

Engineer's Construction Notes

1. All construction shall be in accordance with the Washington State Department of Transportation (WSDOT) and the Washington state chapter of the American Public Works Association (APWA) standard specifications for road, bridge, and municipal construction (latest edition), Kittitas County, Suncadia Water Company (SWC), Suncadia Environmental Company (SEC) and New Suncadia, LLC standards and specifications. SWC and SEC reserve the right to adjust water and sewer requirements based on conditions in the field, product availability, and updates to operations and maintenance practices. The state standard specifications and plans shall be maintained by the contractor on site during the entire period of the construction. Definitions noted as "state" and "contracting agency" shall be amended to read "owner".
2. Road standards shall conform to the requirements set forth in exhibit "J" to the Amended and Restated Development Agreement for the Suncadia Master Planned Resort dated December 2, 2008. The most stringent specification, instruction, rule and/or plan shall govern the selection of conflicting and/or overlapping specifications and/or plans.
3. Before any construction or development activity, a preconstruction meeting must be held between the construction representative and the owner.
4. Utilities and grades shall be constructed per the approved plans. A copy of the approved plans must be on the job site whenever construction is in progress.
5. Construction work hours for the master planned resort (MPR) shall be from 7:00 a.m. until 7:00 p.m. Monday through Saturday. Work on Sundays will be on an emergency basis only. Equipment servicing and maintenance times will be unrestricted.
6. Except for emergency work, construction contractor shall not, on or within five hundred (500) feet of any noise sensitive property, operate or cause to be operated any equipment used in construction, repair, alteration, excavation, grading or demolition work on buildings, structures, streets, alleys, or appurtenances thereto:
 - a. With sound-control devices less effective than those provided on the original equipment; and
 - b. With noise levels exceeding:
 - (i) 80 DB during any calendar day for more than three (3) consecutive or non-consecutive calendar days in a three hundred sixty-five (365) day period. Noise determination tests shall be for at least ten (10) minutes, with any four (4) tests in consecutive or non-consecutive clock hours above the 80 DB level constituting an exceedance for that day; or
 - (ii) 90 DB during any clock hour for more than four (4) consecutive or non-consecutive clock hours. Tests shall be for at least ten (10) minutes, with any single test above the 90 DB level constituting an exceedance for that hour; or

- c. A noise sensitive property shall mean any non-owner property outside the MPR. The location of sound level measurements shall be on any receiving noise-sensitive property outside the MPR, provided that each test is taken from the same property, and the provisions in this section shall apply to that specific test location.
7. It shall be the contractor's responsibility to obtain all construction easements and right-of-way permits necessary before initiating off-site work within the road right-of-way.
8. Franchised utilities or other installations that are not shown on these approved plans shall not be constructed unless a separate set of plans has been approved by the reviewing authority.
9. Open cutting of existing roadways is not allowed unless specifically approved by Kittitas County, or owner (as appropriate) and noted on these approved plans. Approved cuts of existing roads shall be performed with a neat saw cut and restored per the appropriate jurisdictional standards.
10. Contractor shall be responsible for providing adequate safeguards, safety devices, protective equipment, flaggers, and any other needed actions to protect the life, health, and safety of workers and the public, and to protect property and work performed by the contractor. Any work within the traveled right-of-way that interrupts normal traffic flow requires at least one flagger for each lane of traffic affected. All sections of the WSDOT/APWA standard specifications 1-07.23, public convenience and safety, shall apply.
11. Contractor agrees that in accordance with generally accepted construction practices, he is required to assume sole responsibility for job site conditions during the course of construction. this includes safety of all persons and property. This responsibility shall apply continuously and not be limited to normal working hours. The contractor is to defend, indemnify and hold design professional harmless from any and all liability, real or alleged, in connection with the performance of work, excepting liability arising from the sole negligence of design professional.
12. Existing utilities and underground structures shown on the plan are based upon the best available public and private records, surface utility features obtained by survey, and verbal information obtained from representatives of franchised utilities. Neither the owner nor the engineer guarantees the accuracy or completeness of his information and assume no responsibility for improper locations or failure to show utility locations on the construction plans.
13. The contractor shall call the utilities underground location center (811) for field location of all utilities and shall not begin excavation until all known underground utilities in the vicinity of the proposed work have been located and marked. For utilities not subscribing to the underground location center, the contractor shall give individual notice to the utility as per section 1-07.17 of the WSDOT/APWA standard specifications.

14. Prior to commencing sanitary sewer, storm drain, water main and other utility services, the contractor shall verify the vertical and horizontal location of the proposed tie-in locations. The contractor shall immediately report any discrepancies or altered location of proposed tie-ins to the engineer and public agency(s).
15. If existing utilities are damaged, the contractor shall immediately notify the owner and the engineer. The contractor shall restore the utility to its existing condition as per section 1-07.17 of the WSDOT/APWA standard specifications.
16. Tracer wire shall be installed on all PVC and HDPE pipes.
17. Detectable underground warning tape shall consist of inert polyethylene plastic that is impervious to all known alkalis, acids, chemical reagents, and solvents likely to be encountered in the soil, with a metallic oil core to provide for the most positive detection and pipeline location. The tape shall be color coded and shall be imprinted continuously over its entire length in permanent black ink indicating the type of line buried below and shall also have the word "Caution" prominently shown. Color coding of the tape shall be as follows:

Utility	<u>Tape Color</u>
Water	Blue
Sewer	Green
Electrical	Red
Gas/Oil	Yellow
Telephone/CATV	Orange
Non-Potable Water	Purple

18. Air and water pollution laws - the attention of the contractor is called to the statutes of the State of Washington relating to the pollution of water and air. The contractor shall carry out his operations and conform with the applicable sections of the state and federal statutes and all regulations adopted pursuant thereto.
19. Inspection - the contractor shall notify the appropriate agencies and departments for all required inspections prior to placing any utilities into service.
20. The contractor shall maintain at the job site one full size, reproducible set of the approved drawings and any supplemental drawings for record keeping. All changes made during the course of construction including invert, depths and location of all utilities encountered, etc., shall be neatly marked on the reproducibles. Sewer stub locations shall be marked with length of pipe from sewer main, distance from nearest lot line, and stub depth. The marked up reproducibles shall be delivered to the engineer upon completion of the work.
21. Contractor shall coordinate final walkthrough inspections with appropriate agencies and departments and provide Owner notice of date and time of inspections with a written inspections completion log. Contractor to include any agency revisions on punch list and provide Engineer and Owner with revised

written punch list and complete punch list items in a timely manner and coordinate re-inspection.

22. Unauthorized changes and uses - caution: the engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All requests for changes to the plans must be in writing and must be approved by the preparer of these plans.
23. Prior to transporting any oversized or overweight hauls on WSDOT-maintained rights-of-way, the contractor shall obtain the appropriate permit from relevant jurisdictions such as WSDOT, Kittitas County, City of Cle Elum, and City of Roslyn.

Soil Condition and Grading Notes

1. Fill shall be benched onto slopes that exceed 4H:1V.
2. If changed conditions are encountered, the contractor shall notify the engineer promptly of (1) existing subsurface conditions differing from those indicated in the plans, or (2) existing unknown subsurface conditions, of an unusual nature, differing materially from those ordinarily encountered during construction. The contractor shall make no claims to the owner/engineer for extra work resulting from changed conditions unless the engineer or owner has approved the work in writing as per section 1-04.7 of the WSDOT/APWA standard specifications.
3. All utility trenches and borrow pits shall be backfilled and compacted to a minimum 95% of maximum dry density as determined by the ASTM D-1557 test method.
4. Groundwater conditions vary seasonally. The contractor is required to review the project geotechnical engineering report, perform a site visit, and otherwise communicate with the geotechnical engineer to familiarize himself with groundwater conditions on-site. Dewatering of utility trenches shall be considered incidental to the project and incorporated into the various bid items. Contractor shall develop a dewatering plan as necessary and coordinate the discharge location with the soils engineer. Dewatering may be accomplished by pumping from a sump in the utility trench or by well points.
5. It shall be the responsibility of the contractor to ensure that all provisions of the soils report for the site be observed and complied with during all phases of the site preparation, grading, trenching, and backfill operations, and paving construction, as applicable for the project.
6. Any provisions of the soils report which conflict with information shown elsewhere on these drawings, or which require further clarification, shall be brought to the attention of the soils engineer.
7. Soils engineer shall contract directly with Owner and coordinate with Contractor. Contractor to ensure a representative for the soils engineer is available and on-site

to observe and approve the earthwork operations and to verify field conditions as work proceeds. The soils engineer shall submit field reports certifying that the methods and materials of the earthwork operations were in accordance with the recommendations of the soils investigation and that the work was performed to the satisfaction of the soils engineer. Any discrepancies are to be brought to Owner's attention in writing.

Water Main Construction Specifications

1. Water main construction shall be in accordance with standard specifications for road, bridge, and municipal construction, Washington State Department of Transportation (WSDOT). Washington State chapter of the Americas Public Works Association (APWA), current edition (English units.) and Suncadia Water Company (SWC). Materials shall conform to APWA/WSDOT standard specifications, section 9-30 Water Distribution Materials, except as modified herein. Construction shall conform with the following sections of standard specifications:
 - 7-8 General Pipe Installation Requirements
 - 7- 9 Water mains
 - 7-12 Valves for water mains
 - 7-13 Hydrants
 - 7-14 Service connections
2. Water main, hydrant, and service connection construction shall be in accordance with water main pipe 4-inch through 12-inch diameter shall be Class 150 (DR18), polyvinyl chloride (PVC) meeting the requirements of ANSI/AWWA C900. Water main pipe larger than 12-inch diameter shall be Class 165 (DR25), polyvinyl chloride (PVC) meeting the requirements of ANSI/AWWA C905. PVC pipe shall have the same outside dimensions as ductile iron pipe. Joints shall meet the requirements of ASTM D-3139 using a restrained rubber gasket conforming to ASTM F-477. The minimum depth of cover shall be 4-feet.
3. PVC water pipe under 4-inch diameter shall meet the requirements of ASTM D-2241, pipe material shall be PVC 1120, PVC 1220 or PVC 2120 and shall have a minimum wall thickness equal to or greater than a standard dimension ratio (SDR) of 21. Joints for PVC pipe under 4-inch diameter shall meet the requirements of ASTM D-3139 using a restrained rubber gasket meeting the requirements of ASTM F-477.
4. PVC water mains shall have Tracer Wire installed directly to the top of the water main. Tracer Wire shall be installed on the outside of valve box until 6" from the top and then enter inside.
5. Fittings for PVC pipe shall be new ductile iron conforming to AWWA C-110 or C-153 and shall be cement mortar lined conforming to AWWA C-104. Joints shall conform to AWWA C-111.
6. Where specified on the plans, joint restraint shall be provided. Joint restraint shall be series 1500 for C-900 or series 2800 ductile iron retainers for C-905 PVC pipe

as manufactured by EBAA Iron or approved equal. Restraint for fittings shall be series 2000 PV ductile iron mechanical joint restraint glands for C-900 or C-905 PVC pipe as manufactured by EBAA Iron or approved equal.

7. The water service connection between the meter and buildings shall be AWWA C-901, ASTM D-2239 polyethylene pipe with a 200 PSI rating, or copper tubing meeting the requirements of ASTM B88M, Type K. Fittings for copper pipe shall be flare type compression fittings conforming to the requirements of AWWA C-800.
8. Water meters shall be installed in the locations specified on the plans per SWC.
9. Meter boxes shall be located as indicated on the plans. Meter boxes shall be Ford or Mueller 18"x60" coil pit type with a cast iron lid, or as otherwise approved by SWC. A cutout for an automatic meter reading shall be provided unless the meter box is located in traffic areas, which shall be designed for H-20 loading.
10. Fire hydrants shall conform to AWWA C-502 and have 5-1/4 - inch minimum valve opening, and pumper ports as specified by Kittitas County Fire District #7. Fire hydrant spools shall be ductile iron class 52 conforming to AWWA C-151 with cement mortar lining conforming to AWWA C-104. Fire hydrants shall stand plumb and set to the proposed grade. The lowest outlet of the hydrant shall be no less than 18-inches above grade. Hydrants shall be painted yellow.
11. All gate valves smaller than 12-inch diameter shall be resilient wedge conforming to AWWA C-509 or AWWA C-515. Valves 12-inch diameter and larger shall be butterfly -type conforming to AWWA C-504, Class 150B, suitable for direct burial.
12. Combination air valves shall be series 140 C as manufactured by the APCO corporation meeting the requirements of AWWA C-512. Combination valve shall be located in a meter box. A bronze gate valve shall isolate the combination air valve from the water main. A 2-inch diameter galvanized iron pipe shall daylight with a 180-degree bend and beehive strainer.
13. Pressure reducing stations shall be as fabricated and assembled by Cimco-GC Systems, Inc., or approved equal.
14. Valve boxes shall be installed on all buried valves. The box shall be cast iron, two-piece slip design with a base corresponding to the size of the valve. The cover shall have the word "water" cast in it and the lid "ears" shall be installed parallel to the main. Valve box shall be Olympic Foundry part no. VB1 or approved equal. Valve box tabs shall point in the direction of the pipe. Valve box shall be encased with 6-inch concrete collar poured at subgrade.
15. Concrete thrust blocking shall be per WSDOT/APWA and shall utilize 3000 psi concrete.
16. The location of water stubs at the property line shall be marked by the Contractor with a 2 by 4-inch pressure treated wooden stake 4 feet long buried in the ground a depth of 3 feet. The low end shall have a 2 by 4-inch cleat nailed to it to prevent withdrawal of the stake. The exposed end shall be painted Blue and the depth to the water stub shall be indicated in black paint on the 2 by 4. In addition, a length of 12-gage galvanized wire shall be provided to extend from the plugged end of the

water stub. The upper end shall emerge at the 4-foot stake, but shall not be fastened to it.

17. Prior to connection with existing mains, all new water mains and hydrants shall be pressure tested and disinfected in accordance with section 7-09.3(24). Pressure testing and disinfection shall be performed in the presence of SWC or SEC inspector. The contractor shall provide plugs, portable pump, blow off assemblies, temporary blocking, and other equipment and materials necessary for pressure testing and disinfection.
18. Blow off assemblies shall be a minimum of 2.5-feet deep to be adequately insulated with a valve box.
19. Blow off and flushing stations shall not be PVC and shall terminate with 2.5-inch male Fire Hose NST and cap.
20. The new connection to the existing main shall be performed in the presence of a SWC or SEC inspector.
21. Minimum test pressure is 225 psi.

Gravity Sanitary Sewer Construction Specifications

1. Gravity sanitary sewer construction shall be in accordance with standard specifications for road, bridge, and municipal construction, Washington State Department of Transportation (WSDOT) and Washington State Chapter of the American Public Works Association (APWA), current edition, (English units), and Suncadia Environmental Company (SEC). Construction shall conform with the following sections of the standard specifications.
 - 7-05 Manholes, inlets, catch basins and dry wells.
 - 7-08 General pipe installation requirements
 - 7-17 Sanitary sewers
 - 7-18 Side sewers
 - 7-19 Sewer cleanouts
2. All sewer pipe shall be PVC conforming to ASTM D-3034, SDR 35 for pipe sizes 4" to 15". PVC pipe sized 18" to 27" shall meet the requirements of ASTM F-679. Pipe joints shall conform to ASTM D-3212 and shall have factory installed rubber gaskets meeting requirements of ASTM F-477. PVC pipe fittings shall meet requirements of ASTM D-3034 and ASTM D-3212.
3. Bedding for PVC pipe shall conform to bedding material per section 9-03.12(3).
4. Sewer stubs shall have tracer wire installed. The tracer wire shall exit the ground at the base of the 4x4 pressure treated marker with an extra 3 feet wrapped around the base of the marker.
5. Backfill material shall be bank run gravel for trench backfill per section 9-03.19 of the WSDOT/APWA or with the approval of the project geotechnical engineer, native material of similar characteristics to bank run gravel for trench backfill.

6. Precast concrete manholes shall meet the requirements of AASHTO M-199.
7. Castings for manhole rings shall be gray iron conforming to the requirements of AASHTO M-105, grade 30b. Contractor shall provide Pro-Stik Butyl Sealant or approved equal between all manhole riser rings. Covers shall be centered to the structure and shall be ductile iron conforming to ASTM A-536, grade 80-55-06. Manhole riser shall be encased with 6-inch concrete collar poured at subgrade.
8. Manhole steps shall be constructed to meet requirements of ASTM C-478, be rated for a minimum of 300-foot-pound concentrated load and meet the latest OSHA requirements. Access steps shall be 12-inches apart maximum and the last step shall be 12-inches from the channel. A co-polymer polypropylene steel reinforced step with a minimum half inch diameter bar fully enclosed on the co-polymer shall be used.
9. Flow channels in manholes shall be shaped and sloped to provide a smooth transition between the inlet and outlet sewer lines and minimize turbulence.
10. Rigid pipe connections to concrete manholes shall be made with a flexible joint, Kor-n-Seal or approved equal, at a distance from the face of the manhole not more than 1.5 times the nominal pipe diameter or 18 inches, whichever is greater.
11. PVC manhole adapters shall be manufactured by GPK products, Inc. (or equivalent) with abrasive silica exterior layer. The manhole adapter will be grouted with Quikrete mortar mix or equivalent. Manhole adapters shall be watertight to 6.5 psi (minimum).
12. The location of side sewers at the property line shall be marked by the Contractor with a 4 by 4-inch pressure treated wooden stake that extends down to the capped end of the pipe with 4 feet exposed. The low end shall have a 2 by 4-inch cleat nailed to it to prevent withdrawal of the stake. The exposed end shall be painted Green and the depth to the side sewer or tee shall be indicated in black paint on the 4 by 4.
13. New connections to existing facilities shall be sealed off until upstream construction is finished, cleaned, and accepted. All construction debris and water shall be removed prior to opening the seal. The new connection to the existing main shall be performed in the presence of a SWC or SEC inspector.
14. Prior to final acceptance, the contractor shall flush the system at a sufficient velocity to remove any debris from the pipe.
15. Pressure testing and tv inspection of gravity sewer pipes shall be performed by the contractor as per WSDOT/APWA specifications. Testing and inspection shall be performed in the presence of SEC inspector.
16. Utility contractor to install sanitary sewer side sewer lines a minimum of 5 feet beyond road right-of-way into private property.

Low Pressure Sanitary Sewer Construction Specifications

1. Pressure sewer lines shall be constructed of high-density polyethylene pipe conforming with ASTM-D-2737, SDR 11 with a working pressure of 150 psi.
2. Contractor shall stub-out pressure sewer laterals five feet from road right-of-way. Lateral assembly shall consist of a 1.25-inch curb stop, pack joints and adapters, check valve and couplings. The lateral assembly shall be marked on the surface with a 2-inch x 4-inch stud.
3. Low pressure sewer pipes under 4-inches shall be HDPE with welded joints or approved equal.
4. Low pressure side sewer pipes shall be 1.25-inch HDPE welded with brass or stainless ¼ turn valve or approved equal.
5. Low-pressure sewer check-valves shall be selected from sewer manufacturers.
6. Low pressure sewer valves located in driveways shall have a valve box designed for H-20 loading.
7. Pressure sewer and mains shall have tracer wire installed directly to the top of the pressure sewer pipe.
8. Bedding and backfill for pressure sewer shall be as specified for gravity sewers.