PROJECT CONCEPT DESIGNS

Based on the suggested considerations on urban context, parking demands, traffic operations, safety, public feedback, and City/ODOT input, the project team finalized the preferred solutions. This section presents a project list and concept sheets for each location of recommended improvements.

In addition to the location-specific recommendations outlined below, systemic recommendations include requiring bike parking with new development, adding leading pedestrian intervals at all signals, and adding passive pedestrian detection at corners with signals that have higher volumes of people walking. Highest priority locations for leading pedestrian intervals (LPIs) include U.S. 20 (Santiam Highway)/Airport Road based on public feedback, 5th Street/Airport Road based on proximity to the school, U.S. 20 and OR-24 based on crash data, and U.S. 20 (Park Street)/Oak Street based on proximity to the transit stop. LPIs should be paired with audible pedestrian pushbuttons so that people with low or no vision can be informed of the advance walk time.

To accommodate for freight on the Reduction Review Routes, none of the presented designs further reduce pinch points for the corridors. Horizontally protected bike lanes, curb extensions, and medians are presented so that they do not further reduce horizontal pinch points from the existing conditions on the corridor. However, these elements may reduce vehicle carrying capacity. Vertically, overhead RRFBs are the only recommended treatment that would overhang the highways. ODOT design guidance is that these should be 18' minimum to 19' maximum from the ground to the bottom of equipment on mast arms for both traffic signals and RRFBs, so these will not create new pinch points shorter than existing signals.

OR 34 PROJECTS AND CONCEPT DESIGNS

Improving the bike infrastructure along OR 34 through upgrading to protected or buffered bike lanes would increase safety and comfort for bicyclists and motorists. Based on speeds and volumes, design guidance recommends protected bike lanes throughout the corridor. There is not currently maintenance funding to maintain protected bike lanes, so wider buffered bike lanes should be implemented in the near-term and separation should be added in time when there is funding to maintain them.

There are several constraints for implementing protected bike lanes on OR 34. Driveways throughout will create constraints on locations where protection can be added. The eastbound freight pinch point of 30' means that protection can only be added on one side or the other, *not both,* at any given point and there are some narrower sections of the corridor where protection is not recommended at all.

Figure 14A presents OR 34 from 12th Street to 6th Street. From 12th Street to Hansard Avenue, minor lane narrowing to 11' travel lanes through restriping would be necessary to provide a buffer on the existing bike lane. Note that narrowing lanes may also have the benefit of lowering speeds to be more appropriate for this urban context. East of Hansard Avenue, parking removal is recommended to provide space for buffered to protected bike lanes. It is recommended to have additional follow-up with these neighbors before restriping to discuss the tradeoffs between parking removal and the safety improvements associated with improved bicycle facilties. Parking utilization is generally low on adjacent side streets, which could accommodate the additional parking demand from OR 34.

Figure 14B presents OR 34 from just east of 6th Street to the intersection with U.S. 20. From 6th Street to just west of the railroad tracks where parking removal is recommended to provide space for buffered to protected bike lanes. From the railroad tracks to U.S. 20, restriping can add a buffer to the existing bike lane. While narrowing travel lanes to 11' can encourage slower speeds and better represent the urban nature of the corridor, this restriping west of the railroad tracks can be done without needing to narrow to narrower than 12' lanes. In addition to these bike facility recommendations, crossing enhancements at 2nd Street both north and south are recommended. The project list and further crossing details are provided in the Enhanced Crossing Projects and Concept Designs section of this document.

Table 4: OR 34 (Tangent Street) Projects

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
T-1	14A, 14B	OR 34 (Tangent Street)	OR 34 (Tangent Street)	12th Street	U.S. 20 (Main Street)	Restripe to narrow the lanes and provide buffered bike lanes. When maintenance funding allows, add separators to the buffer to provide a protected bike lane in areas with space.	$1,705,000	ODOT	Parking removal will be needed along some stretches of the corridor and additional outreach is recommended to the adjacent neighbors to discuss the change to parking on adjacent side streets before implementation.

Note: Crossing projects are not included in this table. See Table 8 for details on crossing projects.

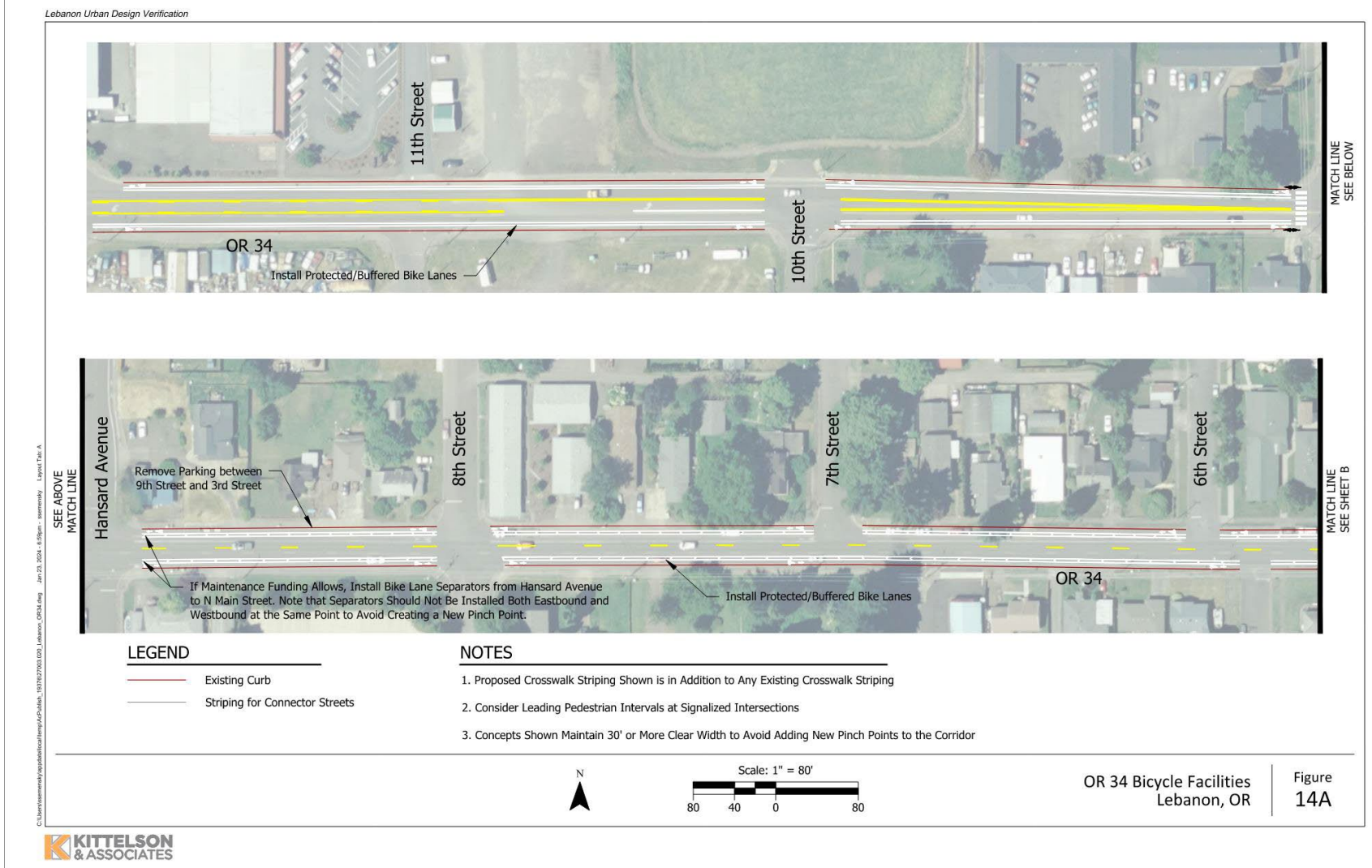

Figure 14A: OR 34 Bicycle Facilities Sheet A

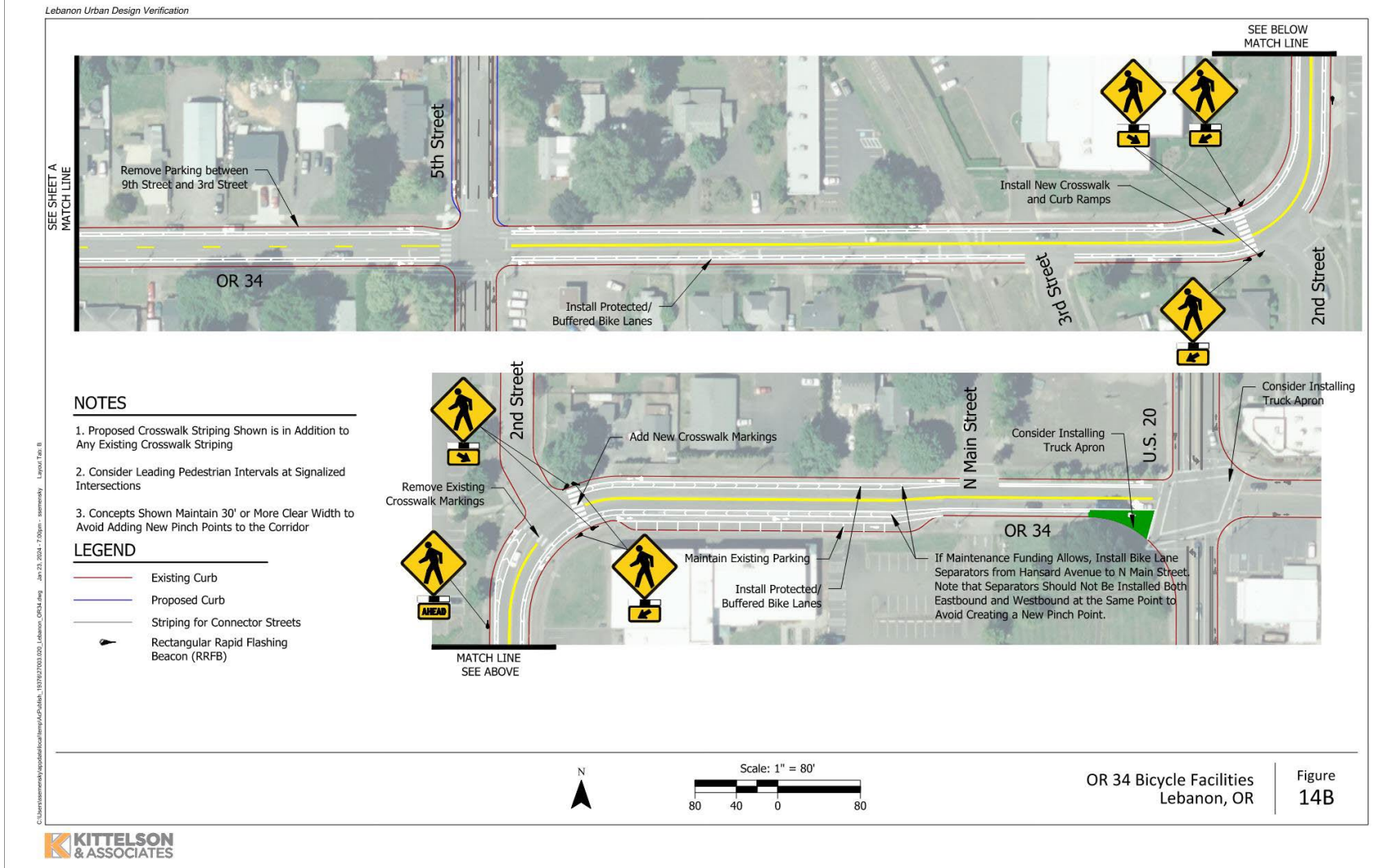

Figure 14B: OR 34 Bicycle Facilities Sheet B

U.S. 20 (MAIN STREET, PARK STREET, AND SANTIAM HIGHWAY) PROJECTS AND CONCEPT DESIGNS

Photo: Kittelson and Associates, Inc.

While parallel biking routes are recommended for most of U.S. 20, there are several sections of U.S. 20 that should still be improved with biking facilities. From OR 34/Wheeler Street to Reeves Parkway, the roadway should be restriped to form continuous, upgraded bike lanes.

Figure 15A presents U.S. 20 from Reeves Parkway to south of Industrial Way. There are already striped bike lanes through this stretch of highway, and with restriping those can be widened to buffered/ protected bike lanes in the future. Crossing enhancements are shown at Industrial Way to support crossing spacing targets and connections to the parallel bikeways that can be accessed from the N Main Street to Mary Street connection to the 5th Street Bikeway and the Industrial Way connection to the Grove Street Bikeway. Note that the crossing is placed on the south side of the intersection to allow for southbound left turns onto Industrial Way. To facilitate bicyclists reaching the crossing enhancements, a short section of a two-way path connection is included. E Burnside Street and SE 30th Avenue in Portland, OR provides an example of an implemented similar treatment. The project list and further crossing details are provided in the Enhanced Crossing Projects and Concept Designs section of this document.

Figure 15B presents U.S. 20 from south of Industrial Way to the intersection with Carolina Street. While protected bike facilities are recommended throughout and should be included if reconstruction occurs, restriping provides space for buffered/ protected bike lanes until the addition of the turn lane at the intersection of U.S. 20/OR 34. At this intersection, there is only space for a standard bike lane. The left turn lane was maintained to provide separate pedestrian crossing phase from the southbound left turning phase.

South of OR 34/Wheeler Street, the southbound bike recommendation is to use one of the parallel routes: the 5th Street Bikeway to the west or the Grove Street Bikeway to the east. The bike route wayfinding sign pointing to OR 34 from U.S. 20 southbound intends to direct bicyclists to this route because there is not a receiving southbound bike lane on the other side of the intersection. A northbound buffered/protected

bike facility is recommended on U.S. 20 from OR 34/Wheeler Street on Main Street to Carolina. Parking is not allowed for the majority of this segment but will need to be removed for a short section between Carolina Street and Dodge Street.

An enhanced crossing is presented at Dodge Street. The project list and further crossing details are provided in the Enhanced Crossing Projects and Concept Designs section of this document.

Figure 16A and 16B show the Carolina Street and Park Street sections of U.S. 20 from Main Street to Oak Street. A northbound buffered facility should be added from the intersection of Oak Street and Park Street to the intersection of Carolina Street and Main Street, and when maintenance funding allows, protection should be added in the segment from Ash Street to Oak Street. North of Ash Street there is not space to add bike protection without reducing the pinch point, so therefore just restriping to buffered bike lanes is recommended north of Ash Street.

On Carolina Street, a near-term project is recommended to remove one travel lane and stripe a westbound buffered bike lane. Low left turning traffic volumes at Carolina Street and Main Street mean that there should be negligible traffic impacts with this change. Parking is not currently allowed for most sections of Carolina Street between Main Street and Park Street. The parking that does exist on the north side of the street will need to be removed, but parking may be added on the south side of the street due to the removal of the second travel lane.

There is concern about northbound left-turning trucks running onto the curb and sidewalk at the intersection of Carolina Street and Park Street. The project team ran turning templates and found that with correct positioning, large trucks (WB-67) should be able to make this turn without conflicting with the curb. The consolidation to one lane northbound and the removal of parking south of the intersection should help encourage trucks to take the full space for turning, which may help reduce the conflicts with the curb. Large turning trucks will need to travel into the bike lane to make the turn, creating potential safety conflicts with vulnerable road users. Therefore, a construction project is recommended to construct a shared-use path on the north side of Carolina Street to reduce potential safety conflicts with people biking and turning trucks. The recommended pedestrian crossing at this intersection should be placed just south of the intersection to reduce potential conflicts with turning trucks and pedestrians or the crossing signs and equipment.

On Park Street, consolidating parking to the west side of the roadway will open space for a northbound buffered/protected bike lane on the east side. This would benefit the community by slowing traffic speeds, improving safety for bicyclists and pedestrians, and providing another important north-south biking connection through the downtown area. The addition of curb extensions will also help slow speeds and improve the visibility and comfort of pedestrians crossing. To minimize impacts to stormwater, designs that do not impede stormwater flow, like the trench drain implemented at the curb extension in front of Banks High School, may be considered. The right turn lane at Grant Street is shown as removed in the concepts, and traffic analysis showed minimal impacts to traffic operations with this change.

South of Ash Street, protected bike facilities can be added without reducing the pinch point for freight except at adjacent curb extensions, so bike lane separators are not shown in these areas. North of Ash Street, the roadway widths are reduced to eleven and half feet and a buffered bike lane is recommended to provide comfort for bicyclists while maintaining clear space for freight. In addition, pedestrian crossing islands are recommended at E Sherman Street. At this intersection with Sherman Street, twenty-five feet of clear space should still be maintained as to not create a new pinch point along the corridor, which will require the curb extension and/or the bike lane to be narrower to allow for the six foot wide pedestrian crossing island.

Enhanced crossings are recommended in several sections along Park Street and details are provided in the Enhanced Crossing Projects and Concept Designs section of this document.

Table 5: U.S. 20 (Santiam Highway/Main Street/Park Street) Projects

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
S-1	15A, 15B	U.S. 20 from Reeves Parkway to Wheeler Street/Tangent Street	U.S. 20 (Santiam Highway/ Main Street)	Reeves Parkway	Wheeler Street/ Tangent Street	Restripe to add buffered bike lanes in the near term. Transition to standard bike lanes just north of the intersection with Tangent Street to provide space for turn lanes. If reconstruction occurs at this intersection in the future, reconstruct to provide buffered bike lanes to the intersection. When maintenance funding allows, add separators to the buffer to provide a protected bike lane. Provide southbound bike route signage directing bicyclists onto Tangent Street and 5th Street	$1,236,000	ODOT	Cost estimate includes concrete traffic separators
S-2	15B	U.S. 20 (Santiam Highway/Main Street) from Wheeler Street/Tangent Street to Carolina Street	U.S. 20 (Main Street)	Wheeler Street	Carolina Street	Restripe to provide a northbound buffered bike lane. When maintenance funding allows, add separators to the buffer to provide a protected bike lane.	$350,000	ODOT	Cost estimate includes concrete traffic separators
S-3	16A, 16B	U.S. 20 (Carolina Street/Park Street) from Main Street to Oak Street	U.S. 20 (Carolina Street/ Park Street)	Main Street	Oak Street	Restripe to consolidate parking to the west side of the street and provide a northbound buffered bike lane on the east side of the street. When maintenance funding allows, add separators to the buffer to provide a protected bike lane south of Ash Street. When funding allows, reconstruct to provide a shared use path connection for the first 150 feet of Carolina Street (nearest Park Street) to provide greater separation for bicyclists from larger turning vehicles.	$1,278,000	ODOT	Cost estimate includes concrete traffic separators

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
S-4	16B	Curb Extensions	U.S. 20 (Park Street)	N/A	N/A	Add curb extensions to the west side of the street at Ash Street, Sherman Street, Grant Street, Maple Street, and Oak Street.	$250,000	ODOT	
S-5	Not pictured	Prohibit Left Turns from S Main Road	U.S. 20 and South Main Road	N/A	N/A	Prohibit left turns from S Main Road onto U.S. 20 (convert to right in/left in/right out).	$10,000	ODOT	

Note: Crossing projects are not included in this table. See Table 8 for details on crossing projects.

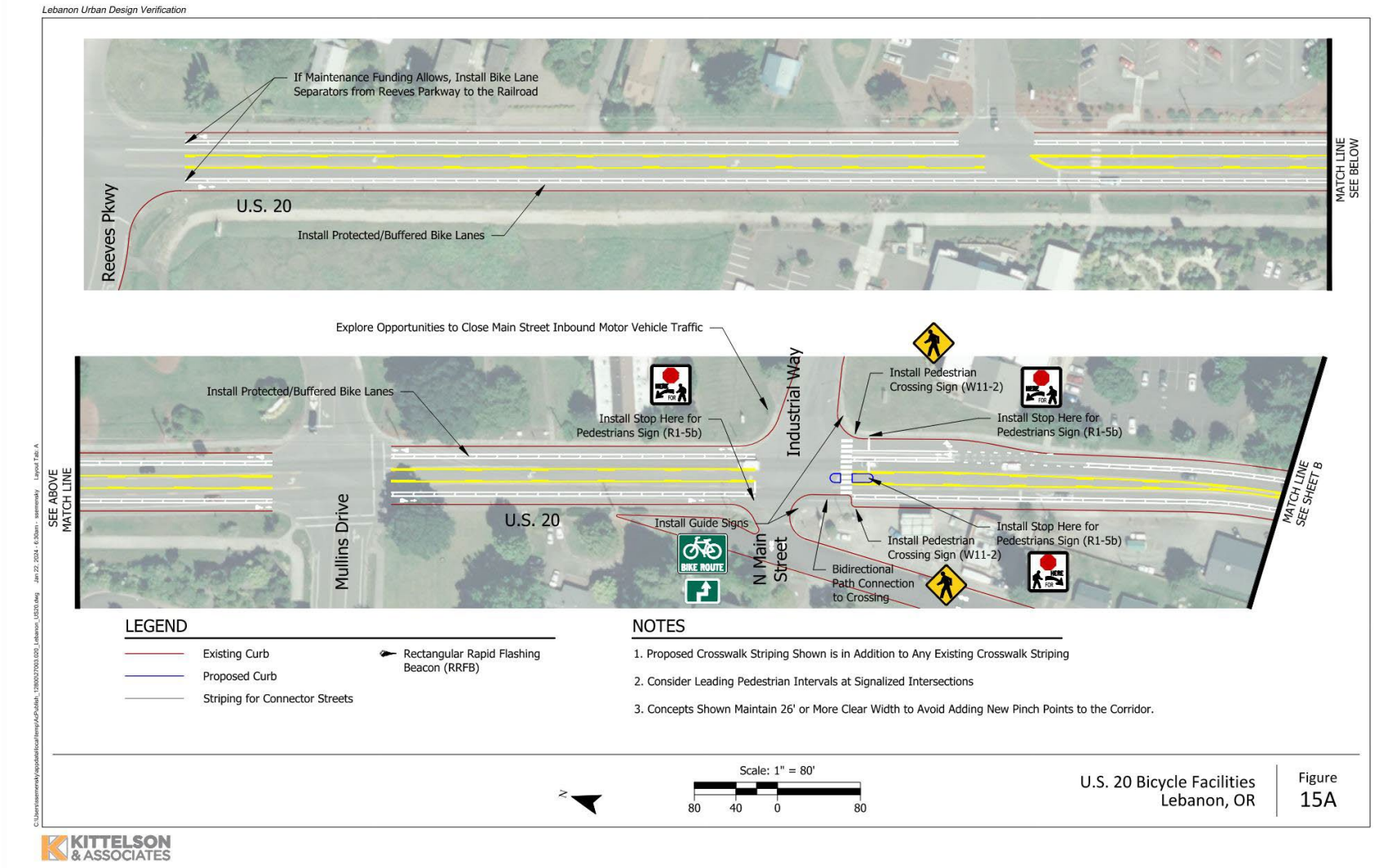

Figure 15A: U.S. 20 Bicycle Facilities Sheet A

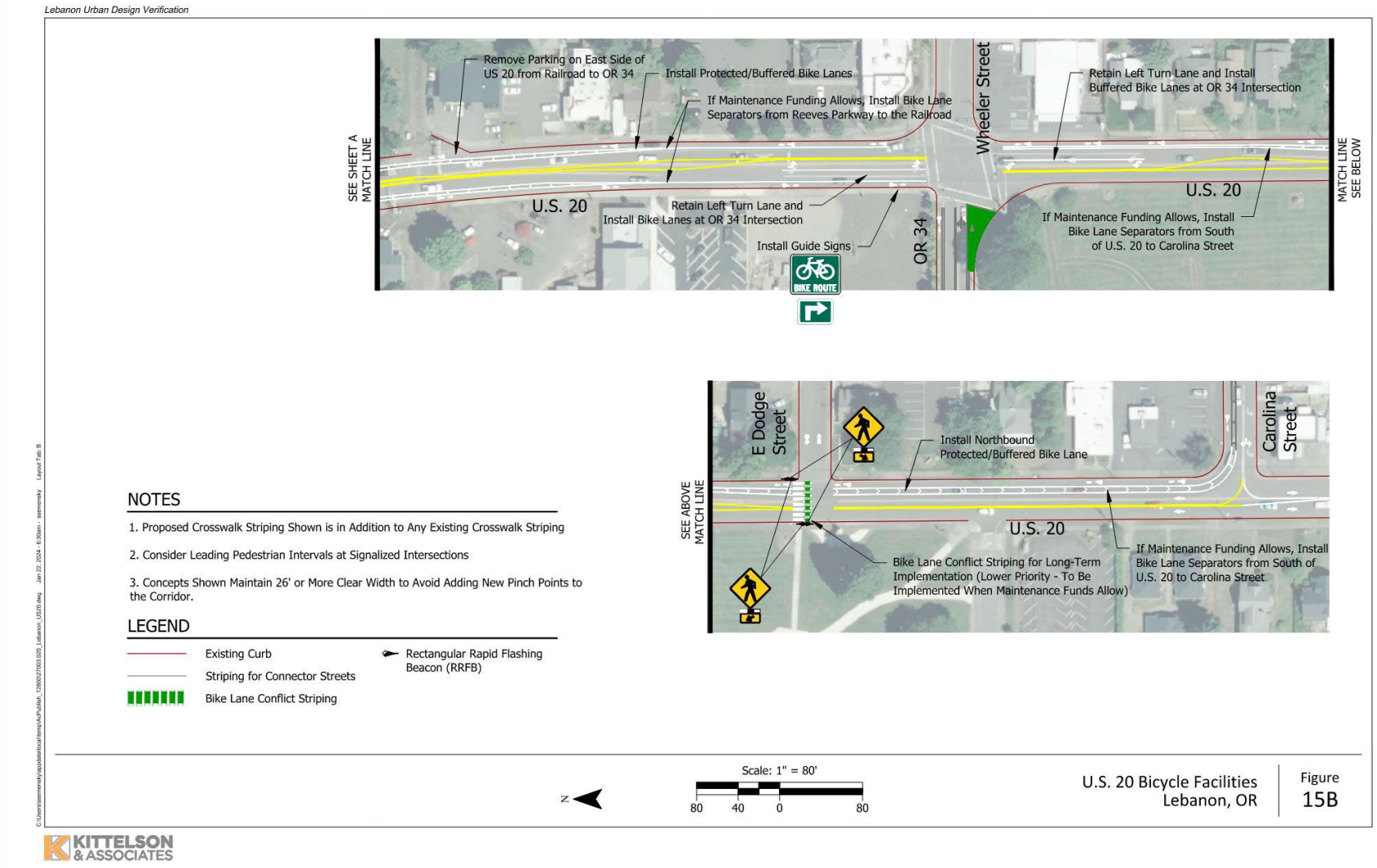

Figure 15B: U.S. 20 Bicycle Facilities Sheet B

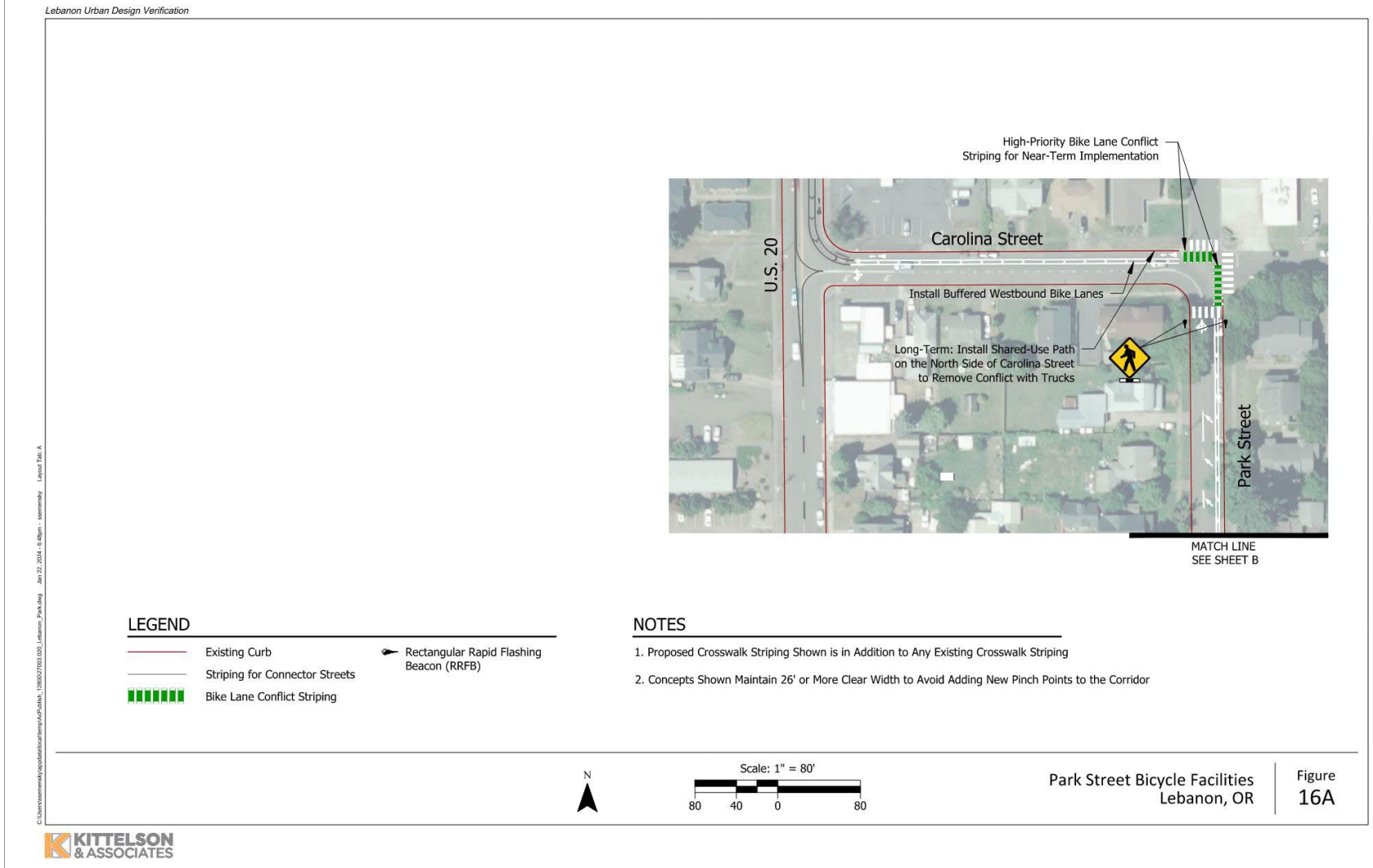

Figure 16A: Park Street Bicycle Facilities Sheet A

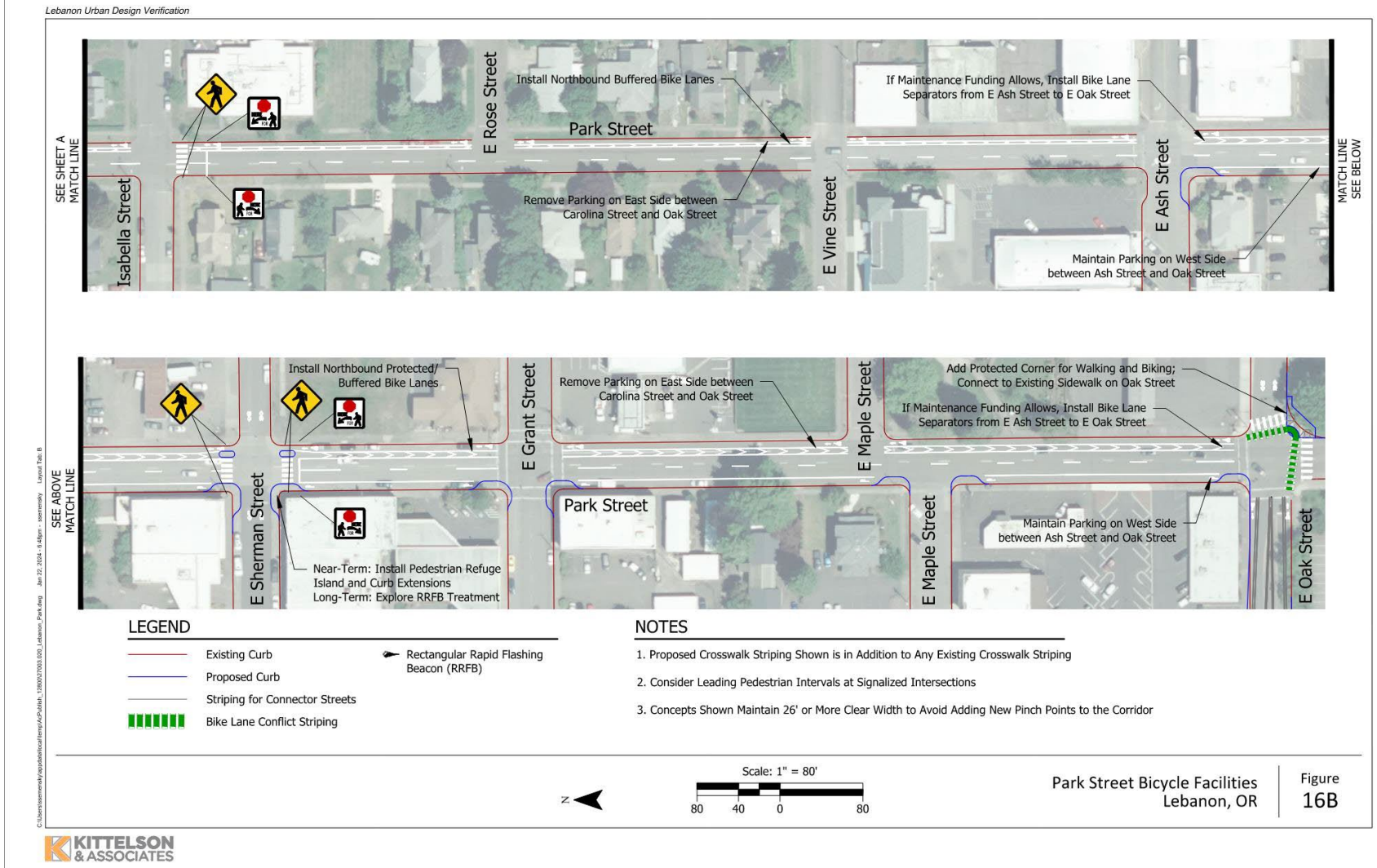

Figure 16B: Park Street Bicycle Facilities Sheet B

5TH STREET BIKEWAY PROJECTS AND CONCEPT DESIGNS

As a parallel route to the busy U.S. 20 highway, 5th Street provides a lower-stress biking environment with its lower speeds and traffic volumes. Enhancements to 5th Street will create an important north-south biking connection through town. Bike lanes already exist on 5th, but these bike lanes are substandard and should be upgraded to buffered lanes to provide comfortable travel for all ages and abilities. The street connects to important destinations like Lebanon High School and has lower parking utilization, making parking removal easier than on 2nd Street or Main Street. Note that the proposed parallel routes (5th Bikeway and Grove Street Bikeway) are on City streets and these projects would be the responsibility of the City. Without these parallel routes, bike facilities should be included on the highway where absent.

5th Street was identified as the key parallel route to improve as an alternative to making major changes like parking removal and/or removing a travel lane on U.S. 20 to provide bicycle facilities. If improvements are not made to 5th Street, these decisions regarding U.S. 20 need to be revisited.

While the following concepts are not all on 5th Street, they all support a more robust 5th Street Bikeway as a parallel route to the highway.

Figures 17A and 17B present the corridor from Reeves Parkway to just north of OR 34 (Tangent Street). For this section, a buffered bike lane can be striped throughout. North of Mary Street, parking on one side (as existing) and buffered bike lanes can fit within the existing curb. South of Mary Street, parking will need to be removed or the street will need to be widened to provide parking and buffered bike lanes. The City has a planned reconstruction of 5th Street south of Mary Street, and 5th Street may be widened during this time to provide parking and buffered bike lanes. If parking is provided in the future, there may not be space for a landscape strip between the sidewalk and roadway.

Figure 17C presents a neighborhood bikeway connection on Mary Street and N Main Street to U.S. 20. This continues across U.S. 20 on Industrial Way to ultimately connect to the Grove Street Bikeway.

Figures 17D, 17E, and 17F present the corridor from just north of OR 34 (Tangent Street) to Airport Road. Parking will need to be removed from this section to provide space for the bike lane improvements. With the reconfiguration, buffered bike lanes can fit throughout except in constrained sections, where a standard bike lane can be provided.

There are two sections along 5th Street that will require a phased approach for implementation. The first involves the section adjacent to Century Park, where community members expressed concern with removing parking. For this reason, a standard bike lane and parking (the existing configuration) is recommended to remain along the block adjacent to Century Park until parking on Carolina Street just north of the park can be reconfigured to angled parking to make up for the lost parking capacity on 5th Street. The second location involves the intersection with Airport Road. This is an important connection for people biking to school, but there is not space to maintain the turn lane at Airport Road and provide an on-street bike facility. Widening is recommended through that section to provide both.

Figures 17G, 17H and 17I present the 5th Street Bikeway south of Airport Road. Through this section, the bikeway goes from 5th Street to Kees Street to S Main Street to Market Street. It is recommended to create a shared use path connection from Market Street to the existing path just south of Market Street on U.S. 20. As documented in the Lebanon TSP, this path will ultimately connect to the southern Urban Growth Boundary.

This connection is a shared street/neighborhood bikeway on 5th Street and Kees Street. Restriping to 10 foot travel lanes (which aligns with the Lebanon TSP) is needed on S Main Street to provide buffered bike lanes on this stretch. Removal of the two-way left turn lane on Market Street and turn lanes at S Main Street/Market Street and U.S. 20/Market Street are recommended to provide bike facilities on Market Street. The bike connection on Market Street was a key connection recommended by community members. Operational analyses show minimal impact to operations on Market Street with these changes.

Figures 17J and 17K present the connection from U.S. 20 to the 5th Street Bikeway via Oak Street and Airport Road. The Oak Street connection will require reconstruction and is therefore likely a longer-term implementation project. It is recommended to provide sharrows and signing onto Sherman Street as a bikeway connection to the highway and beyond to the Grove Street Bikeway in the meantime. A protected corner is recommended at the intersection of Park Street and Oak Street to help support pedestrian crossings at the intersection and support an eastbound to northbound left turn movement for bicyclists. Restriping on Airport Road to narrow lanes and provide buffered bike lanes can occur in the near-term.


Photo: Kittelson and Associates, Inc.

Table 6: 5th Street Bikeway Projects

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
F-1	17A, 17B, 17D, 17E, 17F, 17G	5th Street Bike Facilities	5th Street	Reeves Parkway	Kees Road	Restripe to add buffered bike lanes on 5th Street from Reeves Parkway to W Maple Street, then bike lanes to F Street, and buffered bike lanes from F Street to Airport Road. Provide sharrows from Airport Road to Kees Street. Will require parking removal in some stretches. Reconfigure parking on the north side of Century Park to angled parking to account for loss of parking on 5th Street. Will require widening at Airport Road to provide turn lanes and bike lanes.This can be implemented in phases as appropriate.	$4,287,000	City of Lebanon	Potential for Safe Routes to School funding due to direct connection to Lebanon High School; cost estimate assumes full grind and inlay but does not include parking reconfiguration at Century Park.
F-2	17G	5th Street Connection: Kees Street	Kees Street	5th Street	S Main Street	Restripe to add sharrows and signs for a neighborhood route connection	$30,000	City of Lebanon	
F-3	17G, 17H	5th Street Connection: S Main Street	S Main Street	Kees Street	Market Street	Restripe to add buffer to bike lane; will require narrower (9.5' - 10') lane widths.	$871,000	City of Lebanon	
F-4	17I	5th Street Connection: Market Street	Market Street	S Main Street	Santiam Highway	Restripe to add buffered bike lanes and remove the turn lanes on Market Street, including the center turn lane, turn lanes at S Main Street, and turn lanes onto Santiam Highway. Operations analysis shows little to no operational impact with right turn lane removal at Santiam Highway.	$644,000	City of Lebanon	Public input identified this as a high priority connection.

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
F-5	17C	5th Street Connection: W Mary Street and N Main Street	W Mary Street and North Main Street	5th Street	Santiam Highway	Restripe to add sharrows and signs for a neighborhood route connection between 5th Street and U.S. 20.	$45,000	City of Lebanon	This project will be most useful if phased with the recommended crossing enhancements at U.S. 20/Industrial Way.
F-6	17D	5th Street Connection: Sherman Street	Sherman Street	5th Street	Grove Street	Restripe to add sharrows and signs for a neighborhood route connection between 5th Street and Grove Street.	$68,000	City of Lebanon	This is a high priority for near-term implementation, as the Oak Street connection will likely take longer to implement, making this Sherman Street connection more critical. This project will be most useful if phased with the recommended crossing enhancements at Park Street.
F-7	17J	5th Street Connection: Oak Street	Oak Street	5th Street	Park Street	Widen to add buffered or protected bike lanes from 5th Street to Park Street. Provide protected SE corner at Park Street to facilitate bicyclists making a left onto Park Street.	$1,800,000	City of Lebanon/ODOT at intersections with Main Street and Park Street	
F-8	17K	5th Street Connection: Airport Road	Airport Road	5th Street	Santiam Highway	Restripe to provide buffered bike lanes.	$530,000	City of Lebanon	

Note: There is currently no City funding available for the projects listed in the table. Completion of these projects would only happen if funding becomes available.

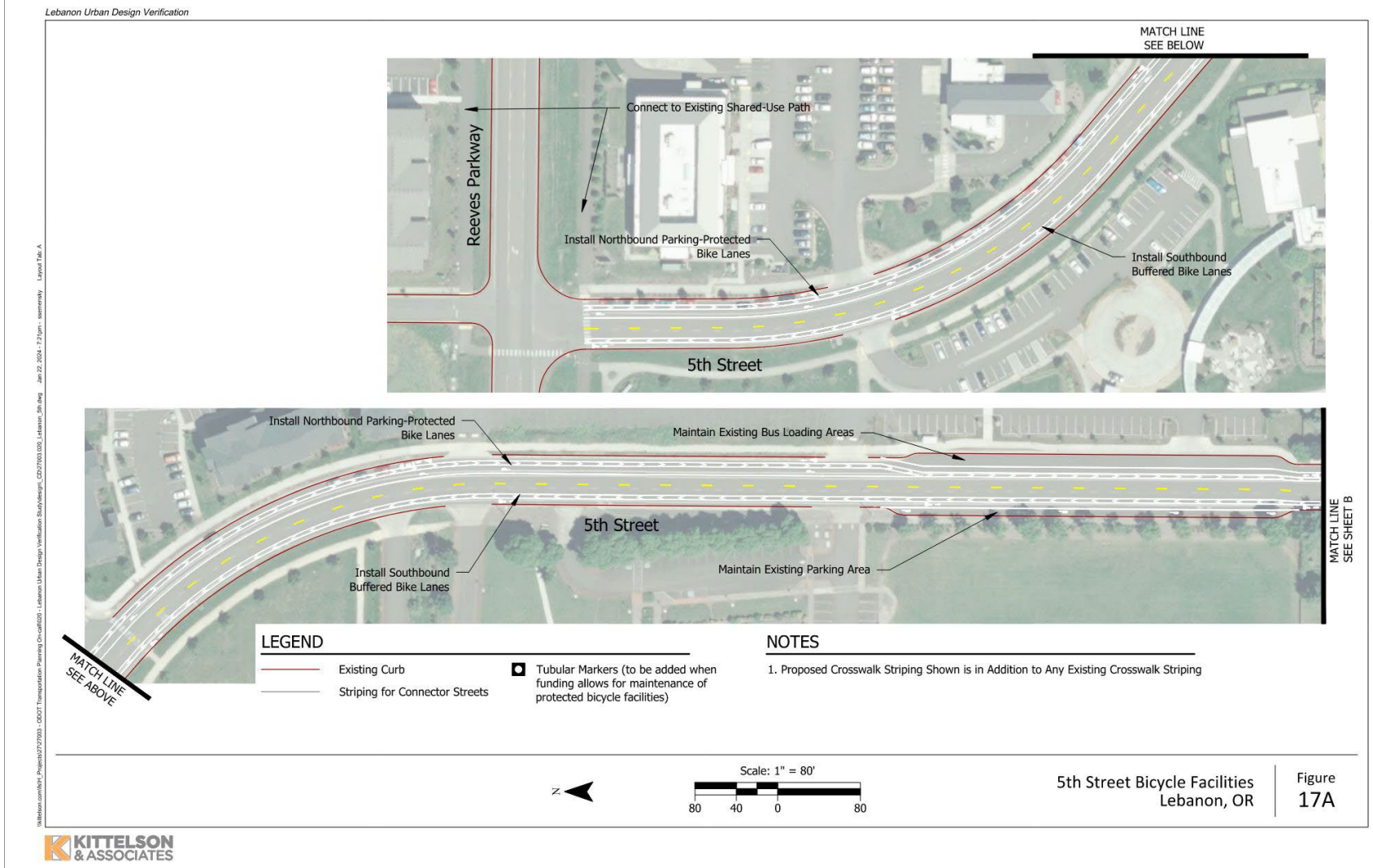

Figure 17A: 5th Street Bicycle Facilities Sheet A

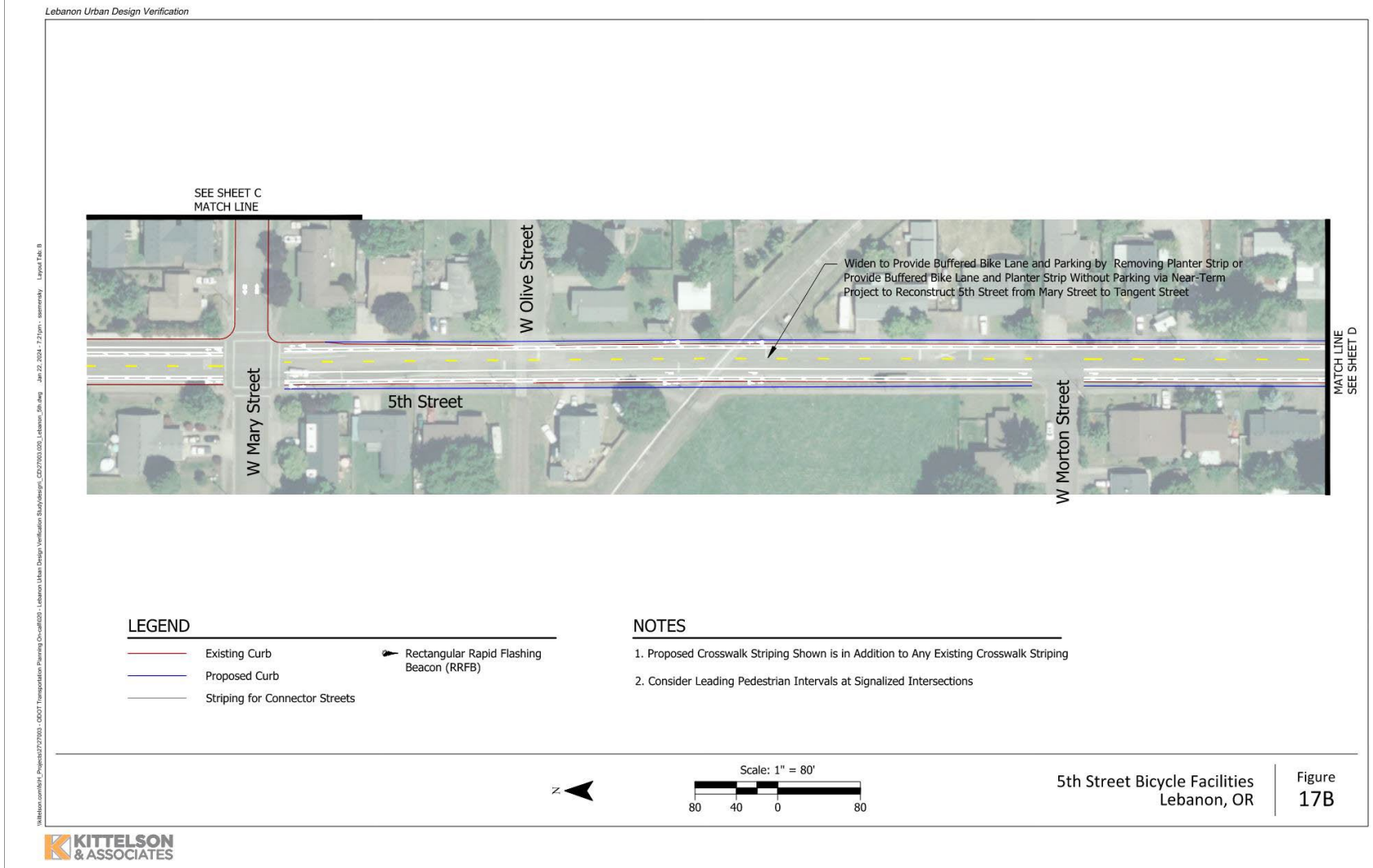

Figure 17B: 5th Street Bicycle Facilities Sheet B

Figure 17C: 5th Street Bicycle Facilities Sheet C

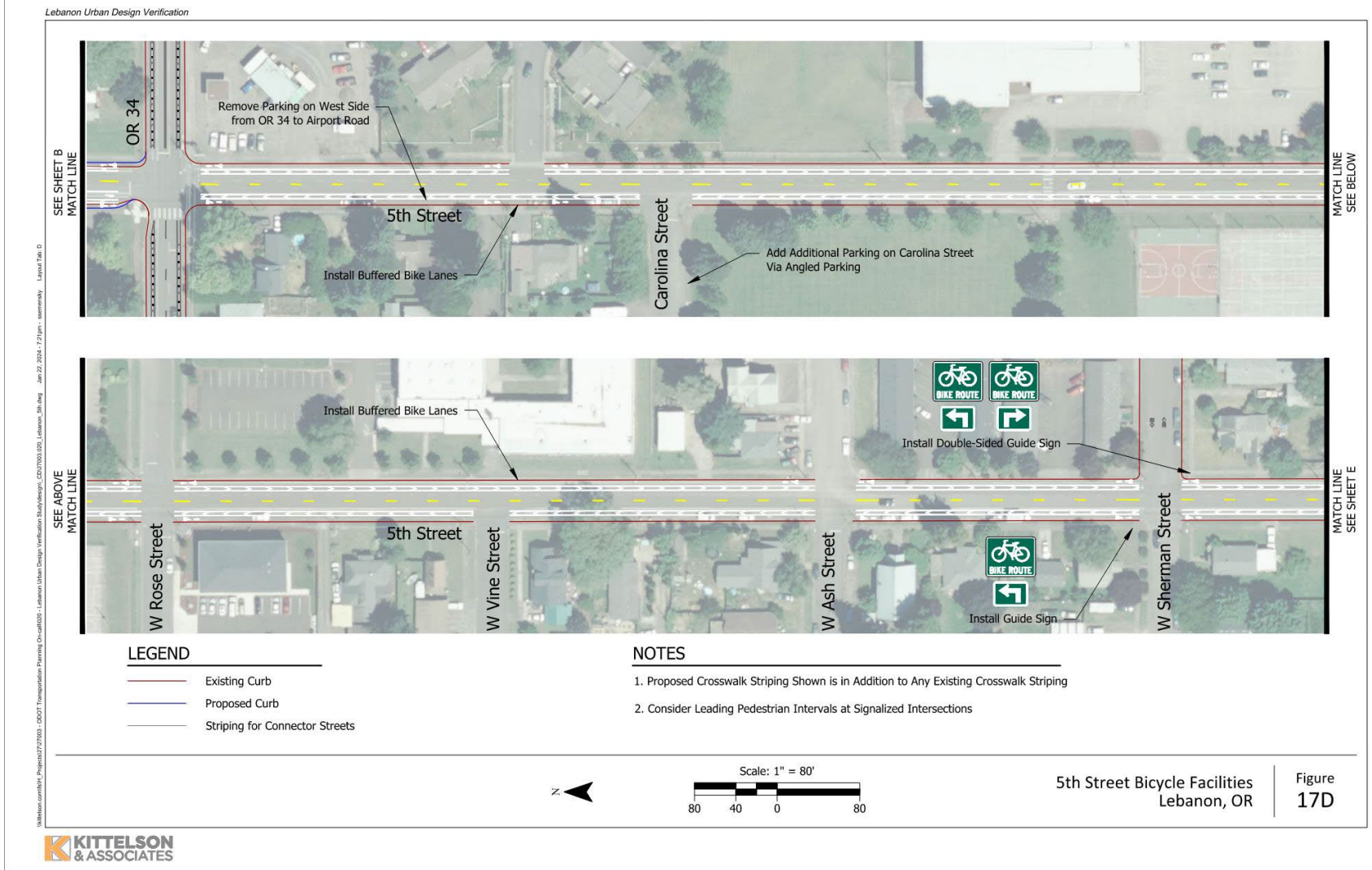

Figure 17D: 5th Street Bicycle Facilities Sheet D

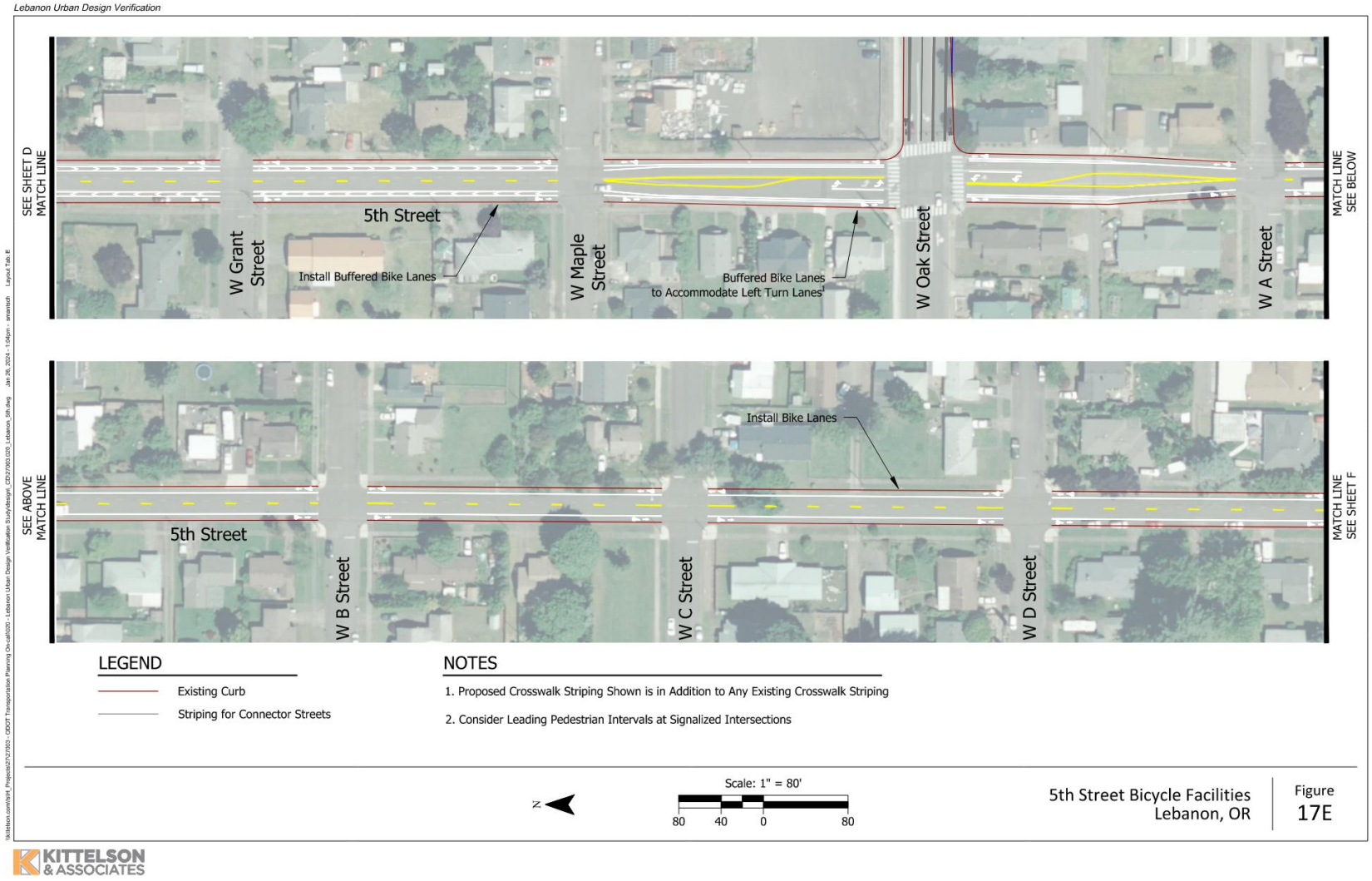

Figure 17E: 5th Street Bicycle Facilities Sheet E

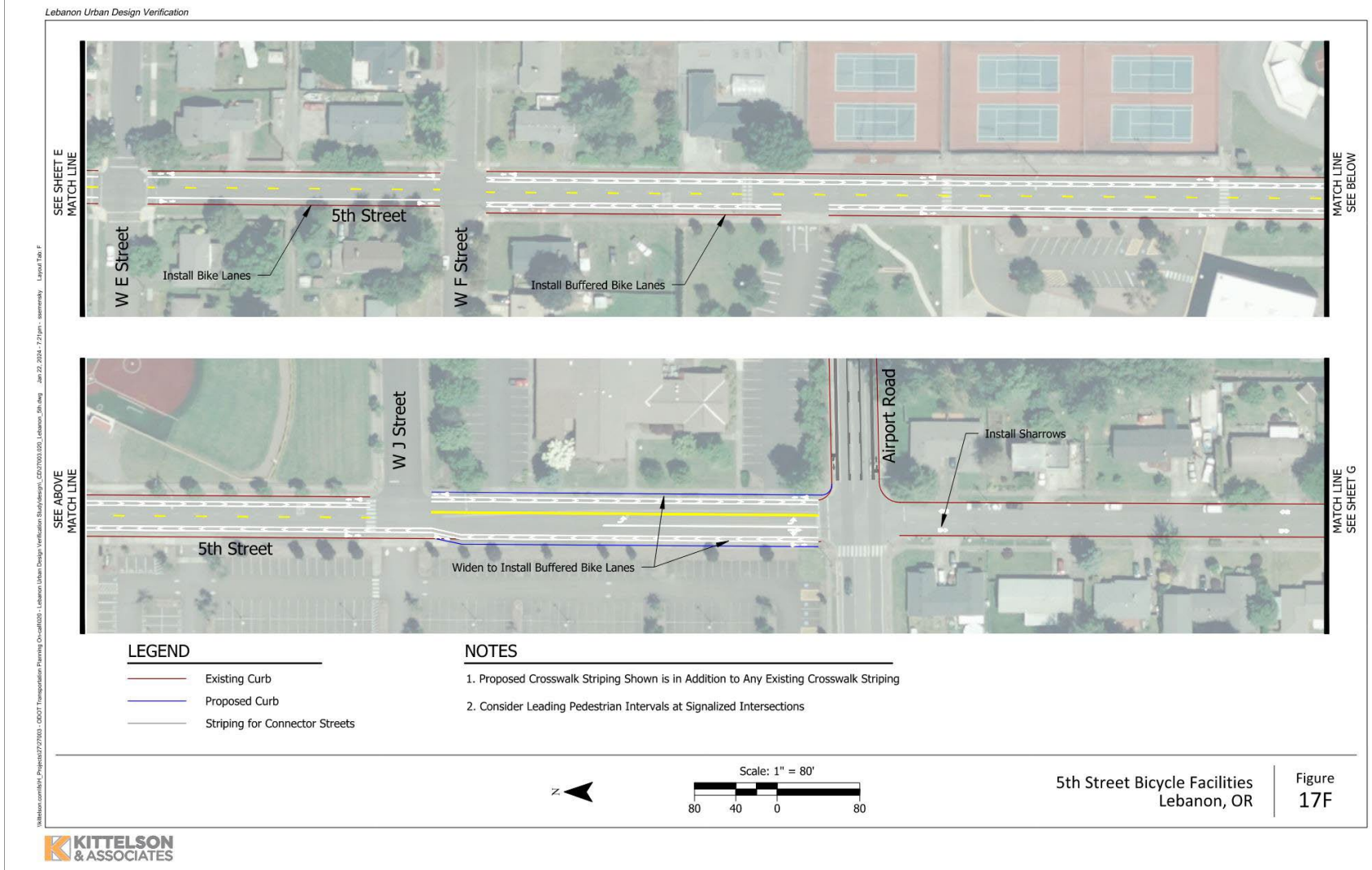

Figure 17F: 5th Street Bicycle Facilities Sheet F

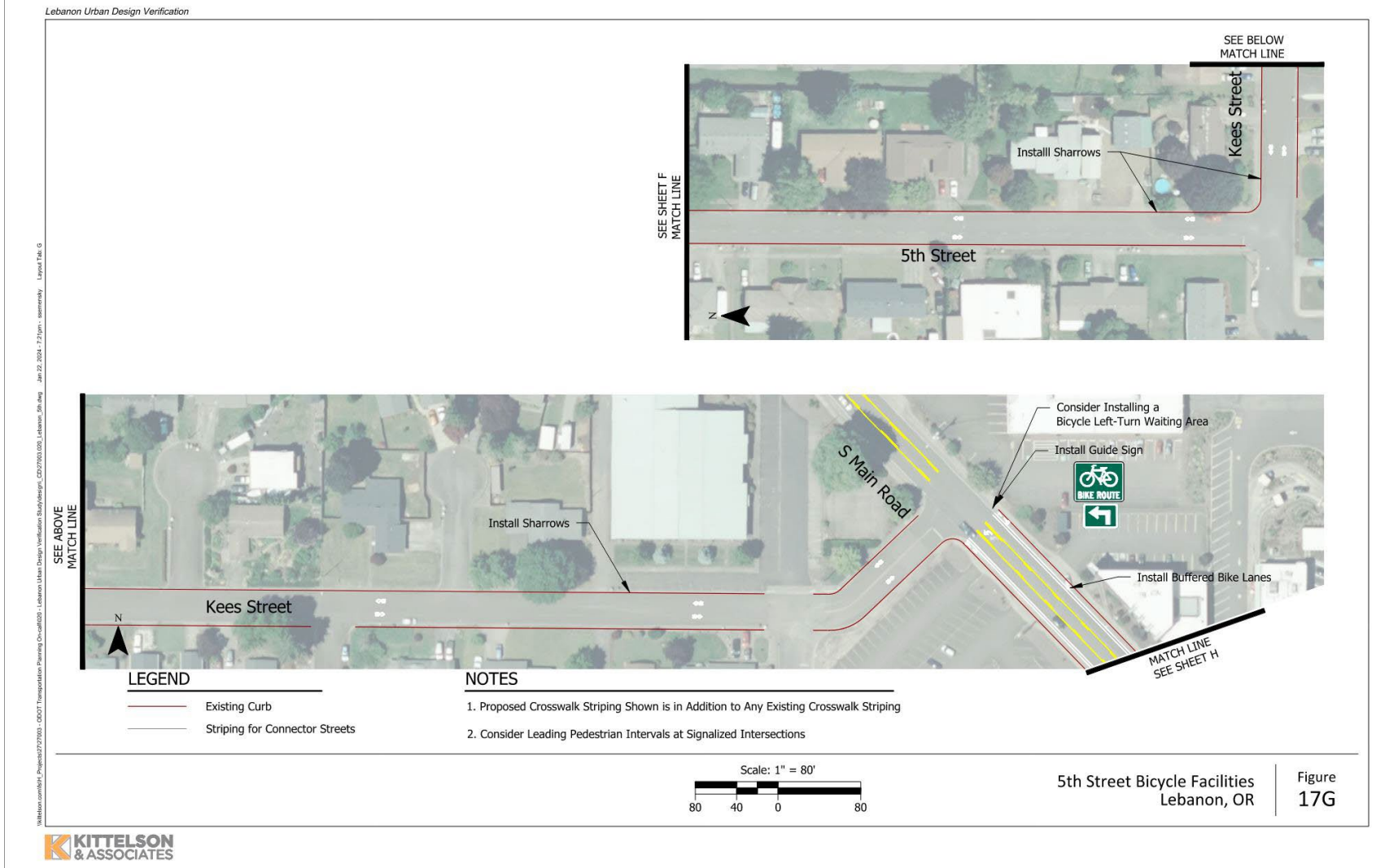

Figure 17G: 5th Street Bicycle Facilities Sheet G

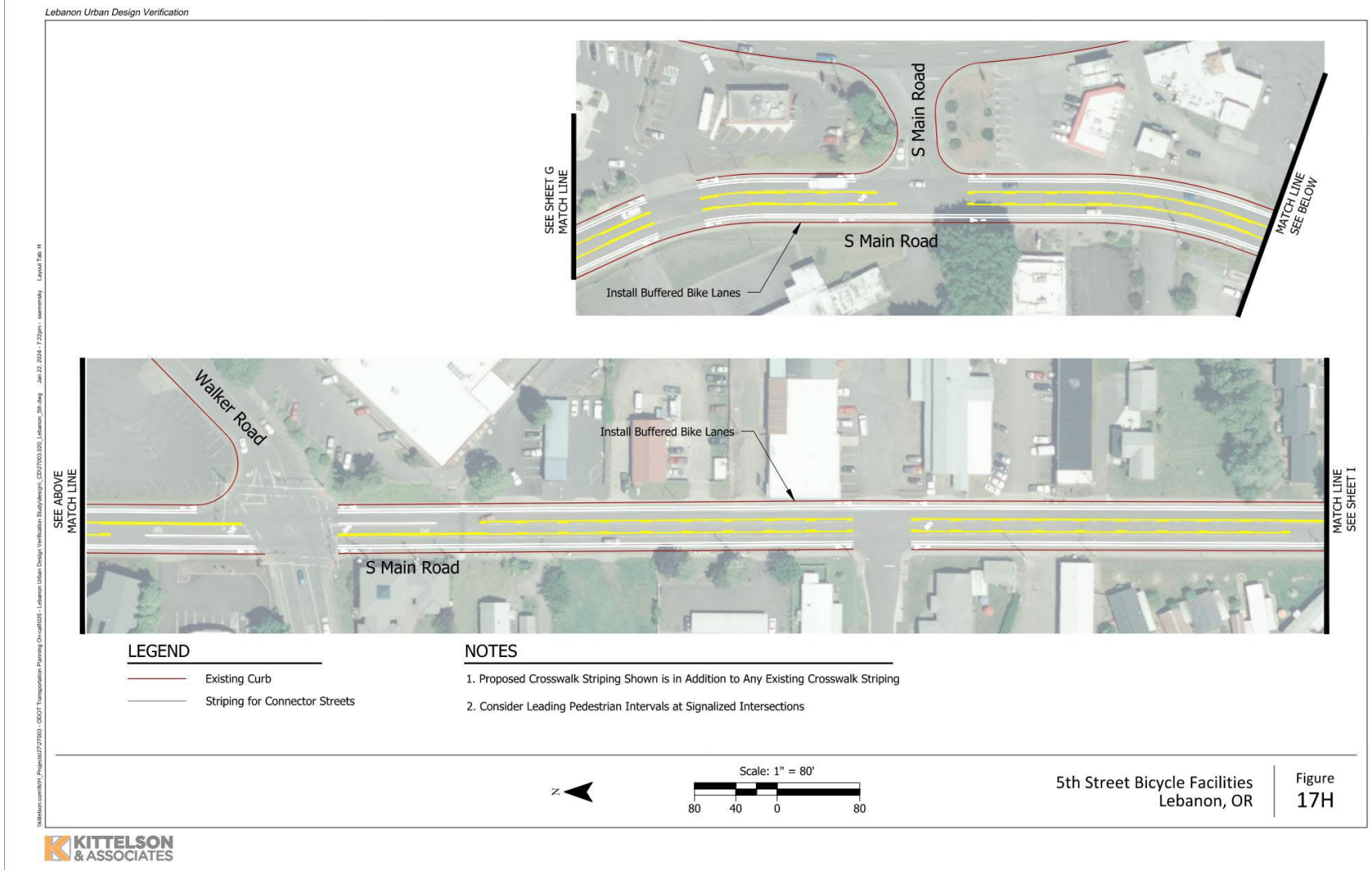

Figure 17H: 5th Street Bicycle Facilities Sheet H

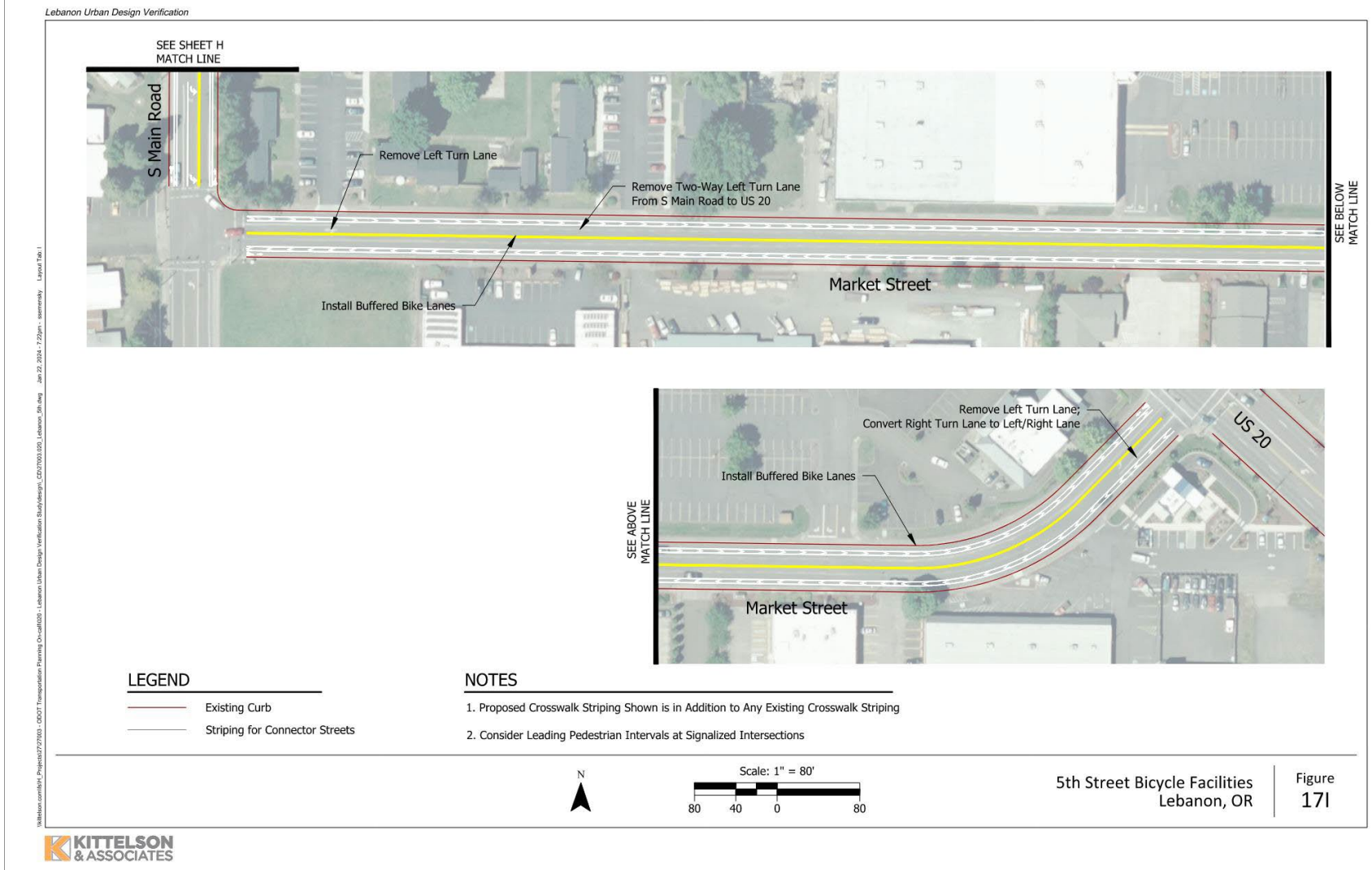

Figure 17I: 5th Street Bicycle Facilities Sheet I

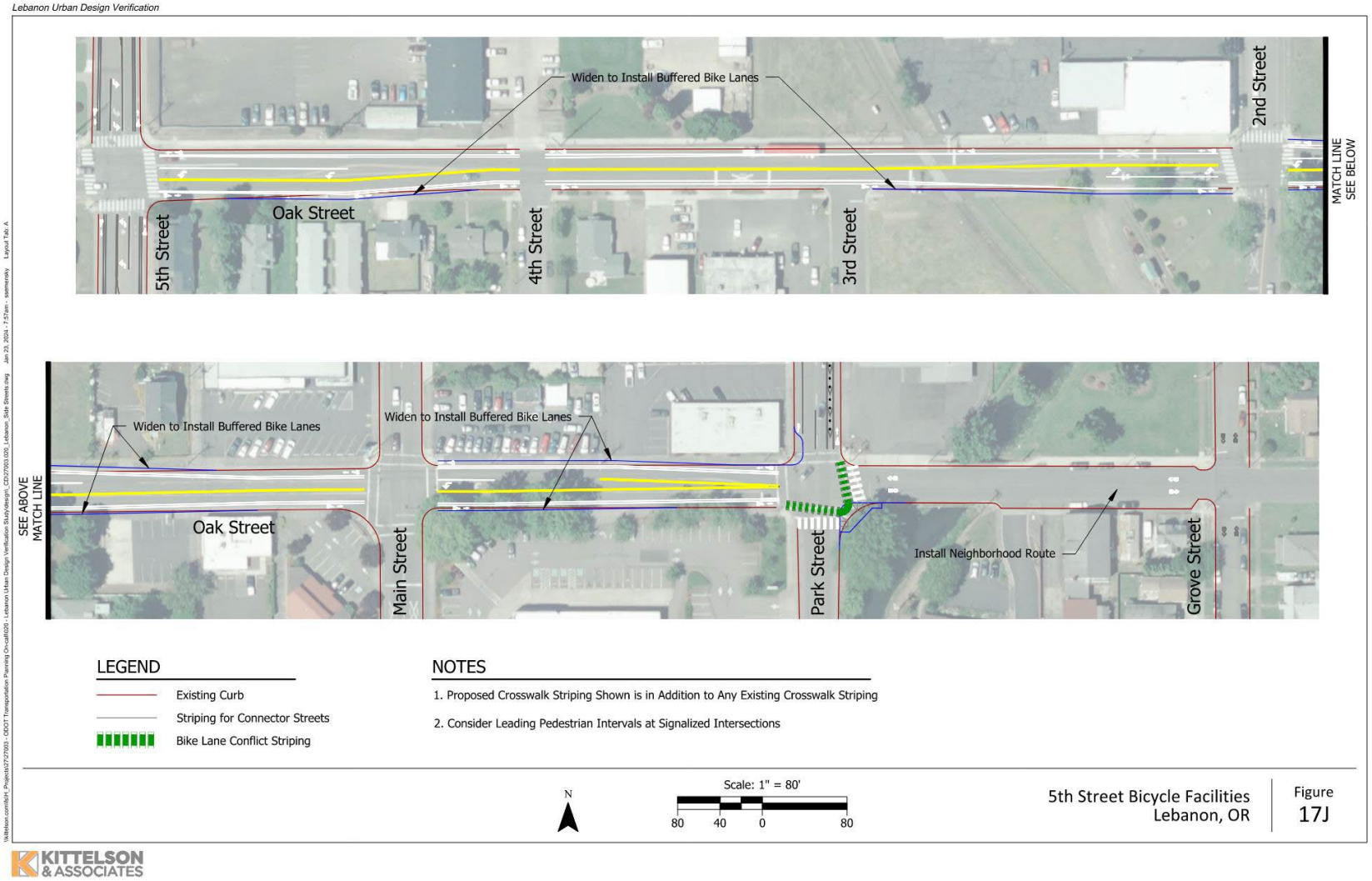

Figure 17J: 5th Street Bicycle Facilities Sheet J

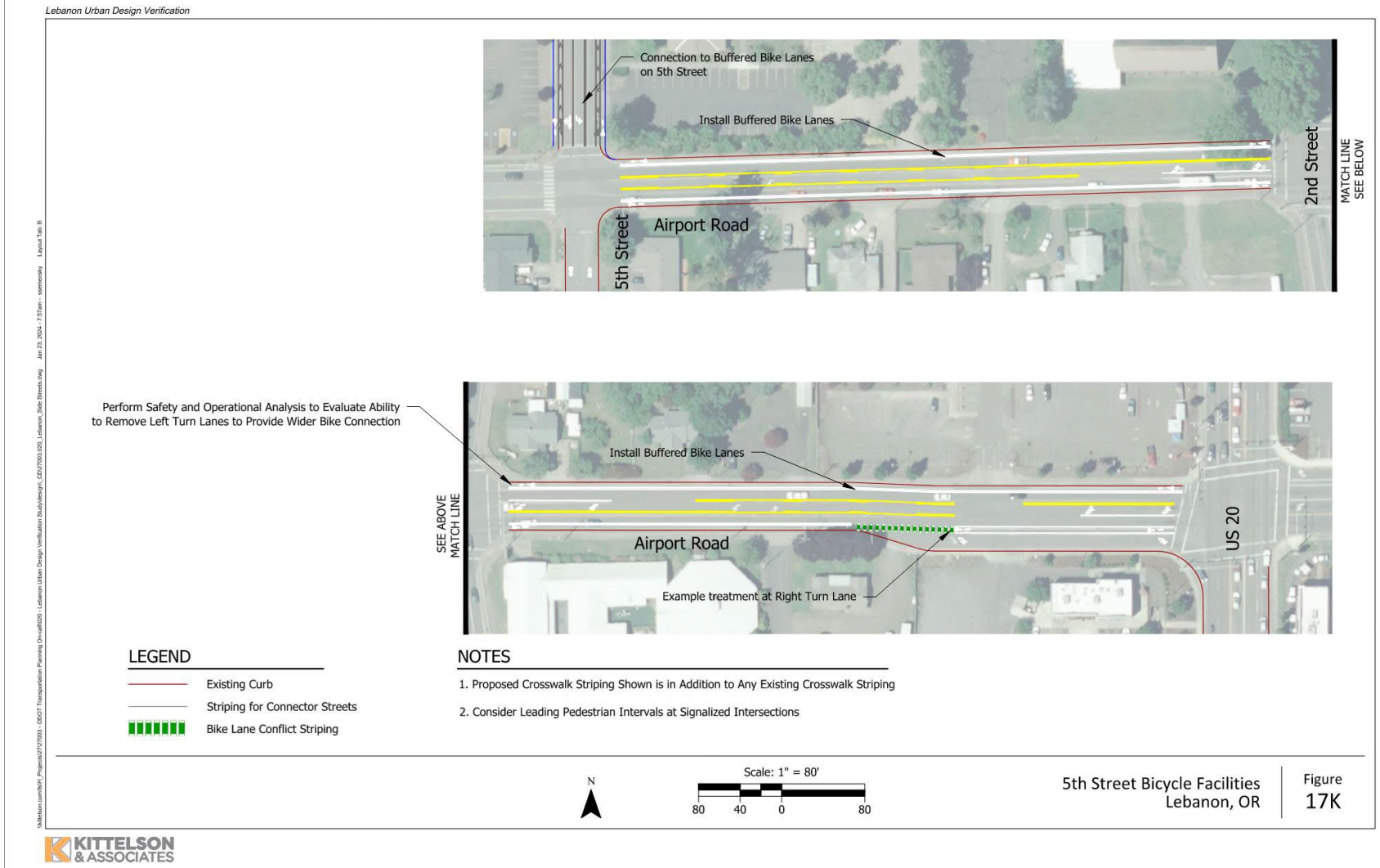

Figure 17K: 5th Street Bicycle Facilities Sheet K

GROVE STREET BIKEWAY PROJECTS AND CONCEPT DESIGNS

As a parallel route to the busy U.S. 20 highway, Grove Street provides a lower-stress biking environment for those to the east of the highway. Bike route signage already exists in some locations on Grove Street, but there are some additional treatments recommended to improve the wayfinding for the parallel route and to improve the visibility of the bike route. Enhancements to Grove Street will create an important north-south biking connection through town to the east of U.S. 20.

While the following concepts are not all on Grove Street, they all support a more robust Grove Street Bikeway as a parallel route to the highway.

Figures 18A and 18B present the northern connection to and from U.S. 20. The connection is made via a shared street/neighborhood bikeway on Industrial Way that connects to the existing and proposed trail system. That trail system is anticipated to get the bicyclists to the intersection of Williams Street and Wheeler Street. If the trail system is not constructed, neighborhood bikeway treatments (sharrows and signage) should be provided all the way to Wheeler Street.

Speeds and volumes are higher on Wheeler Street and it is a freight route, so buffered bike lanes are recommended to make the connection to Grove Street. This will require parking removal for the short section of Wheeler Street.

Figures 18C, 18D, 18E, and 18F present neighborhood bikeway treatments on Grove Street, Elmore Street, and Franklin Street to the path connection on Russell Drive. In the future, as volumes increase on Franklin Street with development, bike lanes should be provided instead.

Figures 18G and 18H show the connection with the shared use path on the south side of Russell Street, wayfinding from those facilities to Willow Street, then neighborhood bikeway treatments on Willow Street, Primrose Street, and Dewey Street. When Dewey Street is realigned with Walker Road, bike lanes should be provided on Dewey Street. If improvements are made on Walker Road, too, adding bike facilities would provide a full connection between the Grove Street Bikeway and the 5th Street Bikeway.

Table 7: Grove Street Bikeway Projects

Project ID	Concept ID	Project Name	Street(s)	Start	End	Project Description	Cost	Jurisdiction	Notes
G-1	18A	Industrial Way Connection	Industrial Way	U.S. 20 (Main Street)	Albany/Santiam Canal Trail	Provide sharrows on Industrial Way near Santiam Highway and bike route wayfinding connecting to the existing and planned shared use path connections from Industrial Way to Wheeler Street.	$12,000	City of Lebanon	
G-2	18B	Wheeler Street Connection	Wheeler Street	Williams Street	Grove Street	Remove parking and provide buffered bike lanes on Wheeler Street from Williams to Grove Street.	$152,000	City of Lebanon	
G-3	18C, 18D, 18E, 18F, 18G	Grove Street/ Elmore Street/ Franklin Street Bikeways	Grove Street/ Elmore Street/ Franklin Street	Wheeler Street	Russell Drive	Restripe to add sharrows and signs for a neighborhood route connection between Wheeler Street and Russell Drive. Provide wayfinding to the shared use path on the south side of the street on Russell Drive.	$264,000	City of Lebanon	As development occurs on Franklin Street, a bike lane will be necessary to provide proper separation and should be required with development.
G-4	18G, 18H	Russell Drive/ Willow Street/ Primrose Street/ Dewey Street Bikeways	Russell Drive/ Willow Street/ Primrose Street/ Dewey Street	Franklin Street	U.S. 20 (Santiam Highway)	Provide wayfinding on Russell Street then restripe to add sharrows on Willow Street, Primrose Street, and Dewey Street to provide connection to Santiam Highway. When Dewey Street is realigned, provide bike lanes on Dewey Street.	$79,000	City of Lebanon	

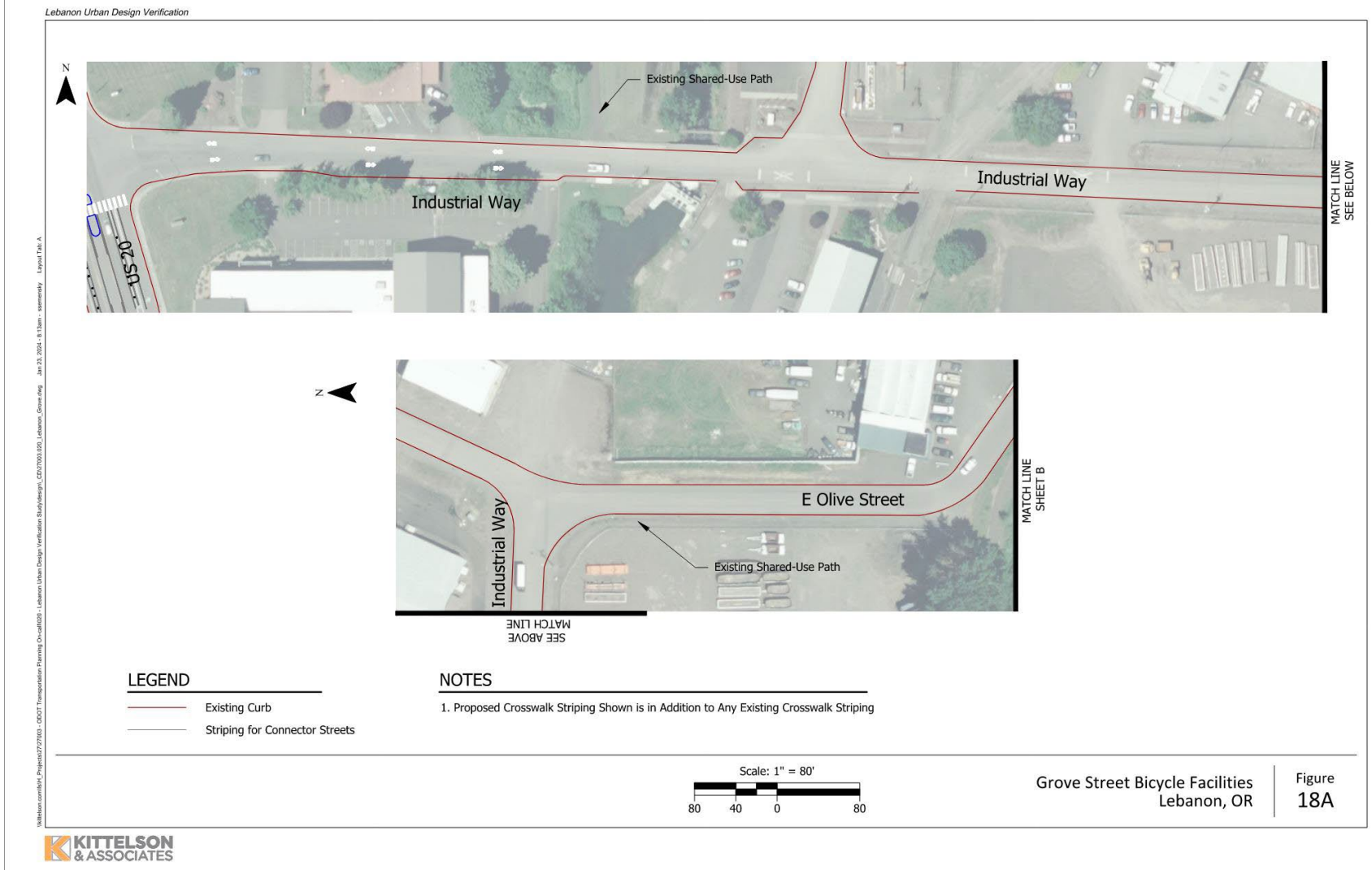

Figure 18A: Grove Street Bicycle Facilities Sheet A

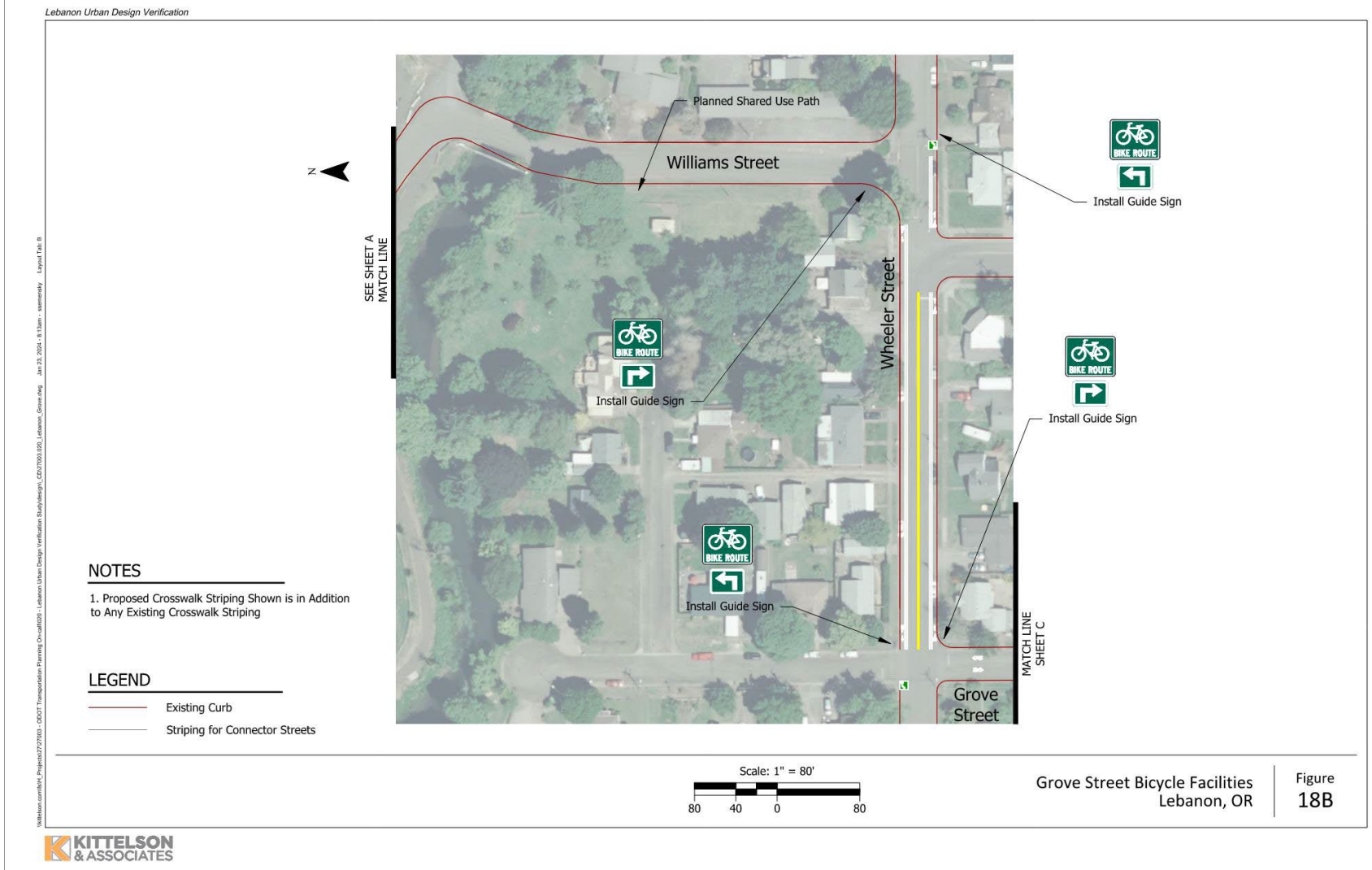

Figure 18B: Grove Street Bicycle Facilities Sheet B

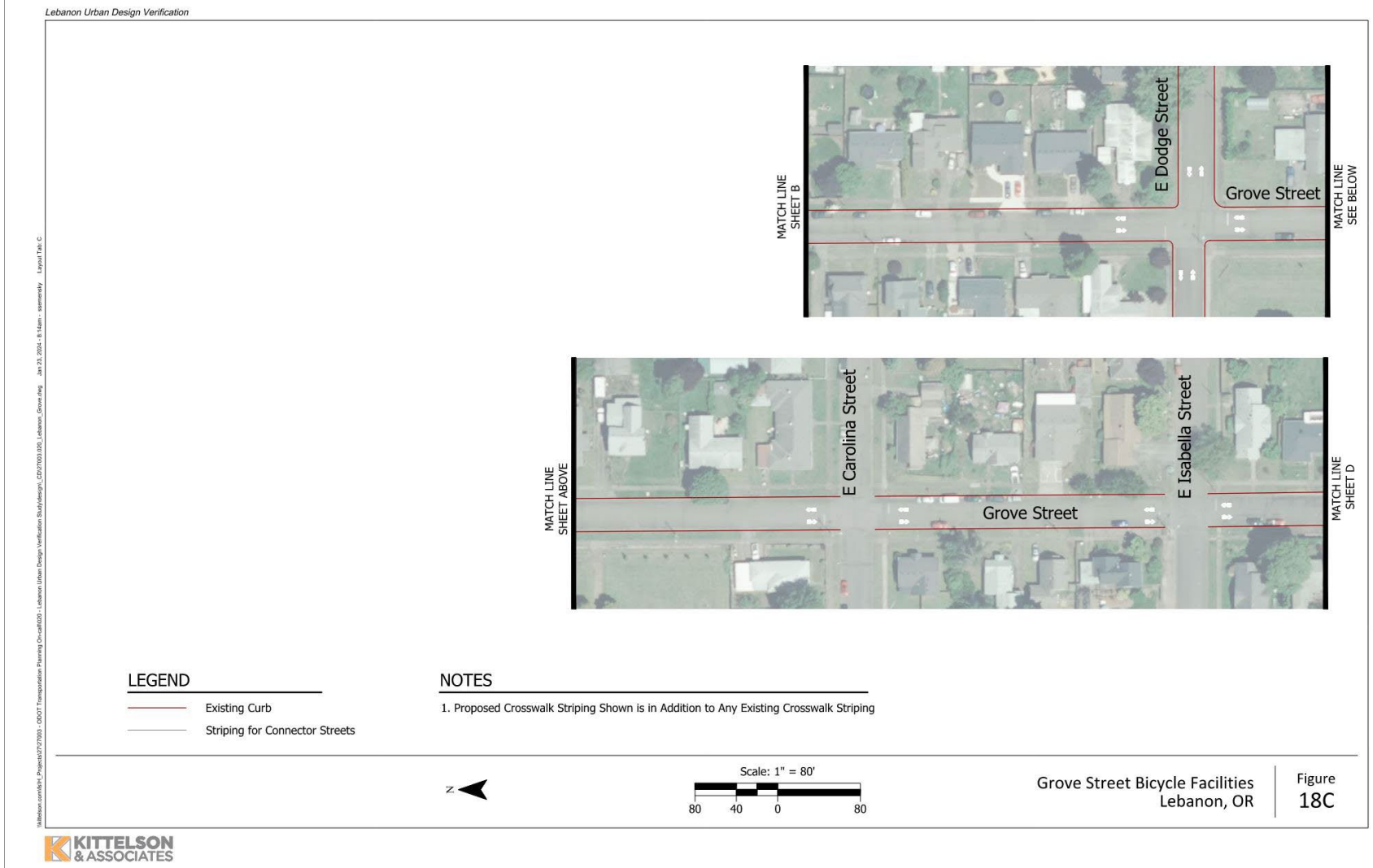

Figure 18C: Grove Street Bicycle Facilities Sheet C

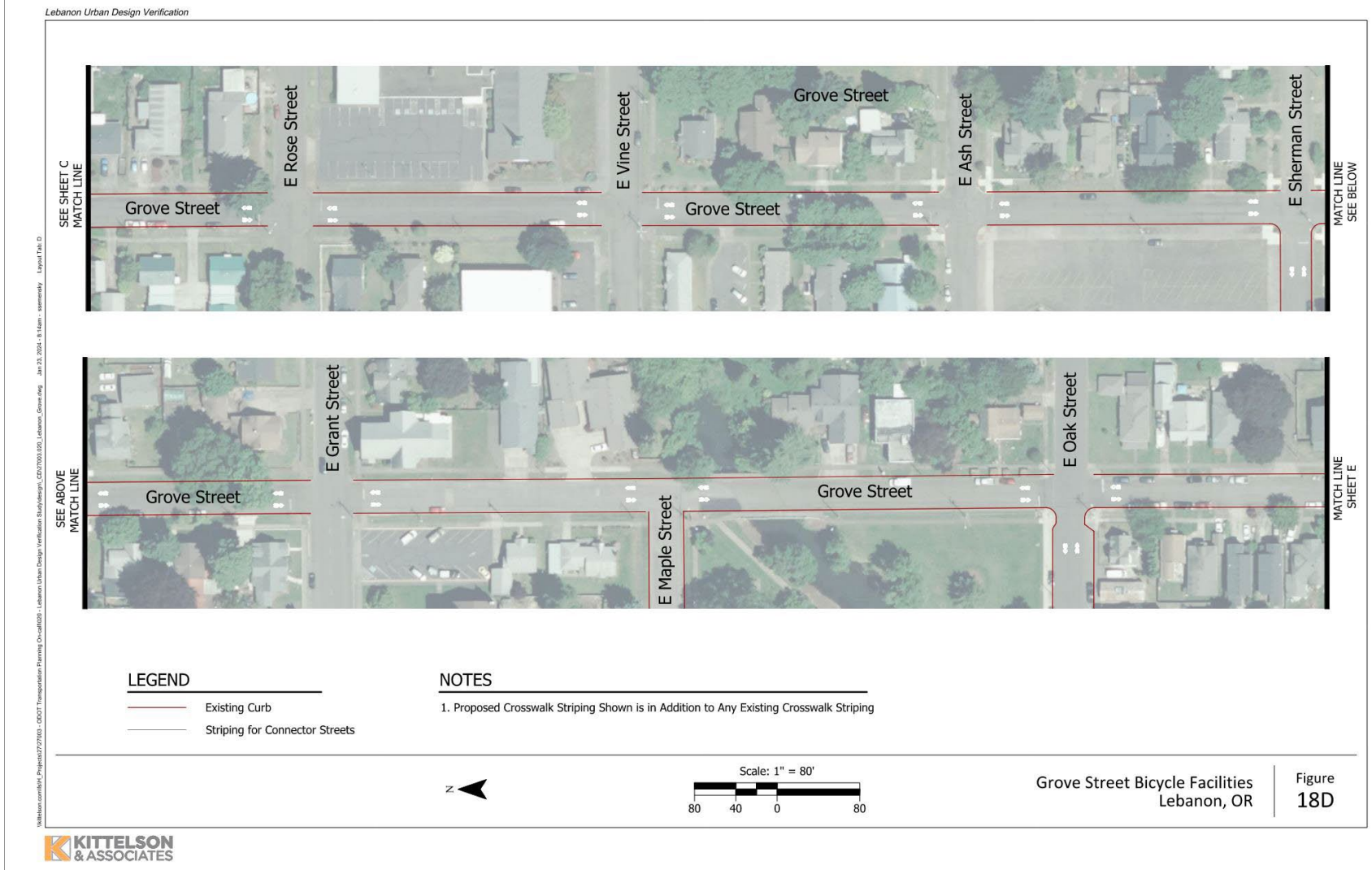

Figure 18D: Grove Street Bicycle Facilities Sheet D

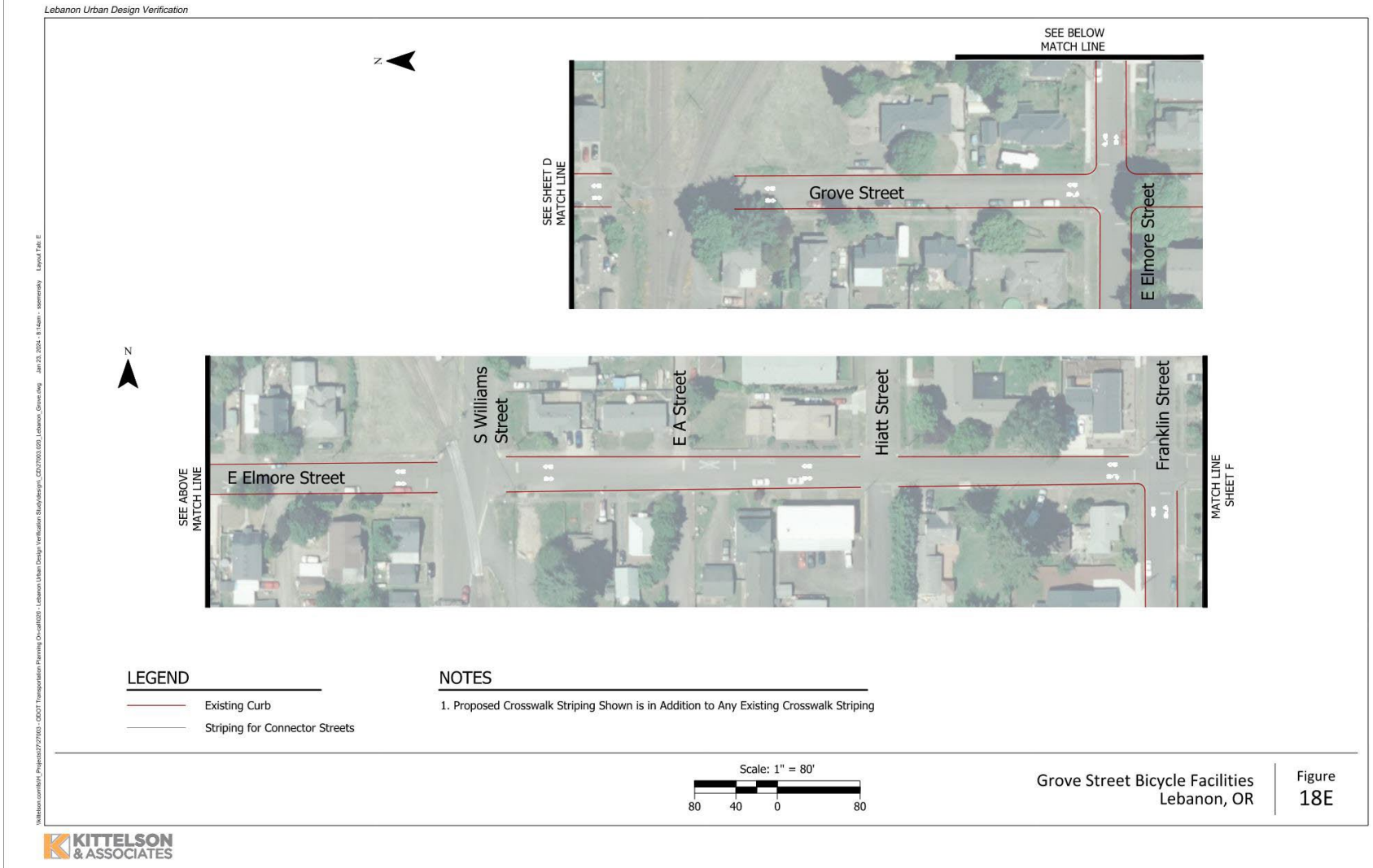

Figure 18E: Grove Street Bicycle Facilities Sheet E

Figure 18F: Grove Street Bicycle Facilities Sheet F

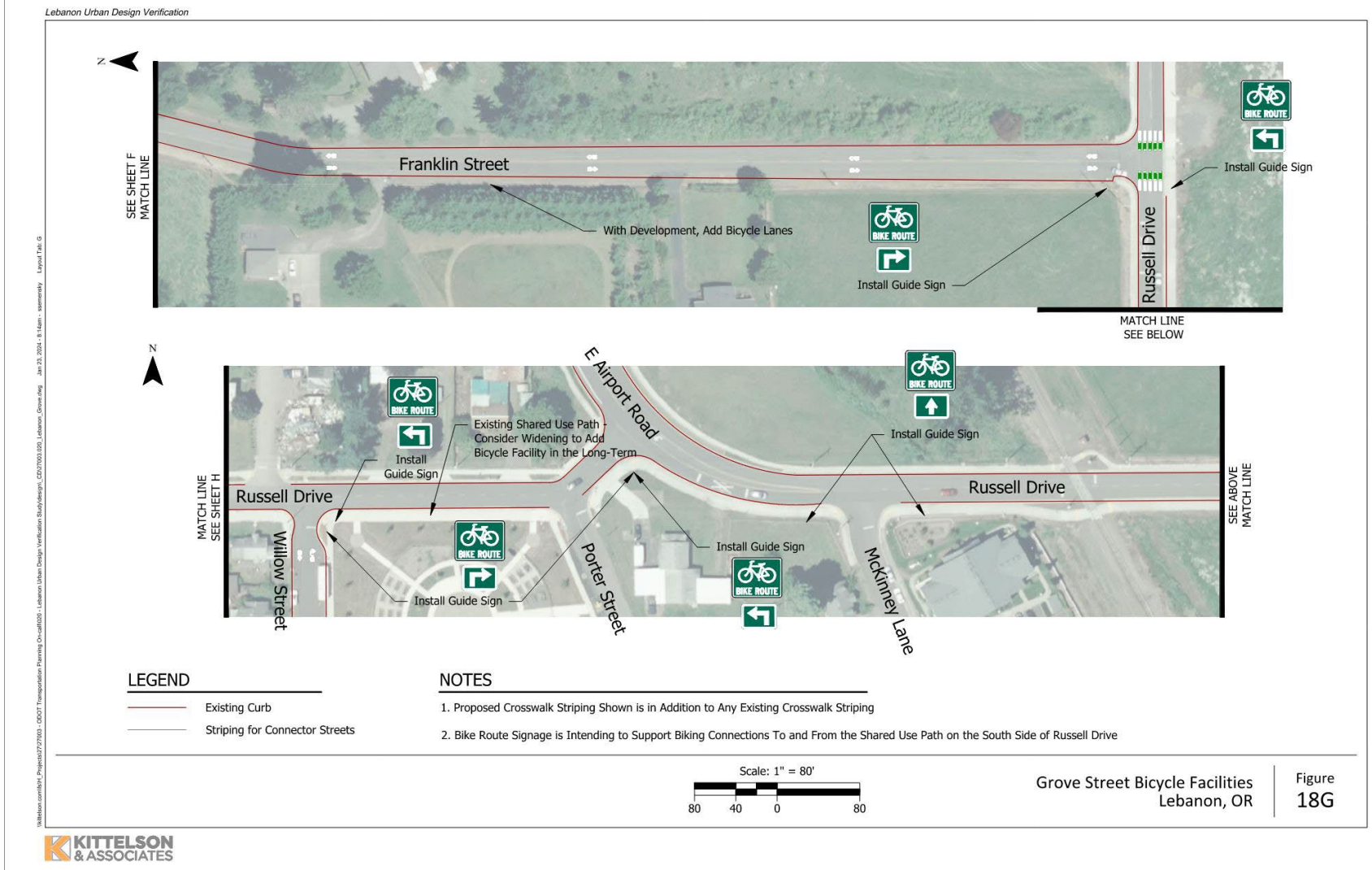

Figure 18G: Grove Street Bicycle Facilities Sheet G

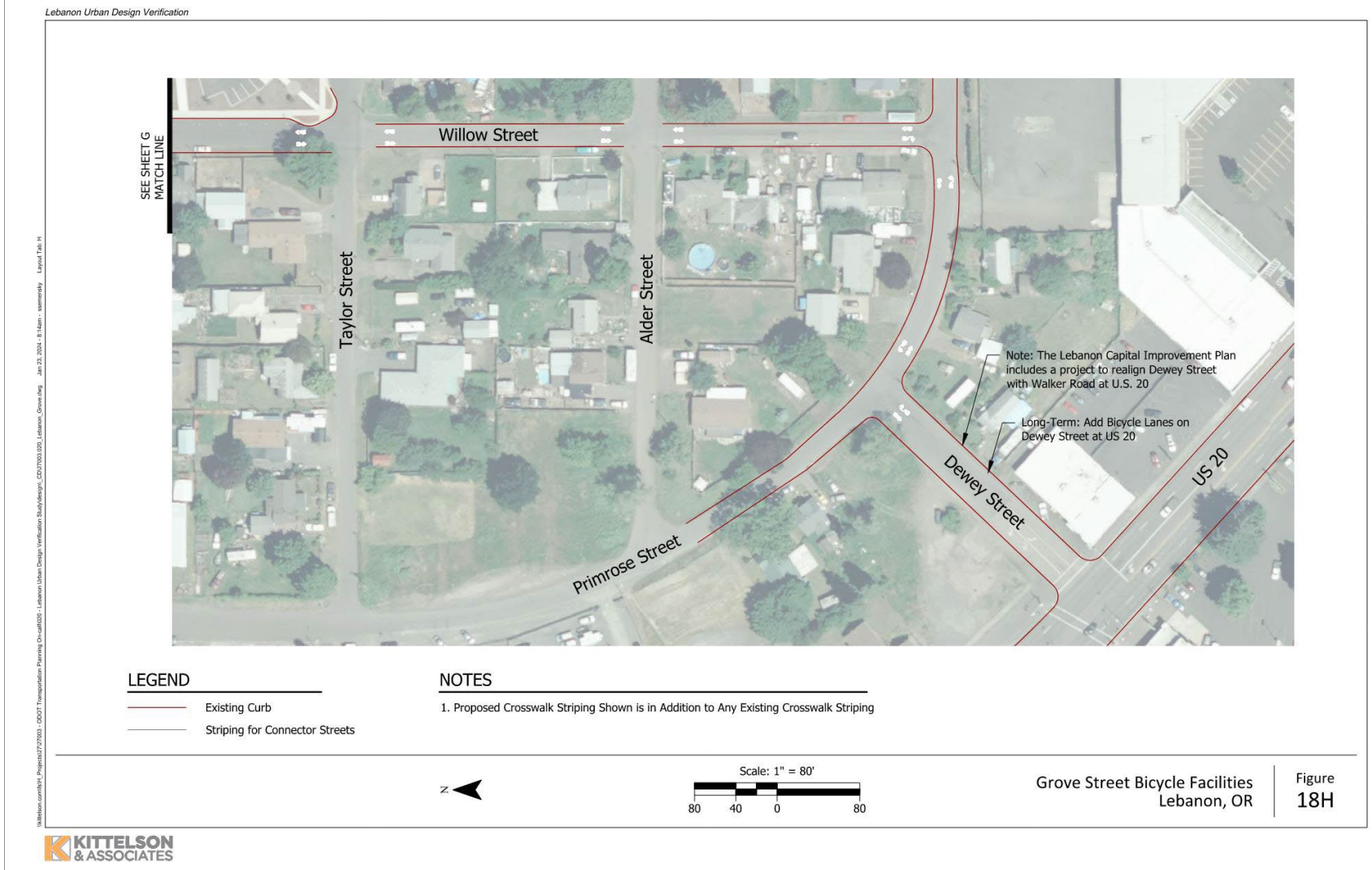

Figure 18H: Grove Street Bicycle Facilities Sheet H

ENHANCED CROSSING PROJECTS AND CONCEPT DESIGNS

Crossing enhancements are recommended at multiple locations within the study area to provide better walking and biking connectivity and access across the highways. Locations were selected based on target crossing spacing for the urban context, nearby land uses and origin/destination patterns, and public input. Crossing enhancement recommendations are based on speeds, volumes, field observations, and context for each location. Crossing treatments were selected for each location based on the number of lanes crossed, traffic volumes and speeds, and surrounding context. Most recommendations are directly based on ODOT's crossing enhancement guidance (ODOT Traffic Manual, Table 310.3-A), and this guide should be referenced when making final design decisions. However, the presented enhancements at 2nd Street on OR 34 are higher visibility than typical treatments for the context because of the proximity to the Senior Center and Library and therefore the higher number of children and older adults that will be using the crossings.

Both side-mounted and overhead-mounted enhanced crossings are recommended, depending on the context of the crossing. Overhead mounts are most appropriate at locations with longer crossing distances or higher volumes and/or speeds. Side-mounted enhanced crossings are considerably less costly but are less visible in areas with higher speeds and volumes, especially with multiple lanes. Final designs should be based off ODOT's recommended crossing treatments (ODOT Traffic Manual, Table 310.3-A).

Note that the jurisdiction responsible for maintenance of the crossing enhancements will be determined when the project is funded for construction but has historically been a local jurisdiction responsibility.

Photo: Kittelson and Associates, Inc.

Table 8: Crossing Projects

Project ID	Concept ID	Project Location	Project Description	Cost	Jurisdiction
C-1	19A	U.S. 20 (Main Street) and Elmore Street	Provide overhead RRFB with median refuge island at the intersection. Hazardous waste treatment may be necessary with any foundation work deeper than 5 feet. An additional $50,000 is assumed in cost estimate for hazardous waste removal. Reference: Web Documents for Union Cleaners II (state.or.us), Residual Risk Assessment Report, Figure 4.	$900,000	ODOT
C-2	19B	OR 34 (Tangent Street) and 2nd Street	Provide side mounted RRFBs on the approaches to 2nd Street both north and south of 2nd Street. Provide an advanced warning flasher on the westbound approach to the intersection with 2nd Street north of OR 34.	$350,000	ODOT
C-3	19C	U.S. 20 (Santiam Highway) and Industrial Way/N Main Street	Provide signing and striping and median refuge island at the southern leg of the intersection with Industrial Way. Consider closing left-in access N Main Street to support lower volumes on the proposed bike route. Do not provide bike lane protection adjacent to the median to avoid creating a pinch point for freight vehicles.	$200,000	ODOT
C-4	19D	OR 34 (Tangent Street) and 9th Street/Hansard Avenue	Provide side mounted RRFBs to support pedestrian crossings north/south at the intersection.	$200,000	ODOT
C-5	19E	U.S. 20 (Main Street) and Dodge Street	Provide side mounted RRFBs to support pedestrian and bicycle crossings between the library area and neighborhoods to the east. Provide green skip striping to support bicycle crossing movements.	$200,000	ODOT
C-6	19F	U.S. 20 (Main Street) and Isabella Street	Provide side mounted RRFBs to support pedestrian crossings east/west at the intersection.	$200,000	ODOT
C-7	19G	U.S. 20 (Park Street) and Isabella Street	Provide side mounted RRFBs to support pedestrian crossings east/west at the intersection.	$200,000	ODOT
C-8	19H	U.S. 20 (Park Street) and Sherman Street	Provide curb extensions, pedestrian refuge islands between the bike lane and travel lanes, and signing and striping to support east/west pedestrian and bicycle crossings.	$250,000	ODOT
C-9	19I	U.S. 20 (Santiam Highway) and Jennings Street	Provide overhead RRFB with median refuge island at the intersection.	$850,000	ODOT
C-10	19J	U.S. 20 (Santiam Highway) and Russell Drive	Provide overhead RRFB with median refuge island at the intersection.	$850,000	ODOT
C-11	19K	U.S. 20 (Santiam Highway) and Truman Street	Provide overhead RRFB with median refuge island at the intersection.	$850,000	ODOT
C-12	19L	U.S. 20 (Park Street) and Carolina Street	Provide side mounted RRFBs to support pedestrian crossings east/west at the intersection.	$200,000	ODOT

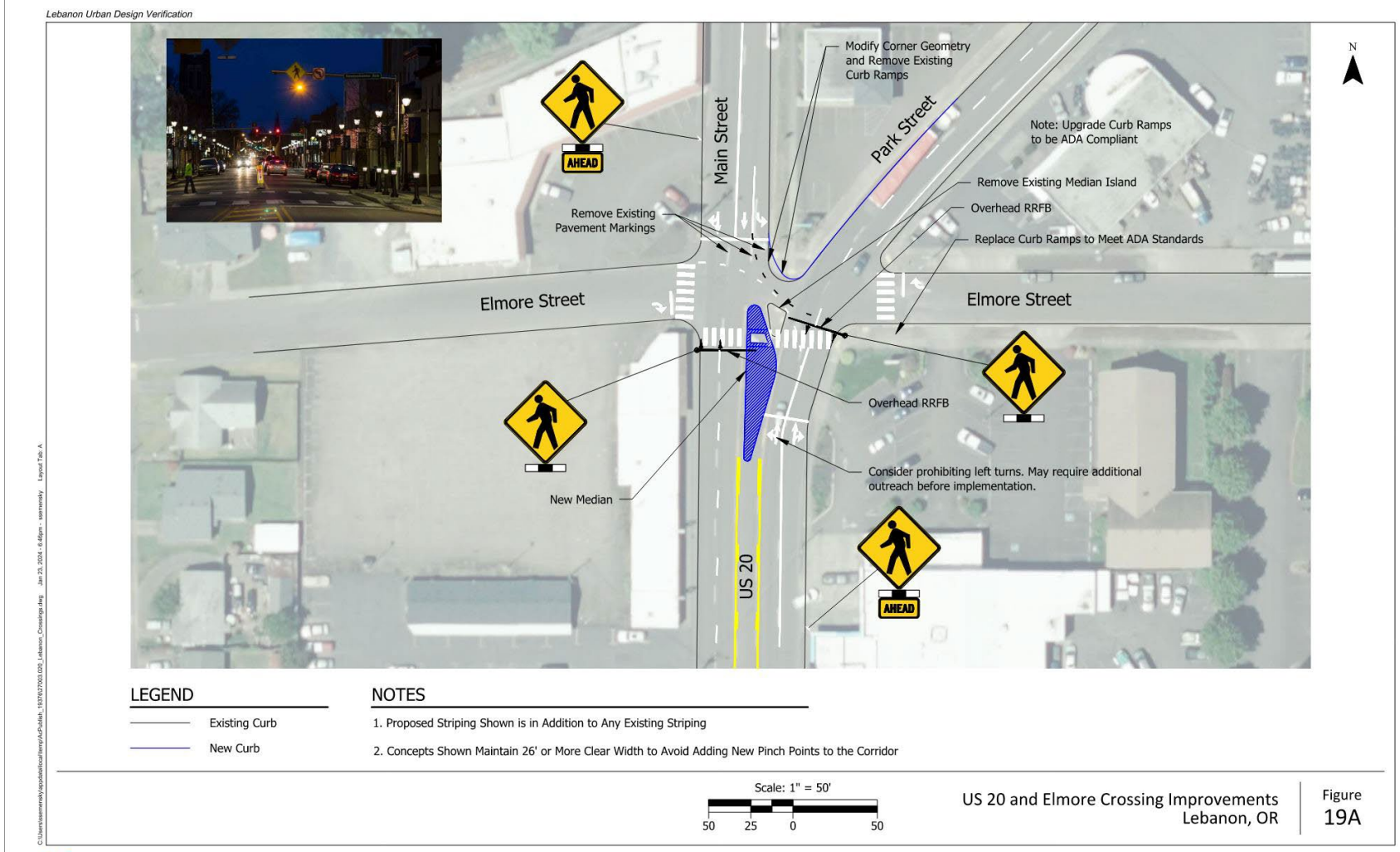

Figure 19A: U.S. 20 and Elmore Crossing Improvements

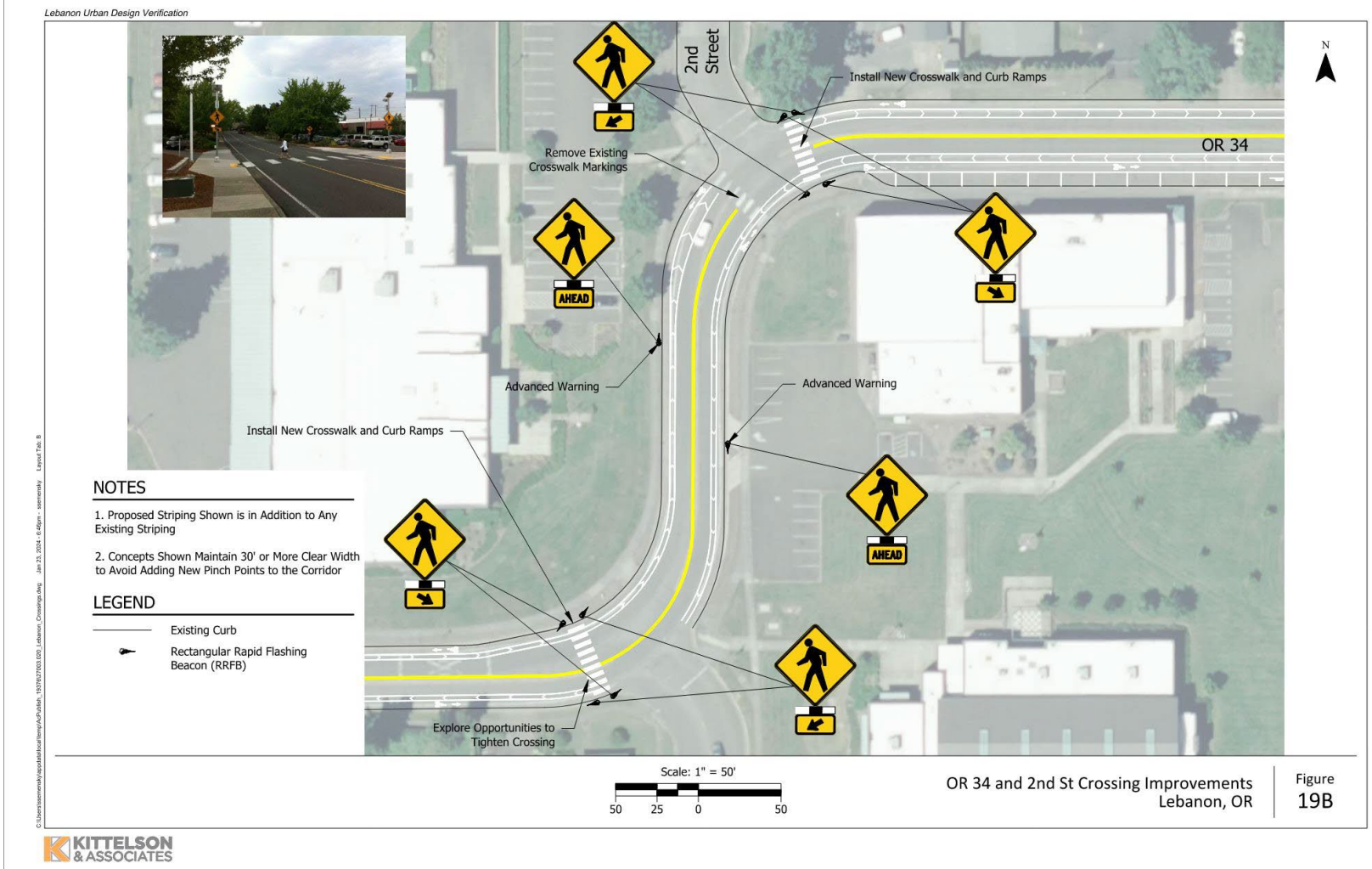

Figure 19B: OR 34 and 2nd Street Crossing Improvements

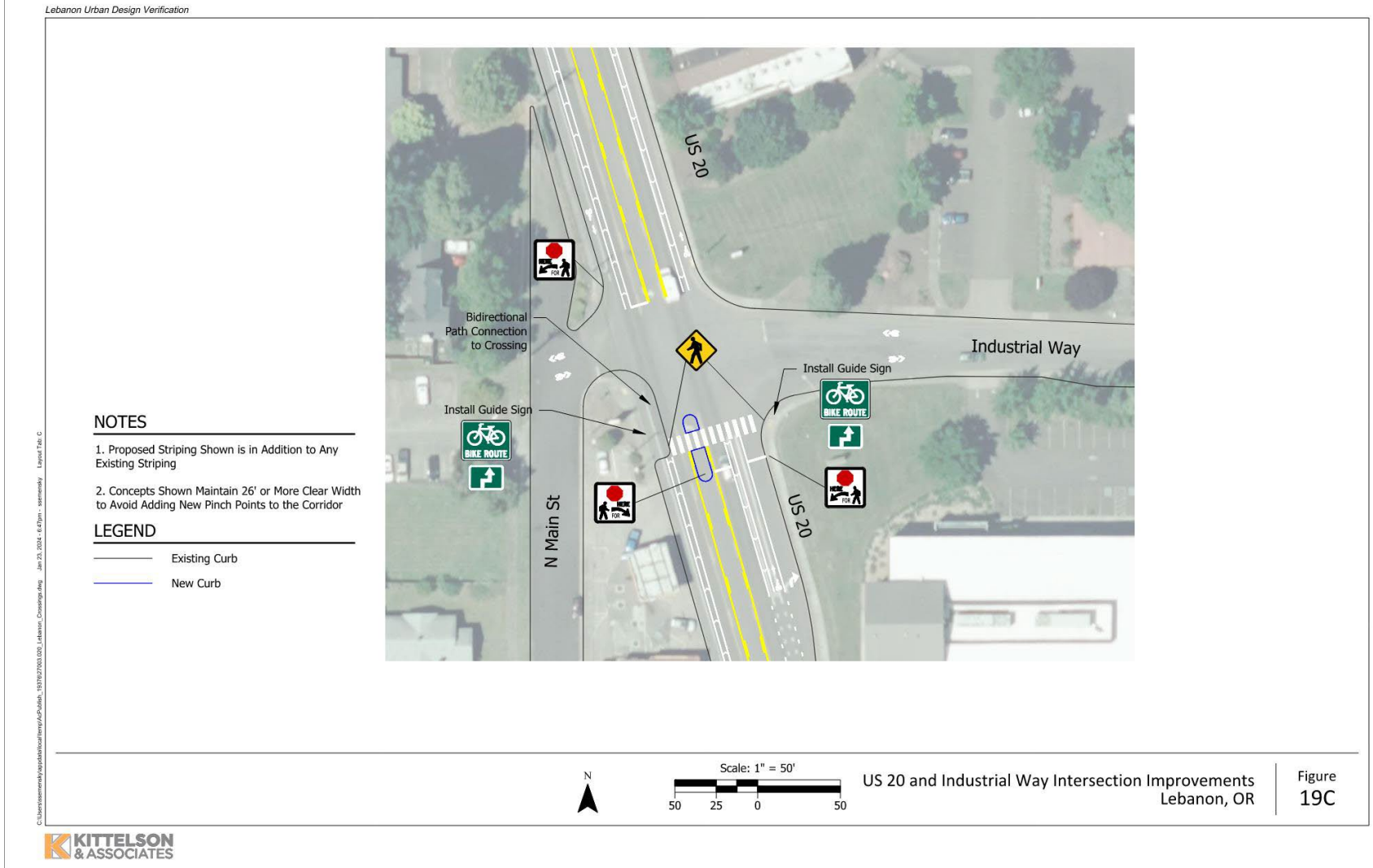

Figure 19C: U.S. 20 and Industrial Way Intersection Improvements

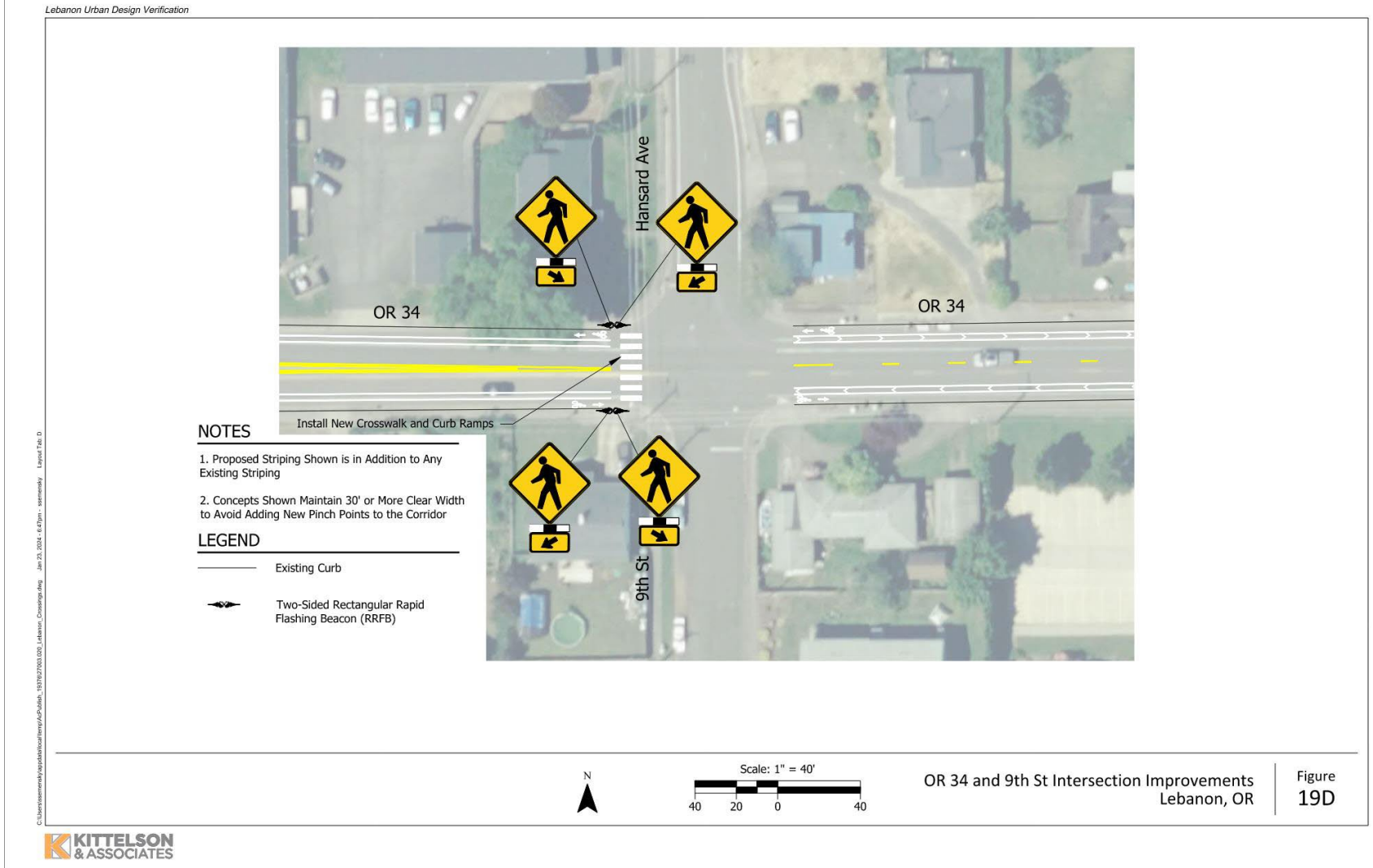

Figure 19D: OR 34 and 9th Street Intersection Improvements

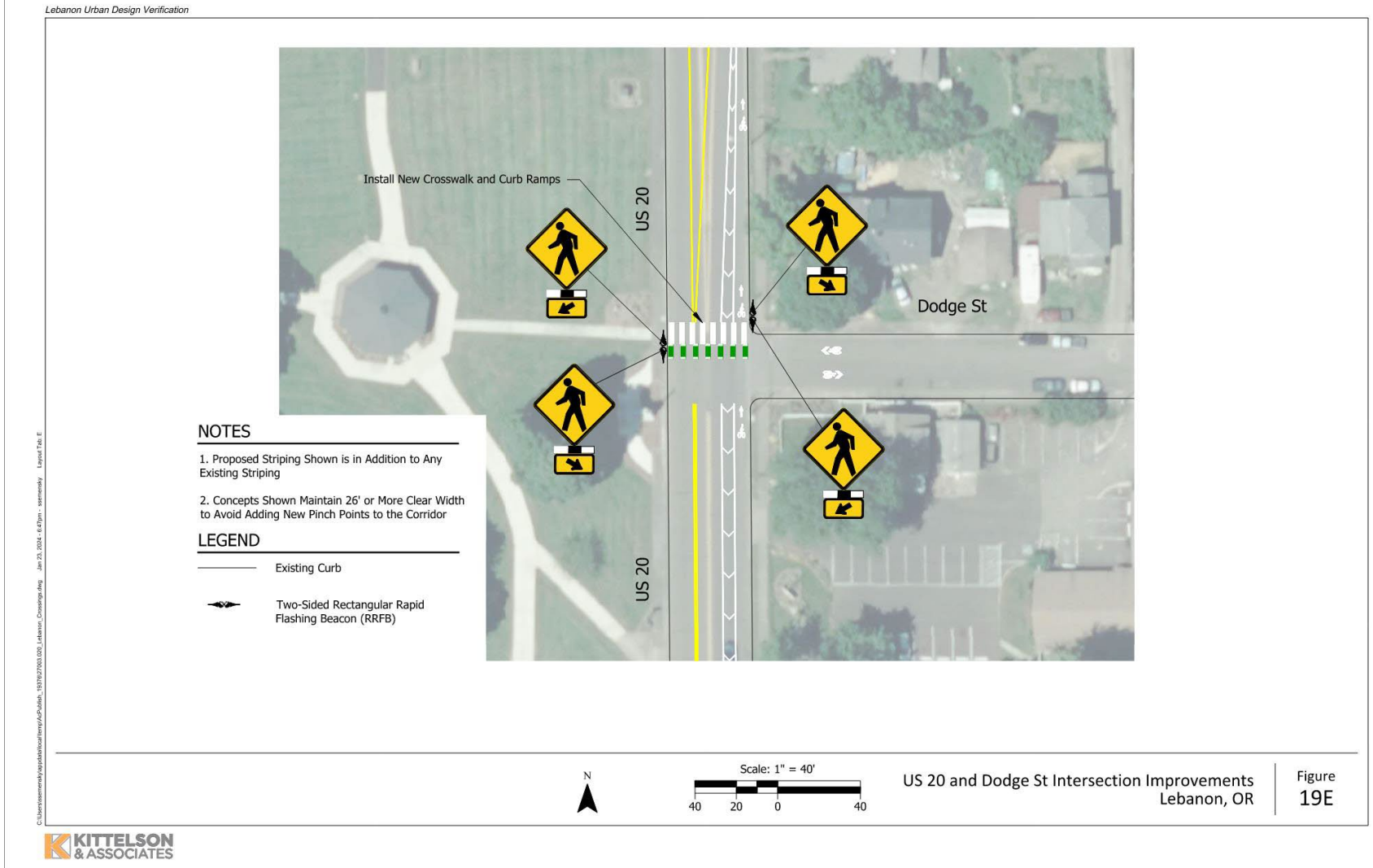

Figure 19E: U.S. 20 and Dodge Street Intersection Improvements

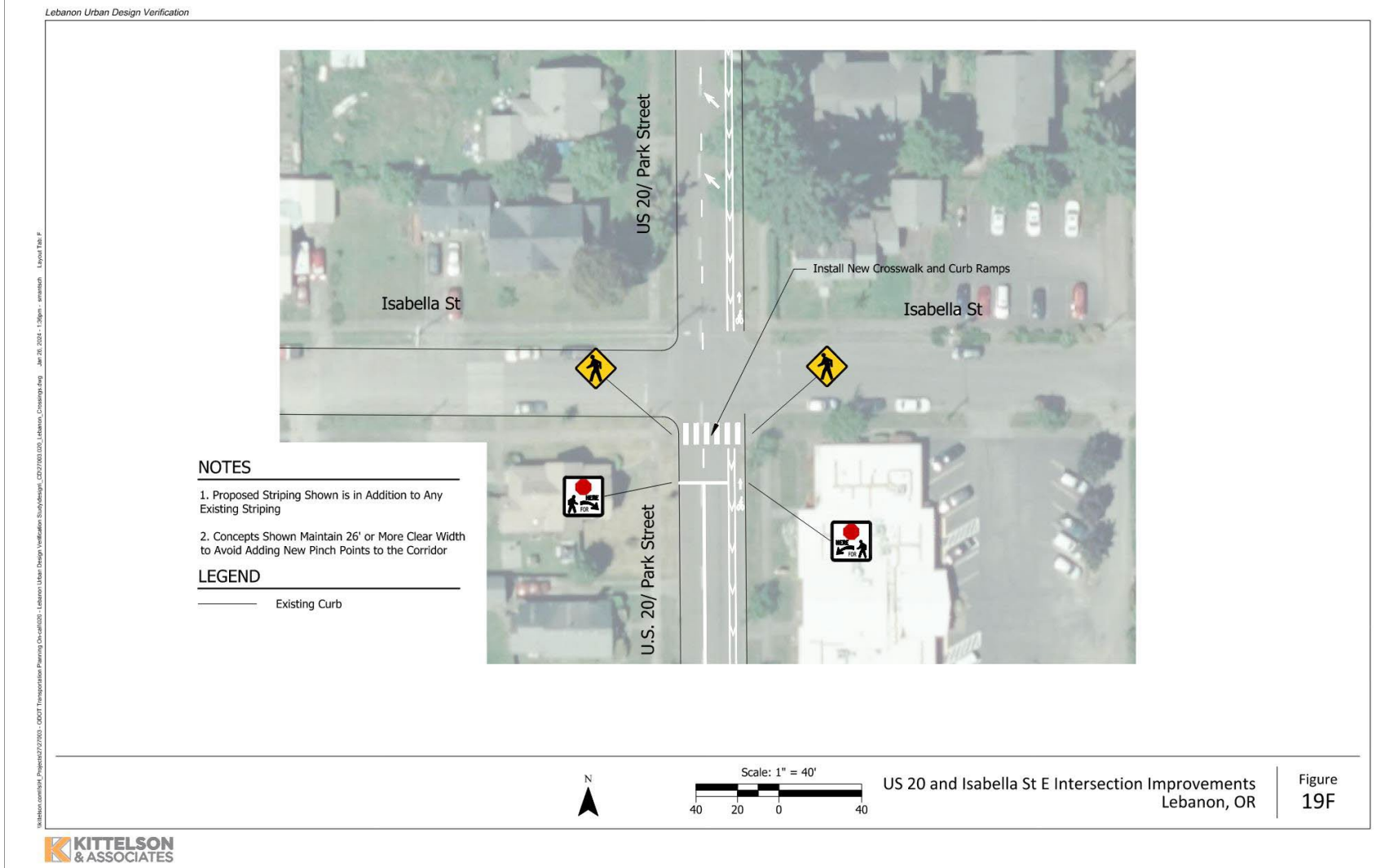

Figure 19F: U.S. 20 and Isabella Street E Intersection Improvements

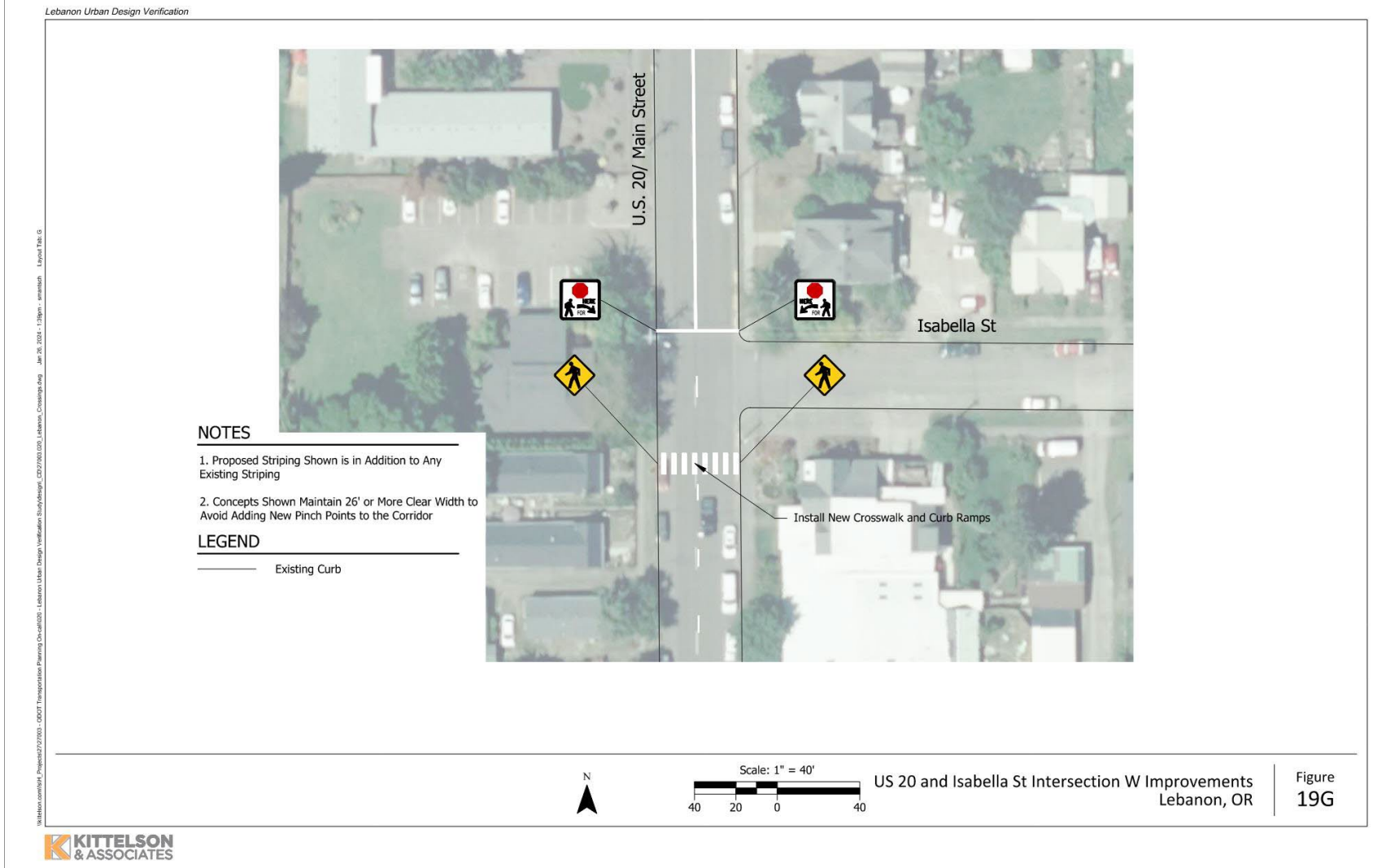

Figure 19G: U.S. 20 and Isabella Street W Intersection Improvements

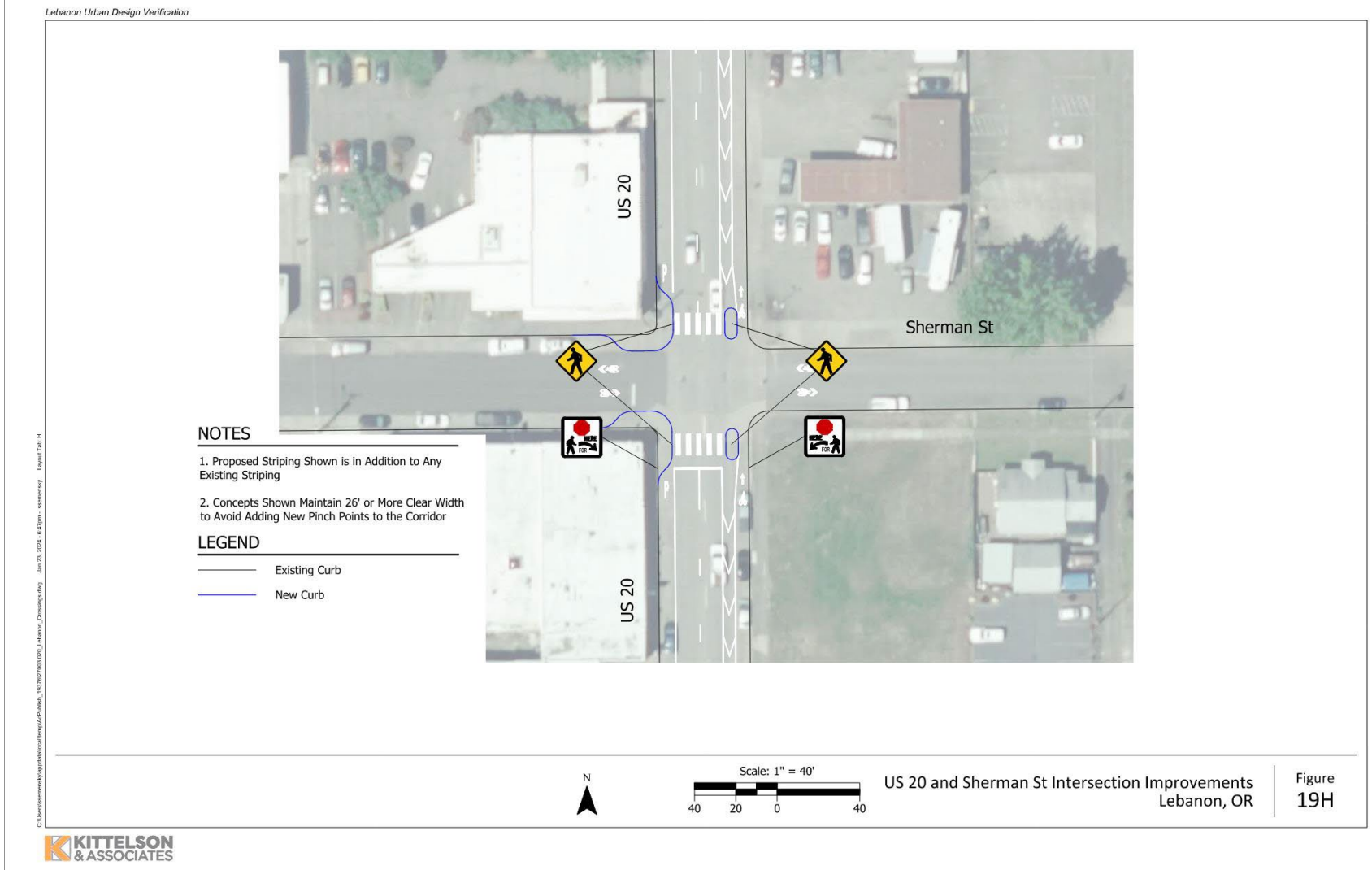

Figure 19H: U.S. 20 and Sherman Street Intersection Improvements

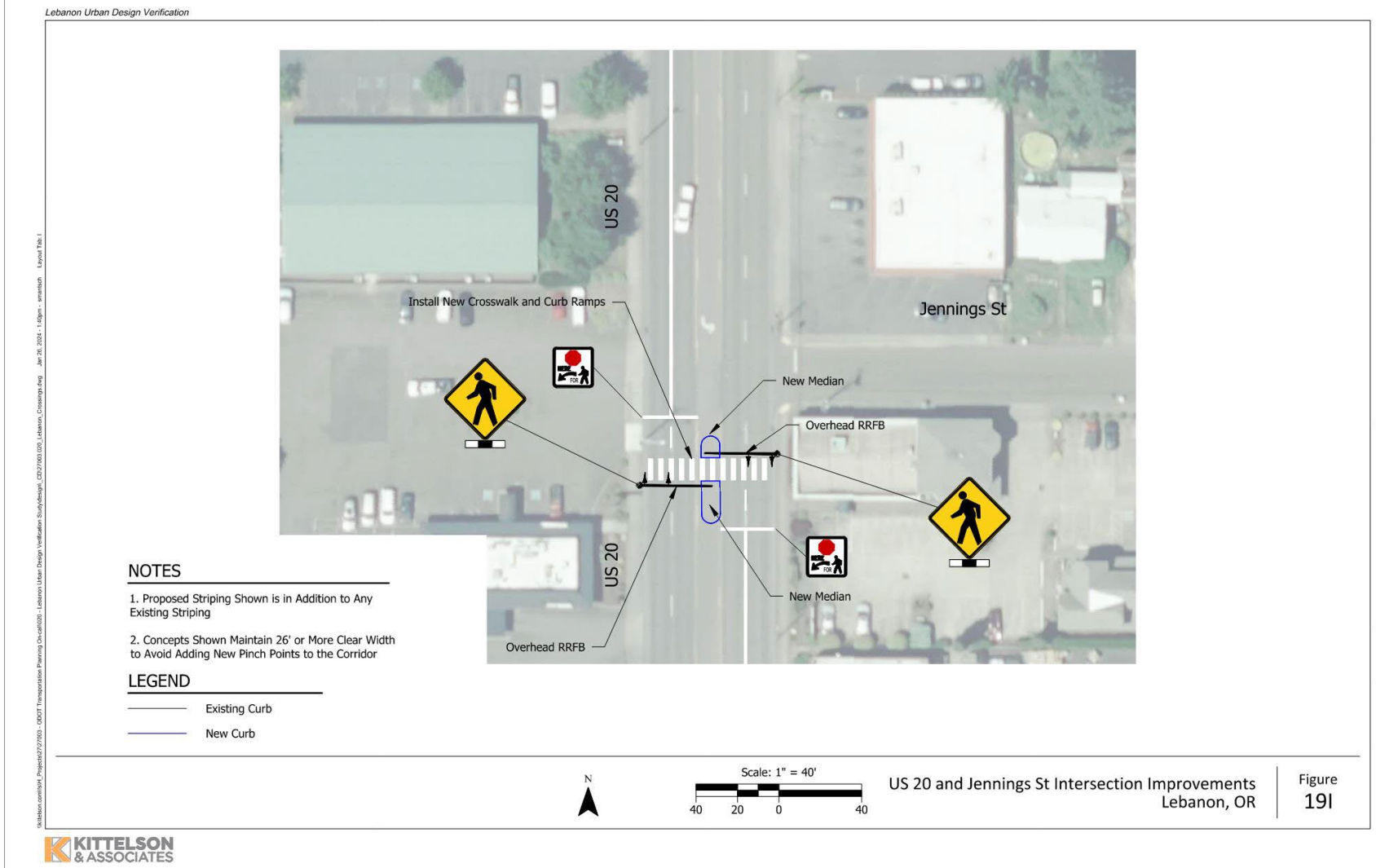

Figure 19I: U.S. 20 and Jennings Street Intersection Improvements

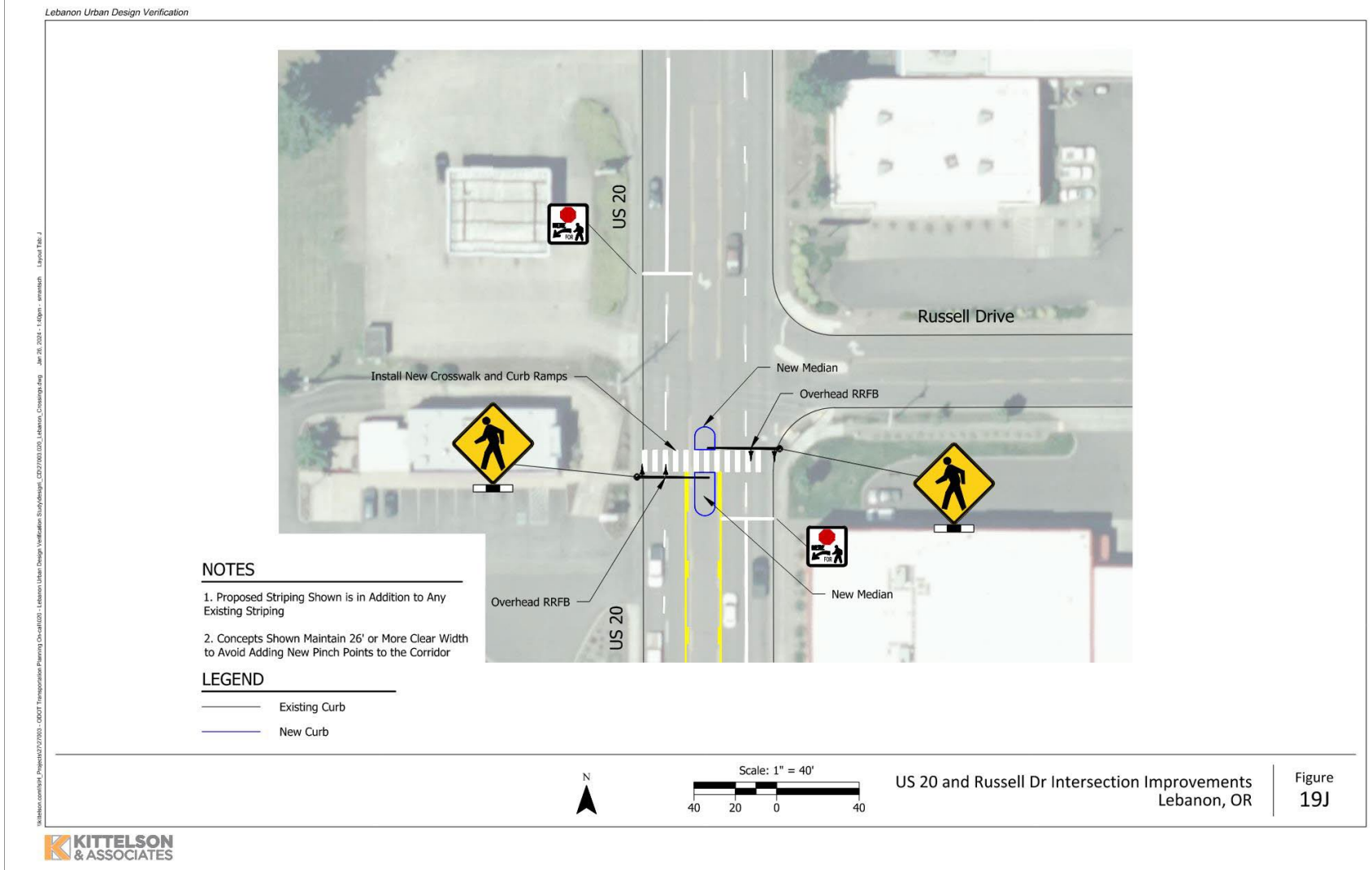

Figure 19J: U.S. 20 and Russell Drive Intersection Improvements

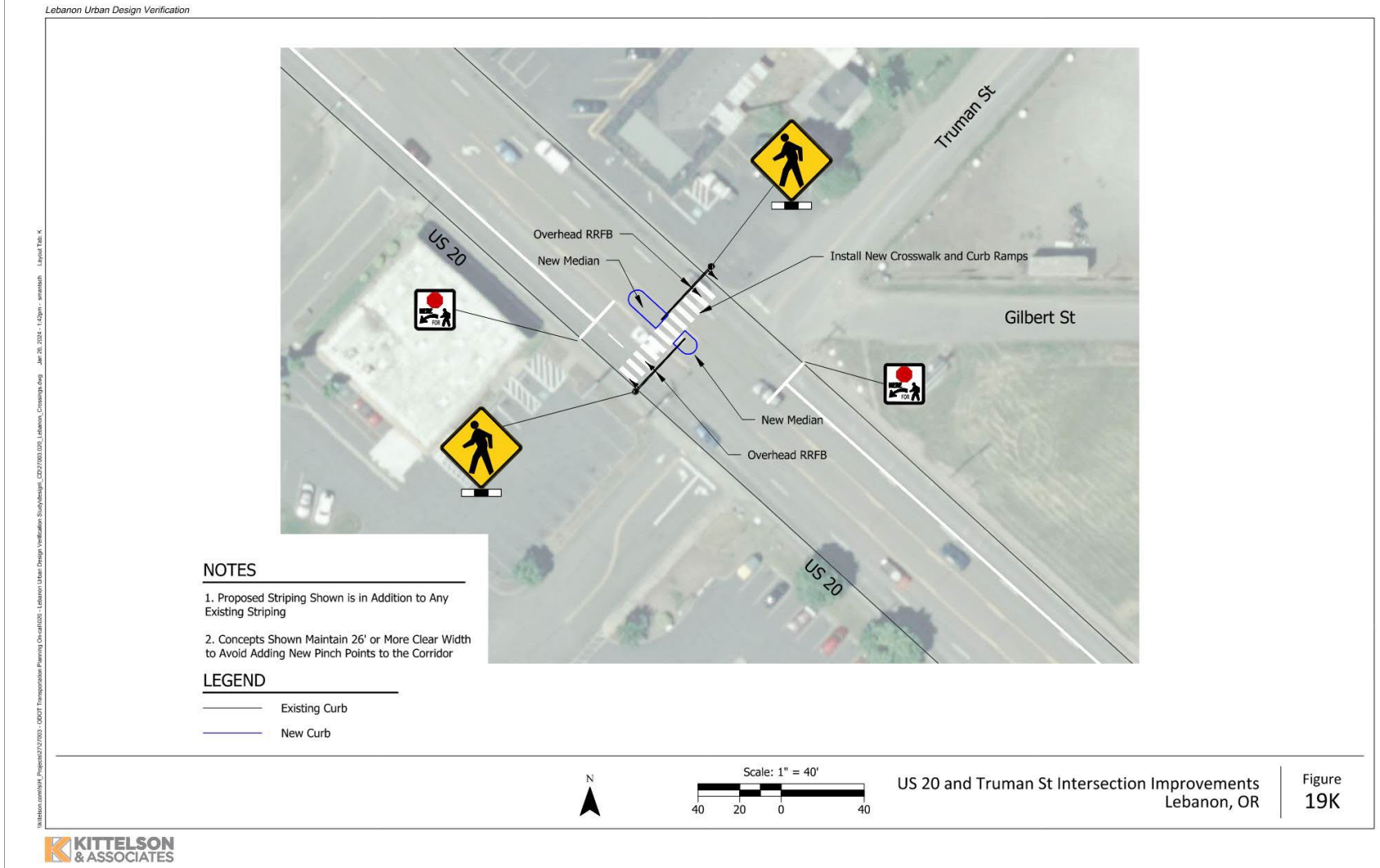

Figure 19K: U.S. 20 and Truman Street Intersection Improvements

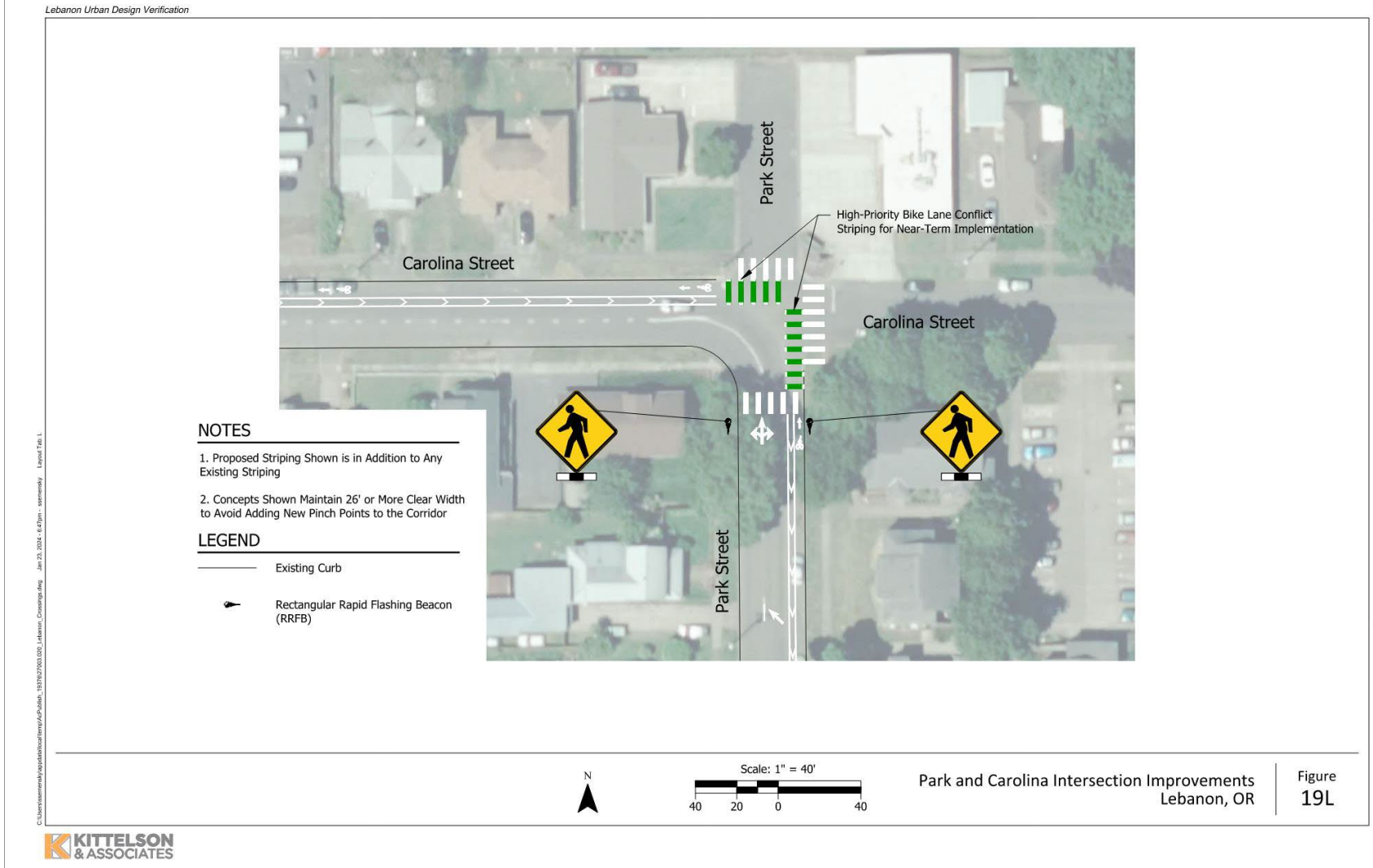

Figure 19L: Park Street and Carolina Street Intersection Improvements