

CITY OF DONALD

PUBLIC WORKS DEPARTMENT

**PUBLIC WORKS DESIGN &
CONSTRUCTION STANDARDS**

**Adopted July 9, 2019
in Ordinance 176-2019**



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CITY OF DONALD
PUBLIC WORKS DESIGN &
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Copies of the Donald Public Works Design & Construction Standards and the Donald Development Ordinance are available on-line without charge at the City's website: <https://www.donaldoregon.gov/>

CHAPTER 1 GENERAL DESIGN & CONSTRUCTION STANDARDS

FEES, BONDS, SCHEDULING & TRAFFIC CONTROL

Fees:

All new construction requires plan review and approval prior to any construction, and periodic City inspection during construction. To cover the costs incurred by the City that are directly related to a specific development the City will charge a fee set by resolution.

The cost for all public improvements shall be borne by the developer, including any off-site improvements required, subject to the credit provisions of the System Development Charge methodologies.

Performance & Warranty Bond:

The developer/contractor/owner will be required to furnish a performance bond or other comparable security, and proof of insurance, for any work completed within the existing right-of-ways. The amount of the bond shall be as required in the Donald Development Code, as 110 percent of the estimated cost of the public works construction, as approved by the City Engineer. This bond shall remain in effect until acceptance of the construction by the City.

Following acceptance of the construction, the developer/contractor/owner will also be required to furnish a warranty bond or other security that will remain in-place for the one-year warranty period for all work within new or existing public right of ways. The warranty bond shall cover all work within the existing right of ways and all work completed in new right of ways dedicated to the City upon recording of plats.

The warranty bond or security shall be in the amount of 5% of the cost of the public works improvements, as approved by the City Engineer. A warranty inspection shall be completed in the 11th month after completion and final acceptance and release of security will be made after all warranty items have been corrected.

Scheduling and Traffic Control:

Right-of-way permits, with a traffic control plan, are required for any City and/or County projects that impact the roadways, and must be approved prior to commencing the construction. Marion County Public Works Department should be contacted directly for County roads, like Butteville Road, Main Street or Donald Road. All construction shall be scheduled with the City and/or County prior to the start of work in accordance with the permit.

All public right of ways subject to pedestrian and vehicular traffic where construction is to occur shall be provided with signing, barricades and flaggers as required during any construction that could impact public use. All traffic control shall conform to the "Manual on Uniform Traffic Control Devices".

Construction shall be managed to keep a single lane of traffic open at all times and both lanes open to traffic at the end of each work day. The closure of any street or road (with detouring of traffic around the closure) will only be considered on a case by case basis where maintenance of a single lane of traffic is not a viable option. Closure will only be granted by the City in writing after formal request for approval of a detailed detour plan and schedule of construction. The contractor shall be responsible to inform the police, sheriff, fire district, school district, postmaster, railroad, garbage collection service and any other impacted agencies.

Note: Kinder Morgan should be contacted for any work near the high pressurized petroleum line that runs parallel to the railroad. Kinder Morgan can be contacted at 1100 W Town and Country Road, Orange, California 92868, phone: 714-560-4400

PLAN PREPARATION STANDARDS

Requirements:

All public improvements shall be designed with the intent to serve all developable areas. Infrastructure shall be sized to serve the local development as well as the surrounding area anticipated to be developed in the future. All infrastructure improvements shall be extended to the boundaries of each development to permit extension of each system. The City may also require oversizing the infrastructure to serve future users, with the additional cost funded by a System Development Charge credit.

Public improvements are conditioned through the development review process, City ordinances and other policies adopted by the City. No public street improvements or utility construction shall commence prior to the City of Donald approval of the construction plans. Designs submitted for approval shall be stamped by a Registered Professional Engineer licensed to practice in the State of Oregon.

Submittal requirements consist of design plans, grading plans, erosion control plans and other information as required for street or utility construction, including paving, curbs and sidewalks, sanitary sewer, water, storm drainage and all private utilities. Developers shall be responsible for preparation of plans and specifications to comply with all conditions of approval from the City and the requirements of these Public Works Design Standards, unless otherwise approved by the Public Works Director.

Developers shall be responsible to coordinate with City staff and all utility providers prior to preparation of preliminary design drawings. The Developer is responsible to secure approval from all utility providers prior to submittal of preliminary plans and specifications to the City.

Plan Preparation:

Vicinity Maps shall be located on the first sheet of all plans and shall show the location of the project with respect to the nearest major street intersection.

A north arrow shall be shown on each plan view sheet of the plans and adjacent to any other drawing which is not oriented the same as other drawings on the sheet.

Plan scales shall be 1" = 1' V, 1" = 10' H; 1" = 2' V, 1" = 20' H; 1" = 4' V, 1" = 40' H; or 1"= 5' V, 1"= 50' H for all drawings except details.

Letter size shall not be smaller than 0.10 inch high.

The location and elevation of a National Geodetic Survey, United States Geological Survey, State Highway or Marion County bench mark shall be shown. No other datum shall be used. Temporary bench marks and elevations shall be shown on the plans.

A title block shall appear on each sheet of the plan set. The title block shall include the names of the project, the engineering firm, the owner, the sheet title and the sheet number.

The seal of the Registered Professional Engineer responsible for preparation of the plans shall appear on the each sheet.

The description and date of all revisions to the plans shall be shown on each sheet affected, and shall be approved and dated by a Registered Professional Engineer as evidenced by signature .

Plans shall, as a minimum, show the following:

- a. Right-of-Way lines, property lines, tax lot numbers and easement lines.
- b. Subdivision or partition name, street names and other identifying labels.

- c. Owner and Developer's name, address and phone number.
- d. Right-of-way centerline stationing with offsets shall be used for all improvements.
- e. Existing and proposed contours, the 100-year flood plain, and vegetation in conflict with the construction of the improvements.
- f. All existing and proposed improvements including utilities, water courses, wells, railroads, culverts, ditches, etc. with street centerline and offset stationing. Include all features within 100 feet of the proposed improvements, with legend.
- g. Top face of curve elevations along curb returns, including quarter-deltas.
- h. Station and elevation of all high and low points of streets and curb returns.
- i. Sidewalk ramp locations and details at each pedestrian accessible location.
- j. Crown lines along portions of streets transitioning from one typical section to another.
- k. Centerline stationing of all intersecting streets.
- l. Location and description of existing survey monuments, including but not limited to, property corners, section corners, quarter corners and donation land claim corners.
- m. Original ground profile along the roadway centerline and if necessary at the edges of the right-of-way if grade differences are significant.
- n. Centerline grade and elevations of existing streets for a distance of at least one hundred fifty (150) feet each way at intersections with proposed streets and each end beyond the limits of construction.

Agency Approvals:

The developer shall be responsible for obtaining all approvals from Oregon Department of Environmental Quality, Oregon Health Authority, Marion County Building Department, Marion County Public Works Department and any other applicable agencies prior to final approval.

Review Procedure:

One PDF set and four (4) 11" x 17" hard copy sets of complete plans shall be submitted for review by the City. This review is to check that the all required information has been submitted.

Upon completion of the detailed review by the City, the City will return one (1) set of plans with "Red Line" comments. After the design engineer has completed all revisions, one revised plan set and the original "Red Line" plans shall be returned to the City for construction approval. The final plan set submitted for signatures may be 11" x 17" or 22" x 34". The plans shall have a provision for the City to sign upon final approval. Only signed plans shall be reproduced and distributed for construction.

As-Built Drawings & Acceptance

Following completion of construction, the design Engineer shall submit one hard copy set of as-built drawings, one electronic set of PDF drawings to the City and one AutoCAD drawing of the composite street and utility plan. As-built drawings shall describe any and all revisions to the previously approved construction plans.

Final acceptance will be given by the City and the 12-month warranty period shall begin only upon completion of all work including punch list items, and submittal of all required documents.

STREET DESIGN & CONSTRUCTION STANDARDS

DESIGN REQUIREMENTS:

All street design and construction shall comply with the current edition of the ODOT/APWA Oregon Standard Specifications for Construction, as modified herein, unless otherwise approved by the Public Works Director. Design calculations performed and stamped by a Civil Engineer registered in the State of Oregon shall be included with all plans submitted.

Geometric Design:

Conform to the latest edition of AASHTO Policy on Geometric Design of Highways and Streets. All streets shall have type 'C' curbs. Curb height shall be a full 6" in height and be even with the roadway centerline elevation. All curb returns and sidewalks shall be designed to be ADA accessible in accordance with the current Public Right of Way Accessibility Guidelines (PROWAG)

Minimum paved width and right of way shall be as follows:

<i>SERVICE AREA</i>	<i>MIN PAVED WIDTH</i>	<i>'C' CURB</i>	<i>SIDEWALK</i>	<i>ROW WIDTH</i>
ARTERIALS*	46 feet	6" each side	5' w/5' Planter	68 feet
CORE AREA LOCAL	40' curb to curb with 8' parking	6" each side	6' curb tight	60 feet
RURAL LOCAL STREET	34' curb to curb with 7' Parking	6" each side	5' curb tight	50 feet
CUL-DE-SAC (over 150')	Curb Radius: 48'	6" each side	5' curb tight	54' Radius
CUL-DE-SAC (under 150')	Curb Radius: 30'	6" each side	5' curb tight	36' Radius
PRIVATE STREET	Min 20 feet	No curbs	No sidewalks	NA

* Arterial Street design must meet Marion County requirements

CORE AREA LOCAL streets shall include:

- Oak Street, from Butteville Road to the Railroad
- Main Street, from Butteville Road to the Railroad
- Crisell, Feller & Williams Street, from Oak to Cone Street

All developments shall provide a 12' Public Utility Easement on all lots fronting onto a public right of way.

Design Speeds:

Local Streets	25 mph
Arterial Streets	35 mph

Horizontal alignment shall meet the following requirements:

- a. Centerline alignment of improvements shall be parallel and aligned over the centerline of the right-of-way.
- b. The following are guidelines for minimum horizontal curve radius:

Arterial Streets	-	300 feet
Local Streets	-	100 feet

Vertical alignment shall meet the following requirements:

- a. Minimum longitudinal street gradients shall be one-half (0.5) percent along the crown and curb.
- b. Maximum longitudinal street gradients shall be six (6) percent for arterials and twelve (12) percent for local streets. Grades in excess of twelve (12) percent must be approved by the City Engineer on an individual basis.
- c. Local streets intersecting with a collector or greater functional classification street or streets intended to be posted with a stop sign shall provide a landing averaging two (2) percent or less. Landings are that portion of the street within fifty (50) feet of the edge of the intersecting street at full improvement.
- d. Grade changes of more than one (1) percent shall be accomplished with vertical curves.
- e. At street intersections, the crown of the major (higher classification) street shall continue through the intersection. The roadway section of the minor street will flatten to match the major street at the curb line or quarter panel.
- f. Street grades, intersections and super elevation transitions shall be designed to not allow concentrations of stormwater to flow over the pavement.
- g. Vertical Curves are required for any change in grade of 1% or greater:

	<u>Local</u>	<u>Arterial</u>
Minimum K_{SAG}	26	49
Minimum K_{CREST}	12	29
Maximum Grade	12%	6%

Angles between intersecting streets shall meet the following requirements.

- a. Streets shall be laid out so as to intersect at an angle as near to a right angle as practicable, except if topography requires a lesser angle, but in no case less than 60 degrees unless there is special intersection design. Streets shall have at least 25 feet of tangent adjacent to the right-of-way intersection unless topography requires a lesser distance. Intersections which are not at right angles shall have a minimum corner radius of 20 feet along the right-of-way lines of the acute angle. Right-of-way lines at intersection with arterial streets shall have a corner radius of not less than 20 feet.
- b. Curb radii at intersections shall be as shown below for the various classifications.

Arterial Streets (Marion County)	R = 30 feet
Local Streets	R = 20 feet

Cul-de-sacs and eyebrows shall meet the following requirements.

- a. Cul-de-sacs and eyebrows shall be allowed only on local streets.
- b. Cul-de-sacs shall not be more than four hundred (400) feet in length, except where no other alternatives are available for access. The length of a cul-de-sac shall be measured along the projection of the face of curb of the nearest through traffic intersecting street to the farthest point of the cul-de-sac right-of-way.
- c. For cu-de-sacs longer than 150 feet from the face of curb, the minimum radius for a cul-de-sac bulb right of way shall be 54 feet with a minimum curb radius of 48 feet to provide turnaround space for fire protection vehicles. For cul-de-sacs less than 150 feet from the face of curb, the curb radius may be reduced to a minimum of 30 foot with a right of way radius of 36 feet.
- d. The minimum curb radius for transitions into cul-de-sac bulbs shall be twenty-eight (28) feet minimum, and the right-of-way radius shall be sufficient to maintain the same right-of-way to curb spacing as in the adjacent portion of the road.

Driveways:

All driveways shall conform to the standard details. Driveway drops, excluding wings, shall be a maximum of 36 feet for all land uses.

Private Driveways:

Turnarounds for private driveways shall conform to the current edition of the Marion County Fire Code Applications Guide.

Vision Clearance:

Sight distance requirements and vision clearance at intersections shall conform to the ODOT Geometric design requirements

Structural Design Section:

Local & Collector Streets:	4" of 1/2" Dense Mix AC in 2 lifts 2" first lift - 2" top lift after 1 year 12" Aggregate Base (1" minus) Subgrade Geotextile Fabric Minimum Subgrade Modulus 2000 psf
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Arterial Street:	Must comply with Marion County Standards
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Geotextile Fabric shall be non-woven polypropylene; Tencate Mirafi 180N, Propex 801 US Fabrics US 205NW, or equal.

ADA Truncated Domes shall be yellow, cast in place, Armor-Tile Vitrified Polymer Composite (VPC), or equal.

Street Lighting:

All development shall provide street lighting to conform to the latest guidelines from the Illumination Engineers Society for full cutoff pedestrian scale lighting with a guideline average 6 lux illuminance and uniformity coefficient of 6. Lighting fixtures and poles shall be as approved by the Public Works Department.

CONSTRUCTION REQUIREMENTS:

Aggregate Base:

Follow the requirements of ODOT/APWA Standard Specification for Construction sections 00641 Aggregate Subbase, Base, and Shoulders, as modified herein. Aggregate base shall consist of 1" to 0" dense graded crushed rock conforming to ODOT/APWA section 02630. Base rock shall be compacted to a minimum of 95% of AASHTO T-180 (ASTM D1557).

Subbase shall be prepared in accordance with Section 00330 compacted to a minimum of 95% of AASHTO T-180 (ASTM D1557) to a depth of 1 foot, and including all embankments regardless of depth.

The CITY will be responsible for the cost of the proctor and all passing test costs. Any work showing noncompliance with test standards shall be repaired or replaced and retested at DEVELOPER'S expense until in compliance with specified standards.

Asphalt Concrete Pavement (ACP):

Follow the requirements of ODOT/APWA Standard Specification for Construction Section 00744 for small quantity and miscellaneous ACP, and Section 00745 for street construction ACP, as modified herein. Material shall be 1/2" ACP, level 2, with PG 64-22 asphaltic cement.

Pave only after Engineer approves base. Paving shall be placed in two lifts; the initial lift of 2 inches will be placed at the time the development is completed. The final lift of 2 inches will be placed approximately eleven months later, near the end of the one year warranty period. Prior to placing the second lift, the surface shall be cleaned and a tack coat shall be applied as specified.

All existing pavement edges to be joined with new pavement shall be saw cut such that the cut remains straight and vertical without breakouts at the time of joining the new pavement. Thoroughly seal and sand the saw cut edge with asphaltic cement.

Asphalt Concrete Compaction: The density of asphalt concrete as determined by ODOT TM 305 or AASHTO T 209 shall be at least 91 percent of the maximum density for the base lift and 92 percent for top lift.

The CITY will be responsible for all passing test costs. Any work showing noncompliance with test standards shall be repaired or replaced and retested at DEVELOPER'S expense until in compliance with specified standards.

Curbs, Sidewalks & Driveways:

Follow the requirements of ODOT/APWA Standard Specification for Construction Section 00759 Miscellaneous Portland Cement Concrete Structures, as modified herein. Commercial Concrete shall follow the requirements of ODOT/APWA Standard Specification for Construction sections 00440 as modified herein.

Finish all flat work with a light broom finish and minimum 1 1/2" tool against all joints. The surface of flat work shall be scored at nominal 5 foot spacing to provide a contraction joint. Curbs shall have contraction joints nominally spaced at 15 foot on center.

Furnish and install a minimum of two 3-inch ABS or PVC pipe weep holes to each lot.

END OF STREET DESIGN & CONSTRUCTION STANDARDS

WATER SYSTEM DESIGN & CONSTRUCTION STANDARDS

DESIGN REQUIREMENTS:

Water system design shall conform to all Oregon Health Authority Requirements. Contractor/Developer/owner shall secure OHA approval prior to construction. Construction shall conform to the current edition of the ODOT/APWA Oregon Standard Specifications for Construction, as modified herein, unless otherwise approved by the Public Works Director.

Plans and Specifications shall be prepared and stamped by a Civil Engineer registered in the State of Oregon.

All mainlines shall be minimum 8" diameter pressure class 235 PVC C-900 pipe, with ductile iron fittings and mechanical joint restraint where required. Fire hydrants shall be installed to ensure all properties are within 250 feet of the nearest hydrant.

When public water lines are not located in public right-of-ways a minimum 15' easement shall be provided.

All pipelines shall have mechanical thrust restraint, where thrust is developed, capable of restraining a minimum line pressure of 150 psi. Concrete thrust blocking will only be permitted when connecting to existing lines with unknown thrust restraint design.

PRODUCTS:

Water Distribution Pipe and Fittings

Water main lines 4" through 12" inches shall conform to AWWA C900, pressure class 235, DR 18. Pipeline shall utilize mechanical thrust restraint at all locations where thrust is developed.

All public pipelines shall have a blue 14 gauge insulated copper toning wire placed in the trench and connected to all appurtenances.

Mechanical thrust restraint systems shall be MJ Gripper Gland, Mega Lug, Romac GripRing, or approved equal.

Mainline Valves

Follow the requirements of ODOT/APWA Standard Specification for Construction section 01150 Potable Water Valves, as modified herein. Mainline valves shall be resilient seat or resilient wedge gate valves. M&H, Kennedy, Clow or equal.

Valve Boxes and Extensions:

Valve boxes shall be Model VB910 cast iron valve box with cast iron cover marked "WATER" as manufactured by Olympic Foundry, Portland, OR, 503.281.3381, or equal. Valve box extensions shall conform to ASTM D3034, SDR 35.

Fire Hydrants

Follow the requirements of ODOT/APWA Standard Specification for Construction section 01160 Hydrants and Appurtenances, as modified herein.

Hydrants shall be equipped with two 2½ N.S.T. bronze hose ports with cast iron caps and one 4½ N.S.T. bronze steamer port with Storz adapter with cap. Waterous 5-1/4" Pacer Traffic (Model WB67) as manufactured by American Flow Control, Birmingham, AL (205.325.7856), or equal;

Water Services and Meters

Follow the requirements of ODOT/APWA Standard Specification for Construction section 01170 Potable Water Service Connections, as modified herein.

Service saddles shall be AWWA taper thread made of epoxy coated ductile iron with stainless steel straps, washers, and nuts per ODOT/APWA 02490.20. Provide Romac Industries, Inc., Bothell, WA (800.426.9341), Model 202 BS for C900 pipe and 202N-H for HDPE pipe, or equal.

Service lines shall be minimum 1" copper tube size cross linked polyethylene per AWWA C-904, SDR 9, blue PEXa. All street crossings shall be bored, jacked or installed by horizontal directional drill HDD.

Corporation stops and angle meter stops shall comply with AWWA C-800 and have taper inlets, and packed compression outlets, per ODOT/APWA 02490.30. All brass shall be lead free, Ford, Mueller, or equal.

Meter boxes for meter and backflow preventer shall be 11" x 18" reinforced fiberglass plastic with polymer concrete lids, Armorcast Products Company, Model A6000485TAFRP with A6000484T cover as provided by Oldcastle Infrastructure in Wilsonville, OR (503.682.2844), or equal.

The design and material requirements for all commercial or residential services greater than 1" shall be as approved by Public Works Department on a case by case basis.

The City will provide and install all meters, tandem connection, backflow prevention and tailpieces.

CONSTRUCTION REQUIREMENTS:

Follow the requirements of ODOT/APWA Standard Specification for Construction Section 00405 Drainage and Sewers for trench construction, and Section 01140 Potable Water Pipe and Fittings, as modified herein.

Trench Excavation, Bedding, and Backfill

Pipe bedding and pipe zone material shall be 3/4" - 0" crushed rock. Provide native backfill outside of traveled roadways or sidewalks. Provide 3/4" - 0" crushed rock backfill under travel surfaces and sidewalks. Compact all materials as follows:

Pipe Bedding & Pipe Zone	90% of ASTM D1557 (AASHTO T-180)
Native Backfill:	90% of ASTM D1557 (AASHTO T-180)
Granular Backfill:	95% of ASTM D1557 (AASHTO T-180)

Thrust Restraint:

All fittings developing thrust shall have mechanical thrust restraint in accordance with the following required minimum lengths:

MINIMUM REQUIRED RESTRAINED LENGTH (FEET) FOR PVC PIPE ON EACH SIDE OF THE FITTING

Test Pressure 150 psi, min 36" cover. Adjust accordingly for alternative test pressures.

Pipe Size	Sand/Silt (SM)					Sand/Clay (SC)				
	11-1/4°	22-1/2°	45°	90°	Valve/ Plug	11-1/4°	22-1/2°	45°	90°	Valve/ Plug
4	3	4	8	16	36	3	4	6	13	26
6	3	6	10	22	48	3	6	8	18	34
8	4	8	12	28	64	4	7	10	24	46
10	6	9	14	34	76	5	9	12	28	54
12	7	10	16	38	88	6	11	14	32	64

On all pipelines where joint locations are unknown, restraint must be developed with concrete thrust blocking. Thrust blocks shall be minimum 3,000 psi commercial concrete. Thrust blocking shall be poured against undisturbed earth in accordance with the following tables:

THRUST PER 150 PSI TEST PRESSURE, LB.

Pipe Size	11-1/4°	22-1/2°	45°	90°	Valve/Tee/Plug
4	370	740	1,450	2,670	1,900
6	1,060	2,110	4,140	7,640	5,400
8	1,480	2,950	5,770	10,700	7,600
10	2,310	4,600	9,020	16,700	11,880
12	3,330	6,620	13,000	24,000	17,000

TYPICAL SOIL BEARING VALUES, LB/SF

SAND	1,000 lbs/sf
SAND and GRAVEL	1,500 lbs/sf
SAND and GRAVEL with CLAY	2,000 lbs/sf

Testing & Disinfection:

All waterlines shall be pressure tested in accordance with AWWA C-605 and disinfected in conformance with AWWA C-651 standards. The Contractor shall notify the City of Donald to complete bacteriological testing. The Contractor shall pay all costs for testing.

END OF WATER SYSTEM DESIGN & CONSTRUCTION STANDARDS

STORM DRAINAGE DESIGN & CONSTRUCTION STANDARDS

DESIGN REQUIREMENTS:

All stormwater runoff shall be conveyed to a storm sewer or natural drainage channel. Piped and open channel storm drainage systems shall be reviewed to confirm they have adequate capacity to carry necessary flow without overflowing or causing damage to public property or welfare. In the absence of any available stormwater conveyance system, stormwater shall be disposed of on-site by infiltration through dry well, infiltration trench or similar.

All construction shall comply with the current edition of the ODOT/APWA Oregon Standard Specifications for Construction, as modified herein, unless otherwise approved by the Public Works Director.

When public storm lines are not located in public right-of-ways a minimum 15' easement shall be provided.

Calculations:

Design calculations performed and stamped by a Civil Engineer registered in the State of Oregon shall be included with all plan submittals. Peak design flows may be calculated using the King County Method, TR-20, Hydrocad software, or other approved methods. Rational Formula, $Q = CIA$ may be used for basins under 25 acres.

Design Rainfall Event:

The following guidelines shall apply for selecting a design rainfall event. Design rainfall events shall be the 10 and 25-year events. Analyses shall be provided showing no increase in runoff for all storm events up to the 10-year 24-hour storm. All storm drainage facilities shall be designed to pass a 10-year 24-hour storm event without surcharge, and demonstrate that a 25-year 24-hour storm event may surcharge but will not cause any property damage.

Rainfall Intensity Duration Frequency Curve:

For development areas less than 25 acres using the Rational Method, the following rainfall intensities from the ODOT Zone 7 24 hour Intensity-Duration-Frequency (IDF) curves shall apply:

5-Year	2.5 inches/hr.
10-Year	3.0 inches/hr.
25-Year	3.5 inches/hr.
50-Year	4.0 inches/hr.
100 Year	5.0 inches/hr.

Runoff Control:

Development of areas within the City of Donald must provide runoff controls to limit the developed condition's peak rates of runoff by the use of on-site detention if the downstream receiving system is inadequate to accommodate the discharge at full development of the drainage basin.

Hydraulic Considerations:

The minimum design velocity for storm drainage conduits shall be 3.0 fps. Manning's "n" value of 0.013 shall be used for flow and velocity calculations. Manning's equation shall be used for design of piped systems where practicable.

Subsurface utilities crossing private property shall have a minimum easement width of 15 feet.

Storm Water Quality:

Point source water quality facilities shall be provided where required by the City Engineer. Catch basins shall be outfitted with 18" sumps. Water quality manholes shall be 60" diameter with a minimum 36" and maximum 60" sump. Sump volume shall provide a minimum of 20 cf per 1 CFS of flow. Storm water quality manholes shall be installed in all proposed storm drains discharging into existing drainage facilities.

Manholes:

Manholes are required at:

- (1) All changes in horizontal alignment.
- (2) All connections and changes in pipe size.
- (3) At a maximum spacing of 500-feet.

Inlets and Catch Basins:

Inlets must be placed at all low points in streets, at intersections, at points where changes in the street configuration will direct flow across the street and at intervals on continuous grades that will limit contributing street length to a maximum of 400 feet.

Minimum lateral diameter for connection to an inlet or catch basin shall be 10-inches. Minimum inlet lead slopes shall be 1%.

Water from all low areas must be collected and conveyed to the storm drainage system. Quantity of gutter flow is determined using the Rational Method. Inlet design flows shall exceed gutter flow.

Culverts:

Culvert design shall comply with the Oregon Department of Transportation, Highway Division Hydraulics Manual. Other methods may be used with approval of the City Engineer.

Perimeter Drainage

Construction drawings shall include an approved "Grading and Drainage Plan" showing the location of perimeter drainage facilities and private drainage easements that will control runoff to and from project sites.

Grading and Drainage Plans shall identify control for Finished Floor Elevations, and shall be enforced in conjunction with Building Permits.

Erosion and Pollution Control:

Adequate erosion and pollution control facilities shall be installed in conjunction with construction projects. Developments greater than 1 acre in size shall be required to obtain an NPDES 1200-C erosion control permit from the Department of Environmental Quality.

PRODUCTS:

Storm Drainage Pipe and Appurtenances

Storm drainage piping shall be High Density Polyethylene (HDPE) with corrugated exterior, smooth interior and soil tight joints conforming to AASHTO M294, type S or D; ADS, Hancor, or equal. Manhole frames shall be suburban or standard with 16-hole lids. Catch basins shall be standard ODOT G2 gutter inlet.

CONSTRUCTION REQUIREMENTS:

Follow the requirements of ODOT/APWA Standard Specification for Construction Section 00405 Drainage and Sewers for trench construction, and Section 00445 Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe, and as modified herein.

Trench Excavation, Bedding, and Backfill

Pipe bedding and pipe zone material shall be 3/4" - 0" crushed rock. Provide native backfill outside of traveled roadways or sidewalks. Provide 3/4" - 0" crushed rock backfill under travel surfaces and sidewalks. Compact all materials as follows:

Pipe Bedding& Pipe Zone:	90% of ASTM D1557 (AASHTO T-180)
Native Backfill:	90% of ASTM D1557 (AASHTO T-180)
Granular Backfill:	95% of ASTM D1557 (AASHTO T-180)

Testing:

All storm pipelines shall be mandrel tested for deflection per ODOT/APWA 00445.73 and video inspected per ODOT/APWA 00445.74. All cost of testing shall be paid by the developer.

END OF STORM DRAINAGE DESIGN & CONSTRUCTION STANDARDS

SANITARY SEWER DESIGN & CONSTRUCTION STANDARDS

DESIGN REQUIREMENTS:

All sanitary sewage shall be conveyed to a public sanitary sewer. Receiving sewer systems shall be reviewed to confirm they have adequate capacity to carry necessary flow without overflowing or causing damage to public property or welfare.

All services shall be Septic Tank Effluent Pump (STEP) design. Alternative Septic Tank Effluent Gravity (STEG) with required municipal pumping station may be approved on a case by case basis.

Minimum pipeline velocities for septic tank effluent shall be a maximum of 6 feet per second. Hazen-Williams Roughness coefficient shall be 130 for all force mains.

STEP collection systems pipelines shall be sized according to the number of STEP pumps on the common force main according to the following table:

<i>Pipe Dia</i>	<i>Flow at 6 fps, gpm</i>	<i>STEP Pumps Total</i>
2"	60	< 18
2.5"	92	< 80
3"	132	< 146
4"	236	< 377
6"	530	< 1004

Air Relief Valves:

Air Relief Valves shall be installed at all high points along force mains.

Trench Minimum Cover:

Minimum cover on all public sanitary sewer pipes shall be 48".

Horizontal & Vertical Separation:

The horizontal separation between water lines paralleling a sewer line shall be 10 feet. Separation may be reduced to 5 feet clear if the invert of the water line is 18" above the crown of the sewer line.

When a water and sewer line cross, the water line shall be higher than the sewer line and the vertical separation shall not be less than 18 inches. Also, the water service shall be installed with no joints within 10 feet of the sanitary sewer. Where there is less than

18 inches of clearance, the sewer line shall be exposed for 10 feet on each side of the waterline crossing and inspected. If any defects are apparent, the sanitary sewer line shall be replaced with one 20 foot length of PVC pipe centered on the waterline crossing.

Horizontal separation of 3 feet with all other utilities is required.

Location:

When public sanitary sewer lines are not located in public right-of-ways a minimum 15' easement shall be provided.

Septic Tanks:

Septic Tank installations shall conform to Standard Detail ST-70.

Thrust Restraint:

All sanitary sewer force mains shall have mechanical thrust restraint, where thrust is developed, capable of restraining a minimum line pressure of 100 psi. Concrete thrust blocking will only be permitted when connecting to existing lines with unknown thrust restraint design.

PRODUCTS

High Density Polyethylene Pipe (HDPE) for force mains shall be of engineered PE 4710 resin conforming to ASTM D3350 with cell classification of 44557C/E. High density polyethylene pipe (HDPE) shall meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) for Ductile Iron Pipe Size outside diameters. Sanitary sewer force mains shall be rated for minimum 100 psi, with standard dimension ratio (SDR) of 21.

STEP sanitary sewer service lines shall be 1 1/2" green cross linked polyethylene (PEXa or PEXb), or may be schedule 40 PVC complying with ASTM D1785. STEG sanitary sewer gravity service lines shall be minimum 6" PVC conforming to the requirements of ASTM D3034.

STEG sanitary sewer service lines shall be a minimum 6" diameter and gravity main lines shall be a minimum of 8" diameter ASTM 3034. The municipal pumping station shall be as approved by the Public Works Department on a case by case basis.

Air release valves shall be sewage air release valve ARI model S-021 installed in an 11" x 18" reinforced fiberglass plastic meter box with polymer concrete lids. Service tap and service lines shall comply with the specified for water service lines. Air release assembly shall be located outside of any traffic loads and designed in compliance with Oregon Health Authority requirements.

All public pipelines shall have a green 14 gauge insulated copper toning wire placed in the trench and connected to all appurtenances.

Provide fusion saddles to connect services to polyethylene pipe.

CONSTRUCTION REQUIREMENTS:

Follow the requirements of ODOT/APWA Standard Specification for Construction Section 00405 Drainage and Sewers for trench construction, Section 00445 Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe, and Section 01140 for force main construction as modified herein, unless otherwise approved by the Public Works Director.

Trench Excavation, Bedding, and Backfill

Pipe bedding and pipe zone material shall be 3/4" - 0" crushed rock. Provide native backfill outside of traveled roadways or sidewalks. Provide 3/4" - 0" crushed rock backfill under travel surfaces and sidewalks. Compact all materials as follows:

Pipe Bedding & Pipe Zone:	90% of ASTM D1557 (AASHTO T-180)
Native Backfill:	90% of ASTM D1557 (AASHTO T-180)
Granular Backfill:	95% of ASTM D1557 (AASHTO T-180)

Testing:

Testing of sanitary sewer force mains shall comply with the waterline hydrostatic testing requirements in ODOT/APWA Section 01140.51, at 100 psi test pressure. All testing shall be paid by the Developer.

END OF SANITARY SEWER DESIGN & CONSTRUCTION STANDARDS

CHAPTER 2

RELATED DOCUMENTS AND FORMS

TABLE OF CONTENTS CHAPTER 2

RELATED DOCUMENTS AND FORMS

Improvement Agreement_____	Page 1
Satisfaction of Improvement Agreement _____	Page 5
Non-Remonstrance Agreement_____	Page 7
Dedication - Public Roadway_____	Page 9
Public Utility Easement:_____	Page 11

AFTER RECORDING RETURN TO:

City Manager
City of Donald
P.O. Box 388
Donald, OR 97020-0388

**UNTIL A CHANGE IS MADE
SEND ALL TAX STATEMENTS TO:**

Same

IMPROVEMENT AGREEMENT

This Agreement, made and entered, into this _____ day of _____ by and between the CITY OF DONALD, an Oregon municipal corporation, hereinafter called the **CITY**, and _____, hereinafter called the **DEVELOPER**.

WHEREAS, on _____, 20____, the Hearings Officer granted conditional approval to the tentative plat of the _____, (Planning File No. _____); and

WHEREAS, certain conditions were imposed on the **DEVELOPER** as part of the approval of the Subdivision; and

WHEREAS, the **DEVELOPER** is constructing Public Improvements for a _____ lot Subdivision along the _____; and

WHEREAS, on _____, the City Engineer approved construction plans according to the Donald Design and Construction Standards, consistent with the conditions contained within the Hearings Officer's approval; and

WHEREAS, the **DEVELOPER** wishes to plat and develop the _____ Subdivision, the boundary of which is described as follows:

SEE ATTACHMENT "A"

NOW, THEREFORE, the **DEVELOPER** and the **CITY** agree to the following conditions for the development of this Subdivision to-wit:

1. The **DEVELOPER** shall complete or cause to be completed the improvements as detailed on the approved construction plans and according to the specifications and standards on file in the office of the Donald Public Works Director.
2. The **DEVELOPER** shall cause his engineer to provide all surveying services necessary to stake the project prior to construction and to prepare and furnish to the City as-built drawings within thirty (30) days following completion of the project. All such work shall be in conformance with Donald Design and Construction Standards (Latest Edition).
3. The **DEVELOPER** shall complete required improvements in Six (6) months, or cause them to be completed within Eighteen (18) months of the date of this Agreement. Upon written request of the Developer, however, this Agreement may be extended for an additional period of Eighteen (18) months.
4. The **DEVELOPER** shall, after satisfactorily completing conditions 1 through 3, submit a maintenance bond or other written evidence in a form approved by the City Attorney and Public Works Director, valued at a minimum amount of five percent (5%) of the estimated public improvement construction costs, and guaranteeing the completed project construction for a period of one (1) year from final acceptance.
5. It is agreed between the **CITY** and the **DEVELOPER** that all building permits for any structures within the development will be not be issued until all of the required improvements have been constructed and all conditions of approval have been met by the **DEVELOPER** and accepted by the **CITY**.
6. The parties hereto agree that should any suit or action be filed to enforce the terms of this Agreement or the breach thereof, the losing party agrees to pay the prevailing party's reasonable attorney fees in an amount to be set by the court, including costs, disbursements and any such attorney fees, costs or disbursements associated with any appeal there from.

In witness whereof, the said **CITY** has caused this agreement to be signed for the City of Donald, Oregon, and the **DEVELOPER** has caused this Agreement to be signed and sealed the same as the date and year first written above.

CITY OF DONALD, an
Oregon Municipal Corporation

By: _____
City Manager

By: _____
Public Works Director

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____, by the City Manager and Public Works Director.

NOTARY PUBLIC FOR OREGON
My Commission Expires: _____

By: _____
DEVELOPER

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____,

By _____.

NOTARY PUBLIC FOR OREGON
My Commission Expires: _____

AFTER RECORDING RETURN TO:

City Manager
City of Donald
P.O. Box 388
Donald, OR 97020-0388

**UNTIL A CHANGE IS MADE
SEND ALL TAX STATEMENTS TO:**

Same

SATISFACTION OF IMPROVEMENT AGREEMENT

Know all men by these presents that the City of Donald, Oregon, declares the conditions and obligations set forth in that certain improvement agreement with _____, for the _____, (Planning Files No. _____) dated the _____ day of _____, 20____, made and executed by the Public Works Director and recorded in _____, Deed Records of Marion County, have been fully satisfied and discharged.

Dated this _____ day of _____, 20__.

Public Works Director
City of Donald, Oregon

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____, 20__, by _____, as the Public Works Director of the City of Donald, Oregon.

NOTARY PUBLIC FOR OREGON
My Commission Expires:_____

AFTER RECORDING RETURN TO:

City Manager
City of Donald
P.O. Box 388
Donald, OR 97020-0388

SEND ALL TAX STATEMENTS TO:

Same

Map No: _____

Tax Lot(s): _____

Planning No: _____

**RESTRICTIVE COVENANT AND
NON-REMONSTRANCE AGREEMENT**

The undersigned legal owners of the property described below (the "Property") hereby waive any and all right to remonstrate against any focal improvement project benefitting the subject property by the City of Donald (City) and assessing the cost to benefited properties pursuant to the City's capital improvement regulations in effect at the time of such improvement. This non-remonstrance agreement is executed in consideration of not being required by the City to make the above-mentioned improvements at this time as a condition of land use approval of the _____

City of Donald Planning File No. _____

For the purpose of this Covenant:

"Sanitary Sewer Improvements" includes pipelines or conduits and all other structures, devices, appurtenances and facilities used in collecting or conducting waste to an ultimate point for treatment or disposal.

"Storm Sewer Improvements" includes pipelines, swales, detention or retention devices or conduits and all other structures, devices, appurtenances and facilities used in collecting or conducting storm water flow to an ultimate point for treatment or disposal.

"Water Improvements" includes pipelines, conduits, meters, hydrants and all other structures, devices, appurtenances and facilities used in collecting, treating or conveying drinking water from a source of supply to water consumers and other water users.

"Street Improvements" includes streets, sidewalks, curbs, gutters, street lighting and all other structures, devices, appurtenances, facilities and improvements used to serve cars, bicycles, pedestrians and other modes of transportation and conveyance.

"Right to remonstrate against the formation of an LID" refers solely to a property owner's right under the City Charter and Code to be counted as part of an extraordinary majority of property owners that can, in certain circumstances, suspend proceedings on the formation of an LID. The waiver of this right herein does not limit or otherwise restrict the ability of a property owner bound by this covenant to appear at any of the required public hearings and testify regarding the formation of the LID, whether the boundaries include all benefited property, the equity of the assessment formula, the scope and nature of the project or of the final assessment, or any other issue regarding the LID.

This covenant shall run with the land and be binding upon the undersigned and upon all subsequent owners of property.

The property subject to this covenant is described as follows:

-- SEE ATTACHED EXHIBITS "A" (Legal Description) and "B" (Survey, Plat, etc)—

In construing this covenant and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.

IN WITNESS WHEREOF, the GRANTOR has executed this instrument this _____ day of _____, 20____; if a corporate grantor, it has caused its name to be signed and seal affixed by its officers, duly authorized thereto by order of its board of directors.

OWNER(S)

Mailing address of Owner(s)

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____, 20____, by _____
_____.

NOTARY PUBLIC FOR OREGON
My Commission Expires: _____

ACCEPTED: _____
City Manager

AFTER RECORDING

RETURN TO:

City Manager
City of Donald
P.O. Box 388
Donald, OR 97020-0388

UNTIL A CHANGE IS MADE

SEND ALL TAX STATEMENTS TO:

Same

DEDICATION - PUBLIC ROADWAY

KNOW ALL MEN BY THESE PRESENT, that _____,
hereinafter called the Grantor, in consideration of other valuable consideration, receipt of which is hereby
acknowledged by Grantor, does hereby dedicate to the use of the public forever, for public roadway,
sidewalk, and utility purposes, all the certain land described as follows:

SEE ATTACHMENT "A"

The Grantor covenants and warrants to the City of Donald, its successors and assigns, that he/she/they is/are
lawfully seized in fee simple of the above described premises, free from all encumbrances and that Grantor
will warrant and forever defend the said premises and every part and parcel thereof against the lawful claims
and demands of all persons whomsoever.

**1. THE GRANTOR MAKES THE FOLLOWING REPRESENTATIONS CONCERNING
THE DEDICATION AREA:**

1.1 Disclosure of Environmental Conditions. After reasonable inquiry and to the best of
the Grantor's knowledge, Grantor has disclosed all results of any report, investigation, survey, or
assessment regarding environmental condition of the Easement Area.

1.2 Disclosure of Underground Storage Tanks. After reasonable inquiry and to the best of
the Grantor's knowledge, Grantor has disclosed whether there are underground storage tanks, as defined
at ORS 466.706(20), on or under the Easement Area.

1.3 Defined Terms. For purposes of the Easement, (a) "reasonable inquiry" shall mean
inquiry of Grantor's managers or agents with property management or environmental management
responsibility of the dedicated area and review of Grantor's records and (b) "knowledge" shall mean the
current actual knowledge of such managers.

2. ALLOCATION OF LIABILITY. It is understood and agreed that this conveyance is not
intended to alter the liability of the parties for any release of hazardous substances as defined in any

federal, state or local law onto or from the Easement Area.

3. INDEMNIFICATION

To the extent allowed under Oregon Law, Grantor agrees to defend, indemnify, and hold harmless the City for all claims, liabilities, actions, damages, injuries, costs, loss, demands, actions, suits or expenses (including attorney fees and costs: incidental to the investigation and defense thereof, arising out of the acts or omissions of, or the use or occupancy of, the Easement Area by the Grantor, its agents or employees, or resulting from the presence or release of hazardous substances onto or from the Easement Area prior to the Effective Date of the Easement. This indemnity shall not apply to the release of hazardous substances on to or from the Easement Area caused by the officers, agents or employees of the City or third parties not acting under the authority or control of Grantor.

4. EFFECTIVE DATE

The Easement shall be effective as of the date it is signed by all parties.

5. DURATION

The Easement shall remain in effect perpetually; however, it shall terminate automatically in the event that the City of Donald vacates the Easement Area, in which case the City shall execute a recordable document evidencing such termination.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed the date and year written below.

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____, 20____, by _____
_____.

NOTARY PUBLIC FOR OREGON
My Commission Expires:_____

ACCEPTED: _____, City Manager

AFTER RECORDING

RETURN TO:

City Manager
City of Donald
P.O. Box 388
Donald, Oregon 97020-0388

PUBLIC UTILITY EASEMENT

For consideration of this conveyance, the receipt of which is hereby acknowledged by the Grantor, the undersigned, _____,

Grantor(s) do hereby grant to the City of Donald, Marion County, Oregon, a municipal corporation, referred to herein as City a permanent, non-exclusive easement to construct, reconstruct, operate and maintain City utilities, including water, sanitary sewer, and other public utilities, and all necessary related facilities under and along the following described area:

**Ex A - Legal Description here:
Ex B – Sketch for Legal Description**

Collectively, the “Easement Area”

TO HAVE AND TO HOLD said easement unto said City, its successors and assigns.

The permanent easement shall include the right, privilege, and authority of City and other public utility providers to excavate for, and to construct, install, lay, operate, maintain and remove underground pipelines and/or cables with all appurtenances incident thereto or necessary thereafter, for the purpose of supplying public utility service under and across the said premises, together with the right of City and other public utility providers to place, install, maintain, inspect, add to the number of and relocate pipelines and/or cables and necessary appurtenances and make excavations therefore from time to time, in, under and through the above described premises within said right-of-way, and to cut and remove from said right-of-way any trees and other obstructions which may endanger the safety or interfere with the use of said pipelines and/or cables or appurtenances attached to or connection therewith; and the right of ingress and egress to and over said above described premises at any and all times for the purpose of patrolling the pipelines and/or cables, or repairing, renewing or adding to the number of pipelines and/or cables and appurtenances and for doing anything necessary, useful or convenient for the enjoyment of the easement hereby granted.

Upon completion of the construction, and any maintenance of the easement area, the CITY shall restore the surface of the property to its original condition and shall indemnify and hold the GRANTOR harmless against any and all loss, cost, or damage arising out of the exercise of the rights granted herein. No trees, permanent structures or improvements shall be placed or constructed on the easement by the Grantor or the Grantor's heirs, assigns or successors in interest without the written permission of the City.

Grantor hereby covenants to and with the CITY, and CITY’S successors in interest and assigns that

GRANTOR is lawfully seized in fee simple of the Easement Area, free from all encumbrances except:

_____ and that GRANTOR and their heirs and personal representatives shall warrant and forever defend the said premises and every part thereof to the CITY, its successors in interest and assigns against the lawful claims and demands of all persons claiming by, through or under the GRANTOR.

In construing this deed and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.

IN WITNESS THEREOF, Grantors have executed this Public Utility Easement as of this _____ day of _____ 20____.

Grantor(s)

By: _____

Print Name: _____

STATE OF OREGON)
) SS
County of _____)

This instrument was acknowledged before me on _____, 20____, by _____.

NOTARY PUBLIC FOR OREGON
My Commission Expires:_____

ACCEPTED: _____ City Manager

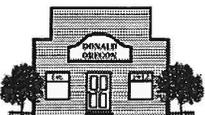
CHAPTER 3 STANDARD

DRAWINGS

NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO CITY OF DONALD STANDARDS.
2. THE CITY OF DONALD REQUIRES A PRE-CONSTRUCTION CONFERENCE. CALL ALL AFFECTED UTILITIES 48 HOURS PRIOR TO START OF CONSTRUCTION TO REQUEST FIELD LOCATES. NOTIFY CITY OF DONALD 24 HOURS PRIOR TO START OF CONSTRUCTION.
3. WATER MAINS SHALL BE AWWA C900, CLASS 150. SERVICES TO BE 1", COPPER TUBE SIZE CROSS-LINKED POLYETHYLENE PER AWWA C-904, SDR 9, BLUE PEXA. UNLESS OTHERWISE NOTED.
4. MAINTAIN MINIMUM 36" COVER OVER MAIN LINES, MEASURED FROM EXISTING OR PROPOSED FINISHED GRADE.
5. FLUSH, PRESSURE TEST & DISINFECT NEW MAIN PRIOR TO ACTIVATING OR RECONNECTING SERVICES, PRESSURE TEST TO BE WITNESSED BY CITY OF DONALD. COORDINATE CHLORINATION WITH CITY & PROVIDE TEMPORARY WATER SERVICE IN ANY CASE WHERE SHUTDOWN MAY EXCEED FOUR (4) HOURS. ALL VALVES UNDER PRESSURE SHALL BE OPERATED ONLY BY CITY OF DONALD WATER DEPARTMENT.
6. SAW CUT ALL EXISTING PAVED AREAS.
7. ALL LIVE TAPS TO BE FURNISHED BY CITY OF DONALD. CALL 678-5543 TO OBTAIN COSTS & ARRANGE SCHEDULING.
8. PRIOR TO FINAL ACCEPTANCE, SUBMIT COMPLETE "AS-BUILT" PLANS TO THE CITY ENGINEER SHOWING SERVICE LOCATIONS, LENGTHS, DEPTHS, SIZES, DISTANCES BETWEEN STRUCTURES & CORP. STOPS.

J:\Donald\DETAILS\W-10 STANDARD WATER NOTES.dwg, 5/27/2019 2:48:47 PM, Xerox AluLink B8055 PS (6.5X11).pc3



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

DATE: 4/30/2019

DRAWN: JVB

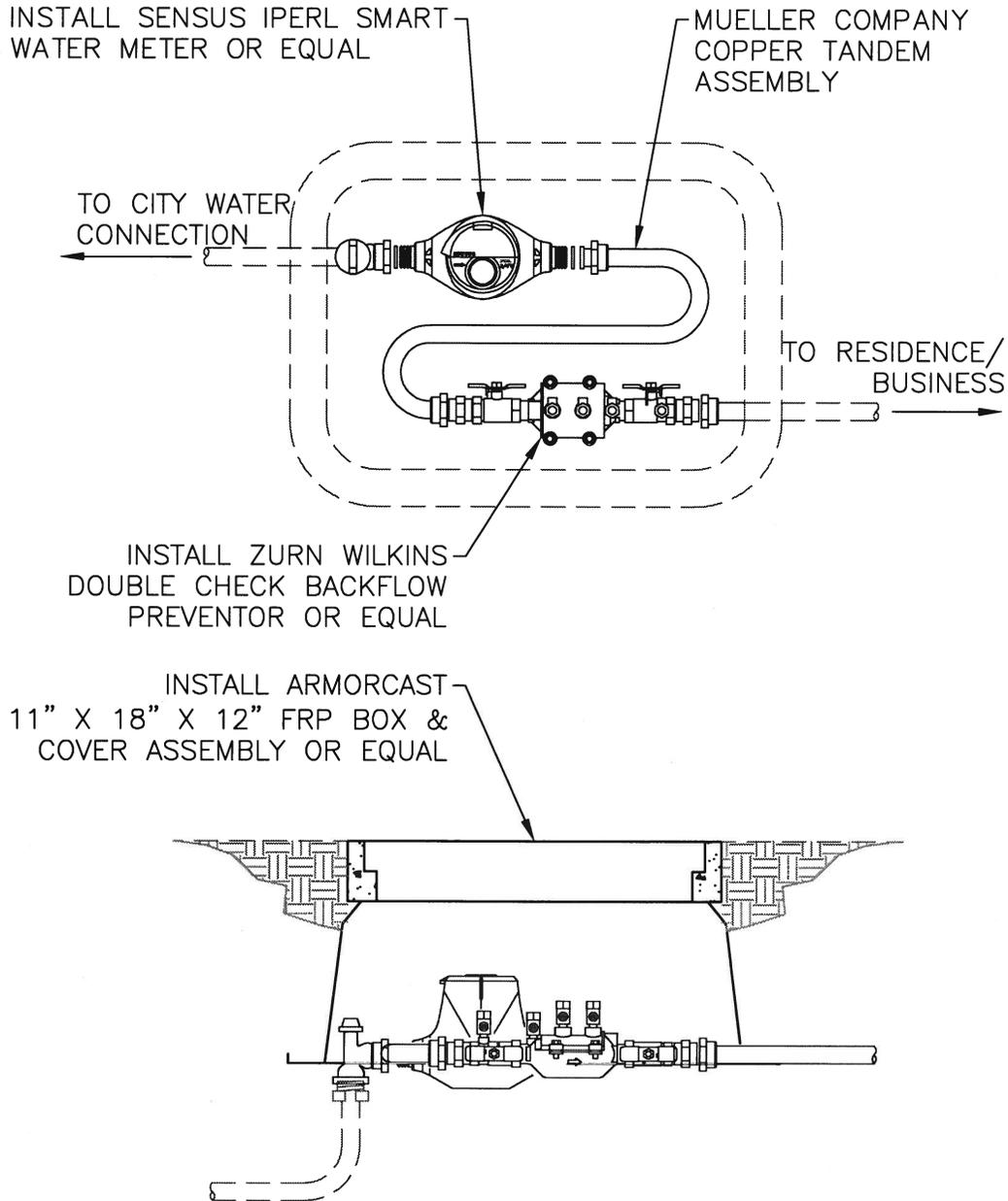
APPROVED:

STANDARD WATER NOTES

STD DWG NO: W-10

NOTES:

1. METER, BACKFLOW PREVENTER AND TAIL PIECE SUPPLIED AND INSTALLED BY CITY.



J:\Donald\DETAILS\W-11 WATER SERVICE DETAIL.dwg, 5/3/2019 2:01:11 PM, Xerox AltaLink 86055 PS (8.5x11).pc3



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

DATE: 4/30/2019

DRAWN: JVB

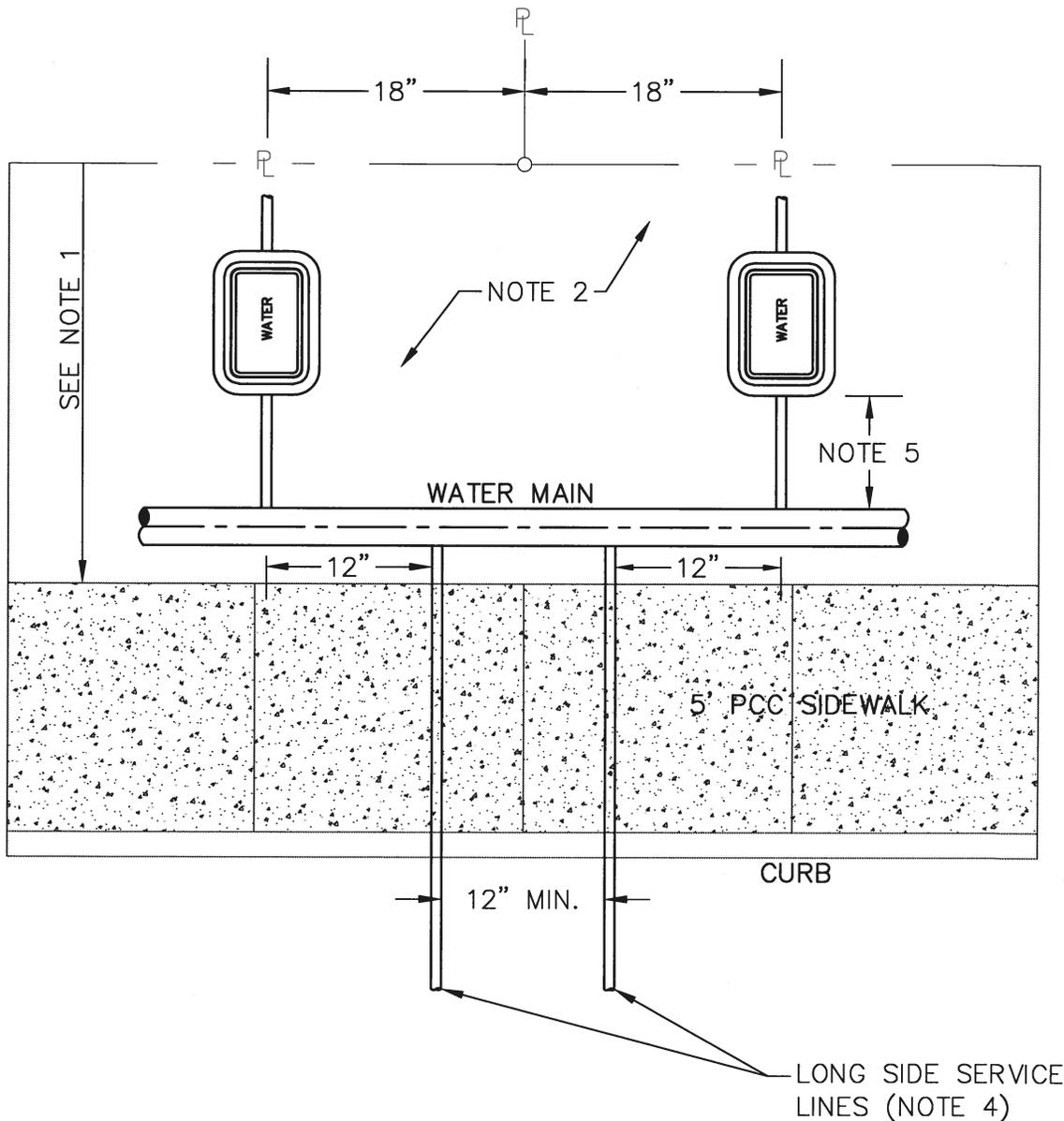
APPROVED:

3/4" OR 1" WATER SERVICE DETAIL

STD DWG NO: W-11

NOTES:

1. NORMALLY 2.5' FOR LOCAL STREETS.
2. AREA BETWEEN METERS TO REMAIN CLEAR TO PERMIT INSTALLATION OF STREET LIGHT POLES.
3. WATER MAIN LOCATION MAY VARY.
4. TAP LONG SIDE SERVICE BETWEEN SHORT SIDE SERVICES AS SHOWN.
5. SET METER BOX AS CLOSE TO BACK OF WALK AS PRACTICAL.
6. SEE STANDARD DRAWING W-11 FOR SERVICE DETAILS.



J:\Donald\DETAILS\W-15 TYPICAL WATER METER LOCATION.dwg, 5/3/2019 2:28:22 PM, Xerox AltiLink B8055 PS (6.5X11).pc3



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

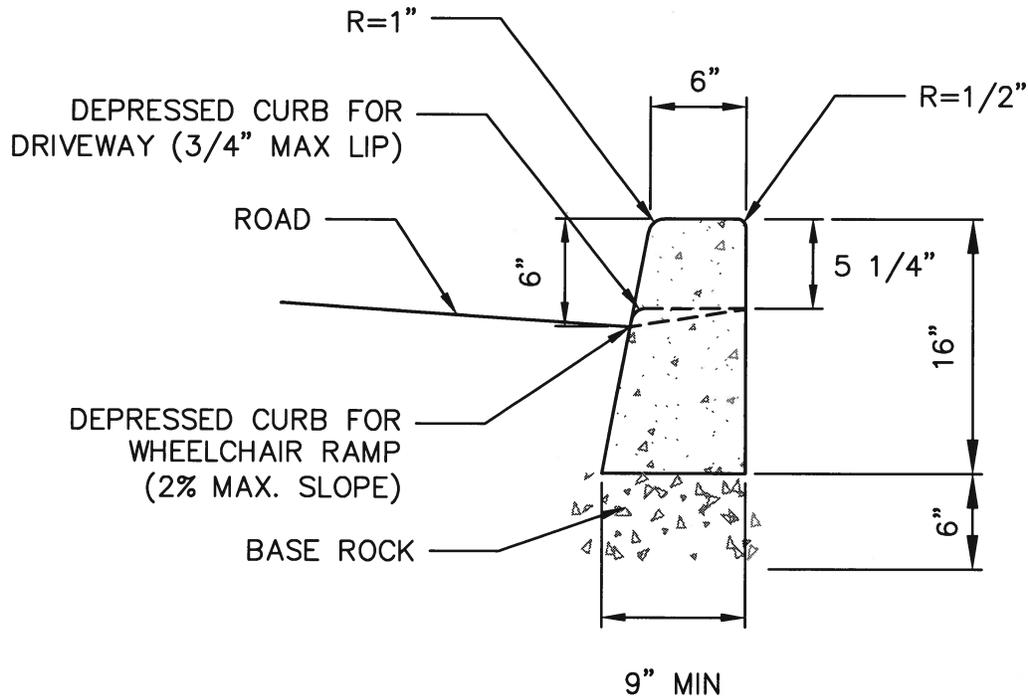
DATE: 4/30/2019

DRAWN: JVB

APPROVED:

TYPICAL WATER METER LOCATION

STD DWG NO: W-15



TYPICAL "C" CURB

NOTES:

1. ALL RADII SHALL BE 3/4" EXCEPT AS OTHERWISE SHOWN.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' INTERVALS AND SHALL EXTEND AT LEAST 50% THROUGH THE CURB OR CURB AND GUTTER.
3. A CONTRACTION JOINT SHALL BE PLACED ALONG AND OVER WEEP HOLE THROUGH THE CURB AND THROUGH THE SIDEWALK.
4. WHEN SIDEWALKS ARE CONSTRUCTED, EXTEND 3" PIPE TO BACK OF SIDEWALK AND INSTALL COUPLING.
5. ALL CURB SHALL BE CONSTRUCTED A MINIMUM OF 24 HOURS PRIOR TO PLACING SIDEWALK.



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

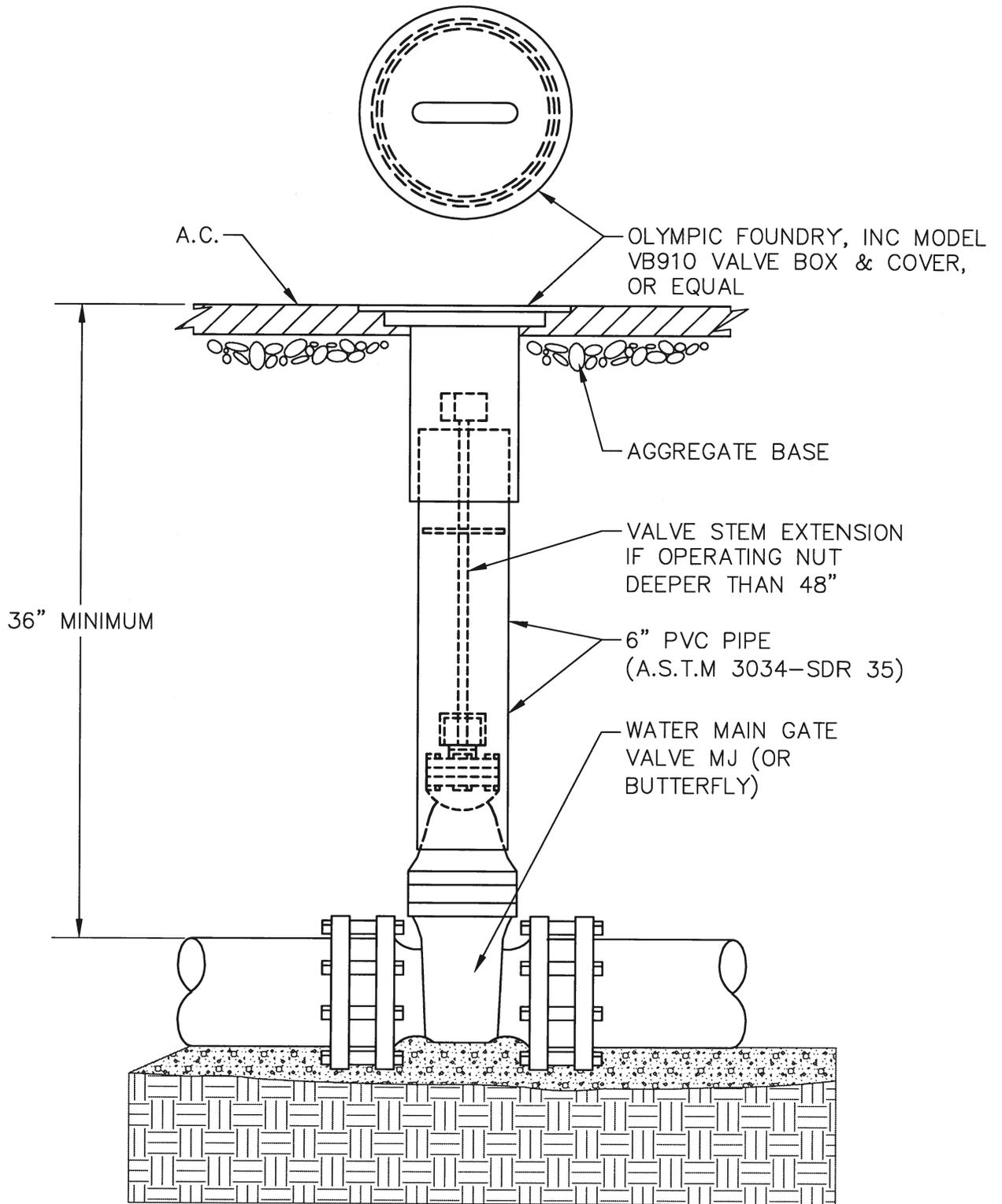
DATE: 4/30/2019

DRAWN: JVB

APPROVED:

CURB DETAIL

STD DWG NO: ST-20



J:\Donald\DETAILS\W-21 WATER VALVE BOX.dwg, 5/3/2019 3:38:07 PM, Xerox AltaLink B8055 PS (8.5x11).pc3



CITY OF DONALD
 P.O BOX 388
 DONALD, OREGON
 97020

DATE: 4/30/2019

DRAWN: JVB

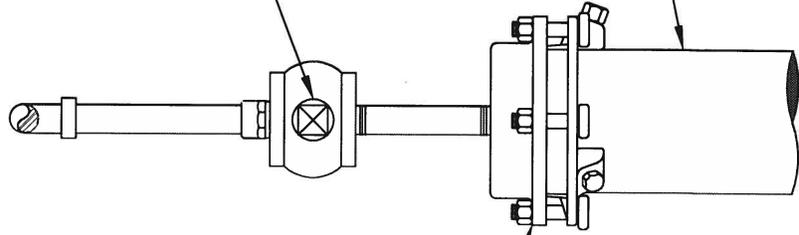
APPROVED:

WATER VALVE BOX DETAIL

STD DWG NO: W-21

2" BLOWOFF VALVE
W/SQUARE
OPERATING NUT

MECHANICALLY
RESTRAINED PIPE AS
REQUIRED

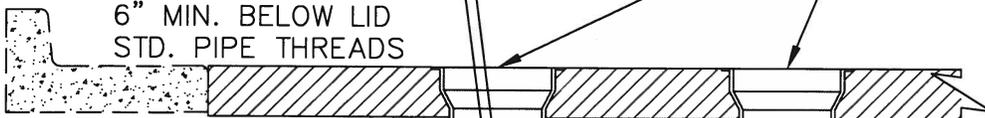


MJ CAP W/2" TAP &
MECHANICAL RESTRAINT

2" BLOWOFF PLUG
WITH TEFLON TAPE

VALVE BOXES

2" GALV. PIPE TO BE
6" MIN. BELOW LID
STD. PIPE THREADS



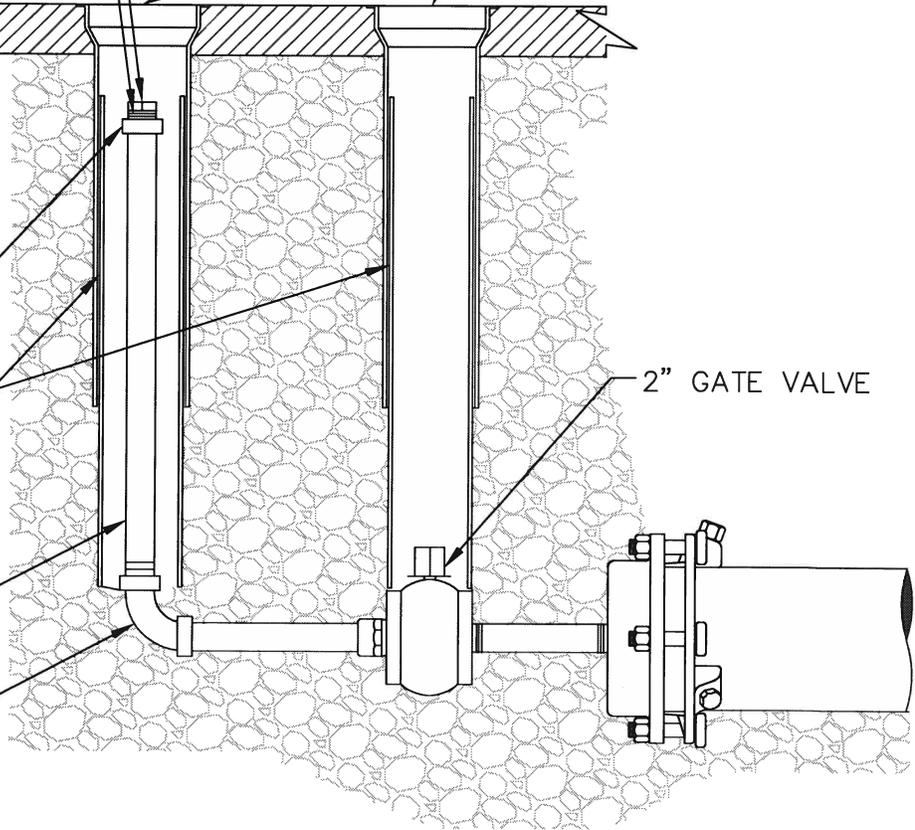
2" GALV. COUPLING

6" 3034 P.V.C.

2" VERTICAL PIPE

2" G.I. RISER W/1/4"
DRAIN HOLE & ROCK
BEDDING

2" GATE VALVE



J:\Donald\DETAIL SW-22 STANDARD BLOWOFF DETAIL.dwg, 5/3/2019, 2:39:24 PM, Xerox AltaLink 88055 PS (8.5X11).pc3



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

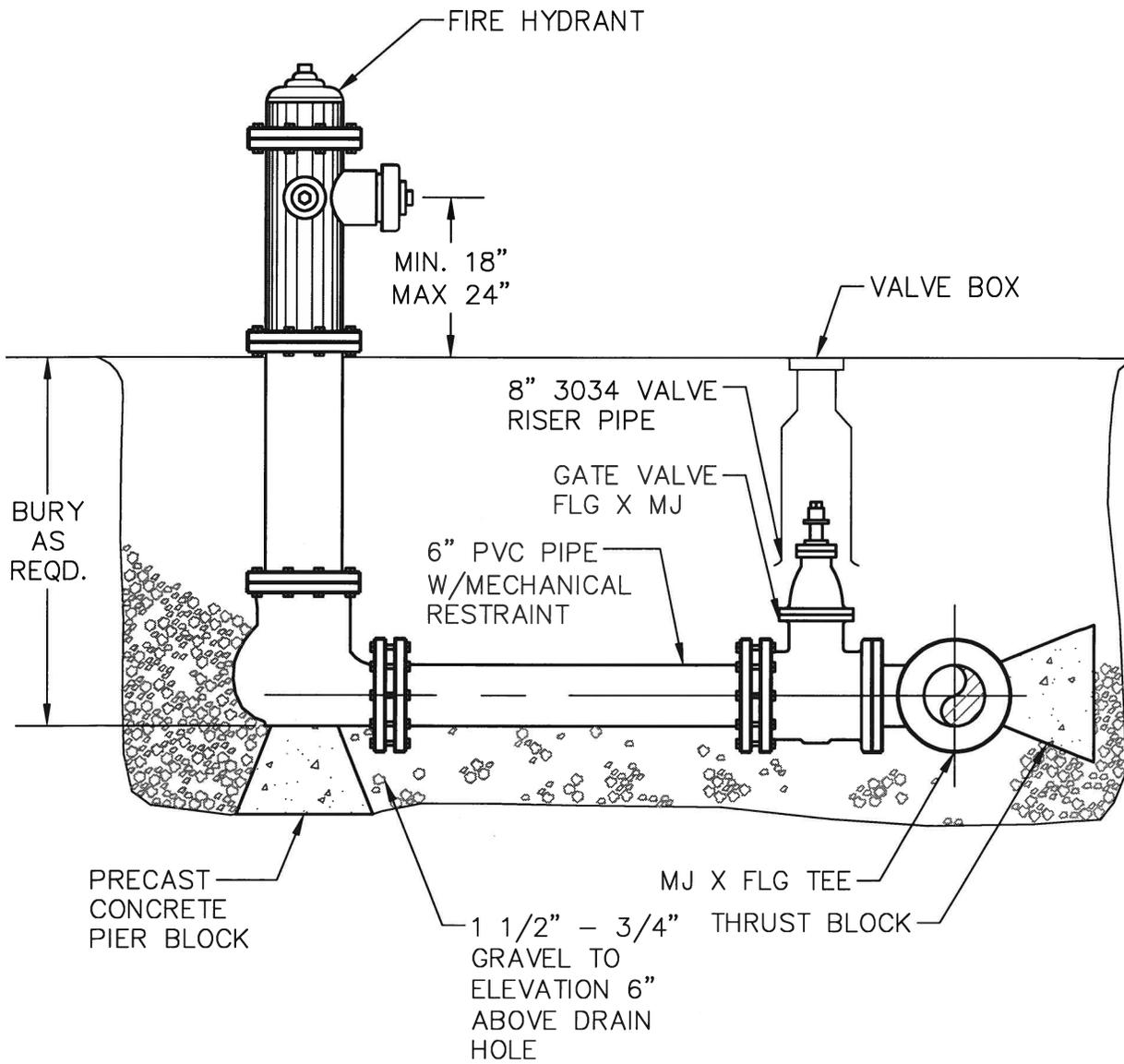
DATE: 4/30/2019

DRAWN: JVB

APPROVED:

STANDARD BLOWOFF DETAIL

STD DWG NO: W-22



J:\Donald\DETAILS\W-24 FIRE HYDRANT DETAIL.dwg, 5/3/2019 2:54:18 PM, Xerox AltaLink B9055 PS (8.5X11).pc3



CITY OF DONALD
 P.O BOX 388
 DONALD, OREGON
 97020

DATE: 4/30/2019

DRAWN: JVB

APPROVED:

FIRE HYDRANT DETAIL

STD DWG NO: W-24

**MINIMUM REQUIRED RESTRAINED LENGTH (FEET) FOR
PVC PIPE ON EACH SIDE OF THE FITTING**

Test Pressure 150 psi, min 36" cover. Adjust accordingly for alternative test pressures.

Pipe Size	Sand/Silt (SM)					Sand/Clay (SC)				
	11-1/4°	22-1/2°	45°	90°	Valve/ Plug	11-1/4°	22-1/2°	45°	90°	Valve/ Plug
4	3	4	8	16	36	3	4	6	13	26
6	3	6	10	22	48	3	6	8	18	34
8	4	8	12	28	64	4	7	10	24	46
10	6	9	14	34	76	5	9	12	28	54
12	7	10	16	38	88	6	11	14	32	64

On all pipelines where joint locations are unknown, restraint must be developed with concrete thrust blocking. Thrust blocks shall be minimum 3,000 psi commercial concrete. Thrust blocking shall be poured against undisturbed earth in accordance with the following tables:

THRUST PER 150 PSI TEST PRESSURE, LB.

Pipe Size	11-1/4°	22-1/2°	45°	90°	Valve/Tee/Plug
4	370	740	1,450	2,670	1,900
6	1,060	2,110	4,140	7,640	5,400
8	1,480	2,950	5,770	10,700	7,600
10	2,310	4,600	9,020	16,700	11,880
12	3,330	6,620	13,000	24,000	17,000

TYPICAL SOIL BEARING VALUES, LB/SF

SAND	1,000 lbs/sf
SAND and GRAVEL	1,500 lbs/sf
SAND and GRAVEL with CLAY	2,000 lbs/sf

J:\Donald\DETAILS\W-33 STANDARD THRUST BLOCKING DETAILS.dwg, 5/3/2019 3:30:15 PM, Xerox AltaLink 88055 PS (6.5X11).pc3



CITY OF DONALD
P.O BOX 388
DONALD, OREGON
97020

DATE: 4/30/2019

DRAWN: JVB

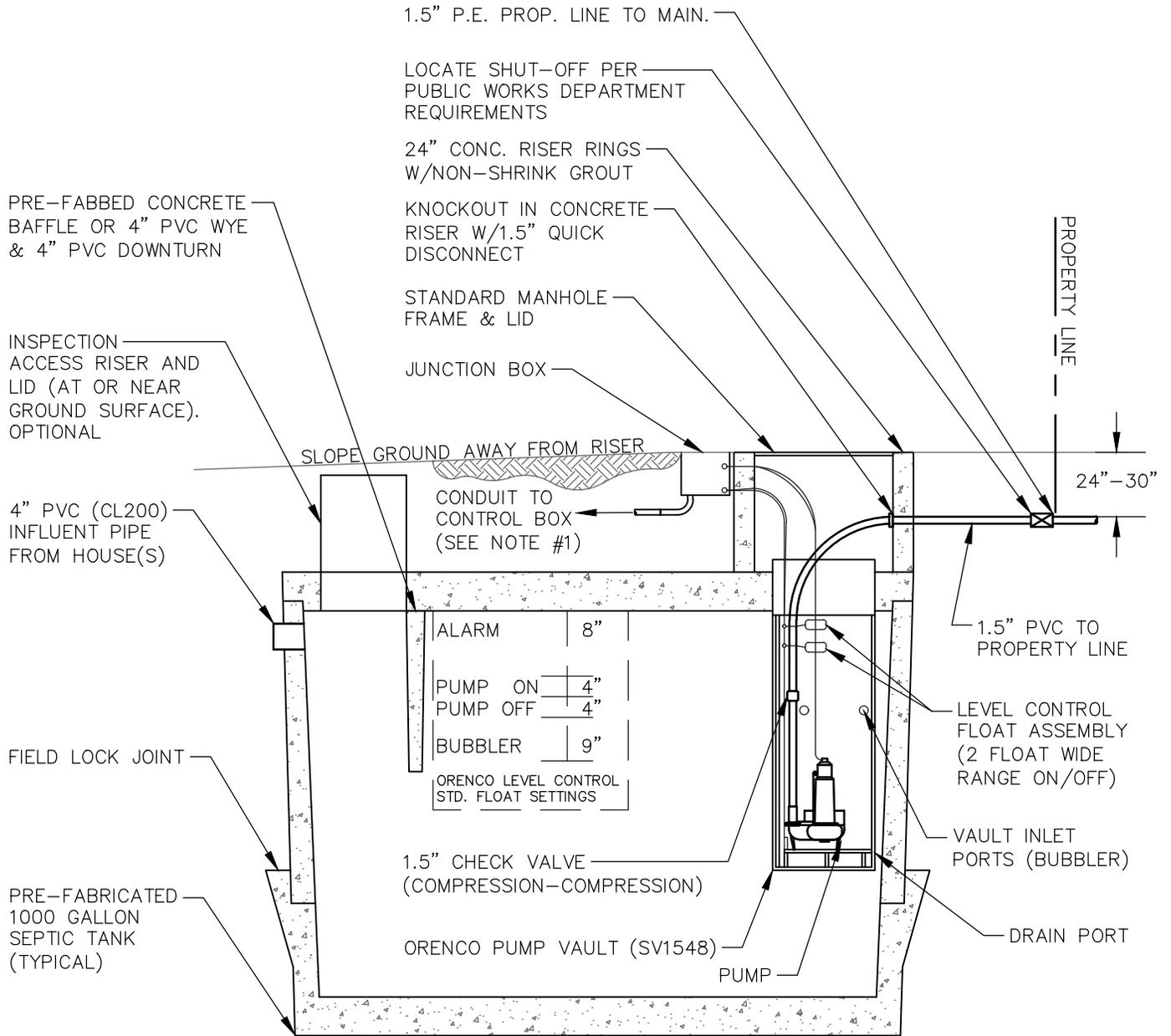
APPROVED:

**STANDARD THRUST BLOCKING
DETAIL**

STD DWG NO: W-33

NOTES:

1. ORENCO CONTROL BOX WITH COUNTER ORENCO #51 CT (MOUNTED TO HOUSE WITH 15 AMP CKT. DEDICATED)
2. SEPTIC TANK MUST BE LOCATED TO HAVE A MAXIMUM OF 36" OF COVER.



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APPROVED:

**STANDARD SEPTIC TANK
 INSTALLATION**

STD DWG NO: ST-70