



CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

CITY COUNCIL

March 26, 2024
Council Chambers • 411 SW 9th Street

COUNCIL MEMBERS

Ed Fitch
Mayor

Cat Zwicker
Council President

Tobias Colvin
Councilor

Clifford Evelyn
Councilor

John Nielsen
Councilor

Kathryn Osborne
Councilor

Shannon Wedding
Councilor

MARCH 26, 2024

EXECUTIVE SESSION AGENDA

5:30 PM

I. EXECUTIVE SESSION

Oregon Law permits public bodies to meet in executive session to discuss specific matters which are not open to the public. Final actions or decisions on these matters will be made during regular session.

- A. Litigation – ORS 192.660(2)(h) authorizing executive sessions “to consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed.”
- B. Labor Negotiations – ORS 192.660(2)(d) authorizes executive sessions “to conduct deliberations with persons designated by the governing body to carry on labor negotiations.”

Under the provisions of the Oregon Public Meetings Law, the proceedings of this executive session are for background information only for media attending and not for publication or broadcast.

MARCH 26, 2024

REGULAR MEETING AGENDA

6:00 PM

I. CALL TO ORDER / ESTABLISH A QUORUM

II. BLESSING - Pastor Jason Reeves, Redmond Heights Pentecostals

III. PLEDGE OF ALLEGIANCE

IV. CITY ANNOUNCEMENTS

- A. Doug Riggs: Review of 2024 Oregon Legislative Session

V. COMMENTS FROM CITIZENS AT THE MEETING

Citizen comments are limited to three (3) minutes per person and will be accepted for a period of 30 minutes. Comments should be focused on City of Redmond business. Attendees are asked to refrain from interrupting, calling-out, or cheering during citizen comments.

- A. Written Comments from Jay Patrick

VI. CONSENT AGENDA

- A. Minutes of January 29, 2024, Council Meeting
- B. Minutes of February 13, 2024, Council Meeting
- C. International Dark Sky Week Proclamation

- D. Resolution #2024-09 - A resolution authorizing the City of Redmond to apply for the Local Government Grant from the Oregon Parks and Recreation Department for rehabilitation of the Central Dry Canyon and delegating authority to the City Manager to sign the application and accept the grant if awarded. (up to \$1 million)

VII. PROCLAMATIONS

- A. Arbor Week Proclamation

VIII. BID AWARDS / BID REJECTIONS

- A. Purchase of Replacement Playground Equipment at Fairhaven Park (PK2402): \$425,000.

IX. ACTION ITEMS

- A. Special Event Street Closure Request for the Wild Ride Classic Car Show: April 20, 2024
- B. Resolution #2024-07 - A resolution of the City of Redmond declaring principal and interest, due and payable at once, on Tax Lot #15-13-10A0-01100 as authorized by Oregon Revised Statutes 223.370 and Redmond City Code Sections 3.005 - 3.095.
- C. Resolution #2024-10 - A resolution adopting amendments to the City of Redmond Standards and Specifications.

X. ADDITIONAL COMMENTS FROM CITIZENS AT THE MEETING

XI. CITY MANAGER COMMENTS

XII. COUNCIL COMMENTS

XIII. MAYOR'S COMMENTS

XIV. ADJOURN

Regular Council meetings are broadcast live on COTV11 – BendBroadband Channel 11 beginning at 6:00 p.m. on the 2nd and 4th Tuesdays of each month. Rebroadcasts are scheduled for the non-meeting Tuesdays at 6:00 p.m.

The City of Redmond encourages all citizens to participate in its programs and activities. This meeting location is accessible to people with disabilities. Requests for accommodation may include sign language interpreter service, assistive listening devices, materials in an alternate format or any other accommodation. If any accommodations are needed, please contact the ADA Coordinator at 541-504-3036 or access@redmondoregon.gov. Requests should be made as soon as possible, but at least 3 business days prior to the scheduled meeting.

The City of Redmond does not discriminate on the basis of disability status in the admission or access to, or treatment, or employment in, its programs or activities

COCO End-of-Session Report

March 18, 2024



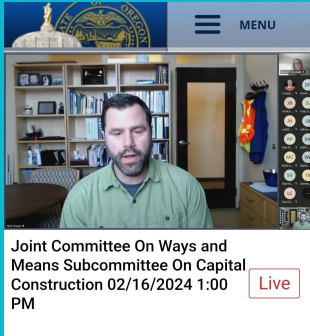
**NORTHWEST
POLICY ADVOCATES**

Session Overview

- 135 bills passed in 32 days
- **Main Session Goals:** Housing & Ballot Measure 110 reform
- Few investments in projects for many parts of rural and Eastern Oregon, despite lawmakers having \$560 million more to spend than expected



2024 Session



Policy and Funding

Passed

Juniper Water Bill Fix

SB 1501 includes the technical fix the *Central Oregon Intergovernmental Council* needs to implement NWSA's 2023 **Stream Restoration and Juniper Management Act**, and should immediately eliminate the hold-up at the Dept. of Administrative Services. This has prevented COIC from working with Soil and Water Conservation Districts to identify additional potential funding sources for this important water conservation work throughout Central, Eastern and Southern Oregon.



Ballot Measure 110 Reform

Numerous hearings (late into the night)
Hours of closed-door meetings
Several iterations of the bill

Joint Addictions Committee arrived at a compromise

[HB 4002](#) passed the House 51-7 and Senate 21-8. Mix of incentives (and potential criminal penalties), plus enhanced substance abuse treatment options. Counties will be assigned much of the task of implementing this new system. Workforce in this area remains a key concern

The bill is likely to take a potential fall 2024 ballot measure off the table.



Oregon fentanyl deaths: the ‘staggering’ statistic for how we compare nationally

Overdose fatalities in Oregon are up more than 1,500% since 2019.

Behavioral Health

Legislators introduced dozens of concepts to improve behavioral health and substance use disorder treatment this session.

Passed:

- **HB 4150** – notifies providers of overdoses
- **SB 1553** – makes drug use on public transit a misdemeanor punishable by up to 1 year in jail, a fine of up to \$6,250 or both. Defendants would be eligible for treatment programs
- **HB 4001** – creates a Task Force on Specialty Courts
- **SB 1503** – sets up a Firearm Suicide Prevention Task Force
- **HB 4151** – establishes a Youth Behavioral Health Workforce Subcommittee in the System of Care Advisory Council to improve licensure for youth behavioral health service professions
- **HB 4092** – requires a study on what it would take for counties and their partners to respond to state behavioral health mandates



Behavioral Health, cont.

The Legislature **funded critical behavioral health and substance use disorder** prevention and treatment programs in its "Christmas tree" bills ([HB 4002](#)/[HB 5204](#)):

- \$7.5 million for **Aid & Assist**,
- \$14.6 million for **Counties' Community Corrections**, and
- Funding for Deschutes County's **Impacts** program
- \$525,000 to **expand detox capacity** and
- \$1.5 million to develop **culturally specific SUD residential capacity** in Central Oregon
- \$1.5 million for the **Deschutes County Stabilization Center**
- Outpatient clinics, residential facilities, sobering centers, opioid treatment (**MAT**) in jail, public defenders and court diversion programs.
- \$18 million for [recovery houses](#)
- **Free on the Outside** – received \$850,000

[HB 5203](#) also allocates \$18.3 million to the Problem Gambling Fund

Housing & Homelessness \$

The Governor introduced just one bill this session, [SB 1537](#) (refined legislation that had failed on the last day of the 2023 Session).

Numerous provisions designed to speed up housing approvals, give limited opportunities to cities to expand their Urban Growth Boundaries, etc. SB 1537 is the policy portion of the Governor's agenda. SB 1530 includes much of the funding to make all of this happen.

[SB 1530](#) appropriates **\$279.6 million** General Fund for housing-related projects:

- \$65 million for **shelter support**
- \$34 million for **homelessness prevention services** + \$7 million to the Urban League
- \$5 million for **Individual Development Accounts**
- \$15 million to OHA's **Healthy Homes Repair Fund**
- \$18 million for **housing projects for people recovering from SUD**

Housing & Homelessness \$, cont.

HB 4134 and **HB 4128** will help **cities** fund **infrastructure projects** to develop housing. HB 4134, which passed and is now on the way to the Governor for her signature, includes funding for 4 cities, as well as key criteria requiring that projects: be inside the UGB, have completed land use evaluations, be ready for construction, and generate housing that critical workers can afford (teachers, fire, police, etc.). The funding will be fast-tracked (within 60 days) through "Business Oregon." Several projects from the original version of HB 4128 were also included in SB 1530.

SB 1530 and HB 4134 also fund critical **water, sewer and stormwater projects in Central Oregon**, including:

- \$1.425 million to Madras
- \$2 million to Prineville
- \$2.5 million to Redmond
- \$1.3 million to Culver

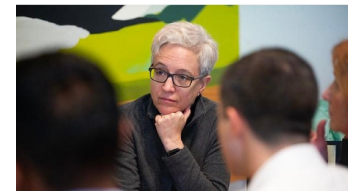


House Committee On Housing
and Homelessness 02/06/2024
8:00 AM

Live

Current Item:

HB 4134 Public Hearing



SUBSCRIBER EXCLUSIVE

**Gov. Tina Kotek
vows to hold
cities, agencies
accountable on state
spending**

By Carlos Fuentes. 19 hr. ago

Other City/County Issues

HB 4003 Oregon is facing a **medical examiner** shortage. The Oregon State Police will study the causes and ways to address the shortage of medical examiners under a bill passed this session. Expect their report by October of 2025.

SB 1576 expands the definition of recreation under the state's "**recreational immunity**" law to include walking, running and bicycling, and would protect local governments from lawsuits for one year. The bill will lead to a longer-term solution in time for the 2025 Legislative Session. It passed along partisan lines.

HB 4045 **lowers the retirement age for firefighters and police officers** with five years on the job from 60 years to 55. The bill reclassifies district attorneys, forensic scientists and evidence technicians as police and increases retirement benefits for employees involved with patients at the Oregon State Hospital and 911 operators. Most of the provisions will take effect Jan. 1, 2025.

Other City/County Issues, cont.

Passed/funded:

- [SB 1575](#) – Limits public bodies from including a **duty to defend** requirement in a construction agreement with people providing architecture/landscape architecture/engineering/photogrammetric mapping/transportation planning/land surveying or related professional services, except to the amount of the person's proportionate fault.



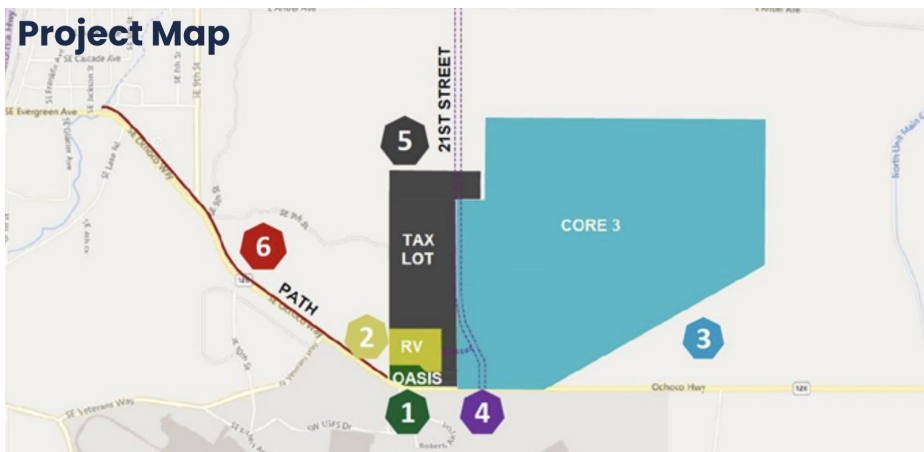
Missed Opportunities

Failed bills and funding

City/County Issues

Failed/not funded:

- **CORE3/21st street**
- **Mountain View Village RV**
- **Bend funding request**
- **HB 4107** – \$ for loss/injury to livestock/dogs by wolves



Key Bills and Funding Requests

Mysteriously stuck in Ways & Means. Some may return in 2025:

- Funding for critical local projects, including **housing infrastructure** (Bend), **Fire/EMS resources**, transportation infrastructure for **housing/homeless/RV resources** in rural areas, etc. were left by the wayside, although Legislators are already promising to make these a priority in 10 months for the "long" session in 2025.
- **SB 1592** – would have appropriated \$6 million for 5 higher education schools to expand their existing programs to train the **behavioral health workforce**



Joint Committee On Ways and
Means Subcommittee On Capital
Construction 02/16/2024 1:00
PM

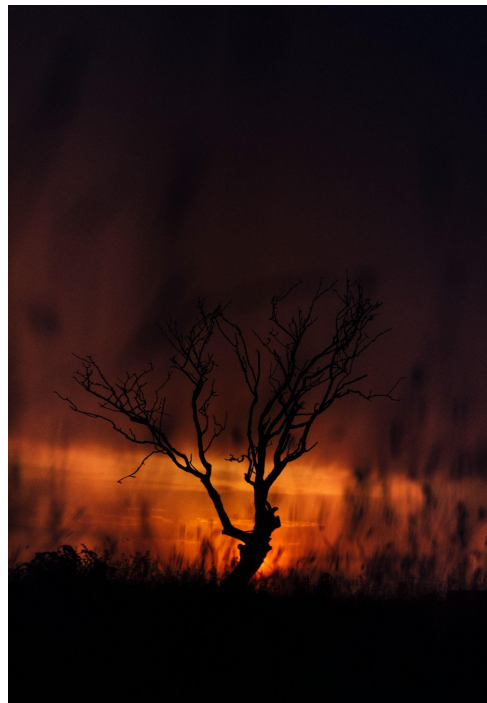
Live



Wildfire Prevention & Protection

Three bills to fill funding gaps for wildfire prevention and protection failed:

- **HB 4075** was a referral for a ballot measure to Oregon voters to raise property taxes to pay for wildfire programs
- **SB 1593** would have asked Oregonians to vote to reinstate a severance tax on the value of industrial timber harvests for the first time in 30 years
- **HB 4133** would have raised an existing tax on the volume of logs companies harvest while reducing timber and ranch landowner fees for wildfire protection



But....

465 million

...and \$48 million





Next Steps

Preparation for the Election
& 2025 Session

Issues for COCO

The Lesson of: Lists Lists Lists / And Partnerships



- Water/groundwater rule/responsibility
- Housing
- Wildfire funding
- Continued funding for juniper/stream restoration projects (esp. monitoring)
- Overall transportation system funding crisis/JCT Road Shows
- CORE3 funding
 - 21st St.
 - 2nd construction bond allocation



Elected Official News

All 60 Oregon House seats and 15/30 House seats are up for election in Nov., as are Sec. of State, Treasurer and Attorney General, and all 6 US House of Representative seats:

- Rep. **Julie Fahey** (D-Eugene) will replace Speaker **Dan Rayfield** (D-Corvallis) who is running for AG
- WM Chair Sen. **Elizabeth Steiner** (D-Portland) is running for Treasurer. Current Treasurer **Tobias Read** is running for Sec. of State against 5 Ds, including Sen. **James Manning** (D-Eugene)
- 6 Senators can't run for their seats in 2024: **Tim Knopp** (R-Bend), **Art Robinson** (R-Cave Junction); **Brian Boquist** (I-Dallas) is running for State Treasurer; **Dennis Linthicum** (R-Klamath Falls) filed for Sec. of State; **Bill Hansell** (R-Athena) and **Lynn Findley** (R-Vale) will retire.
- **Competitive races:**
 - Senate: **Bend-based 27th district**, **Dick Anderson** (R-Lincoln City), **Chris Gorsek** (D-Troutdale)
 - House: **Kevin Mannix** (R-Salem), **Jeff Helfrich** (R-Hood River), **Cyrus Javadi** (R-Tillamook), **Tracy Cramer** (R-Gervais), **Emerson Levy** (D-Bend/RDM), **Annessa Hartman** (D-Gladstone), and **Hoa Nguyen** (D-Portland)
- Running for the legislature (again): **Christine Drazan**, **Bruce Starr** and **Mike McLane**
- Running for US House: District 3 – Rep. **Maxine Dexter** (D-Portland), District 5 – Rep. **Janelle Bynum** (D-Clackamas)



Interim To-Do List

- ☐ Thank and meet with local delegation
- ☐ Spend time getting to know 1st term members and candidates
- ☐ JCT Hearings/Water Summit/CORE3 Tour
- ☐ Identify potential 2025 issues/**September Bill Note Deadlines**
- ☐ Work with Governor/agencies
- ☐ Collaborate with regional/local partners
- ☐ Participate in interim legislative hearings

Short Session Done!



DOUG RIGGS

Director

doug@nwpolicy.com



COREY BARBER

Outreach Director

corey@nwpolicy.com

I was reading articles the other day and ran across this one. It was about a young man who has actually been in the shoes of the homeless and experienced drug addiction.

I can have my opinion, you can have yours. The opinions we should especially give attention and thought to are the ones given by those in the shoes of the people facing the realities in our society today. Not the self prescribed all knowing politicians or advocates who “know how to fix homelessness”. We can all agree it is a complex problem.

Please take a few minutes and read the following article. I believe you’ll find the perspective worthy of a few moments of your time.

SALEM, Ore. — Matt Maceira remembers people throwing trash out their car windows at him as they drove by. But the insults they hurled hurt more. Worthless. Hopeless. Lost cause.

"Hey low-life," he recalled one man shouting. "Nobody loves you. Why don't you kill yourself?"

"I heard that all the time," walking through the woods he used to call home. "Because I [was] homeless, which means I have less value, right?"

"Said God never," he added sarcastically.

After 27 years in the drug world, Maceira is approaching a decade of sobriety. He travels around the world and his home state, sharing the gospel in hopes of inspiring others to rejoin society. Maceira is also a strong critic of Oregon's policies around [drugs, addiction](#) and homelessness.

Maceira was born into a world of drugs, violence and crime. He started drinking at 8 years old and, and when he was 11, his father introduced him to crank. He was stabbed for the first time that same year.

"I used to call that fun," he said of his bloody upbringing.

His twin brother Rei developed chemical psychosis from prolonged meth use and took his own life shortly before their 24th birthday, Maceira said, sending him deeper into despair and addiction.

But a pastor befriended Maceira, never giving up on him. And, after several more years, Maceira finally turned his back on the only way of living he'd ever known.

"I have a totally new life today," he said. "God changed my heart."

Oregon's [homeless population](#) has grown 37.4% from 2020 to 2023, according to data from the U.S. Department of Housing and Urban Development. The state has the second-highest percentage of homeless residents who are unsheltered (64.6%), behind only California (68%). State and local government spending on housing and other homeless services has also skyrocketed.

Ahead of a forecasted ice storm, Maceira and volunteers from other nonprofits loaded up wagons with sleeping bags, wool socks, water and other gear, and headed into the woods behind Wallace Marine Park, located just across the Willamette River from the [Oregon State Capitol](#). The park holds one of the largest homeless encampments in the entire state.

"I see it solely as a blessing" to return to Wallace Marine Park, Maceira said softly. His bright blue sweatshirt, emblazoned with the words "Hope dealer," stood out against the gray sky and bare trees.

Some who live there "knew me when I was not necessarily the most friendly or approachable person." Maceira smiled. "So I get to come back and genuinely love all these folks out here."

Many of the people Maceira works with are also formerly homeless, like Aidan, who ran away from home at the age of 11. He spent most of the next 12 years living on the streets or in the woods behind Wallace Marine Park.

"I just got addicted to the streets," Aidan said. "Drugs, crime, pretty much doing whatever I wanted to do."

But in October 2019, a month before the birth of his daughter, he had an epiphany.

"I grew up without a dad," he said. "I didn't wanna put my daughter through that."

Now going on five years clean and sober, Aidan works for a medication-assisted [addiction treatment](#) facility and often returns to his old home, spreading the gospel and encouraging others to find their way out of the forest.

As Maceira and other volunteers chatted with residents of the encampment, Aidan let 28-year-old Tyler borrow his phone. After a decade of methamphetamine addiction, Tyler called a treatment facility.

"I'm just trying to get out of here and to do what I can to become a citizen of the outside world," Tyler said after he finished giving the center his information. "To not live out here."

For others, living in the woods is more comfortable than the claustrophobic feeling of being surrounded by four walls.

"I don't know if I want to be indoors," said Seven, who has been homeless since 2006, shortly after his mother died. "I'm not used to it."

Ressa, who was off the streets and in transitional housing for a time, agreed.

"I couldn't handle the four walls, the limitations and the lack of nature," she said. "I don't want to be stuck."

Asked how society can address homelessness when some individuals prefer living outside, Maceira paused.

"If somebody tells you they like it, they like not bathing, they like not eating ... or they are cool with eating food that's no longer fit for human consumption, drinking creek water," he said, trailing off. "If somebody tells you that they like any of that, they're not doing well."

A 2018 HUD report estimated that about 27% of unsheltered homeless people were "severely mentally ill," and about 21% suffered from chronic substance abuse. In the Portland area, drug overdoses accounted for nearly 40% of all homeless deaths in 2022. Fentanyl contributed to about 74% of those, according to a [recent report](#) from the Multnomah County Health Department.

Addiction and homelessness went "hand in hand" for Maceira. And, while he acknowledged that's "not everybody's story," Maceira is deeply critical of Oregon's approach to the homeless crisis, which he said often neglects to address underlying causes.

The "housing first" model is popular with those who insist that a lack of affordable housing is at the root of homelessness. It prioritizes giving homeless individuals housing without preconditions like sobriety or addiction treatment.

"[That] doesn't stop drug addiction" or address mental health needs, Maceira said. "Giving somebody a house doesn't resolve that."

Maceira opposes low-barrier shelters "in their entirety" and said a lot of money is being "wasted" on programs that put the homeless out of sight and out of mind.

"Drugs are being sold and used in those places," he said. "People are dying in those places. I've done celebrations of life services for people that have overdosed at low-barrier shelters."

Maceira has also spoken out in favor of re-criminalizing possession of hard drugs in Oregon, saying lawmakers have an opportunity to "course correct" during their [current legislative session](#).

"Letting people use methamphetamine, fentanyl, and heroin or any other deadly substance is not compassionate," he said.

As the group splashed through puddles, the wheels of their carts cutting deep tracks in the mud, one volunteer looked around at all the garbage.

"No matter what we give, this is what happens to it," he said. But clean socks and water do serve as "ice breakers."

"And then we're always offering the hope that there's a better way," he said.

Sometimes — like with Tyler — people are ready. Be Bold Street Ministries participated in an event at the park in December with dozens of other nonprofits and [churches](#).

"We had people, same day, off the streets," Maceira said. "We had a bunch of people say yes to salvation, get plugged into medical services, navigation services and housing services."

And even though Oregon's homeless problem shows no signs of subsiding yet, Maceira is optimistic about the future.

"It's amazing what we get to do because we get to see miracles all week long," he said.

SPECIAL CITY COUNCIL MEETING OF THE CITY OF REDMOND WAS HELD JANUARY 29, 2024, IN THE EXECUTIVE CONFERENCE ROOM.

COUNCIL MEMBERS PRESENT: Tobias Colvin – Clifford Evelyn – Ed Fitch – John Nielsen – Kathryn Osborne – Shannon Wedding – Cat Zwicker (arrived at 3:05 p.m.)

STAFF PRESENT: City Manager Keith Witcosky – Deputy City Manager John Roberts – City Attorney Keith Leitz – Deputy City Manager/Chief Financial Officer Jason Neff – Housing Program Analyst Linda Cline – Airport Director Zachary Bass – Public Works Director/City Engineer Jessica MacClanahan – Finance Director James Wood – Water Utilities Supervisor Joshua Wedding – City Recorder Kelly Morse

MEDIA PRESENT: None

An Executive Session was added to the agenda.

EXECUTIVE SESSION

A. Litigation – ORS 192.660(2)(h) authorizes executive session "to consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed. "

Mayor Fitch convened the Council into Executive Session at 3:00 p.m. in accordance with ORS 192.660(2)(h) authorizing executive sessions to consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed.

Mayor Fitch adjourned Executive Session at 3:18 p.m.

Mayor Fitch called the meeting to order at 3:20 pm. A quorum was present.

PRESENTATIONS

A. Northpoint Vista Check In

Deputy City Manager John Roberts provided an update on Northpoint Vista, highlighting the conveyance of the property from the County to the City, the Oregon Housing and Community Services application deadlines, and completing the master infrastructure plan.

City Manager Keith Witcosky noted the City is not likely to receive any funds from the State as part of the League of Oregon Cities' infrastructure request.

At this point in the meeting, the Council moved to item C.

B. Water Permit Update

Regarding water conservation, Councilor Osborne expressed concern that residents could face issues from their Homeowners Associations and/or Covenants, Conditions and Restrictions since these may precede any future conservation measures implemented by the City. Mayor Fitch opined there may be some flexibility for the areas of grass between the sidewalk and street since these may be in the right-of-way. In addition, CC&Rs could be amended to incorporate landscaping conservation options

C. Next Steps on DSL Large Log Partnership

Mr. Witcosky and Mayor Fitch reported on the City's follow-up meeting with the Department of State Lands (DSL). The meeting discussed planning for 700 acres with \$300,000 in funds from the South Highway 97 Urban Renewal District to get the process started. Planning would involve creating a master

infrastructure plan similar to Northpoint Vista. Mayor Fitch spoke about doing a conceptual layout of the property itself, and the financial feasibility of the whole project.

Public Works Director/City Engineer Jessica MacClanahan described how the Council would concurrently see a Transportation System Plan amendment.

D. Construction Excise Tax Update/Check In

Housing Program Analyst Linda Cline sought the Council's direction on consideration of a Construction Excise Tax (CET). She shared information regarding various residential and commercial/industrial CET percentages and the amount of revenue they each would generate. The Council reviewed and discussed various exclusions to the commercial/industrial CET.

The consensus of the Council was to consider 0.5 percent commercial/industrial CET and to exempt public improvements, supportive shelters, and deed-restricted housing. The remaining items would wait until March 1, 2024, to see what the legislature does.

The Council directed Staff to return with a deeper analysis on the 0.5 percent commercial CET, particularly for major projects, and bring examples of what the CET can do in one year and five years for actual projects.

E. Council Goals Refinement

Mayor Fitch recalled when the Council defined their goals, they said they would take another look after one year. Mr. Witcosky distributed copies of the updated Council goals which he reviewed concerning updating the Great Neighborhood principles, the DSL Large Lot project, the Transportation System Development Charges, and water use measures. The Council supported the updated goals.

Councilor Nielsen noted some lower priority items are already being worked on ahead of medium priority items. Staff will reprioritize the priorities and bring the list back to the Council.

After some general discussion regarding the timeframe for an Urban Growth Boundary (UGB) expansion, Mayor Fitch recommended speaking to Deschutes County about reserving land in the northeast for master planning the Urban Growth Boundary expansion.

At this point in the meeting, the Council moved to item B.

The Council briefly discussed the virtual tour of the public safety building.

There being no further business, the meeting was adjourned at 4:42 pm.

Prepared by ABC Transcription Service
Reviewed by Kelly Morse, City Recorder

APPROVED by the City Council and SIGNED by the Mayor this 26th day of March 2024.

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder

REGULAR CITY COUNCIL MEETING OF THE CITY OF REDMOND WAS HELD FEBRUARY 13, 2024, IN COUNCIL CHAMBERS.

COUNCIL MEMBERS PRESENT: Tobias Colvin – Clifford Evelyn – Ed Fitch – John Nielsen – Kathryn Osborne – Shannon Wedding – Cat Zwicker

STAFF PRESENT: City Manager Keith Witcosky – Deputy City Manager John Roberts – Deputy City Manager/Chief Financial Officer Jason Neff – City Attorney Keith Leitz – City Recorder Kelly Morse – Police Chief Devin Lewis – Public Works Director/City Engineer Jessica MacClanahan – Finance Director James Wood – Airport Director Zachary Bass – Communications Director Heather Cassaro – Network Administrator Christian Armatas – Fleet Services Manager Scott Gibson – Budget Analyst Herlinda Corn

MEDIA PRESENT: None

Mayor Fitch called the meeting to order at 6:00 pm. A quorum was established.

BLESSING

Steve Parnell from Redmond Community Church led the blessing.

PLEDGE OF ALLEGIANCE

Councilor Colvin led the Pledge of Allegiance.

CITY ANNOUNCEMENTS

A. Mayor Fitch

Mayor Fitch provided an update on a racist incident that occurred last June. While the perpetrator(s) have not been caught, the incident brings to light the fact that racist acts and verbal racist taunts continue to occur in Redmond. Mayor Fitch met with concerned citizens who indicated individuals, particularly children, continue to face racist and/or prejudice acts and taunts because of their minority status. He reiterated the Council's strong stance against any form of racism or prejudice in the community.

B. Legislative Update from Doug Riggs

Central Oregon Cities Organization Lobbyist Doug Riggs provided an update on last week's legislative hearings regarding a rewrite of Ballot Measure 110 as well as housing in general and homelessness. Due to technical difficulties, Mr. Riggs finished his update later in the meeting.

At this point in the meeting, the Council proceeded to Action Items.

COMMENTS FROM CITIZENS AT THE MEETING

A. Written Comments from Catherine Caudle

B. Written Comments from George Endicott

C. Written Comments from Richard Williams

Bend Resident Judy Trego spoke to her candidacy for Deschutes County Commissioner.

Redmond resident Karin Stauder addressed the written comments from citizens and expressing her support for term limits and nepotism rules for the Council.

CONSENT AGENDA

A. Minutes of December 12, 2023, Council Meeting

B. Minutes of January 8, 2024, Council Workshop

C. Minutes of January 9, 2024, Council Meeting

D. Approval for Increased Purchase Authority of Heavy Equipment to \$232,674

Councilor Zwicker moved, seconded by Councilor Colvin, to approve the Consent Agenda, motion passed. (Colvin-yes, Evelyn-yes, Fitch-yes, Nielsen-yes, Osborne-yes, Wedding-yes, Zwicker-yes)

PRESENTATIONS

A. Fiscal Year 2023/2024 2nd Quarter Financial Report

Deputy City Manager Jason Neff presented the 2nd Quarter financial report. Questions from the Council were addressed throughout the presentation.

At this point in the meeting the Council returned to City Announcements Item B. for the remainder of Mr. Riggs' update.

ACTION ITEMS

A. Purchase of real property at 3415 SW 26th Street for a future transportation project: \$380,000.

Public Works Director/City Engineer Jessica MacClanahan requested approval for the purchase of property located at 3415 SW 26th Street in the amount of \$380,000 plus closing costs. The property will be used for a future expansion of the Yew Avenue roundabout.

Councilor Osborne moved, seconded by Councilor Zwicker, to approve the purchase of real property located at 3415 SW 26th Street in Redmond, Oregon 97756, for the sum of \$380,000 and any associated cost and direct the City Manager to execute all documents required to complete the purchase, motion passed. (Colvin-yes, Evelyn-yes, Fitch-yes, Nielsen-yes, Osborne-yes, Wedding-yes, Zwicker-yes)

B. Proposed Changes to the City Charter for Consideration on the May 21, 2024, Ballot

City Attorney Keith Leitz requested approval of amendments to the City Charter for a referral measure on the May 21, 2024, ballot. The amendments consist of adding term limits to the Council, making the Mayor's term four years and adding term limits, and nepotism.

There were no comments from the public.

Councilor Colvin moved, seconded by Councilor Zwicker, to direct the City Attorney to draft and submit to the County Election Office the proposed Charter amendments to Sections 8, 9, and 12 for placement on the May 21, 2024, ballot and to execute all documents to complete the Charter amendment referral.

Councilor Nielsen asked why each amendment was not being voted on individually. After a brief discussion, the consensus of the Council was to have two different ballot titles. Councilor Colvin then amended his original motion.

Councilor Colvin moved, seconded by Councilor Zwicker to direct Staff to have two ballot measures, one for Sections 8 and 9 and one for [Section] 12, motion passed. (Colvin-yes, Evelyn-yes, Fitch-yes, Nielsen-yes, Osborne-yes, Wedding-yes, Zwicker-yes)

ADDITIONAL COMMENTS FROM CITIZENS AT THE MEETING

There were no additional comments from citizens.

CITY MANAGER COMMENTS

City Manager Keith Witcosky did not have any comments.

DRAFT

COUNCIL COMMENTS

Councilor Nielsen commended the Airport staff for their service during the recent ice storm.

Councilor Colvin wished everyone a happy Valentine's Day.

MAYOR'S COMMENTS

- A. Historic Landmarks Commission - Appointment of Barry Branaugh, term ending December 31, 2027, and appointment of Claire Gray as the Youth Ex-Officio, term expiring December 31, 2024.**

Councilor Colvin moved, seconded by Councilor Zwicker, to approve the appointments of Barry Branaugh, term ending December 31, 2027, and Claire Gray as the Youth Ex-Officio, term expiring December 31, 2024, to the Historic Landmarks Commission, motion passed. (Colvin-yes, Evelyn-yes, Fitch-yes, Nielsen-yes, Osborne-yes, Wedding-yes, Zwicker-yes)

There being no further business for open session and no motions expected as a result of Executive Session, Mayor Fitch adjourned the meeting at 6:38 p.m. He noted the Urban Renewal Agency Board meeting would take place prior to Executive Session.

EXECUTIVE SESSION

- A. Real Property – ORS 192.660(2)(e) authorizes executive session "to conduct deliberations with persons designated by the governing body to negotiate real property transactions."**
- B. Labor Negotiations – ORS 192.660(2)(d) authorizes executive sessions "to conduct deliberations with persons designated by the governing body to carry on labor negotiations."**

Mayor Fitch convened the Council into Executive Session at 7:10 p.m. in accordance with ORS 192.660(2)(e) authorizing executive sessions to conduct deliberations with persons designated by the governing body to negotiate real property transactions and ORS 192.660(2)(d) authorizing executive sessions to conduct deliberations with persons designated by the governing body to carry on labor negotiations.

Mayor Fitch adjourned Executive Session at 7:33 p.m.

Prepared by ABC Transcription Service
Reviewed by Kelly Morse, City Recorder

APPROVED by the City Council and SIGNED by the Mayor this 26th day of March 2024.

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder

City of Redmond PROCLAMATION

A proclamation designating April 2-8, 2024, as

INTERNATIONAL DARK SKY WEEK

WHEREAS, the experience of standing beneath a starry night sky inspires feelings of wonder and awe, and encourages stewardship of our shared environment and our magnificent dark skies; and

WHEREAS, dark skies are an integral aspect of the sustainability of Oregon's wild ecosystems as a key environmental factor in bird migration, insect pollination, and human sleep patterns; and

WHEREAS, Oregon's dark skies are a significant natural resource, with two accredited Dark Sky Places to date – Sunriver and Prineville Reservoir State Park; and

WHEREAS, Oregon holds the largest area of pristine night skies in the contiguous 48 states; and

WHEREAS, astro-tourism, including stargazing, astronomy star parties, and dark sky photography, is an evolving facet of outdoor recreation with real economic benefits for communities across Oregon, and which promotes the mitigation of light pollution; and

WHEREAS, International Dark Sky Week is observed in April on the week of the new moon.

NOW, THEREFORE BE IT RESOLVED THAT the City Council hereby proclaims the week of April 2-8, 2024, to be **INTERNATIONAL DARK SKY WEEK** in the City of Redmond and citizens are encouraged to join in this observance.

APPROVED by the City Council and **SIGNED** by the Mayor this 26th day of March 2024.

The City of Redmond, Oregon

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder



CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

STAFF REPORT

DATE: March 26, 2024
TO: City Council
THROUGH: Keith Witcosky, City Manager
Jason Neff, Deputy City Manager/Chief Financial Officer
Jessica MacClanahan, Public Works Director/City Engineer
FROM: Maria Ramirez, Parks Planner and Project Manager
SUBJECT: Resolution #2024-09 - A resolution authorizing the City of Redmond to apply for the Local Government Grant from the Oregon Parks and Recreation Department for rehabilitation of the Central Dry Canyon and delegating authority to the City Manager to sign the application and accept the grant if awarded. (up to \$1 million)

Report in Brief:

This item authorizes the City to apply for an Oregon Parks and Recreation Department, Local Government Grant for the purposes of bringing more resources (up to \$1 million) to the Central Dry Canyon Rehabilitation Project.

Background:

The Local Government Grant Program will be awarding more than \$23 million of voter-approved Lottery fund grants for outdoor recreation projects in their 2024 grant cycle. Eligible projects include development and/or rehabilitation of outdoor park and recreation areas and facilities, land acquisition for park purposes, development of trails, development of bicycle recreation opportunities, and development of non-motorized water-based recreation projects that are consistent with the outdoor recreation goals and objectives contained in the 2019-2023 Statewide Comprehensive Outdoor Recreation Plan. Applications are due April 1, 2024.

The Central Dry Canyon park contains several of Redmond's parks, including Sam Johnson Park, Kiwanians Field, Spudbowl Field, the Redmond Skate Park, the Weigand Family Dog Park, the Redmond Disc Golf course, the Dry Canyon multi-use trail, and the Dry Canyon mountain biking trail.

The Central Dry Canyon Park Rehabilitation project will expand access to community gathering space, as well as improve vehicle, bicycle, and pedestrian connectivity throughout the park series through rehabilitation and development of several enhancements including:

- Expanding entry points and improving the multi-use pathway that connects the Dry Canyon Park series to the Redmond High School and Cascade Swim Center;
- Improving the multi-use pathway and developing a new pedestrian corridor that connects Sam Johnson Park, Kiwanis Field, Spudbowl Field, the Skate Park, the Dog Park, and Disc Golf area;
- Enhancing two major pedestrian and vehicle connection points at Rimrock Drive and Black Butte/Antler;
- Developing three new parking lots with one providing additional access to Sam Johnson Park; one providing additional access to Spudbowl Field, Kiwanis Field, and the Skate Park; and the final providing additional access to the Dog Park and the Redmond Disc Golf Course;
- Enhancing street improvements along 15th Street to improve stormwater runoff, traffic flow, and increase access,
- Developing one new flushable public restroom located adjacent to the new parking lot near the Dog Park, Disc Golf course, and Dry Canyon trail system; and
- Updating and enhancing the Dry Canyon trailhead and wayfinding signage throughout the park series.

Discussion:

The 2019-2023 Statewide Comprehensive Outdoor Recreation Plan, Redmond Parks Master Plan, Redmond Comprehensive 2040 Plan, and Local Government Grant project scoring criteria demonstrate a heightened need to focus local efforts on:

- Increasing trail connectivity to public lands;
- Connecting neighborhoods through trails;
- Increasing restroom facilities;
- Providing wildlife viewing opportunities and places to sit and observe nature;
- Fostering a healthy and active community; and
- Providing more free-of-charge recreation opportunities.

The Central Dry Canyon addresses all the above needs. Resolution No. 2024-09 demonstrates City Council support for the project and is a requirement of the grant application.

Fiscal Impact:

The estimated cost of improvements is approximately \$6,400,000. The grant will provide up to \$1,000,000 of the project cost.

Of the total project costs, \$1.2 million is allocated for a new city waterline.

Construction is planned to begin in October 2024. The Grant will reimburse up to \$1 million of the project cost with the remainder funded primarily through Park System Development Charges. In the event the grant application is not successful, the City may revisit the scope and continue to pursue other grant opportunities.

Alternative Courses of Action:

1. Adopt Resolution No. 2024-09.
2. Do not adopt Resolution No. 2024-09.
3. Request additional information.

Recommendation / Suggested Motion:

"I move to adopt Resolution No. 2024-09 authorizing the City Manager to sign the application and subsequent acceptance of the Central Dry Canyon Rehabilitation Project Grant if awarded."

**CITY OF REDMOND
RESOLUTION NO. 2024-09**

A RESOLUTION AUTHORIZING THE CITY OF REDMOND TO APPLY FOR THE LOCAL GOVERNMENT GRANT FROM THE OREGON PARKS AND RECREATION DEPARTMENT FOR REHABILITATION OF THE CENTRAL DRY CANYON AND DELEGATING AUTHORITY TO THE CITY MANAGER TO SIGN THE APPLICATION AND ACCEPT THE GRANT IF AWARDED.

WHEREAS, the Oregon Parks and Recreation Department is accepting applications for the Local Government Grant; and

WHEREAS, the City of Redmond desires to participate in this grant program to the greatest extent possible as a means of improving connectivity and safety throughout the Central Dry Canyon Parks series; and

WHEREAS, the Parks Committee and City Staff have identified a project as a high priority need in the City of Redmond; and

WHEREAS, the project will provide safe pedestrian, bicycle, and vehicle connection throughout the Central Dry Canyon Park series; and

WHEREAS, the City of Redmond has available local matching funds to fulfill its share of obligation related to this grant application should the grant funds be awarded; and

WHEREAS, the City of Redmond will provide adequate funding for on-going operations and maintenance of this park and recreation facility should the grant funds be awarded.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL, OF THE CITY OF REDMOND AS FOLLOWS:

SECTION 1: The City Council demonstrates its support for the submittal of a grant application to the Oregon Parks and Recreation Department for the rehabilitation of the Central Dry Canyon Park Project in Redmond.

SECTION 2: This Resolution shall be effective following its adoption by the City Council.

ADOPTED by the City Council and **SIGNED** by the Mayor this 26th of March 2024.

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder

City of Redmond PROCLAMATION

A proclamation designating April 7-13, 2024, as

ARBOR WEEK

WHEREAS, in 1872 Arbor Day, a special day set aside for the planting of trees, was first celebrated in Nebraska; and

WHEREAS, Arbor Day is the day set aside to plant ceremonial trees, educate children and adults about the importance of trees, and honor the important role trees play in our daily lives; and

WHEREAS, trees provide shade and habitat for wildlife, improve air and water quality, reduce the erosion of precious topsoil, increase property values and economic vitality in business areas, contribute to a sense of community pride and ownership, and add beauty to communities; and

WHEREAS, the City of Redmond recognizes that our urban forest is a necessity and is an integral part of the City's infrastructure and ecosystems; and

WHEREAS, the City of Redmond is committed to provide resources to maintain and enhance the urban forest; and

WHEREAS, the City of Redmond is now recognized as a "Tree City USA" recipient for fostering programs which increase the number and health of our trees; and

WHEREAS, the City of Redmond recognizes April 26, 2024, as National Arbor Day.

NOW, THEREFORE BE IT RESOLVED THAT the City Council hereby proclaims the week of April 7-13, 2024, to be **ARBOR WEEK** in the City of Redmond and citizens are encouraged through the City to become more involved with the planting and stewardship of the urban forest in celebration of **ARBOR WEEK**.

APPROVED by the City Council and **SIGNED** by the Mayor this 26th day of March 2024.

The City of Redmond, Oregon

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder



ARBOR WEEK

Slide /1

APRIL 7-13
TREE
PLANTING

Arbor Week:

Umatilla park - Cub Scouts

WED., APRIL 10, 4:00 PM

Arbor Day:

Canyon clean up – Volunteers

Thurs. APRIL 25, 12:30 pm - 2:30



CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

STAFF REPORT

DATE: March 26, 2024
TO: City Council
THROUGH: Keith Witcosky, City Manager
Jason Neff, Deputy City Manager/Chief Financial Officer
Jessica MacClanahan, Public Works Director/City Engineer
FROM: Maria Ramirez, Parks Planner and Project Manager
SUBJECT: Purchase of Replacement Playground Equipment at Fairhaven Park (PK2402): \$425,000.

Report in Brief:

The Parks Division requests City Council approval to enter into a contract in the amount of \$425,000 with GameTime for the purchase and installation of playground equipment and fall surface at Fairhaven Park.

Background:

Redmond's parks system offers a variety of facilities and play equipment that require regular re-investment and repair to maintain safe and accessible open spaces. Fairhaven Park was built in 2003 and the existing playground equipment is now more than 20 years old.

The density of development near Fairhaven Park has experienced significant growth over the past two decades. Usage of the park has increased to a commensurate amount, increasing the demand for the current play system. The equipment has served the community well. However, issues with accessibility, increased maintenance requirements, and increased pressure on the system have resulted in a need for replacement.

Discussion:

The removal and replacement of the existing Fairhaven Park play equipment, located at 370 NW 25th Street, is identified as a priority project in the City's Americans with Disability Act (ADA) Transition Plan and the Parks Master Plan. This is due to barriers to accessible access to the play area as well as the age and physical condition of the play equipment.

The City requested design proposals from four playground designers and received a total of four design alternatives. The preferred design selected by the Parks Committee was provided by GameTime with purchase and installation costs of \$425,000.00 (see attached quote).

The contract with GameTime will be made through an interstate cooperative procurement agreement administered by NPPGov per Oregon Revised Statutes (ORS) 279A.220. This mechanism provides competitive pricing established through national solicitations performed in compliance with Oregon public contracting provisions and results in a savings of five percent off material list price. A notice of intent to establish a contract through an interstate cooperative procurement was published on March 15, 2024. Vendors were given seven days to submit comments.

The total budget for the Fairhaven Park Project is \$500,000.

Fiscal Impact:

Funding for the Fairhaven Park Project is included in the Fiscal Year 2023/2024 budget from Parks System Development Charges (see attached). The total project cost is estimated at \$500,000, of which \$425,000 is associated with this City Council action. The procurement is being made under a cooperative purchasing agreement: US Communities Contract #2017001134 (Redmond City Code 2.410.7 & ORS 279A.205).

Alternative Courses of Action:

1. Approve the contract for purchase of replacement playground equipment at Fairhaven Park.
2. Do not approve the contract.
3. Request additional information.

Recommendation / Suggested Motion:

"I move to approve the purchase and installation of playground equipment from GameTime, in the amount of \$425,000, and authorize the City Manager to sign the contract."



C/O MRC
PO Box 225250
San Francisco, CA 94122
Ph: 800-235-2440
Em: MRC@GAMETIME.COM
Web: www.mrcrec.com

02/07/2024
Quote #
113179-01-02

OR Redmond City of Fairhaven Park Playground Option 2

City of Redmond Oregon
Attn: Maria Ramirez
370 NW 25th St
Redmond, OR 97756
Phone: 541-504-2003
maria.ramirez@redmondoregon.gov

Ship to Zip 97756

Quantity	Part #	Description
1	RDU	GameTime - PT18317 AppleBerry- <i>Appropriate for ages 5 to 12 years</i>
1	RDU	GameTime - PrimeTime ADA 2-Bay Swing- <i>Includes (1) Zero-G 5-12 Swing, (1) Expression Swing, (1) enclosed tot swing and (1) belt swing</i>
1	5058	GameTime - Arch Swing (Galv)
1	6372	GameTime - Spin With Me (With Handle)
1	5944SP	GameTime - VistaStar 3
1	INSTALL	GameTime - by a GameTime-Certified Installer- <i>Includes installation of above-quoted equipment</i>
1	TURF	XXXX - Supply & Installation of 8,836 SF Turf Surfacing
		Total \$425,000.00

Comments

Shipping to Redmond, OR.

Site preparation, sub base, and borders are not included in this proposal.

CUSTOMER IS RESPONSIBLE FOR OFF-LOADING OF EQUIPMENT FROM DELIVERY TRUCK.

TURF INSTALLATION SCHEDULE TO BE DETERMINED BY WEATHER CONDITIONS ALLOWING FOR PROPER MATERIAL SET UP AND CURING. QUOTE DOES NOT INCLUDE ANY TENTING OR ARTIFICIAL HEATING.

CHOOSE YOUR COLOR SCHEME: IT IS VERY IMPORTANT THAT YOU CHOOSE A COLOR SCHEME FOR YOUR MODULAR PLAYGROUND UNIT AT TIME OF ORDER. PLEASE SELECT FROM ONE OF THE MANY "**PLAY PALETTES**" LISTED IN THE BACK OF THE GAMETIME CATALOG OR ON OUR WEBSITE: www.gametime.com. INDICATE YOUR SELECTION BELOW.

GAMETIME PLAY PALETTE: _____

NOTE: COLOR SELECTION FOR ALL OTHER EQUIPMENT SHOULD BE ENTERED IN THE SPACE PROVIDED UNDER THAT SPECIFIC ITEM.





C/O MRC
PO Box 225250
San Francisco, CA 94122
Ph: 800-235-2440
Em: MRC@GAMETIME.COM
Web: www.mrcrec.com

02/07/2024
Quote #
113179-01-02

OR Redmond City of Fairhaven Park Playground Option 2

NOTES:

- It is the customer's responsibility to verify total square footage of materials Synthetic Turf must be installed on asphalt, concrete or crushed stone surfacing.
- Grading and base preparation of area is required prior to installation of above surfacing.
- Base must be GTImpax Architectural Specifications.
- All ground preparation is the responsibility of the customer.
- Customer must be on site at time of delivery.
- Customer is responsible for overnight security of the site.
- A large turning area is required for access by tractor/trailer.

This quotation is subject to policies in the current GameTime Park and Playground Catalog and the following terms and conditions. Our quotation is based on shipment of all items at one time to a single destination, unless otherwise noted, and changes are subject to price adjustment. Purchases in excess of \$1,000.00 to be supported by your written purchase order made out to **GAMETIME, c/o MRC**. Kindly issue one order for the equipment and a separate order for surfacing and/or equipment installation services. Customer is responsible for any required permits and fees pertaining to such permits.

PRICING / PAYMENT: Pricing f.o.b. factory, firm for 30 days from date of quotation. Payment terms: Purchase order made payable to **GameTime**. 75% due Net 30 days after ship and 25% balance due upon completion of project for tax supported governmental agencies. A 1.5% per month finance charge will be imposed on all past due accounts. Equipment shall be invoiced separately from other services and shall be payable in advance of those services and project completion. Retainage not accepted.

TAXES: State and local taxes, if applicable, will be added at time of invoicing unless a tax exempt certificate is provided at the time of order entry.

FREIGHT/SHIPMENT: Freight charges: Prepaid and added at time of invoicing. Shipment: order will ship within 14-18 weeks after GameTime's receipt and acceptance of your PURCHASE ORDER, signed quotation and color selections.

RECEIPT OF GOODS: Customer is responsible for unloading and uncrating equipment from truck. Customer shall receive, unload and inspect goods upon arrival, noting any discrepancies on the Delivery Receipt prior to written acceptance of the shipment.

INSTALLATION: Installation by a Gametime Certified Installer. Terms of installation listed briefly below:

- Installation Pricing is based on manufacturer's recommended footing depth of 30" below finished grade. Any requirement greater than that will incur additional charges.
- Installation assumes a flat, dirt surface with no grading preparation required.
- Gametime's installer is not responsible for any site preparation, and/or grading.
- Customer is responsible for calling 888-DIG-SAFE a minimum of 72 hours before installation is to begin.
- Direct access is required for large construction vehicles.
- All work is to be done in one move.
- All excavated material is to remain on site.
- Customer is responsible for accepting delivery, storage of equipment and transporting equipment from storage to the site, if storage is other than installation site.
- Customer will be responsible for unloading the truck and disposal of packaging.
- The installation of border timbers is not included in the above price.
- Fencing and overnight security NOT included.
- Unforeseen subsurface obstructions may incur additional charges.

EXCLUSIONS: unless specifically included, this quotation excludes all site work and landscaping; removal of existing equipment; acceptance of equipment and off-loading; storage of goods prior to installation; safety surfacing; borders; drainage provisions and bonding fees.

TO ORDER: Please complete the acceptance portion of this quotation and provide color selections, purchase order and other key information requested. Acceptance of this proposal indicates your agreement to the terms and conditions stated herein.

Sales Representative: Martha Rainey/es





C/O MRC
PO Box 225250
San Francisco, CA 94122
Ph: 800-235-2440
Em: MRC@GAMETIME.COM
Web: www.mrcrec.com

02/07/2024
Quote #
113179-01-02

OR Redmond City of Fairhaven Park Playground Option 2

Acceptance of quotation: (ALL INFORMATION REQUIRED)

Accepted By (printed): _____

P.O. No: _____

Signature: _____

Date: _____

Title: _____

Phone: _____

Email: _____

Facsimile: _____

Purchase Amount: **\$425,000.00**

Order Information: (ALL INFORMATION REQUIRED)

Bill To: _____

Ship To: _____

Bill To Contact: _____

Ship To Contact: _____

Bill To Email: _____

Ship To Email: _____

Bill To Phone: _____

Ship To Phone: (Office): _____

(Cell): _____

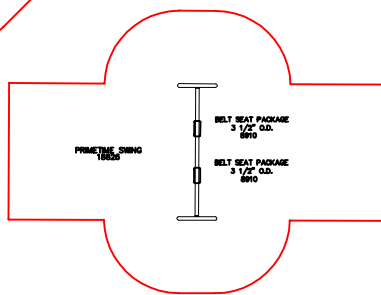
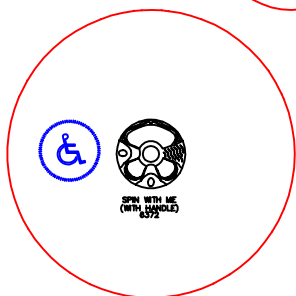
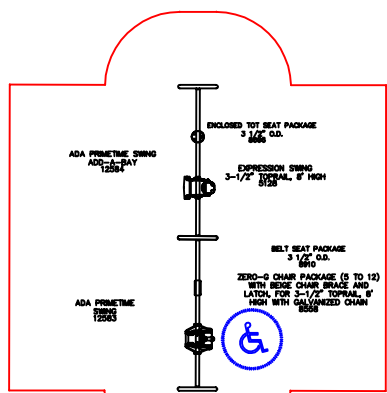
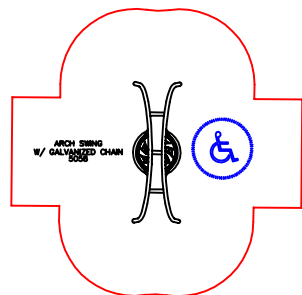
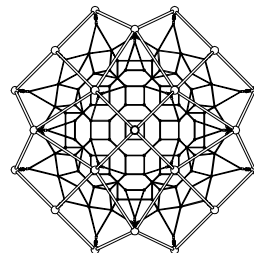
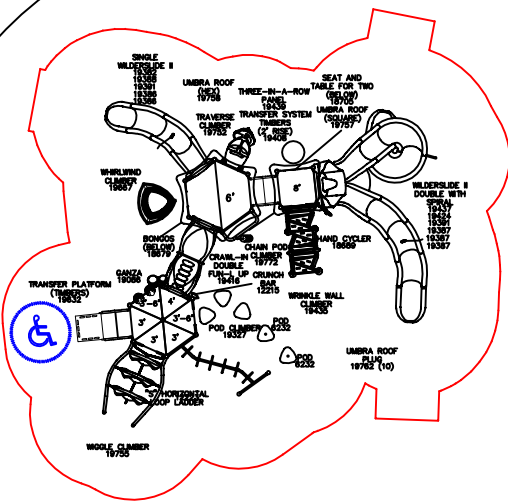
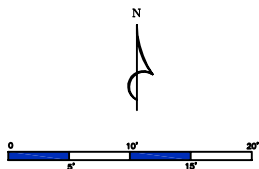
Bill to Address: _____

Ship To Address: _____

Bill To City, State, Zip: _____

Ship To City, State, Zip: _____





150 PlayCore Drive SE
Fort Payne, AL 35967
www.gametime.com

City of Redmond, OR
Fairhaven Park OPT 2
Redmond, OR
Representative
MRC

This Unit includes play events and routes or travel specifically designed for special needs users. It is the opinion of the manufacturer that these play events and routes of travel conform to the accessibility requirements of the ADA (Americans with Disabilities Act).

Total Elevated Play Components	12	0	0
Total Elevated Play Components Accessible By Ramp	0	Required	6
Total Elevated Components Accessible By Transfer	12	Required	4
Total Accessible Ground Level Components Shown	15	Required	4
Total Different Types Of Ground Level Components	5	Required	3

This play equipment is recommended for children ages 2-5 and 5-12

Minimum Area Required:
Scale: 1" = 5'-0"
This drawing can be scaled only when in an 24" x 36" format

IMPORTANT: Soft resilient surfacing should be placed in the use zones of all equipment, as specified for each type of equipment, and at depths to meet the critical fall heights as specified by the U.S. consumer Product Safety Commission, ASTM standard F 1487 and Canadian Standard CAN/CSA-Z-614.

Drawn By:
MR
Date:
02.05.24
Drawing Name:
Redmond Fairhaven Park OPT 2

NOTES ON THE FISCAL YEAR 2023/24 BUDGET

The budget includes the following notable items for FY 2023/24:

- \$96,500 total position funding for a new parks & cemetery utility worker. The City is adding 3 new parks to the current 26 developed parks that's maintained. The added utility worker will help cover the new responsibilities that is required with adding those parks to the current workload.
- Equipment needed to replace some aging equipment: 2 utility trucks at \$140,000, a Zero-Turn Mower at \$15,000, a utility vehicle for the cemetery at \$15,000, a landscape trailer at \$15,000 and an ice resurfacing machine for \$20,000. The table below lists the major equipment planned to be purchased in the near term.

Equipment - New and Replacement, Near-Term List	Main Use	Cost
Service Truck (FY 23/24)	Replace existing	\$ 75,000
Service Truck (FY 23/24)	Replace existing	\$ 75,000
Zero-Turn Mower (FY 23/24)	Replace existing	\$ 15,000
Landscape Trailer (FY 23/24)	Replace existing	\$ 15,000
Utility Vehicle (FY 23/24)	Replace existing	\$ 20,000
Ice Resurfacing Machine (FY 23/24)	New addition	\$ 20,000
Service Truck (FY 24/25)	Replace existing	\$ 75,000
Walker Mower (FY 24/25)	Replace existing	\$ 35,000
Total		\$ 330,000

- A budgeted operating contingency of \$527,133 is included. This amount is equal to approximately 60 days of operations for Parks and Cemetery.
- \$200,000 is allocated for resurfacing the tennis and pickleball courts at Sam Johnson Park and Valleyview Park.
- \$1,690,000 is included for the design and construction of the Central Dry Canyon Infrastructure Plan Phase 1, which includes new parking and an all-season restroom at the dog park, Rimrock Ave. pedestrian pathway improvements, and vehicle and pedestrian flow improvements at Sam Johnson Park.
- \$500,000 is included to upgrade the play structures and improve amenities at Fairhaven Park.
- \$1,000,000 is included for the potential acquisition of land needed for future park development as identified in the 2018 Parks Master Plan.
- \$54,500 is allocated for continued preventative maintenance on City-owned parking lots.
- The anticipated costs for major capital improvements and infrastructure maintenance projects are summarized below:

Project	SDC Reimbursement	SDC Improvement	Total Project Expenditures
Sam Johnson Park & Valley View Park - Tennis Court Rehabilitation	\$ 200,000	\$ -	\$ 200,000
Central Dry Canyon*	\$ -	\$ 1,690,000	\$ 1,690,000
Fairhaven Park	\$ 200,000	\$ 300,000	\$ 500,000
Valleyview Park	\$ -	\$ 150,000	\$ 150,000
Potential Land Acquisition	\$ -	\$ 1,000,000	\$ 1,000,000
Future Projects	\$ -	\$ 100,000	\$ 100,000
Total	\$ 400,000	\$ 3,240,000	\$ 3,640,000

* Project carried forward from FY 22/23



FAIRHAVEN PARK

**PLAY EQUIPMENT
CONTRACT AWARD:
\$425,000**

**CITY COUNCIL
MARCH 26, 2024**

SLIDE / 1





IDENTIFIED COMMUNITY PARK IMPROVEMENTS

IMPROVED ADA PATHWAYS

UPDATED PLAY EQUIPMENT

IMPROVED PEDESTRIAN CONNECTION

WAYFINDING SIGNAGE



PLAYGROUND SELECTION

**SOLICITED EIGHT ALTERNATIVES FROM THREE
DIFFERENT PLAYGROUND DESIGNERS**

**PREFERRED DESIGN BY GAMETIME IN THE
AMOUNT NOT TO EXCEED \$425,000.00**

**PURCHASED THROUGH A NATIONAL COOPERATIVE
PROCUREMENT AGREEMENT**









TIMELINE

MARCH 2024



EQUIPMENT PURCHASE

JUNE 2024



SITE PREP

JULY 2024



INSTALL COMPLETE



QUESTIONS?

SLIDE / 8





CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

STAFF REPORT

DATE: March 26, 2024
TO: Redmond City Council
THROUGH: Keith Witcosky, City Manager
John Roberts, Deputy City Manager
FROM: Chuck Arnold, Economic Development/Urban Renewal Program Manager
SUBJECT: Special Event Street Closure Request for the Wild Ride Classic Car Show: April 20, 2024

Report in Brief:

This item requests City Council take testimony and consider approval of a Public Assembly Permit/Street Closure for the Wild Ride Classic Car Show, scheduled for April 20, 2024.

Background:

Special events involving the closure of any portion of 5th and 6th streets require approval from City Council. These streets serve as the spine of Redmond's primary commercial and downtown corridor. Closures can have unanticipated impacts. Therefore, prior to approving a closure it is important to provide the community with the opportunity to offer input as well as increase public awareness of the event.

Discussion:

Public Assembly Permit applications are reviewed for City Code compliance to ensure public safety, transportation, parking, sanitation, trash removal, marketing, fire protection, medical services and public notice concerns are addressed. Each application is routed to impacted City departments and partner agencies for comments. Fees are established per the City's Fee Schedule to recover City costs for supporting the event.

This will be the fifth year of the Wild Ride Classic Car Show. As such, the street closures, parking plan and detour routes were reviewed by the City's Public Works and Police departments, and Redmond Fire and Rescue. Businesses potentially impacted by the proposed closure were contacted by the event producer and made aware of this meeting and the event.

The permit application requests closure of SW 5th Street between Forest and Black Butte Avenues. The closure will be from 5:00 a.m. through 5:00 p.m. on Saturday, April 20, 2024. It was conveyed to the applicant the requirement that Evergreen Avenue remain open during the event.

Two detour options will be set-up around the street closure:

- 1) SW 4th Street will remain open for fire/medical emergency response and allow through traffic from Forest Avenue to Black Butte Avenue; and
- 2) SW 7th Street will remain open for both north and southbound traffic. SW 6th Street will remain open for southbound traffic.

The attached map is shows how the event will control access, vendors, parking, traffic, and detours.

Below is a matrix of items evaluated per City Policy CM 101 (which governs special events):

Review Item From Policy	Staff Assessment
Who benefits or is adversely impacted from the event?	<i>Beneficiaries: Event Organizer, General Community, adjacent Businesses</i> <i>Impacted: Businesses, General Community</i>
What are the benefits and impacts?	<i>Benefits: Increased pedestrian traffic, downtown awareness and</i>

	<i>enhanced customer visitation habits Impacts: Reduced vehicular access for customers and business owners, potential to cause regular customers to avoid downtown on event day</i>
Is there another street closure in the vicinity around the event date?	No
Does permitting this event result in closing 5th or 6th Streets more than twice in a month?	<i>No other event is scheduled to close 5th or 6th Streets during April 2024.</i>
What is the duration of the closure and expected attendance? (City Policy provides guidelines for event duration and size)	<i>The request is for a 12-hour closure with approximately 500 participants expected in attendance.</i>
How event itself benefit the community? Is there a community charity supported?	<i>The event plans to attract approximately 500 participants downtown, raising awareness of businesses, goods, and services available. Proceeds from the event will support local veterans.</i>
Have all permit requirements been met?	Yes

Fiscal Impact:

Cost recovery fees per the City's Fee Schedule are as follows:

- Permit Fee (event with street closures on 5th or 6th Streets): \$200;
- Deposit: \$250 refundable cleaning deposit is being held

Alternative Courses of Action:

1. Approve the Public Assembly Permit and SW 5th Street closure for the Wild Ride Classic Car Show (with an understanding that Evergreen Avenue will remain open).
2. Request more information.
3. Deny the public assembly permit.

Recommendation / Suggested Motion:

"I move to approve the Public Assembly Permit and fee schedule for the Wild Ride Classic Car Show on April 20, 2024."



Full Day Kindergarten
- Redmond Oregon

Proust Coffee

Grace and Hammer
Pizza • \$\$

Every Bloom'n Thing
Flower Shop Gift Shop...
Florist

Lunavista Barbershop

Parole & Probation

SW Cascade Ave

SW Cascade Ave

SW Cascade Ave

SW Cascade Ave

SW Cascade Ave

SW Cascade Ave

SW Cascade Ave

Mirror Priorities

Nails By Tina

U.S. Bank Branch

E BarGrill
New American • \$\$

Brent Woodward, Inc

Redmond Library

Checkers Pub

Devine Salon

Wild Ride Brewing

Redmond Police
Department

Trendy Tots
Clothing store

CARNAVAL
MEXICAN GRILL
Mexican • \$\$

Red Road Pizza Cart
Pizza
CHECK-IN

PUBLIC
PARKING

W Deschutes Ave

W Deschutes Ave

W Deschutes Ave

W Deschutes Ave

W Deschutes Ave

W Deschutes Ave

W Deschutes Ave

Deschutes County
Health Department

Junction Coffee
Deschutes Children's
Foundation - Becky...

PUBLIC
PARKING

Vision's Smoke Shop
Vaporizer store

Brickhouse
Steak • \$\$\$

EleMar Oregon -
Central Oregon
Countertop store

PUBLIC
PARKING

Centennial
Park & 7th
Street Plaza

Redmond Chamber
of Commerce & CVB

Diego's Spirited Kitchen
Mexican • \$\$

Gas Stations

SW Evergreen Ave

SW Evergreen Ave

SW Evergreen Ave

SW Evergreen Ave

The Hideaway Redmond

Feast Food Company

PUBLIC
PARKING

SCP Redmond

Terra Kitchen

La Fondita Mexican Grill
Mexican • \$

Shell

Just Cut Organic
Juice Bar and Fitness
Health Food • \$\$

Kelley Connect

SW Forest Ave

SW Forest Ave

SW Forest Ave

SW Forest Ave

SW Forest Ave

SW Forest Ave

Loan Fox Inc

Wells Fargo Bank

Bank of America (with
Drive-thru services)

Honey and Pine
Coffee Company

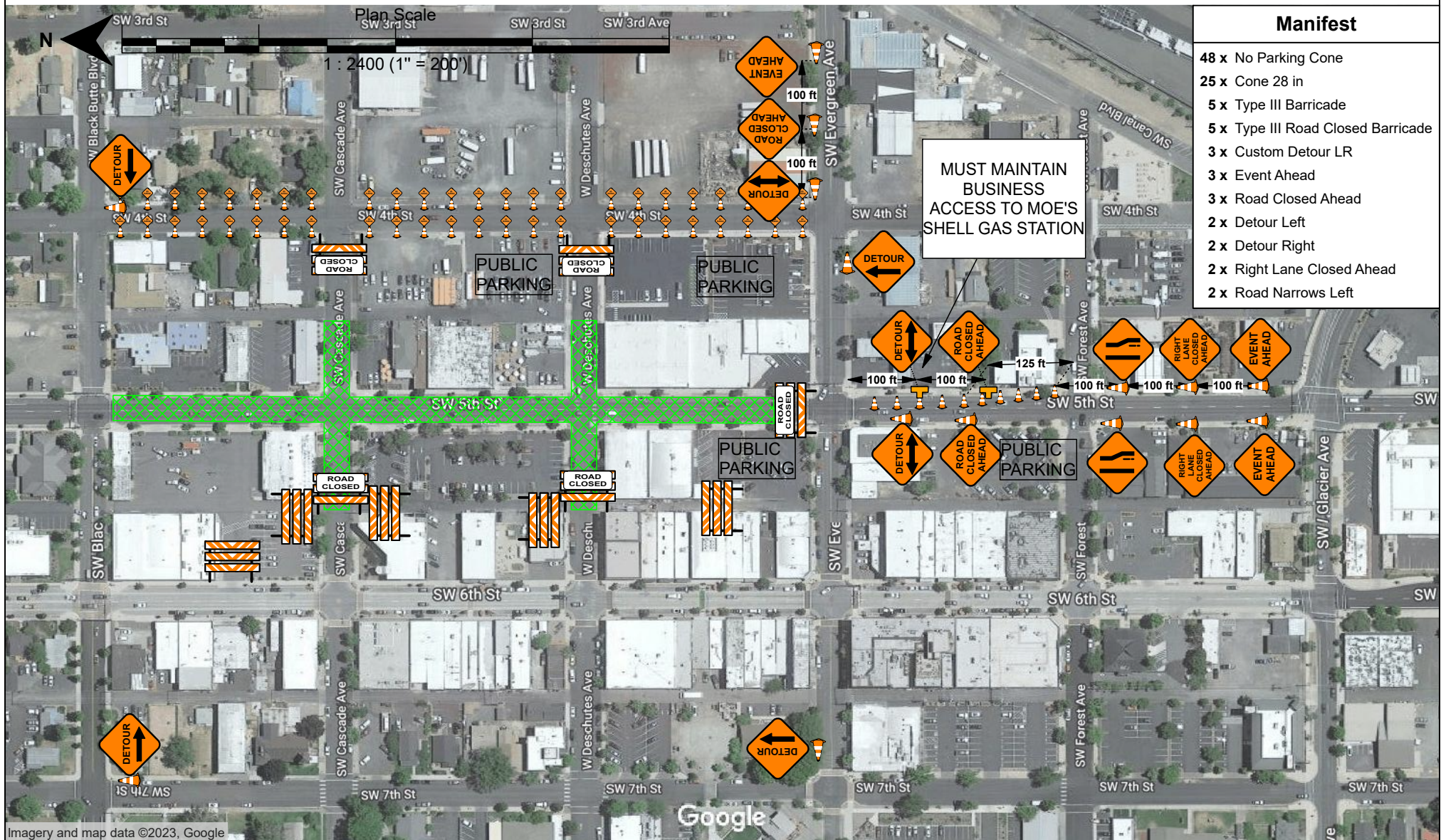
Chase Bank

General Duffy's
Waterhole

CASCADE CAR SHOW

5TH ST CLOSURE FOREST REDMOND OR

www.invarion.com



Manifest

- 48 x No Parking Cone
- 25 x Cone 28 in
- 5 x Type III Barricade
- 5 x Type III Road Closed Barricade
- 3 x Custom Detour LR
- 3 x Event Ahead
- 3 x Road Closed Ahead
- 2 x Detour Left
- 2 x Detour Right
- 2 x Right Lane Closed Ahead
- 2 x Road Narrows Left

Imagery and map data ©2023, Google

Date: 6/23/2023 **Author:** Josh Meguiar **Project:** Cascade Car Show
Traffic Control Company: TRAFFIC CONTROL CONSULTANTS **Phone:** 541-548-3165 **Address:** PO Box 1827 Redmond, OR 97756
Contractor Name: Central Oregon Motors **Contractor Phone:** N/A **Permit #:** TBD
TCC JOB#: 2023-0058 **Estimated Start Date:** Will begin upon aproval of traffic control plan/ or per contractors directive

Comments:
 - ALL TRAFFIC CONTROL MUST MEET OTTCH 2011 STANDARDS
 - TO DETERMINE SIGN SPACING USE " SIGN SPACING AND BUFFER TABLE"
 PROPRIETARY: THIS PLAN IS PROPERTY OF TRAFFIC CONTROL CONSULTANTS

SIGN SPACING AND BUFFER LENGTHS (FEET)

POSTED SPEED	SPACING BETWEEN SIGNS			BUFFER SPACE
	A	B	C	
20				50
25				75
30				100
35				125
40				150
45				180
50	500	500	500	210
55				250
60	700	700	700	285
65				



SPECIAL EVENT STREET CLOSURE

CASCADE CAR SHOW – APRIL 20, 2024

CITY COUNCIL – MARCH 26, 2024

SLIDE / 1

QUESTIONS





CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

STAFF REPORT

DATE: March 26, 2024
TO: Redmond City Council
THROUGH: Keith Witcosky, City Manager
Jason Neff, Deputy City Manager/Chief Financial Officer
FROM: James Wood, Finance Director
SUBJECT: Resolution #2024-07 - A resolution of the City of Redmond declaring principal and interest, due and payable at once, on Tax Lot #15-13-10A0-01100 as authorized by Oregon Revised Statutes 223.370 and Redmond City Code Sections 3.005 - 3.095.

Report in Brief:

This item requests City Council approve a resolution to declare amounts owing on Tax Lot #15-13-10A0-01100 (1051 NE 11th Street), in relation to the NE 11th Street and NE Kingwood Local Improvement District, as due and payable at once.

Background:

On December 13, 2005, City Council declared its intent to construct street, water, and sewer improvements by establishing a Local Improvement District (LID), known as the "NE 11th Street and NE Kingwood Avenue LID". This action was done through Resolution No. 2005-35.

On February 12, 2008, the City Council established assessments for the properties that benefited from the improvements of the "NE 11th Street and NE Kingwood Avenue LID" through Resolution No. 2008-02.

Within the same resolution (2008-02), Linda L. & Lyndon C. Lengele (Tax Lot #15-13-10A0-01100) were assessed \$125,093 for their share of the benefit generated by the LID. Participants of the LID were allowed to pay their assessment in-full with cash/check or use the Bancroft Bond financing method.

On April 30, 2008, Linda L. & Lyndon C. Lengele signed an installment agreement with the City of Redmond to pay the assessment of \$125,093 across 20 years at a rate of 5.67% interest (semi-annual installments of \$5,268.42).

Total payments made toward the installment loan to-date total \$2,300. The most recent partial payment was received on December 19, 2016.

The current principal owed as of March 26, 2024, is \$125,093 and interest owing is \$111,573 (a total of \$236,666). Of the 12 original LID participants, four remain with active installment agreements, and one is in default (the one before Council tonight).

Loans Currently in Repayment

o Maryann and Wilbur H. Durfee	(15-13-10A-00801)	\$9,203	Matures 06/15/2027
o LM3 Properties LLC	(15-13-10A-01000)	\$29,153	Matures 12/15/2027
o Timeline Enterprises	(15-13-10A-00802)	\$23,030	Matures 12/15/2027
o Linda L. & Lyndon C. Lengele	(15-13-10A-01100)	\$236,666	Matures 12/15/2027

Discussion:

Oregon Revised Statutes (ORS) provide guidance around the collection of LID assessments in default. Before the City may begin foreclosing on the LID participant, in accordance with its own policies/procedures, it must pass a resolution that declares the whole sum of the assessment as due and payable at once (ORS 223.270). Upon approval of such a resolution, the City may then proceed with collection efforts in a manner consistent with its collection of street and sewer assessments, pursuant to the terms of the city charter.

Fiscal Impact:

LIDs are established/created with the intent of 100% cost-recovery. The City does not stand to profit, nor does the City stand to lose when all LID participants pay their assessments in full.

However, in the event an LID participant does not pay the assessment, the City is left with paying the underlying debt payments from its own discretionary resources. The NE 11th Street and NE Kingwood LID had an original assessment of \$1,166,583 spread across 12 participants that benefited from the LID creation. Of the total assessment, Linda L. & Lyndon C. Lengele were assessed \$125,093, which is approximately 11% of the total assessment.

Alternative Courses of Action:

1. Adopt Resolution 2024-07.
2. Do not adopt Resolution 2024-07.
3. Take no Action and Request more information.

Recommendation / Suggested Motion:

"I move to adopt Resolution No. 2024-07."

**CITY OF REDMOND
RESOLUTION NO. 2024-07**

A RESOLUTION OF THE CITY OF REDMOND DECLARING PRINCIPAL AND INTEREST, DUE AND PAYABLE AT ONCE, ON TAX LOT #15-13-10A0-01100 AS AUTHORIZED BY OREGON REVISED STATUTES 223.370 AND REDMOND CITY CODE SECTIONS 3.005 - 3.095.

WHEREAS, the City of Redmond, by and through the City Council with Resolution #2005-35, duly formed the NE 11th and NE Kingwood Local Improvement District (the "District") for the purpose of financing infrastructure improvements that benefitted Tax Lot #15-13-10A0-01100; and

WHEREAS, the City of Redmond, by and through the City Council with Ordinance #2008-02, duly authorized the assessment and property lien of \$125,093.00 against Tax Lot #15-13-10A0-01100; and

WHEREAS, the City of Redmond, by and through the City Council with Ordinance #2008-02, duly authorized Tax Lot #15-13-10A0-01100 to pay the assessment with cash or to file an application under the Bancroft Bonding Act for financing; and

WHEREAS, on April 30, 2008, the owner of Tax Lot #15-13-10A0-01100, Linda L. & Lyndon C. Lengele, signed a 20-year installment payment lien agreement (the "Agreement"), at 5.67% interest, with the City of Redmond, agreeing to make payments of \$5,268.42 on or before June 15, 2008, and a like amount on or before each succeeding December 15 and June 15 until the 40 semi-annual installment payments are complete and all outstanding principal and interest owed has been paid; and

WHEREAS, on November 15, 2012, the owner transferred ownership of the property to the "Lengele, Lyndon C. Trustee" with Deschutes County Recording Instrument 2012-047172; and

WHEREAS, the owner has neglected or refused to pay the Agreement installments as they became due and payable for a period of more than one year; and

WHEREAS, Oregon Revised Statutes (ORS) 223.270 (Procedure for collection on default) authorizes the City of Redmond to pass a resolution declaring the whole sum, both principal and interest, due and payable at once; and

WHEREAS, ORS 223.270 (Procedure for collection on default) authorizes the City of Redmond to enforce collection in the same manner in which delinquent property taxes are collected under applicable law, or, in the same manner as street and sewer assessments are collected pursuant to the terms of the city charter; and

WHEREAS, it should be understood that these Districts are statutorily structured to “break-even” in terms of assessments and costs; a District that is paid in-full provides a neutral financial benefit to the City, whereas, a district that does not pay has a direct negative financial impact on the City.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF REDMOND, OREGON, AS FOLLOWS:

Section 1. The current owner: Lengele, Lyndon C Trustee, is currently in-default of the amount owing in Section 3 (below).

Section 2. The property assessed/owing is Tax Lot #15-13-10A0-01100.
Legal Description of Property: The North ½ of the SW ¼ of the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M.
Also known as 1051 NE 11th Street, Redmond, Oregon 97756.

Section 3. Amounts owed total \$236,510.56 (principal owed is \$125,093.00, and accrued interest, as of March 18, 2024, is \$111,573.00)

Section 4. The amounts owed in Section 3 are declared as due and payable at once.

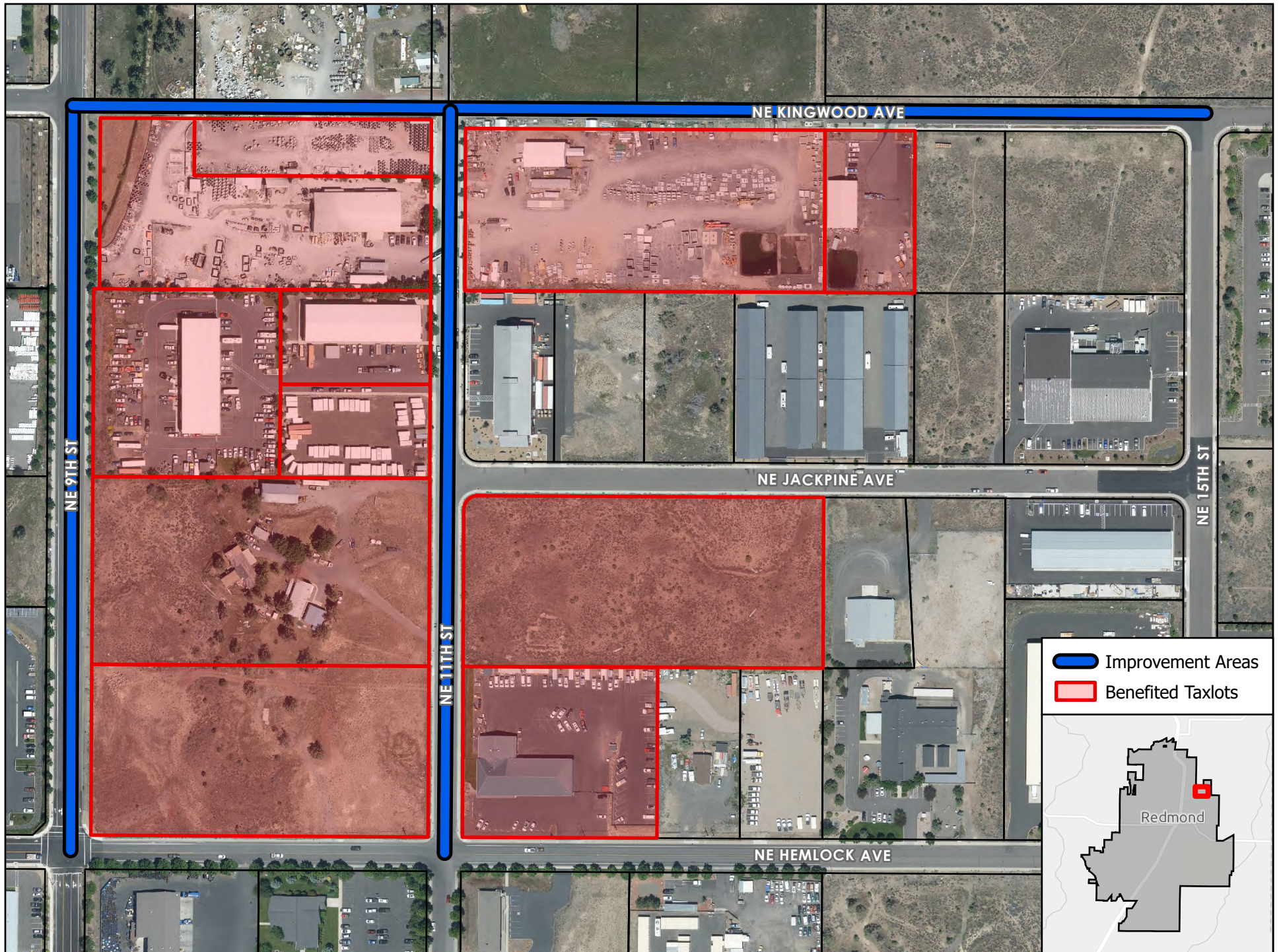
Section 5. The amounts owed in Section 3 will be collected in the same manner in which delinquent property taxes are collected under applicable law, or, in the same manner as street and sewer assessments are collected pursuant to the terms of the city charter.

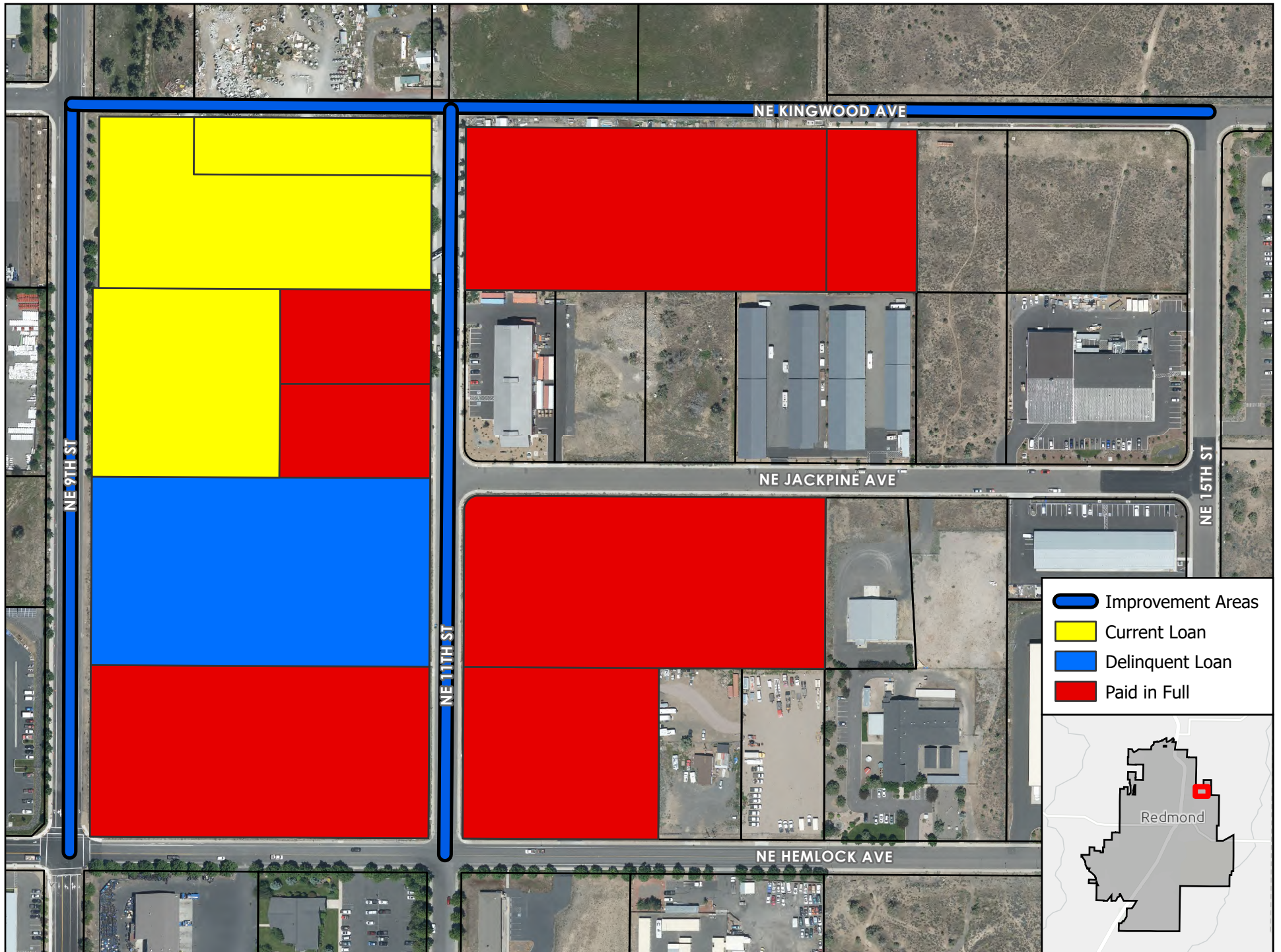
ADOPTED by the City Council and **SIGNED** by the Mayor this 26th day of March 2024.

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder





**IMPROVEMENT RESOLUTION
RESOLUTION NO. 2005-35**

A RESOLUTION DECLARING INTENT TO CONSTRUCT STREET, WATER AND SEWER IMPROVEMENTS, BY ESTABLISHING A LOCAL IMPROVEMENT DISTRICT FOR THE CITY OF REDMOND, KNOWN AS THE “NE 11TH STREET AND NE KINGWOOD AVENUE LID” UNDER THE AUTHORITY OF OREGON REVISED STATUTES CHAPTER 223 AND CITY OF REDMOND CODE SECTION 3.005 – 3.095.

WHEREAS, the City Council finds it necessary and to be in the best interest of the City to declare its intention to make this needed local improvement, and to have the property owners who are benefited by these local improvements pay the costs of the local improvements according to benefits conferred;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF REDMOND AS FOLLOWS:

Section 1: Project Initiation

The City does hereby declare its intention to make the following local improvements by initiating that certain local improvement district (LID) to be known as the “NE 11th Street and NE Kingwood Avenue LID” said project being more particularly described as follows:

A. Benefited Areas:

The benefited and assessed areas shall include those certain properties as follows:

The NW, NE and SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13E W.M.
The NW, NE and SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13E W.M.

See attached Exhibit A – Preliminary Engineer’s Report.

B. Project Scope:

The proposed project is for street, water, and sewer improvements to City standards. The area of proposed construction will be located in the SW and SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10, Township 15 South, Range 13 East, Willamette Meridian; Redmond, Oregon. More particularly described as follows:

The LID involves street, water, and sewer improvements and all necessary utilities on NE Kingwood from NE 9th Street to NE 15th Street, NE 11th Street from NE Highland to NE Kingwood, Gravity Sanitary Sewer in NE 9th Street

between NE Jackpine Ave, and NE Kingwood, a sewer pump station at NE 9th and NE Kingwood and a sewer force main in NE 9th from NE Kingwood to NE Hemlock.

C. Cost Estimates:

Preliminary estimated total LID cost is \$1,450,469

D. Estimated Assessments:

Preliminary estimated benefited property owner assessments are shown in Exhibit "A" attached.

E. Method of Assessment:

The cost for constructing streets, sewer, and water lines shall be distributed to the benefited properties on a frontage basis with the exception of the sewer pump station and force main which will be on an area basis.

Section 2: Public Hearing

A Public Hearing on this LID will be held on Tuesday, January 10, 2006, at 7:00 PM at the Redmond Council Chambers.

Section 3: Assessments

In making, apportioning and levying assessments for any portion of the cost of the project against the properties to be benefited, the Council shall follow the procedure specified by applicable laws of the State of Oregon and particularly Oregon Revised Statutes Chapter 223, in addition to the Code of the City of Redmond Section 3.005 to 3.095. Such assessments shall be eligible for financing under the Bancroft Bonding Act (ORS 223.205 et seq.)

ADOPTED by the City Council and SIGNED by the Mayor this 13th day of December, 2005.

/s/ Alan Unger
Alan Unger, Mayor

ATTEST:

/s/ Patricia Leymaster
Patricia Leymaster, City Recorder

**PRELIMINARY ENGINEER'S REPORT
NE AREA LOCAL IMPROVEMENT DISTRICT**

Prepared For:

City of Redmond



Prepared By:



November, 2005

Purpose and Scope:

Previously, WRDS analyzed and estimated costs for two potential LID options. City staff has reviewed these options and has requested consideration of a third option.

In this Addendum, individual property assessments are estimated based on lineal foot frontage of improvements except for sanitary sewer pump station and force main costs which are assessed based on percentage of overall area.

Option Three (see Exhibit "F") includes the following improvements and properties:

1. Gravity and pressure force main sanitary sewer improvements along the east side of NE 9th St. between NE Kingwood Ave. and NE Hemlock. Includes a sanitary sewer pump station at NE 9th St. and Kingwood Ave.
2. Sewer, water, and street improvements along NE Kingwood Ave. between NE 9th St. and NE 15th St.
3. Sewer, water, and street improvements along NE 11th Street between NE Kingwood Ave. and NE Hemlock Ave.

The potential benefiting properties and areas are as follows:

15 13 10A 800 (4.8 acres)
15 13 10A 801 (1.0 acres)
15 13 10A 802 (3.1 acres)
15 13 10A 900 (3.5 acres)
15 13 10A 1000 (1.0 acres)
15 13 10A 1100 (4.5 acres)
15 13 10A 1200 (4.1 acres)
15 13 10A 1300, 1301, & 1302 (4.4 acres)
15 13 10A 1400 (4.8 acres)
15 13 10A 1500 (14.0 acres)
Desert Rise Industrial Park (16.2 acres)

Preliminary Plan:

The assumed improvements are listed below and are subject to verification in final design.

NE 9th Street – NE Kingwood Ave. to NE Hemlock Ave.: 8" gravity sanitary sewer line, pump station, and 4-inch pressure force main.

NE Kingwood Ave. – NE 9th St. to NE 15th St.: 10" and 12" gravity sewer line, 12" water line, and ¾ industrial street.

NE 11th St. – NE Kingwood Ave. to NE Hemlock Ave.: 10" gravity sewer line, 12" water line, and full-width industrial street.

A preliminary plan of improvements and benefiting properties is attached hereto as Exhibit "F".

Estimate of Engineering and Survey Costs:

All design and construction is assumed to be completed in accordance with City of Redmond Standards and Specifications including plans, profiles, details, contract documents and special specifications as may be required. Surveying includes topography of existing ground conditions within right-of-way corridors, construction staking, and legal descriptions for right-of-way dedications as may be required. Alignments are as generally shown in Exhibit "F".

Option Three

Engineering and Surveying Estimate = \$64,000
5% of construction cost estimate

Estimate of Administrative Costs:

It is assumed that administrative costs listed below, whether performed by City staff or Consultant, would be charged to the project and contribute to the overall LID assessments. Administrative costs are roughly equal for all options.

Inspection = \$19,000

1.5% +/- of construction cost estimate

Conduct pre-construction meeting, issue notice to proceed, provide inspection services during construction, and material testing.

Legal Counsel = \$3,000

20 hours @ \$150/hour

Review resolutions, assessments, and notices.

Finance Costs = \$75,000

Interim and long-term finance costs.

Right-of-Way and/or Easement Acquisition

It is assumed that property owners are willing to dedicate easements and right-of-way as may be necessary to complete the project.

Project Management/Construction Period Services = \$21,600

20 weeks x 12 hours/week (average) x \$90/hour

Attend pre-bid meeting.
Process pay requests and change orders.
Coordinate with Contractor and others to provide design and construction clarifications.

City Recorder = \$3,000

30 hours @ \$75/hour + \$750 for notices, mailing, advertisements, recording

General Administration = \$11,200

102 hours @ \$110/hour

Research existing files to determine which properties are subject to Waivers of Remonstrance. (4 hours)
Prepare Intent Resolution and present to City Council. (8 hours)
Prepare notice of preliminary assessments along with hearing notice to affected property owners. Prepare general public hearing notice (City Recorder to deliver notices). (8 hours)
Prepare Establishment Resolution and Notice of Intent to Assess. Present to City Council at public hearing. (8 hours)
Attend Public hearing before City Council for establishment of LID. (8 hours)
Coordinate with Finance Director for interim and long-term financing. (6 hours)
Determine final project cost and final allocations. (32 hours)
Prepare notice of final assessments and present at public hearing before City Council. (24 hours)
Prepare final assessment notices. (8 hours)

Total Estimated Administration Costs For All Options = \$132,800

Construction Cost Estimates:

The construction costs shown herein are for estimating purposes only based on City Engineering Division historical data.

Option Three = \$1,253,669

See Exhibit "G" for itemized construction costs.

Total Project Estimate and Estimated Assessments:

Total project estimate Option Three = \$1,450,469

While the infrastructure improvements described in this Report are generally beneficial to all properties within the boundaries of the proposed LID, the methodology employed to determine the estimated assessment of construction costs is based on the lineal foot cost of improvements directly adjacent to any given property. The one exception to the foregoing is the sanitary sewer and

force main which are size based on overall area contribution. Therefore, the estimated assessment for the pump station and force main are based on the proportionate size of each affected parcel in relation to the overall LID area. The estimated assessment for engineering, surveying, and administration are proportioned based on the estimated cost of construction for an individual property relative to the total estimated cost of construction.

It should also be noted here that Tax Lots 15 13 10A 1200, 1300, 1301, and 1302 do not share in the cost of sanitary sewer improvements because those properties are already served by sewer in NE Hemlock and sewer is not being extended to these properties by the proposed LID.

The estimated assessment for each individual property is calculated as follows:

The sum of improvement costs along the subject property frontage, plus the percentage area of the subject parcel relative to the total LID area (not including TL 1200,1300,1301,1302) multiplied by the cost of the sanitary sewer pump station and force main improvements, plus a proportionate share of engineering, surveying, and administration cost.

Estimated Assessment = [(sum of lineal foot frontage cost)] + [(% of total area) x (pump station & force main cost)] + [(% of total construction cost) x (engineering, surveying, and administration cost)]

Option Three

15 13 10A 800 (4.8 acres)

$$\$224,430 + [(\$224,430/\$1,253,699) \times (\$196,800)] = \$259,660$$

15 13 10A 801 (1.0 acres)

$$\$144,926 + [(\$144,926/\$1,253,699) \times (\$196,800)] = \$167,676$$

15 13 10A 802 (3.1 acres)

$$\$201,415 + [(\$201,415/\$1,253,699) \times (\$196,800)] = \$233,032$$

15 13 10A 900 & 1000 (4.5 acres)

$$\$103,679 + [(\$103,679/\$1,253,699) \times (\$196,800)] = \$119,954$$

15 13 10A 1100 (4.5 acres)

$$\$58,679 + [(\$58,679/\$1,253,699) \times (\$196,800)] = \$67,890$$

15 13 10A 1200 (4.1 acres)

$$\$41,861 + [(\$41,861/\$1,253,699) \times (\$196,800)] = \$48,432$$

15 13 10A 1300, 1301, & 1302 (4.4 acres)

$$\$46,461 + [(\$46,461/\$1,253,699) \times (\$196,800)] = \$53,754$$

15 13 10A 1400 (4.8 acres)

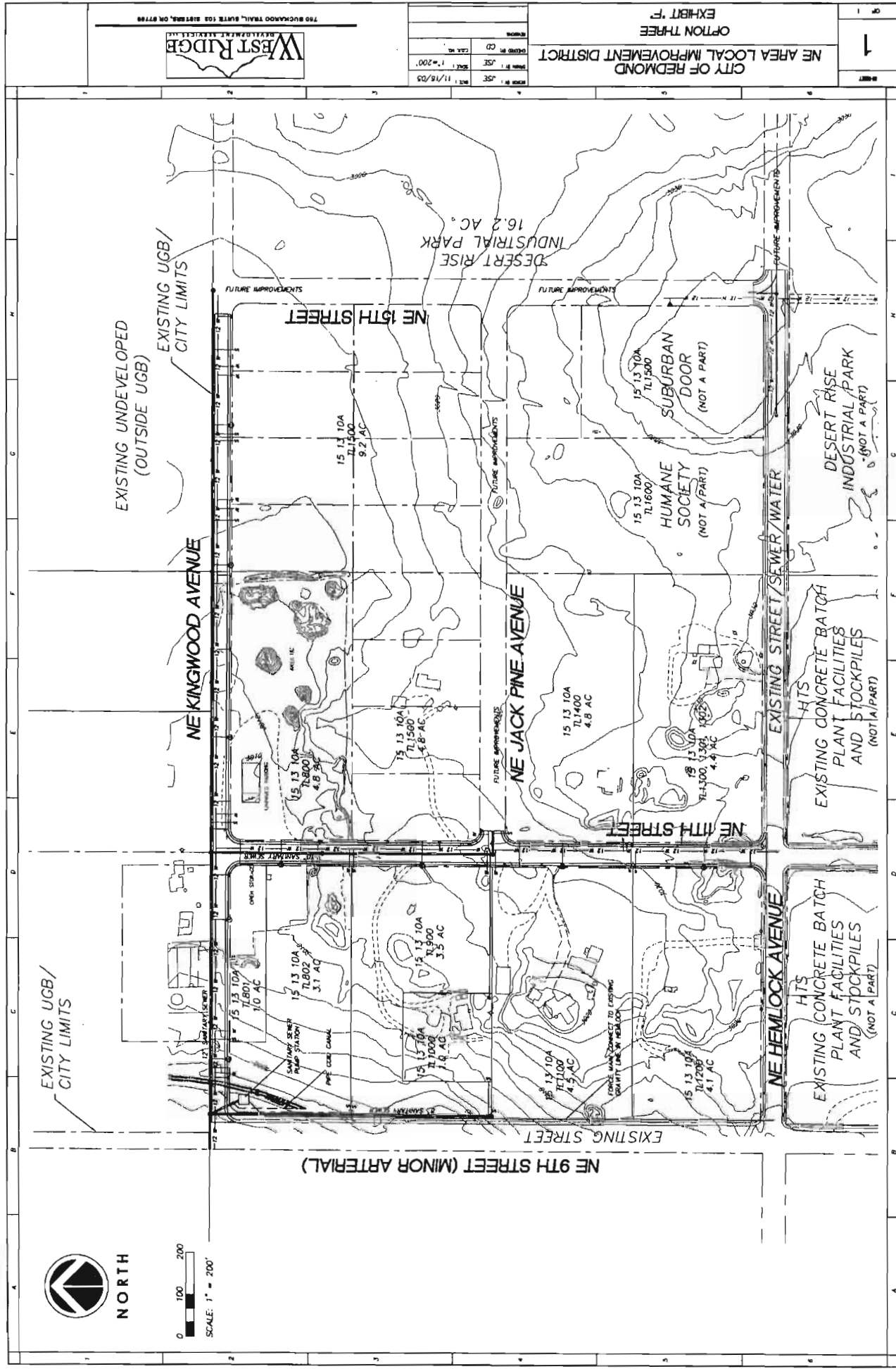
$$\$68,945 + [(\$68,945/\$1,253,699) \times (\$196,800)] = \$79,768$$

15 13 10A 1500 (14.0 acres)

$$\$309,683 + [(\$309,683/\$1,253,699) \times (\$196,800)] = \$358,296$$

Desert Rise Industrial Park (16.2 acres)

$$\$53,592 + [(\$53,592/\$1,253,699) \times (\$196,800)] = \$62,005$$



**REDMOND ORDINANCE
ORDINANCE NO. 2008-02**

AN ORDINANCE ESTABLISHING ASSESSMENTS FOR THE NE 11TH AND NE KINGWOOD LOCAL IMPROVEMENT DISTRICT; AUTHORIZING THE CITY FINANCE DIRECTOR TO ENTER SAID ASSESSMENTS IN THE LIEN DOCKET AND REQUIRING BANCROFT BOND APPLICATIONS TO BE FILED BY MARCH 3, 2008; AND DECLARING AN EMERGENCY.

WHEREAS, the City of Redmond, by and through the City Council, duly formed the NE 11th and NE Kingwood Local Improvement District for the purpose of financing infrastructure improvements; and

WHEREAS, the City duly entered into construction contracts for the purpose of said improvements; and

WHEREAS, the City Engineering and Finance Departments have apportioned the cost and spread the assessments upon the lots or parcels of land benefited thereby; and

WHEREAS, the City set a hearing for objection to the proposed assessments for February 12, 2008, at 7:00 p.m. and notice of the assessments and hearing were mailed to the property owners with the notation that objections were to be filed with the City Recorder before 5:00 p.m. on February 11, 2008; and

WHEREAS, the City Council, after considering any objections raised has determined the amount of benefit accruing to each lot or parcel of land by reason of said improvements;

NOW, THEREFORE, the City of Redmond ordains as follows:

SECTION ONE: The total cost to be assessed the NE 11th and NE Kingwood Local Improvement District is \$1,166,583, which is by this ordinance, assessed against individual benefiting properties in the amounts set forth in Exhibit A.

SECTION TWO: The City Finance Director shall enter the assessments shown above in the docket of City liens and the assessments shall constitute a lien against properties shown above as of the date of adoption of this ordinance.

SECTION THREE: The City Recorder shall cause to be mailed a Notice of Assessment to each person or entity listed in Exhibit A. The Notice of Assessment shall be in the form shown on Exhibit B, attached hereto and by this reference incorporated herein and shall allow owners of assessed property to pay the assessment in cash or to file an application under the Bancroft Bonding Act. Such application under the Bancroft Bonding Act must be received by the City no later than 5:00 p.m., March 3, 2008.

SECTION FOUR: It is essential to proceed immediately with levying of assessments to limit the cost of this project and it is in the best interest of the citizens of the City to make this ordinance effective immediately; now, therefore, an emergency is declared to exist and this ordinance shall take effect upon its adoption.

PASSED by the Council and **APPROVED** by the Mayor this 12th day of February, 2008.

/s/ Alan Unger
Alan Unger, Mayor

ATTEST:

/s/ Kelly Morse
Kelly Morse, Deputy City Recorder

STATE OF OREGON)
County of Deschutes) ss

On February 12, 2008, Alan Unger, Mayor of the City of Redmond, personally appeared before me,

X who is personally known to me

_____ whose identity I proved on the basis of _____

_____ whose identity I proved on the oath/affirmation of _____, a credible witness to be the signer of the above document, and he/she acknowledged that he/she signed it.

[Notary Stamp]

/s/ Kelly Morse
Notary Public for Oregon
My Commission Expires: 12/1/10

EXHIBIT A

The parcels listed below are located in the South 2 of Sec.10, T15S, R13E, W.M.; City of Redmond, Deschutes County, Oregon.

Tax Lot Number	Owner	Final Assessment
15 13 10A 800	Double G Ranch LLC	\$124,848

Legal Description of Property:

Parcel 3 of Partition Plat 1998-32 in the North $\frac{1}{2}$ of the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M except the north 30 feet dedicated as NE Kingwood Avenue right of way.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 801	Maryann and Wilbur H. Durfee	\$31,863

Legal Description of Property:

Parcel 2 of Partition Plat 1998-32 in the North $\frac{1}{2}$ of the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 802	Timeline Enterprises LLC	\$81,011

Legal Description of Property:

Parcel 1 of Partition Plat 1998-32 in the North $\frac{1}{2}$ of the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 900	Richard C. Foss	\$33,990

Legal Description of Property:

A parcel of land situate in a portion of the NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 10, Township 15 South, Range 13 East of the Willamette Meridian, City of Redmond, Deschutes County, Oregon, more particularly described as follows:

Commencing at a 5/8" rebar monumenting the N $\frac{1}{4}$ corner of Section 10, T.15S., R.13E., W.M., the initial point;

Thence S00°14'07" E along the west line of the NE $\frac{1}{4}$ of said Section 10 – 1649.79 feet to the south line of Parcel 1, County Partition Plat No. 1998-32;

Thence N89°45'24" E along said south line – 367.71 feet to the true point of beginning;

Thence S00°16'18"E – 165.00 feet;

Thence N89°45'28"E – 264.00 feet to the west right-of-way (R/W) line of NE 11th Street;

Thence N00°16'18"W along said R/W – 165.00 feet to said south partition line;

Thence S89°45'24"W along said south line – 264.00 feet to the point of beginning.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1000	LM3 Properties LLC	\$56,959

Legal Description of Property:

Parcel 1 of Partition Plat 2007-22 located in the NW ¼ SW ¼ NE ¼ Section 10, Township 15 South, Range 13 East of the Willamette Meridian, City of Redmond, Deschutes County, Oregon,

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1001	LM3 Properties LLC	\$33,990

Legal Description of Property:

Parcel 2 of Partition Plat 2007-22 located in the NW ¼ SW ¼ NE ¼ Section 10, Township 15 South, Range 13 East of the Willamette Meridian, City of Redmond, Deschutes County, Oregon.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1100	Linda L. & Lyndon C. Lengele	\$125,093

Legal Description of Property:

The North ½ of the SW ¼ of the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1200	Carol J. & James L. Hayes	\$85,571

Legal Description of Property:

The South ½ of the SW ¼ of the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1300	Carrie & Rickey Dice	\$71,524

Legal Description of Property:

Parcel 1 of Partition Plat 2005-2 located in the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1400	Adelbert LLC	\$129,749

Legal Description of Property:

The North ½ of the SE ¼ of the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10A 1500	Silvey & Sons LLC	\$327,989

Legal Description of Property:

The South $\frac{1}{2}$ of the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.,
The NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 excepting the south 53.38 feet of the SW $\frac{1}{4}$ of
the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.
The West $\frac{1}{2}$ of the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.

Tax Lot Number	Owner	Estimated Assessment
15 13 10 100	City of Redmond	\$63,996

Legal Description of Property:

The East $\frac{1}{2}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 10 T15S R13 W.M.

EXHIBIT B

SENT REGULAR AND CERTIFIED MAIL

DATE

OWNER
ADDRESS

RE: NE 11th Street and NE Kingwood Avenue Local Improvement District
Tax Lot #

At its regular meeting on February 12, 2008 the Redmond City Council adopted Ordinance 2008-# which authorized the levying of assessments on the above project. The final assessment on your property is \$ASSESSMENTAMOUNT.

You may choose to pay your assessment in full by March 3, 2008 or use the Bancroft Bond financing method. If you choose to use Bancroft Bond financing, the enclosed Bancroft Bond application must be signed, witnessed and returned to the City Recorder by 5:00 PM on March 3, 2008. The assessment will be set up on a 10-year repayment schedule with principal and interest payments due semi-annually. There is no penalty for prepayment. The rate of interest on the repayment will be equal to the rate the City receives on the bonds, plus 1.5%. In addition, if the Bancroft Bond financing method is chosen, an additional amount will be added to the final assessment to reimburse the City for the costs of issuing the bonds. A return envelope is enclosed which you may use to send the Bancroft application back.

Failure to respond with either option by March 3, 2008, may result in collection procedures that may include foreclosure proceedings to collect the assessment.

If you have any questions regarding the Bancroft Bond application please call me at 923-7727.

Sincerely,

Chris Earnest
Finance Director

Attachments



CITY OF REDMOND
City Hall Annex

559 SW 7th St.
P.O. Box 726
Redmond, OR 97756-0100

(541) 923-7710
Fax: (541) 548-7149
info@ci.redmond.or.us
www.ci.redmond.or.us

APPLICATION FOR INSTALLMENT PAYMENT PLAN

OWNER NAME: Lyndon & Linda Lengele
ADDRESS: 1051 NE 11th Street
CITY, STATE, ZIP: Redmond, OR 97756

IN THE MATTER OF LOCAL IMPROVEMENT DISTRICT

NE 11th Street and NE Kingwood Local Improvement District

To the Finance Director of the City of Redmond, Oregon:

In accordance with the provision of the City Charter and ORS 223.205 et seq., and for the payment of local improvements by installments, I hereby make application and agree to pay my proportion of the cost as has been determined and assessed by the City Council of the City of Redmond under **ORDINANCE No 2008-02** therein given and entered in the City of Redmond Lien Docket, in semi-annual installments on all unpaid assessments plus interest at the rate of 5.67%. Said interest is to be paid semiannually at the time each installment is paid, as required by the provisions of the state statute.

In consideration there of and in pursuance of the provisions of the statute aforesaid, I hereby expressly waive all or any irregularity or defect, jurisdictional or otherwise, in the proceedings to cause the improvement to be constructed for which the assessment is levied and in the apportionment of the cost thereof on the property affected thereby, being the following described property for the improvement herein set forth.

Property affected by this Improvement: Tax Lot #15-13-10AO-01100

Amount of Assessment: \$125,093.00

Interest Rate: 5.67%

Term: 20 Years (40 semi-annual installments)

Estimated Semi Annual Payment: \$5,268.42

First Semi Annual Payment Due: June 15, 2008

Prepayment provision: None, Full payment may be made at anytime without penalty

IN WITNESS WHEREOF, I have hereunto set my hands this 23 day of April, 2008

Lyndon C. Lengele
Signatures of Applicants and Property Owner

Linda Lee Lengele
Signatures of Applicants and Property Owner

543-46-6674
Social Security # or Tax Identification #

COPY

City Filing Index – Property Lien
To be Recorded by the City and Filed on the City's Electronic Lien Docket

(Added to City Lien Docket _____)

**NE 11th Street and NE Kingwood Avenue LID Program Installment Payment
Lien Agreement**

THIS AGREEMENT is between Lyndon C. & Linda L. Lengele (OWNER) and the City of Redmond, Oregon (CITY).

WHEREAS, OWNER owes the NW 11th Street and NE Kingwood Avenue Local Improvement District the amount of \$ 125,093.00 for the construction of streets, sewer and water improvements whereas, benefited Owner's property which is outlined in Redmond Resolution #2008-02 and

WHEREAS, CITY agrees to loan and OWNER agrees to pay the City of Redmond the amount of \$ 125,093.00 for the following described real property 15-13-10A0-01100, The North ½ of the SW ¼ of the SW ¼ of the NE ¼ of Section 10 T15S R13 W.M. in forty (40) consecutive semi-annual installment payments including interest at an annual rate of 5.67%,

NOW, THEREFORE, the OWNER agrees to pay CITY \$ 5,268.42 on or before June 15, 2008, and a like amount on or before each succeeding December 15 and June 15 until the 40 semi-annual installment payments are complete and all outstanding principal and interest owed has been paid. Outstanding principal and accrued interest may be prepaid at anytime without penalty.

OWNER also agrees that this obligation is not only personal to OWNER but also is a recordable lien on the above described property, which may be foreclosed upon non-payment of the amount owed. OWNER affirms that OWNER has authority to consent to the imposition of such lien.

OWNER hereby acknowledges that upon sale of the above described property the unpaid balance is due at the time of sale unless otherwise approved by the City.

State of Oregon)
County of Deschutes) ss.



Subscribed and sworn to before me
this 30 day of APRIL,
2008 by ODL

Lori L. Layton
Notary Public for Oregon
Public Notary
Title
My Commission Expires 11-14-2010

Linda L. Lengele 4-30-08
Owner
Lyndon C. Lengele 4-30-08
Owner

Approved by:

[Signature]
City of Redmond
Finance Department

Date: 4/30/08

After recording, return to:
David W. Smiley
70 SW Century Drive, Ste. 100-333
Bend, OR 97702

Until a change is requested, all tax statements
shall be sent to the following address:
Lyndon C. Lengele
1051 NE 11th Street
Redmond, OR 97756

DESCHUTES COUNTY OFFICIAL RECORDS
NANCY BLANKENSHIP, COUNTY CLERK

2012-47172



\$53.00

00865592201200471720020025

11/26/2012 12:12:34 PM

D-D Cnt=1 Stn=2 TM

\$10.00 \$11.00 \$16.00 \$10.00 \$6.00

WARRANTY DEED

LYNDON C. LENGELE, Grantor, conveys and warrants to LYNDON C. LENGELE, Trustee, or Successor in Trust, of the Lyndon Lengele Revocable Trust U/D/T dated November 15, 2012, as amended or restated, Grantee, the following described real property situated in Deschutes County, Oregon:

The North Half of the Southwest Quarter of the Southwest Quarter of the Northeast Quarter (N1/2 SW1/4 SW1/4 NE1/4) of Section Ten (10), Township Fifteen (15) South, Range Thirteen (13) East of the Willamette Meridian, Deschutes County, Oregon.

Tax account no. 15-13-10A-1100

This property is free from encumbrances, EXCEPT: Regulations and assessments of Central Oregon Irrigation District. The existence of roads, railroads, irrigation ditches and canals, telephone, telegraph and power transmission facilities. Agreement recorded December 19, 1967 in volume 157, page 44. Easement recorded April 7m, 1975 in volume 217, page 264.

Grantor conveys the property to Grantee subject to all exceptions to coverage contained in Grantor's policy or policies of the title insurance insuring Grantor's title to the subject property, if Grantor has any such policy or policies of the title insurance in effect, and if not, subject to all encumbrances, easements and restrictions of record, or which accurate survey or inquiry of parties in possession of the property would disclose.

The liability and obligations of the Grantor to Grantee and Grantee's heirs and assigns under the warranties and covenants contained herein or provided by law shall be limited to the extent of coverage that would be available to Grantor under a standard policy of title insurance. The limitations contained herein expressly do not relieve Grantor of any liability or obligations under this instruments, but merely define the scope, nature, and amount of such liability or obligations.

The true and actual consideration for this conveyance is \$0 and other good and valuable consideration (this being a transfer for estate planning purposes).

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO

WARRANTY DEED

Page 1 of 2

11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 55, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

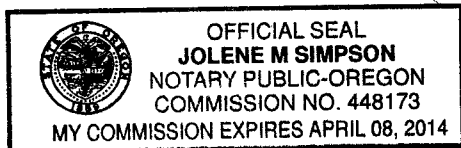
DATED this 15th day of November, 2012.

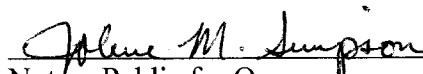
Grantor:


LYNDON C. LENGELE

STATE OF OREGON)
) ss.
County of Deschutes)

This instrument was acknowledged before me this 15th day of November, 2012, by Lyndon C. Lengele, as Grantor.




Notary Public for Oregon
My Commission Expires: 4-8-2014



CITY OF REDMOND

CITY HALL
411 SW 9th STREET
REDMOND, OR 97756
541.923.7710
FAX: 541.548.0706
info@redmondoregon.gov
redmondoregon.gov

STAFF REPORT

DATE: March 26, 2024
TO: Redmond City Council
THROUGH: Keith Witcosky, City Manager
Jason Neff, Deputy City Manager/Chief Financial Officer
Jessica MacClanahan, Public Works Director/City Engineer
FROM: Lindsey Crowsigt, Assistant City Engineer
SUBJECT: Resolution #2024-10 - A resolution adopting amendments to the City of Redmond Standards and Specifications.

Report in Brief:

This item requests City Council approve changes to the City of Redmond Standards and Specifications.

Background:

The City of Redmond Public Works Department identified the need to update the Public Works 2010 Standards and Specifications. The document was originally approved in 1995 and most recently updated with minor improvements July 19, 2022. A vast majority of the current version of the Standards and Specifications was adopted in 2010.

The purpose of the document is to set provisions which serve as the minimum development and construction standards for the City and are intended as a supplement to the Oregon Standard Specifications for Construction. The document applies to both private development and publicly bid contracts where applicable. The Standards and Specifications apply to all related infrastructure which will be ultimately owned, operated, and maintained by the City.

Discussion:

The modernization of the City of Redmond Standards and Specifications (S&S) is intended to clarify expectations for the public and City staff regarding reviewing, permitting and inspecting construction in the public right of way.

Significant Changes

A summary of significant changes is included in Exhibit A - Resolution 2024-10. The S&S were generally modified to:

- Provide consistency with the Redmond Development Code
- Reflect updated design and construction practices
- Improve function and durability of infrastructure
- Improve clarity and efficiency of design and construction
- Provide flexible design options

Several major updates include:

- **Grading and Stormwater Management.** The proposed language includes slope stabilization measures, clarifies terracing for retaining walls and cut/fill requirements, and requires reciprocal maintenance agreements when retaining wall or storm facilities cross property lines. Proposed stormwater management standards create flexibility for developers designing residential subdivisions and more closely align with the Central Oregon Stormwater Manual (COSM). Regional stormwater facilities are proposed, which allow private property drainage and right of way drainage to be contained in a facility located in the right of way. These changes will streamline building permit review and reduce costs for stormwater management.
- **Tree Preservation.** The proposed standards establish tree protection requirements during construction, planting standards, and an acceptable tree list organized by five classes, depending on spacing width and landscape strip width.

- **Pavement Restoration.** The proposed language establishes minimum pavement restoration standards when existing streets are cut during construction activities.
- **Irrigation System Standards.** The proposed language establishes irrigation system standards for systems to be owned and operated by the City.
- **Water Service and Meter Installation Standards.** Incorporates the Water Service and Meter Installation Manual that was previously a stand-alone document.
- **Drawings.** All standard drawings were updated and several new drawings were incorporated.

The draft document is attached as Exhibit B - Draft City of Redmond Standards and Specifications.

Public Involvement

The City identified internal and external stakeholders as part of the engagement process. External stakeholder outreach was primarily targeted to the industry-related community, including engineers and consultants, contractors, franchise utility groups, partner agencies, and developers. Outreach included:

- Email distributed to 127 members of the development community requesting feedback;
- City website notifications requesting feedback;
- Workshops held with Planning Commission on September 20, 2023, October 4, 2023, and October 17, 2023;
- Workshops held with City Council on November 14, 2023;
- Workshops regarding specific topics held with external stakeholders including Central Oregon Builders Association, Oregon Department of Forestry, partner agencies, and the development community; and
- Internal stakeholder coordination with Public Works, Redmond Fire and Rescue, and Community Development Department.

Feedback received was addressed or incorporated into the draft amendments.

Fiscal Impact:

There is no direct fiscal impact with this action. Operationalizing the new standards will require effort from the City Engineering Department.

Alternative Courses of Action:

1. Approve updated Standards and Specifications via resolution.
2. Modify draft document and approve updated Standards and Specifications via resolution
3. Take no action and request additional information

Recommendation / Suggested Motion:

"I move to adopt Resolution No. 2024-10."

**REDMOND RESOLUTION
RESOLUTION NO. 2024-10**

A RESOLUTION ADOPTING AMENDMENTS TO THE CITY OF REDMOND PUBLIC WORKS STANDARDS AND SPECIFICATIONS.

WHEREAS, City of Redmond Resolution 95-27 provides that the City of Redmond Public Works Standards and Specifications, dated December 1995, may be amended by resolution of the Redmond City Council;

WHEREAS, the City of Redmond Public Works Standards and Specifications were amended by Resolutions 1997-14 (April 1997), 1997-48 (October 1997), 1998-01 (January 1998), 1998-35 (June 1998), 1999-24 (May 1999), 2001-02 (January 2001), 2003-28 (April 2003), 2011-15 (May 2011), and 2022-23 (July 2022);

WHEREAS, amendments to the City of Redmond Public Works Standards and Specifications are summarized in Exhibit A and a copy of the revised document is available on the City of Redmond website, and

WHEREAS, adoption of the City of Redmond Standards and Specifications replaces all previous publications of the City of Redmond Public Works Standards and Specifications.

NOW, THEREFORE, THE REDMOND CITY COUNCIL RESOLVES AS FOLLOWS:

SECTION ONE: Amendments to the City of Redmond Standards and Specifications (available on the City of Redmond website and from the Engineering Division), are hereby approved by the Redmond City Council.

SECTION TWO: All plans for construction of public improvements submitted to the Public Works Department after approval of this resolution shall conform to the City of Redmond Standards and Specifications.

SECTION THREE: Minor amendments to the City of Redmond Standards and Specifications may be approved by the City Engineer.

PASSED by the Redmond City Council and **APPROVED** by the Mayor this 26th day of March, 2024.

Ed Fitch, Mayor

ATTEST:

Kayla Duddy, Deputy City Recorder

State of Oregon
County of Deschutes

This instrument was acknowledged before me this 26th day of March, 2024 by Ed Fitch, Mayor.

Kayla Duddy, Deputy City Recorder

My commission expires _____

EXHIBIT A: SUMMARY OF SIGNIFICANT CHANGES FROM THE 2010 TO THE CURRENT VERSION OF THE PUBLIC WORKS STANDARDS AND SPECIFICATIONS, AMENDED IN 2024

STANDARD SPECIFICATIONS: Major changes to the five divisions of the Standard Specifications are as follows:

Division I Trenches:

Blasting provisions updated per previous Council approvals

Division III Sewer Facilities:

- Added requirement for hydrant within 50 feet of a pump station for drawdown testing
- Added emergency generator power requirements (natural gas or propane)
- Replaced pump station fencing requirement from chain link to cedar

Division IV Water:

- Incorporates the Water Service and Meter Installation Manual
- Clarified hydrant model types and numbers
- Added irrigation system materials section for City-owned and operated systems

DESIGN STANDARDS: The design standards set parameters for design of infrastructure including street, stormwater, sewer and water and also list requirements for construction drawings. There were a number of significant changes to the Design Standards to match current state and federal standards.

Street Design:

- Clarified that accessible curb ramps are required at each corner of an intersection
- Removed requirement for curb ramps every 400 feet
- Added requirement that design plans proposing to utilize existing curb ramps must demonstrate compliance with PROWAG prior to permit issuance
- Added requirement that stop bars are required at roads intersecting Collectors/Arterials
- Clarified requirement that striping disturbed during construction must be restored by the applicant
- Added tree preservation and tree planting standards
- Removed midblock street light requirement
- Added pavement restoration standards
- Added Clear Vision and Curb Painting standards; refers to Development Code
- Clarified requirement that when public utilities are proposed within private streets, the private street must meet public paving standards or public all weather access standards

Stormwater:

- The entire section was repealed and replaced
- The Central Oregon Stormwater Manual is referenced for design standards and Redmond special provisions to the stormwater manual are provided
- The design storm was reduced from a 50-year rainfall event to a 25-yr rainfall event, per the Central Oregon Stormwater Manual
- Clarified requirements for residential development, non-residential development, and public streets or alleys
- Added option for Regional Facilities, which allow private and public stormwater to be maintained in one facility located in the right of way
- Reduced design requirements to allow the Engineer of Record to propose an infiltration rate up to 9 in/hr. The previous standard was the rate specified in the National Resource Conservation Service (NRCS), which was more conservative.
- Clarified that infiltration rates must be tested upon construction. Infiltration rates must be reported.

- Streamlined acceptance testing for drywells. Reduced volume of water required to test drywells.
- Added Grading Standards, previously located the Development Code
 - Specifies cuts/fills permitted, temporary and permanent stabilization, and retaining wall terracing requirements
 - Specifies requirements for grading proposed adjacent to properties

Sewer:

- Requires one service per lot, unless otherwise approved by City Engineer (CE) or when required for Middle Housing Land Divisions
- Requires concentric cones for external drop manholes

Water:

- Added option for hydrant or blowoff at dead end mains
- Specified preferred locations for water mains 6 feet from curb. Require water mains to be located in public right of way, unless otherwise approved by CE. Specifies 20-ft easement for public water mains.
- Specifies one fire service per lot. Specifies fire service and domestic service must be separated, unless otherwise approved by CE.
- Added Middle Housing Land Division requirements
- Removed reference to the City of Redmond “Water Service and Meter Installation Manual” and included the guide materials within the S&S
- Added water service and meter sizing table to clarify water meter sizing requirements
- Added requirement to separate hydrants from drywells unless otherwise approved
- Added requirement that hydrant may be required to be placed on the opposite side of the street from a development and should be placed on alternating sides of the street when possible
- Added hydrant models allowed by the City

Irrigation:

- Clarified requirements for City-owned or maintained irrigation systems
- Added irrigation main and lateral design requirements
- Added operations and maintenance transfer requirements

Drawings:

- Clarified datum requirements
- Added Tree Survey requirements, when applicable
- Added electronic plan submittal nomenclature requirements

DEVELOPMENT PROVISIONS: Development provisions cover both private and public improvements. Changes throughout this section to reflect current policy for design and review.

03 Public Facility Requirement:

- Clarified properties may not connect to sewer or water through easements across adjacent property, unless otherwise approved or required by the City Engineer, such as for Middle Housing Land Divisions

04 Plans and Specifications:

04.02 Review Plan

- Removed requirement for paper plan during review
- Exempted certain grading and drainage reviews from requiring a storm drainage report
- Removed reference to Advanced Grading Permit

04.2 Review Plan

- Reduced number of plan sets required for review from three to two
- Added requirement for storm drainage report
- Added DEQ review of UIC storm drainage facilities

- Added opportunity for review meeting of redlined plans

04.3 Final Plan

- Reduced number of final set paper copies required from four to one

04.5 Pre-Construction Meeting

- Clarified Notice to Proceed will not be issued until submittal items are approved

04.6 Plan Revisions

- Removed requirement to submit two paper copies and a new mylar set with any revision
- Require text “As-Built Drawings” on PDF copy of record drawings

04.7 Final Plat

- Exempt condominium plats from City signature per ORS 100.115.

23 Site Grading and Drainage

23.1.00 General

- Modified to allow drainage to cross property lines when approved through design process

23.2.00 Plans and Specifications

- Removed reference to 50-yr storm

23.3.00 Subdivision Site Grading

- Removed reference to steep banks, extreme cuts/fills, and unsightly areas and added reference to grading standards within the S&S

23.5.02 Advanced Grading Activity

- Removed reference to advanced grading; removed section and combined with 23.5.01; renumbered subsequent sections

STANDARD DRAWINGS: All of the standard drawings were revised with new title blocks, corrections and updates. Modifications are clouded. There are several new standard drawings. Major changes are noted below:

1-1 Utility Trench: Clarified trench backfill requirements and dimensions

1-2 Water Line and Sewer Line Separation: Clarified concrete encasement dimensions and strength requirements

2-1 Typical Minimum Street Cross Section Dimensions:

- Decreased alley pavement from 4-inch to 3-inch section
- Clarified NO PARKING signs required on one side of the roadway when 28 feet wide; on both sides of the roadway when 24 feet wide
- Modified local roadway pavement from 3 inch to 4 inch section; decreased aggregate base from 8 inch to 6 inch section
- Clarified curb and gutter required when roadway slope is less than 0.5%
- Grind and inlay is less costly than pavement replacement and does not increase crown and reduce curb exposure as an overlay will. Drawing 2-1A Reduced Width Street revised to match Transportation System Plan and Development Code.

2-11 through 2-14 (driveway options): Requires 2-foot wide patch on existing asphalt to match typical width of a plate compactor; reduced driveway widths to 12 feet to facilitate infill and middle housing

2-16 through 2-19 (ADA ramp options): Modified concrete to be 6 inches thick; removed rebar requirements; specified curb reveal minimum of 3 inches between ramps

2-21 Typical Concrete Curb and Sidewalk: Demonstrates curb-tight and property-tight sidewalk options

2-22 Typical Concrete Joint Sections: Specified typical distances between control and expansion joints

- 2-23 Typical Downtown Tree Well Installation:** Specifies tree installation requirements
- 2-24 Typical Downtown Sidewalk:** Demonstrates irrigation requirements in downtown sidewalk
- 2-24B Typical Downtown Sidewalk Meter Installation:** New drawing to demonstrate where to locate water meters and valve boxes downtown
- 2-31 Street Name Signs:** Clarified sign dimension requirements by speed and numbers of lanes
- 2-33B Decorative City Street Light Irrigation Installation:** New drawing to demonstrate irrigation requirements for street lights in the downtown zone
- 2-33C Decorative City Street Banner Installation:** New drawing to demonstrate banner installation on street lights in the downtown zone
- 2-37 City Art Base Installation:** New drawing to demonstrate art base installation requirements
- 2-38 Traffic Control Removable Bollards:** New drawing to demonstrate removable bollards, typically used for emergency service access
- 2-40 End of Street Markers:** New drawing to show end of roadway marker requirements per MUTCD
- 3-4 Standard Outside Drop Sanitary Sewer Manhole:** Specified that the pipe inlet shall extend 1 foot into the manhole; manholes shall be concentric
- 4-7 through 4-10 (Water Meters 3-inch to 8-inch):** Demonstrate setter and future meter; clarified dimensions and clearances required
- 4-22 and 4-23 (Fire Services):** Removed post indicator valve (PIV) requirements; added vault heater requirements
- 4-29 Typical Water Meter Installation Location:** New drawing to demonstrate typical water meter box locations with regard to hardscape
- 5-7 Storm Sewer Manhole:** Clarified clearance to water main from storm sewer manhole to be 30 inches
- 5-11 Storm Water Sedimentation Manhole:** Added new drawing
- 5-12 Combination Catch Basin Inlet:** New drawing to show combination catch basin sedimentation manhole
- 5-13 Tree Protection Zone:** New Drawing to show the protection of trees to be preserved during construction

EXHIBIT B

DRAFT STANDARDS AND SPECIFICATIONS

Text in red underline is proposed
new text. Text in strike-through
is proposed to be deleted.

CITY OF REDMOND, OREGON

2010 STANDARD SPECIFICATIONS
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01 INTRODUCTION

01.1.00 General

The following provisions are minimum development and construction standards for the City of Redmond and are intended as a supplement to the Oregon Standard Specifications for Construction. Where the term Design Engineer occurs in this document, it shall mean a professional engineering firm retained by the City or Developer/Owner to provide design, construction management, or some other service necessary for the construction of the proposed public facility or site drainage facility. This document shall apply to both private development and publicly bid contracts where applicable.

01.2.00 Public Work Improvements

This document is intended to set minimum standards for public work improvements within the Urban Growth Boundary of the City of Redmond. These standards are not a substitution for professional experience. Sound judgement must be exercised in the application to specific conditions. The City Engineer may vary or modify any of the City's Design Standards, on a case-by-case basis, if it is found that the strict application of the City's Design Standards is impractical or if it would result in hardship. Deviations from these specifications are subject to approval of City Engineer

The City of Redmond, Public Works Department Standards and Specifications will be incorporated in and made a part of any contract for the design and construction of a municipal project. The portions of this specification relating to design, easements, materials, and workmanship shall be adhered to for private developments where improvements will become part of municipally owned and operated systems. These Standards and Specifications will be updated periodically and, as such, all persons should assure they are working with the most current set of Standards and Specifications.

Minimum general standards shall be as set forth in the current ***City of Redmond Public Works Standard and Specifications for Construction***.

02 RULES

No project or construction work that requires City Engineering or Public Works inspection shall commence until the appropriate agreements have been signed, performance bonds submitted for work in a public right of way, final construction plans approved, preconstruction meeting held, all associated fees and deposits have been paid and 'Notice to Proceed' issued.

The Owner/Developer, or agent, will be responsible for any faulty material and workmanship for one year from the date of the formal acceptance of the sewer, street, water, storm drainage or other public facility installation. Final Acceptance of a project, or any portion of a project, shall be in writing from the City Engineer, and shall state any special conditions required for acceptance by the City.

The Owner/Developer, or agent, shall comply with all terms and conditions of applicable governmental rules and regulations pertaining to the work.

The design and construction of all proposed facilities shall be in conformance with the City of Redmond Public Works Standards and Specifications, and all standards and specifications referenced therein.

Workmanship and materials not conforming to these Standards and Specifications will be deemed a violation of City code and any associated agreement and may result in an immediate suspension of the Contractor's activities. When an authorized representative of the City Engineer suspends the Contractor's activities, all work shall cease on the subject project until the violation is corrected to the satisfaction of the City Engineer.

03 PUBLIC FACILITY REQUIREMENT

To provide for orderly and efficient urban development and extension of public facilities, public streets, alleys and public utilities shall be extended along public right-of-way or City easements for the full length of all portions of property frontage being developed or as otherwise determined through the land use approval process. Public facilities shall be extended from the point of connection "to and through" to the far boundary of subject property. All public facility extensions and/or improvements shall conform to the City of Redmond; Public Works Standards and Specifications, Public Facilities Plan, Transportation System Plan, Water System Plan and Wastewater System Plan where applicable. All new service or fire hydrant connections to City water and/or sewer systems shall require a public water and/or sewer main line to be located or extended in public right-of-way or City easements along property frontage, where applicable. Properties may not connect to the public sewer and/or water system by extending individual services through adjacent private property within private easements, unless otherwise approved or required by the City Engineer, or when required for Middle Housing Land Divisions. The "to and through" public facility requirement shall be fulfilled except where it is not practical to extend a street or utility because of topography or by boundary and/or land use restrictions prohibiting development (e.g. UGB, public lands, etc.) as determined by the City Engineer. When it is not practical to extend a street or public utility, the property owner or developer will be required to provide a cash payment equal to the value of the improvements.

04 PLANS & SPECIFICATIONS

04.1.00 General

Plans and specifications for public streets, alleys, storm drainage, sewer, or water facilities must be submitted by the person or firm proposing the work to the City of Redmond Engineering Department for approval before construction is started. Plans must be submitted after land use approval where applicable unless otherwise authorized by the City Engineer. The Contractor shall not start work until he/she has plans signed and approved by the City Engineer and Director of Public Works and project security/performance bond is submitted. A copy of any construction requirements or development conditions levied by any public agency, such as City of Redmond Community Development Department Staff Reports, shall be attached to plans submitted for review. Support documentation such as fire flow analysis and storm drainage calculations/reports shall be submitted as well. Without the above document submittal, the Engineering Department will be unable to adequately review the plans and will return the plans without review.

Final plans addressing review comments are to be submitted by the Owner, or the Design Engineer, to the City of Redmond Engineering Department for approval. The final design shall be prepared, sealed, and signed by a Registered Professional Engineer licensed in the State of Oregon, in accordance with state law.

04.2.00 Review Plan

One ~~full size paper copy and one~~ electronic PDF copy of the design plans showing the proposed facilities shall be submitted to the City of Redmond Engineering Department for review. One ~~'redline'~~ An electronic copy of the preliminary plan will be returned indicating any modifications required.

Any final design plans for facilities requiring postal delivery service shall have on the cover sheet the signature of an appropriate official of the United States Postal Service indicating that the design is approved by the United States Postal Service. A copy of the negotiated and signed Mode of Postal Delivery form shall be attached to the final plan.

Any final design plans having fire hydrants or facilities for the suppression of fires, shall have on the cover sheet the signature of an authorized official of Redmond Fire and Rescue indicating that the design is approved by Redmond Fire and Rescue. Plans requiring approved fire flows as determined by Redmond Fire and Rescue or Land Use action will not be accepted for review unless documentation in the form of a fire flow analysis verifying compliance is attached to the submittal. The fire flow analysis shall be stamped and signed by a Registered Professional Engineer, licensed in the State of Oregon.

Any final design plans having storm drainage facilities will not be accepted for review unless a storm drainage report stamped and signed by a Registered Professional Engineer, licensed in the State of Oregon is attached to the submittal, unless otherwise exempt within the Public Works Standards and Specifications.

The final design plans shall have on the cover sheet the signature of the Owner/Developer and of an authorized representative of all affected agencies, utilities, fiber optic and/or service providers including but not limited to; Pacific Power and Light, Central Electric Cooperative, Qwest, Lumen, CenturyLink, Bend Broadband/TDS, Cascade Natural Gas and Central Oregon Irrigation District indicating design review and approval. When required, the developer will be responsible to submit drawings and required fees to Oregon Health Authority (for private water facilities) and to the Oregon Department of Environmental Quality (for private and/or common sewer systems, pressure sewer systems and UIC storm drainage facilities) for review and approval.

Upon request of the Design Engineer, a meeting to review City ~~'redline'~~ comments will be scheduled. Re-submitted plans shall be accompanied by any and all Department comments including the ~~'redline'~~ City's comments copy to facilitate further review.

An ~~Advanced~~ Grading Permit may be issued subject to City Engineering approval ~~after the first plan review redline comments have been addressed~~ after a land use decision is

issued and prior to Site Development Permit issuance. ~~Advanced~~ Grading plans require a Cover sheet, Grading Plan and ~~ESC~~ Erosion and Sedimentation Control (ESC) Plan.

04.3.00 Final Plan

After all revisions have been made to the reviewed plans, and the corrected plans have been approved by the Engineering Department, ~~then one set of the final plan set shall be~~ the cover sheet shall submitted on mylar reproducible media for signatures. The final plan sets shall be stamped and signed by a registered professional engineer employed or retained by the Design Engineer. Documentation of any required Oregon Health Authority or Department of Environmental Quality agency submittal and approval must accompany final plan submittal. No changes will be made by the City to the mylar reproducible copies sealed and signed by the Design Engineer. The City Engineer's signature will indicate that the design is approved. Other affected agencies/persons, such as the United States Postal Service, Redmond Fire and Rescue, Central Oregon Irrigation District, ODOT, etc., will indicate their approval by signature. The final signatory is the Public Works Director, which will indicate that all Engineering fees have been paid.

The Owner or the Design Engineer shall provide the City with one complete electronic signed set of mylar reproducible (or equal) drawings and four signed sets of printed, ~~blue-line, or photocopied drawings.~~ Cloudy, dark, or otherwise illegible drawings are not acceptable. ~~The information shall also be submitted to the City in PDF format on a storage device or transmitted by email as appropriate.~~ All fonts, shape files, external references, images and other items necessary for a complete drawing shall be packaged with the electronic file. ~~Cloudy, dark, or otherwise illegible drawings are not acceptable. The information shall also be submitted to the City in PDF format on a CD or transmitted by email as appropriate. All fonts, shape files, external references, images and other items necessary for a complete drawing shall be packaged with the electronic file.~~

Final plan approval is effective for the duration of the associated land use approval period and/or improvement agreement schedule of work. Extension of final plan approval may be granted at the discretion of the City Engineer and will be subject to fee retainage and adherence to the most current City of Redmond Standards and Specifications and Fee Schedule. However, unless an extension is granted the final plan approval shall be declared void, and the final plans must be resubmitted to the City for review and approval if either of the following occur:

- 1) Construction has not been initiated within eighteen (18) months of the final plan approval date.
- 2) Construction has not been initiated within six- (6) months of the Engineering Fee letter date.
- 3) The inspection portion of the Engineering fee is refunded back to the Owner/Developer prior to project acceptance.
- 4) Land use approval and/or improvement agreement expire prior to construction completion or City acceptance.

04.4.00 Engineering Fees

Engineering fees for City inspection and plan review of public improvements are required as established by the City of Redmond Fee Schedule and must be paid before the construction plans can be approved and signed by the Public Works Director. The plan

review portion of this fee is for services already provided and is non-refundable. The inspection portion of this fee is based on project valuation and is non-refundable. A cost estimate shall be submitted by the Design Engineer for review by the Engineering Department to determine project valuation. A non-refundable final warranty inspection fee will be charged to cover future inspection services to be performed in the one-year warranty period.

04.5.00 Pre-Construction Meeting

A pre-construction meeting will be held after Engineering fees are paid, the plans have been approved and signed, and before construction can begin. Items to be covered are outlined in Section 12 of the Development Provisions. Following the pre-construction meeting, the City Engineering Department will issue a 'Notice to Proceed' once all submittal items are approved. The 'Notice to Proceed' is the document which authorizes construction to begin, and inspection services to commence.

04.6.00 Plan Revisions

No design changes or revisions to final plans signed by the City Engineer and Public Works Director will be considered effective without the following:

- 1) The City Engineer shall verify and approve any changes, modifications, or revisions. For design changes affecting the scope of work, additional Engineering 'Change Order' review fees established by the City of Redmond Fee Schedule must be paid before the approved revised plans can be signed by the City Engineer. Each revised plan sheet shall have a 'Change Order' approval signature block added and shall be approved and signed by the City Engineer. For minor revisions that do not affect the design content, such as changing the location of water or sewer services, revisions can be approved by the Inspector in the field and noted on the As-Built drawings. Minor revisions must also be submitted to the Engineering Department in PDF format ~~and full size plan sheet~~. Revising the location of a fire hydrant, line valve, vault, manhole, catch basin, or similar structure changes the design content, and such change must be submitted for review and approval to the City Engineer.
- ~~2) Within two working days after City Engineer approval, two copies of the revised plans sheets and one copy of the new original mylar drawings sheets sealed by the Design Engineer with the revisions noted in the Revision Box shall be submitted, and one PDF plan set submitted to the Engineering Department for distribution.~~
- 3) 2) Provide and maintain on the job site one complete set of construction drawings which includes approved change orders, modifications, and revisions.
- 4) 3) Immediately after completion of each portion of the work is installed, indicate all deviations from the original design on the Drawings either by additional sketches or marked in red thereon.
- 5) 4) Upon completion of the project, the Design Engineer shall submit full size electronic (PDF) and mylar set record drawings and change order drawings with design changes that required new or substantially altered drawings for approved design changes with the revisions noted in the Revision Box. These electronic drawing change order drawings shall reflect as-built conditions known to the Design Engineer. The drawings shall include the text "As-Built Drawings" on each page.

04.7.00 Final Plat

A final subdivision or partition plat showing complete information shall be submitted to the Community Development Department for routing. Condominium Plats do not require City of Redmond signature per ORS 100.115. Prior to plat signature by the Director of Public Works, the following conditions must be met: the County Surveyor has signed the plat; required improvements to public facilities have been constructed, accepted, bonded, or guaranteed per the Development Code and any associated land use approval; cash contributions for public improvements in lieu of construction have been paid; warranty agreement and warranty bond provided for completed public improvements; Contactor lien release provided, documentation submitted to verify the abandonment of any private water and sewer systems per County and/or State requirements; certification of all earth fill areas located outside of public right-of-way/easement by a license professional engineer; public or City easements dedicated on the plat are consistent with current City easement agreement template provisions; all related public or City easements conveyed separate from the plat have been signed and recorded; All other conditions of land use approval that relate to Public Works or Engineering Departments have been met; and any fees or assessments associated with the plat and required by the land-use process, reimbursement/improvement districts, or cost sharing agreements have been paid. The final plat (or easements and/or right-of-way dedication in lieu of) shall be recorded upon completion and City acceptance of any associated required public improvements where in the determination of the City Engineer said final plat left unrecorded may adversely impact existing and/or active public infrastructure or traveled way or constructed City master plan public facility.

05 AGREEMENTS

Improvement agreements are required by the City for public improvements not completed but bonded/secured for plat approval or for public improvements to be constructed within existing public right-of-way or upon existing public facilities. All agreements shall be signed, and related performance bond/surety received by the City, prior to commencing construction on the associated facility. These agreements are generally prepared by the City's Community Development Department and specify improvement cost and construction completion date. It is the responsibility of the Owner, or her/his agent, to coordinate with the City offices to assure all agreements and bonds/sureties have been completed and executed prior to start of construction.

06 INSURANCE

The person or firm doing the work (Contractor) shall maintain Construction Public Liability Insurance during the life of the Project. The coverage shall be maintained in the amount of the City's tort liability limits set by the Oregon Legislature (ORS 30.271 and ORS 701.084) for bodily injury liability and property damage applying to her/his own work and that of any subcontractor performing work under the Agreement.

All Contractors performing work on public improvements must be registered with the Construction Contractors Board and License with a Commercial endorsement. Contractors performing landscape improvements must be licensed with the State Landscape Contractor Board.

All contractors and subcontractors working on a public works project with a value over

\$100,000 must file a \$30,000 “public works bond” with the Construction Contractor’s Board. General Contractors must verify that subcontractors have filed a public works bond before permitting a subcontractor to start work on a project.

The City of Redmond shall be indemnified and held harmless from any liability of any kind resulting from or in connection with activities associated with the project. The City of Redmond shall be named as an additional insured, and a certificate of insurance with ten-day cancellation notice shall be filed with the City of Redmond Recorder’s office prior to start of construction.

07 EASEMENTS AND PERMITS

When portions of a public facility, utility or structure will be located on private property, permanent easements for location, maintenance, and operation shall be provided. Easements shall provide for the use of property for construction purposes to the extent indicated on the easements. Current City easement agreement templates shall be used unless otherwise authorized by the City Attorney, Public Works Director and City Engineer.

A Public Utility Easement (PUE) shall be provided along existing and new right of way lines for the placement of underground utilities and to provide the subdivision or partition with electric power, communication facilities, street lighting, sewer lines, water lines, gas lines, or drainage. Such easements shall be labeled “Public Utility Easement” on the final plat or partition. A PUE shall be a minimum of 5-feet in width. See Standard Drawing No. 2-1.

All City Easements conveyed separately from the final plat shall require the following to be submitted to the Engineering Department:

- 1) Exhibit ‘A’ - property/parcel legal description.
- 2) Exhibit ‘B’ - easement map.
- 3) Exhibit ‘C’ - easement legal description.
- 4) Current property title report or equivalent ownership verification if requested by the City Engineer.
- 5) City recording fee as established by the City of Redmond Fee Schedule if requested by the City Engineer.

All exhibits shall be letter size (8.5x11) and stamped by a registered professional engineer (PE) or land surveyor (PLS) if prepared by the PE or PLS. Copies of these easements (including a copy of the easement in relation to the site plan) will be made available to the City for review prior to construction. Easements shall be recorded prior to City Engineer’s acceptance of the public facility. Easements that impact property located beyond an established or approved development boundary, plat or site plan shall be recorded prior to construction. Easements for public facilities identified in City Transportation, Water or Wastewater System Plans shall be recorded prior to construction unless otherwise approved by the City Engineer. The City accepts no liability for actions of the Contractor not in conformance with written easements.

08 PERFORMANCE AND PAYMENT BOND

Public Contracts: ORS 279C.380 If the contract is for a publicly bid improvement, the

successful bidder shall execute and deliver to the City of Redmond a good and sufficient bond, to be approved by the City, in a sum equal to the contract amount for the faithful performance of the contract. In lieu of a surety bond, the City may permit the Contractor to submit a cashier's check or certified check payable to the City of Redmond in an amount equal to one hundred (100) percent of the contract amount.

Private Contracts: A performance bond or surety, cash deposit or other approved security shall be provided by the Developer as project security for all work proposed in existing public right-of-way, or upon existing City facilities. The approved project security shall be in the amount of one hundred twenty (120) percent of the estimated public improvement cost. The performance bond/surety shall be submitted with the current City approved performance bond agreement form. A City approved performance bond agreement that specifies construction schedule, construction cost, and completion date shall accompany said performance bond. Improvement agreements and bonds described in Section 5 may be substituted for the performance bond at the discretion of the City Engineer.

09 WARRANTY

Upon acceptance of the construction by the City of Redmond Engineering Department, a minimum one (1) year warranty agreement on materials and workmanship shall be initiated between the City of Redmond and the Owner/Developer within thirty (30) days from date of acceptance. The warranty agreement shall include a bond, cash deposit or other approved security, with a minimum value of ten (10) percent of the Developer's final public improvement construction costs. The warranty agreement and security shall guarantee replacement and repair of any defective materials or workmanship which become apparent during the warranty period. The warranty agreement will be held by the City for the duration of the warranty period or until all warranty issues have been resolved. A final warranty inspection of the project will be conducted by the City during the last month of the warranty period. A closed-circuit television (CCTV) video inspection of the gravity sanitary and storm sewer systems will be conducted by the City during the warranty period. Prior to CCTV Inspection the Owner/Developer shall have all debris removed from the line. Upon expiration of the warranty period and resolution of all warranty issues, the warranty agreement and security will be released and returned to the Owner/Developer.

10 PUBLIC NOTIFICATION

Any construction activity that impedes or interrupts any existing public service shall require that the public be notified of that interruption at least 24 hours prior to such impediment or interruption. Public notification shall be made by direct contact with owners/residents or door hangers/flyers distributed to properties adjacent to impact. Notice to City to be posted on City website, newspaper, radio public service messages and/or variable message sign placement. Notification shall also include, but not be limited to, emergency services, local school district, post office, garbage collection, and any other affected public agency. Each notification shall be the responsibility of the Contractor performing the work and shall be coordinated with the City Engineering Department to assure adequate notification. Failure to adequately notify the public will result in an immediate suspension of the Contractor's construction activities.

11 INTERGOVERNMENTAL JURISDICTION

Public improvements often times fall within the jurisdiction of several governmental agencies, i.e., Deschutes County, Central Oregon Irrigation District, Oregon Department of Transportation, Oregon Department of Environmental Quality, etc. When multiple jurisdictions are involved, it is the responsibility of the Owner, Developer, or agent, to coordinate with and gain the appropriate approval from the governmental agency having jurisdiction over that portion of the work.

It shall be the responsibility of the construction Contractor to verify approvals and/or permits with agencies prior to commencing work. Failure to verify approval will result in project work being suspended until approval and/or permit is obtained.

12 PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be held following approval of final plans and prior to issuance of the 'Notice to Proceed' for construction. Before the meeting can be held, agreements must be signed, project security/performance bonds submitted, if applicable, and the

~~Engineering Department must have one original mylar reproducible drawings set and four complete photocopied or blue-line drawing sets of the signed construction plans~~ approved plans and a signed mylar cover sheet. Items to be discussed at the meeting include, but are not limited to:

- 1) Initiating construction
- 2) Contractor's work schedule in writing
- 3) Inspector assignment
- 4) Traffic Control Plan, Lane & Street Closure Required Notifications and Advisories
- 5) Subcontractors and suppliers
- 6) Materials furnished (i.e. type, brand, submittal requirements, etc.)
- 7) Safety requirements
- 8) Sampling and testing program
- 9) Regulatory agency requirements and approvals
- 10) Easement and right-of-way requirements.
- 11) Project Closeout and City acceptance
- 12) Warranty requirements and inspection

For projects including work that will impede or affect vehicular traffic on established streets, the Contractor shall submit a construction schedule and Traffic Control Plan (TCP) specifically for that work for review by the City Engineer. Work which impedes traffic flow shall not proceed until the schedule and TCP is approved by the City. Where street closure is required, the Contractor shall follow the ~~City of Redmond Street Closure Communication Outline~~ Traffic Control Plan Notification Protocol.

No inspections shall be performed until a pre-construction meeting has been held with the City of Redmond Engineering Department. At the meeting, a City Inspector will be assigned to the project and all communications, changes, and field decisions will be coordinated through the Inspector. If the Inspector is not informed of a change or field decision, and the change has not been approved by the appropriate authority, then the change is not allowed, and the facility must be constructed as shown on the approved plans.

13 UTILITIES

The construction drawings shall show the location of all existing and proposed utilities (i.e. electric, phone, cable, fiber optic, gas, irrigation, etc.). The Owner/Developer shall provide and have constructed all City maintained facilities associated with the proposed development, including but not limited to, sewer and water systems, storm drainage, streets, street and traffic control signs, street lights, bikeways, pathways and appurtenant facilities. The Owner is responsible for the coordination of this work with any other agencies, individuals, and utility companies including, but limited to, Central Electric Cooperative, Pacific Power, CenturyLink, Quantum Communications, Cascade Gas, or other utility providers or agencies that may be affected by the construction.

14 INSPECTIONS

Authorized Representatives of the City Engineer will be appointed as inspectors for all phases of the work. Inspections will be performed at the expense of the Owner or Developer for whom the work is being constructed, to assure that the public facilities installation or street construction conform to City Standards and Specifications. Engineering services shall be provided by the Owner/Developer. Contractors may call for the City Inspector, or Engineering Representative, to inspect the work when deemed necessary.

The inspections listed below in 14.2.00 through 14.5.00 will be established at the Pre-Construction Conference based on the project requirements. Inspections requiring 24 or 72-hour advanced notice and approvals to be obtained before proceeding with dependent work will be outlined. Listed below the numbered inspections are general performance standards that the Inspector will observe.

14.1.00 ADVANCED NOTIFICATION FOR INSPECTION

The City will provide periodic, ongoing inspections on an as-needed basis. The Contractor shall be responsible for notifying the City Engineer's office at least 24 hours in advance of required inspections. Closed circuit television (CCTV) video inspections require a 72-hour advance notice by the Contractor. The City will not be responsible for performing inspections without sufficient notice, nor will the City be responsible for any cost incurred for delay caused by insufficient notification.

No inspections will be performed without the associated 24 or 72-hour notification. Any work performed without a required inspection will be subject to removal and inspection, or acceptance, at the City Inspector's discretion.

14.2.00 STREET INSPECTION

14.2.01 Traffic Control

- a. Temporary signs, barricades, delineators, and cones are in accordance with the approved Traffic Control Plan and MUTCD.

14.2.02 Excavation

- a. Construction staking meets requirements.
- b. Construction area cleared and grubbed to mineral soil.
- c. Fill construction and material meets standards and specifications.
- d. Erosion control in place, stormwater facilities protected.

14.2.03 Subgrade

- a. All underground utility work is complete, inspected, and approved.
- b. All fill and backfill compacted to 95% of AASHTO T 99 maximum density and tested.
- c. Subgrade is graded uniform and free of irregularities and within tolerances.
- d. Soft subgrade that is irregular, rolling or pumping is subject to proofing loading with a loaded dump truck.

14.2.04 Curb

- a. Construction staking meets requirements.
- b. Subgrade has been approved.
- c. Drop curb areas have been located.
- d. Driveways, alleyways, access approaches, ADA ramps are staked and graded.

14.2.05 Curb Backfill

- a. Construction staking is in place.
- b. Finished curb matches staking.
- c. Curb backfill material meets specification.
- d. Finished surface is level, uniform, and free from irregularities.

14.2.06 Sidewalks

- a. Curb backfill is in place and compacted.
- b. Water meter & meter boxes set to grade per City Specifications.
- c. Fire hydrants set to grade.

14.2.07 Drainage Structures

- a. Inlets are set as designated on the plans or at low point staked in field.
- b. Inlet grate frame is set to appropriate street grade and slope.
- c. Backfill around structures will be mechanically compacted.
- d. Drain cross pipes are inspected per pipe construction and grouting requirements.
- e. Storm drainage facilities constructed per approved design (location, geometry, slope, soil depth, filtering, surfacing, etc.).
- f. Storm drainage facility performance tests in accordance with City Standards and Specifications.
- g. Storm sewer systems inspected according to City specifications.
- h. Sedimentation manholes are installed with correct fittings in accordance with City standards and specifications.

14.2.08 Base

- a. Base material meets specifications prior to placement (submit gradation, proctors).
- b. Subgrade is fine bladed to meet specified crown and curb exposure.
- c. Water valve boxes have been set to subgrade and can be raised to grade.
- e. All water compaction has been completed at least 48 hours previously.
AI
- d. Base is compacted to 95% of AASHTO T 99 maximum density and tested.

14.2.09 Paving and AC Patching Preparation

- a. Base rock is tight, not segregated and free from ravelling or areas prone to ravelling.

- b. Base rock is watered, uniform to grade and slope, and free of irregularities.
- c. Water valves boxes are set to the top of the base.
- d. All manholes have been set and grouted to grade for at least 24 hours.
- e. Base has not been contaminated by dirt or other substances.
- f. Asphalt areas to be matched are cut square, straight, and uniform for AC patching.
- g. Tack coat applied to concrete and asphalt surfaces to be matched or overlaid.

14.2.10 Paving Operation

- a. Paving operation to be closely monitored by City Representatives.
- b. Water valve boxes are set to finish grade.
- c. All joints are raked, and coarse stone removed from the pavement surface.
- d. The uncompacted A.C. shall be set 1/2" - 3/4" above drainage and manhole structures so that the roller will bridge such structure and no dimpling of the finished mat adjacent to the structure will occur.
- e. There shall be a minimum of at least four (4) passes of the breakdown roller to achieve proper compaction of the mat.
- f. Finish rolling shall continue until no roller marks remain.

14.2.11 Striping Layout

- a. The City Inspector to review and approve layout of striping prior to authorization to stripe.
- b. Pavement is clean, dry and air/surface temperatures are appropriate for striping.

14.3.00 SANITARY & STORM SEWER INSPECTION

14.3.01 Before Construction

- a. Inspection of materials and storage area.
- b. Protection of existing systems.
- c. Assurance of proper traffic control.
- d. Utilities located and marked.
- e. Construction staking meets requirements.
- f. Bypass pumping equipment in place and installed according to approved plan.

14.3.02 Subgrade

- a. Subgrade of proposed road established.

14.3.03 Pipe Trench and Bedding

- a. Inspection immediately prior to pipe installation.
- b. No rock points in pipe zone.
- c. Bedding material is in conformance with specification.

14.3.04 Pipe Installation

- a. Services provided to each lot as shown on plans and cleanout or sampling manhole along with locate wire provided at property line.
- b. Pipe alignment is true.
- c. Compaction under pipe haunches.

- d. Fittings tight.
- e. Water grade pipe and couplers installed where required.

14.3.05 Pipe Backfill

- a. Compaction inspection and soil testing will be required during backfill operation in accordance with Section 101.3.04 of the Standards and Specifications.

14.3.06 Manhole Invert

- a. Distance between manholes matches distance on construction plans.
- b. Inspection during base construction to assure compact subbase.
- c. Required fall between incoming and outflow pipe inverts.
- d. Rough channel has appropriate shape. Sidewalls come to top of uppermost pipe.

14.3.07 Completed Manhole

- a. Contractor shall demonstrate designed fall between manholes before proceeding with subsequent construction.
- b. All sewer main pipelines and manholes will be televised by the City.
- c. Backfill around structures will be mechanically compacted.
- d. Barrel not cracked or spalled.
- e. Barrel joint and pipe connections grouted.
- f. Concrete encasement of external drop manhole.
- g. Invert channel grouted to smooth finish.
- h. Frame in place set to finish grade and grouted.

14.3.08 Sewer Testing

- a. Sewer is clear of all debris, prior to CCTV inspection.
- b. All backfill is completed.
- c. Observation during air test.
- d. Observation during deflection test at 92% of i.d. required for both rigid and flexible pipe.
- e. All sewer mains will be inspected by closed circuit television (CCTV) video. Maximum allowable sag causing ponding of water is specified State regulations OAR 340-52 or ½ inch, whichever is more stringent.

14.3.09 Connection to Live Facilities

- a. Inspection during connection.
- b. No obstructions in line.
- c. Fittings tight.

14.4.00 WATER SYSTEM INSPECTION

14.4.01 Before Construction

- a. Inspection of material and storage area. Unless otherwise specified, all pipe shall be domestic Class 52, or Class 50, ductile iron pipe.
- b. Protection of existing systems.
- c. Proper traffic control in place.
- d. Utilities located and marked out and potholed as necessary to determine conflicts.
- e. Construction staking meets requirements.

14.4.02 Subgrade

- a. Subgrade of proposed road established with adequate control.

14.4.03 Pipe Trench and Bedding

- a. Inspection immediately prior to pipe installation.
- b. No rock points in pipe zone.
- c. Bedding material is in conformance with specifications.
- 14.4.04 Pipe Installation**
 - a. Pipe alignment is true.
 - b. Fittings tight.
 - c. Ductile iron Class 52 Tyton joints, mechanical joints, or approved equal.
- 14.4.05 Service Installation**
 - a. Services complete, continuous copper pipe, proper size, and provided to each lot.
 - b. Services set to finish grade per City Water Service and Installation Manual specifications.
 - c. Power, telephone, gas, and cable lines require a minimum five (5) foot separation from water and sewer services.
- 14.4.06 Fitting Location and Installation**
 - a. Fittings installed and torqued to specification.
 - b. Fittings witnessed for As-Builts before being covered.
 - c. Joint restraints in place where required.
- 14.4.07 Preparation and Pouring of Thrust Blocks**
 - a. Inspection of excavation and forms before pouring.
 - b. Forms placed at appropriate positions so blocks will be against undisturbed earth.
 - c. Reinforcement in place and secured when needed (deadmen).
 - d. Pipe and fittings wrapped with plastic as required.
- 14.4.08 Pipe Backfill**
 - a. Compaction inspection and testing will be required during backfill operation.
 - b. Backfill placed in maximum 8" (loose) lifts.
- 14.4.09 Connection to Live Facilities**
 - a. Inspection and Water Division staff present during hot tap.
 - b. No obstructions in line.
 - c. Fittings and taps are tight and set plumb.
- 14.4.10 Setting of Valve Boxes**
 - a. Plumb, centered over nut, and bottom flange not resting on pipe.
- 14.4.11 Pressure Testing**
 - a. Testing completed according to Division IV Water Facilities, Leakage/Hydrostatic Testing & Disinfection Procedures.
 - b. Thrust blocks have cured for five days minimum.
- 14.4.12 Chlorination Testing and Flushing**
 - a. Completed according to Division IV, Water Facilities Disinfection Procedures.
 - b. All services flushed to angle stop at meter connection.
 - c. Tracing wire to be tested after pressure testing and chlorination flushing completed.
- 14.4.13 Flow Testing**
 - a. Services checked, flow measured and noted.
 - b. Hydrants checked, flow measured, and static and residual pressures

noted.

14.5.00 STRUCTURES

14.5.01 Before Construction

- a. Inspection of material and storage area.
- b. Protection of existing systems.
- c. Proper traffic control in place.
- d. Utilities located and marked.
- e. Construction staking meets requirements.

14.5.02 Excavation

- a. Excavation sufficient for structure.
- b. Bedding as specified for thickness, material, and compacted.

14.5.03 Foundation

- a. Reinforcing steel placed in accordance with approved shop drawings, plans and specifications.
- b. Form work in accordance with approved details, plans and specifications.

14.5.04 Form Work & Reinforcement

- a. Reinforcing steel placed in accordance with approved shop drawings, plans and specifications. Reinforcing steel supported as necessary to stay in position during pouring and finishing.
- b. Form work in accordance with approved details, plans and specifications.

14.5.05 Concrete Placement

- a. Air and soil temperature requirements within specified range.
- b. Concrete placed within 90 minutes of mixing.
- c. Interval between batches not to exceed 20 minutes.
- d. Concrete testing and sample cylinders prepared as required.
- e. Continuous placement, or cold joints, as shown on plans or as specified.
- f. Mechanical vibration of concrete.
- g. Laitance removed.
- h. Cure applied to exposed surfaces.
- i. Work protected from elements.

14.5.06 Form Removal & Concrete Finish

- a. Forms remain in place for required time.
- b. Wire and snap ties removed as per specifications.
- c. Open or honeycombed areas cut out and grouted.
- d. Surface finished per specifications.

14.5.07 Backfill

- a. Compaction inspection and testing will be required during backfill operation.

14.6.00 SUBDIVISION SITE GRADING

14.6.01 Grading

- a. Site graded to maintain or contain run off within development boundary and per approved plan.
- b. Subgrade staked and constructed per approved design.
- c. All earth fill areas located outside of public right-of-way require

certification by a licensed Registered Professional Engineer.

- d. Measures in place to prevent soil from washing off site, into storm facilities or irrigation canals.

14.6.02 Drainage Facilities

- a. Inlets, grates, and drain pipes are set to appropriate grade and slope as designated on the plans or at low points staked in field.
- b. Sedimentation manholes are installed with correct fittings in accordance with City and DEQ standards and specifications.
- c. Storm drainage facilities constructed per approved design (location, geometry, slope, soil depth, filtering, surfacing, etc.).
- d. Storm drainage facility performance tests in accordance with City Standards and Specifications.
- e. Drain pipes crossing public right-of-way are inspected per City Standards and Specifications for material, construction and grouting.

15 CONSTRUCTION STAKING See General Conditions M.11 Lines and Grades

16 MATERIALS

Materials shall conform to the City of Redmond Standards and Specifications, or other specifications as set forth in the Contract Documents.

17 WATERING

Watering shall conform to Section 205 of these Standards and Specifications. Watering shall be performed at any hour of the day and on any day of the week that the City Engineer may determine necessary for proper performance or protection of the work, and for adequate alleviation of dust nuisance. The Contractor is responsible for the cost of watering. If the Contractor is unable or unwilling to water as directed, the City will water and charge the Owner or Developer.

17.1.00 TEMPORARY WATER

Water is available from hydrants via combination meter and backflow devices rented from City of Redmond Public Works. Contractor shall make arrangements and pay all costs for obtaining and transporting the water from the hydrants to the area of usage for the construction and testing of the facilities.

18 WORKMANSHIP

18.1.00 GENERAL

The work shall be done by responsible and qualified workers. Should the Inspector find any worker to be unqualified or unfit to perform assigned work on the project, or if the worker is repeatedly performing work not in conformance with the specifications, the Contractor will be notified and directed to reassign the worker to tasks for which he is qualified or dismiss him for cause as determined by the Inspector.

18.2.00 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

The Contractor shall notify the public and local service organizations, i.e. Police, Fire Department, hospital emergency services, school bus dispatchers, 24 hours in advance

of any construction activity that may impede their daily activities and functions. For work in areas that will impede or obstruct traffic flow on established streets, the Contractor shall adhere to the construction schedule submitted at the Pre-Construction Meeting, or as subsequently revised. Paved surfaces of streets removed or damaged by trenching or other activities to an extent affecting the driving surface shall be restored with a hard, smooth surface within 48 hours of pavement removal or damage. Should the Contractor neglect to prosecute the work properly or in accordance with the approved schedule, in the opinion of the City Engineer, then the City of Redmond will notify the Contractor's Surety of the conditions, and after ten (10) days written notice, or without notice in the case of an emergency or imminent danger to the public, and without prejudice to any other right which the City of Redmond may have, take over that portion of the work which has been improperly executed and make good the deficiencies and assess the costs of such work to the Contractor.

At locations where the Contractor's operations could potentially cause damage resulting in considerable expense, loss, and inconvenience to the City or public utility, and when adjacent to or near railway, telegraph, telephone, television, power, oil, gas, water irrigation systems, or other private or municipal systems, the Contractor's working operations shall be suspended until all arrangements necessary for the protection thereof have been made by the Contractor.

The Contractor shall notify by the one call number **1-800-332-2344**, at least 48 hours in advance, all utility offices affected by the construction operations. The Contractor shall not expose any marked out underground utility without first notifying the affected agency and being granted permission to do so. The Contractor is responsible for locating and exposing, if necessary, all existing underground utilities in advance of the trenching operation.

The Contractor is responsible for protecting all power and telephone poles and overhead cables from damage. If interfering power poles, telephone poles, guy wires, or anchors are encountered, the Contractor shall notify the utility owner at least 48 hours in advance of construction operations to permit the necessary arrangements with the affected utility company for protection or relocation of the interfering structure. The Contractor shall be solely and directly responsible to the owner and operators of such utilities/properties for any damage, injury, expense, loss or inconvenience, delay, suits, actions, or claims of any kind brought because of injuries or damage which result from performing the contract work.

The Contractor shall immediately notify the proper authority in the event of interruption to domestic water, sanitary sewer, storm sewer or other utility service resulting from accidental breakage, or as a result of being exposed or unsupported. All repair or replacement of existing water or sewer pipe must conform to City's Standards and Specifications. If an existing water or sewer pipe is damaged to any extent, the City's Water and/or Wastewater Divisions must be immediately notified. The damaged pipe must remain exposed until inspected by a City representative. Repairs will be made upon approval by the City Inspector. All repairs or replacements will be inspected by a City Inspector prior to backfill. Repaired or replaced sewer lines will be inspected by closed circuit television (CCTV) video by the City after the trench is backfilled and prior to City

acceptance. Contractor will be charged for CCTV service per the City of Redmond Fee Schedule. The Contractor shall cooperate with the affected agency to restore services as promptly as possible and shall bear all costs of repair for the utility. In no case shall interruption of any water, sanitary sewer or utility service be allowed outside normal working hours unless prior approval is granted by the City Engineer or City Public Works Director.

Neither the City, the utility owner, nor its officers or agents, shall be responsible to the Contractor for damages resulting from the location of any underground utilities being other than that shown on the plans, or for the existence of underground utilities not shown on the plans or properly marked out on the site.

Should the Contractor encounter any utility service lines that interfere with trenching or conflict with the proposed work, the Contractor may obtain prior approval of the utility owner and governing authority to cut the service, dig through, and cause the service to be restored or relocated with similar and equal materials at the Contractor's expense.

18.3.00 FIELD RELOCATIONS

During the progress of construction, it is expected that minor relocations of the proposed work may be necessary. Such relocations shall be made only by direction of the Design Engineer, or representative, with the approval of the City Engineer. Unforeseen obstructions encountered as a result of such relocations will not be cause for claiming additional compensation by the Contractor to any greater extent than would have been the case had the obstructions been encountered at the original location.

18.4.00 BARRICADES, GUARDS, AND SAFETY PROVISIONS

Adequate barricades, construction signs, warning lights, and guards, as required, shall be placed and maintained during the progress of the work to protect persons and vehicles from injury and to avoid property damage until the area is determined safe for normal public use.

Rules and regulations of the local, State, and Federal authorities regarding safety provisions shall be adhered to. The Contractor shall be solely responsible for directing and implementing all safety provisions on the Project site, and for all accidents caused by inadequate or insufficient safety provisions. The City of Redmond, City Engineer, Inspectors, or other agents of the City, shall not be held responsible for directing, implementing, or enforcing any safety regulations.

18.5.00 PAVEMENT REMOVAL AND REPLACEMENT

All bituminous and concrete pavements shall be cut with a saw or other approved device prior to asphalt patching or concrete replacement, such that the patching material abuts a smooth, uniform, vertical face of at least twice the depth of the maximum particle size in the patching medium. Uneven pavement edges shall be trimmed smooth before patching the pavement.

The width of the pavement cut for trenching shall be at least 12" wider on either side than the width of the finished backfilled trench at the ground surface. Pavement materials removed during excavation shall be kept separate from native backfill material and

removed from the site. Pavement shall not be used for backfill or embankment material.

Where existing paved roadways are cut, trench backfill shall be Class B backfill as defined in the City of Redmond Standards and Specifications, Division I, and shall be placed as specified. The pavement section will be replaced to a standard equal to or better than the existing street section, except that in no case shall it be less than the current standard for that classification of street. Base material must meet current City of Redmond Standard and Specifications.

18.6.00 OBSTRUCTIONS

Obstructions to the construction such as tree roots, stumps, abandoned pilings and concrete structures, logs, rubbish, and debris of all types are to be removed from the project site as part of clearing and grubbing operations, or as incidental work, and no additional compensation will be made for the amount or type of clearing required.

The City Engineer may, if requested, approve minor changes in the alignment or location of facilities to avoid major obstructions if such alignment changes can be made within the permanent easement or right-of-way, and without adversely affecting the intended function of the facility.

18.7.00 INTERFERING STRUCTURES, ROADWAYS OR DRIVEWAYS

The Contractor shall replace and/or repair any damage done by the Contractor's forces during construction to landscaping, fences, buildings, billboards, irrigation lines, roadways, cultivated fields, drainage crossings, driveways and any other private or public properties at Contractor's own expense and without additional compensation from the Owner. The Contractor shall replace or repair these structures to a condition as good or better than their pre-construction condition. Pre-construction videotapes or photographs taken by the City will be used to determine the pre-construction conditions of properties adjacent to the work. In the absence of pre-construction photographs, the property shall be restored to original, like new conditions.

18.8.00 BLASTING

Where rock material is encountered which requires systematic drilling and blasting for removal, the Contractor shall furnish all necessary approved blasting certifications and licenses, tools, equipment, and materials required to perform the work. The Contractor shall comply with all Federal, State, and local laws that apply to the storage, handling, placement, and firing of all explosives.

The Contractor shall furnish additional insurance coverage as required by the City or any agency in addition to the basic coverage required by these specifications.

No blasting shall be permitted adjacent to any portion of exposed work or structures unless proper precautions are taken to assure that damage to adjacent property will not occur. All blasting shall be covered with blasting mats or other approved type of protective cover to prevent the scattering of rock fragments or other material to outside the excavation area and limits of the construction. The Contractor shall be responsible for any and all damage or injury resulting from the use or handling of explosives, and accidental or premature explosion that may occur in connection with Contractors' use of explosives.

Proper notification and ample warning shall be provided to all persons within the danger zone. Contractor's personnel shall be stationed at strategic locations a safe distance from the blasting zone to prevent persons and vehicles from entering the blasting area. Electrical blasting caps shall not be connected to the electrical source until the area is cleared of all personnel and the proper warning signals have been sounded.

Where blasting is proposed in the proximity of private property or residences that may be affected by vibrations, shaking, or seismic shocks, the Contractor shall be responsible to perform pre-blast surveys of all structures to determine the condition of walls, ceilings, floor slabs, or other surfaces in which cracking or movement may be induced by the blasting operations. All existing conditions shall be thoroughly documented and recorded by means of photographs and/or video recordings to establish pre-blast conditions and existing damage. Following the blasting operations, the Contractor shall perform a follow up survey of those affected properties to determine if any shifting, cracking, settlement, or other damage was induced by the blasting. Contractor shall promptly repair or replace any damaged structures to a condition equal to or better than that found in the pre-blast survey. The City will be indemnified and held harmless from any liability for damage or injury caused by the Contractor's blasting operations.

Public utilities (utilities) located within the blast area must be identified and notified 72 hours prior to blasting. Contractor shall perform pre-blast survey and inspections of identified utilities including closed circuit television (CCTV) video inspection of sanitary and storm sewer lines. Utilities damaged from blasting activities shall be repaired and/or restored at the expense of the Contractor.

18.9.00 SHORING AND SHEATHING

The Contractor shall be solely responsible to determine the means necessary to maintain safe working conditions and protect adjacent property and structure from damages during excavation operations. The Contractor shall comply with all Federal, State, and local laws, rules, and regulations governing shoring, sheathing, structure support, and support of excavations.

18.10.00 LOCATION OF EXCAVATED MATERIALS

The Contractor shall stockpile excavated material so as not to block any public streets, traveled roadways or paths, public or private. Roadways shall be kept open to two-way traffic unless otherwise approved by the City Engineer and the City of Redmond Public Works Department. The Contractor shall store or dispose of excavated materials only in designated areas as approved by the Engineer. Utmost care shall be taken to prevent erosion, spillage or damage to property adjacent to the project. Contractor shall implement erosion control measures and shall immediately clean up any spilled or spoiled material on streets or paved roadways and contain storm water runoff from stockpiles to prevent silt and dirt from entering catch basins, storm drains, drywells, or other drainage structures. Refer to Central Oregon Stormwater Manual, Chapter 9, for erosion control measures.

18.11.00 SITE RESTORATION AND CLEANUP

At all times during the work, the premises of the site shall be kept clean and orderly, and

upon completion of the work the project shall be free of debris, rubbish or excess materials of any kind.

During construction, stockpile excavated trench materials so as to prevent potential damage to adjacent lawns, grassed areas, gardens, shrubbery or fences, whether these are on private property, City, State or County property or rights-of-way. Remove all excavated materials from grassed and planted areas; and restore these surfaces to a condition equal to their pre-construction condition and free from all rocks, gravel, boulders or other foreign material. Replace topsoil, raked and graded, to conform to the original contours. All existing drainage ditches and culverts shall be opened and graded, and natural drainage restored. Restore or replace broken or damaged culverts to their original condition and location. Upon completion of pipe laying and backfilling operations in any section, hand rake and drag all former grassed and/or planted areas leaving all disturbed areas free from rocks, gravel, clay or any other foreign material. The finished surface shall conform to the original surface and shall be free draining, free from holes, rough spots or other surface features detrimental to a seeded area.

18.12.00 STREET CLEANING

Clean all dirt, gravel, debris, or other material generated by the construction operations from all streets, alleys and roads at the conclusion of each day's operation. Contractor shall not stockpile construction materials in streets, sidewalks, alleyways, nor on other paved areas, except during working hours when operations are being conducted in the immediate area. If Contractor fails to provide cleanup within 24 hours of being so directed by the City Inspector, the City, or an agent retained by the City, may complete the cleanup and the cost plus 10% shall be billed to the Contractor to be paid prior to project acceptance by the City.

18.13.00 EROSION and SEDIMENT CONTROL

Contractor shall take measures to prevent erosion or sediment run off from work site as required by the Central Oregon Stormwater Manual.

19 TESTING

Testing shall conform to the City of Redmond Standards and Specifications and shall be performed by a certified/independent testing laboratory approved by the City Engineer.

Testing criteria shall meet the requirements as established in each Division of these Standards. Gravity sanitary or storm sewer mains shall be air tested or hydrostatically tested pursuant to A.P.W.A Standards by the Contractor and in accordance with City of Redmond Procedures set forth in Division III. All gravity sanitary and storm sewer lines shall be closed circuit television (CCTV) video inspected. Pressure sewer lines shall be hydrostatically tested pursuant to A.P.W.A Standards by the Contractor and in accordance with City of Redmond Procedures set forth in Division III. Storm drainage facility tests shall be performed in accordance with City Standards as set forth in the Central Oregon Stormwater Manual. Waterlines shall be hydrostatically tested pursuant to A.W.W.A. Standards and in accordance with City of Redmond Procedures set forth in Division IV. Street compaction and asphalt testing shall be in accordance with these Standards and current Oregon Department of Transportation Standard Specifications.

The City Engineer may require additional testing of any portion of the work performed. When additional testing is required by City Engineer, the City shall pay all costs for initial tests demonstrating satisfactory performance. Non-passing tests and subsequent re-testing shall be paid for by the Contractor.

Prior to final acceptance for maintenance, the Owner/Developer may be required to provide verification testing of any facility that shows evidence of being stressed beyond design limits or capacity.

20 SANITARY and STORM SEWER CLEAN-UP

Final Sewer Cleaning: During construction, take all measures to prevent debris from entering sewer system. Prior to final acceptance of the sanitary and storm sewer system by the Engineer, pressure and gravity sewers must be clean. Remove all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the sewer system at or near the closest downstream manhole or port

Upon the Engineer's final manhole-to-manhole inspection of the sewer system, if any foreign matter is still present in the system, the pipe must be re-cleaned at the expense of the Contractor.

21 AS BUILT DRAWINGS

All final record 'As Built' drawings shall be prepared by the Design Engineer per 4.6(5) and the City of Redmond Engineering Department. Any change which would appear on 'As Built' drawings should be immediately brought to the attention of the Inspector at the time the Contractor or Design Engineer discovers such discrepancy.

The Contractor shall provide the City with a detailed marked up set of construction drawings showing any deviation from the original design. Upon completion of construction to include, but not limited to, the following;

For Streets, show revisions to curb, ramp, and driveway locations.

For Sewers, show all changes in the main alignment and grade, manhole invert and rim elevation, lateral station locations, slope, and cleanout locations.

For water, show changes to horizontal and vertical alignment, location of fittings, additional fittings valve locations, location of fire hydrants, thrust blocks or restrained changes, and revised in meter locations.

For storm drainage, show all changes in main alignment and grades, pipe size, manhole invert and rim elevations, lateral connection points and slopes, catch basin type, location, rim and invert location, drywell location and elevation, swale dimensions, and any other structure location or elevation.

22 SUBSTANTIAL COMPLETION AND FINAL ACCEPTANCE

Substantial completion is the stage of a project in which the City has inspected, tested, and found acceptable the water supply system, fire hydrant system, sewage disposal system, the stormwater drainage system including paving of the roadway associated

with the stormwater system, curbs, street signs, and roads necessary for emergency vehicle access. City Engineering will issue a letter of substantial completion with a punch list indicating construction items to be corrected.

Final acceptance shall be determined as the date on which the City Engineer formally accepts, in writing, the constructed public improvements for ownership and maintenance by the City of Redmond.

Final acceptance will follow the Engineering Department's final inspection and approval of construction and subject shall be to the completion of the following items (as applicable):

1. Release of Liens or claims.
2. Easement Dedication.
3. Right-of-way Dedication.
4. Recorded Plat or Partition.
5. Warranty agreement for materials and workmanship, including warranty bond.
6. Verification Performance Tests (if required).
7. Resolution of material and workmanship issues, i.e. final punch list.
8. Contractor's As-Built plans.
9. Electronic copies of approved design changes from Design Engineer.
10. Street light and postal box installed, or provider contract paid.
11. Curb ramp and hydrant pads installed.
12. Sidewalks adjacent to existing developed lots (existing residence, etc.).
13. Private water, sewer and storm drainage system abandonment documentation (water wells, underground injection facilities, drill holes, septic tanks, etc.).
14. Certification of all fill areas located outside of public right-of-way/easement by a license professional engineer.
15. Survey monument and/or property corner restoration and documentation as required by ORS 209.

23 SITE GRADING and DRAINAGE

23.1.00 General

This document is intended to set minimum standards for site grading and drainage on private property within the Urban Growth Boundary of the City of Redmond.

All storm drainage from private property (site) shall be maintained and/or contained on site and shall not drain onto public streets, alleys, irrigation canals or neighboring properties, unless otherwise approved through the design review process. Storm water runoff from private property shall not impact public right-of-way or public drainage systems unless otherwise approved by the Public Works Director, City Engineer or as determined through the land use approval process. All earth fill areas located outside of public right-of-way require certification by a licensed Registered Professional Engineer.

23.2.00 Plans and Specifications

A comprehensive site grading and drainage plan prepared by a licensed Registered Professional Engineer shall be required for development of private property that proposes

five thousand (5,000) or more square feet of new roof, pavement, compacted gravel, concrete or other impervious surface improvements.

For design parameters and drawing requirements, see Section II (B.) and Section III of the Design Standards and the Central Oregon Stormwater Manual where applicable for storm drainage facilities on private property. In addition to Sections II and III, the following information shall be required on the plans:

- 1) Parking and driveway approach finish grades and slopes.
- 2) Roof drain conveyance.
- 3) Sizing and testing data for underground injection or infiltration systems.
- 4) Swale cross sections with 3:1 max. slope, topsoil/sand layer, geotextile filtering layer and surface treatment.
- 5) 100 year/24-hour storm event containment and outfall.

Where less than 5,000 s.f. (but more than 500 s.f.) of new or modified impervious surface areas are proposed, a site plan shall be required that demonstrates on-site drainage will be maintained on site, any proposed retention area or storm drainage facility has design capacity for the required ~~50-year/24-hour~~ storm event runoff volume ~~(2-inch rainfall)~~ and any necessary erosion control measures will be taken.

Underground Injection Control Devices (drywells, etc.) shall be Rule Authorized or permitted by Oregon Dept. of Environmental Quality (DEQ) and a copy of DEQ approval shall be submitted to the City prior to construction.

Submit the appropriate application for site and grading, drainage, and water/sewer service to City Engineering. Submit an electronic set, ~~and one full size paper copy~~ for review and comment. Submitted four corrected full size sets to City Engineering for stamp for approval. After the permit fee payment is paid, an approval memo and an electronic plan set will be returned to the applicant for distribution. A pre-construction meeting may be held at request of the City, Developer/Owner or Contractor.

A Developer/Owners project representative shall submit a City Engineer stamped approved grading and drainage plan with the building permit submittal. Submit- through the E-permit website at www.buildingpermits.oregon.gov, or in person with the building permit submittal.

23.3.00 Subdivision Site Grading

Mass site grading and drainage plans required as part of subdivision land use approval shall be reviewed, approved, constructed, inspected and accepted through the public improvement construction process described in Sections 04 – 22. Design parameters and drawings requirements are as described in Section 23.2.00 above. Lot and Tract grading shall comply with COR Development Code 8.2720 and ~~shall not create steep banks, extreme cuts/fills of areas of unsightly to adjacent properties or lots~~ grading standards herein.

23.4.00 Grading Fees

Engineering fees for City inspection and plan review of site grading and drainage

improvements are required as established by the City of Redmond Fee Schedule and must be paid before the City can issue the associated building permit and before grading construction can begin. This grading fee is non-refundable.

23.5.00 Grading Inspection

The City Engineering Inspector shall be notified twenty four (24) hours prior to start of grading construction. Any work performed without a required inspection will be subject to removal and inspection at the City Inspector's discretion.

23.5.01 Grading

- a. Site graded to maintain or contain run off on site or as approved.
- b. Subgrade and curb staked and constructed per approved design.
- c. Driveway approach constructed per approved plans and City standards.

~~23.5.02~~ Advanced Grading Activity

- ~~a~~d. Clearing, grubbing, utility blasting and mass grading may be approved if an Erosion and Sediment Control (ESC) plan has been reviewed and approved by City Engineering.
- ~~e~~b. The Contractor must contact the City Engineering Inspector and City Engineering Administration 24-hours prior to blasting or construction activity.
- ~~f~~e. Blasting activities shall comply with Standards & Specifications, Development Provisions, Section 18.8.00 including pre-blast notification and structure surveys.
- ~~g~~d. Contractor shall always control dust-, including weekends and days of non-construction activities. Dust nuisance and complains may cause the City to order at Owner/Developer expense or cause the site to be shut down until compliance is met
- ~~h~~e. Any dust nuisance of complaint could cause code enforcement by the City.
- ~~i~~f. Any construction staking or work done prior to final construction grading and utility plan is ant the Owner/Developer and Contractor's risk

23.5.023 Drainage Facilities

- a. Inlets, grates, and drain pipes are set to appropriate grade and slope as designated on the plans or at low points staked in field.
- b. Sedimentation manholes are installed with correct fittings in accordance with City and DEQ standards and specifications.
- c. Storm drainage facilities constructed per approved design (location, geometry, slope, soil depth, filtering, surfacing, etc.).
- d. Storm drainage facility performance tests in accordance with City Standards and Specifications.

23.6.00 Final Grading Acceptance

The City Engineering Department will indicate acceptance of site grading and drainage improvements with Engineering approval of the associated final building occupancy permit. All necessary private drainage easements shall be recorded prior to acceptance.

CITY OF REDMOND, OREGON

2010 STANDARD SPECIFICATIONS

DESIGN STANDARDS

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I. GENERAL

These are the minimum design standards for the City of Redmond. The following standards shall be adhered to unless an exception is granted in writing by the City Engineer. Exceptions will be granted based upon a design that is the functional equivalent of the design parameters listed herein. Street standards are generally in conformance with the American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets 2018 Edition. This document is referred to as AASHTO throughout these standards.

This document will be periodically updated as new technology, policy changes, procedure changes, or updated methods of design and construction are implemented. The City Engineer may vary or modify any of the City's Design Standards on a case-by case basis, if it is found that the City's Design Standards are impractical or if it would result in a hardship.

II. DESIGN PARAMETERS

A. STREET

1) 4. General

Materials and procedures for street improvements shall conform to the City of Redmond Specifications, Ordinances of the City of Redmond and Oregon Standard Specifications for Construction. Street width, alignment and placement shall meet the requirements of the City of Redmond Development Code. Street widths are shown in Table 1, ~~Section 8.2710 of the Development Code (reproduced below)~~ and in Standard Drawing 2-1. Street intersections shall be as near right angles as possible except where topography requires a lesser angle, but in no case shall the acute angle be less than 60°.

Table 1 - City of Redmond Right of Way and Roadway Design and Cross-Section Standards

Functional Class	Width (ft)		Right of Way*	Travel Lanes	Sidewalks	Bike Lanes**	Parking**
	Pavement standard	Pavement (minimum)*					
Residential Alley*	20 ft		20 ft	1****	none	shared	none
Commercial Alley*	20 ft		20 ft	n/a	none	shared	none
Local Residential	36 ft		60 ft	2***	5 ft.	shared	both sides (unstripped)
	32 ft		60 ft	2***	5 ft.		one side both sides (unstripped)
	28 ft*		60 ft	2***	5 ft.	shared	one side (unstripped)
	24 ft*		60 ft	2***	5 ft.	shared	none
Local Industrial	40 ft	38 ft	60 ft	2***	5 ft.	shared	optional (unstripped)
Industrial Collector	40 ft	38 ft	80 ft	2	5 ft.	6 ft.	none
Minor Collector	40 ft	36 ft****	60 ft	2	5 ft.	shared	both sides (8 ft, unstripped)
Major Collector	36-50 ft	36 ft****	80 ft	2	5 ft.	6 ft.	none
Minor Arterial (3-lane)	50 ft	48 ft	100 ft	3	7 ft.	6 ft.	none
Minor Arterial (5-lane)	74 ft	72 ft	100 ft	5	7 ft.	6 ft.	none

Notes:

**New alleys must be private and may be constructed only in conjunction with the creation of covenants, conditions and restrictions (CCR's) and the establishment of a homeowner's association (HOA) for the development. The CCR's shall provide that the primary responsibility for parking enforcement, if applicable, shall be the HOA, with the City of Redmond also being acknowledged in the CCR's as a beneficiary for such parking*

enforcement as a violation of the land use decision and/or city code.

** In certain cases, bike lanes may be reduced to 5 ft, parking may be reduced to 7 ft, and travel lanes to 11 ft at the discretion of the City Engineer

*** Unstriped travel lane.

**** 36 ft in existing built out areas. Minor collectors require Stop Bars and Stop Signs at side streets.

***** All streets less than 28 feet wide shall be no longer than 300 feet in length, unless such streets include at least one (1) parking bay per lot, located along each lot frontage for the entire length of such street, up to the maximum block length. Streets 300 feet or less in length shall not have any direct driveway access. In no case shall any street less than 28 feet wide intersect with any other street less than 28 feet wide. Residential Alleys less than 20 feet wide shall be one way with a through connection to Public Right of Way. A dead alley requires a dedicated vehicle turn around.

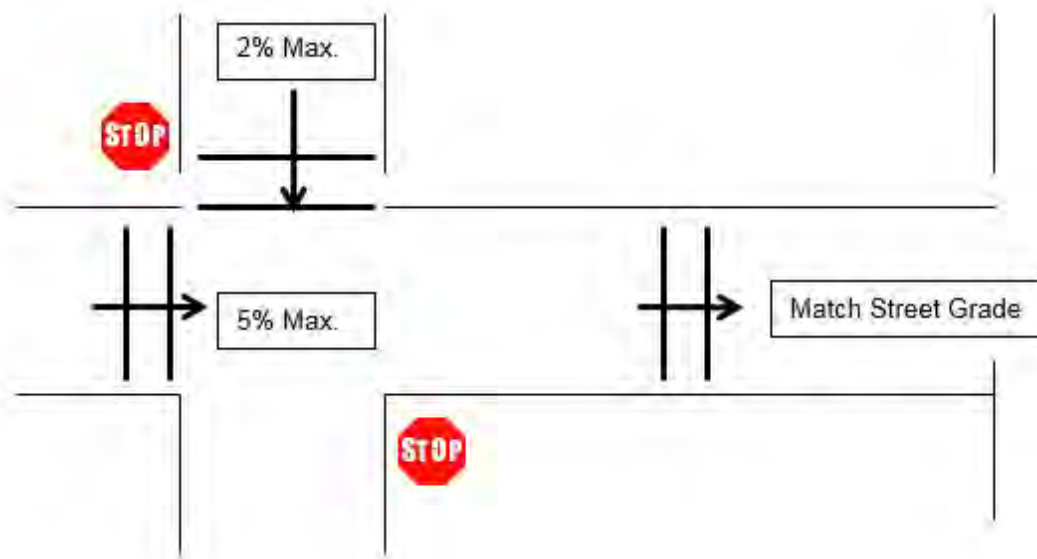
2) 2- Slope

Minimum longitudinal slope for drainage control at the standard curb grade for all streets is 1.0%. A minimum longitudinal slope of 0.5% using curb and gutter may be allowed by the City Engineer. A written request is required justifying the need for a variation and describing what will be done to ensure that constructed street grades are not less than design and storm drainage requirements are met.

Maximum street grades are as follows (see also Standard Drawing 2-1):

Arterials, Major and Industrial Collectors	6%
Minor Collectors, Industrial Streets	8%
Local Street	10%

Maximum street grade may be increased up to 2 percent with City Engineer's approval. Note that Draft Public Rights of Way Accessibility Guidelines (PROWAG) specify maximum cross slopes of pedestrian street crossings which will control the longitudinal grade of the street at intersections. In accordance with PROWAG Section 302.6, the maximum cross slope of the pedestrian crossing for stop or yield controlled streets shall be 2 percent. For streets without stop or yield control, the maximum cross slope is 5 percent (R302.6.1). Cross slopes of midblock pedestrian street crossings are permitted to match the grade of the street (R302.6.2).



To ensure that cross slopes are not exceeded during sidewalk ramp construction, maximum slope

through intersections shall be 2% in accordance with Standard Drawing 2-27. Detailed slope and elevation information shall be provided for sidewalk ramps and curb returns and shall conform to Draft Public Rights of Way Accessibility Guidelines (PROWAG) ~~published~~ adopted by the Department of Justice. Note that the minimum continuous and unobstructed clear width of a pedestrian access route shall be four feet (PROWAG R302.3). The maximum cross slope of the walkway shall be two percent (PROWAG R302.6). Pedestrian access routes running parallel to a street may run at the same grade as the street but cannot exceed the street grade (PROWAG R302.5). Options for ramp layout at intersections are provided in the standard drawings. Slopes and widths of landings, wings and other components must comply with Section R304 of PROWAG. It is recommended that design slopes be set lower than the PROWAG maximum to allow for discrepancies during construction.

3) ~~3-~~ Sight Distance

All streets shall be designed to the following values for adequate safe stopping sight distance at the design speed, according to AASHTO, Table 3-1

15 MPH	80'
20 MPH	115'
25 MPH	155'
30 MPH	200'
35 MPH	250'
40 MPH	305'
45 MPH	360'
50 MPH	425'

4) ~~4-~~ Vertical Curves

The minimum centerline vertical curve length shall be as determined be in accordance with AASHTO 2018 requirements. Minimum rates of curvature (K value) is used to determine the length of vertical curve.

$$K=L/A$$

L = Length of vertical curve

A = Total change in grade, %

Crest vertical curves shall be designed to provide at least the stopping sight distance for the design speed of the road. Equations to calculate these minimum lengths, based on differential in grade for a given design speed are shown in AASHTO 2018 Equations 3-48 through 3-51. Figure 3-36 provides a graphical representation of minimum curve lengths based on rounded values determined from these equations. Design controls for stopping sight distance and crest vertical curves expressed in terms of terms rates of curvature (K) are provided in Table 3-35.

Design Speed (mph)	Stopping sight distance (ft)	Rate of vertical curvature, K
15	80	3
20	115	7
25	155	12
30	200	19

35	250	29
40	305	44
45	360	61

Sag vertical curve minimum length shall be determined in accordance with AASHTO 2018 requirements, using equations 3-48 through 3-51 and Figure 3-37, using stopping sight distances as the value of S. These minimum lengths provide for headlight sight distance.

Design controls in terms of (K), rate of curvature, for each design speed and corresponding stopping sight distance, are shown in AASHTO Table 3-37. To provide for adequate drainage, K values for sag curves shall not exceed K = 167.

Design Speed (mph)	Stopping sight distance (ft)	Rate of vertical curvature, K
15	80	10
20	115	17
25	155	26
30	200	37
35	250	49
40	305	64
45	360	79

5) 5- Horizontal Curves

The minimum horizontal curve radius shall be designed using AASHTO's side friction factor method for low-speed urban streets and super elevation distribution method 2. Minimum curve radius for various design speeds and cross slopes are shown in the following table:

Street Classification	Design Speed	Crown	Superelevation		
	(mph)		-0.02	0.02	0.03
Major Arterial	45	1039	794	750	711
Minor Arterial	40	762	593	561	533
Collector	35	510	408	389	371
Industrial	35	510	408	389	371
Local	25	198	167	(b)	(b)

Notes:

- (a) From Table 3-13, A Policy on Geometric Design of Highways and Streets, AASHTO 2018.
- (b) Superelevation permitted only with approval of City Engineer
- (c) The use of superelevation above 0.04 ft./ft. will require approval of the City Engineer.

6) 6- Superelevation Rate

Superelevation is to be used only as a design element to enhance drivability of horizontal curves

on arterial and collector streets. The use of superelevation for other purposes, or on local streets, will require the approval of the City Engineer, will be handled on a case by case basis and will not exceed 2%. The maximum design superelevation for collectors and arterials shall generally be 0.040 ft/ft and minimum superelevation shall be 0.020 ft/ft. Plans incorporating superelevation shall show left and right gutter on the profile and the scale shall be such that these can be distinguished.

7) 7.-Superelevation Runoff

The designer must be concerned with three profiles in the development of a superelevated section: left gutter, centerline and right gutter. Superelevation shall be obtained by rotating two of these profiles around the third stable profile, usually the centerline, which reflects the overall design.

Particular attention must be paid to the impact on drainage characteristics resulting from superelevation. No more than 25% of a transition section may be placed on the horizontal curve. No transition section shall be less than 100' in length. The minimum transition section lengths shall be determined in accordance with the AASHTO Policy on Geometric Design of Highways and Streets 2018 Edition, Chapter 3 Transition Design Controls. AASHTO Table 3-16 provides runoff length for various design speeds, number of lanes and superelevation rates. Select examples are provided in the table below for a road section with two 12-foot lanes and a superelevation rate of 4 percent (AASHTO Table 3-16).

DESIGN SPEED	MIN. LENGTH
50 mph	96'
45 mph	89'
40 mph	83'
35 mph	77'
30 mph	73'
25 mph	69'

8) 8.-Reverse Curves

On all streets having a design speed of greater than 30 mph there shall be a minimum 100' tangent section between reverse horizontal curves. Reverse curve signing shall be shown on the plans.

9) 9.-Compound Horizontal Curves

Compound horizontal curves should be avoided on streets having a design speed of greater than 30 mph. If a compound curve is necessary, the ratio of the flatter radius to the sharper radius should not exceed the following:

31 - 49 mph design speed	2 : 1
50 + mph design speed	1.5 : 1

Where the ratio exceeds these limits, a suitable length of spiral or a circular arc of intermediate radius shall be inserted between the two curves.

10) 10.-Pavement Transitions

At times there are transitions that need to be accommodated to reduce pavement widths. These transitions shall utilize the recommended MUTCD taper length formulas as follows:

For speeds 45 mph or greater; $L=WS$ and For speeds less than 45 mph; $L=WS^2/60$ Where:
L = length of the taper (in feet)

W = off-set distance of the travel lane (in feet)

S = design speed of the roadway (in mph).

At times there are transitions that need to be accommodated to expanded pavement widths use 10:1 taper.

Reviews shall include identification and mitigation for downstream roadside obstacles when pavement widths are narrowing.

11)14.-Road Crown

Collector and arterial streets shall be designed with either a crowned or a superelevated section through curves. A shed section on collector and arterial streets is not acceptable. On other classes of streets with design speeds less than 30 mph, shed sections are permissible. Shed section cross slope shall not be greater than 2%. Slopes less than 2% require approval by the City Engineer. Where a non-standard street width is designed, the crown shall be based on a 2% side slope.

12)12.-Offset Intersection

Minimum distance between offset intersections shall be 165 feet, measured from center line to centerline of the intersection.

13)13.-All Weather Service Road Standard

All weather service roads shall meet requirements of Standard Drawing 2-6.

14)14.-Curb Radius

The minimum curb radius shall be as follows:

Arterial - Arterial	35'
Local-Local	15'
Local-Collector	20'
Local-Arterial	25'
Collector-Collector	25'
Collector-Arterial	35'
Industrial	35' *

*(35' radius with parking eliminated within 40' of intersection measured from curb return)

When evaluating curb radius, designers should consider the location of sidewalk ramps and attempt to line up crosswalks with sidewalks to maintain a straight walking path across

intersections. A reduced curb radius may be allowed in areas with high pedestrian traffic to improve crosswalk alignment and visibility. Curb radius less than standard must be approved by the City Engineer.

Where a radius larger than 35' is desired, a 3-centered symmetric compound curve shall be used. Three-centered symmetric compound curves shall be designed only on right-of-way sufficiently large to accommodate 12' minimum between curb face and the property line. The radii of the 3-centered symmetric compound curve shall be 120'-40'-120'. The offset of the 40' radius shall be determined by the design vehicle as follows:

<u>Design Vehicle</u>	<u>Offset</u>
SU	2'
BUS	3'
WB-40	4'
WB-50	5'
WB-67	6'

15) 15-ADA Ramps

All required curb ramps must meet the Public Rights-of-Way Accessibility Guidelines (PROWAG) ~~published~~ adopted by the U.S. Access Board. The City, by this reference, adopts PROWAG into its standards.

Curb ramps are required at all corners of intersections ~~only required~~ where there is a pedestrian walkway (e.g., a sidewalk or trail/path) with a *prepared surface* that intersects a roadway. ~~Local Street sub ramps shall be placed Mid block adjacent to streetlights for blocks longer than 400 feet from center of intersection to center of intersection.~~ When required by the Redmond Development Code, curb ramps will typically be required along the property frontage at a minimum. Curb ramps will typically be required on both sides of the roadway when curb is being installed on the opposite side of the roadway with the development.

Curb ramps must be designed to fit the site and detailed on constructions plans. The design must provide sufficient horizontal and vertical control and the drawings annotated to ensure that ramp conforms to federal, state, and local accessibility standards. Curb ramps with corresponding grades and transitions must be designed to ensure proper drainage of the intersection. Grades including running slopes and cross slopes must be noted on each quarter delta of the curb return.

The following information is required to be shown in plans:

- **Running slope** (parallel to path of travel) percentage and direction.
- **Cross slope** (perpendicular to path of travel) percentage and direction.
- **Control points** with finished grade and top of curb (where applicable) elevation information.*
- **Dimensions** of features (e.g., length and widths of ramps and landings.)

***Control points may include throats of ramps, top and bottom of ramps and landings, tie- in points to match existing or other proposed features, and any wings or curb returns.**

When applicable, if a project is proposing to keep existing curb ramps in place when the development is required to bring the property frontage into compliance with current standards, compliance with PROWAG and City Standards must be demonstrated prior to permit approval. Curb ramp dimensions and slope measurement documentation will be required to be submitted by the EOR. Any ramps determined to be out of compliance will be required to be removed and replaced per PROWAG and City standards.

16)16-Street Striping

Street striping shall be designed in accordance with the current ODOT Traffic Line Manual. See Standard Drawing 2-1 for striping requirements by road classification.

Stop bars are required for any road intersecting a collector or arterial roadway.

Existing striping disturbed during construction must be restored by the applicant.

17)17-Street Signs

Street signage must conform with the latest edition of the Manual on Uniform Traffic Control Devices. Signposts shall meet requirements of Standard Drawings 2-28 to 2-29. The Contractor shall verify the correctness of all street sign legends and names immediately prior to installation.

Sign dimensions and details must be demonstrated on plans.

18)18-Cluster Postal Delivery Boxes

Cluster box locations shall be shown on the plans. US Postal Service must agree on location and type of delivery boxes. Cluster Postal Delivery Boxes should be constructed on residential streets in an area that minimizes impact on abutting properties.

Accessibility: Cluster mailboxes shall meet accessibility requirements in the Americans with Disabilities Act (ADA) and Public Right of Way Accessibility Guidelines (PROWAG):

- a. Provide a 72-inch-wide concrete pad adjacent to cluster mailboxes with turning space that conforms to Section 304 of the 2010 ADA Standards for Accessible Design.
- b. Provide a pedestrian access route to adjacent sidewalk complying with PROWAG Section R301.
- c. Provide a pedestrian access route to on street parking complying with PROWAG Section R301 within 25 feet of the mailbox.

Cluster Postal Delivery Boxes desired along arterial or collector streets should be constructed off public right of way on common ground dedicated to that purpose and provided with appropriate driveway access. Cluster Postal Delivery Boxes shall not be constructed on arterial street right of way. Cluster Postal Delivery Boxes may be constructed on collector street right of way provided that a turnout meeting the following requirements is constructed.

- a. The center of the turnout shall be located in the center of a tangent section of the Collector. This tangent section shall have a length of not less than two times the stopping sight

- distance for the design speed.
- b. The required right of way width shall be increased to provide for the parking bay.
 - c. The bay shall not be located less than the design stopping sight distance from any intersection.
 - d. The bay of the turnout shall be a minimum of 40' in length and not less than 10' in depth.
 - e. Tapered approach sections into the bay shall be not less than 10:1.
 - f. Curb radius in the bay shall be not less than 50' radius.
 - g. There shall be adequate stopping sight distance on either end of the turnouts into the parking bay.
 - h. The bay shall be signed with the following:
10 Minute Parking
No U-turns (MUTCD # R3-4a or R3-4 with R3-4p)

19) Trees

a) Tree Preservation

Trees must be preserved when required by Redmond Development Code. Trees shall be preserved by installing a physical barrier such as a chain link, wire mesh, or wooden fence around the drip line of the tree or group of trees to be preserved. The drip line is defined by the maximum width of the tree canopy.

When barriers are not feasible, the following are options to install within the drip line:

- i) A minimum of six inches of wood chips;
- ii) A minimum of four inches of wood chip mulch and a minimum ¾-inch layer of plywood, beams, commercial logging, or road mats; or
- iii) A minimum of four inches of gravel over taut, staked, geotextile fabric.

When roots over 1-inch in diameter are required to be cut, a pruning saw must be used. Air and water excavation tools or boring machines may be used to route utilities or wires under or around tree roots.

b) Tree Planting

Trees shall be planted so as the bottom of the trunk flare shall be at or above the finished grade. Trunk flare is defined as the area of transition between the root system and the trunk. The shallowest bottom of the trunk flare determines the planting depth.

Wire baskets or fabric rags shall be removed from root balls before planting.

In high quality soils, planting hole width shall be only as wide as needed to plant the tree and root ball. In poor quality soils, planting holes shall be twice as wide as the root ball diameter.

Mulch placed over a tree planting area shall not exceed two inches.

Staking, guying, or bracing are acceptable methods to support the trunk of a newly planted tree to keep it in the upright position.

20)19-Street Lights

Streetlights shall be shown on the plans and provided at the following locations:

- Intersections.
- Cul de sac bulbs if over 200 feet from the intersection.
- ~~Mid-block for blocks longer than 400 feet from center of intersection to center of intersection.~~
- High-use driveways and other locations designated by the City Engineer.

Poles and fixtures shall conform to the power provider standards. Standard cobra head fixtures shall be used unless decorative design is approved by the City Engineer or required for downtown areas.

Street lighting shall conform to the provider's (i.e., Pacific Power and Light or Central Electric Cooperative) standards. Typically, private developments are required to install the street light base per the provider's standards. The pole and light are typically installed by the provider upon payment by the developer.

21)20-Asphalt Concrete Pavement

Asphalt concrete pavement depth, classification and asphalt binder shall be as follows for various road classifications:

- Arterials: Five inches (two lifts-3-inch base, 2-inch top) of level 3, 1/2" dense-graded mix with PG 70 -28 asphalt binder in top lift, PG 64 -28 asphalt binder bottom lift on 5th St., 6th St., S. Canal Blvd and other arterials designated by the City Engineer. Same requirements for all other arterials except the asphalt binder shall be PG 64 -28 in both lifts.
- Collectors: Four inches (two lifts) of level 3, 1/2" dense-graded mix with PG 64 -28 asphalt binder on collectors with more than 1 million anticipated equivalent single axle loads over the 20-year design life. For collectors with less than 1 million equivalent single axle loads, use level 2 mix.
- Local: ~~Three~~ Four inches (one lift) of level 2, 3/8" dense-graded mix with PG 64 -28 asphalt binder.
- Alleys: See local
- Overlays and AC Patch: Level 2, 3/8" dense-graded mix with PG 64 -28 asphalt binder.

A modified section may be permitted when proposed by a professional geotechnical engineer and when approved by the City Engineer.

22)Pavement Restoration Standards

Pavement restoration shall comply with the following standards:

- Pavement cuts shall be perpendicular or parallel to the path of travel, except for pothole patches as described below. Parallel pavement cuts shall not be made under the wheel path whenever possible.
- Pavement cuts within streets paved within two years are not permitted unless approved by the City Engineer. If allowed, the pavement restoration area will be required to extend 25 feet beyond the edge of the trench in each direction, unless otherwise approved by the City Engineer.

- Potholes shall be restored with a minimum of 5 foot by 5 foot minimum (5'x5') patch. If the patch is located within the wheel path, the patch shall be a diamond configuration.
- Collector/Arterial Roadways – depending on the width of the trench, pavement restoration shall extend from the curb or edge of pavement (EOP) to the bike lane, travel lane, centerline, or full-width (curb-to-curb or EOP-to-EOP).
- Local roadways and alleys – depending on the width of the trench, pavement restoration shall extend from the curb or EOP to the centerline or full-width (curb-to-curb or EOP-to-EOP)
- When two or more patches are proposed within 20 feet of each other, the pavement restoration shall be one patch.
- The City Inspector may require additional pavement restoration based on the existing condition of the pavement, which may require pavement restoration to existing cracks or existing patches.
- Concrete roadways must be restored to the nearest panel boundary in each direction. Typically, entire panels disturbed must be replaced.

23)24. Cul-de-sacs and Eyebrow Corners

Cul-de-sacs and eyebrow corners shall only be allowed on local streets and commercial/industrial roads. ~~An eyebrow may be used on a local non-grid street where the expected ADT will not exceed five hundred (500) vehicles per day.~~ Cul-de-sacs and eyebrows shall have a minimum five (5) foot continuous public utility easement extending outside the right of way the length of these features.

A permanent vision clearance easement is required on the inside corner of an eyebrow where the turning movement is not controlled by a yield sign or stop sign. ~~The vision sight triangle extends 20 feet along each leg of an intersection right of way. The minimum vision clear area starts at 3 feet above the curb and extends to 8 feet above the curb. The following are exempt for the clear vision area compliance:~~

1. ~~Post of column~~
2. ~~Tree trunk clear of branches from 3 feet of curb to 8 feet above curb.~~
3. ~~Safety Signage~~
4. ~~Telephone or power poles.~~

Cul-de-sac requirements for public streets are provided in Standard Drawing 2-4. Eyebrow requirements for public street are provided in Standard Drawing 2-5.

223. Dead End Streets and Alleys

A turnaround must be provided on all dead-end streets, alleys and all-weather access roads, unless otherwise approved. Cul -de-sac requirements for public streets are provided in Standard Drawing 2-4. Through alleys are encouraged, but where they cannot be provided, and the alley is a required emergency access, either a standard cul-de-sac or alternate turnaround meeting the requirements of the Oregon Fire Code must be provided. Dead end alleys that do not required emergency access and are longer than 150 feet shall have a hammerhead turnaround per **A Policy of Geometric Design of Highways and Streets**, Figure 5-2.

234. Pavement Taper

When street transitions to a different pavement width, the edge of the pavement shall be tapered as follows:

Travel Lane Transition: 1: Design speed. Example: for a street with 25 miles per hour design speed, length of transition equal 25 feet for every foot of width difference.

Other than Travel Lane: 1:10.

24.5. Driveway Spacing from Intersections

The distance from the right of way to the nearest edge of a driveway shall be in accordance with Development Code Section 8.3035(9) 8.2820 which includes the following table:

Roadway Classification	Minimum Access Driveway Spacing	Minimum Access Clearance Corner	Intersection Spacing
Local Street	No Restrictions	30 feet	165 feet
Minor Collector	80 feet	80 feet	330 feet
Major Collector	165 feet	165 feet	330 feet
Minor Arterial	330 feet	330 feet	¼ mile
Major Arterial	ODOT Standards	ODOT Standards	ODOT Standards

Refer to Development Code for additional details and the most current standards.

26. Clear Vision Area and Curb Painting

Clear vision standards and curb painting shall be required per the Development Code.

25.7. Public Sanitary Sewers in Private Streets

Public Sanitary Sewers located in Private Streets and Alleys are subject to approval of the City of Redmond City Engineer and shall meet the following Design Standards:

- ~~1. Provide a minimum unobstructed width of 20 feet with not parking allowed within the clear distance. No parking signage and yellow painted curbs are required on 20-foot-wide drive aisle.~~
- ~~2. Minimum public easement width for truck access shall be 20 feet.~~
- ~~3. Minimum turning radius shall be based on the City's -jetter/vacuum trucks turning movements. AAHTO A Policy on Geometric Design of Highways and Streets, BUS-40 is considered an equivalent design vehicle template. Provide an additional 2-feet clearance to the -Path of Front Overhang-. Field verification of the turning movement may be required with the eCity's -jetter/vacuum trucks.~~
- ~~4. The Private Street shall be paved with a minimum structural section of 3-inch thick AC over 8-inch thick aggregate base~~ per public paving standards based on the roadway classification.
- ~~5. Easements outside of paved surfaces shall be an all-weather section capable of supporting a 70,000 lbs. vehicle load.~~ meet public all-weather access standards.

- ~~6. Minimum distance between manholes shall be 200 feet unless otherwise approved by the city's Wastewater Division.~~
- ~~7. CC&R's and or easements are subject to approval of the City Engineer and shall include enforcement for parking restrictions~~

B. STORMWATER

1. General

Designs of stormwater facilities and conveyance systems shall conform to the City of Redmond Standards and Specifications and the applicable Oregon Department of Environmental Quality (DEQ) regulations. Where a conflict is discovered between City and DEQ requirements, the Design Engineer shall notify the City Engineer of the issue and the most stringent practice shall apply.

The City recognizes the current Central Oregon Stormwater Manual (COSM) as a standard design manual for stormwater and incorporates it into these Design Standards except as modified or otherwise prescribed herein. Stormwater design professionals are required to be familiar with the specific requirements and practices of the Manual and implement them fully into their designs for City approval.

2. Stormwater Design Requirements

a. Design Storm.

The design storm to be used in the City of Redmond for flow control shall have a recurrence interval of 25-year design storm required in Chapter 7 of the Central Oregon Stormwater Manual. The stormwater system for proposed development shall be designed to pass or retain up-gradient flow through the site without damage to the proposed development or existing stormwater facilities. This flow shall be discharged at the lower end of the site at the same flow rate and location(s) as the pre-development conditions, otherwise, it will not be permitted. The routing and safe passage for the 100-year design storm must be demonstrated, when applicable, away from adjacent structures towards the natural discharge point of the contributing basin.

b. Precipitation Isoplethials

Precipitation Isoplethials provided in the COSM for the 2-year, 25-year, 50-year, 100-year, 24-hour storm events, shall be used for National Resource Conservative Service (NRCS) Curve Number Method, Soil Conservation Service (SCS) Method and Santa Barbara Urban Hydrograph Method (SBUH) to estimate peak flow rates. Use a Type 1, 24-hour storm distribution method to estimate volumes. City of Redmond 24-hour storm depths (inches) are as follows:

<u>6-MONTH</u>	<u>2-YEAR</u>	<u>25-YEAR</u>	<u>50-YEAR</u>	<u>100-YEAR</u>
<u>0.7"</u>	<u>1.0"</u>	<u>1.8"</u>	<u>2.0"</u>	<u>2.2"</u>

IDF curves developed for Redmond in September 2008 by MGS Engineering Consultants, Inc. shall be used for Rational Method as provided in the Central Oregon Stormwater Manual Appendix 5C. These curves and supporting data are provided in the table and graph at the end of this section.

c. Stormwater Discharge.

Stormwater retention shall be designed for any project adding 500 square feet or more impervious surfaces as described in the subsections below.

Stormwater shall not be allowed to discharge to down-gradient private property, unless the adjacent property or facility is designed and approved to maintain the stormwater as such.

Drainage facilities that cross shared property lines will only be permitted when a shared stormwater maintenance agreement is recorded on affected properties, and when approved by the City Engineer.

UICs must be designed by a Professional Engineer licensed in the State of Oregon. Infiltration is not permitted without a drainage report stamped by a Professional Engineer and testing required per Section 4.

i. Private Property - Residential Development 1-4 Units and Accessory Dwelling Units

For residential development up to four units, accessory dwelling units, and accessory structures to those uses, site drainage shall be retained onsite, unless otherwise approved to be conveyed to an alternative discharge location. The site plan must clearly demonstrate If a residential property is approved to convey water offsite, the site plan must clearly demonstrate conveyance to the approved location (gutters, downspouts, conveyance swales, flow over a hard surface, flow within a pipe, etc.).

Onsite drainage retention measures include infiltration trenches, berms, swales, or other measures approved by the City Engineer or designee.

Residential developments proposing new impervious surfaces equal to or greater than 5,000 square feet must clearly demonstrate appropriately sized drainage facilities and supporting calculations for the 25-year storm maintained onsite or discharged to another approved location.

Residential redevelopment must demonstrate stormwater management for the new or changed impervious surfaces.

ii. Private Property – Non-Residential Development

Any non-residential development (multifamily over four units, commercial, industrial, mixed use, etc.) must retain the 25-year storm onsite, within the stormwater disposal system. The development must also store the 100-year storm onsite, such as in a parking lot, routed away from structures or adjacent private property.

A drainage report stamped by a Professional Engineer licensed in the State of Oregon is required for projects that add new impervious surfaces equal to or greater than 5,000 SF.

Non-residential redevelopment projects are required to demonstrate stormwater management for the new or changed drainage. If drainage from a surface equal to or greater than 500 SF is proposed to be contained within an existing facility, the plans must clearly demonstrate that the existing facility has capacity to contain the new stormwater. Testing will be required to confirm the existing facility performs per the assumptions of the plan, unless otherwise approved by the City Engineer.

Resurfacing projects, such as repaving a parking lot, that do not alter drainage patterns are exempt from drainage review.

iii. Public Streets or Alleys

Public streets or alleys shall maintain the 25-year storm event at a minimum for all impervious and pervious surfaces within the right of way. Facilities located at sags shall contain the 100-year storm at a minimum. The development must also demonstrate safe passage for the 100-year

storm, to be maintained in the right of way (i.e., within the curbed area of the roadway).

Adjacent private property will be required to retain 100% of stormwater onsite when the public stormwater facilities are only designed to contain stormwater discharged from the right of way.

Runoff from off-site upgradient, undeveloped areas shall be considered in the stormwater calculations and designers shall make provisions to either retain this runoff or pass it through the site to the same location and at the same rate and volume as it did prior to development.

a. Regional Facilities

Regional facilities are stormwater facilities that collect and retain stormwater from the right of way and adjacent residential private property. Regional facilities are located in the public right of way. Regional facilities are not permitted for non-residential subdivisions, partitions, or developments.

At a minimum, the facility shall contain stormwater from the right of way as described in Section 2(c)(iii) above plus the 25-year storm for upgradient private property, as topography allows. The design may only account for upgradient lots immediately adjacent to the right of way within the development, unless otherwise designed and approved to discharge across multiple shared private property lines. Regional systems are not permitted to flow and discharge stormwater outside the development or phase limits.

The design must include assumptions for total pervious surfaces and impervious surfaces in square feet, based on the maximum lot coverage per the zone for each lot proposed to drain to the regional facility. The design must demonstrate areas that will be maintained onsite for future development. The plan must include a conceptual building permit drainage plan. If multiple drainage patterns are proposed throughout the subdivision, the plan must include an example building permit drainage plan per each basin or regional facility.

Private alleys will be permitted to discharge to the right of way when the regional facility is designed to contain the stormwater as such and when the public facility containing the stormwater is preceded by a sedimentation manhole located on private property. A maintenance agreement is required for the private sedimentation manhole to be maintained by the HOA or other Owner. The pipe connecting the sedimentation manhole to the regional facility will be publicly maintained. Privately maintained stormwater pipes are not permitted in the right of way, unless otherwise approved by the City Engineer and when a maintenance agreement is recorded.

d. Stormwater Facilities Design

Stormwater facilities must meet the standards described below:

i. Drywells

Public drywells must meet applicable Standard Drawings. Sedimentation manholes must be located immediately upgradient from drywells, unless otherwise approved by the City Engineer or designee.

Public drywell drainage gallery shall be concrete capped to its surface extents. Drywell drain rock design volume is limited to a minimum of 60 cubic yards and a maximum of 180 cubic yards, unless otherwise approved by the City Engineer. The drywell stack should be located in the center of the drywell gallery, to the maximum extent possible. Drain rock volume is calculated

using the design storm volume, minus the infiltration volume, utilizing a maximum void ratio of 40%.

Private swales or ponds must meet applicable design criteria of the COSM. Private drywells do not have a maximum size.

If any portion of a public drywell or gallery is constructed outside of City right-of-way, it shall be dedicated in a stormwater easement or public utility easement.

Public drywells may not conflict with franchise utilities and must be located 10 feet minimum from public water and sewer mains, 10 feet minimum from water laterals, 5 feet minimum from sewer laterals, and 25 feet from public hydrants.

Public and private drywells may not be proposed within the 2-year time of travel zone or within a 500-foot radius from City or community water supply wells without additional treatment and written approval of the City Engineer.

Where possible, drywells should be located on the opposite side of the street than water mains.

Infiltration rates assumed for design purposes shall be permitted to offset drywell storage design, limited to 9 inches per hour. The infiltration surface includes the area of the drainage gallery floor only.

ii. Swales and Ponds

Public swales and ponds must meet applicable Standard Drawings. A six-inch diameter observation port is to be installed in rock-filled infiltration trenches greater than 1 foot deep that come to the surface and where subsurface rock galleries are constructed under a swale or soil layer.

Swales may not conflict with franchise utilities.

Private swales or ponds must meet applicable design criteria of the COSM.

Infiltration rates assumed for design purposes shall be permitted to offset storage design, limited to 9 inches per hour.

Fences will be required where applicable per COSM Section 7.6.

iii. Drill holes

Drill holes are not permitted within City limits, unless otherwise approved by the City Engineer or designee. Existing drill holes within public right of way will be required to be decommissioned in accordance with DEQ requirements. Existing drill holes located on private property will not be permitted to add new stormwater.

iv. Private Site Porous Paving

Porous or permeable paving is permitted on private property. Runoff shall not be directed from surrounding areas to the pavement surface. Subbase layers shall be capable of bearing an appropriate load without deforming, and must be comprised of an appropriate, open graded material to provide voids. Pervious pavement must not exceed 5% slope. The reservoir floor

must be 0% slope. The reservoir must adequately accommodate the required design storm. Provisions shall be made to retain overflow in the case of pavement blinding.

Permeable pavers shall be the last element installed during construction or redevelopment. Erosion and sediment introduction from surrounding areas must be strictly controlled during and after construction to prevent clogging of void spaces in base material and permeable surface. During construction, construction or heavy vehicles must not traverse across excavated subgrade or areas of completed porous pavement.

v. Loading Docks

Loading dock drainage must be collected in a blind sump, or discharged to the public sewer if approved by the City Engineer or Public Works director. A minimum of 3 feet of the loading dock, measured from the building wall, must be hydraulically isolated by grading, curbing, installing a gutter, and/or other means to segregate the area from the remainder of the onsite storm drainage system. A cover shall be installed over the hydraulically isolated area. If the cover is less than 10 feet tall, the cover must extend 3 feet beyond the hydraulically isolated area, for a total of 6 feet minimum measured from the building. If the cover is 10 feet or taller, the cover must extend 5 feet beyond the hydraulically isolated area, for a total of 8 feet minimum measured from the building. If approved, discharge to a public sewer requires an oil/water separator followed by a shutoff valve. This information shall be shown on the building, site plans, and mechanical plans.

3. Storm Sewer Design

Storm sewers shall generally conform to the same specifications as sanitary sewers (see Section II C).

Storm pipe with cover to pavement finish grade greater than 30 inches shall be:

- PVC meeting the requirements of ASTM D3034 (for pipes less than 18 inches in diameter) or F679 (for pipes 18-inch diameter and larger) –or-
- Polypropylene with smooth interior, annual exterior corrugations and gasketed integral bell and spigot joints meeting the requirements of ASTM F2736 for diameters of 12 to 30 inches. –or-
- Polypropylene with smooth interior and exterior, inner annual corrugations and gasketed integral bell and spigot joints meeting the requirements of ASTM F2764 for diameters of 30 to 60 inches.

Storm pipe with cover to pavement finish grade less than 30 inches shall be PVC meeting the requirements of AWWA C900 or C905.

Flanking inlets at sags will not be required provided that the primary inlet is shown to be adequate to capture the design flow.

Double-sized catch basins are normally required for inlets. A single catch basin is acceptable for the collection of water where special situations apply.

Curb inlet catch basins shall be installed in arterial and collector streets to provide better bicycle routes. Inlets shall be provided at intersections of local streets. These inlets shall be so arranged that water is not directed through the intersection or in certain cases, around a curb

return. Inlets across street from each other require a connecting pipe of 8-inch minimum diameter.

Valley gutter intersections may be allowed with approval of the City Engineer in situations such as intersections of short cul-de-sacs with local streets.

4. Storm Water Disposal Testing

Stormwater facility testing requirements shall be shown on the plans. Testing requirements vary depending on the type of facility and whether infiltration is accounted for in the design.

Facilities in series must be tested individually and on the same day.

All stormwater drainage facilities proposed for non-residential uses, public streets or alleys, or those that assume infiltration require acceptance testing. Upon completion of construction per approved plans, but prior to paving or capping of a drywell, the Acceptance Testing Request Form must be completed by the EOR or Contractor and provided to the City Inspector a minimum of 48 hours in advance of testing. The City Inspector must review and approve the City Acceptance Testing Request Form prior to scheduling testing. The City Inspector or City's testing representative will supervise acceptance testing and prepare a test report upon completion.

Acceptance testing shall be performed by the Contractor. The Contractor or EOR is responsible for providing and operating all testing equipment including water, hydrants, water trucks, meters, hoses, etc.

The City is not involved during infiltration rate testing for design purposes or during construction prior to acceptance testing. If a designer or contractor chooses to test a facility's infiltration rate prior to the facility being fully constructed per approved plans, it is solely the responsibility of the EOR or contractor to do so. The City will require acceptance testing of the facility once fully constructed.

a. Information to show on plans: For each drainage facility, provide total contributing runoff area in square feet; runoff coefficient or curve number used for calculations; peak runoff volume to the facility in gallons; and required drain rock volume in cubic yards. For facilities with designs that account for infiltration, also provide the total required storage volume in gallons; design storage volume in gallons; design infiltration rate in gallons per minute and inches per hour. Drywells or facilities in series must include details for each individual facility.

b. Drywell Acceptance Testing Procedures:

- i. Test Volume:** Confirm the total test volume from the approved construction drainage plan. The City's Inspector or representative will enter the volume in the City of Redmond Drywell Test Form.
- ii. Water Testing Volume:** Contractor to fill the drywell with water from a metered source.

Place an initial 13,000 gallons within the drywell within a 1-hour period. If the test volume is less than 13,000 gallons, place the total test volume within the drywell within the 1-hr period. If no water remains upon completion of the 1-hour period, the test is considered complete and the drywell is considered passed.

The next sections only apply if standing water is present at the end of the initial 13,000 gallon test.

If any standing water is present at the end of the initial 13,000-gallon test, then the City will require the full design inflow volume and/or a Full Scale Drywell test per COSM Appendix 4B. The test may be immediately performed after the initial test of 13,000 gallons.

In no case shall the total volume injected into the drywell exceed the design storm volume.

- iii. **72-hour drainage:** If the full scale drywell test method is used, the City Inspector or the City's representative will check in 72 hours after the initial volume test to verify that the drywell has drained completely.
- iv. **Infiltration testing.** Post-construction infiltration testing is required for tests over 13,000 gallons that require full design volume or Full Scale Drywell Test per COSM Appendix 4B. For drywells, draw down measurements shall be performed to determine infiltration rate and recorded during the drywell testing, tested in 5-minute increments for 20 minutes beginning when the water level is at least 1 foot below the top of the perforated barrel section (obtaining 4 recorded draw down measurements). An average infiltration will be determined from the draw down measurements and compared to the design infiltration used in the calculations.
- v. **Results:** The drywell will be failed if the facility does not drain within the 72 hour period (standing water below the perforated barrel is acceptable), cannot contain the required test volume of the test as specified above, is unable to infiltrate at the design infiltration rate assumed in the construction plans and/or drainage report, or if stormwater overflows above the perforated barrel section during the test. If the test results indicate that the infiltration rate assumed during construction is not achieved, the storm facilities shall be redesigned and reconstructed to support the measured infiltration rate. Retesting will be required.
- vi. **Alternate Test:** If the initial 72-hour drainage test fails, or there is concern that the drywell will not infiltrate in the required 72 hours, the drywell may be initially designed or enlarged after to contain twice the Total Storage Volume representing two consecutive storms in a 2-hour period. 72-hour drainage compliance will be waived if drywell contains twice the Total Storage Volume. If infiltration is included in determination of the design volume, the EOR must recalculate the required storage volume based on the infiltration rate measured during the 72-hour period to ensure double the volume is provided.

- vii. **Drywell Test Report:** The City Inspector or City's representative will record the following information for each test (refer to attached form):
- a. Basin number
 - b. Drywell identification
 - c. Test volume
 - d. Start time
 - e. Starting meter read
 - f. Goal meter read
 - g. End time
 - h. Ending meter read
 - i. Depth of drywell
 - j. Depth of water after test
 - k. Depth of water after 72 hrs
 - l. Pass or fail
 - m. Notes or comments as necessary

c. Ponds, swales and infiltration galleries design and testing:

- i. **Storage Volume:** For ponds, swales, and other surface facilities, confirm the storage volume with as-built measurements and calculations provided by the project surveyor. Calculate the storage volume in the drain rock using a maximum void ratio of 40%.
- ii. **Water Testing Volume:** Swales and ponds are to be flood tested with the 2-year storm design volume, loaded within 1 hour and fully infiltrated in 24 hours. The swale is required to take the entire volume within the 1 hour period without overflowing.
- iii. **Infiltration Rates:** Infiltration shall be permitted to offset storage design but limited to 9 inches per hour. The City of Redmond recommends that infiltration rates be assumed based on field testing when possible or using the National Resource Conservation Services (NRCS) soil surveys. If field testing is conducted prior to design, the testing information shall be provided to the City of Redmond with the construction plans.
- iv. **Infiltration Surface:** Includes the floor area or horizontal infiltration area.
- v. **24-hour Drainage:** For infiltration swales and ponds in general and for infiltration galleries constructed with filter soil placed above the drain rock, test after the filter soil is placed. The City Inspector or representative will confirm that all water is below the surface and any infiltration galleries are drained within 24 hours. A 6" diameter observation port is to be installed in rock galleries to visually observe water level. If the infiltration gallery is designed so that runoff enters directly into the drain rock with filter soil below, observe that all water is below soil surface within 24 hours. The test must be performed such that 24 hours later, the performance may be evaluated on a weekday (typically scheduled on Monday – Thursday).
- vi. **Infiltration Testing.** Post-construction infiltration testing is required. Regardless of infiltration determination/testing, it is required that the City Inspector or its representative certify that all stormwater infiltrate from drywells/swales within 24 hours. For swales, infiltration shall be tested in

conformance to the COSM Appendix 4D (Single-Ring Infiltrometer test), or other City approved method. If design infiltration rates are not met during testing, the EOR shall determine how to 1) increase infiltration rates or 2) back calculate the facility design with the measured infiltration rate to determine if the facility has adequate capacity including a safety factor.

vii. **Results:** The swale will be failed if the facility does not drain within the 24-hour period, cannot contain the required volume of the test as specified above, is unable to infiltrate at the design infiltration rate assumed in the construction plans and/or drainage report, or if water encroaches on the required swale freeboard. If the test results indicate that the infiltration rate assumed during construction is not achieved, the storm facilities shall be redesigned and reconstructed to support the measured infiltration rate. Retesting will be required.

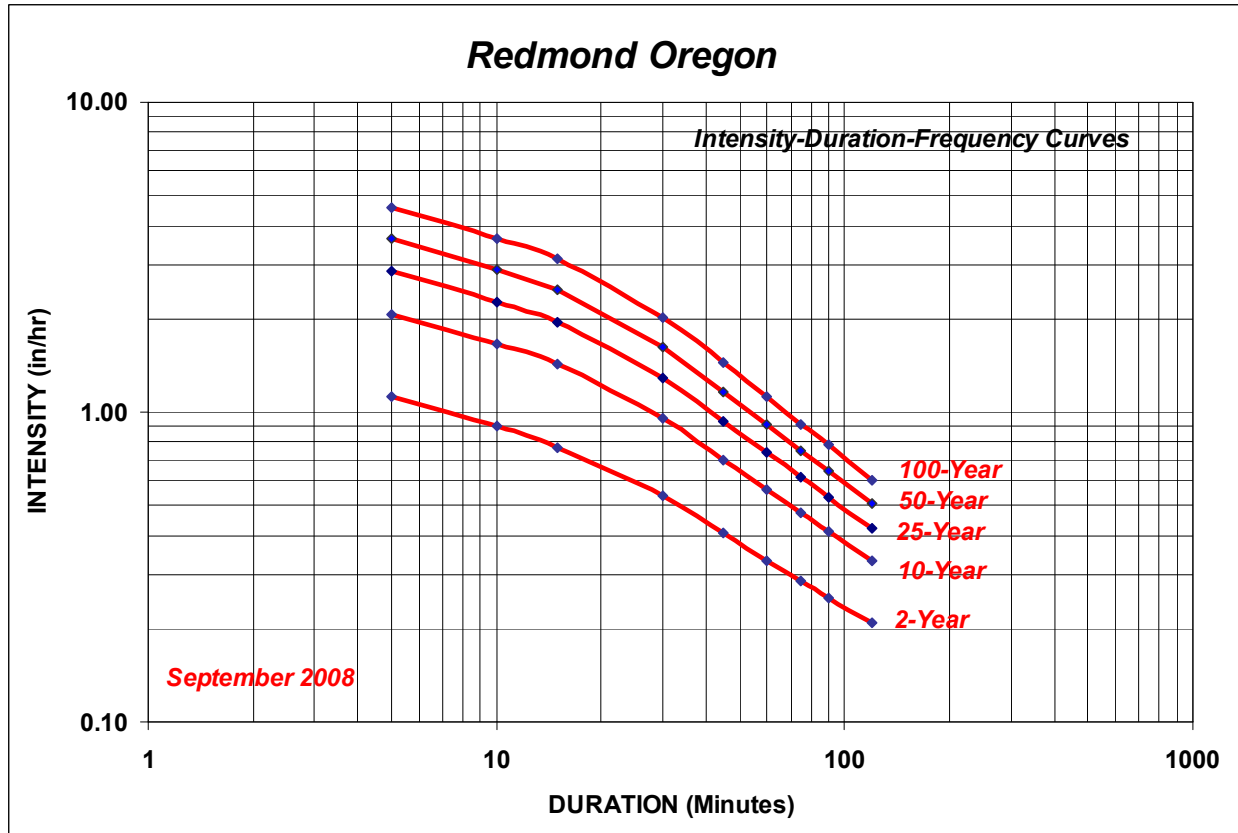
viii. **Alternate Test:** If the initial Acceptance Test fails, or there is concern that the pond, swale, or gallery will not infiltrate in the required 24 hours, the facility may be initially designed or enlarged to contain the volume of two consecutive design storms in a two-hour period (double design). 24-hour drainage compliance will be waived if the facility contains the double design volume without overflowing. If infiltration is included in determination of the design volume, recalculation is required for storage volume based on the infiltration rate measured during the 24-hour period to ensure the double volume is provided.

ix. **Swale Test Report:** The City's representative will record the following information for each test (refer to attached form):

- a. Basin number
- b. Swale identification
- c. Test volume
- d. Start time
- e. Starting meter read
- f. Goal meter read
- g. End time
- h. Ending meter read
- i. Depth of swale
- j. Depth of water after test
- k. Depth of water after 24hrs
- l. Pass or fail
- m. Notes or comments as necessary

RECURRENT E INTERVAL (Years)	PRECIPITATION INTENSITY (in/hr)								
	DURATION (minutes)								
	5	10	15	30	45	60	75	90	120
0.5	0.60	0.48	0.41	0.30	0.23	0.19	0.17	0.15	0.13
2	1.12	0.90	0.77	0.54	0.41	0.33	0.28	0.25	0.21
5	1.60	1.28	1.10	0.75	0.56	0.45	0.38	0.34	0.27
10	2.07	1.65	1.42	0.96	0.70	0.56	0.47	0.41	0.33

<u>25</u>	<u>2.84</u>	<u>2.26</u>	<u>1.95</u>	<u>1.29</u>	<u>0.94</u>	<u>0.74</u>	<u>0.61</u>	<u>0.53</u>	<u>0.42</u>
<u>50</u>	<u>3.61</u>	<u>2.87</u>	<u>2.48</u>	<u>1.62</u>	<u>1.17</u>	<u>0.91</u>	<u>0.75</u>	<u>0.65</u>	<u>0.51</u>
<u>100</u>	<u>4.57</u>	<u>3.62</u>	<u>3.14</u>	<u>2.03</u>	<u>1.44</u>	<u>1.12</u>	<u>0.92</u>	<u>0.78</u>	<u>0.61</u>
<u>500</u>	<u>7.77</u>	<u>6.12</u>	<u>5.35</u>	<u>3.35</u>	<u>2.34</u>	<u>1.78</u>	<u>1.43</u>	<u>1.20</u>	<u>0.90</u>



Redmond Rainfall-Intensity-Duration-Frequency Curves prepared by MGS Engineering Consultants, Inc. September 2008

NOTE: The 6-month rainfall intensity is 2/3 of the 2-year rainfall intensity

5. Grading

This section applies to any project requiring a grading permit.

a. Fills

In residentially-zoned areas, fills greater than five feet are not permitted from natural, pre-development grade without approval by the City Engineer. In non-residentially-zoned areas (multifamily, commercial, industrial, etc.), fills greater than seven feet are not permitted from natural, pre-development grade without approval from the City Engineer. Foundations shall be stepped, built into natural slopes, or other measures shall used to minimize fills.

Areas that require engineered fill to support structures, roadways or for other reasons shall be noted on the grading plan and plat. Design and placement of engineered fill

shall be under the direction of a licensed professional engineer. Fill material shall be tested and approved by the engineer prior to placement and tested with suitable methods after compaction.

b. Stabilization Measures

Stabilization measures include, but are not limited to, straw wattle, riprap, seeding, sodding, silt or sand fences, matting or netting, or any other best management practice approved by the City Engineer or designee. Bark mulch is not an acceptable stabilization measure.

c. Grading Adjacent to Property Lines

Modified slopes steeper than 3:1 shall be no closer than two feet from the property line. Impacts to existing or future development on adjacent property must be mitigated. A proposed retaining wall must not compromise existing development or limit future development on an adjacent property and shall be engineered to support existing or future vehicular pathways, structures, or other development. When grading is proposed that impacts adjacent property, plans must clearly demonstrate location of structures, parking areas, vehicular drive aisles, or other development within 30 feet of the property line.

d. Slopes Equal to or Steeper than 3:1 and Less than 2:1

Slopes equal to or steeper than 3:1, but less than 2:1 (horizontal to vertical) require temporary and permanent slope stabilization measures. Slopes shall be landscaped, terraced or benched, or receive other treatment to reduce the visual impact and minimize the need for maintenance. In residentially-zoned areas, individual terraces or benches must not exceed five feet in height and shall be separated horizontally by a minimum of five feet or the maximum height of each terrace, whichever is less, unless otherwise approved by the City Engineer. In non-residential areas, individual terraces or benches must not exceed seven feet in height and shall be separated horizontally by a minimum of five feet or the maximum height of each terrace, whichever is less, unless otherwise approved by the City Engineer.

e. Slopes Equal to or Steeper than 2:1

Slopes less than four feet in height and equal to or steeper than 2:1 require temporary and permanent stabilization.

Slopes four feet or taller and equal to or steeper than 2:1 require a retaining wall. Cut slopes up to and equal to 1:1 are permitted in rock material when a professional geologist or professional geotechnical engineer certifies the slope is stable with a stamped report.

Structural engineering calculations stamped by a licensed professional engineer must be provided for retaining walls higher than four feet from the top of the footing to the top of the retaining portion of the wall and for retaining walls of any height that support a surcharge such as a structure, roadway, driveway, drainage facility, or slope greater than 4:1. A cross-section detail of the wall must be provided. Drainage and stormwater control must be demonstrated at retaining walls.

In residentially zoned areas, retaining walls exceeding five feet in height must be terraced. In non-

residential areas, retaining walls exceeding seven feet in height must be terraced. Each individual terrace shall not exceed 5 feet for residential areas and 7 feet for non-residential areas and shall be separated horizontally by a minimum of 5 feet or 7 feet for residential or non-residential areas, respectively, or the maximum height of each terrace, whichever is less, unless otherwise approved by the City Engineer or designee. The area between terraced retaining walls shall be landscaped or receive other treatment to reduce the visual impact of the retaining walls.

Retaining walls located on multiple lots require a reciprocal maintenance agreement to be recorded on each property affected.



Full-Scale Drywell Test

COSM App 4B

Date of test: _____ UIC Identification: _____
Location: _____ Rim to floor depth: _____
Weather Conditions: _____ Rim to barrel depth: _____
Name of Tester: _____ Rim to invert depth: _____
Start time: _____ Starting meter reading: _____

Saturation Period: *raise water level in the structure until it reaches the active barrel section, maintain water level for 2 hours*

Time (hr:min)	Meter Reading (gal)	Flow (GMP)	Comments

Drawdown Period: *discontinue flow, monitor water level <5 minute increments for 30 minutes*

Time (hr:min)	Depth to Water (in)	Change in Depth (in)	Comments

Notes:

Witnessed By:

Photos:



Stormwater Facility Acceptance Test Results

General Information

Project Name: Contractor/EOR Name:
Project Address: Contractor/EOR Number:
Project or Permit Number: City Representative:
Date and Time of Test: Weather Conditions:

Test Information

Stormwater Facility ID*:
Facility Type: ☐ Drywell ☐ Swale ☐ Pond
New/Retest: ☐ New ☐ Retest
Infiltration Rate Assumed:
Total Facility Depth**:
Test Start Time:
Test End Time:

	CFS	Gallons
Required Test Volume:		
Meter Reading (Start):		
Meter Reading (Goal):		
Meter Reading (End):		
Total Volume Used:		

Depth of Water After Test**:

Drainage Verification

Swale/Pond - Water remaining after 24 hrs: ☐ Yes ☐ No If Yes, Depth Remaining:
Drywell - Water Remaining after 72 hrs: ☐ Yes ☐ No If Yes, Depth Remaining:

☐ PASS / ☐ FAIL

Notes

* Multiple drywells in the same basin may be included on one form when verifiably connected through drain rock or if the volume introduced into each drywell is clearly recorded separately.

** Measurements of the total depth and water depth must be individually recorded for each drywell, per basin.

1. General

Stormwater systems in the public right of way and private property shall be designed in accordance with the latest version of the Central Oregon Stormwater Manual (COSM) and City of Redmond Special Provisions listed in this section.

2. Special Provisions to Central Oregon Stormwater Manual (COSM)

- a. Design Storm.** The design storm to be used in the City of Redmond for flow control shall have a recurrence interval of 50 years (as opposed to the 25-year design storm required in Chapter 7 of the Central Oregon Stormwater Manual). Pre-development conditions of the site are defined as characteristics of the land prior to any development. If pre-development runoff rates are used to offset developed rates, discharge must match the original conditions. Redmond has no year round watercourses and runoff is primarily sheet flow with some intermittent channel flow during large events. If pre-development rates are utilized, the design must discharge in the same manner and at the same flow rate and location. The stormwater system for proposed development shall be designed to pass up gradient flow through the site without damage to the proposed development or stormwater facilities. This flow shall be discharged at the lower end of the site at the same flow rate and location(s) as the pre-development conditions, otherwise, it will not be permitted. The routing for the 100-year storm must be demonstrated.
- b. Precipitation Isopluvials** provided in the COSM for the 2-year, 20-year, 50-year, 100-year, 24-hour storm events, shall be used for National Resource Conservative Service (NRCS) Curve Number Method, Soil Conservation Service (SCS) Method and Santa Barbara Urban Hydrograph Method (SBUH) to estimate peak flow rates. Use a Type 1, 24-hour storm distribution method to estimate volumes. City of Redmond 24-hour storm depths (inches) are as follows:

6-MONTH	2-YEAR		50-YEAR	100-YEAR
0.7"	1.0"		2.0"	2.2"

IDF Curves. IDF curves developed for Redmond in September 2008 by MGS Engineering Consultants, Inc. shall be used for Rational Method as provided in the Central Oregon Stormwater Manual Appendix 5C. These curves and supporting data are provided in the table and graph at the end of this section.

— Stormwater Discharge.

Per the City of Redmond Development Code, section 8.3035(7)(A)(2), "All drainage shall be retained on-site at all times. A drainage plan may be required that shows slope, method of drainage retention, and disbursement of water on-site at the discretion of the City Engineer."

- c.** 1. Commercial, Industrial, Institutional, and Multifamily development site drainage shall be retained on-site.
- d.** 2. Single Family Residential development site drainage shall be either retained on-site or conveyed to a contiguous public right of way. A minimum of the front half of the lot will contribute to the public right of way. Where lot grading dictates, 100% of the lot drainage will be conveyed to the public right of way. Surface water drainage shall not

be allowed to discharge to down gradient private property. On-site drainage retention measures include infiltration trenches, berms, swales, or other measures approved by the City Engineer. Public infrastructure designs shall include all contributing drainage basin areas both public and private.

~~e. _____~~

~~1. Commercial, Industrial, Institutional, and Multifamily development site drainage shall be retained on site.~~

~~2. Single Family Residential development site drainage shall be either retained on-site or conveyed to a contiguous public right-of-way. A minimum of the front half of the lot will contribute to the public right of way. Where lot grading dictates, 100% of the lot drainage will be conveyed to the public right of way. Surface water drainage shall not be allowed to discharge to down gradient private property. On-site drainage retention measures include infiltration trenches, berms, swales, or other measures approved by the City Engineer. Public infrastructure designs shall include all contributing drainage basin areas both public and private.~~

~~a. Public Preferred BMP. Sediment manholes are a preferred best management practice and should be located immediately upgradient from drywells when used in a treatment train.~~

~~b. Private Site LID Porous Paving.~~

- ~~1. Erosion and sediment introduction from surrounding areas must be strictly controlled during and after construction to prevent clogging of void spaces in base material and permeable surface.~~
- ~~2. Runoff shall not be directed from surrounding areas to the pavement surface.~~
- ~~3. Subbase layers shall be capable of bearing an appropriate load without deforming.~~
- ~~4. Permeable pavers shall be the last element installed during construction or redevelopment.~~
- ~~5. Use single size grading in subbase materials to provide open voids.~~
- ~~6. During construction, do not allow construction or heavy vehicles to traverse excavated subgrade or areas of completed porous pavement.~~
- ~~7. Contractors shall be trained and have experience with installation of the product.~~
- ~~8. Refer to the Truckee Meadows Low Impact Development Handbook.~~
- ~~10. Stormwater overflow facilities are required to collect and dispose of runoff in the case of surface plugging.~~

~~f. Swale Lining For swales that are not irrigated, a rock lining is required. Swales shall be lined with geotextile below 10 inches of 3" to 4" crushed rock. Irrigation is required for vegetated swales.~~

~~g. Loading Docks Loading dock drainage must be collected in a blind sump, or maybe discharged to a the public sewer if approved by the City Engineer or Public Works director. The back 3 feet of the loading dock must be isolated from the storm water intrusion. If approved, discharge to a public sewer requires an oil/water separator followed by a shutoff valve. This information shall be shown on the building and mechanical plans.~~

Proximity to City Water Supply Well Drywells may not be placed within the 2-year time of travel zone additional treatment and written approval of the City Engineer or within a 500-foot radius from City or community water supply wells.

- ~~h. **Drywell Detail** The slotted cover shown in Figure 7-7 Note 6 is not permitted. Refer to Standard Drawing 3-8. For drywells outside of paved areas, a 5 foot by 5 foot concrete pad, 6 inches thick is required around the manhole frame and cover.~~
- ~~i. **Drill Holes** Drill hole construction for stormwater disposal is not permitted without written approval of the Public Works Director.~~
- ~~j. **Drywell Spacing** Minimum spacing between drywells shall be 20 feet.~~
- ~~k. **Drywell Infiltration Gallery**, if constructed outside of City right of way, shall be dedicated in a stormwater easement. The drainage gallery shall be concrete capped to its surface extents.~~
- ~~l. **Infiltration Rates** shall be permitted to offset drywell/swale storage design but limited to the lower limit of the published rate of the National Resource Conservation Services (NRCS) soil surveys unless supported with location specific predevelopment field testing to use up to, but not exceeding the upper limit. COSM Appendix 4A Safety Factor not required. Common Redmond soil classifications are:

 - ~~• 32A Deschutes Sandy Loam, 0 to 3 percent slope, 1.98 to 5.95 inches per hour~~
 - ~~• 34C Deschutes-Stukel Complex, 0 to 15% slope, 1.98 to 5.95 inches per hour~~
 - ~~• 151D Tetherow-Clovecamp Complex, 8 to 50% slope, 0.57 to 5.95 inches per hour~~
 - ~~• 65A Houstake, 23A Buckbert, 0.57 to 1.98 inches per hour~~~~
- ~~m. **Total Contributing Area** to include: all right of way surface runoff and 100% of the to be developed/developed lots potential contributing areas. Runoff from off-site upgradient areas shall be considered in the stormwater calculations and designers shall make provisions to retain this runoff or pass it through the site to the same location and at the same rate and volume as it did prior to development. The City Engineer may waive the requirement for 100 percent design when soil, topography, or other conditions do not allow runoff to reach the public system or make it impractical for the public stormwater system to accommodate all the site runoff. In these cases, the design engineer will clearly determine what percentage of runoff the public system can accommodate, how the remaining runoff will be retained and how ancillary facilities will be maintained.~~
- ~~n. **Drywell Design**
 - ~~i. **Drywell drain rock** design volume is limited to 160 cubic yards or a maximum storage volume of 13,475 gallons, including interior volume of 48" diameter by 8-foot deep drywell barrel. The City Engineer may approve alternate design volumes.~~
 - ~~ii. **Infiltration surface** includes the area of the drainage gallery floor only. A 60-cubic yard drywell has a typical floor area of 202 square feet based on standard 8 feet of infiltration barrels. A 120-cubic yard drywell has a typical floor area of 404 square feet. Dimensions of the drainage gallery are to be designed to best fit available space.~~
 - ~~iii. **Drain rock volume** is calculated using 50-year, 24-hour volume minus the infiltration volume utilizing a maximum void ratio of 35%.~~~~

3. Storm Sewer Design

- ~~a. Storm sewers shall generally conform to the same specifications as sanitary sewers (see Section II-C).~~
- ~~b. Flanking inlets at sags will not be required provided that the primary inlet is shown to be adequate to capture the design flow.~~
- ~~c. Double-sized catch basins are normally required for inlets (Standard Drawing 3-10). A~~

- single catch basin is acceptable for the collection of water where special situations apply.
- ~~d. Curb inlet catch basins shall be installed in arterial and major collector streets to provide better bicycle routes.~~
 - ~~e. Inlets shall be provided at intersections of collectors and arterials. Inlets should be provided at intersections of local streets. These inlets shall be so arranged that water is not directed through the intersection or in certain cases, around a curb return.~~
 - ~~f. Inlets should be provided to avoid ice formation on the roadway.~~
 - ~~g. Valley gutter intersections may be allowed with approval of the City Engineer in situations such as intersections of short cul-de-sacs with local streets.~~
 - ~~h. Storm pipe with cover to pavement finish grade greater than 30 inches shall be:

 - ~~• PVC meeting the requirements of ASTM D3034 (for pipes less than 18 inches in diameter) or F679 (for pipes 18-inch diameter and larger) or~~
 - ~~• Polypropylene with smooth interior, annual exterior corrugations and gasketed integral bell and spigot joints meeting the requirements of ASTM F2736 for diameters of 12 to 30 inches. or~~
 - ~~• Polypropylene with smooth interior and exterior, inner annual corrugations and gasketed integral bell and spigot joints meeting the requirements of ASTM F2764 for diameters of 30 to 60 inches.~~~~
 - ~~i. Storm pipe with cover to pavement finish grade less than 30 inches shall be PVC meeting the requirements of AWWA C900 or C905.~~
 - ~~j. Inlets across street from each other require a connecting pipe of $\geq 8"$ diameter.~~

4. Storm Water Disposal Testing

Stormwater facility testing requirements shall be shown on the plans. Testing requirements vary depending on the type of facility and whether infiltration is accounted for in the design. multifamily residential.

- ~~a. Information to show on plans: For each drainage facility, provide total contributing runoff area in square feet; runoff coefficient or curve number used for calculations; peak runoff volume to the facility in gallons; and required drain rock volume in cubic yards. For facilities with designs that account for infiltration, also provide the total required storage volume in gallons; design storage volume in gallons; design infiltration rate in gallons per minute..~~
- ~~b. Drywell Testing Procedures:

 - ~~i. Storage Volume: Confirm the storage volume by tracking the quantity of drain rock used and by measuring the dimensions and depth of the drywell. Provide load tickets to show that the total drain rock volume exceeds the minimum design requirements.~~
 - ~~ii. Water Testing Volume: For drywells, fill the drywell with water from a metered source. Fill drywell with 50-year Peak Runoff Volume (gallons) within 1 hour. The drywell is required to take the 50-year Peak Runoff volume (gallons) within a 1-hour period without overflowing into the sedimentation manhole or catch basins.~~~~

- iii. ~~72-hour drainage: Check in 72 hours after the initial volume test to verify that the drywell has emptied completely.~~

iv. ~~beginning when the water level is at least 1 foot below the top of the perforated barrel section.~~ **Alternate Test:** If the initial test fails, or there is concern that the drywell will not infiltrate in the required 72 hours, the drywell may be initially designed or enlarged to contain the volume of two consecutive 50-year storms in a two-hour period (double design). ~~72-hour drainage compliance will be waived if drywell contains the double design volume without overflowing into the sedimentation manhole or catch basins. If infiltration is included in determination of the design volume, recalculation is required for storage volume based on the measured infiltration rate to ensure the double volume is provided.~~

c. Ponds, swales and infiltration galleries design and testing:

- i. **Storage Volume:** For ponds, swales, and other surface facilities, confirm the storage volume with as-built measurements and calculations provided by the project surveyor. For infiltration galleries, track the quantity of drain rock used with load tickets. Calculate the storage volume in the drain rock using a maximum void ratio of 35%.
- ii. **Water Testing Volume:** ~~2-year~~ Swales and ponds are to be flood tested with the 6-month storm design volume, loaded within 1 hour and fully infiltrated in 24 hours (below visible surface). Infiltration galleries are to be loaded with either Total Storage Volume (gallons) or Total Storage Volume, less Infiltrated Volume (gallons) within 1 hour. The gallery is required to take the entire volume within the 1-hour period without overflowing.

Infiltration Rates: Infiltration shall be permitted to offset storage design but limited to the lower limit of the published rate of the National Resource Conservation Services (NRCS) soil surveys, unless supported with location-specific field testing to use up to, but not exceeding the upper limit. See Section 2.B subsection I for typical infiltration limitations.

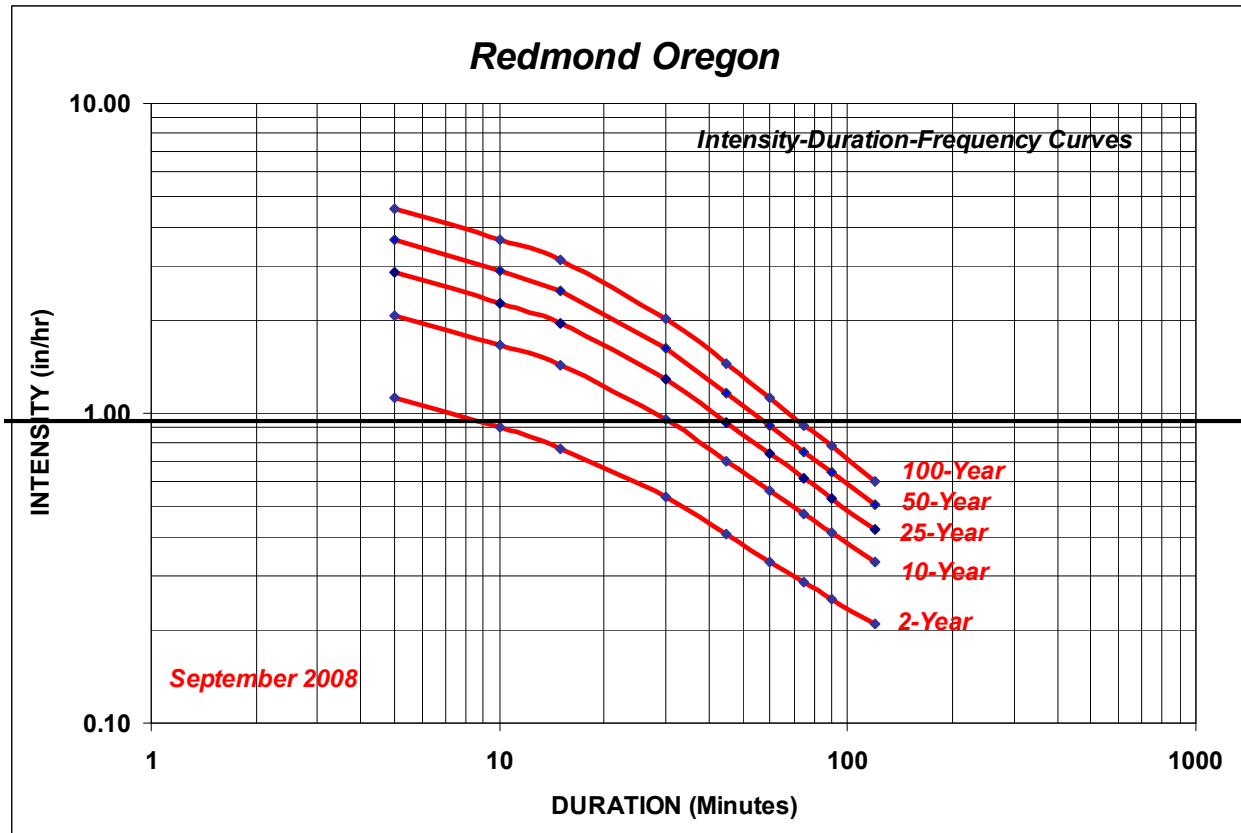
- i. **Infiltration Surface:** Includes the floor area or horizontal infiltration area.

v. ~~24-hour~~ **Drainage:** For infiltration swales and ponds in general and for infiltration galleries constructed with filter soil placed above the drain rock, test after the filter soil is placed and confirm that all water is below this surface after 24 hours. A 6" diameter observation port is to be installed in rock galleries to visually observe water level. If the infiltration gallery is designed so that runoff enters directly into the drain rock with filter soil below, observe that all water is below surface after 24 hours. its

vi. **Alternate Test:** If the initial test fails, or there is concern that the pond, swale, or gallery will not infiltrate in the required 24 hours, the facility may be initially designed or enlarged to contain the volume of two consecutive 50-year storms in a two-hour period (double design). 24-hour drainage compliance will be waived if the facility contains the double design volume without overflowing. If infiltration is included in determination of the design

volume, recalculation is required for storage volume based on the measured infiltration rate to ensure the double volume is provided.

RECURRENCE INTERVAL (Years)	PRECIPITATION INTENSITY (in/hr)								
	DURATION (minutes)								
	5	10	15	30	45	60	75	90	120
0.5	0.60	0.48	0.41	0.30	0.23	0.19	0.17	0.15	0.13
2	1.12	0.90	0.77	0.54	0.41	0.33	0.28	0.25	0.21
5	1.60	1.28	1.10	0.75	0.56	0.45	0.38	0.34	0.27
10	2.07	1.65	1.42	0.96	0.70	0.56	0.47	0.41	0.33
25	2.84	2.26	1.95	1.29	0.94	0.74	0.61	0.53	0.42
50	3.61	2.87	2.48	1.62	1.17	0.91	0.75	0.65	0.51
100	4.57	3.62	3.14	2.03	1.44	1.12	0.92	0.78	0.61
500	7.77	6.12	5.35	3.35	2.34	1.78	1.43	1.20	0.90



Redmond Rainfall Intensity-Duration-Frequency Curves prepared by MGS Engineering Consultants, Inc. September 2008

NOTE: The 6-month rainfall intensity is 2/3 of the 2-year rainfall intensity

C. SEWER

1. General

Sewer/water line separation and construction is established by Oregon State Health Department Standards. Materials and procedures for sewer facilities shall conform to the City of Redmond Standards and Specifications, D.E.Q. Specifications, and ODOT/APWA Standard Specifications.

Sewer facilities shall be installed in rights of way except in those situations where, in the determination of the City Engineer, drainage basins cannot be served from the right of way. In those cases, an easement will be required.

Engineering firms submitting sewer plans shall include a sewer profile. The profile will include the existing ground elevation, proposed street grade, pipe diameter, material and slope, manhole, station and invert elevations and trench backfill information.

2. Sewer Main

a. Design Parameters

- 1) **Location** Sewer mains should be located in accordance with the Department of Environmental Quality and OAR Chapter 340, Division 52. Sewer mains shall be located on roadway centerline on tangent sections and as close as practicable to this configuration on curves. Gravity sewer mains from manhole to manhole shall run in a straight alignment.
- 2) **Sewer Main Stub** outs for the future continuation of the sewer shall terminate at a manhole unless approved by the City Engineer due to unusual circumstances. In phased subdivisions the sewer should be extended to the next adjacent manhole as shown on the master plan to minimize the number of manholes required.
- 3) **Depth** Minimum cover for all standard sewer lines except sewer services shall be 36".
- 4) **Minimum Diameter:** For gravity sewer, the minimum size shall be 8". Size of pressure lines will be determined by the design engineer a Professional Engineer.
- 5) **Minimum Velocity:** 2 feet per second (fps) for gravity sewers. 3 fps for pressure and inverted siphons.
- 6) **Maximum Velocity:** Velocity shall not exceed 8 fps for pressure sewers.
- 7) **Minimum Grade (Gravity):** From DEQ design criteria:

Pipe I.D.	Slope (ft/100 ft)
6"	0.60
8"	0.40
10"	0.25
12"	0.19
15"	0.14
18"	0.11
21"	0.09
24"	0.08

8) Flow Calculation

- a. **Gravity** Flow calculations will be based on Manning's equation using an n value of 0.013

- b. **Pressure** Flow calculations will be based on the Hazen and Williams equation using the following values for C:

Concrete	120
Cast iron/steel	125
PVC	135

- 9) **Flow Estimation:** Average sanitary sewer flows shall be calculated using the most current zoning. Flows generated by unusual land uses such as intuitional of heavy industrial may be based on actual (preferred) or estimated water consumption records. Estimates must be based on industrial standards or water consumption of similar purposes.

Single Family Residential (including townhomes and ADUs): 130 gallons per dwelling unit (DU) per day Flows shall be determined by a qualified professional and require approval by the City Engineer, of his designee.

Two Family or Duplex: 260 gallons per DU per day

Multi-Family (3+ units): 105 gallons per DU per Day

Commercial and Industrial: 1000 gallons per acre per day

Schools: Elementary: 10 gallons per student per day
Middle: 15 gallons per student per day
High School: 20 gallons per student per day

Infiltration: Negligible

- 10) **Peak Factor:** 3.0 for flows less than 1 MGD
2.5 for flows from 1 MGD to 10 MGD
2.0 for flows greater than 10 MGD

11) Manholes

Spacing: Not more than 400' apart

Design Fall: Not less than 0.1' without prior approval by City Engineer

External Drop Manhole: Required when fall greater than or equal to 18"

Dead end lines: End with a manhole, cleanouts are not acceptable.

Diameter: Standard diameter for pipes up to and including 15-inch diameter is 48 inches. For 18-inch and larger pipes and for unusual pipe angles, 60-inch diameter or larger manholes are required to maintain structural integrity. Submit manhole design for pipes sizes 18 inches and larger.

12) 11 Wet Wells

Operating Capacity: The minimum operating capacity of the wet well, from first pump on to pumps off, shall be not less than 5 minutes times one pump flow rate.

Emergency Capacity: The emergency capacity, from alarm on to an overflow condition, shall be determined on a case by case basis, but in no case shall be less than 30 minutes times the peak flow rate. This 30 minute response time shall generally apply to areas not adjacent to water courses and within 10 road miles of the treatment facility.

Pump Flow Rate: A single pump flow rate should sufficiently exceed the peak inflow rate to be effective.

Pump Cycle Times: Pump cycle time, from "pump off" to "pump on" shall not be less than 10 minutes at peak flow and shall take into consideration any line back-draining requirements.

Design Line Size and Volume Requirements

Given:

Q_i = Peak inflow rate
 Q_p = Design pumping rate
 V_w = Working capacity
 V_b = Back drain volume
 V_e = Emergency volume for response time

Wetwell shall be designed for the sum of V_w , V_b and V_e

Conditions:

$Q_p \gg Q_i$
For 3" line: $66 \text{ gpm} < Q_p < 150 \text{ gpm}$
For 4" line: $118 \text{ gpm} < Q_p < 270 \text{ gpm}$
For 6" line: $265 \text{ gpm} < Q_p < 600 \text{ gpm}$
 $V_e > (30)(Q_i)$ (minimum)
 $V_w > (5)(Q_p)$
 $V_w > (10)(Q_i) + V_b$

See Section 310 Sewage Lift Stations in the Standards and Specifications for additional design information and equipment specifications.

~~b-12~~ Waterline Crossings

When the sewer line is located above or less than 18" below a crossing waterline, the sewer line shall be constructed of pipe conforming to water pipe standards. AWWA C-900 pipe is acceptable. The minimum length of this strengthened sewer is 20'. It is intended that a section of the water class pipe be centered over the water main and connected to the sewer line with approved PVC couplings.

~~c-13~~ Detection Tape and Wire

Detection tape shall be installed on all non-metallic gravity sewer main. Detection tape shall be as manufactured by Allen Systems or an approved equal. One course of detection tape is required at the top of the pipe zone. Detection wire shall be installed on all pressure sewer mains; ~~all gravity sewer mains laid on a curve and~~ all service connections. The wire shall be a green clad 18 gauge direct bury copper, solid wire. The wire shall be attached to the top of the pipe.

~~d-14~~ Materials

Materials shall conform to the Standard Specifications of the City of Redmond.

~~e-15~~ Construction

Construction shall conform to the City of Redmond Standard Specifications and applicable

Standard Drawings. Prior to installing a sewer facility in an unimproved street, the street must be brought to sub-grade to ensure that adequate bury, depth of cover, and utility separation is acquired. In the event the street is to be improved at a later date, the street shall be properly staked to the approved design prior to the commencement of sewer line construction.

3. Sewer Services

One sewer service is permitted per lot, unless otherwise permitted by the City Engineer due to gravity service constraints or when required to facilitate a Middle Housing Land Division. Existing properties with multiple services may be required to remove additional services upon redevelopment. Services shall be installed perpendicular to the main when possible.

All single-family residential sewer service laterals shall be a minimum of four (4) inches in diameter and have a clean out at the property line.

All new duplex and multi-family service laterals shall be a minimum of six inches in diameter, except when higher flows require a larger line size. However, existing 4-inch service laterals with clean out may be used to serve duplex or multi-family lots with approval of City Engineer, unless flow rates are greater than the capacity of the existing line.

Commercial and industrial service laterals shall be a minimum of six inches in diameter. However, existing four (4) inch service laterals with clean out may be used, with approval of the City Engineer. Separate and independent building sewers shall be provided for buildings on separate lots or parcels. Sewer services shall be extended at minimum grade or steeper as required to provide gravity service to each building. Sewer services shall not have less than 24" of cover at the property line, 30" minimum cover in street, and shall be located as required to provide gravity service to each lot or parcel. Sewer services on terminal main lines shall be installed with a eye wye fitting.

Pressure sewer services shall be designed by a ~~competent professional~~ Professional Engineer. The pump curve with the operating point indicated shall be submitted to the City of Redmond Engineering Division so it may be ascertained that the proposed installation will not conflict with the operation of the City system. Pressure mains shall be a minimum of 3 inches in diameter and all check valves, gate valves will have the capacity to pass a 3-inch ball. It is considered prudent to specify the service line one size larger than the pump outlet.

4. Sanitary Sewer Manholes

Manholes shall be located as shown on the design plans or as directed by the City Engineer, or representative, in a manner to provide complete accessibility and to minimize the possibility of damage from vehicles or injury to pedestrians. Manholes shall be located at the centerline street where feasible. The following criteria apply:

- Spacing: Not more than 400' apart, unless on a private road then they shall be spaced 200' apart
- Design Fall: Not less than 0.1' without prior approval by City Engineer
- External Drop Manhole: Required when fall greater than or equal to 18". A concentric cone will be required with an external drop manhole.
- Dead-end lines: Dead-end lines typically end with a manhole. Temporary cleanouts at the end of a dead-end line may be approved by the City Engineer.

- **Diameter:** Standard diameter for pipes up to and including 15-inch diameter is 48 inches. For 18-inch and larger pipes and for unusual pipe angles, 60-inch diameter or larger manholes are required to maintain structural integrity. Submit manhole design for pipes sizes 18 inches and larger.

Location of the center of manholes in a vehicle wheel track is not acceptable. Location of the center of manholes within 5 feet of the curb line is not acceptable. Location of manholes outside of paved areas is not generally acceptable. If manholes cannot be located in the pavement, then a six-inch-thick concrete pad 5-foot square centered on the manhole cover must be provided. Pipe stub-outs in manholes for 4"-inch service connections will not be allowed.— Service line crown elevation shall match main line crown. Internal drop manholes will not be acceptable for drops equal to or greater than 18 inches. A channel is required from service line connections to the main channel in the manhole base.

Angle between inlet and outlet lines of sewer manholes less than 90° shall be avoided, but if necessary, the invert of the inlet line shall be at or above the crown of the outlet line, but not to exceed 18 inches. Channel construction must allow access for City's closed-circuit television camera.

5. Cleanouts on Mains

Permanent cCleanouts will not be approved as a substitute for manholes on public sewer mains.

Temporary cleanouts are permitted at the end of an extendable sewer main to mark the location of temporary termination of the line. On Upon extension of the sewer main, the temporary cleanout shall be removed.

6. Access to Sewer Facilities

Where manholes lie outside of the paved right of way, an all-weather access road, with dedicated right of way or easement, shall be constructed to provide ~~all-weather~~ access to the manhole. This access road shall meet all weather service road standards (See Standard Drawing 2-6) or be paved. Support facilities such as, but not limited, to drainage structures, vehicular turnaround with 38 foot turning radius, or a pad-lockable gate may be required on any manhole location outside of the paved right of way. An exception to the requirement for an access road will be made when no manholes are located in the easement area.

7. Sampling Manholes

A sanitary sewer sampling manhole located at a point accessible at all hours to City personnel is required for each commercial, industrial, or institutional user's service lateral. The sampling manhole shall be constructed upgradient from any discharge into the public sewer system. The sampling manhole shall conform to Standard Drawing 3-7. The sampling manhole may be constructed of pre-cast concrete. Alternatively, a prefabricated sampling manhole is acceptable subject to the City of Redmond Wastewater Division's approval. An acceptable prefabricated product is a Schier SV24-O with 6-inch inlet/outlet, or equal. The interior height of a sampling manhole must be a minimum of 48-inches. Follow the ~~manufactures~~ manufacturers recommendations for installation.

The sampling manhole shall be constructed, owned and maintained by the property owner. The manhole may be located at the sewer connection within public right of way subject to approval of the City of Redmond Wastewater Division. Privately owned sampling manholes within public right of way are subject to revocable right of way approval [City Code 4.337(1)]. At the option of the property owner, the sampling manhole may be located on private property within an easement that provides unobstructed access to City personnel. If manholes cannot be located in the pavement, then a six-inch-thick concrete pad 5-foot square centered on the manhole cover must be provided. Provide a 2-foot wide, 2% maximum slope earth walking path around perimeter of the concrete pad.

D. WATER

Materials and procedures for water facilities shall conform to the Standard Specifications of the City of Redmond, Oregon Health Division Administrative Rules, and AWWA standards. Water facilities shall be installed in public rights of way except in those situations where, in the determination of the City Engineer, service areas and/or pressure levels will be better served by an alternate design. In those cases, an easement will be required.

1. Main Line

a. Minimum Size

The minimum size for mainline shall be 8 inches except in industrially zoned areas where the minimum main size is 12 inches. Lines must be sized to provide the following required fire flows:

Residential	1,500 gpm
Commercial	2,500 gpm
Industrial	3,500 gpm

All main lines shall end with a fire hydrant or blowoff for maintenance purposes. Hydrant lines may be 6" if total length is less than 400 feet. Hydrant runs longer than 400 feet will require 8" line, or larger if determined by the fire flow analysis. A fire flow analysis will be required to ~~determine the size for lines longer than 400 feet.~~

b. Required Information on Drawings

All drawings that include water and sewer mains submitted for review by the City Engineer shall have the street station and offset, size, number, and type of fittings specified at the location they occur. Specifying only the deflection angle of the line, e.g. 30°, is not acceptable.

c. Location

Water mains are normally located 12 feet from roadway centerline or 6 feet from the curb line or edge of pavement with a minimum ~~40~~5-foot horizontal separation from parallel underground dry utilities unless written approval of the City Engineer is obtained. Separation from sewer lines and storm lines shall be in accordance with OAR 333-61-0050 (see City Standard Drawing 1-2). Water mains must be located in public right of way, unless otherwise approved by the City Engineer. Public water main approved to be located on private property shall be located within a 20-foot wide public water or utility easement.

~~d. Service Lines~~

d.

~~A separate water service, including meter, shall be required for each lot of record. One water service is permitted per lot, unless otherwise permitted by the City Engineer or when required to facilitate a Middle Housing Land Division. Existing properties with multiple services may be required to remove additional services upon redevelopment. Services shall be installed perpendicular to the main when possible.~~

Only one fire service is allowed per lot. Fire services shall be separate from domestic services, unless otherwise approved by the City Engineer and when the domestic line is a minimum of 8-inches in diameter. Refer to the most current version of the City of Redmond's "Water Service and Meter Installation Manual" for approved fittings, boxes and meters as well as installation

~~requirements.~~ Maintain a minimum of 2 feet of separation between main line water service taps.

Developments proposing Middle Housing that cannot feasibly serve each lot or unit with an individual publicly-owned water meter will be required to install one master meter located in the public right of way. Individual submeters will be required for each lot or unit, to be privately owned and maintained. Where necessary, private easements will be required to be shown on the plans and recorded. Private water service easements shall be a minimum of 5 feet in width. Maintenance agreements will be required to be recorded on affected parcels.

Service lines are to terminate in an approved meter box. Service lines shall be constructed, complete and with all incidentals to the terminus of the meter box as shown in drawing 4-5, to be located outside hardscaped area within the right of way, unless otherwise approved. ~~directly behind the sidewalk or, if there is no sidewalk, directly behind the curb.~~ An approved meter shall be installed in the meter box. Any services larger than 1 -inch diameter" shall be provided with a saddle or tee at the main.

A back-flow prevention device, as approved by the Oregon State Health Division and the City of Redmond, shall be installed on all new services larger than 1 -inch" diameter and all fire service lines. Backflow devices shall be installed at the property line unless otherwise approved by the City Engineer. An approved double check valve assembly shall be the minimum backflow protection for all non-residential water service lines.

e. Valves

Valves in water mains shall be located in the street right-of-way, preferably in intersections unless otherwise approved. Maximum distance between valves is 1,000 feet on transmission mains and 500 feet on distribution mains. Valves will be provided so as to minimize the number needed to be closed to isolate sections of line and minimize the number of customers impacted by shutdowns. A cross will normally require 3 or 4 valves, and a tee 2 or 3 valves. Valves are required on the end of lines for future extension. Valves shall be installed on flanged tees or crosses, unless otherwise approved by City Engineer. No valve shall be located closer than 3 feet from existing or proposed gutter line. All valves shall conform to AWWA Standards. All intersections shall have approved valving. Butterfly valves shall be used on all waterlines 10"" or larger; or where 18"" of cover to the top of a gate valve body cannot be obtained. Where valves are located outside" of paved areas, they shall be provided with a concrete collar not less than 30"" square. Valve clusters may be set in a single collar provided there is not less than 12"" from the edge of the valve to the edge of the collar.

f. f. Air & Vacuum

Standard Air & Vacuum Release Assembly's (AVR) will be required on City water mains at high spots or as otherwise required by the City Engineer. A high spot is any location at which the main rises more than 1 time the pipe nominal diameter, and then descends in elevation. The AVR shall be sized per AWWA M51 manual. The ARV shall be located behind curb or sidewalk and within the public right of way or public utility easement. If possible, the water main profile shall be adjusted to eliminate the use of ARV's.

g. Detection Tape and Wire

Detection wire and tape shall be installed on all non-metallic main line, non-metallic service line, angled or meandering service lines. Note that ductile iron pipe is the only currently approved

material for water mainlines. Detection tape shall be as manufactured by Allen Systems or an approved equal. One course of detection tape shall be installed 12" above the pipe. Detection wire shall be a Blue 18-gauge UF bury solid copper wire located within 6" of the top of the pipe. The wire shall have electrical continuity and a lead shall be brought to within 1 foot above of the surface within the valve stacks. Wherever there is a splice, it shall be repaired according to manufacturer's recommendation.

h. All Weather Access

Where water facilities requiring maintenance, access lie outside paved right of way, a paved access pad sufficient for service equipment to operate without blocking the traveled way shall be provided. Where water facilities (such as fire hydrants and valves) lie away from paved right of way, an all-weather access road shall be constructed to provide all weather access to the facilities. This access road shall meet all weather service road standards (See Standard Drawing 2-5) or be paved. Support facilities such as, but not limited to, drainage structures, vehicular turnaround with a 38-foot radius, or a pad-lockable gate may be required on any water facility location.

i. Thrust Restraint

Thrust restraint shall be provided for water fittings. Internal pipe joint restraints, such as Field-Lok gaskets and external joint restrains, such as Mega-lugs, are generally preferred to concrete thrust blocks. Plans shall show the required restrained pipe length in accordance with the Joint Restraint Table in Division IV Water Section 402.3.09E. When concrete thrust blocks are necessary, plans shall include Standard Drawings 4-3 and 4-4 for thrust blocks.

2. 2-Meters

All water service lines must have a meter assembly placed outside of hard surface (concrete and asphalt). Water meters ~~2~~ inches and smaller shall be sized per Chapter 6 of the current edition of the ~~OREGON PLUMBING SPECIALITY CODE~~ Oregon Specialty Plumbing Code (OPSC). Meter sizing should be based on domestic and irrigation water demand.

Water meters ~~3 inches~~ greater than 2 inches and larger will be sized based on a case by case basis on Table 1: Water Service and Meter Sizing below and are subject to the City Engineer of Redmond Water Division approval.

Table 1: Water Service and Meter Sizing

<u>Water Service Size (Inches)</u>	<u>Meter Size (inches)</u>	<u>Max Allowable GPM (Gallons per Minute)</u>
<u>3/4</u>	<u>5/8</u>	<u>OPSC Table 610.4, (UPC 6-5)</u>
<u>1</u>	<u>5/8 or 1</u>	
<u>2</u>	<u>1.5 or 2</u>	
<u>4</u>	<u>3</u>	<u>400</u>
<u>4</u>	<u>4</u>	<u>700</u>

<u>6</u>	<u>6</u>	<u>1600</u>
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- Water service and meter size subject to Water Division approval
- Commercial water services and meters to be 1" minimum
- Meters 2-inch diameter or less to be sized per OPSC
- Meters 3-inch+ diameter to be sized based on the maximum allowable GPM stated above
- GPM to include domestic and irrigation water supply

~~Approved water meters and meter boxes are described in the most current **Water Service and Meter Installation Manual**.~~

3. 3-Fire Hydrants

a. General

Each hydrant shall be connected to the main with a 6-inch branch controlled by an independent 6-inch gate valve bolted to a flanged tee. On hydrant lines over one hundred (100) feet long, a second valve shall be required within 10 feet of the hydrant. No other lines are allowed to be connected to this 6-inch fire hydrant line unless the line is upsized to 8 inches and flow calculations have been provided that show the line can provide the required fire flow and peak domestic flow simultaneously.

b. Location

Hydrants shall be placed at maximum 400' intervals. Any other spacing requires approval of the Redmond Fire ~~Marshall~~ and Rescue (RFR). Hydrants shall be located as shown on the plans or as directed by the City Engineer, in a manner to provide complete accessibility and to minimize the possibility of damage from vehicles or injury to pedestrians. The hydrant barrel shall be set as shown in the standard drawings. Fire Hydrant thrust block shall be placed on 10-foot minimum width of undisturbed earth. Hydrants are not permitted within 25 feet of a drywell unless specifically permitted by the City Engineer. Hydrants may be required to be placed on the opposite side of the street of the property, if required by RFR. Hydrants shall be placed on alternating sides of the street when possible.

On hydrant runs exceeding that shown on Standard Drawing 4-13, design and installation shall be such that the hydrant can be excavated and repaired without danger of the hydrant valve blowing off the line or causing the main line to be taken out of service. This requirement may result in the installation of a second hydrant valve at the mainline tee, or joint and fitting restraints. Hydrant valves shall be located reasonably close to the hydrant as indicated in the drawings so as to be obvious in the event of an emergency.

~~One Kennedy Guardian K81AN with Flow sensors will be required and installed on all new subdivisions, or as directed by the City Engineer. In general, install one for every 50 single-family lots.~~ Preferred models are Kennedy, M & H, or Clow. Other hydrant makes/models shall be approved by the City Engineer.

One hydrant with pressure sensor will be required and installed on all new subdivisions, or as directed by the City Engineer. In general, install one for every 50 single-family lots.

~~One Kennedy Guardian K81AN with Flow sensors will be required and installed on all new subdivisions, or as directed by the City Engineer. In general, install one for every 50 single-family lots.~~

c. Staking

All hydrants shall have two reference points (swing ties) indicating the face of hydrant and tops of curb and face of curb. These reference points are the responsibility of the Design Engineer and he/she shall be responsible for position of such prior to construction.

d. Concrete Pad

A concrete pad shall be installed around the barrel as specified in Section 404.3.00 of the Standard Specifications of the City of Redmond.

e. Bollards

All hydrants located in areas vulnerable to traffic shall be protected by bollards as shown in Standard Drawing 4-14. The design and location shall be approved prior to installation.

4. WATER QUALITY SAMPLING STATIONS

Water sampling stations will be required and installed on all new subdivisions, or as directed by the City Engineer. In general, install one for every 50 single-family lots, as shown in Standard Drawing 4-26.

E. UTILITIES

1. Prohibition on Cutting Recently Constructed Streets

No open cut for utilities will be allowed within ~~two~~2 years of completion of a street construction project, unless approved by City Engineer. If permitted within two years of pavement installation, additional paving and/or improved backfill will be required. This may include, removal to centerline or full width of street, full street overlays, grinding and inlay or controlled density backfill. Refer to Part II Section A.22 Pavement Restoration.

2. Utility Conduit

Where any utility is not completely installed by the time of the sub-grade inspection, provisions such as utility conduit placed under all areas to be improved, shall be implemented to protect the improvement. This installation shall be acceptable to the affected utility and the City of Redmond. Conduit banks shall be spaced no greater than 300' apart and not less than one per block.

3. Shared Trenches

Underground utilities shall not be located closer than 10 feet horizontally from any water or sewer main. With special permission from the City Engineer this separation may be reduced but should never be less than 5 feet. Utility crossings of water or sewer mains shall be as close to perpendicular as practicable.

4. Utilities in Public Rights of Way

f. General

Utility companies shall construct facilities in City of Redmond public rights of way in strict accordance with City of Redmond Standards and Specifications. Utility companies and their agents shall cooperate with the City of Redmond Engineering Division to provide for City inspection of their facilities during construction to ensure that City of Redmond facilities are not damaged during construction. If a city facility is damaged during construction, it shall be repaired or reconstructed to current City standards. Public Utility easements shall be required adjacent to all city street rights of way for power, communication and gas lines.

~~g-6.~~ 6. Plan Submittal

Utility companies must submit plans and profiles of any proposed work in City of Redmond Public rights of way for review by the City of Redmond Engineering Division. These plans must be approved by the City of Redmond before start of construction. Emergency work requiring immediate action shall be exempted from this requirement. All existing underground utilities shall be shown on these plans and shall have been field located by the appropriate utility company through the "one call" network. Failure to field locate existing utilities on the plans will be cause for the City to deny permission to work in the public right of way.

5. Trench Patching in Paved Right of Way Areas

Trench backfill and patching in pavement areas shall conform to Section 212 [and Part II Section A.22 Pavement Restoration](#) of the Standards and Specifications.

6. Trench Backfill

Trench backfill shall conform to Section 101 of the Standards and Specifications.

F. IRRIGATION

1) ~~4.~~ General

This section applies to piping, valves, sprinklers, specialties, controls, and wiring for irrigation systems to be owned, maintained and/or operated by the City of Redmond.

Developments within the Downtown Overlay Zone are required to install an irrigation service that is separate from the fire or domestic service.

Irrigation laterals shall be installed in culvert pipe to the outside limits of public and utilities improvements in right of ways. The construction shall conform to the requirements of the Irrigation Company and the City of Redmond. Where requirements may conflict or differ, the requirement providing the highest level of control, security, and/or integrity shall govern the construction.

The irrigation layout should provide full and complete coverage without overthrow onto roadways, sidewalks or buildings. The plan shall identify the location, type, and coverage of sprinklers and/or drip lines, valves, zones, points of connection and other equipment required to provide water. Trenching through existing trees, roots, or other obstructions shall be avoided.

Irrigation designs shall not mix rotary, fixed spray, bubblers, microsprays, drip, or subsurface irrigation methods on the same zone. Provide separate irrigation zones for trees shrubs & groundcovers, and turf.

Systems shall meet minimum pressure at each head in each zone.

Shop drawings are to be submitted for approval that show all equipment to be supplied as part of the pre-assembled irrigation controller assembly.

a) Irrigation Mains

Irrigation mains are defined as piping downstream from irrigation point of connection to valves and is under constant pressure. Mains must be located 24 inches from edge of paving or 24 inches from edge of adjacent shrub or groundcover bed. Main trenching should be straight. Mains shall have a minimum horizontal and vertical clearance of 12 inches from other lines. A minimum of 24-inch cover is required over mainline piping.

b) Irrigation Laterals

Irrigation laterals are defined as piping downstream from control valves to sprinklers, outlets, and drain valves. Lateral piping is not under constant pressure. A minimum of 18-inch cover is required for lateral piping and drain piping.

c) Warning Tape

Warning tape shall be installed directly above pressure piping, 12 inches below finished grade. Warning tape shall be a minimum of 3-inches wide, 5-mils thick, inert plastic tape with continuous layer of aluminum foil encased in the plastic.

2) Zone Map and Valve and Control Identification

At time of final inspection, a laminated irrigation plan sized to fit inside the controller enclosure shall be provided by the contractor. The plan shall indicate the area of coverage for each control valve, show which valves are activated by each station on the controller,

and show the location and valve number of each valve and the corresponding controller station number.

Valve identification tags shall be provided on each valve. The valve shall be polyurethane with an integral attachment neck and reinforced attachment hole. The tag must be hot stamped alphanumeric lettering 1-1/8 inches in height. Provide a Christy (T. Christy Enterprises), or equal.

Control wire numbering labels shall be provided. Labels shall be self-adhesive alphanumeric labels, 3M or equal.

3) Irrigation Schedule

Submit one electronic copy of the irrigation schedule. Indicate the day(s) of the week each zone is watered, and the duration each zone is watered in minutes.

4) Testing Certificates

Upon construction and testing, provide certification of backflow devices and hydrostatic pressure testing conducted.

5) Operations and Maintenance Transfer

Upon acceptance of the system by the City, the Contractor shall provide the necessary keys and other tools necessary to operate, drain, and activate the system. Contractor shall train the City maintenance personnel and provide written instructions to ensure the system operation, maintenance, and winterizing can continue after departure of the Contractor.

2. Materials

~~Pipe used for irrigation in City right of way shall meet the requirements of AWWA C900 or C905.~~

G. SMALL WIRELESS FACILITIES

Small Wireless Facility (SWF) in the City of Redmond public right of way and PUE include small cell facilities, microcells, and small cell networks. Design in accordance with the current edition of the ~~City of Redmond Small Wireless Facility Design Standards~~ City of Redmond Development Code.

III. DRAWINGS

A.B. SUBMITTAL

For information concerning the process of submitting plans, see Section 04 of the Development Provisions.

B.C. PLAN SCALE & SIZE

The drawing scale shall be such as to clearly show the proposed improvements and any conflicts with existing or proposed improvements. Where clarity is not compromised, it is preferred that street, sewer and water be combined on one drawing to better disclose the potential for utility conflicts. Plan views shall incorporate a grid to assist in the determination of distance and elevation of improvements. The preferred scale for combined drawings showing multiple facilities is 1" = 20'. Depending on the amount of information shown on the drawings, the scale may be increased to 1" = 40'. Smaller scales will not be accepted. All construction drawings submitted shall be 22" by 34" or 24" by 36" overall size.

C.D. INFORMATION REQUIRED ON PUBLIC SITE DEVELOPMENT PLANS

1. Cover Sheet

- a. Vicinity map.
- b. North arrow, preferably to top or right of plan view.
- c. Project title or name.
- d. Project address
- e. Any associated City or County Land Use application number(s).

- f. Sheet Index.
- g. Infrastructure Asset Reporting Quantities for Public Improvements.
 - 1) Size and total lineal feet of sewer main.
 - 2) Size and total lineal feet of water main.
 - 3) Size and total lineal feet of fire service lines.
 - 4) Size and total number of water services/sewer services.
 - 5) Size and total number of water meters.
 - 6) Size and total lineal feet of storm line.
 - 7) Size and total number of manholes.
 - 8) Total Number of dDrywells, catch basins and sedimentation manholes.
 - 9) Total number of fire hydrants.
 - 10) Lineal feet of all public.
 - 11) Lineal feet of a private alleys.
- h. Approval signature block for subdivisions including: ~~Public Works Director~~, City Engineer, Redmond Fire Department, Central Oregon Irrigation District and all Utility Providers impacted by project.
- i. Owner/Developer name, address, and phone number.
- j. Consulting Engineer/Surveyor name, address, and phone number.
- k. Indicate City benchmark used to establish control.
- l. Construction Notes.
 - 1) The Contractor must control dust at all times. This includes weekends and those days when there is no construction activity. Dust nuisance and complaints may cause the City to order watering at Owner/Developers expense or cause the site to be shut down until compliance is met. No debris of any kind, including dirt, dust, sand, or other wind-borne material, shall progress beyond the perimeter of any property that is being developed for construction or where construction is in progress. It is the responsibility of the owner, the person in charge of a property, and contractor working on a property to ensure that no debris progress beyond the perimeter of any property that is being developed for construction or where construction is in progress.
 - 2) Blasting activities shall comply with Standards & Specifications, Development Provisions, Division 1 – Trenches Section-~~102-18.8.00~~, including pre-blast notification and structure surveys and Redmond Fire and Rescue requirements. Blasting is not permitted within 100 feet of Central Oregon Irrigation District facilities unless approved in writing by COID. Provide the City of Redmond an approved copy of the blasting permit and notify Engineering Inspectors a minimum of 24 hours prior to blasting.
 - 3) ~~The Contractor must contact the City Engineer 24 hours prior to any blasting.~~
 - 4) ~~Contractor must obtain water and sewer service connection permits from the City and pay associated tapping fees for all new water and sewer service taps on existing public main lines.~~
 - 5) ~~3) Lot and Tract grading shall conform to current COR Development Code 8.2720 and shall not create steep banks, extreme cut/fills or areas unsightly to adjacent properties or lots.~~ Standards and Specifications.
 - 6) ~~4) Construction staking shall include station and offsets that correspond to the plan set.~~
 - 7) ~~5) Any construction staking, or work being done prior to approved construction plans is at the owners and contractors' risk.~~

- m. Per OAR 952-001-0020 Plans must contain the statement: ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0001 through 952-001-0090. You may obtain copies of the rules by calling the center. NOTE: The telephone number for the Oregon Utility Notification Center is (503) 232-1987.

2. Provide the following notes on all public improvement plan sets.

- a. City Engineers signature does not grant approval for construction to begin.
- b. Inspection of public and site grading/drainage improvements will be performed by the City of Redmond Engineering Department with the exception of plumbing code/permit improvements.
- c. Excavation shall conform to the provisions of OAR 952-001-0090.
- d. All materials and workmanship shall conform to the current City of Redmond Public Works Standards and Specifications requirements.
- e. Contractor is required to notify the City of Redmond 24 hours in advance of commencing construction and to coordinate inspections until project is deemed complete by the Engineering Department.
- f. Drywells/UICD's or swales shall be tested by the engineering firm (or qualified subcontractor) and witnessed by city staff. Testing will be based on square footage of drainage area, volumes, infiltrations rates, and any additional testing criteria as shown on the approved plans. If any test fails, additional measures for storm drainage shall be made and retesting shall be required.
- g. Access to existing properties/residences affected by construction activities shall be maintained at all times by the contractor. Emergency access and coordination of Redmond Emergency Services shall be required.
- h. Survey monuments, controls or property corners which are disturbed or destroyed by construction activities shall be re-established, restored and/or replaced at the contractor's expense.
- i. Public streetlights and utility layout shall be installed per approved construction plans. Public streetlights shall be constructed, installed and completed prior to City acceptance of project.
- j. Contractor shall coordinate installation of public streetlights with the local power company. All costs related to street light installation including but not limited to base, pole, conduit and wiring shall be provided by the property owner/project developer.
- k. Contractor is responsible for contacting the Oregon Utility Notification Center or LOCATE prior to excavation. Contractor shall verify location and elevation of existing utilities.
- l. The location of proposed drywells/UICD's shall not conflict with existing domestic water wells or existing and planned City municipal water wells.
- m. Topography survey is based on City Datum _____ USC & GS 1929 located at _____.
- n. All necessary changes to design plans, revealed during construction, must be approved by the Design Engineer and City of Redmond.
- o. Plan approval does not assume liability or responsibility for errors and omissions in the design and/or construction plans.

3. Provide the following notes on all private improvement plan sets.

- a. Inspection of public and site grading/drainage improvements will be performed by the City of Redmond Engineering Department except for plumbing code/permit improvements.

- b. Contractor is required to notify the City of Redmond 24 hours in advance of commencing construction and to coordinate inspections until project is deemed complete by the Engineering Department.
- c. Where applicable, all materials and workmanship shall conform to the current City of Redmond Public Works Standards and Specifications requirements.
- d. Drywells/UICD's or swales shall be tested the engineering firm (or qualified subcontractor) and witnessed by city staff. Testing will be based on square footage of drainage area, volumes, infiltrations rates, and any additional testing criteria as shown on the approved plans. If any test fails, additional measures for storm drainage shall be made and retesting shall be required.
- e. Access to existing properties/residences affected by construction activities shall be maintained at all times by the contractor. Emergency access and coordination of Redmond Emergency Services shall be required.
- f. Survey monuments, controls or property corners which are disturbed or destroyed by construction activities shall be re-established, restored and/or replaced at the contractor's expense.
- g. Topography survey is based on City Datum _____ located at _____.
- h. All necessary public infrastructure changes to design plans, revealed during construction, must be approved by the Design Engineer and City of Redmond.
- i. Plan approval does not assume liability or responsibility for errors and omissions in the design and/or construction plans.

4. Existing Topography/Conditions Plan and Tree Survey

- a. Contours Labeled.
- b. North Arrow, Engineering Scale.
- c. Tax lot numbers, Acreage, Zone, onsite and adjacent lots.
- d. Streets Right of Way, Boundary.
- e. Contiguous lot lines.
- d. Location of all existing utilities and roads.
- e. Rights of way, property lines, easement types, width.
- f. Size of Sewer Mains, Manholes, Rims, Invert Elevations.
- g. Size of Water Mains, fire hydrants, valves, meters.
- h. Size of Storm drain Lines, ~~MH~~ manhole ~~r~~ Rims, IEs.
- i. Fences.
- j. ADA Ramps. Spot elevations, slopes, dimensions.
- k. Utility Poles, boxes, ~~g~~ Guy ~~W~~ wires, lines overhead, underground ~~TEL~~ utilities, such as telecommunication, ~~P~~ power, ~~G~~ gas, and cable.
- l. Buildings.
- m. Tree Survey requirements when required by Redmond Development Code.

5. Grading, Erosion and Sediment Control Plan

- a. Design per ODOT EROSION CONTROL FIELD MANUAL and Central Oregon Stormwater Manual.
- b. Provide details per ODOT Oregon Standard Drawings RD 1000 Series – Erosion Control.
- c. Show proposed finish grade contours.
- d. Location of gravel construction entrance.
- e. Location of concrete washout area.
- f. Location of soils stockpile area.

- g. Curb and inlet protection.
- h. Sedimentation and debris fence.

6. Sign, Striping, Street Trees -Plan

- a. North Arrow, preferable to top right of page.
- b. Indicate ~~p~~Public ~~r~~Right of ~~w~~Way, ~~p~~Public and private ~~E~~easements, ~~Intersection~~ ~~C~~clear VVision Triangle areas
- c. Show location curb, sidewalk, driveways, curb ramp, striping, vaults, transformers, pedestals, streetlights poles, utility poles, signs, fire hydrants, mail boxes, signs, all other above ground appurtenances.
- d. ~~Street tree location and spacing~~ per Redmond Development Code and Standards and Specifications requirements.: ~~Trees should be spaced no less than the following distances from existing or planned infrastructure.~~
 - ~~1. Stop signs: 35 feet;~~
 - ~~2. Street Lights: 25 feet;~~
 - ~~3. Non-street light utility poles: 5 feet;~~
 - ~~4. Fire Hydrants: 10 feet;~~
 - ~~5. Water meter, vault, or sampling manholes: 5 feet;~~
 - ~~6. Driveways, sidewalks, curbs or alleys: 3 feet;~~
 - ~~7. Traffic Signs: 20 feet.~~
- e. ~~Trees shall not be planted within the following areas:~~
 - ~~1. Clear Vision Areas: no shrub's or grasses over 2 feet tall;~~
 - ~~2. Sight Distance area:~~
 - ~~3. City easements, unless approved by City Engineer:~~
 - ~~4. Public utility easements (PUE)~~
 - ~~5. Medians less than 4 feet wide.~~

7. Streets

- a. North arrow, preferably to top or right of page
- b. Vertical and horizontal curve data
- c. Indicate roadway centerline and stationing along centerline
- d. Indicate slopes of centerline, and gutter lines if necessary
- e. Indicate curb return radius
- f. Indicate grades at the ends and midpoint of the curb returns
- g. Detailed design of each curb ramp showing slopes of all ramps and landings with spot elevations as necessary and in conformance with Public Right of Way Accessibility Guidelines.
- h. Indicate drainage system and location and size, in square foot, of drainage area served by every dry well
- i. Indicate the location of utilities, existing and proposed
- j. All relevant street system details
- k. Demonstrate that streets may be extended thru adjacent properties if so desired
- l. Show location, direction, size, type and of MUTCD number of all permanent street signing
- m. Show location and size of any postal delivery boxes to be placed on public right of way
- n. Existing streetlights within one block radius of project boundary
- o. Location of streetlights to be installed by local power company

8. Stormwater – See Chapter 3 Central Oregon Stormwater Manual

- a. Location of manholes, inlets and storm line
- b. Stationing of structures relative to street stationing
- c. Invert and rim elevations at junction and sediment manholes and inlets
- d. Inlet type, size, rim elevation
- e. Swale and pond edge, slope, contours, inlets, outlets, surfacing, overflow, outlet protection
- f. All relevant storm system details.
- g. A profile demonstrating that sufficient cover will be maintained and showing finished street where applicable.
- h. Drainage report including narrative, basin map and other figures, calculations, downstream analysis and other required submittals as appropriate
- i. Wellhead protection areas within project.

9. Sanitary Sewer

- a. Location of manholes, sewer line
- b. Location of gravity grease interceptors and sampling manholes as required
- c. Stationing along sewer line
- d. Entering and exiting invert elevations at manholes
- e. Sewer is designed and extended to provide service to adjacent properties
- f. All relevant sewer system details
- g. Sewer cleanout locations
- h. A profile demonstrating that sufficient cover will be maintained and showing finished street where applicable

10. Water

- a. Location of valves, fittings, sampling station (if required), fire hydrants, meters, and water lines.
- b. Stationing along waterline.
- c. Water system is designed to provide service to adjacent properties.
- d. All relevant water system details.
- e. A profile demonstrating that sufficient cover will be maintained and showing finished street grade where applicable.

11. Construction Cost Estimate and Fees

An estimate of probable cost must be provided for public improvements to determine plan review and inspection fees. Public Improvement and Private Improvement final plans will not be approved until fees have been paid.

E. PLAN SUBMITTAL NOMENCLATURE

Electronic plans submitted to the Engineering Department shall be organized and named as follows:

- 1. Application "Project" YYMMDD
- 2. Site Development Plan "Project" YYMMDD
- 3. Traffic Control Plan "Project" YYMMDD
- 4. Water Meter Determination Form "Project" YYMMDD
- 5. Drainage Submittal "Project" YYMMDD
- 6. Fire Flow Analysis "Project" YYMMDD

Note: YYMMDD = YEAR, MONTH, DAY, such as 231201 for December 1, 2023

Revisions shall be submitted with the same file name as originally submitted, with an updated date.

CITY OF REDMOND, OREGON

2010 STANDARD SPECIFICATIONS

DIVISION I – TRENCHES

101 TRENCH EXCAVATION, BEDDING AND BACKFILL

101.1.00 DESCRIPTION

Minimum general standards for facilities shall be as set forth in Sections 00330 and 00405 of the Oregon Standard Specifications for Construction, current edition. This work consists of excavating trenches, constructing trench foundations, placing bedding, pipe zone material, and trench backfill.

101.1.01 PIPE ZONE

The pipe (main line and service lines) zone is defined as the full width of the trench from 6-inches below the bottom outside surface of the bell of the pipe to 12-inches above the top outside of the barrel of the pipe.

101.1.02 TRENCH FOUNDATION

The trench foundation shall be undisturbed material. Where ground water, unsuitable material, or other unstable conditions exist additional excavation may be required.

101.1.03 UTILITY CROSSINGS UNDER RAILROAD

Utilities crossing under the railroad require a permit from the Burlington Northern Santa Fe Railroad.

101.2.00 MATERIAL

101.2.01 BEDDING & PIPE ZONE

Pipe zone material and bedding for pipes and structures shall be Class B backfill, or other select material as directed by the Engineer. Samples of the proposed material including technical information such as gradation, proctor test results, and certifications shall be submitted to the Engineer for approval prior to construction.

101.2.02 TRENCH BACKFILL

Material used for trench backfill below subgrade shall be earth, gravel, rock, or combinations thereof, free of frozen material and with less than 1 percent by weight of deleterious material such as humus, organic matter, vegetable matter, clods, sticks, and debris. The backfill material shall predominate in the finer sizes and, in place, shall present no isolated voids, silt pockets, or areas of larger stones, which could cause fracture or denting of the utility or structure, or subject it to undue point stresses.

Pumice and cinders are not acceptable for trench foundations, pipe bedding, pipe zone or trench backfill material. Material with a compacted density less than 80 pcf based on AASHTO T-99 standard proctor is not acceptable.

Trench backfill shall consist of the following material:

101.2.02A Class A Backfill

Class A backfill shall be native or common material acceptable to the Engineer. The intent is that material excavated on the site may be used for backfill after being screened on a 3-inch screen. Class A backfill shall meet the following:

- 1) No rock, soil clod or hardpan fragment has a dimension of greater than 3-inches.
- 2) No more than 30 percent by weight shall be larger than $\frac{3}{4}$ -inch.
- 3) Material passing the #200 sieve shall not exceed 25 percent by weight of the total sample.

101.2.02B Class B Backfill

Class B backfill shall be any non-plastic, granular material, pit run gravel or sand, or non-plastic soil meeting the following criteria:

- 1) Shall have more than 90 percent by weight passing a $\frac{3}{4}$ -inch screen
- 2) Shall contain no rock, soil clod or hardpan fragment larger than 1-inch
- 3) Shall be free of humus, organic matter, vegetable matter, frozen material, clods, sticks and debris
- 4) Shall contain no more than 10 percent by weight passing the #200 sieve.

101.2.02C Class C Backfill

Class C backfill shall be clean sand with no particle size larger than $\frac{1}{4}$ -inch, and with no more than 10 percent of material passing the # 200 sieve, or well graded $\frac{3}{4}$ "-0 granular material with no more than 10 percent by weight passing the No. 200 sieve as acceptable to the Engineer.

101.2.02D Class D Backfill

Class D backfill shall be native or common material acceptable to the Engineer. Class D backfill shall be used only in trenches exceeding 9 feet in depth, and only in areas where roadway construction is not scheduled to follow the completion of the utility installation.

The intent of this specification is that material excavated on the site may be used for backfill after being processed on a bar screen to remove rocks larger than 12-inches in dimension. The bar screen shall have a clear space not greater than 9-inches between the bars. The Contractor shall make every reasonable effort to remove rocks larger than 12-inches in major dimension from the stock pile by means such as, but not limited to, scalping and wasting the base perimeter of the stockpile where such rocks collect. The material shall be predominately of the finer sizes such that no voids are evident in the stockpile, nor shall voids or pockets of rock occur in the compacted backfill. The Engineer or his/her representative shall approve the stockpile prior to incorporation into the work.

The material shall be placed in 3-foot maximum loose lift thickness and compacted by mechanical means to a non-yielding condition. The Contractor may be required to prove compaction by water jetting the backfill. Should subsidence be evident, the backfill shall be reworked and compacted to density non-yielding condition based upon a proof-roll or other load test acceptable to the Engineer.

Where Class D backfill is specified, it shall not be placed within 36 inches of the top of the pipe, within 24 inches of any other utility, nor within 36 inches of subgrade elevation or finish grade.

Class D backfill shall be placed only in a trench of sufficient width to permit heavy equipment to place and compact the backfill to the satisfaction of the Engineer.

101.2.02E Cement Treated Base (CTB)

Cement Treated Base shall conform to the requirements of the Oregon Department of Transportation, State Highway Division. It shall contain 4.5%- 5.5% cement by weight (1 to 2 sacks of cement per ton). CTB shall be used as trench backfill for street crossings where subgrade conditions are likely to cause differential settlement of the trench section, and for high traffic areas as directed by the Engineer.

101.2.02F Concrete Backfill

Concrete Backfill shall conform to ASTM C-94, Alternate 3. Proportion the mix to obtain a 28-day compressive strength of 2,500 pounds per square inch. The mix design shall have a minimum of five sacks of cement per cubic yard of concrete.

101.2.02G Controlled Low Strength Material

Controlled Low Strength Material (CLSM) shall conform to Section 00442 of the ODOT Oregon Standard Specifications for Construction. The minimum proportions of the mix shall be one sack cement to one ton of sand. CLSM may be placed in one lift, but do not agitate or use mechanical compaction.

101.2.02H Utility Bores Under Railroad

- 1) Sewer Pipe: Conform to Section 303 of the Specifications.
- 2) Water Pipe: Conform to Section 402 of the Specifications.
- 3) Casing: Casing shall be steel pipe conforming to AWWA C200. Minimum yield strength shall be 35,000 psi. Diameter and wall thickness shall be as indicated on drawings. The Contractor shall be responsible for selecting the size and wall thickness of the casing required to permit construction to the required lines and grades consistent with the operation and as approved by the Permittee. However, in no case shall the casing diameter and wall thickness be less than those shown. If a casing diameter larger than the minimum is used, increase wall thickness accordingly. Submit wall thickness design calculations and revised pipe support and blocking details to the Engineer for approval
- 4) Excavation or Boring: Excavation or boring shall be unclassified and shall include whatever materials are encountered. The Contractor shall make an estimate of the kind and extent of the various materials which will be encountered to complete the work.
- 5) Stainless Steel Bands: One-half inch wide by 0.020 inch thick, 304 stainless steel bands, or equal.
- 6) Supports (Skids): Lumber for supports shall be of No.2 pressure treated Douglas fir, cedar or redwood graded in accordance with the WWPA Current Grading Rules for Western Lumber. Blocking shall be sized adequately to prevent flotation or lateral movement of the carrier pipe in the event the casing should be inundated by ground water.
- 7) Supports (Hangers): Hangers shall be fabricated from plate steel, size as indicated on the drawings.

- 8) Alternative Supports: In lieu of the hangers and skids as shown on the drawings, the Contractor may elect to fabricate a support structure for both water and sewer lines which can be installed inside the casing. Details and design calculations shall be submitted for the Engineer's review should an alternative be desired.

101.3.00 CONSTRUCTION

101.3.01 TRENCH EXCAVATION

101.3.01A General

Construction of a utility in an unimproved street shall include grading the street to subgrade elevation to ensure that adequate bury, depth of cover, and utility separation is acquired. The street must be fully improved within six months after sewer is installed. If the street cannot be improved within the six months after sewer is installed, a 14-foot wide 2" thick paved all weather access road, with a 6-inch base, or as approved by the City Engineer, shall be installed centered over the sewer line with 6' x 6' asphalt or concrete pad around manholes. If the access road requires a vehicle turn around, adequate space shall be included for an all-weather access road.

If the street is to be improved more than six months after construction approval, the designer shall require that the street be properly staked to the approved design prior to the commencement of sewer line construction.

Except by permission of the City Engineer, the maximum length of open trench shall not exceed 500 feet of the distance to accommodate the amount of pipe installed in a single day, whichever is greater. The distance is the collective length at any location, including open excavation, pipe laying and appurtenant construction.

The Contractor shall be solely responsible for obtaining all applicable State, County, or City street cutting permits, and shall comply with all provisions of the permits. The Contractor shall comply with all City, County, State and Federal Highway Construction Safety and Health Standards pertaining to trenches and excavations, and traffic control. Prior to installing pipe or other utility in an unimproved street, the roadway shall be staked for subgrade to assure that adequate bury, depth of cover, and utility separation is acquired.

101.3.01B Trench Width and Depth

The trench depth below the finish profile elevations and width at the bottom shall be as listed in the following table for the size and type of pipe as indicated on the approved plans. The top of the ditch shall be 6 inches wider than the nominal width and shall conform to all safety standards and regulations.

Pipe Size I.D.	Min. Depth Wtr & Sewer	Max Width Wtr & Sewer	Min. Width Water	Min. Width Sewer
Less than 6"	32"	30"	24"	30" *
6"	42"	36"	24"	30" *
8"	46"	36"	24"	30" *
10"	48"	42"	30"	30" *

12"	52"	42"	30"	30" *
14" - 16"	54" – 56"	48"	36"	36"
18" - 24"	58" - 60"	52"	40"	40"
Greater than 24"	60"	60"	48"	48"

*For pipes with less than 60" of cover, minimum width of 26" will be allowed.

101.3.01C Trench Backfill in Existing Streets

Trenches in existing pavement areas, curb, or sidewalk may be backfilled with controlled low strength material (CLSM) subject to approval by the City Engineer.

101.3.02 PIPE BEDDING

The bottom of the trench shall be graded by hand to the elevation at which pipe is to be placed with a 6-inch depth) of compacted pipe bedding material as specified in 101.2.02. Before each section of pipe (mains and services) is installed the grade shall be checked with a straight-edge, level/rod, or laser level, and any irregularities found shall be corrected. The pipe bedding shall form a continuous and uniformly compacted bearing surface and support for the pipe or structure.

A coupling or bell hole shall be dug in the trench bottom having a length, width and depth sufficient to allow assembly of the pipe, and to maintain a minimum clearance of 4 inches between coupling and undisturbed trench bottom. The trench bottom between coupling holes shall be dug flat and cut true and even to grade so as to provide continuous contact of the bedding with the pipe.

No blocking shall be used to achieve the required depth of bedding.

101.3.03 PIPE ZONE

Pipe zone material shall be Class B material as specified in 101.2.02B. Backfill material above, and around the pipe shall be carefully and thoroughly tamped in layers no more than 6 inches deep to achieve 95% of maximum density as determined by AASHTO T-99 or ODOT Manual of Field Test Procedures.

101.3.04 TRENCH BACKFILL

Backfill material shall be Class B placed in accordance with APWA Section 00405.46 except for the following options:

- 1) For trenches deeper than 6 feet from top of pipe to subgrade (except for water lines), the backfill material may be Class A backfill as specified in 101.2.02A from 24 inches above the pipe zone to subgrade.
- 2) For trenches deeper than 9 feet from top of pipe to subgrade (except for water lines) and outside of the street right of way, the backfill material may be Class D backfill as specified in 101.2.02D from 36 inches above the pipe zone to subgrade.

The material shall be carefully and thoroughly tamped in layers to achieve 95% of maximum density as determined by AASHTO T-99. Trenches shall be compacted in one foot lifts unless otherwise approved by the City Engineer. Methods of testing materials in the field may include nuclear densometer, sandcone, WA densometer, or other methods approved by the Engineer.

101.3.05 COMPACTION TESTING

For trenches with three feet or less of cover over the pipe zone, compaction test shall be taken at top of pipe zone and at finish subgrade elevations. For installations deeper than three feet trench backfill shall be tested at one passing test for each foot of fill and top of subgrade, or as directed by the Engineer. Passing tests shall meet the requirements for compaction in that segment of the trench backfill. All sampling and testing shall be performed by an independent testing laboratory acceptable to the City of Redmond. All results, including failing tests, shall be submitted to the City of Redmond inspector prior to any subgrade inspection and approval.

Compaction testing performed at the City's expense and the work fails to meet the minimum standard, the Contractor shall bear costs and reimburse the City for all subsequent testing to meet specified requirements.

101.3.06 UTILITY BORES UNDER RAILROAD

- 1) General: Prior to the start of the work, submit satisfactory evidence to the Engineer that all insurance coverage requirements called for by the Permittee have been complied with. All proposed construction methods and materials for each under crossing shall be approved by the Engineer and Permittee prior to the crossing operation, and no construction shall be started until written approval to proceed from the Permittee has been submitted to the Engineer.
- 2) Casing: Casings shall be continuously welded at joints. Bored installations shall have a hole diameter that shall not exceed the outside diameter of the casing pipe. Boring operations shall be conducted in such a manner as not to be detrimental to the facility being crossed. If there are excessive voids or the bore is larger than the casing pipe, prompt remedial measures shall be taken by the Contractor, subject to approval by the Engineer and the Permittee.
- 3) Installation of Pipe: Provide strapped timber skids around the barrel of sewer pipe as shown on the drawings, join pipe, and slide into casing. Pipe barrel shall bear continuously on cradles. Provide temporary supports for the water pipe prior to welding hangers in place. Conform to any additional requirements of the pipe manufacturer.
- 4) Pipe installation to conform to applicable portions of Section 303.3 of the Specifications, including hydrostatic or air testing and line and grade.
- 5) Seals: Place 2-inch timber seals at the ends of the under crossing casing to prevent foreign material from entering the casing after it is backfilled. Shape and notch timbers to fit around pipe to provide a tight seal.

101.4.00 MEASUREMENT AND PAYMENT

101.4.01 LINEAR FOOT BASIS

The length of trench shall be measured horizontally from center to center of manholes, or to the end of pipe, whichever is applicable. Measurement of the various depth classes as stated in the Schedule of Bid Items will be from the pipe invert as constructed to the design subgrade elevation at the point of measurement.

Payment for TRENCH EXCAVATION will be at the unit price bid per lineal foot for the specified pipe class and diameter, and at the depth as measured. Payment shall include all materials, tools, labor, equipment, bedding, backfill and incidentals required to excavate and backfill the

trench as specified. All excavation shall be considered as unclassified as specified in Section 204.1.02, unless specifically called for in the Schedule of Bid Items.

101.4.02 INCIDENTAL BASIS

When not listed in the Schedule of Bid Items as a separate pay item, TRENCH EXCAVATION shall be considered incidental to the price bid for the specified pipe or conduit and diameter, and at the specified depth.

101.4.03 UTILITY BORES UNDER RAILROAD

Payment for each crossing will be based upon the lump sum price stated in the proposal. Payment on the lump sum basis shall constitute full compensation for all labor, materials, and equipment required to complete the installation, within the limits shown in addition to the amount per linear foot for each pipeline. Payment to the Contractor for any services provided by the Permittee shall also be included in this item.

102 BLASTING

102.1.00 DESCRIPTION

This work consists of excavating in rock using controlled blasting methods to facilitate trench excavation for utilities and dry wells or to remove rock for construction of road grades or structures. This Section shall be used in tandem with the Redmond Fire and Rescue District Explosive Blasting Permit issued by the Redmond Fire Marshal, and with other Fire Marshal requirements. In the event of conflicts between the Fire Marshal Blasting Permit and these Standard Specifications, the more stringent requirement applies unless approved by the City Engineer and Fire Marshal.

In addition to what is set out by federal, state or local laws, as a matter of quality assurance elements associated with these Standards, the following measures will apply:

Process Step/Task	Quality Assurance
Review of Personnel Qualifications	Redmond Fire
Blasting Plan Review	Redmond Fire
Inspection/Survey Requirements	City Standard/Template
Door Hangers	City Standard/Template
Informational Flier/FAQ	City Standard/Template

Minimum general standards for blasting shall meet the requirements of Section 00335 Blasting Methods and Protection of Excavation Backslopes of the Oregon Standard Specifications for Construction, current edition, with the following modifications and additions. In the event of a conflict between the ODOT Standards and these regulations, these regulations shall control:

ADD the following Section: 00335.02 Qualifications of Blasting Personnel

- Provide the services of an independent, qualified Blasting Consultant, experienced in controlled blasting techniques for similar works, to prepare blasting plans, to guide the installation of blasting seismographs, and to coordinate and/or perform the interpretation of recorded results. The Blasting Consultant shall have at least

10 years of experience and demonstrate satisfactory experience on 5 similar projects. The Blasting Consultant shall be an approved Blasting Consultant for ODOT projects. These projects must include blasting within 100 feet of occupied dwellings. The Blasting Consultant shall not be an employee of the Contractor, explosives manufacturer, or explosives distributor. Submit the Blasting Consultant name and qualifications to the Fire Marshal as part of the blasting permit. All blasting plans, including revisions, shall be approved, in writing, by the Blasting Consultant. The City may waive the requirement for a Blasting Consultant on a particular project if, in the City's sole discretion, the scope and complexity of the project do not warrant the participation of a Blasting Consultant. Such a waiver will not preclude the City from requiring the subsequent engagement of a Blasting Consultant if, in the City's sole discretion, such participation would be advisable in the event of blasting-related problems or issues.

- The Contractor shall use experienced, competent Blasting Superintendents (Blasters-In-Charge) for all blasting operations. All blasting operations shall be under the direct supervision of a Blaster-In-Charge, who shall be present at the blast site whenever explosives are being handled. All Blasters-in-Charge shall have at least 10 years of experience and be able to demonstrate satisfactory experience on at least 5 similar projects, including blasting within 100 feet of occupied dwellings or other structures if close-in blasting is part of the Project. All Blasters-in-Charge shall be properly qualified and licensed in accordance with applicable federal, state, and local regulations. The Contractor shall not allow prohibited persons as defined by the BATF (27 CFR Part 555) to transport, handle, or use explosive materials.
- The Contractor shall use experienced and qualified personnel for conducting pre-blast condition surveys. Personnel conducting pre-blast surveys shall have at least 5 years of experience in conducting pre-blast condition surveys of structures and be able to demonstrate satisfactory experience on at least 3 similar projects. Personnel conducting pre-blast surveys shall be the employees of a firm regularly engaged in conducting such surveys and shall not be an employee of the Contractor or any explosives manufacturer or distributor.

ADD the following Section: 00335.03 Blasting Influence Zones

For purposes of this regulation, separate Blasting Influence Zones are defined for pre-blasting notifications, blast seismograph monitoring, and pre-blast surveys, as given in Table 1 below. All distances are straight-line distances from the closest blast hole in any given pattern.

TABLE 1 – BLASTING INFLUENCE ZONES

Charge per Delay ⁽¹⁾ (lb)	Notification Distance ⁽²⁾ , feet	Monitoring Distance ⁽³⁾ , ft	Pre-Blast Surveys ⁽⁴⁾ , ft
<7	200	175	150
7-17	300	250	200

18-49	500	425	350
50-100	700	600	500
100-250	1,100	950	800
>250	1,500	1,200	1,000

Notes

- (1) Charge per delay means the maximum total charge occurring within:
 - a. Any 8-millisecond delay interval when using nonelectric or electric methods of initiation
 - b. Any 3-millisecond delay interval when using electronic (digital/programmable) methods of initiation
- (2) Notify utility operators and the owners and occupants of all habitable structures within this radius.
- (3) Where the closest structure or utility is further than the distance shown, place one (1) blasting seismograph at the closest structure or utility. When the closest structure or utility is closer than the radius shown, place one (1) blasting seismograph at the closest structure or utility and at least one (1) additional seismograph at a point as close to the radius given as is practicable. Where the City, in its sole discretion, identifies special circumstances or complications, the City may require additional seismographs to be used. For Test Blasting (ODOT 0035.40(f) as modified herein), an array of seismographs approved by the City shall be used at varying distances.
- (4) At a minimum, conduct pre-blast surveys at all habitable dwellings, outbuildings, flatwork and other above-ground structures pursuant to the requirements of this Regulation, that occur within this radius.

DELETE Section 00335.40(c) in its entirety and REPLACE with the following: Section 00335.40(c) Pre-blast/Post-blast Inspections

Pre-blast inspections are required for existing residences and other structures or facilities within the blasting influence zone, as defined in Table 1 per 00335.03 above. Inspections shall be completed by qualified personnel as stated in 00335.02 above, ~~using a City-approved inspection form~~. Notification of pre-blast inspections shall be made not less than 14 days prior to the first blast and shall include information about the inspection process and contact information for the contractor and third-party inspection firm. Notification shall be made in writing using a City-approved template and transmitted to the property owner, as well as to the occupant if the occupant is not the owner. If there is no response, a second attempt shall be made, also in writing. A Blasting Survey Log of notifications attempted, along with survey acceptance or refusal, shall be maintained that identifies the address, owner, occupant, and date and manner of contact. The Blasting Survey Log shall be available for review by any duly authorized representative of the City or Redmond Fire within 72 hours of the request by the City or Redmond Fire.

In the event any property owner denies access for the survey of structures, a signed statement shall be sought from the property owner declaring that they decline the pre-blast inspection of their property. If the property owner, or occupant if different from the

property owner, refuses to allow a pre-blast survey, the Blasting Survey Log shall show the date, time, manner, and reasons (if known) for the refusal. If the property owner refuses to sign a statement declining a pre-blast survey, the log shall show the date, time, and manner of the refusal.

Inspections shall include documentation of interior subgrade and above grade accessible walls, ceilings, floors, roof, and visible exterior as viewed from grade level. It will detail the existing condition of structures or facilities by notes, sketches, and videotape or photographs. Existing crack damage, other structural problems or defects occurring inside and outside the structure or facility shall be thoroughly documented. Sufficient information and documentation shall be included that the location and scale of each recorded defect can be ascertained.

As construction progresses, re-inspect, as often as necessary and upon receipt of any complaints, to determine if blasting methods are causing any new damage.

The Contractor shall respond to all complaints or allegations, whether written or verbal, of blasting damage within 72 hours of the first such notification or allegation and shall arrange for post-blast inspection(s) to inspect the alleged damage promptly thereafter. Post-blast surveys shall be performed by qualified third parties and documented with measurements, notation and photos or videos of the damage that will allow comparison with the pre-blast documentation, if any. Contractor shall promptly repair or replace any blasting-caused damage to structures or facilities to a condition equal to or better than the pre-blasting condition. Any such complaints, allegations, repairs or replacements shall be noted in the Blasting Survey Log.

The pre-blast and post-blast survey notation and imagery files shall be maintained in a secure manner by the third-party pre-blast survey firm. Copies of the inspection reports, including the photos or videos taken, shall be made available to the City, Redmond Fire, and/or the property owner within 72 hours upon request.

The City will be indemnified and held harmless from any liability for damage or injury caused by the Contractor's blasting operations.

Contractor shall contact utilities that may be impacted by blasting to determine if closed circuit television (CCTV) video inspection of sanitary and storm sewer manholes, inlets and lines is needed before and/or after blasting and if (for gas lines) leak monitoring is required. Utilities damaged from blasting activities shall be repaired and/or restored at the expense of the Contractor.

**DELETE Section 00335.40(d) in its entirety and REPLACE with the following:
00335.40(d) Blasting Plan and Fire Marshal Permit**

Blasting permits shall be obtained a minimum of 14 days prior to blasting from the Redmond Fire and Rescue District Fire Marshal, which can be found at: redmondfireandrescue.org. Blasting plans shall be included in the permit application as outlined below.

Each plan shall cover individual major Rock cut areas or Rock production from a material source. Similar minor Rock cut areas of less than 50 cubic yards, as well as utility and culvert trenches, may be covered as a group in one generalized blasting plan.

The blasting plans will be submitted to and reviewed by the Fire Marshal for conformance with the Specifications and any concerns will be discussed with the Contractor. The City Engineer may also review blasting plans in tandem with the Fire Marshal, at the City's and Fire Marshal's discretion. Submit any proposed changes to the blasting plans in writing to the Fire Marshal for review before implementation. Submittal of blasting plans is for quality assurance and record-keeping purposes. Review of blasting plans by the City or Fire Marshal does not relieve the Contractor of full responsibility for the accuracy and adequacy of the plans and the resulting safety when implemented in the field. For blasting within 100 feet of a structure, the City retains the right, at its discretion, to utilize the services of a third-party blasting consultant to verify the safety and appropriateness of the Plan, and to require additional detailed blasting plans and information specific to each individual shot.

Each blasting plan shall contain the full details of the drilling and blasting patterns, methods to reduce vibration, flyrock, and noise; blast area security measures and traffic control that the Contractor proposes to use; and the following information:

- Station limits of proposed shot.
- Removal of overburden.
- Plan and Cross Section diagrams of proposed drill pattern for controlled and production blast holes including buffer rows, free face, burden, blast hole spacing, blast hole diameters, blast hole angles, lift height and sub drill depth. Accurately draw to scale and show each cut area to be blasted.
- Loading diagram showing the type, amount and specific gravity of explosives, primers, and initiators; and location, depth, and type of stemming; and deck loading if any.
- Initiation sequence of production and controlled blast holes including delay times and delay system.
- Manufacturer's product data sheets for all explosives, primers and initiators to be used in the Work.
- Map showing where blast will occur, distance to structures, notification perimeter and structures that will be offered pre-blast inspections. Distance from blast shall be the distance from the structure to the closest drillhole where blasting materials will be placed. Perimeter for notification shall be measured from the full extent of the blasting.
- Proposed seismograph locations.

Blast plan shall be modified as necessary once drilling is complete to account for subsurface materials that may influence blasting results. Submit blasting plan changes and reasons for the changes to the Fire Marshal.

Blasting plan shall clearly identify measures taken to avoid damage to any structures or utilities within 100 feet.

DELETE Section 00335.40(e) in its entirety and REPLACE with the following:
00335.40(e) Blasting Notification

Notify all owners and occupants of buildings, Structures, and utilities that are within the Influence Zone per Table 1 in 00335.03. Owners of record of property are those shown on the most recent property assessment roll of property. Occupants are those currently residing at the property. Pre-blast notification is required to all properties within the blasting influence zone as specified above unless geologic conditions (as determined by drilling blast holes and/or conventional geotechnical investigations) warrant a larger radius. Notification templates can be found on the City website at: www.redmondoregon.gov/constructionstandards.

Pre-blast notification shall occur on the following timeline:

- No less than 14 calendar days prior to first scheduled detonation, notification of blasting activities and pre-blast inspection notices shall be mailed to property owner (and to the structure address if different) and door hanger placed at each address. See Template A and Template C). Properties within the Influence Zone for Pre-Blast Inspections shall be given notification specifically stating they are being offered a pre-blast survey and include the name and contact information of both the blasting contractor and pre-blast surveyor. See Template B.
- 48 hours prior to first scheduled detonation and any subsequent detonations, notification shall be by direct contact or door hanger.
- Day of blast notification shall be by direct contact or door hanger prior to all detonations.

All notifications shall contain proposed blasting schedule, location where blasting will occur, and contact information for the ~~developer, general contractor and blasting contractor~~. Contractors shall use the City standard door hanger template and notification letter as part of the notification requirements (see www.redmondoregon.gov/constructionstandards for details~~Appendix for details~~).

ADD the following to Section 00335.40(f) Blasting Test Sections:

The need for blasting test sections shall be evaluated in the Blasting Plan and based on complexity of blast and/or distance to structures or facilities. The City may, at its sole discretion, require test blasts for any project.

ADD the following: Section 00335.46 Vibration Control and Monitoring

Control ground vibrations by using properly designed blast hole patterns, delay sequences, stemming, and allowable charge weights per delay. Base the allowable charge weights per delay on ground vibration levels which will not cause damage. Establish allowable charge weights per delay by carrying out test blasts and measuring

ground vibration levels. Follow any recommendations given by the Blasting Consultant. When recommended, perform test blasts according to 00335.40(f), modified as required to limit ground vibrations to a level which will not cause damage.

Monitor each blast with an approved seismograph located, as approved, between the blast area and the closest Structure, facility, or utility subject to blast damage, in accordance with the distances given in Table 1 in 00335.03. Utilize additional seismographs as provided in this Standard. The seismograph(s) used shall be capable of recording particle velocity for three mutually perpendicular components of vibration in the range generally found with controlled and production blasting.

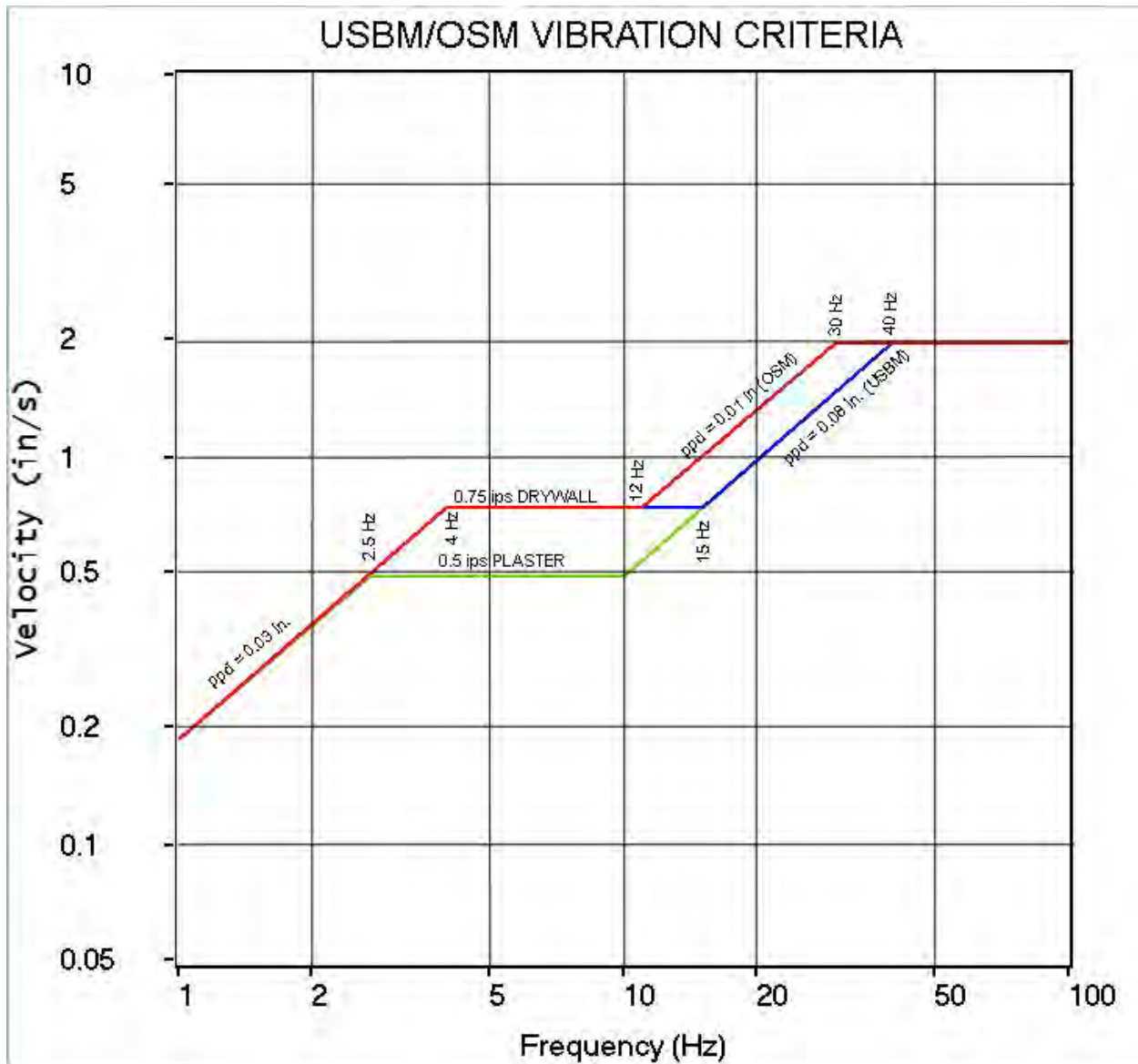
Operate the seismographs according to the guidelines of the International Society of Explosives Engineering Seismograph Section, titled ISEE Field Practice Guidelines for Blasting Seismographs. The applicable guidelines are those contained in the current publication on the date the Project is advertised.

Do not allow peak particle velocity of each component to exceed the safe limits of the nearest Structure subject to vibration damage as follows:

Structure	Maximum Peak Particle Velocity at the Structure (Inches/Second)
Standard Construction Timber Frame, Brick.....	refer to Figure 1
Reinforced Concrete Structures	4.0
Steel Structures.....	4.0
Buried Utilities	6.0
Wells and Aquifers	2.0
Green Concrete (Less than 7 Days).....	1.0

If the vibration levels exceed the limits, immediately report the measurements to the Engineer.

FIGURE 1



Dear Neighbor,

Drilling and blasting operations near _____
will begin _____ as part of _____ [INSERT PROJECT NAME]_____.

Residents and businesses can expect some routine construction noise and dust; however, crews will work to mitigate these impacts to the neighborhood. Modern blasting is designed to be a safe, effective, and efficient way of excavating rock in Central Oregon.

What you can expect during blasting activities:

- Air horns leading up to the blast
- Sounds and light ground vibration during the blast
- Dust in the air that will dissipate quickly after the blast
- Faint smell of explosive material that will dissipate quickly after the blast

You may be contacted to have your property inspected prior to blasting operations based on the City's Standards and Specifications for Construction. While damage is not expected to occur to any residences or structures, pre-blast surveys offer additional peace of mind for those nearest to the blast site. Cooperation with inspection staff and personal due diligence is encouraged.

If you have any additional questions or would like more information, please contact the contractor directly at:

Contractor Name: _____

Contractor Website: _____

Contractor Phone Number: _____

Contractor Email: _____

To learn more about the City's Standards and Specifications for Construction, please visit:
www.redmondoregon.gov/constructionstandards

Dear Neighbor,

Drilling and blasting operations near _____
will begin _____ as part of _____ [INSERT PROJECT NAME] _____.

Residents and businesses can expect some routine construction noise and dust; however, crews will work to mitigate these impacts to the neighborhood. Modern blasting is designed to be a safe, effective, and efficient way of excavating rock in Central Oregon.

What you can expect during blasting activities:

- Air horns leading up to the blast
- Sounds and light ground vibration during the blast
- Dust in the air that will dissipate quickly after the blast
- Faint smell of explosive material that will dissipate quickly after the blast

Your property is eligible for a Pre-Blast Survey inspection prior to blasting operations based on the City's Standards and Specifications for Construction. While damage is not expected to occur to any residences or structures, pre-blast surveys offer additional peace of mind for those nearest to the blast site. Cooperation with inspection staff and personal due diligence is encouraged.

If you have any additional questions or would like to schedule a Pre-Blast Survey, please contact the contractor directly at:

Contractor Name: _____

Contractor Website: _____

Contractor Phone Number: _____

Contractor Email: _____

Pre-Blast Surveyor Name: _____

Pre-Blast Surveyor Phone Number: _____

Pre-Blast Surveyor Email: _____

To learn more about the City's Standards and Specifications for Construction, please visit:
www.redmondoregon.gov/constructionstandards

FRONT

Dear Neighbor,

NOTICE

DRILLING/BLASTING OPERATIONS

Location _____

Date _____

Time _____

Project _____

Residents and businesses can expect some routine construction noise and dust; however, crews will work to mitigate these impacts to the neighborhood. Modern blasting is designed to be a safe, effective, and efficient way of excavating rock in Central Oregon.

If you have any additional questions or would like more information, please contact the contractor directly. *(Insert following REQUIRED info)*

Contractor NAME:

Contractor WEBSITE:

Contractor PHONE#:

Contractor EMAIL:

SEE BACK FOR MORE DETAILS

BACK

WHAT YOU CAN EXPECT DURING BLASTING ACTIVITIES:

- Air horns leading up to the blast
- Sounds and light ground vibration during the blast
- Dust in the air that will dissipate quickly after the blast
- Faint smell of explosive material that will dissipate quickly after the blast

You may be contacted to have your property inspected prior to blasting operations based on the City of Redmond Standards and Specifications for Construction. While damage is not expected to occur to any residences or structures, pre-blast surveys offer additional peace of mind for those nearest to the blast site. Cooperation with inspection staff and personal due diligence is encouraged.

To learn more about the City's Standards and Specifications for Construction, please visit:
www.redmondoregon.gov/constructionstandards

PREBLAST SURVEY EXTERIOR REPORT

Property Owner: _____ Page ____ of ____ Pages

Exterior Pictures Taken: YES ____ NO ____ IF YES, Date(s) Taken _____

Description of Lot: Level ____ Sloping to Front ____ Sloping to Rear ____ Or to Side ____

Standing Water or Pooling Area: Front ____ Rear ____ Left ____ Right ____

Condition Codes: (E) - Excellent (G) - Good (F) - Fair

ITEM	CONDITION (Use Codes)	TYPE of MATERIAL	REMARKS
Roofs			
Siding			
Gutters/Dnspouts			
Driveway			
Foundation			
Walkway(s)			
Porch(es) _____		Patio(s) _____	Windows _____

Chimney(s): # of ____ Material(s) Brick ____ Stone ____ C-Block ____ Metal ____

Foundations:

FRONT

REAR

LEFT

RIGHT

Condition Codes: (E) - Excellent (G) - Good (F) - Fair

DETACHED BUILDINGS	# OF	ITEM CONDITION (Use Codes)
Garage(s)		
Barn(s)		
Shed(s)		
Utility Building(s)		
Other _____		

PREBLAST SURVEY INTERIOR REPORT

Property Owner: _____ Page ____ of ____ Pages

ROOM: _____ ENTERED FROM _____

ROOM	MATERIALS: (Mark with 'X' if used)					
WALLS	Plaster:	Dry Wall:	Panel:	Paper:	C-Block:	Other:
CEILING	Plaster:	Dry Wall:	Ac Tile/Panel:	Paper:	Open C:	Other:
FLOOR	Carpet:	Linoleum:	Square Tile:	Wood:	Concrete:	Other:

WALL

CEILING/FLOOR

--	--	--	--	--

REMARKS: _____

ROOM: _____ ENTERED FROM _____

ROOM	MATERIALS: (Mark with 'X' if used)					
WALLS	Plaster:	Dry Wall:	Panel:	Paper:	C-Block:	Other:
CEILING	Plaster:	Dry Wall:	Ac Tile/Panel:	Paper:	Open C:	Other:
FLOOR	Carpet:	Linoleum:	Square Tile:	Wood:	Concrete:	Other:

WALL

CEILING/FLOOR

--	--	--	--

REMARKS: _____

CITY OF REDMOND, OREGON

2010 STANDARD SPECIFICATIONS

DIVISION IV - WATER FACILITIES

401 TRENCH EXCAVATION, BEDDING, AND BACKFILL

401.1.00 DESCRIPTION

Minimum general standards for water facilities shall be as set forth in the current American *Water Works Association Standards (AWWA)* and *current Oregon Standard Specifications for Construction*. The following special provisions are the minimum construction standards for the City of Redmond and are intended as a supplement to the above standards.

401.2.00 TRENCH EXCAVATION, BEDDING, AND BACKFILL

See Division I - Trenches

401.3.00 CONSTRUCTION

The Contractor shall secure and comply with applicable State, County, or City street cutting permits. The Contractor shall comply with all City, County, State and Federal Highway Construction Safety and Health Standards. Prior to installing a water facility in an unimproved street, the street shall be brought to sub-grade to assure that adequate bury, depth of cover, and utility separation is acquired.

401.4.00 MEASUREMENT AND PAYMENT

Measurement and Payment shall conform to the requirements of Subsection 301.4.00.

402 WATER PIPE AND FITTINGS

402.1.00 DESCRIPTION

402.1.01 GENERAL

This section covers the work necessary for furnishing and installing water pipe and fittings normally used for water distribution systems.

402.1.02 CERTIFICATION

The Contractor shall furnish material certifications for pipe, fittings, and appurtenances incorporated in the work when requested by the City Engineer or City Representative.

402.1.03 CORROSION PROTECTION

The method of corrosion protection shall be as specified when required.

402.2.00 MATERIALS

Pipe used for water mains shall be ductile iron meeting the requirements of Section 402.2.02 unless alternate pipe is approved by the City Engineer. Where more than one type of material is specified, the type required will be designated on the plans. Material used on pump stations, meter vaults, or control valve applications shall be approved by the City Engineer on a ~~case-by-case~~ case-by-case basis. All appurtenances shall be of the same manufacture. Materials shall be manufactured or produced in the United States of America, or as permitted under NAFTA. Materials manufactured outside of the USA shall meet all applicable standards required per AWWA, ASTM, ANSI, NSF, UL, and shall be the product of manufacturing facilities having current ISO 9000 or QS9000 certifications. All fittings and materials coming in direct contact with drinking water must meet NSF-61 standards. At the discretion of the City, the contractor and/or material supplier shall provide certified manufacture date of pipe and fittings. Any pipe or fittings with visible cracking, discoloration or other defects or with age older than one year may be rejected.

402.2.01 DUCTILE IRON PIPE

Ductile iron pipe shall be centrifugally cast in metal molds and cement mortar lined in accordance with ANSI/AWWA Standards C151/A21.51-02 and C104/A21.4. Tyton joint pipe shall be used except where conditions require mechanical type joints as shown and approved on plans. Care shall be taken in handling the pipe. No material shall be shipped inside coated pipe. Pipe shall ~~be~~ be manufactured by U.S. Pipe, Pacific States Pipe, American Pipe, or Griffin Pipe and shall meet the following specifications:

- 1) 6" through 12" I.D., Class 52 Ductile Iron Pipe, ANSI/AWWA Standard C151/A21.51-02
- 2) 14" I.D. and larger, Class 50 Ductile Iron Pipe, ANSI/AWWA Standard C151/A21.51-02

402.2.02 DUCTILE IRON PIPE FITTINGS

Ductile iron pipe fittings shall meet the requirements of AWWA C110 or C153 and shall have a minimum working pressure rating of 250 psi. Joints shall meet the requirements of AWWA C111. Fittings shall be cement mortar lined and seal coated, meeting the requirements of AWWA C104. Gaskets for flat faced or raised face flanges shall be ~~1/8-inch-thick~~ 1/8-inch-thick neoprene having a Durometer reading of 60, +/- 5. The type, material and identification marks for bolts and nuts shall be provided.

402.2.03 PIPE RESTRAINT

402.2.03A GENERAL

Refer to Section I.D.1.h of the Design Standards and Section 402.3.09E for joint restraint requirements.

402.2.03B PUSH ON PIPE JOINT RESTRAINT

Where required, push-on joints shall be restrained using Field-Lok gaskets for Tyton joint pipe, and Fast-grip gaskets for Fastite joint pipe, utilizing stainless steel locking segments vulcanized into the gaskets to prevent joint separation.

402.2.03C EXTERNAL MECHANICAL RESTRAINTS

Mechanical restraints shall be installed where shown on the plans, and as directed by the Engineer. Approved manufacturers are as follows: Ebba Iron 1100 Series "Mega-Lug", or Romac RomaGrip.

402.2.05 C-900 PVC WATER PIPE

PVC water pipe shall only be used for repair of existing PVC lines and with approval of the City Engineer. PVC water pipe shall meet the requirements of ANSI/AWWA Standard C-900-97 or latest edition for PVC pressure pipe and fabricated fittings for water distribution. Joints (couplings) shall be fitted with elastomeric gaskets conforming to the requirements of ASTM F477. Assembled pipe (bell end joints or couplings) shall meet the performance requirements of ASTM D3139. Pipe shall have a minimum pressure class of 150 psi (DR 18).

At the sole discretion of the City, the contractor and/or material supplier shall provide certified manufacture date of any PVC pipe with visible cracking, discoloration and/or fading due to ultraviolet light exposure. Pipe which is one year or older may be rejected. The City also reserves the right to reject pipe material for cause regardless of age of pipe.

402.2.10 SERVICE PIPE

Service piping from the water main to the meter and 4 feet beyond meter assembly shall be as follows:

Size	Material
3/4"	Type K Soft Copper
1"	Type K Soft Copper
2"	Type K Hard Copper

2" commercial, medical, and multi-residential services

<u>Service Size</u>	<u>Manufacturer</u>	<u>Part Number/Type</u>
<u>2"</u>	<u>Ford</u>	<u>Copper Setter VBB87-12HB-11-77</u>
<u>2"</u>	<u>Mueller</u>	<u>Copper Meter Yoke MB2427-12-0000</u>

402.2.11 SERVICE CONNECTION

~~Refer to latest version of City of Redmond, Water Service and Meter Installation Manual which supersedes these standards and specifications.~~

1. Water Service Line Standard for 5/8 – 3/4" water service line:

Water service line installation for a typical 5/8 x 3/4" water meter shall consist of a water service saddle (direct taps are allowed on DI water mains only), a 3/4" iron pipe thread or CC thread corporation stop, sufficient 3/4" type K soft copper tubing to reach from the water main to the meter box, a 3/4" angle meter stop, a 7 1/2" jumper, a second angle meter stop on the customer side of meter, and a tail of 3/4" type K soft copper pipe extending out the back side of the meter box to facilitate connection by the plumber.

2. Water Service Line Standard for 1" water service on a one-inch service line: Water service line installation for a typical 1" water meter shall consist of a water service saddle (direct taps are allowed on DI mains only), a 1" iron pipe thread or CC thread corporation stop, sufficient 1" type K soft copper tubing to reach from the water main to the meter box, a 1" angle meter stop, a 10 3/4" jumper, a second angle meter stop on the customer side of the meter, and a tail of 1" type K soft copper pipe extending out the back side of the meter box to facilitate connection by the plumber.

3. Water Service line Standard for a 2" water service from a two-inch service line: Water Service line installation for a typical 2" water meter shall consist of a service saddle with a 2" female iron pipe tap, a 2" brass nipple three inches long, a 2" resilient seated gate valve, a 2" Male Iron Pipe by Copper Pack adaptor, sufficient 2" type K hard copper to extend from the mainline to the water meter. A 17 1/4" jumper will be used supplied by the contractor. 1.5" water meters will be installed on two-inch services utilizing 1.5" to 2" meter adapters supplied by the City.

4. Water Service line Standard for services 3" and larger: Installation requirements and configurations for meters 3" and larger vary widely, please contact the City of Redmond Utility Inspection staff to determine the best installation for each application. Lead time of six (6) weeks is required for ordering meters. To avoid construction delays contractor/owner must contact the City in advance so that the meter can be ordered.

402.2.11A GENERAL

All brass fittings shall be manufactured in accordance with ANSI/AWWA Standard C-800-05, or latest edition, and meet the requirements of Standard Drawing 4-5.

402.2.11B - 2" SERVICE SADDLES

Service Saddles for and 2" services shall be stainless steel or cast double strap service clamp with iron pipe threads meeting ANSI/AWWA Standard C-800-05. Saddles shall be Mueller or approved equal. Brass or bronze nipple between saddle and valve is to be installed level; bolts to be torqued to manufacturer's specifications.

402.2.11C 3/4" to 1" SERVICE SADDLES

Direct taps are permitted on ductile iron pipe only. Where required, service saddles shall be stainless steel band service clamp with iron pipe threads as manufactured by Mueller, Romac, or approved equal.

402.2.11D SADDLE TAP

Bit size shall be as follows:

3/4" tap – 11/16" bit

1" tap 1" tap – 15/16" bit.

All bits to be Mueller or equal, and be approved for tapping ductile iron, cast iron, galvanized and steel pipe. The tapping machine shall be a Mueller #E-5, #D-5 or equal. Equipment to be ~~water tight~~ watertight and capable of boring a straight center hole.

402.2.11E DIRECT TAP

All bits to be Mueller AWWA taper thread combined drills and taps or equal and must be approved for tapping cast iron and ductile iron water mains. The tapping machine shall be a Mueller B-101 Drilling and Tapping Machine or equal. Equipment to be ~~water tight~~ watertight and capable of drilling a straight center hole.

402.2.11F CORPORATION STOPS

Corporation Stops shall be manufactured by Mueller or Ford with part numbers matching the list provided below in the latest version of the City of Redmond Water Service and Meter Installation Manual. Inlet threads may be iron pipe or AWWA CC Taper Thread if a saddle is used. Inlet threads for direct tapped ductile iron pipe shall be AWWA CC Taper Thread. Outlet threads shall be copper pack.

Brass Fittings – Corporation Stops

<u>Service Size</u>	<u>Manufacturer</u>	<u>Part Number</u>
<u>3/4"</u>	<u>Ford</u>	<u>FB1000-3-Q cc Thread</u>
<u>3/4"</u>	<u>Ford</u>	<u>FB1100-3-Q IP thread</u>
<u>3/4"</u>	<u>Mueller</u>	<u>B25008 CC thread</u>
<u>3/4"</u>	<u>Mueller</u>	<u>B25028 IP thread</u>
<u>1"</u>	<u>Ford</u>	FB1000-4-Q CC thread
<u>1"</u>	<u>Ford</u>	FB1100-4-Q IP thread
<u>1"</u>	<u>Mueller</u>	B25008 CC thread
<u>1"</u>	<u>Mueller</u>	B25028 IP thread

402.2.11G ANGLED METER STOPS

Angled meter stops shall be as shown on the Standard Drawings. Part number shall match those provided in the current version of the City of Redmond Water Service and Meter Installation Manual below. A rigid meter jumper shall be supplied and installed between the meter stops of the dimension as shown on the Standard Drawings.

Angle Meter Stop (with locking ears)

<u>Service Size</u>	<u>Manufacturer</u>	<u>Part Number</u>
<u>3/4"</u>	<u>Ford</u>	<u>BA43-33WQ</u>
<u>3/4"</u>	<u>Mueller</u>	<u>B-24258</u>

<u>1"</u>	<u>Ford</u>	<u>BA43-44WQ</u>
<u>1"</u>	<u>Mueller</u>	<u>B-24258</u>
<u>2"</u>	<u>Ford</u>	<u>BFA43-777WQ</u>
<u>2"</u>	<u>Mueller</u>	<u>B-24276</u>

402.2.11H COUPLINGS and UNIONS

Couplings and unions, if required, shall be copper couplings and unions with part numbers matching those provided in the current version of the City of Redmond Water Service and Meter Installation Manual below:

Couplings (compression both sides)

Service Size	Manufacturer	Part Number
<u>3/4"</u>	<u>Ford</u>	<u>C44-33-Q</u>
<u>3/4"</u>	<u>Mueller</u>	<u>H-15403</u>
<u>1"</u>	<u>Ford</u>	<u>C44-44-Q</u>
<u>1"</u>	<u>Mueller</u>	<u>H-15403</u>
<u>2"</u>	<u>Ford</u>	<u>C44-77-Q</u>
<u>2"</u>	<u>Mueller</u>	<u>H-15403</u>

90 Degree couplings (compression both sides):

Service Size	Manufacturer	Part Number
<u>2"</u>	<u>Ford</u>	<u>L44-77-Q</u>
<u>2"</u>	<u>Mueller</u>	<u>H-15526</u>

Straight couplings (MIP x compression):

<u>Service Size</u>	<u>Manufacturer</u>	<u>Part Number</u>
<u>2"</u>	<u>Ford</u>	<u>C84-77Q</u>
<u>2"</u>	<u>Mueller</u>	<u>H-15428</u>

402.2.11I SERVICE GATE VALVES

Gate valves 1½" in diameter and smaller shall not be used. Two-inch service gate valves shall be AWWA approved resilient seated with 2" square operating nut.

402.2.11J DUPLEX SERVICES

Duplex Services shall not be installed unless approved by the City Engineer.

402.2.11K METER BOXES

Water meter box and lid part numbers shall match those provided in the current version of the City of Redmond Water Service and Meter Installation Manual below. Cast iron and steel lids are not allowed. Meter boxes shall be equipped with concrete polymer lid rated to 10,000 lbs. in sidewalks and 20,000 lbs. in traffic areas.

Meter Box Type Meter boxes in sidewalk or traffic areas shall be concrete polymer with a lid rated for 10,000 lbs. in sidewalks and 20,000 lbs. in traffic areas. Solid cast iron and steel lids are not allowed. In landscape areas, use HDPE meter boxes with HDPE lid and cast-iron meter reader opening.

5/8" to 1" residential meter boxes shall measure 13" wide by 24" long by 18" deep. 1" commercial and all 1½" to 2" meter boxes shall measure 17" wide by 30" long by 18" deep. 1" meter boxes shall have straight sides. 1½" to 2" meter boxes shall have flared sides. Acceptable manufactures include Armorcast, Carson, Oldcastle (Synertec), BES and Armor. Other manufacturers require Water Division Manager approval.

402.2.11L METERS

Water Meters will be purchased by the City and installed at the request of the plumber/property owner as part of the Building Permit Process. Meters 3-inches and larger will be purchased and supplied by the City and installed by the Contractor/builder. Any adjustments required to the water service, meter box, or plumbing must be completed by the Contractor prior to meter installation.

Water services, service lines and appurtenant piping will be installed by contractors, developers, builders, or plumbers. A jumper shall be placed in the space that is typically occupied by the meter. Care must be taken to ensure that the length of the jumper is exactly equal to the lay length of the meter. Water meters will be supplied by the City and installed at the request of the plumber/property owner as part of the building permit process. All water meter fees shall be included in the cost of the building permit. Meters 3" and larger in size will be installed by the contractor/builder, however, the meter will be supplied by the City of Redmond Water Division. All water meter fees shall be included in the cost of the building permit. Water meter boxes shall be cleaned out, and centered before the meter will be installed. If the meter box is not properly installed, installation of the water meter will be delayed until proper installation is complete. City of Redmond Water Division Staff will remove the jumper, install, program, and activate the water account as a part of the meter installation process. All materials shall meet NSF-61 standards. All other materials will be rejected. The property owner assumes all responsibility for protecting the integrity of the water service, meter box, meter, and AMR equipment. Cost of repair or replacement of any water service component(s) damaged during construction is the responsibility of the property owner.

Any adjustments required to the water service, meter box, or plumbing must be done by the contractor prior to meter installation. Meter installation will include the following:

1. Water meter with AMR register
2. Meter Transmitting Unit (MTU)
3. Meters 3" and larger, require the developer to coordinate with the City of Redmond to facilitate the installation. Meters 3" and larger shall be equipped with a screen as suggested by the manufacturer and will be constructed according to the standard drawing in the City of Redmond Standards and Specifications.

Meter Box Type Meter boxes in sidewalk or traffic areas shall be concrete polymer with a lid

rated for 10,000 lbs. in sidewalks and 20,000 lbs. in traffic areas. Solid cast iron and steel lids are not allowed. In landscape areas, use HDPE meter boxes with HDPE lid and cast-iron meter reader opening.

Size and Manufacturer 5/8" to 1" residential meter boxes shall measure 13" wide by 24" long by 18" deep. 1" commercial and all 1½" to 2" meter boxes shall measure 17" wide by 30" long by 18" deep. 1" meter boxes shall have straight sides. 1½" to 2" meter boxes shall have flared sides. Acceptable manufactures include Armorcast, Carson, Oldcastle (Synertec), BES and Armor. Other manufacturers require Water Division Manager approval.

402.2.15 PIPE FITTINGS

402.2.15A BURIED FITTINGS

Buried ductile or cast iron, long bodied fittings with mechanical joints or flanged, shall meet ASA specification 21.10, 250 psi working pressure, with glands, ~~bolts~~bolts, and gaskets in accordance with ASA 21.11. Mechanical joints shall be so designed to completely accommodate star brace bolts, if required. A non-toxic vegetable soap lubricant shall be supplied in sufficient quantities for installing the pipe furnished. Lube must be approved by the City Engineer, or representative, prior to use.

402.2.15B ABOVE GROUND INSTALLATIONS

Above ground ductile iron fittings with threaded flanged joints shall meet ANSI/AWWA Standards C115/A21.15, latest edition, 250 psi working pressure, with stainless steel bolts and gaskets in accordance with ANSI/AWWA Standards.

402.2.15C COUPLINGS

Couplings 6" to 12" diameter must be ductile iron, long barrel couplings, Romac Style 501, Pacific States (Union Foundry) or U.S. Pipe M.J. ductile iron sleeve. Pipe shall be centered in the coupling and pipe gap shall be less than 1" unless approved by the city. Appurtenances shall be of same manufacture.

402.2.15D PLUGS and CAPS

Plugs shall be of Tyton joint type with internal set screws. Caps shall be of M.J. type.

402.2.16 SPECIAL COATINGS AND LININGS

For special conditions, other types of coating and linings may be available. Such special coatings and linings shall be approved by the City Engineer prior to the time of purchase.

402.2.17 PIPE INSULATION

Bridge crossing shall be ductile iron pipe and shall be insulated with a urethane or fiberglass pipe wrap system specifically designed for pipe insulation purposes, minimum 2-inch thickness, CPR Upjohn-Trymer bun material, Mansville Micro-Lok, or equivalent, covered with an aluminum roll jacketing, 0.016-inch minimum thickness, Pabco Surefit Aluminum ~~Jacketing,~~Mansville Jacketing, Mansville Micro-Lok, or equivalent. Insulation shall have a maximum conductivity ("K") of 0.40. Insulation at pipe supports shall be calcium silicate or other approved rigid insulation adequate to support the pipe. Jacketing joints shall be sealed within silicone caulk. Pipe supports and hangars shall be plated or hot dipped galvanized after fabrication.

402.2.18 TAPPING SLEEVE

The tapping sleeves shall be constructed of heavy welded steel. The outlet flange shall be AWWA 207, Class D, ANSI 150 lb. drilling, recessed for tapping sleeve. The body finish shall be a fusion-applied epoxy coating. Gasket shall have a resistance to water, oil, and hydrocarbon fluids. Bolts shall be corrosion resistant, stainless steel 18-8 type 304. A $\frac{1}{4}$ " test plug shall be installed for testing prior to drilling pipe. A minimum service rating of 150 psi shall be required. Tapping sleeves shall be stainless steel sleeve, JCM 432, Romac SST III with stainless steel flanges, Mueller H304, Smith-Blair 665, or equal.

402.2.19 DETECTION WIRE

Detection wire shall be blue clad 18-gauge UF bury solid copper wire.

402.2.20 DETECTION TAPE

Detection tape shall be a blue metallic tape manufactured by Allen System or an approved equal.

402.3.00 CONSTRUCTION

402.3.01 HANDLING AND STORAGE

All material shall be handled with care using straps to avoid damage to coatings and linings. Material shall not be dropped, bumped, or allowed to impact concrete, paved, or metal surfaces.

The Contractor shall provide safe storage for material until it has been incorporated into the completed project. Storage shall be on skids, off the ground. No more pipe shall be strung out on job than can be installed in one shift. The interior of all pipe, couplings, rings, fittings, and other accessories shall be kept free from dirt and other foreign matter at all times. Valves and hydrants shall be drained and stored in such a manner that will protect them from damage by freezing. Material that is supplied by the Contractor and rejected at the point of delivery because of defects or damage shall be removed from the project site and replaced by the Contractor. Material damaged subsequent to ~~acceptance~~ after acceptance by the Engineer shall be removed from the work and replaced by the Contractor.

402.3.02 INSTALLATION, ALIGNMENT AND GRADE

Installation of ductile iron water mains and appurtenances shall generally conform to ANSI/AWWA Standard C600-99, or latest edition, and APWA Standard Specifications for Public Works Construction, latest edition.

All pipe shall be laid to and maintained at the lines and grades shown on the plans or directed by the Engineer. Fittings, valves, air release vents, and hydrants shall be installed at the designed locations with joints centered, spigots fully inserted, and valve and hydrant stems plumb. No deviation shall be made from the required line and grade without approval from the Engineer or City representative.

Pipe shall be laid on firm support made with pipe bedding and pipe zone material. Bedding shall be excavated for pipe bells to provide continuous support along length of pipe. The use of wood, ~~concrete~~ concrete, or stone blocking to support pipe is not allowed.

Pipe shall be plugged or capped to maintain a water-tight seal at the end of pipelines during construction at the end of the shift/day, or whenever the trench is to be left open for an extended period of time. The intent is to minimize the possibility of contamination from surface runoff or construction watering.

Each section of pipe shall be lowered into the trench by means of slings or straps of a type approved by the Engineer. The pipeline shall be assembled piece by piece with the pipe barrels bearing evenly along its length on the bottom of the trench. Where necessary to properly locate valves and fittings, pipe shall be neatly and squarely cut to length. Fittings shall be set in place to accurate line and grade and centered. In pipelines not encased in concrete, all ~~fittings~~fittings, and bends 11-3 degree or more shall have thrust blocks. Restrained joint fittings may be used in lieu of thrust blocks where conflicts with other utilities or structures prevent proper thrust block placement or construction. Collars and rods or thrust blocks shall be used on all cast iron plugs and at the other locations as indicated on the drawings and as directed by the Engineer.

Minimum cover above water pipelines shall be ~~36"~~30 inches. Minimum cover may be reduced to 30 inches when approved by the City Engineer. Where the street profile drawings indicate an uneven grade creating high points in the pipeline, the pipe shall be laid to a uniform slope. Hydrants are generally placed at high points in the pipeline.

402.3.02A PIPE ALIGNMENT

Pipe shall be laid accurately in conformity with the prescribed lines and grades. Gradual curvature, both horizontal and vertical, may be obtained by deflecting the pipe, but in no case shall such deflection exceed the manufacturer's stated allowable deflection angle. Pipe fittings shall be used for deflections in excess of that stated above. Bends shall have thrust blocks or joint restraint.

After each length of pipe has been laid to line and grade, there shall be no movement of the pipe to disturb its alignment.

402.3.02B GROUND WATER

Care should be taken to clean joints and to keep them free of water during construction. Whenever water is excluded from the interior of the pipe, adequate backfill shall be deposited on the pipe to prevent water excluded from the interior of the pipe, adequate backfill shall be deposited on the pipe to prevent floating. In the event of any flotation occurring, the pipe so affected shall be removed from the trench, ~~replaced~~replaced, and relayed at the Contractor's expense.

Groundwater in the area may not be above the invert of the pipe. No pipe or fitting shall be lowered into a trench containing water. Water shall be pumped from wet trenches. The trenches shall be kept dry until the joints have been completed and the open ends of the main have been closed with watertight plugs or bulkheads. The plug or bulkhead shall not be removed unless the trench is dry. Every effort shall be made to keep the trench dry at all times.

402.3.02C PIPE CLEANING

Each section of the pipe and each fitting shall be thoroughly cleaned before it is lowered into the trench. Cleaning of each pipe or fitting shall be accomplished by swabbing out, brushing out, blowing out with compressed air and washing to remove all foreign matter.

402.3.02D CONSTRUCTION RECORDS & SERVICE CONNECTION LOCATION

A true and accurate record of the location of the lines, valves, services, ~~connections~~connections, and appurtenances shall be kept by the Contractor. Such record shall be furnished to the City upon completion of the work.

402.3.02E DETECTION TAPE & WIRE Detection wire and tape shall be installed on all non-metallic mainline and service lines larger than two-inch. Detection tape is required on all main lines larger than two-inch. Detection wire shall be installed on all non-metallic service lines two-inch and smaller. Detection tape shall be as manufactured by Allen Systems or an approved equal. One course of detection tape shall be installed ~~twelve inches~~ **twelve inches** above the pipe. Detection wire shall be a blue-clad 18-gauge UF bury solid copper wire located within six-inches of the top of the pipe. The wire shall be continuous in continuity and a lead shall be brought through to above the top of each valve stack. Where there is a splice, it shall be repaired with a King KWC 100 tan watertight connector or equivalent as approved by the Engineer. When installing ductile iron pipe, detection tape is required, detection wire is not.

402.3.03 FITTINGS, COUPLINGS, AND JOINTS

402.3.03A SETTING VALVES and FITTINGS

Valves, fittings, plugs, and caps shall be set and jointed in pipe in the manner prescribed by these specifications, or by the approval of the City Engineer, or City representative.

402.3.03B COUPLING PIPE

402.3.03B(1) RUBBER GASKET JOINT PIPE.

Pipe with rubber gasket type joints shall be laid and jointed in strict accordance with the manufacturer's recommendations and shall be in accordance with the requirements of these Specifications. Lubricant for the pipe gaskets shall be furnished by the pipe manufacturer. Rubber gaskets shall be new and cannot be reused.

MAXIMUM DEFLECTION OF RUBBER GASKET JOINT DUCTILE IRON PIPE
Based on 18-Foot Pipe Length

SIZE OF PIPE	BEND IN ONE JOINT ANGLE A	DEFLECTION IN INCHES D	APPROX. RADIUS IN FEET OF CURVE PRODUCED BY SECESSION OF JOINTS
6" fire hydrant	2°00'	8"	450'
6" through 12"	4°00'	15"	258'
14" through 16"	3°00'	11"	343'
18" through 24"	2°00'	8"	450'

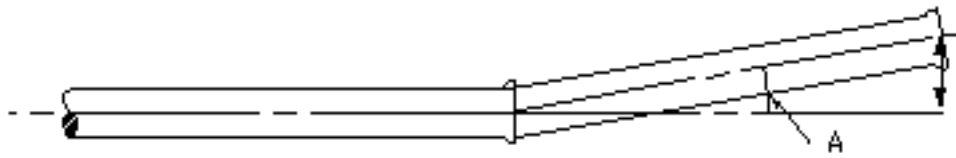


Fig. 1- Pipe Deflection

402.3.03B (2) DUCTILE IRON PIPE

Ductile Iron Water Pipe shall meet the requirements of ANSI/AWWA Standard C-151/A21.51-02, or latest edition. Joints shall be gasketed 'TYTON' type or mechanical type as shown on the plans. Gaskets shall conform to the requirements of ASTM F477 and ASTM D1869. Unless otherwise specified, pipe shall be minimum pressure Class 150. Minimum size for mainlines shall be 8". Hydrant lines may be reduced to 6" for runs under 400' in length

402.3.03B (3) SCREW JOINT PIPE

The threads of the screwed joints shall be thoroughly cleaned by wire-brushing, swabbing, or other approved method. Approved joint compound shall be applied to the threads prior to making the joint. Joints shall be ~~water tight~~ watertight at test pressures before acceptance.

402.3.03C INSTALLATION of MECHANICAL and FLEXIBLE COUPLINGS

Mechanical and flexible couplings shall be provided where required for proper installation and as indicated on the plans and shall be installed in accordance with the manufacturer's recommendations. Before couplings are installed, the end of the pipes shall be thoroughly cleaned of oil, scale, rust, and dirt for a distance of at least 8 inches back from the end to provide a seat for the coupling gaskets. Care shall be taken that the gaskets are wiped clean before they are installed. If necessary, they may be lubricated with pipe lubricant for installation on the pipe ends. Coupling bolts shall be tightened progressively, drawing up bolts on opposite sides a little at a time until all bolts have a uniform torque as recommended by the manufacturer. Worker tightening bolts shall be equipped with torque-limiting wrenches or other approved wrench capable of indicating the bolt torque. Mechanical and flexible couplings shall be tested with the pipeline. Couplings that do not pass the requirements of the leakage tests shall be removed and reassembled on the pipe, and the leakage test shall be repeated.

MAXIMUM DEFLECTION OF MECHANICAL JOINT PIPE

Safe Deflection for 150 PSI¹
Based on 18-Foot Pipe Length
(See fig. 1)

SIZE OF PIPE	BEND IN ONE JOINT ANGLE A	DEFELCTION IN INCHES D	APPROX. RADIUS IN FEET OF CURVE PRODUCED BY SECESSION OF JOINTS
8"	4° 21'	20"	195'
10"	4° 21'	20"	195'
12"	4° 21'	20"	195'
14"	3° 35'	13.5"	285'
16"	3° 35'	13.5"	285'
18"	2° 00'	11"	340'
20"	2° 00'	11"	340'

24"	2°23'	9"	450'
30"	2°23'	9"	450'
36"	2°05'	8"	500'
42"	2°00'	7.5"	510'
48"	2°00'	7.5"	510'

¹ For pressures above 150 PSI, reduce the tabulated deflection by 10% for each additional 150 PSI.

402.3.03D MECHANICAL JOINT VALVES, FITTINGS and APPURTENANCES

Mechanical joint valves, fittings, and appurtenances vary slightly with different manufacturers, and the particular fittings furnished shall be installed in accordance with the manufacturer's recommendations as approved by the Inspector. All appurtenances attached to fittings and/or valves shall be of the same manufacture and material.

The ends of the valves and fittings shall be thoroughly cleaned of all dirt, mud, and other foreign matter by washing with water and scrubbing vigorously with a wire brush. The gland and gasket shall be slipped on the plain end. If necessary, the gasket may be lubricated with approved pipe lubricant to facilitate sliding in place. The end of the pipe shall then be guided carefully into the bell of the fitting. The spigot shall be centered in the bell, the gasket placed in position, and the bolts inserted in the holes.

Torque ranges to be applied to cast iron bolts, shall be as follows:

Diameter of Bolt (in.)	Torque Range (Ft.-lbs.)	
5/8	40	60
3/4	60	90
1	70	100
1-1/4	90	120

When tightening bolts, the gland should be brought up to the flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This shall be done by partially tightening the bottom bolt first, then the top bolt, next the bolts at either side, and lastly, the remaining bolts. This cycle shall be repeated until all bolts are within the required recommended range of torques. If effective sealing is not attained at the maximum torque, the joint shall be disassembled thoroughly cleaned and checked for irregularities and reassembled using the same procedure.

402.3.03D (1) FLANGED DUCTILE IRON PIPE and FITTINGS:

Flanged ductile iron pipe and cast-iron fittings shall be furnished and installed as shown on the plans.

The flanges shall be thoroughly cleaned by washing or other approved method. The pipe shall be carefully aligned and faces brought together so that the bolt holes are lined up. The

gaskets shall be inserted, and bolts slipped in place. Bolts shall be drawn up gradually so that the tension is equal, and the faces of the flanges are in close contact over the entire area.

Flanges, where required, shall be steel ring flanged, conforming to A.W.W.A. C207, Class D. Flanges shall be faced and drilled 125 pound or 250-pound U.S.A.S. as directed. Steel blind flanges for use on welded steel pipe shall be as shown.

402.3.03D (2) FLANGED JOINTING MATERIALS:

All nuts, bolts, and gaskets required for jointing the flanged pipe, fittings, and appurtenances shall meet the requirements of AWWA. C207. Gaskets shall be ring or full-cut with holes to pass the bolts, of rubber or neoprene composition, ~~c inch thick~~.

Prior to joining flanged valves, the flange faces shall be thoroughly cleaned. After cleaning, insert the gasket and tighten the nuts progressively and uniformly. If flanges leak under pressure, loosen the nuts, reset or replace the gasket, retighten the nuts, and retest the joint. Joints must be watertight at test pressures before acceptance.

402.3.03E RUBBER GASKET JOINT PIPE

Pipe with rubber gasket type joint shall be laid and jointed in strict accordance with the manufacturer's recommendations as approved by the Inspector and in accordance with the requirements of the Special Specifications (if applicable). The Contractor shall provide all special tools and devices such as special jacks, chokers, and similar items required for the installation. Lubricant for the pipe gaskets shall be of the type recommended by the pipe manufacturer, and no substitute will be permitted under any circumstances.

402.3.03F ELECTRICAL CONTINUITY

When so stated in the Specifications, the Contractor shall provide adequate means to permit an electric current to pass across all pipe joints without excessive voltage drop. The electrical connection shall be made by driving silicon-bronze wedges between the barrel of the pipe and the mouth of the bell where joints using rubber rings are employed. Two such wedges shall be installed per joint on opposite sides of the pipe on the horizontal centerline. The wedges shall be approximately one-inch square and shall be tapered from c inch to 1/16 inch approximately. The wedges shall have serrated edges to provide good contact. The voltage drop at 500 amperes current flow shall not exceed 1.0 volt per joint.

402.3.03G TIE RODS

Tie rods and/or thrust blocks are required on all mechanical joint branch valves and fittings. Tie rods shall be of such a diameter and strength of material to prevent separation of valves or fittings from the mainline under test pressures. Tie rods shall be a minimum of two (2) 3/4 – inch diameter all-thread ASTM Grade 304 (18-8) stainless steel rods. On pipe sizes 10" diameter and larger, a minimum of 4 rods or more may be required as determined by the Engineer for the test pressures anticipated. Rods shall be of sufficient length to provide that all threads on any tightened nut are in contact and seated with rod threads. Additional mainline tie rods, or other restraint, may be required in certain instances at the direction of the City Engineer or City representative.

Note: Tie rods may be used in lieu of thrust blocks as an alternate means of restraint only with the Engineer's approval (See 402.3.08C). Tie rods may be required to supplement thrust blocking for proper installation. Tie rods shall be used in conjunction with $\frac{3}{4}$ -inch high strength low alloy steel eye bolts in conformance with AWWA C111-80. Use of Tie rods through MJ flange bolt holes is not permitted.

402.3.03H CUTTING PIPE

- 1) Ductile Iron, rubber-gasketed joint pipe shall be cut in the field as recommended by the pipe manufacturer. The pipe may be cut cold in the field using rolling pipe cutters or Carborundum cutting wheel. The cut end shall be reconditioned so that it may be used for the next joint. On rubber gasket joint ~~pipe~~ joint pipe, the outside of the cut shall be tapered back, or dressed as recommended by the pipe manufacturer, and approved by the Inspector prior to installation.
- 2) PVC Pipe (if approved for use by City Engineer): All cuts pipe shall be made by proper pipe cutting tools designed specifically for that purpose. Cuts shall be made in accordance with the pipe manufacturer's recommendations.
- 3) Flame Cutting: Cutting pipe with an oxyacetylene torch or electric arc shall not be allowed.

402.3.04 HYDROSTATIC TESTING/LEAKAGE

402.3.04A HYDROSTATIC TESTS

A Hydrostatic test shall be performed on buried pipe after the trench has been backfilled, and before permanent pavement is placed over the trench. Contractor shall be responsible for securing pipe and fittings during testing. Where any section of pipe is provided with concrete thrust blocking, the pressure test shall not be made until at least 5 days have elapsed after the concrete blocking is installed. If high-early cement is used for the concrete thrust blocking, the time may be cut to 2 days instead of the 5 previously specified.

Duration of the hydrostatic test shall be 2 hours with an allowable leakage not greater than that calculated from the formulas in Section 402.3.04B. All visible leaks shall be repaired and re-tested before the pipe trench is completely backfilled. Test shall be 1,000-foot sections of less or approved by the city Water Division

Any and all testing necessary for final acceptance shall be performed by a certified individual under the supervision of the City of Redmond. This work shall conform to procedures specified by the City of Redmond (see 402.3.06 Leakage/Hydrostatic Testing & Disinfection Procedures).

402.3.04B LEAKAGE

Leakage is defined as the quantity of water necessary to restore the specified test pressure at the end of the test period. No pipe installation will be accepted until the leakage is less than the total gallons per hour allowed as determined by the formulas below. Should any hydrostatic test disclose leakage greater than that allowed, the Contractor shall locate and repair the defective joints or pipe, and repeat the hydrostatic test, at contractor's own expense, until the leakage is within the specified allowable amount. Piping or jointing having visual leakage will not be accepted and shall be repaired or replaced and re-tested.

Ductile Iron: Allowable leakage shall be determined by the formula:

$$L = \frac{S \times D \times \sqrt{P}}{13,320}$$

Where:
L=Allowable leakage (gal/hr.)
S= Length of pipe tested (feet) or 1,000 feet whichever is less
D=Nominal diameter of pipe (inches)
P=Average test pressure (psi). Equal to two times the system pressure, but not less than 150 psi.

C900 PVC: *Where PVC pipe is allowed* allowable leakage shall be determined by the formula:

$$G = ND / P / 7400$$

Where:
G = Allowable leakage (gal./hr.)
N = Number of joints in the section tested (pipe and fittings). In 1000' of 18' lengths, there are 55.5 pipe joints. Each fitting has 2 joints.
D = Nominal diameter of pipe (in.)
P = Average test pressure (psi). Equal to two times the system pressure, but not less than 150 psi.

402.3.05 DISINFECTION

Disinfection of new lines shall be completed prior to connections with existing water distribution piping systems. Approval by City Engineer, or City Representative, must be acquired prior to this work. Disinfection shall be performed by a certified individual under the supervision of the City of Redmond. This work shall conform to the procedures specified by the City of Redmond Public Works Department Water Division.

402.3.06 LEAKAGE/HYDROSTATIC TESTING & DISINFECTION PROCEDURES

402.3.06A SCOPE

The testing of water lines for conformance with the requirements for the City of Redmond and the Oregon State Health Department shall be the responsibility of the Contractor. This testing includes hydrostatic pressure testing, chlorination, flushing, and bacteriological testing. The City of Redmond, or City approved laboratory, will perform all tests according to approved procedures. The City Representative will monitor and observe all testing procedures; and collect all water samples for bacteriological testing.

For bacteriological testing, an independent, certified, approved laboratory retained by the Contractor for that purpose may be used. The City of Redmond cannot provide this testing on a timely basis.

402.3.06B CERTIFICATION

The Contractor or Contractor's employee shall be not less than a State of Oregon Certified Water Distribution Systems Operator I. This person shall be present during and shall supervise all phases of these procedures.

The Contractor or Contractor's representative shall demonstrate knowledge of the steps required for chlorinating/flushing/testing; and conduct a field demonstration of technique.

402.3.06C MATERIALS

Equipment used for testing shall be kept clean and disinfected at all times. Tanks, hoses, pumps or any equipment directly in contact with any potable water piping or City of Redmond water facilities shall be dedicated for potable water use only. Equipment is subject to inspection and/or testing by the City at any time to prove compliance with these specifications.

The Contractor will supply all water and chemicals used for test procedures. The chlorine used will be approved by the City of Redmond prior to use. In some cases, the City may be able to provide water. The method of chlorination will be by injection. Slug chlorination will not be allowed. The Contractor will also be responsible for the safe disposal of chlorinated water at the completion of the test.

402.3.06D PROCEDURES

Testing procedures shall be performed during normal City working hours, 7:00 AM to 1:30 PM, Monday through Friday. Pressure testing will be scheduled to allow completion of all tests within the normal working hours. Chlorination and pressure tests will not be performed when the temperature is expected to be less than 33° between the hours of 8 AM and 4 PM. Chlorine residual tests require a minimum of 24 hours.

The Contractor's personnel shall not operate any valve connected to the City water distribution system.

402.3.06E FLUSHING

The Contractor will be responsible for ~~all flushing~~ all flushing activity, including, but not limited to, flushing air from services and main lines at time of chlorination, flushing chlorinated water after all chlorination and re-chlorination, and as directed by the City's Representative prior to chlorination in case of dirty installation conditions.

The Contractor shall thoroughly flush all lines. Flushing velocity shall not be less than 3 fps. Flushing is considered completed when the system chlorine residual matches the background chlorine residual level of the City water distribution system at the source of water used for flushing.

402.3.06F CHLORINATION

The Contractor will be responsible for chlorine taps. Taps are required on all dead ends and may be required on high points to vent trapped air. Taps will be coordinated and observed by the City of Redmond.

Before chlorination, the City Representative will witness all valves being opened in the system being chlorinated.

The City Representative will sample chlorine residuals as follows:

After chlorination (beginning of test initial value).

Prior to the chlorination solution being flushed at the end of the 24-hour test period (finish value).

The system water after the system has been thoroughly flushed.

Chlorine shall be applied to the water in enough quantities to produce dosage of not less than 50 ppm in all sections of the line, service, and appurtenances. Treated water shall be retained in the system for a period of twenty-four (24) hours minimum and shall produce not less than half ppm added in all sections being disinfected at the end of twenty-four (24) hour period. Chlorine is not-to-exceed one hundred (100) ppm under normal conditions.

If a passing residual level is not obtained after three chlorinations of the system, the pipeline will be deemed to be contaminated and will not be accepted. The Contractor shall remove the contaminated pipeline and replace all pipe at his own expense.

402.3.06G BACTERIOLOGICAL

When the chlorination test has passed and been accepted, the system shall be thoroughly flushed until the chlorine residual is equal to the chlorine residual at the source of the water used for flushing. Twenty-four (24) hours after completion of flushing, a representative of the City of Redmond, or approved testing laboratory representative, shall draw bacteriological samples from the closed system. The number of samples required will be determined by the City, and the cost of processing will be borne by the developer.

There will be a minimum 48-hour period between collecting the chlorination sample and the scheduling of the beginning of the pressure testing to permit an acceptable bacteriological test to be conducted. If the bacteriological test result is negative, pressure testing of the main can proceed. However, if the bacteriological test result is positive, re-chlorination of the system is required. When re-chlorination is required because of a failed sample, a companion sample set will be taken with the second primary sample set.

402.3.06H PRESSURE TESTING

Prior to pressure testing, all air will be flushed and expelled from the system. The City Representative will witness all valves checked to be open, and all service stops, and hydrants securely closed. All service lines shall be installed prior to testing and stop at main open during testing.

Pressure testing should be done from the high end of the main, unless otherwise directed by the City of Redmond. The test pressure shall be one and half times (1.5X) the system pressure, but not less than 150 psi, for a period of not less than two hours.

The Contractor's pressure testing equipment (hoses from pump to metering device and from metering device to main) will be made up to connect thru a 3/4" meter. The City will use their meter and gauge for pressure testing.

The length of the pressure test will be two hours. The allowable leakage shall be determined from the chart in the City of Redmond Water Specifications.

In-line valves in the test section shall be open during the 2-hour test. Once the line has passed, the in-line valve farthest from the pressure gauge shall be closed and the line pressure from that point on reduced to normal system operating pressure. Pressure shall be observed for 10 minutes. If there is no drop in pressure, close the next in-line valve towards the pressure gauge, reduce pressure beyond that valve, observe for 10 minutes and repeat until all in-line valves have been tested. If the pressure drops during any of the in-line valve tests, repair as necessary and repeat the 2-hour test for the section of line with that valve at one end. Jumper in meter shall not be allowed/hooked up during pressure tests.

402.3.06I OTHER TESTS

The City Representative may require other tests, such as Volatile Organic Chemicals, Inorganic Chemicals, Synthetic Organic Chemicals, if he has reason to believe the line has been contaminated with such compounds. The costs for these tests may be substantial and shall be borne by the Contractor/Developer. Failure to pass such other tests will be grounds to reject the work and may require that the pipe be replaced prior to further testing and acceptance.

402.3.06 J CLEANUP

Upon completion of the testing and acceptance of the tests by the City of Redmond, the Contractor shall clean the area and set valves to closed or open as directed by the City.

402.3.07 HOT TAPS

When shown on the plans, or as directed by the City Water Division, branches and large services may be connected to existing City of Redmond facilities by utilizing a tapping sleeve and tapping valve. The performance of this procedure shall be completed only by a City approved contractor. Approval shall be requested from the City Engineer, or City authorized representative, 48 hours in advance of performing the hot tap. No pipe shall be exposed without a City representative on-site.

Hot taps shall be scheduled only during the hours of 7:30AM to 3:30 PM, Monday through Friday. No hot taps shall be performed in cold weather until the air temperature is 35°F and rising, and no inclement weather is forecasted. Hot taps 3-inches or larger will require thrust blocks behind tapping sleeve. See thrust blocking section. Sleeve shall be wrapped in 8 mill plastic.

TAPPING SLEEVE REQUIREMENTS

Sleeve Types as Manufactured by JCM, Mueller, Romac, or Smith-Blair

1. Epoxy coated Fabricated Steel Sleeve; JCM 532 or equal.
 2. Stainless Steel Sleeve: JCM 432; Romac SST III (with stainless steel flanges); Mueller H304; Smith-Blair 665, or equal.
- Place a concrete thrust blocks on tapping sleeve as specified in section 4.03.09

Note: numbers in tables below correspond to accepted sleeve types.

FOR TAPS OTHER THAN SIZE- ON- SIZE

Type of Main being Tapped	Main 8" and under	Main 10" or 12" Tap 12" Tap 8" & under	12" Main 10" Tap	Main 14" & up Tap 8" & Under	Main 14" & up Tap 10" & 12"
C-900 Plastic	2	2	2	N/A	N/A
Steel Size Plastic	2	2	N/A	N/A	N/A
Ductile Iron	2	2	2	1	1
Cast Iron (spun)	2	2	2	1	1
Cast Iron (pit cast)	2	2	2	2	2
Steel	2	2	2	1	1

FOR TAPS OTHER THAN SIZE -ON-SIZE

Type of Main being Tapped	Main 8" & under	Main 10"	Main 12"	Main 14" & 14" & Over
C-900 Plastic	2	2	2	N/A
Ductile Iron	2	2	2	1
Cast Iron (spun)	2	2	2	1
Cast Iron (pit cast)	2	2	2	2
Steel	2	2	2	1

N/A = Not Applicable

N/R = Not Recommended

402.3.08 SERVICES

1. Fittings for copper tubing shall be pack joint.
2. All services will have minimum 30 inches of cover.
3. Approved bedding material shall be placed at least 6" below and at least 12" above all pipes. Material shall be hand tamped or water jetted to achieve 95% of maximum density.
4. Approved meter boxes with lids shall be installed at each meter location. The meter box shall be centered on the meter assembly and adjusted to existing ground level or proposed finished grade. All meter boxes shall be of the type approved by the Water Division as specified in the Water Service and Meter Installation Manual.
5. The main corporation stop shall be Copper Pack or approved equal.

6. Angled meter stops shall be Mueller or approved makes/models.
7. All services shall be blown free of all foreign objects before connecting double check valve.
8. All services to be flushed and checked for flow.
9. Meter boxes shall not be installed in driveways or closer than 5 feet from the edge of the driveway apron. In residential areas, meter boxes shall be set directly behind the sidewalk or directly behind the curb where there is no sidewalk. In commercial areas with sidewalks that occupy all of the space between the building and curb, meter boxes may be placed in the sidewalk unless there is a landscape or paver strip, in which case meter boxes shall be placed in these areas.
10. Where necessary, Meter boxes in traffic areas; e.g. streets, alleys, driveways, sidewalks, and parking lots shall be Armor, Armorcast, BES or Carson boxes fitted with concrete polymer lid rated to 10,000 lbs (sidewalks) and 20,000 lbs (vehicular areas).
11. Commercial and industrial services, fire-lines, and all water services larger than 1" shall have an approved double check valve assembly installed on the service side of the meter.
12. Any service rising 30" or more above the top of the main shall have an approved double check valve assembly installed on the service side of the meter.
13. 3/4" Service runs shall not exceed 60 feet.
14. Service runs shall not contain fittings or unions unless approved by the City Engineer.
15. Service taps on C-900 shall be with a Ford S90 or Romac 901 series tapping saddle.
16. Electrical continuity shall be provided as shown in the standard drawings on all services.
17. ~~Duplexes. All new duplexes shall have separate meters and shut off valve installed for each dwelling unit in individual conventional meter boxes. These shall be served by individual 3/4" or 1" copper service lines.~~ Triplexes, four-plexes and other multi-family buildings, commercial and industrial use will be master metered. Service size to be determined by a Plumber, Design Engineer, Architect, or Landscape Contractor and subject to approval by the Building Official and city Water Division.
18. Pressure reducing valves may be required in areas of excess pressure, PRV's shall be placed on customer side of meter. PRV's will be maintained by property owner.
19. Water service meter boxes shall be set with a minimum separation of 18-inches between each water meter box to facilitate water meter maintenance. All water services shall have a minimum of 10 feet horizontal separation from power and other utilities in the public right-of-way.
20. All property that is the subject of a site plan, or any new construction that is being served by an inadequate water service, shall be required to upgrade the existing water service to current City Standards.
21. All existing water services that are being abandoned must be cut and capped at the water main. All costs for abandonment shall be borne by the Developer/property owner. Whenever possible, the water service to be abandoned shall be physically removed. When a service is abandoned and left in place, its location (horizontal and vertical) shall be noted on the Record Drawings.

402.3.09 THRUST BLOCKING

402.3.09A MATERIALS

Concrete for thrust blocking and hydrant support shall conform to ASTM C 94, Alternate 2 and shall be proportioned to obtain a 28-day compressive strength of 2,500 pounds per square inch. Mix design with current material certifications and compressive strength test results shall be submitted prior to placement of Concrete. "Sacrete" type products are not allowed.

402.3.09B ANCHORAGE

- a) Limiting Pipe Diameter and Degree of Bend: On all ~~pipe lines~~ pipelines 6 inches in diameter or larger, all tees, plugs, caps, 113° or greater bends, and other locations where unbalanced force exist, shall be securely anchored by suitable thrust blocking or other restraint as shown on the Plans or hereinafter specified.
- b) Thrust Blocking: Reaction or thrust blocking shall be placed as shown on the Plans and shall consist of concrete. Concrete blocking shall be placed between the undisturbed ground and the fitting to be anchored. The quantity of concrete and the area of bearing on the pipe shall be as shown on the Plans or as directed by the Inspector. The blocking shall be placed so it will not obstruct repairs to the joint, unless specifically shown otherwise on the Plans. The pipe and fitting joints shall be wrapped with plastic sheeting before placing concrete.
- c) All fittings, valves, etc. shall be wrapped with visqueen or polywrap before concrete is placed to prevent corrosion or bonding of the concrete to the bolt's fittings, or pipe.

402.3.09C METAL HARNESS

Metal harness consisting of tie rods or clamps of adequate strength to prevent movement may be used instead of concrete blocking as an alternative means only with the Engineer's approval. Steel rods or clamps shall be stainless steel, galvanized, or otherwise rustproof treated as directed by the Inspector.

402.3.09D EXISTING THRUST BLOCKS

No existing thrust blocks shall be removed by the Contractor unless a City of Redmond representative is on-site for inspection and coordination.

402.3.09E JOINT RESTRAINT

On all pipelines 4 inches in diameter or larger, all tees, crosses, reducers, caps, plugs, valves, bends 11 ¼ degrees or greater, and other locations where unbalanced forces exist, shall be securely anchored by suitable mechanical restraints.

A minimum of 40 lineal feet of pipe shall be restrained in and out of all fittings. See LARGE PIPE JOINT RESTRAINT TABLE for additional pipe restraint lengths.

LARGE PIPE JOINT RESTRAINT TABLE

FITTING	LENGTH -BRANCH	LENGTH -RUN
	(Feet)	(Feet)
8" Cap		47
12" x 6" REDUCER		50

12" Cap		70
16" x 12" TEE	47	40
16" x 16" TEE	72	40
16" x 8" Reducer		65
16" Cap		89
18" x 18" TEE	78	40
18" x 16" TEE	66	40
18" x 12" REDUCER		53
18" x 8" REDUCER		77
18" 90° BEND 18" 90° BEND		41
18" Cap 18" Cap		98
24" x 24" TEE 24" x 24" TEE	101	40
24" x 16" TEE	52	40
24" x 16" Reducer		68
24" x 12" Reducer		92
24" x 8" Reducer		110
24" 90° BEND		51
24" Cap		125

Pipe Zone bedding shall be compacted to 95% of AASHTO T-99-74 Method C.
 Restrained lengths are based on 150 PSI test pressure, S.F 2, soil type GW. 3' cover

402.3.10 DEADMAN TABLE

Deadman requirement: Able to withstand twice test pressure - 360 psi

THRUST (lbs)

Pipe (in.)	Plug	90°	45°	22-1/2°	11-1/4°
6	13,460	19,037	10,303	5,252	2,638
8	23,159	32,749	17,723	9,036	4,540
10	34,837	49,266	26,662	13,594	6,829
12	49,266	69,671	37,706	19,224	9,659
14	66,186	93,604	50,659	25,826	12,974
16	85,604	121,061	65,516	33,401	16,780

CONCRETE (cubic yards)

Pipe (in.)	Plug	90°	45°	22-2°	11-3°
6	3.3	4.7	2.5	1.3	0.7
8	5.7	8.1	4.4	2.2	1.1
10	8.6	12.2	6.6	3.4	1.7
12	12.2	17.2	9.3	4.7	2.4

14	16.3	23.1	12.5	6.4	3.2
16	21.1	29.9	16.2	8.2	4.1

402.4.00 MEASUREMENT AND PAYMENT

402.4.01 PIPE

Measurement and payment for water pipe will be made on a linear foot basis for the type and size of pipe installed. No reduction in length will be made for valves and fittings unless specified.

402.4.02 FITTINGS

Measurement and payment for fittings will be made on a per each basis for the type, kind, and size specified and installed. No separate or additional payment will be made for restrained couplings, joint lubricant, nuts and bolts, washers, and other fitting related hardware or supplies.

402.4.03 SERVICES

Measurement and payment for water services shall be on a per each basis for the type, kind and size specified. Measurement includes all valves, piping, fittings, jumpers, grounding strap, clamps, meter box, insulation, and backflow prevention devices required for a complete installation in accordance with the Water Service and Meter Installation Manual for the type and size indicated.

402.4.04 THRUST BLOCKS

Measurement and payment for thrust blocks will be made on a per each basis for each thrust block installed. No allowance will be made for additional concrete required for over-excavated areas.

402.4.05 INCIDENTAL BASIS

When neither specified nor listed in the proposal for separate payment, Pipe, Fittings, services, and Thrust Blocks shall be considered incidental work for which no separate payment will be made.

402.4.06 TESTING AND DISINFECTION

When neither specified nor listed in the proposal for separate payment, flushing, chlorination, and hydrostatic testing shall be considered incidental work for which no separate payment shall be made.

403 VALVES

403.1.00 DESCRIPTION

403.1.01 GENERAL

This section covers the work necessary for furnishing and installing valves and appurtenances.

403.2.00 MATERIALS

403.2.01 RESILIENT SEATED GATE VALVES

Buried epoxy coated, iron body gate valves shall meet AWWA standards (C-509 or C515), have non-rising stems, be rated at 200 lbs. working pressure and 350 lbs. hydrostatic pressure, open left with 2" square operating nuts, resilient seat, with brass fittings, "O" ring stem pressure seals, non-directional, mechanical joints with full body glands (AWWA C-110); as manufactured by Mueller, Kennedy, Waterous, CLOW, and American Flow Control, and approved by the City Engineer, or representative. Special attention should be made of AWWA specification, Section 10-4-3.

Above ground or in-vault gate valves shall be equipped with hand wheels.

403.2.02 BUTTERFLY VALVES

Butterfly valves shall meet the strength and performance characteristics of AWWA C 504, latest edition, Class 150-B, mechanical joint etc., except worm gear operators are not permitted. Manufacturer shall be Mueller, Pratt Groundhog, American Flow Control, CLOW or approved equal. Butterfly valves shall be required on all water lines of 10" size and larger, or where 24" of cover over the operating nut cannot be obtained on smaller mains. Variance may be obtained for special valve installation from the City Engineer, or his representative. Above ground or in-vault butterfly valves shall be equipped with hand wheels.

403.2.03 AIR & VACUUM RELEASE VALVES

Air & VACUUM Release Valves shall be a combination air-release/vacuum type which permits entrained air to escape from the line while retaining water upon filling and which permit a reverse of flow of air into line upon draining. All internal parts shall be either stainless steel, bronze, or other approved non-corrodible material. Valve shall be A.R.I., D-40 Series.

403.2.04 VALVE BOXES

All valve boxes shall be a two-piece grade adjustable box. The valve box shall have 5-inch I.D. with a slip top section without a dirt flange on the bottom. Valve boxes shall be East Jordan Iron Works, Inc., product number 00363912 (3639Z1) as shown in the Standard Drawings. The extension piece shall be of the proper length for depth of cover. The word "WATER" shall be cast into the top of the lid. Where valve boxes are located outside of ~~pavement~~pavement, they shall be provided with a 6" thick concrete collar not less than 30" square. Valve clusters may be set in a single collar provided there is not less than 12" from the edge of the valve box to the edge of concrete.

403.2.04 CHECK VALVES

403.2.04A SWING CHECK TYPE

Swing check valves shall be bronze mounted with cast or ductile iron body with outside lever and spring unless otherwise specified.

403.2.04B SPRING LOADED PLUG or DISC TYPE

Spring loaded plug or disc type check valves shall be bronze mounted with bronze, cast, or ductile iron body, bronze plug or disc, stainless steel spring and resilient seal suitable for clear cold-water service. The plug or disc of the check valve shall be easily removable and replaceable.

403.2.04C HYDRAULIC CUSHION TYPE

Hydraulic cushion type check valves shall be of bronze, cast or ductile iron with bronze disc and disc faces, seat rings, and pivot pins. The valve shall provide drop-tight sealing. The valve shall be provided with an adjustable speed, integrally mounted, oil dashpot mechanical snubber system.

403.3.00 CONSTRUCTION

403.3.01 VALVES

403.3.01A GENERAL

Before installation, valves shall be carefully cleaned of all dirt, debris, and foreign material and inspected in open-closed position. Valves shall be installed in accordance with the applicable portions of these Specifications. Unless otherwise indicated, gate valves shall be mounted with the stem vertical. Butterfly valves shall be mounted with the stem vertical and on the 'curb' side of the main. Horizontal valves shall be mounted in such a manner that adequate clearance is provided for operation. Installation practices shall conform to the manufacturer's recommendations.

403.3.01B VALVE BOXES

A metal valve box shall be provided for every valve which has no gearing or operating mechanism, or in which the gearing or operating mechanism is not fully protected with a cast iron grease case. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve. The box cover shall be flush with the surface of the finished pavement, concrete pad, or such level as may be directed by the Inspector.

Valve operating nuts that are deeper than 3' from finish grade shall have a valve operating nut extension installed prior to setting the valve box. The valve operating nut extension shall be HD Fowler or approved equal with a set-screw to attach the extension to the valve operating nut.

403.4.00 MEASURE AND PAYMENT

403.4.01 VALVES

Measurement and payment for valves will be made on a per each basis for the type, kind, and size specified. Payment shall include all materials, labor, equipment, and incidentals required to furnish and install valves and valve boxes complete and operational.

403.4.02 BACK FLOW PREVENTION DEVICES

Measurement and payment for Back flow Prevention Devices will be made on a per each basis for the type, kind, and size specified.

403.4.03 INCIDENTAL BASIS

When neither specified nor listed in the proposal for separate payment, valves, valve boxes, and backflow prevention devices shall be considered incidental work for which no separate payment will be made.

404 FIRE HYDRANTS

404.1.00 DESCRIPTION

404.1.01 GENERAL

This section covers the work necessary for furnishing and installing fire hydrants.

404.1.02 CERTIFICATION

The Contractor shall furnish material certifications.

404.2.00 MATERIALS

404.2.01 HYDRANTS

Traffic model fire hydrants will meet AWWA specifications C502 with dry top. Hydrants shall have a center stem compression, 53-inch valve opening, two 22-inch hose nozzles with National Standard Threads and one 5" Storz by 4 ½" NST Adapter with cap and cable, 6-inch mechanical joint inlet connection, open left (1) 12-inch pentagon operating nut, and gaskets in nozzles. The hydrants shall be painted the City approved yellow. To reduce the number of different hydrants in the system, the preferred models are Kennedy, M & H, Clow, or Mueller. Other hydrant makes/models shall be approved by the City Engineer. The barrel length will fit ~~4.5-, 5-, or 5.5-foot~~ 4.5-, 5-, or 5.5-foot trench as required. A brass seating ring is required. Hydrants must be painted with proper color before acceptance of installed water system.

Where specified on the plans the hydrant shall be Kennedy Guardian K81AN ~~with Flow Sensors~~ (K8152NH & K8153NH), M&H model 129S (MH7129S), M&H Model 129S iHydrant (MH8129S) with pressure sensors, or Clow model (61504QQ14AG002B MEDN SS 5"X6" MJ IHYDRANT SS STEMS SSBN OL 4'0" 75228-A-5 YELLOW(TGIC)NL(VERIZON LTE CAT-1).

404.2.02 HYDRANT EXTENSIONS

Provide the appropriate hydrant height for the installation based on the construction drawings to avoid the need for hydrant extensions. If unavoidable, hydrant extensions shall be of same manufacture as hydrant and only one extension is permitted per hydrant.

404.2.03 GRAVEL FOR DRAINAGE

Gravel for drainage under fire hydrants shall be graded river gravel free of organic matter, sand, loam, clay and other small particles that will tend to restrict water flow through the gravel.

404.2.04 GEOTEXTILE

When required to protect the drain rock from contamination, geotextile fabric shall be placed against, and to 24-inches beyond gravel or soil at the limits of the excavation for drain rock to prevent fines from migrating into the drain rock. The geotextile shall be a commercial fabric designated for this application and shall be approved by the Engineer's representative prior to incorporation in the work.

404.3.00 CONSTRUCTION

404.3.01 HYDRANTS

404.3.01A LOCATION

Hydrants shall be located as shown on the Plans or as directed by the Engineer. The center of the operating nut on the hydrant barrel shall be set a minimum of 6 feet, and not more than 7 feet, from face of curb as shown in the standard drawings. All hydrants shall have two (2) reference points (swing ties) indicating the face of hydrant, top of curb, and face of curb.

Hydrants located in areas not protected by curb shall be protected by a 6' X 6' concrete pad and bollards as shown in Standard Drawing 4-14. Hydrants located adjacent to any vehicular traffic areas shall be protected on the side facing traffic by a minimum of two (2) bollards or curb as shown in the Standard Drawings.

404.3.01B POSITION

No hydrant shall be set within 25 feet of a dry well unless specifically permitted by the City Engineer. No hydrant shall have more than a 6 foot bury. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the curb with the pumper nozzle facing the curb. Hydrants shall be set to the established grade with the bottom edge of break off flange no less than 3 inches, nor more than 6 inches, above the top of the concrete slab as shown on the plans or as directed by the Inspector. Hydrant pads shall be placed flush with sidewalks and curbs at a slope of 0.02/FT.

404.3.01C HYDRANT DRAINAGE

Unless otherwise specified in the Plans or Special Conditions, hydrant drainage shall be provided at the base of the hydrant by placing a geotextile mat against native earth, and graded river gravel from the bottom of the trench to at least 6 inches above the waste opening in the hydrant, and to a distance of one foot around the bowl. No drainage system shall be connected to a sewer. A concrete base or rock, at least 12 inches square by 4 inches deep, shall be provided for all hydrants.

404.3.01D ANCHORAGE of HYDRANTS

The bowl of each hydrant shall be well braced against undisturbed earth at the end of the trench with concrete blocking, or it shall be tied to the water main pipe with suitable metal tie rods and clamps, or both if required, as shown on the plans or as directed by the Inspector.

404.3.01E COATING

All hydrants shall be fully liquid coated yellow at the factory with an undercoat of primer and a top chrome yellow at least 6 mils thick.

Re-touch painting of a fire hydrant that has been coated with a conventional liquid paint. The touch up paint process includes: 1) mask at the base, 2) scrape off loose paint, rust and dirt, 3) Clean off hydrant with a rag, 4) Roughen shiny surfaces with by sanding, 4) Apply primer to bare metal, 5) apply top coat paint at least 6 mils thick.

404.4.00 MEASUREMENT AND PAYMENT

Measurement and payment will be made on per each basis for the type of hydrant specified and installed. Payment shall include all materials, labor, and equipment to furnish and install hydrant, bury and risers, drain rock, geotextile fabric, thrust blocking and tie-backs, concrete pad and bollards, and painting, complete and accepted by the Inspector.

When specified and listed in the proposal, payment shall include 6-inch hydrant valve and ductile iron piping from the water main.

When neither specified nor listed in the proposal for separate payment, Hydrants shall be considered incidental work for which no separate payment will be made.

405 WATER SAMPLING STATIONS

405.1.00 DESCRIPTION

405.1.01 GENERAL

This section covers the work necessary for furnishing and installing water sampling stations.

405.1.02 CERTIFICATION

The Contractor shall furnish material certifications.

404.2.00 MATERIALS

404.2.01 SAMPLING STATIONS

Water quality sampling station shall consist of a 3/4 -inch: corporation stop, Type K soft temper copper tubing water supply, F.I.P ball valve, valve box, 3/4-inch M.I.P. x (110 Compression) quarter bend coupling. Eclipse No. 66-SS Sampling Station (Kupferle Foundry) or approved equal. Fill housing with pea gravel.

404.3.00 CONSTRUCTION

404.3.01 LOCATION

Location shall be located as shown on the Plans or as directed by the Engineer. Valve box shall be located 1 foot behind the curb in the planter strip. In the case of curb tight ~~side walk~~ sidewalk the valve box shall be located 1-foot behind the sidewalk.

404.4.00 MEASUREMENT AND PAYMENT

Measurement and payment will be made on per each basis. Payment shall include all materials, labor, and equipment to furnish and install station, complete and accepted by the Inspector.

When neither specified nor listed in the proposal for separate payment, Stations shall be considered incidental work for which no separate payment will be made.

406 IRRIGATION SYSTEM MATERIALS

406.1.00 PIPES, TUBES, AND FITTINGS

406.1.01 BRASS PIPE

ASTM B584 Alloy c84400 standard specifications for copper alloy sand casting for general applications:

- 1) Brass pipe nipples: ASTM B-43, seamless red brass pipe with threaded ends
- 2) Brass pipe fittings: ANSI B-16.15 cast copper alloy threaded fittings
- 3) Brass unions: ANSI B-16.15, Federal Specification WW-U-516 for Type III, Class A and Class B cast copper alloy threaded unions

406.1.02 PVC Pipe, General:

- 1) Material used in the manufacture of the pipe shall be domestically produced rigid PVC 1120 compound, Type 1 Grade I, with cell classification of 124554 as defined in ASTM D-1784
- 2) Pipe shall continuously bear the National Sanitation Foundation seal of approval for potable water usage and comply with the following requirements for product marking ASTM D-2241; D-1785 and D-2665 as applicable. Markings shall include manufacturers name; nominal pipe size outside diameter system; material designation code; applicable standard thermoplastic pipe dimension ratio designation code (SDR number) or pipe schedule, and corresponding pressure rating in psi for water at 73 degrees Fahrenheit.
- 3) Belled-end pipe shall have tapered sockets to create an interference-type fit, which meet or exceed the dimensional requirements and the minimum socket length for pressure-type sockets as defined in ASTM-2672.
- 4) Pipe sizes ½ inch and 1 ½ inch are not permitted

406.1.03 PVC Mainline

PVC mainline shall be ASTM D-1785, Schedule 40

406.1.04 PVC Lateral Line

PVC lateral line shall be pressure-rated pipe, ASTM D-2241, SDR 21, 200 psi minimum, Schedule 40

406.1.05 PVC Nipples and Fittings

- 1) PVC socket fittings, Schedule 40: ASTM D-2466; and schedule 80: ASTM D 2467
- 2) PVC pipe nipples: ASTM D-1785, PVC 1120 compound, schedule 80
- 3) PVC threaded fittings, Schedule 80: ASTM D-2464, pressure
- 4) PVC threaded fittings, Schedule 40: ASTM D-2466, non-pressure

406.1.06 Polyethylene drip tubing with In-Line Pressure Compensating Emitters

- 1) Tubing shall be of nominal sized one-half inch low-density, ultraviolet resistant, linear polyethylene tubing with internal pressure-compensating, self-cleaning, integral emitters at a specified interval. The tubing shall be brown for potable water or purple for non-potable water and shall conform to an outside diameter of 0.60 inch and an inside diameter of

0.54 inch. The low volume tubing shall be capable of a discharge rate of 0.92 gallons per hour (GPH) and between operating pressure of 7 to 70 psi for each individual emitter.

- 2) The individual self-cleaning, pressure compensating emitters shall be coextruded to the inside of the tubing wall. The emitters are constructed of three individual pieces.
- 3) Emitter spacing shall be available in 12-inch intervals (on center).

406.1.07 Polyethylene Tubing Fittings

All insert barbed fittings shall be constructed of molded, ultraviolet resistant brown or purple colored plastic having a nominal inside dimension of 0.54 inch. Each fitting shall have a minimum of two ridges or barbs per outlet. All fittings shall be of the same manufacturer as drip tubing and shall be available in one of the following end configurations:

- 1) Barbed insert fittings
- 2) Male pipe threads (MPT) with barbed insert fittings, or
- 3) Female pipe threads (FPT) with barbed insert fittings

406.1.08 Sleeves

PVC pipe under all paving, sized to accommodate required sizes and numbers of pipes and wires, 6-inch minimum diameter, in no case less than twice the diameter of the pipe being sleeved.

- 1) Schedule 40 PVC, ASTM D-1785 or plastic sewer pipe ASTM D-3034, SDC-35, PVC conforming to ASTM D-1784, NSF approved pipe.

406.2.00 JOINING MATERIALS

406.2.01 COPPER PIPE SOLDER

Silver solder, 45 percent silver, 15 percent copper, 16 percent zinc, 24 percent cadmium and solidus at 1125 degrees Fahrenheit, and liquids at 1145 degrees Fahrenheit; conforming to ASTM B206-52T and Federal specifications QQB 00655.

406.2.02 PIPE SOLVENT CEMENT

- 1) PVC solvent cement ASTM D-2564
- 2) Weld-on IPS 705 for pipe sizes up to 2-inch diameter
- 3) Weld-on IPS 711 cement with P70 primer for pipe sizes 2 ½ inches and larger

406.2.03 PVC PRIMER

Weld-on IPS P-70, ASTM F-656

406.2.04 PVC Cleaner

Weld-on IPS C-65, SCAQMD 1168, Low VOC

406.2.05 Field Assembled Swing Joints

For rotors and quick couplers: schedule 40 PVC fittings and Schedule 80 PVC nipples. Size to match inlet size of rotor head or quick coupler. Use is acceptable for all flows.

406.2.06 Prefabricated Swing Joint Assemblies

Class 315 PVC construction with leak-proof “o-ring” seals. Size to match inlet size of pop-up rotor head or quick coupler. Use for flows greater than 4 GPM. Length as required. Lasco triple swing joint, or equal.

Flexible PE swing pipe flexible riser assembly: Minimum 18-inch length PE piping with black Marlex spiral bab fittings, or equal. Use for flows under 4 GPM. Rainbird swing assemblies or equal.

406.2.07 Flex Riser at Bubbler Assemblies

Nylon-reinforced rubber hose with integral male pipe threaded ends. Custom length 8-inch long by 0.5-inch diameter. KBI FR-500, or equal.

406.3.00 GENERAL DUTY VALVES

406.3.01 Shut-off Valve (Point-of-Connection)

Bronze Gate Valve; MSS SP-80, Type 2; Class 125; 200 PSIG CWP rating; ASTM B 62 bronze body material with integral seat and screw in bonnet; threaded ends; nonrising bronze stem; solid wedge; bronze disc; asbestos free packing; malleable iron or bronze handwheel.

Nibco Model T-113; Matco-Norco Model 513T; or equal. Same size as pipe on which it is installed.

406.3.02 Isolation Valve (Mainline)

Full port ball valve with threaded ends, minimum 400 PSI CWP rating, forged brass and cast bronze bodies and end pieces RP1FE seats and seals, blow-out proof stem design, chrome-plated brass ball, with stainless steel handle, 'Apollo' 70 Series or equal. Size same as pipe on which it is installed.

Valves 2-inches and smaller shall be equipped with stainless steel tee handle and nut; and 2-1/2-inch valves shall be equipped with stainless steel lever and nut.

406.3.03 Isolation Valve for Electric Control Valve Assembly

Unionized brass, angle-pattern, globe valve with screw-in bonnet, integral seat, 200 PSI CWP rating, conforming to MSS SP-80, size to be same as remote control valve: 'Champion' 300RS Series or equal.

406.3.04 Drain Valves (Mainline Drain Valves)

Bronze, angle-pattern, globe valve with screw-in bonnet, integral seat, 200 PSI CWP rating, conforming to MSS SP-80: 'Nibco' T-311-Yor equal, 1 inch minimum.

406.4.00 VALVE BOXES AND VAULTS

406.4.01 Valves Boxes

Valve Boxes should be HDPE plastic boxes. 'Carson Brooks,' 'Pentek,' 'RainBird' or equal, with tee-style locking top and 6-inch extensions to facilitate required depth of installation where applicable. Lids shall be black unless otherwise noted. Traffic rated composite lids will be required if in traffic area.

1. Electric valves shall be installed in jumbo boxes.
2. Electric drip system valves shall be installed in jumbo [standard] boxes.
3. Isolation valves shall be installed in standard boxes.
4. Quick couplers shall be installed in 10-inch round valve boxes.
5. Drain valves shall be installed in 5-1/4 inches round adjustable valve boxes.
6. Grounding rods shall be installed in 7-inch round valve boxes with black covers.
7. Flow meters shall be installed in standard valve boxes.
8. Combination Air Release and Air and Vacuum Release Valves shall be installed in jumbo boxes with black covers.
9. Filter assembly units shall be installed in jumbo valve boxes.
10. Pull boxes and splice boxes shall be standard boxes with black covers.
11. Drip Air/Vacuum Relief Valves shall be installed in 5-inch round valve boxes.
12. Drip Automatic Flush Valves shall be installed in 5-inch round valve boxes.

406.4.02 Composite Vaults

Composite Vaults should be fiber-reinforced composite polymer vault with locking top. Lids shall be gray color unless otherwise noted. Vault shall be constructed in single unit without extensions to accommodate full depth of assembly. Provide 6 inches minimum clearance on all sides of equipment housed within or as required by state and local codes.

Available Manufacturer: 'Utility Vault Company', 'Synertech', 'Oldcastle Precast' or equal.

Backflow Devices shall be installed in a 24-inch x 36-inch x 24-inch deep] [24-inch x 48-inch x 30-inch-deep vault with 6-inch minimum clearance on all sides of devices enclosed within.

406.4.03 Valve Box and Vault Accessories

1. Stainless steel 'penta' bolts for bolt-down covers.
2. Drain Rock: 3/4 inch to 1/4 inch clean and washed pea gravel, no fines.
3. Filter Fabric: Woven or non-woven geotextile for use in separating drain rock from subgrade in valve box and vault installations while providing adequate drainage.
4. Brick or Concrete Block Supports: (2)-4-inch by 8-inch by 4-inch bricks or (1) 8- inch by 8-inch by 4-inch concrete paver at each corner of valve box.

406.5.00 AUTOMATIC CONTROL SYSTEM

406.5.00 Control System

The control system assembly should consist of a completely pre-assembled control system that is tested for operation and is housed within a cabinet. The components are pre-wired in the cabinet, which is to be mounted on a vertical surface. All conduits and wire runs to be provided and installed by the Contractor. Equip controllers for remote radio operation.

Controller stations for automatic control valves shall be variable from 0-120 minutes. Include switch for manual or automatic operation of each station. The timing device shall be adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate 2 or more times daily.

Exterior control enclosures shall be NEMA type 3R rated, UL listed, weather and vandal resistant, louvered for ventilation, with 3-point locking system cover, removable backboard and two

matching keys. Include provision for grounding. Material shall be 100 percent stainless-steel sheet material.

Sensors shall be Hunter WFRS wireless Rain Click, Rainbird wireless rain, or equal.

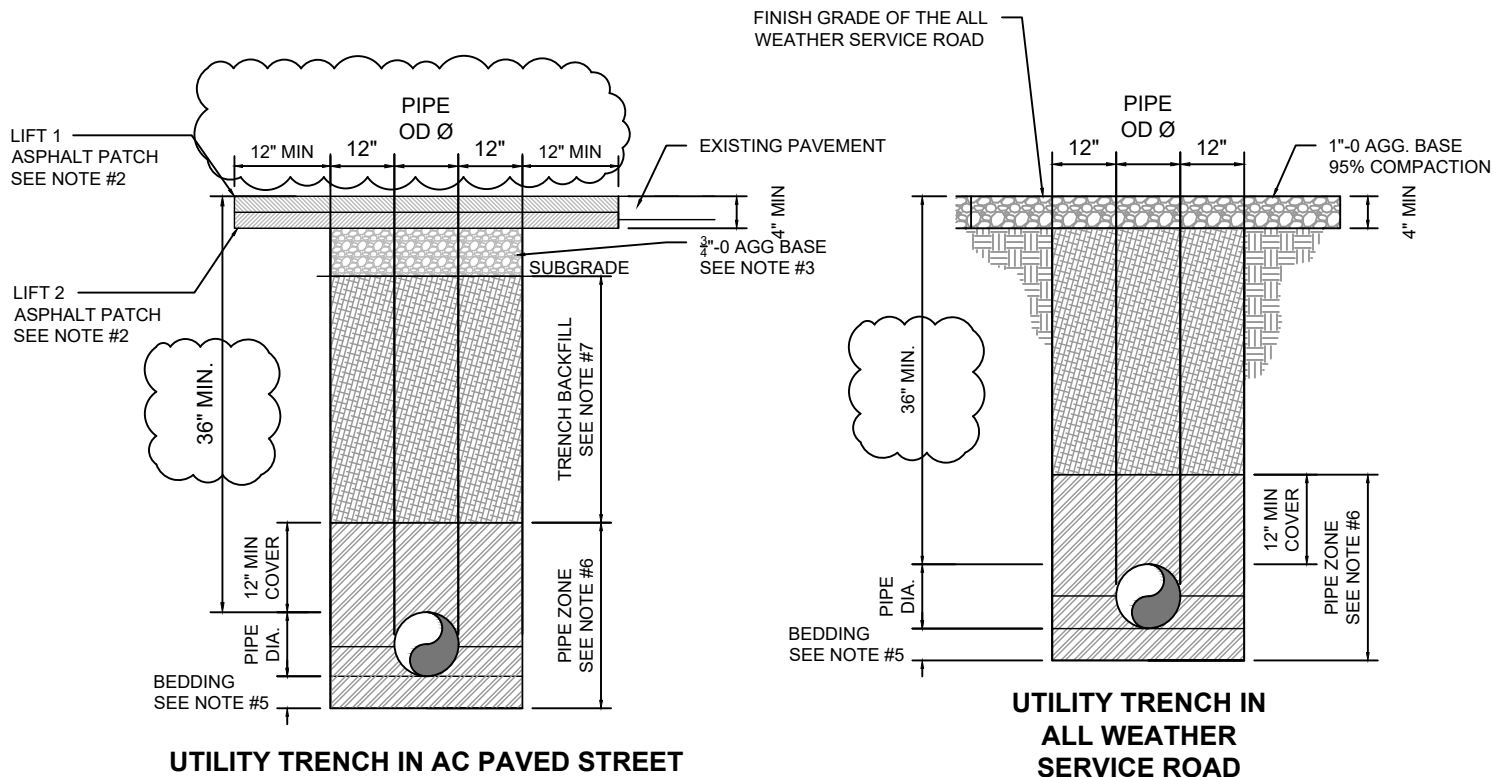
Electrical control wire accessories shall be single-strand copper, UL approved for direct burial,

AWG-UF type, sized per manufacturer's recommendations, No.12 gauge minimum for pilot wires, and No.

12 gauge minimum for common wires. Provide colored PVC jackets as listed below:

- a. Use red jacket wire for control valves pilot wires.
- b. Use white jacket wire for common wires.
- c. Use orange jacket wire for master valve pilot wire.
- d. Use yellow jacket wire for spare wires.
- e. Use blue jacket wire for tracer wires.

Control Wire Connectors: 3M/ DBY and DBR connectors, or equal.



NOTE:

1. SAW CUT JOINTS SHALL BE TACKED AND SAND SEALED.
2. ASPHALT PATCH SECTION SHALL BE NOT LESS THAN 4" THICK, PLACED IN TWO LIFTS MINIMUM NOT TO EXCEED 2" MAX PER LIFT.
3. BASE MATERIAL SHALL MEET CURRENT CITY STANDARDS AS SHOWN IN STANDARD DRAWING 2-1.
4. ALL TRENCHES UNDER EXISTING PAVEMENT, CURB AND/OR SIDEWALK AREAS SHALL BE BACKFILLED IN ACCORDANCE WITH DIVISION I TRENCHES.
5. PIPE BEDDING SHALL BE 4" MINIMUM DEPTH.
6. PIPE ZONE MATERIAL SHALL BE CLASS "B" BACKFILL , COMPACTED TO 95% OF MAXIMUM DENSITY ASHTO T-99 IN ONE FOOT LIFTS. FOR PIPES LARGER THAN 3" PLACE FIRST LIFT TO PIPE SPRINGLINE.
7. FOR NEW CONSTRUCTION, CLASS "B" TRENCH BACKFILL MATERIAL IS ALLOWED FROM 2' ABOVE PIPE TO SUBGRADE FOR TRENCHES DEEPER THAN 6 FEET (FINISH GRADE TO TOP OF PIPE).
8. WHEN TRENCH CUT IS ALLOWED IN NEWLY PAVED STREET LESS THAN 2 YEARS OLD, SPECIAL PATCHING REQUIREMENTS WILL BE NECESSARY AND PROVIDED BY CITY OF REDMOND ENGINEERING.
9. DRYWELL CONCRETE CAP SHALL NOT EXTEND WITHIN 6" OF UTILITY TRENCH.
10. DRY UTILITY TRENCH PER MANUFACTURE

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

UTILITY TRENCH

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

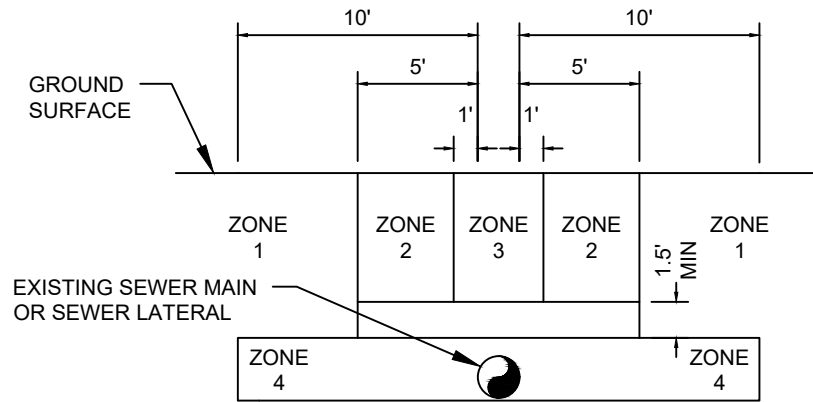
10/22/2022



STANDARD
DRAWING
NO.

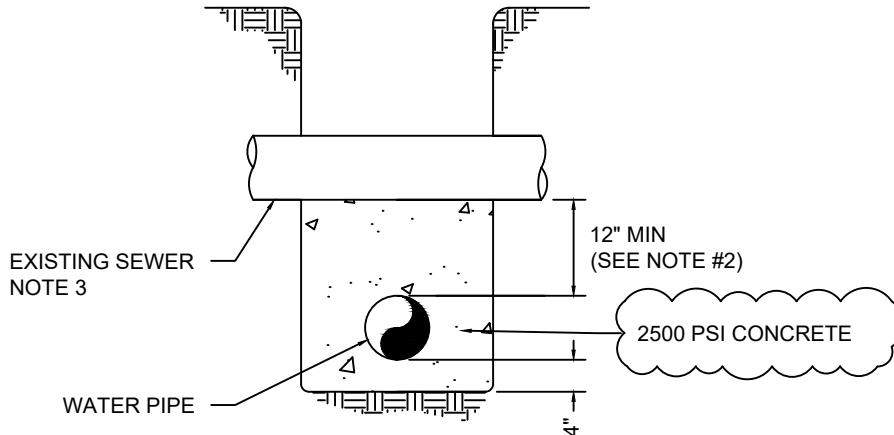
1-1

TRENCHES



WATER & SEWER LINE IN PARALLEL CONDITIONS

ZONE	VERTICAL SEPARATION	HORIZONTAL SEPARATION	RESTRICTIONS
1	WATER LINE HIGHER THAN SEWER	5'	ONLY CROSSING RESTRICTIONS APPLY
1	WATER LINE LEVEL OR LOWER THAN SEWER	10'	ONLY CROSSING RESTRICTIONS APPLY
2	WATER LINE 1.5' HIGHER THAN SEWER	GRATER THAN 1', LESS THAN 5'	CASE BY CASE DETERMINATION
3	WATER LINE 1.5' HIGHER THAN SEWER	LESS THAN 1'	PARALLEL WATER LINE PROHIBITED
4	WATER LINE LESS THAN 1.5' ABOVE SEWER	LESS THAN 5'	PARALLEL WATER LINE PROHIBITED
4	WATER LINE LEVEL OR LOWER THAN SEWER	LESS THAN 10'	PARALLEL WATER LINE PROHIBITED



CONCRETE ENCASEMENT UNDER EXISTING PIPES

NOTE:

1. WATER & SEWER LINE CROSSINGS SHALL COMPLY WITH DESIGN STANDARDS, II C. SEWER OR O.A.R. 333-61-050 FOR SEPARATION AND PIPE MATERIAL REQUIREMENTS.
2. C900 LATERAL REQUIRED FOR SEPARATION LESS THAN 12" FOR WATER & SEWER LINE CROSSINGS MUST BE APPROVED BY THE CITY ENGINEER.
3. CONCRETE ENCASEMENT TO BE USED IN CASES WHERE A CITY WATER MAIN CROSSES UNDER AN EXISTING SEWER MAIN, WITH CITY APPROVAL. MINIMUM ENCASEMENT LENGTH SHALL BE 3' EACH SIDE.
4. UNDERGROUND UTILITIES SHALL NOT BE LOCATED CLOSER THAN 10' HORIZONTALLY FROM ANY WATER AND SEWER MAIN. UNDER SPECIAL PERMISSION FROM THE CITY ENGINEER, SEPARATION MAY BE REDUCED TO 5'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

WATER LINE & SEWER LINE SEPARATION

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

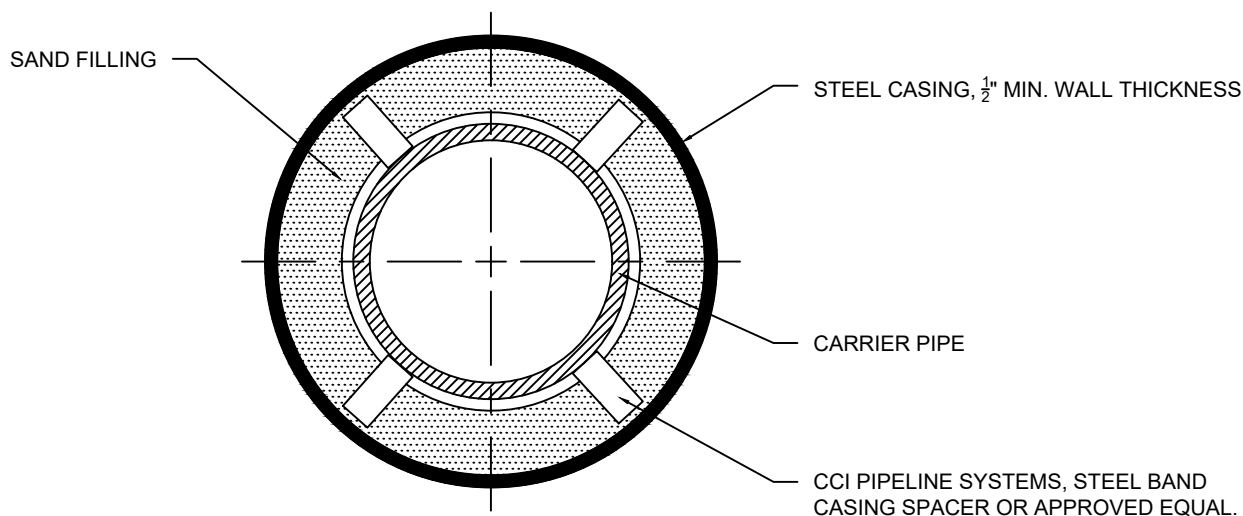
10/22/2022



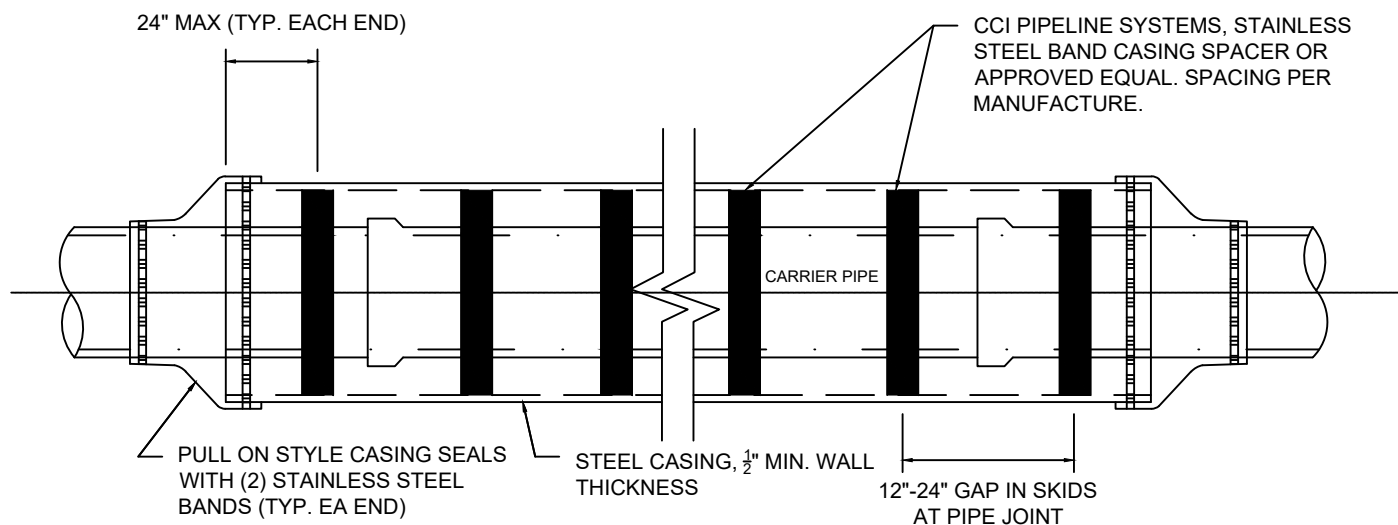
STANDARD
DRAWING
NO.

1-2

TRENCHES



SECTION VIEW



NOTES:

1. CASING INSIDE DIAMETER SHALL NOT BE LESS THAN MAXIMUM CARRIER PIPE OUTSIDE DIAMETER PLUS 3 INCHES.
2. CASING WALL THICKNESS SHALL BE DETERMINED IN ACCORDANCE WITH THE CURRENT REVISION TO AWWA MANUAL M-11
3. SECTIONS OF CASING PIPE SHALL BE JOINED BY FULL PENETRATION BUTT WELDS. FIELD WELDING OF STEEL PIPE SHALL COMPLY WITH THE CURRENT REVISION TO AWWA C-206
4. CARRIER PIPE JOINTS SHALL BE FULLY RESTRAINED WITHIN CASING WITH APPROVED MECHANICAL JOINT RESTRAIN.
5. CASING SHALL CONFORM TO SEWER SLOPE WHEN APPLICABLE.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**BORE CASING AND
CARRIER PIPE**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/22/2022

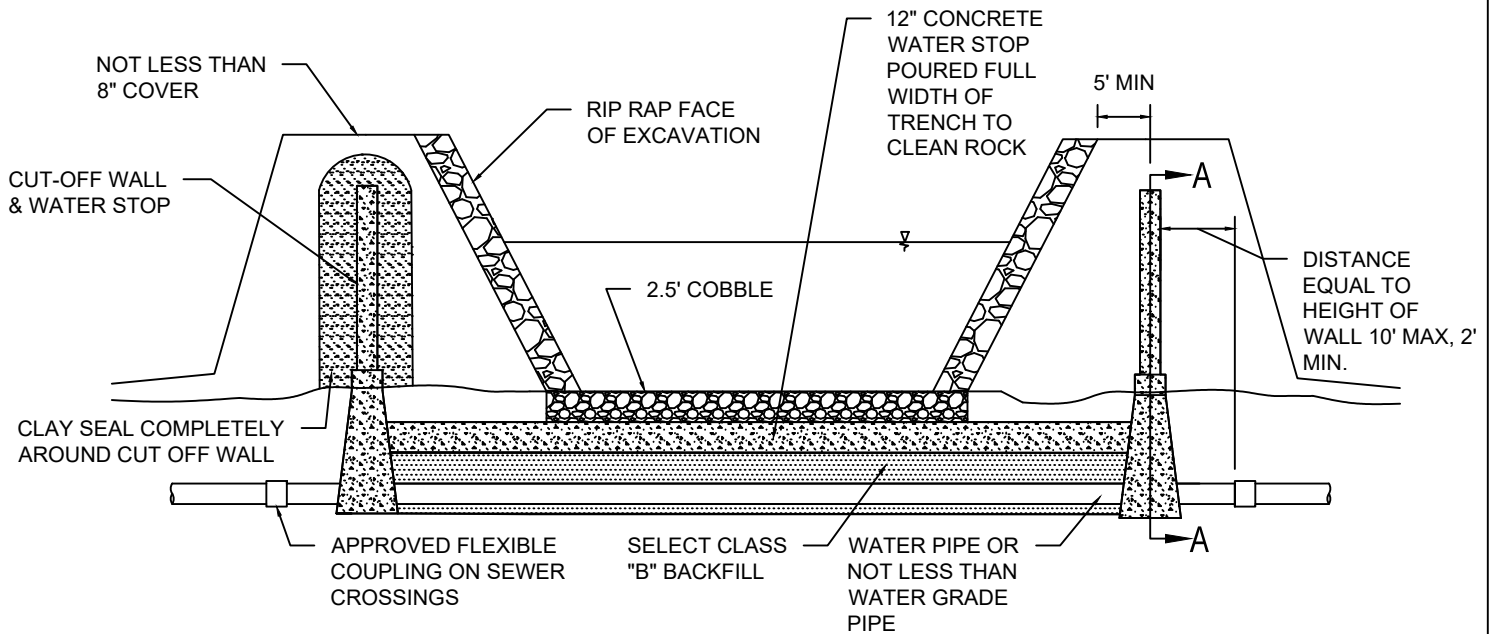


STANDARD
DRAWING
NO.

1-3

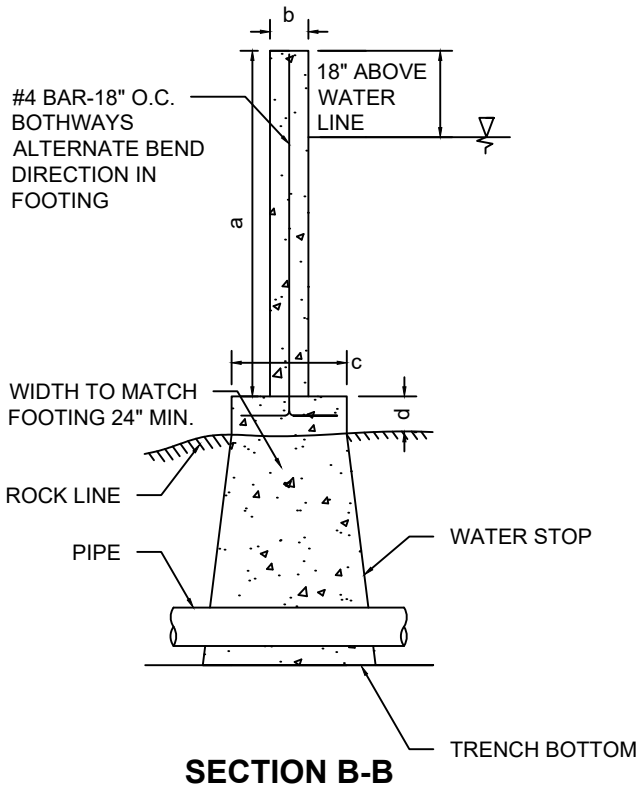
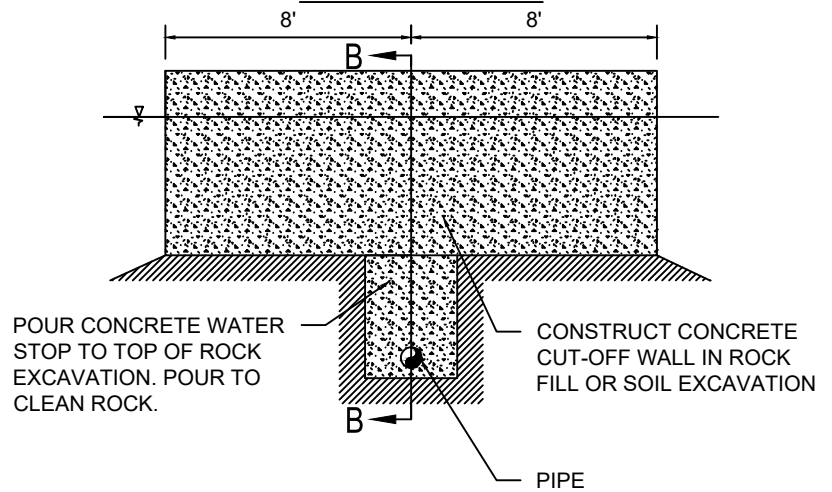
TRENCHES

G:\ENGINEER\2010\STANDARD&SPEC\2022 REVISIONS (WORKING)\STANDARD DETAIL\SECTION 1 GENERAL\CAD UPDATED\COR 1-4 2023.DWG



TRENCH PROFILE THRU CANAL

SECTION A-A CUT-OFF WALL



SECTION B-B

NOTE:

1. DRAWING INCLUDED FOR REFERENCE ONLY. FINAL DESIGN TO BE APPROVED BY IRRIGATION PROVIDER AND CITY OF REDMOND

DIMENSIONS

a	b	c	d min.
0 - 6'	8"	24"	8"
6' - 10'	12"	36"	8"
10' - 14'	12"	48"	12"

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL IRRIGATION CANAL UTILITY CROSSING

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/22/2022

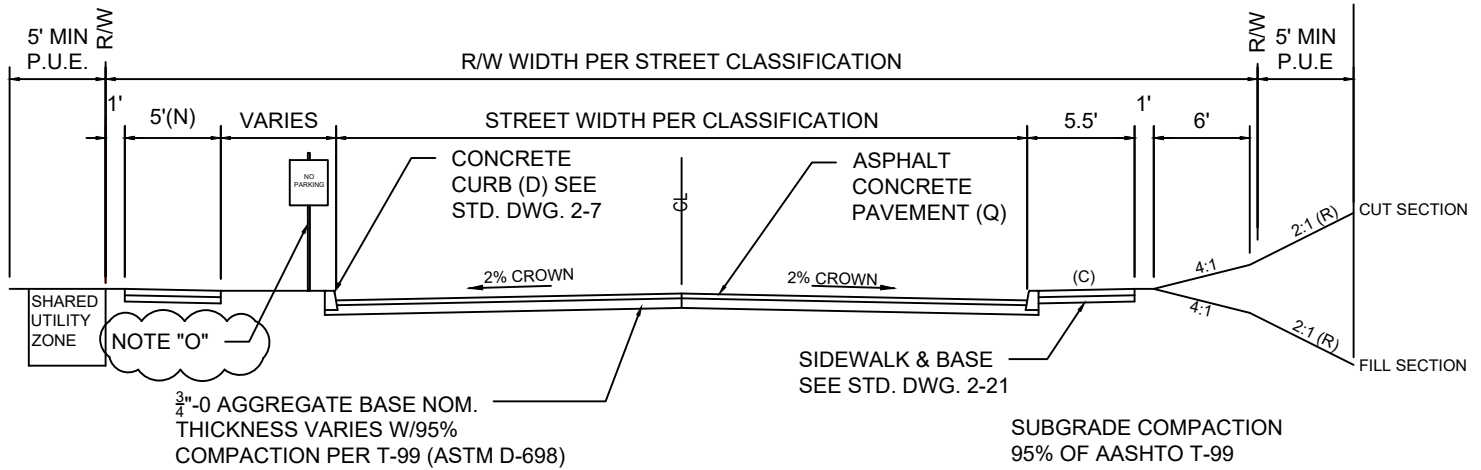


STANDARD
DRAWING
NO.

1-4

TRENCHES

SLOPE CATCH OUTSIDE OF CITY RIGHT-OF-WAY
REQUIRE SLOPE EASEMENT DOCUMENTATION



TYPE OF STREET	R/W WIDTH (FT.)	PAVING WIDTH CURB TO CURB (FT.)	TRAVEL LANE WIDTH (FT.)	TURN LANE WIDTH (FT.)	BIKE LANE WIDTH (FT.)	PARKING LANE WIDTH (FT.)	SIDEWALK WIDTH (FT.)	AC DEPTH (IN.)	(E.) AGGR. BASE DEPTH (IN.)	MIN. CURB RETURN RADIUS (FT.)	DESIGN SPEED (MPH)	(B) MAX. GRADE (%)	MIN. CL CURVE RADIUS (FT.)
MAJOR ARTERIAL (STATE HIGHWAY)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)
MINOR ARTERIAL (M)	100(A)	50	12	14	6	N/A	7	8	10	(I)	40	6	(H)
MAJOR COLLECTOR	80	36	12	(P)	6	N/A	5	6	8	(I)	35	6	(H)
MINOR COLLECTOR	60	40	12	N/A	N/A	8	5	6	8	(I)	35	8	(H)
INDUSTRIAL COLLECTOR	80	40	14	N/A	6	N/A	5	6	8	(I)	35	6	(H)
INDUSTRIAL	60	40	12	N/A	N/A	8	5	6	8	(I)	35	8	(H)
LOCAL RESIDENTIAL	60	36/32/28/24(O)	10	N/A	N/A	8	5	4	6	(I)	25	10	(H)
ALL WEATHER SERVICE ROAD	30(J)	24(G)	12	N/A	N/A	N/A	N/A	2(G)	6	15	15	10	(H)
ALL WEATHER UTILITY ACCESS	20(F)	14(G)	14(K)	N/A	N/A	N/A	N/A	2(G)	6	15	15	10	(H)
ALLEY - COMMERCIAL	20	20	10	N/A	N/A	N/A	N/A	3	6	15	15	10	(H)
ALLEY - RESIDENTIAL	20	16	N/A	N/A	N/A	N/A	N/A	2	4	15	15	10	(H)

NOTES:

- 80 FOOT RIGHT-OF-WAY PERMITTED IN EXISTING DEVELOPED AREAS WITHIN CITY LIMITS.
- MAXIMUM GRADE MAY BE INCREASED BY 2% WITH CITY ENGINEER'S APPROVAL. MINIMUM GRADE 1%, 0.50% WITH GUTTER AND CITY ENGINEER'S APPROVAL.
- SIDEWALKS SHALL BE PROVIDED ON BOTH SIDES OF THE STREET UNLESS CONDITIONED OTHERWISE IN THE LAND USE APPROVAL PROCESS. CONSIDERATION MUST BE GIVEN TO ACCOMMODATE AND MATCH EXISTING DRIVEWAYS. PROPERTY TIGHT SIDEWALK IS STANDARD. CURB TIGHT SIDEWALK IS WITH APPROVAL OF THE CITY ENGINEER ONLY.
- 7 INCH CURB EXPOSURE IS REQUIRED ON MINOR ARTERIAL STREETS.
- AGGREGATE BASE MAY BE INCREASED OF DECREASED WHEN A "CBR" OR "R" VALUE IS REQUIRED.
- MAY BE LOCATED IN A EASEMENT GRANTED TO THE CITY OF REDMOND.
- CURBS ARE NOT REQUIRED. AC PAVING MAY BE REQUIRED FOR ALL WEATHER SERVICE & UTILITY ACCESS ROADS UNDER SPECIAL CIRCUMSTANCES.
- DESIGN CRITERIA SHALL BE APPROVED BY THE CITY OF REDMOND AT NO LESS THAN CURRENT AASHTO STANDARDS. SEE DESIGN STANDARDS, SECTION II.A.7., HORIZONTAL CURVES, FOR DESIGN VALUES.
- ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED TO ACCOMMODATE THE LARGE RETURN RADIUS AND WHEELCHAIR RAMP.
- MINIMUM WIDTH REQUIRED FOR PUBLIC ACCESS.
- ONE TRAVEL LANE ONLY
- DESIGN CRITERIA SHALL MEET CURRENT O.D.O.T. STANDARDS.
- SEE TRANSPORTATION SYSTEM PLAN FOR FIVE LANE ARTERIAL. (PAVING WIDTH = 74 FEET)
- SEE SECTION 215.3.09,C. OF DIVISION II-STREETS, STANDARD SPECIFICATIONS FOR HORIZONTAL & VERTICAL ALIGNMENT REQUIREMENTS OF SEPARATED OR MEANDERING SIDEWALKS. SEE STANDARD DRAWING 2-24 FOR DOWNTOWN COLORED SIDEWALK REQUIREMENTS.
- SEE DESIGN STANDARDS SECTION II.A.1 32'-36" WIDTH: PARKING ON BOTH SIDES OF STREET. 28' WIDTH: PARKING ON ONE SITE OF STREET. 24' WIDTH: NO PARKING.
- 14 FOOT TURN LANE WHEN WARRANTED.
- REFER TO DESIGN STANDARDS SECTION II.A.18 FOR ASPHALT CONCRETE CLASSIFICATION AND BINDER.
- ANYTHING STEEPER THAN 2:1 REQUIRES CITY ENGINEER APPROVAL.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL MINIMUM STREET CROSS SECTION DIMENSIONS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

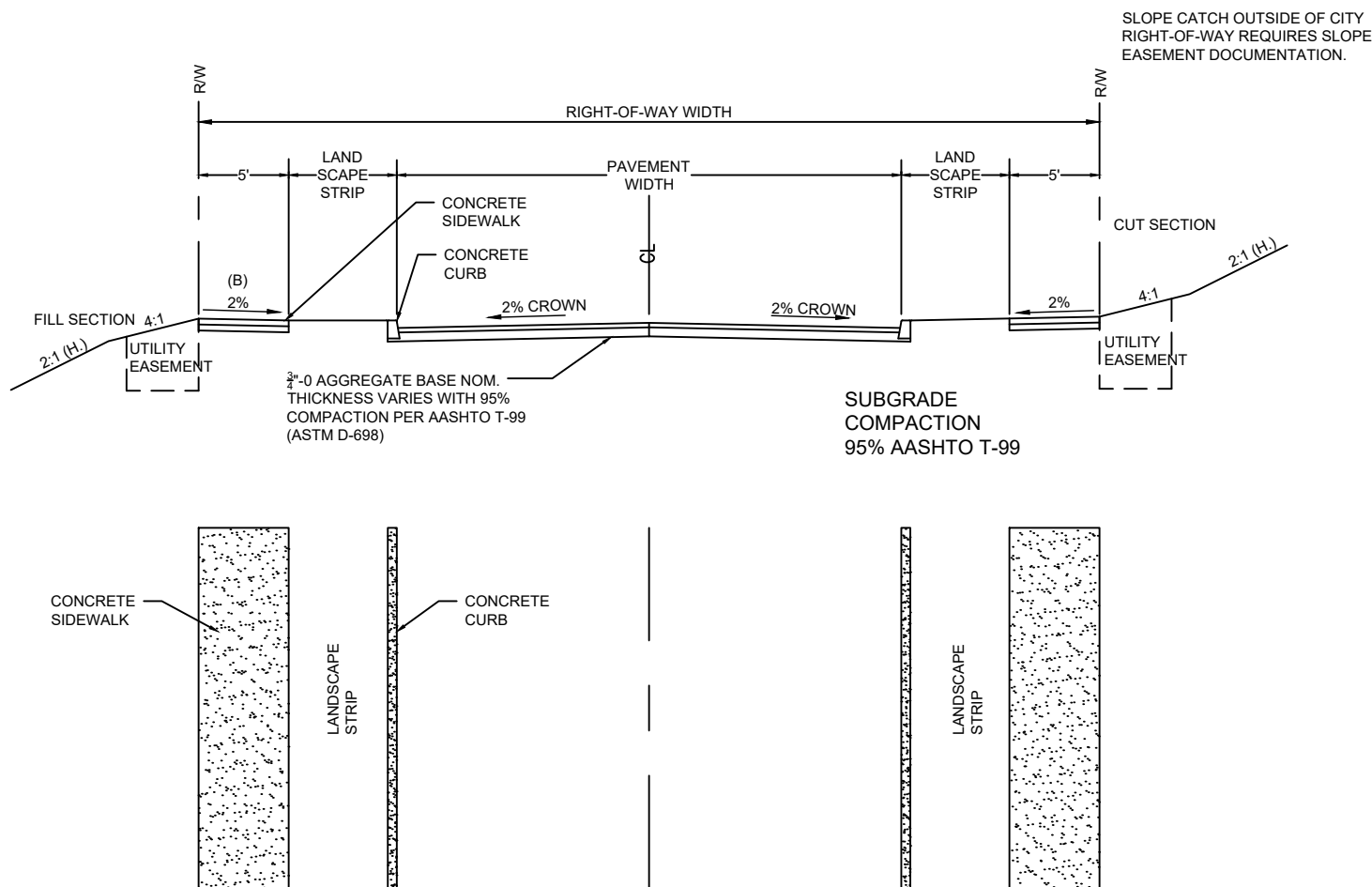
10/26/2022



STANDARD
DRAWING
NO.

2-1

STREETS



TYPE OF STREET	R/W WIDTH (FT.)	PAVING WIDTH CURB TO CURB (FT.)	AC DEPTH (IN.)	(E.) AGGR. BASE DEPTH (IN.)	MIN. CURB RETURN RADIUS (FT.)	DESIGN SPEED (MPH)	(B) MAX. GRADE (%)	MIN. CL CURVE RADIUS (FT.)	TRAVEL LANE #, WIDTH (FT.)	PARKING LANE #, WIDTH (FT.)	UTILITY EASEMENT (FT.)
REDUCED LOCAL 1	50	32	3	6	20	25	10%	(E.)	2, 9	2, 7	5
REDUCED LOCAL 2	40	28	3	6	20	25	10%	(E.)	1, 14	1, 7	10 (G)
RESIDENTIAL ALLEY	20	20	3	6	15	15	10%	(E.)	2, 10	N/A	N/A

NOTES:

- THE LOCATION AND APPROVAL OF REDUCED WIDTH NON-GRID STREETS IS DETERMINED ONLY THROUGH THE LAND USE PROCESS AND/OR ANNEXATION AGREEMENT. 20 FOOT WIDE PUBLIC UTILITY AND ACCESS EASEMENTS LOCATED AT THE REAR LOT LINE IN CONJUNCTION WITH REDUCED WIDTH STREETS ARE REQUIRED. PUBLIC UTILITY AND ACCESS EASEMENTS SHALL BE IMPROVED TO AC PAVED ALLEY STANDARDS INCLUDING PAVED APRONS AT ALL STREET INTERSECTIONS AND ARE REQUIRED TO HAVE AN AGREEMENT FOR MAINTENANCE PROVISIONS FILED WITH THE COMMUNITY DEVELOPMENT DEPARTMENT.
- SIDEWALKS SHALL BE PROVIDED ON BOTH SIDES OF THE STREET. CONSIDERATION MUST BE GIVEN TO ACCOMMODATE AND MATCH EXISTING DRIVEWAYS. PROPERTY TIGHT SIDEWALK IS STANDARD, SIDEWALKS MAY BE LOCATED TIGHT TO CURB WITH CITY ENGINEER APPROVAL IF EXISTING TOPOGRAPHY OR OTHER PHYSICAL CONDITIONS PREVENT THE LANDSCAPE STRIP FROM BEING INSTALLED.
- NO PARKING ALLOWED WITHIN 40 FEET OF THE END OF ALL CURB RETURNS IN ORDER TO ACCOMMODATE LARGE EMERGENCY VEHICLES.
- MINIMUM GRADE OF 0.5%. IF UNAVOIDABLE CONDITIONS EXIST, A GRADE OF 2.0% STEEPER THAN SHOWN IS ALLOWED.
- SEE DESIGN STANDARDS, SECTION II.A.7, HORIZONTAL CURVES, FOR DESIGN VALUES.
- MAXIMUM DISTANCE BETWEEN REDUCED WIDTH STREET INTERSECTIONS SHALL BE 660 FEET. CUL-DE-SACS ARE NOT PERMITTED.

G. LOCATE SIDEWALK IN UTILITY EASEMENT TO PROVIDE MINIMUM 3 FOOT WIDE LANDSCAPE STRIP.
H. ANYTHING STEEPER THAN 2:1 REQUIRES CITY ENGINEER APPROVAL.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

REDUCED WIDTH STREET TYPICAL NON-GRIND STREET CROSS SECTION & DIMENSIONS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

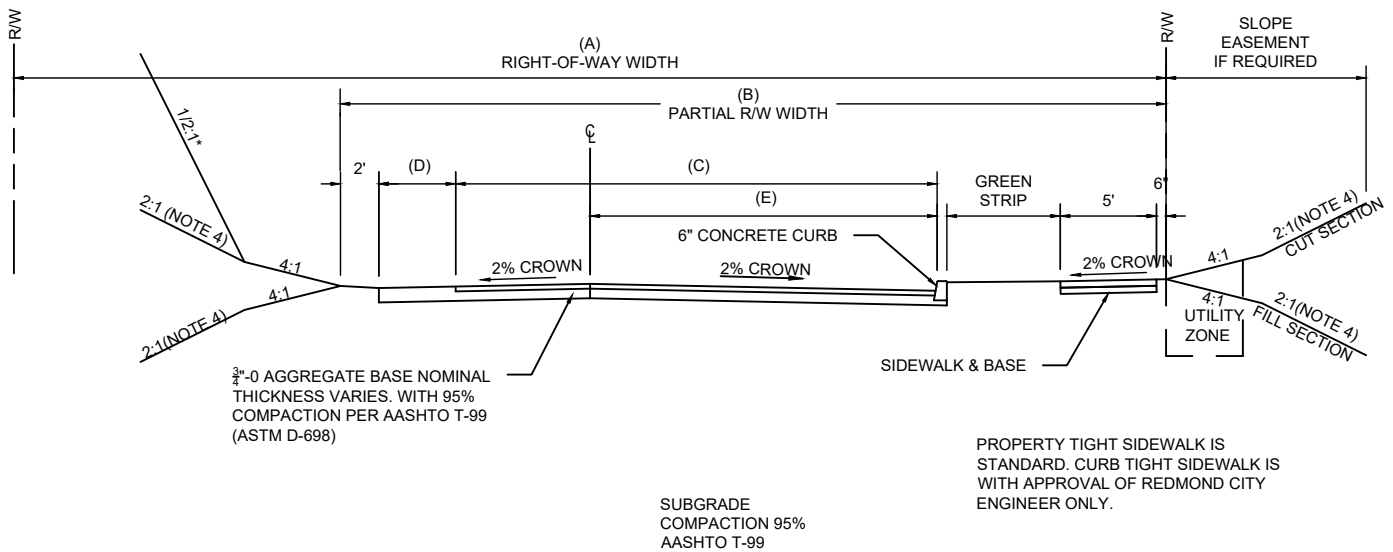
10/26/2022

STANDARD
DRAWING
NO.

2-2

STREETS

SLOPE CATCH OUTSIDE OF CITY
RIGHT-OF-WAY REQUIRE SLOPE
EASEMENT DOCUMENTATION



	MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	INDUSTRIAL COLLECTOR	INDUSTRIAL	LOCAL RESIDENTIAL
	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
A. FULL RIGHT-OF-WAY WIDTH	100	80	60	60	60	60
B. PARTIAL RIGHT-OF-WAY WIDTH	60	45	45	45	45	40
C. PAVING WIDTH	38	27	30	30	30	25
D. SHOULDER WIDTH	4	2	2	4	4	2
E. DISTANCE TO CENTERLINE	25	18	20	20	20	18

PARTIAL STREET IMPROVEMENT STANDARD

STREETS SHALL BE DEVELOPED TO FULL CITY STANDARDS AND SPECIFICATIONS FOR NEW DEVELOPMENTS AS SHOWN IN STANDARD DRAWING 2-1 INCLUDING ASPHALT, CONCRETE PAVING, CURBS & SIDEWALKS BOTH SIDES AND STRIPING UNLESS CONDITIONED OTHERWISE IN THE LAND USE APPROVAL PROCESS FOR THE FOLLOWING REASONS:

1. IN THE CASE OF A BOUNDARY, INABILITY TO OBTAIN RIGHT OF WAY OR OFFSITE STREET, THE CITY ENGINEER MAY GRANT APPROVAL TO REDUCE PAVEMENT WIDTH TO A MINIMUM OF 3/4 STREET WITH CURB AND SIDEWALK ON THE SIDE OF THE STREET ADJACENT TO THE PROPOSED DEVELOPMENT. WHEN STANDARD RIGHT OF WAY IS NOT AVAILABLE OR UNABLE TO BE OBTAINED.
2. IF THERE ARE EXTREME TOPOGRAPHIC CIRCUMSTANCES SUCH AS STEEP SLOPES OR UNSTABLE SOILS THAT WOULD PREVENT THE DEVELOPMENT OF A CITY STANDARD STREET, CURB TO CURB PAVEMENT WIDTH CAN BE REDUCED TO NO LESS THAN 24 FEET INCLUDING CURBS AND SIDEWALKS ON BOTH SIDES.
3. WHEN FINISHING AN EXISTING 3/4 STREET TO A FULL WIDTH STREET, THE EXISTING STREET SHALL BE SAW CUT AND REMOVED TO CENTERLINE.
4. ANYTHING STEEPER THAN 2:1 REQUIRES CITY ENGINEER APPROVAL.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL MINIMUM PARTIAL STREET IMPROVEMENT STANDARD

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

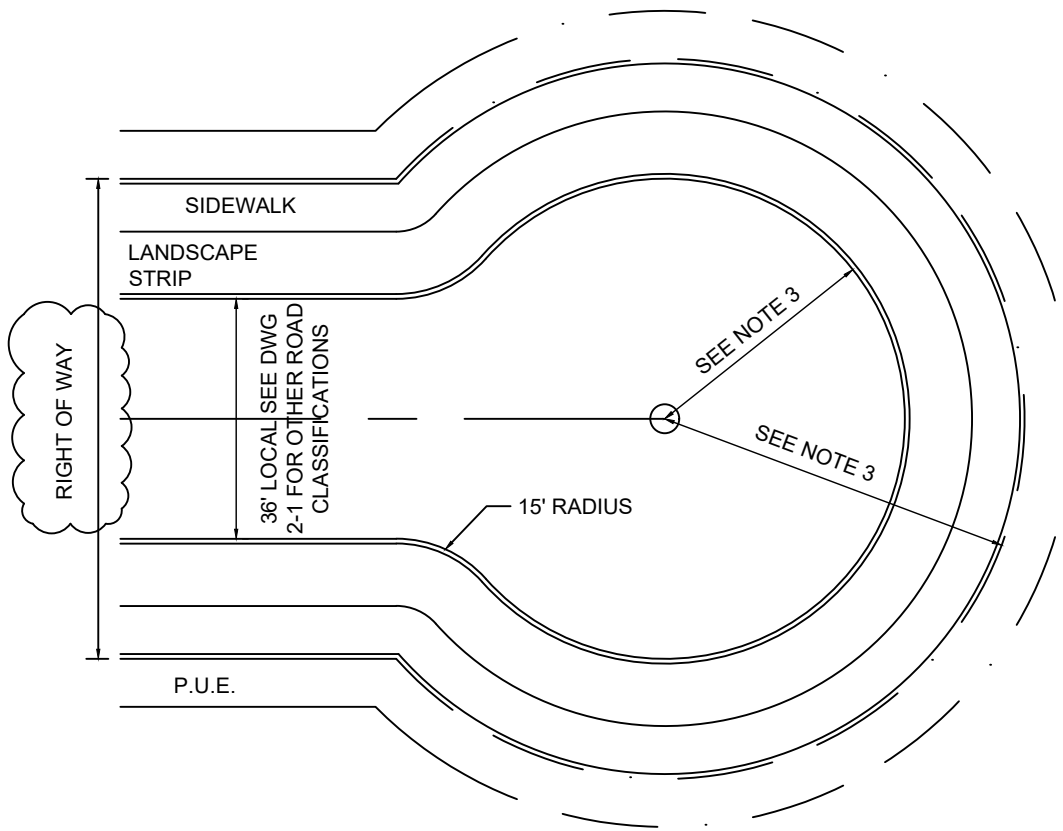
10/26/2022



STANDARD
DRAWING
NO.

2-3

STREETS



NOTE:

1. MOUNTABLE CURB AND GUTTER (STANDARD DRAWING 2-9) PERMITTED AND ENCOURAGED WHEN MULTIPLE DRIVEWAYS MAKE STANDARD CURB IMPRACTICAL.
2. MAXIMUM LENGTH OF A CUL -DE- SAC SHALL BE 600 FEET AND MINIMUM LENGTH SHALL BE 130 FEET. CUL-DE-SAC LENGTH IS MEASURED FROM THE CENTER LINE OF THE CROSS STREET TO THE CENTER OF THE CUL-DE-SAC. IN SUCH CASES, A 5 FOOT UTILITY EASEMENT SHALL BE PROVIDED ON BOTH SIDES OF THE RIGHT OF WAY.
3. LOCAL RESIDENTIAL CUL -DE- SAC SHALL HAVE A MINIMUM 96 FOOT DIAMETER PAVED WIDTH AND MINIMUM 108 FOOT DIAMETER RIGHT OF WAY.
4. RIGHT ANGLE EYEBROW CORNER (SEE DWG 2-5) CUL-DE-SACS MAY BE CONSIDERED AS A EXCEPTION TO CITY STANDARDS. A WRITTEN REQUEST FOR AN EXCEPTION ADDRESSED TO THE CITY ENGINEER WILL BE REQUIRED AND MUST INCLUDE ANALYSIS OF SIGHT / STOPPING DISTANCE, CLEAR VISION AND VEHICLE TURNING MOVEMENTS. OTHERWISE, UNCONTROLLED 90 DEGREE TWO-LEG INTERSECTIONS SHALL NOT BE PERMITTED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**CUL DE SAC
STANDARD**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

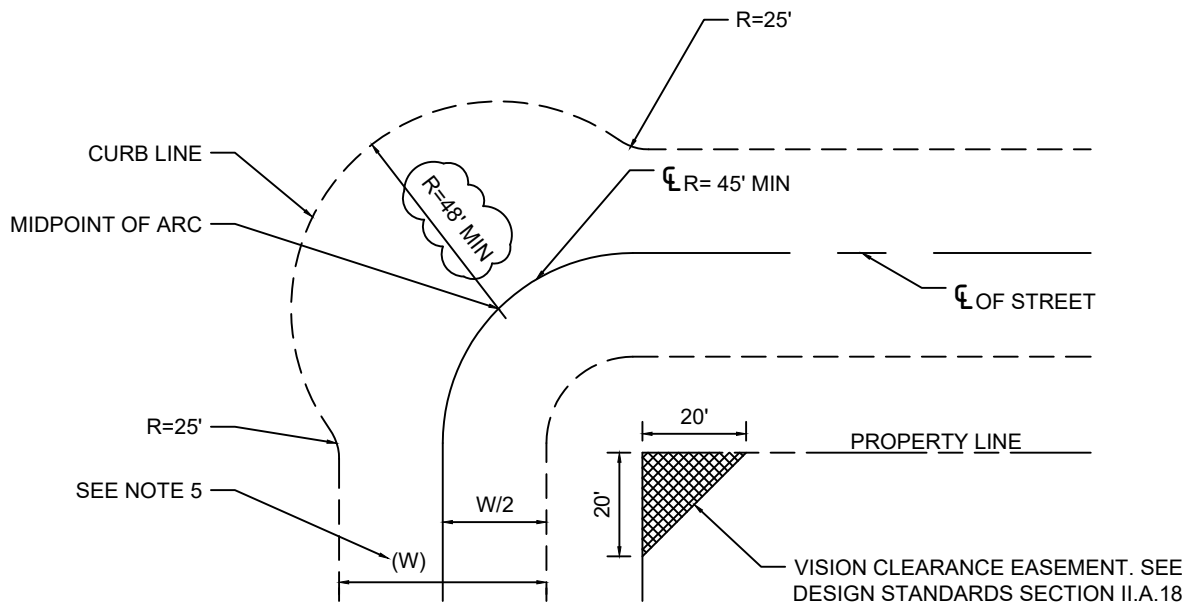
10/26/2022



STANDARD
DRAWING
NO.

2-4

STREETS



NOTES:

1. EYEBROW CORNERS MAY BE USED ONLY ON LOCAL STREETS.
2. EYEBROW CORNER GEOMETRY SHALL BE EVALUATED ON THE BASIS OF TURNING REQUIREMENTS FOR THE FIRE DEPARTMENT VEHICLES.
3. EYEBROW CORNERS SHALL MEET AASHTO REQUIREMENTS FOR MINIMUM STOPPING SIGHT DISTANCE.
4. CLEAR VISION ZONE PER CITY OF REDMOND CODE 8.0305
5. WIDTH (W) PER DESIGN STANDARDS TABLE 1- CITY OF REDMOND RIGHT OF WAY AND ROADWAY DESIGN AND CROSS-SECTION STANDARDS.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STANDARD EYEBROW
CORNER**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

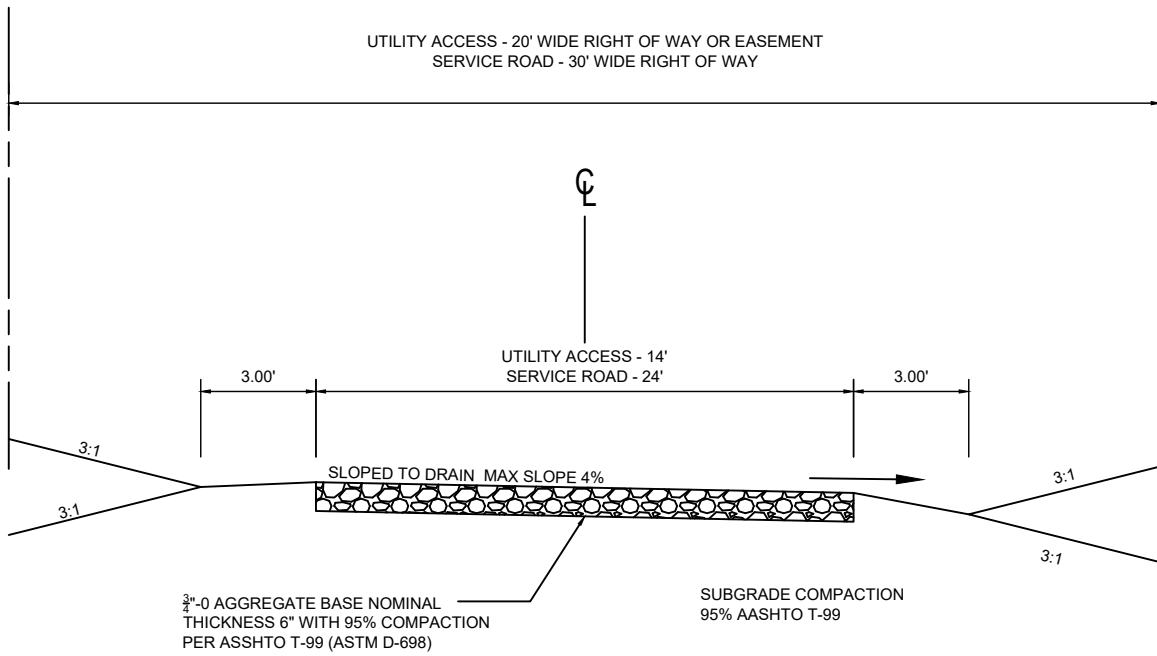
10/26/2022



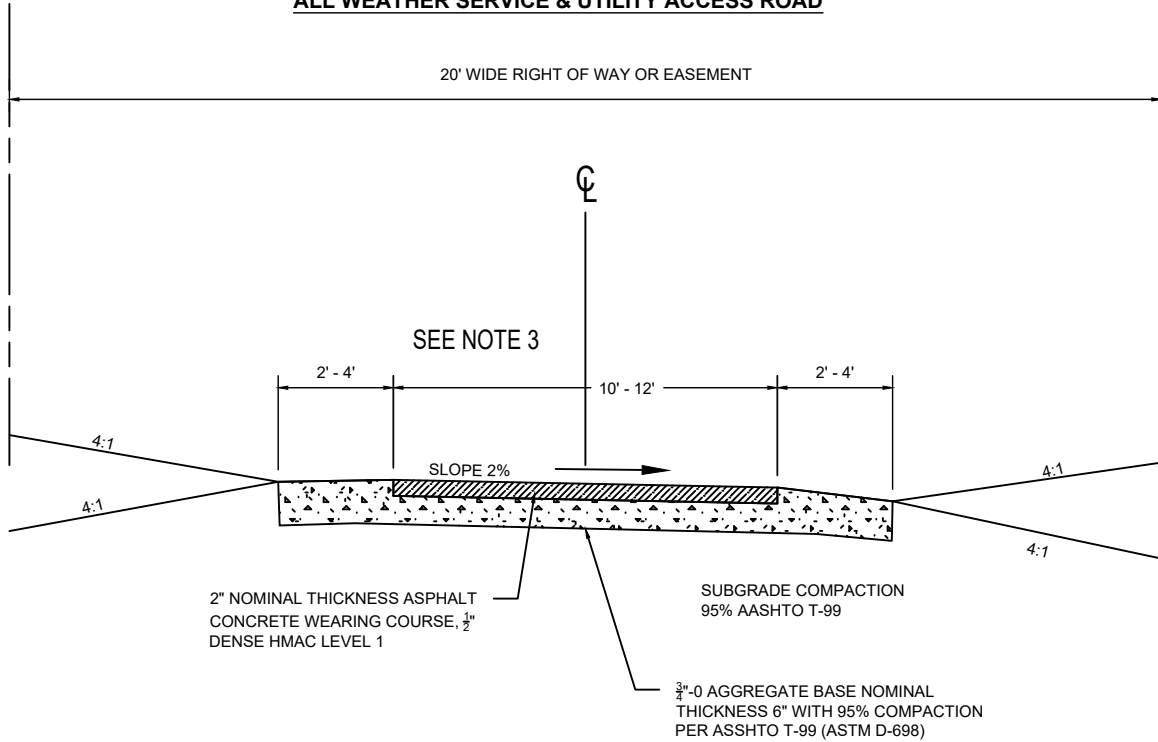
STANDARD
DRAWING
NO.

2-5

STREETS



ALL WEATHER SERVICE & UTILITY ACCESS ROAD



ALL WEATHER SERVICE & UTILITY ACCESS MULTI-USE PATH

NOTES:

1. PLACE 6 INCHES OF SELECT BACKFILL ON ALL SLOPES TO CATCH POINT PRIOR TO PAVING MULTI-USE PATH.
2. PROVIDE TURNAROUND WITH 38 FOOT RADIUS AT END OF DEAD END SERVICE AND UTILITY ACCESS ROADS. CURBS ARE NOT REQUIRED- RETURN RADIUS SHALL BE 15 FEET.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

ALL WEATHER SERVICE UTILITY ACCESS AND MULTI-USE PATH

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

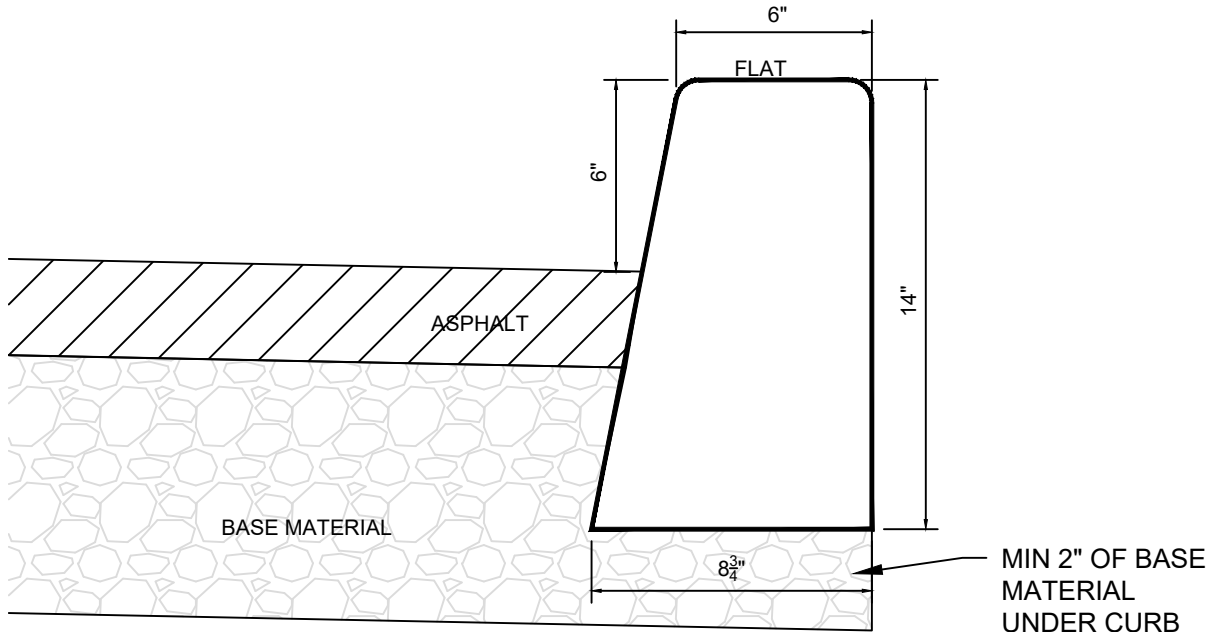
10/26/2022



STANDARD
DRAWING
NO.

2-6

STREETS



NOTES:

1. CONCRETE SHALL BE CLASS 3000 MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. EXPANSION JOINTS ARE REQUIRED AT:
 - A. A MAXIMUM SPACING OF 100 FEET.
 - B. AT EACH POINT OF TANGENCY.
 - C. AT THE TOP OF ALL ADA AND DRIVEWAY APRON FLARES.
 - D. AROUND ALL POLES, POSTS, BOXES AND OTHER FIXTURES THAT PROTRUDE THROUGH OR AGAINST THE CURB.
3. CONTROL JOINTS ARE TO BE CUT INTO THE WET CONCRETE A MINIMUM 1/3 OF THE DEPTH AND PLACED AT A MAXIMUM OF 10' APART.
4. BASE ROCK UNDER CURB SHALL BE A MINIMUM OF TWO INCHES DEEP OR DEEPER AS REQUIRED TO MATCH STREET SECTION AND MEETING THE REQUIREMENTS OF SECTION 207.
5. DRIVEWAY APRON LIPS SHALL BE MINIMUM OF 1" TO A MAXIMUM OF 1 1/2" HEIGHT ABOVE ASPHALT AT GUTTER.
6. ADA LIPS SHALL BE FLUSH WITH ASPHALT PAVEMENT AT GUTTER.
7. ALL VISIBLE EDGES OF CURB SHALL HAVE A MAXIMUM 3/4" RADIUS FINISHED EDGE.
8. ALL VISIBLE SURFACES SHALL HAVE A LIGHT BROOM FINISH, PARALLEL WITH CURB.
9. WHERE CURB AND GUTTER IS CALLED OUT ON THE PLANS, BUT NO DETAIL IS PROVIDED, USE ODOT STANDARD DRAWING RD-700 WITH 18" GUTTER PAN SLOPED AT 4° AND 6" CURB EXPOSURE. FOR REPLACEMENT, MATCH EXISTING CURB AND GUTTER DIMENSION AND SLOPE.
10. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE MARKED ON THE SURFACE OF CURB USING A STAMPED IMPRESSION OF "W" OR "S".
11. 14" CURB FOR USE ON ALL LOCAL, COLLECTOR, INDUSTRIAL, AND ARTERIAL STREETS.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STANDARD
14" CONCRETE CURB**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

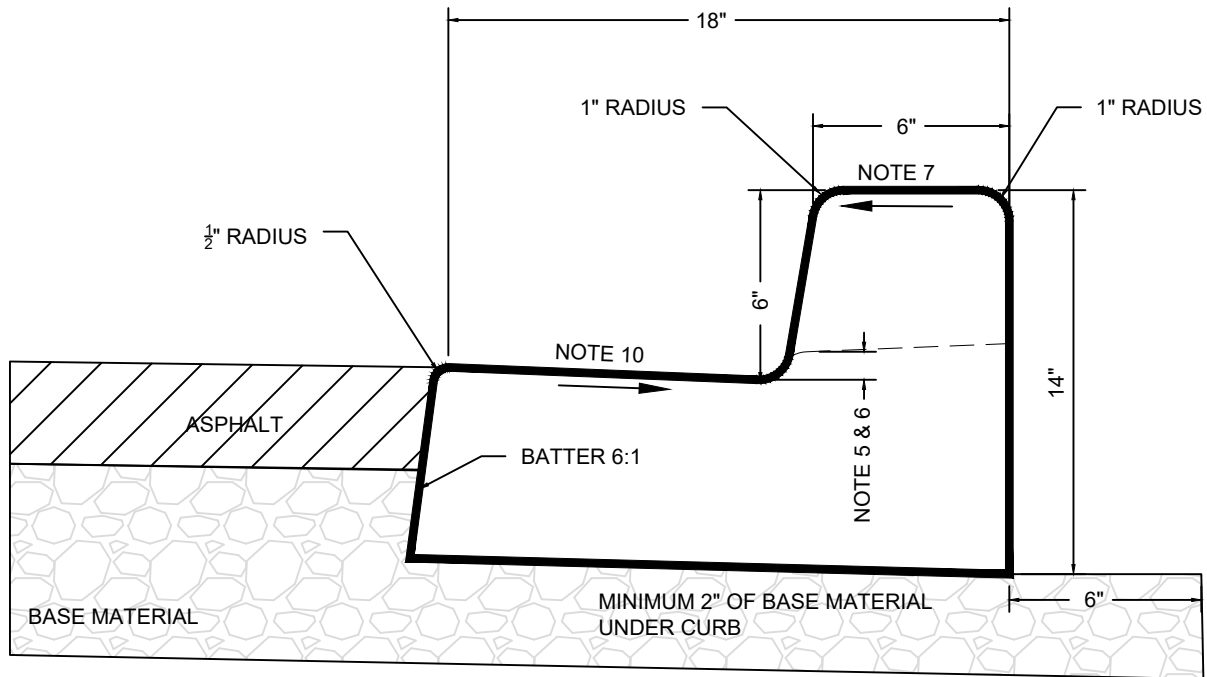
10/26/2022



STANDARD
DRAWING
NO.

2-7

STREETS



NOTES:

1. CONCRETE SHALL BE CLASS 3000 MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. EXPANSION JOINTS ARE REQUIRED AT:
 - A. A MAXIMUM SPACING OF 100 FEET.
 - B. AT EACH POINT OF TANGENCY.
 - C. AT THE TOP OF ALL ADA AND DRIVEWAY APRON FLARES.
 - D. AROUND ALL POLES, POSTS, BOXES AND OTHER FIXTURES THAT PROTRUDE THROUGH OR AGAINST THE CURB.
3. CONTROL JOINTS ARE TO BE CUT INTO THE WET CONCRETE A MINIMUM 1/3 OF THE DEPTH AND PLACED AT A MAXIMUM OF 10' APART.
4. BASE ROCK UNDER CURB SHALL BE A MINIMUM OF TWO INCHES DEEP OR DEEPER AS REQUIRED TO MATCH STREET SECTION AND MEETING THE REQUIREMENTS OF SECTION 207 AND EXTEND 6" BEHIND CURB.
5. DRIVEWAY APRON LIPS SHALL BE MINIMUM OF 1" TO A MAXIMUM OF 1 1/2" HEIGHT ABOVE GUTTER PAN.
6. ADA LIPS SHALL BE FLUSH WITH GUTTER PAN.
7. TOP OF CURB SHALL BE SLOPED TOWARD STREET WITH A MAXIMUM 4% SLOPE.
8. ALL VISIBLE EDGES OF CURB SHALL HAVE A MAXIMUM 1" RADIUS FINISHED EDGE.
9. ALL VISIBLE SURFACES SHALL HAVE A LIGHT BROOM FINISH, PARALLEL WITH CURB.
10. GUTTER PANS ARE SLOPED AT 2% MINIMUM TO 4% MAXIMUM OR MATCH CROSS SLOPE OF STREET.
11. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE MARKED ON THE SURFACE OF CURB USING A STAMPED IMPRESSION OF "W" OR "S".
12. GUTTER TO BE USED WHEN RUNNING SLOPE OF ROADWAY IS LESS THAN 1%.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD CONCRETE CURB AND GUTTER

SCALE:

NTS

DRAWING BY:

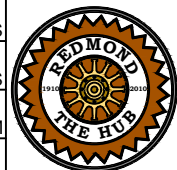
JWS

APPROVED BY:

JNM

DATE:

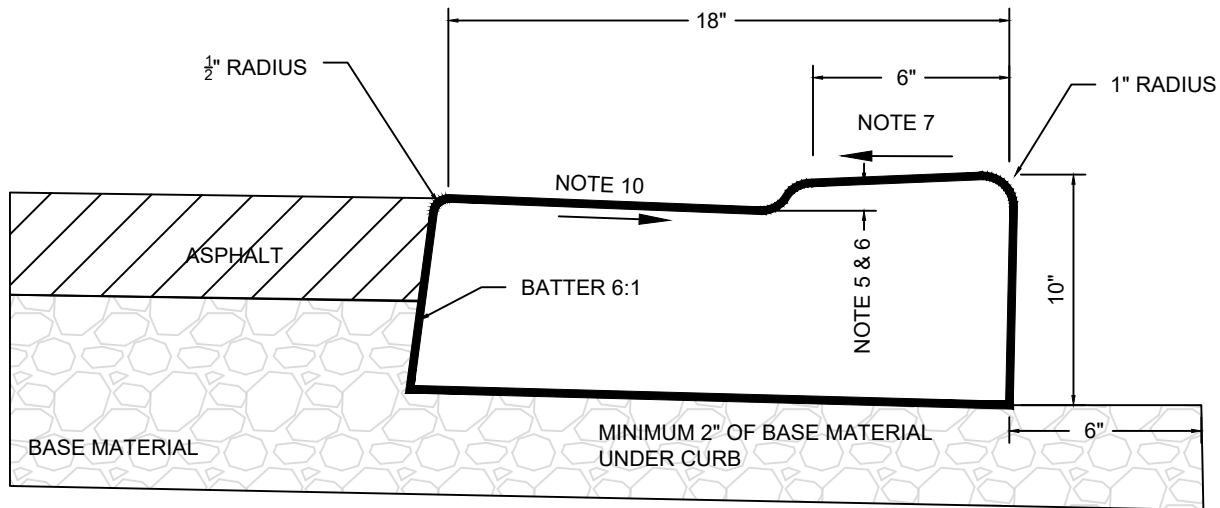
10/26/2022



STANDARD
DRAWING
NO.

2-8

STREETS



NOTES:

1. MOUNTABLE CURB USED ONLY WHEN APPROVED BY CITY ENGINEER.
2. CONCRETE SHALL BE CLASS 3000 MEETING THE REQUIREMENTS OF SECTION 213.2.01.
3. EXPANSION JOINTS ARE REQUIRED AT:
 - A. A MAXIMUM SPACING OF 100 FEET.
 - B. AT EACH POINT OF TANGENCY.
 - C. AT THE TOP OF ALL ADA AND DRIVEWAY APRON FLARES.
 - D. AROUND ALL POLES, POSTS, BOXES AND OTHER FIXTURES THAT PROTRUDE THROUGH OR AGAINST THE CURB.
4. CONTROL JOINTS ARE TO BE CUT INTO THE WET CONCRETE A MINIMUM 1/3 OF THE DEPTH AND PLACED AT A MAXIMUM OF 10' APART.
5. BASE ROCK UNDER CURB SHALL BE A MINIMUM OF TWO INCHES DEEP OR DEEPER AS REQUIRED TO MATCH STREET SECTION AND MEETING THE REQUIREMENTS OF SECTION 207 AND EXTEND 6" BEHIND CURB AND GUTTER.
6. LIP SHALL BE MINIMUM OF 1" TO A MAXIMUM OF 1 1/2" HEIGHT ABOVE GUTTER PAN.
7. ADA LIPS SHALL BE FLUSH WITH GUTTER PAN.
8. TOP OF CURB SHALL BE SLOPED TOWARD STREET WITH A MAXIMUM 2% SLOPE.
9. ALL VISIBLE EDGES OF CURB SHALL HAVE A MAXIMUM 1" RADIUS FINISHED EDGE.
10. ALL VISIBLE SURFACES SHALL HAVE A LIGHT BROOM FINISH, PARALLEL WITH CURB AND GUTTER.
11. GUTTER PANS ARE SLOPED AT 2% MINIMUM TO 4% MAXIMUM OR MATCH CROSS SLOPE OF STREET.
12. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE MARKED ON THE SURFACE OF CURB USING A STAMPED IMPRESSION OF "W" OR "S".
13. GUTTER TO BE USED WHEN RUNNING SLOPE OF ROADWAY IS LESS THAN 1%

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD MOUNTABLE CURB AND GUTTER

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

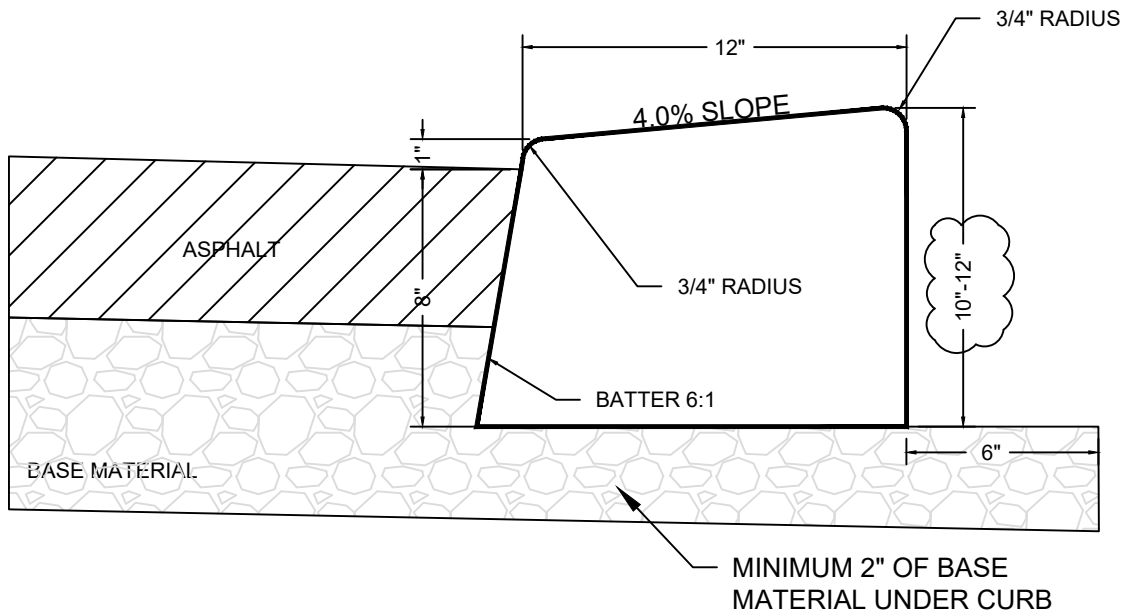
10/26/2022



STANDARD
DRAWING
NO.

2-9

STREETS



NOTES:

1. LOW PROFILE MOUNTABLE CURBS USED WHEN APPROVED BY CITY ENGINEERS.
2. CONCRETE SHALL BE CLASS 3000 MEETING THE REQUIREMENTS OF SECTION 213.2.01.
3. EXPANSION JOINTS ARE REQUIRED AT:
 - A. A MAXIMUM SPACING OF 100 FEET.
 - B. AT EACH POINT OF TANGENCY.
 - C. AT THE TOP OF ALL ADA AND DRIVEWAY APRON FLARES.
 - D. AROUND ALL POLES, POSTS, BOXES AND OTHER FIXTURES THAT PROTRUDE THROUGH OR AGAINST THE CURB.
4. CONTROL JOINTS ARE TO BE CUT INTO THE WET CONCRETE A MINIMUM 1/3 OF THE DEPTH AND PLACED AT A MAXIMUM OF 10' APART.
5. BASE ROCK UNDER CURB SHALL BE A MINIMUM OF TWO INCHES DEEP OR DEEPER AS REQUIRED TO MATCH STREET
6. ALL VISIBLE EDGES OF CURB SHALL HAVE A MAXIMUM 3/4" RADIUS FINISHED EDGE.
7. ALL VISIBLE SURFACES SHALL HAVE A LIGHT BROOM FINISH, PARALLEL WITH CURB.
8. TOP OF MOUNTABLE CURB SHOULD BE SLOPED AT 4%.
9. CITY STANDARD LOW PROFILE MOUNTABLE CURB TYPICALLY LOCATED ON CUL-DE-SAC, EYEBROW, AND ROUNDABOUTS. GUTTER TO BE USED WHEN RUNNING SLOPE OF ROADWAY IS LESS THAN 1%.
10. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE MARKED ON THE SURFACE OF CURB USING A STAMPED IMPRESSION OF "W" OR "S".

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

LOW PROFILE MOUNTABLE CURB

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

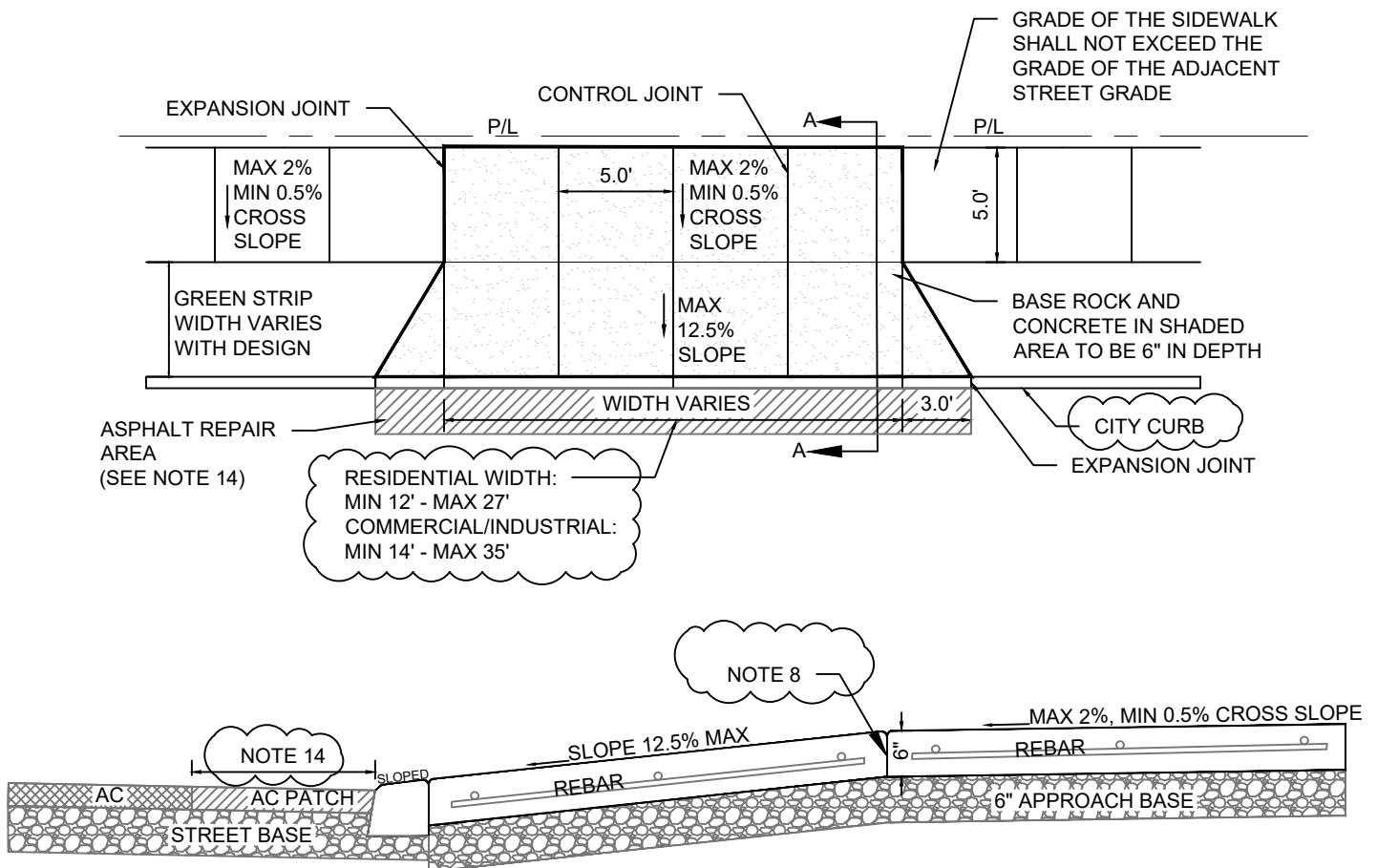
10/26/2022



STANDARD
DRAWING
NO.

2-10

STREETS



CROSS SECTION A-A

DRIVEWAY APPROACH

NOTES:

1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP IN THE APPROACH AND THAT PORTION OF THE SIDEWALK ADJACENT TO THE APPROACH.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF DRIVEWAY APPROACH WHERE THE TOP OF THE FLARE/WING MEETS THE SIDEWALK.
4. WHERE SIDEWALKS ARE CONTAINED WITHIN A STREET RIGHT-OF-WAY, THE GRADE OF THE SIDEWALK SHALL NOT EXCEED THE GENERAL GRADE ESTABLISHED FOR THE ADJACENT STREET.
5. THE FLARE/WINGS ARE A MINIMUM LENGTH OF 3' AT CURB.
6. THE BASE ROCK UNDER A DRIVEWAY APPROACH SHALL BE A MINIMUM OF SIX INCHES DEEP.
7. BASE ROCK SHALL BE CLASS "B" BACKFILL MEETING THE REQUIREMENTS OF SECTION 101.2.02B AND COMPACTED TO 95% OF AASHTO T-99.
8. #4 REBAR SHALL BE USED IN ALL COMMERCIAL, INDUSTRIAL, ALLEY, AND MULTI-FAMILY DRIVEWAY APPROACHES. LONGITUDINAL AND TRANSVERSE BARS SHALL BE PLACED TWO FEET ON CENTER, TWO INCHES FROM BOTTOM AND THREE INCHES IN FROM EDGES.
9. DRIVEWAY APRON LIPS SHALL BE A MINIMUM OF ONE INCH TO A MAXIMUM ONE AND ONE HALF INCH IN HEIGHT ABOVE ASPHALT AT GUTTER.
10. ALL VISIBLE EDGES SHALL HAVE A MAXIMUM $\frac{3}{4}$ " RADIUS FINISHED EDGE.
11. APPROACH SURFACES SHALL HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO THE CURB.
12. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-22.
13. CURB, SIDEWALK AND APPROACH APRON MAY BE A MONOLITHIC POUR.
14. ASPHALT PATCH SHALL BE PLACED PER DIVISION II SECTION 212.03. MATCH EXISTING CONDITIONS AND A MINIMUM WIDTH OF 2'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

CONCRETE DRIVEWAY APPROACH & CURB CUT

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

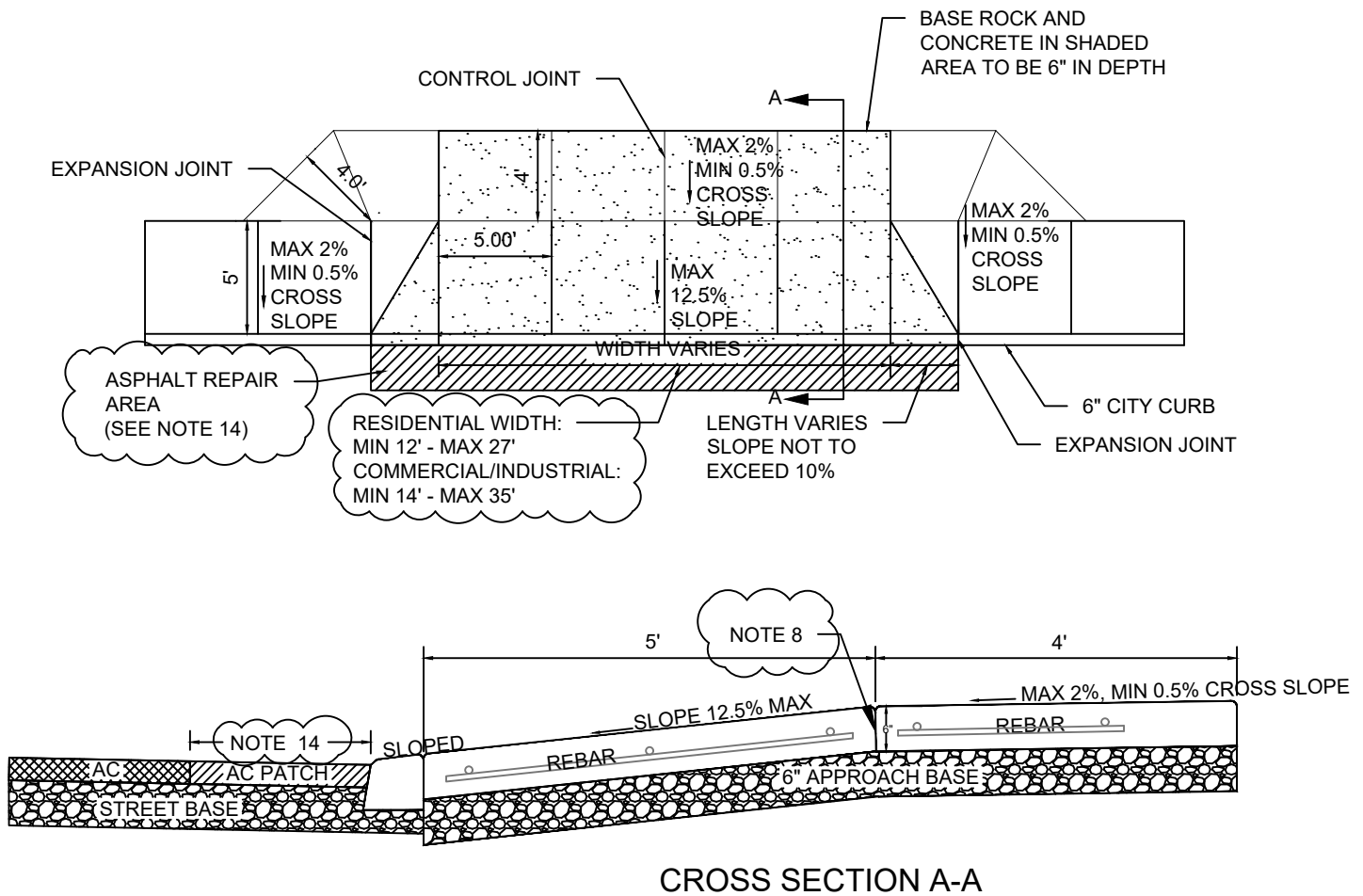
01/22/2024



STANDARD
DRAWING
NO.

2-11

STREETS



DRIVEWAY APPROACH OPTION A

NOTES:

1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF DRIVEWAY APPROACH WHERE THE TOP OF THE FLARE/WING MEETS THE SIDEWALK.
4. THE FLARE/WINGS SHALL NOT EXCEED 10% SLOPE.
5. THE ADA ACCESSIBILITY PATH PLACED BEHIND APPROACH RAMP SHALL BE 4 FEET IN WIDTH AND THE CROSS SLOPE SHALL NOT EXCEED 2%. THIS ADA ACCESSIBILITY PATH SHALL EXTEND BEYOND EITHER SIDE OF THE APPROACH TO INSURE THAT THE 2% CROSS SLOPE IS MAINTAINED THROUGHOUT.
6. THE BASE ROCK UNDER A DRIVEWAY APPROACH SHALL BE A MINIMUM OF SIX INCHES DEEP.
7. BASE ROCK SHALL BE CLASS "B" BACKFILL MEETING THE REQUIREMENTS OF SECTION 101.2.02B AND COMPACTED TO 95% OF AASHTO T-99.
8. #4 REBAR SHALL BE USED IN ALL COMMERCIAL, INDUSTRIAL, ALLEY, AND MULTI-FAMILY DRIVEWAY APPROACHES. LONGITUDINAL AND TRANSVERSE BARS SHALL BE PLACED TWO FEET ON CENTER, TWO INCHES FROM BOTTOM AND THREE INCHES IN FROM EDGES.
9. DRIVEWAY APRON LIPS SHALL BE A MINIMUM OF ONE INCH TO A MAXIMUM ONE AND ONE HALF INCH IN HEIGHT ABOVE ASPHALT AT GUTTER.
10. ALL VISIBLE EDGES SHALL HAVE A MAXIMUM $\frac{3}{4}$ " RADIUS FINISHED EDGE.
11. APPROACH SURFACES SHALL HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO THE CURB.
12. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-22.
13. CURB, SIDEWALK AND APPROACH APRON MAY BE A MONOLITHIC POUR.
14. ASPHALT PATCH SHALL BE PLACED PER DIVISION II SECTION 212.03. MATCH EXISTING CONDITIONS AND A MINIMUM WIDTH OF 2'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

CONCRETE DRIVEWAY APPROACH & CURB CUT OPTION A

SCALE:

NTS

DRAWING BY:

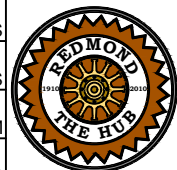
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APPROVED BY:

JNM

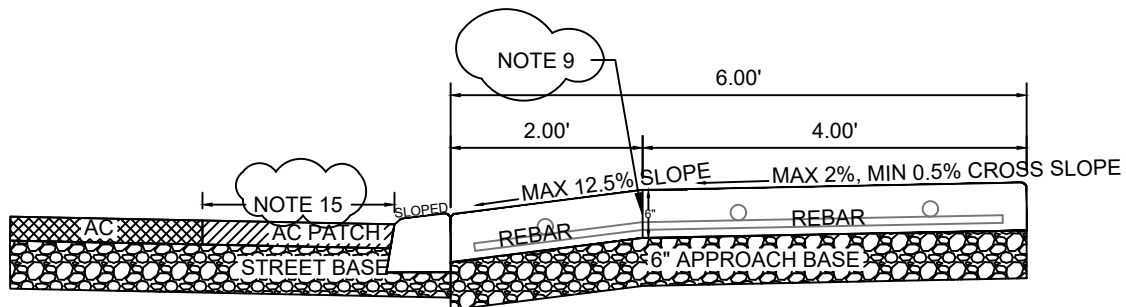
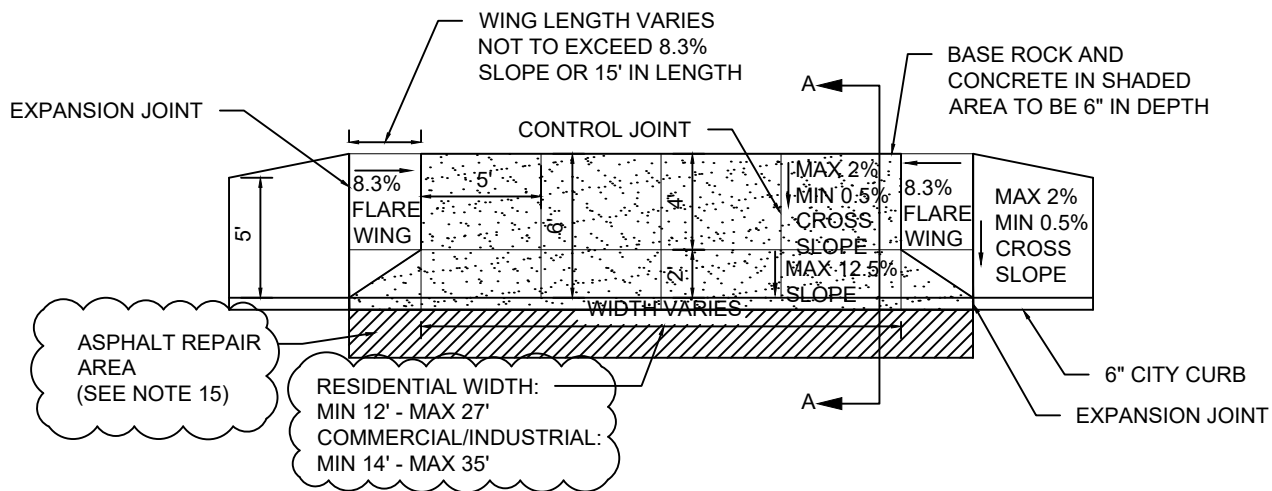
DATE:

01/22/2024

STANDARD
DRAWING
NO.

2-12

STREETS



CROSS SECTION A-A

DRIVEWAY APPROACH OPTION B

NOTES:

1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF DRIVEWAY APPROACH WHERE THE TOP OF THE FLARE/WING MEETS THE SIDEWALK.
4. A MAXIMUM OF 12.5% SLOPE ON THE FIRST 2 FEET OF THE APPROACH.
5. A MAXIMUM OF 2% CROSS SLOPE ON THE BACK 4 FEET OF THE APPROACH.
6. THE FLARE/WINGS SHALL NOT EXCEED 8.3% IN RUNNING SLOPE. WHERE 8.3% SLOPE CAN NOT BE ACHIEVED BECAUSE OF STREET GRADE THEN THE RUNNING SLOPE WILL NOT EXCEED 15' IN LENGTH.
7. THE BASE ROCK UNDER A DRIVEWAY APPROACH SHALL BE A MINIMUM OF SIX INCHES DEEP.
8. BASE ROCK SHALL BE CLASS "B" BACKFILL MEETING THE REQUIREMENTS OF SECTION 101.2.02B AND COMPACTED TO 95% OF AASHTO T-99.
9. #4 REBAR SHALL BE USED IN ALL COMMERCIAL, INDUSTRIAL, ALLEY, AND MULTI-FAMILY DRIVEWAY APPROACHES. LONGITUDINAL AND TRANSVERSE BARS SHALL BE PLACED TWO FEET ON CENTER, TWO INCHES FROM BOTTOM AND THREE INCHES IN FROM EDGES.
10. DRIVEWAY APRON LIPS SHALL BE A MINIMUM OF ONE INCH TO A MAXIMUM ONE AND ONE HALF INCH IN HEIGHT ABOVE ASPHALT AT GUTTER.
11. ALL VISIBLE EDGES SHALL HAVE A MAXIMUM $\frac{3}{4}$ " RADIUS FINISHED EDGE.
12. APPROACH SURFACES SHALL HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO THE CURB.
13. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-22.
14. CURB, SIDEWALK AND APPROACH APRON MAY BE A MONOLITHIC POUR.
15. ASPHALT PATCH SHALL BE PLACED PER DIVISION II SECTION 212.03. MATCH EXISTING CONDITIONS AND A MINIMUM WIDTH OF 2'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**CONCRETE DRIVEWAY
APPROACH & CURB CUT
OPTION B**

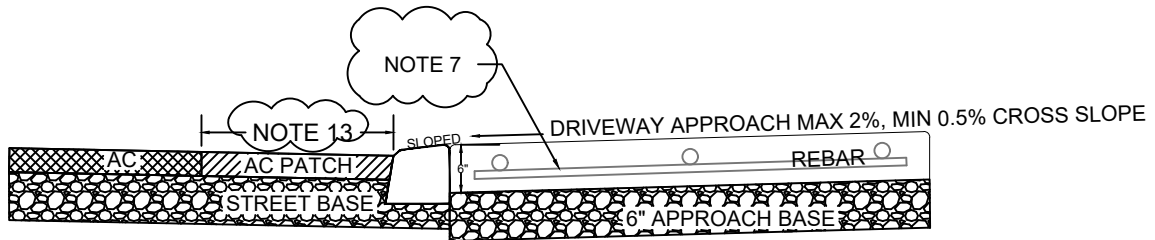
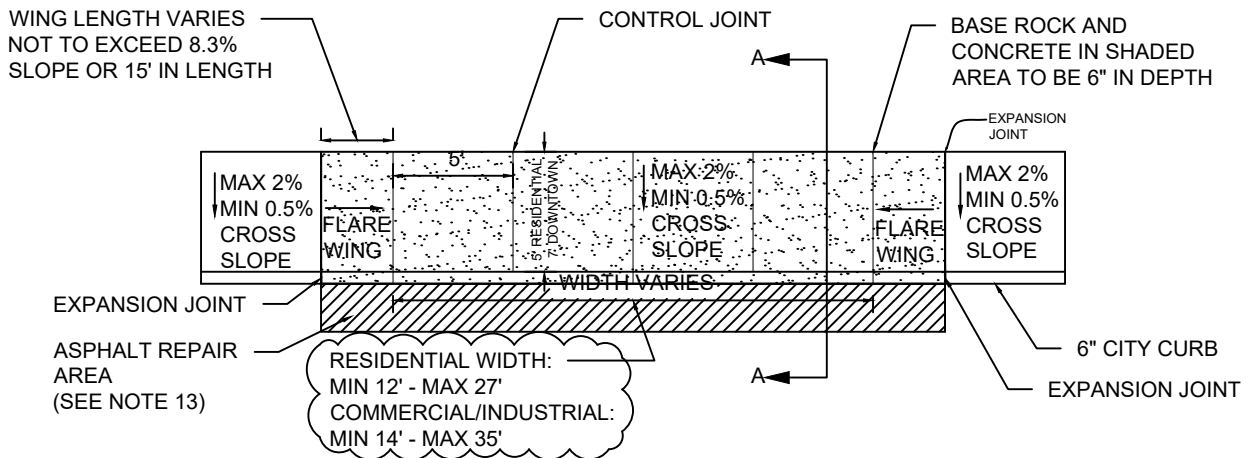
SCALE: NTS
DRAWING BY: JWS
APPROVED BY: JNM
DATE: 01/22/2024



STANDARD
DRAWING
NO.

2-13

STREETS



CROSS SECTION A-A

DRIVEWAY APPROACH OPTION C

NOTES:

1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF DRIVEWAY APPROACH WHERE THE TOP OF THE FLARE/WING MEETS THE SIDEWALK.
4. THE FLARE/WINGS SHALL NOT EXCEED 8.3% IN RUNNING SLOPE. WHERE 8.3% SLOPE CAN NOT BE ACHIEVED BECAUSE OF STREET GRADE THEN THE RUNNING SLOPE WILL NOT EXCEED 15' IN LENGTH.
5. THE BASE ROCK UNDER A DRIVEWAY APPROACH SHALL BE A MINIMUM OF SIX INCHES DEEP.
6. BASE ROCK SHALL BE CLASS "B" BACKFILL MEETING THE REQUIREMENTS OF SECTION 101.2.02B AND COMPACTED TO 95% OF AASHTO T-99.
7. #4 REBAR SHALL BE USED IN ALL COMMERCIAL, INDUSTRIAL, ALLEY, AND MULTI-FAMILY DRIVEWAY APPROACHES. LONGITUDINAL AND TRANSVERSE BARS SHALL BE PLACED TWO FEET ON CENTER, TWO INCHES FROM BOTTOM AND THREE INCHES IN FROM EDGES.
8. DRIVEWAY APRON LIPS SHALL BE A MINIMUM OF ONE INCH TO A MAXIMUM ONE AND ONE HALF INCH IN HEIGHT ABOVE ASPHALT AT GUTTER.
9. ALL VISIBLE EDGES SHALL HAVE A MAXIMUM $\frac{3}{4}$ " RADIUS FINISHED EDGE.
10. APPROACH SURFACES SHALL HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO THE CURB.
11. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-22.
12. CURB, SIDEWALK AND APPROACH APRON MAY BE A MONOLITHIC POUR.
13. ASPHALT PATCH SHALL BE PLACED PER DIVISION II SECTION 212.03. MATCH EXISTING CONDITIONS AND A MINIMUM WIDTH OF 2'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

CONCRETE DRIVEWAY APPROACH & CURB CUT OPTION C

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

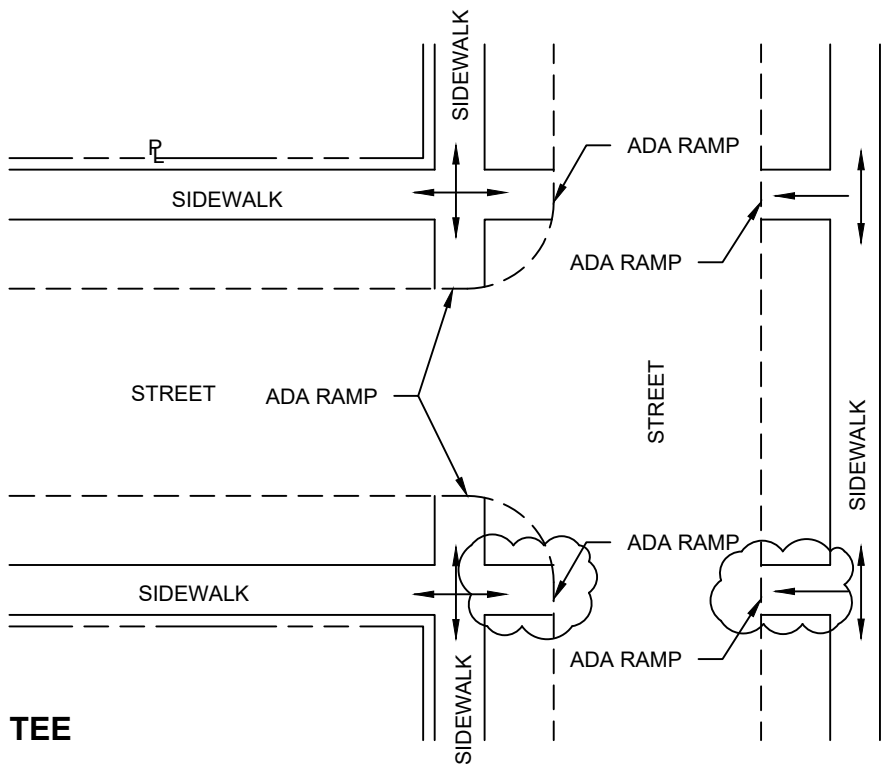
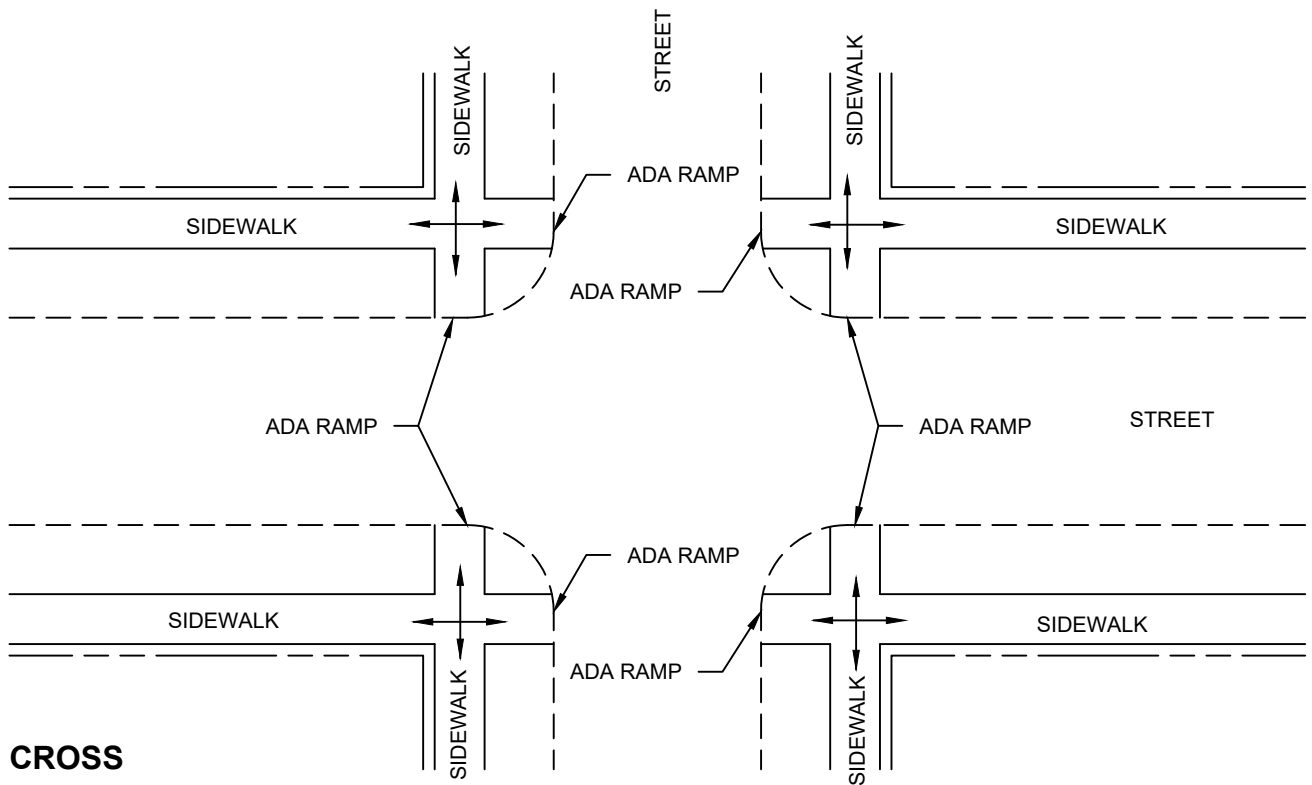
01/22/2024



STANDARD
DRAWING
NO.

2-14

STREETS



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL ADA INTERSECTION CONNECTIONS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

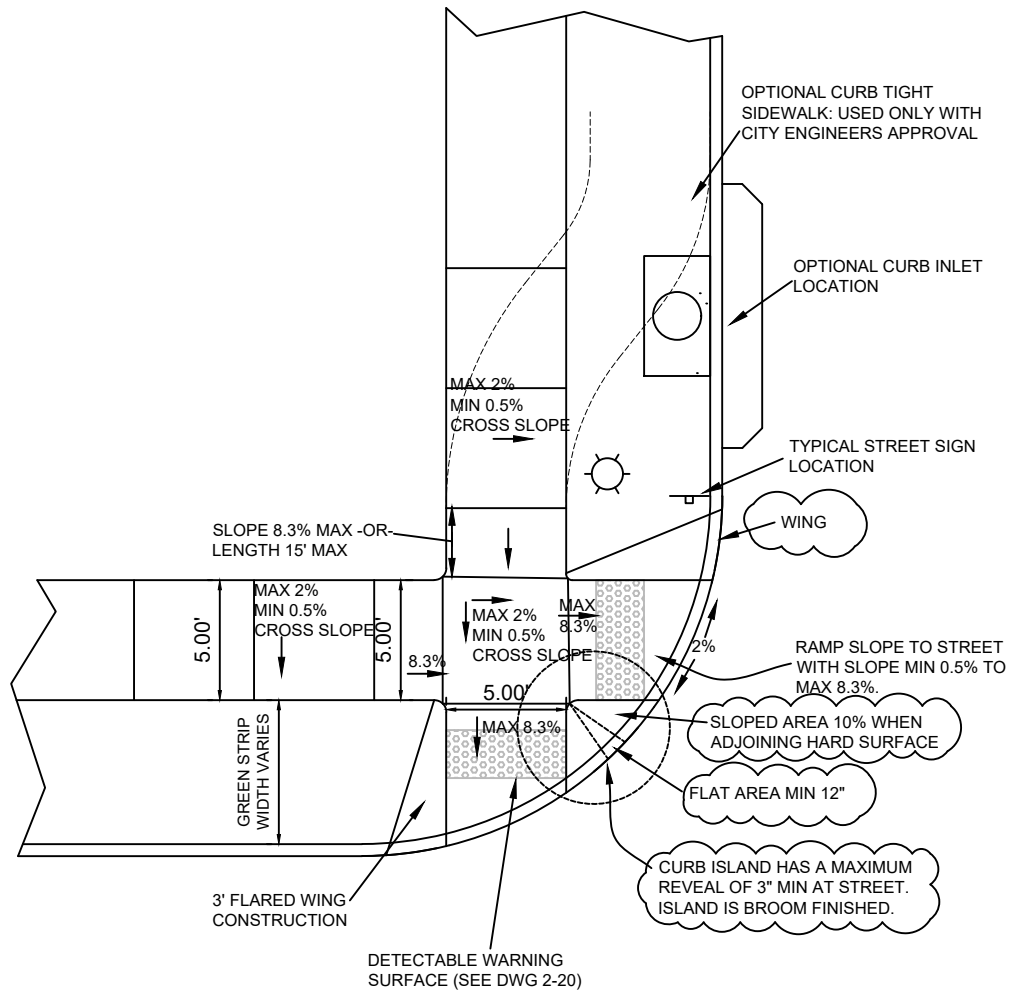
10/26/2022



STANDARD
DRAWING
NO.

2-15

STREETS



1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF ADA RAMP SHARE THE TOP OF THE RUNNING SLOPE MEETS THE SIDEWALK.
4. THE BASE ROCK SHALL BE 3/4"-0" AGGREGATE BASE BACKFILL WITH A DEPTH OF SIX INCHES, MEETING THE REQUIREMENTS OF SECTION 207 AND COMPACTED TO 95% OF AASHTO T-99.
5. BACK CURB IS NOT REQUIRED WHEN CONNECTION TO TRAIL / PATH OR WHEN LANDSCAPING IS AT GRADE WITH CONCRETE.
6. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-18.
7. DESIGN AND CONSTRUCT RAMPS AND CROSS SLOPES AT LESS THAN MAXIMUM SLOPE LIMITS.
8. RAMP LANDINGS SHALL NOT EXCEED 2% MAXIMUM IN CROSS SLOPE OR RUNNING SLOPE.
9. THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT EXCEED A MAXIMUM OF 8.3%.
10. IN RETROFIT RAMP CONSTRUCTION ONLY, IF 8.3% SLOPE CAN NOT BE ACHIEVED. CONNECT TO EXISTING WALK WITH 15' LONG RAMP
11. DETECTABLE WARNING SURFACE COVER THE FULL WIDTH OF LANDING AT CURB.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL ADA RAMP TYPE 1

SCALE:

NTS

DRAWING BY:

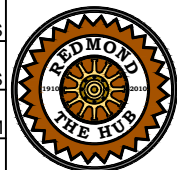
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APPROVED BY:

JNM

DATE:

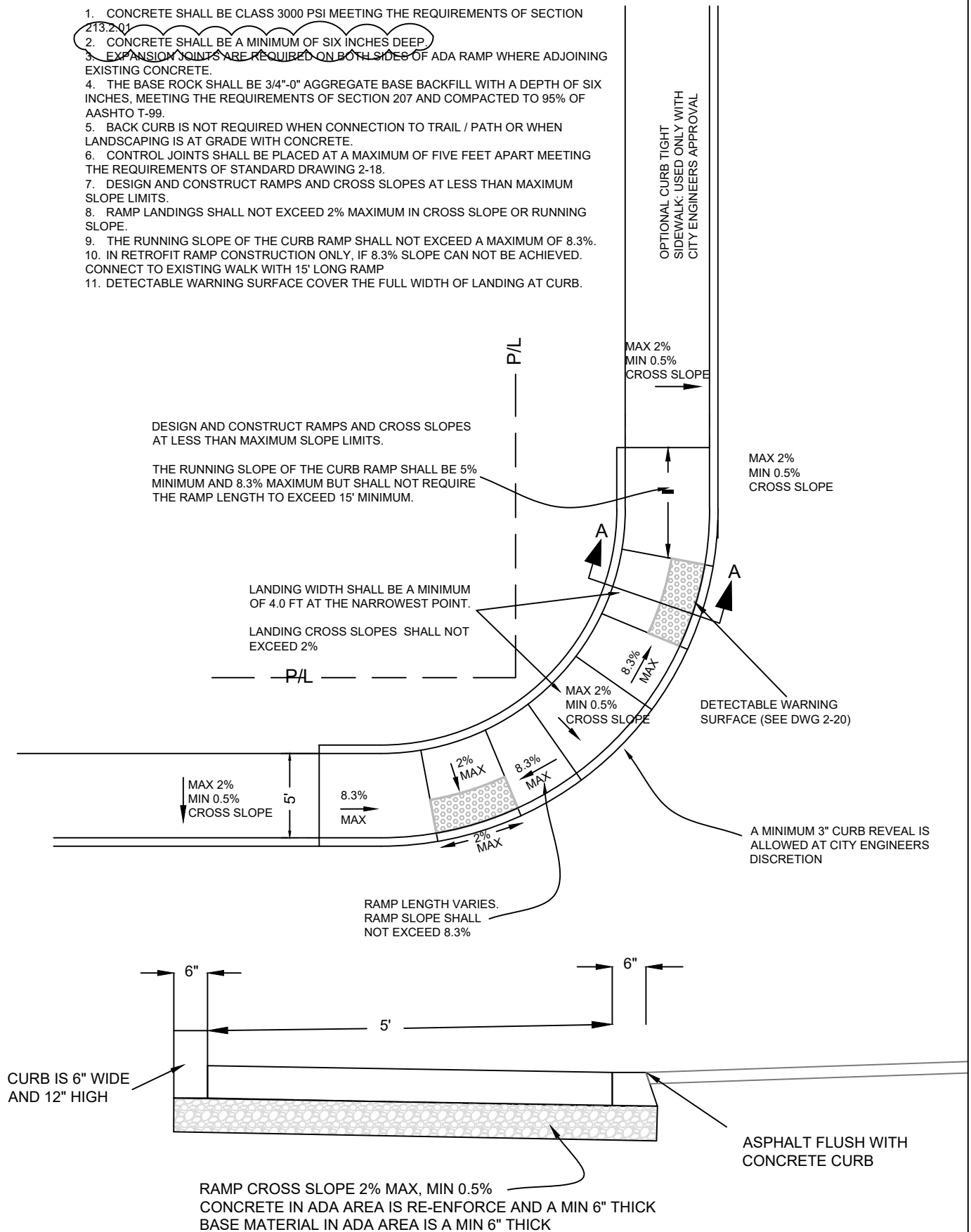
10/26/2022

STANDARD
DRAWING
NO.

2-16

STREETS

1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2-01
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP.
3. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF ADA RAMP WHERE ADJOINING EXISTING CONCRETE.
4. THE BASE ROCK SHALL BE 3/4"-0" AGGREGATE BASE BACKFILL WITH A DEPTH OF SIX INCHES, MEETING THE REQUIREMENTS OF SECTION 207 AND COMPACTED TO 95% OF AASHTO T-99.
5. BACK CURB IS NOT REQUIRED WHEN CONNECTION TO TRAIL / PATH OR WHEN LANDSCAPING IS AT GRADE WITH CONCRETE.
6. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-18.
7. DESIGN AND CONSTRUCT RAMPS AND CROSS SLOPES AT LESS THAN MAXIMUM SLOPE LIMITS.
8. RAMP LANDINGS SHALL NOT EXCEED 2% MAXIMUM IN CROSS SLOPE OR RUNNING SLOPE.
9. THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT EXCEED A MAXIMUM OF 8.3%.
10. IN RETROFIT RAMP CONSTRUCTION ONLY, IF 8.3% SLOPE CAN NOT BE ACHIEVED, CONNECT TO EXISTING WALK WITH 15' LONG RAMP
11. DETECTABLE WARNING SURFACE COVER THE FULL WIDTH OF LANDING AT CURB.



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL ADA RAMP TYPE 2

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/26/2022

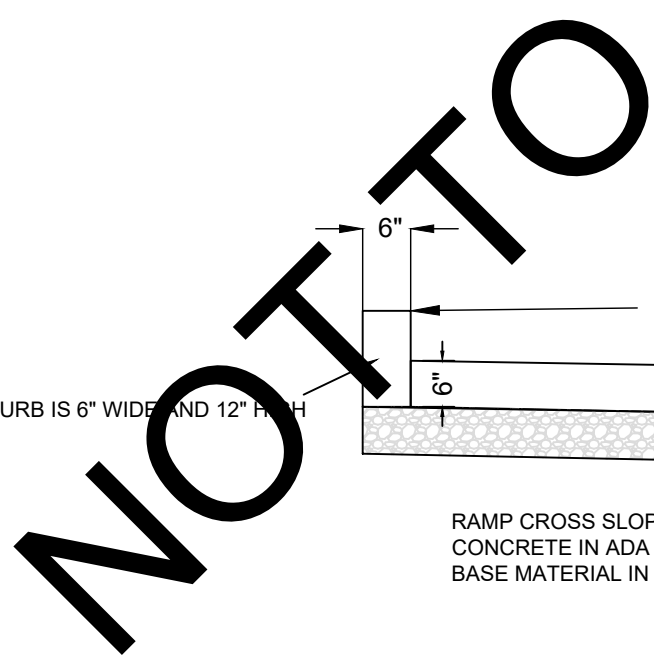


STANDARD
DRAWING
NO.

2-17

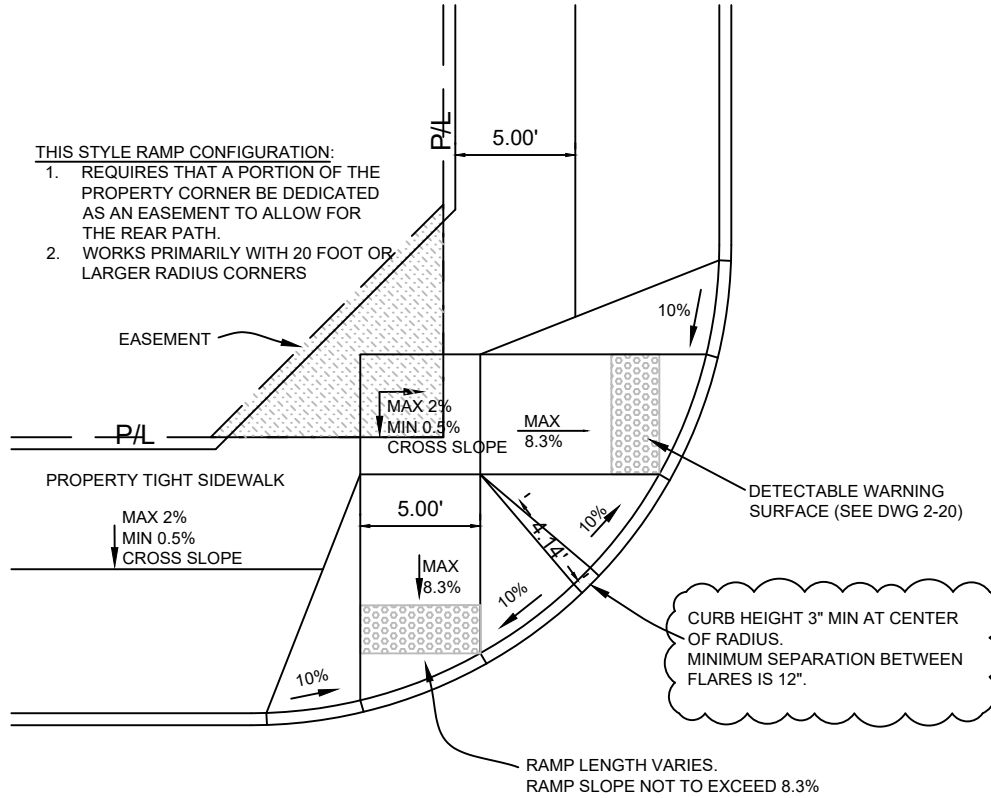
STREETS

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STREETS

DESIGN AND CONSTRUCT RAMPS AND CROSS SLOPES
AT LESS THAN MAXIMUM SLOPE LIMITS.



1. CONCRETE SHALL BE CLASS 3000 PSI MEETING THE REQUIREMENTS OF SECTION 213.2.01.
2. CONCRETE SHALL BE A MINIMUM OF SIX INCHES DEEP. EXPANSION JOINTS ARE REQUIRED ON BOTH SIDES OF ADA RAMP SHEER THE TOP OF THE RUNNING SLOPE MEETS THE SIDEWALK.
3. THE BASE ROCK SHALL BE 3/4" Ø AGGREGATE BASE BACKFILL WITH A DEPTH OF SIX INCHES, MEETING THE REQUIREMENTS OF SECTION 207 AND COMPACTED TO 95% OF AASHTO T-99.
4. BACK CURB IS NOT REQUIRED WHEN CONNECTION TO TRAIL / PATH OR WHEN LANDSCAPING IS AT GRADE WITH CONCRETE.
5. CONTROL JOINTS SHALL BE PLACED AT A MAXIMUM OF FIVE FEET APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-18.
6. DESIGN AND CONSTRUCT RAMPS AND CROSS SLOPES AT LESS THAN MAXIMUM SLOPE LIMITS.
7. RAMP LANDINGS SHALL NOT EXCEED 2% MAXIMUM IN CROSS SLOPE OR RUNNING SLOPE.
8. THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT EXCEED A MAXIMUM OF 8.3%.
9. IN RETROFIT RAMP CONSTRUCTION ONLY, IF 8.3% SLOPE CAN NOT BE ACHIEVED. CONNECT TO EXISTING WALK WITH 15' LONG RAMP
10. DETECTABLE WARNING SURFACE COVER THE FULL WIDTH OF LANDING AT CURB.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL ADA RAMP TYPE 4

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

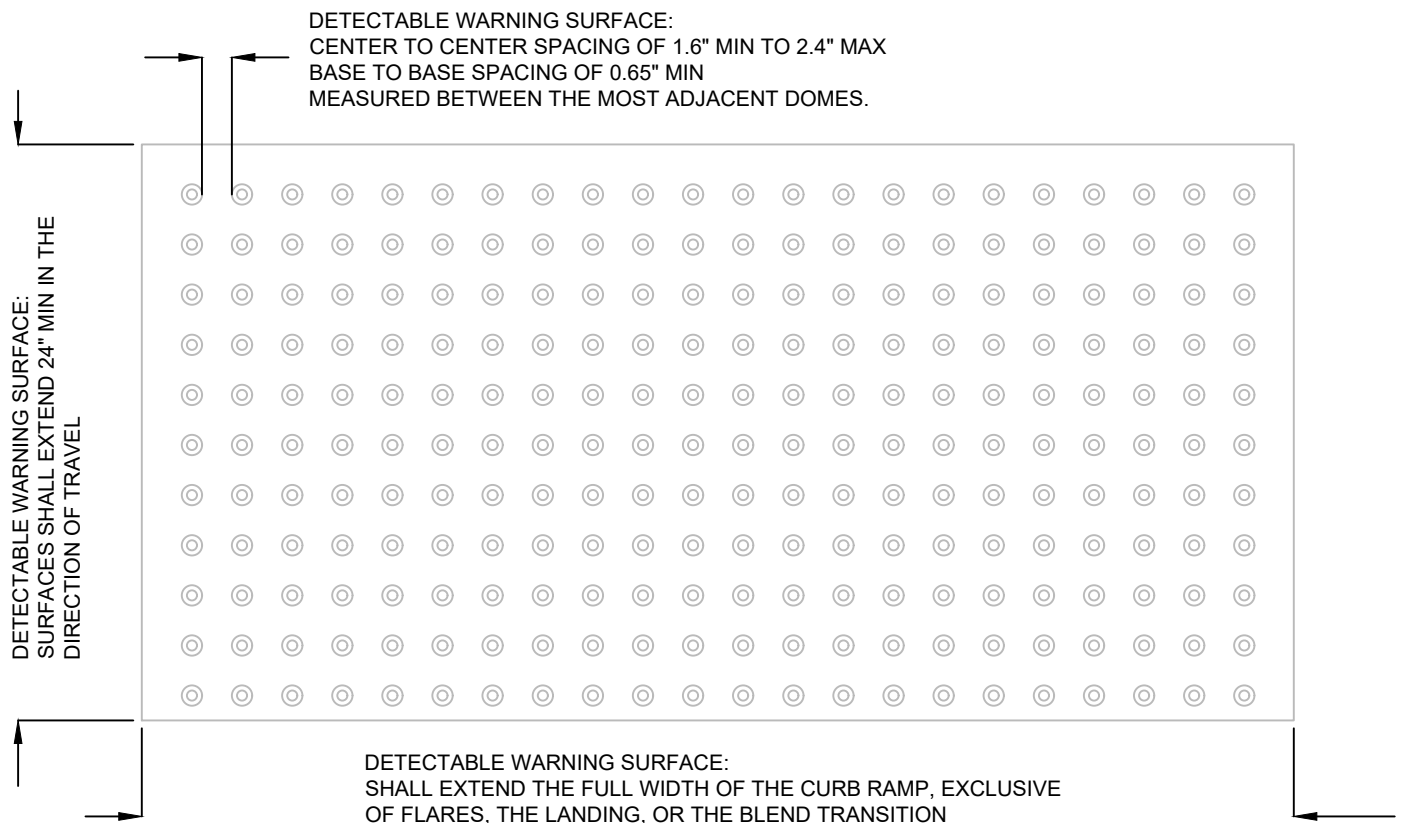
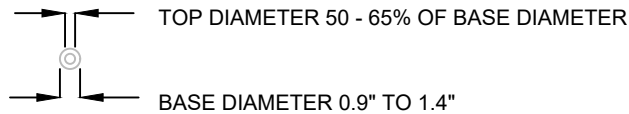
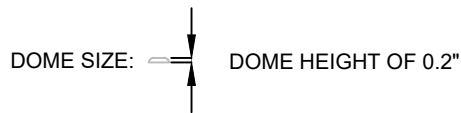
10/26/2022



STANDARD
DRAWING
NO.

2-19

STREETS



- NOTE:
1. THE WARNING SURFACE SHALL BE A RAW CAST IRON INSERT, SUCH AS EAST JORDANS, DURALAST-#00700571, OR TUFTILE-#TTCI2430-WS, OR AN APPROVED EQUAL THAT MEETS CURRENT AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) FOR ACCESSIBLE PUBLIC RIGHTS-OF-WAY, SECTION R304 - DETECTABLE WARNING SURFACES.
 2. THE WARNING SURFACE SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET, HIGHWAY, OR WALKWAY SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT, UNLESS A SPECIFIED COLOR IS REQUIRED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL DETECTABLE WARNING SURFACE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

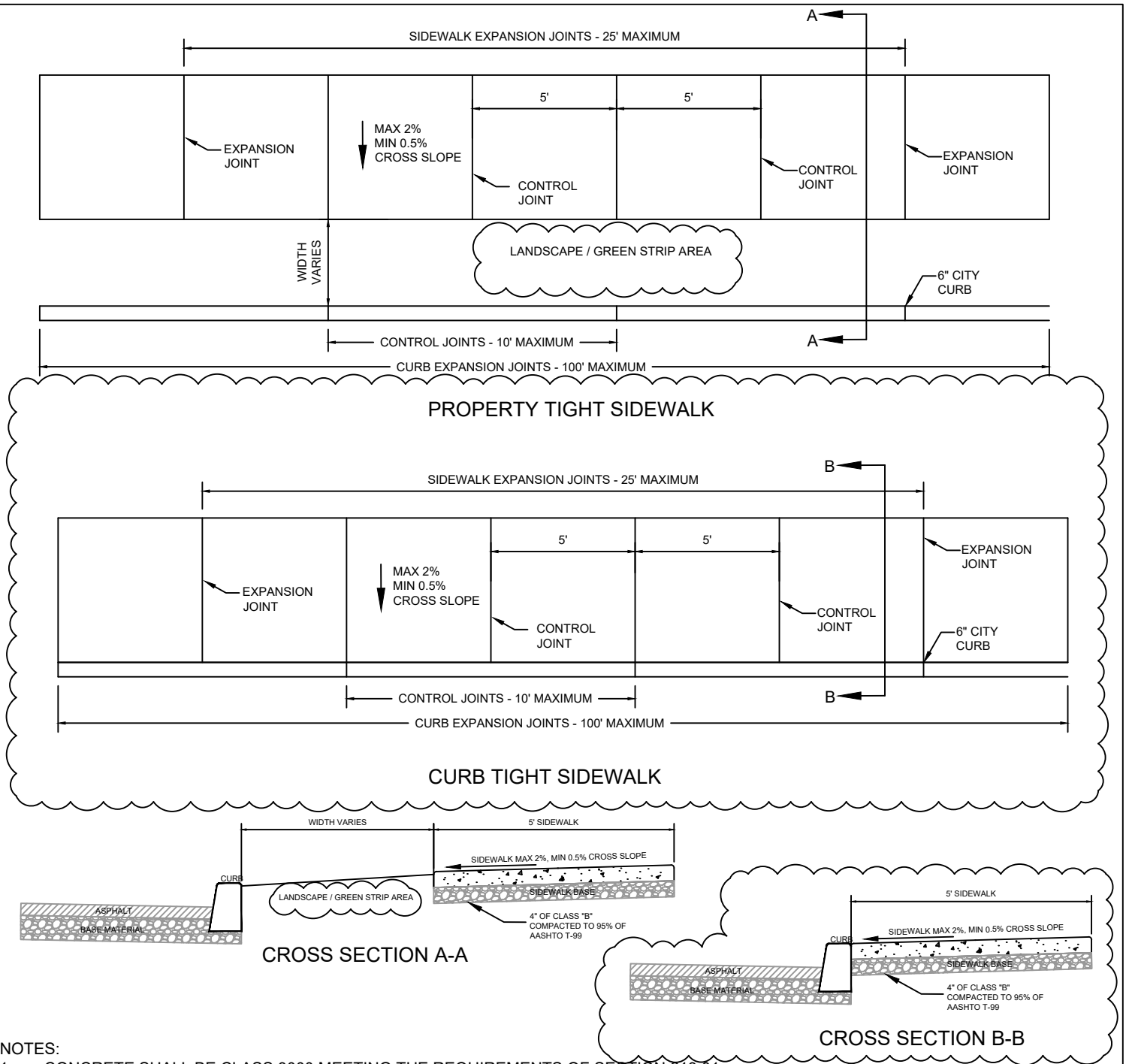
10/26/2022



STANDARD
DRAWING
NO.

2-20

STREETS



NOTES:

1. CONCRETE SHALL BE CLASS 3000 MEETING THE REQUIREMENTS OF SECTION 213.01.
2. CONCRETE SIDEWALK SHALL BE A MINIMUM OF FOUR INCHES DEEP.
3. SIDEWALK CROSS SLOPE MAXIMUM OF 2% AND A MINIMUM OF 0.5%.
4. EXPANSION JOINTS ARE REQUIRED EVERY 25' MAXIMUM CONCRETE SIDEWALK.
5. CONTROL JOINTS IN SIDEWALK SHALL BE PLACED AT A MAXIMUM OF 5' APART MEETING THE REQUIREMENTS OF CITY OF REDMOND DETAIL 2-18.
6. BASE ROCK UNDER THE SIDEWALK SHALL BE CLASS "B" BACKFILL MEETING THE REQUIREMENTS OF SECTION 101.2.02B AND COMPACTED TO 95% IF AASHTO T-99.
7. CONCRETE CURB SHALL MEET THE REQUIREMENTS OF STANDARD DRAWING 2-6.
8. EXPANSION JOINTS ARE REQUIRED AS SPECIFIED IN SECTION 213.3.04 AND 215.3.04.
9. CONTROL JOINTS IN THE CURB SHALL BE PLACED AT A MAXIMUM OF 10' APART MEETING THE REQUIREMENTS OF STANDARD DRAWING 2-18.
10. BASE ROCK UNDER THE CURB SHALL MEET THE REQUIREMENTS OF SECTION 207 AND COMPACTED TO 95% OF AASHTO T-99.
11. ALL VISIBLE EDGES SHALL HAVE A MAXIMUM 3/4" RADIUS FINISHED EDGE.
12. THE SIDEWALK SURFACE SHALL HAVE A LIGHT BROOM FINISH PERPENDICULAR TO CURB.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL CONCRETE CURB & SIDEWALK

SCALE:

NTS

DRAWING BY:

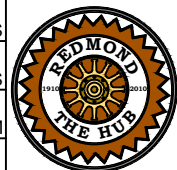
JWS

APPROVED BY:

JNM

DATE:

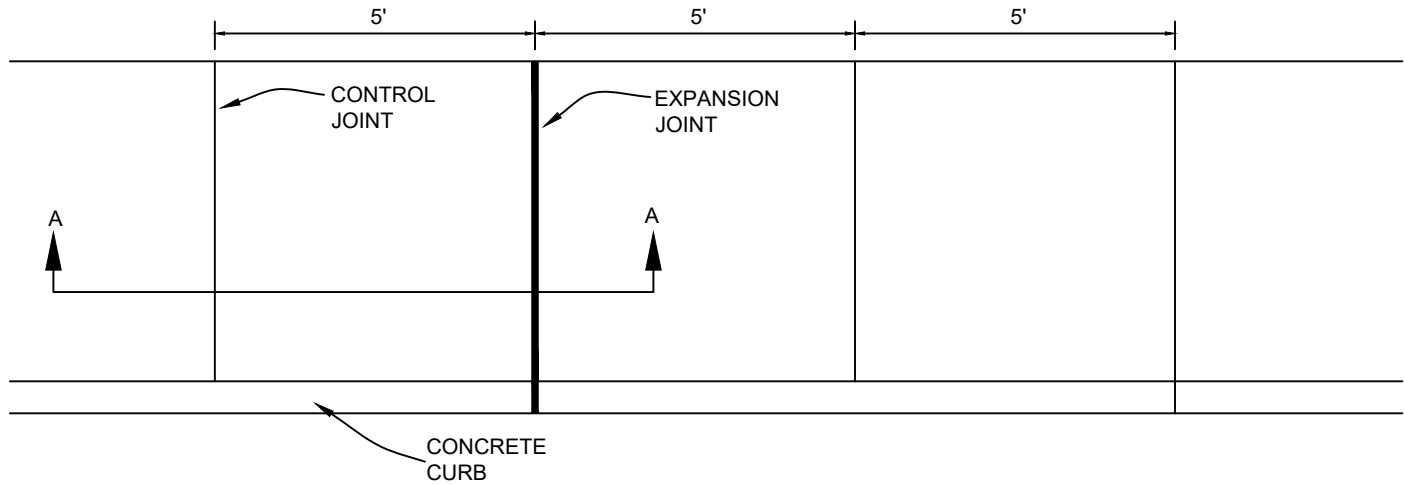
10/26/2022

STANDARD
DRAWING
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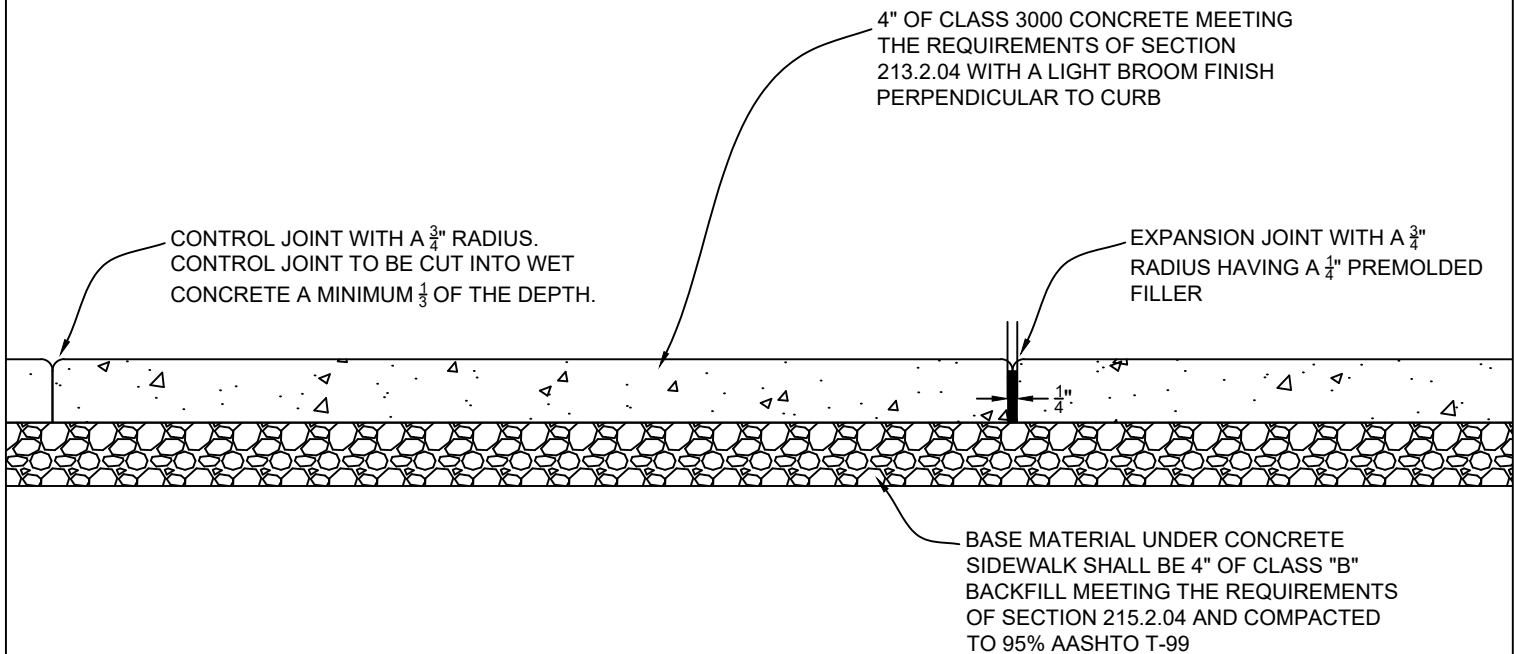
2-21

STREETS

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CROSS SECTION A-A



NOTE:

1. CONTROL JOINTS EVERY 5', EXPANSION JOINTS EVERY 25'

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL CONCRETE JOINT SECTIONS

SCALE:

NTS

DRAWING BY:

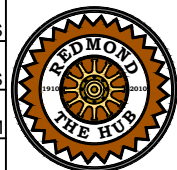
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APPROVED BY:

JNM

DATE:

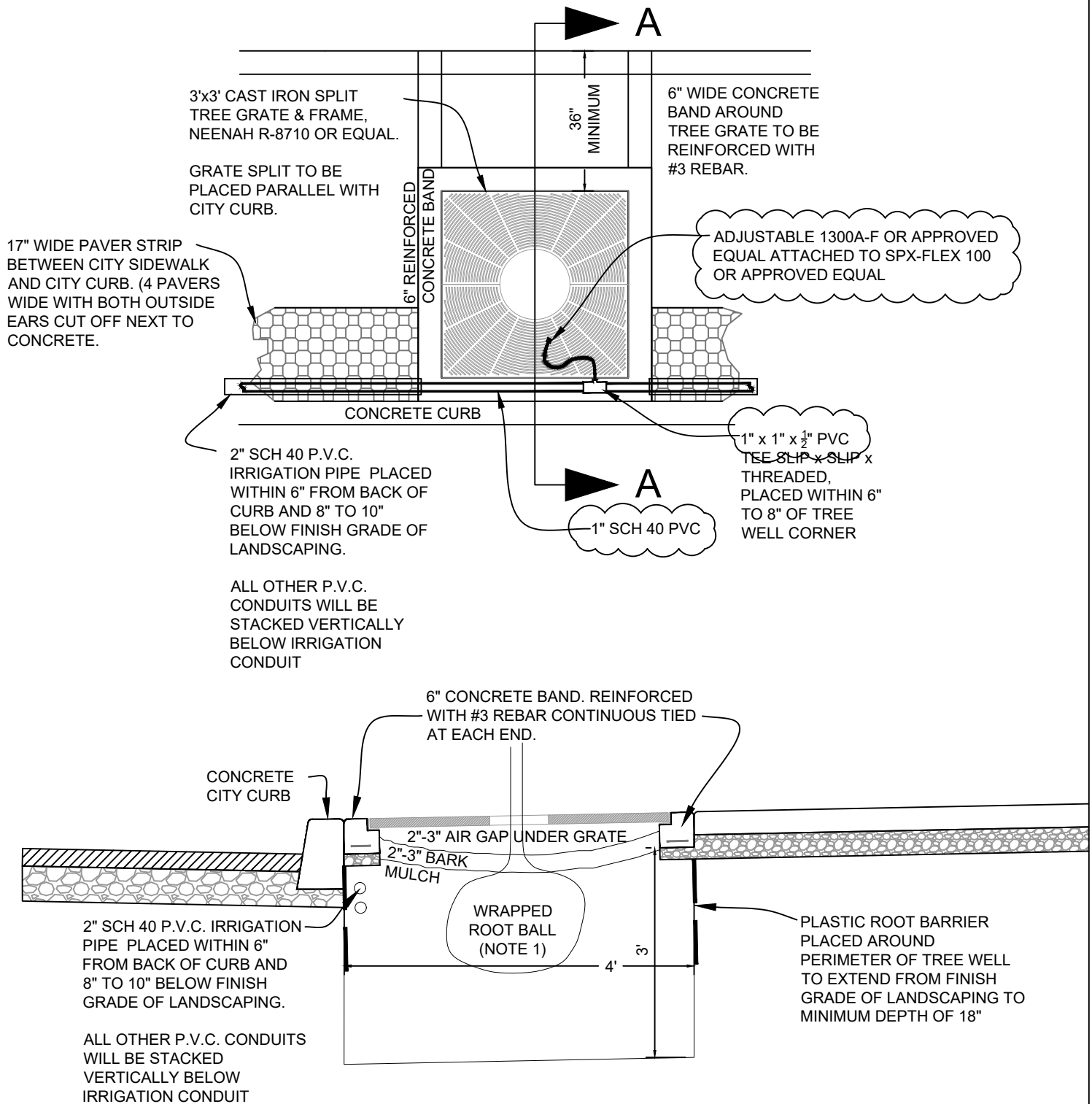
10/26/2022



STANDARD
DRAWING
NO.

2-22

STREETS



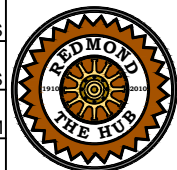
NOTES:

1. REMOVE WIRE BASKETS, BURLAP OR FASTENERS FROM ROOTBALL COMPLETELY IF ROOTBALL WILL NOT BE DAMAGED. IF DAMAGE IS SUSPECTED, NOTIFY CITY OF REDMOND PARK DEPARTMENT (ARBORIST) FOR CONCURRENCE AND REMOVE TOPS AND SIDES OF BASKETS MINIMUM. USE BOLT CUTTERS ON WIRE IF NECESSARY TO REMOVE WIRE BASKETS. BENDING BACK NOT ACCEPTABLE. REMOVE ALL BURLAP AND TWINE FROM PLANTING PIT.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL DOWNTOWN TREE WELL INSTALLATION

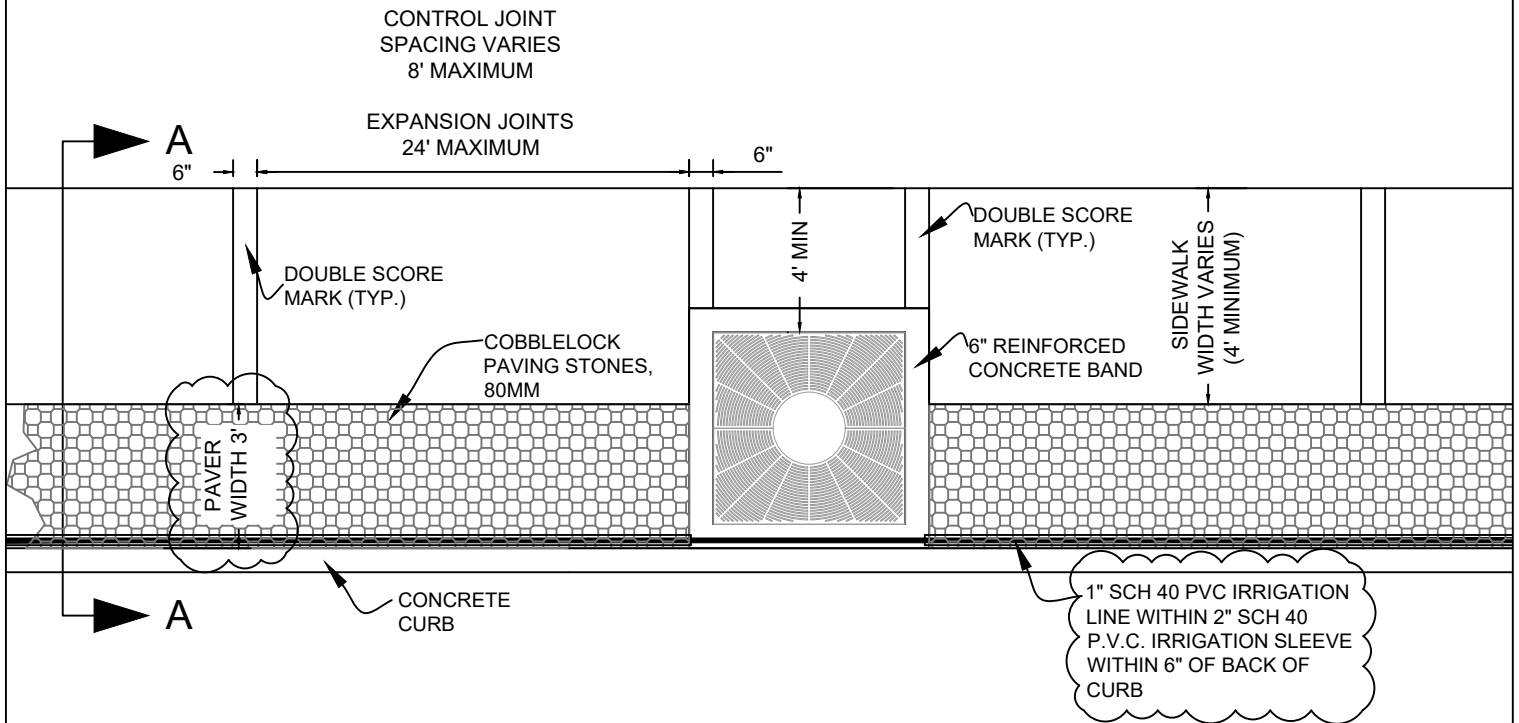
SCALE: NTS
DRAWING BY: JWS
APPROVED BY: JNM
DATE: 10/26/2022



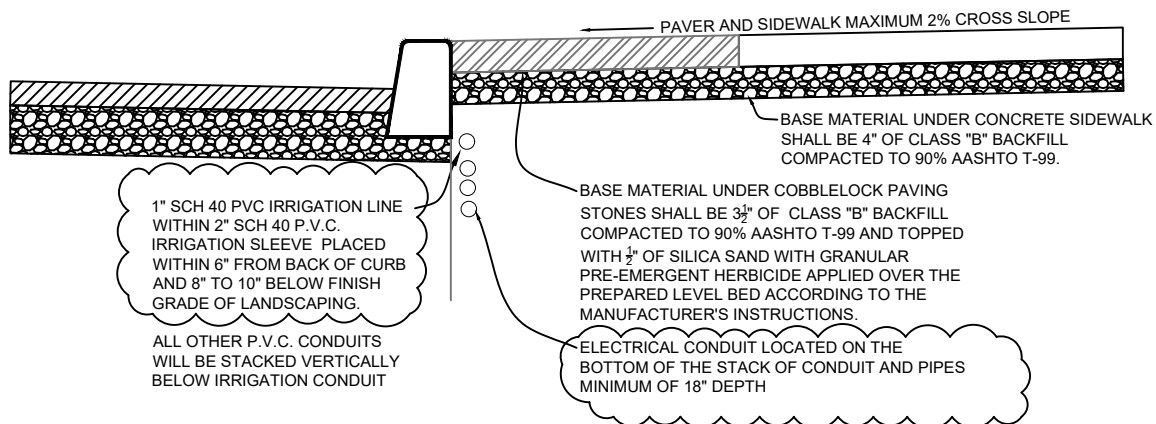
STANDARD DRAWING NO.

2-23

STREETS



CROSS SECTION A-A



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL DOWNTOWN SIDEWALK

SCALE:

NTS

DRAWING BY:

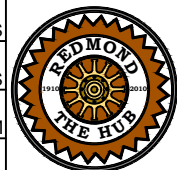
JWS

APPROVED BY:

JNM

DATE:

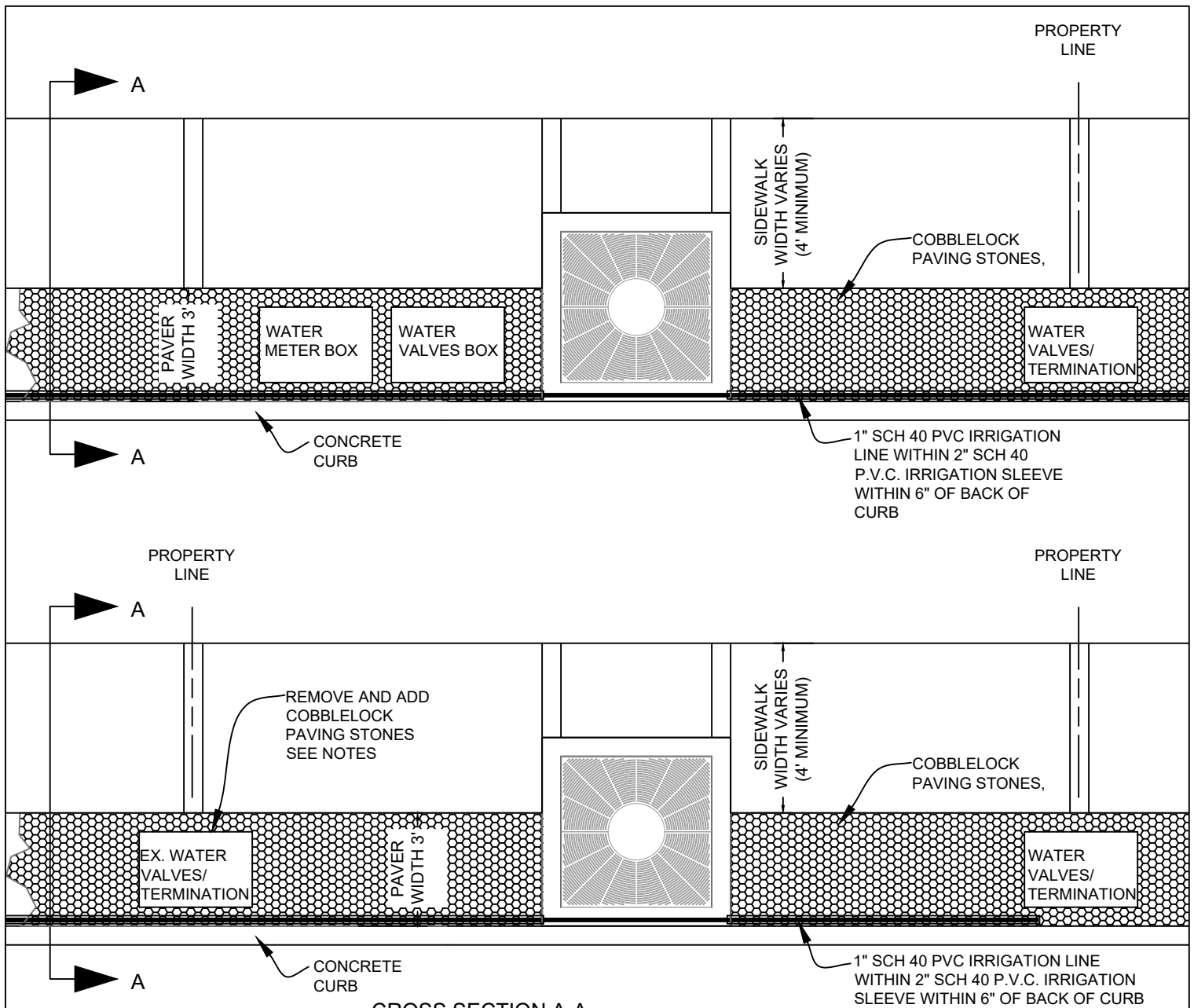
10/26/2022



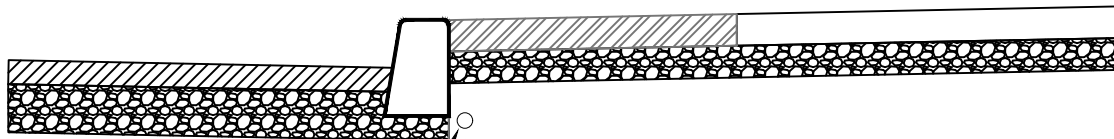
STANDARD DRAWING NO.

2-24

STREETS



CROSS SECTION A-A



1" SCH 40 PVC IRRIGATION LINE WITHIN 2" SCH 40 P.V.C. IRRIGATION SLEEVE PLACED WITHIN 6" FROM BACK OF CURB AND 8" TO 10" BELOW FINISH GRADE OF LANDSCAPING.

ALL OTHER P.V.C. CONDUITS WILL BE STACKED VERTICALLY BELOW IRRIGATION CONDUIT

NOTES:

1. CONNECTED NEW 2" SCH 40 PVC TO EXISTING PVC PIPE SUBS.
2. RUN NEW 1" SCH 40 PVC INSIDE OF THE 2" PVC PIPES FROM EXISTING TREE TO NEW TREES.
3. AFTER 2" PIPES ARE CONNECTED FILL IN EXISTING TERMINATION BOX AND RESTORE COBBLE LOC PAVING STONES.
4. PROPERTY LINE COULD BE AROUND THE CORNER TERMINATION BOX IS BETWEEN PROPERTY LINES AT THE FURTHEST POINT FROM THE CLOSEST STREET TREE WATER METER.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL DOWNTOWN
SIDEWALK METER
INSTALLATION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

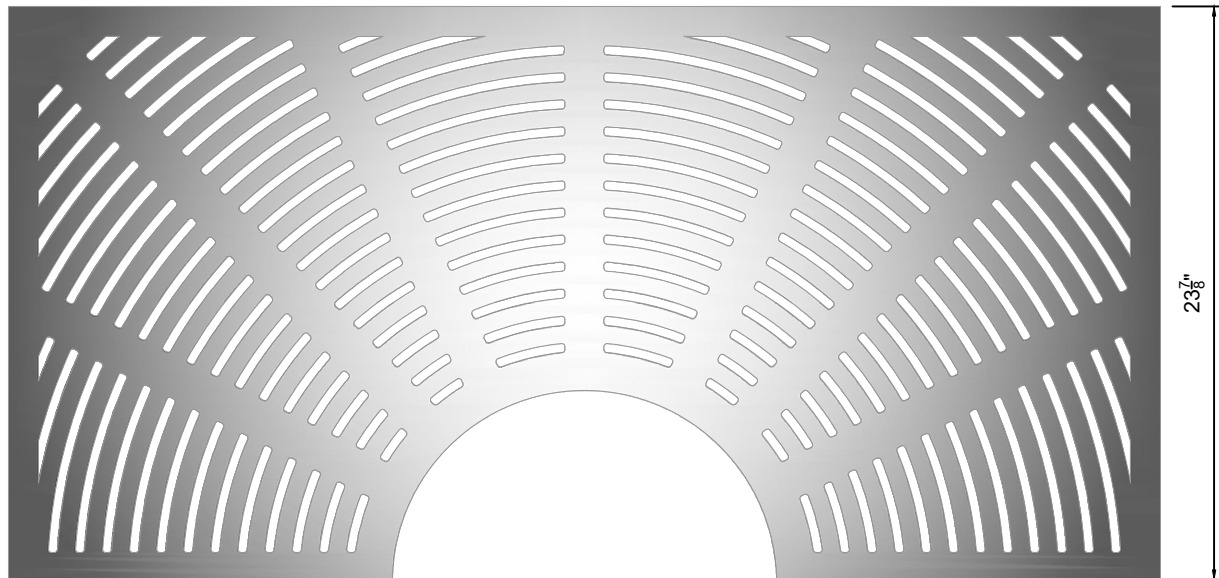
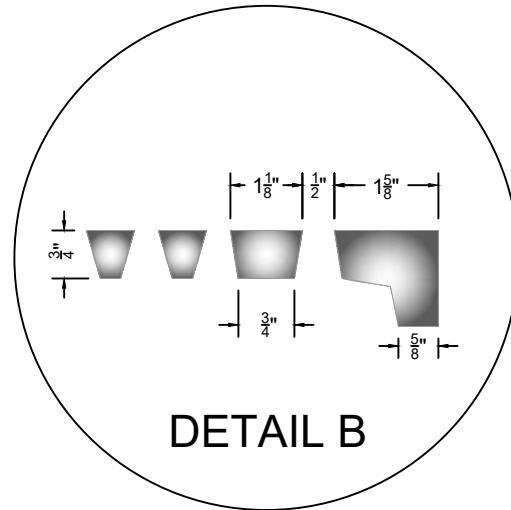
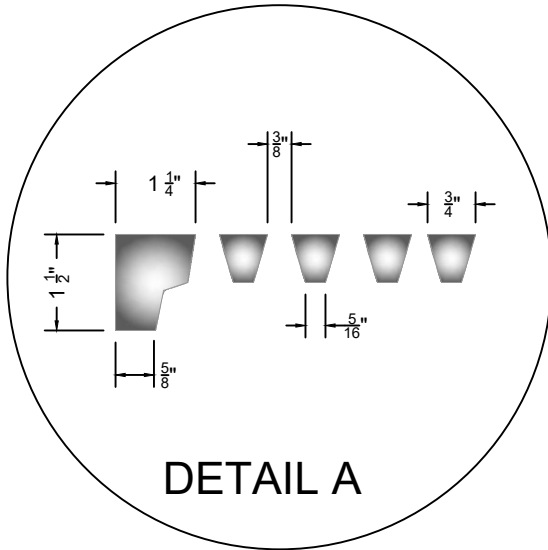
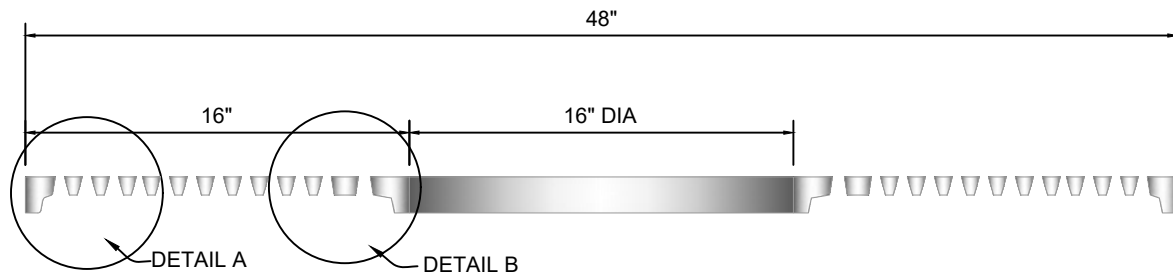
10/26/2022



STANDARD
DRAWING
NO.

2-24B

STREETS



NOTES:

1. 48" x 48" GRATE IS THE STANDARD SIZE GRATE.
2. 36" x 36" GRATE MAY BE USED TO MAINTAIN SIDEWALK CLEAR SPACE WITH APPROVAL OF CITY ENGINEER.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL DOWNTOWN
STREET TREE GRATE**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

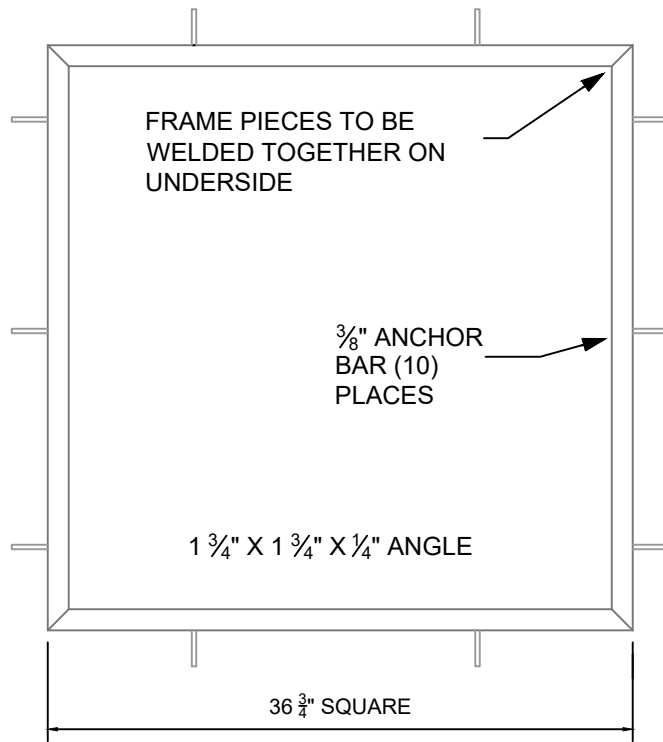
10/26/2022



STANDARD
DRAWING
NO.

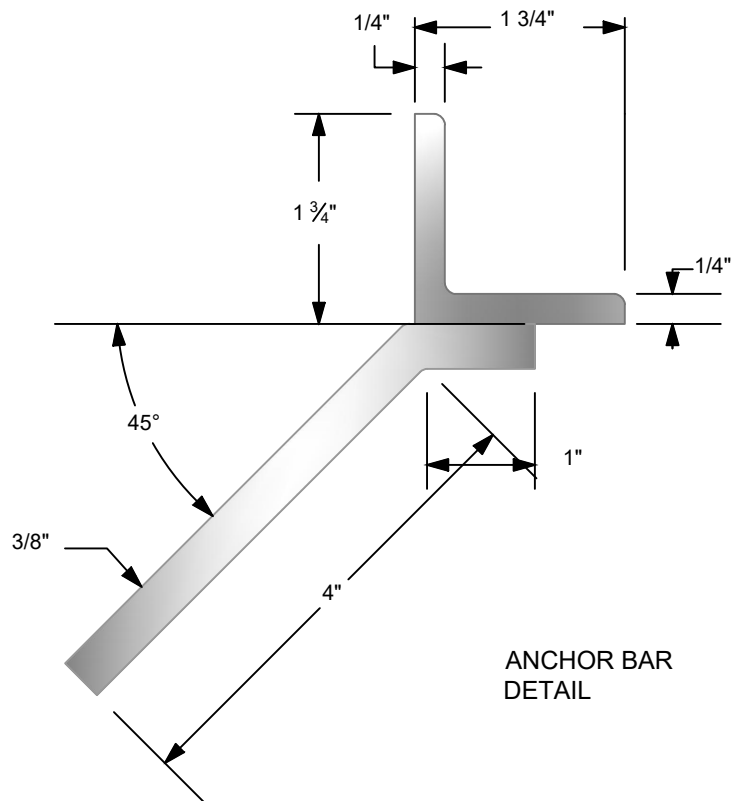
2-25

STREETS



NOTE:

1. $36 \frac{3}{4}$ " x $36 \frac{3}{4}$ " WHEN 36" GRATE ALLOWED (SEE STANDARD DRAWING 2-21)



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STREET TREE
GRATE FRAME**

SCALE:

NTS

DRAWING BY:

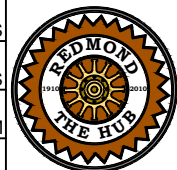
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APPROVED BY:

JNM

DATE:

10/26/2022

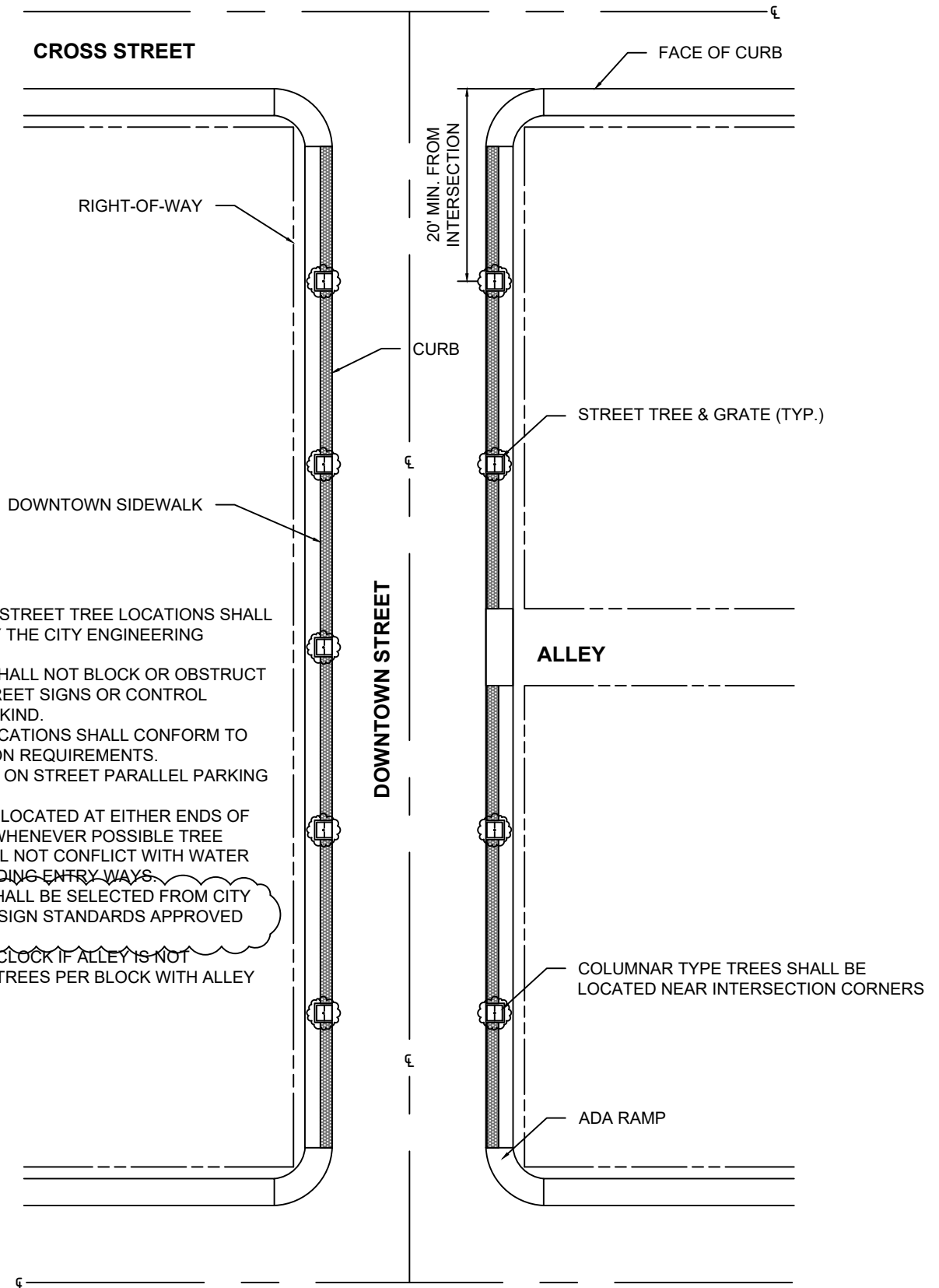


STANDARD
DRAWING
NO.

2-26

STREETS

G:\ENGINEER\2010\STANDARDS&SPECS\2022 REVISIONS (WORKING)\STANDARD DETAIL SECTION 2 STREETS\CAD UPDATED\COR 2-27 2023.DWG



NOTES:

1. ALL DOWNTOWN STREET TREE LOCATIONS SHALL BE APPROVED BY THE CITY ENGINEERING DEPARTMENT.
2. STREET TREES SHALL NOT BLOCK OR OBSTRUCT THE VIEW OF STREET SIGNS OR CONTROL DEVICES OF ANY KIND.
3. STREET TREE LOCATIONS SHALL CONFORM TO CITY CLEAR VISION REQUIREMENTS.
4. IN AREAS WHERE ON STREET PARALLEL PARKING IS ALLOWED,
5. TREES SHALL BE LOCATED AT EITHER ENDS OF PARKING STALL WHENEVER POSSIBLE TREE LOCATIONS SHALL NOT CONFLICT WITH WATER METERS OR BUILDING ENTRY WAYS.
6. TREE SPECIES SHALL BE SELECTED FROM CITY OF REDMOND DESIGN STANDARDS APPROVED TREE LIST.
7. FIVE TREES PER BLOCK IF ALLEY IS NOT PRESENT. FOUR TREES PER BLOCK WITH ALLEY PRESENT.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL DOWNTOWN
STREET TREE LOCATION
STANDARD**

SCALE:

NTS

DRAWING BY:

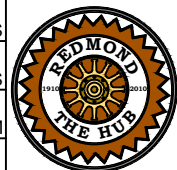
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APPROVED BY:

JNM

DATE:

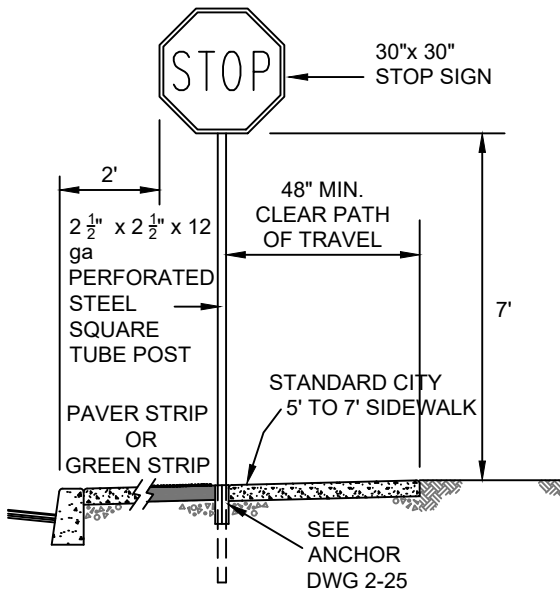
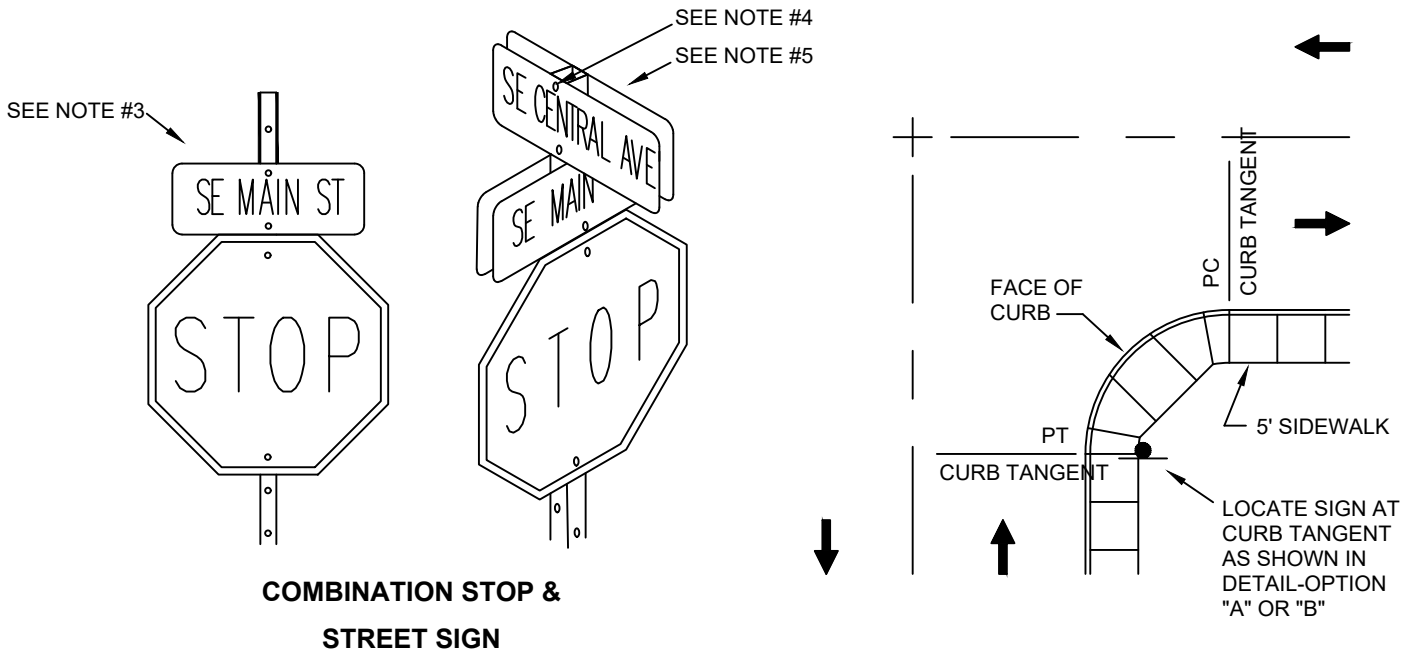
10/26/2022



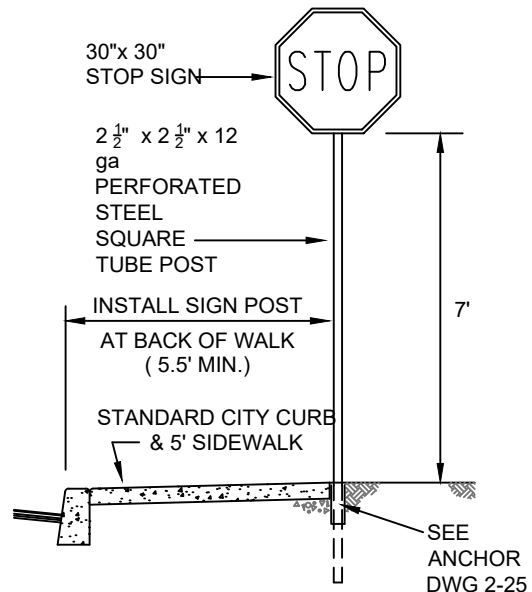
STANDARD
DRAWING
NO.

2-27

STREETS



OPTION "A"
7' MIN. WIDE SIDEWALK
OR
PROPERTY TIGHT SIDEWALK



OPTION "B"
5' WIDE SIDEWALK WHEN CURB
TIGHT SIDEWALK AUTHORIZED

STOP SIGN INSTALLATION

1. SIGNS SHALL MEET ALL MANUAL on UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SPECIFICATIONS.
2. ALUMINUM BACKING IS MADE OF 5052-H38 ALLOY AND IS OF 0.080 GAUGE THICKNESS.
3. STREET NAME SIGNS MOUNTED AT TOP STOP SIGN POSTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING 2-29.
4. ATTACH ALL STREET NAME SIGNS, STOP SIGNS TO POST WITH 3/8" BOLTS, NYLON WASHERS, FLAT STEEL WASHERS, AND 3/8" NUTS.
5. LARGER DIMENSIONED STREET NAME SIGN TO BE MOUNTED DIRECTLY ABOVE STOP SIGN. SMALLER DIMENSIONED STREET NAME SIGN TO BE MOUNTED AT TOP OF POST.
6. ALL SIGNAGE 576 SQUARE INCHES OR LESS, SHALL BE MOUNTED ON 2" STEEL TELSPAR POST WITH HEAVY WALL 30" ANCHOR.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL STOP & STREET SIGN COMBINATION

SCALE:

NTS

DRAWING BY:

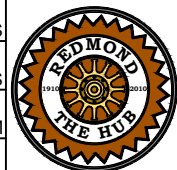
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APPROVED BY:

JNM

DATE:

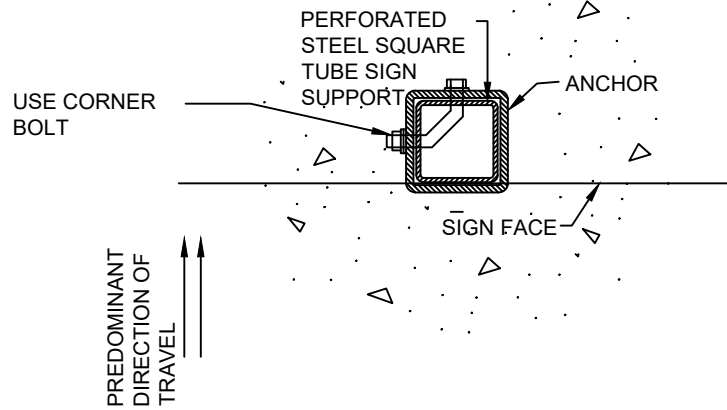
10/26/2022



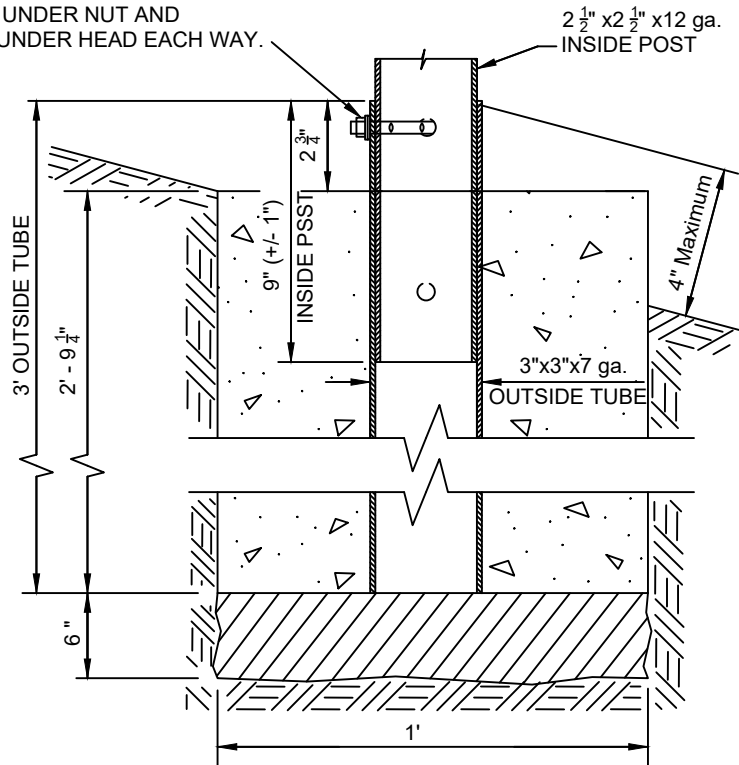
STANDARD
DRAWING
NO.

2-28

STREETS



3/8" CORNER BOLT W/ FLATWASHER AND LOCKWASHER UNDER NUT AND FLATWASHER UNDER HEAD EACH WAY.



2 1/2" ANCHOR DETAIL

NOTES:

1. MATERIAL GRADE FOR BASE HARDWARE CONNECTION SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATION AND BASED ON CRASH TESTING.
2. ANCHOR STEEL SHALL BE HOT DIPPED GALVANIZED OR APPROVED EQUAL.
3. FOOTING CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE (FC = 3000 PSI) PER SPECIFICATION 00440. THE CGC MIX MAY BE ACCEPTED AT THE SITE OF PLACEMENT ACCORDING TO 00440.14.
4. THE ESTIMATED CONCRETE VOLUME IS 0.09 CUBIC YARD

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL STREET
SIGN ANCHOR**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

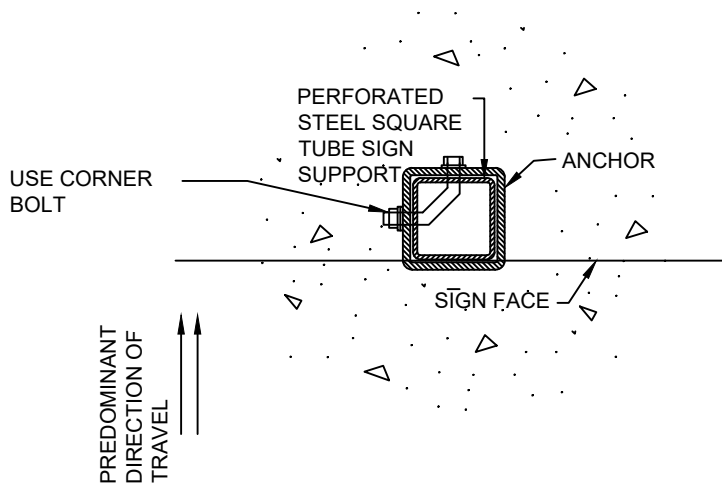
10/26/2022



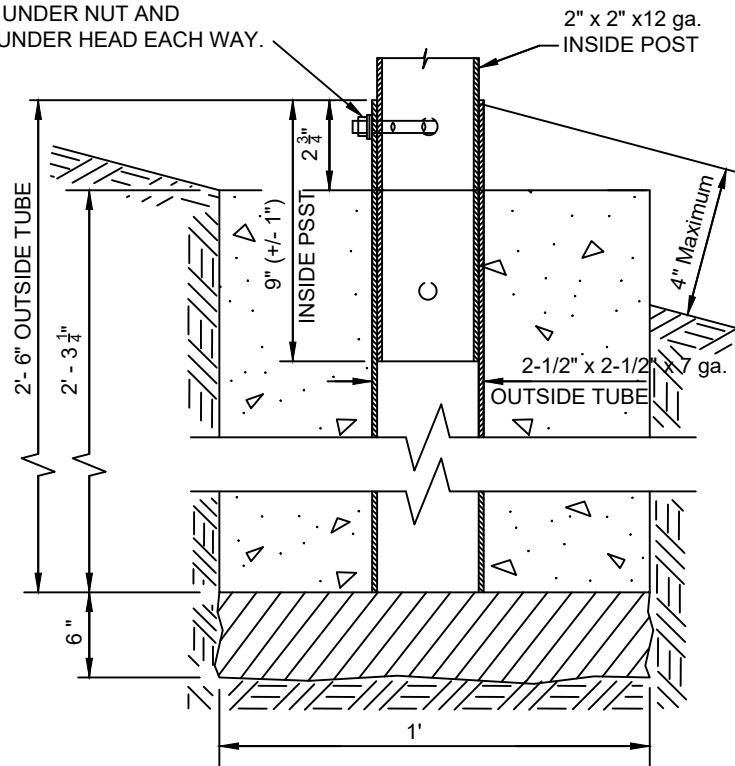
STANDARD
DRAWING
NO.

2-29

STREETS



3/8" CORNER BOLT W/ FLATWASHER AND LOCKWASHER UNDER NUT AND FLATWASHER UNDER HEAD EACH WAY.



2" ANCHOR DETAIL

NOTES:

1. MATERIAL GRADE FOR BASE HARDWARE CONNECTION SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATION AND BASED ON CRASH TESTING.
2. ANCHOR STEEL SHALL BE HOT DIPPED GALVANIZED OR APPROVED EQUAL.
3. FOOTING CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE (FC = 3000 PSI) PER SPECIFICATION 00440. THE CGC MIX MAY BE ACCEPTED AT THE SITE OF PLACEMENT ACCORDING TO 00440.14.
4. THE ESTIMATED CONCRETE VOLUME IS 0.09 CUBIC YARD

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL STREET SIGN
2" ANCHOR**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/26/2022

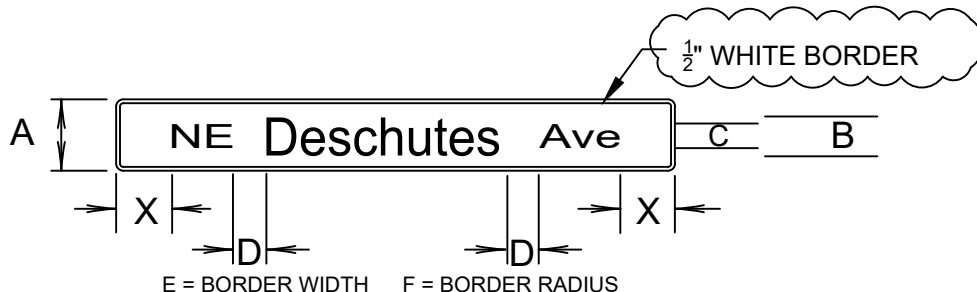


STANDARD
DRAWING
NO.

2-30

STREETS

STREET NAME SIGN



	A	B	C	D	E	F
GROUND-MOUNTED SIGN (LOCAL ROAD, 25 MPH OR LESS)	9"	5"	3"	$1\frac{7}{8}$ "	$\frac{1}{2}$ "	$1\frac{1}{2}$ "
GROUND-MOUNTED SIGN (2-3 LANE HWYS, 26-39 MPH)	12"	6"	4"	$2\frac{1}{2}$ "	1"	$1\frac{1}{2}$ "
GROUND-MOUNTED SIGN (4+ LANES AND > 40 MPH)	15"	8"	5"	3"	1"	$1\frac{1}{2}$ "
STACKED LEGEND SIGN (GROUND-MOUNTED, AT INTERSECTION)	21"	6"	N/A	N/A	1"	3"

STACKED LEGEND FOR STREET NAME SIGN (GROUND-MOUNTED)

SERIES (FONT)				
	B	C	D	E
S	.531 H	.625 H	.836 H	1.00 H

SPACING BETWEEN WORDS

H = LETTER HEIGHT
S = SPACE BETWEEN WORDS
X = 1/2 OF REMAINING SPACE

X-DIMENSION SHOULD BE APPROXIMATELY THE SAME DIMENSION AS THE LETTER HEIGHT (H). AT A MINIMUM THE X-DIMENSION SHALL BE NO LESS THAN ONE-HALF THE LETTER HEIGHT ($\frac{1}{2}$ H)

LETTERS USED ON GUIDE SIGNS FOR STREETS AND ROADS SHALL BE THE FEDERAL HIGHWAY ADMINISTRATION'S STANDARD ROUNDED CAPITAL LETTER ALPHABETS AS SHOWN IN THE CURRENT EDITION OF MUTCD'S STANDARD ALPHABETS FOR HIGHWAY SIGNS.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STREET NAME SIGN

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/26/2022



STANDARD
DRAWING
NO.

2-31

STREETS

THROUGH STREET	INTERSECTING STREET	'A' MIN.	'B' MIN.	'C' MAX SLOPE.	'D' MIN. V.C.
LOCAL/INDUSTRIAL	LOCAL/INDUSTRIAL	0'	0'	+/- 2.0%	50'
COLLECTOR	LOCAL/INDUSTRIAL	50'	50'	+/- 2.0%	50'
COLLECTOR	COLLECTOR	100'	100'	+/- 2.0%	100'
ARTERIAL	LOCAL	50'	50'	+/- 2.0%	100'
ARTERIAL	COLLECTOR	100'	100'	+/- 2.0%	125'
ARTERIAL	ARTERIAL	200'	200'	+/- 2.0%	150'

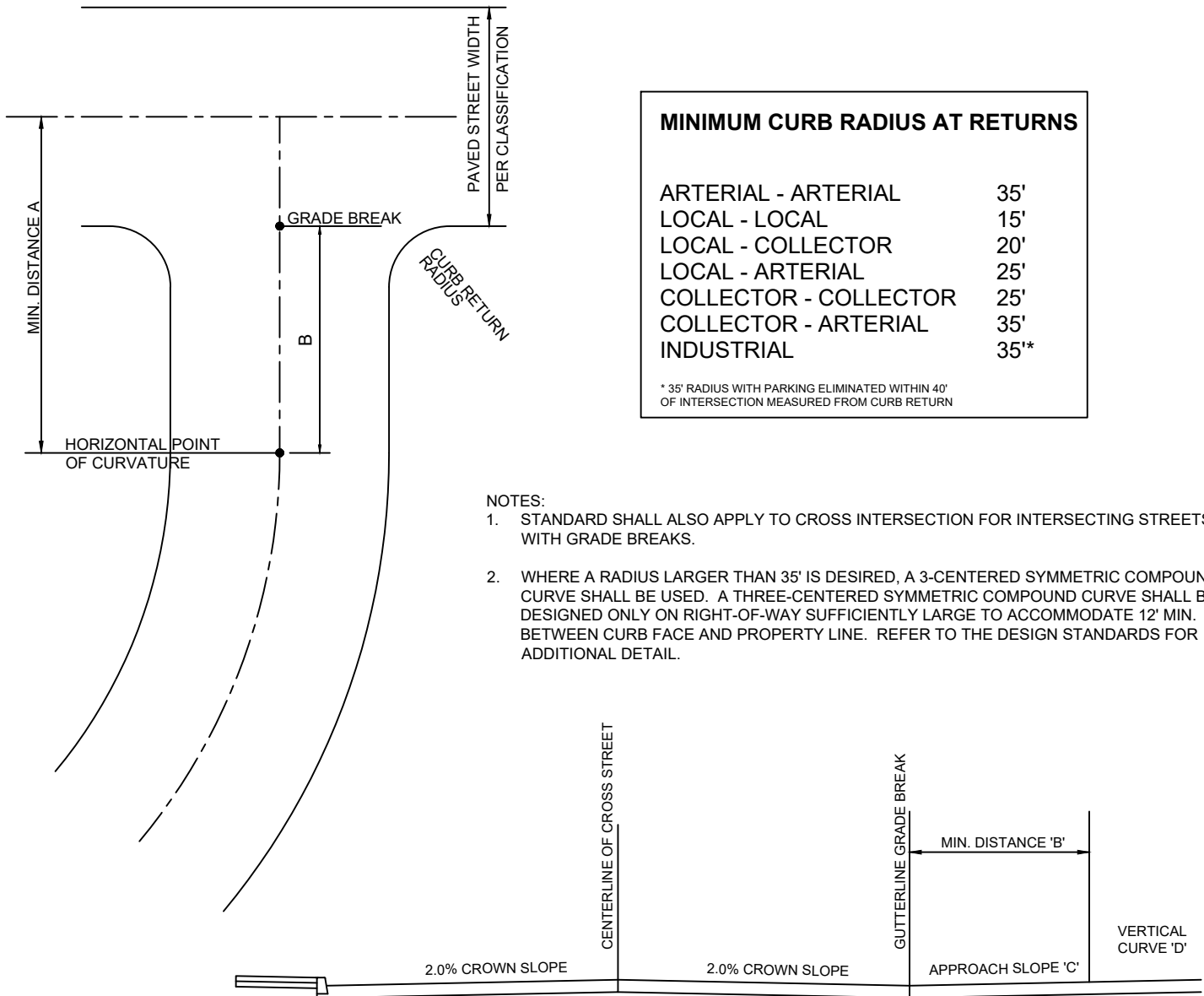
MINIMUM CURB RADIUS AT RETURNS

ARTERIAL - ARTERIAL	35'
LOCAL - LOCAL	15'
LOCAL - COLLECTOR	20'
LOCAL - ARTERIAL	25'
COLLECTOR - COLLECTOR	25'
COLLECTOR - ARTERIAL	35'
INDUSTRIAL	35'*

* 35' RADIUS WITH PARKING ELIMINATED WITHIN 40' OF INTERSECTION MEASURED FROM CURB RETURN

NOTES:

- STANDARD SHALL ALSO APPLY TO CROSS INTERSECTION FOR INTERSECTING STREETS WITH GRADE BREAKS.
- WHERE A RADIUS LARGER THAN 35' IS DESIRED, A 3-CENTERED SYMMETRIC COMPOUND CURVE SHALL BE USED. A THREE-CENTERED SYMMETRIC COMPOUND CURVE SHALL BE DESIGNED ONLY ON RIGHT-OF-WAY SUFFICIENTLY LARGE TO ACCOMMODATE 12' MIN. BETWEEN CURB FACE AND PROPERTY LINE. REFER TO THE DESIGN STANDARDS FOR ADDITIONAL DETAIL.



TYPICAL STREET SECTION THROUGH INTERSECTION

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

T - INTERSECTION ALIGNMENT STANDARD

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

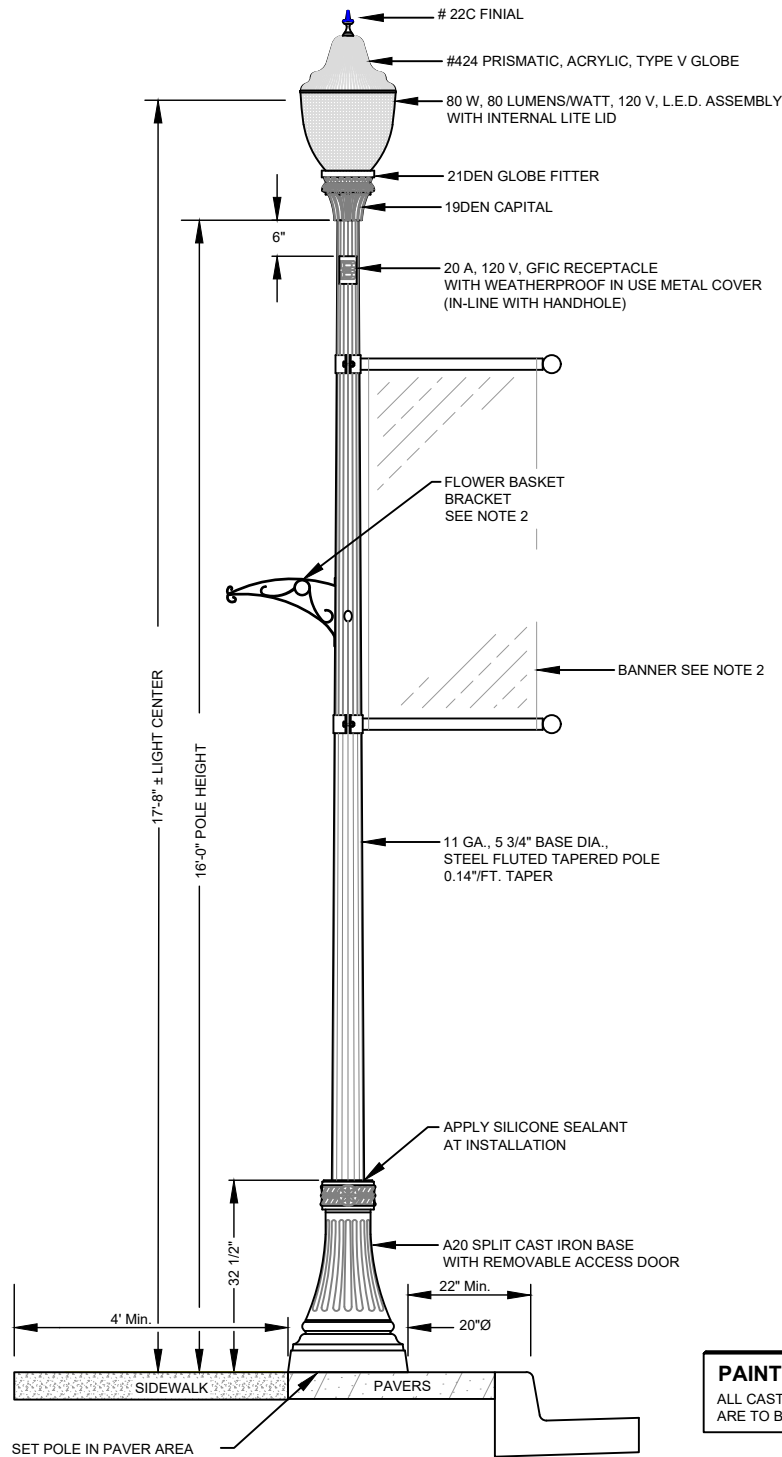
10/26/2022



STANDARD
DRAWING
NO.

2-32

STREETS



PAINT SPECIFICATION
ALL CAST IRON AND STEEL LIGHT POLE PARTS
ARE TO BE FACTORY FINISH PAINTED "BLACK".

NOTES:

1. POLE SHALL BE VISCO STREET LIGHT # VI-A20-1-F/16 OR APPROVED EQUAL.
2. DECORATIVE CITY LIGHTS IRRIGATION INSTALLATION 2-33B AND DECORATIVE CITY LIGHT BANNER INSTALLATION 2-33C TO BE ADDED TO THIS DRAWING AND CAN BE REMOVED WITH AUTHORIZATION FROM CITY OF REDMOND PARKS DEPARTMENT

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**DECORATIVE CITY STREET
LIGHT INSTALLATION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

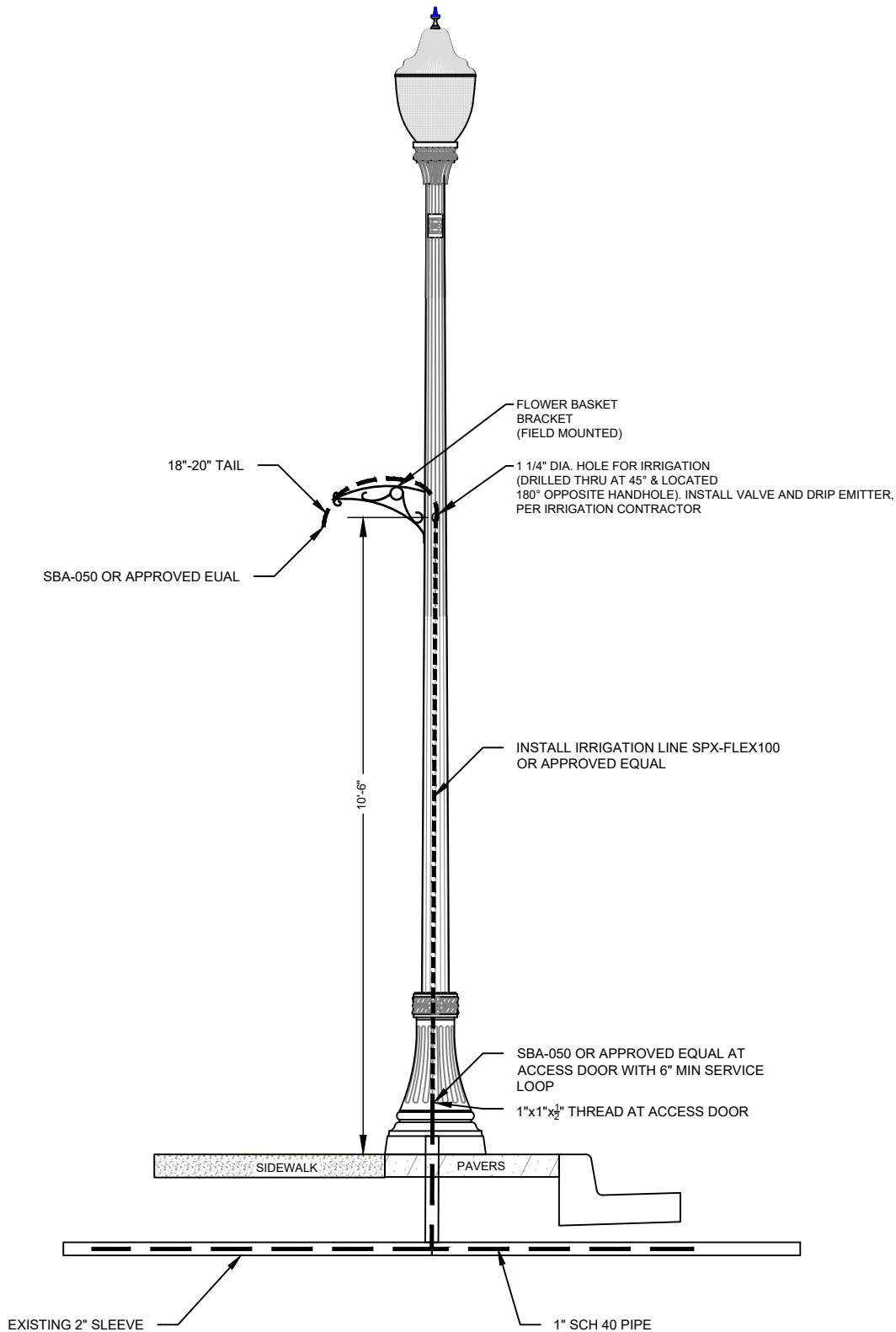
10/26/2022



STANDARD
DRAWING
NO.

2-33

STREETS



NOTES:
THIS IS THE IRRIGATION CONFIGURATION TO BE ADDED TO STANDARD DRAWING 2-33 DECORATIVE CITY STREET LIGHT INSTALLATION.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

DECORATIVE CITY STREET LIGHT IRRIGATION INSTALLATION

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

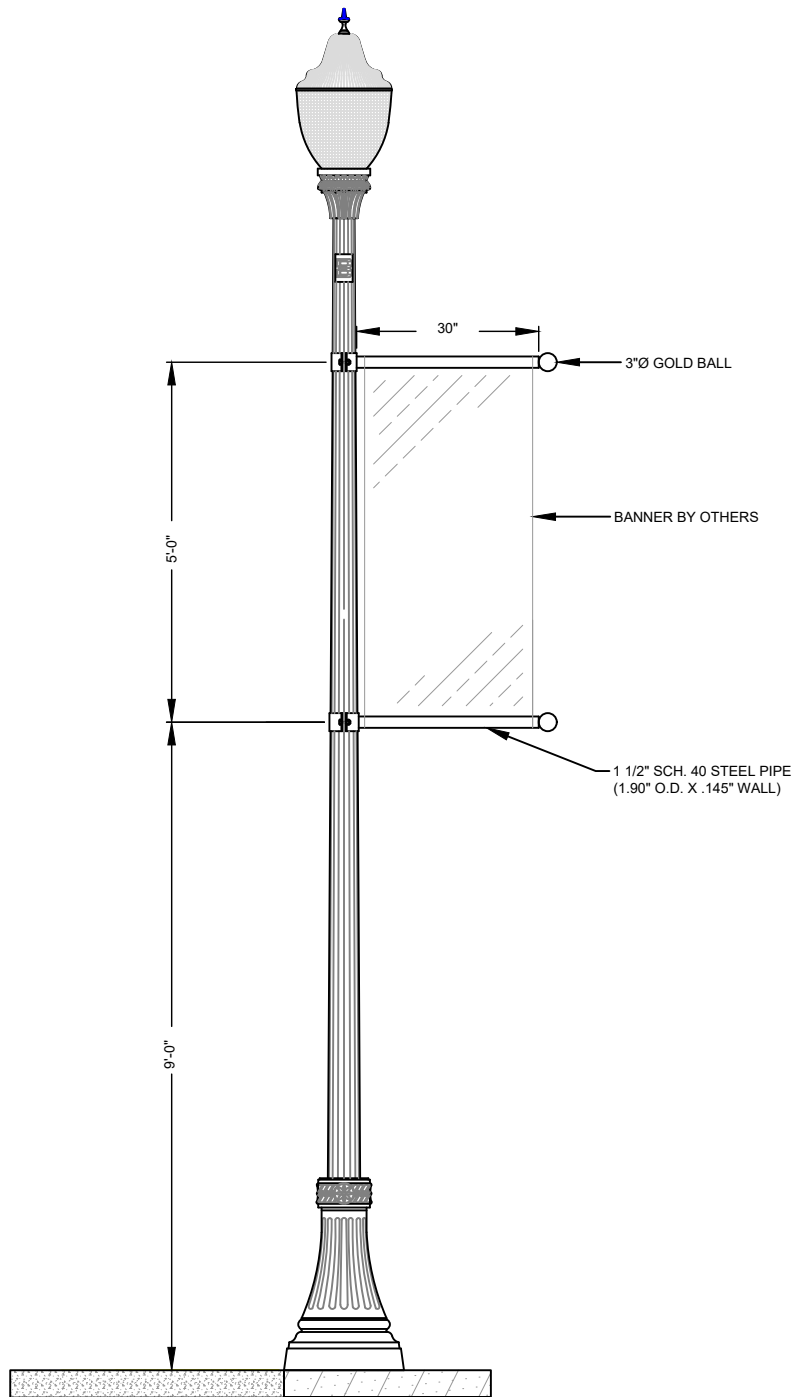
6/9/2023



STANDARD
DRAWING
NO.

2-33B

STREETS



NOTES:
THIS IS THE BANNER CONFIGURATION TO BE ADDED TO STANDARD DRAWING 2-33 DECORATIVE CITY STREET LIGHT INSTALLATION.

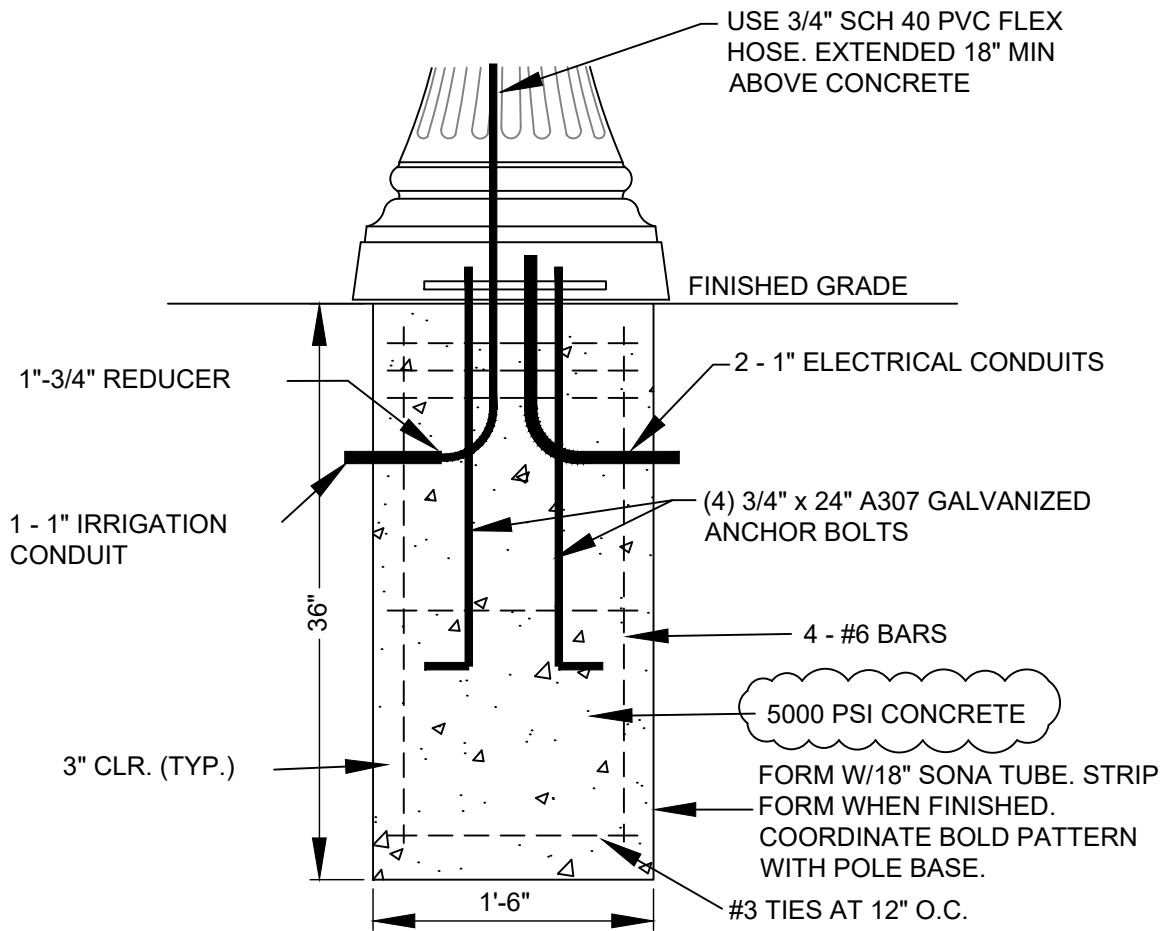
CITY OF REDMOND PUBLIC WORKS DEPARTMENT DECORATIVE CITY STREET BANNER INSTALLATION	SCALE:		STANDARD DRAWING NO. 2-33C STREETS
	DRAWING BY:		
	APPROVED BY:		
	DATE:		

NTS

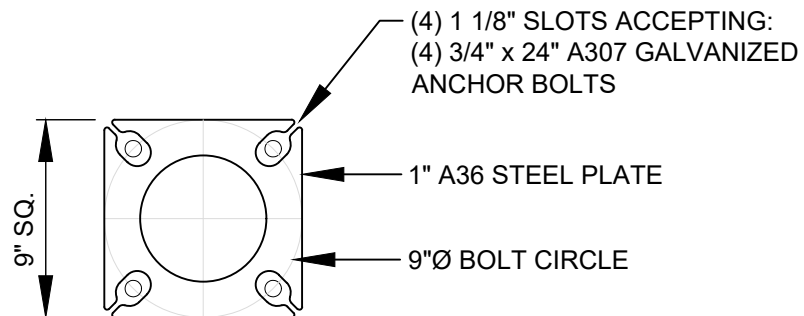
JWS

JNM

6/9/2023



POLE BASE



BASE PLATE DETAIL

SCALE: 2X

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

DECORATIVE CITY STREET LIGHT BASE INSTALLATION

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

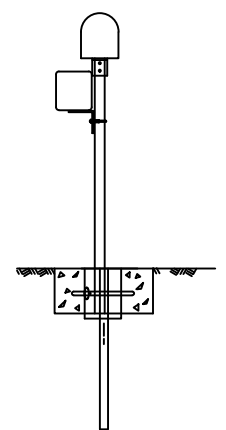
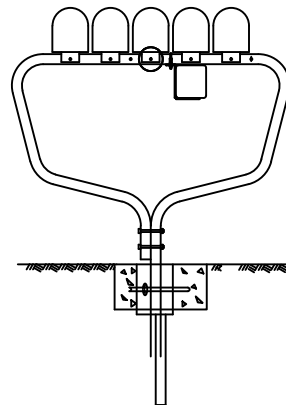
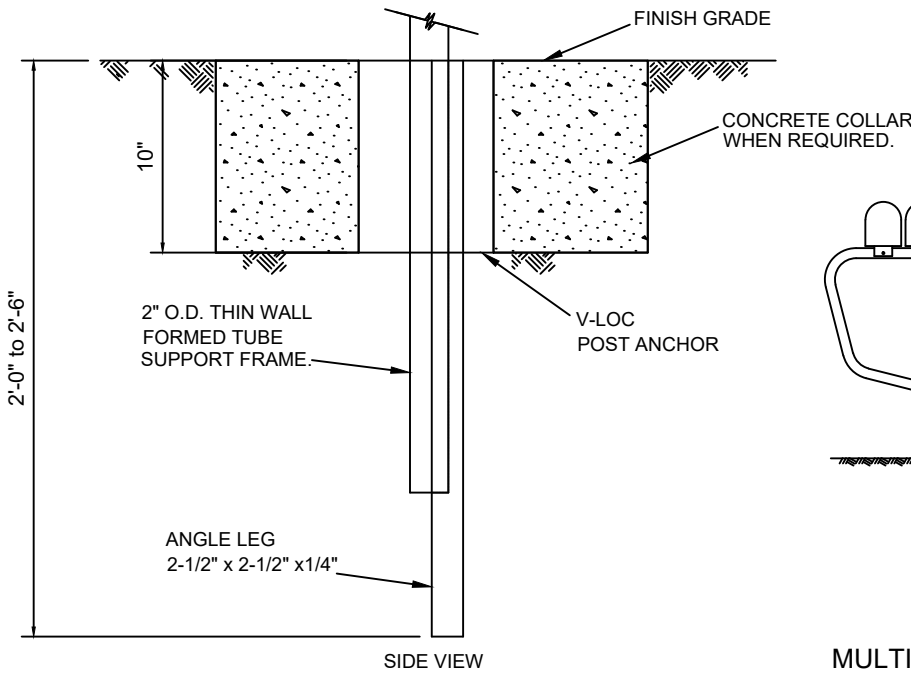
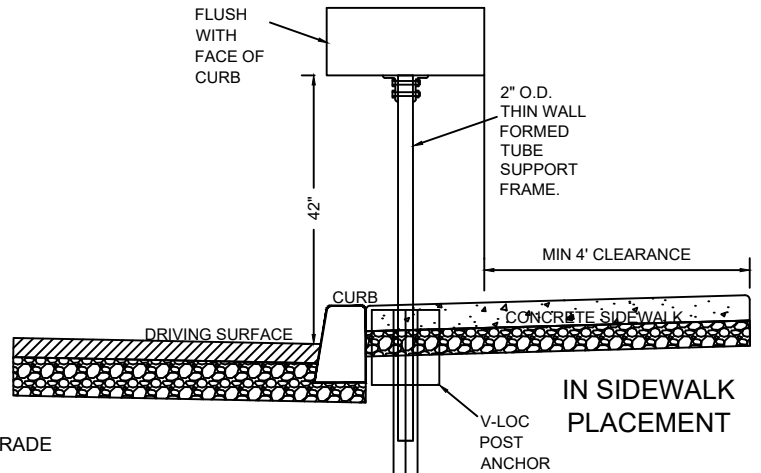
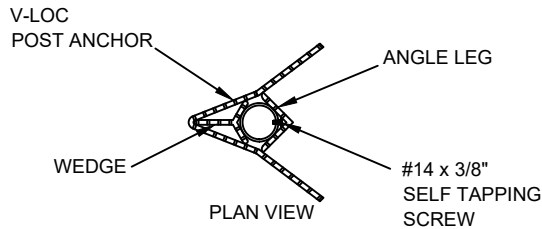
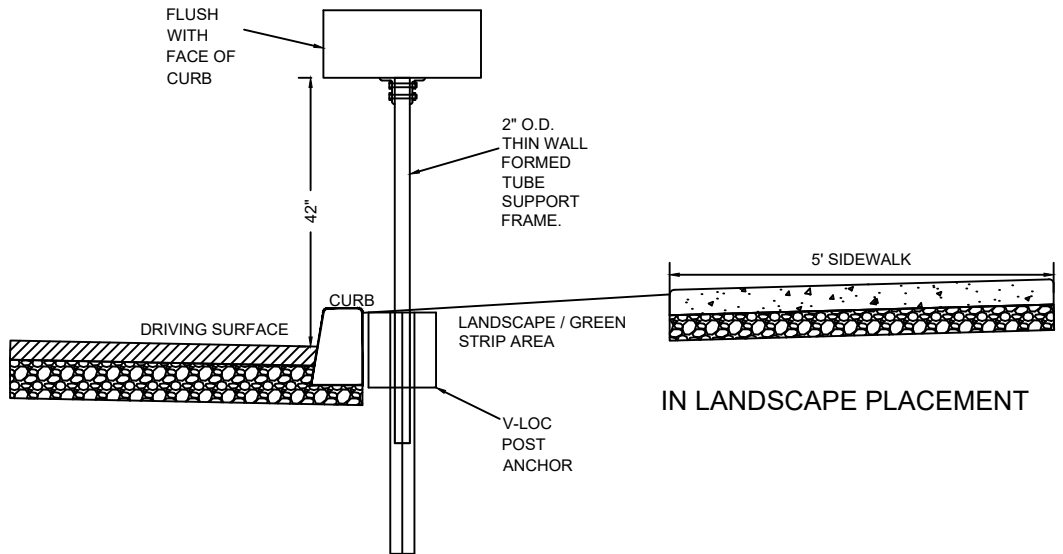
10/26/2022



STANDARD
DRAWING
NO.

2-34

STREETS



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL MAILBOX SUPPORT

SCALE: NTS

DRAWING BY: JWS

APPROVED BY: JNM

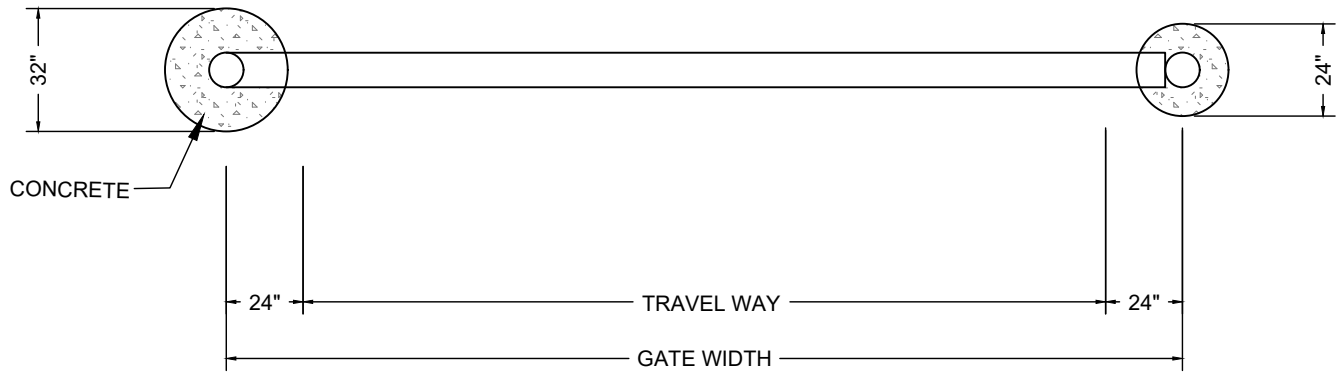
DATE: 10/26/2022



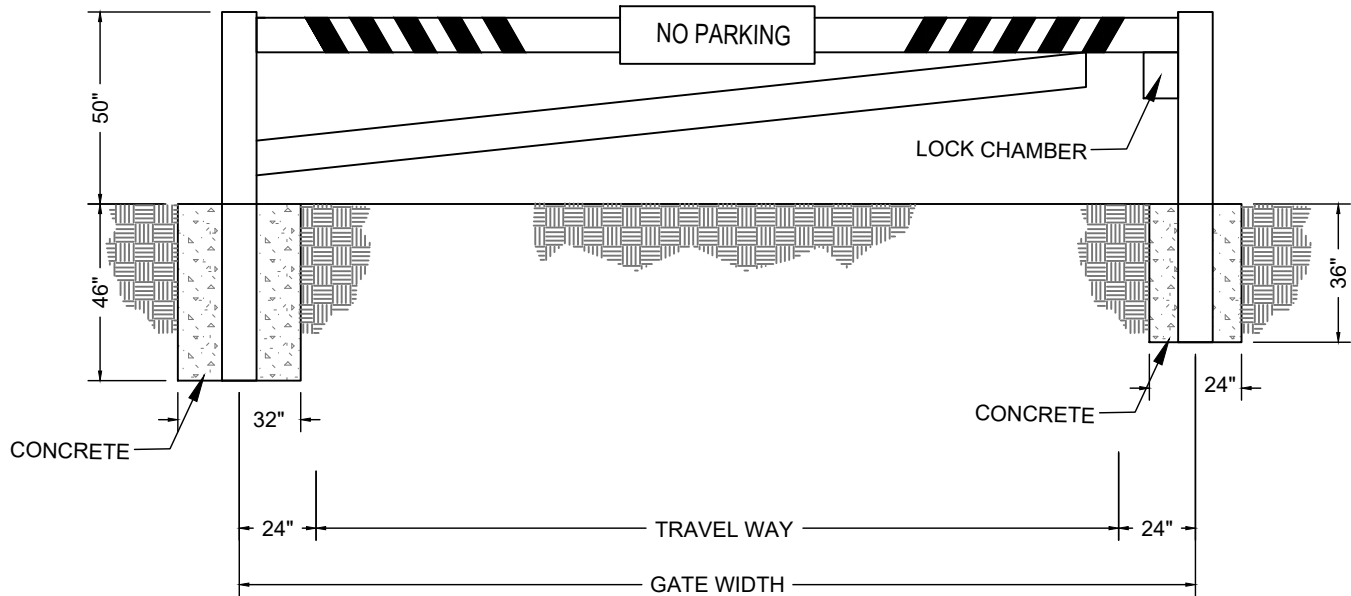
STANDARD
DRAWING
NO.

2-35

STREETS



PLAN VIEW



ELEVATION

NOTE:

1. ACCESS GATE TO BE APPROVED BY CITY ENGINEER.
2. WHEN THE CITY OF REDMOND REQUIRES AN ACCESS GATE, AN ACCESS GATE SUCH AS THE CR FABRICATION LTD. OF REDMOND OREGON, MODEL, 24' GATE ASSEMBLY OPTION 2 OR APPROVED EQUAL.
3. MINIMUM OF 20' WIDE.
4. GATES SHALL BE A SWINGING TYPE, AND BE ABLE TO BE MANUALLY OPERATED BY ONE PERSON.
5. LOCKING DEVICES SHALL BE FIRE DEPARTMENT KNOX KEY SWITCH PARCHED FROM BEND LOCK & SAFE, ON LINE AT WWW.KNOXBOX.COM, OR APPROVED EQUAL.
6. SHALL HAVE A SIGN ON GATE "NO PARKING", WHEN USED AS FIRE ACCESS GATE, SHALL HAVE A SIGN ON THE GATE "NO PARKING - FIRE LANE".

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL ACCESS GATE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

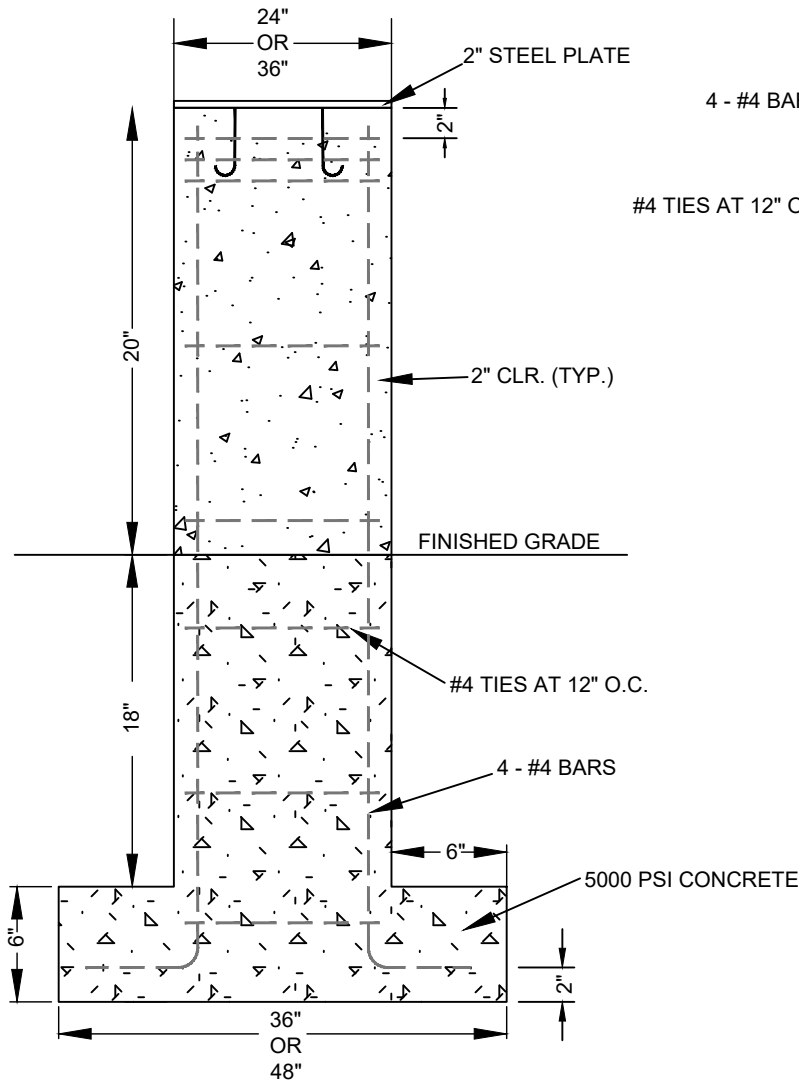
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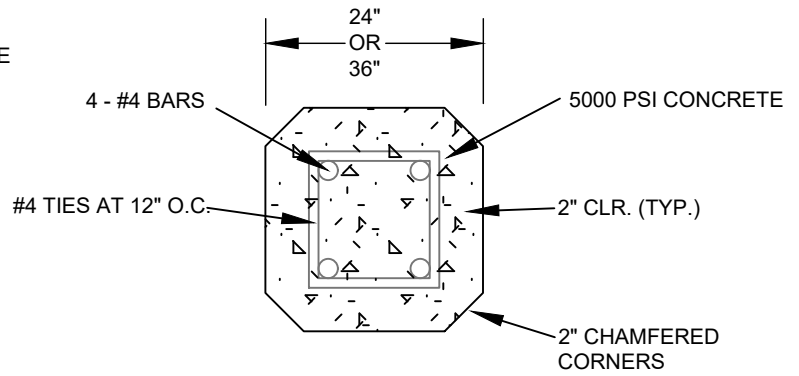
STANDARD
DRAWING
NO.

2-36

STREETS



PEDESTAL BASE



PEDESTAL TOP VIEW

PEDESTAL BASE WILL HAVE 2 VARIANTS.
24" x 24" BASE
OR
36" x 36" BASE
WITH 2" CHAMFERED CORNERS

CITY WILL SUPPLY STEEL MOUNTING PLATE FOR ART PEICES. MADE WITH 3/16" STEEL PLATE AND HAVE 4 J BOLTS WELDED ON TO BE EMBEDDED INTO TOP OF CONCRETE BASE

CONCRETE SHALL HAVE A 5000 PSI STRENGTH AT FULL CURE

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**CITY ART BASE
INSTALLATION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

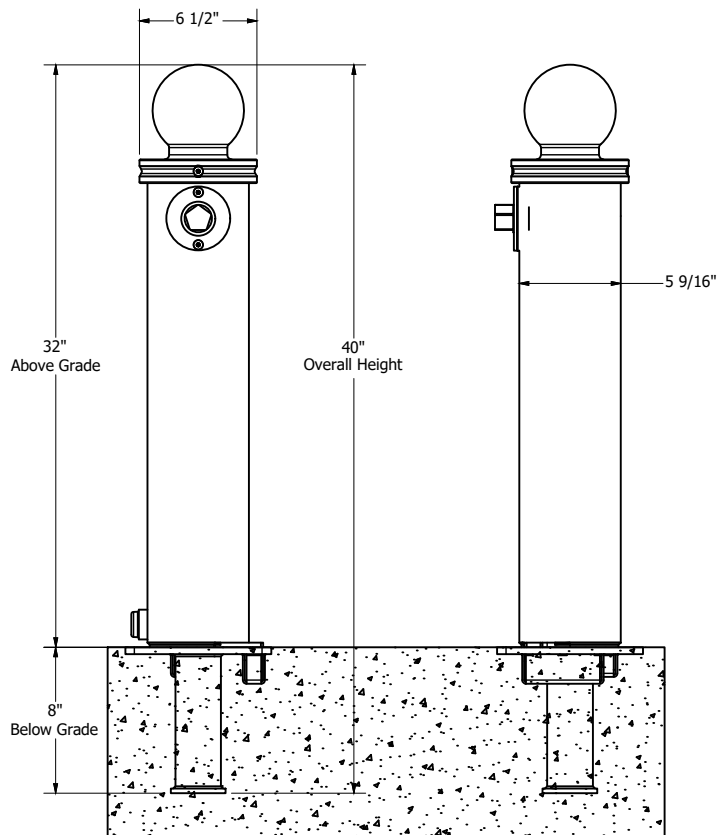
6/8/2023



STANDARD
DRAWING
NO.

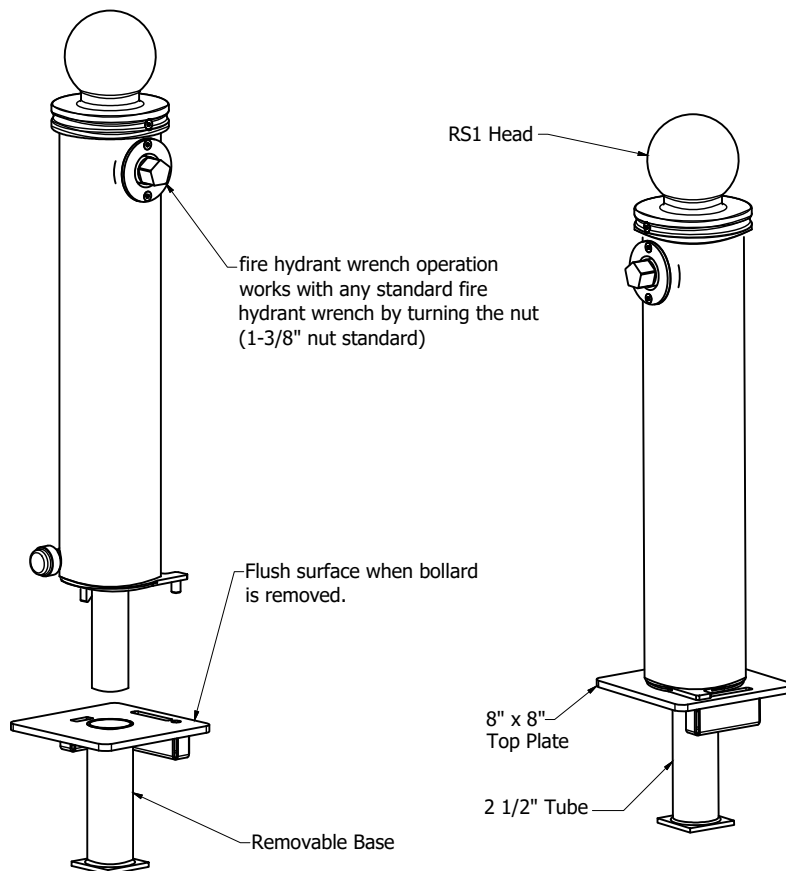
2-37

STREETS



NOTES:
MAXIFORCE TRAFFIC CONTROL
BOLLARDS MODEL MRRW-RS1-R OR
APPROVED EQUAL

FINISH: POWDER COATED
COLOR: RED



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TRAFFIC CONTROL REMOVABLE BOLLARDS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

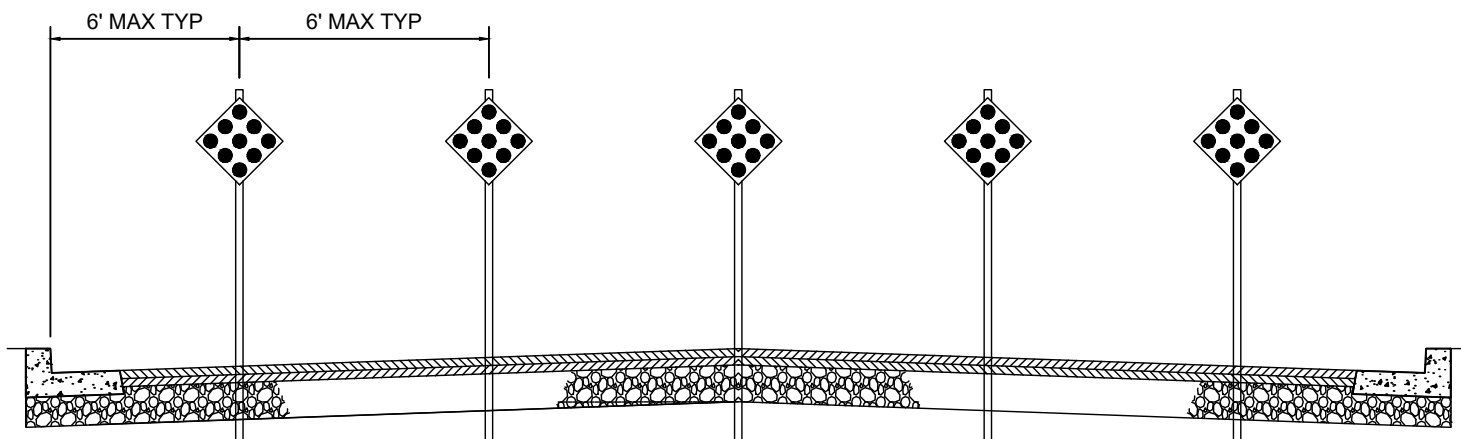
6/8/2023



STANDARD
DRAWING
NO.

2-38

STREETS

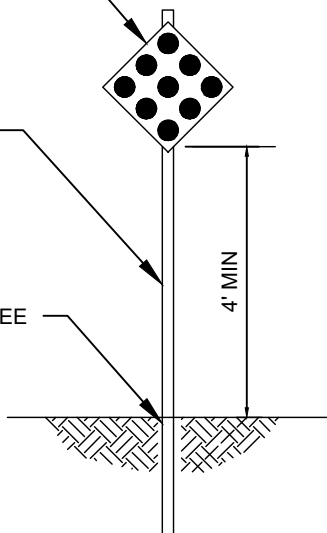


END OF STREET MARKER

OM4-1 END OF ROAD
MARKER RED BUTTONS
ON RED BACKGROUND

2 1/2" x 2 1/2" x 12GA
PERFORATED STEEL
SQUARE TUBE POST

SIGN POST ANCHOR SEE
DWG 2-29



NOTES:

1. END OF STREET MARKERS SHALL BE USED TO WARN ROAD USERS OF THE END OF A STREET WHERE NO DROP OFF HAZARD EXIST (SLOPES GREATER THAN 3:1).
2. SEE SECTION 2C.66 OBJECT MARKERS FOR END OF ROADWAYS FROM THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD, LATEST EDITION).

OM4-1 MARKER AND POST

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

END OF STREET MARKERS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

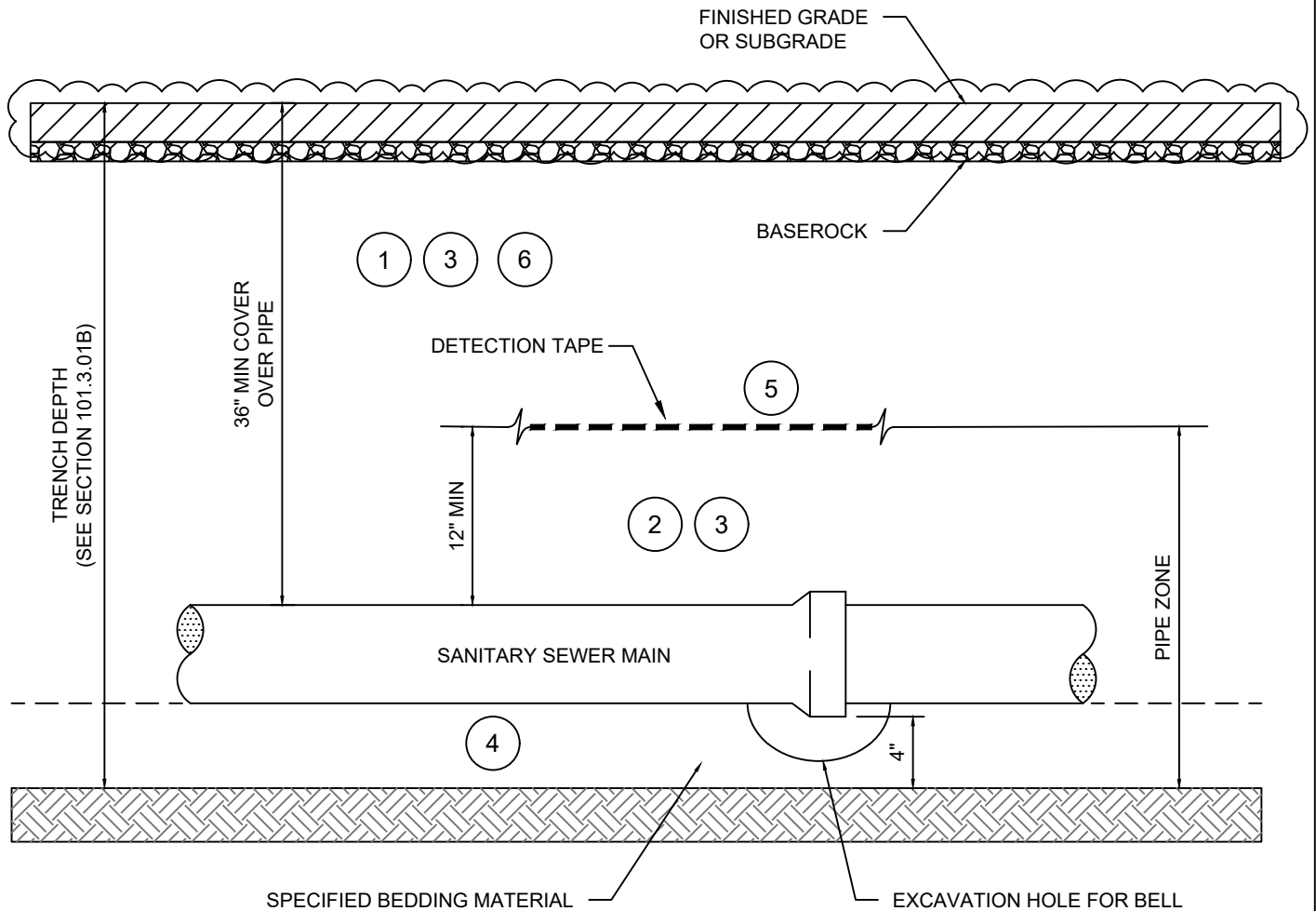
11/16/2023



STANDARD
DRAWING
NO.

2-39

STREETS



NOTES:

1. CLASS "B" BACKFILL COMPACTED TO 95% OF AASHTO T-99.
2. SPECIFIED PIPE ZONE MATERIAL ABOVE, AROUND, AND BELOW PIPE SHALL BE COMPACTED TO 95% IF AASHTO T-99.
3. THE ENGINEER MAY REQUIRE THIS ZONE TO BE WATER SETTLED TO PROVE THE INTEGRITY OF THE BACKFILL.
4. PIPE BEDDING SHALL BE CLASS "B" MEETING THE REQUIREMENTS OF SECTION 101.2.01 AND SHALL BE MECHANICALLY COMPACTED TO 95% OF MAXIMUM AS DETERMINED BY AASHTO T-99.
5. DETECTION TAPE TO BE LOCATED AT TOP OF PIPE ZONE, 12" ABOVE THE PIPE.
6. FOR TRENCHES DEEPER THAN 6 FEET, BACKFILL MAY BE CLASS A (SECTION 101.2.02A) FROM 2' ABOVE TOP OF PIPE TO SUBGRADE. WITH APPROVAL OF CITY ENGINEER, CLASS D BACKFILL MAY BE USED OUTSIDE OF ROADWAY AREA (SECTION 101.2.02D) FROM 3' ABOVE TOP OF PIPE TO SUBGRADE FOR TRENCHES DEEPER THAN 9'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

PROFILE OF TYPICAL SANITARY SEWER MAIN INSTALLATION

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

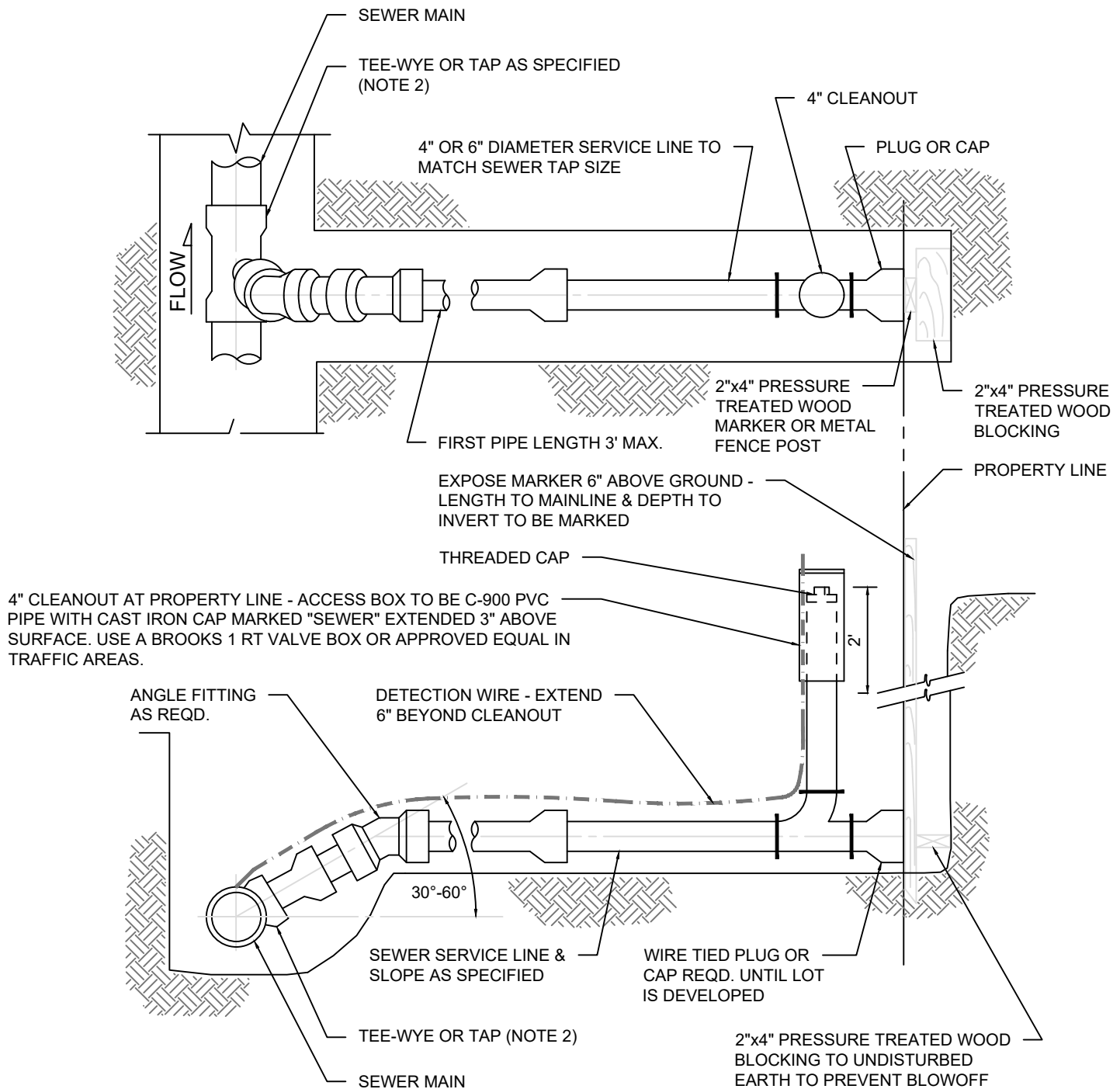
10/22/2022



STANDARD
DRAWING
NO.

3-1

SANITARY

**NOTE:**

1. MINIMUM SLOPE TO BE $\frac{1}{4}$ " PER FOOT OR AS APPROVED BY THE CITY ENGINEER.
2. TEE-WYE ON NEW MAINS, TAP ON EXISTING MAINS. ONLY CITY CREWS SHALL PERFORM TAP OF SEWER MAIN, SERVICE SADDLE OF PROPER SIZE WILL BE INSTALLED BY THE CITY.
3. ALL TRENCH BACKFILL TO CONFORM TO CITY OF REDMOND STANDARDS AND SPECIFICATIONS FOR SEWER MAIN, MINIMUM SERVICE TRENCH WIDTH IS 24".
4. ALL SERVICE LINES SHALL END WITH A 4" CLEANOUT AT THE PROPERTY LINE.
5. SEWER SERVICE LINES SHALL NOT HAVE LESS THAN 3 FEET OF COVER UNDER ROADWAY AND 2 FEET OF COVER TO NATURAL GROUND IN THE RIGHT OF WAY.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL SEWER SERVICE & CLEANOUT

SCALE:

NTS

DRAWING BY:

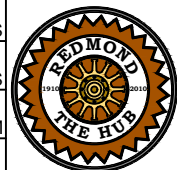
JWS

APPROVED BY:

JNM

DATE:

10/22/2022

STANDARD
DRAWING
NO.

3-2

SANITARY

Technical drawings of a 24-inch diameter concrete manhole. The top view shows a circular structure with a central opening, reinforced with #4 bars at 12-inch intervals and #4 hoops. The side view shows a cross-section with a flat top, a 23-inch minimum width, and a 25-inch diameter. The bottom view shows a cross-section with a 23-inch minimum width and a 25-inch diameter.

INFRA-RISER
GRADE RING

This diagram shows a cross-section of a bridge deck. A horizontal line represents the top of the deck. Below it, a hatched rectangular area is labeled 'INFRA-RISER GRADE RING'. Below this ring, there are several horizontal lines representing reinforcement or structural layers. The bottom of the diagram shows the bridge piers and the ground level.

12:1 —
SLOPE

MATCH PIPE INVERTS WHEN PIPE DIAMETERS VARY IN PRECAST BASES, TRIM PIPE TO WALL AND THOROUGHLY GROUT IN PLACE ALL AROUND BOTH SIDES

6" MIN BASE
ROCK

PRECAST MANHOLE BASE
#4 BARS @ 8" E.W. OR
EQUIVALENT WIRE FABRIC

FINISH SHELF TO EVEN SLOPE
BROOM FINISH TO DRAIN TO
CHANNEL.

ON ECCENTRIC MANHOLES
LOCATE MANHOLE OPENING
OPPOSITE OUTLET

GROUT
CHANNEL TO
SMOOTH
FINISH

SPREAD FOOTING (FOR FILL AREAS)

INLET MUST HAVE CLEARANCE
FOR T.V. CAMERA INSERTION

STANDARD MANHOLE SHOWING INSIDE DROP

1. ALL MANHOLE CONES SHALL BE CONCENTRIC, UNLESS CITY ENGINEER APPROVES USE OF ECCENTRIC CONE OR FLAT TOP LID.
2. ALL MANHOLES OUTSIDE OF PAVED AREAS SHALL HAVE 6" THICK CONCRETE PAD, 5' x 5' SQUARE CENTERED ON THE MANHOLE LID.
3. FLAT TOP MANHOLE LIDS SHALL BE SET AT AN ELEVATION THAT WILL ALLOW PLACEMENT OF 6" MINIMUM OF AGGREGATE BASE BETWEEN TOP OF CONCRETE LID AND BOTTOM OF ASPHALT PAVEMENT.
4. ALL MANHOLES IN TRAFFIC AREAS, AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, SHALL BE USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATION BETWEEN INFRA-RISER RINGS, MANHOLE FRAME AND AND CONCRETE GRADE RINGS.
5. GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF MANHOLE MEETING THE REQUIREMENTS OF SECTION 305.3.02B
6. MANHOLE DIAMETER SHALL BE MINIMUM OF 48", FOR PIPE SIZE UP TO 15". FOR PIPE SIZES > 18" OR UNUSUAL ANGLES, 60" OR LARGER DIAMETER IS REQUIRED TO PROVIDE STRUCTURAL INTEGRITY.

PROFILE OF TYPICAL SANITARY SEWER MAIN INSTALLATION

NTS

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DATE:

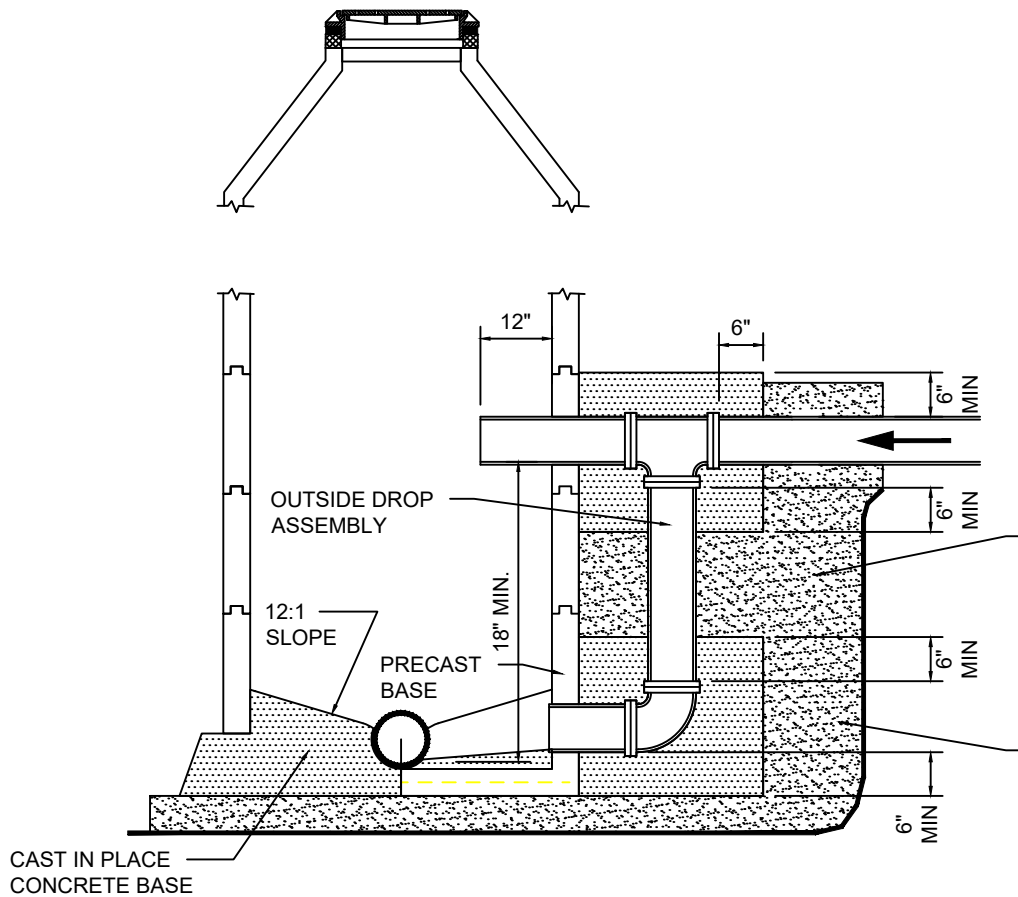
10/22/2022



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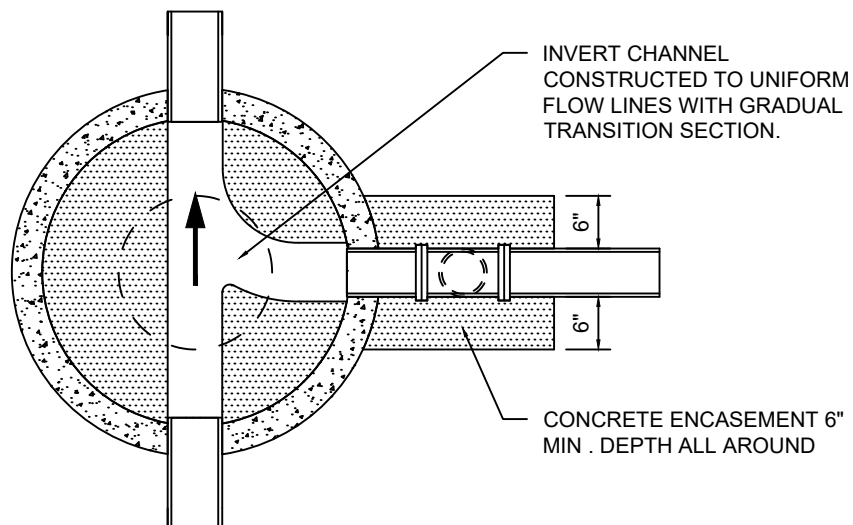
3-3

SANITARY



COMPACTED GRAVEL
ENCASEMENT IS
ACCEPTABLE WHERE DROP
PIPE IS ONE SECTION.
MULTIPLE SECTION DROP
PIPE REQUIRES FULL
CONCRETE ENCASEMENT.

CLASS "B" BACKFILL WITH
95% COMPACTION OF
AASHTO T-99 FULL TRENCH
WIDTH.



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD OUTSIDE DROP SANITARY SEWER MANHOLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

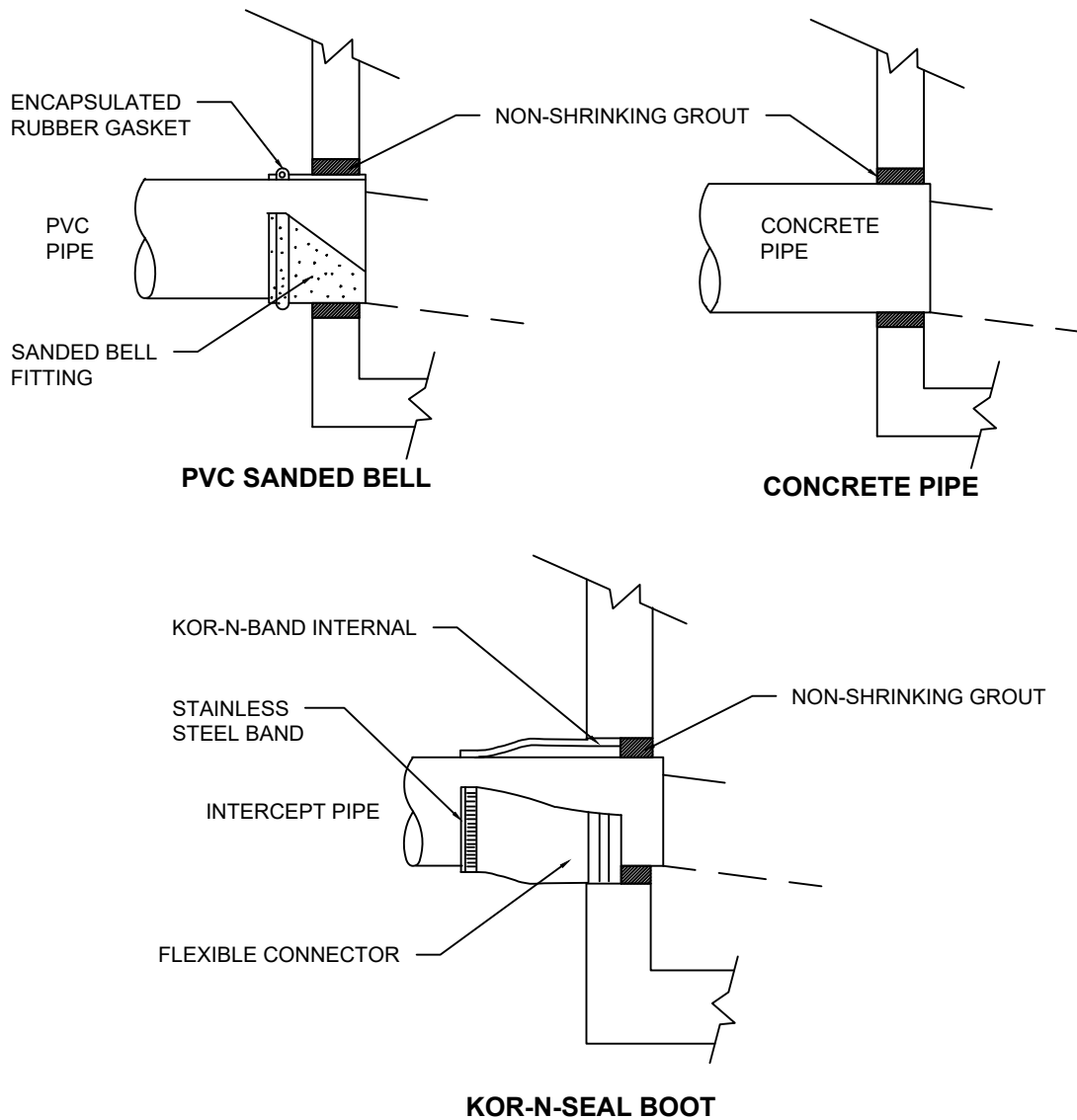
10/22/2022



STANDARD DRAWING NO.	
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3-4

SANITARY



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD OUTSIDE DROP SANITARY SEWER MANHOLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

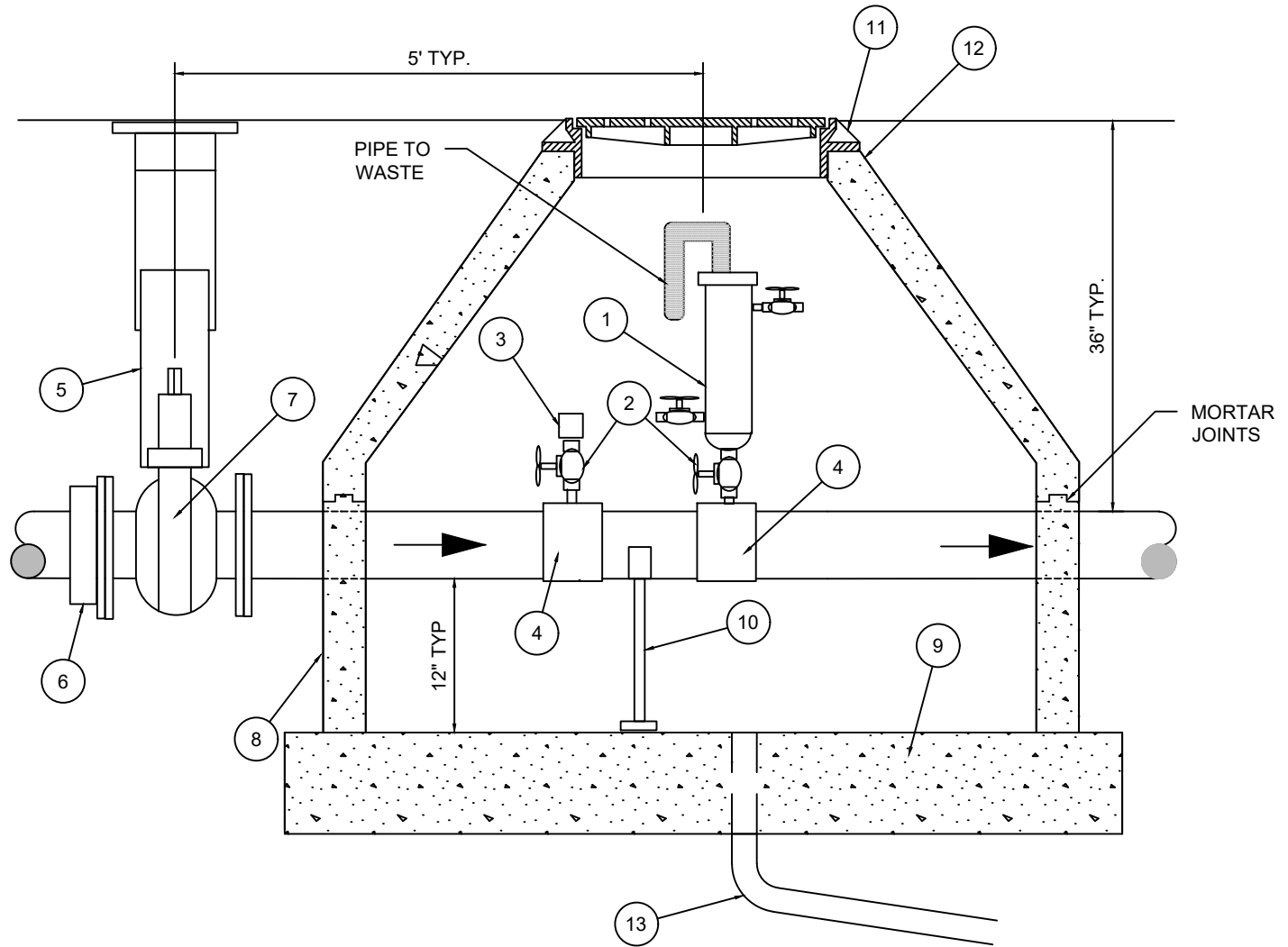
10/22/2022



STANDARD
DRAWING
NO.

3-5

SANITARY



NOTES:

1. APCO SHORT BODY AIR AND VACUUM VALVE (SERIES 400 SAW) OR APPROVED EQUAL.
2. 2" GATE VALVE WITH HAND WHEEL TO MEET REQUIREMENTS OF SECTION 403.
3. THREADED CAP.
4. 2" TEE OR 2" SADDLE TEE AS APPROVED FOR PRESSURE APPLICATIONS
5. ADJUSTABLE VALVE BOX WITH COVER. TOW MARKED "SEWER".
6. FLANGE BY SLIP FITTING TO MEET REQUIREMENTS OF SECTION 403.
7. RESILIENT SEAT GATE VALVE TO MEET REQUIREMENTS OF SECTION 403.
8. 48" DIAMETER MINIMUM MANHOLE. PRECAST SECTIONS TO CONFORM TO THE REQUIREMENTS OF ASTM C-478.
9. ANGULAR SHAPED CONCRETE BASE. CAST IN PLACE.
10. STANDON S92 ADJUSTABLE PIPE SADDLE SUPPORT OR APPROVED EQUAL.
11. AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, SHALL BE USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATION BETWEEN INFRA-RISER AND TOP OF MANHOLE FRAME AND CONCRETE GRADE RINGS, IN TRAFFIC AREAS.
12. GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF MANHOLE MEETING THE REQUIREMENTS OF SECTION 306.3.02B.
13. INSTALL A DRAIN TO WET WELL WITH FLAP VALVE WHEN FEASIBLE. IF NO WET WELL OR OTHER SANITARY SEWER CONTAINMENT IS AVAILABLE, NO DRAIN IS ALLOWED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

PRESSURE SANITARY SEWER MANHOLE

SCALE:

NTS

DRAWING BY:

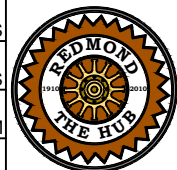
JWS

APPROVED BY:

JNM

DATE:

10/22/2022

STANDARD
DRAWING
NO.

3-6

SANITARY

SEE NOTE 1

SEWER MANHOLE FRAME
AND COVER STANDARD
DRAWING 3-8

LOCATE OPENING
OPPOSITE OUTLET
UNLESS OTHERWISE
DIRECTED

SEE NOTE 2

PRECAST GRADE RINGS,
3", 4", 6" MAX. HEIGHT 18"
SEE NOTE 3

48" PRECAST
MANHOLE
BASE WITH 1',
2', 3', OR 4'
BARREL
SECTIONS

48" MIN DEPTH BERM EARTH
AROUND MANHOLE IF NECESSARY

INSIDE HEIGHT OF
MANHOLE OR PORT
MUST BE 48" MIN

CONCENTRIC
48" PRECAST
CONE

INLET PIPE TO BE 6" MIN.
DIA. FOR A MIN.
STRAIGHT LENGTH OF 10'
@1% MIN.

PLACE CHANNEL TO
FORM A SMOOTH
CHANNEL THROUGH
MANHOLE

6" MIN.
BASE ROCK

#4 BARS 8" O.C.
BOTH WAYS

#4 BARS 8" O.C.
BOTH WAYS

6" MIN. BASE ROCK

NOTE #5
10' MIN.

MULTIPLE SERVICE LINES
SHALL CONNECT OUTSIDE THE
SAMPLE MANHOLE AS SHOWN

10'x10' ACCESS
EASEMENT

NOTES:

1. ALL MANHOLES OUTSIDE OF PAVED AREAS, SHALL HAVE A 6" THICK CONCRETE PAD, 5' x 5' SQUARE CENTERED ON THE MANHOLE LID.
2. ALL MANHOLES IN TRAFFIC AREAS, SHALL USE AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, SHALL BE USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATION BETWEEN INFRA-RISER RINGS, MANHOLE FRAME AND CONCRETE GRADE RINGS.
3. GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF MANHOLE MEETING THE REQUIREMENTS OF SECTION 306.3.02B.
4. SAMPLING MANHOLE TO BE LOCATED IN A 10' x 10' ACCESS EASEMENT.
5. INLET PIPE SHALL BE STRAIGHT FOR A MINIMUM LENGTH OF 10' AND HAVE NO CONNECTIONS WITHIN THAT 10' PRIOR TO ENTERING THE SAMPLING MANHOLE.
6. OUTLET PIPE SHALL BE EQUAL OR GREATER DIAMETER THAN INLET PIPE.
7. SAMPLING PORT MAY BE PERMITTED IN LIEU OF THE SAMPLING MANHOLE DUE TO ELEVATION CONSTRAINTS, WHEN APPROVE BY THE CITY PUBLIC WORKS DEPARTMENT, THE SAMPLING PORT SHALL BE SCHIER SV24 SAMPLING PORT, OR APPROVED EQUAL.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

SAMPLING MANHOLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

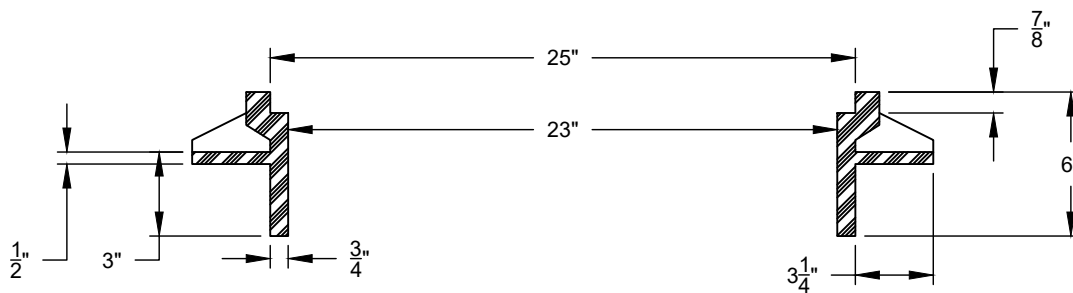
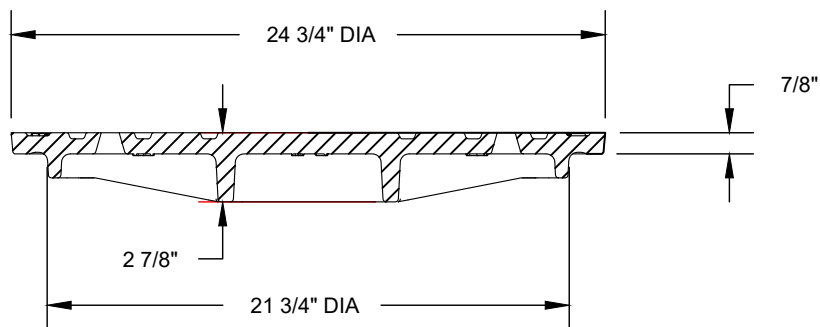
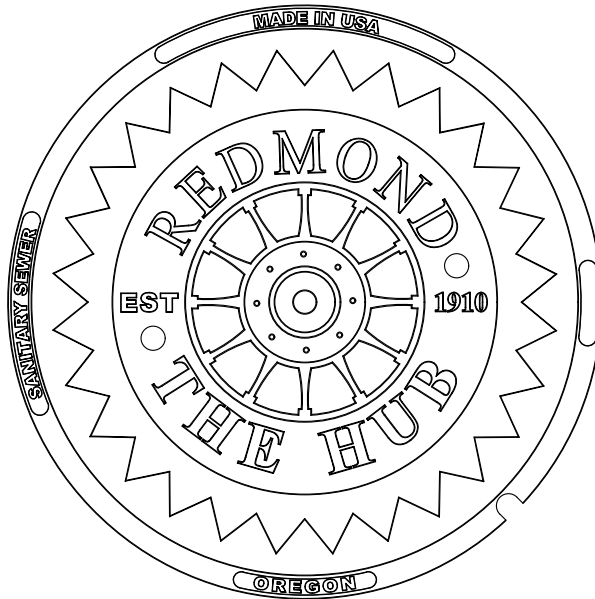
10/22/2022



STANDARD
DRAWING
NO.

3-7

SANITARY



NOTES:

1. AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-FISER, OR APPROVED EQUAL, SHALL BE USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STANDARD SEWER
MANHOLE RING & COVER**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

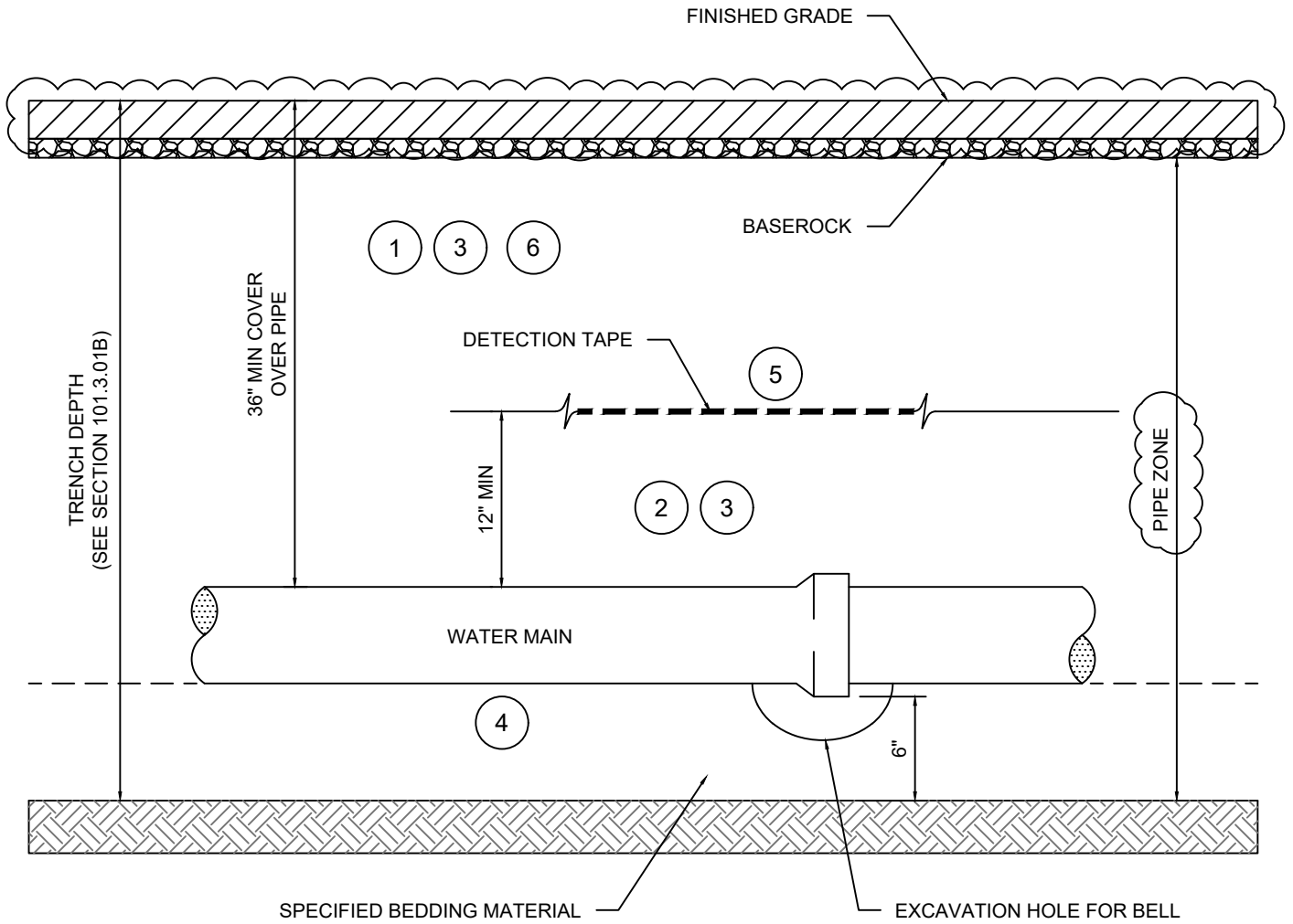
10/22/2022



STANDARD
DRAWING
NO.

3-8

SANITARY



NOTES:

1. CLASS "B" BACKFILL MECHANICALLY COMPACTED TO 95% OF AASHTO T-99.
2. SPECIFIED PIPE ZONE MATERIAL ABOVE, AROUND, AND BELOW PIPE SHALL BE COMPACTED TO 95% OF AASHTO T-99
3. PIPE BEDDING SHALL BE CLASS "B" MEETING THE REQUIREMENTS OF SECTION 101.2.01 AND SHALL BE MECHANICALLY COMPACTED TO 95% OF AASHTO T-99.
4. DETECTION TAPE TO BE LOCATED 12" ABOVE THE PIPE.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**PROFILE OF TYPICAL
WATER MAIN
INSTALLATION**

SCALE:

NTS

DRAWING BY:

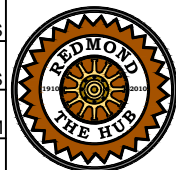
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JNM

DATE:

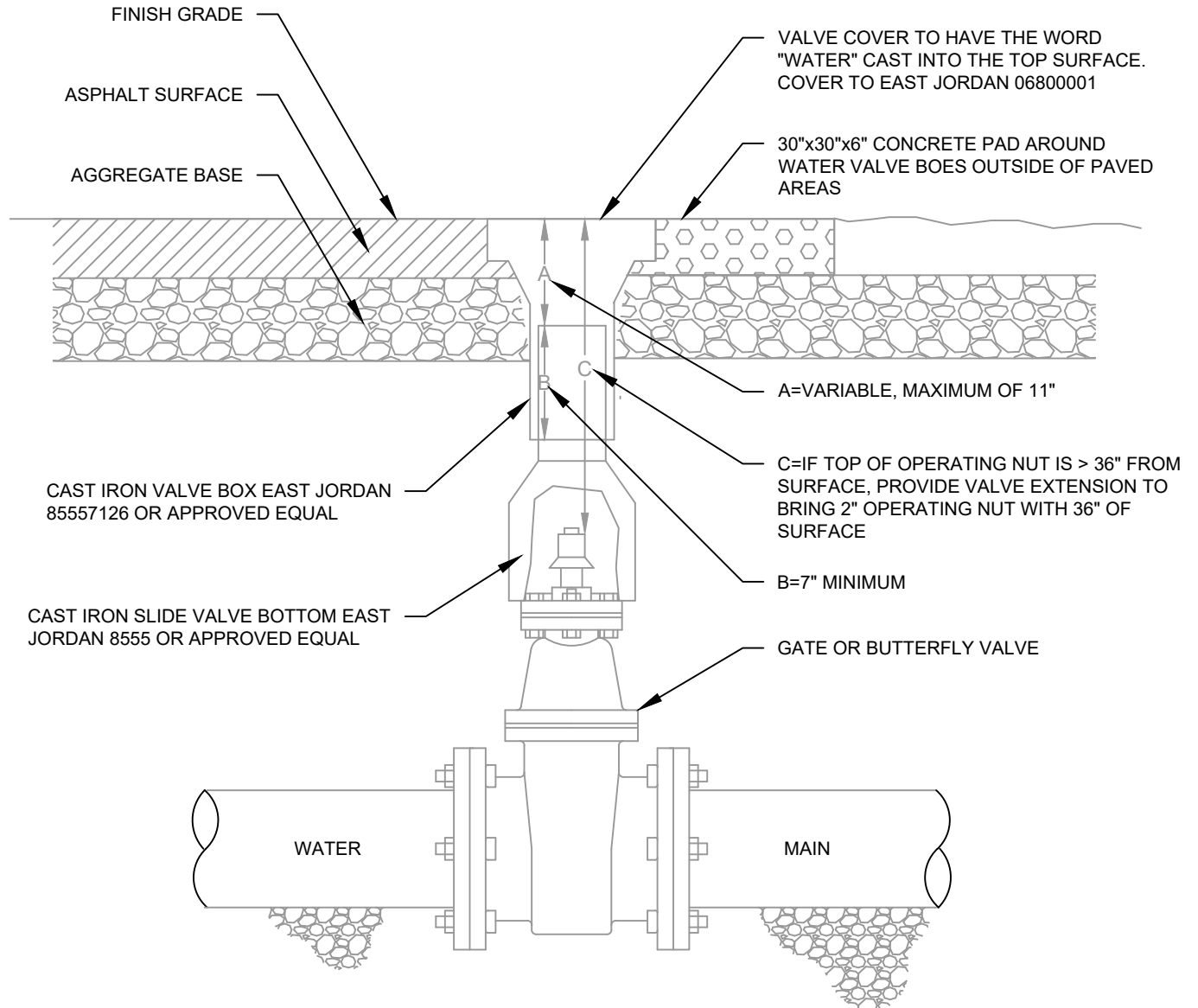
11/04/2022



STANDARD
DRAWING
NO.

4-1

WATER



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL VALVE & BOX INSTALLATION

SCALE:

NTS

DRAWING BY:

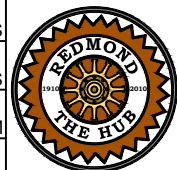
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JNM

DATE:

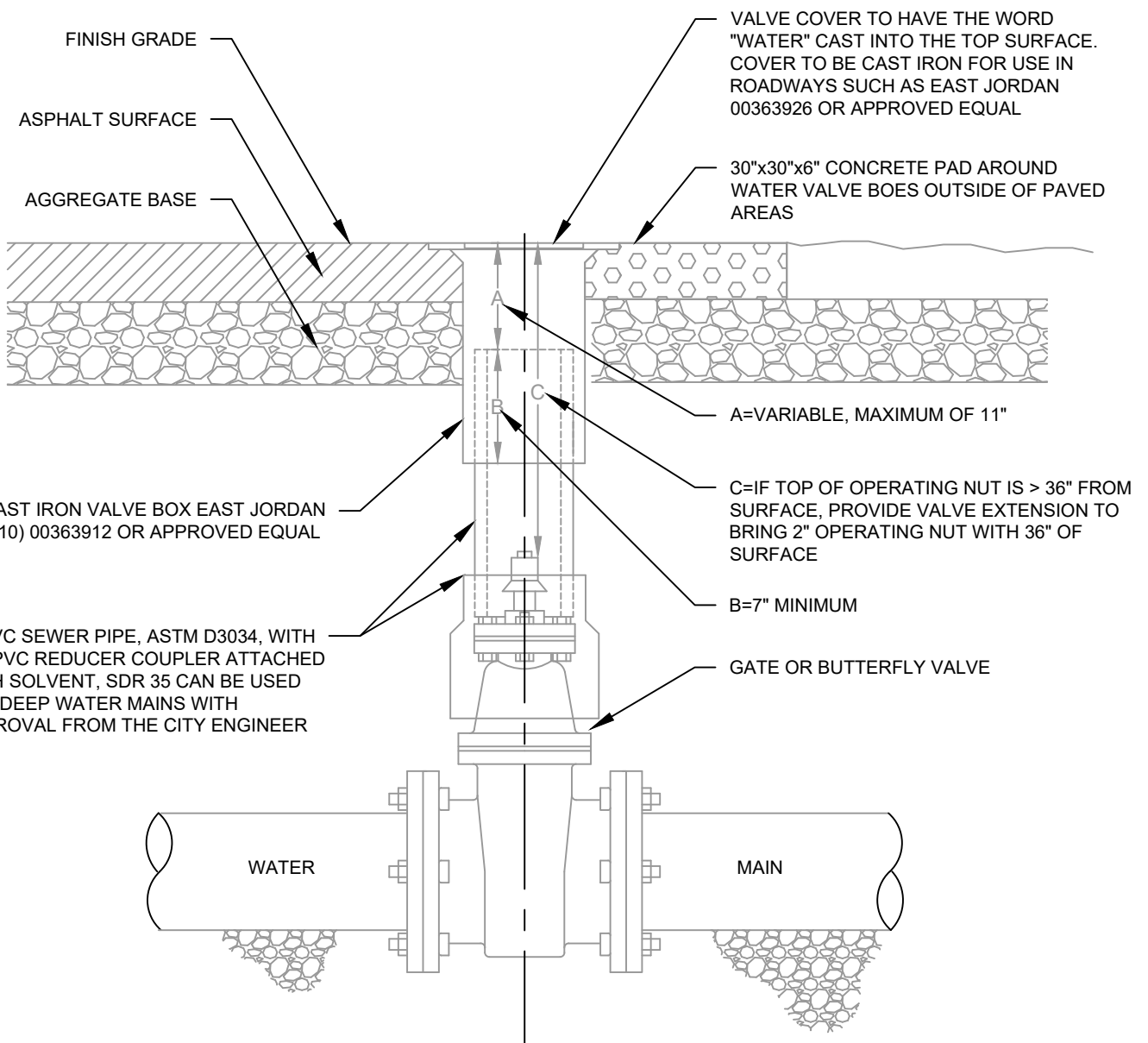
11/04/2022



STANDARD
DRAWING
NO.

4-2

WATER



NOTES:

USED WHEN TOP OF VALVE IS OUTSIDE THE RANGE OF 24-48" FROM GROUND SURFACE

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL VALVE & BOX INSTALLATION (NON-TYPICAL)

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

11/04/2022



STANDARD
DRAWING
NO.

4-2A

WATER

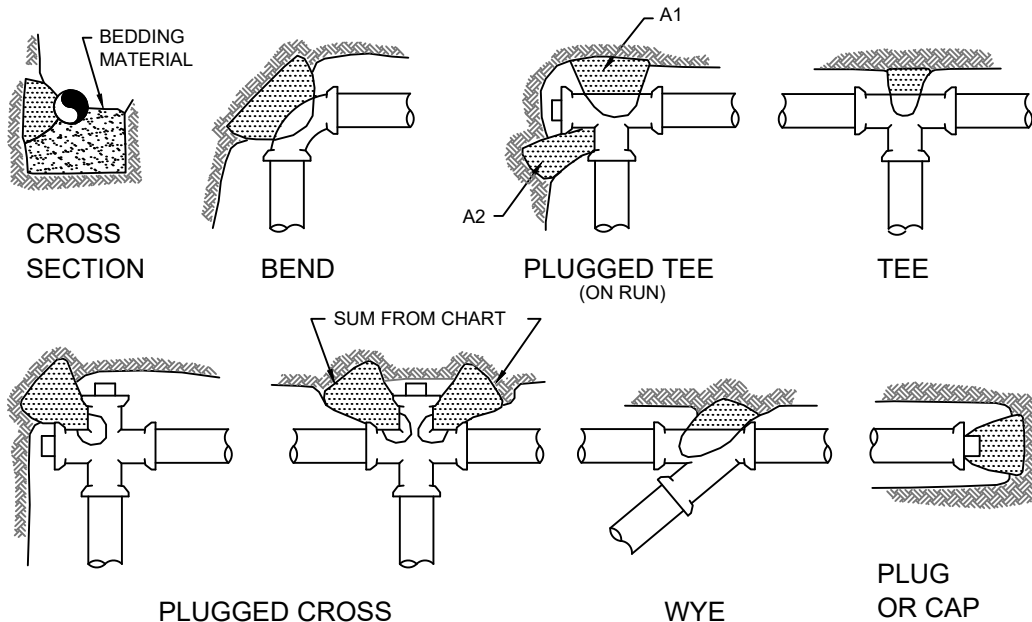


CHART A

SIZE OF FITTING (PIPE DIA.)	THRUST BLOCKING BEARING AREA (SQ.FT.)						
	TEE, WYE, PLUG, CAP	90° BEND, PLUGGED 'X'	PLUGGED TEE (ON RUN) A1 A2		45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1.0	1.4	1.9	1.4	1.0	-	-
6"	2.1	3.0	4.3	3.0	1.6	1.0	-
8"	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10"	5.9	8.4	11.8	8.4	4.6	2.4	1.2
12"	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14"	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16"	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18"	19.1	27.0	38.0	27.0	14.6	7.6	3.8

NOTES:

1. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. THE BEARING AREA SHALL BE EQUALLY DIVIDED ABOVE & BELOW THE CENTERLINE OF THE PIPE.
3. CONCRETE SHALL BE KEPT CLEAR OF JOINTS AND ACCESSORIES.
4. REQUIRED BEARING AREAS SHALL BE AS INDICATED ON CHART A, ADJUSTED WHEN NECESSARY TO CONFORM TO TEST PRESSURE(S) & ALLOWABLE SOIL BEARING STRESS(ES). SEE CHART B, SOIL BEARING.
5. CHART A IS BASED ON A TEST PRESSURE OF 150 PSI & AN ALLOWABLE SOIL BEARING STRESS OF 2,000 LBS. PER SQ. FT.
6. SAFE BEARING LOADS GIVEN IN CHART B ARE FOR HORIZONTAL THRUSTS WHEN THE PIPE COVER EXCEEDS TWO FEET.
7. IN MUCK OR PEAT, ALL THRUSTS MUST BE RESISTED BY PILES OR TIE RODS TO SOLID FOUNDATIONS, OR BY REMOVAL OF THE MUCK OR PEAT & REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS INVOLVED.

CHART B

BEARING LOADS FOR SOILS	
TYPE OF SOIL	SAFE BEARING LOAD (LBS. PER SQ. FT.)
HARD SHALE	10,000
SAND & GRAVEL (CEMENTED WITH CLAY)	4,000
SAND & GRAVEL	3,000
SOFT CLAY	2,000
MUCK OR PEAT, ETC.	0

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

THRUST BLOCKS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

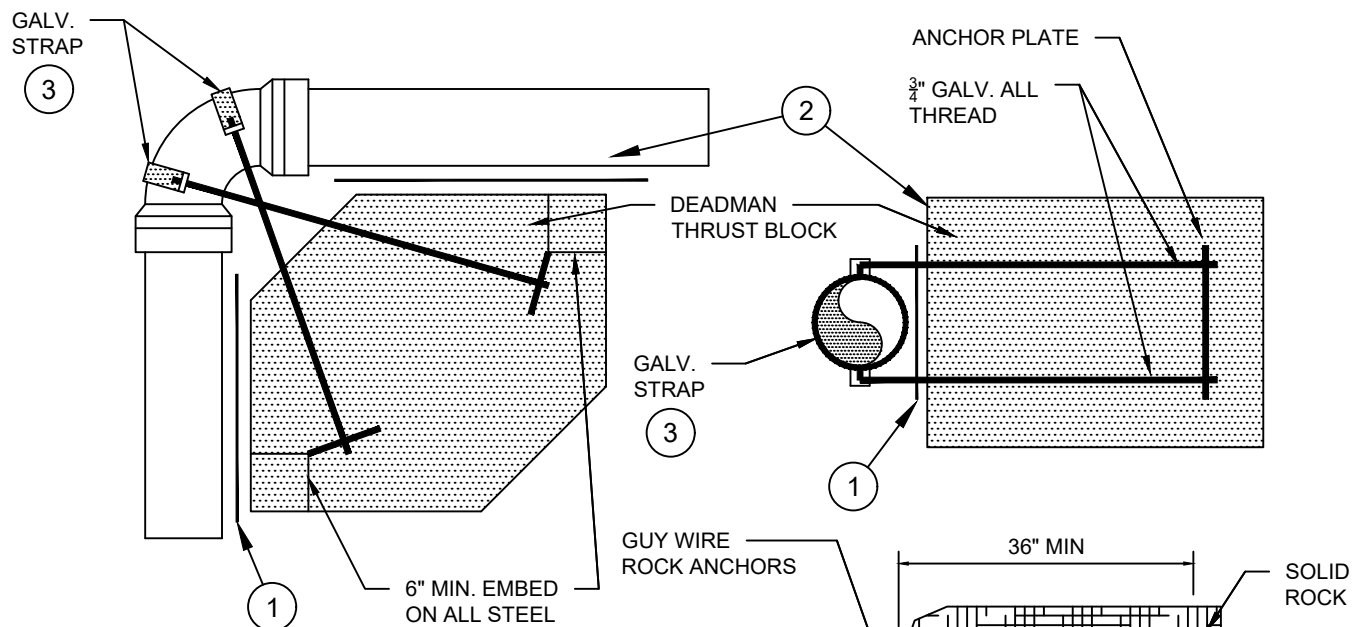
11/04/2022



STANDARD
DRAWING
NO.

4-3

WATER



NOTES:

1. WRAP PIPE IN POLYURETHANE IN AREAS WHERE IT MAY BE CONTACTED BY THE THRUST BLOCK DURING CONSTRUCTION.
2. FORM FACE OF DEADMAN THRUST BLOCK TO PREVENT ENCASEMENT OR CONTACT WITH PIPE.
3. STRAP AND ANCHOR PLATE TO BE FABRICATED FROM 1/2" MILD STEEL FLAT STOCK, COATED TO PREVENT CORROSION. STRAP TO BE SHAPED TO CONFORM TO O.D. OF PIPE.
4. REQUIREMENTS OF TABLE MAY VARY DUE TO PRESSURE IN AREA.

ROCK ANCHOR ALTERNATE

DEAD END

PIPE DIAMETER	6"	8"	10"	12"	14"	16"	18"
VOLUME OF CONCRETE IN DEADMAN	3.3 CY	5.7 CY	8.6 CY	12.2 CY	16.3 CY	21.1 CY	26.5 CY
NO. OF RODS REQ'D	2	2	2	4	4	4	6
WIDTH OF STRAP AND ANCHOR PLATE	2 1/2	2 1/2	2 1/2	4 1/2	4 1/2	4 1/2	6 1/2

90° FITTING

PIPE DIAMETER	6"	8"	10"	12"	14"	16"	18"
VOLUME OF CONCRETE IN DEADMAN	4.7 CY	8.1 CY	12.2 CY	17.2 CY	23.1 CY	29.9 CY	37.5 CY
NO. OF RODS REQ'D	4	4	4	8	8	12	12
WIDTH OF STRAP AND ANCHOR PLATE	2 1/2	2 1/2	2 1/2	4 1/2	4 1/2	6 1/2	6 1/2

45° FITTING

PIPE DIAMETER	6"	8"	10"	12"	14"	16"	18"
VOLUME OF CONCRETE IN DEADMAN	2.5 CY	4.4 CY	6.6 CY	9.3 CY	12.5 CY	16.2 CY	20.3 CY
NO. OF RODS REQ'D	2	2	2	4	4	4	6
WIDTH OF STRAP AND ANCHOR PLATE	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2

22 1/2° FITTING

PIPE DIAMETER	6"	8"	10"	12"	14"	16"	18"
VOLUME OF CONCRETE IN DEADMAN	1.3 CY	2.2 CY	3.4 CY	4.7 CY	6.4 CY	8.2 CY	10.4 CY
NO. OF RODS REQ'D	2	2	2	4	4	4	6
WIDTH OF STRAP AND ANCHOR PLATE	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2

11 1/4° FITTING

PIPE DIAMETER	6"	8"	10"	12"	14"	16"	18"
VOLUME OF CONCRETE IN DEADMAN	0.7 CY	1.1 CY	1.7 CY	2.4 CY	3.2 CY	4.1 CY	5.2 CY
NO. OF RODS REQ'D	2	2	2	2	2	2	2
WIDTH OF STRAP AND ANCHOR PLATE	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

DEADMAN THRUST BLOCKS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

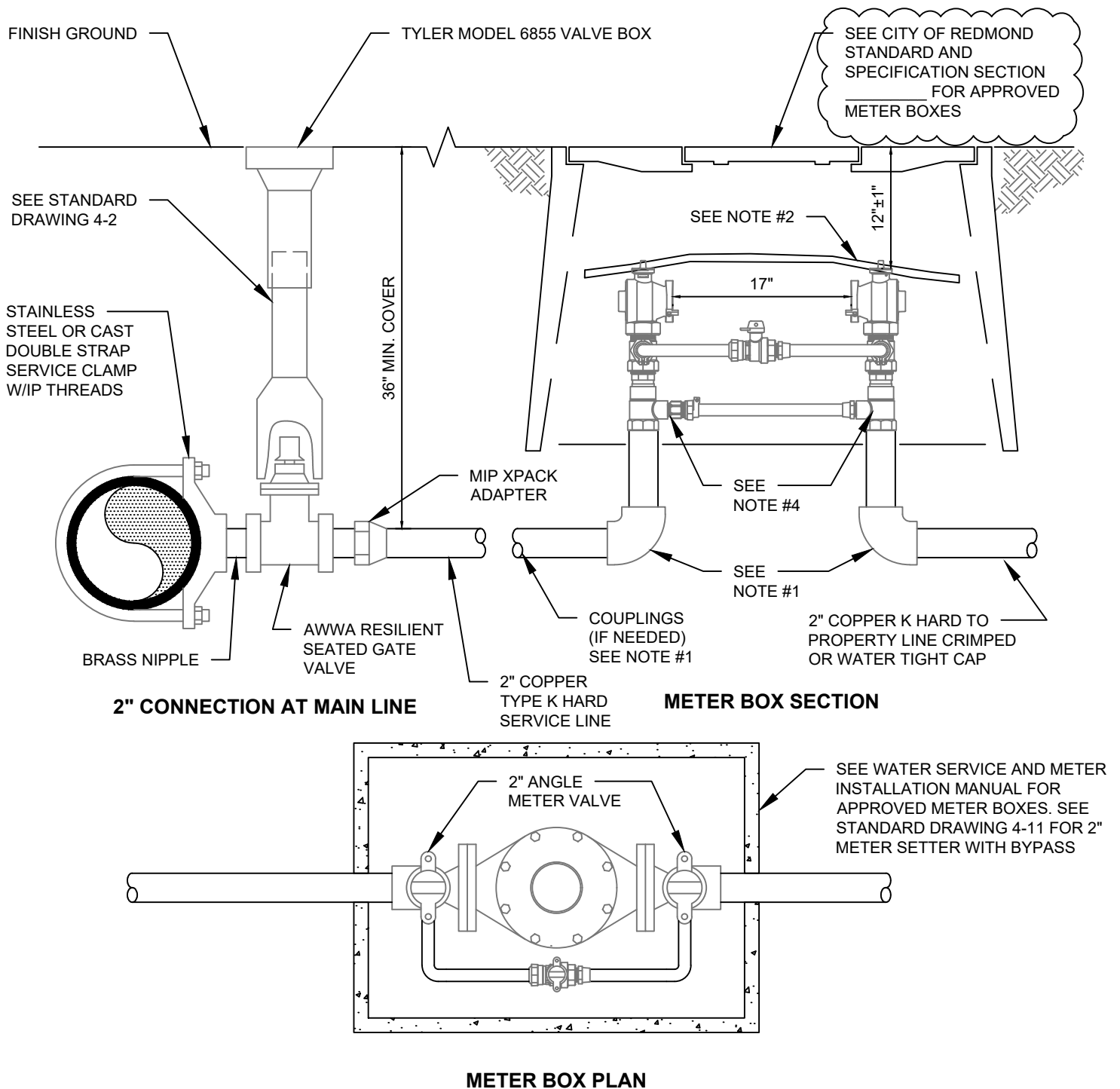
11/04/2022



STANDARD DRAWING NO.

4-4

WATER



NOTES:

1. SEE CITY OF REDMOND STANDARD AND SPECIFICATION SECTION _____ APPROVED FITTINGS.
2. $\frac{1}{2}$ " CROSSLINK CLOSED CELL NATURAL T20 INSULATION, CUT TO FIT METER BOX.
3. DOUBLE CHECK VALVE ASSEMBLY REQUIRED ON CUSTOMER SIDE OF METER FOR ALL COMMERCIAL AND INDUSTRIAL WATER SERVICES. SEE STANDARD DRAWING 4-18 FOR MORE INFORMATION.
4. SEE STANDARD DRAWING 4-11 FOR 2" METER SETTER WITH BY PASS ASSEMBLY.
5. METER SUPPLIED AND INSTALLED BY CITY OF REDMOND.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

1 $\frac{1}{2}$ " & 2" METER SETTER WITH BYPASS FOR 2" DOMESTIC USE

SCALE:

NTS

DRAWING BY:

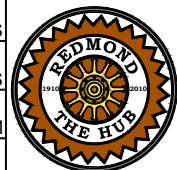
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APPROVED BY:

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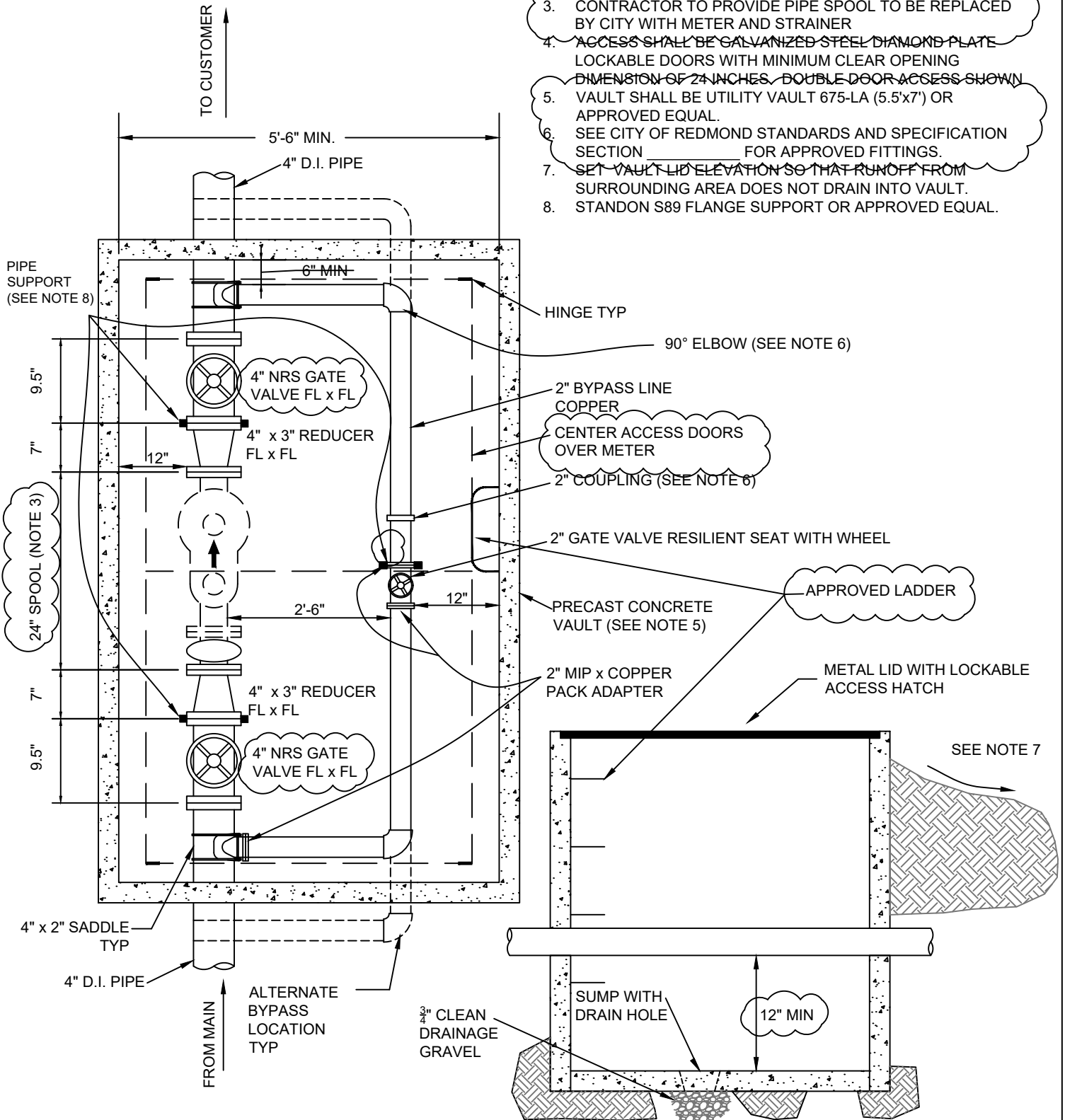
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11/04/2022

STANDARD
DRAWING
NO.

4-6

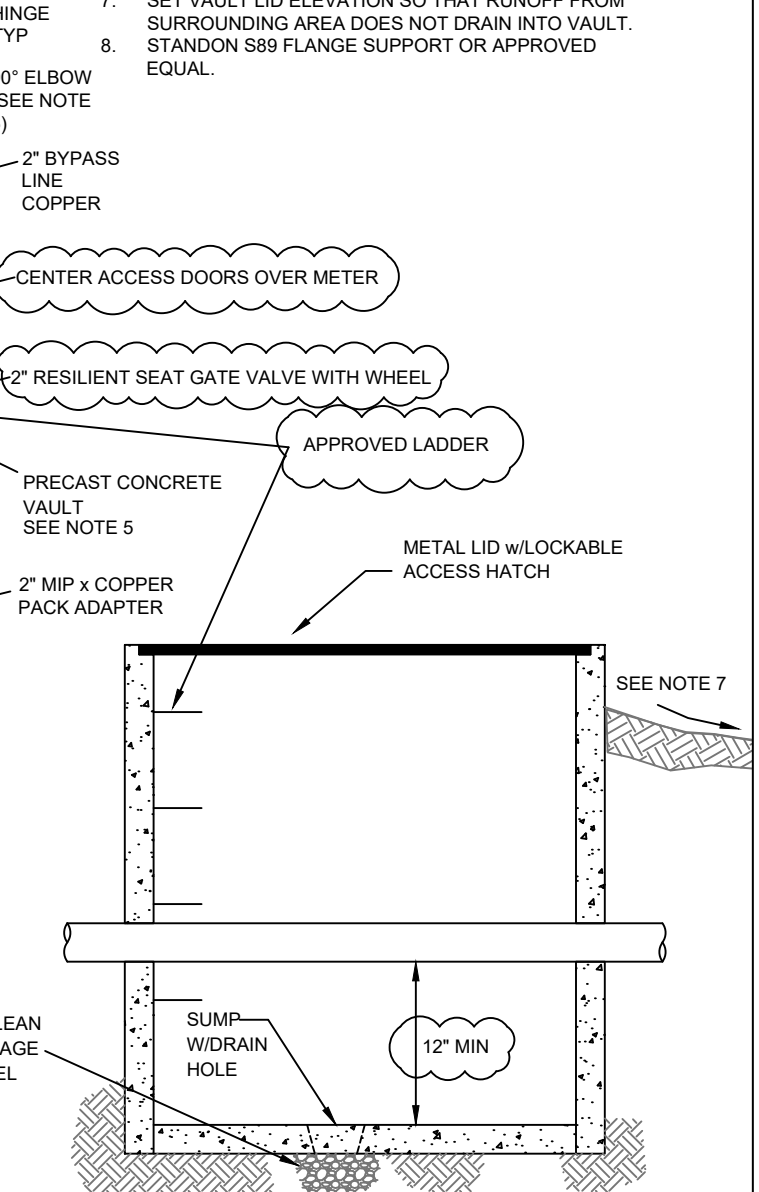
WATER



CITY OF REDMOND PUBLIC WORKS DEPARTMENT		SCALE:		STANDARD DRAWING NO. 4-7	
3" WATER METER VAULT		DRAWING BY:			NTS
		APPROVED BY:			JWS
		DATE:			JNM
		03/31/2023			
					WATER

NOTES:

1. METER TO BE PROVIDED BY CITY
2. ALL DIMENSIONS SHOWN ARE MINIMUM CLEARANCE DIMENSIONS UNLESS NOTED OTHERWISE.
3. CONTRACTOR TO PROVIDE PIPE SPOOL TO BE REPLACED WITH METER AND STRAINER BY CITY
4. ACCESS SHALL BE GALVANIZED STEEL DIAMOND PLATE LOCKABLE DOORS WITH MINIMUM CLEAR OPENING DIMENSION OF 24 INCHES. DOUBLE DOOR ACCESS SHOWN.
5. VAULT SHALL BE UTILITY VAULT 675-LA (5.5'x7') OR APPROVED EQUAL.
6. SEE CITY OF REDMOND STANDARD AND SPECIFICATIONS SECTION _____ FOR APPROVED FITTINGS.
7. SET VAULT LID ELEVATION SO THAT RUNOFF FROM SURROUNDING AREA DOES NOT DRAIN INTO VAULT.
8. STANDON S89 FLANGE SUPPORT OR APPROVED EQUAL.



SECTION VIEW

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

4" WATER METER VAULT

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

03/31/2023



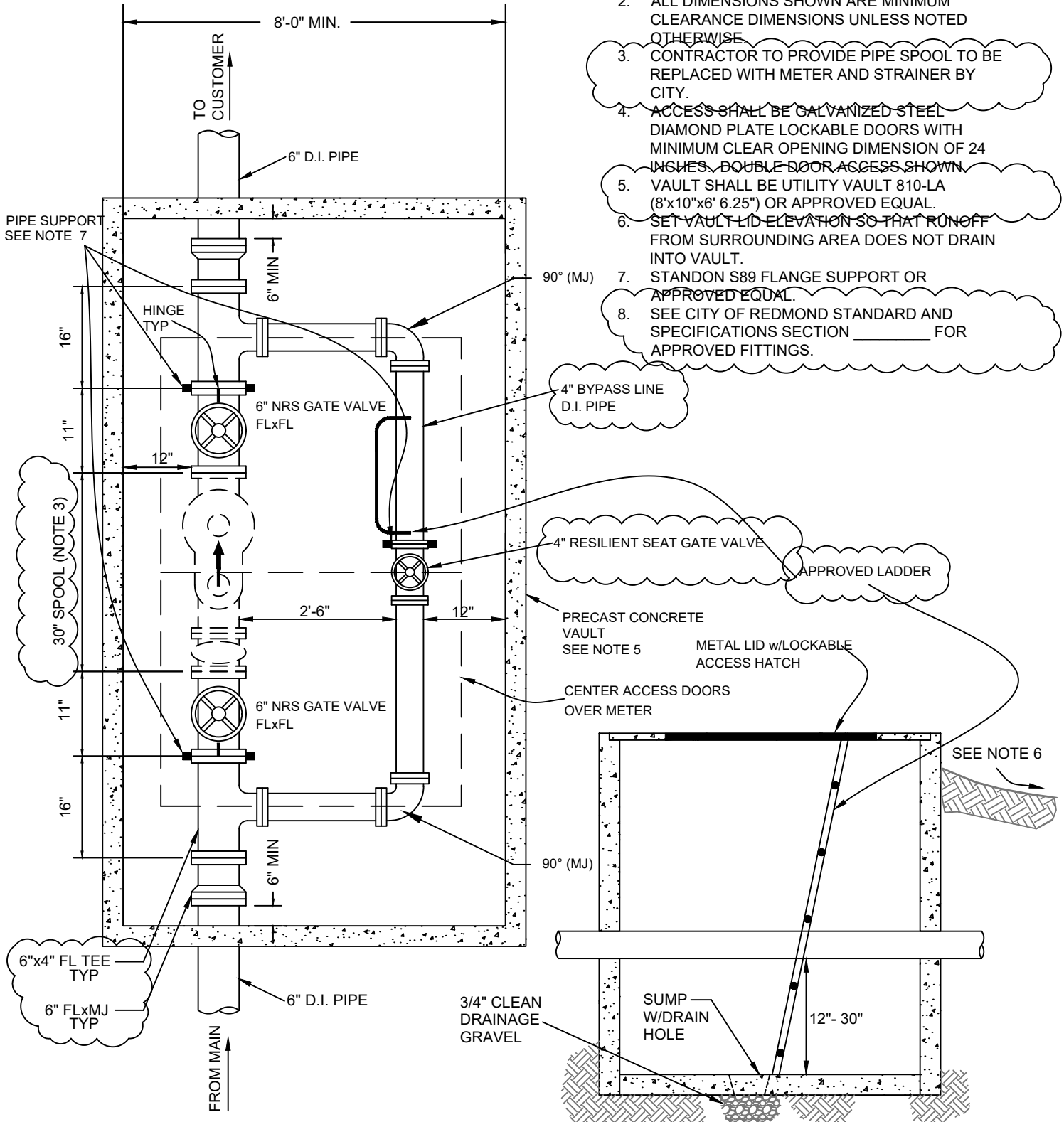
STANDARD DRAWING NO.	
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4-8

WATER

NOTES:

1. METER TO BE PROVIDED BY CITY OF REDMOND
2. ALL DIMENSIONS SHOWN ARE MINIMUM CLEARANCE DIMENSIONS UNLESS NOTED OTHERWISE
3. CONTRACTOR TO PROVIDE PIPE SPOOL TO BE REPLACED WITH METER AND STRAINER BY CITY.
4. ACCESS SHALL BE GALVANIZED STEEL DIAMOND PLATE LOCKABLE DOORS WITH MINIMUM CLEAR OPENING DIMENSION OF 24 INCHES. DOUBLE DOOR ACCESS SHOWN.
5. VAULT SHALL BE UTILITY VAULT 810-LA (8'x10'x6' 6.25") OR APPROVED EQUAL.
6. SET VAULT LID ELEVATION SO THAT RUNOFF FROM SURROUNDING AREA DOES NOT DRAIN INTO VAULT.
7. STANDON S89 FLANGE SUPPORT OR APPROVED EQUAL.
8. SEE CITY OF REDMOND STANDARD AND SPECIFICATIONS SECTION _____ FOR APPROVED FITTINGS.



SECTION VIEW

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

6" WATER METER VAULT

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

03/31/2023



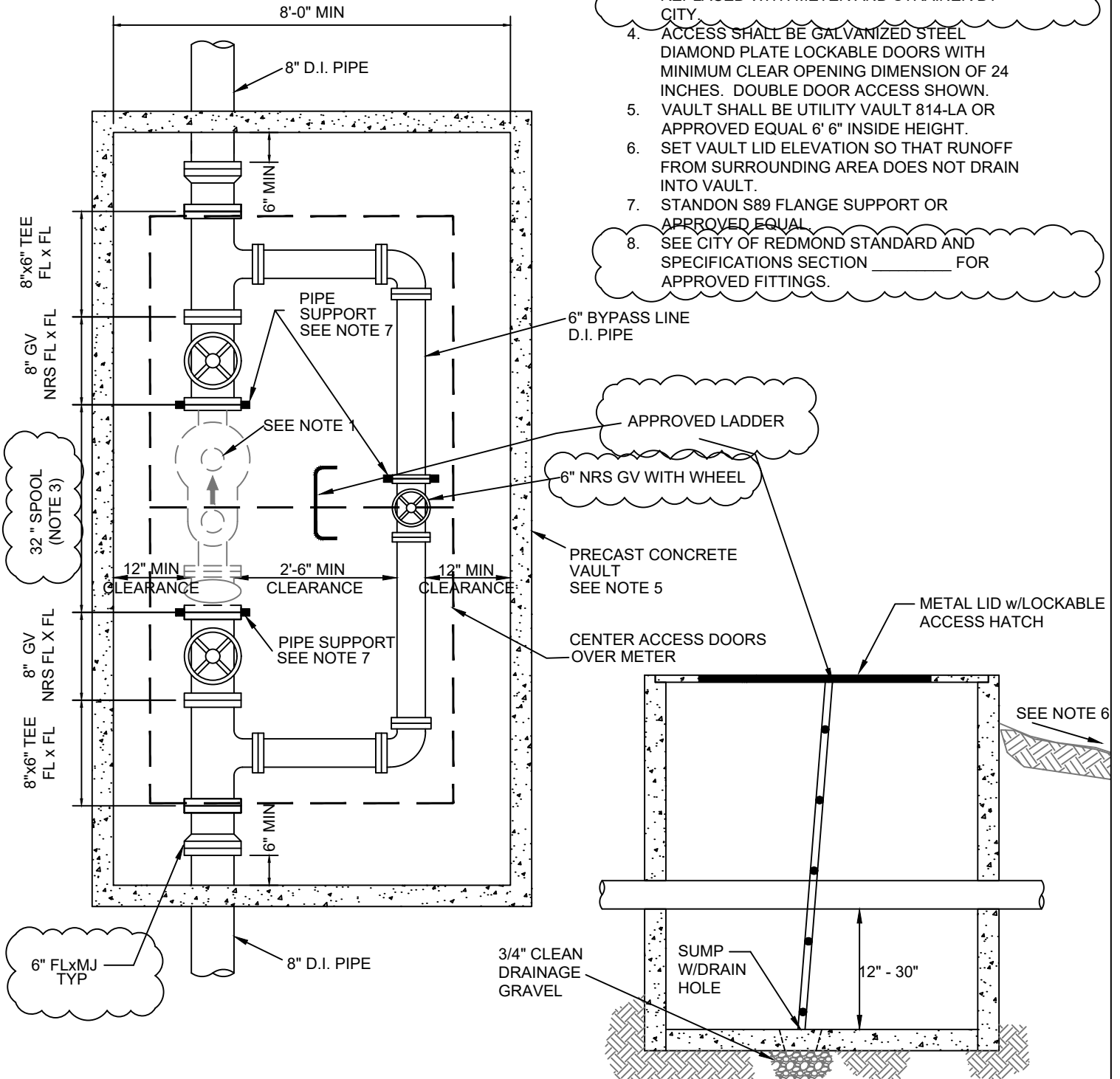
STANDARD
DRAWING
NO.

4-9

WATER

NOTES:

1. METER TO BE PROVIDED BY CITY OF REDMOND.
2. ALL DIMENSIONS SHOWN ARE MINIMUM CLEARANCE DIMENSIONS UNLESS NOTED OTHERWISE.
3. CONTRACTOR TO PROVIDE PIPE SPOOL TO BE REPLACED WITH METER AND STRAINER BY CITY.
4. ACCESS SHALL BE GALVANIZED STEEL DIAMOND PLATE LOCKABLE DOORS WITH MINIMUM CLEAR OPENING DIMENSION OF 24 INCHES. DOUBLE DOOR ACCESS SHOWN.
5. VAULT SHALL BE UTILITY VAULT 814-LA OR APPROVED EQUAL 6' 6" INSIDE HEIGHT.
6. SET VAULT LID ELEVATION SO THAT RUNOFF FROM SURROUNDING AREA DOES NOT DRAIN INTO VAULT.
7. STANDON S89 FLANGE SUPPORT OR APPROVED EQUAL.
8. SEE CITY OF REDMOND STANDARD AND SPECIFICATIONS SECTION _____ FOR APPROVED FITTINGS.



SECTION VIEW

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

8" WATER METER VAULT

SCALE:

NTS

DRAWING BY:

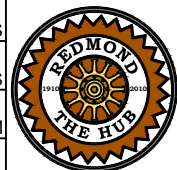
JWS

APPROVED BY:

JNM

DATE:

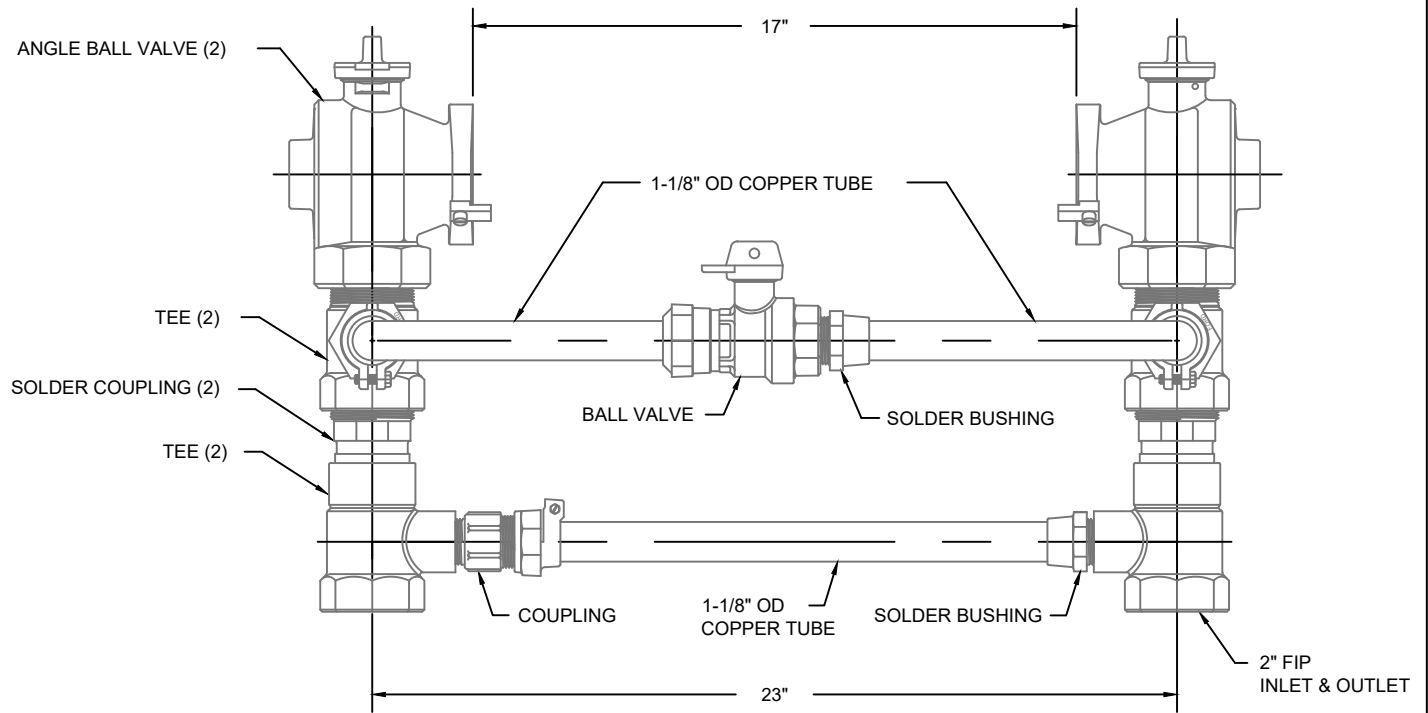
03/31/2023



STANDARD
DRAWING
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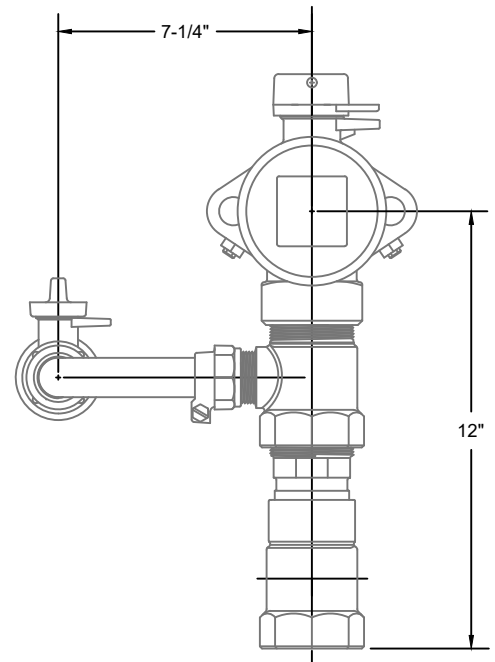
4-10

WATER



NOTES:

1. SEE CITY OF REDMOND STANDARD AND SPECIFICATIONS SECTION 401 FOR APPROVED FITTINGS.



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**2" METER SETTER WITH
BYPASS FOR DOMESTIC
USE**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

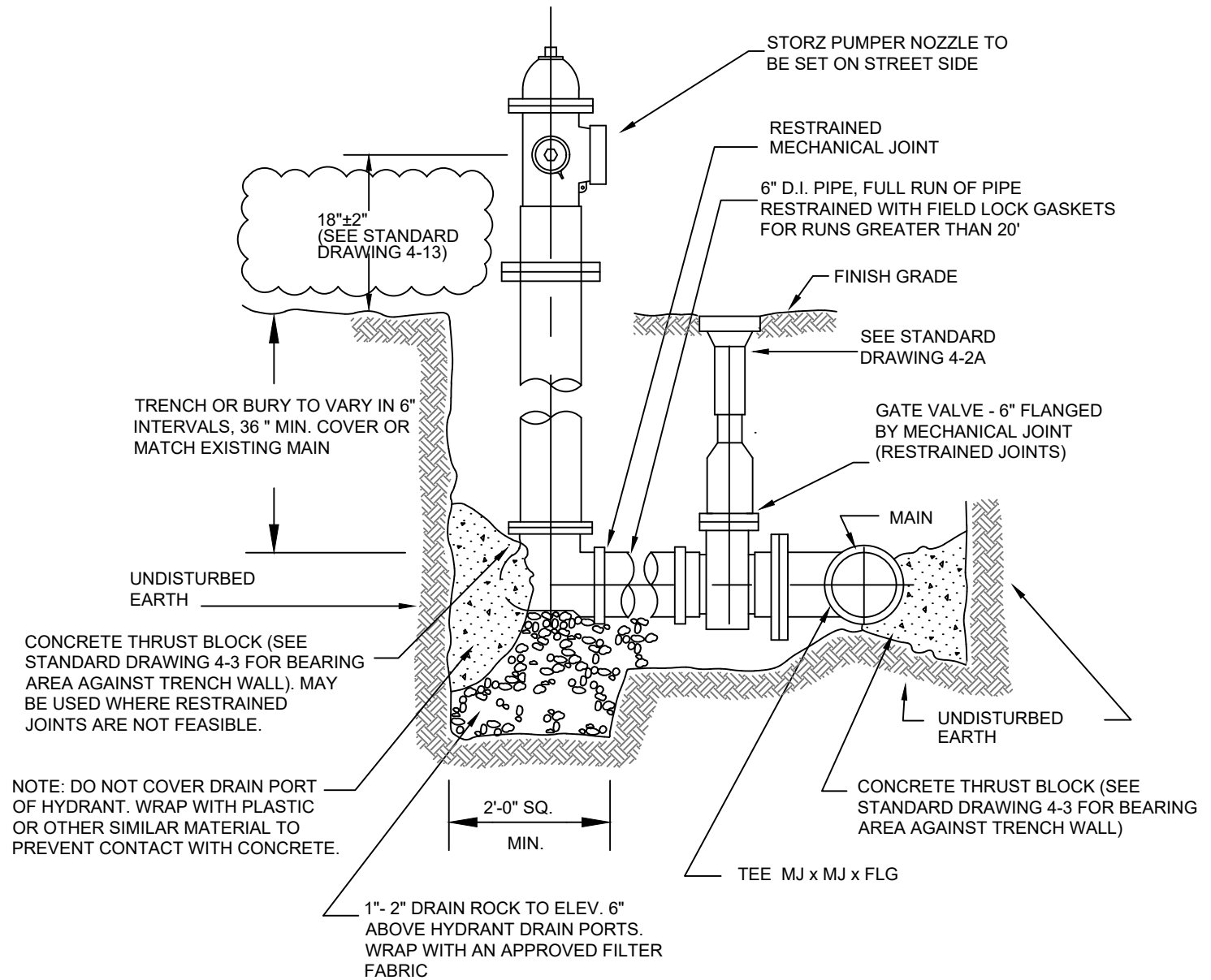
03/31/2023



STANDARD
DRAWING
NO.

4-11

WATER



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

FIRE HYDRANT & GATE VALVE CONTROL INSTALLATION

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

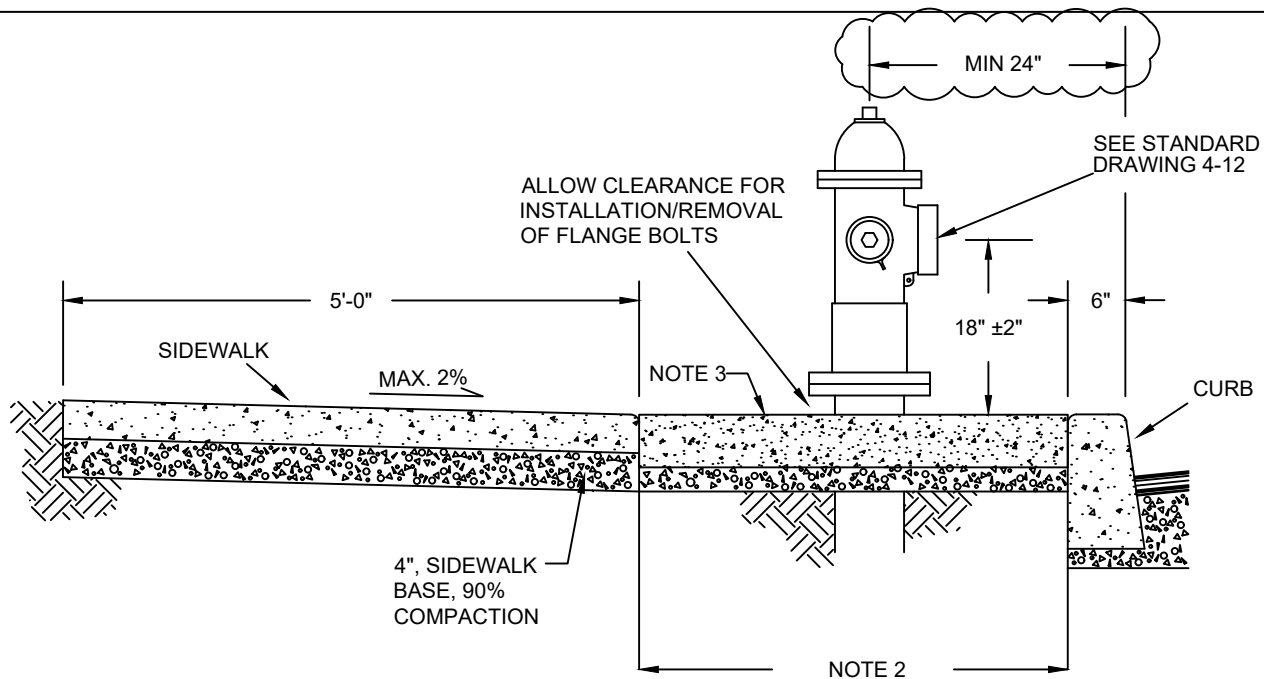
03/31/2023



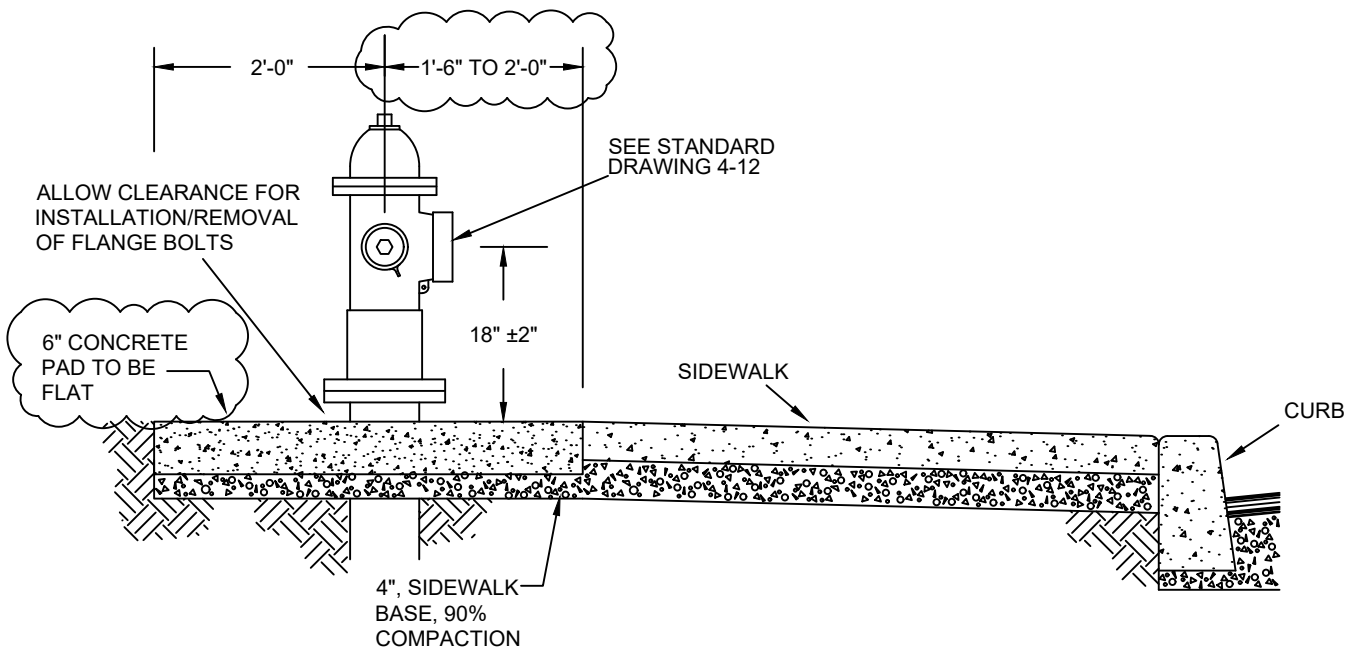
STANDARD
DRAWING
NO.

4-12

WATER



PROPERTY-TIGHT SIDEWALK



CURB-TIGHT SIDEWALK

NOTES:

1. CITY OF REDMOND FIRE DEPARTMENT REQUIRES MIN 3' CLEARANCE FROM HYDRANT IN ALL DIRECTIONS.
2. CENTER HYDRANT IN SPACE BETWEEN BACK OF CURB AND SIDEWALK. MINIMUM OF 18" FROM FACE OF CURB
3. 6" THICK CONCRETE PAD FILLING SPACE BETWEEN CURB AND SIDEWALK EXTENDING 3' EITHER SIDE OF HYDRANT MEASURED FROM CENTER OF HYDRANT.
4. PAINT TOP AND FACE OF CURB WITH RED TRAFFIC PAINT FOR 20" CENTERED ON HYDRANT.
5. WHEN HYDRANT IS LOCATED BEHIND SIDEWALK, CONCRETE PAD WILL EXTEND 3' EITHER SIDE OF HYDRANT AND 2' BEHIND HYDRANT MEASURED FROM CENTER OF HYDRANT.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD FIRE HYDRANT SET BACKS

SCALE:

NTS

DRAWING BY:

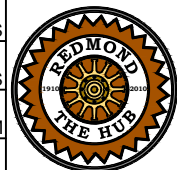
JWS

APPROVED BY:

JNM

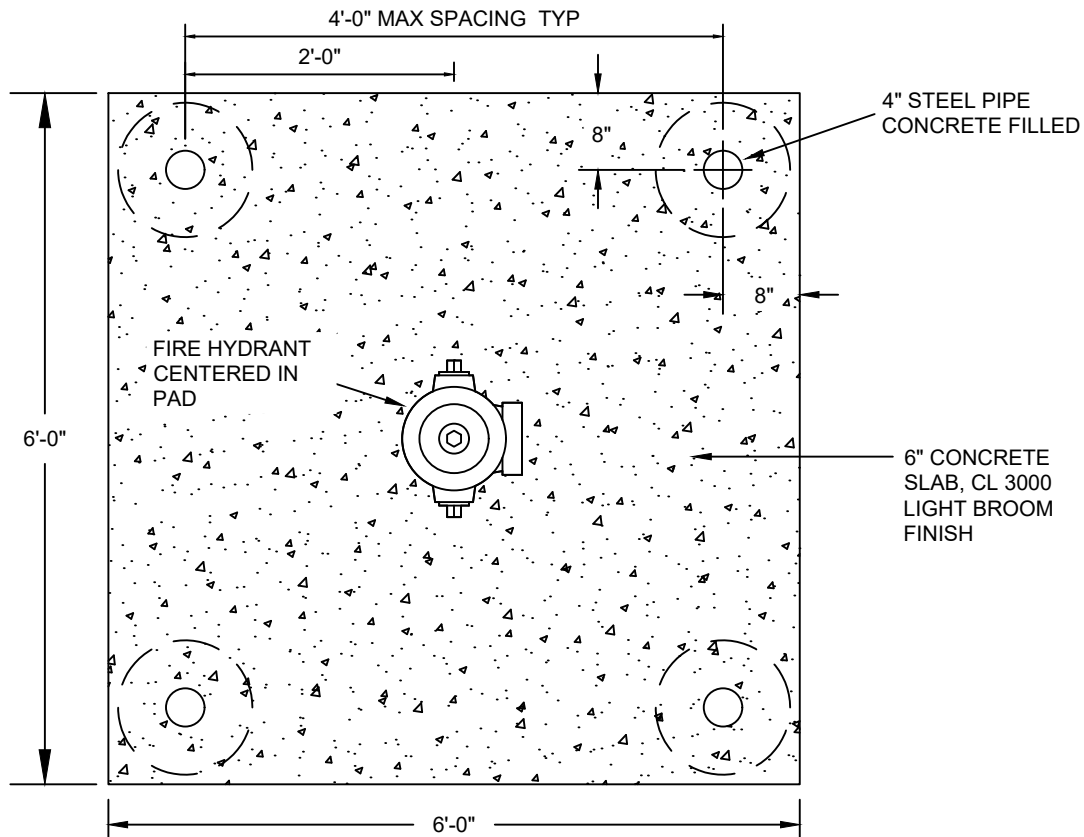
DATE:

03/31/2023

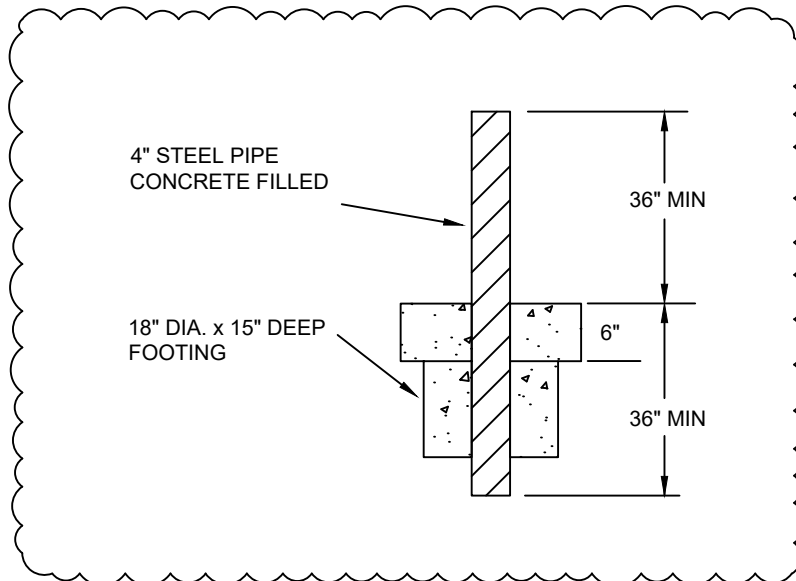
STANDARD
DRAWING
NO.

4-13

WATER



BOLLARD DETAIL



NOTE:

1. TO BE CONSTRUCTED IN AREAS WHERE NOT PROTECTED BY CURBS.
2. BOLLARDS WILL BE PAINTED WITH "SAFETY RED"

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

FIRE HYDRANT PAD & BOLLARDS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

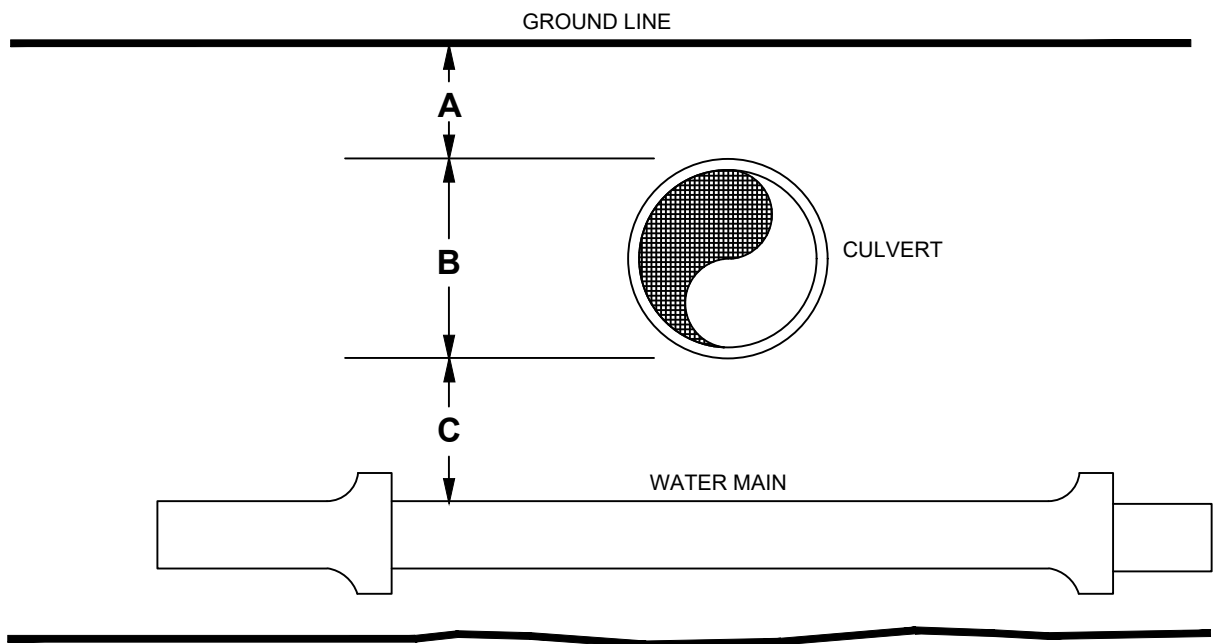
03/31/2023



STANDARD
DRAWING
NO.

4-14

WATER



A	B	C
COVER FROM CULVERT TO FINISH GRADE	CULVERT SIZE	SEPARATION CULVERT TO MAIN
12" OR LESS	6" THRU 12"	NOT LESS THAN 18"
12" OR MORE	6" THRU 12"	NOT LESS THAN 12"
12" OR LESS	14" THRU 24"	NOT LESS THAN 30"
12" OR MORE	14" THRU 24"	NOT LESS THAN 24"
	GREATER THAN 24"	NOT LESS THAN 36"

CLEARANCE OF WATER MAIN TO INSIDE WALL OF A CATCH BASIN SHALL BE NOT LESS THAN 30".

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

SEPARATION OF WATER LINE TO IRRIGATION CULVERTS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

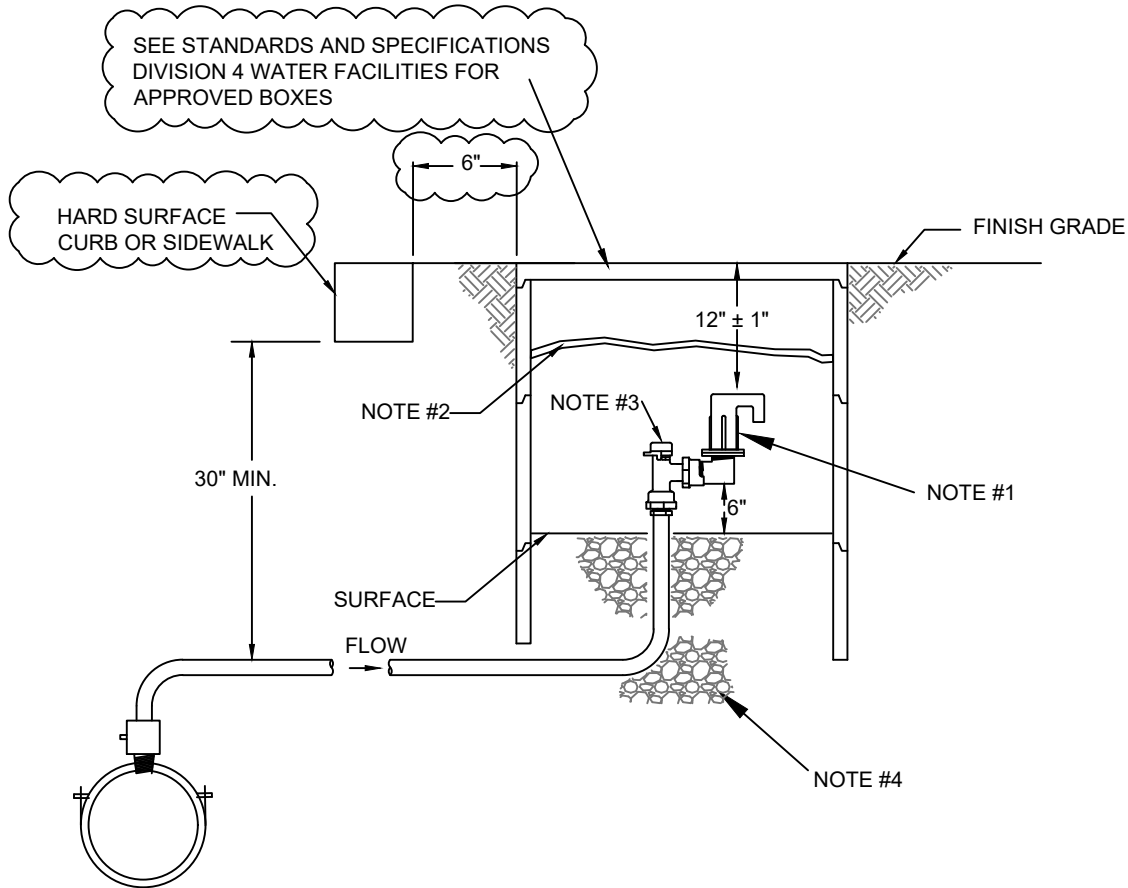
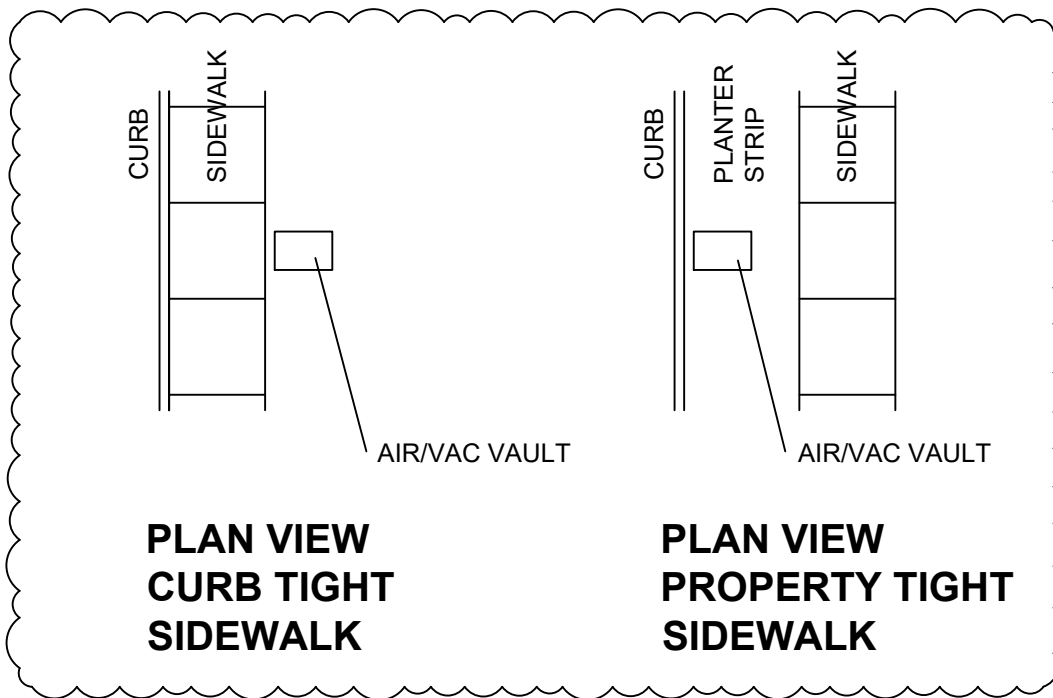
03/31/2023



STANDARD
DRAWING
NO.

4-15

WATER



NOTES:

1. ARI D-040 COMBINATION AIR VALVE WITH BUG SCREEN.
2. 1/2" CROSSLINK CLOSED CELL NATURAL T20 INSULATION.
3. 1" ANGLE STOP-BALL AND 1" x 1-1/4" BUSHING AND STREET ELBOW
4. 3/4" - 1/2" DRAIN ROCK .

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STANDARD AIR & VACUUM
RELEASE VALVE
ASSEMBLY**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

03/31/2023



STANDARD
DRAWING
NO.

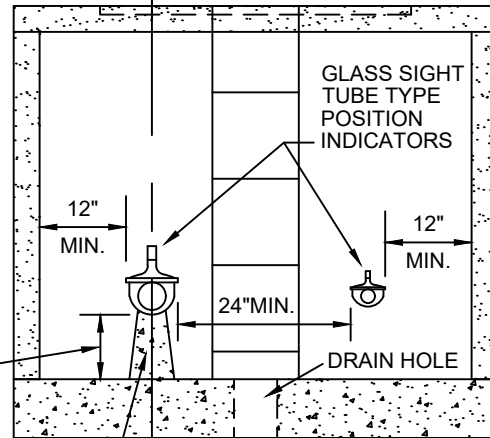
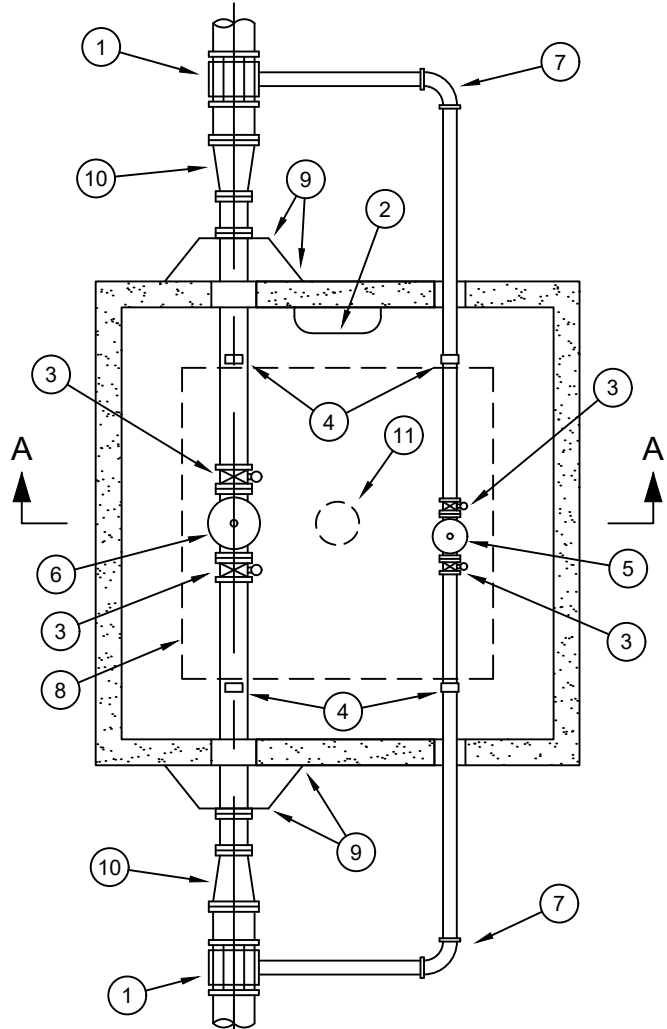
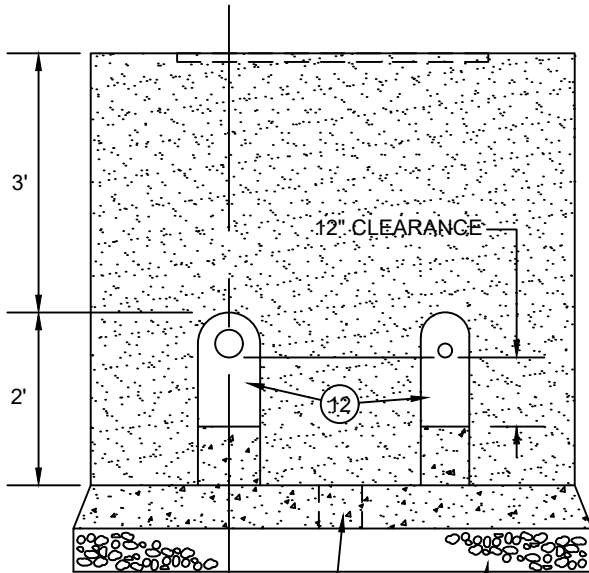
4-16

WATER

NOTES

1. SADDLE TAP
2. GALVANIZED STEEL LADDER w/RUNGS @ 12" O.C.
3. BUTTERFLY VALVE, AS REQ'D
4. PRESSURE GAUGE WITH SHUT OFF
5. BYPASS PRESSURE REDUCING VALVE, AS SPEC.
6. PRIMARY PRESSURE REDUCING VALVE, AS SPEC.
7. 90° BEND
8. DOUBLE OPENING GALVANIZED STEEL LIDS
9. COATED STEEL PLATE (PAINT, MASTIC, BITUMUL)
10. REDUCER
11. DRAIN HOLE
12. KNOCK-OUTS TO BE FILLED WITH APPROVED MOISTURE PROOF INSULATION

5' x 5' - MIN. VAULT SIZE FOR
6" & 8" MAINS. ALL OTHER
VAULT SIZES AS SPECIFIED.



SECTION A-A

CONCRETE OR APPROVED
EQUAL UNDER SUPPORT
ON VALVES 6" OR LARGER

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

PRESSURE REDUCING VALVE VAULT

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

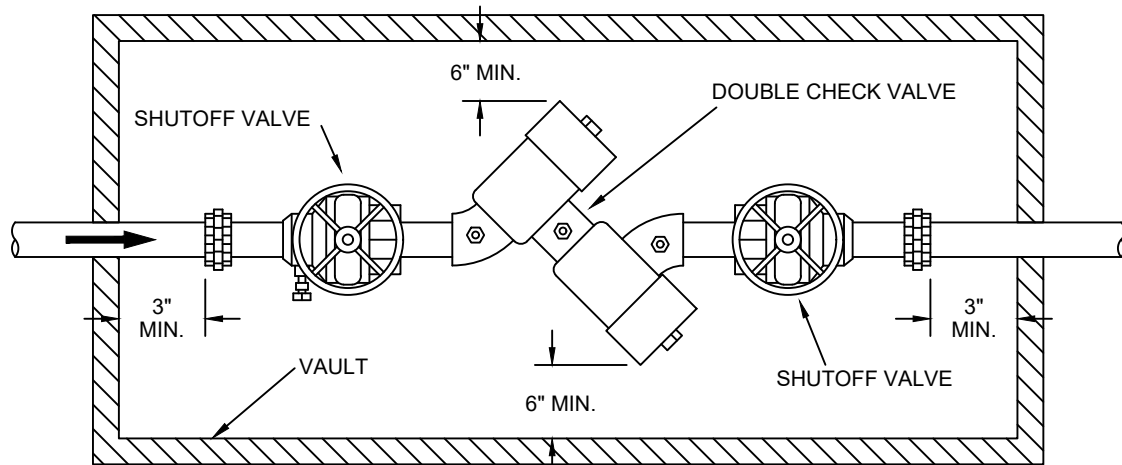
03/31/2023



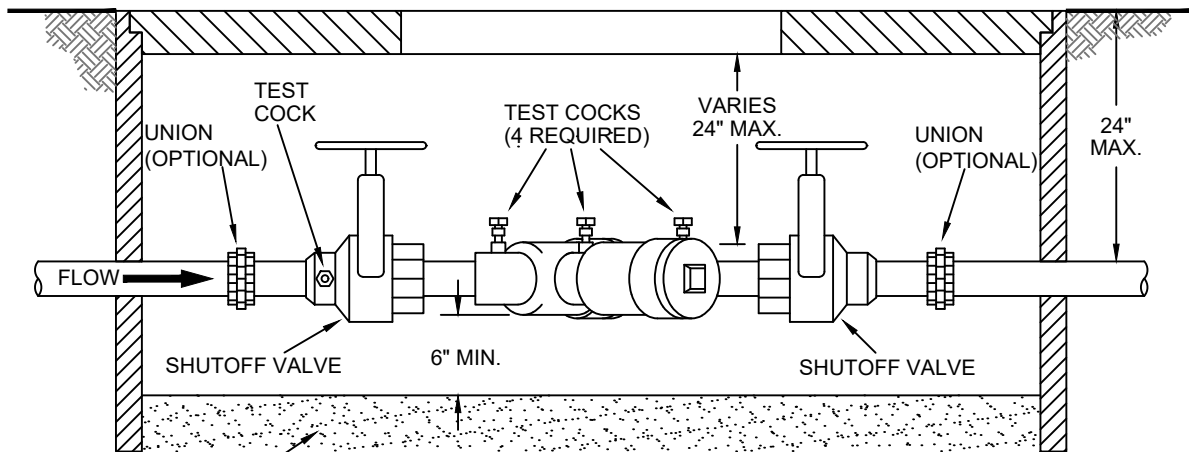
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NO.

4-17

WATER



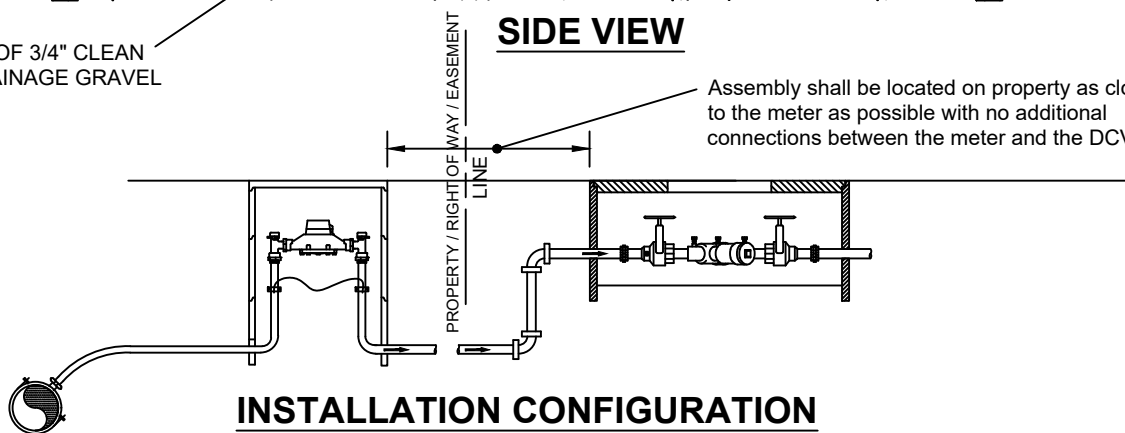
TOP VIEW
DOUBLE CHECK VALVE ASSEMBLY



SIDE VIEW

12" OF 3/4" CLEAN
DRAINAGE GRAVEL

Assembly shall be located on property as close
to the meter as possible with no additional
connections between the meter and the DCVA.



INSTALLATION CONFIGURATION

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL BACKFLOW
DEVICE $\frac{3}{4}$ " TO 2" DCVA
INSTALLATIONS**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

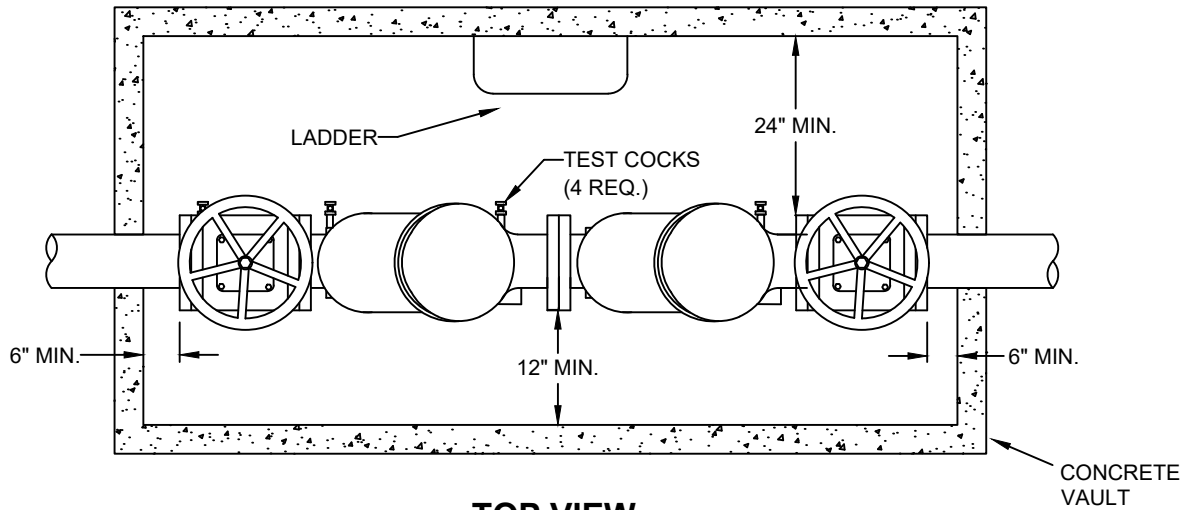
03/31/2023



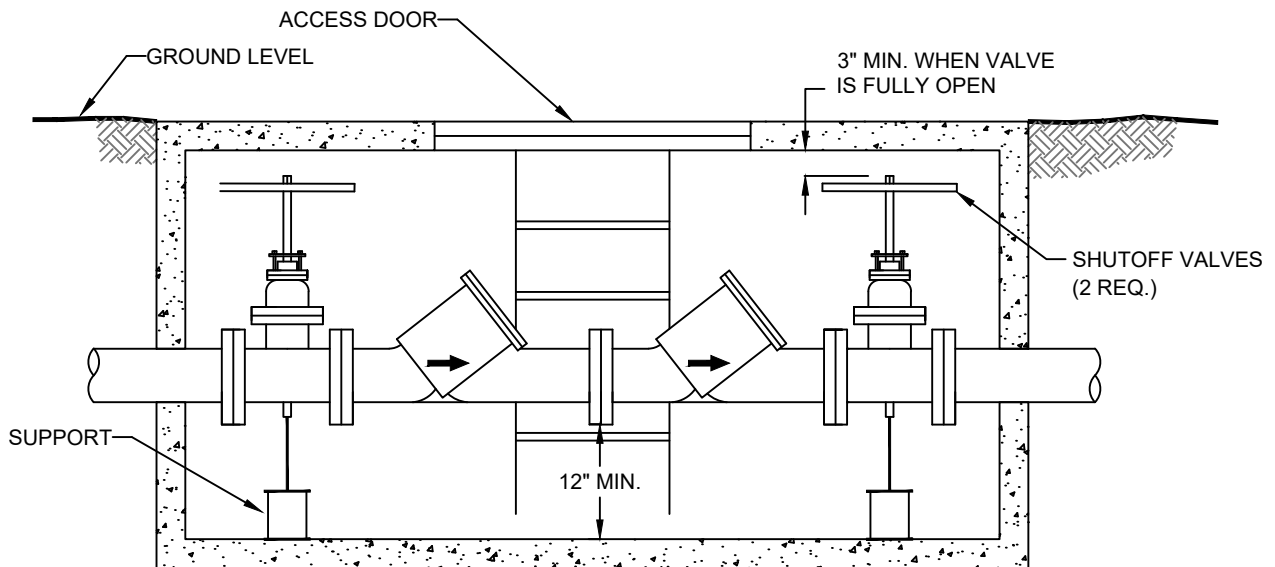
STANDARD
DRAWING
NO.

4-18

WATER

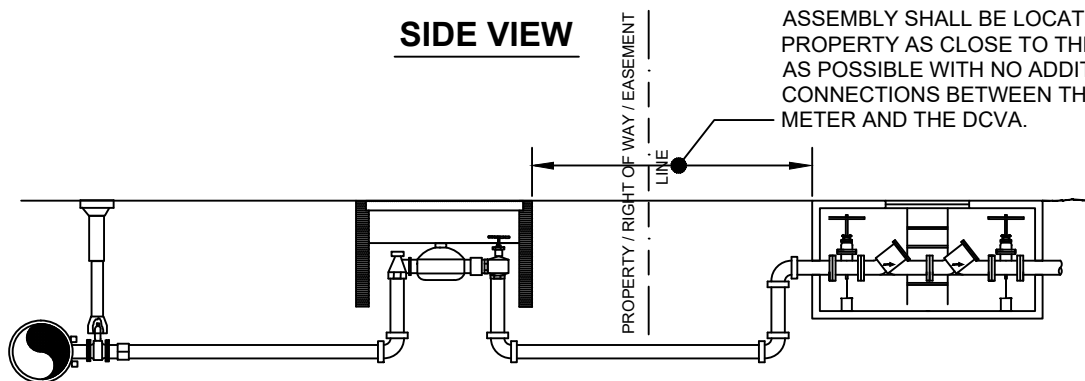


TOP VIEW
DOUBLE CHECK VALVE ASSEMBLY & VAULT



SIDE VIEW

ASSEMBLY SHALL BE LOCATED ON PROPERTY AS CLOSE TO THE METER AS POSSIBLE WITH NO ADDITIONAL CONNECTIONS BETWEEN THE METER AND THE DCVA.



INSTALLATION CONFIGURATION

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL BACKFLOW
DEVICE LARGER THAN 2"
DCVA INSTALLATIONS**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

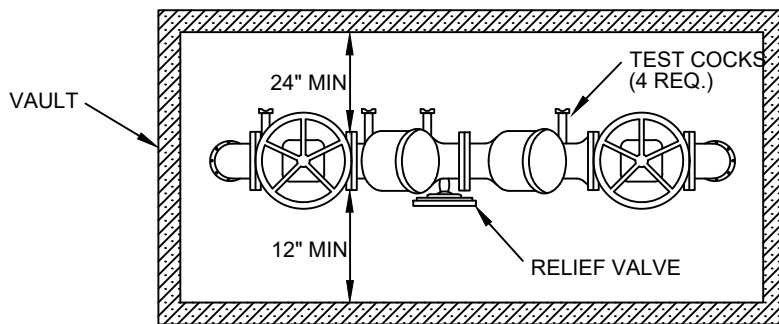
03/31/2023



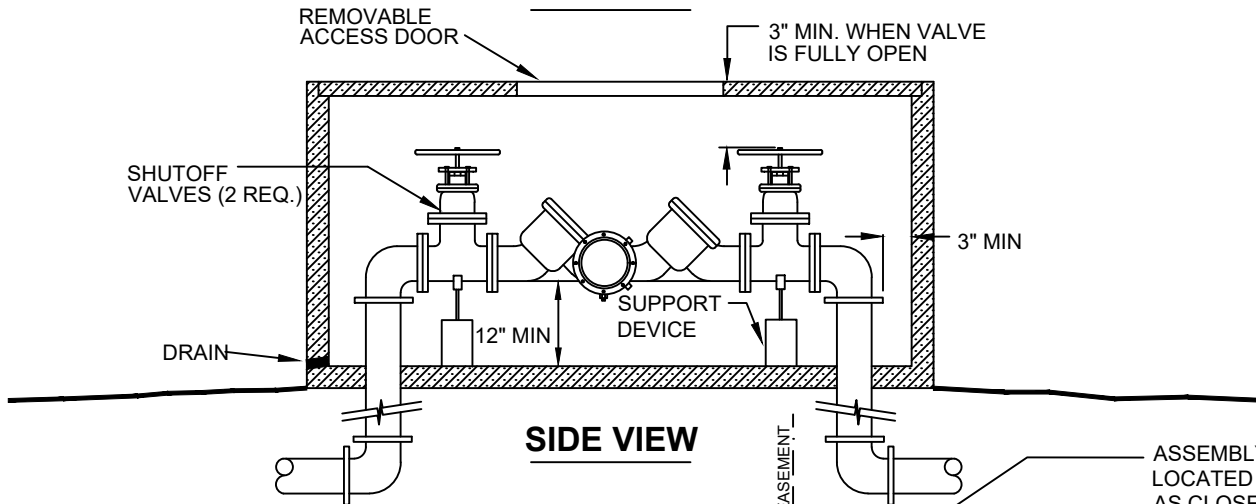
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4-19

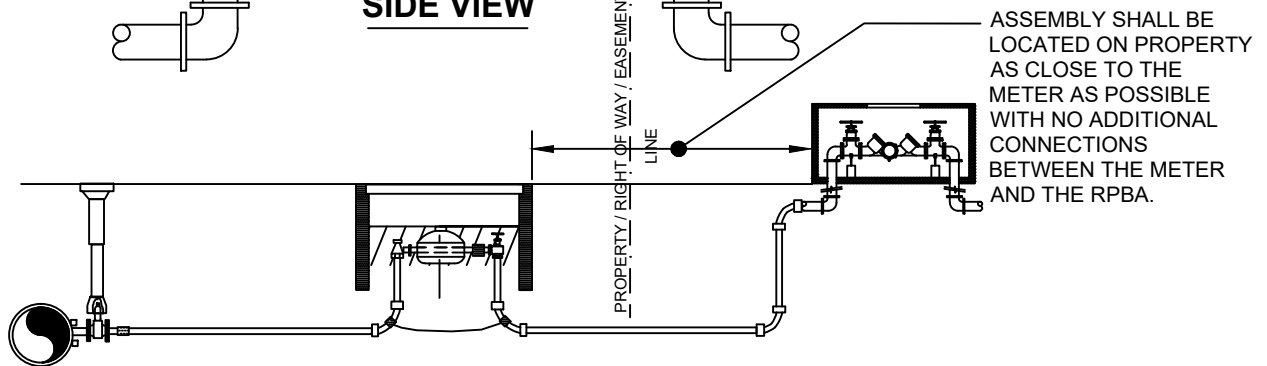
WATER



TOP VIEW



SIDE VIEW



INSTALLATION CONFIGURATION

NOTES:

1. BOTTOM AND SIDE CLEARANCES APPLY WHEN DEVICES ARE INSTALLED INSIDE BUILDING. ACCESS DOORS MAY BE PROVIDED ON SIDE OF ABOVE GROUND VAULT.
2. RPBA'S SHALL ALWAYS BE INSTALLED HORIZONTALLY, NEVER VERTICALLY, UNLESS APPROVED BY OREGON HEALTH AUTHORITY.
3. RPBA'S SHALL ALWAYS BE INSTALLED ABOVE THE 100 YEAR (1%) FLOOD LEVEL UNLESS APPROVED BY CITY ENGINEER.
4. RELIEF VALVES SHALL NEVER BE EXTENDED OR PLUGGED.
5. PROVIDE HEAT OR INSULATION FOR PROTECTION FROM FREEZING.
6. A PROVISION FOR AN AIR GAPPED DRAIN SHALL BE PROVIDED.
7. RPBA'S SHALL NOT BE INSTALLED IN A CLOSED VAULT OR BOX UNLESS A BORE SIGHTED DRAIN TO DAYLIGHT IS PROVIDED.
8. MINIMUM CLEARANCES FOR DEVICE ASSEMBLIES 2 INCHES OR SMALLER MAY BE REDUCED PROVIDED THAT THEY ARE ACCESSIBLE FOR TESTING AND REPAIRING AND APPROVED BY THE WATER DIVISION.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**REDUCED PRESSURE
BACKFLOW DEVICE
INSTALLATION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

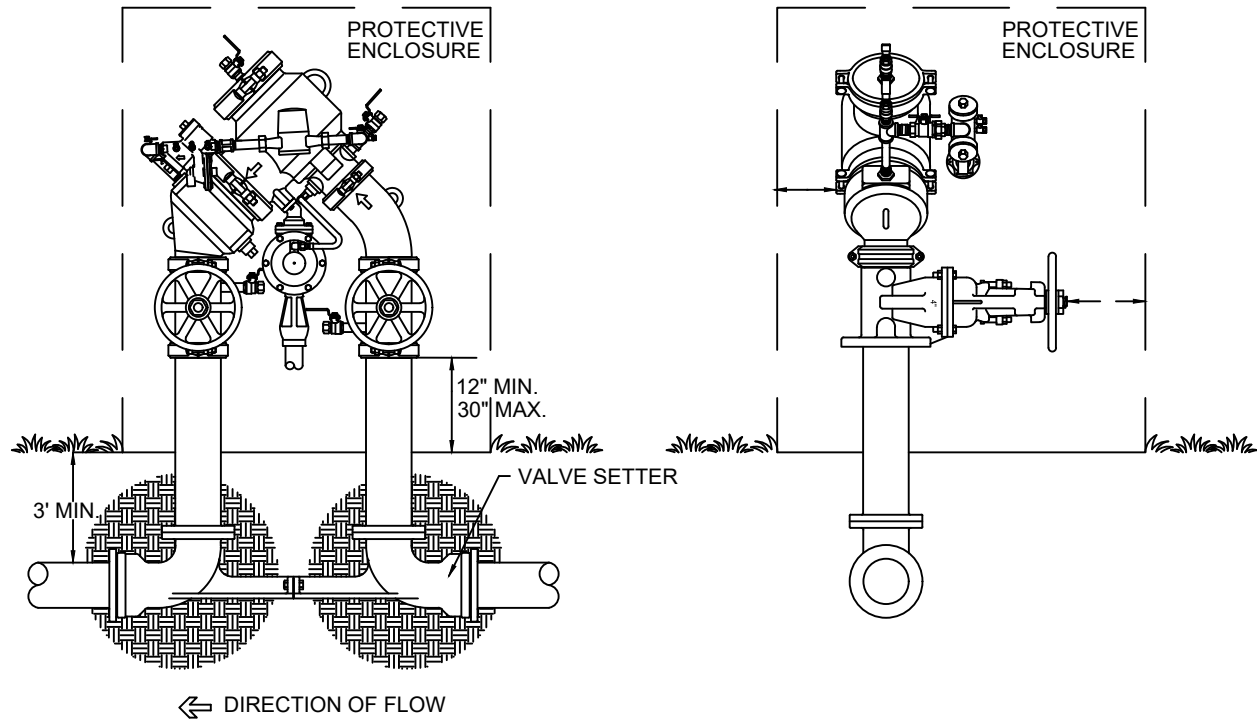
04/06/2023



STANDARD
DRAWING
NO.

4-20

WATER



NOTES:

1. ENCLOSURE SIZE SHALL MAINTAIN 1' CLEARANCE IN ALL DIRECTIONS.
2. ENCLOSURE SHALL PROVIDE FREEZE PROTECTION

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL BACKFLOW
DEVICE LARGER THAN 2"
RPDA INSTALLATIONS**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

04/06/2023



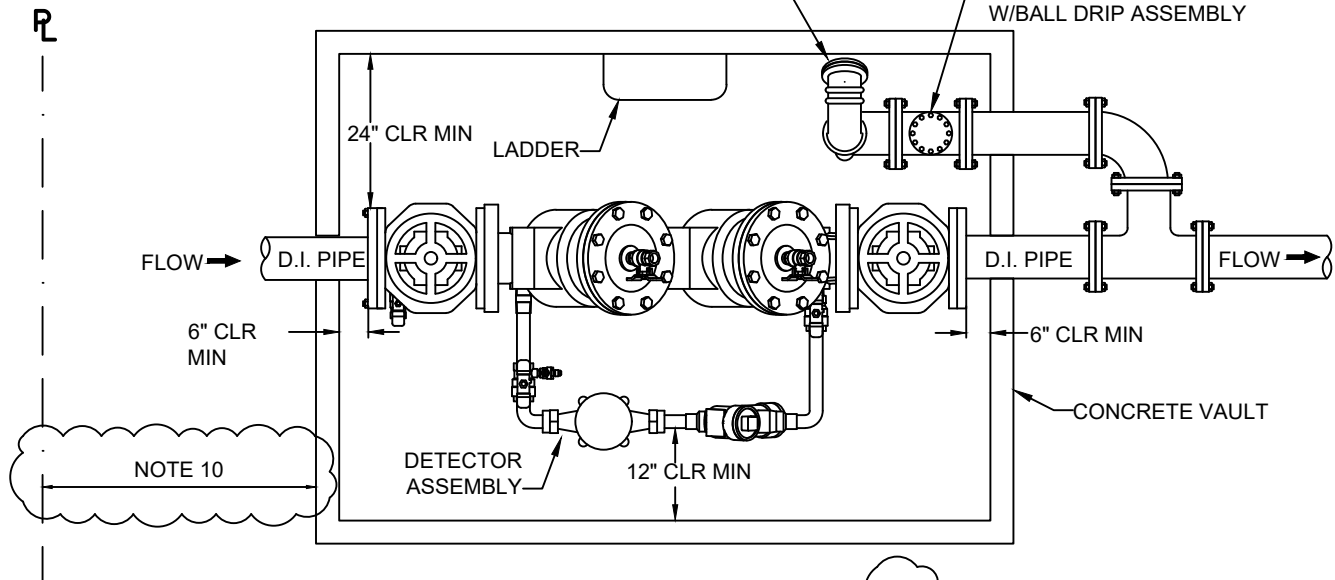
STANDARD
DRAWING
NO.

4-21

WATER

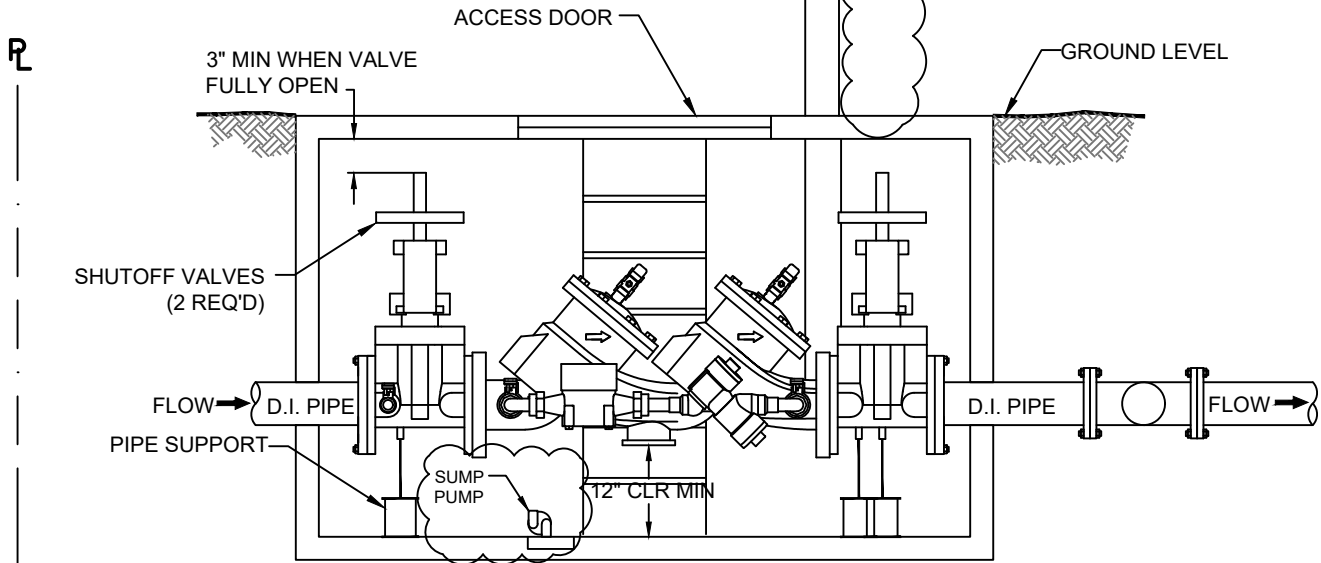
SEE NOTE #7 - STORZ FIRE DEPARTMENT CONNECTION

SWING CHECK VALVE
W/BALL DRIP ASSEMBLY



PLAN

SEE NOTE #7 - STORZ FIRE DEPARTMENT CONNECTION
ORIENT TOWARD FIRE DEPT. ACCESS
MINIMUM HEIGHT 18" TO MAXIMUM HEIGHT 48"



SECTION

NOTES:

1. ELECTRONICALLY MONITOR ALL SHUTOFF VALVES.
2. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS.
3. ALL VALVES SHALL BE U.L. LISTED.
4. ALL PIPE AND VALVE SIZES SHALL BE AS INDICATED ON THE SITE PLAN.
5. FDC PIPE AND VALVE SIZE SHALL MATCH SIZE OF FIRE SERVICE.
6. ALL FITTINGS AND VALVES SHALL BE FLANGED.
7. DCVA SHALL BE APPROVED BY OREGON DHS.
8. FIRE DEPARTMENT CONNECTION SHALL BE A SINGLE CONNECTION HAVING A 30° ELBOW WITH A 5" STORZ x 4" NPT MALE RIGID WITH STORZ CAP WITH CABLE OR APPROVED EQUAL.
9. FULL RUN OF PIPE RESTRAINED WITH FIELD LOCK GASKETS FOR RUNS GREATER THAN 20'.
10. LOCATED OUTSIDE PUE AS CLOSE TO PROPERTY LINE AS POSSIBLE, ON PRIVATE SITE HYDRANT IS REQUIRED WITHIN 100'.
11. VAULT SHALL BE HEATED AND MONITORED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

FIRE SERVICE VAULT DCDA WITH FDC

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

04/13/2023



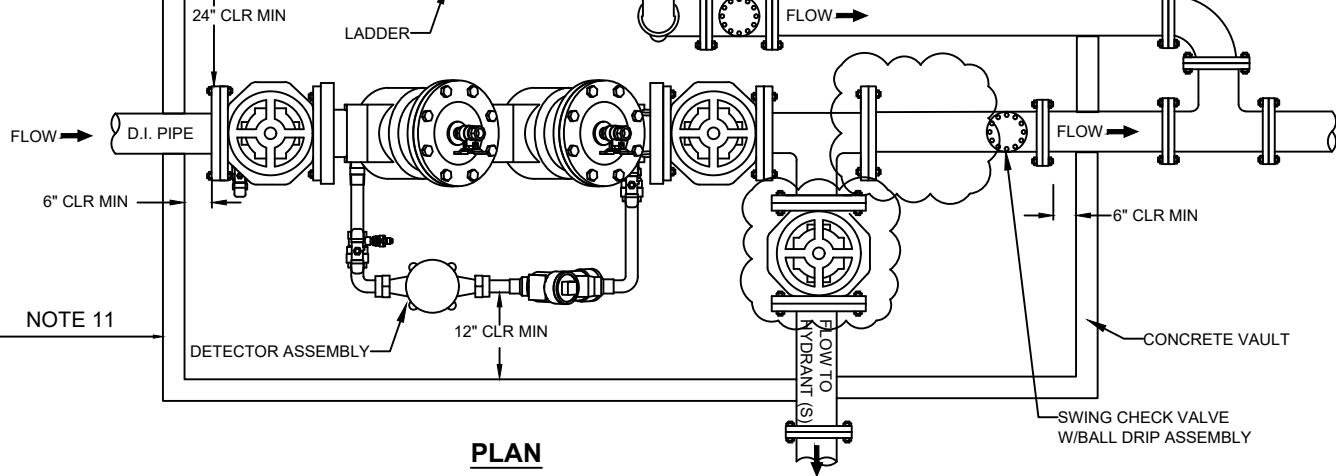
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4-22

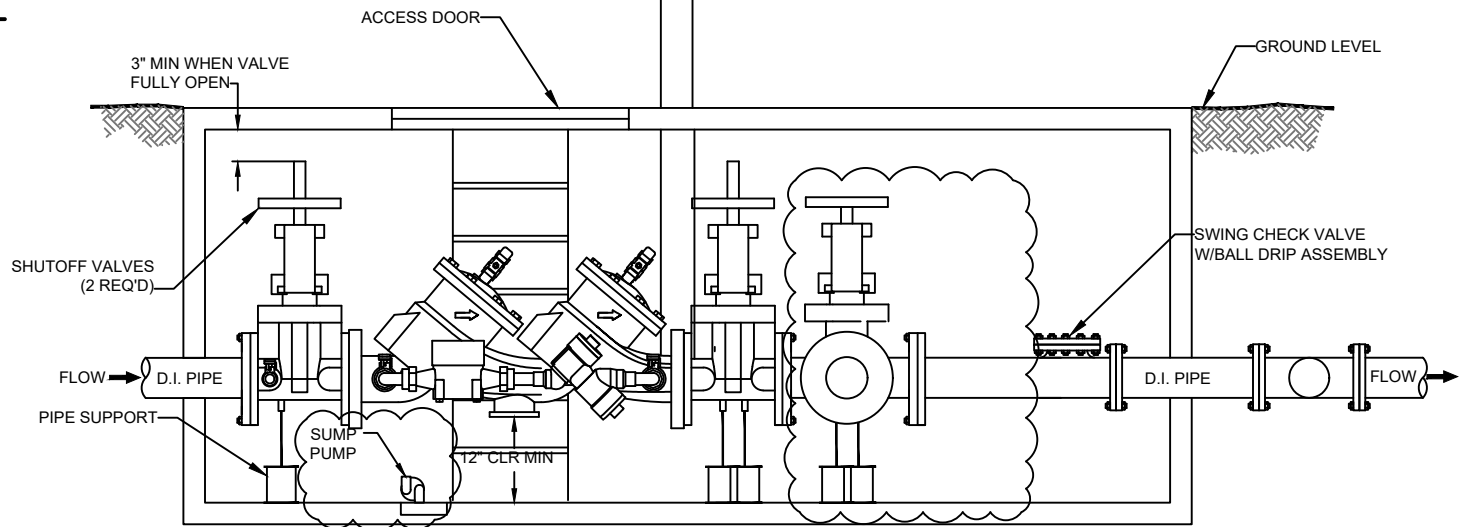
WATER

R

SEE NOTE #7 - STORZ FIRE DEPARTMENT CONNECTION

SWING CHECK VALVE
W/BALL DRIP ASSEMBLY**PLAN**SEE NOTE #7 - STORZ FIRE DEPARTMENT CONNECTION
ORIENT TOWARD FIRE DEPT. ACCESS
MINIMUM HEIGHT 18" TO MAXIMUM HEIGHT 48"

R

**SECTION****NOTES:**

1. OPTION FOR PRIVATE HYDRANT LINE.
2. ELECTRONICALLY MONITOR ALL SHUTOFF VALVES.
3. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS.
4. ALL VALVES SHALL BE U.L. LISTED.
5. ALL PIPE AND VALVE SIZES SHALL BE AS INDICATED ON THE SITE PLAN.
6. FDC PIPE AND VALVE SIZE SHALL MATCH SIZE OF FIRE SERVICE.
7. ALL FITTINGS AND VALVES SHALL BE FLANGED.
8. DCVA SHALL BE APPROVED BY OREGON DHS.
9. FIRE DEPARTMENT CONNECTION SHALL BE A SINGLE CONNECTION HAVING A 30° ELBOW WITH A 5" STORZ x 4" NPT MALE RIGID WITH STORZ CAP WITH CABLE OR APPROVED EQUAL.
10. FULL RUN OF PIPE RESTRAINED WITH FIELD LOCK GASKETS FOR RUNS GREATER THAN 20'.
11. LOCATED OUTSIDE PUE AS CLOSE TO PROPERTY LINE AS POSSIBLE, ON PRIVATE SITE HYDRANT IS REQUIRED WITHIN 100'.
12. VAULT SHALL BE HEATED AND MONITORED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

FIRE SERVICE VAULT DCDA WITH FDC & PRIVATE HYDRANT

SCALE:

NTS

DRAWING BY:

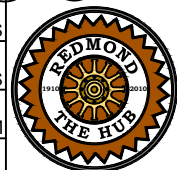
JWS

APPROVED BY:

JNM

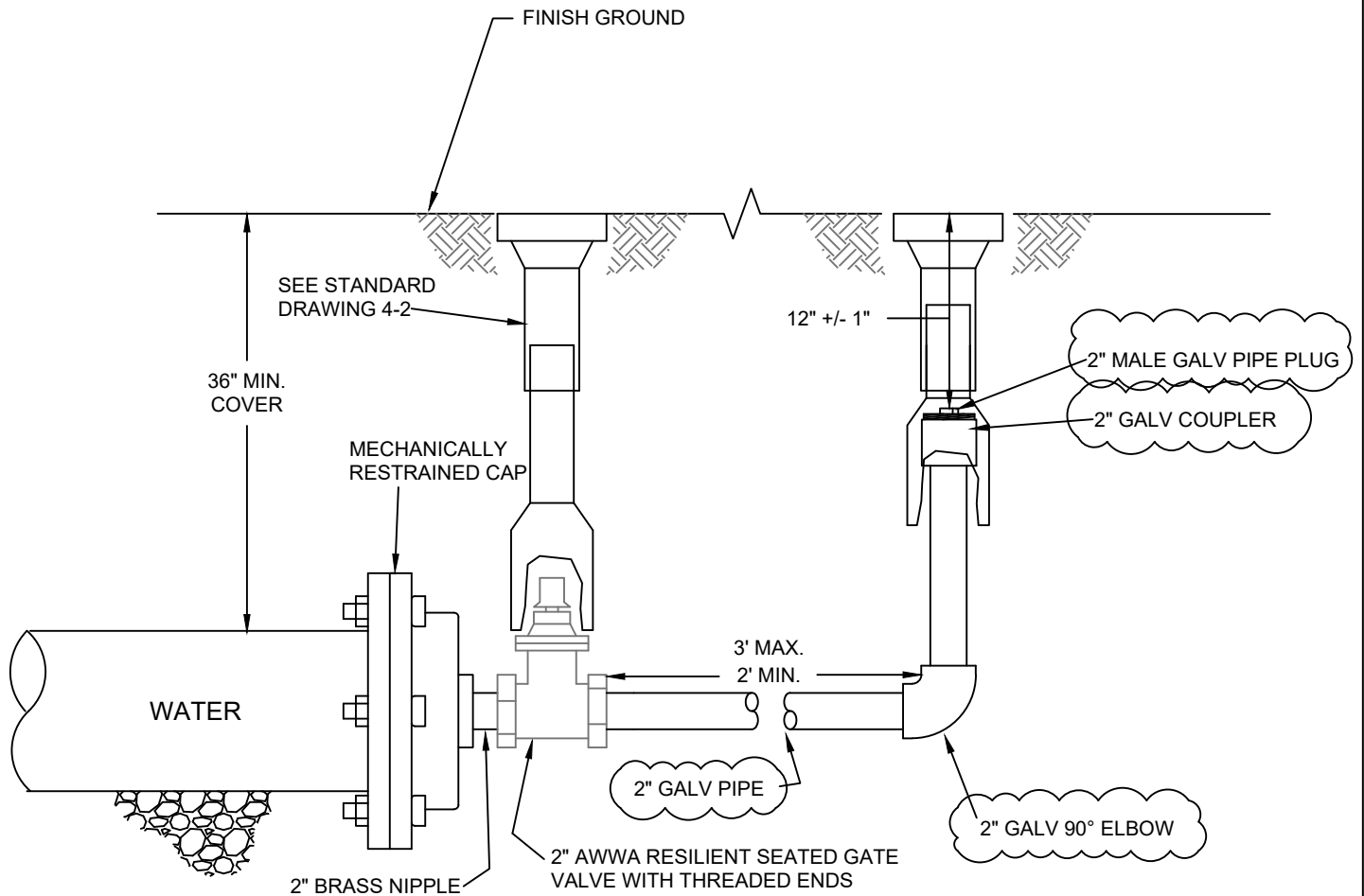
DATE:

04/13/2023

STANDARD
DRAWING
NO.**4-23**

WATER

G:\ENGINEER\2010STANDARDS&SPEC\2022 REVISIONS (WORKING)\STANDARD DETAIL SECTION 4 WATERCAD UPDATED\COR 4-24 2023.DWG



2" BLOW OFF DETAIL

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL 2" BLOW OFF INSTALLATION

SCALE:

NTS

DRAWING BY:

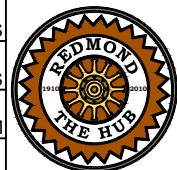
JWS

APPROVED BY:

JNM

DATE:

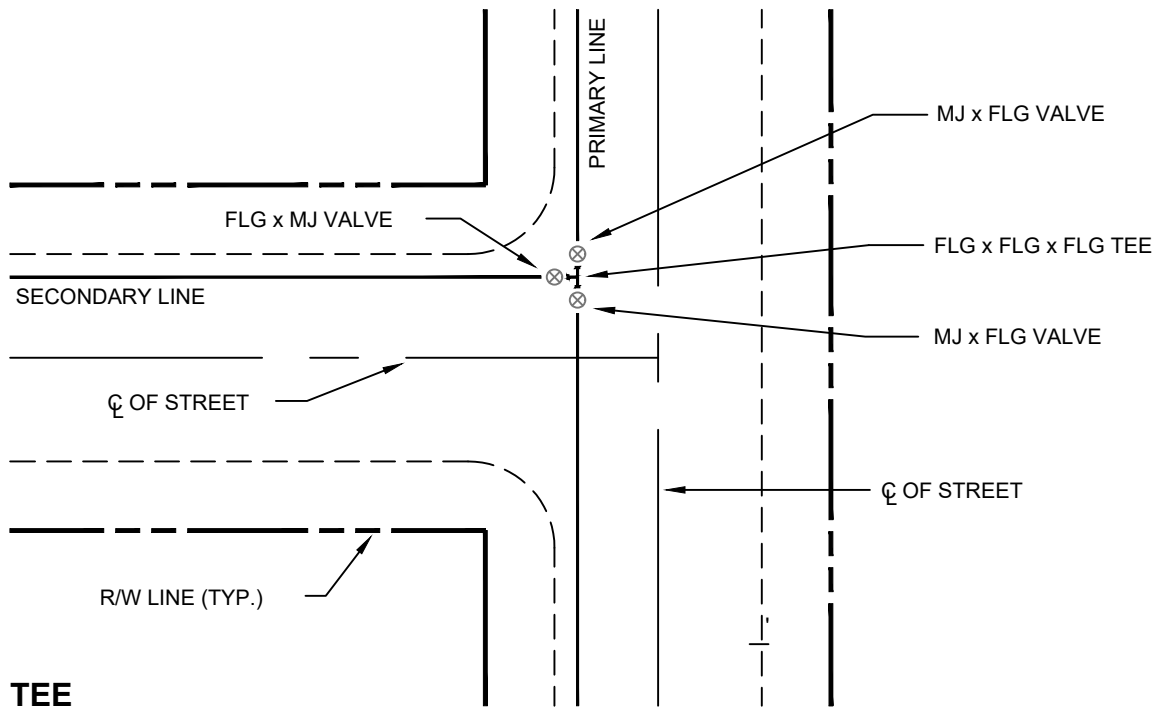
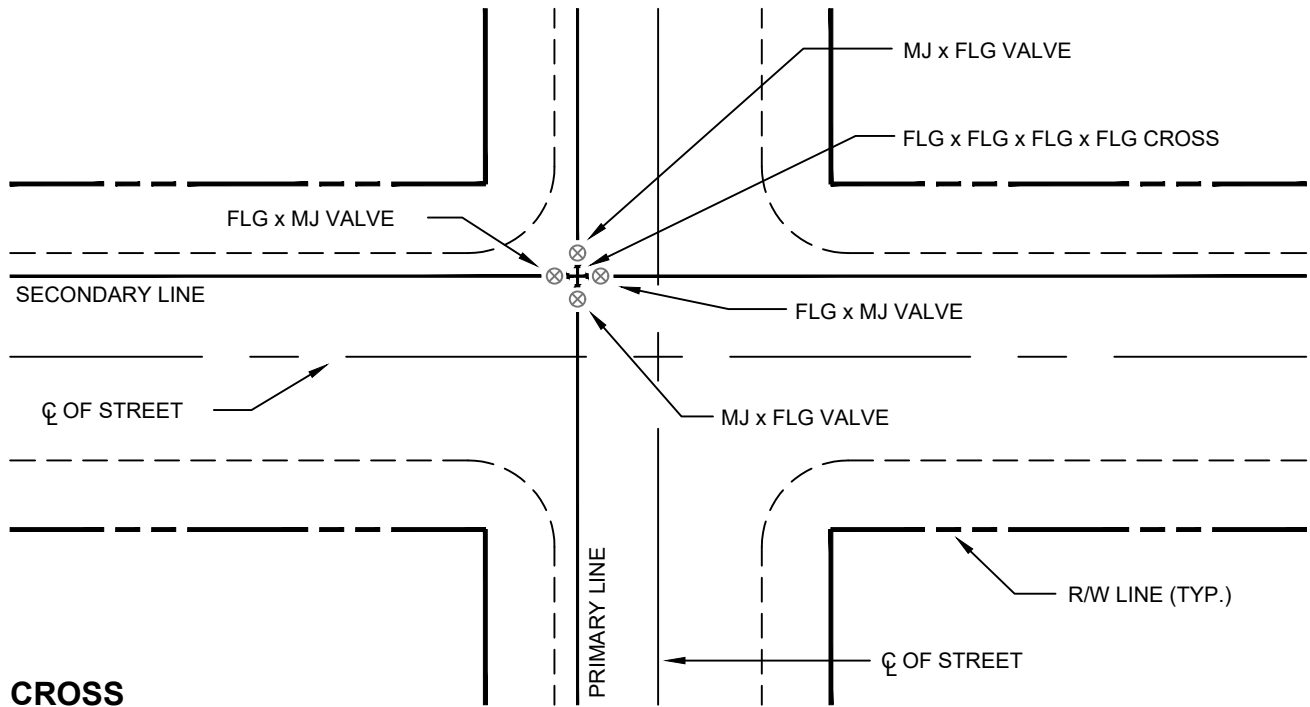
04/13/2023



STANDARD
DRAWING
NO.

4-24

WATER



CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TYPICAL WATER LINE INTERSECTION CONNECTIONS

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

04/13/2023



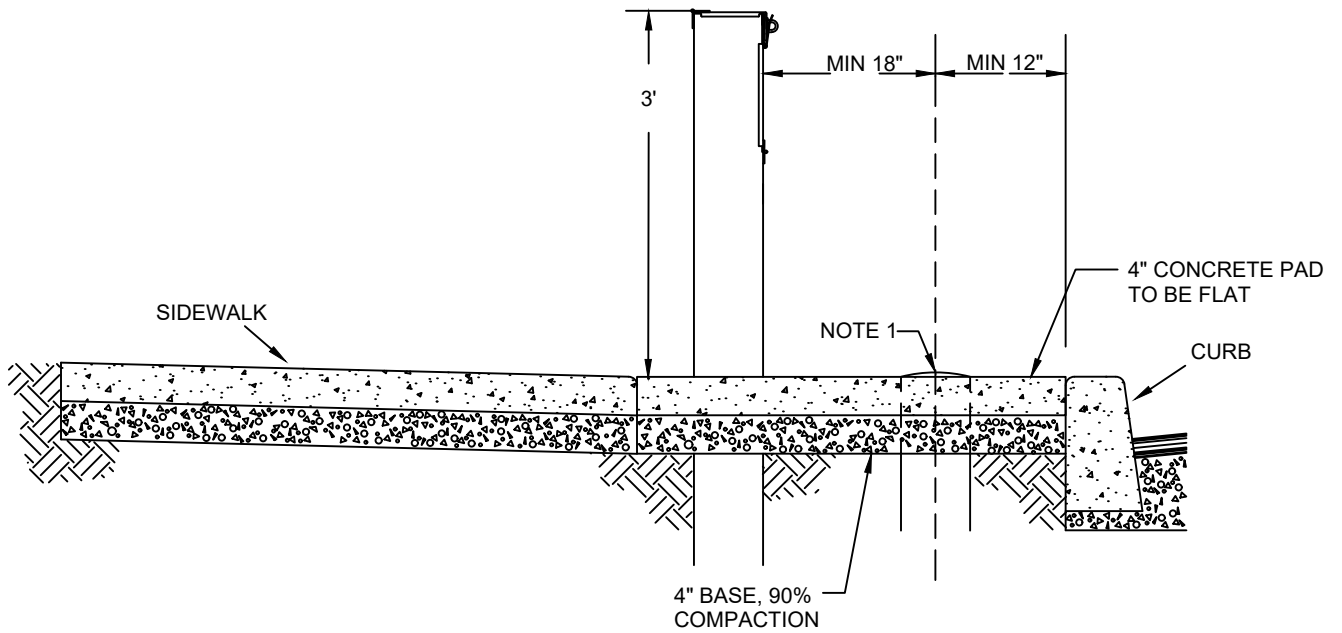
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4-25

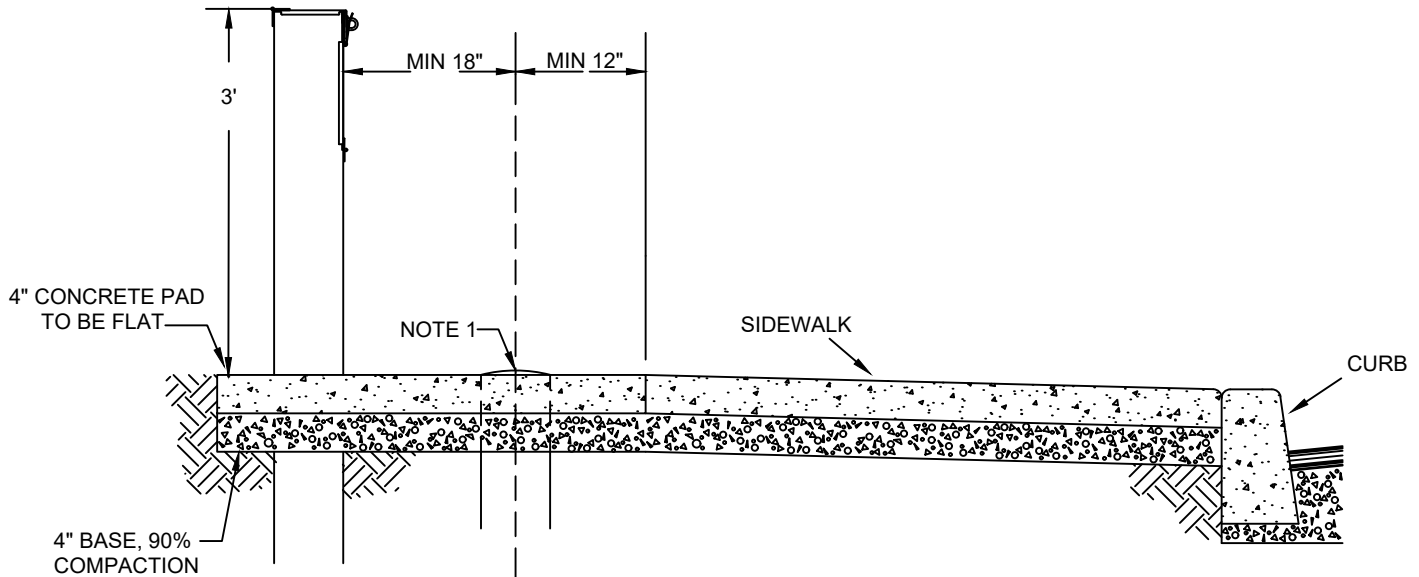
WATER

1. CITY OF REDMOND WATER DIVISION REQUIRES A WATER SAMPLING STATION SUCH AS THE KUPERLE FOUNDRY COMPANY, MODEL #66 SAMPLING STATION, OR APPROVED EQUAL..
2. SAMPLING STATION SHALL BE 30" BURY, WITH A 3/4" FIP INLET, AND 7/16" UNTHREADED BLOW OFF AND SAMPLING BIBB.
3. STATION SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE 6" SQUARE ALUMINUM BOX WITH HINGED OPENINGS.
4. WHEN OPEN, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND ALL WATER FLOW SHALL PASS THRU AN ALL STAINLESS STEEL WATERWAY.
5. ALL WORKING PARTS SHALL BE OF STAINLESS STEEL AND SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING OR REPLACEMENT NEEDED.
6. A STAINLESS STEEL PET COCK WILL BE LOCATED BELOW THE SAMPLING BIB TO ALLOW PUMPING OF ANY WATER REMAINING INSIDE THE STATION TO INSURE NON-FREEZING.
7. INTERIOR OF SAMPLE STATION BOX FILLED TO JUST BELOW PET COCK WITH 3/8" PEA GRAVEL.
8. VALVE BOX PER STANDARD DRAWING 4-2.
9. 3/4" F.I.P. BALL VALVE.
10. 3/4" STAINLESS STEEL NIPPLE.

Page 318 of 334



PROPERTY-TIGHT SIDEWALK



CURB-TIGHT SIDEWALK

NOTES:

1. VALVE BOX PER STANDARD DRAWING 4-2.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD SAMPLING STATION SET BACKS

SCALE:

NTS

DRAWING BY:

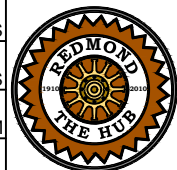
JWS

APPROVED BY:

JNM

DATE:

04/13/2023



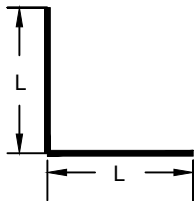
STANDARD
DRAWING
NO.

4-27

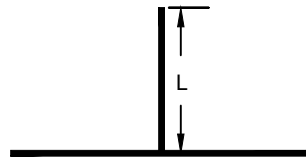
WATER

LENGTH OF HORIZONTAL RESTRAINED PIPE

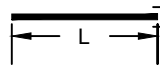
	PIPE SIZE	4"	6"	8"	12"	16"	18"	24"
FITTING TYP								
TEE/CROSS		40'	40'	40'	45'	60'	40'	100'
90° BEND		40'	40'	40'	40'	40'	40'	40'
45° BEND		40'	40'	40'	40'	40'	40'	40'
22.5° BEND		40'	40'	40'	40'	40'	40'	40'
11.25° BEND		40'	40'	40'	40'	40'	40'	40'
CAP		40'	40'	44'	61'	78'	98'	126'



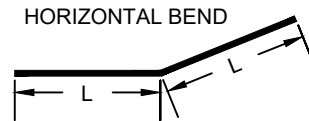
90° BEND



TEE



CAP



HORIZONTAL BEND



VERTICAL BEND

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED.
2. ALL T-BOLTS SHALL BE COR-BLUE, ALL OTHER BOLTS SHALL BE STAINLESS STEEL.
3. WHEN REDUCERS ARE USED AT FITTINGS, THE LENGTH OF RESTRAINED PIPE SHALL BE BASED ON THE LARGER PIPE SIZE.
4. BASED ON DUCTILE IRON PIPE @ 150 PSI, S.F.=2, SOIL TYPE GW.
5. DESIGN ENGINEER MAY SUBMIT CALCULATIONS FOR VARYING CONDITIONS.
6. AT LEAST TWO FULL PIPE JOINTS MUST BE RESTRAINED.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD DUCTILE IRON PIPE RESTRAINED LENGTH TABLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

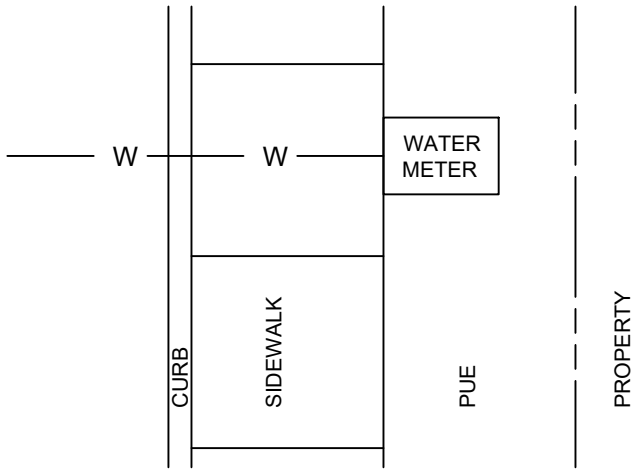
04/13/2023



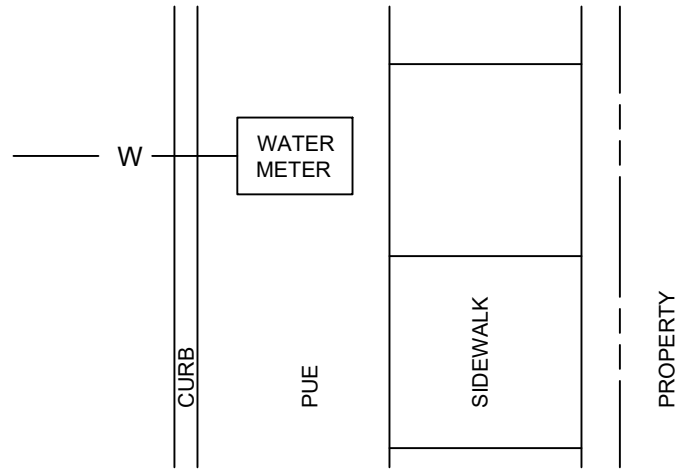
STANDARD
DRAWING
NO.

4-28

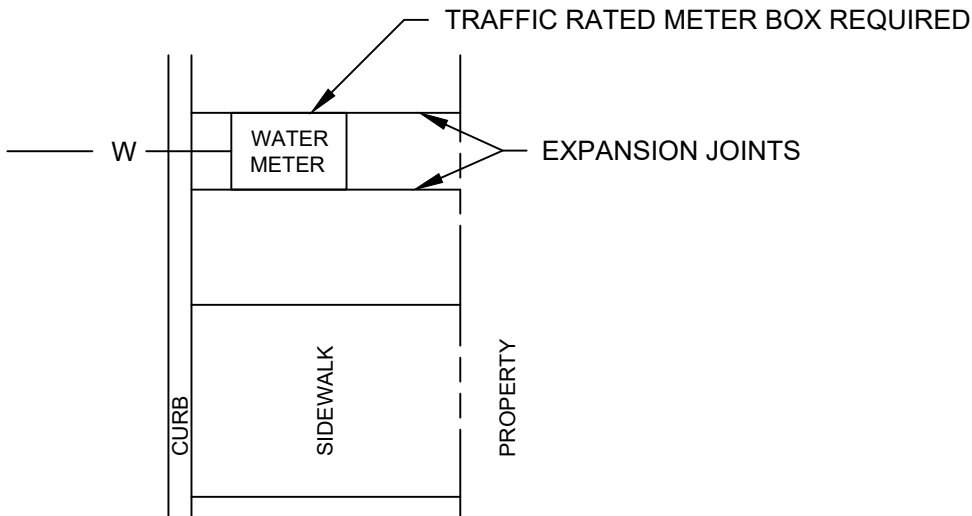
WATER



**CURB TIGHT SIDEWALK
METER LOCATION**



**PROPERTY TIGHT SIDEWALK
METER LOCATION**



**IN SIDEWALK METER
LOCATION**

REQUIRES CITY ENGINEER
APPROVAL

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL WATER METER
INSTALLATION LOCATION**

SCALE:

NTS

DRAWING BY:

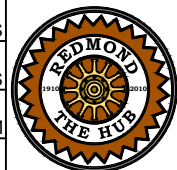
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JNM

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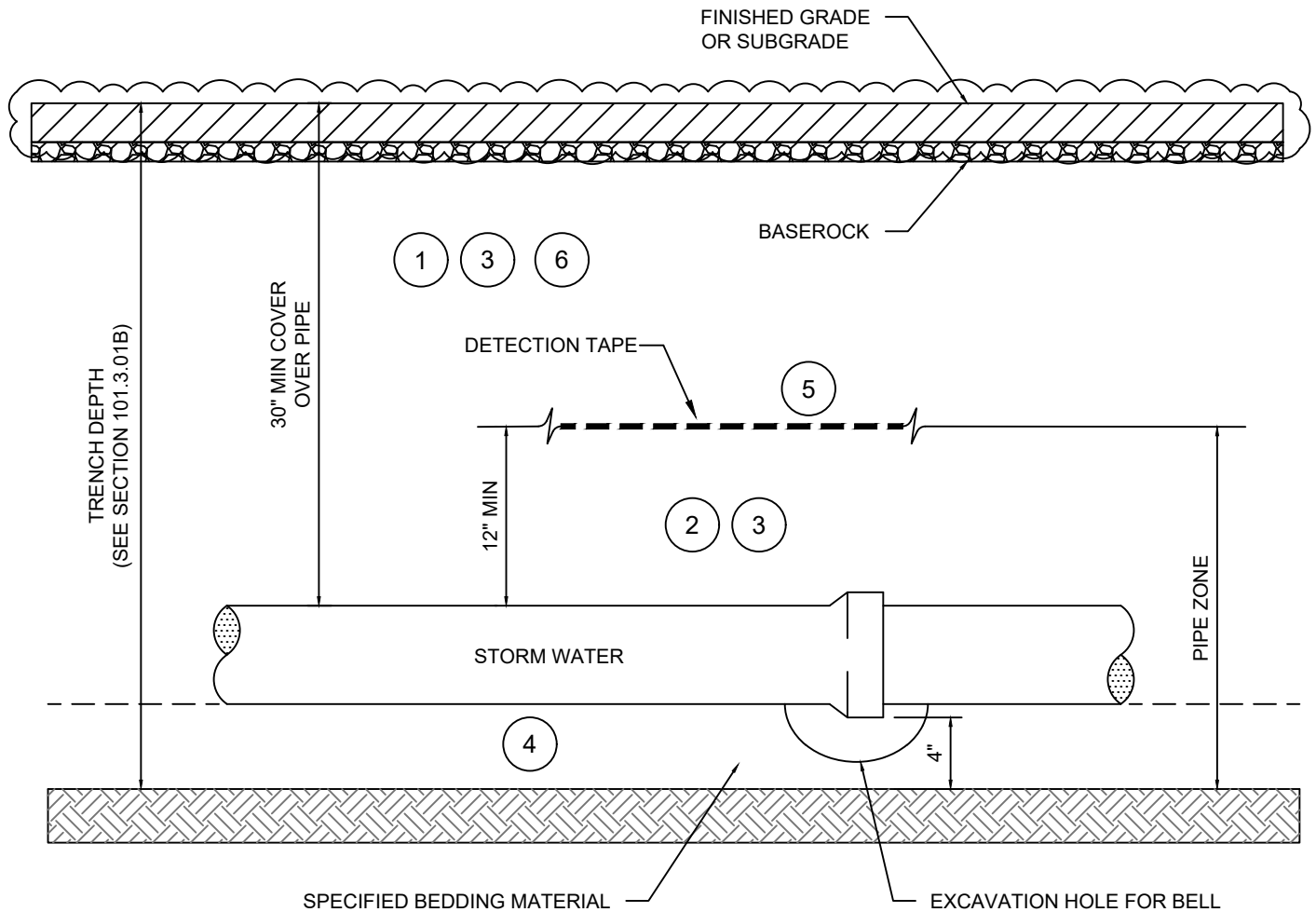
05/25/2023



STANDARD
DRAWING
NO.

4-29

WATER



NOTES:

1. CLASS "B" BACKFILL COMPACTED TO 95% OF AASHTO T-99.
2. SPECIFIED PIPE ZONE MATERIAL ABOVE, AROUND, AND BELOW PIPE SHALL BE COMPACTED TO 95% IF AASHTO T-99.
3. THE ENGINEER MAY REQUIRE THIS ZONE TO BE WATER SETTLED TO PROVE THE INTEGRITY OF THE BACKFILL.
4. PIPE BEDDING SHALL BE CLASS "B" MEETING THE REQUIREMENTS OF SECTION 101.2.01 AND SHALL BE MECHANICALLY COMPACTED TO 95% OF MAXIMUM AS DETERMINED BY AASHTO T-99.
5. DETECTION TAPE TO BE LOCATED AT TOP OF PIPE ZONE, 12" ABOVE THE PIPE.
6. FOR TRENCHES DEEPER THAN 6 FEET, BACKFILL MAY BE CLASS A (SECTION 101.2.02A) FROM 2' ABOVE TOP OF PIPE TO SUBGRADE. WITH APPROVAL OF CITY ENGINEER, CLASS D BACKFILL MAY BE USED OUTSIDE OF ROADWAY AREA (SECTION 101.2.02D) FROM 3' ABOVE TOP OF PIPE TO SUBGRADE FOR TRENCHES DEEPER THAN 9'.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**PROFILE OF TYPICAL
STORM WATER MAIN
INSTALLATION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

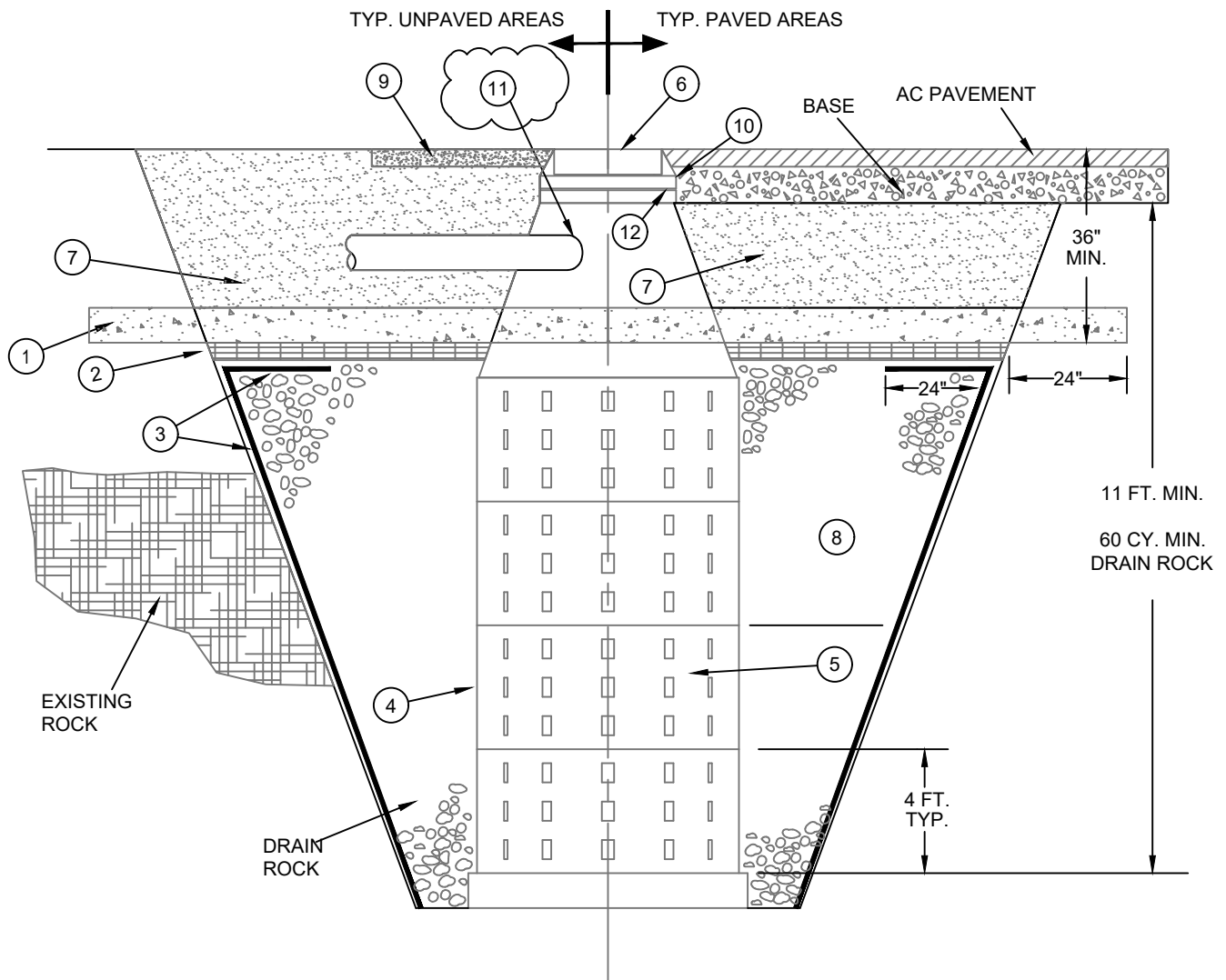
10/22/2022



STANDARD
DRAWING
NO.

5-1

STORM WATER



NOTE:

SEE ALSO THE CITY OF REDMOND STANDARDS AND SPECIFICATIONS FOR DESIGN CRITERIA.

1. 6" CONCRETE CAP CL 3000, REQUIRED TO 24" BEYOND DRAIN ROCK. IF IN EXISTING ROCK, 24" CAP NOT REQUIRED.
2. ~~MOISTURE BARRIER - 2 LAYERS OF 4 MIL. POLYETHYLENE ON ALL INSTALLATIONS.~~
3. LINE ALL EXCAVATION SIDEWALLS WITH GEOTEXTILE FILTER FABRIC TO PREVENT SUBSIDENCE. OVER LAP 24" WITH MOISTURE BARRIER.
4. LINE INSIDE OF PERFORATED BARREL WITH HEAVY WEIGHT VINYL SCREEN, SUCH AS "FULLFLOW VINYL SCREEN (a0706)". TOP AND BOTTOM OF SCREEN SHALL BE ATTACHED TO BARREL WALL. INLET PIPE SHALL BE EXTENDED THROUGH THE SCREEN.
5. PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478. CONCRETE SHALL BE CL - 3300, AIR ENTRAINED CONCRETE.
6. SEE STANDARD DRAWING 5-3 FOR FRAME AND COVER.
7. CLASS "B" BACKFILL COMPACTED TO 95% OF AASHTO T-99.
8. DRAIN ROCK SHALL CONSIST OF CLEAN 6" - 2" HARD CINDER, RIVER ROCK, CRUSHED OR PIT RUN AGGREGATE CONTAINING LITTLE OR NO FINES.
9. WHEN DRY WELL IS LOCATED OUTSIDE OF PAVED AREAS, PROVIDE A 6" THICK CONCRETE PAD, 5' x 5' SQUARE CENTERED ON THE MANHOLE LID.
10. DRY WELLS DRAIN ROCK SHALL NOT BE LOCATED IN PUBLIC STREET SECTION UNLESS APPROVED BY CITY OF REDMOND ENGINEER, AND IF APPROVED, SHALL USE AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFR-RISER, OR APPROVED EQUAL, IS USED TO ADJUST DRY WELL FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATION BETWEEN INFRA-RISER RINGS, DRY WELL FRAME AND CONCRETE GRADE RINGS.
11. INLET / OUTLET PIPE SHALL NOT EXTEND INTO DRY WELL MORE THAN 1'-4".
12. GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF DRY WELL MEETING THE REQUIREMENTS OF SECTION 306.3.02B.
13. MAXIMUM CHIMNEY HEIGHT IS 18" BETWEEN TOP OF CONE AND BOTTOM OF LID FRAME.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD PRE-CAST DRYWELL

SCALE:

NTS

DRAWING BY:

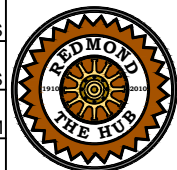
JWS

APPROVED BY:

JNM

DATE:

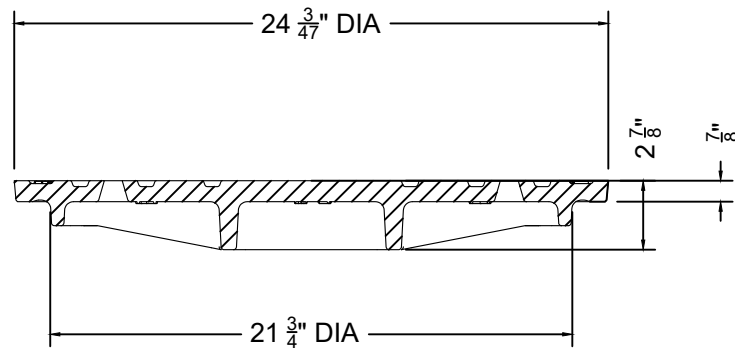
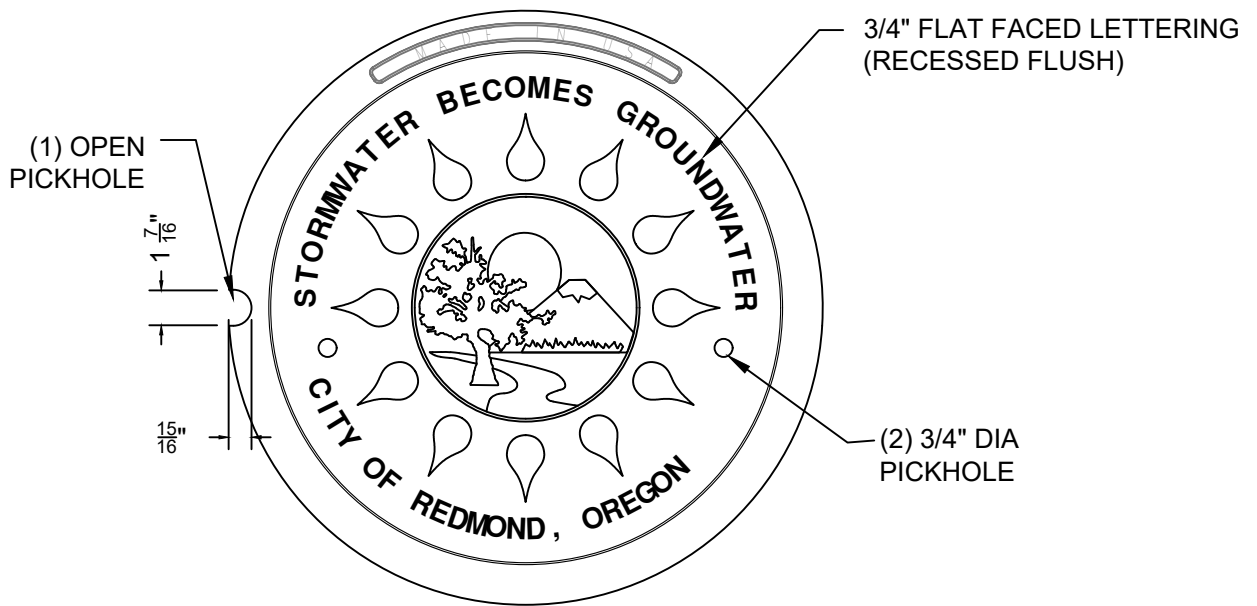
10/22/2022



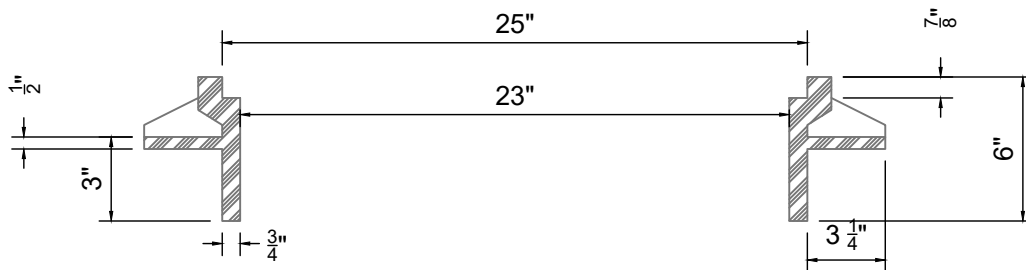
STANDARD DRAWING NO.	
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5-2

STORM WATER



SECTION



NOTES:

1. AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, SHALL BE USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE IN PUBLIC STREETS.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STORMWATER ACCESS LID

SCALE:

NTS

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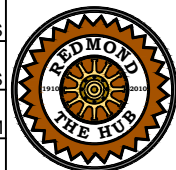
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JNM

DATE:

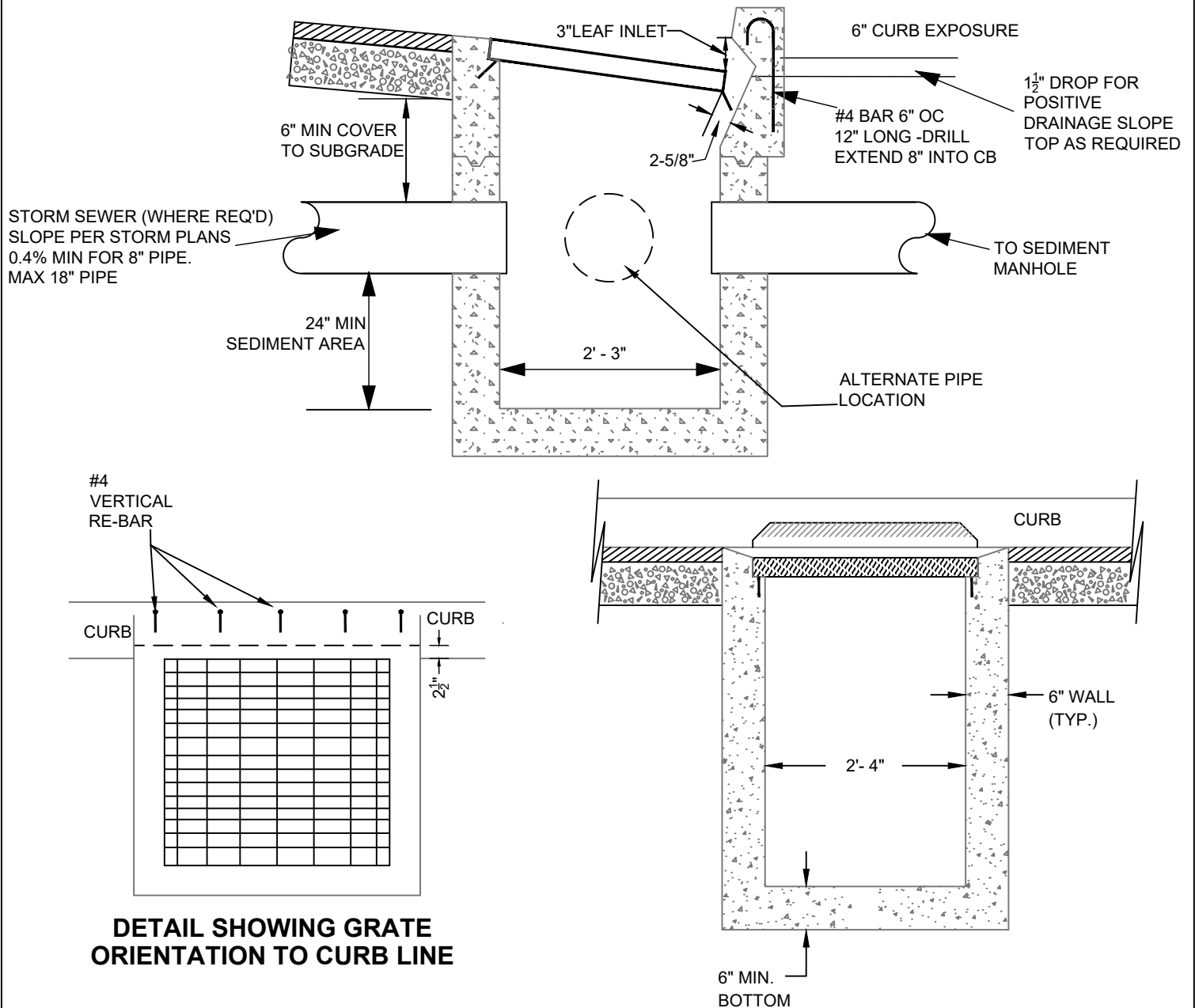
10/22/2022



STANDARD
DRAWING
NO.

5-3

STORM WATER



**DETAIL SHOWING GRATE
ORIENTATION TO CURB LINE**

NOTES:

1. PRECAST CATCH BASINS ARE PREFERRED. CAST IN-PLACE CATCH BASINS ARE ALLOWED WITH CITY ENGINEER APPROVAL ONLY. AS A CONDITION OF EXCEPTION TO THE PRE-CAST STANDARDS, INTERIOR AND EXTERIOR FORMS ARE REQUIRED TO ENSURE CATCH BASIN WALLS ARE UNIFORM 6" THICK WALLS.
2. PRECAST CATCH BASINS MUST BE CORED FOR PIPE ENTRY, (MAXIMUM 1" CLEARANCE).
3. BACKFILL SHALL BE PLACED IN LIFTS TO FACILITATE THE REQUIRED COMPACTION OF 95% OF OPTIMUM AASHTO T-99.
4. WATER JETTING OF BACKFILL MATERIAL AROUND CATCH BASIN IS REQUIRED.
5. DURING CONSTRUCTION, FILTER MATERIAL, PLANKING, OR OTHER ACCEPTABLE MEANS SHALL BE USED TO COVER CATCH BASINS UNTIL PROJECT IS ACCEPTED.
6. CATCH BASIN FRAME AND GRATE TO BE RECESSED INTO CURB AS SHOWN.
7. GROUT ALL PIPES INSIDE AND OUTSIDE OF STRUCTURE.
8. INLET / OUTLET PIPE SHALL NOT PROTRUDE MORE THAN 2" INTO CATCH BASIN.
9. WALLS AND FLOORS TO BE WITHIN 2" OF FLAT PLANE.
10. CLEARANCE OF WATER MAIN TO INSIDE WALL OF A CATCH BASIN SHALL BE NOT LESS THAN 30".

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**STANDARD C-G2
CATCH BASIN**

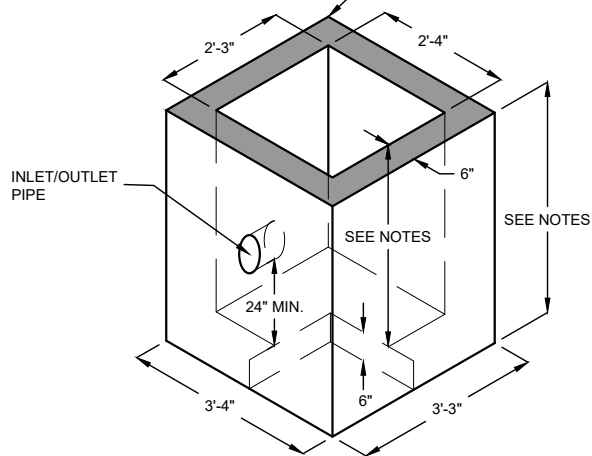
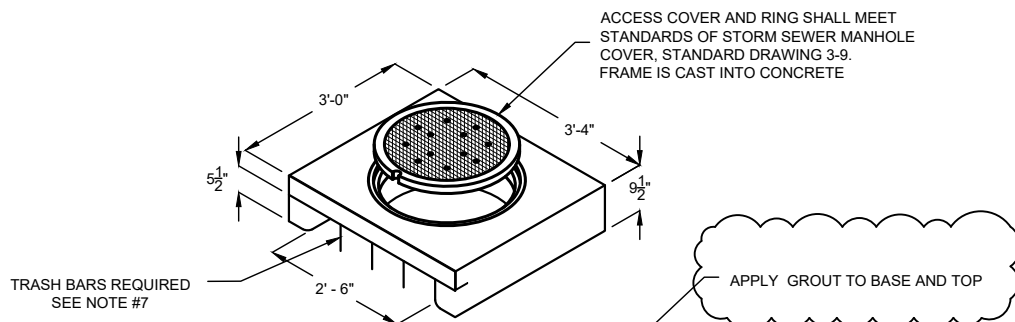
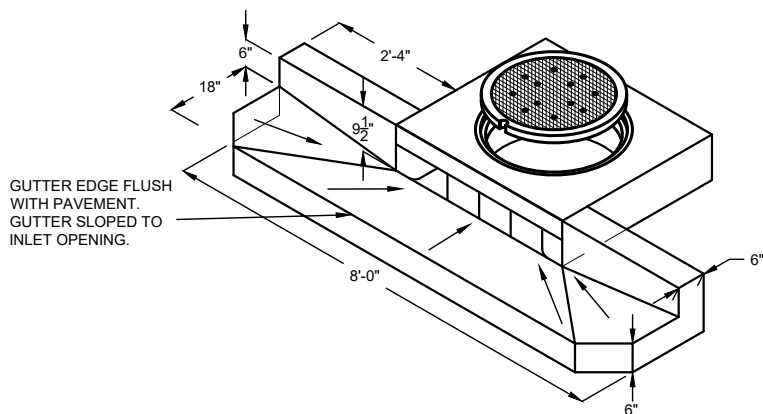
SCALE: NTS
DRAWING BY: JWS
APPROVED BY: JNM
DATE: 10/22/2022



STANDARD
DRAWING
NO.

5-4

STORM WATER



NOTES:

1. CURB INLET TOP IS PRECAST WITH STANDARD CITY OF REDMOND STORM WATER LID.
2. CURB INLET BASE PRECAST IS PREFERRED. CAST-IN-PLACE ARE ALLOWED WITH CITY ENGINEER APPROVAL ONLY. AS A CONDITION OF EXCEPTION TO THE PRE-CAST STANDARDS, INTERIOR AND EXTERIOR FORMS ARE REQUIRED TO ENSURE CATCH BASIN WALLS ARE UNIFORM 6" THICK WALLS.
3. CONCRETE SHALL BE CLASS 3000.
4. DEPTH OF VAULT IS 30" + PIPE DIAMETER + PAVING SECTION
5. DEPTH OF SUMP IS MINIMUM OF 24" MEASURED FROM INVERT OF PIPE.
6. INLET AND OUTLET PIPE OPENINGS TO BE GROUT SEALED
7. TRASH BARS MIN. 3/8" DIAMETER HOT DIPPED GALVANIZED STEEL.
8. INLET / OUTLET PIPE SHALL NOT PROTRUDE MORE THAN 2" INTO CATCH BASIN.
9. WALLS AND FLOORS TO BE WITHIN 2" OF FLAT PLANE.
10. PRECAST CATCH BASINS SHALL BE CORED FOR PIPE ENTRY, MAXIMUM 1" CLEARANCE.
11. CLEARANCE OF WATER MAIN TO INSIDE WALL OF A CATCH BASIN SHALL BE NOT LESS THAN 30".

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

CURB INLET CATCH BASIN

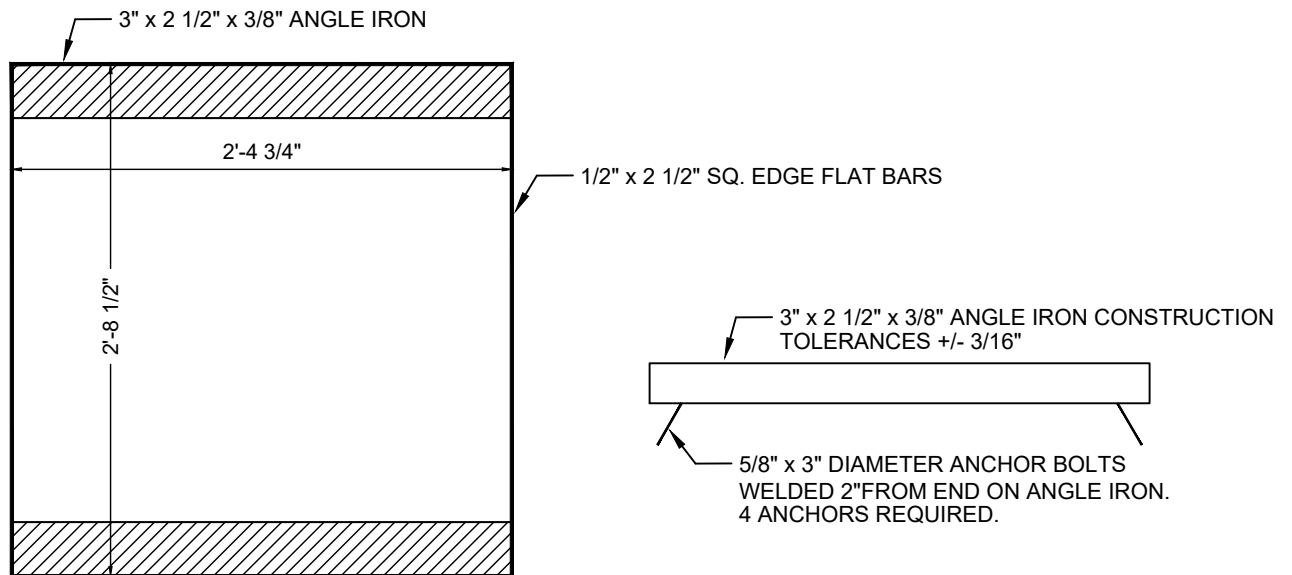
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DRAWING BY: JWS
APPROVED BY: JNM
DATE: 10/22/2022



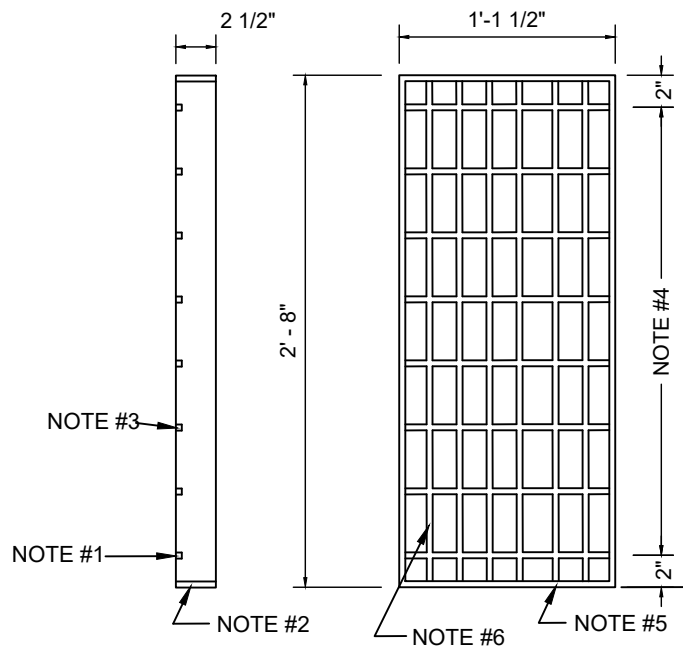
STANDARD
DRAWING
NO.

5-5

STORM WATER



FRAME GRATE



NOTES:

1. TYPICAL ALL BARS 3/16" WELDED ALL AROUND.
2. 3/16" WELDED TYPICAL BOTH ENDS, OUTER BARS AND EVERY THIRD INNER BAR.
3. CROSS BARS 3/8" ROUND, RECTANGLE, OR HEXAGONAL BAR OF EQUIVALENT AREA, WELD ALL AROUND.
4. 8 BARS ON 4" CENTERS
5. 3/8" x 2 1/2" FLAT BAR EACH END.
6. 3/8" x 2 1/2" FLAT BARS AT 1 7/8" ON CENTER.
7. 3/8" CROSS BARS SHALL BE FLUSH WITH GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELETROFORGED TO BEARING BARS.
8. DUCTILE IRON GRATE AND FRAME ARE ACCEPTABLE ALTERNATES.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STANDARD CATCH BASIN FRAME AND GRATE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

10/22/2022



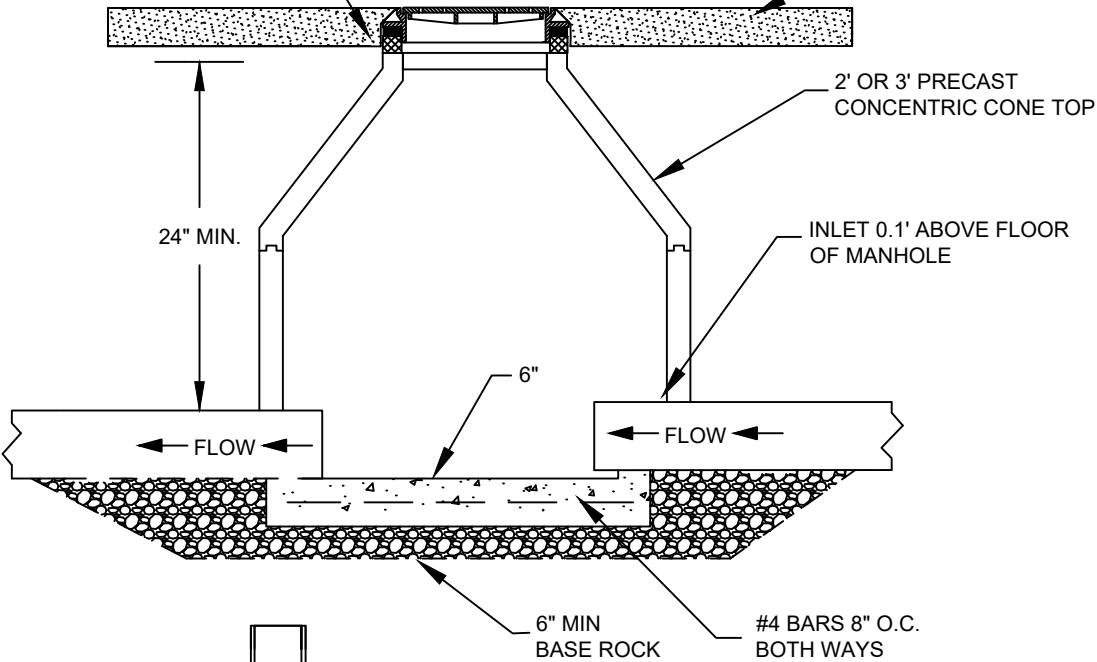
STANDARD
DRAWING
NO.

5-6

STORM WATER

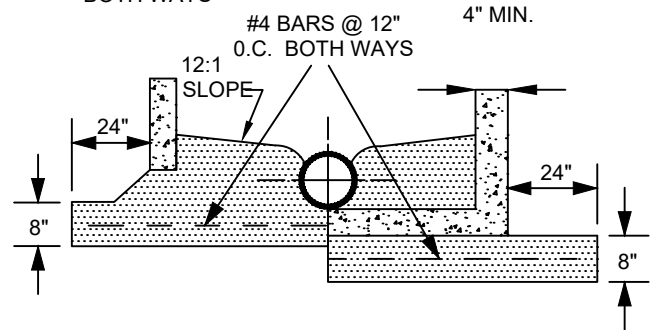
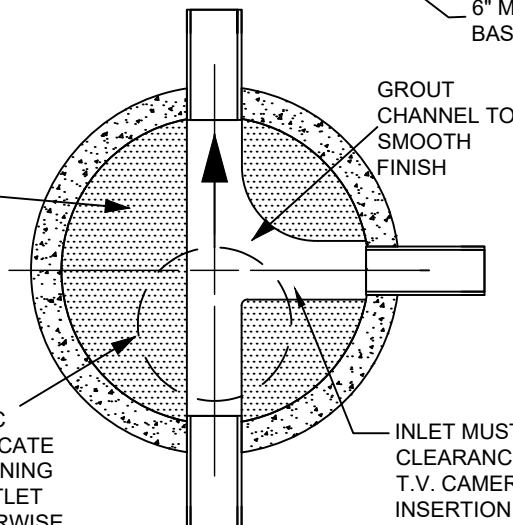
PRECAST GRADE RINGS, 3", 4" 6"
MAX. HEIGHT- 18"
SEE NOTE #6

SEE NOTE #4



FINISH SHELF
TO EVEN SLOPE
BROOM FINISH
TO DRAIN TO
CHANNEL

ON ECCENTRIC
MANHOLES LOCATE
MANHOLE OPENING
OPPOSITE OUTLET
UNLESS OTHERWISE
DIRECTED (NOTE 1)



POURED IN PLACE MANHOLE BASE

- NOTE:**
1. ALL MANHOLE CONES SHALL BE CONCENTRIC , UNLESS CITY ENGINEER APPROVES USE OF ECCENTRIC OR FLAT TOP LID.
 2. ALL STORM SYSTEMS WILL BE TV TESTED BEFORE BEING ACCEPTED.
 3. ALL MANHOLES IN TRAFFIC AREAS, SHALL USE AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, IS USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATIONS BETWEEN INFRA-RISER RINGS, MANHOLE FRAME AND CONCRETE GRADE RINGS.
 4. THE INVERT FILL SHALL BE TRUE TO THE SEWER PIPE INVERT ELEVATIONS, WITH SMOOTH CHANNELS OF UNIFORM CROSS SECTION AND SLOPE, EITHER STRAIGHT OR WITH A CONTINUOUS CURVE BETWEEN INLET AND OUTLET PIPES.
 5. ALL MANHOLES OUTSIDE OF PAVED AREAS SHALL HAVE A 6" THICK CONCRETE PAD, 5' x 5' SQUARE CENTERED ON THE MANHOLE LID.
 6. MANHOLE SIZE SHALL BE 48" DIAMETER WITH 1', 2', 3' OR 4' BARREL SECTIONS. 60" DIAMETER BARREL SECTIONS FOR 18" PIPES OR GREATER.
 7. GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF MANHOLE MEETING THE REQUIREMENTS OF SECTION 306.3.02B.
 8. CLEARANCE OF WATER MAIN TO INSIDE WALL OF A STORM SEWER MANHOLE SHALL BE NOT LESS THAN 30"

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STORM SEWER MANHOLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

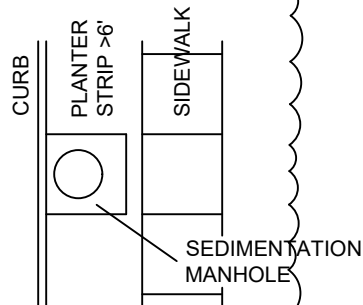
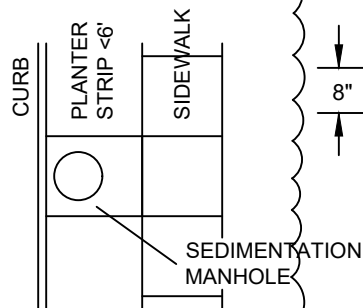
10/22/2022



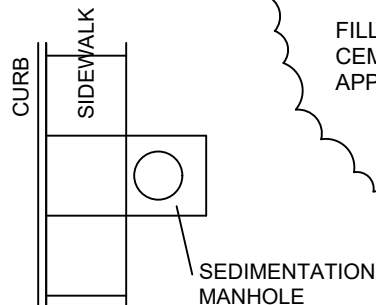
STANDARD
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5-7

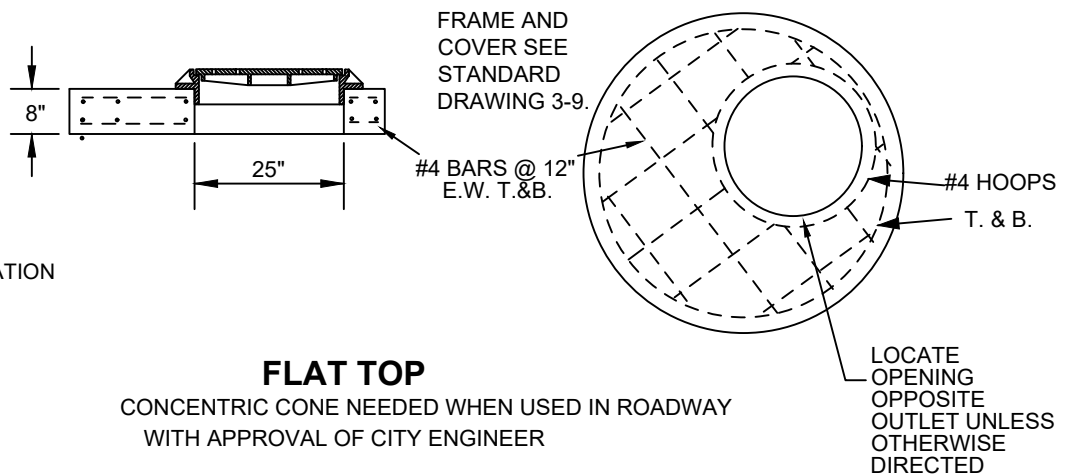
STORM WATER



PLAN VIEW PROPERTY TIGHT SIDEWALK



PLAN VIEW CURB TIGHT SIDEWALK



NOTES:

- ALL MANHOLES OUTSIDE OF PAVED AREAS SHALL HAVE A 6" THICK CONCRETE PAD, 5' x 5' SQUARE CENTERED ON THE MANHOLE LID OR EXTENDED BETWEEN CURB AND SIDEWALK WHEN WITHIN 6'.
- ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF ASTM C-478.
- ALL LADDER RUNG HOLES SHALL BE GROUT FILLED.
- ALL MANHOLES IN TRAFFIC AREAS, SHALL USE AN ADJUSTMENT SYSTEM SUCH AS EAST JORDAN IRON WORKS INFRA-RISER, OR APPROVED EQUAL, IS USED TO ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE. USE TAPERED RINGS AS NECESSARY. PROVIDE MASTIC PER MANUFACTURER'S RECOMMENDATION BETWEEN INFRA-RISER RINGS, MANHOLE FRAME AND CONCRETE GRADE RINGS.
- GROUT SHALL BE APPLIED BETWEEN RISERS AND TOP OF MANHOLE MEETING THE REQUIREMENTS OF SECTION 306.3.02B.
- 8" TEE WITH MECHANICAL PLUG OR ALTERNATIVE SUCH AS THE SNOOT OR APPROVED EQUAL.
- MUST PROVIDE 2' DIAMETER CLEARANCE AREA FROM BELOW THE LID TO THE BOTTOM OF THE MANHOLE, UNENCUMBERED BY PIPES OR FITTINGS, TO ALLOW FOR MANHOLE CLEANING.
- MAXIMUM CHIMNEY HEIGHT IS 18"
- CLEARANCE OF WATER MAIN TO INSIDE WALL OF SEDIMENTATION MANHOLE SHALL BE NOT LESS THAN 30".

TYPICAL SECTION

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

SEDIMENTATION MANHOLE

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

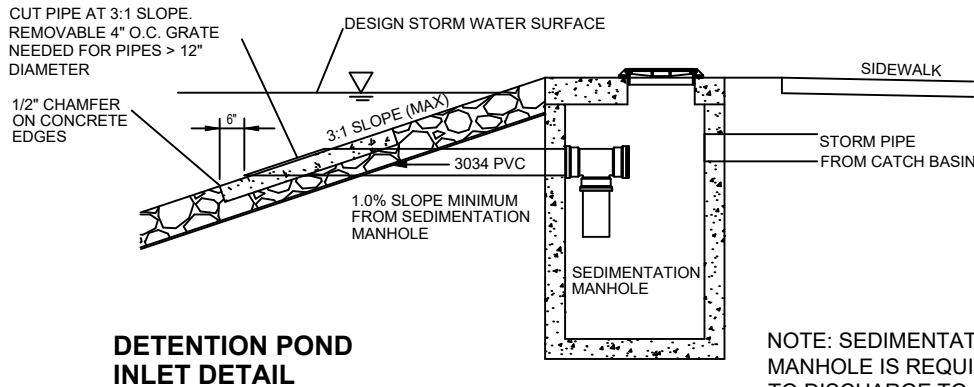
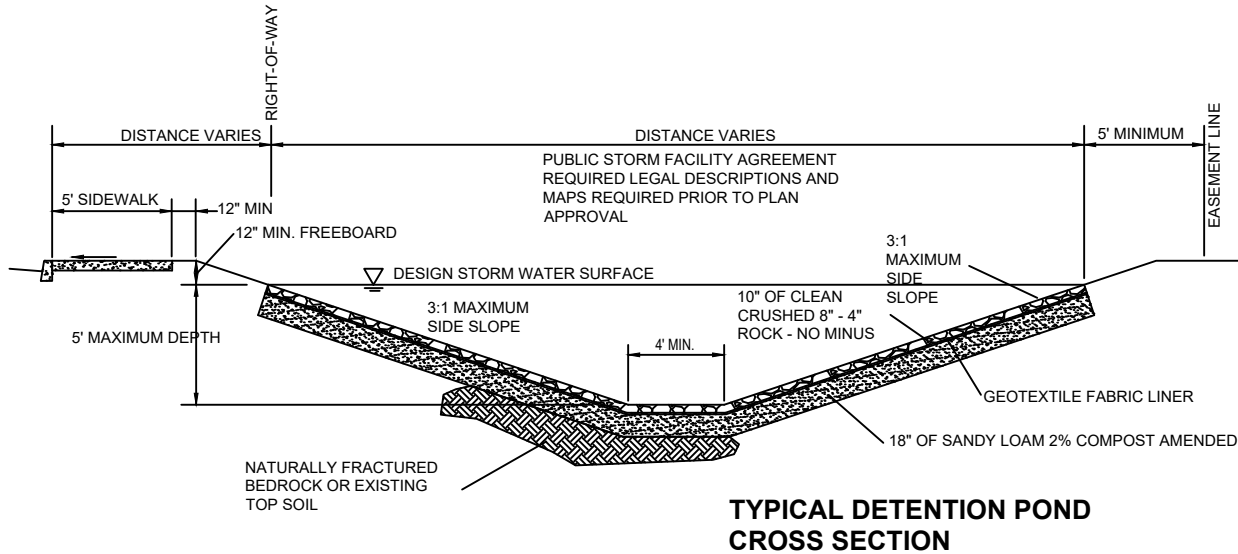
DATE:

10/22/2022

STANDARD
DRAWING
NO.

5-8

STORM WATER



NOTE: SEDIMENTATION MANHOLE IS REQUIRED PRIOR TO DISCHARGE TO DETENTION POND, SWALE OR DRYWELL SEE STANDARD DETAIL 3-15

GENERAL NOTES:

1. DETENTION PONDS SHALL BE DESIGNED FOR VOLUME OF A 24HR/25 YR (1.8") STORM EVENT, IF DETENTION POND DOES NOT HAVE AN OUTFALL TO DRY WELL. DETENTION PONDS WITH DRY WELL OUTFALL SHALL BE DESIGNED FOR A VOLUME OF A 24HR/2 YR (1") STORM EVENT.
2. LOCATION OF DRIVEWAYS AND UTILITIES SHALL BE SHOWN ON PLANS TO CONFIRM THAT NO CONFLICTS EXIST WITH DETENTION SWALES. NO UTILITIES, EXCEPT CROSSINGS ARE PERMITTED UNDER DETENTION BASINS.
3. 8"-4" CLEAN CRUSHED ROCK (NO FINES) SHALL BE APPROVED PRIOR TO PLACEMENT.
4. SANDY LOAM SOIL MEETING THE REQUIREMENTS OF SECTION 308.2.06 SHALL BE SUBMITTED AND APPROVED BY THE CITY OF REDMOND ENGINEER PRIOR TO PLACEMENT.
5. CONCRETE SHALL BE CLASS 3000 (SIX SACK MIX) AND CONTAIN NO ADDITIVES TO CAUSE RAPID SETTING, 4% - 7% AIR ENTRAINMENT REQUIRED.
6. LIGHT BROOM FINISH REQUIRED ON ALL CONCRETE FLAT WORK.
7. ALL INLET PIPES 12" OR GREATER SHALL HAVE A REMOVABLE GRATE. BARS SHALL BE 4" ON CENTER.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL STORM WATER
DETENTION POND SECTION**

SCALE: NTS

DRAWING BY: JWS

APPROVED BY: JNM

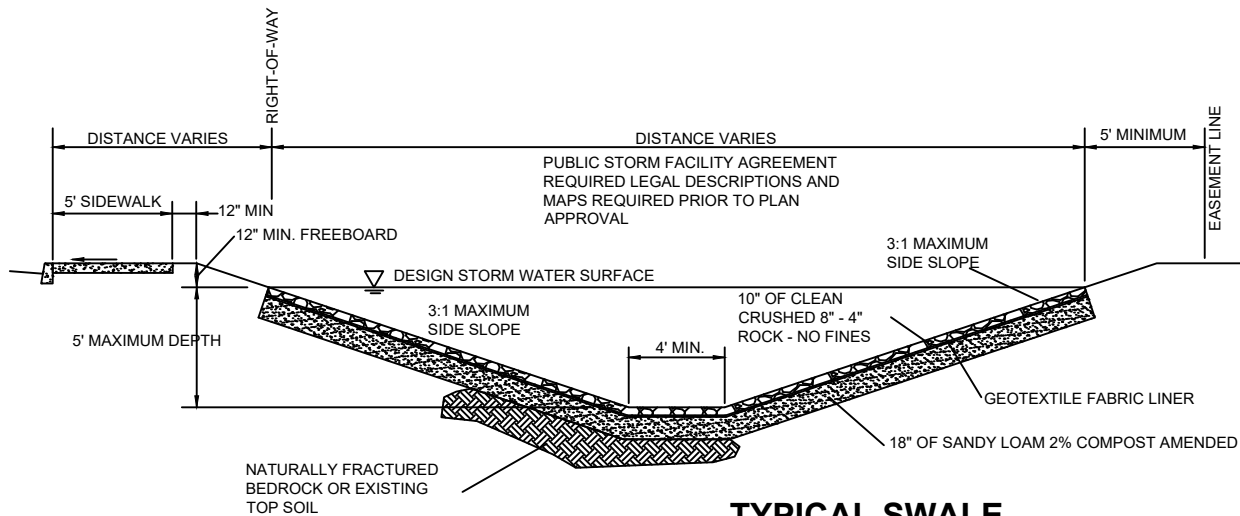
DATE: 10/22/2022



STANDARD
DRAWING
NO.

5-9

STORM WATER



**TYPICAL SWALE
CROSS SECTION**

GENERAL NOTES:

1. SWALE SHALL BE DESIGNED FOR VOLUME OF A 24HR/25 YR (1.8") STORM EVENT. IF DETENTION POND DOES NOT HAVE AN OUTFALL TO DRYWELL. DETENTION PONDS WITH DRYWELL OUTFALL SHALL BE DESIGNED FOR A VOLUME OF A 24HR/2 YR (1") STORM EVENT.
2. LOCATION OF DRIVEWAYS AND UTILITIES SHALL BE SHOWN ON PLANS TO CONFIRM THAT NO CONFLICTS EXIST WITH DETENTION SWALES. NO UTILITIES, EXCEPT CROSSINGS ARE PERMITTED UNDER DETENTION BASINS.
3. 8" - 4" CLEAN CRUSHED ROCK (NO FINES) SHALL BE APPROVED PRIOR TO PLACEMENT.
4. SANDY LOAM SOIL MEETING THE REQUIREMENTS OF SECTION 308.2.06 SHALL BE SUBMITTED AND APPROVE BY CITY OF REDMOND ENGINEER PRIOR TO PLACEMENT.
5. CONCRETE SHALL BE CLASS 3000 (SIX SACK MIX) AND CONTAIN NO ADDITIVES TO CAUSE RAPID SETTING, 4% - 7% AIR ENTRAINMENT REQUIRED.
6. LIGHT BROOM FINISH REQUIRED ON ALL CONCRETE FLAT WORK.
7. ALL INLET PIPES 12" OR GREATER SHALL HAVE A REMOVABLE GRATE. BARS SHALL BE 4" ON CENTER.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

**TYPICAL STORM SWALE
POND SECTION**

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

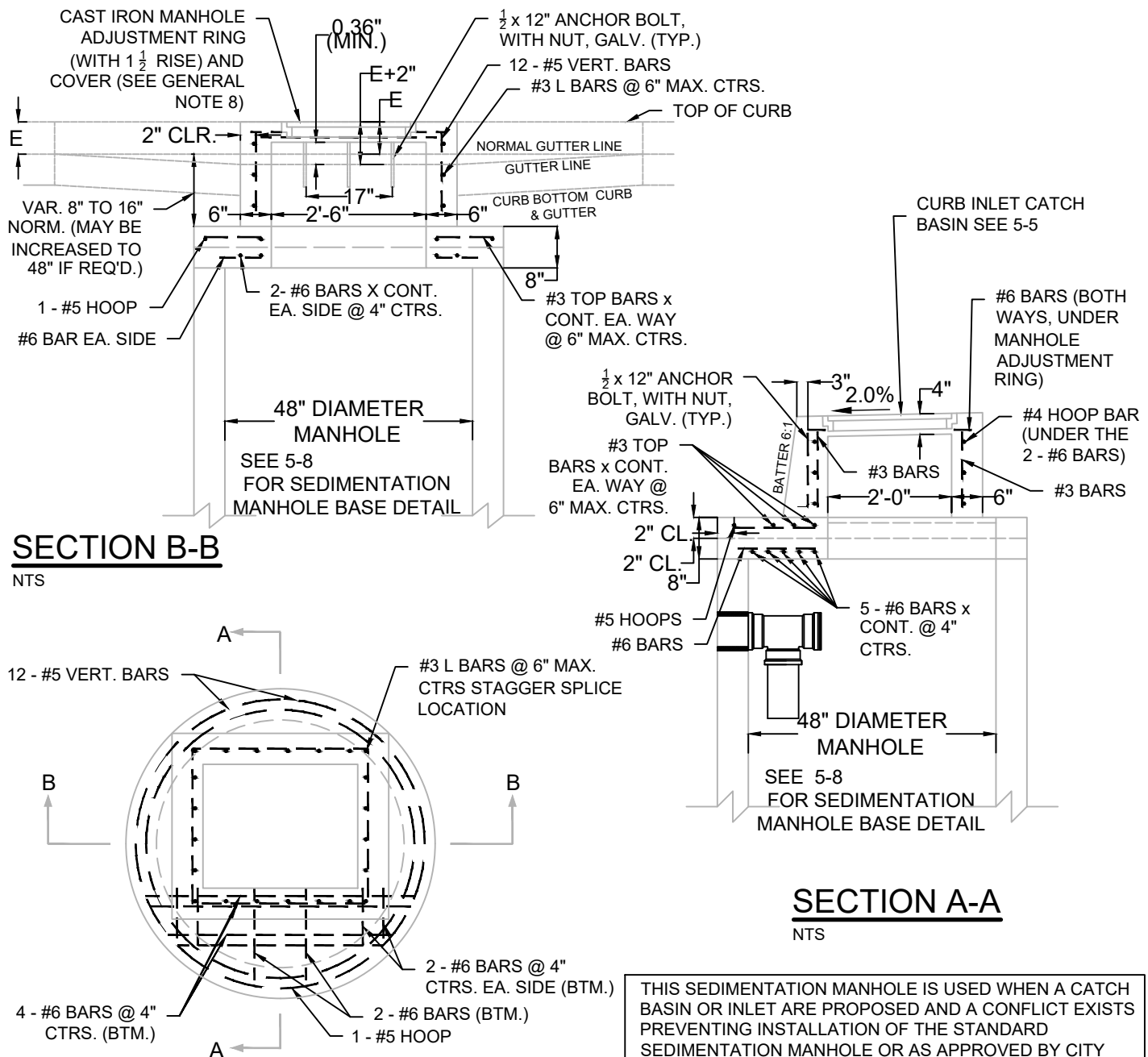
10/22/2022



STANDARD
DRAWING
NO.

5-10

STORM WATER



NOTES:

1. ALL REINFORCEMENT TO BE PLACED A MINIMUM OF 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS OTHERWISE SHOWN OR NOTED.
2. ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
3. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE.
4. INLET TOP MAY BE CAST-IN-PLACE OR PRECAST. ALL PRECAST INLETS SHALL CONFORM TO REQUIREMENTS OF 4. ASTM C913.
5. VARY ANCHOR BOLT LENGTH AND REINFORCING BAR PLACEMENT AS REQUIRED BY CURB EXPOSURE E.
6. SEE 2-8 FOR CURB DETAILS.
7. SEE ODOT STD DWG RD356 FOR MANHOLE ADJUSTMENT RING.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

STORM WATER SEDIMENTATION MANHOLE

SCALE:

NTS

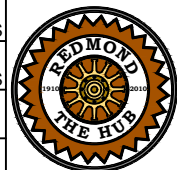
DRAWING BY:

JWS

APPROVED BY:

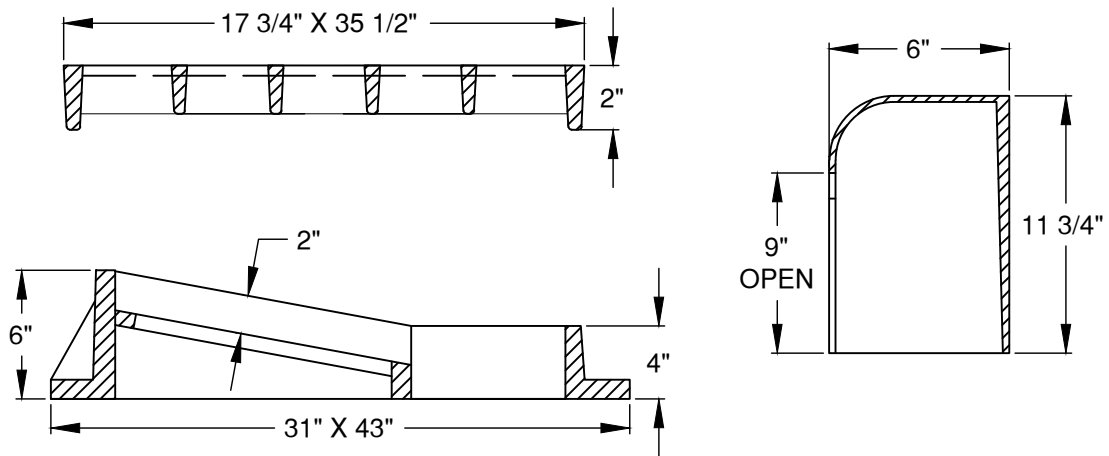
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8/16/2023

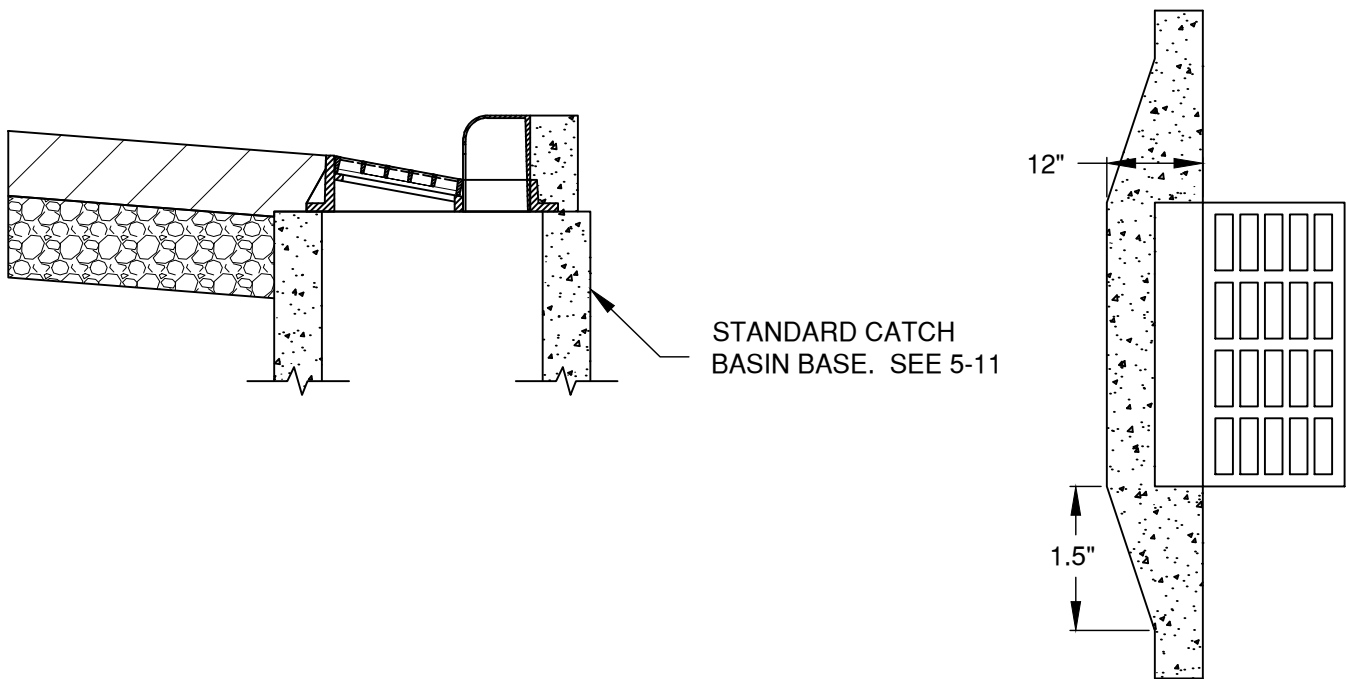
STANDARD
DRAWING
NO.

5-11

STORM WATER



CAST IRON COMBINATION CATCH BASIN INLET



NOTES:

1. COMBINATION CATCH BASIN INLET TO BE USED ON COLLECTOR AND LOCAL STREETS WHEN THE ROAD GRADE EXCEED 6%.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

COMBINATION CATCH BASIN INLET

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

6/8/2023

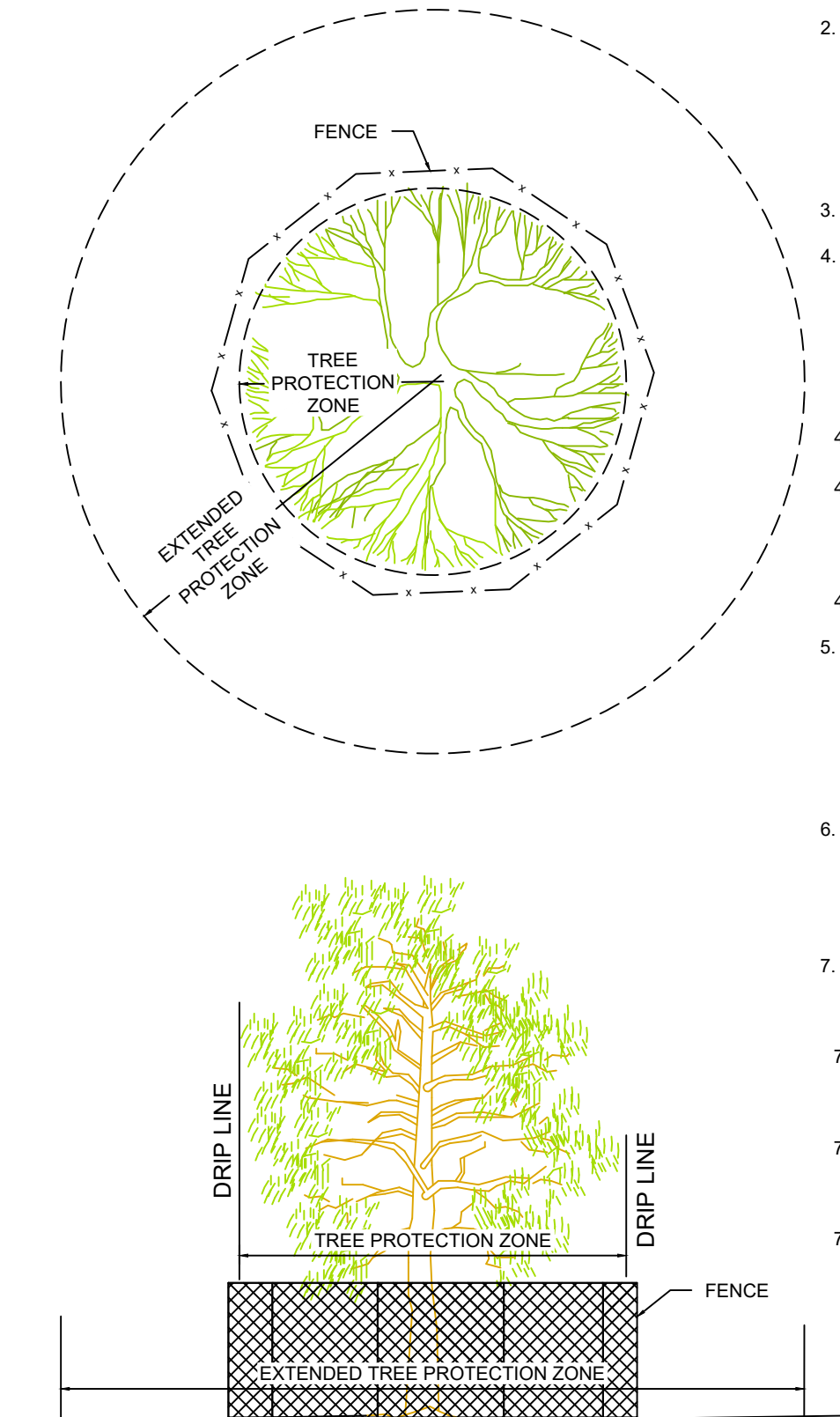


STANDARD
DRAWING
NO.

5-12

STORM WATER

G:\ENGINEER\2010\STANDARDS&SPEC\2022 REVISIONS (WORKING)\STANDARD DETAIL\SECTION 5 STORMWATER\CAD UPDATED\COR 5-13 2024.DWG



NOTES:

1. TREE PROTECTION ZONE (TPZ) MINIMUM SIZE IS BELOW THE DRIP LINE OF THE TREE BRANCHES.
2. EXTENDED TREE PROTECTION ZONE (ETPZ) DESIGNATION FOR TREES MAYBE APPLIED BY THE CITY ENGINEER OR CITY ARBORIST WITH PERMISSION OF CITY ENGINEER. THE SIZE OF THE ETPZ WILL BE DEFINED BY THE CITY ENGINEER OR CITY ARBORIST. THE ETPZ IS TO BE TREATED AS THE TREE PROTECTION ZONE DESCRIBED BELOW.
3. IRRIGATIONS SHALL BE PROVIDED WITHIN THE TPZ DURING CONSTRUCTION.
4. SOIL AND ROOT PROTECTION WITHIN THE TPZ IF FOOT OR VEHICULAR TRAFFIC OR CONSTRUCTION ACTIVITIES CAN NOT BE KEPT OUTSIDE OF THE TPZ FOR THE ENTIRE DURATION OF CONSTRUCTION ACTIONS CAN BE TAKEN TO DISPERSE THE LOAD, MINIMIZING SOIL COMPACTION AND MECHANICAL ROOT DAMAGE .
 - 4.1. APPLY 6-12 INCHES OF WOOD CHIP MULCH TO AREA
 - 4.2. LAY $\frac{3}{4}$ INCH MINIMUM THICKNESS PLYWOOD, BEAMS, COMMERCIAL LOGGING , OR ROAD MATS OVER A 4+ INCH THICK LAYER OF WOOD CHIP MULCH
 - 4.3. APPLYING 4-6 INCHES OF GRAVEL OVER TIGHT STAKED GEOTEXTILE FABRIC.
5. TPZ BARRIERS SHOULD BE ERECTED AROUND THE ZONE'S PERIMETER FOR ANY SITE WORK FENCING SHOULD BE STURDY AND HIGHLY VISIBLE. INSTALLATION OF CHAIN LINK, WIRE MESH OR WOODEN FENCE. THE FENCING SHOULD IDEALLY BE 4-6 FEET TALL AND SOLIDLY ANCHORED IN THE GROUND.
6. TPZ BARRIERS SHOULD BE CLEARLY MARKED WITH SIGNS AND STATING THE ARE WITHIN IS TREE PROTECTION ZONE AND THAT NO ONE IS ALLOWED TO ENTER OR DISTURB THIS AREA WITHOUT AUTHORIZATION.
7. ANY ROOTS OVER 1 INCH IN DIAMETER SHALL BE PRUNED RATHER THAN TORN OR CRUSHED THE ACCEPTABLE METHODS OF ROOT PRUNING ARE:
 - 7.1. SOIL EXCAVATION USING AIR EXCAVATION TOOLS, PRESSURIZED WATER , OR HAND TOOLS, FOLLOWED BY SELECTIVE ROOT CUTTING.
 - 7.2. CUTTING THROUGH THE SOIL ALONG A PREDETERMINED LINE ON THE SURFACE USING A TOOL SPECIFICALLY DESIGNED TO CUT ROOTS.
 - 7.3. AIR AND WATER EXCAVATION TOOLS CAN BE USED TO ROUTE PIPES OR WIRES UNDER OR AROUND TREE ROOTS.

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

TREE PROTECTION ZONE (TPZ)

SCALE:

NTS

DRAWING BY:

JWS

APPROVED BY:

JNM

DATE:

3/14/2024



STANDARD
DRAWING
NO.

5-13

STREETS