APPENDIX V: TLG TRANSPORTATION STUDY

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		Doc No	
		Date	April 2020
		Issued to	
Issued by	TLG Transport	Client	GE
Project	Horse Heaven, Pasco WA	Job No	

Subject Preliminary site review (This study is for feasibility only and not to be used for permitting purposes without a physical survey being conducted by the carrier)

Surveyed: **April 6th and 7th**

Configurations: 3.03 140m at 81m HH (81M Tower (3 section)(4.556 15-3. 4.3 and 3.4), 3.0 Machine head and 68M (60.6 M plus 8M Ext Blade)

2.82 127m at 89m HH (89 M Tower, 2.8 MH and 62 M Blade)

Reviewed by: **Peter Lynch**

Abbreviations:

CR:	County Road
Comm:	Communication
CZ:	Construction
DH:	Dead Head
DW:	Driveway
FOW:	Flasher on Wire
GR:	Guard Rail
HV:	High Voltage
IOS:	Information Sign on Steel
IR:	Inside Radius
OAL:	Overhead with ramp or without ramp
OH:	Overhead
RAB:	Round About
RR x-ing:	Railroad Crossing
RR Markings:	***W****: Width,* ***AR****: Arm Right,* ***AL****: Arm Left,* ***SPA****: Spacing Angle,* ***AS****: Arm Spacing,* ***AA****: Arm Angle* ***RA:*** *Right Arm,* ***LA:*** *Left Arm*
SKB:	Skinny Bridge
Slip ramp:	Sweeping Ramp
SOS:	Signal on Steel
SOW:	Signal on Wire
SS:	Stop Sign
ST:	Sub Transmission
TS:	Truck Stop
UP:	Under Pass
Wire:	LoWest Conduit there may be more above and multiple utility
owners Xing:	Crossing
ZZ:	Zig Zag

Directions:

N:	North
S:	South
E:	East
W:	West
R:	Right
L:	Left
NB:	North Bound
SB:	South Bound
EB:	East Bound
WB:	West Bound
LT	Left Turn
RT	Right Turn

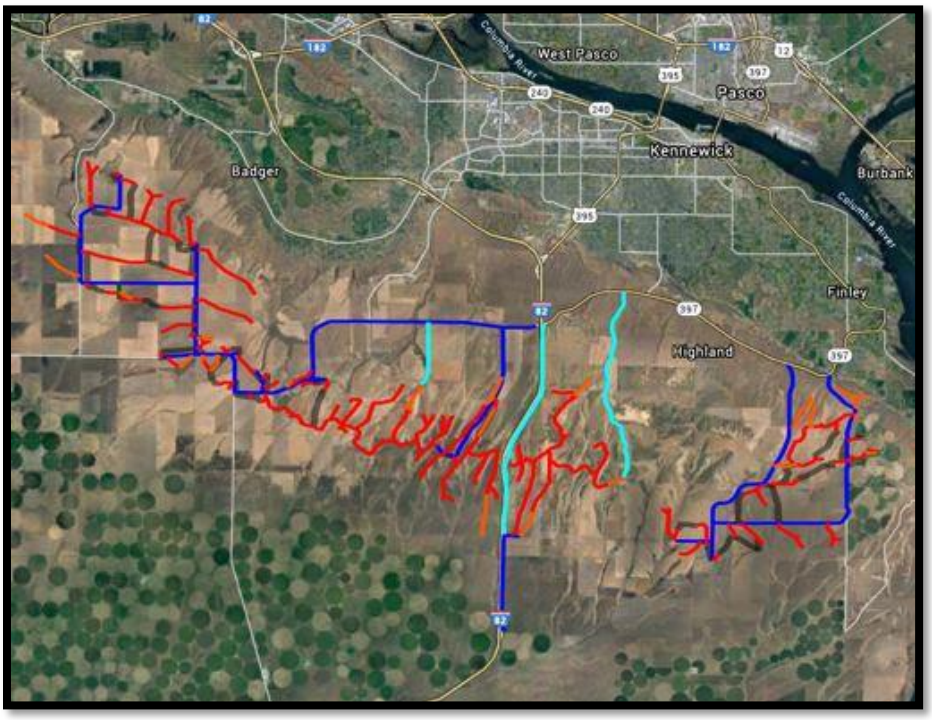
Horse Heaven Wind Project (Summary)

Scout Energy asked GE to have TLG Transport review whether trucking configurations for 3.x Towers and 60.8 M plus 8M ext.) Blades and 2.x towers and 62 M blades can reach proposed pad site along proposed access routes within their project.

The proposed project location is East and West of I-82 and South of Pasco/Kennewick, WA. The customer's provided a map with preliminary site plans and access points, but was later reported that it was outdated. The proposed project was reviewed based on the information provided at the time of the review. A revisit may be needed if the changes to the provided plan are substantially different and the recommendations in this report are not suitable to accommodate those changes. Site access from known source locations was not conducted at this time as the project is currently scheduled for Q2/3 2021. Site Access review and site audits by GE Fieldcore will need to be conducted closer to the project to review available routing to site and to make sure the improvements to the site meet GE specifications.

The customer requested that three exits from I-82 be reviewed. One exit for access to the Eastern portion of the project and two for the Western portion of this project. Within this report preliminary feedback (areas of concern) will be provided for primary and alternative routes reviewed to the proposed site points. The focus of this report will be on the major improvements required. This report does not represent a complete list of all necessary improvements, as changes to the site and plans can change necessary improvements as the project evolves up and through completion, and subsequent site visits may identify other changes that are needed. Ultimately, it is the customers responsibility to build the site to GE specifications. If there are places on the site that present a challenge to meeting the specifications the customer should advise GE.

Access Overview of proposed sites



Preliminary Summary of Improvements

Note: New string roads off routes listed below see report – focus of the report was to review proposed and alternative access routes

Eastside of the project - Improve to selected platform requirements

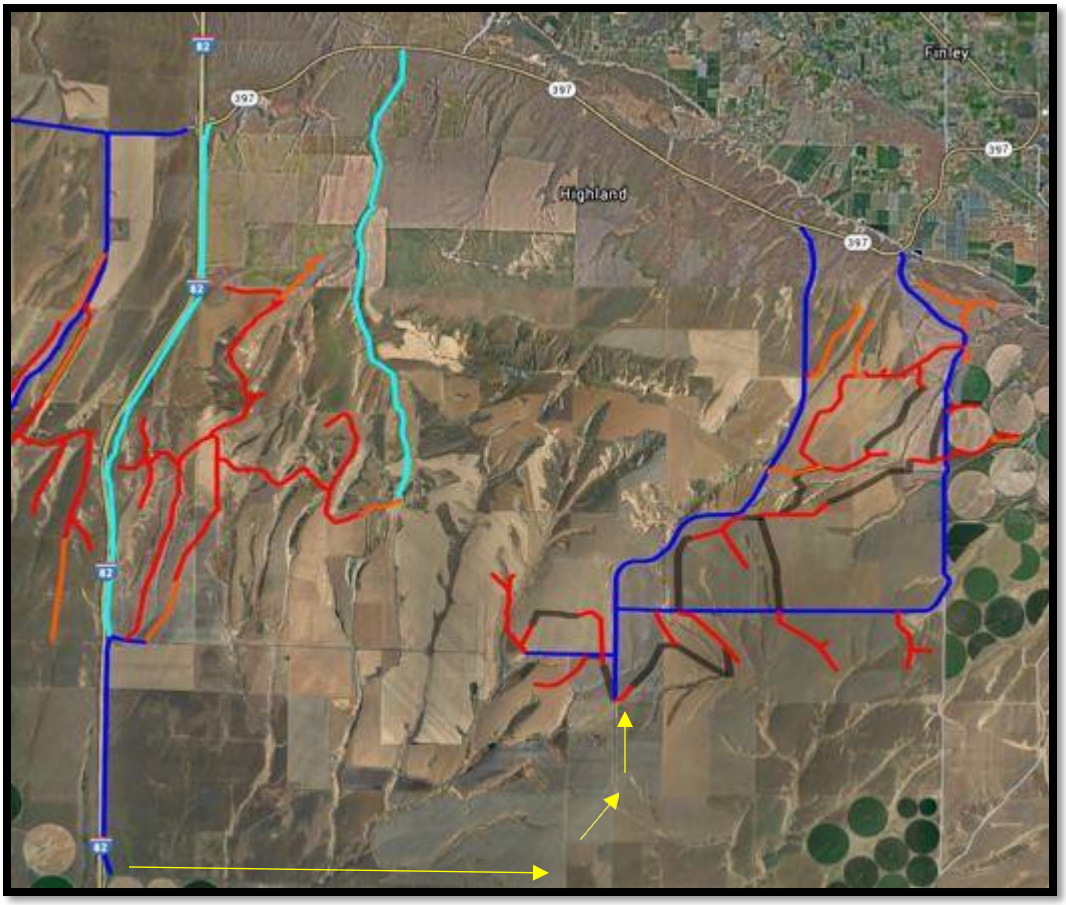
1) I-82 North (Exit 122) ramp right turn to Coffin Road East
2) Coffin Road East
- **a.** Left turn to Boyer Canyon Road North
  - **i.** Right turn to Beck – Need a special solution here – 3 point turn
- **b.** Left turn to Nine Canyon North

3) Nine Canyon Road North
- **a.** Connect to Beck road West
  - **i.** Build proposed cross over avoid traditional left turn
- **b.** Connect to site off Kirk
  - **i.** build cross overs either North of South of Kirk Road for first string
  - **ii.** Remaining strings build new roads parallel with knolls to proposed sites from Miles Road access point
- **c.** Right turn to Miles Road
  - **i.** Build new road over to Finley from Miles Road access point

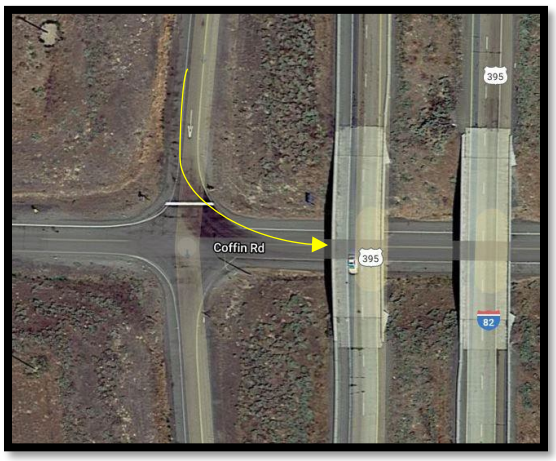
Westside of the project - Improve to selected platform requirements

1) I-82 North (Exit 114) ramp left turn to Locust Road West
   a. Improve inside and outside radius to accommodate a left turn for all components
2) Locust Road West
   a. Left turn to Nicoson South improve left turn and improve route to an access road
   b. Edwards –
      i. Would require a cross over or another solution to access this road if it will be used for incoming deliveries
      ii. Improve route to an access road
   c. Left turn C Williams
      i. Right turn to Bently – build outside radius to avoid obstacles inside sweep
   d. Right turn to H Smith
   e. Right turn to Plymouth Road North – improve turn to accommodate all components
   f. Continue onto Sellards West
      i. Right turn to H Smith
      ii. Right turn to S Badger
         1. Left turn to Cemetery West
            a. Right turn to Travis North
               i. Right turn to Hanson East – Build bypass to Hanson Road
                  1. Dennis North
                     a. Improve curve to from Hanson to Dennis

Routing (Eastern side of the project)
Note: Only dark and light blue routes were reviewed)



I-82 South exit number 122 Coffin Road East (If needed)



- Signs will need to be modified to removable (currently wood).
- Radius improvements to GE specifications will be needed.
- Cut slopes inside turn and rear sweep (TBD by civil engineering designs within GE specifications).

Coffin East
The under pass was measured at 16-0~ last beam coming out

-82 North (Exit 122) to Coffin (East)

- Signs will need to be modified to removable (currently wood).
- Radius improvements to GE specifications will be needed.
- Cut slopes inside turn and rear sweep (TBD by civil engineering designs within GE specifications).

Coffin East 5 miles (no issues)

Coffin left turn to Nine Canyon North

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.

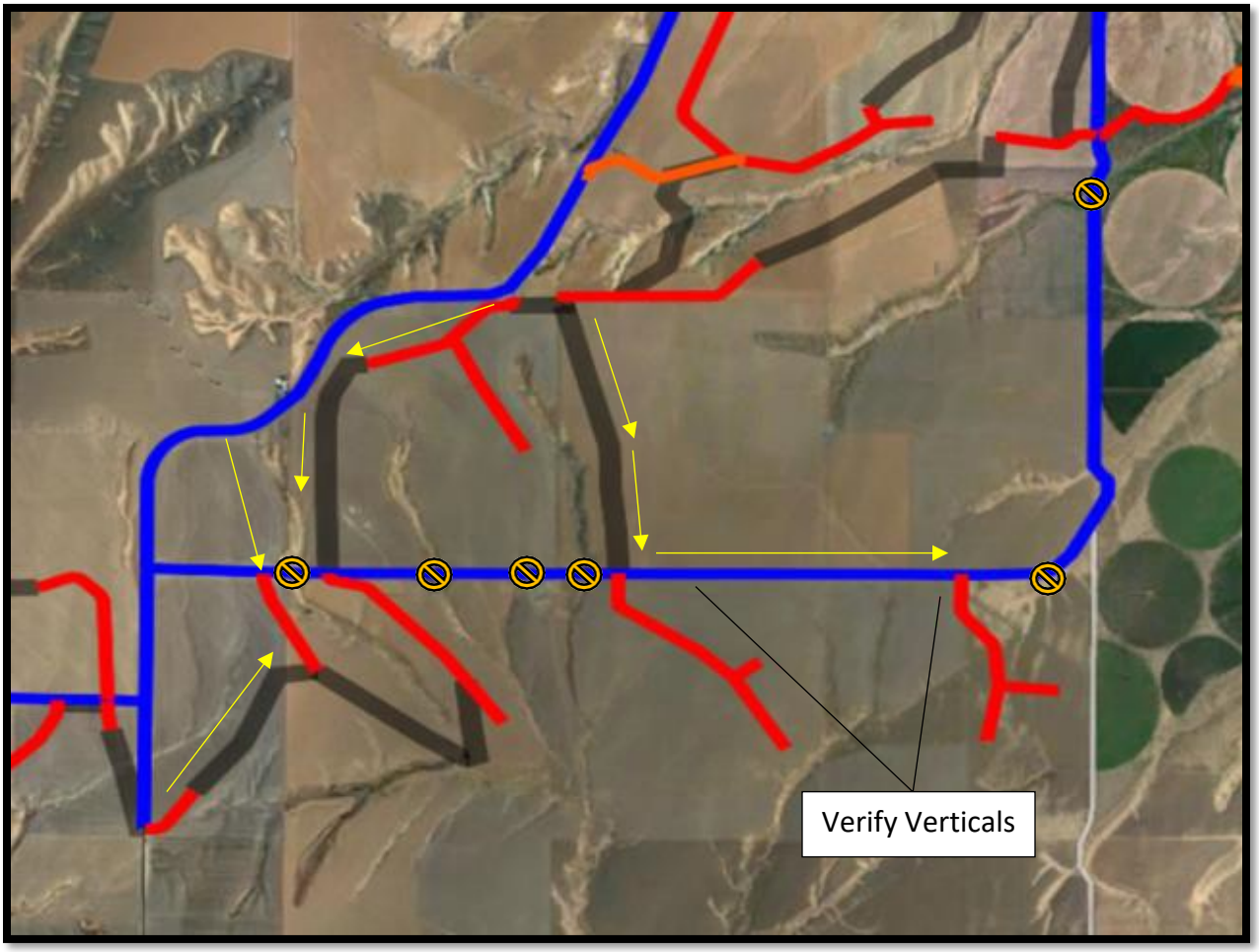
Nine Canyon North

At Beck Road

- Turn cannot be completed as constructed plus incline after turn.
- Customer proposes to crossover from Nine Canyon Road to Beck Road to bypass these obstacles.
- Verify verticals out about 0.8 to 0.9 miles to last string off Beck.

Nine Canyon North (cont.)

At Kirk Road



- The right turn to Kirk Road can be improved however this road has deep declines with acute inclines (See example below).
- Two vertical deviations in the first 0.3 miles before first string South.
- Recommendation is for customer to consider building new strings along knolls to avoid substantial civil improvements to Kirk Road from Nine Canyon for Western site South of Kirk or from Miles and Nine Canyon existing proposed access point for other strings.
- About 1.8 miles East of Nine Canyon Road on Kirk tie in from Miles string **verify vertical deviations meet GE specification or improve as needed.**

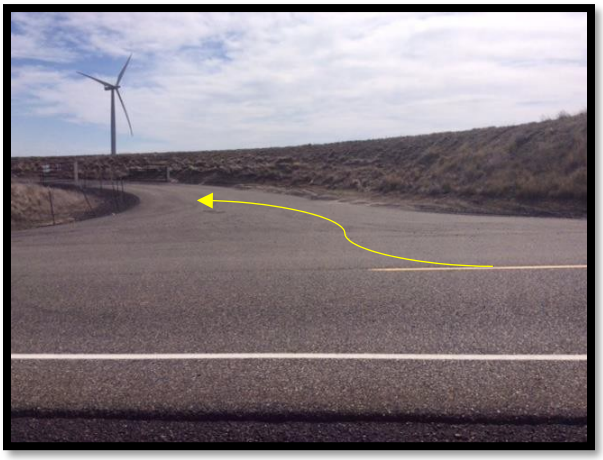
Nine Canyon North (cont.)

Example of acute decline and inclines on Kirk

At Miles

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- Propose connection over to S. Finley from Miles and Nine Canyon (see below).

At site access right (5.6 miles~ North of Coffin Road)



Road profile has been lowered since initial towers on this proposed access point were constructed Right turn leads into left curve before turn is complete. Explore improvements to make this transition as straight as possible.

At site access right (6.8 miles~ North of Coffin Road)

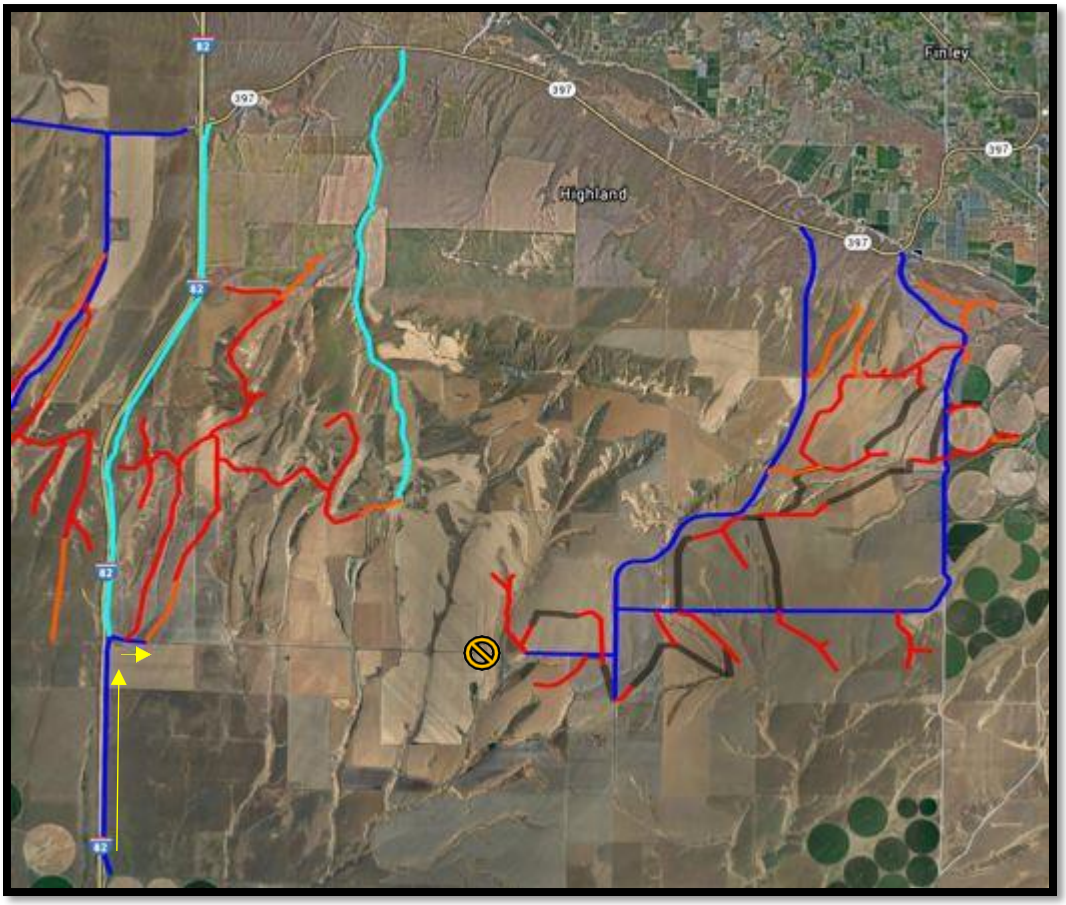
- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.
- (Stop)

Access to Finley from Nine Canyon at Miles

- Finley cannot be access from Kirk or 397 without significant civil improvements (grades curves etc.).
- Coming from 374 would not line up access to Northeast most string.
- Creating path from Nine Canyon at Miles with extensions of proposed strings is recommend if customer want to access the proposed sites off Finley.
- (Stop – Return to Coffin and Bofer Canyon Road).

Coffin and Bofer Canyon Road

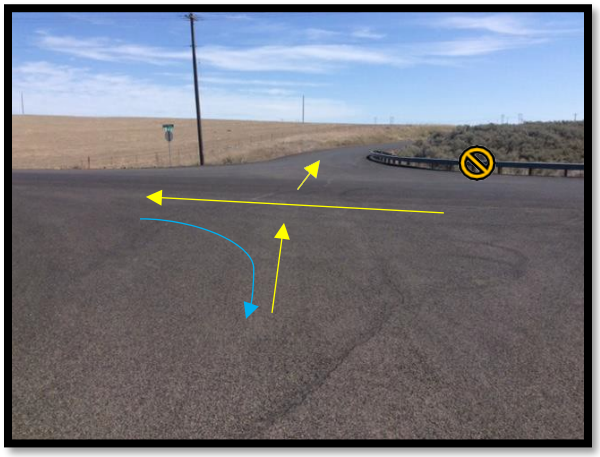
Note: To reach sites on Beck that are East of I-82 that cannot be reach using Beck off Nine Canyon Road



Coffin left turn to Bofer Canyon Road

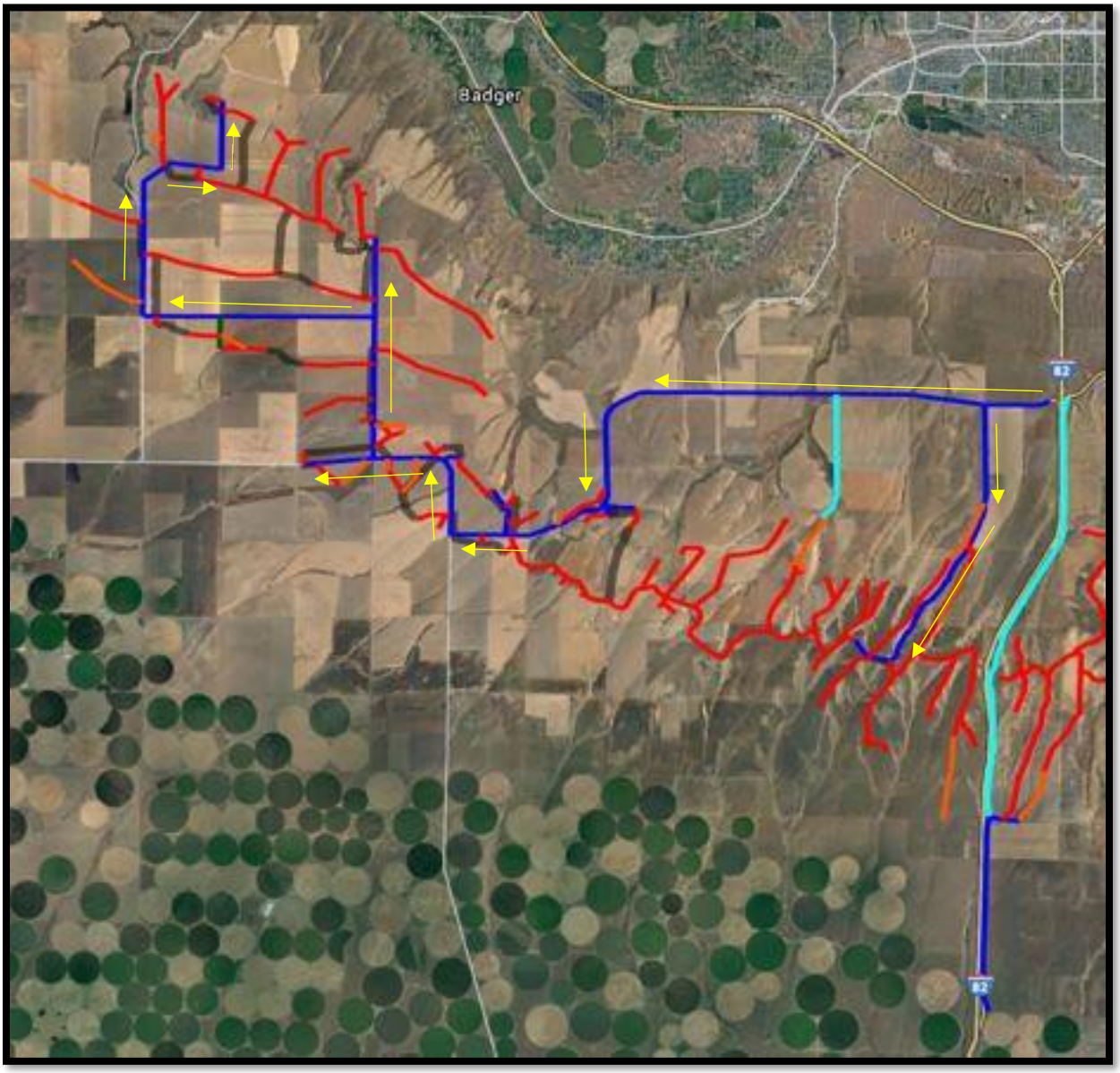
- Signs will need to be modified to removable.
- Radius improvements to GE specifications will be needed.
- Cut slopes inside turn and rear sweep (TBD by civil engineering designs within GE specifications).

Boyer Canyon Road to Beck



- Signs will need to be modified to removable.
- Radius improvements to GE specifications will be needed in NW corner.
- NE and SE corner has guard rail and deep ditches.
- 3 point turn will need to be approved by GE and their carriers.

Access to Western side of the project



I-82 NB Exit 114

- Signs will need to be modified to removable (currently wood).
- Radius improvements to GE specifications will be needed (outside).
- Cut slopes inside turn (TBD by civil engineering designs within GE specifications).

0.0 Under pass clear Over 16-0 high

At Niconson

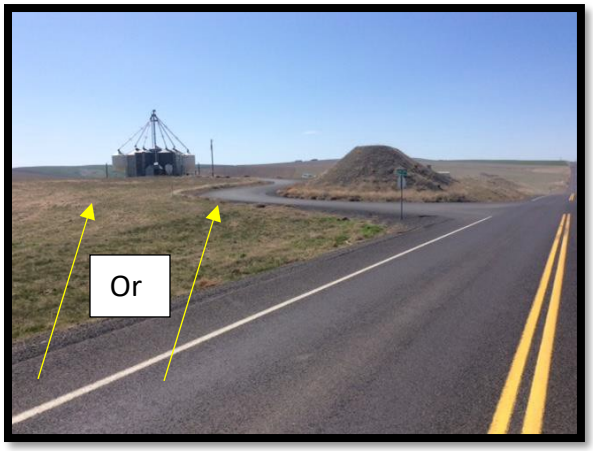
- Signs will need to be modified to removable.
- Radius improvements to GE specifications will be needed.
- Will need use of outside radius to avoid power pole in rear sweep.

Nicoson Road (reviewed for 4.1 miles)

- Road will need to be widened to GE specification for an access road with plan for empties to exit.
- At 2.1 & 2.4 cut slope in tail sweep will make contact with blade tips (back on blade for 60.6 M).
- 3.8 miles need plan for S turn to meet GE specifications for an access road.

Locust Road West (cont.)

At Edwards



- Create cross over and a path to Edwards South to avoid dirt pile at next curve South.
- Gas line marker observed will a cross over SE of S curve be needed?
- Left turn after dirt pile not feasible acute incline and power pole/cut slope in rear sweep.
- Edwards South for 1 mile was reviewed. Road needs to be widened and gate at 1.0.

Widened Locust Road West (cont.)

At proposed site access right (7.1 miles~ West of I-82 interchange)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At C Williams 7.3 miles West of Interchange with I-82

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- 220~ right turn to Bentley outside radius will be needed.

- C William continued 0.2 miles narrow road Power poles right side and post to protect junction left (customer plan).
- 0.4 miles decline in road to proposed string road (Customer Plan).

Locust Road West (cont.)

At proposed access or exit point 8.0 miles West of I-82 interchange

- Access point or exit for string boxed in with guard rail steep slope down (Customer plan for this path?)

At H Smith 8.7 miles West of I-82 Interchange (reviewed for 0.4 miles)

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- 0.2 miles vertical deviation (customer plan?)

Locust Road West (cont.)

At proposed site access left (9.0 miles~ West of I-82 interchange)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At Junction with Plymouth (9.4 miles)

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- If turn cannot be improved the rest of the project North and West of this junction could be accessed for via WA 14 West to Plymouth North (see alternatives reviewed).

Plymouth North

At proposed site access left (0.3 miles~ North of Locust Road)

- Not constructed yet. Improve to GE specifications as necessary to accommodate all components for selected platform.

At H Smith (0.9 miles from Locust Road)

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- H Smith reviewed for 0.2 miles

At 0.9 and junction with H Smith Plymouth becomes Sellards Road

Sellards West

At proposed site access right (0.1 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (0.3 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (0.6 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At S Badger Canyon (0.9 miles West of Jct H Smith) (see below)

Sellards West (cont.)

At proposed site access left (1.0 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (1.6 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access right (1.8 miles~ West of Jct H Smith)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

Stop return to Jct Sellards and Badger Canyon

S Badger Canyon North

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- Immediately North of turn Verify incline is within GE specifications from selected platform.

S Badger Canyon North

At proposed site access right (0.2 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access right (0.4 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

0.5 grade incline with skinny guardrail verify within GE Specifications

S Badger Canyon North (cont.)

At proposed site access left (0.5 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.
- Ensure power poles on right are not within blade tailsweep for the final platform selected.

At proposed site access left (0.7 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.
- Ensure power poles on right are not within blade tail sweep for the final platform selected.

At proposed site access left (1.2 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access right (1.4 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At Junction with Cemetery (1.9 miles North of Sellards)(see below)

At proposed site access left (2.0 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

2.5 low point in road to incline verify its within GE specifications or improve

At proposed site access right(2.7 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (2.9 miles~ North of Jct Sellards)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.
- Stop return to Cemetery

Cemetery Road West

- LEFT TURN from S Badget Canyon.
- Improve turn to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (2.8 miles~ West of Jct S Badger Canyon)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

Cemetery West (cont.)

RIGHT TURN to Travis (3.0 miles from S Badger Canyon)

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.

Travis Road North

At proposed site access left (0.2 miles~ North of Jct Cemetery)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access right (0.8 miles~ North of Jct Cemetery)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (1.2 miles~ North of Jct Cemetery)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

RIGHT TURN (1.4 miles North of Cemetery Road)

- Improve turn to GE specifications as necessary to accommodate all components for selected platform.
- May need a cross over to line up with Henson and eliminate the turn and immediate curve.
- Power pole will be in rear sweep along with sign and mailbox for right turn and curve left (see black circle in photo.)

Henson Road

- Narrow less then GE specifications (customer plan to widen).
- Low point in road.

At proposed site access left (0.6 miles~ North of Jct Travis Road)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

0.6 Road paved at private farm stay right

At proposed site access right (1.2 miles~ North of Jct Travis Road)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At Dennis (1.4 miles North of Travis Road) curve left to dennis (plan for radius for tight curve?)

Dennis North

- low point (0.4 miles North of Hansen).

At proposed site access right (0.8 miles~ North of Curve from Hansen Road)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

At proposed site access left (0.9 miles~ North of Curve from Hansen Road)

- Not constructed yet improve to GE specifications as necessary to accommodate all components for selected platform.

Stop before “S” curve (end of review)

Alternatives Reviewed

1) **Nine Canyon North to WA 397 East to Finley South**

    a. **Can reach Finley but cannot reach proposed sites as constructed.**

2) **Coffin East to Nine Canyon North to WA 397 West to Bofer Canyon South to Beck East**

    a. **This could be used if improvements from Coffin Road to Bofer Canyon Road to Beck Road East.**

3) **WA 397 East from Exit 114 (Locust Grove) to:**

    a. **Owens South to Anderson.**

        This could be done with major civil improvements.

    b. **Nine Canyon South to Beck Road.**

        This does not line up with all of the proposed access points from this direction.

    c. **Finley South to last string.**

        Can reach Finley but cannot reach proposed sites as constructed.

4) **I-82 North and South to WA 14 West to Plymouth North**

    a. **Can reach Junction of Plymouth and Locust Grove.**

    b. **Would require civil improvements and interchange ramps.**

    c. **May require sign remove for turn from WA 14 West to Plymouth North for some components (blades).**

    d. **More data can be provided if this alternative is needed to reach site North and West of junction of Plymouth and Locust.**