



CITY OF West Linn

PLANNING MANAGER DECISION

DATE: September 24, 2019

FILE NO.: WRG-18-04/MISC-18-06

REQUEST: Request for a Flood Management Area (FMA) permit and Willamette and Tualatin River Protection (WRG) permit for a boat dock and ramp at 18418 Old River Landing.

PLANNER: Darren Wyss, Associate Planner

 Planning Manager

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GENERAL INFORMATION

OWNER: Craig & Kristy Neubo
18418 Old River Landing
Lake Oswego, OR 97045

APPLICANT: Eric Dye
Ken’s Floatation Service
1701 Clackamas Drive
Oregon City, OR 97045

CONSULTANT: Rick Givens
18680 Sunblaze Drive
Oregon City 97045

SITE LOCATION: 18418 Old River Landing

SITE SIZE: 1.16 acres (50,378 square feet)

LEGAL DESCRIPTION: Assessor Maps and Tax Lot – 21E-14AD 00700

COMP PLAN DESIGNATION: Low Density Residential

ZONING: R-10, Single-Family Residential Detached

APPROVAL CRITERIA: Community Development Code (CDC) Chapters 11, 27, 28, 34, and 99

120-DAY RULE: The application declared complete on May 28, 2019. The 120-day period ends on September 25, 2019.

PUBLIC NOTICE: Notice was mailed to property owners within 500 feet of the subject property, to all Neighborhood Associations, and posted on the City’s website on July 26, 2019. A sign was placed on the property on August 1, 2019. Therefore, public notice requirements of CDC Chapter 99 have been met.

EXECUTIVE SUMMARY

The proposed private boat dock and ramp will be located within the Willamette River Greenway boundary and the 100-year floodplain and floodway of the Willamette River; therefore, Flood Management Area (FMA) and Willamette and Tualatin Protection (WRG) permits are required. The property is zoned R-10 and located in the Robinwood Neighborhood.

The non-polished aluminum floating dock will be 336 square feet and attached to the shore by a non-polished aluminum 46 foot long ramp. Both the dock and ramp will be anchored to the bedrock with a cabling system. The applicant has provided an engineering report showing the design will withstand the hydrostatic and hydrodynamic loads resulting from the 100-year flood event and keep the dock and ramp secured to the river bank. No vegetation or tree removal is proposed.

The applicable CDC Chapters include:

- Chapter 11, Single-Family Residential Detached R-10
- Chapter 27, Flood Management Areas
- Chapter 28, Willamette and Tualatin River Protection

Public comments:

No public comments have been received.

DECISION

The Planning Manager (designee) approves this application (WRG-18-04/MIS-18-06), based on: 1) the findings submitted by the applicant, which are incorporated by this reference, and 2) supplementary staff findings included in the Addendum below, and 3) the addition of conditions of approval (COA) below. With these findings, the applicable approval criteria are met. The conditions are as follows:

- 1. The applicant shall submit a copy of the General Authorization Permit issued by the Oregon Department of State Lands (DSL) and a copy of the Joint Permit issued by the US Army Corps of Engineers (USACE) for the proposed dock.**
- 2. The applicant shall submit a completed and signed FEMA Elevation Certificate showing no-rise in flood elevation from the dock and ramp installation.**
- 3. With the exception of modifications required by these conditions, the installation of the dock and ramp shall conform to Plan Sheets found on pages 16 to 18, Exhibit PD-1.**

The provisions of the Community Development Code Chapter 99 have been met.



Darren Wyss, Associate Planner

September 24, 2019

DATE

Appeals to this decision must be filed with the West Linn Planning Department within 14 days of the mailing date listed below. The cost of an appeal is \$400. The appeal must be filed by an individual who has established standing by submitting comments prior to the date identified in the public notice. Appeals will be heard by City Council.

Mailed this 24th day of September, 2019.

Therefore, the 14-day appeal period ends at 4 p.m., on October 8, 2019.

**ADDENDUM
APPROVAL CRITERIA AND FINDINGS
WRG-18-04 MIS-18-06**

Chapter 11

SINGLE-FAMILY RESIDENTIAL DETACHED, R-10

11.030 PERMITTED USES

The following are uses permitted outright in this zoning district

- 1. Single-family detached residential unit.*

(...)

11.040 ACCESSORY USES

Accessory uses are allowed in this zone as provided by Chapter [34](#) CDC.

Staff Finding 1: The subject property contains an existing single-family home. The applicant proposes to place a boat dock and ramp (accessory use/structure) on the property per CDC Chapters 27, 28, and 34. The criteria are met.

11.070 DIMENSIONAL REQUIREMENTS, USES PERMITTED OUTRIGHT AND USES PERMITTED UNDER PRESCRIBED CONDITIONS

Except as may be otherwise provided by the provisions of this code, the following are the requirements for uses within this zone:

(...)

- 5. Except as specified in CDC [25.070](#)(C)(1) through (4) for the Willamette Historic District, the minimum yard dimensions or minimum building setback area from the lot line shall be:*

- a. For the front yard, 20 feet; except for steeply sloped lots where the provisions of CDC [41.010](#) shall apply.*
- b. For an interior side yard, seven and one-half feet.*
- c. For a side yard abutting a street, 15 feet.*
- d. For a rear yard, 20 feet.*

(...)

Staff Finding 2: The subject property contains an existing single-family home. The applicant proposes to place a boat dock and ramp (accessory use/structure) on the property. Setback requirements for boat houses and docks are regulated by Chapter 34. Please see Staff Finding 3. The criteria are met.

Chapter 34

ACCESSORY STRUCTURES, ACCESSORY DWELLING UNITS, AND ACCESSORY USES

34.020 ACCESSORY USES

Accessory uses are permitted uses which are customary and incidental to principal uses permitted in the zone and shall be permitted outright, or by prescribed conditions as identified below, and may be either attached or separated from the principal dwelling. (...)

34.050 BOAT HOUSES AND DOCKS

Only side yard setback requirements apply to boat houses and docks.

Staff Finding 3: The subject property is zoned R-10, which requires a 7.5 foot side yard setback. The applicant proposes the dock and anchoring system to be located 40 feet from both side property lines (see page 18, Exhibit PD-1). The criteria are met.

CHAPTER 27, FLOOD MANAGEMENT AREAS

27.060 Approval Criteria

A. Development, excavation, and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations.

B. No net fill increase in any floodplain is allowed. All fill placed in a floodplain shall be balanced with an equal amount of soil material removal. Excavation areas shall not exceed fill areas by more than 50 percent of the square footage. Any excavation below the ordinary high water line shall not count toward compensating for fill.

C. Excavation to balance a fill shall be located on the same lot or parcel as the fill unless it is not reasonable or practicable to do so. In such cases, the excavation shall be located in the same drainage basin and as close as possible to the fill site, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.

Staff Finding 4: The proposed dock is buoyant and floats on the surface of the river. The anchoring system consists of two three-quarter inch thick steel plates, each 12 inches by 12 inches, and a cabling system. The two steel plates are secured to the bedrock. The ramp is secured by a concrete footing. The applicant submitted certification by a professional civil engineer licensed to practice in the State of Oregon (see pages 14 to 15, Exhibit PD-1) that the dock, ramp, and anchoring system will maintain flood storage and conveyance capacity and not increase design flood elevations. The applicant shall submit a completed and signed FEMA Elevation Certificate per Condition of Approval 2. Subject to the Conditions of Approval, the criteria are met.

D. Minimum finished floor elevations must be at least one foot above the design flood height or highest flood of record, whichever is higher, for new habitable structures in the flood area.

E. Temporary fills permitted during construction shall be removed.

Staff Finding 5: The applicant is neither proposing any habitable structures in the flood area, nor any temporary fills during construction. The criteria are met.

F. Prohibit encroachments, including fill, new construction, substantial improvements, and other development in floodways unless certification by a professional civil engineer licensed to practice in the State of Oregon is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

G. All proposed improvements to the floodplain or floodway which might impact the flood-carrying capacity of the river shall be designed by a professional civil engineer licensed to practice in the State of Oregon.

Staff Finding 6: The proposed dock is buoyant and floats on the surface of the river. The anchoring system consists of two three-quarter inch thick steel plates, each 12 inches by 12 inches, and a cabling system. The two steel plates are secured to the bedrock. The ramp is secured by a concrete footing. The applicant submitted certification by a professional civil engineer licensed to practice in the State of Oregon (see pages 14 to 15, Exhibit PD-1) that the dock, ramp, and anchoring system will not result in any increase in flood levels during the occurrence of the base flood discharge. The applicant shall submit a completed and signed FEMA Elevation Certificate per Condition of Approval 2. Subject to the Conditions of Approval, the criteria are met.

H. New culverts, stream crossings, and transportation projects shall be designed as balanced cut and fill projects or designed not to significantly raise the design flood elevation. Such projects shall be designed to minimize the area of fill in flood management areas and to minimize erosive velocities. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable.

I. Excavation and fill required for the construction of detention facilities or structures, and other facilities, such as levees, specifically shall be designed to reduce or mitigate flood impacts and improve water quality. Levees shall not be used to create vacant buildable land.

Staff Finding 7: The applicant is proposing no new culverts, stream crossings, or transportation projects, nor the construction of detention facilities or structures. The criteria are met.

J. The applicant shall provide evidence that all necessary permits have been obtained from those federal, State, or local governmental agencies from which prior approval is required.

Staff Finding 8: The applicant has applied for a General Authorization Permit with the Oregon Department of State Lands (DSL) and has also filed a Joint Permit with the US Army Corps of Engineers (USACE) for the proposed dock. The applicant shall submit a copy of each permit per Condition of Approval 1. The applicant shall submit a completed and signed FEMA Elevation Certificate per Condition of Approval 2 (Staff Findings 4 and 6). Subject to the Conditions of Approval, the criteria are met.

27.070 Construction Materials and Methods

A. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage using methods and practices that minimize flood damage.

B. 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 conditions of flooding.

- C. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.*
- D. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.*
- E. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.*

Staff Finding 9: Staff adopts the applicant findings found in Exhibit PD-1, pages 2 to 3. The criteria are met.

- F. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.*

Staff Finding 10: The proposed dock is buoyant and floats on the surface of the river. The applicant has submitted a report prepared by Munzing Structural Engineering (pages 19 to 37, Exhibit PD-1) that analyzes the design of the anchoring system. The design is to withstand the hydrodynamic and hydrostatic load resulting from the 100-year flood event and keep the dock and ramp secured to the river bank. The criteria are met.

27.090 NON-RESIDENTIAL CONSTRUCTION

New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall either have the lowest floor, including basement, elevated to at least one foot above the level of the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

- A. Be flood-proofed so that below the base flood level the structure is watertight with walls impermeable to the passage of water;*

Staff Finding 11: The applicant is not proposing a structure with walls, but a dock that is buoyant and floats on the surface of the river. The criteria are met.

- B. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;*

Staff Finding 12: The proposed dock is buoyant and floats on the surface of the river. The applicant has submitted a report prepared by Munzing Structural Engineering (pages 19 to 37, Exhibit PD-1) that analyzes the design of the anchoring system. The design is to withstand the hydrostatic and hydrodynamic loads resulting from the 100-year flood event and keep the dock and ramp secured to the river bank. The criteria are met.

- C. Be certified by a professional civil engineer licensed to practice in the State of Oregon that the design and methods of construction shall prevent seepage, collapse or cracking of basement walls, prevent buckling of basement floors, prevent backup of water from sewer lines, and have all openings located one foot above the base flood elevation. In addition, all protective features must operate automatically without human intervention;*

D. *Non-residential construction that is elevated, but not flood-proofed (i.e., the foundation is not at least one foot above the 100-year flood elevation) shall also comply with the standards set forth in CDC [27.080](#). (Ord. 1522, 2005)*

Staff Finding 13: The applicant is not proposing an enclosed structure with a basement, walls, or sanitary sewer service, but a dock that is buoyant and floats on the surface of the river. The applicant has submitted a report prepared by Munzing Structural Engineering (pages 19 to 37, Exhibit PD-1) that analyzes the design of the anchoring system. The design is to withstand the hydrostatic and hydrodynamic loads resulting from the 100-year flood event and keep the dock and ramp secured to the river bank. The criteria are met.

Chapter 28

WILLAMETTE AND TUALATIN RIVER PROTECTION

28.040 EXEMPTIONS/USES PERMITTED OUTRIGHT

The following development activities do not require a permit under the provisions of this chapter. (Other permits may still be required.)

(...)

CC. A new dock subject to the approval criteria of this chapter.

Staff Finding 14: The applicant proposes a new dock and ramp. Staff Findings 15 to 43 address the approval criteria of this chapter.

28.110 APPROVAL CRITERIA

No application for development on property within the protection area shall be approved unless the decision-making authority finds that the following standards have been met or can be met by conditions of approval. The development shall comply with the following criteria as applicable:

A. Development: All sites.

1. Sites shall first be reviewed using the HCA Map to determine if the site is buildable or what portion of the site is buildable. HCAs shall be verified by the Planning Director per CDC [28.070](#) and site visit. Also, "tree canopy only" HCAs shall not constitute a development limitation and may be exempted per CDC [28.070](#)(A). The municipal code protection for trees and Chapters 55 and 85 CDC tree protection shall still apply.

Staff Finding 15: The Planning Director has verified the presence of High Value HCA along the river bank of the subject property. The site is buildable per Staff Findings 16. The criteria are met.

2. HCAs shall be avoided to the greatest degree possible and development activity shall instead be directed to the areas designated "Habitat and Impact Areas Not Designated as HCAs," consistent with subsection (A) (3) of this section.

3. If the subject property contains no lands designated "Habitat and Impact Areas Not Designated as HCAs" and development within HCA land is the only option it shall be directed towards the low HCA areas first, then medium HCA areas and then to high HCA as the last

choice. The goal is to, at best, avoid or, at least, minimize disturbance of the HCAs. (Water-dependent uses are exempt from this provision.)

Staff Finding 16: The Planning Director has verified the presence of High Value HCA along the river bank of the subject property. However, the proposal is for a dock and ramp, which is a water-dependent use and exempt from avoiding HCAs. The criteria is met.

4. All development, including exempted activities of CDC [28.040](#), shall have approved erosion control measures per Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual, rev. 2008, in place prior to site disturbance and be subject to the requirements of CDC [32.070](#) and [32.080](#) as deemed applicable by the Planning Director.

Staff Finding 17: The Planning Director has determined appropriate erosion control measures will be put in place as part of the development process. Per Condition of Approval 3, the installation of the dock and ramp shall conform to Plan Sheets found on pages 16 to 18, Exhibit PD-1. Subject to the Conditions of Approval, the criteria are met.

B. Single-family or attached residential

C. Setbacks from top of bank.

D. Development of lands designated for industrial, commercial, office, public and other non-residential uses.

E. Hardship provisions and non-conforming structures.

Staff Finding 18: The proposal is not for a residential structure, nor on industrial, commercial, office, public, or other non-residential land. The proposal is exempt from avoiding HCAs per Staff Finding 16. The applicant is not requesting a hardship nor alteration of a non-conforming structure. Only side-yard setbacks apply per Staff Finding 3. The criteria are met.

F. Access and property rights.

1. Private lands within the protection area shall be recognized and respected.

2. Where a legal public access to the river or elsewhere in the protection area exists, that legal public right shall be recognized and respected.

3. To construct a water-dependent structure such as a dock, ramp, or gangway shall require that all pre-existing legal public access or similar legal rights in the protection area be recognized and respected. Where pre-existing legal public access, such as below the OLW, is to be obstructed by, for example, a ramp, the applicant shall provide a reasonable alternate route around, over or under the obstruction. The alternate route shall be as direct as possible. The proposed route, to include appropriate height clearances under ramps/docks and specifications for safe passage over or around ramps and docks, shall be reviewed and approved by the Planning Director for adequacy.

Staff Finding 19: The proposed dock and ramp will be accessed from private property. No legal public access to the river exists near the subject property. Legal public access is permitted along the shoreline below the Ordinary Low Water Mark (OLWM). The OLWM is

inundated for most of the year. The proposed ramp has a height clearance from the OLWM of eight-feet near the river bank. Passage under the dock is reasonable by foot or boat. If the boat has a height of eight-feet or greater, there is reasonable passage at the OLWM around the dock. The criteria is met.

4. Any public or private water-dependent use or facility shall be within established DSL-authorized areas.

Staff Finding 20: The applicant has applied for a General Authorization Permit with the Oregon Department of State Lands (DSL) and has also filed a Joint Permit with the US Army Corps of Engineers (USACE) for the proposed dock. The applicant shall submit a copy of each permit per Condition of Approval 1. Subject to the Conditions of Approval, the criteria are met.

G. Incentives to encourage access in industrial, multi-family, mixed-use, commercial, office, public and non-single-family residential zoned areas.

H. Partitions, subdivisions, and incentives.

Staff Finding 21: The proposed dock is located in a single-family residential zone and no partition or subdivision is proposed. The criteria do not apply.

I. Docks and other water-dependent structures.

1. Once the preference rights area is established by DSL, the property owner identifies where the water-dependent use will be located within the authorized portion of the preference rights area. The water-dependent use should be centered or in the middle of the preference rights/authorized area or meet the side yard setbacks of the underlying zone.

Private and public non-commercial docks are permitted where dredging is required so long as all applicable federal and State permits are obtained. Dredging is encouraged if deposits silt up under an existing dock. Dredging is seen as preferable to the construction of longer docks/ramps.

Staff Finding 22: The applicant is required to provide evidence of all necessary DSL permitting per Condition of Approval 1. The applicant has proposed the dock to be centered in the DSL preference rights request and meets the 7.5 foot side yard setback requirements for the R-10 zone (see Staff Finding 3). No dredging is proposed. Subject to the Conditions of Approval, the criteria are met.

2. Both joint and single use docks shall not extend into the water any further than necessary to provide four feet between the ship's keel or fixed propeller/rudder and the bottom of the water at any time during the water's lowest point.

Staff Finding 23: This criteria has been found to be in conflict with National Oceanic and Atmospheric Administration-National Marine Fisheries Service Standard Local Operating Procedures for Endangered Species (SLOPES IV), which requires a minimum depth of 15 feet

for over-water structures (docks). The City determined that these federal standards govern this project and pre-empt this specific criteria. The applicant shows a depth of 15 feet from dock to river bed. The criteria are met.

3. *In no case except as provided in this section shall a private ramp and private dock extend more than 100 feet from OLW towards the center of the river or slough. In the case of L-shaped docks, the 100 feet shall be measured from the OLW to the furthest part of the private dock closest to the center of the river.*

Staff Finding 24: The combined length of the ramp and dock is 66 feet. The furthest part of the dock is 54 feet from OLWM. The criteria are met.

4. *Docks on sloughs and similar channels shall not extend more than 30 percent of the distance between two land masses at OHW, such as between the mainland and an island or peninsula, measured in a lineal manner at right angle to the dominant shoreline. In no way shall a dock impede existing public usage or block navigation of a channel.*

Staff Finding 25: The dock is not located on a slough or similar channel, but is located in the main channel of the Willamette River. The dock is 54 feet from the OLWM, while the river is approximately 446 feet wide at OLWM. The dock will not impede public usage or block the navigation of the Willamette River. The criteria are met.

5. *Boat storage associated with a rail launch facility shall be located above the OHW, either vertically raised above the ordinary high water line or set back behind the OHW. Such boat storage structure will be natural wood colors or similar earth tones. Private railed launch facilities are permitted for individual boat owners. The onshore setback of the storage structure is equal distance on both sides as extended perpendicular to the thread of the stream, or seven and one-half feet, whichever is the greater setback.*

Staff Finding 26: No rail launch structure is proposed. The criteria does not apply.

6. *The width of each deck section shall be no more than 12 feet wide.*

Staff Finding 27: The deck sections measure four-feet in width. The criteria are met.

7. *For only single-user and joint-user docks, pilings shall not exceed a maximum height of eight feet above the 100-year flood elevation.*

Staff Finding 28: The proposed dock is buoyant and floats on the surface of the river. Both dock and ramp are secured to the bank by a cable system. No pilings are proposed. The criteria are met.

8. *A single user non-commercial dock shall not exceed 400 square feet in deck area. The boat slip is not included in the calculation of this square footage limitation.*

Staff Finding 29: The proposed dock is u-shaped and has an area of 336 square feet, excluding the boat slop. The criteria are met.

9. Private non-commercial boat houses are allowed...The above provisions also apply to open-walled boat shelters with or without boatlifts.

Staff Finding 30: The applicant does not propose a boat house, nor an open walled boat shelter. The criteria do not apply.

J. Joint docks.

K. Non-conforming docks and other water-related structures.

Staff Finding 31: The applicant is not proposing a non-conforming dock, nor other water-related structure. The criteria do not apply.

L. Roads, driveways, utilities, or passive use recreation facilities. Roads, driveways, utilities, public paths, or passive use recreation facilities may be built in those portions of HCAs that include wetlands, riparian areas, and water resource areas when no other practical alternative exists but shall use water-permeable materials unless City engineering standards do not allow that. (...)

Staff Finding 32: The applicant is not proposing any roads, driveways, or passive use recreation facilities. Boat docks are exempt from avoiding HCAs per Staff Finding 16. The criteria do not apply.

M. Structures. All buildings and structures in HCAs and riparian areas, including all exterior mechanical equipment, should be screened, colored, or surfaced so as to blend with the riparian environment. Surfaces shall be non-polished/reflective or at least expected to lose their luster within a year. In addition to the specific standards and criteria applicable to water-dependent uses (docks), all other provisions of this chapter shall apply to water dependent uses, and any structure shall be no larger than necessary to accommodate the use.

Staff Finding 33: The proposed dock and ramp are water dependent structures and cannot be screened from the river, but are the minimum size for the proposed use. Surfaces and materials will be non-polished aluminum. The criteria are met.

N. Water-permeable materials for hardscapes.

O. Signs and graphics.

P. Lighting.

Q. Parking.

Staff Finding 34: Staff incorporates applicant findings (page 11, Exhibit PD-1)

R. Views. Significant views of the Willamette and Tualatin Rivers shall be protected as much as possible as seen from the following public viewpoints: Mary S. Young Park, Willamette Park, Cedar Oak Park, Burnside Park, Maddox Park, Cedar Island, the Oregon City Bridge, Willamette Park, and Fields Bridge Park.

Where options exist in the placement of ramps and docks, the applicant shall select the least visually intrusive location as seen from a public viewpoint. However, if no options exist, then the ramp, pilings and dock shall be allowed at the originally proposed location.

Staff Finding 35: The nearest public viewpoint or park is Cedaroak Park/boat ramp which is 3,750 feet to the south and not within line of sight of this property. The criteria are met.

S. Aggregate deposits. Extraction of aggregate deposits or dredging shall be conducted in a manner designed to minimize adverse effects on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, visual quality, noise and safety, and to promote necessary reclamation.

Staff Finding 36: Staff incorporates applicant findings (page 12, Exhibit PD-1).

T. Changing the landscape/grading.

1. Existing predominant topographical features of the bank line and escarpment shall be preserved and maintained except for disturbance necessary for the construction or establishment of a water related or water dependent use. Measures necessary to reduce potential bank and escarpment erosion, landslides, or flood hazard conditions shall also be taken.

Any construction to stabilize or protect the bank with rip rap, gabions, etc., shall only be allowed where there is clear evidence of erosion or similar hazard and shall be the minimum needed to stop that erosion or to avoid a specific and identifiable hazard. A geotechnical engineer's stamped report shall accompany the application with evidence to support the proposal.

Staff Finding 37: The applicant does not propose any changes in topography or vegetation. No stabilization of the bank is proposed. The criteria are met.

2. The applicant shall establish to the satisfaction of the approval authority that steps have been taken to minimize the impact of the proposal on the riparian environment (areas between the top of the bank and the low water mark of the river including lower terrace, beach and river edge).

Staff Finding 38: The applicant has established to the satisfaction of the Planning Manager that steps have been taken to minimize impacts to the riparian environment. Per Condition of Approval 3, the installation of the dock and ramp shall conform to Plan Sheets found on pages 16 to 18, Exhibit PD-1. Subject to the Conditions of Approval, the criteria are met.

3. *The applicant shall demonstrate that stabilization measures shall not cause subsequent erosion or deposits on upstream or downstream properties.*

Staff Finding 39: The applicant does not propose any stabilization measures. The criteria is met.

4. *Prior to any grading or development, that portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be protected with an anchored chain link fence (or approved equivalent) at its perimeter and shall remain undisturbed except as specifically allowed by an approved Willamette and Tualatin River Protection and/or water resource area (WRA) permit. Such fencing shall be maintained until construction is complete. That portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.*

5. *Full erosion control measures shall be in place and approved by the City Engineer prior to any grading, development or site clearing.*

Staff Finding 40: The applicant does not propose any grading or site clearing. The ramp and dock will be anchored to the bedrock. Docks are exempt from avoiding HCAs per Staff Finding 16. The criteria are met.

U. *Protect riparian and adjacent vegetation. Vegetative ground cover and trees upon the site shall be preserved, conserved, and maintained according to the following provisions:*

1. *Riparian vegetation below OHW removed during development shall be replaced with indigenous vegetation, which shall be compatible with and enhance the riparian environment and approved by the approval authority as part of the application.*

Staff Finding 41: The applicant does not propose any disturbance of riparian vegetation below the OHW. The ramp and dock will be anchored to bedrock. Docks are exempt from avoiding HCAs per Staff Finding 16. The criteria are met.

2. *Vegetative improvements to areas within the protection area may be required if the site is found to be in an unhealthy or disturbed state by the City Arborist or his or her designated expert. "Unhealthy or disturbed" includes those sites that have a combination of native trees, shrubs, and groundcover on less than 80 percent of the water resource area and less than 50 percent tree canopy coverage in the primary and secondary habitat conservation area to be preserved. "Vegetative improvements" will be documented by submitting a revegetation plan meeting CDC [28.160](#) criteria that will result in the primary and secondary habitat conservation area to be preserved having a combination of native trees, shrubs, and groundcover on more than 80 percent of its area, and more than 50 percent tree canopy coverage in its area. The vegetative improvements shall be guaranteed for survival for a minimum of two years. Once approved, the applicant is responsible for implementing the plan prior to final inspection.*

Staff Finding 42: The ramp and dock will be anchored to bedrock. Docks are exempt from avoiding HCAs per Staff Finding 16. The criteria are met.

3. *Tree cutting shall be prohibited in the protection area except that:*
 - a. *Diseased trees or trees in danger of falling may be removed with the City Arborist's approval; and*
 - b. *Tree cutting may be permitted in conjunction with those uses listed in CDC [28.030](#) with City Arborist approval; to the extent necessary to accommodate the listed uses;*
 - c. *Selective cutting in accordance with the Oregon Forest Practices Act, if applicable, shall be permitted with City Arborist approval within the area between the OHW and the greenway boundary provided the natural scenic qualities of the greenway are maintained.*

Staff Finding 43: The applicant does not propose the removal of any trees. The ramp and dock will be anchored to bedrock. Docks are exempt from avoiding HCAs per Staff Finding 16. The criteria are met.

EXHIBIT PD-1: APPLICANT SUBMITTAL

DEVELOPMENT REVIEW APPLICATION

For Office Use Only		
STAFF CONTACT <i>Jennifer Arnold</i>	PROJECT NO(S). <i>WRG-18-04 / MISC-18-06</i>	
NON-REFUNDABLE FEE(S) <i>—</i>	REFUNDABLE DEPOSIT(S) <i>1700 + 1050</i>	TOTAL <i>2750-</i>

Type of Review (Please check all that apply):

- | | | |
|--|---|--|
| <input type="checkbox"/> Annexation (ANX) | <input type="checkbox"/> Historic Review | <input type="checkbox"/> Subdivision (SUB) |
| <input type="checkbox"/> Appeal and Review (AP) * | <input type="checkbox"/> Legislative Plan or Change | <input type="checkbox"/> Temporary Uses * |
| <input type="checkbox"/> Conditional Use (CUP) | <input type="checkbox"/> Lot Line Adjustment (LLA) */** | <input type="checkbox"/> Time Extension * |
| <input type="checkbox"/> Design Review (DR) | <input type="checkbox"/> Minor Partition (MIP) (Preliminary Plat or Plan) | <input type="checkbox"/> Variance (VAR) |
| <input type="checkbox"/> Easement Vacation | <input type="checkbox"/> Non-Conforming Lots, Uses & Structures | <input type="checkbox"/> Water Resource Area Protection/Single Lot (WAP) |
| <input type="checkbox"/> Extraterritorial Ext. of Utilities | <input type="checkbox"/> Planned Unit Development (PUD) | <input type="checkbox"/> Water Resource Area Protection/Wetland (WAP) |
| <input type="checkbox"/> Final Plat or Plan (FP) | <input type="checkbox"/> Pre-Application Conference (PA) */** | <input checked="" type="checkbox"/> Willamette & Tualatin River Greenway (WRG) |
| <input checked="" type="checkbox"/> Flood Management Area | <input type="checkbox"/> Street Vacation | <input type="checkbox"/> Zone Change |
| <input type="checkbox"/> Hillside Protection & Erosion Control | | |

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address: 18418 Old River Landing	Assessor's Map No.: 2-1E-14AD
	Tax Lot(s): 700
	Total Land Area: 1.12 Acres

Brief Description of Proposal:

Construct seasonal boat dock and ramp.

Applicant Name: (please print) Eric Dye, Ken's Floation Service	Phone: (503) 449-6667
Address: 1701 Clackamette Drive.	Email: kfsdocks@comcast.net
City State Zip: Oregon City, OR 97045	

Owner Name (required): (please print) Craig & Kristy Neubo	Phone: (503) 305-6001
Address: 18418 Old River Landing	Email: lo500@comcast.net
City State Zip: Lake Oswego, OR 97068	

Consultant Name: (please print) Rick Givens, Planning Consultant	Phone: 503-479-0097
Address: 18680 Sunblaze Dr.	Email: rickgivens@gmail.com
City State Zip: Oregon City, OR 97045	

- All application fees are non-refundable (excluding deposit). Any overruns to deposit will result in additional billing.
- The owner/applicant or their representative should be present at all public hearings.
- A denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.
- Three (3) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format. If large sets of plans are required in application please submit only two sets.

* No CD required / ** Only one hard-copy set needed

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

Eric Dye _____ *10-17-18* _____ *[Signature]* _____ *10-17-18*
 Applicant's signature Date Owner's signature (required) Date



**FMA and WRG Permit Application for
A Seasonal Boat Dock and Access Ramp
18418 Old River Landing, West Linn, OR**

Project Description:

This project proposes the construction of a seasonal dock that will be held in place by an upstream ramp and a downstream arm and cables. Both the ramp and arm will be secured to the shoreline by concrete footings. From the Ordinary Low Water Mark the combined length of the ramp and dock would extend approximately 50 feet into the river. No vertical pilings are proposed. As a seasonal dock, both the dock and ramp will be towed away for storage off-site, typically between the months of October and May. A similar dock and anchoring configuration exists at the adjacent, downstream property located at 18414 Old River Landing.

Approval of the proposed seasonal dock requires City of West Linn Flood Management Area (FMA) and Willamette River Greenway (WRG) permits.

27.020 APPLICABILITY

A flood management area permit is required for all development in the Flood Management Area Overlay Zone. The standards that apply to flood management areas apply in addition to State or federal restrictions governing floodplains or flood hazard areas.

Comment: The proposed dock and access ramp are located within the Flood Management Area Overlay Zone so the standards of this chapter apply.

27.070 CONSTRUCTION MATERIALS AND METHODS

A. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage using methods and practices that minimize flood damage.

Comment: The dock materials are metal and floats that are designed for water-related use. These materials are resistant to flood damage. The dock is seasonal and it and the access ramp will be removed during winter months when flooding is most likely to occur.

B. 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 conditions of flooding.

Comment: No electrical, heating, ventilation, plumbing or air conditioning equipment are proposed for the dock or access ramp.

C. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

Comment: No water service is proposed for the dock or access ramp. No change to the existing home's water service is proposed.

D. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.

Comment: No sewer service is proposed for the dock or access ramp. No change to the existing home's sewer service is proposed.

E. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

Comment: No on-site waste disposal system is proposed.

F. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

Comment: The dock and the access ramp will be secured to concrete pads placed on the shore line, as shown on the plans submitted with this application.

27.090 NON-RESIDENTIAL CONSTRUCTION

New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall either have the lowest floor, including basement, elevated to at least one foot above the level of the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

A. Be flood-proofed so that below the base flood level the structure is watertight with walls impermeable to the passage of water;

Comment: The dock is floating and will ride with the water level. There is no fixed structure that would have a lowest floor or basement.

B. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

Comment: As noted elsewhere in this narrative, it is the intent of this dock that it will be seasonal in nature and will be removed from the property's river frontage prior to the wet season. However, as the City must be certain that the dock will meet the requirements of this section should the dock not be removed for some reason, or if an unusual set of conditions resulted in flood levels during the

summer season, the applicant has hired an engineer to address this section. The dock and ramp, because of the nature of the river bottom which precludes driving deep piling, are not themselves designed to resist the forces of the flood. However, a cable system will be employed to tether the dock and ramp to an anchor point on the shoreline so that they cannot break free and cause damage to downstream properties. Please refer to the attached engineer's report.

C. Be certified by a professional civil engineer licensed to practice in the State of Oregon that the design and methods of construction shall prevent seepage, collapse or cracking of basement walls, prevent buckling of basement floors, prevent backup of water from sewer lines, and have all openings located one foot above the base flood elevation. In addition, all protective features must operate automatically without human intervention;

Comment: Not applicable. The dock does not include walls, basement floors, water or sewer lines.

D. Non-residential construction that is elevated, but not flood-protected (i.e., the foundation is not at least one foot above the 100-year flood elevation) shall also comply with the standards set forth in CDC 27.080. (Ord. 1522, 2005)

Comment: Not applicable. There is no foundation or fixed floor level. The dock and ramp will float and will rise with the water level. The tethering system will ensure that they cannot break free and damage downstream property.

28.030 APPLICABILITY

A. The Willamette and Tualatin River Protection Area is an overlay zone. The zone boundaries are identified on the City's zoning map, and include:

- 1. All land within the City of West Linn's Willamette River Greenway Area.*
- 2. All land within 200 feet of the ordinary low water mark of the Tualatin River, and all land within the 100-year floodplain of the Tualatin River.*
- 3. In addition to the Willamette Greenway and Tualatin River Protection Area boundaries, this chapter also relies on the HCA Map to delineate where development should or should not occur. Specifically, the intent is to keep out of, or minimize disturbance of, the habitat conservation areas (HCAs). Therefore, if all, or any part, of a lot or parcel is in the Willamette Greenway and Tualatin River Protection Area boundaries, and there are HCAs on the lot or parcel, a Willamette and Tualatin River Protection Area permit shall be required unless the development proposal is exempt per CDC [28.040](#).*

B. At the confluence of a stream or creek with either the Tualatin or Willamette River, the standards of this chapter shall apply only to those portions of the lot or parcel fronting the river. Meanwhile, development in those portions of the property facing or adjacent to the stream or creek shall meet the transition, setbacks and other provisions of Chapter [32](#) CDC, Water Resource Area Protection.

C. All uses permitted under the provisions of the underlying base zone and within the Willamette and Tualatin River Protection Area zone are allowed in the manner prescribed by the base zone subject to applying for and obtaining a permit issued under the provisions of this chapter unless specifically exempted per CDC [28.040](#).

D. The construction of a structure in the HCA or the expansion of a structure into the HCA when the new intrusion is closer to the protected water feature than the pre-existing structure. (Ord. 1576, 2008; Ord. 1604 § 21, 2011; Ord. 1636 § 26, 2014)

Comment: The subject property is within the 100 year flood plain of the Willamette River and, therefore, is subject to the provisions of this chapter.

28.050 PROHIBITED USES

Comment: The proposed dock is not a prohibited use.

28.090 SUBMITTAL REQUIREMENTS: APPLICATION

A. An application for a protection area permit shall be initiated by the property owner or the owner's authorized agent. Evidence shall be provided to demonstrate that the applicant has the legal right to use the land above the OLW. The property owner's signature is required on the application form.

Comment: The applicant has filed for a Joint Permit with the US Army Corps of Engineers and Oregon Department of State Lands for the proposed dock. This application is pending review at this time.

B. A prerequisite to the filing of an application is a pre-application conference at which time the Planning Director shall explain the provisions of this chapter and provide appropriate forms as set forth in CDC [99.030\(B\)](#).

Comment: A pre-application conference was held for the proposed use earlier this year (PA-18-11).

C. An application for a protection area permit shall include the completed application and:

- 1. Narrative which addresses the approval criteria of CDC [28.110](#).*
- 2. A site plan, with HCA boundaries shown and by low, moderate, high type shown (CDC [28.120](#)).*
- 3. A grading plan if applicable (CDC [28.130](#)).*
- 4. Architectural drawings if applicable (CDC [28.140](#)).*
- 5. A landscape plan if applicable (CDC [28.150](#)).*
- 6. A mitigation plan if applicable (CDC [28.160](#)).*

Comment: This narrative addresses the criterial of CDC 28.110. A site plan is attached and shows HCA boundaries. No site grading is proposed. No architectural drawings or landscape plan are required.

D. The applicant shall pay the requisite fees.

Comment: The required fees have been paid.

E. The applicant shall be responsible for, and shall apply for, all applicable State and/or federal permits.

Comment: The DSL and Corps of Engineer permits have been filed and are in process of being reviewed.

F. The applicant shall include a map, approved or acknowledged by DSL, of the preference rights and authorized areas if a water surface structure is proposed. (Ord. 1576, 2008; Ord. 1622 § 11, 2014)

Comment: The applicant will provide a copy of the DSL approval once it is obtained.

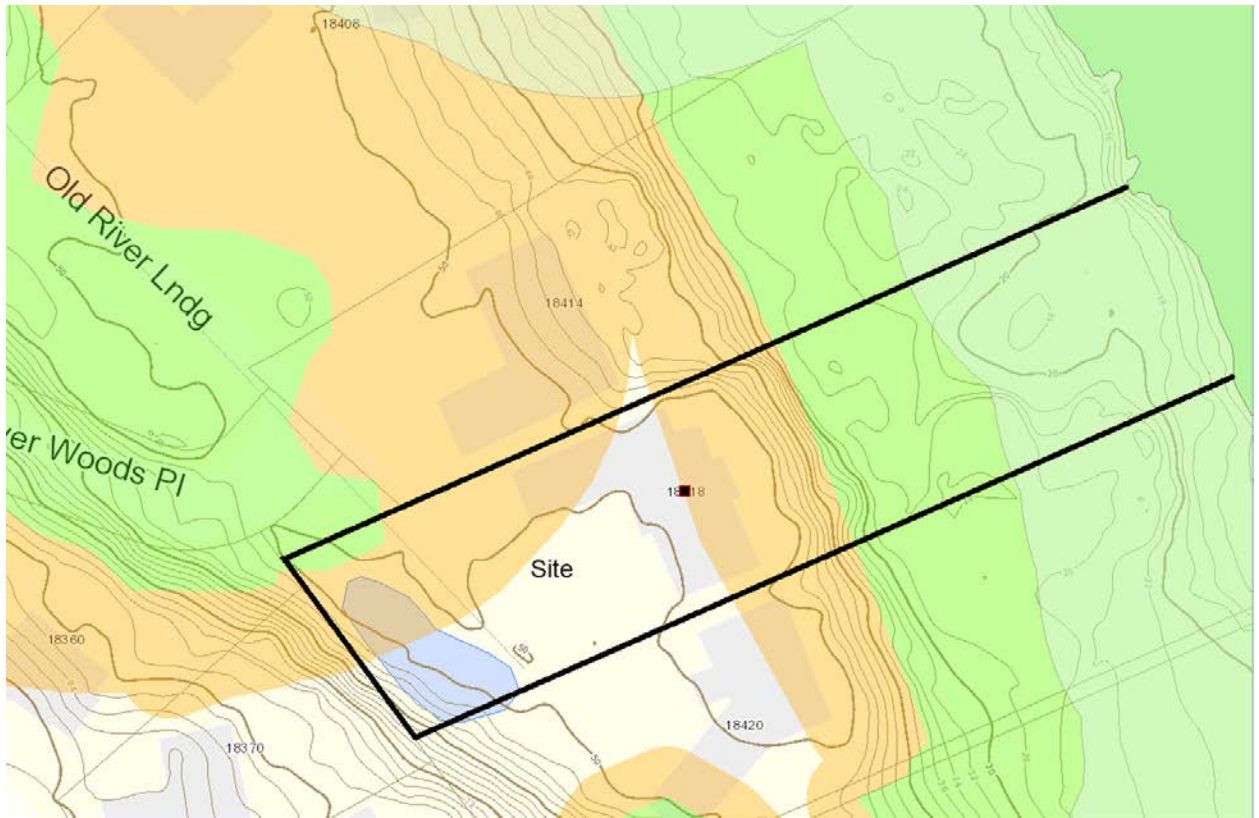
28.110 APPROVAL CRITERIA

No application for development on property within the protection area shall be approved unless the decision-making authority finds that the following standards have been met or can be met by conditions of approval. The development shall comply with the following criteria as applicable:

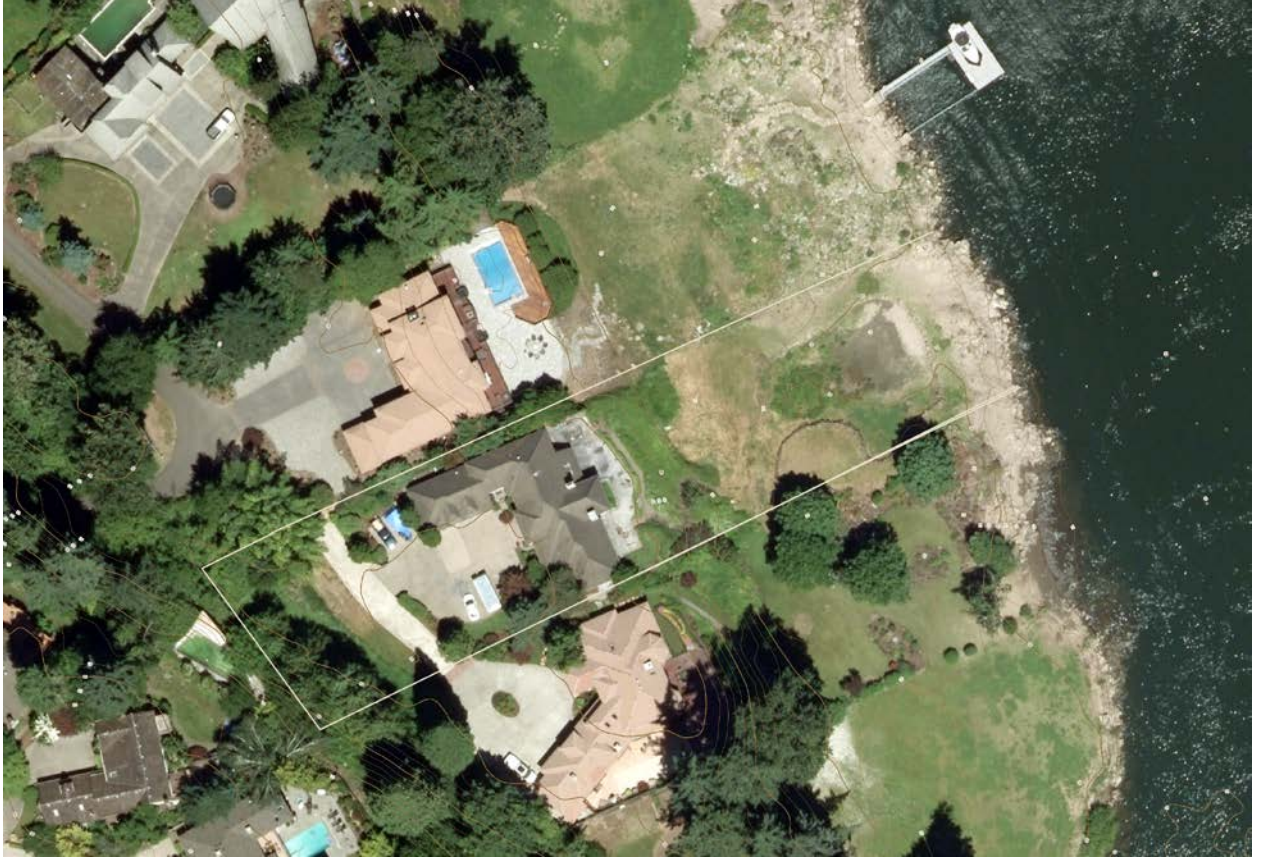
A. Development: All sites.

1. Sites shall first be reviewed using the HCA Map to determine if the site is buildable or what portion of the site is buildable. HCAs shall be verified by the Planning Director per CDC [28.070](#) and site visit. Also, "tree canopy only" HCAs shall not constitute a development limitation and may be exempted per CDC [28.070\(A\)](#). The municipal code protection for trees and Chapters 55 and 85 CDC tree protection shall still apply.

Comment: The HCA is shaded in green on the map below. Only two small concrete pads will be permanently installed within the HCA. No structures are proposed within the HCA.



The aerial photograph of the site shown below demonstrates that the HCA is largely disturbed by landscaping and clearing associated with the home site on the property and provides little in the way of habitat resources.



2. HCAs shall be avoided to the greatest degree possible and development activity shall instead be directed to the areas designated "Habitat and Impact Areas Not Designated as HCAs," consistent with subsection (A)(3) of this section.

Comment: The disturbance of the HCA will be minimal, involving only the pouring of two small concrete pads on the shore. The dock and access ramp will be installed and removed seasonally from the river surface via barge and crane.

3. If the subject property contains no lands designated "Habitat and Impact Areas Not Designated as HCAs" and development within HCA land is the only option it shall be directed towards the low HCA areas first, then medium HCA areas and then to high HCA as the last choice. The goal is to, at best, avoid or, at least, minimize disturbance of the HCAs. (Water-dependent uses are exempt from this provision.)

Comment: The placement of the concrete anchor pads and the seasonal access ramp within the HCA is the only viable means of providing access to the proposed dock.

4. All development, including exempted activities of CDC [28.040](#), shall have approved erosion control measures per Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual, rev. 2008, in place prior to site disturbance and be subject to the requirements of CDC [32.070](#) and [32.080](#) as deemed applicable by the Planning Director.

Comment: Because of the means of placement of the access ramp and dock, there will be no disturbance of site vegetation that might otherwise require erosion control measures.

F. Access and property rights.

1. *Private lands within the protection area shall be recognized and respected.*
2. *Where a legal public access to the river or elsewhere in the protection area exists, that legal public right shall be recognized and respected.*
3. *To construct a water-dependent structure such as a dock, ramp, or gangway shall require that all pre-existing legal public access or similar legal rights in the protection area be recognized and respected. Where pre-existing legal public access, such as below the OLW, is to be obstructed by, for example, a ramp, the applicant shall provide a reasonable alternate route around, over or under the obstruction. The alternate route shall be as direct as possible. The proposed route, to include appropriate height clearances under ramps/docks and specifications for safe passage over or around ramps and docks, shall be reviewed and approved by the Planning Director for adequacy.*
4. *Any public or private water-dependent use or facility shall be within established DSL-authorized areas.*
5. *Legal access to, and along, the riverfront in single-family residential zoned areas shall be encouraged and pursued especially when there are reasonable expectations that a continuous trail system can be facilitated. The City recognizes the potential need for compensation where nexus and proportionality tests are not met. Fee simple ownership by the City shall be preferred. The trail should be dimensioned and designed appropriate to the terrain it traverses and the user group(s) it can reasonably expect to attract. The City shall be responsible for signing the trail and delineating the boundary between private and public lands or access easements.*

Comment: Access to the proposed dock will be from the access ramp placed on the subject property. No public access to the dock or access ramp is proposed.

I. Docks and other water-dependent structures.

1. *Once the preference rights area is established by DSL, the property owner identifies where the water-dependent use will be located within the authorized portion of the preference rights area. The water-dependent use should be centered or in the middle of the preference rights/authorized area or meet the side yard setbacks of the underlying zone.*

Private and public non-commercial docks are permitted where dredging is required so long as all applicable federal and State permits are obtained. Dredging is encouraged if deposits silt up under an existing dock. Dredging is seen as preferable to the construction of longer docks/ramps.

Comment: The proposed dock is centered in the area that has been requested for approval by DSL. Documentation of DSL approval will be provided to the City prior to placement of the dock.

2. Both joint and single use docks shall not extend into the water any further than necessary to provide four feet between the ship's keel or fixed propeller/rudder and the bottom of the water at any time during the water's lowest point.

Comment: The City has determined in file No. WRG-15-06/MIS-15-13 that Federal requirements to place docks in deeper water in order to protect fish habitat supersede this provision of the Community Development Code.

3. In no case except as provided in this section shall a private ramp and private dock extend more than 100 feet from OLW towards the center of the river or slough. In the case of L-shaped docks, the 100 feet shall be measured from the OLW to the furthest part of the private dock closest to the center of the river.

Comment: The proposed dock would extend only approximately 50 feet from OLW.

4. Docks on sloughs and similar channels shall not extend more than 30 percent of the distance between two land masses at OHW, such as between the mainland and an island or peninsula, measured in a lineal manner at right angle to the dominant shoreline. In no way shall a dock impede existing public usage or block navigation of a channel.

Comment: Not applicable. The site is not on a slough or similar channel.

5. Boat storage associated with a rail launch facility shall be located above the OHW, either vertically raised above the ordinary high water line or set back behind the OHW. Such boat storage structure will be natural wood colors or similar earth tones. Private railed launch facilities are permitted for individual boat owners. The onshore setback of the storage structure is equal distance on both sides as extended perpendicular to the thread of the stream, or seven and one-half feet, whichever is the greater setback.

Comment: Not applicable. No rail launch facility is proposed.

6. The width of each deck section shall be no more than 12 feet wide.

Comment: The proposed dock is composed of a 10' wide bow section and two 4' arms that provide for a boat slip. Since each section is less than 10' in width, the proposed dock complies with this requirement.

7. For only single-user and joint-user docks, pilings shall not exceed a maximum height of eight feet above the 100-year flood elevation.

Comment: No piling are proposed. This seasonal dock will be attached to concrete pads on the shoreline via the access ramp, a metal arm, and cross cables. The dock will be removed seasonally prior to high water events

8. A single user non-commercial dock shall not exceed 400 square feet in deck area. The boat slip is not included in the calculation of this square footage limitation.

Comment: The proposed dock is approximately 381 sq. ft. in deck area.

9. Private non-commercial boat houses are allowed but only if they are within 50 feet of OLW and/or in locations sufficiently screened from view so that they do not have a significant visual impact on views from adjacent and nearby homes. Building and roof colors shall be brown, gray, beige, natural or similar earth tones. Non-commercial boat houses shall not exceed 12 feet in height measured from the boat house deck level to the roof peak. The size of the boat house shall be sized to accommodate one boat only and shall not exceed a footprint greater than 500 square feet. Boatlifts are permitted within the boat house. The above provisions also apply to open-walled boat shelters with or without boatlifts.

Comment: Not applicable. No boat house is proposed in conjunction with the dock.

J. Joint docks.

Comment: Not applicable. No joint use of the dock is proposed.

K. Non-conforming docks and other water-related structures. Pre-existing non-conforming structures, including docks, ramps, boat houses, etc., as defined in this chapter may remain in place. Replacement in kind (e.g., replacement of decking and other materials) will be allowed provided the replacement meets the standards of this chapter. However, if any non-conforming structure that is damaged and destroyed or otherwise to be replaced to the extent that the rebuilding or replacing (including replacement in kind) would exceed 50 percent of the current replacement cost of the entire structure, the owner shall be required to meet all the standards of this chapter.

Comment: Not applicable. There are no non-conforming docks or other water-related structures on the property or the adjoining river area.

L. Roads, driveways, utilities, or passive use recreation facilities. Roads, driveways, utilities, public paths, or passive use recreation facilities may be built in those portions of HCAs that include wetlands, riparian areas, and water resource areas 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 percent of the total linear feet of water quality resource area, whichever is greater.

Comment: Not applicable. No such facilities, roads, driveways, or utilities are proposed.

M. *Structures.* All buildings and structures in HCAs and riparian areas, including all exterior mechanical equipment, should be screened, colored, or surfaced so as to blend with the riparian environment. Surfaces shall be non-polished/reflective or at least expected to lose their luster within a year. In addition to the specific standards and criteria applicable to water-dependent uses (docks), all other provisions of this chapter shall apply to water dependent uses, and any structure shall be no larger than necessary to accommodate the use.

Comment: The ramp will be non-polished aluminum.

N. Water-permeable materials for hardscapes. The use of water-permeable materials for parking lots, driveways, patios, and paths as well as flow-through planters, box filters, bioswales and drought tolerant plants are strongly encouraged in all "a" and "b" land classifications and shall be required in all "c" and "d" land classifications. The only exception in the "c" and "d" classifications would be where it is demonstrated that water-permeable driveways/hardscapes could not structurally support the axle weight of vehicles or equipment/storage load using those areas. Flow through planters, box filters, bioswales, drought tolerant plants and other measures of treating and/or detaining runoff would still be required in these areas.

Comment: Not applicable. No parking lots, driveways, patios, and paths, etc. are proposed.

O. Signs and graphics. No sign or graphic display inconsistent with the purposes of the protection area shall have a display surface oriented toward or visible from the Willamette or Tualatin River. A limited number of signs may be allowed to direct public access along legal routes in the protection area.

Comment: Not applicable. No signs or graphics are proposed.

P. Lighting. Lighting shall not be focused or oriented onto the surface of the river except as required by the Coast Guard. Lighting elsewhere in the protection area shall be the minimum necessary and shall not create off-site glare or be omni-directional. Screens and covers will be required.

Comment: Not applicable. No lighting is proposed.

Q. Parking. Parking and unenclosed storage areas located within or adjacent to the protection area boundary shall be screened from the river in accordance with Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas. The use of water-permeable material to construct the parking lot is either encouraged or required depending on HCA classification per CDC 28.110(N)(4).

Comment: Not applicable. No parking is proposed in conjunction with the dock.

R. Views. Significant views of the Willamette and Tualatin Rivers shall be protected as much as possible as seen from the following public viewpoints: Mary S. Young Park, Willamette Park, Cedar Oak Park, Burnside Park, Maddox Park, Cedar Island, the Oregon City Bridge, Willamette Park, and Fields Bridge Park.

Where options exist in the placement of ramps and docks, the applicant shall select the least visually intrusive location as seen from a public viewpoint. However, if no options exist, then the ramp, pilings and dock shall be allowed at the originally proposed location.

Comment: Not applicable. No significant view of the Willamette River would be impacted by the proposed dock and access ramp.

S. Aggregate deposits. Extraction of aggregate deposits or dredging shall be conducted in a manner designed to minimize adverse effects on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, visual quality, noise and safety, and to promote necessary reclamation.

Comment: Not applicable. No extraction of aggregate or dredging is proposed.

T. Changing the landscape/grading.

Comment: No changing of the landscape or grading is proposed.

U. Protect riparian and adjacent vegetation. Vegetative ground cover and trees upon the site shall be preserved, conserved, and maintained according to the following provisions:

Comment: As discussed previously, the ramp and dock will be brought seasonally to the site via barge from the river. The access ramp will be placed from the river via crane. Using this method will minimize the disturbance of the riparian area to only the immediate site of the concrete pads and access ramp.

28.160 MITIGATION PLAN

If any HCA is permanently disturbed as a result of the proposed development of any uses or structures, the applicant shall prepare and implement a revegetation and mitigation plan pursuant to the provisions of CDC [32.070](#) and [32.080](#). (Ord. 1576, 2008)

Comment: Because the ramp and dock will be brought and placed via barge and crane from the river, there will be negligible impact to the HCA. As a result, no mitigation plan is required.



September 19, 2019

Eric Dye
Ken's Floatation Services, Inc.

RE: Neubo Dock Floodway Rise
18418 Old River Landing
West Linn, Oregon

Eric:

This letter is in response to your request for an investigation of the Willamette River base flood water elevation rise due to the installation of a dock at the above referenced location. We have investigated the floodway elevation rise using a two-dimensional river section based on data from FEMA flood insurance maps for a 100-year flood. Based on our investigation using a two-dimensional cross-sectional analysis, we anticipate a negligible water elevation rise of the river cross section at the dock location. Please reference the following calculation.

If you have any questions, please do not hesitate to call.

Sincerely,

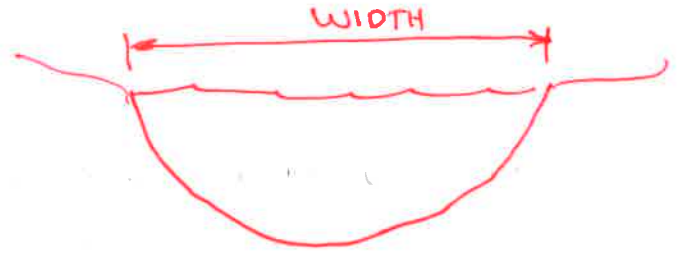
Munzing Structural Engineering

Jeremy Gavelin

Attachments:
Base flood elevation rise calculations



Project No. 19-197	Sheet No.
Project NUEBO DOCK	Date
Subject FLOOD ELEVATION CHANGE	By JG



NEAREST CROSS SECTION : M

RIVER BED DEPTH = -100 FT

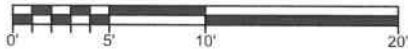
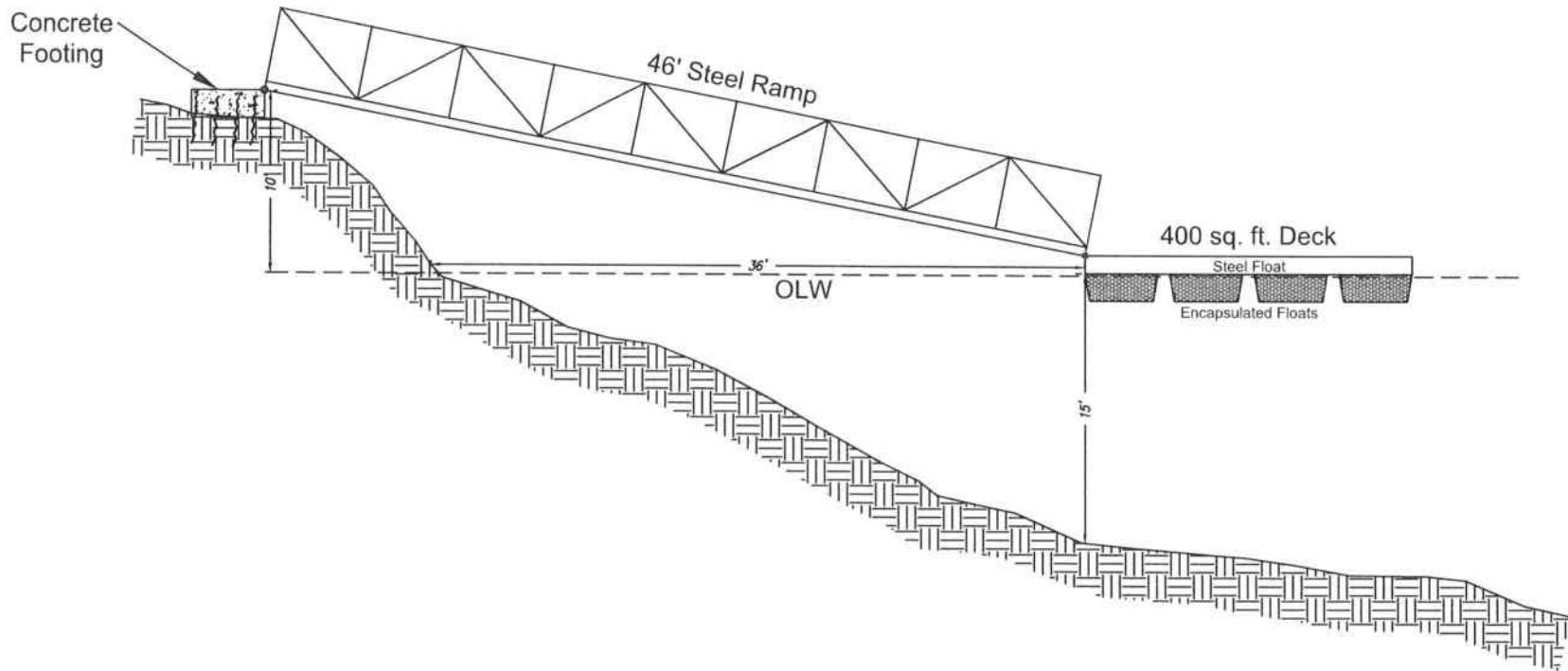
WIDTH = 578 FT

SECTION AREA = 37,630 FT²

FLOOD ELEVATION = 44.7 FT

AREA OF DOCK = 18 FT * 1/2 FT = 9 FT²

RAISE = 9 FT² / 578 FT² = 0.01557 FT = 0.187 IN



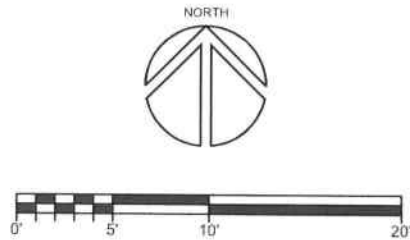
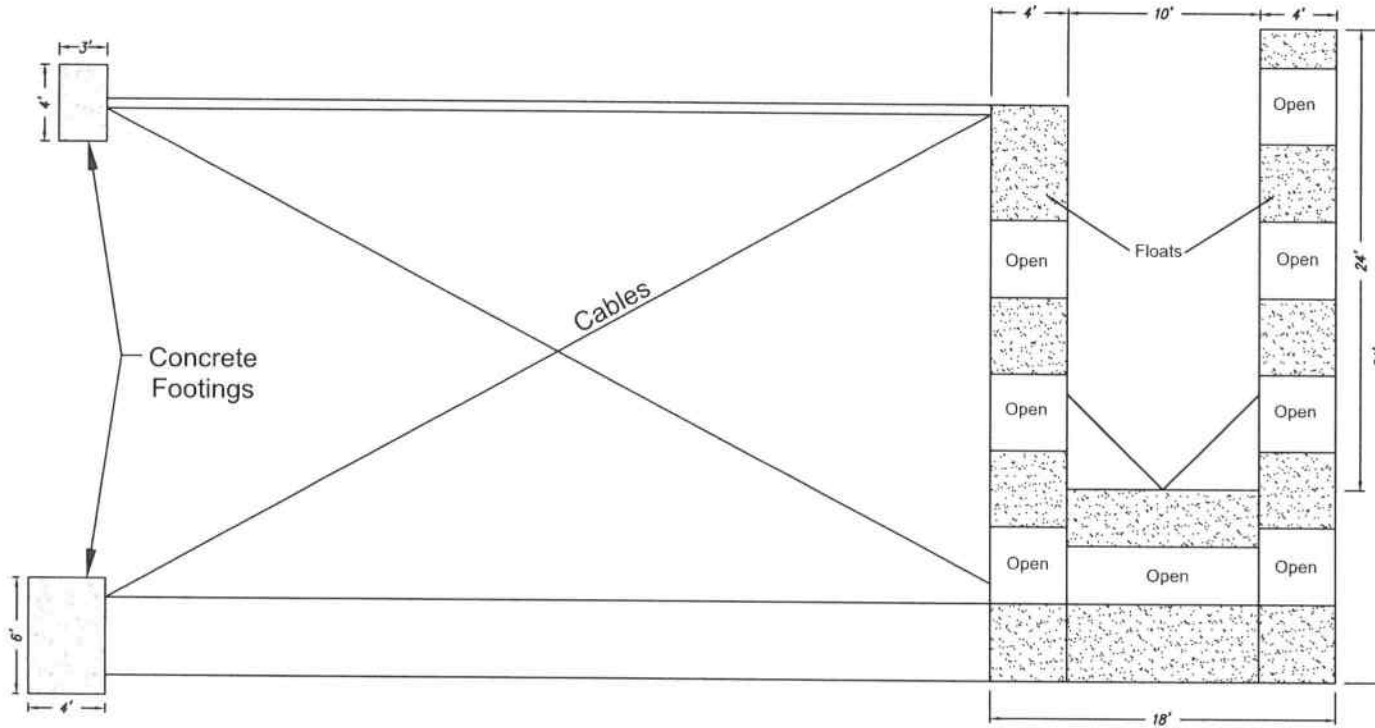
**CROSS SECTION
NEUBO SEASONAL DOCK**

18418 OLD RIVER LANDING
WEST LINN, OR 97068

Ken's Floatation Service Inc.
1701 Clackamette Drive
Oregon City, Oregon 97045
PH: 503-449-6667

SCALE 1" = 10'
DATE: 4-4-2018
PROJECT 18-DYE-100

Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, Oregon 97045
PH: (503) 479-02097



DOCK PLAN
NEUBO SEASONAL DOCK

18418 OLD RIVER LANDING
 WEST LINN, OR 97068

Willamette River
 River Mile 22.25

Ken's Floatation Service Inc.
 1701 Clackamette Drive
 Oregon City, Oregon 97045
 PH: 503-449-6667

SCALE 1" = 10'
 DATE: 4-4-2018
 PROJECT 18-DYE-100

Richard E. Givens, Planning Consultant
 18680 Sunblaze Dr.
 Oregon City, Oregon 97045
 PH: (503) 479-02097



DESIGNED:	R.E.G.			
DRAWN:	R.E.G.			
SCALE:	1" = 40'			
DATE:	10-17-2018			
FILE:	18-DYE-100	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
 18680 Sunblaze Dr.
 Oregon City, OR 97045
 PH: (503) 479-0097

APPLICANT: Craig & Kristy Neubo
 18418 Old River Landing
 Westlawn, OR 97068
 PH: (503) 305-6001

CONTRACTOR: Eric Dye, Ken's Floatation Services, Inc.
 1701 Clackamette Dr.
 Oregon City, OR 97045
 PH: (503) 449-6667

Neubo Seasonal Dock
 Site Plan

SHEET:
 1/1



May 28, 2019

Eric Dye
Ken's Floatation Services, Inc.

RE: Neubo Dock Epoxy anchors

Eric:

This letter is in response to your request for a safety cable anchor system used to connect the dock at the above referenced address to the existing bedrock in the event of a 100-year flood. The dock shall be connected by a stainless-steel cable and anchored to the existing bedrock using (4) ¾" diameter threaded rods, embedded 15" minimum with Simpson SET-XP epoxy. We have evaluated the connection based on the hydrodynamic load resulting in a 44' rise in water height, representing a 100-year flood based on FEMA flood insurance data, with a 2' draft, and have determined a maximum tensile load capacity of the connection to be 4.4 kips.

The contractor shall perform an in-field pull test/special inspection on the anchor assembly to verify safe working capacity. Pull test requirements are as follows:

- Pull test shall be performed by a certified special inspection agency.
- Anchor assemblies shall be loaded in tension to 200% of the tension load noted above.
- The load shall be held for 10 minutes. (4.4 x 2 = 8.8 kips test load)
- If no movement of the anchor occurs, then the test is to be considered acceptable.
- If any movement of the anchor shall occur, the pull test shall be considered invalid and the engineer of record shall be contacted for further instruction.

If you have any questions, please do not hesitate to call.

Sincerely,

Munzing Structural Engineering

Jeremy Gavelin

Attachments:
Structural calculations
Structural details





STRUCTURAL CALCULATIONS

The Neubo Dock

18418 Old River Landing, West Linn, Oregon

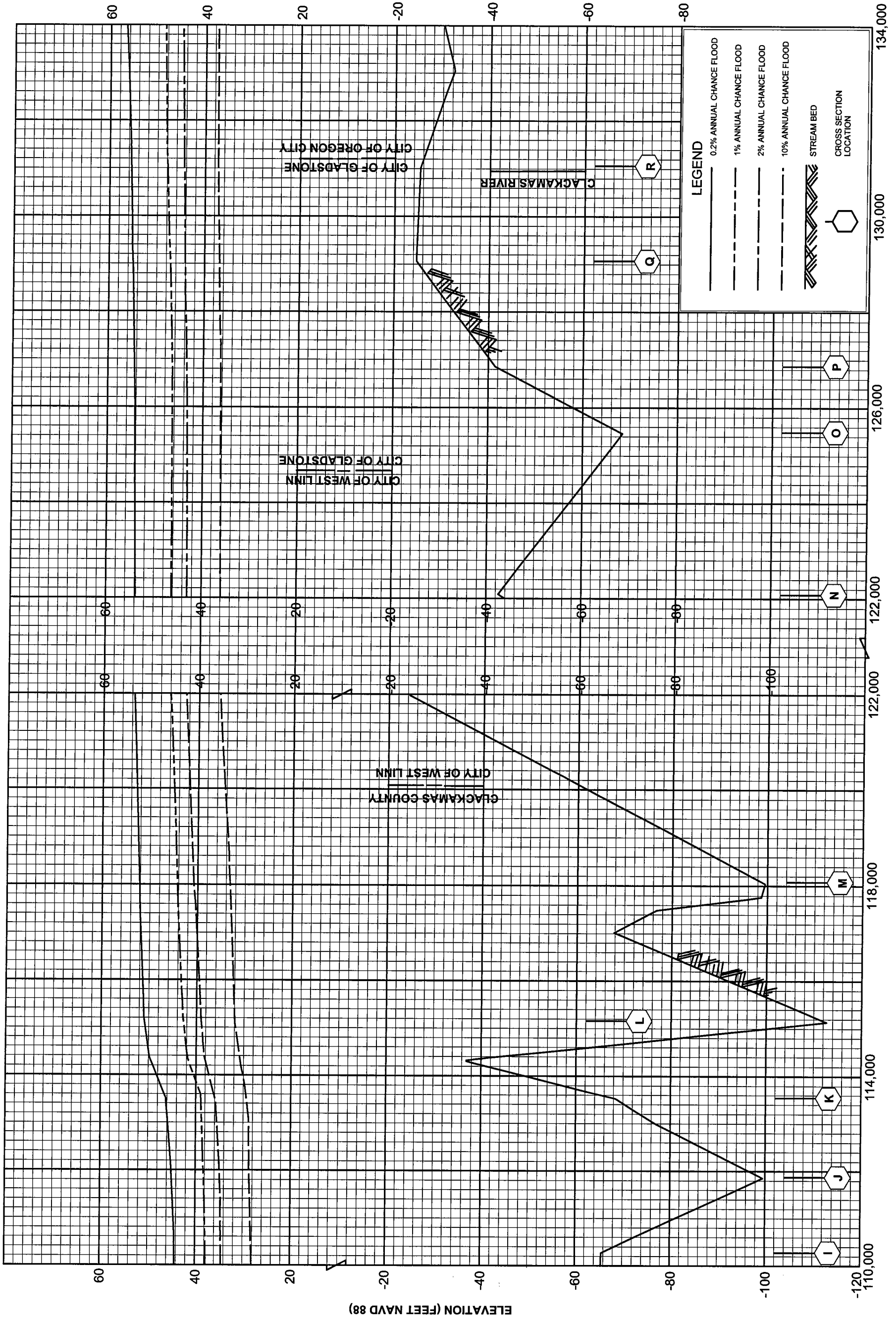
Ken's Floation



LIMITATIONS

Engineer was retained in a limited capacity for this project. Design is based upon information provided by the client who is solely responsible for accuracy of same. No responsibility and/or liability is assumed by or is to be assigned to engineer for items beyond that shown on these sheets.

Project No. 19-197
May 28th, 2019



STREAM DISTANCE IN FEET ABOVE MOUTH

ELEVATION (FEET NAVD 88)

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITHOUT FLOODWAY		INCREASE
					REGULATORY	WITH FLOODWAY	
WILLAMETTE RIVER							
A	91,661	964/460 ²	58,628	6.4	34.7	35.4	0.7
B	94,161	985/390 ²	63,554	5.9	35.3	36.0	0.7
C	96,691	815/220 ²	51,043	7.3	35.6	36.3	0.7
D	98,381	1,325/500 ²	85,767	4.4	36.3	37.0	0.7
E	100,861	1,519/1,020 ^{2&3}	63,590	5.9	36.4	37.0	0.6
F	104,979	955	52,697	7.1	36.7	37.4	0.7
G	105,719	778	47,756	7.9	36.7	37.4	0.7
H	106,469	1,005	62,300	6.0	37.4	38.1	0.7
I	110,312	895	43,115	8.7	37.6	38.1	0.5
J	111,912	550	44,879	8.4	38.1	38.9	0.8
K	113,540	520	31,029	12.1	39.3	40.0	0.7
L	115,130	820	54,496	6.9	42.7	43.4	0.7
M	118,034	578	37,630	10.0	44.0	44.7	0.7
N	122,034	1,440	64,809	5.8	46.1	46.8	0.7
O	125,434	800	46,296	8.1	46.2	46.9	0.7
P	126,834	1,370	55,501	6.8	46.8	47.5	0.7
Q	129,034	1,230	52,785	7.1	47.2	47.9	0.7
R	131,034	1,335	48,241	7.8	47.7	48.4	0.7
S	143,020	888	42,725	8.0	74.5	74.7	0.2
T	145,970	1,040	47,541	7.2	74.9	75.1	0.2
U	149,170	1,050	51,473	6.6	75.2	75.3	0.1
V	165,070	665	31,973	10.3	84.3	85.3	1.0
W	168,300	1,450	66,319	4.9	86.4	87.3	0.9
X	170,950	1,057	47,397	6.9	86.6	87.5	0.9
Y	174,825	1,100	52,109	6.3	87.5	88.4	0.9
Z	176,685	705	37,988	8.6	87.5	88.4	0.9

¹ Stream distance in feet above mouth

² Width/width within study area

³ Values calculated from original model prior redelineation

FEDERAL EMERGENCY MANAGEMENT AGENCY
CLACKAMAS COUNTY, OR
AND INCORPORATED AREAS

FLOODWAY DATA

WILLAMETTE RIVER

TABLE 5

Floodway Loading

Design per 2012 International Building Code as modified by the State of Oregon

Neubo Dock

FEMA CCM Equation 8.8 - Hydrodynamic Load (for All Flow Velocities)

$$F_{dyn} = (1/2) C_d \rho V^2 A \quad \text{Eq. 8.8}$$

where:

- F_{dyn} = horizontal drag force (lb) acting on the stillwater mid-depth (half way between the stillwater level and the eroded ground surface)
- C_d = drag coefficient (recommended coefficient are 2.0 for square or rectangular piles and 1.2 for round piles; for other obstructions, see Table 8-2)
- ρ = mass density of fluid (1.94 slugs/ft² for fresh water and 1.99 slugs/ft² for saltwater)
- V = Velocity of water (ft/sec); see Equation 8.2
- A = surface area of obstruction normal to flow (ft²) = (w)(d_s) if object is not fully immersed, see figure 8-13 or (w)(h) if the object is completely immersed
- h = the height of the object (ft) if the object is completely immersed in water
- d_s = stillwater flood depth of the water (ft) if the object is not fully immersed

Calculation

Input:

- C_d = 1.25
- ρ = 1.94 slugs/ft²
- V = 10.00 ft/sec from Eq. 8.2
- w = 18.00 ft
- h = ft Leave blank if object is not completely immersed.
- d_s = 2.00 ft

Output:

- A = 36 ft² (A = d_s*w or h*w)
- F_{dyn} = **4365.00** lb Eq. 8.8

Project NEUBO DOCK

Date 5/28/2019

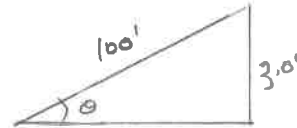
Subject DOCK ANCHORAGE

By JG

LOAD = 4.365 kips

FLOOD ELEVATION = 44 FEET
ANCHOR ELEVATION = 14 FEET

RISE = 30 ft
CABLE LENGTH = 100 ft



$\theta = \sin^{-1}(30/100) = 17.46^\circ$

HORIZONTAL FORCE = $4.365 \cos(17.46^\circ) = 4.163$ kips
VERTICAL FORCE = $4.365 \sin(17.46^\circ) = 1.31$ kips

ALSO CHECK LOAD AT 45°

HORIZONTAL FORCE = $7.517 \cos(45^\circ) = 3.09$ kips
VERTICAL FORCE = $7.517 \sin(45^\circ) = 3.09$ kips

PROVIDE CABLE & EYE BOLT w/ WORKING LOAD = 10,000 lbs MIN

SEE FOLLOWING CALCULATIONS FOR ANCHORAGE REQUIREMENTS



Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	1/6
Project:			
Address:			
Phone:			
E-mail:			

1. Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-11
Units: Imperial units

Anchor Information:

Anchor type: Bonded anchor
Material: F1554 Grade 36
Diameter (inch): 0.750
Effective Embedment depth, h_{ef} (inch): 15.000
Code report: ICC-ES ESR-2508
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 18.75
 c_{ac} (inch): 27.65
 C_{min} (inch): 1.75
 S_{min} (inch): 3.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 24.00
State: Cracked
Compressive strength, f'_c (psi): 2500
 $\Psi_{c,v}$: 1.0
Reinforcement condition: B tension, B shear
Supplemental reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Hole condition: Dry concrete
Inspection: Continuous
Temperature range, Short/Long: 150/110°F
Ignore 6do requirement: Not applicable
Build-up grout pad: Yes

Base Plate

Length x Width x Thickness (inch): 12.00 x 12.00 x 0.75
Yield stress: 36000 psi

Profile type/size: Pipe1/2STD

Recommended Anchor

Anchor Name: SET-XP® - SET-XP w/ 3/4"Ø F1554 Gr. 36
Code Report: ICC-ES ESR-2508



Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



Company:	Munzing Structural Engineeri	Date:	5/28/2019
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Load and Geometry

Load factor source: ACI 318 Section 9.2

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: No

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 2620

V_{uax} [lb]: 0

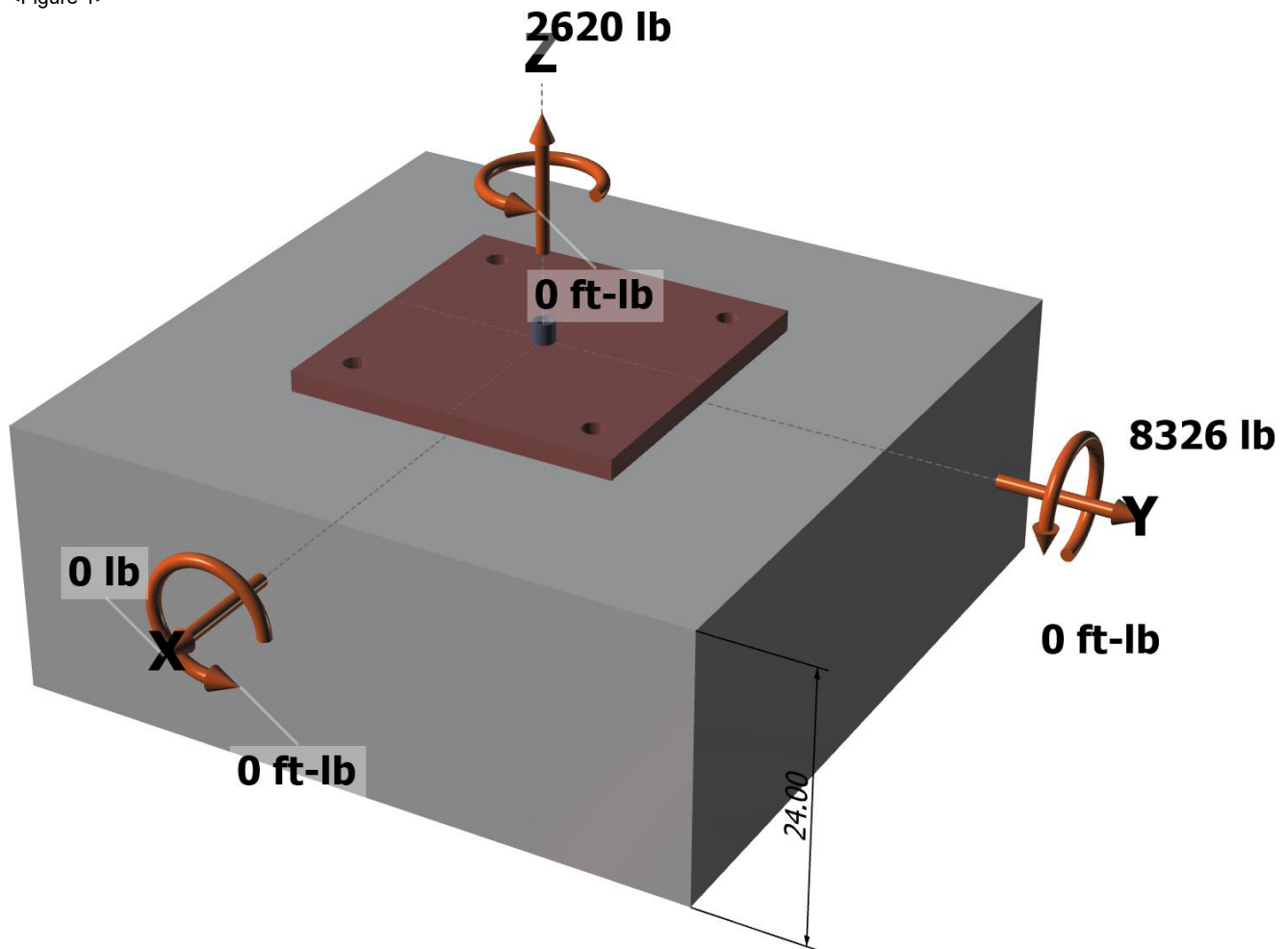
V_{uay} [lb]: 8326

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

<Figure 1>



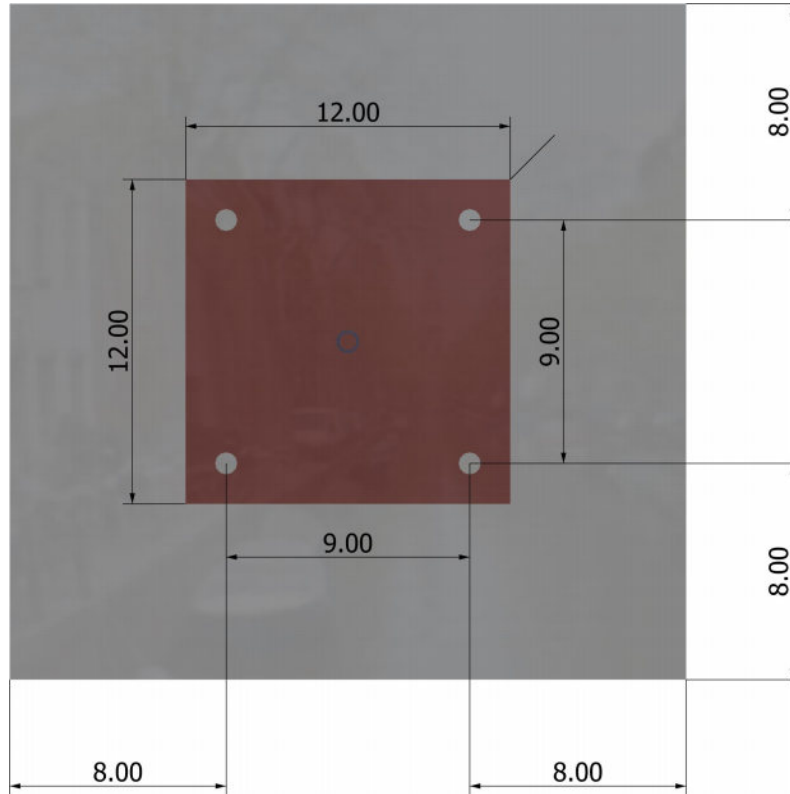
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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<Figure 2>





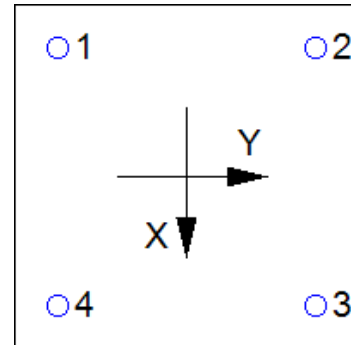
Company:	Munzing Structural Engineeri	Date:	5/28/2019
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E-mail:			

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	655.0	0.0	2081.5	2081.5
2	655.0	0.0	2081.5	2081.5
3	655.0	0.0	2081.5	2081.5
4	655.0	0.0	2081.5	2081.5
Sum	2620.0	0.0	8326.0	8326.0

Maximum concrete compression strain (%): 0.00
 Maximum concrete compression stress (psi): 0
 Resultant tension force (lb): 2620
 Resultant compression force (lb): 0
 Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
 Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
 Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
 Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. D.5.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
19370	0.75	14528

5. Concrete Breakout Strength of Anchor in Tension (Sec. D.5.2)

$$N_b = K_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. D-6)}$$

K_c	λ_a	f_c (psi)	h_{ef} (in)	N_b (lb)
17.0	1.00	2500	5.333	10469

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. D.4.1 \& Eq. D-4)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$C_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
625.00	256.00	8.00	1.000	1.000	1.00	1.000	10469	0.65	16614

6. Adhesive Strength of Anchor in Tension (Sec. D.5.5)

$$\tau_{k,cr} = \tau_{k,cr} f_{short-term} K_{sat}$$

$\tau_{k,cr}$ (psi)	$f_{short-term}$	K_{sat}	$\tau_{k,cr}$ (psi)
385	1.00	1.00	385

$$N_{ba} = \lambda_a \tau_{cr} \pi d_a h_{ef} \text{ (Eq. D-22)}$$

λ_a	τ_{cr} (psi)	d_a (in)	h_{ef} (in)	N_{ba} (lb)
1.00	385	0.75	15.000	13607

$$\phi N_{ag} = \phi (A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba} \text{ (Sec. D.4.1 \& Eq. D-19)}$$

A_{Na} (in ²)	A_{Na0} (in ²)	C_{Na} (in)	$C_{a,min}$ (in)	$\Psi_{ec,Na}$	$\Psi_{ed,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	ϕ	ϕN_{ag} (lb)
532.95	198.41	7.04	8.00	1.000	1.000	1.000	13607	0.65	23758

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



Anchor Designer™
Software
Version 2.7.6990.2

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E-mail:			

8. Steel Strength of Anchor in Shear (Sec. D.6.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
11625	0.8	0.65	6045

9. Concrete Breakout Strength of Anchor in Shear (Sec. D.6.2)

Shear perpendicular to edge in y-direction:

$V_{by} = \min|7(l_e / d_a)^{0.2} \sqrt{d_a \lambda_a} \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}|$ (Eq. D-33 & Eq. D-34)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{by} (lb)
6.00	0.750	1.00	2500	16.00	28800

$\phi V_{cbgy} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{by}$ (Sec. D.4.1 & Eq. D-31)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgy} (lb)
600.00	1152.00	1.000	0.800	1.000	1.000	28800	0.70	8400

Shear parallel to edge in y-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2} \sqrt{d_a \lambda_a} \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}|$ (Eq. D-33 & Eq. D-34)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{bx} (lb)
6.00	0.750	1.00	2500	8.00	10182

$\phi V_{cbgy} = \phi (2)(A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx}$ (Sec. D.4.1 & Eq. D-31)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
300.00	288.00	1.000	1.000	1.000	1.000	10182	0.70	14849

10. Concrete Pryout Strength of Anchor in Shear (Sec. D.6.3)

$\phi V_{cpq} = \phi \min|k_{cp} N_{ag}; k_{cp} N_{cbg}| = \phi \min|k_{cp}(A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba}; k_{cp}(A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b|$ (Sec. D.4.1 & Eq. D-41)

k_{cp}	A_{Na} (in ²)	A_{Na0} (in ²)	$\Psi_{ed,Na}$	$\Psi_{ec,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	N_a (lb)
2.0	532.95	198.41	1.000	1.000	1.000	13607	36550

A_{Nc} (in ²)	A_{Nco} (in ²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	N_{cb} (lb)	ϕ
625.00	256.00	1.000	1.000	1.000	1.000	10469	25560	0.70

ϕV_{cpq} (lb)
35784

11. Results

Interaction of Tensile and Shear Forces (Sec. D.7.)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	655	14528	0.05	Pass
Concrete breakout	2620	16614	0.16	Pass (Governs)
Adhesive	2620	23758	0.11	Pass
Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status
Steel	2082	6045	0.34	Pass
T Concrete breakout y+	8326	8400	0.99	Pass (Governs)

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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Software
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E-mail:			

Concrete breakout x- Pryout	4163 8326	14849 35784	0.28 0.23	Pass (Governs) Pass
-----------------------------	--------------	----------------	--------------	------------------------

Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. D.7..2	0.00	0.99	99.1%	1.0	Pass

SET-XP w/ 3/4"Ø F1554 Gr. 36 with hef = 15.000 inch meets the selected design criteria.

Base Plate Thickness

Required base plate thickness: 0.387 inch

12. Warnings

- When cracked concrete is selected, concrete compressive strength used in concrete breakout strength in tension, adhesive strength in tension and concrete pryout strength in shear for SET-XP adhesive anchor is limited to 2,500 psi per ICC-ES ESR-2508 Section 5.3.
- Designer must exercise own judgement to determine if this design is suitable.
- Refer to manufacturer's product literature for hole cleaning and installation instructions.

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	1/6
Project:			
Address:			
Phone:			
E-mail:			

1. Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-11
Units: Imperial units

Anchor Information:

Anchor type: Bonded anchor
Material: F1554 Grade 36
Diameter (inch): 0.750
Effective Embedment depth, h_{ef} (inch): 15.000
Code report: ICC-ES ESR-2508
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 18.75
 c_{ac} (inch): 27.65
 C_{min} (inch): 1.75
 S_{min} (inch): 3.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 24.00
State: Cracked
Compressive strength, f_c (psi): 2500
 $\Psi_{c,v}$: 1.0
Reinforcement condition: B tension, B shear
Supplemental reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Hole condition: Dry concrete
Inspection: Continuous
Temperature range, Short/Long: 150/110°F
Ignore 6do requirement: Not applicable
Build-up grout pad: Yes

Base Plate

Length x Width x Thickness (inch): 12.00 x 12.00 x 0.75
Yield stress: 36000 psi

Profile type/size: Pipe1/2STD

Recommended Anchor

Anchor Name: SET-XP® - SET-XP w/ 3/4"Ø F1554 Gr. 36
Code Report: ICC-ES ESR-2508





Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	2/6
Project:			
Address:			
Phone:			
E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 9.2

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: No

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 6180

V_{uax} [lb]: 0

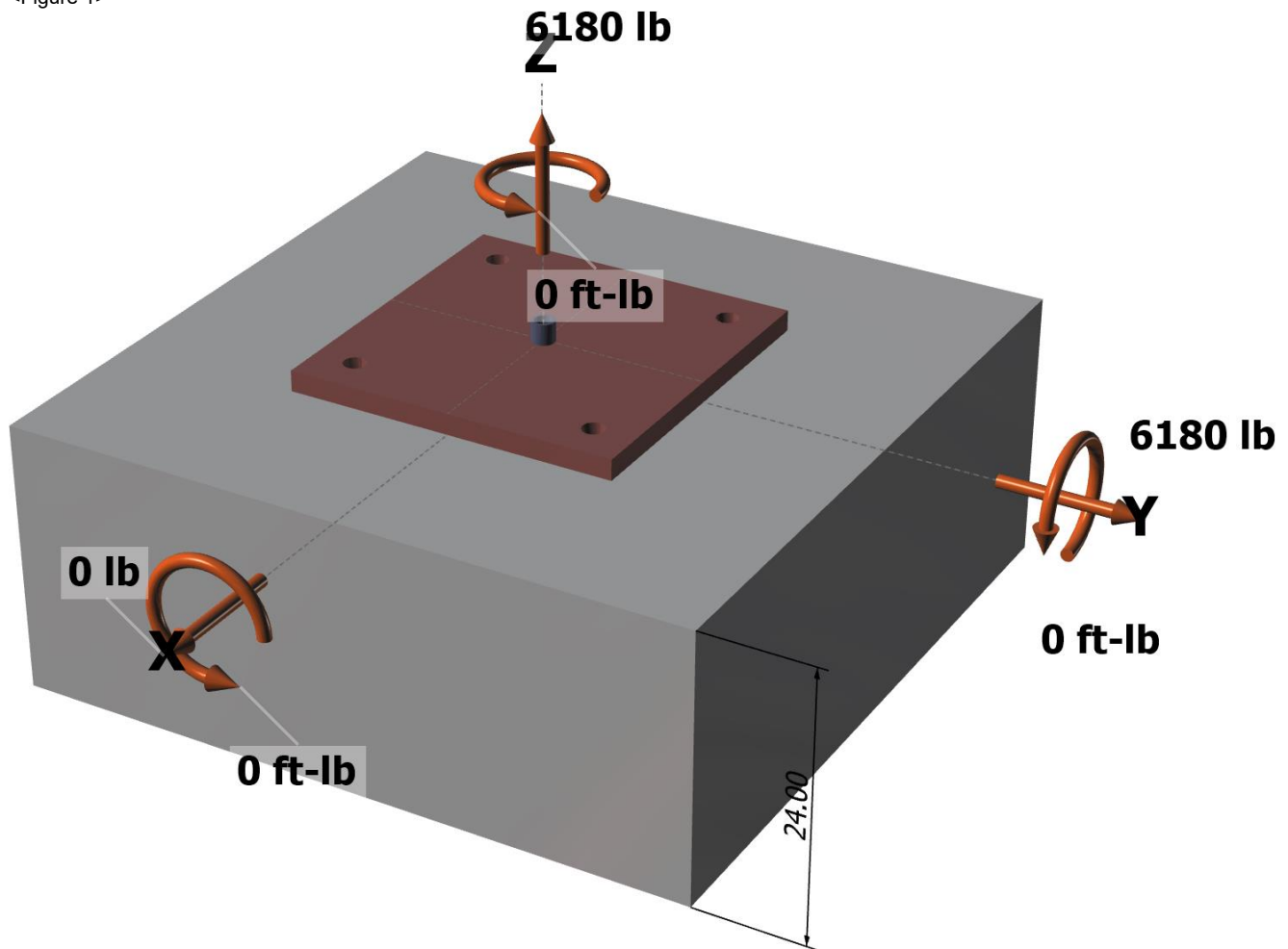
V_{uay} [lb]: 6180

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

<Figure 1>



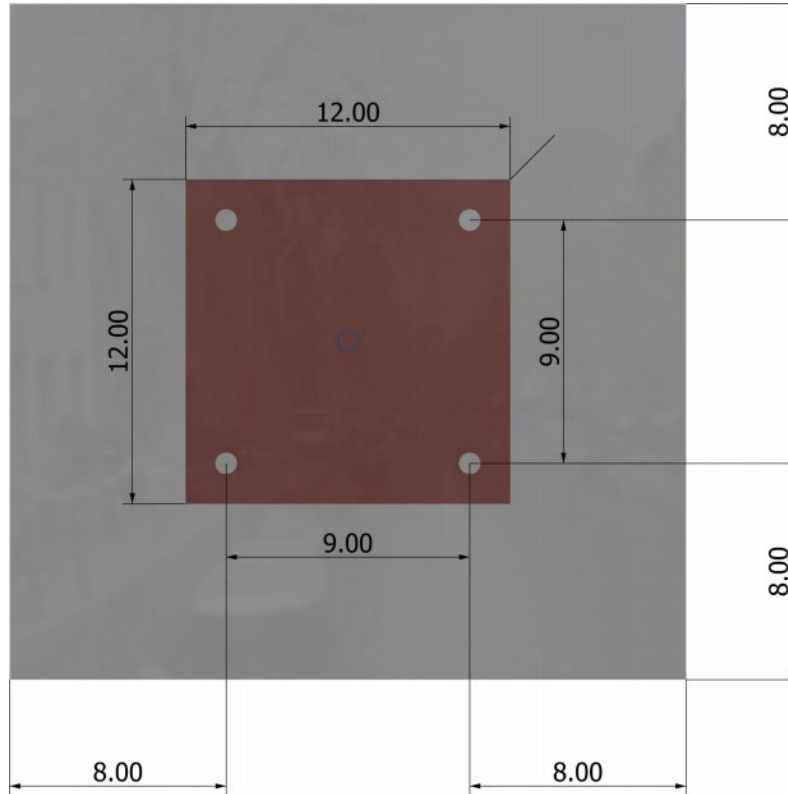
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Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	3/6
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<Figure 2>





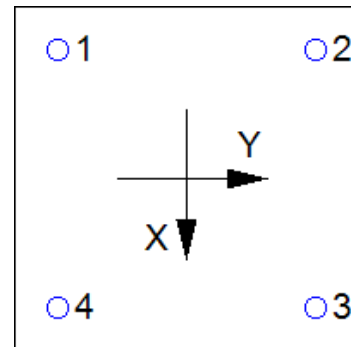
Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	4/6
Project:			
Address:			
Phone:			
E-mail:			

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	1545.0	0.0	1545.0	1545.0
2	1545.0	0.0	1545.0	1545.0
3	1545.0	0.0	1545.0	1545.0
4	1545.0	0.0	1545.0	1545.0
Sum	6180.0	0.0	6180.0	6180.0

Maximum concrete compression strain (%): 0.00
 Maximum concrete compression stress (psi): 0
 Resultant tension force (lb): 6180
 Resultant compression force (lb): 0
 Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
 Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
 Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
 Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. D.5.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
19370	0.75	14528

5. Concrete Breakout Strength of Anchor in Tension (Sec. D.5.2)

$$N_b = K_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. D-6)}$$

K_c	λ_a	f_c (psi)	h_{ef} (in)	N_b (lb)
17.0	1.00	2500	5.333	10469

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. D.4.1 \& Eq. D-4)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$C_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
625.00	256.00	8.00	1.000	1.000	1.00	1.000	10469	0.65	16614

6. Adhesive Strength of Anchor in Tension (Sec. D.5.5)

$$\tau_{k,cr} = \tau_{k,cr} f_{short-term} K_{sat}$$

$\tau_{k,cr}$ (psi)	$f_{short-term}$	K_{sat}	$\tau_{k,cr}$ (psi)
385	1.00	1.00	385

$$N_{ba} = \lambda_a \tau_{cr} \pi d_a h_{ef} \text{ (Eq. D-22)}$$

λ_a	τ_{cr} (psi)	d_a (in)	h_{ef} (in)	N_{ba} (lb)
1.00	385	0.75	15.000	13607

$$\phi N_{ag} = \phi (A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba} \text{ (Sec. D.4.1 \& Eq. D-19)}$$

A_{Na} (in ²)	A_{Na0} (in ²)	C_{Na} (in)	$C_{a,min}$ (in)	$\Psi_{ec,Na}$	$\Psi_{ed,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	ϕ	ϕN_{ag} (lb)
532.95	198.41	7.04	8.00	1.000	1.000	1.000	13607	0.65	23758

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



Anchor Designer™
Software
Version 2.7.6990.2

Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	5/6
Project:			
Address:			
Phone:			
E-mail:			

8. Steel Strength of Anchor in Shear (Sec. D.6.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
11625	0.8	0.65	6045

9. Concrete Breakout Strength of Anchor in Shear (Sec. D.6.2)

Shear perpendicular to edge in y-direction:

$V_{by} = \min|7(l_e / d_a)^{0.2} \sqrt{d_a \lambda_a} \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}|$ (Eq. D-33 & Eq. D-34)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{by} (lb)
6.00	0.750	1.00	2500	16.00	28800

$\phi V_{cbgy} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{by}$ (Sec. D.4.1 & Eq. D-31)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgy} (lb)
600.00	1152.00	1.000	0.800	1.000	1.000	28800	0.70	8400

Shear parallel to edge in y-direction:

$V_{bx} = \min|7(l_e / d_a)^{0.2} \sqrt{d_a \lambda_a} \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}|$ (Eq. D-33 & Eq. D-34)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{bx} (lb)
6.00	0.750	1.00	2500	8.00	10182

$\phi V_{cbgy} = \phi (2)(A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx}$ (Sec. D.4.1 & Eq. D-31)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
300.00	288.00	1.000	1.000	1.000	1.000	10182	0.70	14849

10. Concrete Pryout Strength of Anchor in Shear (Sec. D.6.3)

$\phi V_{cpg} = \phi \min|k_{cp} N_{ag}; k_{cp} N_{cbg}| = \phi \min|k_{cp}(A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba}; k_{cp}(A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b|$ (Sec. D.4.1 & Eq. D-41)

k_{cp}	A_{Na} (in ²)	A_{Na0} (in ²)	$\Psi_{ed,Na}$	$\Psi_{ec,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	N_a (lb)
2.0	532.95	198.41	1.000	1.000	1.000	13607	36550

A_{Nc} (in ²)	A_{Nco} (in ²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	N_{cb} (lb)	ϕ
625.00	256.00	1.000	1.000	1.000	1.000	10469	25560	0.70

ϕV_{cpg} (lb)
35784

11. Results

Interaction of Tensile and Shear Forces (Sec. RD.7)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	1545	14528	0.11	Pass
Concrete breakout	6180	16614	0.37	Pass (Governs)
Adhesive	6180	23758	0.26	Pass
Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status
Steel	1545	6045	0.26	Pass
T Concrete breakout y+	6180	8400	0.74	Pass (Governs)

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Simpson Strong-Tie Company Inc. 5956 W. Las Positas Boulevard Pleasanton, CA 94588 Phone: 925.560.9000 Fax: 925.847.3871 www.strongtie.com



Anchor Designer™
Software
Version 2.7.6990.2

Company:	Munzing Structural Engineeri	Date:	5/28/2019
Engineer:	JG	Page:	6/6
Project:			
Address:			
Phone:			
E-mail:			

Concrete breakout x- Pryout	3090 6180	14849 35784	0.21 0.17	Pass (Governs) Pass	
Interaction check	$(N_{ua}/\phi N_{ua})^{5/3}$	$(V_{ua}/\phi V_{ua})^{5/3}$	Combined Ratio	Permissible	Status
Sec. RD.7	0.19	0.60	79.2%	1.0	Pass

SET-XP w/ 3/4"Ø F1554 Gr. 36 with hef = 15.000 inch meets the selected design criteria.

Base Plate Thickness

Required base plate thickness: 0.593 inch

12. Warnings

- When cracked concrete is selected, concrete compressive strength used in concrete breakout strength in tension, adhesive strength in tension and concrete pryout strength in shear for SET-XP adhesive anchor is limited to 2,500 psi per ICC-ES ESR-2508 Section 5.3.
- Designer must exercise own judgement to determine if this design is suitable.
- Refer to manufacturer's product literature for hole cleaning and installation instructions.

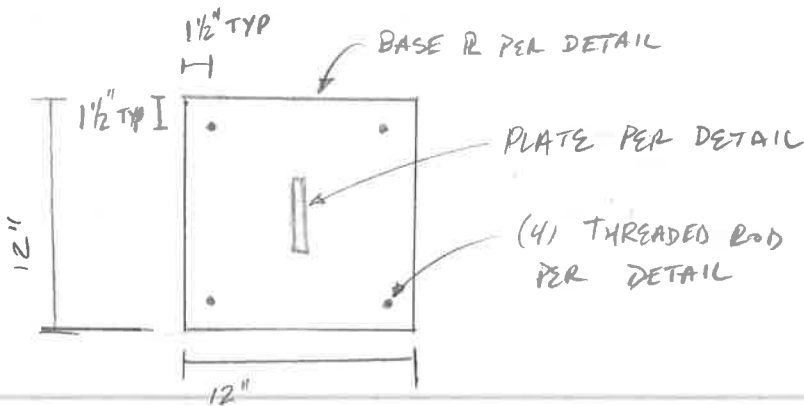
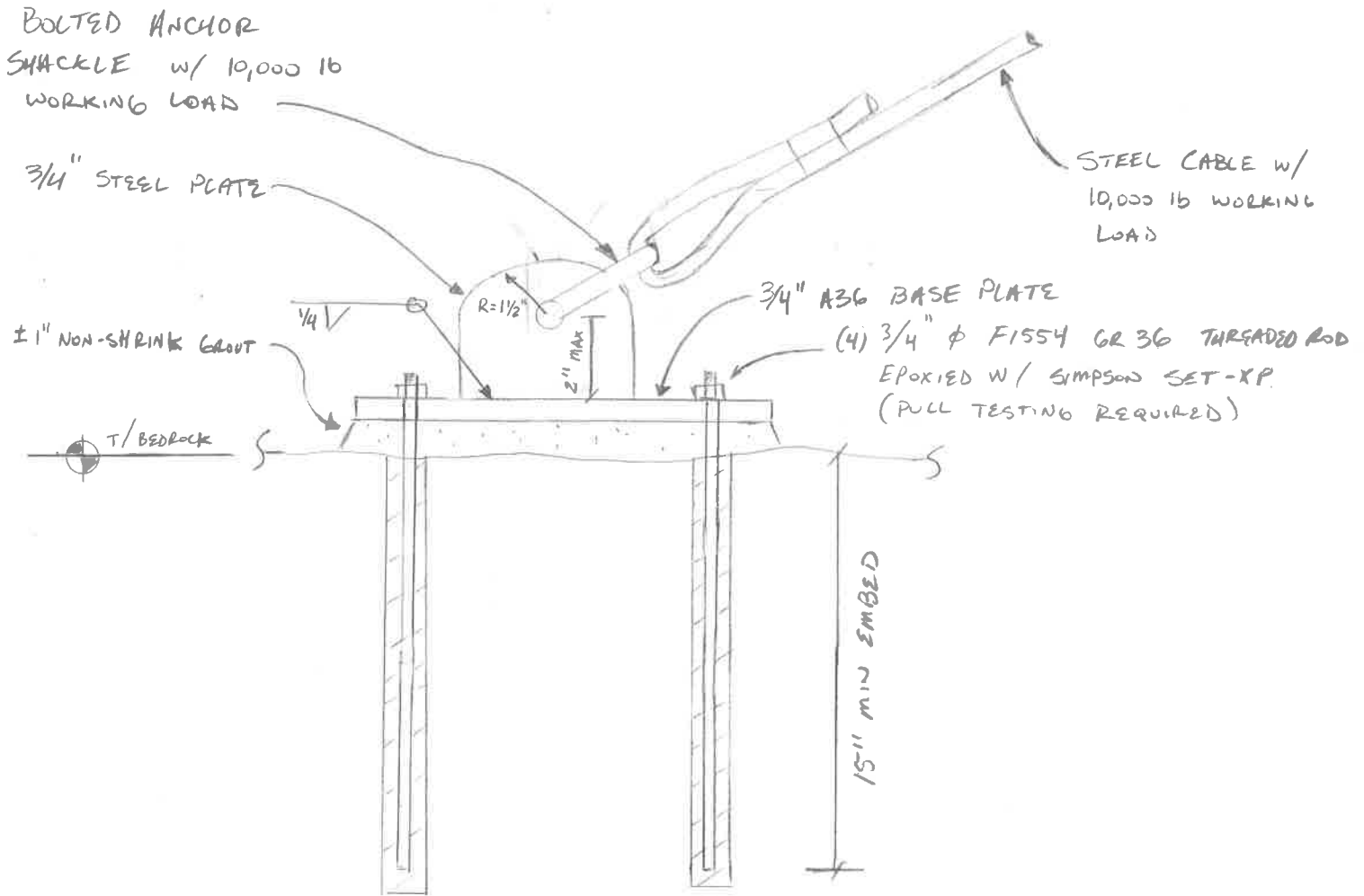
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Project
NEUBO Dock

Date
5/28/2019

Subject
DOCK ANCHORAGE DETAIL

By
JG



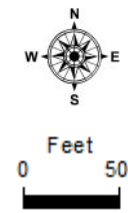
DRILL & EPOXY PER MANUFACTURERS SPECIFICATIONS



EXPIRES: 12/31/20

EXHIBIT PD-2: PROPERTY MAPS

Aerial Photo



Scale 1:1,200 - 1 in = 100 ft
Scale is based on 8-1/2 x 11 paper size

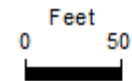
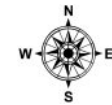
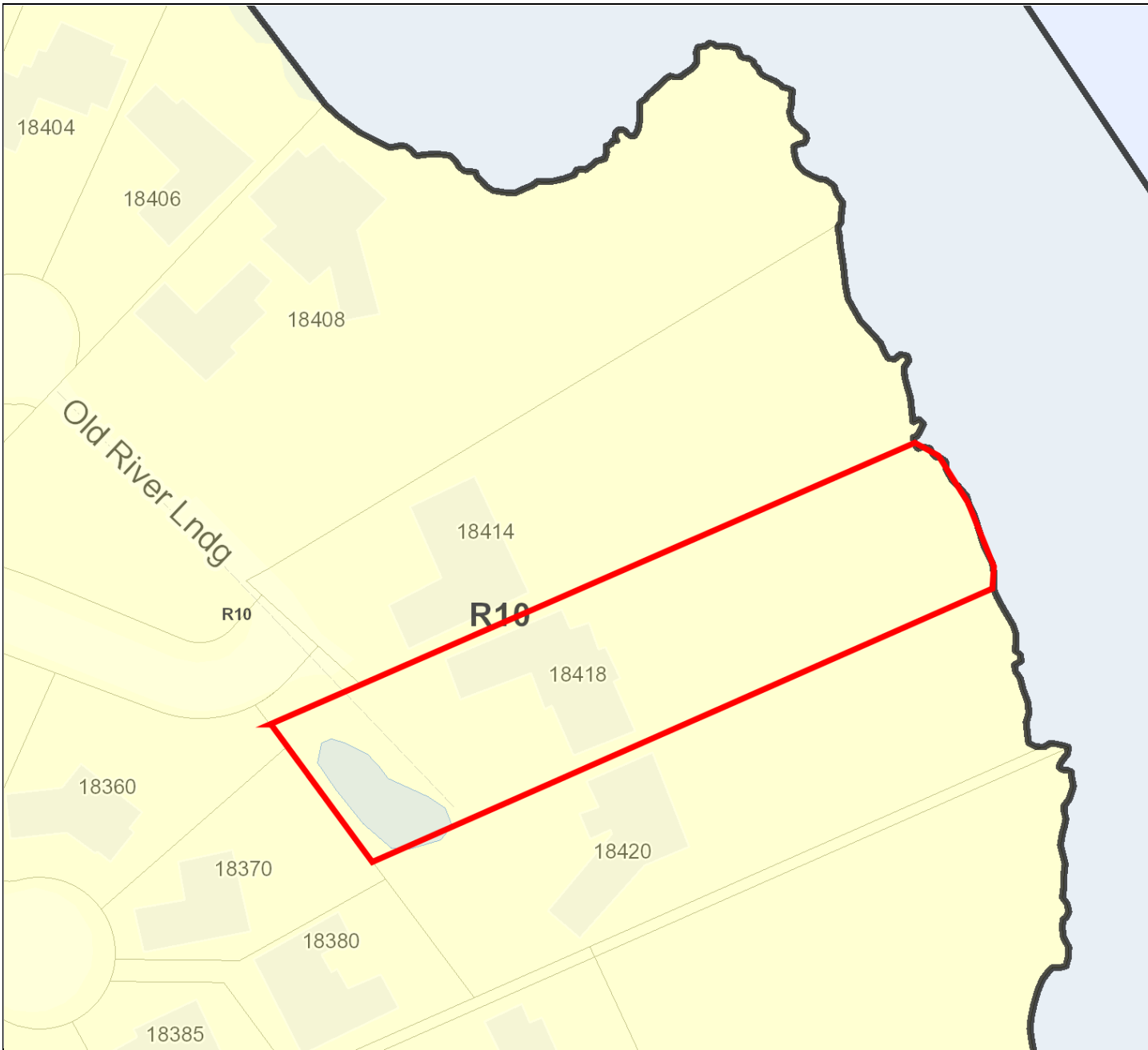


Map created by: DWYSS
Date Created: 20-Sep-19 02:52 PM

WEST LINN GIS

DISCLAIMER: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Map scale is approximate. Source: West Linn GIS (Geographic Information System) MapOptix.

Zoning



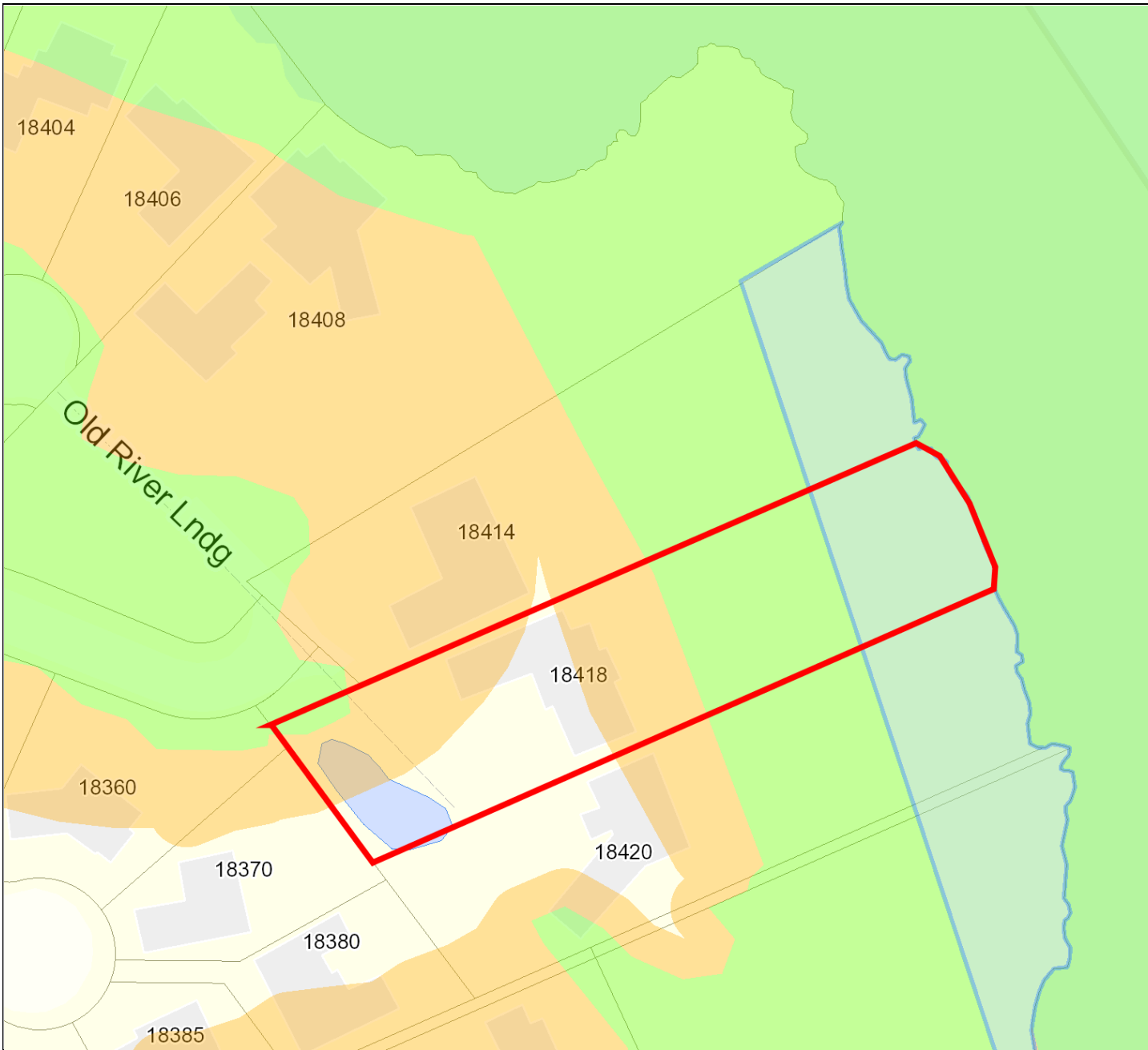
Scale 1:1,200 - 1 in = 100 ft
Scale is based on 8-1/2 x 11 paper size



Map created by: DWYSS
Date Created: 20-Sep-19 02:51 PM

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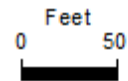
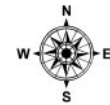


Legend

Willamette River Greenway

Metro Habitat Protection
Published October 2005

Habitat Conservation Area
 Allow Development



Scale 1:1,200 - 1 in = 100 ft
Scale is based on 8-1/2 x 11 paper size

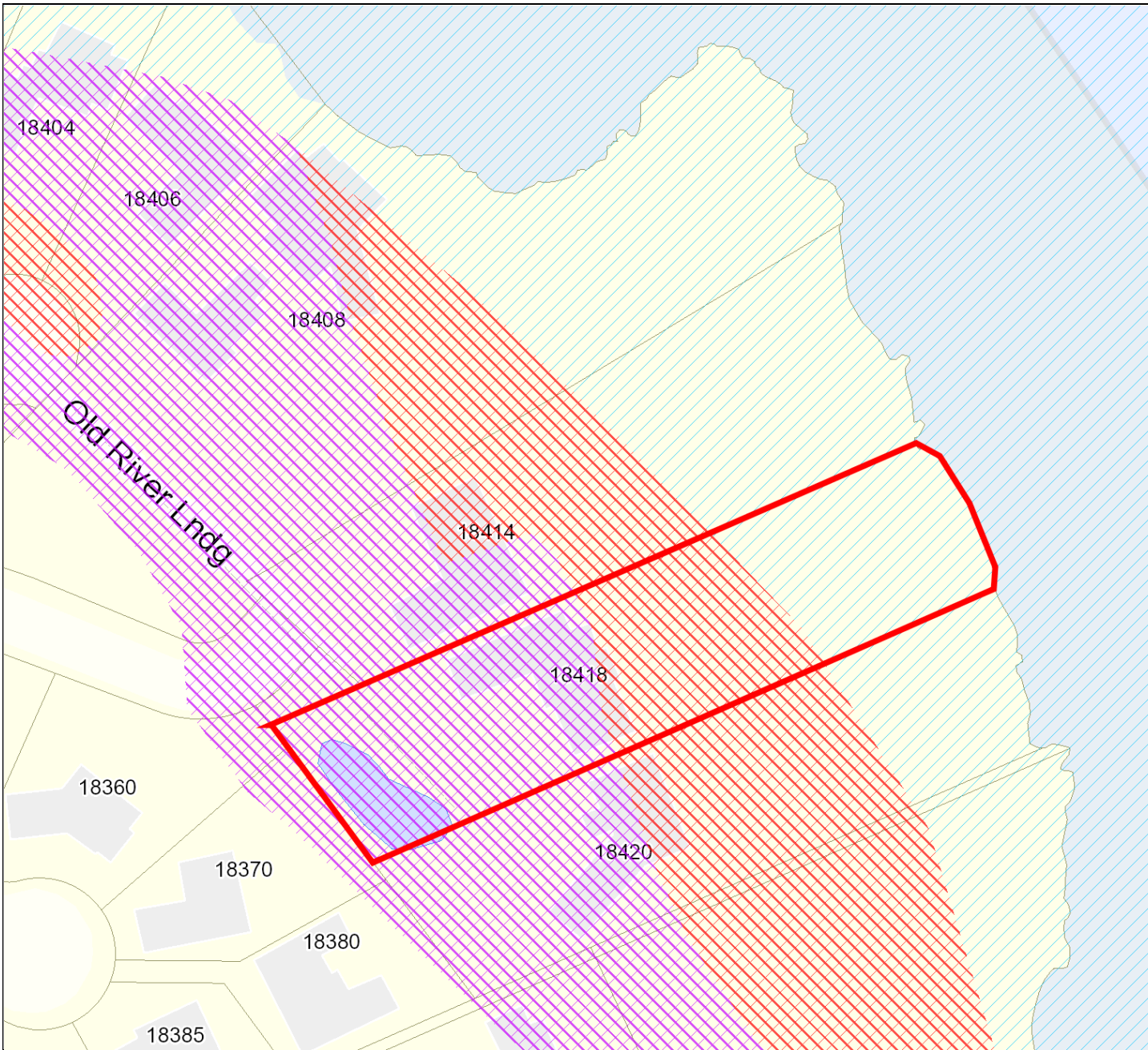


Map created by: DWYSS
Date Created: 20-Sep-19 02:54 PM

WEST LINN GIS

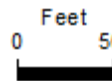
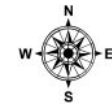
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Floodplain



Legend

- FIRM Flood Areas
- // Floodway
- X Special Flood Hazard Areas 100-year
- X Other Flood Areas 500-year



Scale 1:1,200 - 1 in = 100 ft
Scale is based on 8-1/2 x 11 paper size



Map created by: DWYSS
Date Created: 20-Sep-19 02:55 PM

WEST LINN GIS

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EXHIBIT PD-3: AFFIDAVIT AND NOTICE PACKET

AFFIDAVIT OF NOTICE

We, the undersigned do hereby certify that, in the interest of the party (parties) initiating a proposed land use, the following took place on the dates indicated below:

GENERAL

File No. WRG-18-04/MP-18-06 Applicant's Name Eric Dye, Ken's Plotz from Service
Development Name 18418 Old River Landing Boat Dock
Scheduled Meeting/Decision Date Planning Mayor 8-15-2019

NOTICE: Notices were sent at least 20 days prior to the scheduled hearing, meeting, or decision date per Section 99.080 of the Community Development Code. (check below)

TYPE A

A.	The applicant (date) <u>7-26-2019</u>	(signed) <u>Dan Suf</u>
B.	Affected property owners (date) <u>7-26-2019</u>	(signed) <u>Dan Suf</u>
C.	School District/Board (date) <u>-</u>	(signed) <u>-</u>
D.	Other affected gov't. agencies (date) <u>7-26-2019</u>	(signed) <u>Dan Suf</u>
E.	Affected neighborhood assns. (date) <u>7-26-2019</u>	(signed) <u>Dan Suf</u>
F.	All parties to an appeal or review (date) <u>-</u>	(signed) <u>-</u>

At least 10 days prior to the scheduled hearing or meeting, notice was published/posted:

Tidings (published date) N/A (signed) -
City's website (posted date) 7-26-2019 (signed) Dan Suf

SIGN

At least 10 days prior to the scheduled hearing, meeting or decision date, a sign was posted on the property per Section 99.080 of the Community Development Code.

(date) 8-1-2019 (signed) Dan Suf

NOTICE: Notices were sent at least 14 days prior to the scheduled hearing, meeting, or decision date per Section 99.080 of the Community Development Code. (check below)

TYPE B

A.	The applicant (date) _____	(signed) _____
B.	Affected property owners (date) _____	(signed) _____
C.	School District/Board (date) _____	(signed) _____
D.	Other affected gov't. agencies (date) _____	(signed) _____
E.	Affected neighborhood assns. (date) _____	(signed) _____

Notice was posted on the City's website at least 10 days prior to the scheduled hearing or meeting.

Date: _____ (signed) _____

STAFF REPORT mailed to applicant, City Council/Planning Commission and any other applicable parties 10 days prior to the scheduled hearing.

(date) _____ (signed) _____

FINAL DECISION notice mailed to applicant, all other parties with standing, and, if zone change, the County surveyor's office.

(date) 9-24-2019 (signed) Dan Suf

**CITY OF WEST LINN
NOTICE OF UPCOMING
PLANNING MANAGER DECISION
FILE NO. WRG-18-04/MISC-18-06**

The West Linn Planning Manager is considering a request for a Willamette River Greenway permit and a Flood Management Area permit to construct a boat dock and ramp at 18418 Old River Landing.

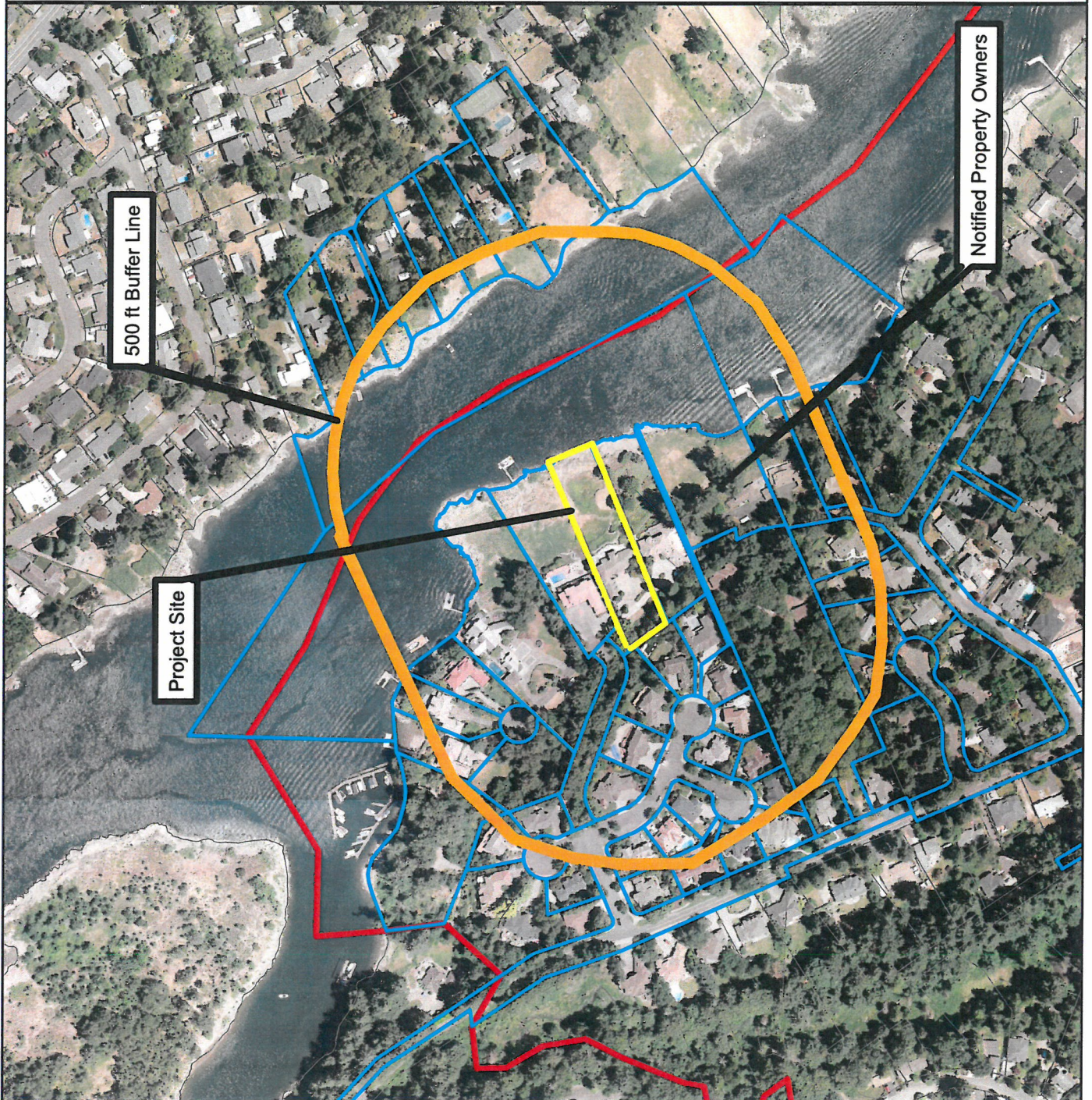
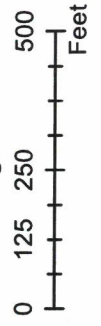
The decision will be based on the approval criteria in Chapters 11, 27, and 28 of the Community Development Code (CDC). The approval criteria from the CDC are available for review at City Hall, at the City Library, and at <http://www.westlinnoregon.gov/cdc>.

You have been notified of this proposal because County records indicate you own property within 500 feet of the subject property (Tax Lot 700 of Clackamas County Assessor's Map 21E 14AD) or as otherwise required by Chapter 99 of the CDC.

The complete application in the above noted file is available for inspection at no cost at City Hall or via the web site <https://westlinnoregon.gov/planning/18418-old-river-landing-seasonal-dock-and-ramp> or copies may be obtained for a minimal charge per page. A public hearing will not be held on this decision. **Anyone wishing to present written testimony for consideration on this matter shall submit all material before 4:00 p.m. on August 15, 2019. Persons interested in party status should submit their letter along with any concerns related to the proposal by the comment deadline.** For further information, please contact Darren Wyss, Associate Planner, City Hall, 22500 Salamo Rd., West Linn, OR 97068, (503) 742-6064, dwyss@westlinnoregon.gov.

Any appeals to this decision must be filed within 14 days of the final decision date with the Planning Department. **It is important to submit all testimony in response to this notice.** Failure to raise an issue in person or by letter, or failure to provide sufficient specificity to afford the decision-maker an opportunity to respond to the issue, precludes the raising of the issue at a subsequent time on appeal or before the Land Use Board of Appeals.

 City Limits





**NOTICE OF UPCOMING
PLANNING MANAGER DECISION**

**PROJECT # WRG-18-04/MISC-18-06
MAIL: 7/26/2019 TIDINGS: n/a**

CITIZEN CONTACT INFORMATION

To lessen the bulk of agenda packets and land use application notice, and to address the concerns of some City residents about testimony contact information and online application packets containing their names and addresses as a reflection of the mailing notice area, this sheet substitutes for the photocopy of the testimony forms and/or mailing labels. A copy is available upon request.

EXHIBIT PD-4: COMPLETENESS LETTER



CITY OF
West Linn

May 28, 2019

Eric Dye
Ken's Floatation Service
1701 Clackamette Drive
Oregon City, OR 97045

SUBJECT: WRG-18-04/MISC-18-06 application for a Willamette and Tualatin River Protection permit and a Flood Management Area permit at 18418 Old River Landing.

Dear Eric:

You submitted this application on November 1, 2018 and deemed incomplete on November 29, 2018. You responded to the incompleteness letter with the requested materials on May 28, 2019. The Planning Department found this application to be **complete**. The City now 120 days to exhaust all local review; that period ends September 25, 2019.

Please be aware that a determination of a complete application does not guarantee a recommendation of approval from staff for your proposal as submitted – it signals that staff believes you have provided the necessary information for the Planning Director to render a decision on your proposal.

A 20-day public notice will be prepared and mailed. This notice will identify the earliest potential decision date by the Planning Director.

Please contact me at 503-742-6057, or by email at jarnold@westlinnoregon.gov if you have any questions or comments.

Sincerely,

Jennifer Arnold
Associate Planner