Respondent No: 2
Login: Anonymous
Email: n/a

Responded At: Apr 17, 2025 16:05:37 pm
Last Seen: Apr 17, 2025 16:05:37 pm
IP Address: n/a

Q1. **Name**	Jeff Hunter & Nathen Erickson
Q2. **Email**	jeffh@klickitatcounty.org & nathene@klickitatcounty.org
Q3. **Are you part of an Agency or Organization?**	**Yes (please specify)** Klickitat County Public Works
Q4. **Share any comment**	not answered
Q5. **Upload your document (optional)**	https://s3-us-west-1.amazonaws.com/ehq-production-us-california/ff5c8ee33ec86b2fec736fff460ece30fded762d/original/1744931057/3922c0f21849c008b894a4034b3054ae_EFSEC%20MDNS%20Carriger%20Solar%20LLC%20Comments%204-17-2025.pdf?1744931057
Q6. **Upload a picture (optional)**	not answered
Q7. **Did you also share a video?**	No
Q8. **What is the title of your video?**	not answered

KLICKITAT COUNTY

PUBLIC WORKS DEPARTMENT

115 WEST COURT STREET, MS 303, GOLDENDALE , WASHINGTON 98620 • FAX 509 773-5713 • VOICE 509 773-4616
JEFF HUNTER – PUBLIC WORKS DIRECTOR

Date: April 17, 2025

To: Joanne Snarski, Energy Facility Siting Specialist

From: Nathen Erickson, Public Works

Re: Carriger Solar, LLC Mitigated Determination of Non-Significance (MDNS) Comments

The following are Public Works comments regarding the Carriger Solar, LLC MDNS:

- The applicant has entered into a Franchise Agreement with Klickitat County under Franchise Agreement No. C21224 as of December 24, 2024, recorded under Auditor's File No. 1166236.
- A Traffic Impact Analysis (TIA) will be required to be submitted to confirm the distribution of traffic, number of trips, and types of vehicles/equipment coming to and from the site, including but not limited to, worker vehicles, equipment & component delivery, aggregate delivery, water delivery, etc.
- The applicant shall evaluate for adequacy the County roads that will be used as haul routes during the construction of this project and enter into Road Haul Agreement (RHA) with Klickitat County. As part of the RHA, the applicant will be required to provide Klickitat County with a financial security, in the form of an assignment of funds or a letter of credit. The attached Geotechnical Guidelines shall be used to prepare a report of those findings. The Geotechnical report shall evaluate all County roads used in the RHA (identified for use in the TIA) and identify the time of year that hauling for construction can occur.
    - A Work Within the Right-of-Way permit will be issued to allow the applicant to conduct research, including but not limited to, exploratory borings, pavement coring, Falling Weight Deflectometer (FWD) testing, etc. to gather geotechnical data for the geotechnical report. Klickitat County will not issue any construction permits (other than approach permits) until the RHA has been agreed upon by the applicant and the County.
- If the haul route utilizes County bridges, those bridges shall be evaluated. The applicant's engineer shall prepare a "Bridge Load Rating Analysis" report for the bridges used during construction. This report shall be included as part of the RHA.
- If the results of the reports above show that the roads or bridges on the haul routes are not adequate to support the loads during construction, mitigation will be required prior to the start of any hauling operations.
- All materials used on County roads shall meet the requirements for and placement in the most current version of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. The aggregate material used on the County road(s) shall meet the specification of "Crushed Surfacing Base Course" and "Crushed Surfacing Top Course" of the said WSDOT Standard Specifications.
- The access road to the O&M building shall meet the requirements for "Private Road B" of Title 12 having a running surface that is no less than 20 feet in width (See Private Road B Standard Plan). The road will need to be built to the parking area for the O&M Building.
- The access road to the O&M building shall be constructed with a minimum of 0.75 ft. compacted thickness gravel base with 0.25 ft. compacted thickness of "Top Course" (5/8" minus crushed rock) placed as the wearing surface.

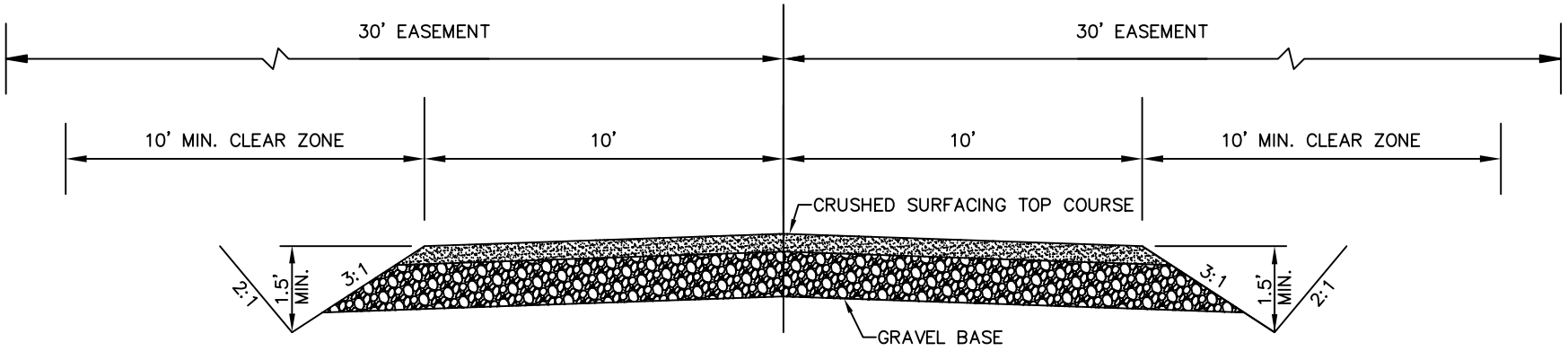
- The access road to the O&M building shall have maximum fill slopes no steeper than 3:1; maximum cut slopes no steeper than 2:1.
- Service roads constructed for this project shall be designed for the traffic served.
- The access road to the O&M building and any new service roads providing access to the site that connect to County roads will require an approach permit through the County Public Works Department.
- The applicant is required to have a Storm Water Plan prepared by an Engineer licensed in the State of Washington submitted for County review and acceptance prior to the start of operation. The report shall be in compliance with the Department of Ecology's Storm Water Management Manual for Eastern Washington and Chapter 7 of Title 12 Transportation Standards.
  - If structures (such as ponds, swales, etc.) are required to be constructed as part of the treatment or flow control of the stormwater runoff, these shall be installed prior to operation of the site.
- Engineers working on this project shall be licensed as a Professional Engineer in the State of Washington.
- The following fees will apply:

Review Type	Cost
Road Inspection	$214
Stormwater Plan Review	$80/hr + Full Price of 3rd Party Consultant if Required
Road Plan & Profile Review (If Required)	$80/hr + Full Price of 3rd Party Consultant if Required
Geotechnical Review	$80/hr + Full Price of 3rd Party Consultant
Traffic Access and Impact Study Review	$80/hr + Full Price of 3rd Party Consultant

- Public Works will review the detailed plan submittal and additional comments may follow.

ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: PRIVATE ROAD B
ACCESS TO 26–40 LOTS OR GREATER THAN OR EQUAL TO 251 ADT BUT LESS THAN OR EQUAL TO 400 ADT



Design Criteria

DESIGN SPEED	25 M.P.H
MAXIMUM ROAD GRADE	14%
MINIMUM SURFACING WIDTH	20'
EASEMENT WIDTH	60' MIN.
ROAD WAY GEOMETRICS	PER AASHTO AND WSDOT STD.
MINIMUM REQUIRED:	
CRUSHED SURFACING TOP COURSE	0.25' COMPACTED DEPTH
GRAVEL BASE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	14'
MINIMUM CROWN CROSS–SLOPE	2.0%
MAXIMUM SUPERELEVATED CROSS–SLOPE	4.0%
MINIMUM HORIZONTAL CURVE RADII	154'
MAXIMUM RATE OF VERTICAL CURVATURE (K)	8

NOTES:

- CLEAR ZONE DISTANCE SHOWN APPLIES TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS.
- THE ROAD SECTION MAY BE CROSS–SLOPED ONE DIRECTION TO ACCOMMODATE FOR EXISTING TOPOGRAPHY OR THE DRAINAGE DESIGN.
- THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.
- NO STRUCTURES SHALL BE WITHIN THE CLEAR ZONE.

KLICKITAT COUNTY
PUBLIC WORKS DEPARTMENT

STANDARD PLAN

PRIVATE ROAD B

FILE NAME	DRAWN	PLOTTING SCALE	DATE	REVISED
T:\STANDARD PLANS\PRIVATE ROAD B	NATHEN E.	NTS/ 1=1	4/17/2023	2/12/2024
CHECKED	SETH S.	REVISED BY	NATHEN E.	

Guidelines for Geotechnical Evaluation of Klickitat County Roads

Several large capital developments have been and are currently being constructed in various areas of Klickitat County (County). The construction of these facilities requires transportation of heavy equipment and materials to remote areas of the County using its roads that are not generally designed to handle such traffic loading. This increased loading has a negative impact on the roadway pavement or traffic bearing surface resulting in reduced service life and, in some instances, pavement distress or premature failure. Accordingly, the County requires means of assessing what the potential near and long-term impacts these large development projects are likely to have on its roadway infrastructure. With this information in hand, the County can then determine what mitigation measures will be necessary to be implemented in advance and/or follow-up to completion of any given project.

For each proposed large development project, the impacted roads should be identified, analyzed and their structural capacity should be determined in the context of anticipated additional loading conditions that the project(s) will impose. If and as necessary the structural capacity of the roadway sections being impacted should be increased to accommodate the anticipated traffic loading associated with the specific development project. Alternatively, post-project completion reconstruction of roadway sections should be performed on section-specific basis, as identified with follow-up studies.

This document is intended to serve as a general guideline for geotechnical investigations or studies directed at determination of the structural condition and adequacy of existing Klickitat County roads for purposes of handling increased traffic related to construction of large capital developments within County boundaries. The following should be included in such investigative studies but it is not intended to preclude or limit provision of other information that may be relevant to the structural assessment.

A. IDENTIFICATION OF PROJECT LOCATION AND POTENTIALLY IMPACTED ROADWAYS

For a given large development project, all key components of the project, including building and facility sites, temporary lay down and materials supply (i.e. concrete and roadway construction aggregates) and storage areas, should be located on suitable mapping, and the project transport routes that utilize any and all portions of County roads clearly identified. Concrete batch plant and asphaltic pavement processing facilities should also be located relative to the proposed project development. Traffic loading conditions and frequency, in terms of project-duration equivalent single axle loadings (EASLs), should be established for each roadway route segment affected. Special traffic loading conditions, such as exceptionally heavy equipment and/or materials transporters should be identified specifically, as may be appropriate.

B. GEOTECHNICAL INVESTIGATION

A geotechnical investigation should be performed on a representative portion of the County roadway system that will be impacted by the traffic that will be associated with the development project. This investigation should be performed and submitted to the County and its agents for

review sufficiently in advance of the project to permit the County to adequately assess the potential impacts and formulate plans related to determination of mitigation measures that it may deem necessary. It is recommended that such investigation include but not necessarily limit themselves to addressing the following aspects.

1. **Site Geology**

Site geology should be identified and its relevance or otherwise to the proposed project development and County roadway system discussed. This discussion should include information on local/regional ground water conditions and potential influence on the roadways and their utilization. For example, are there any ground water discharge areas along the routes that may influence roadway embankment and pavement structure performance?

2. **Climatological and Terrain Conditions**

Climatological factors such as precipitation and freeze-thaw characteristics prevalent to the project area and influencing the County roadways should be identified and discussed in respect to potential impacts on roadway performance and serviceability. For example, is there a need to seasonally restrict pavement loading due to frost dissipation conditions. Terrain conditions should be identified, both on a regional and localized basis, in respect to potential impact of precipitation runoff and any significant areas of ponding adjacent to portions of the roadway embankment, or within the pavement structural layer, should be identified and flagged for potential mitigation measures.

3. **Non-Destructive Testing of Existing Roads.**

Non-destructive testing of the roadway pavement, such as performed with a Falling Weight Deflectometer (FWD), should be conducted on identified routes that will be used to truck in all necessary equipment and materials to build the development project. FWD testing can be used to identify any isolated irregularities in existing pavement structures. FWD testing results can also be used to back-calculate the resilient modulus of existing subgrade soils.

4. **Subsurface Investigation.**

A subsurface investigation program of the identified routes should include advancing an adequate number of shallow (7.5 feet to 10 feet deep) boreholes to investigate the composition and the geometry of the existing pavement sections. The frequency and spacing of the boreholes should be sufficient to adequately identify both pavement structural conditions and subgrade characteristics. Typically, a maximum spacing of the order of 500 to 600 feet is recommended, but this may need to be reduced where significant variability is apparent in the subgrade soils, or may be increased where uniformity is identified. Results from the FWD testing may serve as an initial indicator to borehole spacing requirements.

In general, SPT testing and soil sampling should be performed at 2.5-feet depth intervals to assess the consistency and characteristic nature of the subgrade soils. The cuttings from borehole drilling of subgrade soils should also be sampled, as necessary to augment the SPT samples for purposes of proper classification of subsurface soil materials. Groundwater conditions should also be noted. Logs of all boreholes should be prepared which includes SPT results and sufficient descriptions of subsurface materials and conditions encountered to permit assessment of subgrade characteristics.

5. Laboratory Testing of Soils.

Laboratory testing should be conducted on selected representative soil samples to characterize relevant engineering properties of the on-site soils. Laboratory tests should include, but not necessarily limited to, moisture content determinations, grain size distributions, Atterberg Limits, and any other tests that are needed to characterize the subsurface soils. Soil samples obtained from cuttings should be aggregated into representative bulk specimens to be used to identify Modified Proctor moisture-density relationships, and for CBR testing. CBR testing samples should be reasonably distributed along the entire routes in order to yield representative values of CBR ratio. Alternatively, or in addition to, resilient modulus testing of representative soil specimens may be performed to augment the CBR results and confirm back-calculated modulus values based on the FWD testing results.

6. Pavement Analyses

The subsurface soil exploration results should be used to identify existing 'typical' pavement structures. Reasonable structural coefficients need to be assumed for each material encountered in these pavement sections, and Structural Number (SN) values are to, accordingly, be assigned to the existing 'typical' pavement sections.

FWD testing results should be used to check if any substantial irregularities exist along the identified routes, and whether additional subsurface explorations will be warranted. Resilient modulus values for existing subgrade soils shall be estimated either from FWD testing results or using CBR ratios obtained from laboratory testing of various soils.

7. Calculation of Estimated Traffic Loading.

The traffic loading to be considered for any given roadway section should include all traffic generated during construction and commissioning of the proposed development project. This loading should be expressed in terms of Equivalent Single, Axle Load (ESAL) and should include at least the following components:

- ESALs associated with the transportation of all gravel.
- ESALs associated with the transportation of workforce needed to erect the infrastructure.
- ESALs associated with the transportation of concrete and steel reinforcement needed to cast the foundations of all structures.

- ESALs associated with the transportation of cement or asphalt and aggregates to the proposed batch plant locations.
- ESALs associated with the transportation of electrical equipment associated with re-assembling of all the infrastructure.
- ESALs resulting from the rehabilitation of the existing routes, as well as, those associated with the building of all new needed temporary roads.
- ESALs associated with the transportation of water needed in the concrete batch plant and water used in the construction of new and rehabilitated roads.
- ESALs associated with any other activity that is not indicated above.

Various relevant components of anticipated traffic loading should be summed together for different sections of the existing roads and these are to be used to establish the degree of pavement rehabilitation needed.

8. Design of Road Rehabilitation

AASHTO 93 pavement design method should be used to estimate the design SN needed to accommodate anticipated traffic loading related to the building of the development. To determine the existing SN of 'typical' pavement sections, data from boring logs should be used to determine the depth of each layer and an adequate structural coefficient should be selected for each existing pavement layer. This existing SN shall be subtracted from the design SN and the resulting SN will thereby serve as the basis for recommendations or measures to rehabilitate pavements of all route sections. The pavement rehabilitation design should be performed in such a way that the resulting post-construction pavement sections will still have at least the current remaining service life.

9. Geotechnical Reporting

The geotechnical engineering report should include all relevant data acquired in the investigation process, as discussed above, in a format that is concise and clearly laid out. Methods and means used in the investigation and exploration program, as well as laboratory testing, should be identified and any anomalies in any of the data/results should be explained sufficiently in respect to conclusions reached.

Conclusions should be provided in a clear and concise manner regarding existing pavement conditions and their serviceability or design life prior to proposed development construction activities.

Proposed mitigation measures should be identified from available viable alternatives and reasons given for selection of a specific mitigation or remediation alternative. A section of the report should include detailed construction recommendations for the proposed mitigation or rehabilitation measure proposed.