

# CITY OF BEAVERTON

## GENERAL CONSTRUCTION NOTES

### GENERAL:

1. All public improvements shall be constructed per the applicable sections of the City of Beaverton Engineering Design Manual (Ordinance 4417) and Clean Water Services District's Design and Construction Standards (Resolution and Order 2007-20).
2. Existing utility locations are approximate only. In order to protect existing underground utilities, contractors performing work shown on these plans must notify utilities and public agencies at least 48 business hours in advance of, and no more than 10 business days before, beginning excavation, in accordance with the provisions of OAR 952-001-0090. Limits of work shall be pre-marked for the utility locators. Pothole all crossings as necessary to prevent grade and alignment conflicts. Report all conflicts to the engineer immediately. Protect existing utilities at all times during construction. **Call the One Call Utility Notification Center at 503-246-6699 for utility locates.** Any damage to existing utilities, whether they're shown on these drawings or not, will be repaired or replaced at the contractor's expense.  
**ATTENTION:** Oregon law requires all excavators to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the center. (Note: The telephone number of the administration office for the Oregon Utility Notification Center is 503-232-1987).
3. The contractor shall exercise all due care in protecting property along the route of the improvements. This protection shall include, but not be limited to, trees, yards, fences, drainage lines, mail boxes, driveways, shrubs, lawns, irrigation systems, within any rights-of-ways and easements. If any of the above have been disturbed, they shall be restored as necessary to as near their original condition as possible or replaced in kind.
4. The contractor shall perform all the work shown on the drawings and all incidental work considered necessary to complete the project in an acceptable manner.
5. The contractor and/or each sub-contractor shall have a minimum of one set of City-approved construction plans on the job site at all times during each construction phase while work is being done.
6. All material suppliers shall submit to the engineer proof of material(s) tested in accordance with specifications. By acceptance of the contract with the owner/developer, the contractor certifies that all materials delivered to the job site will meet or exceed those specifications. Any material not conforming shall be removed from the site at no additional cost to the owner.
7. Following substantial completion, the developer's engineer shall provide three paper-copy, as-built and record drawing sets of all sheets in this plan set plus any approved revisions. After walk through and punch-list preparation by City crews, the City Inspector will request revisions to the as-builts and record drawings. The

developer's engineer shall then provide one set of mylar as-builts and record drawings and an electronic copy in AutoCAD format (dxf or dwg files) on disk to the City Inspector, per City standards.

8. The contractor shall notify the City Inspector at least 48 hours (two full working days) prior to beginning the project. Connections between existing infrastructure and new work shall not be made until necessary inspections and tests have been completed on the new work and it is found to conform in all respects to the requirements of the plans and specifications.

#### **STREETS AND STRUCTURAL FILLS:**

1. All trees, brush and debris within the limits of the right-of-way and on the areas to be filled shall be removed and disposed of by the contractor unless otherwise noted on the plans or flagged in the field.
2. All areas of construction shall be stripped. Stripping shall consist of removing the topsoil humus. Stripping materials shall be placed or stockpiled by the contractor on site as shown on the plans and per instruction by the inspector, or hauled off site to an approved location.
3. Embankments and structural fills for roadway construction or fills to be constructed on buildable areas shall be constructed from excavated materials acceptable to the soils engineer and shall be brought to grade in lifts not to exceed 8" loose measure. Each lift shall be compacted to 95 percent of maximum density as obtained by AASHTO T-99 compaction test. Combination test results shall be submitted to the City Inspector.
4. Fills shall not be constructed on natural slopes steeper than 2 horizontal to 1 vertical. All fill slopes shall not exceed 2 horizontal to 1 vertical. No rock or similar irreducible material with a minimum dimension greater than 12 inches shall be buried or placed in the fills.
5. If springs or ground water are encountered during construction, the contractor shall advise the soils and civil engineers of the condition found and coordinate activities in a manner that will allow the engineer(s) time to review the situation and prepare a plan to properly dispose of the water encountered for City approval and per Clean Water Services requirements.
6. Rock base, asphaltic concrete pavement, concrete pavement curb and sidewalk construction shall be as shown on the typical sections and detail sheet and in accordance with the above referenced specifications.
7. The contractor shall clean all spilled dirt, gravel or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day or operation. Cleaning shall be by grader and front-end loader, supplemented by power brushing and hand labor unless otherwise approved by the City. The contractor shall follow City and CWS erosion control procedures.
8. As soon as practical after completion of all paving and gravel shoulder resurfacing, the contractor shall remove all dirt, mud, rock gravel and other foreign material from the paved surface and storm drainage system.

## **STORM SEWER:**

1. All storm sewer construction and all materials shall conform to the applicable sections of the City Engineering Design Manual & CWS Design and Construction Standards.
2. All service laterals to be constructed at a minimum slope of one-quarter inch per linear foot unless otherwise shown on plans or approved by the City Building Division.
3. All existing storm systems shall be cleaned and flushed and original drainage restored. Sediment, rock and other debris shall be collected and disposed of in a proper manner. In no case shall debris be flushed down a storm or sanitary sewer for disposal. All damaged irrigation and house drainage pipe, drain tiles, sewer laterals and culverts shall be repaired expeditiously. Debris collected shall be disposed in a commercial landfill or other approved location.
4. Storm sewer pipe shall be of the size and type noted on the plans. Concrete reinforced pipe shall be bell & spigot pipe and shall conform to ASTM C76-CL 4 (unless otherwise shown). Catch basins and curb inlets shall be the type shown on the detail sheet.
5. Installation of the storm sewer shall be performed according to the standard practice. Pipe lines shall be laid on a straight alignment and uniform grade between structures. Pipe bedding shall be placed to form a continuous and uniform bearing support for the pipe at every point between joints; pipe zone material shall be first placed up to the spring line of the pipe and material uniformly compacted by hand to insure proper support within the pipe haunches. All backfill in public right of way and other traffic areas shall be ¾"-0" compacted crushed rock, compacted to 95% percent of maximum density as obtained by AASHTO T-99 compaction test.
6. Storm sewer stubs and service laterals shall be marked with 2"x4", minimum 8 foot posts (with at least 3 feet exposed above ground) painted white with thick, black pen or black lumber crayon indicating depth of pipe, lot # (if applicable), and stationing. PVC pipe used for storm service laterals shall be white in color.
7. Prior to acceptance, all public storm sewer shall be thoroughly cleaned and, as appropriate, mandrelled and TV-scanned in accordance with the City of Beaverton's requirements for such tests.

## **SANITARY SEWERS:**

1. All sanitary sewer construction and all materials shall conform to the applicable sections of the City Engineering Design Manual & CWS Design and Construction Standards.
2. All service laterals to be constructed at a minimum slope of one-quarter inch per linear foot unless otherwise shown on plans or approved by the City Building Division.

3. Installation of the sanitary sewer shall be performed according to the standard practice. Pipe lines shall be laid on a straight alignment and uniform grade between structures. Pipe bedding shall be placed to form a continuous and uniform bearing support for the pipe at every point between joints; pipe zone material shall be first placed up to the spring line of the pipe and material uniformly compacted by hand to insure proper support within the pipe haunches. All backfill in public right of way and other traffic areas shall be ¾"-0" compacted crushed rock compacted to 95% of maximum density as obtained by AASHTO T-99 compaction test.
4. Sanitary sewer stubs and service laterals shall be marked with 2"x4", minimum 8 foot posts (with at least 3 feet exposed above ground) painted green or red with thick, black pen or black lumber crayon indicating depth of pipe, lot # (if applicable), and stationing. PVC pipe used for sanitary service laterals shall be green in color.
5. Prior to acceptance, all public sanitary sewers shall be thoroughly cleaned and, as appropriate, mandrelled and air tested and TV scanned in accordance with the City of Beaverton's requirements for such tests.

**WATER LINES (City Water Service Area ONLY):**

1. Operation of existing valves shall be performed only by authorized City staff.
2. All materials and workmanship shall comply with AWWA, City of Beaverton, and the Uniform Plumbing Code as applicable. All material shall be of new manufacture. No rebuilt or used materials will be allowed.
3. All mainline pipes shall be push-on, cement-lined ductile iron, Class #52 with Tyton joints. All fitting shall be mechanical joints conforming to ANSI A-21.11.
4. Fire hydrant assemblies shall conform to the City of Beaverton's accepted brands and models.
5. All pipes shall have 30" minimum cover measured from finish grade unless specifically noted for less cover with mitigating measures. In the absence of restrained joints, all tees, bends, crosses, elbows and changes in direction of 11.25 degrees or greater shall be securely thrust blocked using minimum 3,000 PSI concrete poured against undisturbed ground as shown per City Standards.
6. All backfill in the right of way or other traffic areas shall be ¾"-0" compacted crushed rock, compacted to 95 percent of maximum density as obtained by AASTO T-99 compaction test. Pipe bedding shall be placed to form a continuous and uniform bearing support for the pipe at every point between joints; pipe zone material shall be first placed up to the spring line of the pipe and material uniformly compacted by hand to insure proper support within the pipe haunches.
7. Water line construction shall comply with regulations of the Oregon Department of Human Services (DHS, formerly Oregon Health Division – rules accessed at [www.ohd.hr.state.or.us/dwp/rules.cfm](http://www.ohd.hr.state.or.us/dwp/rules.cfm)) regarding the location and separation of water lines and sanitary sewer lines -- (specifically, separation requirements can be accessed at <http://oregon.gov/DHS/ph/dwp/docs/pwsrules/61-0020.pdf>)

8. Upon completion of installation of the water system, all lines shall be flushed and disinfected in conformance with DHS guidelines and the requirements of the Oregon Department of Environmental Quality. Waterlines shall be pressure tested following completion. The minimum test pressure shall be 150 PSI. For lines working with operation pressures greater than 100 PSI, the minimum test pressure shall be one and one-half times the operation pressure. The duration of the test shall be 1 hour, unless otherwise directed by the City Inspector. Allowable leakage is in accordance to City Standards.
9. All water service laterals are to be installed by the developer in accordance with the City Standards.
10. Fire hydrants shall be located to allow a minimum of 36" clear space surrounding all portions of the hydrant. There shall also be no obstructions directly in line with any of the ports of the hydrant for a distance of 6 feet.
11. All waterline taps 4" or greater shall use an all stainless steel tapping sleeve (JCM 432 or approved equal).
12. Cross Connection Control and Backflow Assemblies shall be as per City of Beaverton Engineering Design Manual, Sections 617 through 619 and detail drawings 660 through 672. When required, backflow prevention assemblies for the protection of the public water system shall meet the requirements set forth in the current Oregon Administrative Rules Chapter 333-061-0070, Uniform Plumbing Code, and City of Beaverton Code 4.02.160 and 4.02.165. Contact the City Backflow Specialist for more information at 503-526-2208.

#### **STREET LIGHTS:**

1. Option "C" street lighting will be used as stated in Section 450.4 or the City of Beaverton's Engineering Design Manual. An electrical permit from the City Building Division is required prior to any installation.
2. All electrical components shall be UL approved or approved equal.
3. The contractor shall be responsible for making arrangements with PGE for connecting the street lighting system to the local distribution system.
4. Anchor base poles shall be used unless otherwise pre-approved (on a case by case basis) by the City Operations and Maintenance Director. Wood poles shall not be used.
5. A J-box shall be located within 3 feet of each light pole base (exception: a controller may serve as a J-box for a light pole base within ten feet proximity to a controller). Conduit between light pole base and adjoining J-box shall be minimum 1 inch diameter size. Conduit between J-boxes and conduit to power source, controller, or other structures shall be minimum 2 inch diameter size. J-Boxes shall be Brooks #36 or equivalent at all light pole bases; other applications may require larger box sizes.

**TRAFFIC CONTROL:**

1. Traffic control to be performed in accordance with the Manual for Uniform Traffic Control Devices and Oregon amendments as required. The City can require additional traffic control measures as needed to provide for public safety.
2. On residential local streets, the contractor shall be responsible to provide all required traffic control when work is being done in the right of way.
3. All existing streets with a greater classification than a residential local street shall require a traffic control plan prepared by a professional engineer for both construction operations and after-hour situations.
4. All traffic control measures need to be submitted to the City of Beaverton for review prior to construction.

**APPROVALS AND MODIFICATIONS:**

1. Any revision to approved plans must be under the direction of the Engineer of Record (or Coordinating Design Professional). It shall be at the discretion of the City's Project Inspector as to whether the revision is significant enough to warrant review by the City Engineering Plan Review staff. If so, the Engineer shall submit five (5) copies of the proposed revision; no work affected by the revision shall be done until approved by the City Site Development Engineer. The City Inspector and the Engineer of Record must approve all other changes prior to implementation of the change.

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