



January 17, 2020

Erin Engman
Associate Planner
City of Tualatin
18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

Re: Hedges D
Tax Lot I.D: 2S127BA0800, 2S127BA0800

Dear Erin,

Thank you for the opportunity to review the proposed site plan surrounding the above-named development project. These notes are provided regarding the plans received January 16, 2020 and are based on the current New Construction Guide version 4.2C. There may be more or less requirements needed based upon the final project design, however, Tualatin Valley Fire & Rescue will endorse this proposal predicated on the following criteria and conditions of approval.

FIRE APPARATUS ACCESS:

- FIRE APPARATUS ACCESS ROADS:** Access roads shall be provided for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction. **Exception:** Approved agricultural and equine structures complying with ORS 455.315 are not required to have fire apparatus access roads (see New Construction Guide Appendix C). Access roads are not required to be modified for commercial buildings that undergo a change in occupancy, change in use, or conversion from agricultural or equine exempt to non-exempt unless there is a change to the structure's square footage or building footprint. (OFC 503.1.1)
- FIRE ACCESS ROAD DISTANCE FROM BUILDINGS:** The access shall extend to within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. (OFC 503.1.1)
- ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL HEIGHT:** Buildings exceeding 30 feet in height or three stories in height shall have at least two separate means of fire apparatus access. (D104.1)
- ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL SQUARE FOOTAGE:** Buildings or facilities having a gross building area of more than 62,000 square feet shall have at least two approved separate means of fire apparatus access. Exception: Projects having a gross building area of up to 124,000 square feet that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems. (OFC D104.2)

This requirement is waived based upon the building being fully sprinklered.

5. **AERIAL FIRE APPARATUS ROADS:** Buildings with a vertical distance between the grade plane and the highest roof surface that exceeds 30 feet in height shall be provided with a fire apparatus access road constructed for use by aerial apparatus with an unobstructed driving surface width of not less than 26 feet. For the purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of the parapet walls, whichever is greater. Any portion of the building may be used for this measurement, provided that it is accessible to firefighters and is capable of supporting ground ladder placement. (OFC D105.1, D105.2)

Plans indicate a roadway width of 28ft.

6. **AERIAL APPARATUS OPERATIONS:** At least one of the required aerial access routes shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial access road is positioned shall be approved by the Fire Marshal. Overhead utility and power lines shall not be located over the aerial access road or between the aerial access road and the building. (D105.3, D105.4)
7. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)
8. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)
9. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
1. 20-26 feet road width – no parking on either side of roadway
 2. 26-32 feet road width – parking is allowed on one side
 3. Greater than 32 feet road width – parking is not restricted
- Note:** For specific widths and parking allowances, contact the local municipality.
10. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked "NO PARKING FIRE LANE" at 25 foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3)

See attached sheet C1.31 for location of fire lane.

11. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)
12. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans or the requirements of the Fire Code may be requested. (OFC 503.2.3)
13. **BRIDGES:** Private bridges shall be designed and constructed in accordance with the State of Oregon Department of Transportation and American Association of State Highway and Transportation Officials Standards *Standard Specification for Highway Bridges*. A building permit shall be obtained for the construction of the bridge if required by the building official of the jurisdiction where the bridge is to be built. The design engineer shall prepare a special inspection and structural observation program for approval by the building official. The design engineer shall give, in writing; final approval of the bridge to the fire district after construction is completed. Maintenance of the bridge shall be

the responsibility of the party or parties that use the bridge for access to their property. The fire district may at any time, for due cause, ask that a registered engineer inspect the bridge for structural stability and soundness at the expense of the property owner(s) the bridge serves. Vehicle load limits shall be posted at both entrances to bridges when required by the Fire Marshal. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the Fire Marshal. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the Fire Marshal. (OFC 503.2.6)

Please provide an engineers report regarding the private bridge that indicates the weight limit and the soundness of the bridge. Please indicate who is responsible for the maintenance of the bridge. Vehicle load limits signs shall be posted at both entrances to the bridge.

14. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)
15. **ACCESS ROAD GRADE:** Fire apparatus access roadway grades shall not exceed 15%. Alternate methods and materials may be available at the discretion of the Fire Marshal (for grade exceeding 15%).
16. **AERIAL APPARATUS OPERATING GRADES:** Portions of aerial apparatus roads that will be used for aerial operations shall be as flat as possible. Front to rear and side to side maximum slope shall not exceed 10%.
17. **GATES:** Gates securing fire apparatus roads shall comply with all of the following (OFC D103.5, and 503.6):
 1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width).
 2. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
 3. Electric gates shall be equipped with a means for operation by fire department personnel
 4. Electric automatic gates shall comply with ASTM F 2200 and UL 325.
18. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)
19. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1). Traffic calming measures linked here: <http://www.tvfr.com/DocumentCenter/View/1578>

FIREFIGHTING WATER SUPPLIES:

20. **COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:** The minimum fire flow and flow duration shall be determined in accordance with OFC Table B105.2. The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi residual. (OFC B105.3)
Note: OFC B106, Limiting Fire-Flow is also enforced, except for the following:
 - The maximum needed fire flow shall be 3,000 GPM, measured at 20 psi residual pressure.
 - Tualatin Valley Fire & Rescue does not adopt Occupancy Hazards Modifiers in section B105.4-B105.4.1

An assumption of a type IIB construction type was made. Based upon this construction and a square footage of 66,000 a required fire flow of 5,500GPM is required. Since the building will be equipped with a fire sprinkler system, a 75% reduction is applied, requiring a minimum fire flow of 1,500GPM. Fire sprinkler demand also needs to be added to this.

21. **FIRE FLOW WATER AVAILABILITY:** Applicants shall provide documentation of a fire hydrant flow test or flow test modeling of water availability from the local water purveyor if the project includes a new structure or increase in the floor area of an existing structure. Tests shall be conducted from a fire hydrant within 400 feet for commercial projects, or

600 feet for residential development. Flow tests will be accepted if they were performed within 5 years as long as no adverse modifications have been made to the supply system. Water availability information may not be required to be submitted for every project. (OFC Appendix B)

Provide documentation of a fire hydrant flow test.

22. **WATER SUPPLY DURING CONSTRUCTION:** Approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 3312.1)

TVFR will review and inspect the private fire line.

FIRE HYDRANTS:

23. **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. (OFC 507.5.1)
- This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
 - The number and distribution of fire hydrants required for commercial structure(s) is based on Table C105.1, following any fire-flow reductions allowed by section B105.3.1. Additional fire hydrants may be required due to spacing and/or section 507.5 of the Oregon Fire Code.

24. **FIRE HYDRANT(S) PLACEMENT:** (OFC C104)

- Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 507.5.1)
- Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the Fire Marshal.
- Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the Fire Marshal.
- Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the Fire Marshal.

Remove PIV valve as specified on page C1.31. Per NFPA 24 (2016) 6.2.9, a listed backflow device with at least one indicating valve is permitted. Plans indicate a double check will be installed.

Plans indicate a dead end main. The underground water main should be looped to allow for a more reliable water supply. See attached sheet C1.31

Install additional hydrants around the building. See attached sheet C1.31.

25. **PRIVATE FIRE HYDRANT IDENTIFICATION:** Private fire hydrants shall be painted red in color. Exception: Private fire hydrants within the City of Tualatin shall be yellow in color. (OFC 507)

Private fire hydrants in Tualatin shall be yellow.

26. **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the Fire Marshal. (OFC C102.1)

27. **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of blue reflective markers. They shall be located adjacent and to the side of the center line of the access roadway that the fire hydrant is located on. In the case that there is no center line, then assume a center line and place the reflectors accordingly. (OFC 507)
28. **PHYSICAL PROTECTION:** Where fire hydrants are subject to impact by a motor vehicle, guard posts, bollards or other approved means of protection shall be provided. (OFC 507.5.6 & OFC 312)
29. **CLEAR SPACE AROUND FIRE HYDRANTS:** A 3 foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)
30. **FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS:** FDCs shall be located within 100 feet of a fire hydrant (or as approved). Hydrants and FDC's shall be located on the same side of the fire apparatus access roadway or drive aisle, fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved. (OFC 912.2.1 & NFPA 13)
- Fire department connections (FDCs) shall normally be located remotely and outside of the fall-line of the building when required. FDCs may be mounted on the building they serve, when approved.
 - FDCs shall be plumbed on the system side of the check valve when sprinklers are served by underground lines also serving private fire hydrants.

FDC location is acceptable as proposed.

BUILDING ACCESS AND FIRE SERVICE FEATURES

31. **EMERGENCY RESPONDER RADIO COVERAGE:** In new buildings where the design reduces the level of radio coverage for public safety communications systems below minimum performance levels, a distributed antenna system, signal booster, or other method approved by TVF&R and Washington County Consolidated Communications Agency shall be provided. (OFC 510, Appendix F, and OSSC 915) <http://www.tvfr.com/DocumentCenter/View/1296>.
- Emergency responder radio system testing and/or system installation is required for this building. Please contact me (using my contact info below) for further information including an alternate means of compliance that is available. If the alternate method is preferred, it must be requested from TVF&R prior to issuance of building permit.
 - Testing shall take place after the installation of all roofing systems; exterior walls, glazing and siding/cladding; and all permanent interior walls, partitions, ceilings, and glazing.
32. **KNOX BOX:** A Knox Box for building access may be required for structures and gates. See Appendix B for further information and detail on required installations. Order via www.tvfr.com or contact TVF&R for assistance and instructions regarding installation and placement. (OFC 506.1)

The installation of multiple Knox boxes may be required.

33. **FIRE PROTECTION EQUIPMENT IDENTIFICATION:** Rooms containing controls to fire suppression and detection equipment shall be identified as "Fire Control Room." Signage shall have letters with a minimum of 4 inches high with a minimum stroke width of 1/2 inch, and be plainly legible, and contrast with its background. (OFC 509.1)

Label riser room door as indicated above.

34. **PREMISES IDENTIFICATION:** New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting

the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

Install building address numbers on the east side of the building. While the minimum requirement is 4" in height. Larger numbers of 8"-12" are preferred.

If you have questions or need further clarification, please feel free to contact me at **503-259-1419**.

Sincerely,

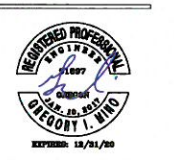
Tom Mooney

Tom Mooney
Deputy Fire Marshal II

Thomas.mooney@tvfr.com

Cc: File
City of Tualatin

A full copy of the New Construction Fire Code Applications Guide for Commercial and Multi-Family Development is available at <http://www.tvfr.com/DocumentCenter/View/1296>



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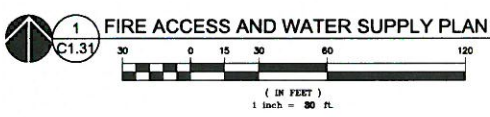
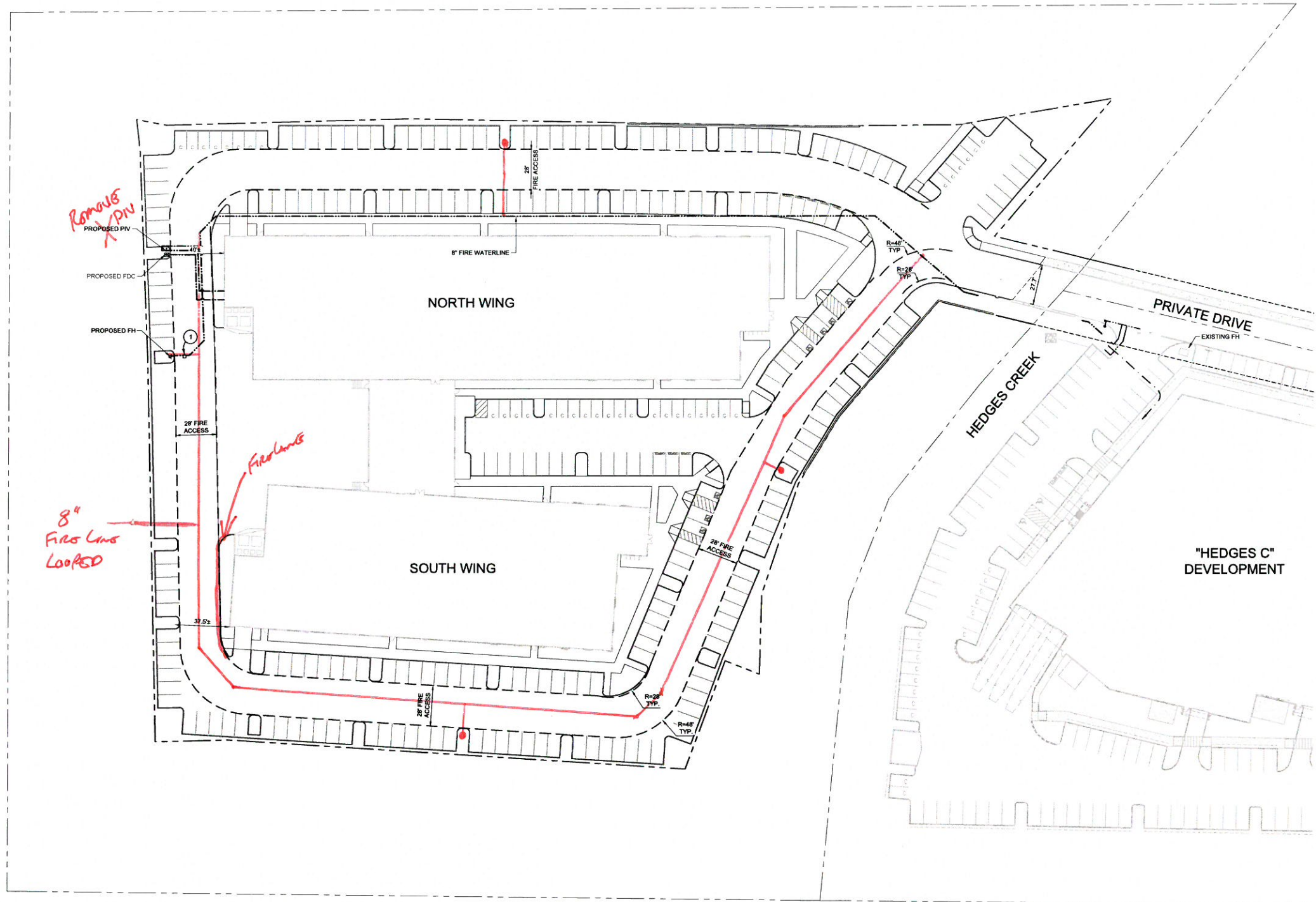
REVISION SCHEDULE		
Delta	Issued As	Issue Date

SHEET TITLE:
**FIRE ACCESS
 AND WATER
 SUPPLY PLAN**

DRAWN BY: **GM**
 CHECKED BY: **MWB**
 SHEET

C1.31

JOB NO. **2190365.00**



GENERAL NOTES

1. FIRE DEPARTMENT ACCESS ROADS ON SITE ARE DESIGNED TO SUPPORT AN APPARATUS WEIGHING 75,000 LB. GROSS VEHICLE WEIGHT.
2. ALL FIRE DEPARTMENT ACCESS ROADS SHOWN ON PLANS HAVE A TURNING RADIUS OF 26 FEET (INSIDE) AND 48 FEET (OUTSIDE), UNLESS OTHERWISE NOTED.
3. PROVIDE EMERGENCY ACCESS EASEMENTS AS REQUIRED BY TUALATIN VALLEY FIRE AND RESCUE.

FIRE HYDRANT NOTES

1. PRIVATE FIRE HYDRANTS IN THE CITY OF TUALATIN SHALL BE YELLOW IN COLOR (OFC 507).
2. FIRE HYDRANT LOCATIONS SHALL BE IDENTIFIED BY THE INSTALLATION OF BLUE REFLECTIVE MARKERS. THEY SHALL BE LOCATED ADJACENT AND TO THE SIDE OF THE CENTER LINE OF THE ACCESS ROADWAY THAT THE FIRE HYDRANT IS LOCATED ON. IN THE CASE THAT THERE IS NO CENTERLINE, THEN ASSUME A CENTER LINE AND PLACE THE REFLECTORS ACCORDINGLY (OFC 507).
3. WHERE FIRE HYDRANTS ARE SUBJECT TO IMPACT BY A MOTOR VEHICLE, GUARD POSTS, BOLLARDS OR OTHER APPROVED MEANS OF PROTECTION SHALL BE PROVIDED (OFC 507.5.6 & OFC 312).
4. A 3-FOOT CLEAR SPACE SHALL BE PROVIDED AROUND THE CIRCUMFERENCE OF ALL FIRE HYDRANTS (OFC 507.5.5).

FIRE DEPARTMENT CONNECTION (FDC) NOTES

1. FDCs SHALL BE LOCATED WITHIN 100 FEET OF A FIRE HYDRANT (OR AS APPROVED). HYDRANTS AND FDCs SHALL BE LOCATED ON THE SAME SIDE OF THE FIRE APPARATUS ACCESS ROADWAY OR DRIVE AISLE, FULLY VISIBLE, AND RECOGNIZABLE FROM THE STREET OR NEAREST POINT OF THE FIRE DEPARTMENT VEHICLE ACCESS OR AS OTHERWISE APPROVED (OFC #12.2.1 & NFPA 13).
2. FIRE DEPARTMENT CONNECTIONS (FDCs) SHALL NORMALLY BE LOCATED REMOTELY AND OUTSIDE OF THE FALL-LINE OF THE BUILDING WHEN REQUIRED. FDCs MAY BE MOUNTED ON THE BUILDING THEY SERVE, WHEN APPROVED.
3. FDCs SHALL BE PLUMBED ON THE SYSTEM SIDE OF THE CHECK VALVE WHEN SPRINKLERS ARE SERVED BY UNDERGROUND LINES ALSO SERVING PRIVATE FIRE HYDRANTS.

PAINTED CURB NOTES

WHERE REQUIRED, FIRE APPARATUS ACCESS ROADWAY CURBS SHALL BE PAINTED RED (OR AS APPROVED) AND MARKED "NO PARKING FIRE LANE" AT 25 FOOT INTERVALS. LETTERING SHALL HAVE A STROKE OF NOT LESS THAN ONE INCH WIDE BY SIX INCHES HIGH. LETTERING SHALL BE WHITE ON RED BACKGROUND (OR AS APPROVED) (OFC 503.3).

KEYNOTES

1. BLUE REFLECTIVE MARKER. SEE FIRE HYDRANT NOTE #2