COMMUNITY DEVELOPMENT
333 Broadalbin Street SW, PO Box 490, Albany, Oregon 97321-0144 | Building and Planning 541-917-7550

Staff Report

Floodplain Development Review

FP-05-23 August 31, 2023

Summary

This staff report evaluates an application for a Floodplain Development Permit to construct a private shared access in the floodway and to construct a single dwelling unit in the Special Flood Hazard Area (SFHA) (aka 100-year floodplain). The proposed development will include grading, fill, excavation and paving within the floodway and the floodway fringe. The proposed development is upon a tract of three properties identified on Linn County Assessor's Map No. 11S-04W-12BB; Tax Lots 1100, 1101 and 1102. A location map is included as Attachment A.

Based on the effective FEMA Flood Insurance Rate Map (FIRM) 41043C0213H, dated December 8, 2016, portions of the property are located within the regulated floodway of the Calapooia River. A portion of the property to be developed with a single dwelling unit is located within Zone AE of the SFHA.

Applicable floodplain development review criteria are *Floodway Restrictions* (ADC 6.100) and *Fill, Excavation, and Paving* (ADC 6.111). These criteria are addressed in this report and must be satisfied to grant approval for this application. All elevations in this report are referenced from the North American Vertical Datum of 1988 (NAVD 1988).

Application Information

Proposal:	Floodplain Development Review for fill, grading, excavation, or paving in the Special Flood Hazard Area.
Review Body:	Staff (Type I-L review)
Property Owner/Applicant:	James and Brenda Ruble; P.O. Box 192; Albany, OR 97321
Representative/Engineer:	Dan Watson, K&D Engineering, Inc.; P.O. Box 725, Albany, OR 97321
Address/Location:	Unaddressed parcel that is next to 1525 7th Avenue SW.
Map/Tax Lot:	Linn County Assessor's Map No. 11S-04W-12BB; Tax Lots 1100, 1101, and 1102
Zoning:	Single-Dwelling Unit Residential (RS-6.5) and Open Space (OS) with Floodplain Overlay (/FP), Riparian Corridor Overlay (/RC), and Significant Wetland Overlay (/SW)
Existing Land Use:	Vacant
Neighborhood:	Broadway

Surrounding Zoning:	North: Linn County Zoning – EFU South: Single Dwelling Unit Residential (RS-6.5 East: Residential Single Family (RS-6.5); and Open Space (OS) West: Residential Single Family (RS-6.5); and Open Space (OS)
Surrounding Uses:	North: Calapooia River and undeveloped land South: Railway and Masonic Cemetery East: Multi-dwelling unit development West: Agricultural use
Prior History:	PA-01-22 and FP-01-22: Partition of a property into three parcels and a concurrent Floodplain Development Review for a land division in the Special Flood Hazard Area (100-year floodplain).

Public Notice

A notice of filing was mailed to surrounding property owners within 300 feet of the subject property on August 4, 2023. At the time the comment period ended on August 18, 2023, the Albany Planning Division did not receive any comments from surrounding property owners regarding the proposed project.

Analysis of Development Code Criteria

The Albany Development Code (ADC) includes the following review criteria, which must be met for this application to be approved. Code criteria are written in **bold** followed by findings, conclusions, and conditions of approval where conditions are necessary to meet the review criteria.

Floodplain Development Review

Floodway Restrictions (ADC 6.100)

No development is allowed in any floodway except when the review body finds that the development will not result in any increase in flood levels during the occurrence of the 100-year flood. The finding shall be based upon applicant-supplied evidence prepared in accordance with standard engineering methodology approved by FEMA and certified by a registered professional engineer and upon documentation that one of the following criteria has been met (ADC 6.100):

(1) The development does not involve the construction of permanent or habitable structures (including fences).
(2) The development is a public or private park or recreational use, or municipal utility use.
(3) The development is a water-dependent structure such as a dock, pier, bridge, or floating marina.

For temporary storage of materials or equipment:

(4) The temporary storage or processing of materials will not become buoyant, flammable, hazardous explosive or otherwise potentially injurious to human, animal or plant live in times of flooding.
(5) The temporary storage of material or equipment are not subject to major damage by floods and is firmly anchored to prevent floatation or is readily removable from the area within the time available after flood warning.

If a floodway boundary is not designated on an official FEMA map available to the City, the floodway boundary can be estimated from available data and new studies. Proposed development along the estimated floodway boundary shall not result in an increase of the base flood level greater than one foot as certified by a registered professional engineer.

Finding of Fact and Conclusion

1.1 The applicant proposes the grading, fill, excavation, and paving within the floodway for the construction of a shared access driveway within the floodway on the currently undeveloped properties. The applicant also proposes the grading, fill, excavation, and paving within the floodway fringe for the construction of a single dwelling unit.

1.2 The majority of the improvements are located outside of the floodway, and within the floodway fringe; however, some of the proposed excavation and fill are within the regulatory foodway. The development within the regulated floodway will not contain structures, either habitable or non-habitable. Modifications, such as the proposed exaction and fill are allowed within the regulatory foodway provided it does not result in an increase in flood levels within the floodway.

1.3 The subject properties are identified on the effective Federal Emergency Management Association (FEMA) Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) Panel No. 41043C0195H, Dated December 8, 2016. Based on the effective FIRM, portions of the properties are located within the regulatory floodway and Zone AE of the Special Flood Hazard Area (SFHA) of the Calapooia River.

1.4 The applicant proposes to excavate 12 inches of existing soil along the private access alignment and backfill with 8 inches of rock and 4 inches of open paving stone, which will be filled with soil and grass. The excavation and backfill will result in no net change of grade. As part of the application an Engineering "No-Rise" Certification was produced by K&D Engineering, Inc, dated June 22, 2023, and included as Attachment D. The Certification concludes: *"No net fill will result so the hydraulic characteristics will not be modified. A "no-rise" certification letter is included with this report".*

1.5 The City requested a review of this Engineering "No-Rise" Certification from Ken Puhn, PR, CFM, of WEST Consultants, Inc., who found the application material adequately addresses ADC 6.100 (Attachment E). This criterion is met.

Grading, Fill, Excavation, and Paving in the Floodplain (ADC 6.111)

A floodplain development permit is required for grading, fill, excavation, and paving in the Special Flood Hazard Area (100-year floodplain), except activities exempted in Section 6.094 of this Article. No grading will be permitted in a floodway, except when the applicant has supplied evidence prepared by a professional engineer that demonstrates the proposal will not result in any increase in flood levels during the occurrence of the 100-year flood. The permit will be approved if the applicant has shown that each of the following criteria that are applicable have been met:

Criterion 1

Provisions have been made to maintain adequate flood-carrying capacity of existing watercourses, including future maintenance of that capacity.

Finding of Fact and Conclusion

1.1 The applicant proposes the grading, fill, excavation, and paving within the floodway for the construction of a shared access driveway within the floodway on the currently undeveloped properties. The applicant also proposes the grading, fill, excavation, and paving within the floodway fringe for the construction of a single dwelling unit.

1.2 Based on the effective FEMA FIS for Linn County, Panel No. 41043C0231H, dated December 8, 2016, the property in its entirety is located within the Zone AE of the SFHA.

1.3 A regulatory floodway has been defined for this area and a portion of the subject property is located within the floodway. The criteria related to the floodway is addressed under ADC 6.100 (above); those findings and conclusions are included here by reference.

1.4 As shown on the site plan (Attachment B), the proposed construction of the single dwelling unit is located entirely within Zone AE of the SFHA. Therefore, the flood carrying capacity of Calapooia River is not affected by the proposed project because the fill will be placed outside the floodway.

1.5 At the conclusion of grading, fill, excavation and paving of the project, documentation is required to verify implementation is consistent with the preliminary plans as proposed.

1.6 As proposed and conditioned, the development will maintain adequate flood-carrying capacity of existing watercourses. This review criterion can be met with the following condition of approval.

Condition

Condition 1 Prior to a certificate of occupancy for future development on the property, the following documentation shall be submitted to the Community Development Department:

a) As-built drawings with elevations provided; and

b) Letter from the Engineer of Record who is licensed in the state of Oregon, stating the fill was placed in accordance with the signed plans.

Criterion 2

The proposal will be approved only where adequate provisions for stormwater runoff have been made that are consistent with the Public Works Engineering standards or are otherwise approved by the City Engineer.

Findings of Fact and Conclusion

2.1 City utility maps show no existing public storm drainage facilities within the subject parcel.

2.2 Calapooia River runs through the property north of the proposed development. Calapooia River is the main drainage feature in this area. Storm water runoff from the property currently sheet flows to the river. The site plan shows the proposed excavation, fill, grading, and pacing will not inhibit or substantially change this sheet flow from draining to Calapooia River.

2.3 The applicant must include a detailed storm drainage plan with building permit submittal. The drainage plan shall show how the roof drainage from the proposed structure will be discharged to a point approved by the Engineering Department and Building Division.

Condition

Condition 2 The applicant must include a detailed storm drainage plan with building permit submittal. The drainage plan shall show how the roof drainage from the proposed structure will be discharged to a point approved by the Engineering Department.

Criterion 3

No grading, fill, excavation, or paving will be permitted over an existing public storm drain, sanitary sewer, or water line unless it can be demonstrated to the satisfaction of the City Engineer that the proposed grading, fill, excavation, or paving will not be detrimental to the anticipated service life, operation, and maintenance of the existing utility.

Findings of Fact and Conclusion

3.1 City utility maps show no existing public sanitary sewer, water, or storm drainage facilities within the subject parcel. Therefore, the proposed fill will not be placed over any existing public utilities.

3.2 No public utilities will be adversely impacted by the proposed fill, grading, excavation, or paving.

3.3 This criterion is satisfied.

Criterion 4

In areas where no floodway has been designated on the applicable FIRM, grading will not be permitted unless it is demonstrated by the applicant that the cumulative effect of the proposed grading, fill, excavation, or paving when combined with all other existing and planned development, will not increase the water surface elevation of the base flood more than a maximum of one foot (cumulative) at any point within the community.

Findings of Fact and Conclusion

4.1 Based on the effective the FIRM 41043C0213H (dated December 8, 2023), portions of the project are located within a SFHA. The SFHA is designated as Zone AE with a regulatory floodway and contain Base Flood Elevations (BFE) defined by the FIS.

4.2 A regulatory floodway has been defined for this area and a portion of the subject property is located within the floodway. The criteria related to the floodway is addressed under ADC 6.100 (above); those findings and conclusions are included here by reference.

4.3 The applicant submitted engineered calculations for flood loads and the foundation wall of the proposed single dwelling unit. The City requested a review of these calculations from Ken Puhn, PE, CFM, of WEST Consultants, Inc., who found the application material adequately addresses ADC 6.111(4).

4.4 This criterion is satisfied.

Criterion 5

The applicant shall notify the City of Albany, any adjacent community, and the Natural Hazards Mitigation Office of the Oregon Department of Land Conservation and Development of any proposed grading, fill, excavation, or paving activity that will result in alteration or relocation of a watercourse (See Section 6.101).

Findings of Fact and Conclusion

5.1 The proposal does not propose alteration or relocation of a watercourse.

5.2 This criterion is not applicable.

Criterion 6

All drainage facilities shall be designed to carry waters to the nearest practicable watercourse approved by the designee as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of non-erosive down spouts and diffusers or other devices.

Findings of Fact and Conclusion

6.1 Stormwater runoff from the property currently sheet flows to Calapooia River. The proposed grading, fill, exaction, and paving will not inhibit this sheet flow from the property to Calapooia River. Stormwater runoff from future development in this area will ultimately be discharged to the Calapooia River.

6.2 An erosion prevention and sediment control (EPSC) permit is required from the City of Albany, prior to site development.

6.3 The applicant must include a detailed storm drainage plan with building permit submittal. The drainage plan shall show how the roof drainage from the proposed structure will be discharged to a point approved by the Engineering Department and Building Division.

Criterion 7

Building pads shall have a drainage gradient of two percent toward approved drainage facilities, unless waived by the Building Official or designee.

Findings of Fact and Conclusion

7.1 The applicant proposes to construct a single dwelling unit within the floodway fringe. The submitted site plan (Attachment B) indicates the building is oriented so that the garage doors face toward the Calapooia River.

7.2 The applicant states the proposed development will be constructed under a building permit issued by the City of Albany.

7.3 As a condition of approval the development on the property must provide a two percent gradient toward an approved drainage facility as approved by the City Engineer and Building Official.

Condition

Condition 3 Future development of the property must provide a two percent gradient toward an approved drainage facility as approved by the City Engineer and Building Official.

Overall Conclusion

As proposed and conditioned, the application for Floodplain Development Review of Floodway Restrictions and the grading, fill, excavation and paving in the Special Flood Hazard Area satisfies all applicable review criteria as outlined in this report.

Conditions of Approval

Condition 1 Prior to a certificate of occupancy for future development on the property, the following documentation shall be submitted to the Community Development Department:

a) As-built drawings with elevations provided; and

b) Letter from the Engineer of Record who is licensed in the state of Oregon, stating the fill was placed in accordance with the signed plans.

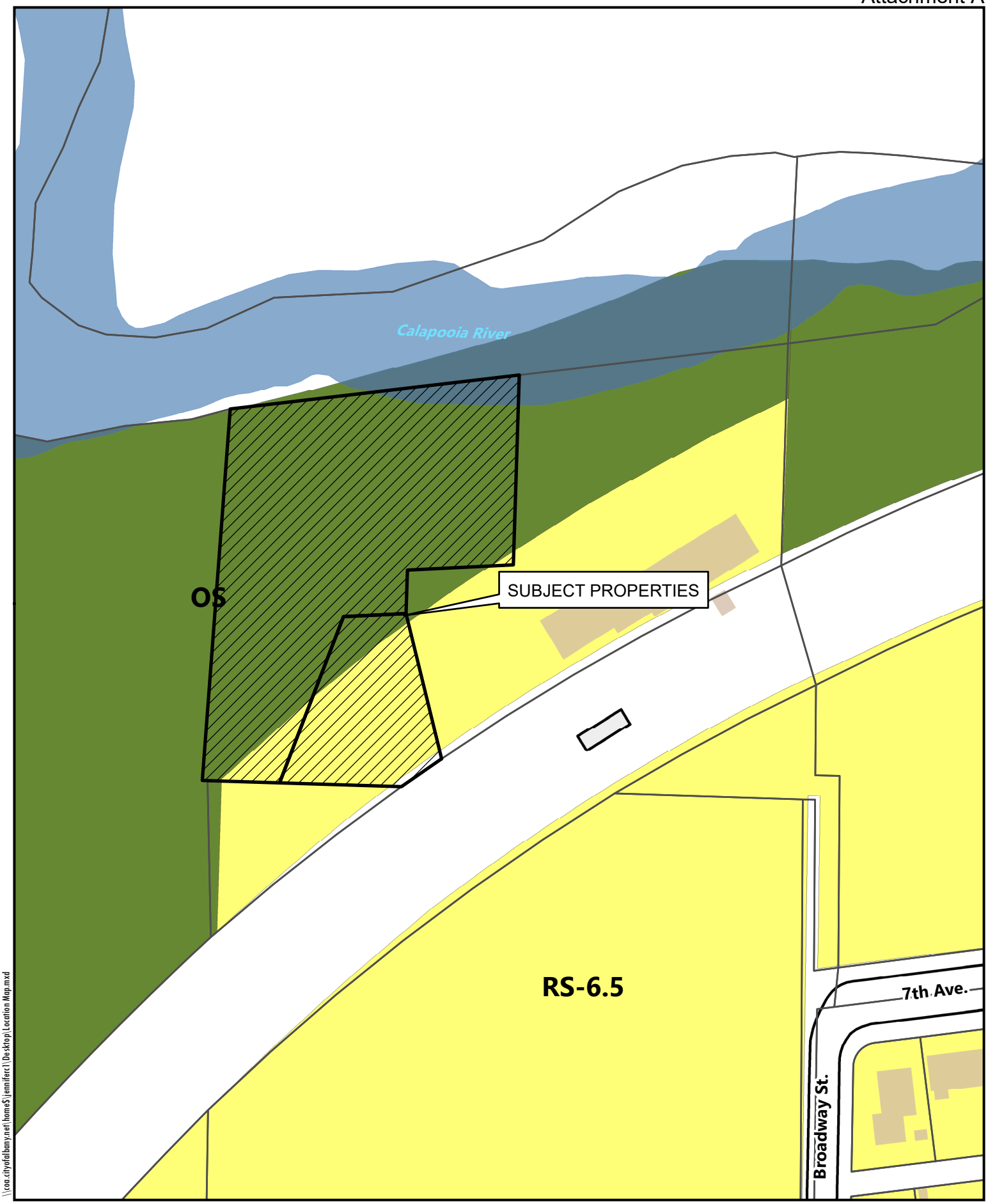
Condition 2 The applicant must include a detailed storm drainage plan with building permit submittal. The drainage plan shall show how the roof drainage from the proposed structure will be discharged to a point approved by the Engineering Department.

Condition 3 Future development of the property must provide a two percent gradient toward an approved drainage facility, as approved by the City Engineer and Building Official.

Condition 4 Development shall occur consistent with the plans and studies submitted by the applicant and shall comply with all applicable state, federal, and local laws.

Attachments

A. Location Map
B. Site Plan
C. Applicant's Findings of Fact
D. No-Rise Certification
E. Third-Party Findings



\\coa.cityofalbany.net\home$\jennifercl\Desktop\Location Map.mxd

N

0 50 100 200 Feet

UNASSIGNED

Date: 6/30/2023 Map Source: City of Albany

Location Map

Attachment B

LEGEND:

- SURVEY MONUMENT
- CURVE DATA; SEE "CURVE DATA TABLE"
- EASEMENT DATA; SEE "EASEMENTS PER PARTITION PLAT"
- EXIST. FIRE HYDRANT
- EXIST. WATER VALVES
- EXIST. WATER METER
- [redacted]
- (197.00) EXIST. SPOT ELEVATION
- —W— EXIST. WATER LINE
- —X— EXIST. FENCE
- —SS— EXIST. SEWER LINES (20" PE)
- —SS— EXIST. ABANDONED SEWER LINES (12" AC)
- —OHP— EXIST. OVERHEAD POWER
- EXIST. EASEMENT LINE
- EXIST. GRAVEL EDGE
- —EP— EXIST. EDGE OF PAVEMENT
- EXIST. CURB
- FEMA FLOOD PLAIN LINES, AS NOTED

PROPOSED UTILITIES:

- —W— PROPOSED WATER LINE
- —SS— PROPOSED SEWER LINES

CURVE DATA TABLE:

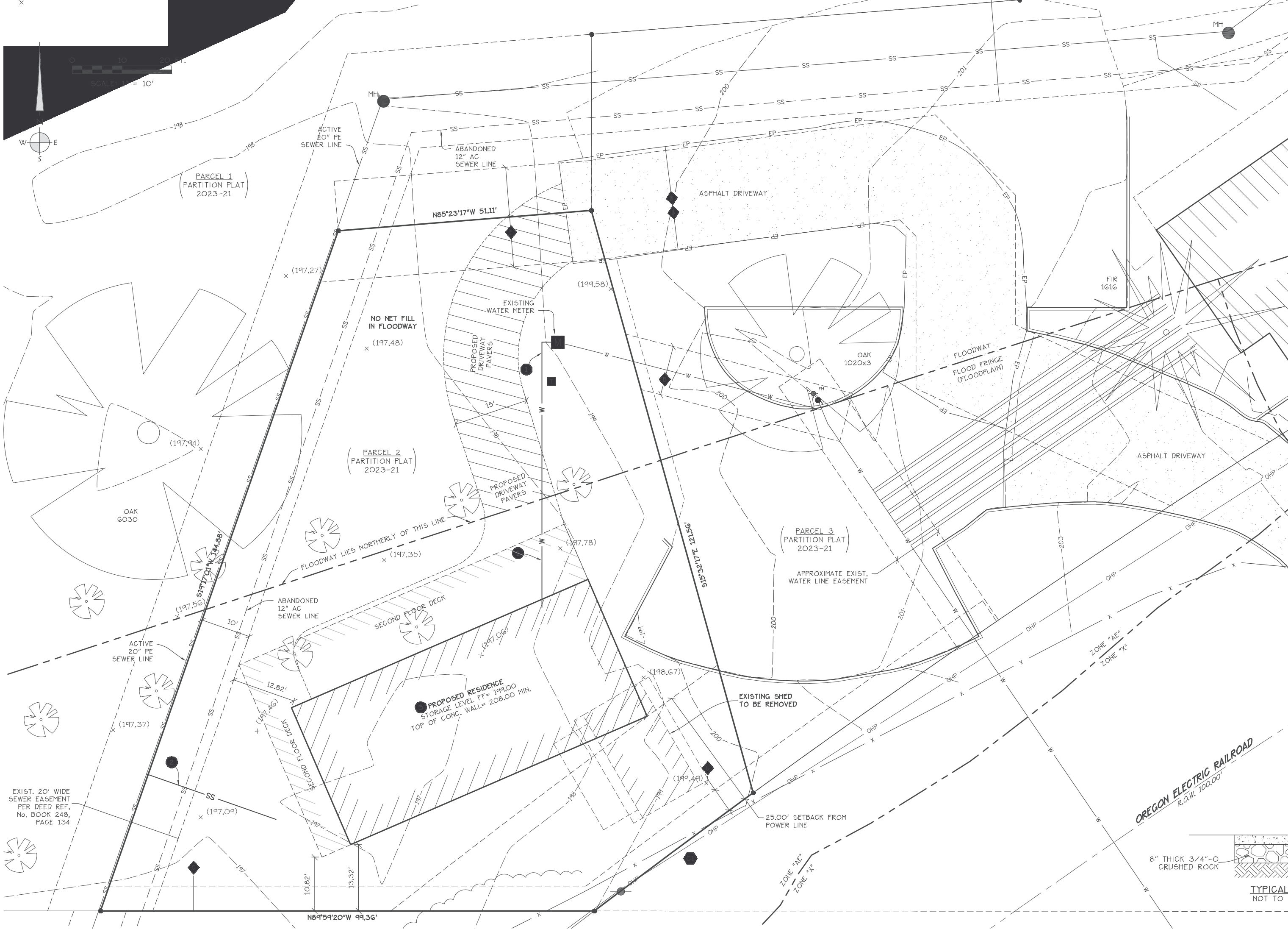
CURVE	RADIUS	LENGTH	CHORD	DELTA
C1	1959.86'	39.85'	S53°23'52"W 39.85'	01°09'54"

EASEMENTS PER PARTITION PLAT 2023-21:

- A 20.00' WIDE CITY OF ALBANY ACCESS + UTILITY EASEMENT
- A 10.00' WIDE PRIVATE WATER EASEMENT
- A 5.00' WIDE PRIVATE WATER EASEMENT
- A 20.00' WIDE PRIVATE RECIPROCAL ACCESS + UTILITY EASEMENT
- A 20.00' WIDE PRIVATE RECIPROCAL ACCESS + UTILITY EASEMENT

CONSTRUCTION NOTES:

- CONSTRUCT DOMESTIC WATER LINE
- CONSTRUCT SANITARY SEWER SERVICE
- CONSTRUCT SINGLE FAMILY RESIDENCE



SITE PLAN
FOR
JAMES + BRENDA RUBLE
LOCATED IN
PARCEL 2, PARTITION PLAT 2023-21 IN THE NW 1/4 SEC. 12, T. 11 S., R. 4 W., W.M.
IN THE
CITY OF ALBANY, LINN COUNTY, OREGON
JUNE 23, 2023

APPLICANT:
JAMES RUBLE
P.O. BOX 192
ALBANY, OR 97321

SURVEYOR:
K+D ENGINEERING, INC.
276 NW HICKORY ST.
ALBANY, OR 97321

NOTE:
DATA SHOWN ON THIS MAP IS BASED ON LINN COUNTY AND CITY OF ALBANY GIS DATABASES, ASSESSOR RECORDS, RECORD DEED INFORMATION AND FIELD SURVEY INFORMATION.

SUBJECT PROPERTY:
PARCEL 2 OF PARTITION PLAT 2023-21

OWNER:
JAMES + BRENDA RUBLE
P.O. BOX 192
ALBANY, OR 97321

ZONING:
THE PROPERTY IS LOCATED IN THE RS 6.5 ZONE.

ZONE SETBACKS:	
FRONT	15'
INTERIOR	5' SINGLE STORY
INTERIOR	8' 2 OR MORE STORIES
MAXIMUM HEIGHT	30' MAXIMUM
LOT COVERAGE	60% MAXIMUM

FLOODPLAIN:
SUBJECT PROPERTY IS LOCATED IN A ZONE AE FLOOD HAZARD PER FEMA FIRM MAP 41043C0195H DATED 12-8-2016
BASE FLOOD ELEVATION = 207.0'

EARTHWORK:
FLOODWAY: 36 CUBIC YARDS CUT, 36 CUBIC YARDS FILL
FLOODPLAIN: 140 CUBIC YARDS CUT, 280 CUBIC YARDS FILL
DISTURBED AREA = 4,800 SQUARE FEET

Grasstone™ II

Grasstone™ II by Pavestone is a versatile product that is used as a surface stabilization product for both sloped and horizontal applications. This grid paver provides a sustainable solution to surface erosion allowing infiltration of water and the ability to establish vegetation. Grasstone™ II offers limited protection for erosion control of mild slopes and landscaping berms. Grasstone™ II reinforces grass areas by providing a concrete matrix support combined with topsoil and vegetative cover. Grasstone™ II has been used extensively for vegetated fire lane pavements when designed and constructed according to conventional pavement design. This layer of concrete and organic materials shall be constructed over a structural base course designed to carry the anticipated loads and repetitions. This system can provide substantial pavement strength to minimize rutting and create a suitable platform for intermittent vehicular use. Vegetation is recommended for maintaining environmental benefits. Civil engineering, according to local building codes and municipal requirements may be required.

APPLICATIONS
Emergency Vehicle Access Routes • Fire Lanes • Overflow Parking • Permeable Pavements • Slope Surface Stabilization Tree Protection • University Campuses • Golf Courses

COMPOSITION AND MANUFACTURE
Grasstone™ II is made from a "no slump" concrete mix. Made under extreme pressure and high frequency vibrations, Grasstone™ II has a compressive strength greater than 4000psi, a water absorption maximum of 7%.

PRODUCT INFORMATION
Grasstone™ II, 80mm = 3 1/4"

INSTALLATION
When installed as a pavement, unsuitable, unstable or unconsolidated subgrade material shall be excavated according to the direction of the Site Engineer/Architect/Landscape Architect and compacted. Backfill with minimum 4 in. (100mm) to 12 in. (305mm) or as otherwise directed by the above noted Site Authorities with compacted, dense, graded aggregate. The Grasstone™ II units are placed on a thin, compacted layer of not more than 1/2 in. (13mm) of sand.

Erosion Control applications require the slope to be graded uniformly before bedding the Grasstone™ II units in a maximum 1/2 inch (13mm) layer of sand. In order to prevent the migration of subgrade material it may well be necessary to place a geotextile on the graded slope before applying the bedding course of sand.

In order to support grass or plant growth, the voids must be filled flush with surface with suitable topsoil or mixture of soil and fertilizer. Then the openings are seeded, sprigged or plugged.

INSTALLATION PATTERN
Call for color availability.

Complete installation & specification details are available by contacting your Pavestone Sales Representative.

PAVESTONE Improving Your Landscape www.pavestone.com

AREA OF WORK IN THE FLOODWAY
974 SQUARE FEET

TYPICAL SECTION
NOT TO SCALE
TOP OF CONCRETE PAVERS (MATCH EXISTING GRADE)
8" THICK 3/4"-0 CRUSHED ROCK
COMPACTED SUB-GRADE

SITE PLAN

JAMES & BRENDA RUBLE
1525 SW 7TH AVE.
CITY OF ALBANY, LINN COUNTY, OREGON

DATE	REVISIONS	BY

K&D ENGINEERING, INC.
276 N.W. HICKORY ST.
P.O. BOX 725
ALBANY, OREGON 97321
(541) 928-2583

REGISTERED PROFESSIONAL ENGINEER 17,612 OREGON DANIEL K. WATSON Digital Signature
RENEWS: 6-30-24

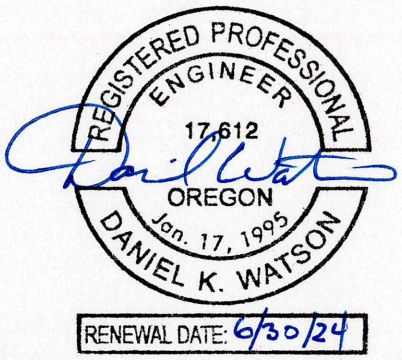
HORZ. SCALE:	1" = 10'
VERT. SCALE:	
SIGN DATE:	6-23-2023
DSGN BY:	JJC
DRWN BY:	GSG
CHCK BY:	DKW
PROJECT No.:	21-146

SHEET No.: 1 OF 1

Date: 6/23/2023 Time: 8:56
Scale: 1=1(PS)
File: dwg\2021\21-146\Site Plan\21-146_site.dwg (George)

ENGINEER'S REPORT
FOR
FILL IN THE FLOODPLAIN
and
DRIVEWAY CONSTRUCTION IN THE FLOODWAY

RUBLE RESIDENCE
PARCEL 2 of PARTITION PLAT 2023-21
LINN COUNTY OREGON



Prepared by:	Dan Watson, P.E. K&D Engineering P. O. Box 725 Albany, OR 97321
Client:	James Ruble
Project No.	21-146
Date:	June 22, 2023
Contents:	Report and Narrative
Appendix:	No Rise Certification Pre-Construction Elevation Certificate Concrete Wall Flood Loading Calculations.

ENGINEER'S REPORT
FOR
FILL IN THE FLOODPLAIN
and
DRIVEWAY CONSTRUCTION IN THE FLOODWAY

RUBLE RESIDENCE
PARCEL 2 of PARTITION PLAT 2023-21
LINN COUNTY OREGON

FLOODWAY CONSTRUCTION

This project requires driveway access through the designated floodway of the Calapooia River. Floodway and floodplain designations are shown on FEMA FIRM Map No. 41043C0195H Dated December 8, 2016.

The work to install the driveway will result in zero net fill within the floodway as required by the floodway rules and regulations adopted the City of Albany as the Floodplain Administrator.

The driveway construction will consist of excavation of 12 inches of existing soil along the alignment and backfilled with 8 inches of rock and 4 inches of open paving stone filled with soil and grass. The excavation and backfill will result in no net change of grade. Excess material will be removed from the floodway.

Since there will be no resulting change in grades within the floodway, there will be no impact to the to the 100-year flood elevations due to the driveway construction in the floodway.

Narrative and Findings for the Albany Development Code

Albany Development Code language is shown in *italics.*

6.100 Floodway Restrictions. No development is allowed in any floodway except when the review body finds that the development will not result in any increase in flood levels during the occurrence of the 100-year flood. The finding shall be based upon applicant-supplied evidence prepared in accordance with standard engineering methodology approved by FEMA and certified by a registered professional engineer and upon documentation that one of the following criteria has been met: [Ord. 5875, 10/28/16]

Fact: A driveway will be constructed in the floodway.
Fact: Existing soil will be removed prior to the driveway rock and paver construction.
Fact: Not net fill will result so the hydraulic characteristics will not be modified.
Fact: A plan for the work and a letter report from a registered professional engineer detailing the absence of impacts is part of this application.

Fact: A floodway has been established for the Calapooia River at this project site.
Fact: A "no rise" certification letter is included with this report.

Conclusion: There will be no increase in the flood levels during the 100-year flood as a result of the work in the floodway. This criterion is met.

(1) The development does not involve the construction of permanent or habitable structures (including fences). [Ord. 5746, 9/29/10]

Fact: A driveway will be constructed in the Floodway.
Fact: No fences are proposed in the Floodway.
Fact: No habitable structures are proposed on the floodway.

Conclusion: Since Item (1) has been met, Items (2) and (3) do not apply. This criterion is met.

(2) The development is a public or private park or recreational use or municipal utility use.

This criterion does not apply.

(3) The development is a water-dependent structure such as a dock, pier, bridge, or floating marina.

This criterion does not apply.

For temporary storage of materials or equipment:

(4) The temporary storage or processing of materials will not become buoyant, flammable, hazardous explosive or otherwise potentially injurious to human, animal or plant life in times of flooding. [Ord. 5746, 9/29/10]

Fact: No temporary storage of processing material in the floodway is proposed.

Conclusion: This criterion is met.

(5) The temporary storage of material or equipment are not subject to major damage by floods and is firmly anchored to prevent flotation or is readily removable from the area within the time available after flood warning. [Ord. 5746, 9/29/10]

Fact: Temporary storage of material or in the floodway, if present, will be limited to material or equipment not subject to major damage and will be anchored or moved prior to flooding.

Conclusion: This criterion is met.

FLOOD FRINGE CONSTRUCTION

The entire parcel is within the floodplain, either the floodway of flood fringe. The home for this site can not be located outside of the floodplain, but will be located outside of the floodway in the flood fringe. Due to the depth of fill required to raise the site above the floodplain and the limited area outside of the floodway (established by FEMA and shown on the FIRM Map No. 41043C0195H dated 12/8/16), the portions of this building below the Base Flood Elevation (BFE) will be built using flood resistant materials, primarily concrete walls. The floor of the home will be a minimum of one foot above the BFE. The Base Flood Elevation for the site is 207.0 feet. There will be an "enclosed area" under the home meeting this definition: An unfinished or flood-resistant enclosure that is used solely for parking of vehicles, building access, or storage as permitted by FEMA regulations (Technical Bulletin 1, March 2020).

Narrative and Findings for the Albany Development Code

6.111 Grading, Fill, Excavation, and Paving, A floodplain development permit is required for grading, fill, excavation, and paving in the Special Flood Hazard Area (100-year floodplain), except activities exempted in Section 6.094 of this Article. No grading will be permitted in a floodway, except when the applicant has supplied evidence prepared by a professional engineer that demonstrates the proposal will not result in any increase in flood levels during the occurrence of the 100-year flood. The permit will be approved if the applicant has shown that each of the following criteria that are applicable have been met: [Ord. 5746, 9/29/10]

(1) Provisions have been made to maintain adequate flood-carrying capacity of existing watercourses, including future maintenance of that capacity.

Fact: The flooding source for the property is the Calapooia River combined with the Willamette River.
Fact: No net fill is proposed in the floodway. Driveway construction will include equal removal and fill so that the driveway will be at the same elevation as the exiting ground.
Fact: Fill is proposed in the flood fringe of the floodplain. Since there is a designated floodway, the fill in the flood fringe (outside the limits of the designated floodway) will maintain floodway capacity by definition.
Fact: No fill is proposed in the designated Riparian Zone of this property.

Conclusion: This proposed fill will not impact the flood carrying capacity of the watercourse because FEMA has established a floodway corridor and no net fill is proposed in the floodway. This criterion is met.

(2) The proposal will be approved only where adequate provisions for stormwater runoff have been made that are consistent with the Public Works Engineering standards, or as otherwise approved by the City Engineer.

Fact: This site currently drains directly to the Calapooia River. This site will continue to drain to Calapooia River.
Fact: Drainage for improvements will be consistent with City requirements and permitted under the building permit for the proposed home.
Fact: An erosion and sediment control permit will be secured, if require, for this project as part of the building permit.

Conclusion: Adequate provisions for storm drain have been made for the site. This Criterion is met.

(3) No grading, fill, excavation, or paving will be permitted over an existing public storm drain, sanitary sewer, or water line unless it can be demonstrated to the satisfaction of the City Engineer that the proposed grading, fill, excavation, or paving will not be detrimental to the anticipated service life, operation and maintenance of the existing utility.

Fact: There is City storm sewer or water line within the project area.
Fact: No construction is proposed over the city sanitary sewer on site.
Fact The existing sewer is buried approximately nine feet deep and that depth is satisfactory for vehicle traffic over the sewer.

Conclusion: The grading and fill proposed with this project will not be detrimental to existing city utilities. This criterion is met.

(4) In areas where no floodway has been designated on the applicable FIRM, grading will not be permitted unless it is demonstrated by the applicant that the cumulative effect of the proposed grading, fill, excavation, or paving when combined with all other existing and planned development, will not increase the water surface elevation of the base flood more than a maximum of one foot (cumulative) at any point within the community.

Fact: There is a designated floodway on this section of the Calapooia River and Willamette River floodplain.

Conclusion: This criterion is not applicable.

(5) The applicant shall notify the City of Albany, any adjacent community, and the Natural Hazards Mitigation Office of the Oregon Department of Land Conservation and Development of any proposed grading, fill, excavation, or paving activity that will result in alteration or relocation of a watercourse (See Section 6.101).

Fact: The adjacent watercourse is the Calapooia River.
Fact: There is no proposed alteration or relocation of the Watercourse.

Conclusion: This criterion is not applicable.

(6) All drainage facilities shall be designed to carry waters to the nearest practicable watercourse approved by the designee as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of non-erosive down spouts and diffusers or other devices.

Fact: Storm runoff form the site drains directly to the Calapooia River without leaving private property.

Fact: The proposed impervious surfaces are comprised of one home.

Fact: The existing site soils are well drained and the rain water infiltrates into the soils prior to reaching the river.

Conclusion: This criterion is met.

(7) Building pads shall have a drainage gradient of two percent toward approved drainage facilities, unless waived by the Building Official or designee.

Fact: There proposed building pad will drain toward the Calapooia River.

Fact: The proposed home will be constructed under a building permit issued by the City of Albany.

Fact: The building code requires drainage consistent with this requirement.

Conclusion: The proposed plan will accommodate future building construction meeting building department requirements. This criterion is met.

6.120 Building Standards. Applications for building permits within the Special Flood Hazard Area, as established in Section 6.080, shall be reviewed by the Building Official pursuant to locally adopted state building codes. In addition to building code criteria, all development in the Special Flood Hazard Area, except that exempted in Section 6.094, is subject to the following building standards: [Ord. 5746, 9/29/10]

(1) Property owners or developers shall file with the City two elevation certificates in a format that is acceptable to FEMA. These certificates must be approved by the Building Official, prepared by a registered surveyor or professional engineer, architect or surveyor, and maintained for public inspection. A Pre-Construction Elevation Certificate shall be submitted and approved prior to setback and foundation inspection approval. A Post-Construction Elevation Certificate shall be submitted and approved prior to final inspection approval for all building permits when the Pre-Construction Elevation Certificate shows the building site to be within a Special Flood Hazard Area and lowest adjacent grade to be at or below the base flood elevation (BFE). The Post-Construction certificate must contain: 1) the actual elevation (in relation to mean sea level) of the lowest floor including basement of all new or substantially improved structures; 2) the elevation of any flood proofing; and 3) whether or not the structure contains a basement.

a. The preconstruction Elevation Certificate is included with this application.
b. The lowest floor is elevation 209.0 feet.
c. Floodproofing is provided up to elevation 208.0 feet
d. The BFE is elevation 207.0 feet
e. There is no below grade basement.

(2) The lowest floor, including basement, of any proposed structure (including residential and nonresidential structures) shall be placed at least one (1) foot above the 100-year flood as determined by the latest Flood Insurance Study.

a. The lowest floor is elevation 209.0 feet.
b. There is an "enclosed area" meeting this definition: An unfinished or flood-resistant enclosure that is used solely for parking of vehicles, building access, or storage.
c. Floodproofing is provided up to elevation 208.0 feet
d. The BFE is elevation 208.0 feet
e. There is no below grade basement.

(3) When elevation data is not available either through the Flood Insurance Study, FIRM, or from other sources of floodplain and floodway data as described in Section 6.080, applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, etc., when available.

a. **This provision is not applicable since the FIS provides flood elevations.**

(4) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

Only Class 4 and Class 5 materials as listed in Technical Bulletin 2, Flood Damage-Resistant Materials Requirements, are permitted below the BFE.

a. **The foundation and walls are will be constructed of concrete. Concrete is listed as a Class 5 material.**
b. **Wall covering will be fiber cement board, a Class 5 material.**
c. **The vents will be metal or plastic, Class 5 materials.**
d. **The garage doors will metal roll-up doors, Class 5 material.**
e. **Man doors will metal or fiberglass doors, Class 5 material.**
f. **Beams will be structural limber, a Class 4 material.**
g. **Stairs will be constructed of preservative treated or decay resistant lumber, Class 4 materials.**

(5) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

a. **All materials will be attached with water resistant materials and per manufacturer recommendations.**

(6) Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during a flood.

a. **Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities will be installed at least one foot above BFE.**
b. **Conduit will be water tight. Electrical wires will be fully insulated with water resistant materials.**

(7) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement and shall be installed or constructed using materials, methods, and practices that minimize flood damage.

a. **Concrete foundations will be buried.**
b. **The walls will be denser than water and not buoyant.**
c. **Vents will ensure equal water levels on both sides of the walls.**

(8) All new and replacement public water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

a. **Water lines will be water tight, buried and run up the insides of the concrete walls of the enclosure.**

(9) All new and replacement public sanitary sewer systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharges from the system into flood water. On site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

a. **All sewer lines will be gasketed, water tight and run up the inside of the walls of the concrete enclosure.**

(10) If floodproofing methods are required as per Section 6.121(2), the property owners or developers shall file with the City a certification by a registered professional engineer or architect that the floodproofing methods meet or exceed FEMA standards. The City will maintain the certification available for public inspection. [Ord. 5146, 9/14/94; Ord. 5281, 3/26/97]

a. **I hereby certify that the provisions listed above mee or exceed the FEMA requirements for flood proofing.**

6.121 Flood Hazard Reduction Standards for Structures. All applicable flood hazard reduction measures are required and must be certified as required in 6.120 (1) and (10) above to at least meet the following standards (these standards do not apply to structures exempted in Section 6.122): [Ord. 5746, 9/29/10]

(1) In all structures that will not be floodproofed, as described in 6.121(2), fully enclosed areas below the lowest floor (crawl spaces, parking areas or building access) and lower than 1 foot above the 100-year flood level must meet or exceed the following criteria:

(a) At least two openings, having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding, shall be provided.

a. **The area of the enclosure is 1950 square feet.**
b. **Four vents will be installed with 500 square inches of opening per vent totaling 2,000 square inches of opening.**

(b) The bottom of all openings shall be no higher than one foot above grade.

a. **The bottoms of the openings will be installed below elevation 200.0 ft and less than one foot below the floor of the enclosure.**

(c) Openings may be equipped with screens, louvers, or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

a. **The openings will permit automatic entry and exit of the flood waters.**

(d) The interior grade below the BFE must not be more than two (2) feet below the lowest adjacent exterior grade.

a. **The floor of the enclosure below the BFE will be at or above the adjacent grade.**

(e) The height of the below-grade area, measured from the interior grade to the top of the foundation wall must not exceed four (4) feet at any point.

a. **There is no below grade area.**

(f) There must be an adequate drainage system that removes floodwaters from the interior area. The enclosed area should be drained within a reasonable time after a flood event.

a. **The enclosure will drain out of the vents and can be drained dry out the garage doors.**

(g) It will be used solely for parking vehicles, limited storage, or access to the building and will never be used for human habitation.

a. **The enclosure will be used solely for parking vehicles, limited storge and access to the building.**

(h) The property owner of the building shall sign and record on the title to the property a nonconversion agreement, guaranteeing not to improve, finish, or otherwise convert the enclosed area below the lowest floor and lower than 1-foot above the 100-year flood level and granting the City the right to inspect the enclosed area.

b. **The owner will sign and record the required non-conversion agreement.**

APPENDIX

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of Oregon.

It is to further certify that the attached technical data supports the fact that proposed Driveway Pavers for Ruble home. (*Name of Development*) will not impact the 100-year flood elevations, floodway elevations and floodway widths on Calapooia River (*Name of Stream*) at published sections in the Flood Insurance Study for Albany (*Name of Community*), dated December 8, 2016 and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

Engineer's Report for Driveway Construction in the Floodway. Located on Parcel 2 of Partition Plat 2023-21 Linn County.(near 1525 Seventh Ave SW, Albany Oregon).

(Date) June 22, 2023

(Signature)

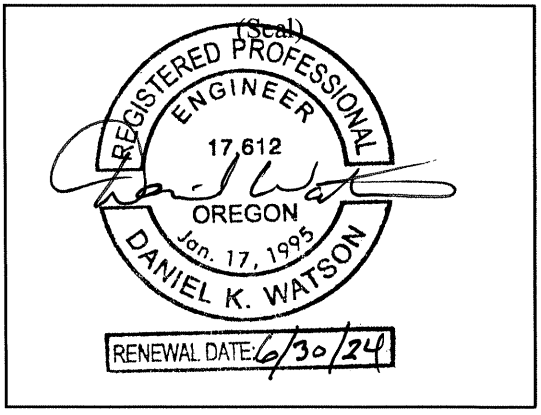
(Title) Principal Engineer

K&D Engineering, Inc.

276 NW Hickory Street

Albany, OR 97321

(Address)



U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2022

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1–9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE

A1. Building Owner's Name
James Ruble

Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
1525 7th Ave. SW

Company NAIC Number:

City	State	ZIP Code
Albany	Oregon	97321

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
Parcel 2 of Partition Plat No. 2023-21

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Resdiential

A5. Latitude/Longitude: Lat. 44.63125 Long. -123.12345 Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number 8

A8. For a building with a crawlspace or enclosure(s):

a) Square footage of crawlspace or enclosure(s) 1950.00 sq ft

b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade

c) Total net area of flood openings in A8.b 2000.00 sq in

d) Engineered flood openings? ☒ Yes ☐ No

A9. For a building with an attached garage:

a) Square footage of attached garage N/A sq ft

b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade 0

c) Total net area of flood openings in A9.b 0.00 sq in

d) Engineered flood openings? ☐ Yes ☒ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
City of Albany 410137	Linn	Oregon

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)
41043C/0213	H	12-08-2016	12-08-2016	AE	207.0

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
☐ FIS Profile ☒ FIRM ☐ Community Determined ☐ Other/Source:

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: ☐ CBRS ☐ OPA

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.

FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
1525 7th Ave. SW

Policy Number:

City	State	ZIP Code
Albany	Oregon	97321

Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☒ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction

*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: ORGN Vertical Datum: NGVD 88

Indicate elevation datum used for the elevations in items a) through h) below.

☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	199.0	☒ feet	☐ meters
b) Top of the next higher floor	209.0	☒ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	☐ feet	☐ meters
d) Attached garage (top of slab)	N/A	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	209.0	☒ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	197.0	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	198.0	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	197.0	☒ feet	☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

Were latitude and longitude in Section A provided by a licensed land surveyor? ☐ Yes ☒ No ☐ Check here if attachments.

Certifier's Name	License Number	
Joe J. Cota	LS 58561	
Title		
Survey Manager		
Company Name		
K& D Engineering Inc.		
Address		
276 NW Hickory St.		
City	State	ZIP Code
Albany	Oregon	97321
Signature	Date	Telephone
	3-29-23	(541) 928-2583

REGISTERED PROFESSIONAL LAND SURVEYOR
Place Seal Here
OREGON
JULY 9, 2002
JOE J. COTA
58561
Ext
RENEWS: 12-31-23

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including type of equipment and location, per C2(e), if applicable)
This is a pre-construction Elevation certificate for a new residential structure. The lowest utility is a Heat pump at second floor elevation. Latitude and Longitude were obtained from google earth. Number of vents in A8.b) unknown at this time, but we propose minimum 2000 sq. in.

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1525 7th Ave. SW			Policy Number:
City Albany	State Oregon	ZIP Code 97321	Company NAIC Number

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____ ☐ feet ☐ meters Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____ ☐ feet ☐ meters Datum _____

G10. Community's design flood elevation: _____ ☐ feet ☐ meters Datum _____

Local Official's Name	Title
Community Name	**Telephone**
Signature	**Date**

Comments (including type of equipment and location, per C2(e), if applicable)

☐ Check here if attachments.

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 1525 7th Ave. SW			Policy Number:
City Albany	State Oregon	ZIP Code 97321	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.

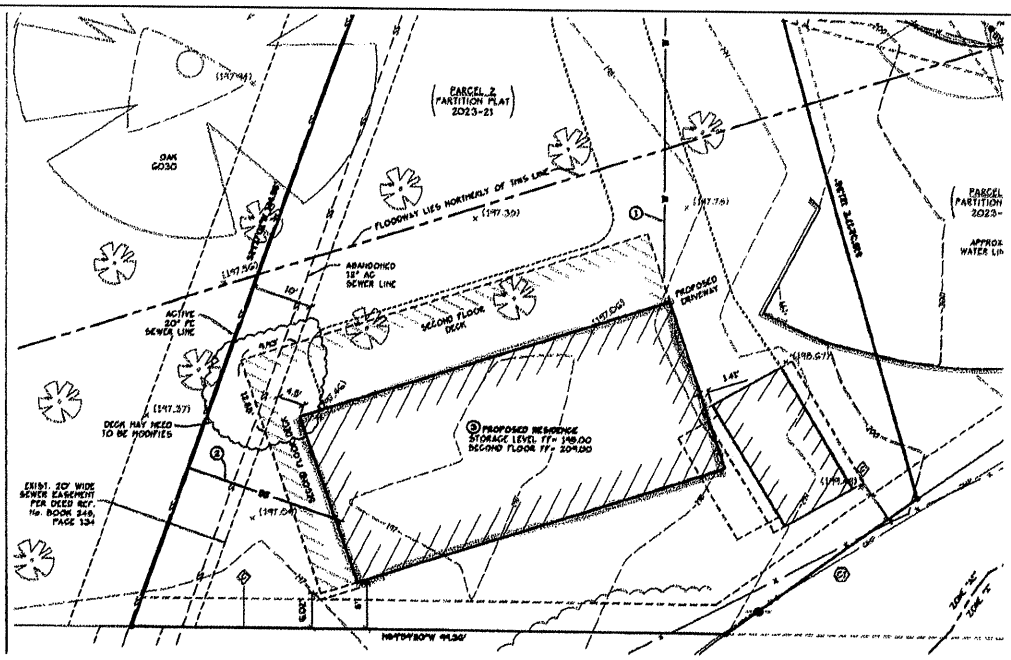


Photo One

Photo One Caption Site plan

Clear Photo One

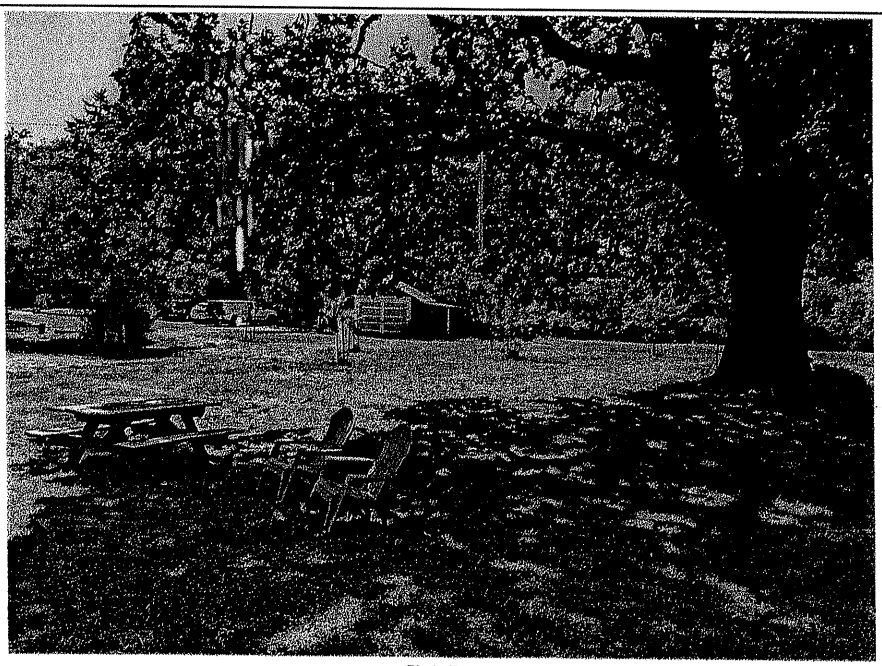


Photo Two

Photo Two Caption proposed building site

Clear Photo Two

HYDRODYNAMIC PRESSURE ON UPSTREAM WALL

ASCE 7-16 Eq (5.4-1)

$$d_h = \frac{\alpha V^2}{2g}$$

CALAPOOIA RIVER
$\alpha = 1.25$
$V = 2.3$ fps (FIS)
$g = 32.2$ ft/s²
d_h = surcharge depth

$$d_h = \frac{(1.25)(2.3 \text{ fps})^2}{2(32.2 \text{ ft/s}^2)} = 0.92$$

HYDRODYNAMIC PRESSURE $P_{hd} = (0.92)(62.4 \text{ pcf}) = 57.4 \text{ psf}$

STATIC PRESSURE 0 ft (WATER BOTH SIDES)
USE MIN 1 ft (per 5.4.2) = 62.4 psf

LOAD ON UPSTREAM WALL = 62.4 + 57.4 = 120 psf
LOAD ON OTHER 3 WALLS = 57 psf
ASSUME CONCURRENT TO WIND LOAD FOR SHEAR

IMPACT LOAD 1000 # OBJECT/DEBRIS ASCE 7-16 (5.4-2)

$F = \pi W V_L / (2g) \Delta t$

$\Delta t = 0.03$ s
$W = 1000$ #
$V_L = 2.3$ fps
$g = 32.2$ ft/s²

$$F = \frac{(3.14)(1000 \#)(2.3 \text{ ft/s})}{2(32.3 \text{ ft/s}^2)(0.03 \text{ s})} = 3,740 \#$$

$F_{Impact} = 3,700$ #

$P_{Impact} = 3700 \#/4' = 925$ plf
(DISTRIBUTE LOAD OVER 4ft WIDTH OF WALL

UPSTREAM WALL FLOOD LOAD 120 psf
10 ft WALL
Try 8" thick PCC WALL f'_c = 3500 psi #5's @ 12"
TOP OF WALL RESISTED BY FLOOR DIAPHRAM A_s = 31 si/LF
d = 4"

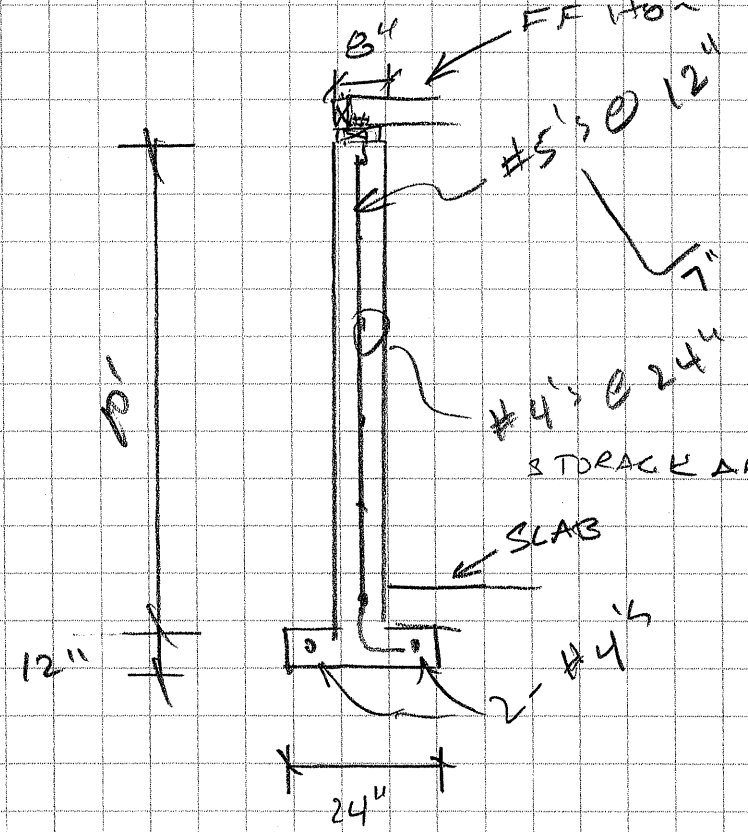
$$M = \frac{(120\,plf)(10')^2}{8} + \frac{(925\,\#)(10')}{4} = 10{,}750\ ft\text{-}\#$$

$$M_u = (1.4)(10{,}750\ ft\text{-}\#) = 3{,}810\ ft\text{-}\#$$

$$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{(0.31\,si)(60{,}000\,psi)}{0.85(3500\,psi)(12")} = 0.52"$$

$$M_a = \phi A_s f_y \left(d - \frac{a}{2}\right) = (0.9)(0.31\,si)(60{,}000\,psi)\left(4" - \frac{0.52"}{2}\right)\left(\frac{1\,ft}{12"}\right)$$

$$M_a = 5220\ ft\text{-}\# > 3{,}810\ ft\text{-}\#$$



f'_c = 3500 psi
f_y = 60,000 psi

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Calapooia River								
A	2.35	2,245	15,543	2.3	208.1	204.5[2]	205.2	0.7
B	2.68	1,151	13,930	2.5	208.3	205.5[2]	206.3	0.8
C	2.84	1,172	4,414	8.0	208.4	205.7[2]	206.5	0.8
D	3.23	1,335	16,668	2.1	209.1	209.1	209.7	0.6
E	4.36	690	6,809	4.2	212.4	212.4	213.0	0.6
F	4.79	750	6,675	4.3	214.0	214.0	214.6	0.6
G	5.41	1000	10,915	2.6	216.3	216.3	216.9	0.6
H	5.88	1,800	17,453	1.6	217.0	217.0	217.6	0.6
I	6.28	1,950	11,350	2.9	217.7	217.7	218.3	0.6
J	7.28	2,286	11,776	2.8	221.8	221.8	222.4	0.6
K	7.69	2,444	19,559	1.7	222.8	222.8	223.5	0.7
L	8.26	2,828	20,645	1.6	223.7	223.7	224.5	0.8
M	8.74	2,200	11,080	3.0	225.1	225.1	225.7	0.6
N	9.13	1,800	11,971	2.7	227.1	227.1	227.6	0.5
O	9.75	1,300	11,867	2.7	229.1	229.1	229.9	0.8
P	9.95	326	3,962	8.2	229.5	229.5	230.4	0.9
Q-AA[3]								

[1] Miles above mouth [2]Elevation computed without consideration of influence from Willamette River [3]No floodway computed for these cross sections

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINN COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

CALAPOOIA RIVER

LEGEND:

Symbol	Description
●	SURVEY MONUMENT
⟨1⟩	CURVE DATA; SEE "CURVE DATA TABLE"
⟨A⟩	EASEMENT DATA; SEE "EASEMENTS PER PARTITION PLAT"
FH	EXIST. FIRE HYDRANT
⊗V	EXIST. WATER VALVES
M	EXIST. WATER METER
-●-	EXIST. UTILITY POLE
	EXIST. DECIDUOUS / CONIFER TREE
MH●	EXIST. SEWER MANHOLE
T	EXIST. TELEPHONE PEDESTAL
× (197.00)	EXIST. SPOT ELEVATION
—W—	EXIST. WATER LINE
— X —	EXIST. FENCE
—SS—	EXIST. SEWER LINES (20" PE)
- -SS- -	EXIST. ABANDONED SEWER LINES (12" AC)
—OHP—	EXIST. OVERHEAD POWER
- - - - -	EXIST. EASEMENT LINE
- - - - -	EXIST. GRAVEL EDGE
—EP—	EXIST. EDGE OF PAVEMENT
═══	EXIST. CURB
— - - —	FEMA FLOOD PLAIN LINES, AS NOTED

PROPOSED UTILITIES:

—W— PROPOSED WATER LINE

—SS— PROPOSED SEWER LINES

CURVE DATA TABLE:

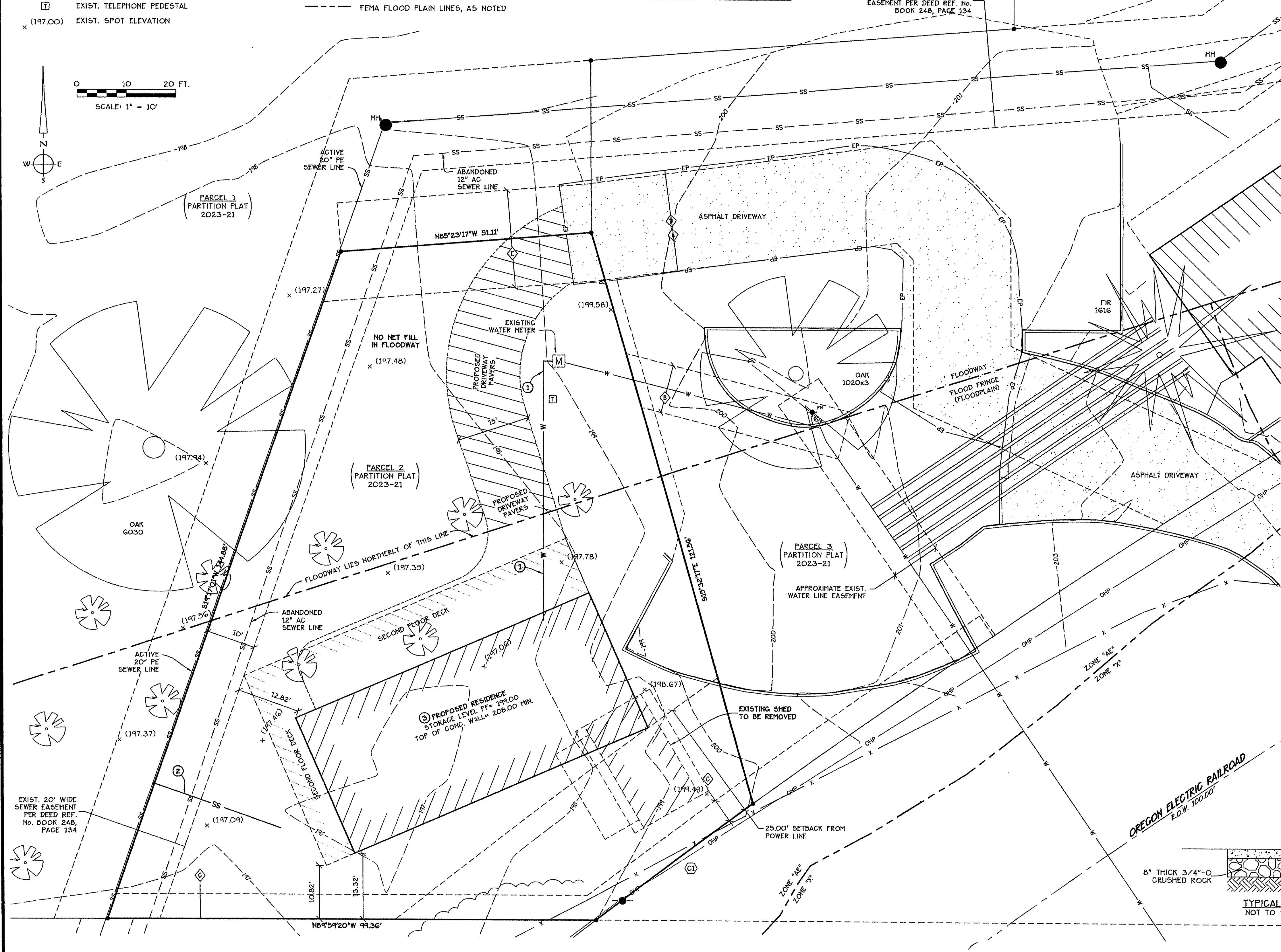
CURVE	RADIUS	LENGTH	CHORD	DELTA
C1	1959.86'	39.85'	S53°23'52"W 39.85'	01°09'54"

EASEMENTS PER PARTITION PLAT 2023-21:

- (A) A 20.00' WIDE CITY OF ALBANY ACCESS + UTILITY EASEMENT
- (B) A 10.00' WIDE PRIVATE WATER EASEMENT
- (C) A 5.00' WIDE PRIVATE WATER EASEMENT
- (D) A 20.00' WIDE PRIVATE RECIPROCAL ACCESS + UTILITY EASEMENT
- (E) A 20.00' WIDE PRIVATE RECIPROCAL ACCESS + UTILITY EASEMENT

CONSTRUCTION NOTES:

1. CONSTRUCT DOMESTIC WATER LINE
2. CONSTRUCT SANITARY SEWER SERVICE
3. CONSTRUCT SINGLE FAMILY RESIDENCE



SITE PLAN

FOR

JAMES + BRENDA RUBLE

LOCATED IN

PARCEL 2, PARTITION PLAT 2023-21 IN THE NW 1/4 SEC. 12, T. 11 S., R. 4 W., W.M.

IN THE

CITY OF ALBANY, LINN COUNTY, OREGON

MARCH 14, 2023

APPLICANT:
JAMES RUBLE
P.O. BOX 192
ALBANY, OR 97321

SURVEYOR:
K+D ENGINEERING, INC.
276 NW HICKORY ST.
ALBANY, OR 97321

NOTE:

DATA SHOWN ON THIS MAP IS BASED ON LINN COUNTY AND CITY OF ALBANY GIS DATABASES, ASSESSOR RECORDS, RECORD DEED INFORMATION AND FIELD SURVEY INFORMATION.

SUBJECT PROPERTY:

PARCEL 2 OF PARTITION PLAT 2023-21

OWNER:
JAMES + BRENDA RUBLE
P.O. BOX 192
ALBANY, OR 97321

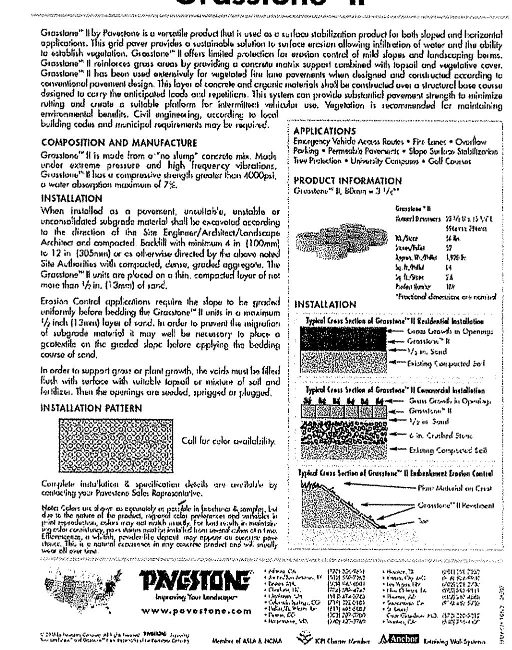
ZONING:

THE PROPERTY IS LOCATED IN THE RS 6.5 ZONE.

ZONE SETBACKS:	
FRONT	15'
INTERIOR	5' SINGLE STORY
INTERIOR	8' 2 OR MORE STORIES
MAXIMUM HEIGHT	30'
LOT COVERAGE	60%

FLOODPLAIN:

SUBJECT PROPERTY IS LOCATED IN A ZONE AE FLOOD HAZARD PER FEMA FIRM MAP 41043C0195H DATED 12-8-2016
BASE FLOOD ELEVATION = 207.0'



Grasstone™ II

Grasstone™ II by Pavestone is a versatile product that is used as a surface stabilization product for both sloped and horizontal applications. This grid paver provides a sustainable solution to surface erosion allowing infiltration of water and the ability to establish vegetation. Grasstone™ II offers limited protection for erosion control of mild slopes and landscaping berms. Grasstone™ II reinforces grass areas by providing a concrete matrix support combined with topsoil and vegetative cover. Grasstone™ II has been used extensively for vegetated fire lane pavements when designed and constructed according to conventional pavement design. This layer of concrete and organic materials shall be constructed over a structural base course designed to carry the anticipated loads and repetitions. This system can provide substantial pavement strength to minimize rutting and create a suitable platform for intermittent vehicular use. Vegetation is recommended for maintaining environmental benefits. Civil engineering, according to local building codes and municipal requirements may be required.

COMPOSITION AND MANUFACTURE

Grasstone™ II is made from a "no slump" concrete mix. Made under extreme pressure and high frequency vibrations, Grasstone™ II has a compressive strength greater than 4000psi, a water absorption maximum of 7%.

INSTALLATION

When installed as a pavement, unsuitable, unstable or unconsolidated subgrade material shall be excavated according to the direction of the Site Engineer/Architect/Landscape Architect and compacted. Backfill with minimum 4 in. (100mm) to 12 in. (305mm) or as otherwise directed by the above noted Site Authorities with compacted, dense, graded aggregate. The Grasstone™ II units are placed on a thin, compacted layer of not more than 1/2 in. (13mm) of sand.

Erosion Control applications require the slope to be graded uniformly before bedding the Grasstone™ II units in a maximum 1/2 inch (13mm) layer of sand. In order to prevent the migration of subgrade material it may well be necessary to place a geotextile on the graded slope before applying the bedding course of sand.

In order to support grass or plant growth, the voids must be filled flush with surface with suitable topsoil or mixture of soil and fertilizer. Then the openings are seeded, sprigged or plugged.

INSTALLATION PATTERN

Call for color availability.

Complete installation & specification details are available by contacting your Pavestone Sales Representative.

APPLICATIONS

Emergency Vehicle Access Routes • Fire Lanes • Overflow Parking • Permeable Pavements • Slope Surface Stabilization Tree Protection • University Campuses • Golf Courses

PRODUCT INFORMATION

INSTALLATION

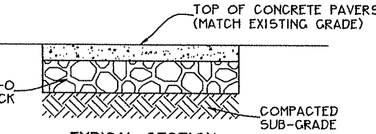
Typical Cross Section of Grasstone™ II Residential Installation

Typical Cross Section of Grasstone™ II Commercial Installation

Typical Cross Section of Grasstone™ II Embankment Erosion Control

PAVESTONE Improving Your Landscape™ www.pavestone.com

AREA OF WORK IN THE FLOODWAY 974 SQUARE FEET



TYPICAL SECTION
NOT TO SCALE

SITE PLAN

JAMES & BRENDA RUBLE
1525 SW 7TH AVE.
CITY OF ALBANY, LINN COUNTY, OREGON

REVISIONS	DATE	BY

K&D ENGINEERING, INC.
276 N.W. HICKORY ST.
P.O. BOX 725
ALBANY, OREGON 97321
(541) 928-2583

HORZ. SCALE:	1" = 10'
VERT. SCALE:	
SIGN DATE:	3-15-2023
DSGN BY:	JJC
DRWN BY:	GSG
CHCK BY:	DKW
PROJECT No.:	21-146

SHEET No.: 1 OF 1

Date: 6/21/2023 Time: 15:23
Scale: 1=1(PS)
File: dwg\2021\21-146\Site Plan\21-146_site.dwg (George)

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of Oregon.

It is to further certify that the attached technical data supports the fact that proposed Paving for Ruble home. (*Name of Development*) will not impact the 100-year flood elevations, floodway elevations and floodway widths on Calapooia River (*Name of Stream*) at published sections in the Flood Insurance Study for Albany (*Name of Community*), dated December 8, 2016 and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

Floodplain "Zero-Rise" Report For Paving a Portion of an Existing Driveway Located at 1525 Seventh Ave SW, Albany Oregon. Dated 11-15-2022.

(Date) November 17, 2022

(Signature) Daniel Watson (Title) Principal Engineer

K&D Engineering, Inc.

276 NW Hickory Street

Albany, OR 97321

(Address)

(Seal)

REGISTERED PROFESSIONAL ENGINEER
17,612
OREGON
Jan. 17, 1995
DANIEL K. WATSON

RENEWAL DATE: 6/30/24

K & D ENGINEERING, Inc.

Engineers • Planners • Surveyors

Floodplain "Zero-Rise" Report For Paving a portion of an existing gravel driveway Located at 1525 Seventh Ave SW, Albany, OR

DATE: 11-15-2022

TO: City of Albany

Purpose:
This report has been completed to verify that paving a portion of an existing gravel driveway had a "Zero-Rise" impact to the 100 Year Base Flood Elevation.

Findings:

- On September 27, 2022 a pre-construction topographic survey of the gravel area to be paved was completed.
- A 20 foot wide strip 3 inches deep of the existing gravel driveway/parking area was excavated and removed from the site.
- The excavated area was then paved with an asphalt thickness of 3 inches.
- On October 13, 2022 an as-built survey of the new paved driveway was completed.

Conclusion:
The as-built survey confirmed that the elevations of the asphalt driveway matched the pre-construction elevations of the gravel area prior to paving. Because there is no change in grades and elevations there is "Zero-Rise" in the 100 Year Base Flood Elevation.

Thank you,

Jason Cota PLS
Survey Manager

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 9, 2002
JOE J. COTA
58561

RENEWS: 12-31-2023

276 N.W. Hickory Street • P.O. Box 725 • Albany, OR 97321 • (541) 928-2583 • Fax: (541) 967-3458

TECHNICAL MEMORANDUM

WEST Consultants, Inc.
2601 25th St. SE
Suite 450
Salem, OR 97302-1286
(503) 485-5490
(503) 485-5491 Fax
www.westconsultants.com

WEST CONSULTANTS
WATER | ENVIRONMENTAL | SEDIMENTATION | TECHNOLOGY

EXPIRES:12/31/2024

To: David Martineau
Company: City of Albany, Oregon
Date: August 24, 2023
From: Ken Puhn, PE, CFM
Subject: Review of Floodplain Development Permit Application FP-05-23 – Ruble Property

Background

WEST Consultants has completed a review of relevant materials from the Floodplain Development Permit Application no. FP-05-23 – Ruble Property Improvements. The applicant proposes grading, fill, excavation, and paving within the floodplain for the construction of a driveway and single dwelling unit located at 1525 7th Avenue SW, Albany, Oregon. Based on the effective FEMA Flood Insurance Study for Linn County (**FIRM 41043C0213H, 12/8/2016**), portions of the subject property are located within the FEMA Zone AE Special Flood Hazard Area (SFHA) and the regulatory floodway of the Calapooia River.

In this application, construction of a driveway is proposed within the floodway, and all other activities are located outside the floodway, within the floodway fringe. The City of Albany Development Code allows construction activities within the floodway fridge provided it does not reduce the flood carrying capacity of existing watercourses. Grading modifications are allowed within the floodway provided they cause 'no-rise' to floodplain or floodway elevations for the 1% annual-chance flood event (100-yr flood). The driveway construction proposed within the floodway will consist of excavation of 12 inches of existing soil along the alignment which will be backfilled with 8 inches of rock and 4 inches of open paving stone filled with soil and grass. The excavation and backfill will result in no net change of grade.

Findings

The applicant's engineer, K&D Engineering, has provided an engineer's report which concludes that the proposed driveway construction within the floodway will result in no-rise to the 1% annual-chance flood elevations. The report also includes a 'no-rise' certification stamped by an engineer. Since there will be no resulting change in grade within the floodway and the driveway will have a similar hydraulic roughness to existing conditions, the no-rise conclusion is considered reasonable. Since there is no-net fill within the floodway, the flood carrying capacity of the watercourse will not be diminished.

Based on my review of the floodplain permit materials, the application adequately addresses provisions 6.100, and 6.111 of the City of Albany - Development Code. The Floodplain Permit Review Checklist is shown in Appendix A. Supporting documentation is included in Appendix B.

APPENDIX A – Floodplain Review Checklist

City of Albany, Oregon
Floodplain Permit Review Checklist

Permit Reference No: FP-05-23
Project: Ruble Property Improvements
Stream: Calapooia River
Projection Description: Grading, Fill, and Installation of driveway pavers
Reviewed By: Ken Puhn, P.E., CFM

6.100 Floodway Restrictions.

☒ FEMA Designated Floodway

- ☐ Development is outside the designated floodway
- ☒ Development within floodway does not result in any increase in 100-year flood levels
- ☒ Finding based upon applicant-supplied evidence
- ☒ Certified by a registered professional engineer
- ☒ Allowed Floodway Development
  - ☒ 6.100(1) Does not involve the construction of permanent or habitable structures (including fences)
  - ☐ 6.100(2) A public or private park or recreational use or municipal utility use
  - ☐ 6.100(3) A water-dependent structure such as a dock, pier, bridge, or floating marina.
  - ☐ 6.100(4) The temporary storage or processing of materials will not become buoyant, flammable, hazardous explosive or otherwise potentially injurious to human, animal or plant life in times of flooding.
  - ☒ 6.100(5) The temporary storage of material or equipment are not subject to major damage by floods and is firmly anchored to prevent flotation or is readily removable from the area within the time available after flood warning.

☐ Regulated Floodplain (Non designated FEMA Floodway)

- ☐ Development along estimated floodway boundary shall not result in an increase of the base flood level greater than 1-foot
- ☐ Finding based upon applicant-supplied evidence
- ☐ Certified by a registered professional engineer

6.101 Alteration of a Watercourse

☐ Watercourse altered

- ☐ changes occur within its banks
- ☐ installation of new culverts and/or bridges
- ☐ size modifications to existing culverts and bridges

☐ 6.101(1) Development does not diminish the flood-carrying capacity of a watercourse. Finding based upon applicant-supplied evidence.

☐ 6.101(4) The applicant shall be responsible for ensuring necessary maintenance of the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

6.111 Grading, Fill, Excavation, and Paving

☒ FEMA Designated Floodway

☐ Grading is outside the floodway.

☒ Grading is inside the floodway and does not result in any increase in flood levels within the floodway during the occurrence of the 100-year flood.

☒ Finding based upon applicant-supplied evidence

☒ Certified by a registered professional engineer

☒ Special Flood Hazard Area (100-year floodplain)

☒ 6.111(1) Provisions have been made to maintain adequate flood-carrying capacity of existing watercourses, including future maintenance of that capacity.

☐ Regulated Floodplain (Non designated FEMA Floodway)

☐ 6.111(4) Demonstrate the cumulative effect of the proposed grading, fill, excavation, or paving when combined with all other existing and planned development, will not increase the water surface elevation of the base flood more than a maximum of one foot (cumulative) at any point within the community.