



SUNCADIA
RESORT · COMMUNITY · LEGACY

***Preliminary Site and Utility
Engineering Summary***

**Phase 3 Divisions 15 & 16
Site Development Plan**

**Suncadia
Master Planned Resort**

**New Suncadia, L.L.C.
Cle Elum, Washington**

February 6, 2019

Prepared by

**ESM Consulting Engineers, LLC
33400 8th Avenue South, Suite 205
Federal Way, WA 98003**

**253.838.6113 tel
253.838.7104 fax**



www.esmcivil.com

Information presented in this document pertains to the proposed roads, illumination, drainage, water and sewer facilities, and solid waste management program to serve the Phase 3 Divisions 15 & 16 plats.

Information on the proposed roads reflects the requirements of Exhibit J to the Development Agreement. Information on storm drainage reflects the requirements of the Department of Ecology Stormwater Management Manuals, the 1999 Master Drainage Plan and preliminary stormwater engineering for Phase 3.

Information on the proposed water supply, storage and distribution system, is taken from the 2013 Water System Plan as revised January 2016. The development will be served by the Suncadia Water Company, a Class A water system regulated by the Department of Health.

Information on the proposed sewage collection, treatment and disposal system is taken from preliminary engineering for Phase 1 and the March 2000 Site Engineering Technical Summary document for the MPR (Appendix A of the FEIS).

Discussed in this part of Phase 3 Divisions 15 & 16 are parking, access, and illumination.

Roadway Classifications

The Phase 3 Divisions 15 & 16 roads shown in the Site Development Plan are classified as follows:

Road	Conceptual Master Plan Classification
Extension of Tumble Creek Drive	Primary Traffic Circulation
Easton Ridge Trail	Primary Traffic Circulation (for Division 15 lots 1-26)
Easton Ridge Trail	Secondary Traffic Circulation (for Division 15 lots 27-56)
Red Mountain Way	Primary Traffic Circulation (for Division 16 lots 1-39)
Red Mountain Way	Secondary Traffic Circulation (for Division 16 lots 40-49)
Mt. Bald Drive	Secondary Traffic Circulation

Roadway Sections

The proposed roadway sections for the project are shown in Figures 2-1 and 2.2. Applicability of the sections is as follows:

Road	Type	Figure
Extension of Tumble Creek Drive	R-V - Major Residential – Two-Way Alternative #2	2-2
Easton Ridge Trail (for Division 15 lots 8-26)	R-V - Major Residential – Two-Way Alternative #2	2-2
Easton Ridge Trail (for Division 15 lots 27-56)	R-II - Minor Residential – Two-Way	2-3
Red Mountain Way (for Division 16 lots 1-39)	R-I - Major Residential – Two-Way	2-1
Red Mountain Way (for Division 16 lots 40-49)	R-II - Minor Residential – Two-Way Alternative #2	2-4
Mt. Bald Drive	R-I - Major Residential – Two-Way	2-1

Access

PRIMARY ACCESS: As illustrated on the General Site Plan, primary access to the project site from Bullfrog Road to Tumble Creek Drive to Easton Ridge Trail looping back to Tumble Creek Drive along Mt. Bald Drive and Red Mountain Way.

SECONDARY ACCESS: As illustrated on the General Site Plan, secondary access to the project site along the extensions of Easton Ridge Trail and Red Mountain Way, past Mt. Bald Drive.

Figure 2-1

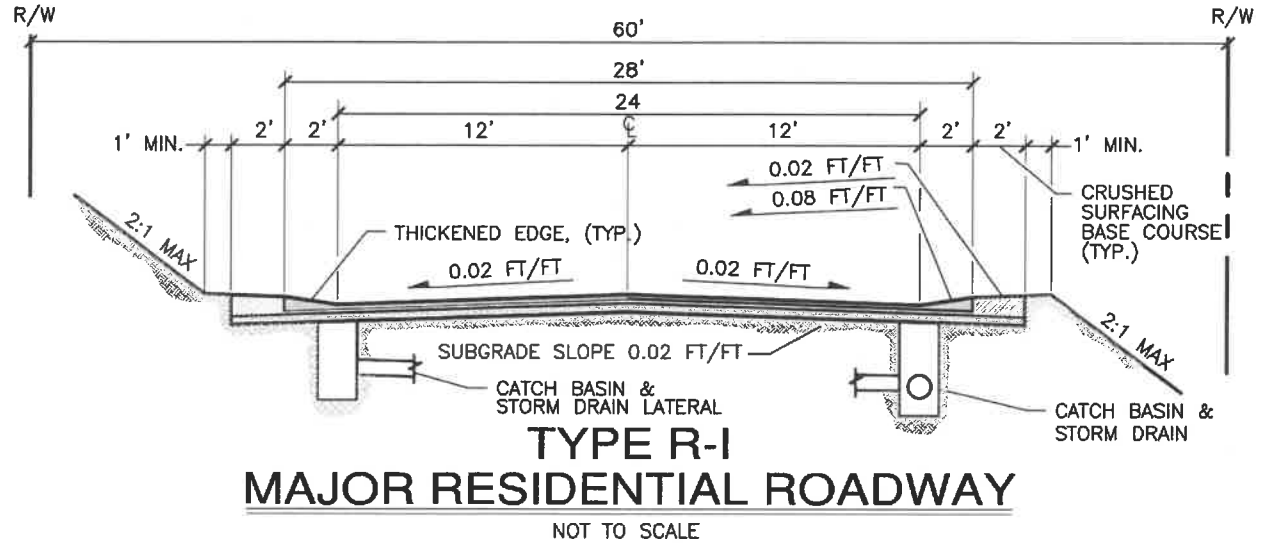


Figure 2-2

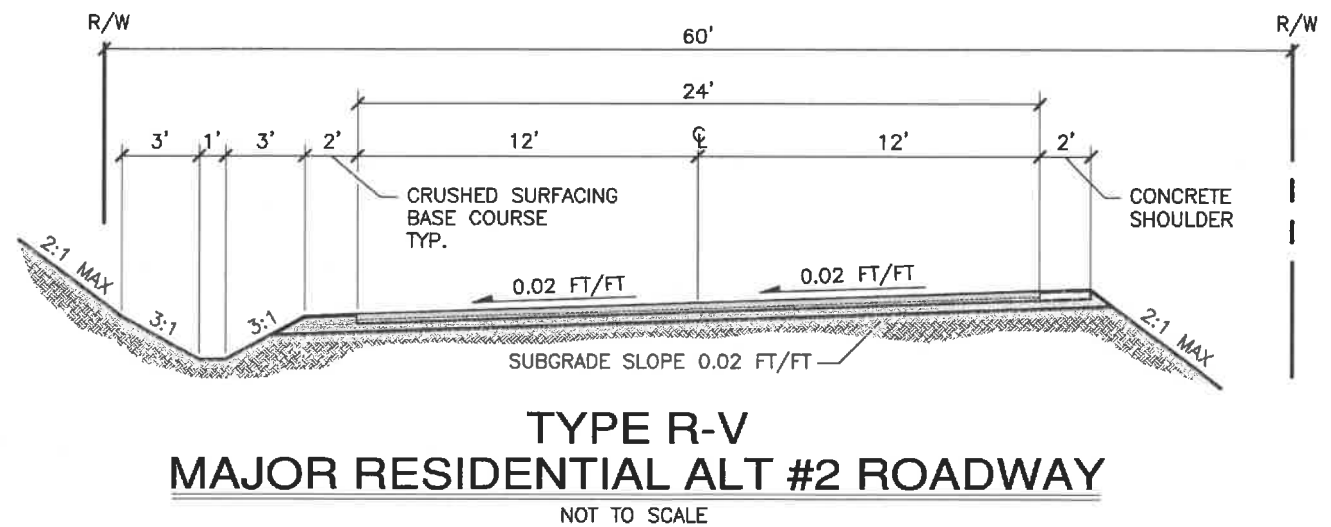
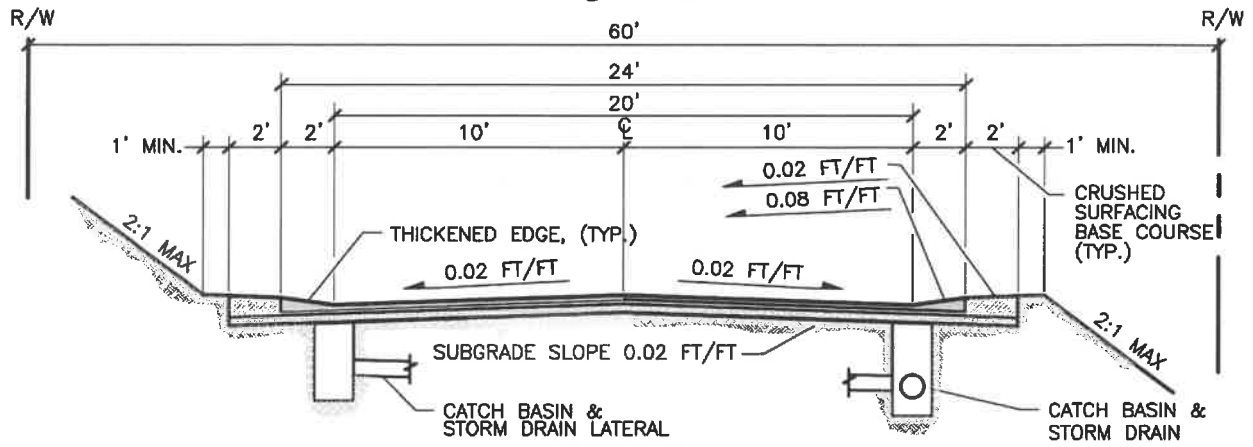


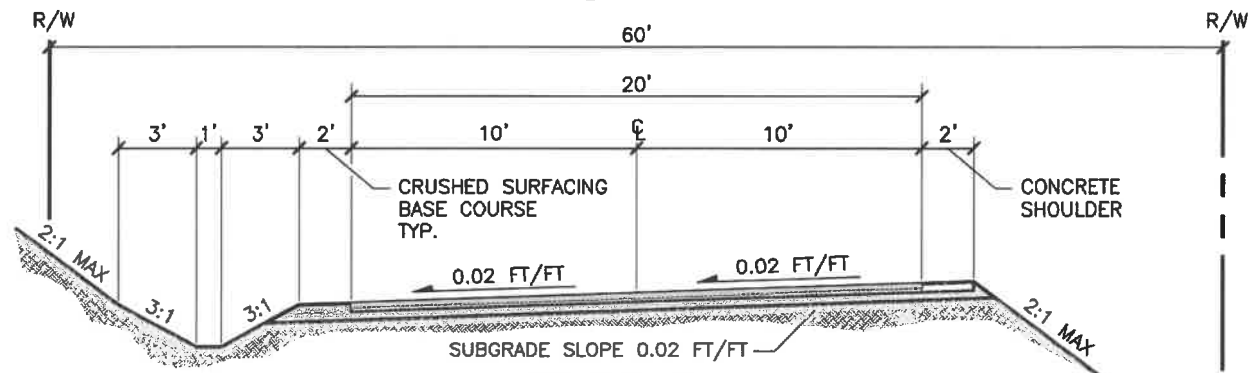
Figure 2-3



**TYPE R-II
MINOR RESIDENTIAL ROADWAY**

NOT TO SCALE

Figure 2-4



**TYPE R-II
MINOR RESIDENTIAL ALT #2 ROADWAY**

NOT TO SCALE

Illumination

Street lighting designs will conform to the principals of preserving dark skies while providing lighting levels appropriate for roadway safety and security. Street lighting will conform to the following planning criteria.

- a) Use of full-cutoff shielding on outdoor light fixtures;
- b) Mounting of light fixture luminaries at a height of not greater than 30 feet;
- c) Establishment of roadway lighting standards based on needed light distribution and the luminance of roadway surfaces;
- d) Use of LED street lights;
- e) Use of timer or photo-cell controls to regulate when and where lighting would occur; and
- f) Avoiding unnecessary lighting of building facades.

Streetlights will be located at intersections, pedestrian trail crossings, and other locations where needed. Alternative luminary styles will be considered during project design.

Introduction

The preliminary Stormwater Management Plan for The Phase 3 Divisions 15 & 16 of the Suncadia Master Planned Resort (MPR) is described in this part. The Stormwater Management Plan reflects application of design guidelines detailed in the Department of Ecology Stormwater Management Manuals as well as information presented in the April 1999 (Rev. July 1999) Master Drainage Plan (MDP) that was prepared by W&H Pacific for the MPR. The MDP outlines stormwater design procedures, guidelines, and protocols for the development.

Updates to the MDP include:

- (1) adoption of the drainage standards set forth in Washington State Department of Ecology's Stormwater Management Manual for Western Washington August 2001 (DOE SMM),
- (2) an addendum to the MDP dated August 2002 that provides (a) water quality protocol information for golf course areas that discharge to surface waters, and (b) revision of golf course water quality protocol summary information for infiltration to conform with the detailed protocol information.

Design specifics addressed in this part include:

- Runoff rate/volume estimation methodology
- Infiltration facility collection and conveyance
- Water quality treatment
- Overflow routing
- Conceptual Stormwater Plan

The proposed land use for the resort is shown in the General Site Plan for Phase 3. Phase 3 Divisions 15 & 16 is located at the west end of Tumble Creek Drive, northwest of Divisions 6-9 and the Tumble Creek Golf Course. The Suncadia stormwater system will be owned, operated, and maintained by either the Suncadia Residential Owners Association, or the Suncadia Community Council, depending on the location within the resort. Construction of facilities will be by New Suncadia, L.L.C.

Conceptual Drainage Plan

Stormwater runoff from the Phase 3 Divisions 15 & 16 proposed roadways impervious surface will be collected in catch basins or roadside water quality swales and directed to water quality and infiltration facilities.

Stormwater runoff from the lots will be handled separately on each lot using dispersion.

The majority of the project area consists of glacial outwash with some glacial moraine deposits. For additional information regarding the existing geology and soils information, see the EIS Technical Report for Geology, Groundwater and Soils prepared by AESI and dated February 10, 2006.

Infiltration Facilities

Infiltration facilities will be designed based on infiltration rates recommended by the project Geotechnical Engineer.

Water Quality Treatment

Water quality treatment will be provided for runoff from impervious road surfaces requiring stormwater treatment. Treatment will be provided in one of several Department of Ecology recommended treatment facility types. Water quality treatment options available for Suncadia are wetponds/lakes, stormfilter systems, biofiltration swales, bio-infiltration and sheet flow dispersion. All water quality facilities are sized to treat the water quality storm. The water quality storm is that storm for which all storms equal or smaller in size account for 90 percent of the average annual runoff. For Phase 3, the water quality design storm is 1.96 inches in 24-hours. Proposed water quality facilities are described below.

Sheet Flow Dispersion

Sheet flow dispersion is an approved Department of Ecology water quality and quantity control method for areas that preserve the existing forest duff. D.O.E. allows this treatment when the impervious area is less than 10 percent of the basin and 65 percent or more of the forest duff is retained.

This method will be used for flow control for the 105 detached resort residential units.

Biofiltration Swales

Biofiltration swales are another approved DOE water quality treatment facility. This facility is also designed to treat the water quality storm. The design criterion for a biofiltration swale is residence time in the swale. For a given flow rate, the required

residence time is a duration equal to that which would be provided by a 200 ft long swale, flow depth of 4 inches, and maximum velocity of 1.5 feet-per-second, or about two and one-half minutes.

Biofiltration swales on the Suncadia project will not be irrigated and, therefore, must be seeded with drought resistant vegetation suitable for the upper Kittitas County climate. The typical seed mixture used for the Suncadia biofiltration swales is as follows:

Seed Mixture Type	Percentage
Sherman Big Blue Grass	10
Joseph Idaho Fescue	30
Sodar Streambank Bunch Grass	30
Secar Blue Bunch Wheat Grass	30

(Source: Wildland, Inc., Richland, WA, October 2000.)

This mixture may be changed to accommodate site conditions or recommendations from design professionals.

Overflow Routes

Each existing stormwater facility in Phase 3 has a controlled overflow structure. The overflow discharges to an overflow drainage swale or enclosed pipe where it is conveyed to a downstream facility or controlled dispersion area. In the case of infiltration ponds, overflow routes are provided to the next downstream infiltration facility where feasible. This provides for the infiltration of stormwater even if one facility is partially clogged or out of operation.

Source of Water Supply

The development will be served by the Suncadia Water Company, a Class A water system regulated by the Department of Health. The Suncadia Water Company has included this parcel in their comprehensive planning and will provide a water availability letter.

Phase 3 Divisions 15 & 16 Water System Description

The preliminary transmission and distribution system for the project site is illustrated on the enclosed Conceptual Utility Plan. The water for the development will be supplied by the Tumble Creek Reservoir.

The project will extend a 12-inch diameter water main along Tumble Creek Drive and continue with a new 8-inch diameter water main loop along Easton Ridge Trail and Red Mountain Way. An additional 8-inch diameter water main will be extended from the water main loop approximately 1,000 feet along Red Mountain Way.

The water main loop will connect, along an extension of Easton Ridge Trail to the existing 8-inch diameter water main (approximately 2,700 feet) that has already been installed as part of Phase 3 Division 9.

Fire flow calculations were developed using a flow of 1500 gallons per minute at 20 pounds per square inch (psi) pressure. The Resort is served by Fire District 7. A fire station for District 7 is located on the Resort at 31 Firehouse Road, at the northwest intersection of Bullfrog Road.

General Description

The Phase 3 Divisions 15 & 16 project consists of 105 detached resort residential vacation homes spaced on 293.03 acres.

The collected raw wastewater from developed portions of the site will be conveyed by means of onsite gravity sewer along the proposed roadways. The eastern portion of the gravity sewer main (approximately 2,700 feet along the proposed Easton Ridge Trail roadway) has already been installed as part of Phase 3 Division 9. Due to the site's topography, a small portion of the lots may require grinder pumps.

Wastewater will continue further to off-site gravity sewers to the Waste Water Treatment Plant (WWTP) in Cle Elum.

Suncadia Solid Waste Management Policy

Solid Waste Management is currently being performed per the Solid Waste Management Plan dated April 13, 2006.