



Memorandum

To: Theresa Gilman
Permitting Services Supervisor
Vermont Agency of Transportation
Barre City Place
219 North Main Street
Barre, Vermont 05641

Date: January 15, 2024

Project #: 58071.13

From: Branden Roberts, PE

Re: VT Real Estate Holdings 1 LLC – “Shaftsbury Solar”
Temporary Break in Limited Access along US Route 7

Overview

On behalf of VT Real Estate Holdings 1 LLC (“Shaftsbury Solar”), VHB is preparing this memorandum for the proposed development of a 20 MW AC solar photovoltaic installation that is planned for a parcel west of US Route 7 in Shaftsbury Vermont (“Project”). To facilitate construction of the Project, Shaftsbury Solar would like to create a temporary roadway with direct access to US Route 7.

General Project Description

Shaftsbury Solar proposes to construct a ground mounted fixed-tilt racking system solar generation facility. The solar array area is anticipated to be approximately 80 acres with annual electric generation of approximately 35,000 MWh. The site will be located west of US Route 7 (adjacent to mile point 2.4) and south of Holy Smoke Road in Shaftsbury. A site map depicting the proposed Project footprint is attached in Appendix A for reference.

Reason for the Permit

Shaftsbury Solar is requesting temporary access from US Route 7 because it would otherwise be difficult and burdensome for construction vehicles and site equipment to access the site utilizing the local roadway network. Direct access to/from US Route 7 will result in the following benefits: be less disruptive to the public and local community, safer due to fewer traffic conflicts, prevent potential damage to local roads from heavy vehicle use, and be more efficient for construction operations. It is anticipated the access road from US Route 7 will only be utilized by construction vehicles with more than two axles and buses of construction workers traveling in a southbound direction, while the access road connecting to Holy Smoke Road will be utilized by smaller vehicles.

Difficulties with Local Road Access

Site access from the local road network would require construction vehicles and heavy equipment to use local roads including Holy Smoke Road, Trumbull Hill Road, Airport Road, and possibly North Road. Holy Smoke Road is a narrow, gravel road with mature woody vegetation adjacent to and forming a canopy over the roadway. Trumbull Hill Road, Airport Road and North Road are also gravel roads with posted legal load limits of 24,000 pounds and are not suitable for heavy construction equipment. To access the Project site using these roads, traffic would need to use historic VT Route 7A from the north or south. Access from the north would require construction vehicles to exit at Arlington, proceed ten miles west and south along VT 7A to Airport Road, and then travel another three miles on local roads to reach the site. From the south, construction vehicles would need to exit at Shaftsbury, proceed 2.5 miles west and north along VT 7A to Airport Road, and then travel another three miles on local roads to reach the site.

Proposed Temporary Access Details

Proposed US Route 7 Access Location

The proposed location of the temporary construction access is on the west side of US Route 7 at mile point 2.42 in Shaftsbury. This location is close to the site access point off Holy Smoke Road. At this location, US Route 7 is relatively flat and on a tangent. A passing zone begins just to the north for northbound traffic, however there is no southbound passing zone nearby. South of the proposed temporary access there is a merge condition where the northbound traffic is navigating a lane reduction. At this location there are clear sight lines along US Route 7 in both directions. Sight distance both north and south exceeds 1,000 feet which is above the AASHTO minimum of 495 feet of stopping sight distance for the posted speed limit of 55 mph.

US 7 is limited access through this project. Is the existing shoulder suitable for heavy vehicle traffic? Or will additional material and work be necessary to bring the shoulder up to standards for heavy vehicle traffic in addition to widening the

Temporary Road Description

To access the site during construction, Shaftsbury Solar proposes to construct a temporary access road approximately 40 feet in width at its intersection with US Route 7, narrowing to 24 feet in width at the end of the right-of-way. The southbound shoulder of US Route 7 is proposed to be widened to twelve feet to allow space for construction vehicles to decelerate and accelerate along US Route 7 without impeding throughway traffic. The access road is designed to have generous turning radii at its connection to US Route 7 to accommodate entering/exiting vehicles exclusively from/to the southbound direction of US Route 7, as seen in Appendix C. Turning movements have been conducted to ensure construction vehicles do not overturn into throughway traffic when entering or exiting the site. The roadway is designed to adequately carry construction traffic for the duration of construction. Signage will be installed at the beginning of the shoulder widening and on both sides of the access road and a lockable gate will be installed at the State right-of-way ("ROW") to prohibit unauthorized vehicles from using the temporary access road. The gate will be closed and locked when active construction is not occurring at the site.

Design Parameters

Turning movements with a fully loaded WB-67 (the largest anticipated construction vehicle) were conducted to ensure construction vehicles do not overturn into throughway traffic when entering or exiting the site. To minimize traffic impacts the design only allows vehicles to access the site from the southbound lane of US Route 7. The turning movements dictated our entrance design, which resulted in a 50-foot entrance radius. The shoulder widening required tapering from 12 feet to 16 feet over a 50 feet length, followed by a 30-foot-long section of 16-foot-wide shoulder to the access road entrance. The access road required a width of 40 feet to allow for vehicles to complete the turning movement and swing wide to exit the site, however the access road tapers back down to 24 feet to minimize wetland impacts and will be 24 feet wide at the State ROW. All extents of the access road within the State ROW are designed to be paved, while the access road that extends beyond the State ROW will be gravel surfaced. The exit radius will be 75 feet with 20-foot shoulder widening for 15 feet before a 100-foot taper back to 12-foot shoulder widening. Deceleration and acceleration lanes, including their tapers, are designed in conformance with AASHTO A Policy on Geometric Design of Highways and Streets (the AASHTO Green Book) minimum for a 55 mph design speed of US Route 7.

During this winter construction season it is assumed that the Contractor will be responsible for plowing/maintaining the access road. Who will be responsible for the plowing/salting the deceleration and acceleration lanes on US-7?

Expected Traffic

Shaftsbury Solar estimates that construction will take approximately nine months to complete, beginning Fall of 2024 and completed in the Summer of 2025 based on the current schedule. It should be noted there is a potential for the start of construction to be delayed and the Project will keep the State informed. In addition to constructing the temporary access road off US Route 7, the Project site work can be divided into 3 phases:

Phase I Site Preparation: The first phase of construction will include installing Erosion Prevention and Sediment Control ("EPSC") measures including silt fence, project demarcation fence, followed by site preparation including brush clearing, tree cutting and stump grubbing. In concurrence with tree clearing, construction of the temporary and permanent access roads will take place. Additional construction activity during the first phase will include initial grading for stormwater treatment practices, installation of landscaping berms, temporary laydown area installation, and auxiliary work to prepare the site for installation of the solar array. The North Bennington Water District water main will also be relocated during this phase. The primary construction vehicles utilizing the temporary access road during this phase are logging trucks, excavation equipment and dump trucks. This is anticipated to be the busiest time for vehicular access during construction with continuous flow of dump trucks hauling stone to the site throughout the day as well as logging trucks and dump removing woody debris.

trucks

Phase II Solar Array Installation: This phase will involve the installation of solar array support structures, (e.g. the racking to hold the modules), transformer pads, substation foundations and structures, module installation, inverter installation, underground trenching for electrical conduits and conductors. Maintenance and installation of stormwater treatment practices will be ongoing during this phase. Planting mitigation will begin during this phase and continue into Phase III. Primary traffic during this phase will be delivery vehicles bringing racking steel, solar modules, inverters, wire, conduit, fencing and plantings to the site. The primary vehicles utilizing the temporary access road during this phase are tractor trailers, box trucks and flatbed trucks and will also include the delivery of cranes to install substation equipment. Equipment deliveries will be scheduled for early mornings whenever possible to limit construction traffic during commuting hours. It is anticipated that two buses will make one daily round trip to bring workers to and from the site.

Phase III: This phase will involve bringing the electrical equipment online, commissioned, and tested. During this time final site stabilization and plantings will be completed, perimeter fencing will be installed, operational stormwater treatment practices will be completed, temporary erosion and sediment control practices will be removed and all construction equipment will leave the site. Following the system being brought the temporary access road, gate, and applicable signs will be removed, shoulder widening improvements will remain, and the area between the site and US Route 7 will be restored to its original condition. Landscaping will also be installed on the Project parcel to re-establish the connectivity of the existing tree line.

To ensure the access road is utilized in the designed application only, Shaftsbury Solar intends to receive written agreements from all carriers stating that vehicles may only access the site from the southbound direction of US Route 7 and only those carriers with agreements may utilize the widened shoulder and temporary access road. In addition, the contractor will provide anticipated weekly delivery schedules to the district to ensure conflict mitigation. The proposed truck routes utilizing the temporary access road off US 7 is attached in Appendix B.

The following sections describe the anticipated needs for transport of materials to the Project site:

- › Materials to be brought to the site include - Posts, racking, PV modules, combiners boxes, inverters, cable and conduit, utility poles, miscellaneous control boxes, transformers, switchgear, concrete, crushed stone, and fencing materials. In particular, the step-down transformer will weigh approximately 100,000 pounds and will require oversized/overweight permitting.
- › Number of workers – It is anticipated that between 50-75 workers per day would be working onsite during construction and be bused in and out utilizing the temporary access road.
- › Types of equipment - Bulldozers, graders, backhoes, dump trucks, tractor trailers [mainly for deliveries], pile drivers, trenchers, cable pullers, logging trucks, and skid steer loaders.
- › Truck sizes and weight – delivery truck sizes and weights are generally consistent with typical roadway/highway limitations without requiring any special over-the-road permits, escorts, etc. A semi-truck hooked up to an empty trailer weighs approximately 35,000 pounds. The weight maximum for a semi-truck with a loaded trailer legally allowed in the United States is 80,000 pounds. A semi-truck without a trailer weighs between 10,000 and 25,000 pounds, depending on the size. For site construction purposes, the fully loaded trucks will weigh between 60,000 and 80,000 pounds.
- › Number and type of daily vehicles - daily (routine) vehicles are directly related to the type(s) of activity occurring on the Project site (see above). If the site is remote and workers are bussed from a rallying point in lieu of driving to the site, two buses round trip per day.

Other Benefits

In addition to the points noted above, the temporary utilization of the US Route 7 access point to the site would result in additional benefits to the community and state:

- › Reduced greenhouse gas emissions: providing direct access to the site would reduce greenhouse gas emissions by decreasing the vehicle miles travelled to access the site during construction. VHB conservatively estimates this reduction to be 195 miles for large trucks and 180 miles for standard sized vehicles per day. A total of 375 fewer miles traveled per day on average is estimated.
- › Safety and Quality of Life: The use of US Route 7 as a temporary access would be a positive approach to Project construction for residents, businesses, and school children residing in the neighborhoods in Shaftsbury which would otherwise be utilized to facilitate delivery of construction materials. This access would greatly reduce safety concerns as well as minimize the impacts of noise, dust, mud, traffic congestion/delays, roadway deterioration, damage to vegetation, etc. on local roads.
- › Public Utility Benefit: The electrical transformer at the site and other electrical equipment at the onsite substation will be partially owned by Green Mountain Power. In accordance with the VTrans Utility Accommodation Plan, this usage will benefit the efficient and safe operation of the Vermont electrical grid.

In summary, the proposed temporary access to the Project site to/from the US Route 7 as described above is necessary to enable efficient construction of the Project. VHB believes that there is no other reasonable option to enable safe, efficient, and minimally disruptive access to the Project site during the anticipated 6-to-9-month construction period during 2024. Therefore, on behalf of Shaftsbury Solar, we request VTrans allowance of this temporary use, to be finalized and formalized following the preparation of the appropriate NEPA compliance documentation and authorization through this Section 1111 permit.

Permitting Services Supervisor
Ref: 58071.13
January 15, 2024
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Sincerely,

VHB

A handwritten signature in black ink, appearing to read "Branden Roberts", is written over a light blue horizontal line.

Branden Roberts, PE
Project Manager
broberts@vhb.com

cc: Peter Ford, Reed Wills - VT Real Estate Holdings 1 LLC

Attachments:

Appendix A: Site Map

Appendix B: Trucking Routes

Appendix C: Proposed Improvement and Traffic Control Plans

Appendices

- A. Site Map
- B. Trucking Routes
- C. Proposed Improvement and Traffic Control Plans

Appendix A

Site Map

Appendix B

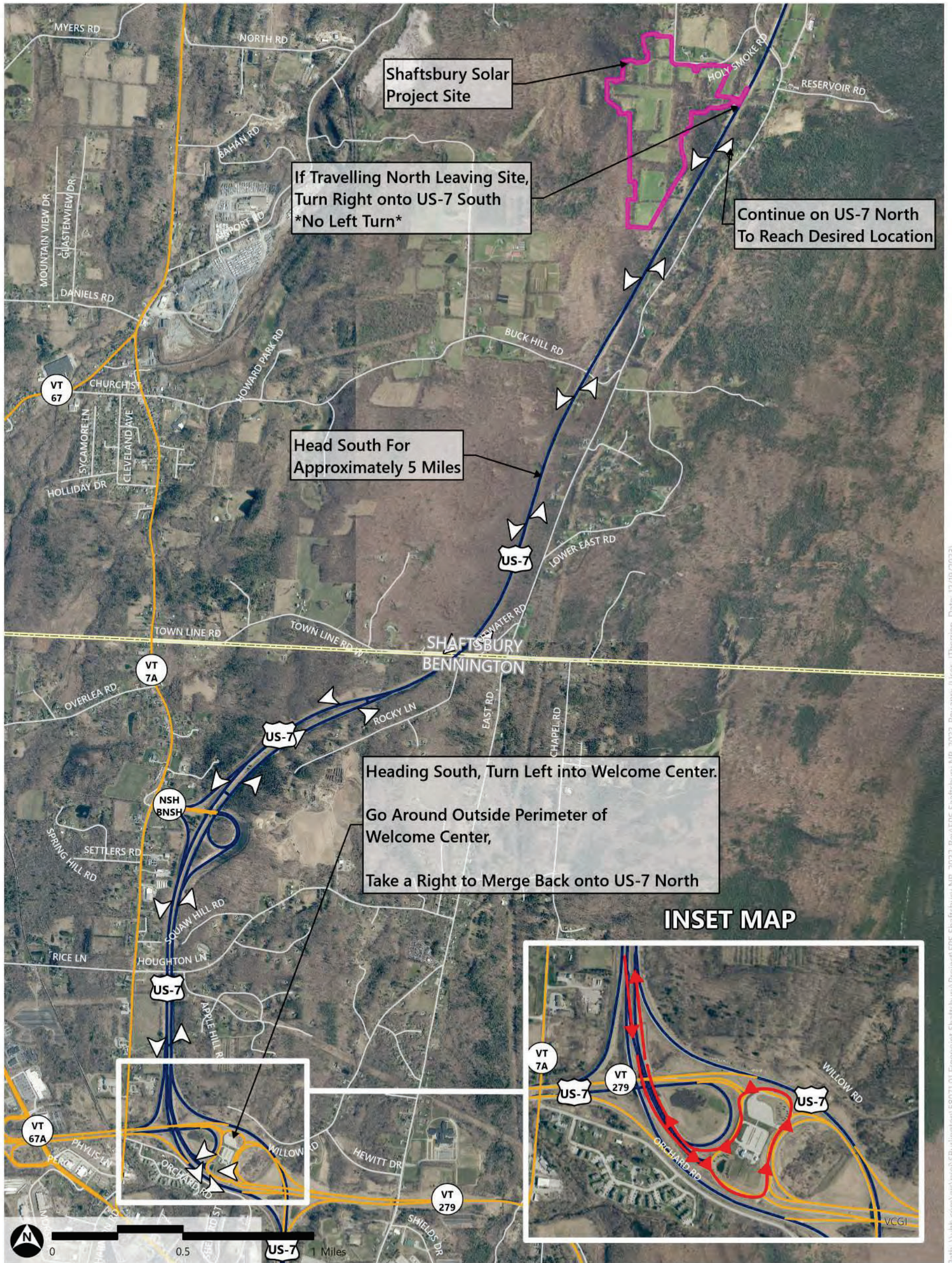
Trucking Routes

Proposed Truck Route Map - Travelling North Leaving Site

FPS Shaftsbury Solar | Shaftsbury, Vermont



DRAFT | December 19, 2023



- Proposed Project Area (VHB)
- US Highway
- State Highway
- Road (VTrans)
- Travel Direction (VHB)
- Town Boundary (VCGI)

Sources:
 Background Imagery by VCGI (Collected in 2016)
 ANR (Newmont Agency of Natural Resources - Various Dates), VCGI (Vermont Center for Geographic Information - Various Dates), VTrans (Vermont Agency of Transportation - 2022), VHB - 2022

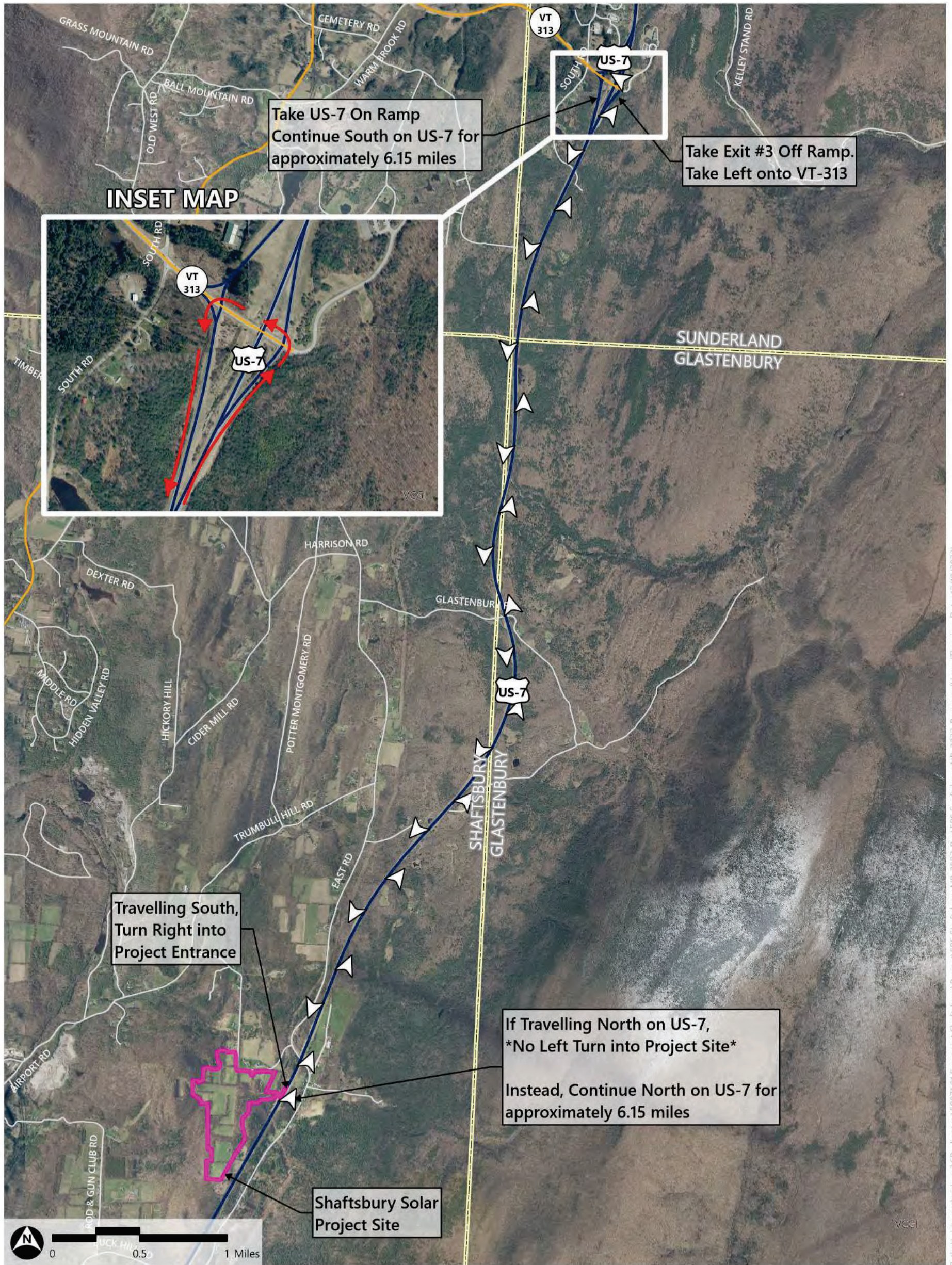
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Proposed Truck Route Map - Accessing Site from the South

FPS Shaftsbury Solar | Shaftsbury, Vermont



DRAFT | December 19, 2023



- Proposed Project Area (VHB)
- US Highway
- State Highway
- Travel Direction (VHB)
- Road (VTrans)
- Town Boundary (VCGI)

Sources:
Background Imagery by VCGI (Collected in 2016)
- ANR (Newmont Agency of Natural Resources - Various Dates), VCGI (Vermont Center for Geographic Information - Various Dates), VTrans (Vermont Agency of Transportation - 2022), VHB - 2022

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Appendix C

Proposed Improvement and Traffic Control Plans



40 IDX Dr
 Building 100 Suite 200
 South Burlington, VT 05403
 802.497.6100

Legend

- PROPOSED TEMPORARY GRAVEL ACCESS ROAD
- PROPOSED TEMPORARY PAVED CONSTRUCTION ACCESS/ PAVED SHOULDER WIDENING
- EXISTING SHOULDER REPAIRING



W9-2L
 48" X 48"



**Shaftsbury Solar
 VT Real Estate
 Holdings 1 LLC**
 1004 Holy Smoke Road
 Shaftsbury, VT 05262

No.	Revision	Date	Appr'd

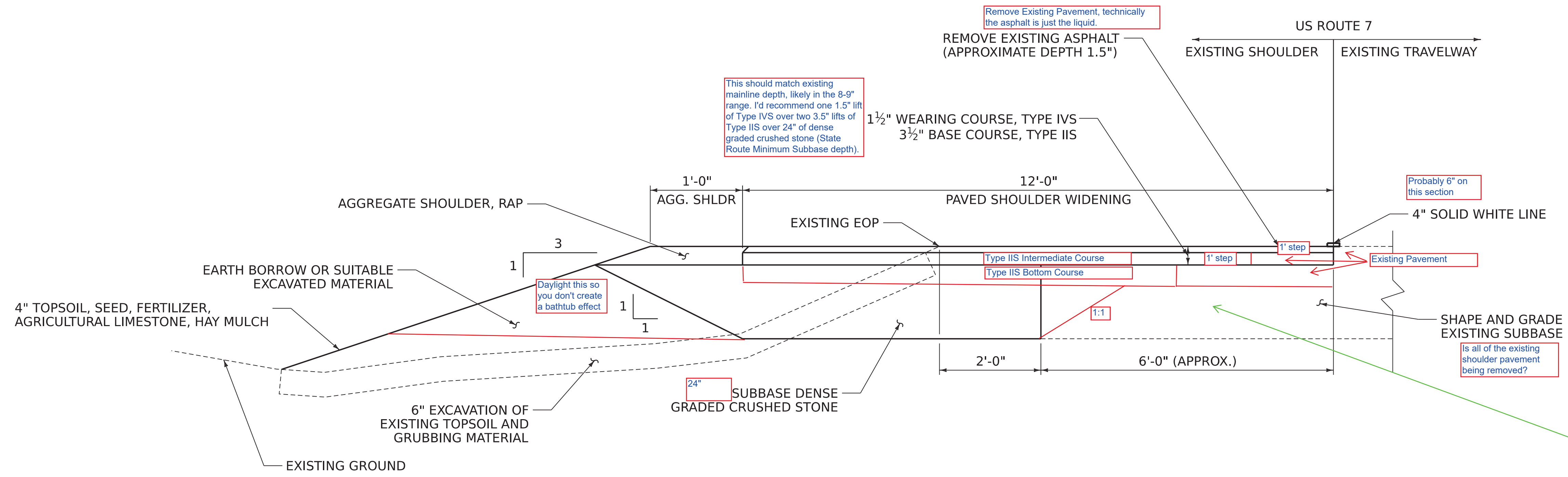
Designed by **PLU/BR** Checked by **SMW**
 Issued for **Permitting** Date **May 1, 2023**

Not Approved for Construction
 Drawing Title
**Shaftsbury Solar Access
 Road
 Temporary Construction
 Details (2 of 2)**

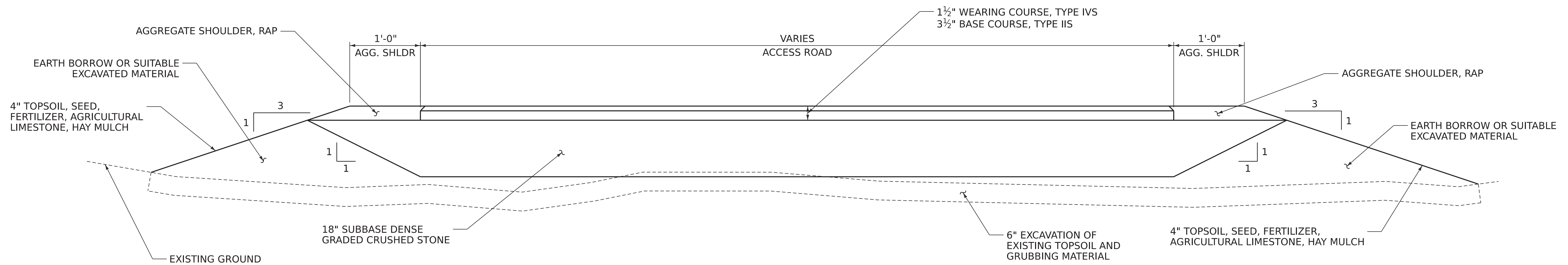
Drawing Number
C1.03

Sheet **3** of **3**

Project Number
 58071.01



US ROUTE 7 SHOULDER WIDENING TYPICAL
NOT TO SCALE

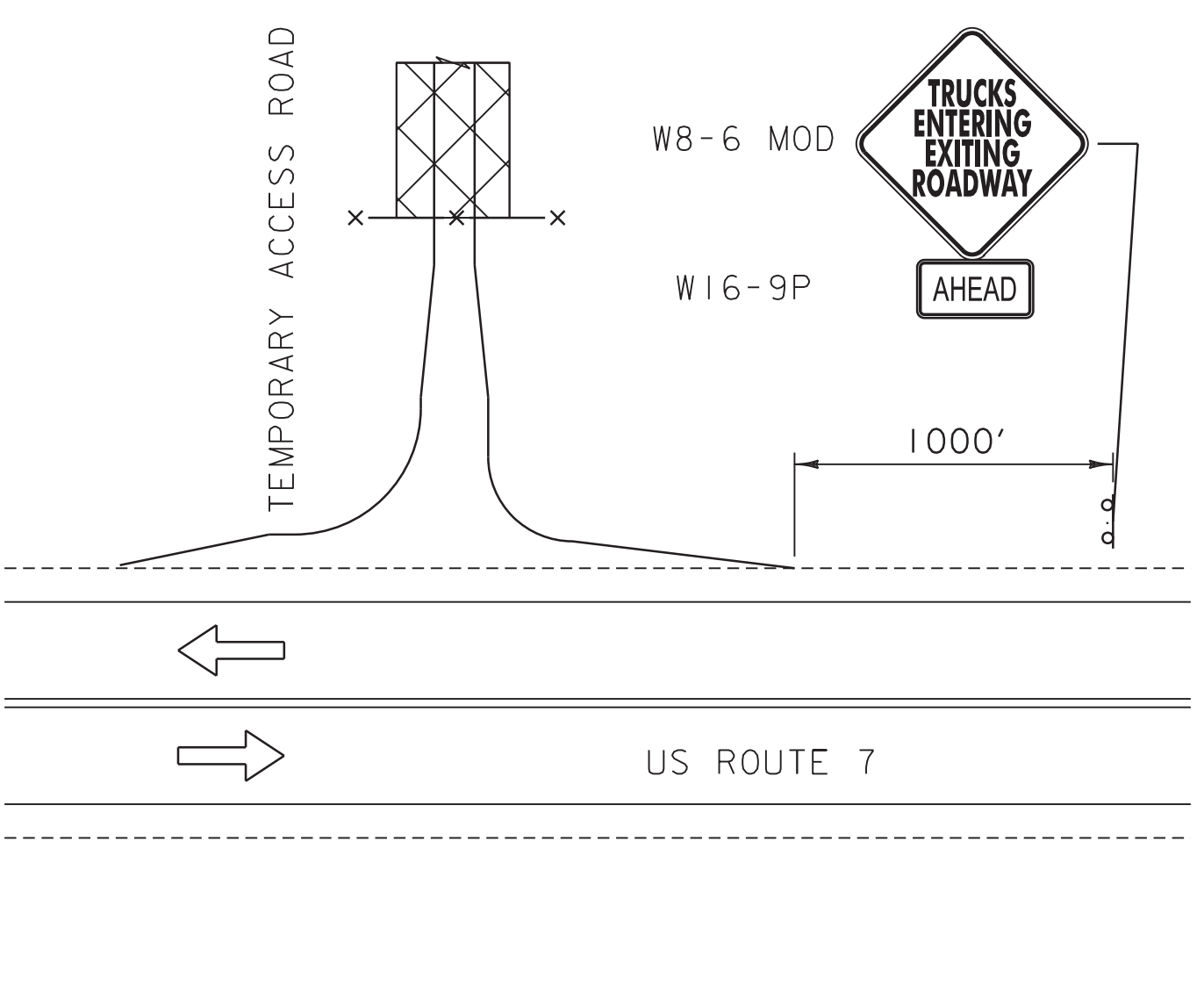
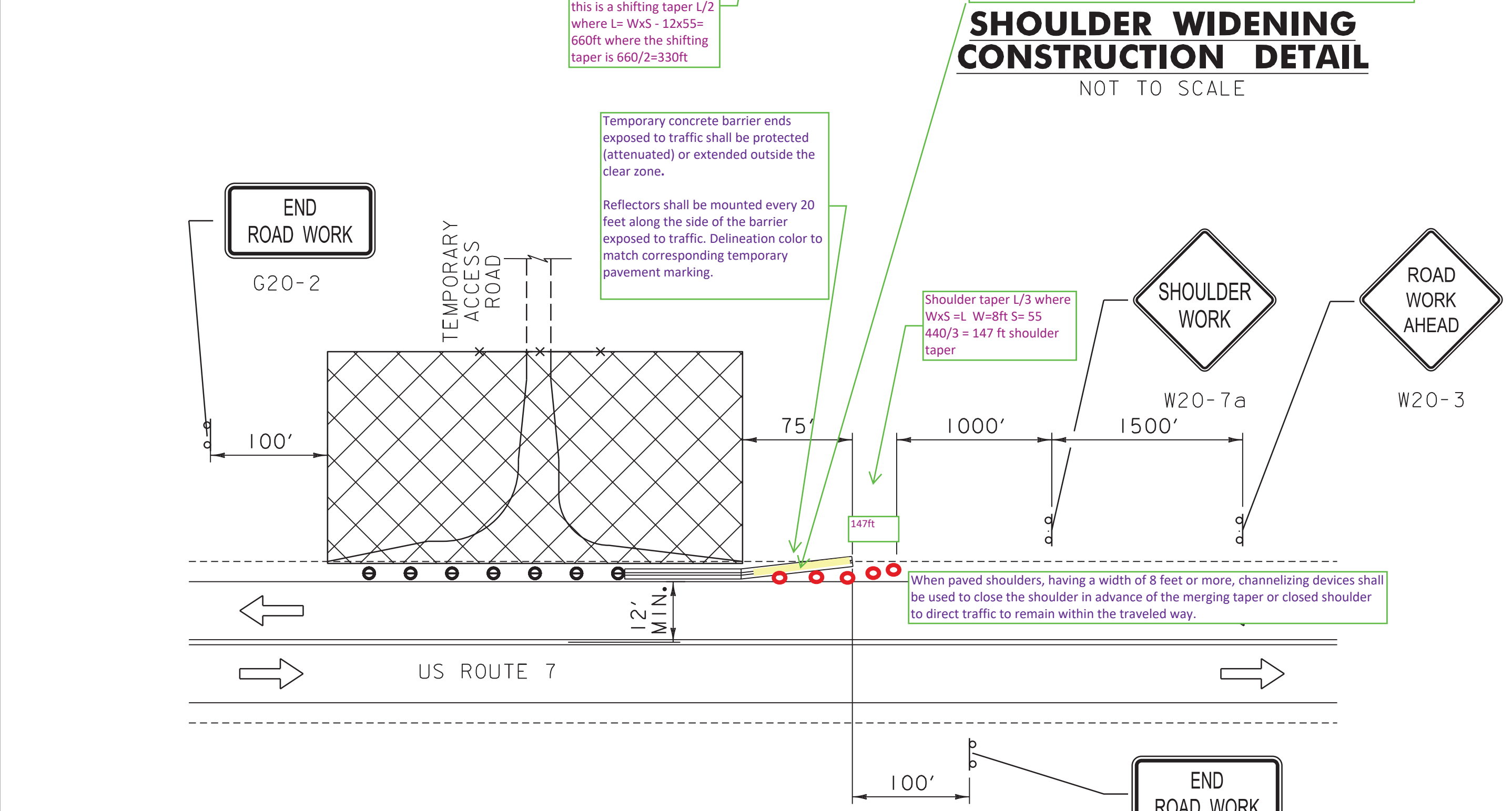
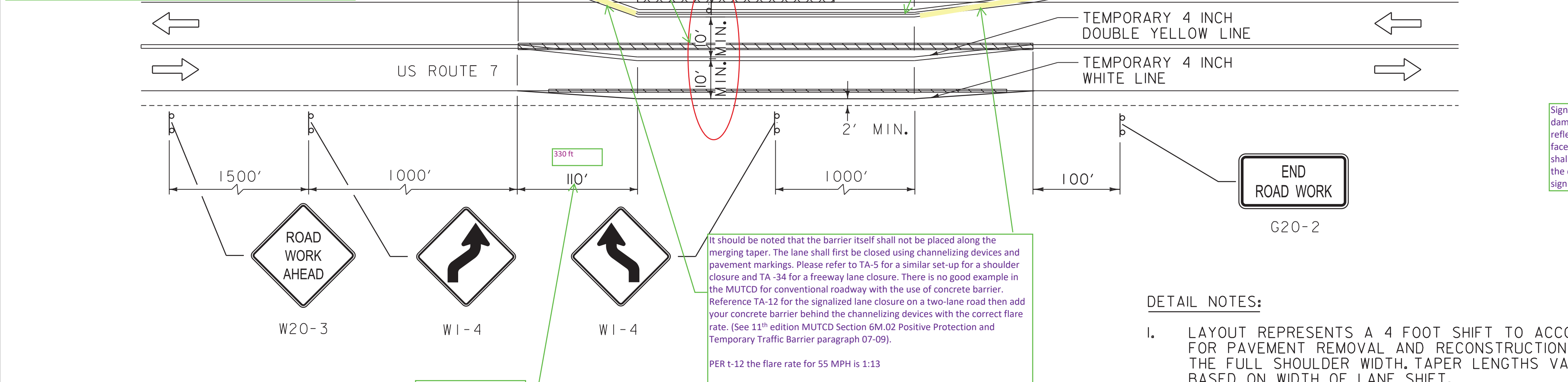


TEMPORARY ACCESS ROAD TYPICAL WITHIN VTRANS R.O.W.
NOT TO SCALE

PROJECT NAME:	SHAFTSBURY SOLAR ACCESS ROAD
PROJECT NUMBER:	58071.01
FILE NAME:	z58071i5_det
PROJECT LEADER:	A. CRARY
DESIGNED BY:	B.M. ROBERTS
DETAILS SHEET	
PLOT DATE:	12/5/2023
DRAWN BY:	S.L. LILLIS
CHECKED BY:	B.M. ROBERTS
SHEET	1 OF 1

For freeways and other divided highways, desirably use 12 ft (3.6 m) wide lanes; but as a minimum, maintain an 11 ft (3.3 m) lane width with 2 ft (600 mm) wide right and left shoulders. Under restrictive urban conditions, a 10 ft (3.0 m) lane width may be considered if an alternative detour route is provided for wide vehicles.
 Also US 7 is the preferred Super Load Route for oversized hauler loads. DMV should be notified of this condition.
 DMV will need to be contacted for Super Load permits that will require rerouting. It should be noted that once a permit is issued the applicant/hauler has 10 days to move their load. This requires additional notice time to capture that 10-day window.

When paved shoulders, having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper or closed shoulder to direct traffic to remain within the traveled way.



TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR SHALL ERECT, MAINTAIN, REMOVE AND/OR RESET AS REQUIRED ALL ON-PROJECT CONSTRUCTION SIGNS AND BARRICADES. ALL SIGNS AND BARRICADES SHALL BE INSPECTED AND REPAIRED DAILY. ALL SIGNS AND BARRICADES SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD AND SHALL BE CLEANED OF DUST AND DEBRIS BIWEEKLY.
2. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE MUTCD AND ITS LATEST REVISIONS AND THE STANDARD SHSM PUBLISHED BY THE FHWA.
3. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING 'AMERICAN SOCIETY FOR TESTING AND MATERIALS' (ASTM) TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
4. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
5. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
6. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL.
7. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND AT ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
8. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 AND/OR AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
9. THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH AND INTO THE WORK ZONE FOR EMERGENCY VEHICLES OR COORDINATE EMERGENCY ROUTES PRIOR TO THE START OF CONSTRUCTION.
10. NO CONSTRUCTION SIGNS SHALL BE INSTALLED AS TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE, AND CORNER SIGHT DISTANCE FROM DRIVES AND TOWN HIGHWAYS. EXISTING SIGNS WHICH CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE COMPLETELY COVERED OR REMOVED.
11. IF USED, SIGN COVERING SHALL NOT DAMAGE THE RETRO-REFLECTIVITY OF THE SIGN FACE. ALSO, THE SIGN COVER SHALL NOT DETERIORATE FOR THE DURATION THAT THE SIGN IS COVERED.
12. UPON COMPLETION OF SHOULDER WIDENING, ANY DAMAGE TO ROADWAY IN BOTH DIRECTIONS OF TRAVEL SHALL BE REPAIRED WITHIN 14 DAYS. ANY RUMBLE STRIPS AND STRIPING REMOVED SHALL BE RESTORED TO PREVIOUS CONDITION AND ANY TEMPORARY PAINT SHALL BE REMOVED.
13. UPON COMPLETION OF THE PROJECT, THE TEMPORARY ACCESS ROAD AND TEMPORARY WIDENING OF US ROUTE 7 SHALL BE REMOVED AND RESTORED TO THE EXISTING CONDITION. ANY PAVEMENT MARKINGS OR RUMBLE STRIPS ALTERED THROUGHOUT CONSTRUCTION SHALL BE RESTORED BACK TO THE EXISTING LOCATIONS PRIOR TO CONSTRUCTION. ALL DISTURBED AREAS WITHIN THE US ROUTE 7 RIGHT-OF-WAY ASSOCIATED WITH THIS PROJECT SHALL BE REVEGETATED USING VAOT STANDARD TURF ESTABLISHMENT PAY ITEMS AND PROTOCOLS FOUND WITHIN SECTION 651 OF VTRANS 2024 STANDARD SPECIFICATIONS FOR CONSTRUCTION. RESTORATION OF ALL IMPACTED INFRASTRUCTURE WITHIN THE US ROUTE 7 RIGHT-OF-WAY SHALL OCCUR WITHIN 21 DAYS FOLLOWING THE PROJECT COMPLETION.

Sign covering shall not damage the retro-reflectivity of the sign face. Also, the sign cover shall not deteriorate for the duration that the sign is covered.

DETAIL NOTES:

1. LAYOUT REPRESENTS A 4 FOOT SHIFT TO ACCOUNT FOR PAVEMENT REMOVAL AND RECONSTRUCTION OF THE FULL SHOULDER WIDTH. TAPER LENGTHS VARY BASED ON WIDTH OF LANE SHIFT.

LEGEND

- ➡ FLOW OF TRAFFIC
- ▨ WORK AREA
- x— FENCE AT VTRANS R.O.W.
- ▨ PAVEMENT MARKINGS REMOVED AND RUMBLE STRIPS COVERED
- TRAFFIC BARREL
- ▨ CONCRETE BARRIER

TRAFFIC CONTROL PLANS FOR U.S. ROUTE 7

NOT TO SCALE

PROJECT NAME: SHAFTSBURY SOLAR ACCESS ROAD	
PROJECT NUMBER: 58071.01	
FILE NAME: z58071i5_tcp.dgn	PLOT DATE: 12/5/2023
PROJECT LEADER: A. CRARY	DRAWN BY: S.L. LILLIS
DESIGNED BY: B.M. ROBERTS	CHECKED BY: B.M. ROBERTS
TRAFFIC CONTROL PLAN SHEET	SHEET 1 OF 1