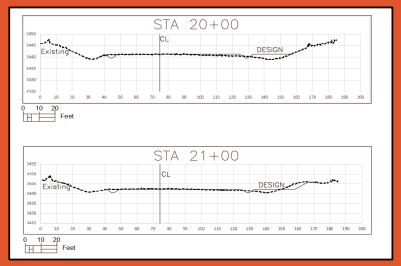
US–20 / OLD BEND–REDMOND HIGHWAY INTERSECTION REDESIGN

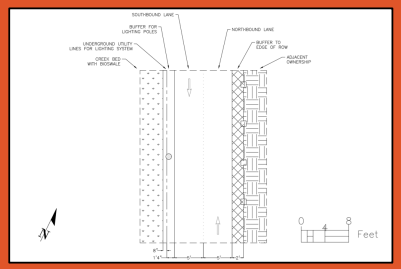
Logan Byorum, Ryan Olson, Charles Hyatt, Foster Kirsch, and Sophia Schmiedt

ROADWAY DESIGN + SHARED USE PATH

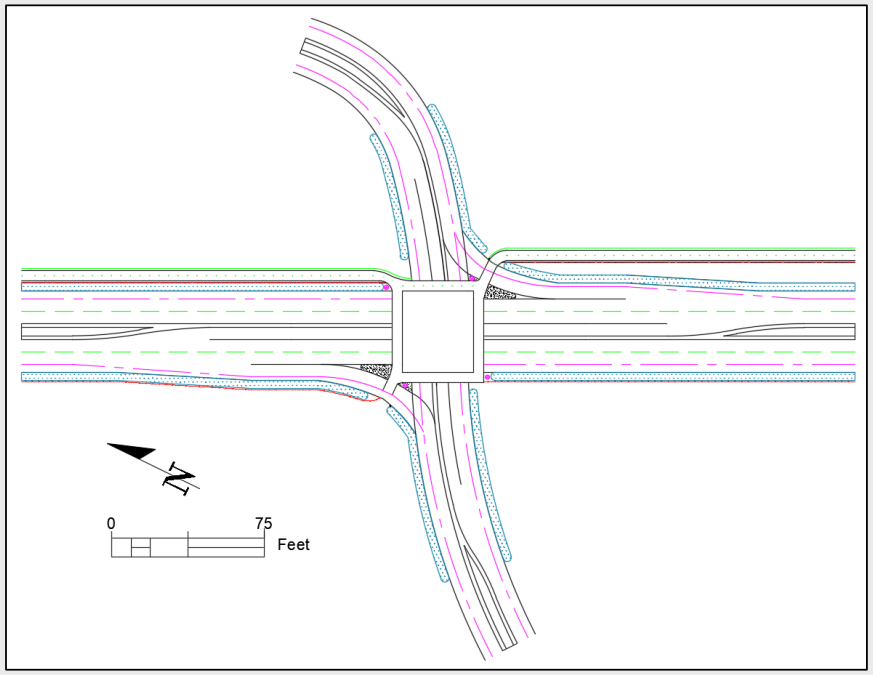
- Left turn lanes facilitate efficiency with protected left turns implemented along the OBRH.
- Semi-actuated signals promote system efficiency and in-pavement loop detectors minimize cost.
- Right turn slip lanes along US–20 facilitate high volume turning movements.
- Medians promote safety by separating traffic.
- Shared use path separated from roadway promotes safety of all users.
- Lighting and signage systems increase visibility and predictability.



Cross sections for roadway design



Shared use path, typical section



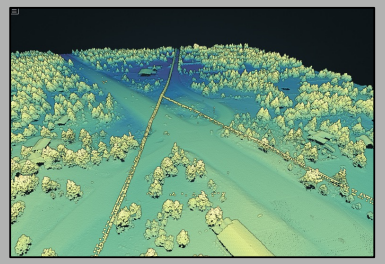
Proposed site plan for project

Selected Alternative: Signalized Intersection

US–20 is a major connector of the Willamette Valley and central Oregon, while the Old Bend–Redmond Highway links the city of Bend with neighboring Redmond. The intersection between these two highways currently features a two-way stop configuration, which has contributed to multiple vehicle conflicts. Other project alternatives included a roundabout and a bridge. A traffic signal was selected in prioritizing the design criteria of safety, cost, and efficiency.

GEOMATICS

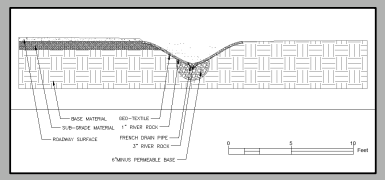
- Provides visualizations of surrounding land characteristics to optimize design.
- Produces cross sections for right-of-way design drawings.
- Allows cost estimates from cut and fill material to minimize project expenditures.



LiDAR output of intersection, looking north

WATER RESOURCES

- Drainage features (bioswales) are located on all four corners of the intersection.
- System is designed for 25-year peak flow event.
- Prioritizes low maintenance, low cost, and ease of implementation.
- Creek bed design matches local aesthetics.



Bioswale design

Similar creek bed design
(source: https://en.wikipedia.org/wiki/Bioswale)

Oregon State University