

Memorandum Related to AP 23-02 Response and Evidence Related to Appellant Testimony

To: West Linn City Council

From: Peter O. Watts OSB Number 025368, Attorney for Applicant/City Staff

This Memorandum has been prepared in response to Appellant testimony related to AP 23-02. Information from prior Applications is being entered into the record, and there is at least one update related to the Application.

Proposed Mitigation Plan for Fields Bridge Park

Since the Application was completed, planting of native species, and other mitigation efforts have been done by the Tualatin Riverkeepers and other organizations. In response to concerns expressed by Councilor Baumgardner, City Staff asked John van Staveren, and his team at Pacific Habitat Services Inc., to confirm that the work previously done, reflected the current reality on the ground.

After reviewing the site with two senior restoration ecologists, John agreed with Councilor Baumgardner, and indicated to staff that there were higher leverage opportunities in the park.

John reports that the updated mitigation plan to compensate for the proposed road impacts is based on a holistic view of the natural area of Fields Bridge Park. The plan includes removing non-native plants from 18 distinct areas of the southern natural area and planting these areas with native trees and shrubs that meet the density requirements of CDC 32.100 Revegetation Plan Requirements.

The locations of the 18 mitigation areas are shown in Figure 1 of John's Memo dated June 13, 2023. The 18 mitigation areas cover a total area of 20,400 square feet. The proposed impact associated with the improvements to Willamette Falls Drive is 18,862 square feet. The originally proposed mitigation area in Pacific Habitat's February 21, 2023, report was 19,000 square feet. As such, the currently proposed mitigation area of 20,400 square feet exceeds the required mitigation area by 1,538 square feet and the formerly proposed mitigation area by 1,400 square feet.

The list of trees and shrubs to be planted within the 18 distinct areas are listed in the table contained in the Memo. This list includes plants that are currently found in the southern natural area and that are suited to a variety of site conditions. The specific location of each of these plants will be selected when the 18 areas are flagged and the conditions for each area are matched with the list of trees and shrubs below.

Cut Fill Balance for the Project

As part of the Application, Applicant provided a cut/fill balance on Applicant Submittal 3 page 314, and Detail Sheets on pages 315-319. The Application, demonstrated that the cut exceeded the fill.

Detailed Public Improvement Plans Related to Fields Bridge Park Retaining Walls

There were questions related to the retaining walls at Fields Bridge Park. Staff has provided an Aerial Map Key, and ten sheets related to the Improvement Plans.

Code Standards for Roads Constructed in an HCA

The standard for building a road, and associated components in a HCA area, is found in West Linn City Code Section 28.110(L) which states:

L. Roads, driveways, utilities, or passive use recreation facilities. Roads, driveways, utilities, public paths, or passive use recreation facilities may be built in those when no other practical alternative exists but shall use water-permeable materials unless City engineering standards do not allow that. Construction to the minimum dimensional standards for roads is required. Full mitigation and revegetation is required, with the applicant to submit a mitigation plan pursuant to CDC 32.070 and a revegetation plan pursuant to CDC 32.080. The maximum disturbance width for utility corridors is as follows:

1. For utility facility connections to utility facilities, no greater than 10 feet wide.
2. For upgrade of existing utility facilities, no greater than 15 feet wide.
3. For new underground utility facilities, no greater than 25 feet wide, and disturbance of no more than 200 linear feet of water quality resource area, or 20 portions of HCAs that include wetlands, riparian areas, and water resource areas percent of the total linear feet of water quality resource area, whichever is greater.

City Engineer Erich Lais confirmed that the road being constructed is not in a portion of the HCA that includes wetlands, riparian areas, and water resource areas. All other aspects of the road are built to code specifications.

How and Why the Roundabout was Selected and Developed for this Project

Alternatives to a roundabout were considered as part of this process. DKS in a memorandum dated January 25, 2020 stated:

“A two-way stop control was analyzed (stop signs on the Brandon Place and Fields Bridge Park driveway). However, the intersection was not able to meet the City’s operating standard (average vehicle delay less than 35 seconds) with the relocated middle school traffic under the sensitivity analysis scenario (100 students walk/bike, 350 students driven, 450 students bussed). Because of the proximity to the Tualatin River bridge, Willamette Falls Drive cannot be widened to the west of Brandon Place to accommodate an eastbound left turn lane at the intersection. A roundabout was determined to provide significantly more capacity than a two-way stop option. Additionally, a roundabout provides many safety benefits for pedestrians and bicyclists. Roundabouts can reduce the types of crashes where people are seriously hurt or killed by 78% - 82%. The curvature of a roundabout results in lower vehicle speeds (15 mph – 25 mph) and provide shorter crossings for pedestrians by providing a center refuge island at each crossing....”

The West Linn Willamette Falls Drive 2021 Conceptual Design Plan, provided further refinement of the West Linn TSP, specifying on page 10:

“The following updates to this section of the corridor are recommended: • Sidewalk and separated bike lane construction from the eastern end of the Tualatin River bridge to the newly constructed downtown corridor. • Intersection safety improvements at all major intersections within Segment A. • Widen road near Fields Bridge Park to include additional on street parking.”

The roundabout is covered on page 15. Further background information related to the project and process related was provided by Rich Faith, the current Chair of the West Linn Transportation Advisory Board in an email dated June 10, 2023. Wade Scarbrough of Kittelson provided Supplemental Roundabout Information in a Memo dated June 13, 2023.

Materials Related to the Application for the Project Construction of an Improved Public Road System

There was substantial evidence in the record related to the Project Construction Application, that relates to the roundabout and other road improvements. Due to the volume of the records we are providing select documents, all of which are attached to this memo.

A general understanding of the land use narrative, can be found on Applicant Submittal 3 page 1-28

- The drive lane for vehicles exiting the park will shift away from the bridge o Figure 7A – Applicant Submittal 3 page 56
- The metal vehicle barriers extending from the bridge will be replaced and relocated to improve visibility o LU1.1 – Applicant Submittal 3 page 309
- The park driveway will be elevated before entering the roundabout to improve visibility o Figure 7A – Applicant Submittal 3 page 56
- All pedestrian and bicycle crossings will be marked o LU1.1 – Applicant Submittal 3 page 309
- A new asphalt path will connect the Brandon Place extension to the pedestrian and bicycle path under the bridge o Figure 6D – Applicant Submittal 3 page 43

Trees

Staff has reviewed the removal of trees and vegetation along the southern side of Willamette Falls Drive. Trees greater than 12" DBH (Diameter at Breast Height – 4.5') require a permit for removal, and in addition trees greater than 12" DBH within a designated Habitat Conservation Area (HCA; in this case, Tualatin River Protection Zone) may not be removed unless they meet the stringent criteria listed in WLMC 8.630 (A)(1)a-d. Tree removal permits were only submitted for three trees.

After review of the tree inventory prepared for the Middle School project and the tree removal proposal submitted to the City in advance of clearing activities, it appears that the City mistakenly authorized the removal of approximately 15-20 trees (we are still working to identify the exact number). Most of these trees were located in the right-of-way of Willamette Falls Drive, and were located in areas proposed to be removed from the HCA. The City mistakenly concluded that the removal of these trees was authorized by the land use approval for the new Middle School. In fact, these trees should not have been removed prior to a decision on WAP 23-01/WRG 23-01/FMA 23-01. Note that smaller trees/shrubs were also removed as part of the work, but these were less than 12" DBH and did not require a permit to remove.

Under West Linn's Municipal Code, the City Manager has enforcement ability on tree code violations and may mandate fines or mitigation via a tree replacement program. Given the mistaken authorization, the City is considering how to partner with the School District to determine suitable locations for replacement trees that will best enhance the park.

The tree removal described here, and the penalties to be enforced, are separate from the criteria and

decision-making on Appeal AP 23-02 currently before Council.

Conclusion

We are submitting this additional information to provide clarity to the Council related to Applicable Codes and in response to Council Questions and Concerns. We have asked both John van Staveren, as well as Wade Scarbrough, from Kittelson, to be in attendance at the hearing.



9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

PACIFIC HABITAT SERVICES, INC

(800) 871-9333 • (503) 570-0800 • Fax (503) 570-0855

Date: June 13, 2023

To: Erich Lais, Assistant City Engineer
Public Works Department
City of West Linn

From: John van Staveren, SPWS

Re: Willamette Falls Drive Public Improvements
Proposed Mitigation Plan Update
PHS Project Number: 6960

Erich: Following the June 6th, 2023, City Council hearing regarding the proposed Willamette Falls Drive Public Improvements Project, I conducted an on-site review of the proposed mitigation area. Although I discussed the mitigation area at the hearing with the Mayor and the City Council, I had not seen the area for myself. Following the meeting, I and two senior restoration ecologists from Pacific Habitat Services conducted an on-site review of the proposed mitigation area and the rest of the natural area within Fields Bridge Park. The goal of our site visit was to determine whether the mitigation area proposed in our February 21st, 2023, report can adequately compensate for the proposed impacts from the road and if not, is there an alternate approach that ensures not only that the mitigation requirements of West Linn Community Development Code 32.100 Revegetation Plan Requirements are met, but that our plan creates ecological uplift for the park's natural area.

Our review concluded that the proposed mitigation plan is not sufficient to adequately compensate for the proposed impacts from the road. A site visit by the previous biologist may have occurred when plants were dormant, and the conditions of the site following new growth in the spring were not realized. As such, we are proposing a new approach to compensate for the proposed impacts resulting from the Willamette Falls Drive Public Improvements Project.

Updated Mitigation Plan

Introduction: Fields Bridge Park has two distinct uses. The northern portion of the park includes ball fields, a community garden, parking areas, and restrooms, and is dedicated to more active recreational uses. The southern portion of the park is dedicated to passive recreational uses. In the southern area, several paved paths wind their way through the overstory of Douglas fir, western redcedar, Oregon ash, red alder, and big leaf maple. The southern portion contains

Willamette Falls Drive Public Improvements

Proposed Mitigation Plan Update

Pacific Habitat Services, Inc.

June 13, 2023

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0.82 acres of wetlands, which includes a pond connected by a culvert to the Tualatin River. The western border of the southern natural area is the river's riparian area.

While the more active areas of the park are important for the community, the southern portion of the park is important to the health of the Tualatin River, the wetlands that encompass a large portion of the southern area, and for the variety of wildlife that depend on this important natural area for their habitat.

Plant communities within the southern natural area vary depending on soil moisture, available light, and other factors. Coniferous (western redcedar, Douglas fir) and deciduous trees (red alder, big leaf maple, Oregon ash, Pacific willow) dominate the overstory. The understory is robust and includes a large stand of native red osier dogwood, thimbleberry, elderberry, Cascara and bracken fern.

Although the southern natural area provides valuable habitat, portions are dominated by non-native plant species, especially Himalayan blackberry and Japanese knotweed. Left to spread on their own, these plants can dominate the understory. Control methods need to be ongoing to adequately control invasive species. An important part of the control process is the planting of native trees and shrubs to ensure open areas created by the removal of non-native species provide competition for non-native plants and quickly provide wildlife habitat.

Mitigation size: The updated mitigation plan to compensate for the proposed road impacts is based on a holistic view of the natural area of Fields Bridge Park. The plan includes removing non-native plants from 18 distinct areas of the southern natural area and planting these areas with native trees and shrubs that meet the density requirements of CDC 32.100 Revegetation Plan Requirements. The locations of the 18 mitigation areas are shown in Figure 1. The 18 mitigation areas cover a total area of 20,400 square feet (sf). The table below lists the size of each mitigation area.

Mitigation Area Number	Mitigation area size (sf)
1	1769
2	4132
3	294
4	419
5	170
6	264
7	304
8	1185
9	864
10	375
11	169
12	1791

Willamette Falls Drive Public Improvements

Proposed Mitigation Plan Update

Pacific Habitat Services, Inc.

June 13, 2023

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Mitigation Area Number	Mitigation area size (sf)
13	1368
14	233
15	230
16	184
17	5483
18	1166
Total	20,400

The total permanent impacts to Habitat Conservation Areas, the Tualatin River Protection Area, and Water Resource Areas is 37,666 sf. PHS has determined that a total of 28,226 square feet of this area is within previously disturbed vegetation areas. The disturbance occurred to facilitate construction of Willamette Falls Drive, Fields Bridge Park, and recreational fields. As allowed by code, half of the previously disturbed areas are required to be mitigated, plus the total of all non-previously disturbed areas.

The required amount of mitigation is equal to $0.5 \times 18,833 \text{ sf} + 9,440 \text{ sf} = 18,857 \text{ sf}$

The originally proposed mitigation area in our February 21, 2023, report was 19,000 sf. As such, the currently proposed mitigation area of 20,400 square feet exceeds the required mitigation area by 1,543 square feet and the formerly proposed mitigation area by 1,400 square feet, and of the required mitigation area by 1,543 sf. Figures 6A, 6B, and 6C are graphics from the report showing the permanent and temporary impacts to the Tualatin River Protection Area, Habitat Conservation Areas, and Water Resource Areas within the proposed project area.

Mitigation Goal and Planting Plan: The mitigation goal is to create a sustainable plant community that will not only benefit wildlife, the Tualatin River, the wetland within the natural area, but also park users wishing to be close to the natural environment as they walk the paved paths. The success of the mitigation plan will depend on the diligent removal of non-native plants, the planting of trees and shrubs that are not only native (all plants are on the Portland Plant List), but also adapted to site specific soil moisture and light exposure. Prior to the implementation of the mitigation plan, PHS biologists will flag the limits of each restoration area, so that impacts to native plants can be avoided and targeted control of non-natives by herbicide application and physical methods of removal can be achieved. It is recommended that several visits by a restoration landscape crew be conducted to ensure that non-native plants do not return and that planted native plants thrive.

The list of trees and shrubs to be planted within the 18 distinct areas are listed in the table below. This list includes plants that are currently found in the southern natural area and that are suited to a variety of site conditions. The specific location of each of these plants will be selected when the 18 areas are flagged and the conditions for each area are matched with the list of trees and shrubs below.

Table 1 Proposed plantings within the 18 mitigation areas in the natural area of Fields Bridge Park, West Linn.

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
<i>Acer macrophyllum</i>	Bigleaf maple	20	Container or field grown	½ in caliper
<i>Cornus nuttallii</i>	Pacific dogwood	35	Container or field grown	½ in caliper
<i>Crataegus douglasii</i>	Hawthorn	58	Container or field grown	
<i>Thuja plicata</i>	Western redcedar	24	Container or field grown	½ in caliper
<i>Alnus rubra</i>	Red alder	45	Container or field grown	½ in caliper
<i>Pseudotsuga menziesii</i>	Douglas Fir	20	Container or field-grown	½ in caliper
Shrubs				
<i>Cornus alba</i>	Red-osier dogwood	180	1 gal.	12 in
<i>Berberis nervosa</i>	Oregon grape	205	1 gal.	12 in
<i>Physocarpus capitatus</i>	Pacific ninebark	150	1 gal.	12 in
<i>Sambucus racemosa</i>	Red elderberry	220	1 gal.	12 in
<i>Symphoricarpos alba</i>	Snowberry	180	1 gal.	12 in
<i>Frangula purshiana</i>	Cascara	85	1 gal.	12 in
Herbaceous seed mix				
<i>Elymus glaucus</i> (Blue Wildrye), <i>Hordeum brachyantherum</i> (Meadow Barley), <i>Bromus carinatus</i> (California Brome)		6 lbs	Seed	n/a

Non-native Plant Control: Blackberries can be effectively controlled by mowing the canes to the ground at the beginning of summer and then spraying the regrowth with an aquatically approved herbicide and aquatically approved surfactant at the beginning of September. Often the auxin herbicide triclopyr is used, although aquatically approved acetolactate synthase inhibitors such as imazapyr may be used. For the late season applications, generous use of surfactant is necessary to get the herbicide into the plants. Often glyphosate and triclopyr are tank-mixed with an aquatically approved surfactant for an application at the beginning of September to kill the summer regrowth of blackberry, followed a month later by another glyphosate-surfactant application.

Willamette Falls Drive Public Improvements

Proposed Mitigation Plan Update

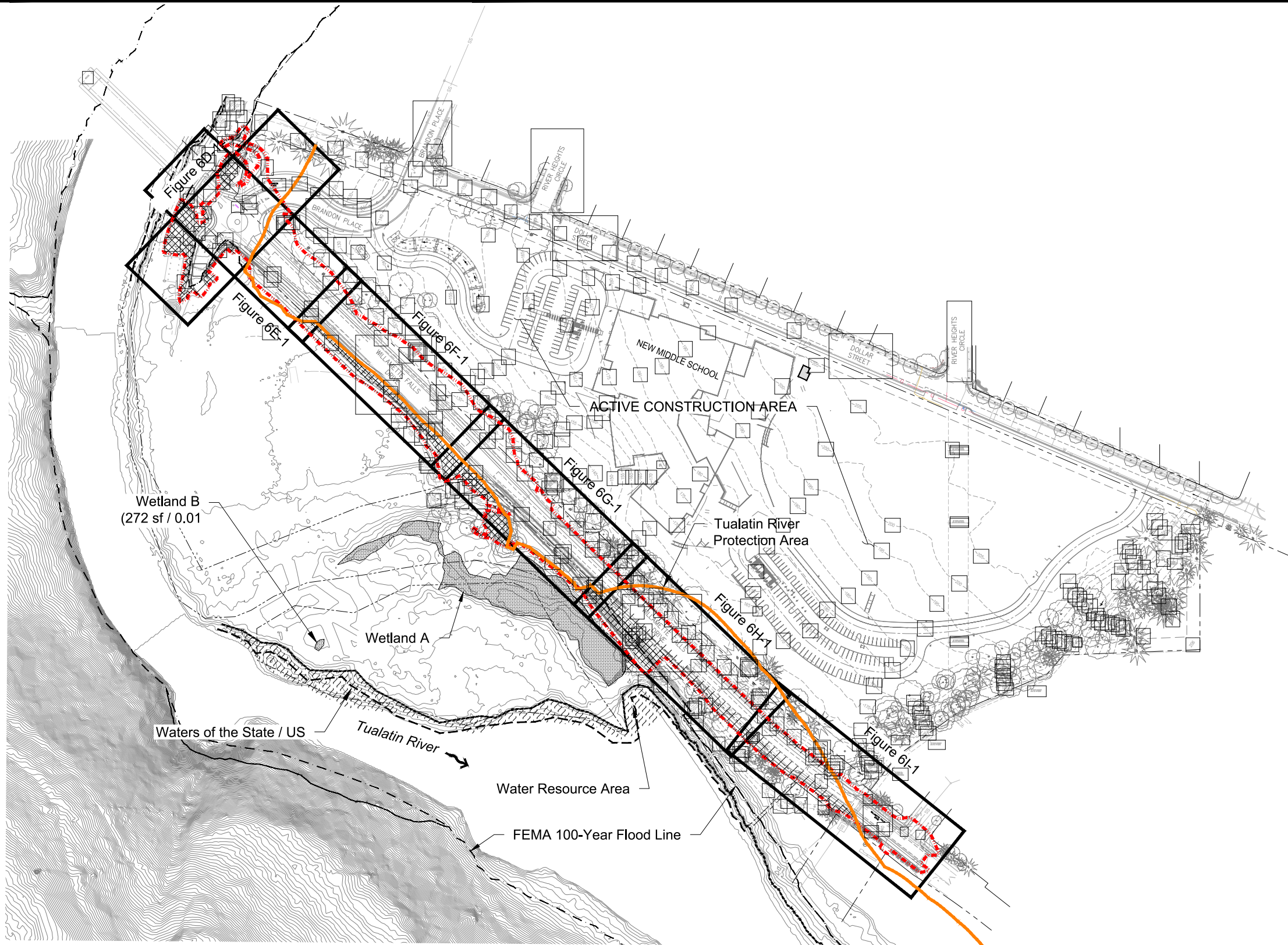
Pacific Habitat Services, Inc.

June 13, 2023

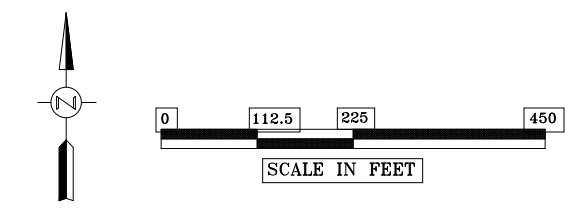
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Because Japanese knotweed is difficult to control, it is recommended that a local specialist conduct a site visit to the largest restoration area to consult on best options to remove the knotweed stand currently growing there. Like blackberry, herbicides need to penetrate the root system to be effective. Stem injection of knotweed could be effective, but robust planting of native trees and shrubs will ensure habitat is restored to this currently disturbed area.

Please let me know if you have any questions.



- LEGEND**
- - - - - Project Area Boundary (205,382 sf / 4.71 ac)
 - Wetland (0.82 ac)
 - Waters of the State/US (0.76 ac)
 - Ordinary High Water (OHW)
 - Ordinary Low Water (OLW)
 - Direction of Flow
 - Contours
 - Tax Lots
 - FEMA 100-Year Flood Line
 - Tualatin River Protection Area
 - Tualatin River Protection Area - Permanent Impact (23,045 sf / 0.53 ac)
 - Tualatin River Protection Area - Temporary Impact (34,594 sf / 0.79 ac)

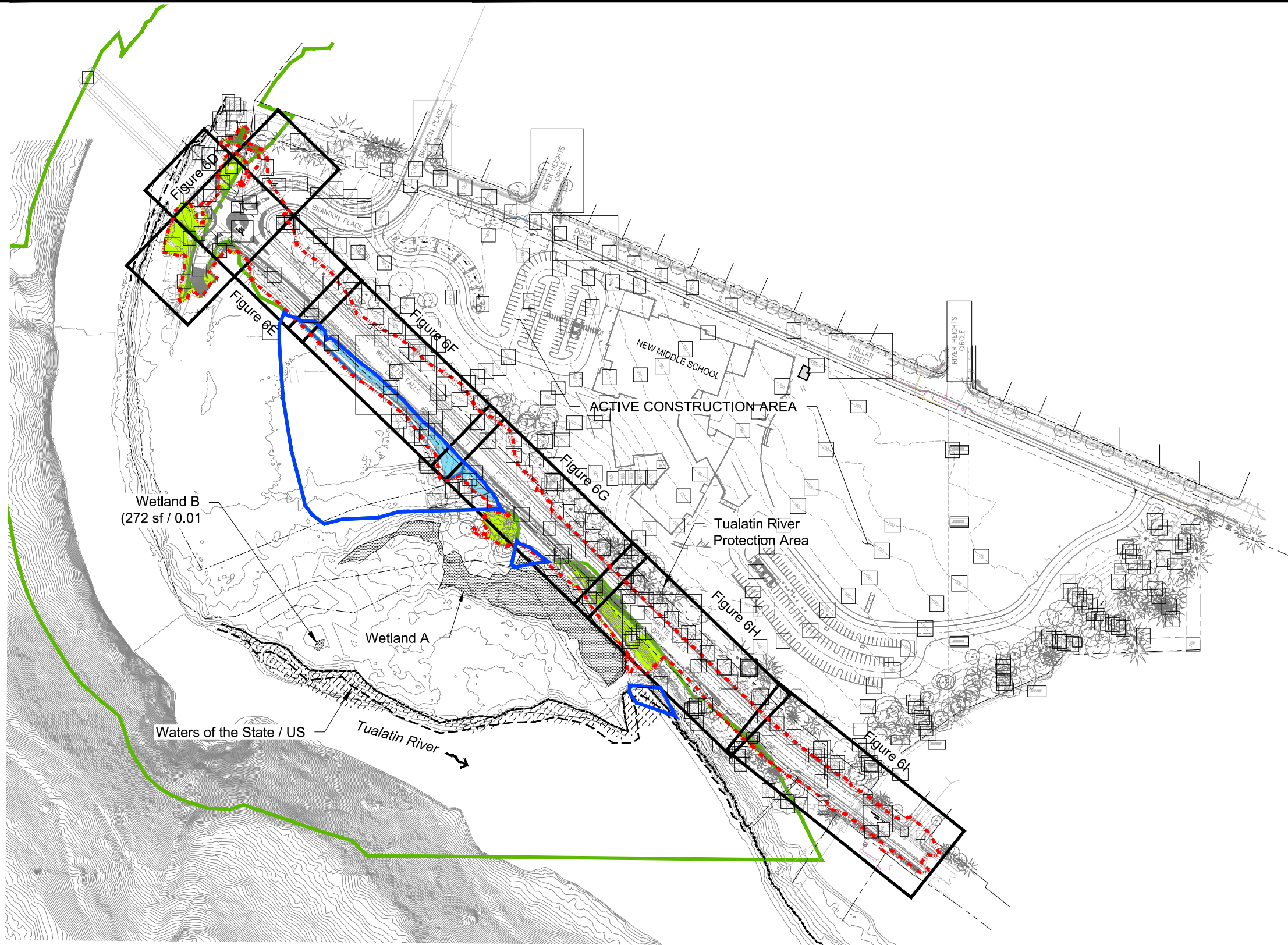


Plans Provided by KPFF

Site Plan Overview (Tualatin River Protection Area)
 Willamette Falls Drive Public Improvements - West Linn, Oregon

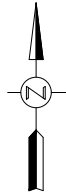
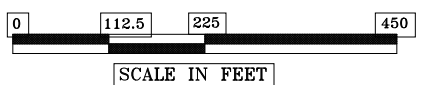
FIGURE 6A

2-20-2023



LEGEND

- - - - - Project Area Boundary (205,382 sf / 4.71 ac)
- Wetland (0.82 ac)
- Waters of the State/US (0.76 ac)
- Ordinary High Water (OHW)
- Ordinary Low Water (OLW)
- ↶ Direction of Flow
- Contours
- Tax Lots
- Habitat Conservation Area (HCA) (High HCA)
- Habitat Conservation Area(HCA) (Moderate HCA)
- High HCA Permanent Impact (7,694 sf / 0.18 ac)
- High HCA Temporary Impact (22,304 sf / 0.51 ac)
- Moderate HCA Permanent Impact (1,543 sf / 0.04 ac)
- Moderate HCA Temporary Impact (10,158 sf / 0.24 ac)

SCALE IN FEET

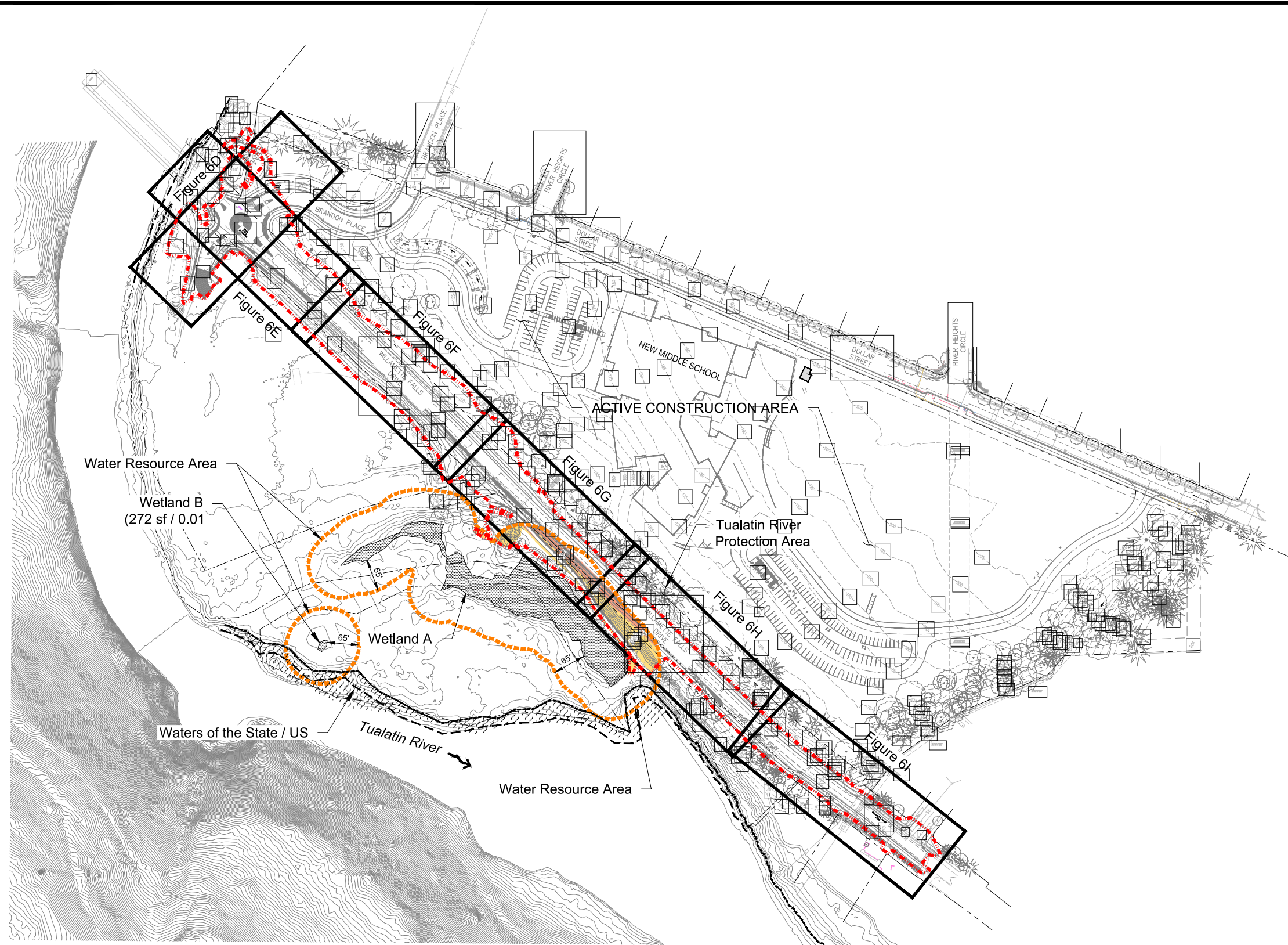


Plans Provided by KPFF

Site Plan Overview (Habitat Conservation Areas)
 Willamette Falls Drive Public Improvements - West Linn, Oregon

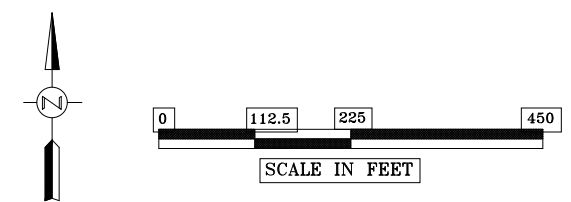
FIGURE 6B

2-20-2023



LEGEND

- - - - - Project Area Boundary (205,382 sf / 4.17 ac)
- Wetland (0.82 ac)
- Waters of the State/US (0.76 ac)
- Ordinary High Water (OHW)
- Ordinary Low Water (OLW)
- Direction of Flow
- Contours
- Tax Lots
- Water Resource Area (WRA)
- WRA Permanent Impact (5,384 sf / 0.12 ac)
- WRA Temporary Impact (10,520 sf / 0.24 ac)



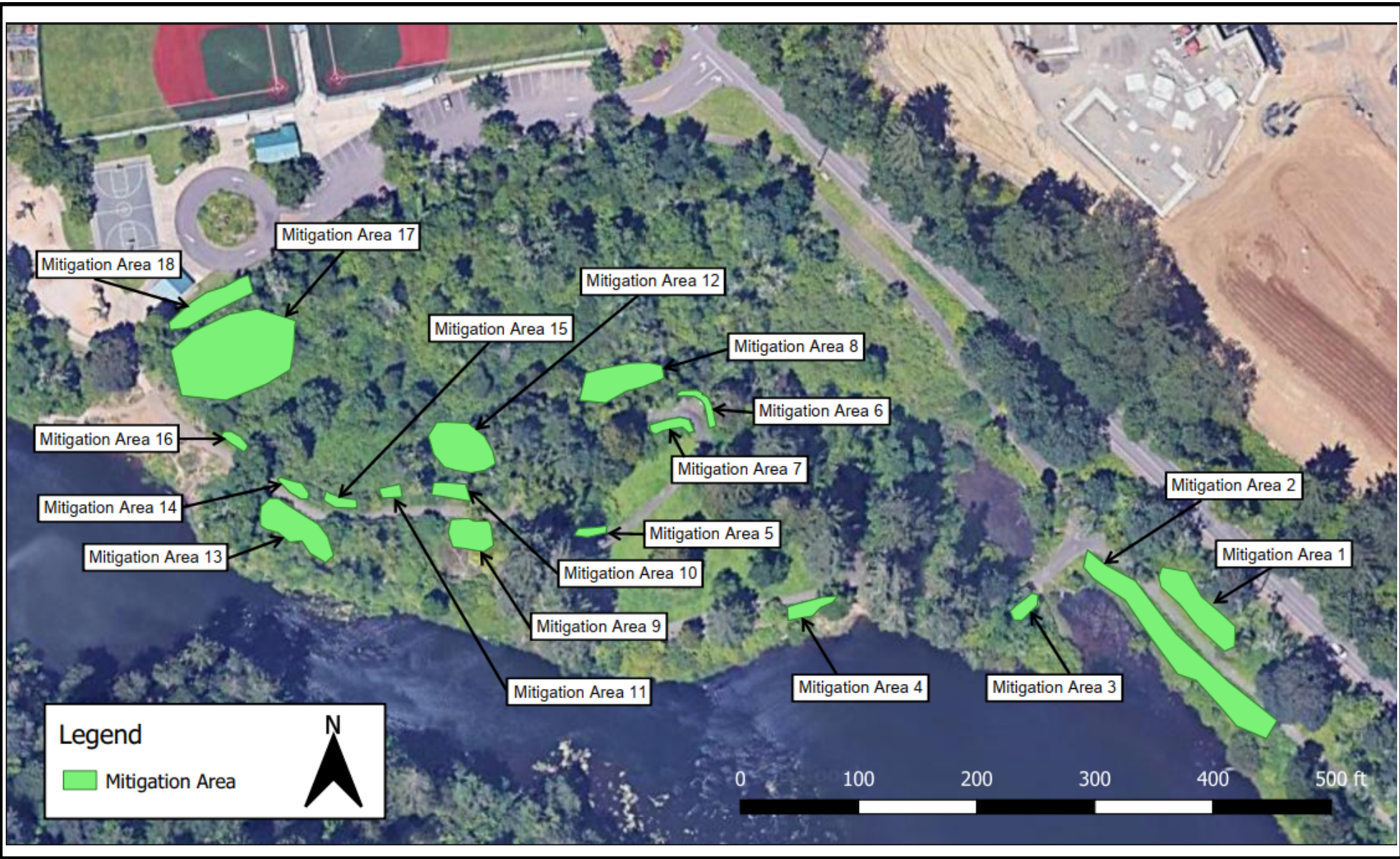
Plans Provided by KPFF

Pacific Habitat Services, Inc.
 9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
 Phone: (503) 570-0800 Fax (503) 570-0855

Site Plan Overview (Water Resource Areas)
 Willamette Falls Drive Public Improvements - West Linn, Oregon

FIGURE 6C

2-20-2023



Project# 6960
Date: 6/13/2023



Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Proposed Mitigation
Willamette Falls Drive Public Improvements, City of West Linn

FIGURE

1



CITY OF
West Linn

Memorandum

Date: June 13, 2023

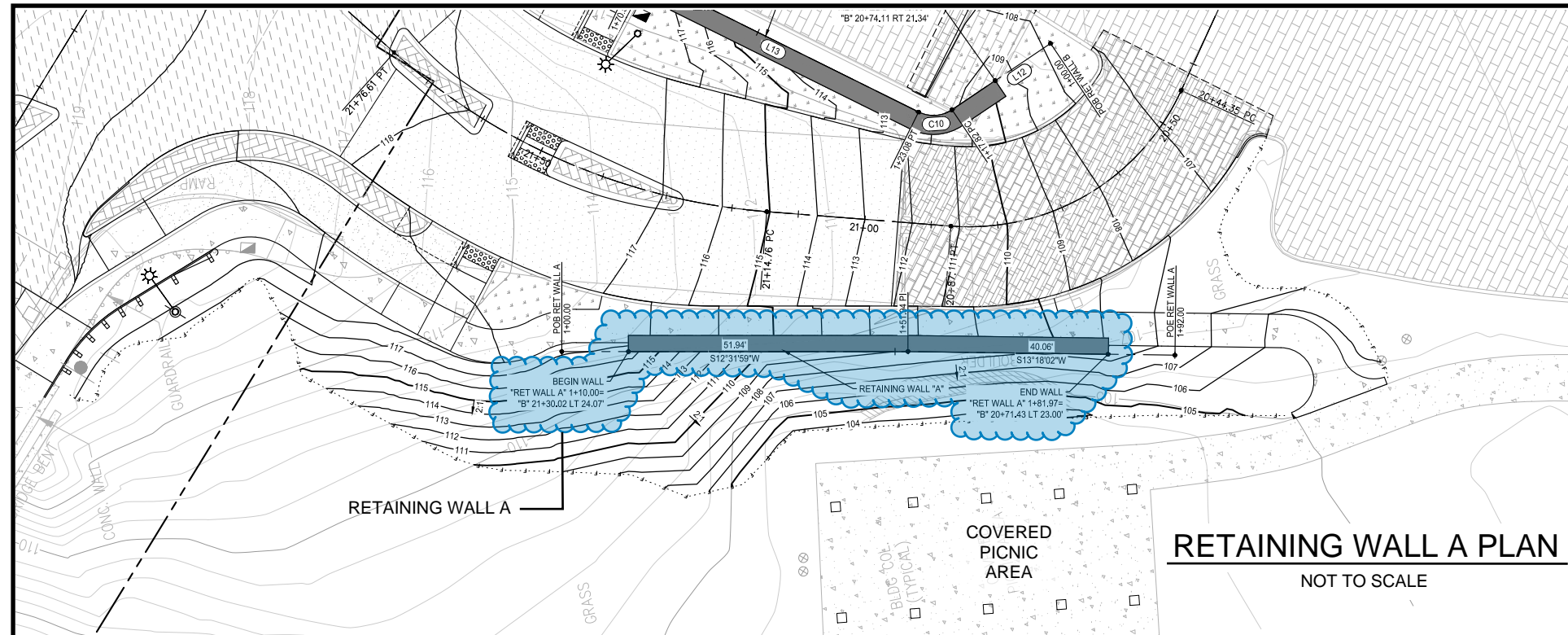
To: Mayor Bialostosky and City Council

From: Erich Lais, Interim City Engineer

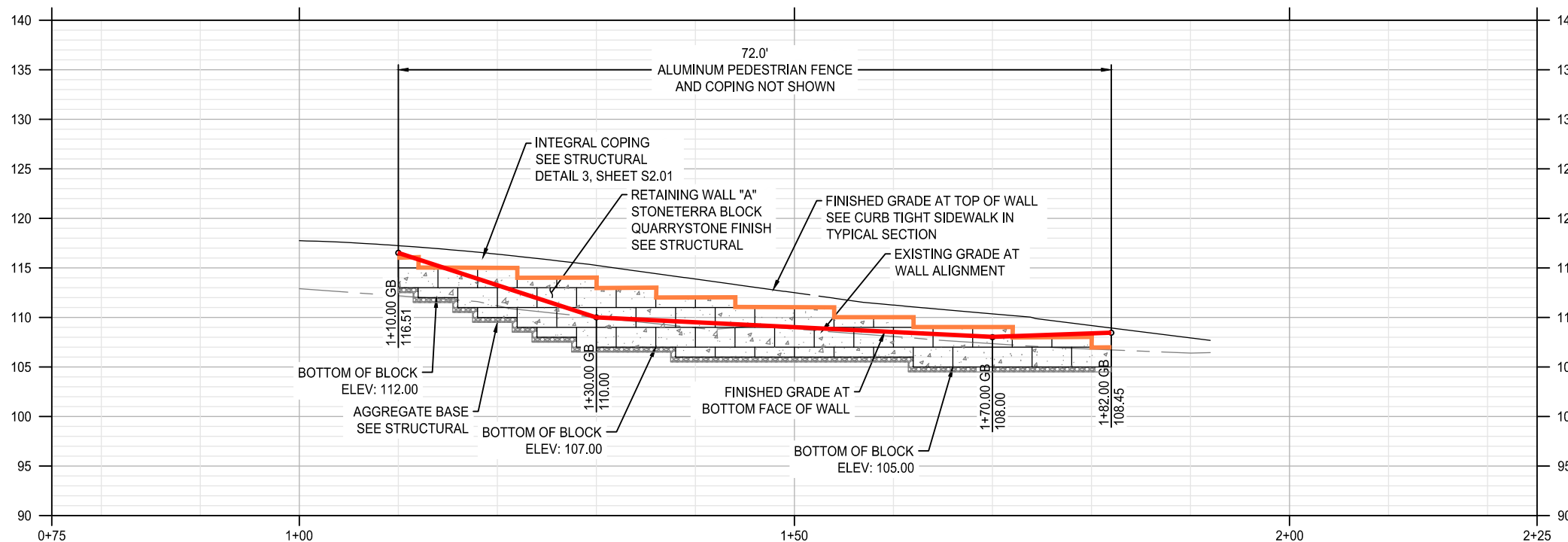
Subject: Willamette Falls Drive Improvements – Retaining Walls

At the appeal hearing (AP-23-02), Council asked questions related to retaining wall locations/heights associated with the proposed improvements to Willamette Falls Drive. Attached are the location of the walls, the design, and heights.





RETAINING WALL A PLAN
NOT TO SCALE



RET WALL A PROFILE

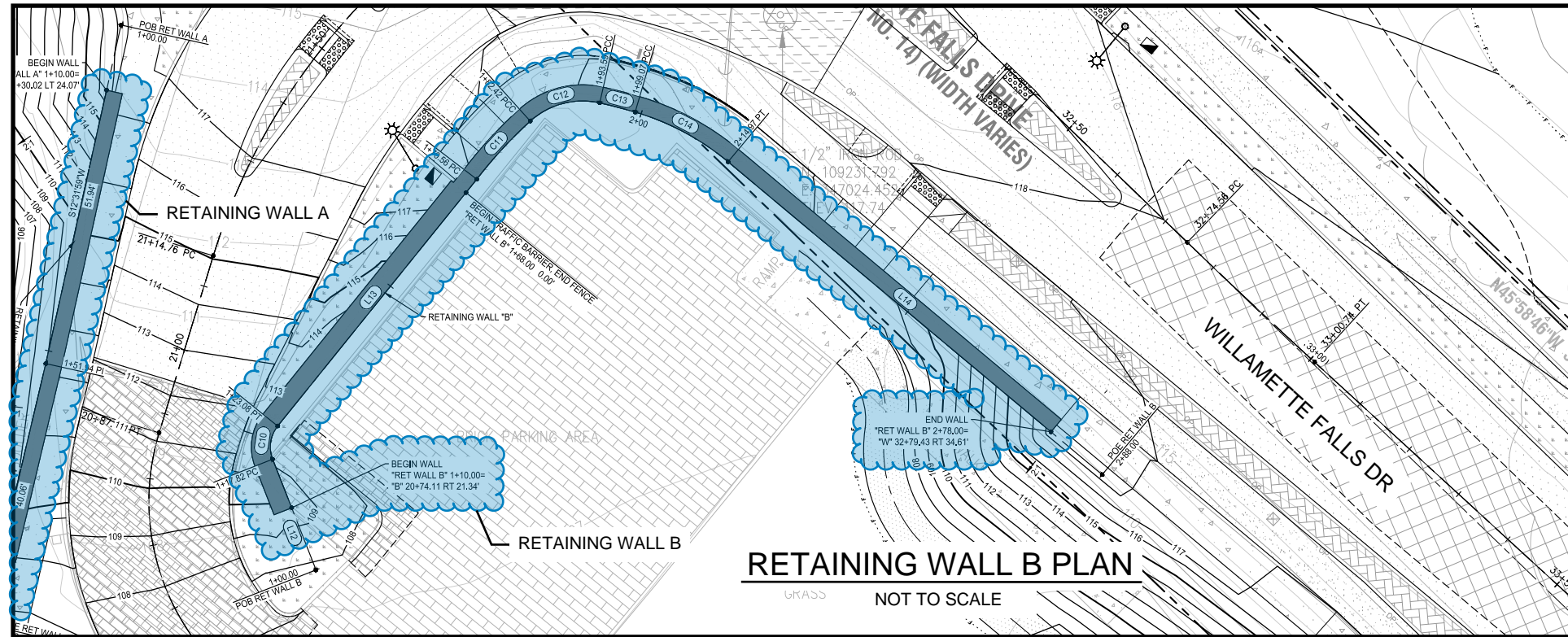
SCALE: HORIZ: 1" = 10'
VERT: 1" = 10'

LEGEND:

- TOP OF WALL
- BOTTOM OF WALL (@ FINISHED GRADE)

GENERAL NOTES:

1. TOTAL WALL LENGTH = 72.0'
2. MAX. WALL HEIGHT = 3' @ APPROX. STA 1+30 (TOP OF WALL ELEV - FINISHED GRADE AT BOTTOM OF WALL ELEV)

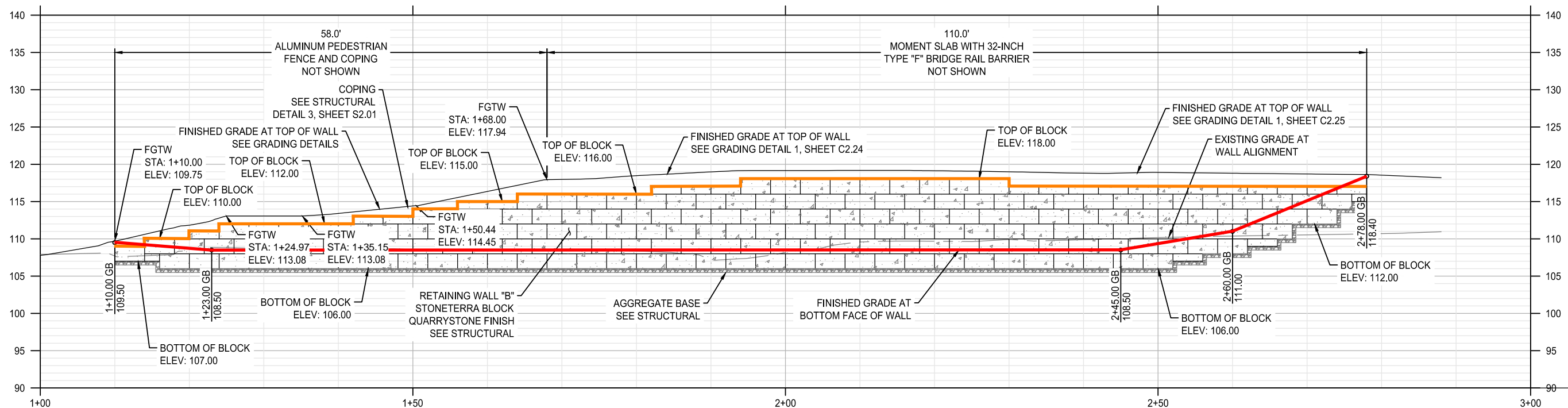


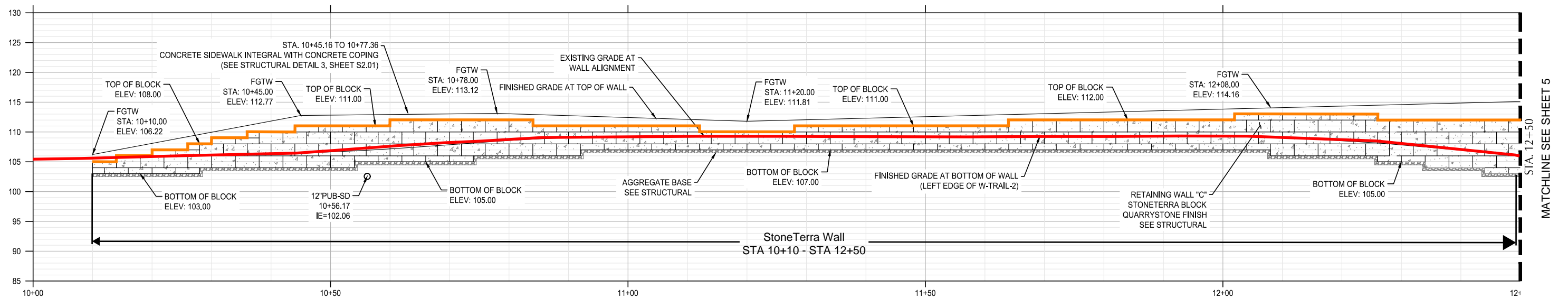
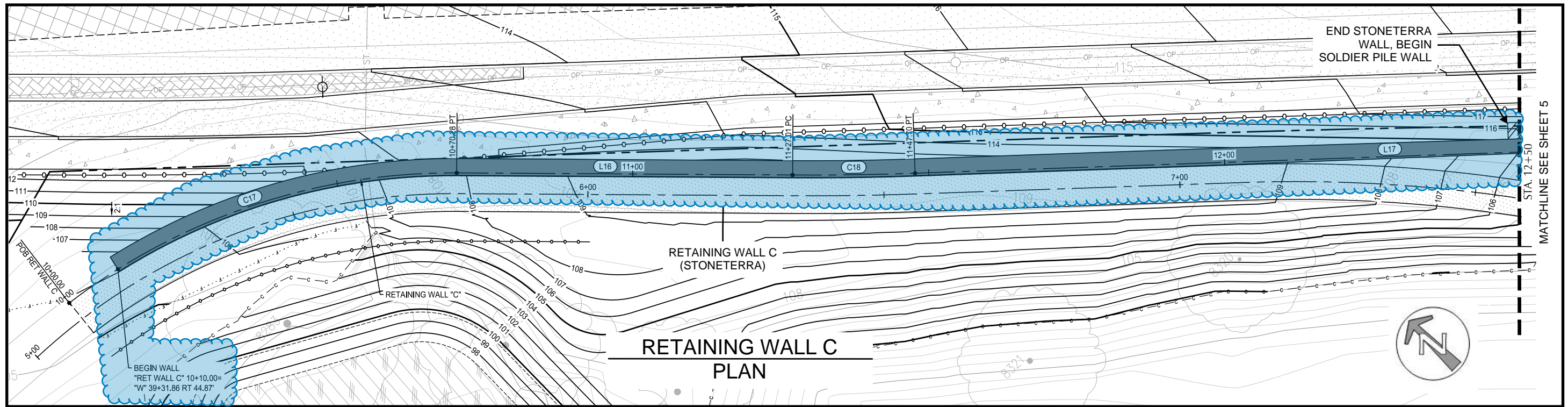
GENERAL NOTES:

1. TOTAL WALL LENGTH = 168.0'
2. MAX. WALL HEIGHT = 9.5' @ APPROX. STA 2+20
(TOP OF WALL ELEV - FINISHED GRADE AT BOTTOM OF WALL ELEV)

LEGEND:

- TOP OF WALL
- BOTTOM OF WALL (@ FINISHED GRADE)





LEGEND:

- TOP OF WALL
- BOTTOM OF WALL (@ FINISHED GRADE)

- GENERAL NOTES:**
1. TOTAL WALL LENGTH = 453.55'
 2. MAX. WALL HEIGHT = 19.43' @ APPROX. STA 13+08
(TOP OF WALL ELEV - FINISHED GRADE AT BOTTOM OF WALL ELEV)



ATHEY CREEK MIDDLE SCHOOL PUBLIC IMPROVEMENT PLANS - WILLAMETTE FALLS DRIVE

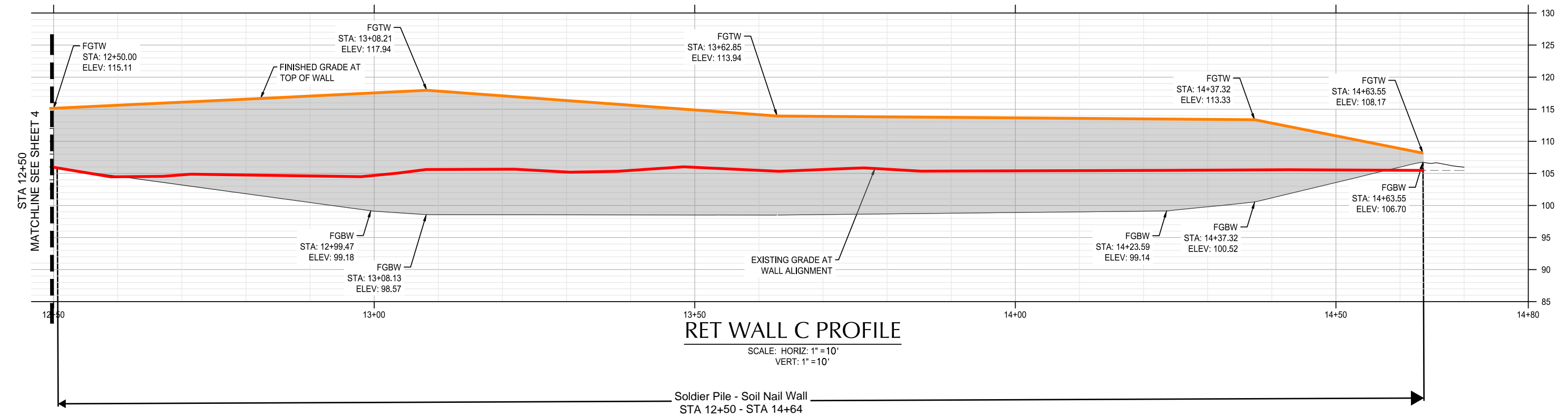
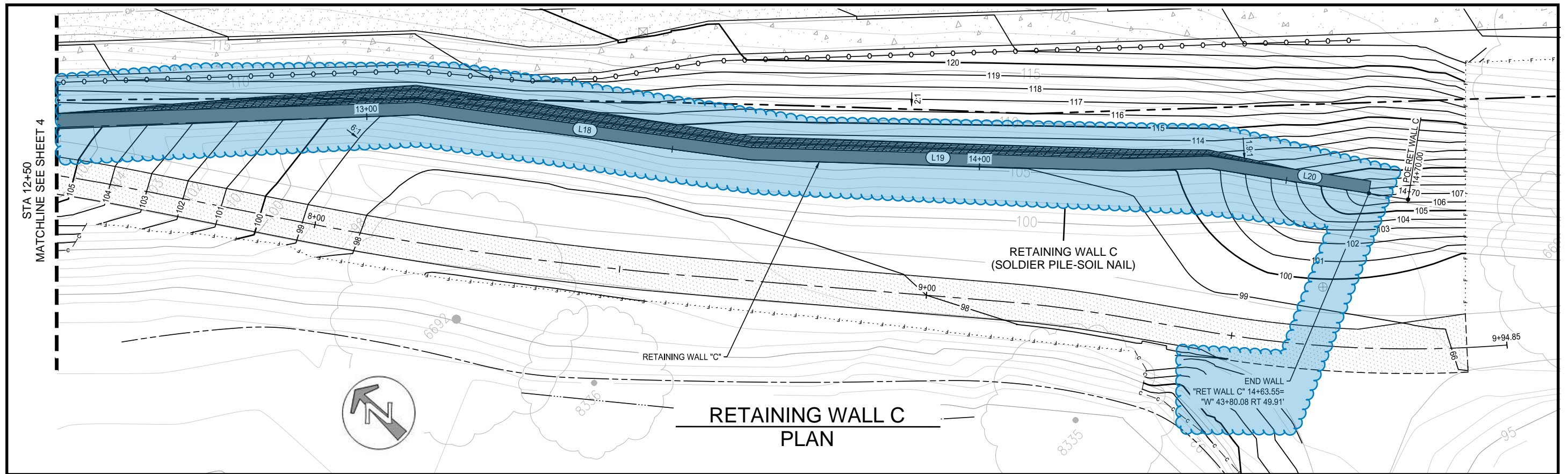
RETAINING WALL EXHIBITS

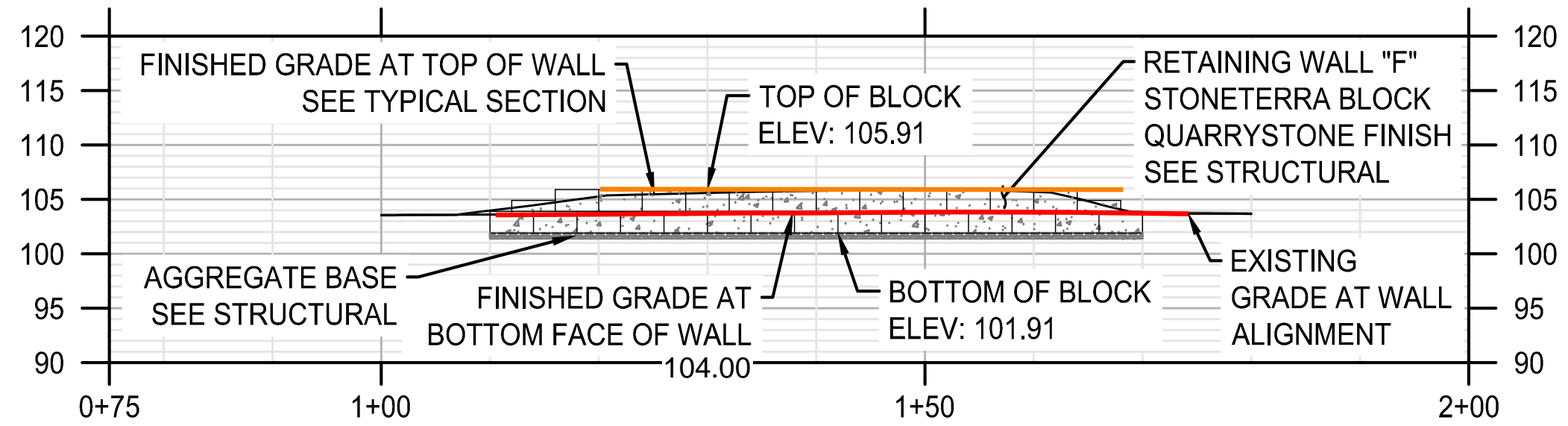
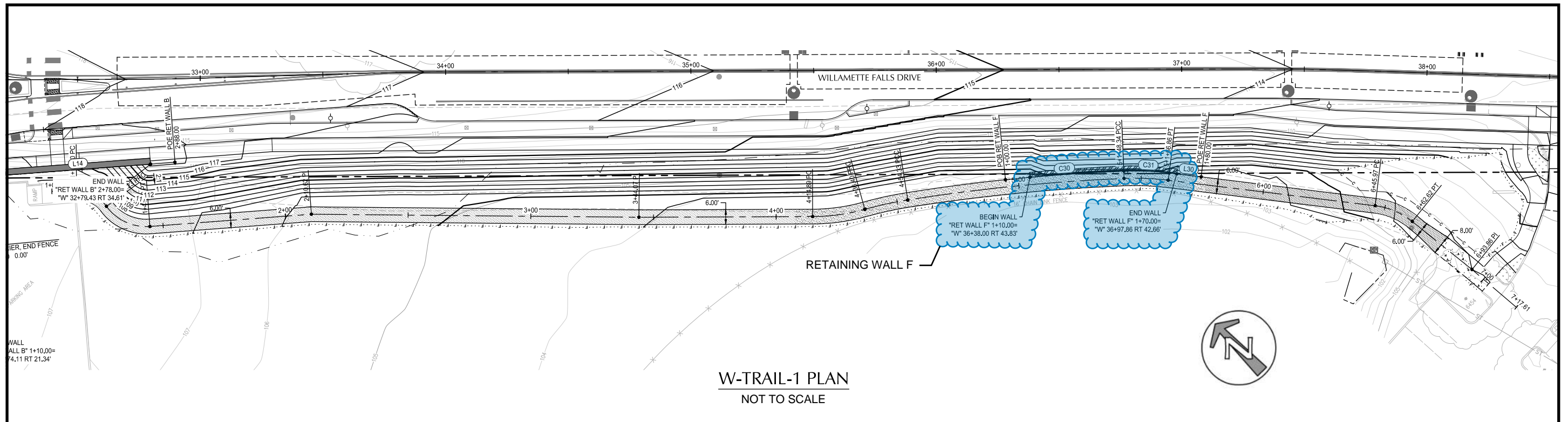
RETAINING WALL C

SHEET NO.

4

4 of 10





LEGEND:

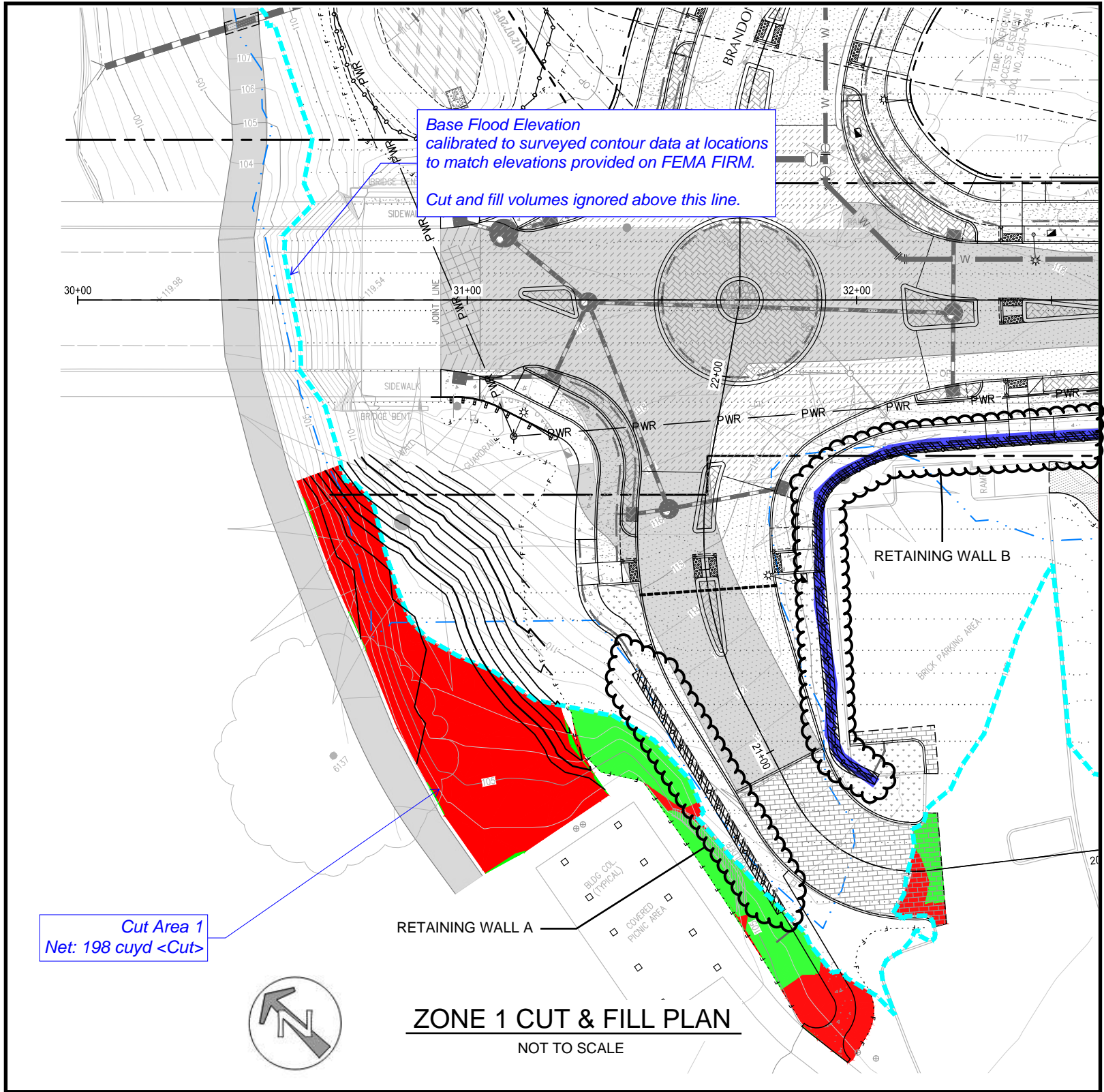
- TOP OF WALL
- BOTTOM OF WALL (@ FINISHED GRADE)

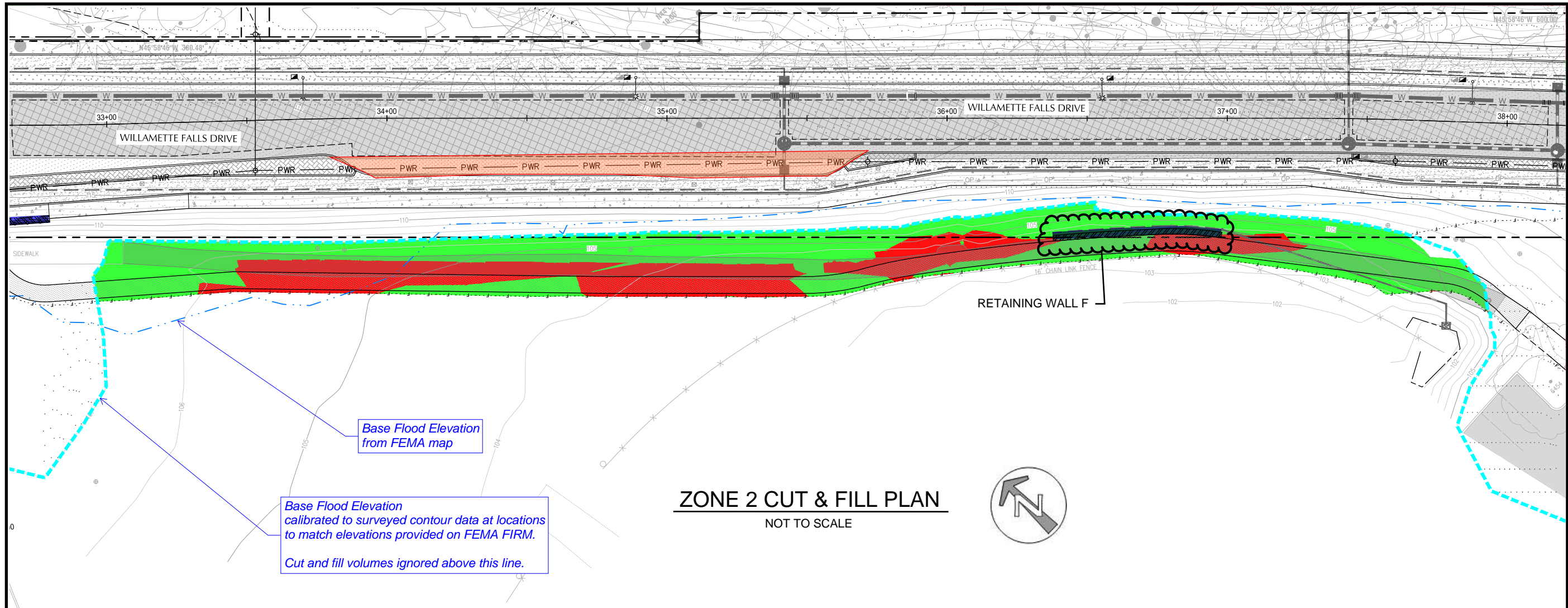
- GENERAL NOTES:**
1. TOTAL WALL LENGTH = 60.0'
 2. MAX. WALL HEIGHT = 2.0'
(TOP OF WALL ELEV - FINISHED GRADE AT BOTTOM OF WALL ELEV)

RET WALL F PROFILE
 SCALE: HORIZ: 1" = 20'
 VERT: 1" = 20'

LEGEND:

- CUT AREA
- FILL AREA

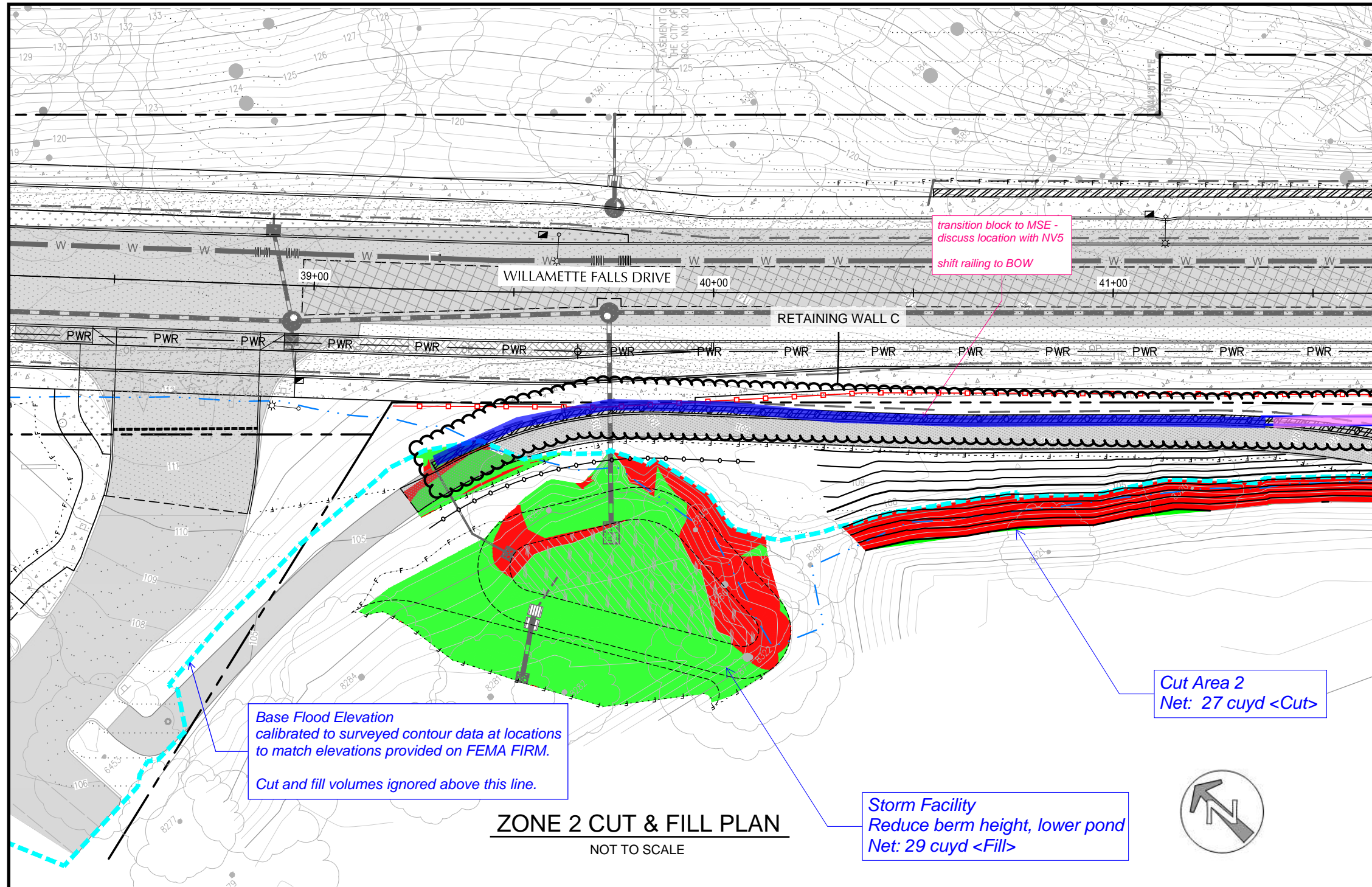




LEGEND:

CUT AREA

FILL AREA

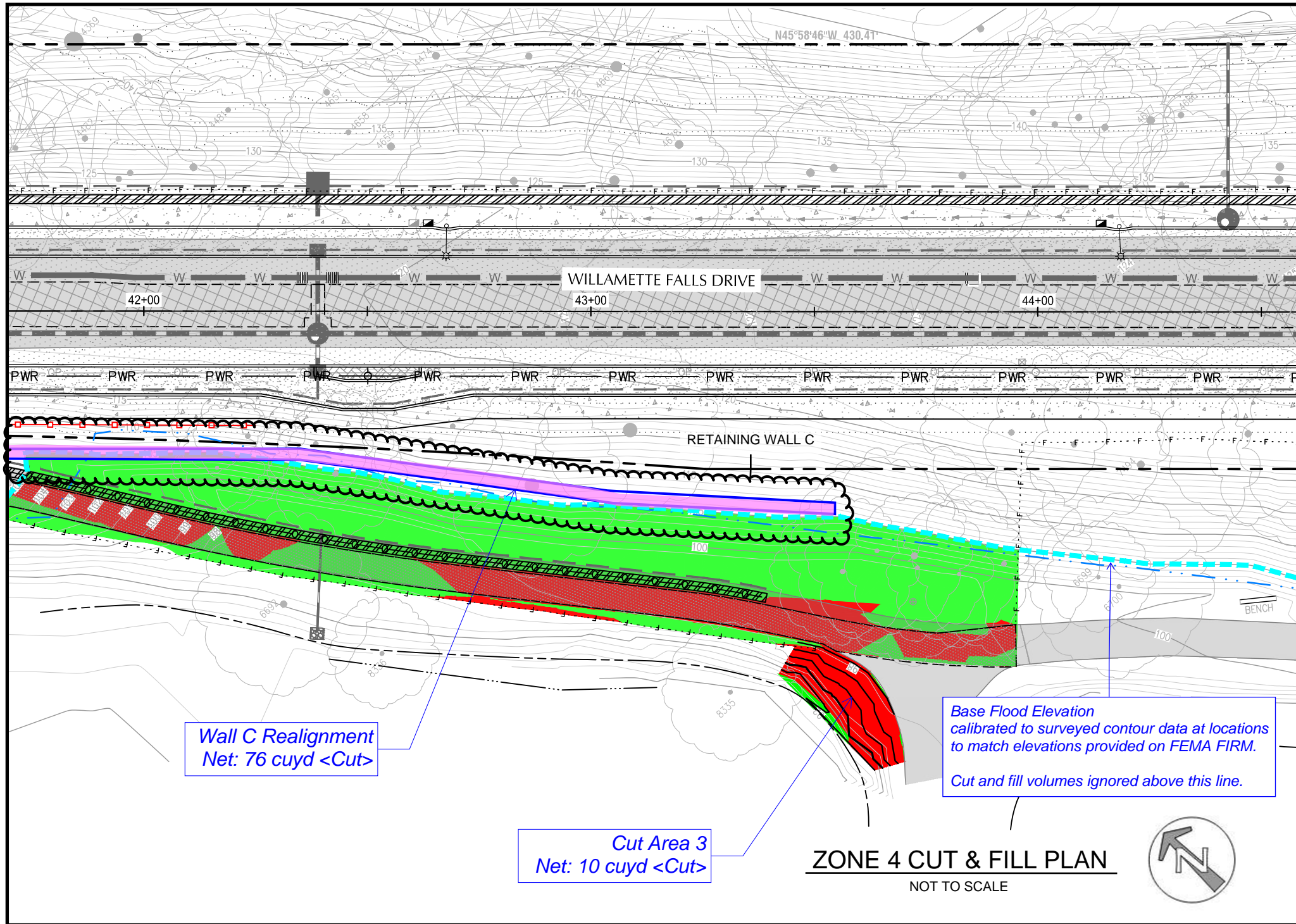


LEGEND:

CUT AREA

FILL AREA

ZONE 2 CUT & FILL PLAN
NOT TO SCALE



LEGEND:

- CUT AREA
- FILL AREA

Wall C Realignment
Net: 76 cuyd <Cut>

Cut Area 3
Net: 10 cuyd <Cut>

Base Flood Elevation
calibrated to surveyed contour data at locations
to match elevations provided on FEMA FIRM.
Cut and fill volumes ignored above this line.

ZONE 4 CUT & FILL PLAN
NOT TO SCALE

CUT/FILL BALANCE PLAN SHEETS

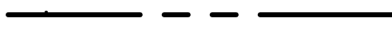

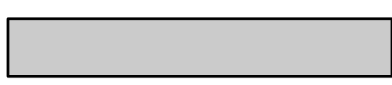


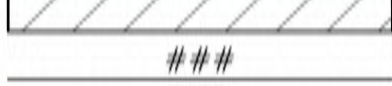


SHEET NOTES

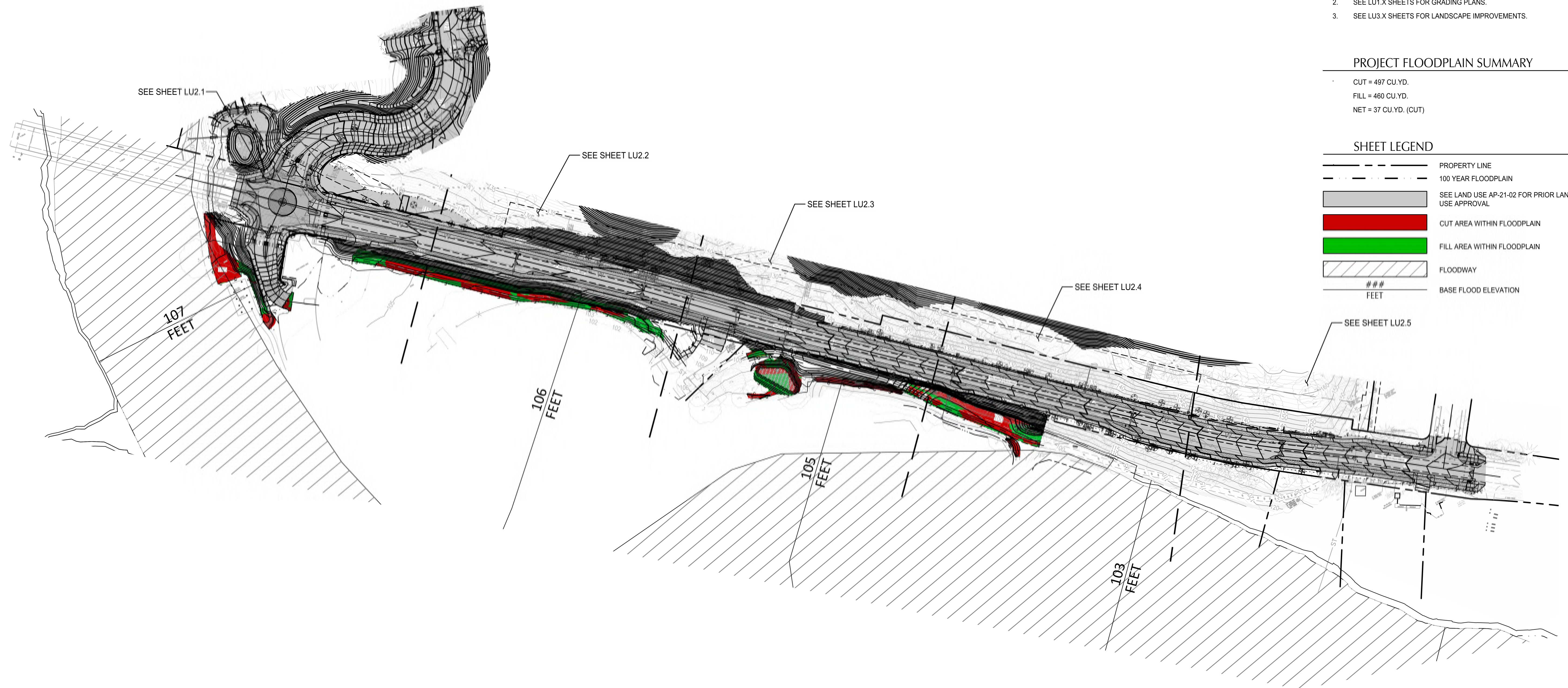
1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

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 FILL = 460 CU.YD.
 NET = 37 CU.YD. (CUT)

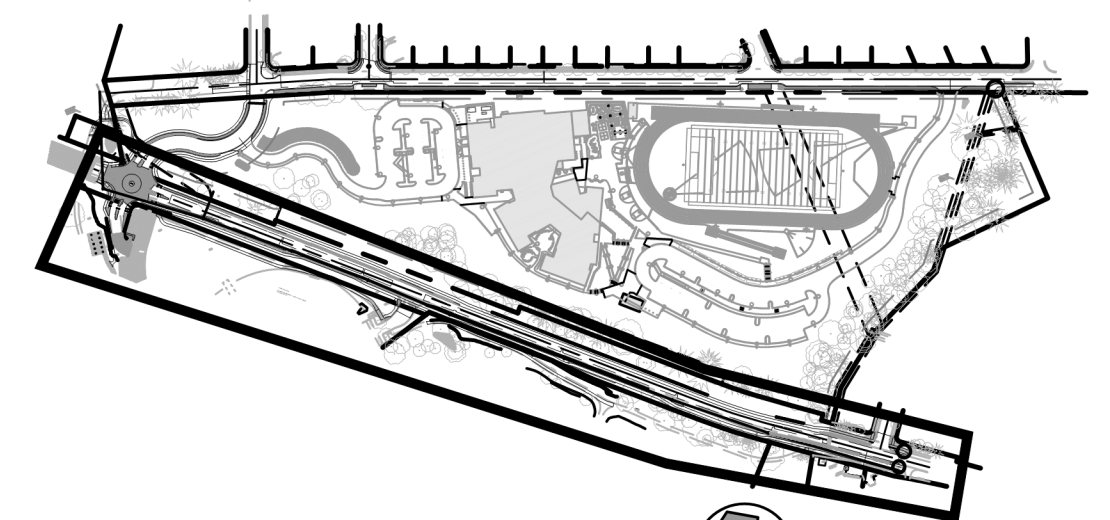
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-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
-  FILL AREA WITHIN FLOODPLAIN
-  FLOODWAY
-  ### FEET
-  FEET



PLAN - WILLAMETTE FALLS DRIVE - OVERALL

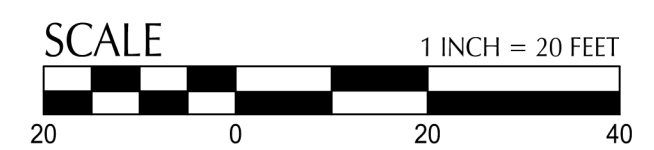
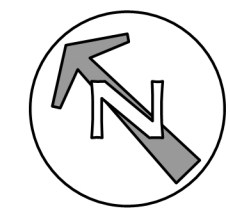
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KEY MAP

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CHECKED BY:	DP/CV
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West Linn, OR 97088

CITY OF WEST LINN
LAND USE

WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING - OVERALL PLAN

SHEET NO.	
LU2.0	
SHEET	7 OF 19
RECORD NO.	2000067-65








SHEET NOTES

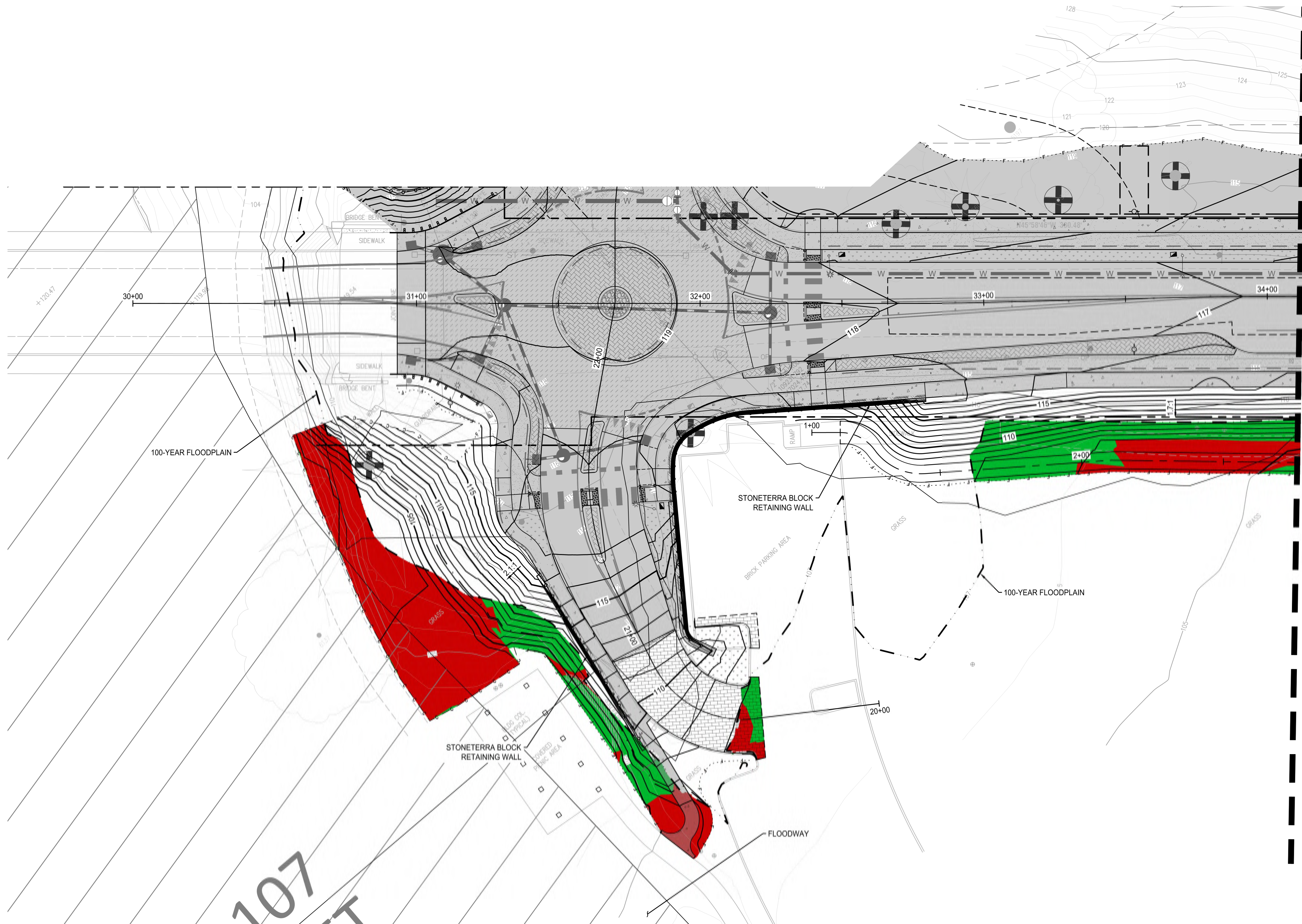
1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

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 FILL = 460 CU.YD.
 NET = 37 CU.YD. (CUT)

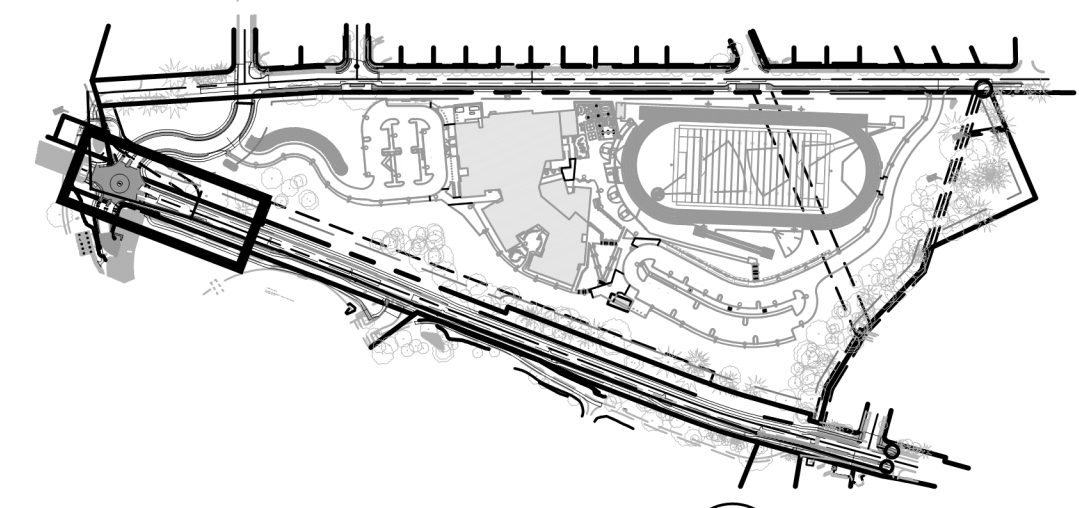
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-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
-  FILL AREA WITHIN FLOODPLAIN
-  FLOODWAY
-  ### FEET BASE FLOOD ELEVATION



MATCHLINE SEE SHEET LU2.2

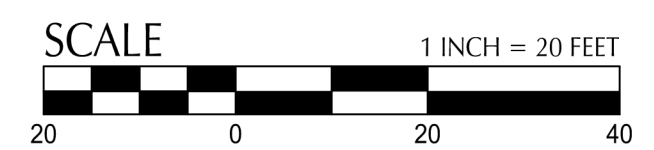
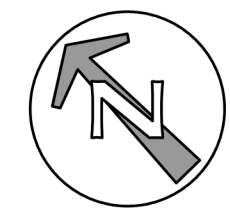
PLAN - WILLAMETTE FALLS DRIVE
 SCALE: 1" = 20'



KEY MAP

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CHECKED BY:	DP/CV
PLOT DATE:	2/9/23 2:06pm
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TAB NAME:	LU2.1

West Linn, OR 97088
 CITY OF WEST LINN
 LAND USE
WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING

SHEET NO.	
LU2.1	
SHEET 8 OF 19	
RECORD NO. 2000067-65	

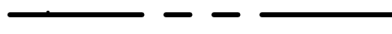




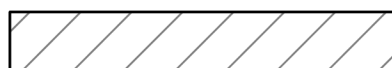

SHEET NOTES

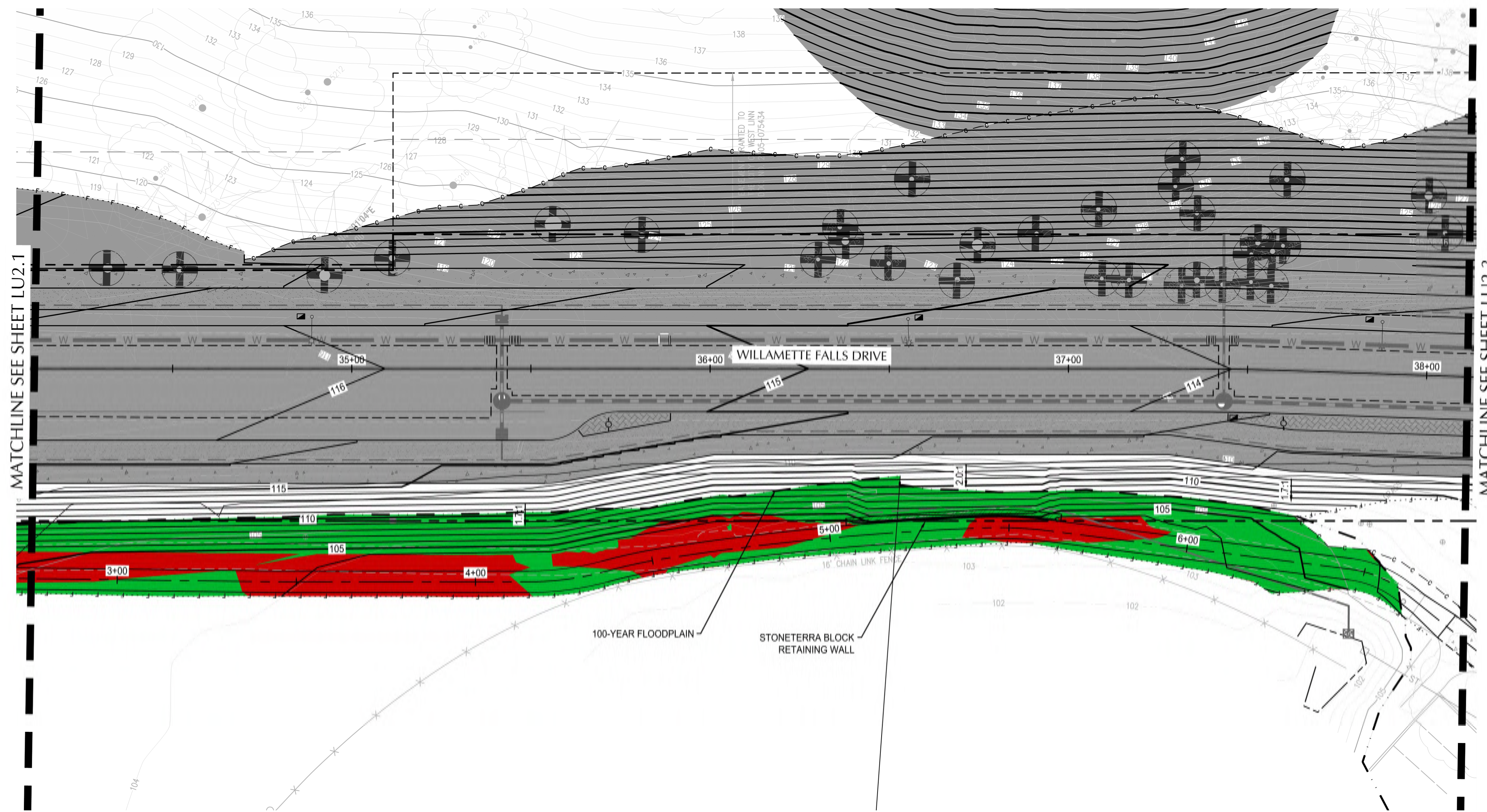
1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

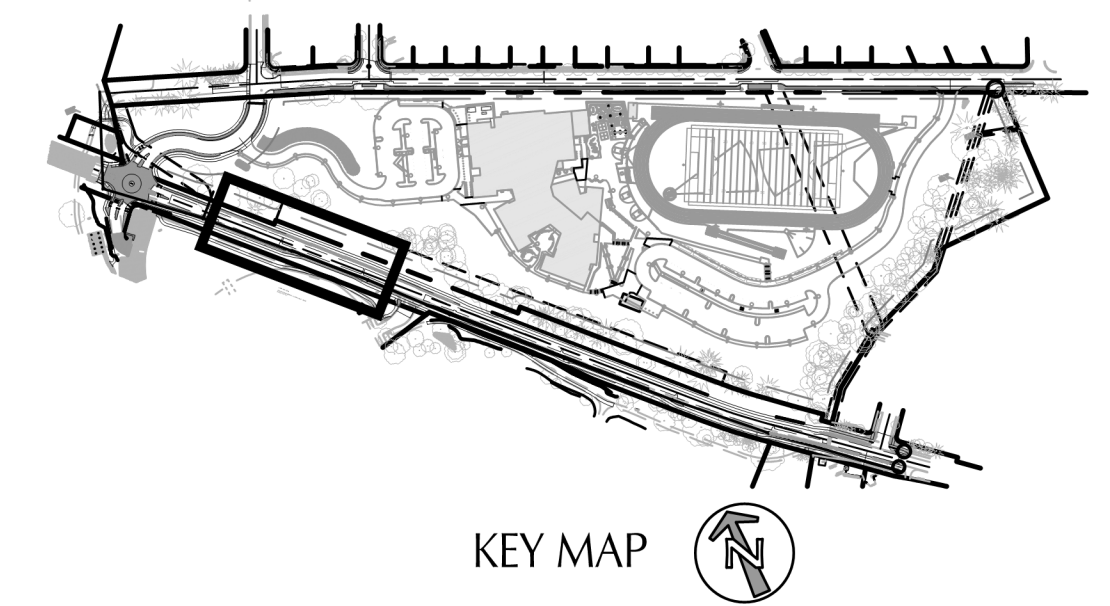
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SHEET LEGEND

-  PROPERTY LINE
-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
-  FILL AREA WITHIN FLOODPLAIN
-  FLOODWAY
-  ### FEET BASE FLOOD ELEVATION

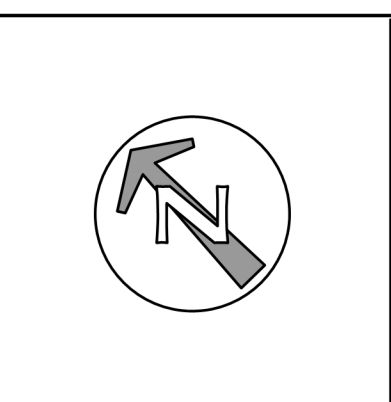


PLAN - WILLAMETTE FALLS DRIVE
 SCALE: 1" = 20'



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 Plotted: 2/9/23 at 2:07pm By: LBurke

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DWG NAME:	2000067-LU2.0-FLOODPLAIN.dwg
TAB NAME:	LU2.2

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WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING

SHEET NO.	
LU2.2	
SHEET	9 OF 19
RECORD NO.	2000067-66








SHEET NOTES

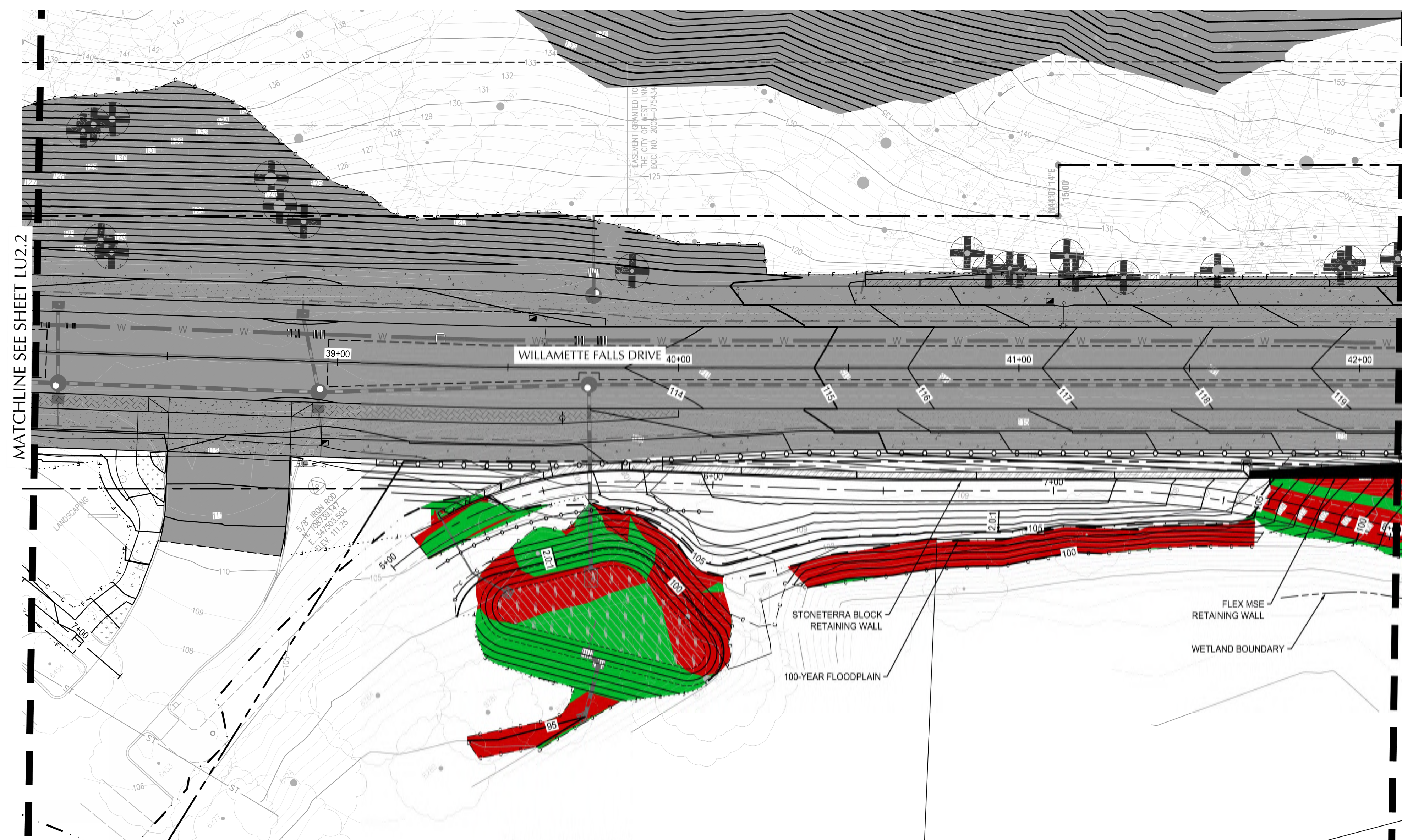
1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

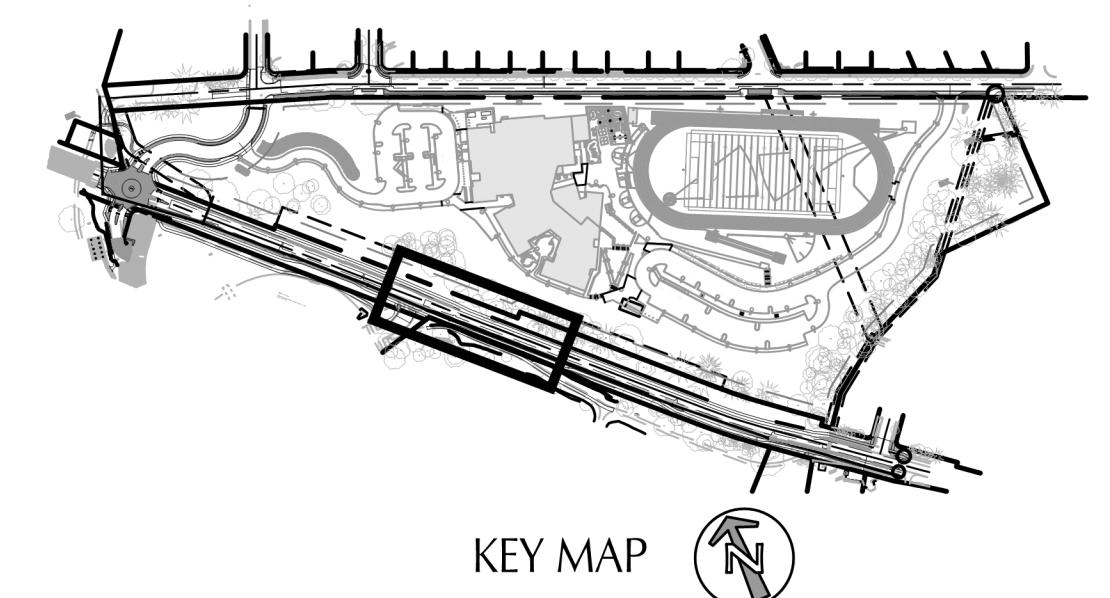
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SHEET LEGEND

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-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
-  FILL AREA WITHIN FLOODPLAIN
-  FLOODWAY
-  ### FEET BASE FLOOD ELEVATION



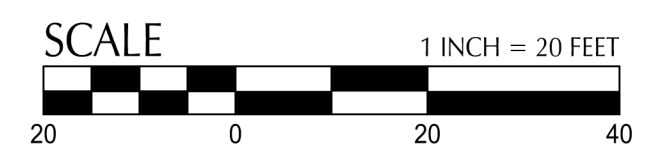
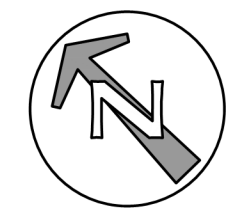
PLAN - WILLAMETTE FALLS DRIVE
 SCALE: 1" = 20'



KEY MAP

File: N:\proj\2020\00067-Dollar-Street-MS-CAD\PLT\LU-WFD\200067-LU2.0-FLOODPLAIN.dwg TAB:LU2.3
 Plotted: 2/9/23 at 2:07pm By: LBurke

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PLOTTED BY:	LBurke
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TAB NAME:	LU2.3

West Linn, OR 97068
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 LAND USE
 WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING

SHEET NO.	
LU2.3	
SHEET	10 OF 19
RECORD NO.	2000067-67








SHEET NOTES

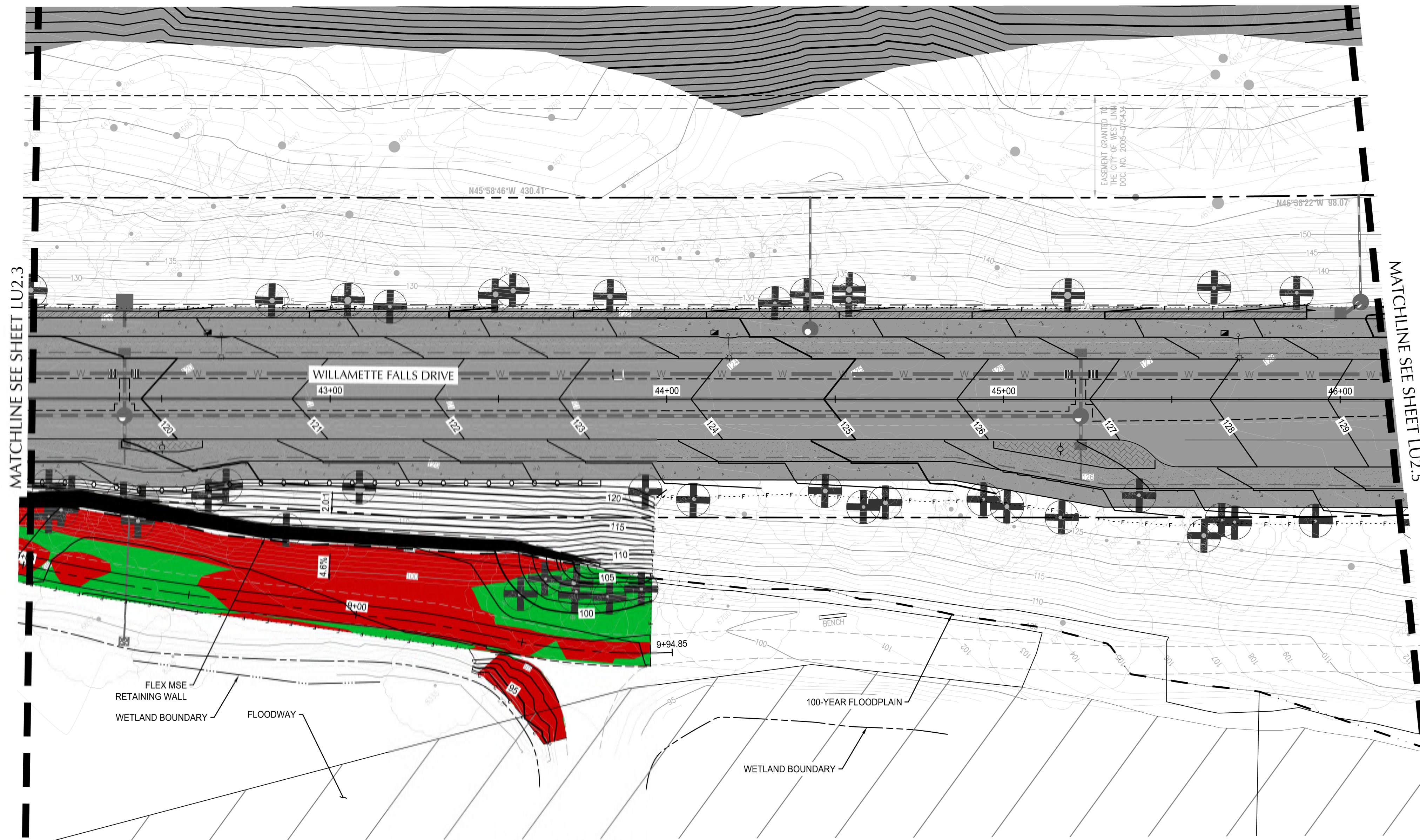
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2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

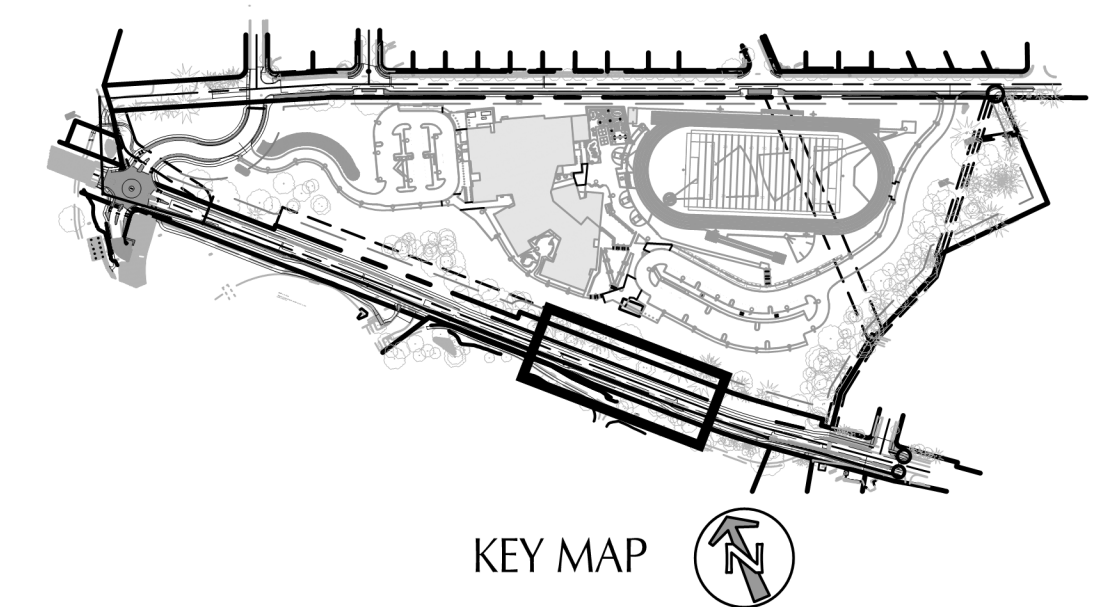
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SHEET LEGEND

-  PROPERTY LINE
-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
-  FILL AREA WITHIN FLOODPLAIN
-  FLOODWAY
-  ### FEET BASE FLOOD ELEVATION

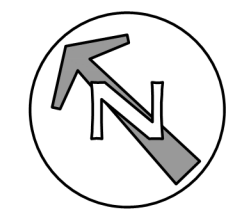


PLAN - WILLAMETTE FALLS DRIVE
 SCALE: 1" = 20'




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SCALE



1 INCH = 20 FEET



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JOB No.: 2000067 DESIGNED BY: LB/TK/MM/JG/NP DRAWN BY: SB/RC CHECKED BY: DP/CV PLOT DATE: 2/9/23 2:08pm PLOTTED BY: LBurke DWG NAME: 2000067-LU2.0-FLOODPLAIN.dwg TAB NAME: LU2.4	West Linn, OR 97088 CITY OF WEST LINN LAND USE
WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING	

LU2.4

SHEET 11 OF 19
 RECORD NO. 2000067-68








SHEET NOTES

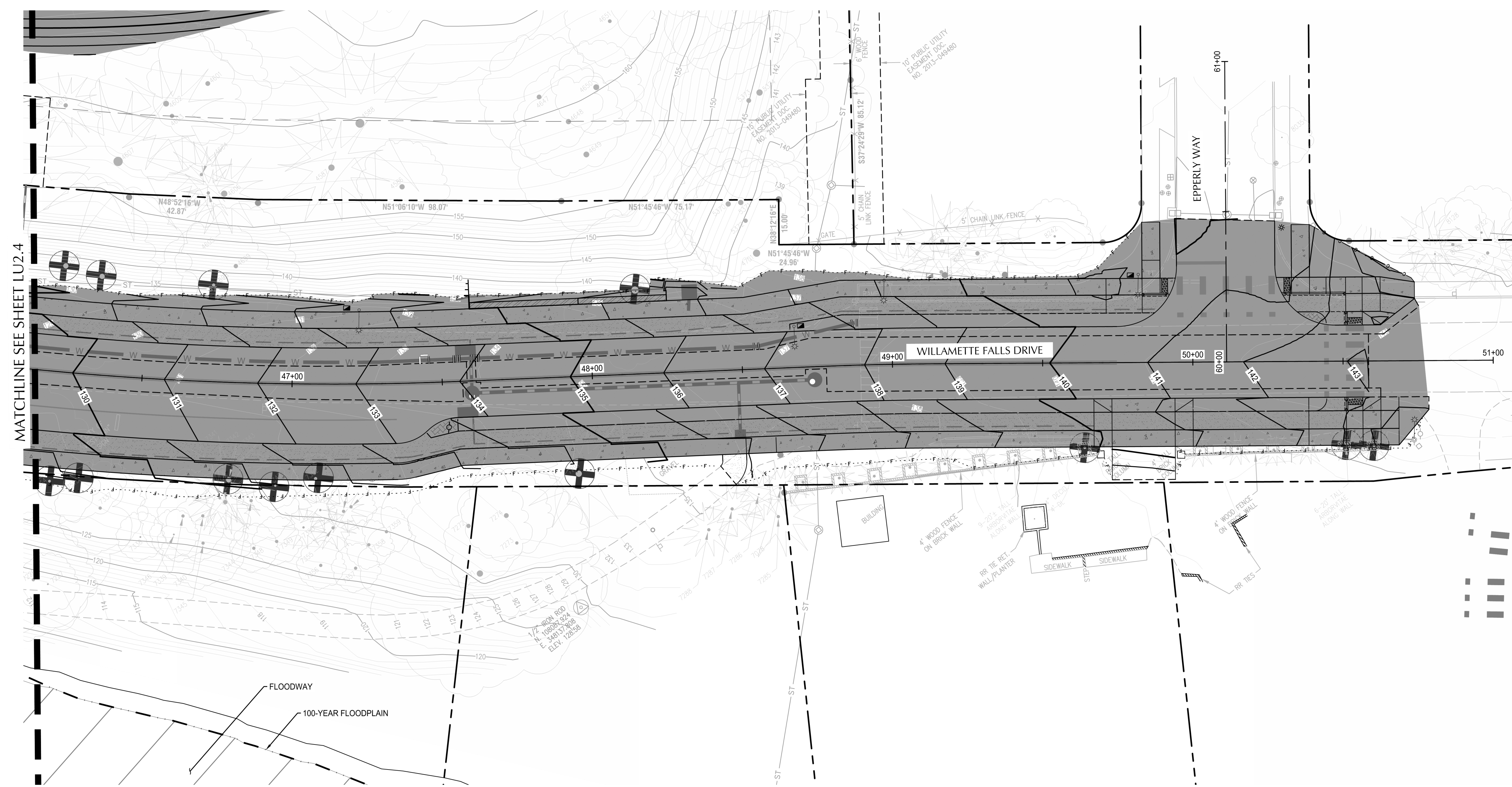
1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU1.X SHEETS FOR GRADING PLANS.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

PROJECT FLOODPLAIN SUMMARY

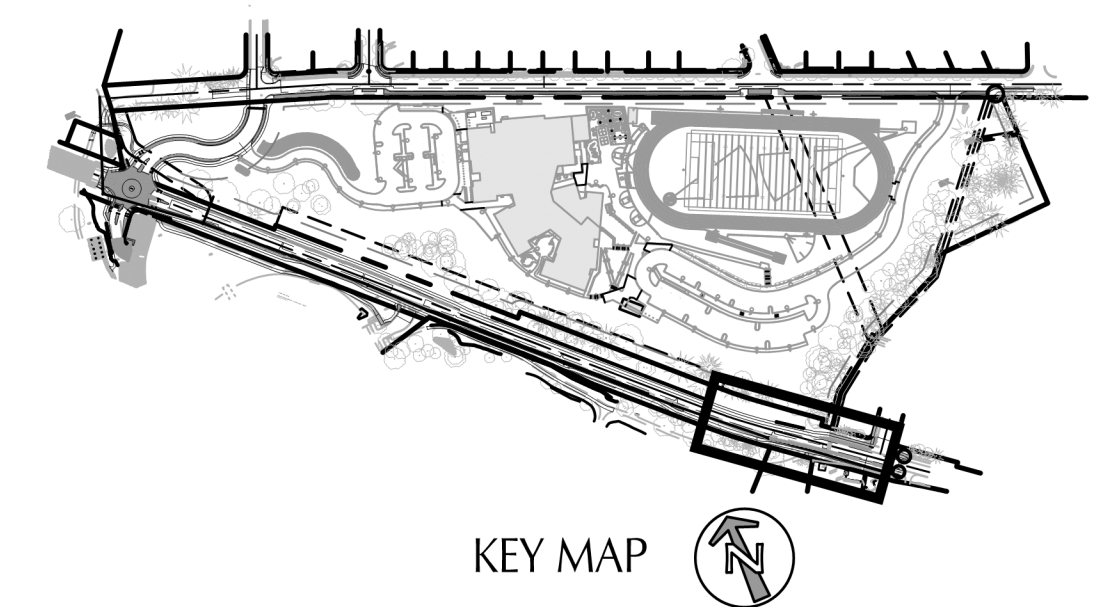
CUT = 497 CU.YD.
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 NET = 37 CU.YD. (CUT)

SHEET LEGEND

-  PROPERTY LINE
-  100 YEAR FLOODPLAIN
-  SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  CUT AREA WITHIN FLOODPLAIN
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-  FLOODWAY
-  ### FEET BASE FLOOD ELEVATION

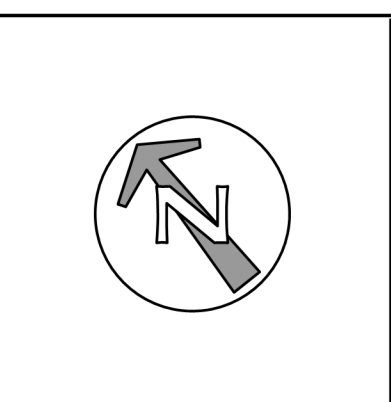


PLAN - WILLAMETTE FALLS DRIVE
 SCALE: 1" = 20'



File: N:\proj\2020\00067-Dollar-Street-MS-CAD\PLT\LU-WFD\200067-LU2.0-FLOODPLAIN.dwg TAB:LU2.5
 Plotted: 2/9/23 at 2:06pm By: LBurke

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West Linn, OR 97088

CITY OF WEST LINN
 LAND USE

WILLAMETTE FALLS DRIVE FLOODPLAIN BALANCING

SHEET NO.
LU2.5
 SHEET 12 OF 19
 RECORD NO.
 2000067-69

Technical Memorandum

June 13, 2023

Project# 26336.003

To: Erich Lais, Interim Public Works Director
City of West Linn
22500 Salamo Rd
West Linn, OR 97068

From: Wade Scarbrough, PE

RE: AP 23-02 Response to Appellant Testimony – Supplemental Roundabout Information

This technical memorandum provides supplemental transportation information in support of the proposed roundabout design at the Willamette Falls Drive/Brandon Place intersection. This information is provided in response to testimony raised by appellants at the City Council public hearing on June 6, 2023.

WHY A ROUNDABOUT?

Given the intersection site constraints (including the Tualatin River bridge structure, adjacent Fields Park parking area, and environmentally sensitive land) the City determined that a regular (full size) roundabout could not feasibly be constructed without substantial costs and impacts. A mini-roundabout was selected due to its small diameter and ability to accommodate the needs of all users.

Mini-roundabouts operate in the same manner as larger roundabouts, with yield control on all entries and counterclockwise circulation around a mountable central island. The mini-roundabout offers most of the benefits of a regular roundabout with the added benefit of a smaller footprint (Reference 1). Compared to other intersection types, the proposed mini-roundabout design will provide the following benefits:

- **Compact Size** – the proposed mini-roundabout will occupy approximately the same footprint as a comparable stop-controlled or signal-controlled intersection. Additionally, because the mini-roundabout does not require adding left-turn lanes, it reduces the overall width required on Willamette Falls Drive.
- **Operational Efficiency** – As noted in the Traffic Impact Analysis and supplemental information prepared by DKS Associates (Reference 2), the proposed roundabout will provide significantly more capacity for traffic on the minor streets than a two-way stop-controlled alternative. Due to the traffic volume on Willamette Falls Drive, the two-way stop-control alternative would result in unacceptably high delays on the minor street. Conversely, the roundabout will provide ample opportunities for traffic on the minor street to enter the major street with low delay.
- **Traffic Safety** – Roundabouts have been shown to significantly reduce fatal and serious injuries at intersections. Single-lane roundabouts have been shown to reduce severe crashes by as much as 82 percent compared with two-way stop-controlled intersections and by as much as 78 percent compared with signalized intersections (Reference 3). Although we have little safety studies of mini-

roundabouts in the U.S., mini-roundabouts have been used successfully in the U.K. to improve safety at intersections with known crash problems (Reference 1).

- **Traffic Calming** – Because of its geometric design, which requires all vehicles to navigate a curved path around the central island, the roundabout will reduce traffic speeds at the intersection. The roundabout is designed such that entry speeds will be 25 miles per hour or less. The mini-roundabout will provide a self-enforcing transition from the higher-speed road section (on the bridge) to the low-speed environment along the school and park frontages. The low-speed environment not only provides safety benefits for traffic, it also enhances the intersection for non-motorized users.
- **Access Management** – The mini-roundabout can accommodate U-turns for passenger vehicles. As such it can facilitate access to the new school, park, and on-street parking facilities.
- **Environmental Benefits** – The mini-roundabout may offer an environmental benefit through reduced delay, fuel consumption, and vehicle emissions.

SAFETY CONSIDERATIONS

As noted above, the City selected the mini-roundabout, in part, because it will provide increased level of safety for all uses. Specific safety considerations for motorists, pedestrians, and bicyclists are further discussed below.

Motorists:

As with other types of roundabouts, mini-roundabouts can enhance the safety for drivers by:

- Allowing more time to make decisions, act, and react;
- Reducing the number of directions in which a drivers needs to watch for conflicting traffic; and
- Reducing the need to judge gaps in fast traffic accurately.

Furthermore, since most users travel at similar speeds through the roundabout, crash severity is reduced compared to other intersection types.

Pedestrians:

Pedestrians are accommodated at marked crosswalks around the perimeter of the mini-roundabout. The roundabout design includes the following features to promote safety:

- Motor vehicle speeds are designed to be low, improving a driver's ability to react and yield to pedestrians.
- Crossing locations are set back from the roundabout circulatory roadway to separate the driver decisions at the crosswalk from the driver decisions at the circulatory roadway.

- Crossings are designed to be made in two stages, crossing one direction of traffic at a time, with a raised median island refuge.

Bicyclists:

The roundabout design will serve bicyclists who have a range of abilities and comfort levels. Cyclists who are approaching the roundabout on the separated bicycle paths and/or the on-street bike lanes on Willamette Falls Drive will have the option to remain on the physically separated bicycle path around the perimeter of the roundabout, crossing each of the roundabout legs at marked crossing locations. The roundabout also features specially designed bicycle ramps so that cyclists that may be comfortable riding in traffic will have the option to merge into the traffic lane and circulate through the roundabout as a vehicle.

OTHER INTERSECTION CONTROL ALTERNATIVES

As noted in the DKS memo (Reference 2), the City and project design team considered and evaluated other intersection control alternatives, including:

- **Signalized Intersection** – While a traffic signal could be installed at the intersection, it is not feasible to widen Willamette Falls Drive to provide left-turn lanes due to the proximity of the Tualatin River bridge. Signalizing the intersection without providing left-turn lanes would result in relatively long queues on Willamette Falls Drive during peak hours, creating safety concerns due to increased likelihood of rear end collisions.
- **Two-Way Stop Control** – The two-way stop-controlled alternative would not meet the City's performance standards due to unacceptably high delays on the minor street approach.

Based on the evaluation of alternatives, the mini-roundabout is the most cost-effective option to address the traffic capacity needs at the intersection as well as multi-modal accommodations.

COMPARABLE ROUNDABOUT EXAMPLES

During the hearing, City Council requested examples of other roundabouts in Oregon that have similar features, including parking area near the roundabout. Below are a few examples:

[SW Terwilliger Blvd & S Palater Rd, Portland](#)

[Mt Hood Ave at PDX Economy Parking Lot Access](#)

[NW Newport Ave at NW Nashville Ave, Bend, OR](#)

[Newport Avenue, Bend](#) (This one is under construction in Google Maps. I have a copy of the design plan I will include.)

REFERENCES

1. Federal Highway Administration. *Mini-Roundabouts* Technical Summary. FHWA-SA-10-007. 2010
2. DKS Associates. *Highway Capacity Manual 7th Edition*. 2022.
3. National Cooperative Highway Research Program. *NCHRP Research Report 1043: Guide for Roundabouts*. 2023.



JANUARY 25, 2020

Remo Douglas
Project Manager
West Linn-Wilsonville School District

**SUBJECT: ATHEY CREEK MIDDLE SCHOOL RELOCATION
TRAFFIC IMPACT ANALYSIS - SUPPLEMENTAL INFORMATION**

NEIGHBORHOOD QUESTIONS

This memorandum provides supplemental answers to questions raised by the community at a series of neighborhood meetings for the relocated Athey Creek Middle School on Dollar Street in West Linn, Oregon. The questions that will be answered in this memorandum are listed below:

1. How were the modal split numbers determined for the relocated middle school on Dollar Street?
2. How will the middle school traffic impact Dollar Street?
3. Was an alternative traffic control option considered besides the roundabout at the Willamette Falls Drive/Brandon Place intersection?

RESPONSES

The responses below address the questions raised by the community as listed above.

1. HOW WERE THE MODAL SPLIT NUMBERS DETERMINED FOR THE RELOATED MIDDLE SCHOOL ON DOLLAR STREET?

The future middle school will have a capacity of 850 students.

The West Linn School District staff estimated that approximately 450 students (about 53% of total students) will be bused to the relocated middle school on 12 school buses. The number students being bused from each school zone was estimated using middle school residence-based enrollment forecasts from the School District and were verified with standard engineering practices.

The remaining students (400) were assumed to walk, bike, or be driven to school. Note that students that live within the walking boundary, which was assumed to be a 1-mile radius around the school, are not provided regular school bus service. Using the student enrollment information, it was estimated that approximately 250 students live within the 1-mile radius walking boundary and could walk or bike to school at full buildout (when the school operates at the 850-student capacity). The remaining 150 students were assumed to be driven to school. The traffic

operations based on these assumptions are shown in Table 9 on page 22 of the Transportation Impact Study (TIS).

Additionally, a sensitivity analysis was conducted that analyzed the traffic operations if the student walking and biking assumptions were reduced to 100 students, 300 students were driven to school, and 450 students took the school bus. Refer to pages 23 – 24 of the TIS on the School District website for details. The sensitivity analysis showed that three of the four study intersections met the City’s operating standard (average vehicle delay less than 35 seconds). The intersection of Willamette Falls Drive/Ostman Road was shown to have an average vehicle delay of 52 seconds (13 seconds more than when 250 students are assumed to walk or bike) for the midday peak hour.

Due to questions from the public, an additional sensitivity analysis was conducted where only 50 students were assumed to walk or bike, 350 students were driven to school, and 450 students took the school bus. The analysis resulted in similar findings as the previous sensitivity analysis. The average vehicle delay at Willamette Falls Drive/Ostman Road was 59 seconds for the midday peak hour. All other study intersections sufficiently met the City’s operating standard.

In summary, even if the number of students that walk or bike to school is as low as 50 students, the study intersections are expected to operate within the City’s standards except for Willamette Falls Drive/Ostman Road.

At this time, the City of West Linn does not desire to improve the Willamette Falls Drive/Ostman Road intersection. The existing traffic congestion at the Willamette Falls Drive/Ostman Road intersection is due to local traffic as well as regional traffic. If capacity is increased at the intersection, the City of West Linn is concerned it will encourage more regional trips on Willamette Falls Drive. The School District will pay System Development Charges (SDCs) to the City when the middle school is approved. That money can be used by the City to improve the intersection in the future if the City decides improvements are desired.

2. HOW WILL THE MIDDLE SCHOOL TRAFFIC IMPACT DOLLAR STREET?

There will be two new accesses to the middle school on Dollar Street. One is located on the eastern edge of the site and will provide access to the staff parking lot and the school bus loading area; this driveway is not intended for parent pick-up/drop-off activity. The other access is the Brandon Place extension (public street) from Dollar Street to Willamette Falls Drive, which will provide access to the middle school.

The middle school is estimated to generate approximately 60-100 trips on Dollar Street during the AM peak hour (8 - 9am) and 50-90 trips on Dollar Street during the Midday peak hour (3:10 - 4:10 pm). The traffic operations for these two accesses on Dollar Street are estimated to meet the City’s operating standard (average vehicle delay less than 35 seconds) once the middle school is built.

Additional traffic analysis was conducted for the two River Heights Circle intersections on Dollar Street. These intersections are estimated to have an average vehicle delays less than 15 seconds on the River Heights Circle approaches once the middle school is built.

3. WAS AN ALTERNATIVE TRAFFIC CONTROL OPTION CONSIDERED BESIDES THE ROUNDABOUT AT THE WILLAMETTE FALLS DR/BRANDON PL INTERSECTION?

Yes, a two-way stop control was analyzed (stop signs on the Brandon Place and Fields Bridge Park driveway). However, the intersection was not able to meet the City's operating standard (average vehicle delay less than 35 seconds) with the relocated middle school traffic under the sensitivity analysis scenario (100 students walk/bike, 350 students driven, 450 students bussed). Because of the proximity to the Tualatin River bridge, Willamette Falls Drive cannot be widened to the west of Brandon Place to accommodate an eastbound left turn lane at the intersection. A roundabout was determined to provide significantly more capacity than a two-way stop option.

Additionally, a roundabout provides many safety benefits for pedestrians and bicyclists. Roundabouts can reduce the types of crashes where people are seriously hurt or killed by 78% - 82%. The curvature of a roundabout results in lower vehicle speeds (15 mph – 25 mph) and provide shorter crossings for pedestrians by providing a center refuge island at each crossing. To learn more about the benefits of roundabouts, visit the Federal Highway Administration website: www.safety.fhwa.dot.gov/intersection/innovative/roundabouts.

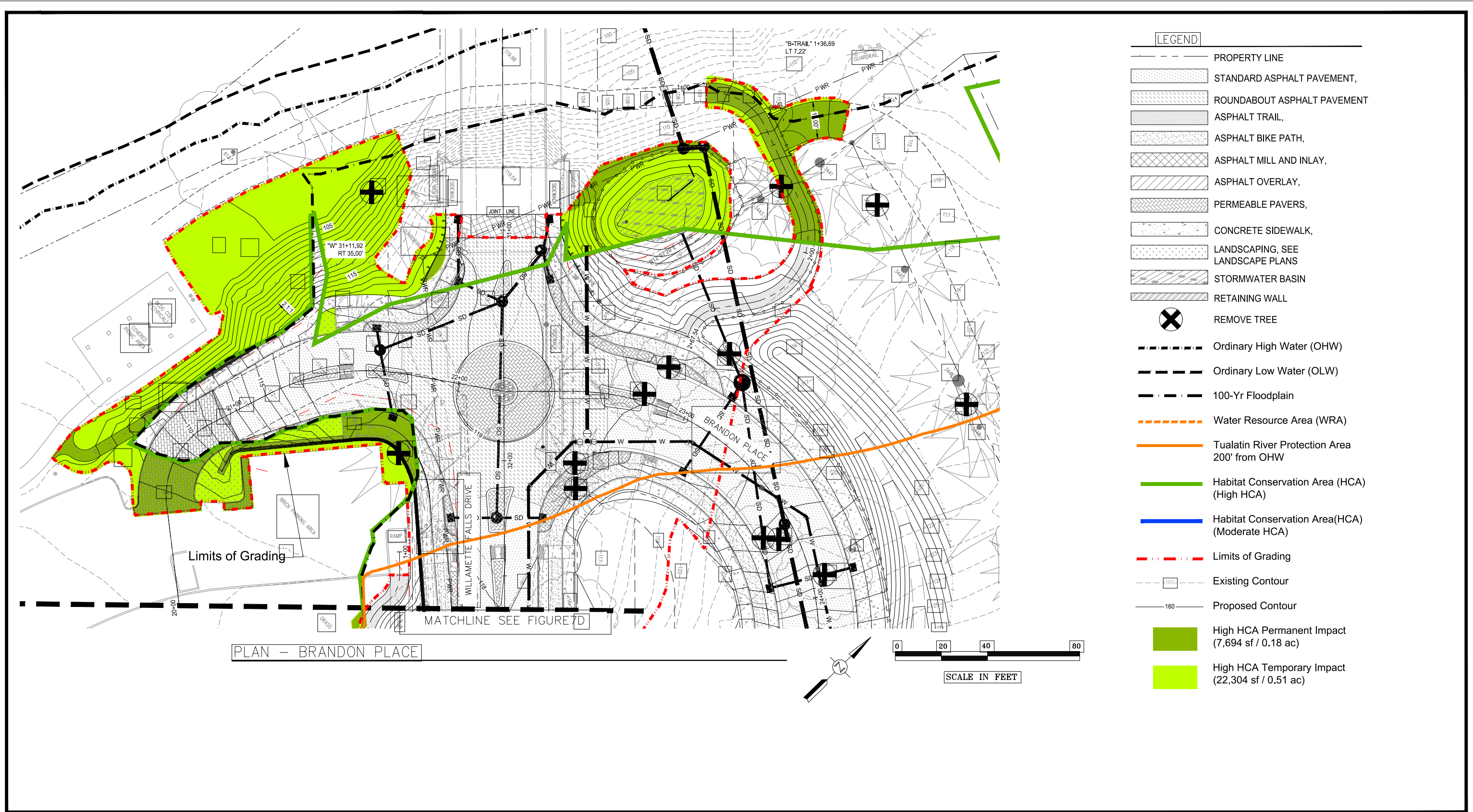
A traffic signal was also considered but was not desired. Again, because of the proximity to the Tualatin River bridge, Willamette Falls Drive cannot be widened to accommodate an eastbound left turn lane at the intersection. With a traffic signal and lack of an eastbound left turn lane, eastbound capacity would be limited as left turn vehicles would block through vehicles. Additionally, a traffic signal would not provide the same safety benefits that a roundabout would provide.

OTHER INFORMATION

Please refer to the Transportation Impact Study (TIS) for other transportation analysis related questions or the School District's Project Website (www.wlwy.k12.or.us/domain/1997).

Let us know if you have any other questions. Thanks!

Scott Mansur, P.E., PTOE
Transportation Engineer
DKS Associates



Plans Provided by KPFF

Grading Plan
Willamette Falls Drive Public Improvements - West Linn, Oregon











FIGURE
7A

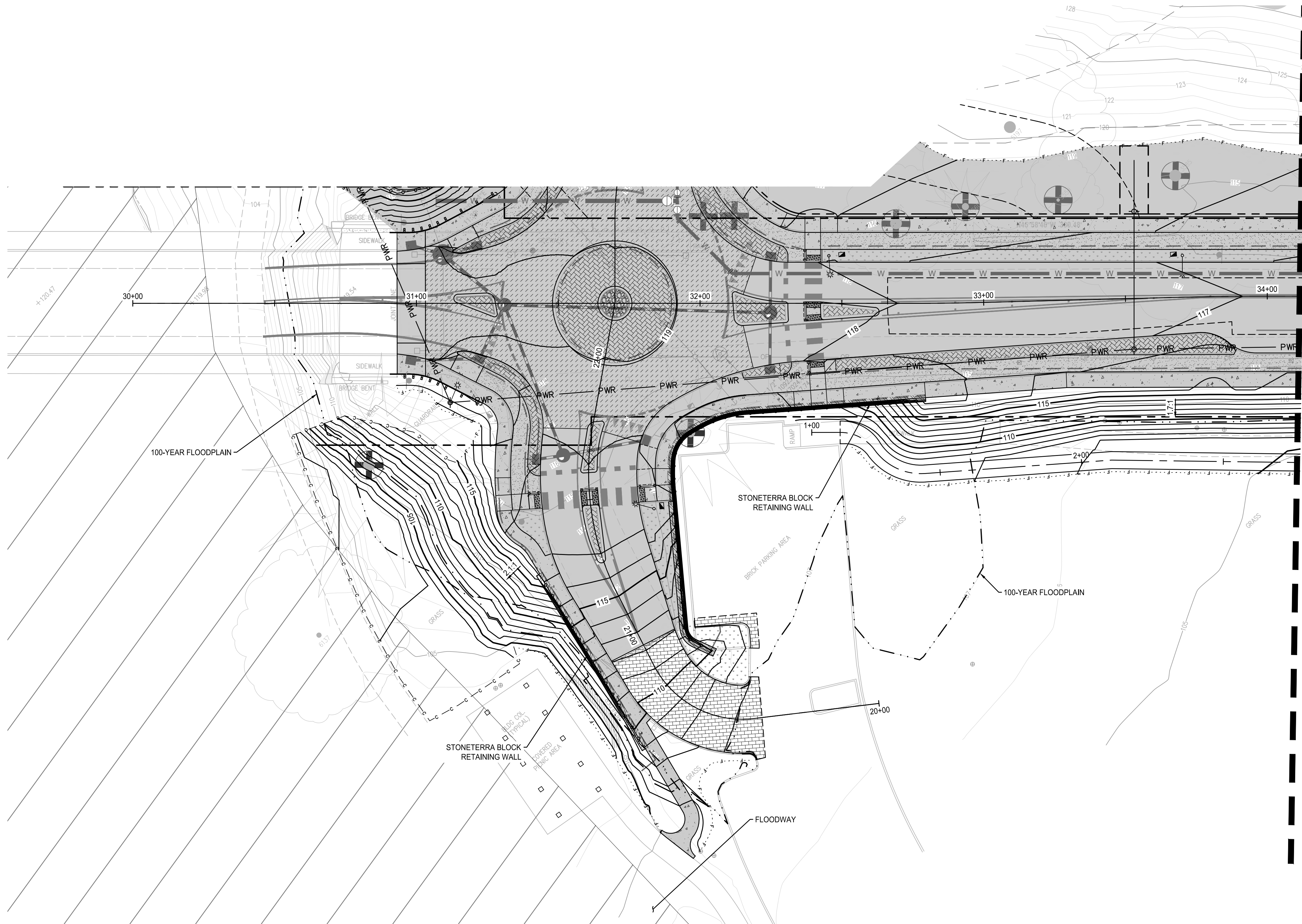
2-18-2023

SHEET NOTES

1. REFER TO LAND USE CASE FILE AP-21-02 FOR PRIOR APPROVALS.
2. SEE LU2.X SHEETS FOR GRADING VOLUMES WITHIN FLOODPLAIN.
3. SEE LU3.X SHEETS FOR LANDSCAPE IMPROVEMENTS.

SHEET LEGEND

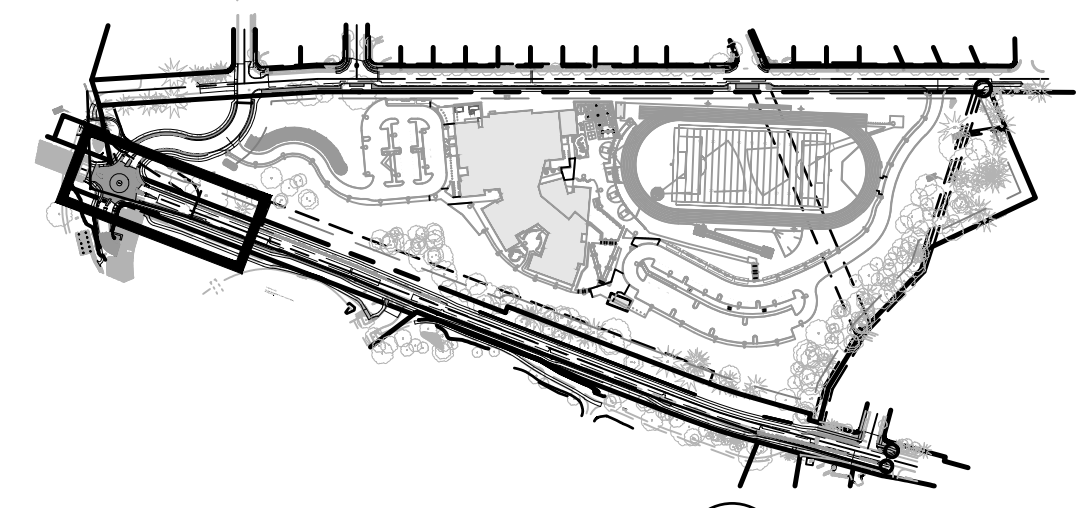
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SEE LAND USE AP-21-02 FOR PRIOR LAND USE APPROVAL
-  ASPHALT TRAIL,
SEE TYPICAL SECTION
-  ASPHALT BIKE PATH,
SEE TYPICAL SECTION
-  CONCRETE SIDEWALK,
SEE TYPICAL SECTION
-  CONCRETE DRIVEWAY
-  PERMEABLE PAVERS, SEE TYPICAL SECTION
-  LANDSCAPING, SEE LANDSCAPE PLANS
-  STORMWATER PLANTER
-  RETAINING WALL
-  REMOVE TREE



MATCHLINE SEE SHEET LU1.2

PLAN - WILLAMETTE FALLS DRIVE

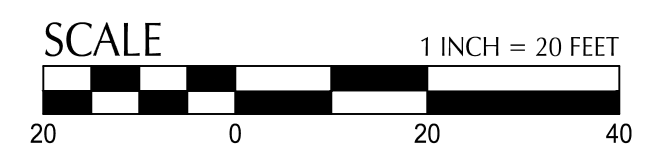
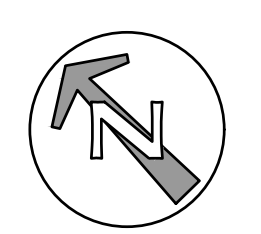
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KEY MAP 

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Plotted: 2/13/23 at 0:13pm By: L.Burke

REVISION	DATE	DESCRIPTION



111 SW Fifth Ave., Suite 2600
Portland, OR 97204
O: 503.542.3860
F: 503.224.4681
www.kpff.com

FOR INFORMATION ONLY

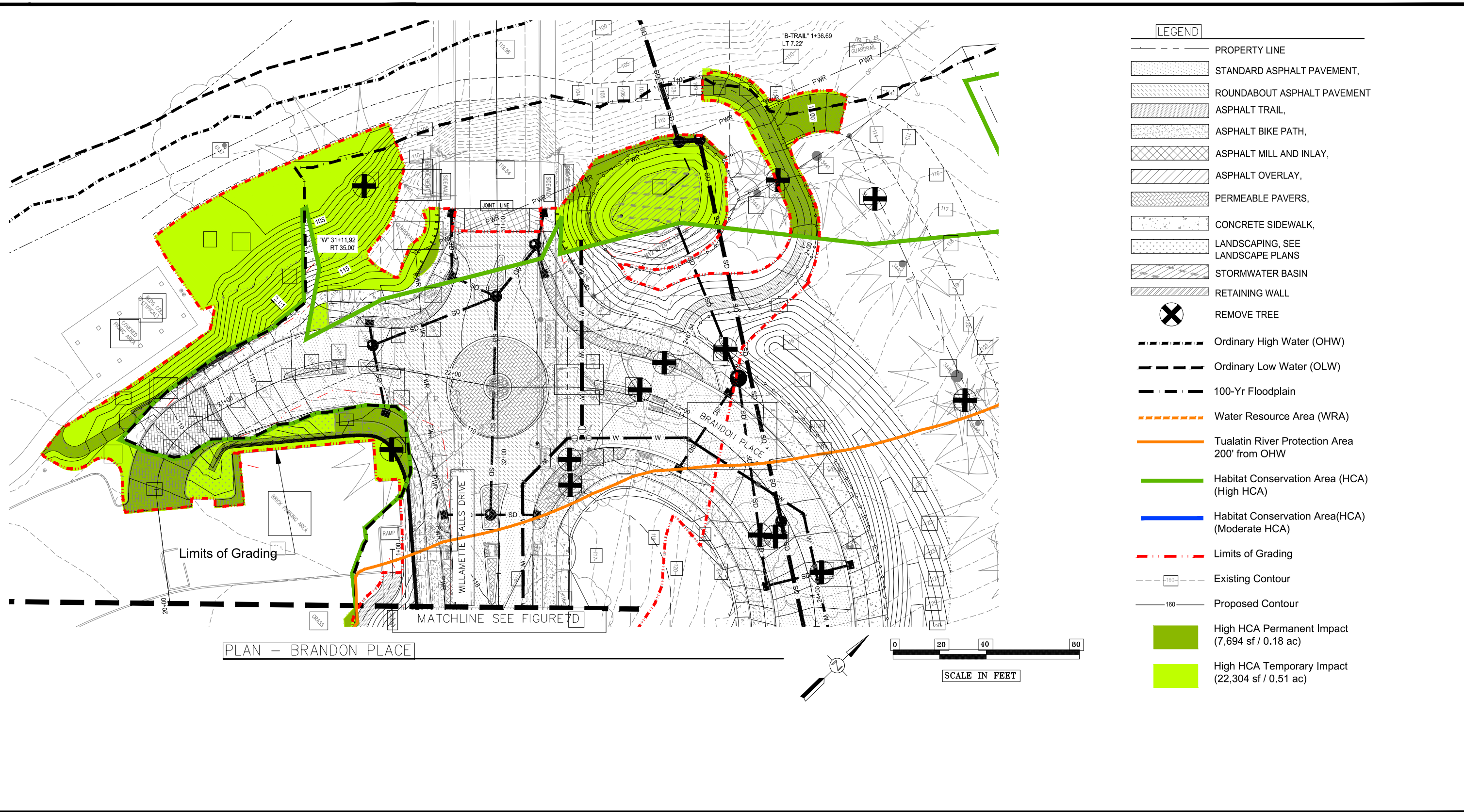
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CHECKED BY:	DP/CV
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PLOTTED BY:	LBurke
DWG NAME:	2000067-LU1.0-GRADING.dwg
TAB NAME:	LU1.1

West Linn, OR 97068

CITY OF WEST LINN
LAND USE

WILLAMETTE FALLS DRIVE GRADING PLAN

SHEET NO.
LU1.1
SHEET 2 OF 19
RECORD NO.
2000067-65

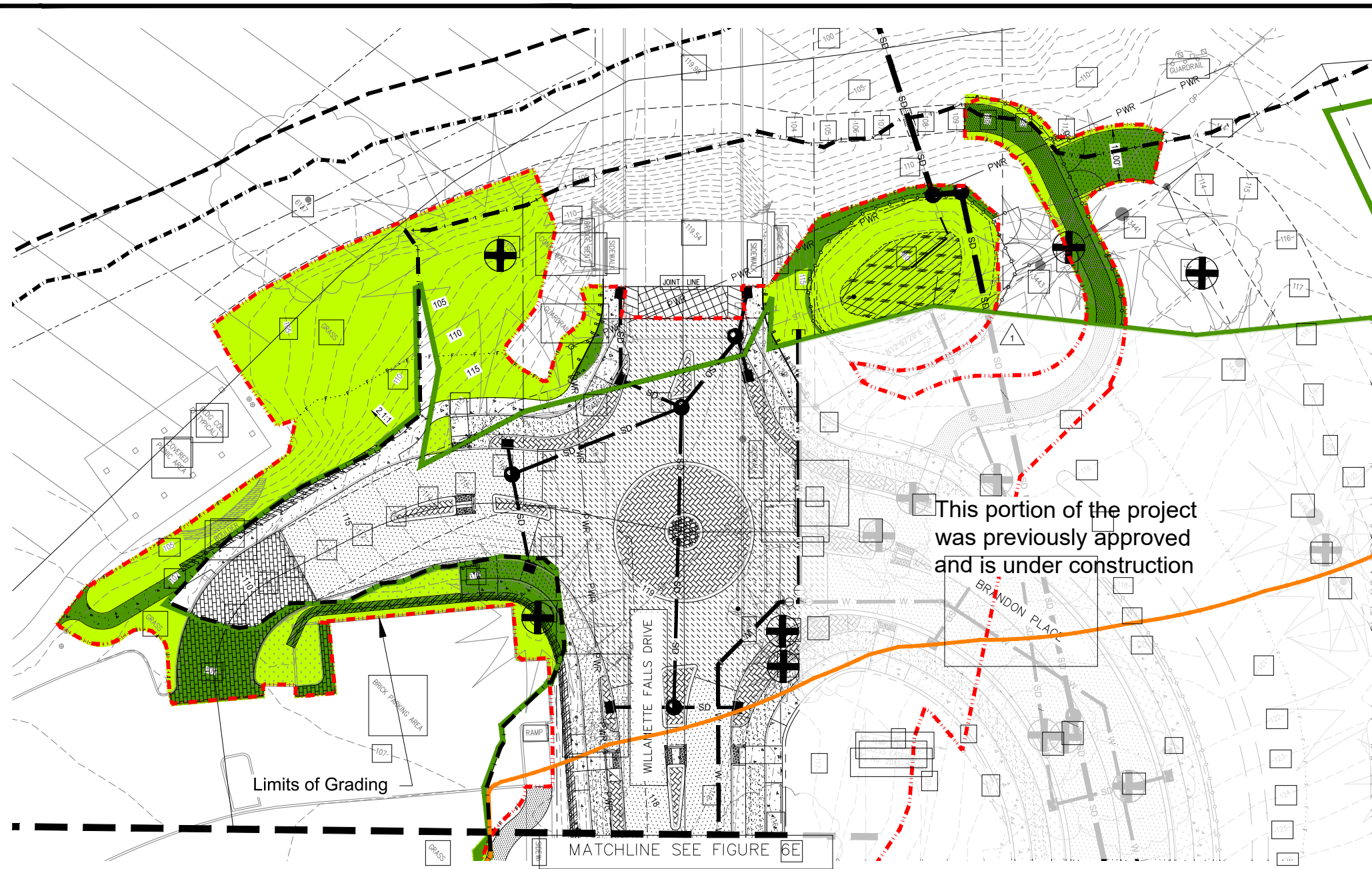


Plans Provided by KPFF

Grading Plan
 Willamette Falls Drive Public Improvements - West Linn, Oregon

FIGURE
7A

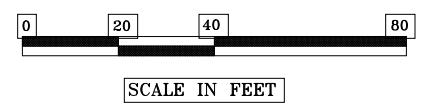
2-18-2023



- LEGEND**
- PROPERTY LINE
 - STANDARD ASPHALT PAVEMENT,
 - ROUNDABOUT ASPHALT PAVEMENT
 - ASPHALT TRAIL,
 - ASPHALT BIKE PATH,
 - ASPHALT MILL AND INLAY,
 - ASPHALT OVERLAY,
 - PERMEABLE PAVERS,
 - CONCRETE SIDEWALK,
 - LANDSCAPING, SEE LANDSCAPE PLANS
 - STORMWATER BASIN
 - RETAINING WALL
 - REMOVE TREE
 - Water Resource Area (WRA)
 - Tualatin River Protection Area
 - Habitat Conservation Area (HCA) (High HCA)
 - Habitat Conservation Area (HCA) (Moderate HCA)
 - Project Area / Limits of Grading (205,382 sf / 4.71 ac)
 - High HCA Permanent Impact (7,694 sf / 0.18 ac)
 - High HCA Temporary Impact (22,304 sf / 0.51 ac)
 - Ordinary High Water (OHW)
 - Ordinary Low Water (OLW)
 - 100-Yr Floodplain

This portion of the project was previously approved and is under construction

PLAN - BRANDON PLACE



Plans Provided by KPFF

Site Plan
 Willamette Falls Drive Public Improvements - West Linn, Oregon

FIGURE
6D

2-18-2023