

**Pike Solar, El Paso County, CO**  
**Road Condition Survey Work Plan**  
 August 31, 2021

**INTRODUCTION**

juwi Inc. (juwi) plans to develop a large-scale photovoltaic Project (Pike Solar, or, “Project”) in El Paso County, Colorado. The Project will be located Southeast of the Landfill and Northeast of Palmer Solar and is planned to have a footprint of approximately 1,200 acres. The construction operations are planned to begin in March 2022 and are expected to last for a duration of 21-24 months. Material deliveries are expected to start approximately two weeks prior to start of the construction activities.



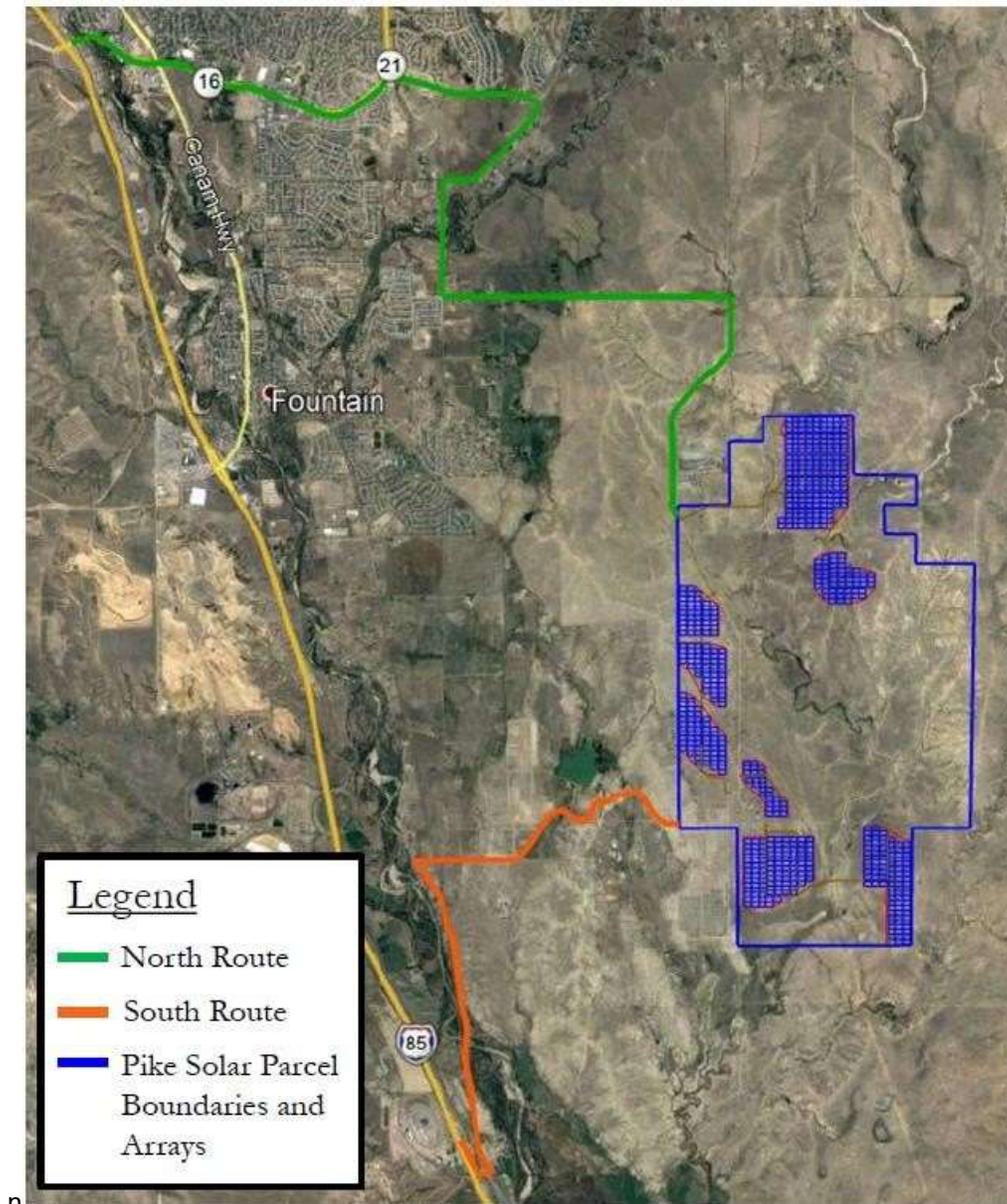
Juwi has developed a Road Condition Work Plan to assess any potential accelerated degradation of the pavements that will be utilized by the construction traffic during the construction period. The goal of this plan is to conduct an objective pavement condition assessment before, during and after the construction operations have been completed to assess the pavement condition and capture Right-of-Way (ROW) imagery to document the condition of the road sections. The pavement condition assessment methodology will be similar to that used by the El Paso County (“The County”) to assess their County roads.

Construction traffic is expected to access the Project site through the North and the South Routes listed below in Table 1 and depicted below in Figure 1. Table 1 shows the section limits and estimated centerline lengths.

**Table 1: Project North and South Access Paved Road Sections and Centerline Mileage**

| Route  | Street Name             | From              | To                           | CL Miles | Route CL Miles |
|--|-------------------------|-------------------|------------------------------|----------|----------------|
| North Route<br>(City of Fountain<br>Truck Route) | CO-16 (Mesa Ridge Pkwy) | I-25 Interchange  | Powers Bd S                  | 3.1      | 9.1            |
|  | Mesa Ridge Pkwy*        | Power Bd S        | Marksheffel Rd S.            | 1.4      |                |
|  | Marksheffel Rd S.*      | Mesa Ridge Pkwy   | Link Rd                      | 0.8      |                |
|  | C&S Road                | Marksheffel Rd S. | Link Rd                      | 0.3      |                |
|  | Link Rd                 | Marksheffel Rd S. | Squirrel Creek Rd            | 1.0      |                |
|  | Squirrel Creek Rd       | Link Rd           | 2.5 miles E of Link Rd       | 2.5      |                |
| South Route                                      | Old Pueblo Rd*          | I-25 Exit         | Birdsall Rd                  | 3.0      | 3.9            |
|  | Birdsall Rd*            | Old Pueblo Rd     | 0.9 miles E of Old Pueblo Rd | 0.9      |                |

\*El Paso County Roads.



**Figure 1: Project North and South Access Routes**

## CONSTRUCTION TRAVEL ESTIMATES

Construction-related traffic is divided into three categories; 1) Worker Travel; 2) Civil Construction Equipment/Materials; and 3) Solar/Battery System Equipment/Materials. Workers are expected to access the site through the North Route with a total number of daily trips estimated at 50,000 over the 730 days during the construction period. Expected vehicle/truck weights that will access the site range between 2,000 lbs. for light passenger cars up to 66,000 lbs. for various trucks and haulers. Approximately 10 trips are expected to be completed using oversize haulers with a total weight of 110,000 lbs. A haul permit will be obtained for these oversize haulers. Aside from Worker Travel, the vast majority (>95 %) of the trips will use the South Route.

## TENTATIVE PROJECT SCHEDULE

**Table 2: Tentative Project Schedule**

| Activity                                | From       | To         |
|---|------------|------------|
| Mobilization of Materials and Equipment | 03/01/2022 | 11/01/2023 |
| Contractor Work                         | 03/22/2022 | 11/02/2023 |
| Testing, Commissioning, and Close-Out   | 02/22/2022 | 02/15/2024 |

## PROPOSED SCOPE OF WORK

The proposed scope of work is summarized below in Table 3. The two major activities that are included in the scope of work are: Pavement Condition Assessment and Pavement Management System (PMS) Analysis. The proposed timing for the field work is also provided below in Table 3.

**Table 3: Proposed Scope of Work and Timing**

| Activity   | Round | Start          | End   |
|--|-------|----------------|---|
| Surface Distress and Roughness Survey on All Lanes of Both North and South Routes. Includes Right-of-Way (ROW) Image capture and processing. | 1     | During 02/2022 | Before Operations begin                                 |
|  | 2     | During 02/2023 | During 02/2023  |
|  | 3     | During 02/2024 | During 02-10/2024 after All heavy equipment travel ends |

## PROPOSED WORK PLAN

Our approach for successfully implementing the proposed scope of work presented above is based on the tasks below.

- Task 1: Surface Distress Survey
- Task 2: Roughness Survey
- Task 3: Digital Images and Spatial Referencing
- Task 4: Data Management Methodology
- Task 5: Reporting

## **TASK 1: SURFACE DISTRESS SURVEY**

- 1.1 Conduct a surface distress survey on all paved sections described in this SOW. A tabular listing of paved sections shall be provided.
- 1.2 Indicate the surface distress collection interval and roadway coverage plan. Provide an explanation of proposed methodology for surveying roads with multiple lanes in each direction of travel. Continuous data sampling submitted in 100-foot intervals is the preferred survey interval.
- 1.3 For flexible pavements, the following distresses shall be collected: Wheel Path Rutting, Transverse Cracking, Patching, Edge Cracking, Excessive Crown, Map Cracking, Rippling, Pavement Distortion, Potholes, Flushing – Bleeding, Alligator Cracking, Raveling, and Longitudinal Cracking. Surface distress data shall have the severity and extent for each distress type. Any additional distresses which feel relevant are to be included in the deliverables.

## **TASK 2: ROUGHNESS SURVEY**

- 2.1 Conduct a surface distress survey on all paved sections described in this Work Plan. A tabular listing of paved sections shall be provided.
- 2.2 Indicate the roughness survey interval and roadway coverage plan. Provide an explanation of proposed methodology for surveying roads with multiple lanes in each direction of travel. Continuous data sampling submitted in 100-foot intervals is the preferred survey interval. Survey intervals will be collected in a manner consistent with existing data in the County's pavement management software.
- 2.3 Undertake an objective measured roughness survey of all paved sections. Roughness data must meet the specifications of the International Roughness Index (IRI) and utilize a laser-based Class II profiler as designated by the Federal Highway Administration. If a Class II profiler is not available specify the profiler to be used and the impact on final data provided. Roughness data must be station specific for each section and must correspond to the station intervals used in the surface distress survey. Indicate the longitudinal sampling rate, wheel path, travel lane and direction of travel for roughness data collection.

## **TASK 3: DIGITAL IMAGES AND SPATIAL REFERENCING**

- 3.1 Image Size and Spatial Referencing. Digital images shall be collected and delivered in .jpg format. The images shall be a minimum of 24-bit color, 80 percent .jpg quality, and have a minimum size of 6 megapixels. The horizontal aspect will achieve a minimum of 120- degree viewing angle. Photographs will be taken every 15 feet, or more frequently. Each photo must be identified with a GPS location. A GIS layer file that contains all photo locations shall also be provided. The GIS database shall contain the image ID, the image name, the path, the folder, and a hyperlink that will open the image file.
- 3.2 ROW Images. Clearly capture pavement cracks, medians, gutters, curbs, up to four lanes of traffic (same direction and opposing), road surface on vertical and horizontal curves, and road signs within right-of-way on same side of roadway as collection vehicle. Camera should not be zoomed in too far.

## TASK 4: DATA MANAGEMENT METHODOLOGY

All data will be uploaded directly to the County PMS. Some section of roads included in this survey are not in the PMS. Road sections will be added in and the data uploaded if that approach is preferred by the County, otherwise for road sections not included in the PMS no data will be uploaded. The County is using Stantec’s Road-Matrix pavement management software version 2.0.8 with database version 2.0.3 with a SQL server database as of June 2018. All data collected shall be directly compatible with the current software system and database version in use by the County

## TASK 5: REPORTING

On three (3) occasions, before, during, and after construction, the Juwi shall deliver surface distress, ride condition (roughness) data, pavement width, and digital images for each roadway section directly to the El Paso County PMS or provided directly to the County.

### Interim Reports

Interim reports will be generated to document the results of the pavement condition surveys. The first interim report will include detailed approach, equipment used, and results of the first condition survey cycles. Follow-up reports will include only the results of the pavement condition survey after each round of testing.

### Final Report

A final report will be submitted that contain the following as a minimum:

- Executive Summary.
- Data Collection procedures and equipment used.
- Results summary of each Surface Distress and Roughness Survey.
- Summary of pavement performance indices (RCI, SDI, PQI) changes over all survey cycles.
- Summary of Conclusions

**Table 5: Reporting Schedule**

| Report   | Completion        |
|--|-------------------|
| Interim Report 1 (Approach + Condition Assessment Round 1 Results) | Week of 3/13/2022 |
| Interim Report 2 (Condition Assessment Round 2 Results)            | Week of 3/12/2023 |
| Final Report   | Week of 4/29/2024 |