



General Notes:

- The Design Engineer will be responsible for inspection of the proposed improvements with oversight from the City's Public Works and Engineering staff.
- A work schedule will be required from the contractor so that the Engineer can have an inspector onsite at the appropriate times. If the work schedule is revised the contractor is to notify the Engineer of the changes. Additionally, the contractor is to give the Engineer at least 24 hours notice of any testing requiring the presence of the Engineer and/or City staff.
- The contractor is to receive the approval of the Engineer and the City of any proposed changes to the plans or standard requirements.
- A Building Department Plumbing Permit is required for utilities beyond the first cleanout or meter on private property or otherwise identified as private.
- A Public Improvement Guarantee Agreement or a Public Works Permit, a pre-construction meeting with the City of West Linn, and installation of erosion control measures are required prior to beginning construction.
- Prior to site clearing, construction "cyclone" fencing shall be placed around trees as noted on sheet 3 and shall remain in place throughout the infrastructure improvements.
- A City representative must be present at all testing and the City shall be furnished a copy of all test results.
- All fees for street trees shall be paid to the City of West Linn Parks and Recreation Department.
- No building permits will be given until the improvements have been accepted by the City as substantially complete.

Rufous Place SGL00-077 2-27-01

Streets:

- New street sections are to be cleared of all surface vegetation and other miscellaneous structures or materials. Grub improvement areas to remove all buried vegetative matter and debris to a depth of 8" below subgrade. Properly dispose of all waste material.
- Street subgrade shall conform to Division 501 of the City of West Linn Standard Construction Specifications. Areas to receive fill are to be inspected by City of West Linn personnel prior to placement of the fill. The Contractor shall have fill areas tested for compaction by a certified testing lab in accordance with W.L.S.C.S. Division 501.03.08. Such testing will be at the contractor's expense.
- Aggregate base rock shall conform to the requirements of W.L.S.C.S. Division 205. Base course shall be 1 1/2" crushed rock and leveling course shall be 3/4" City of West Linn requires a proof roll with a loaded 10 yard dump truck of the subgrade prior placement of the rock and again after placement of the base rock and prior to paving. All underground utilities including laterals, services and power or gas conduits will be in place before subgrade proof roll will take place.
- Asphalt concrete shall conform to the requirements of W.L.S.C.S. Division 205. 1 1/2" base lift shall be Class 'B' A.C. and 1 1/2" final lift shall be Class 'C' A.C. meeting the specifications of W.L.S.C.S. Division 505. The density of the asphalt shall be at least 92% of Rice theoretical maximum density and shall be tested. The top lift of asphalt concrete shall not be placed prior to receiving permission from the City of West Linn Engineering Department.
- Construct curb and gutter using 3300 psi concrete meeting the specifications of W.L.S.C.S. Division 205 (after 28 days) with maximum 1 1/2" aggregate size. Contraction joints at 15' maximum on centers. Three inch weepholes are to be installed on all lots uphill or even with the street. Generally weepholes shall be located at the center and lowest edge of curb for each lot. Handicap ramps shall be located at each curb return at intersections unless otherwise noted on the plans. Contractor shall stamp location of sewer and water crossings with an 'S' or 'W'.
- All materials, installation, tests, and inspections to be in strict accordance with Public Works Standard Construction Standards.
- A street construction encroachment permit or similar permit may be required from the City of West Linn. Construction permit fees or other similar fees or bonding required of the contractor will be the contractor's responsibility to obtain.

Rufous Place SGL00-077 4-9-01

Keystone Retaining Wall Specifications:

- Retaining walls shall be segmental concrete units (Keystone or approved equal) conforming to ASTM C90, C140, and C145. The units shall have a width to height ratio of 2.25, the face area shall be one square foot, and the bonds nominally located at midpoint of vertically adjacent units, in both straight and curved alignments. All units shall be sound and free of cracks, or other defects that would interfere with the proper laying of the unit or significantly impair the strength or permanence of the construction.
- The segmental concrete units shall have a minimum compressive strength of 3000 psi. Unit depth shall be greater than or equal to 20 inches and the maximum horizontal gap between erected units less than or equal to 1/2 inch. The vertical setbacks and horizontal curves shall be as noted on the plans. Units shall be installed per manufacturers recommendations.
- Base leveling pad shall be compacted crushed rock (3/4"-0) with a minimum thickness of 8 inches. Leveling pad shall be compacted to 95% of the maximum dry density as determined by AASHTO T-99 and placed per construction drawings.
- One inch drain rock shall be placed within & behind the segmental concrete units, one cubic foot per each square foot of wall face.
- Reinforced backfill shall be native, onsite material placed in 8 inch lifts and compacted to 95% of the maximum density as determined by AASHTO T-99.
- The owner shall retain services of a Geotechnical Engineer and/or geotechnical testing lab to provide testing services and to certify that the structural fill meets the compaction requirements stated above. Frequency of testing shall be at minimum intervals of 2 feet vertically and 50 feet horizontally for each separate retaining wall or at intervals recommended by Geotechnical Engineer or testing lab.
- Geogrid shall be Tensor Geogrid UX1500SB or equal conforming to the following specifications. High density polyethylene meeting the specifications of ASTM D 1248 Type III/Class A/Grade 5, reinforced shall meet the following minimum specifications:
 - Creep limits strength 2,300 lb/ft per GR1, GG3
 - Flexural rigidity 4,700,000 mg-cm per GR1, GG1
 - Tensile modulus 90,000 lb/ft per GR1, GG1
 - Junctions 5,000 lb/ft per GR1, GG2
 The geogrid shall be a regular grid structure formed by uniaxially drawing a continuous sheet of select high density polyethylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being reinforced. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being reinforced and shall also have high continuity of tensile strength through all ribs and junctions of the grid structure. The geogrid shall have high resistance to deformation under sustained long term design load while in service and shall also be resistant to ultraviolet degradation to damage under normal construction practices and to forms of biological or chemical degradation normally encountered in the material being reinforced.

Rufous Place SGL00-077 2-27-01

Construction Staking Notes:

The Developer has contracted with Engineer to provide construction staking as outlined below. The contractor is to give the Engineer/Surveyor at least a week notice of when the first construction staking will be needed. After the initial staking on the project, requests for staking should be given at least 3 working days (72 hours) in advance of when staking is desired. When called to the site for staking the Engineer's surveyor will stake each phase of the project in a manner that is most efficient for the surveyor. Additional staking requested by the contractor or restaking required due to the contractor's carelessness will be charged to the contractor. In addition, if survey control monuments (which will be plainly identified) are destroyed by the contractor, the contractor will be charged for the re-establishment of the monuments. Staking to be provided is as follows:

- Sanitary sewer cut stakes at the following stations, 10', 25', 50', 100', and every 100' thereafter, following each manhole.
- Storm drain cut stakes at the following stations, 10', 25', 50', 100', and every 100' thereafter, following each manhole or catch basin.
- Rough grade stakes street corners set on centerlines at 50 foot stations. Extra stakes will be provided in cul-de-sacs and street knuckles.
- Set temporary front corners at water service locations and stake waterline angle points and fire hydrant locations (after street coring).
- Set curb stakes at 50 foot stations on the tangent and 25 foot stations in the curves.
- Mark property line locations on curbs for private utilities.
- Once the Contractor has installed the water services (and prior to rock and paving the street) he is to notify the Engineer that such has been done so that the Engineer's Surveyor can verify that the water services/meters are in the correct location.

Associated Land Surveyors 2-18-93

Standard Notes for Erosion Control:

- Approval of this erosion/sediment control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).
- The implementation of these ESC plans and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the applicant/contractor until all construction is completed and approved and vegetation/landscaping is established.
- The boundaries of the clearing limits shown on this plan shall be clearly flagged in the field prior to construction. During the construction period, no disturbance beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the applicant/contractor for the duration of construction.
- The ESC facilities shown on this plan must be constructed in conjunction with all clearing and grading activities, and in such a manner as to ensure that sediment and sediment-laden water do not enter the drainage system, roadways, or violate applicable water standards.
- The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these ESC facilities shall be upgraded as needed for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the site.
- The ESC facilities shall be inspected daily by the applicant/contractor and maintained as necessary to ensure their continued functioning.
- The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within the 24 hours following a storm event.
- At no time shall more than one foot of sediment be allowed to accumulate within a trapped catchbasin. All catchbasins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system.
- Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.
- Clean waste material excavated from road cut or trenching areas not used in street fill areas may be spread evenly across lot areas in depths of less than one foot, except where noted otherwise on the plans.
- Large organic pipe or construction material must be removed from the site and disposed of properly.
- All erosion control facilities shall meet the requirements of the Clackamas County Department of Utilities, Erosion Prevention and Sediment Control Plans Technical Guidance Handbook, revised December, 2000 and the Oregon Administrative Rules.

Standard Notes for Sediment Fences:

- The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to the post, or overlap 2" x 2" posts and attach as shown on the detail sheet 3-2.
- The filter fabric fence shall be installed to follow the contours where feasible. The fence posts shall be spaced a maximum of 6 feet apart and driven securely into the ground a minimum of 24 inches.
- The filter fabric shall be a minimum vertical burial of 6 inches. All excavated material from filter fabric fence installation, shall be backfilled and compacted, along the entire disturbed area.
- Standard or heavy duty filter fabric fence shall have manufactured stitched loops for 2" x 2" post installation. Stitched loops shall be installed on the uphill side of the sloped area.
- Filter fabric fences shall be removed when they have served their useful purposes, but not before the upslope area has been permanently protected and stabilized.
- Filter fabric fences shall be inspected by applicant/contractor immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

West Linn 7-11-00

Erosion Control:

Summary:

- The intent of the requirement is to prevent siltation from reaching storm drain systems and drainage ways.
- The minimum measures need to be made on all projects.
 - A gravel pad, at least 50 feet long, is required where vehicles will leave the construction site.
 - A sediment barrier is to be constructed of straw bales or a sediment fence where noted in the details or where sediment will cross outside the work area.
 - Where excavated material is placed on hard surfaces (such as streets) material must be broomed or scraped clean as soon as possible.
 - Riprap exits from all culverts and storm drain pipes draining into the ditches or swales. Riprap is to be Class 50 riprap or larger or as noted elsewhere in the plans.
 - Reseed or cover disturbed areas as soon as is possible and practical but no later than the completion of construction on the other phases of work. Erosion control measures such as hay bales and silt fences must remain in place until seeded areas show growth substantial to prevent erosion.

Seeding/Mulching:

- All areas disturbed during construction to be graded to drain and compacted to a minimum of 90% of AASHTO T-99 immediately after installation of utilities or grading.
- Recommended Seed Mixture: 80% ELKA Dwarf Perennial Ryegrass and 20% Creep Fescue, by weight. Application Rate shall be 100 pounds minimum per acre.
- Fertilizer shall be 12-16-8 with 50% of the nitrogen derived from UREA-FORMALDEHYDE, and applied at a rate of 400 pounds per acre.
- Seed and mulch at a rate of 2000 lbs/Ac with heavy bonding agent or netting and anchors. Mulch shall be a wood cellulose fiber or other material suitable for hydromulching.
- Temporary or Permanent Hydroseeding or acceptable seeding and mulching must be provided whenever perennial cover cannot be established on sites which will be exposed for 60 days or more.

Rufous Place SGL00-077 2-27-01

AS BUILT

NOTE:

THIS PLAN REPRESENTS THE SANITARY AND WATER LINE AS BUILTS HOWEVER, NONE OF THE SANITARY CLEANOUTS WERE OBSERVED IN THE PRIVATE DRIVEWAY, IT IS POSSIBLE THEY WERE COVERED AND NOT VISIBLE. IN ADDITION, THE SEWER LATERAL FOR LOT 3 MAY BE A STAND PIPE IN THE PLACE OF A 24".

Water Supply

- Service laterals from the water main to the water meter shall be installed by the City of West Linn. Payment for installation shall be due upon request for laterals and prior to curb and sidewalk construction (allow two weeks lead time).
- Service laterals shall be Type K copper. All lateral sizes shall be 1" from the main to the meter. Lateral to lot 2 shall be 1", and laterals to lots 3 and 4 shall be 1 1/2" from the meter to the house. For double services two laterals shall be laid side by side. Corporation stops shall be Mueller H 1500B or Ford F1000 4Q. Angle meter stop shall be Mueller H 1425B or Ford 1" x V43-444W-Q. Meter boxes shall be equal to Brooks #37 with a 37-S lid and cover. Meter boxes are to be installed 3/4" above finish grade and 2 1/2" from the curb in planter strips or flush with sidewalk surface in a sidewalk.
- Granular backfill (3/4"-0) is to be compacted to 95% maximum dry density per AASHTO T 180 test method and native material shall be compacted to 95% of in-place dry density of surrounding soil. Pipe bedding and pipe zone material to be 3/4"-0" crushed rock. Excavation, bedding and backfill shall be in accordance with Division 204 of the City of West Linn Standard Construction Specifications. Backfill under new streets shall be Class "B" and backfill in existing streets shall be Class "E".
- A plumbing permit from the City of West Linn Building Department is required for service lateral installations beyond the water meter.
- All materials, installation, tests, and chlorination to be in strict accordance with the City of West Linn Public Works Standard Construction Specifications, and the Oregon State Health Division Administrative Rules, Chapter 333.

Rufous Place SGL00-077 4-9-01

UTILITIES:

- If not noted on the plans utility information and crossing locations will have to be obtained from the utilities.
- Utility contacts are as follows: PGE - Joyce Shuler, 650-1483; AT & T Cable - Tanya Trujillo, 605-4914, Quest Communications - Lori Dorney 242-4596, Northwest Natural Gas - Scott Palmer 721-2447.

Rufous Place SGL00-077 2-27-01

Sanitary Sewer:

- Four inch PVC 3034 pipe shall conform to ASTM D-3034-SDR 35. Minimum stiffness shall be 46 psi and joint type shall be elastomeric gasket conforming to ASTM D-3212.
- Four inch PVC C-900 pipe shall conform to AWWA C900 Class 100. PVC C-900 joints to be push on joints.
- Cleanout pipe, fittings, and joints shall be the same specifications as for pipe. Castings are as shown on detail and shall conform to ASTM A48 (Grade 30). Cleanout riser shall match downstream pipe diameter. Frame shall set on 18" x 24" concrete pad.
- Granular backfill (3/4"-0) is to be compacted to 95% maximum dry density per AASHTO T-180 test method. All backfill shall be Class "B". Pipe bedding and pipe zone material to be 3/4"-0" crushed rock.
- A plumbing permit from the City of West Linn Building Department is required for all sanitary sewer lateral construction.
- All materials, installation, tests, and inspections to be made in strict accordance with the Uniform Plumbing Code.

Rufous Place SGL00-077 4-23-01

Storm Drains:

- Ten inch storm drain pipe is preferred to be seamless ribbed PVC pipe conforming to ASTM F 794. Four inch storm drain pipe shall conform to ASTM D 3034 PVC pipe.
- Gutter inlets shall be poured in-place concrete with a minimum compressive strength of 3300 psi. Frame shall be fabricated of structural steel, ASTM A-7, A-36, A-373.
- Manhole base may be poured in place concrete with a minimum compressive strength of 3300 psi or precast. Manhole risers and tops shall be precast sections with a minimum compressive strength of 4000 psi. Interior dimensions noted on the plans are minimums. Inverts shall be constructed so as to provide smooth flow-through characteristics. Pipe shall be connected to manhole by means of a flexible connection and shall have a shear joint located 18" outside of the manhole.
- Fittings and joints shall be the same specifications as for pipe.
- Granular backfill (3/4"-0) is to be compacted to 95% maximum dry density per AASHTO T-180 test method and native material shall be compacted to 95% of in-place dry density of surrounding soil. Pipe bedding and pipe zone material to be 3/4"-0" crushed rock. Storm drains under paved surfaces shall be backfilled with granular backfill.
- Storm drains shall be tested for deflection in accordance with Division 601.03.11 and video inspected in accordance with Division 601.03.12 of the West Linn Standard Construction Specifications. All tests shall be witnessed by the Engineer and a representative of the City.
- A plumbing permit from the City of West Linn Building Department is required for all private storm drains.
- The asphalt berm called out on the south side of the proposed private driveway is an integral part of the storm drain system and shall be installed with the paving of the driveway.
- All materials, installation, tests, and inspections to be in strict accordance with the City of West Linn Standard Construction Specifications and/or the Uniform Plumbing Code.

Rufous Place SGL00-077 4-9-01



REVISIONS	BY
REVISE: 1-12/01	Du
COMMENT: 1-12/01	Du
REVISE: 1-12/01	Du
COMMENT: 1-12/01	Du
AS-BUILT: 5-14-04	LD

RUFUS PLACE
STEVE SHERIDAN

Sanitary Plan, Waterline Plan & Notes

SISUL ENGINEERING
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DATE: FEB. 2001
SCALE: 1" = 30'
DRAWN: Du
JOB: 00-077
SHEET: 1
OF 4 SHEETS