



MAIN STREET CORRIDOR VISION

Executive Summary

THE VISION FOR MAIN STREET

Bicycling and walking are the cornerstones of a complete transportation system. In 2020, Salt Lake City and the City of South Salt Lake initiated a process to develop high-comfort bike routes parallel to State Street. This was a result of a recommendation from the Life on State Study (2018), which acknowledged that striped bike lanes on State Street were likely infeasible and alternatives would be needed. In 2021, Salt Lake City completed new sections of parking-protected bike lanes on 200 East and 300 East (from 500 South to 900 South). In a coordinated effort, South Salt Lake City began working on designs for striped bike lanes on Main Street and West Temple south of 2100 South. Soon Salt Lake City will also be refining its plans for the Green Loop, as envisioned in the Downtown Plan, with a linear park system along 200 East, 900 South, and 500 West. Salt Lake City recognized that Main Street between the downtown Central Business District and the City boundary at 2100 South was an opportunity to re-orient the street space towards people and businesses and create a safer and more comfortable environment for walking and bicycling while still accommodating people in cars.

Salt Lake City's vision for Main Street south of downtown builds on a cross-section with one lane of vehicle travel in each direction, with a center lane that can be used for turning vehicles, landscaped medians, pedestrian refuge areas at unsignalized crossings, and other purposes depending on the immediate local context. Creating a people-friendly corridor on Main Street provides the desired parallel route to State Street, and the City will create high-comfort connections between Main Street and State Street to support travel between these two important corridors. Implementing change at this scale has many positive implications

on public health, air quality, economic competitiveness, and quality of life; it is also a major construction project due to preexisting challenges and infrastructure deficiencies on Main Street. This Main Street Corridor Vision document outlines the next steps that Salt Lake City must take to transform Main Street into a high-comfort, world-class place for all people.









1 SEATING



2 DISTINCT BIKE LANE



3 ENHANCED PEDESTRIAN CROSSING



4 WATER SMART PLANTING

MAIN STREET

NEED FOR THE HIGH-INVESTMENT SCENARIO

In 2022, Salt Lake City resurfaced and restriped Main Street from 700 South to 2100 South. This routine maintenance created an opportunity to reconsider the street design and prepare for future upgrades. Main Street was restriped with one travel lane in each direction with a center two-way-left-turn lane, which functions as a left-turn lane at intersections and provides space for future crosswalk refuge islands. This required reducing the existing number of vehicle lanes between 800 South and 1700 South, matching the design that exists between 1700 South and 2100 South.

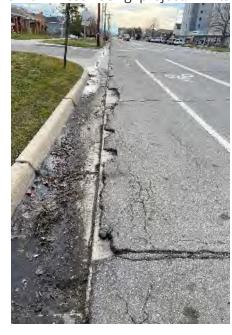
While these changes provide tangible benefits to safety, particularly at uncontrolled crosswalks, it does not remedy many other underlying problems that exist along Main Street. This Main Street Corridor Vision addresses a variety of infrastructure issues present along the corridor while also presenting opportunities for a world-class bicycling facility and rejuvenation of the public spaces along Main Street. These reconstruction needs are outlined below.

First, Main Street's curb and gutter infrastructure are in disrepair and require extensive maintenance, repair, and overhaul. In some sections, the curb is crumbling into the gutter, while in other sections, the pavement is rough and broken, with a sizable drop-off to underlying pavement levels. Driveway tie-ins are irregular and seemingly unregulated. The resurfacing project will improve these issues to a degree, but the infrastructure is failing structurally. These conditions contributed to the decision to maintain curbside parking rather than create a parking-protected

(curbside) bike lane with the 2022 resurfacing project. In its

current state, the area next to the curb and gutter on Main Street is not a good place to position cyclists - a separated bike lane should not pose a safety risk due to pavement hazards.

Second, Main Street's roadway profile represents challenges for people biking and walking across the street. The crown of the roadway is high in the middle, with steep crossslopes for pedestrians to navigate at crosswalks. These cross-slopes also



present a challenge to bicyclists attempting to ride along the corridor, as gravity will tend to pull them towards the curbs (which, as noted above, are falling apart). A full Main Street reconstruction will remove multiple overlaid layers of asphalt



pavement, providing an opportunity to create a more gently-sloped cross-section.

Third, the Main Street Corridor Vision shifts the curb inward to narrow the roadway space. This allows Salt Lake City, business, and property owners along the corridor to repurpose this space





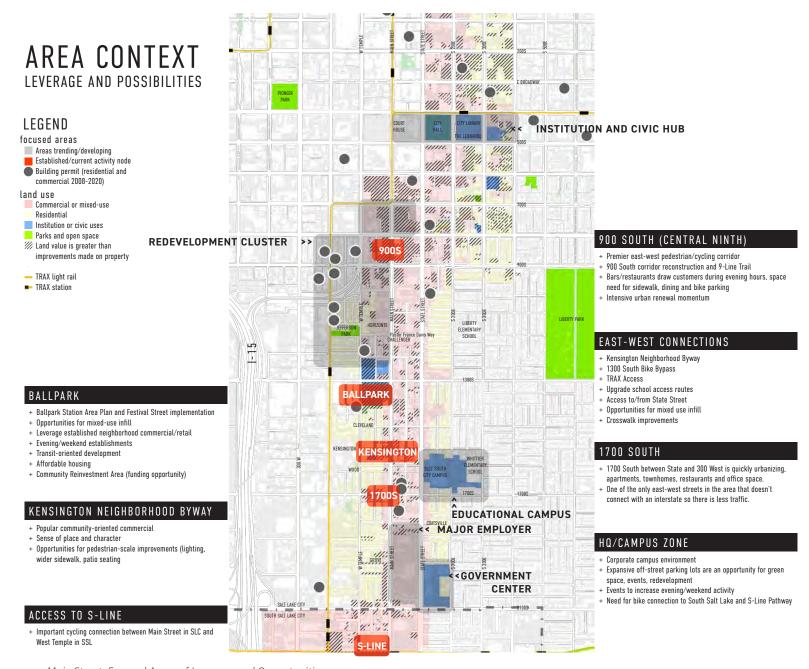
behind the existing curb. This will create significant new street frontage that can be filled with public art, sidewalk dining, bicycle parking, landscaping and greenery, or other uses that can be customized to individual sections of Main Street, Moreover, many properties along the Main Street corridor have land values that exceed the assessed value of their built structures, indicating that these properties are ripe for redevelopment. As these parcels turn over and redevelop, they will likely result in land uses that will necessitate more improvements for pedestrian and bicyclist activities. However, these improvements cannot be implemented successfully on a parcel-by-parcel basis: the planned vision and associated curb shift needs to happen for whole street sections and entire block faces through a coordinated effort. New curb and gutter sections can be constructed when the roadway is narrowed, addressing the curb deficiency issues outlined earlier in this section. Also, adding a series of stormwater planters at critical points along Main Street will also help with rainwater treatment, snow storage, drainage issues, and add to the landscape in a multifunctional manner. A full reconstruction project will also allow for more consistent installation of new landscaping and greenery along the corridor where appropriate; without a coordinated investment, the parkstrip will be managed in a piecemeal manner by adjacent property owners.



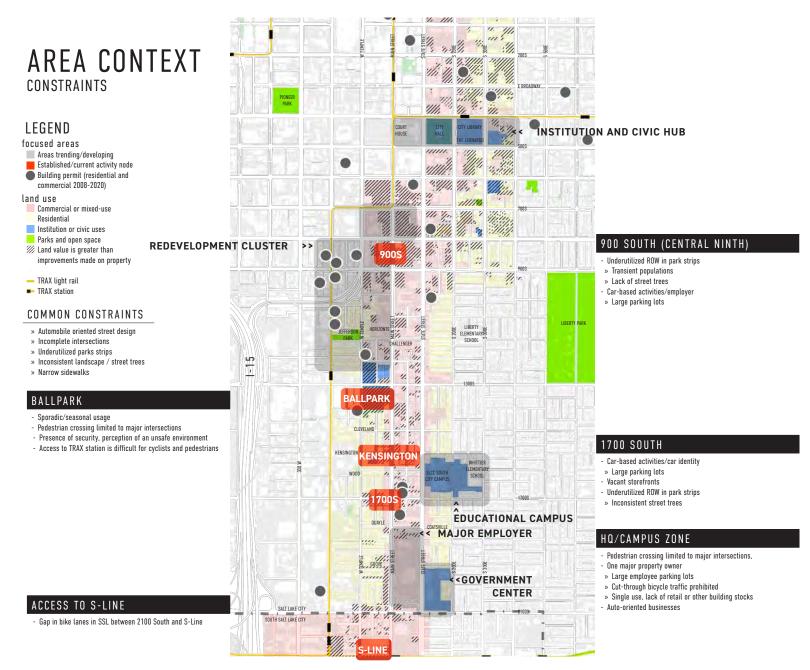
Fourth, Main Street's current cross-section includes multiple cut-back angled parking spaces. These spaces remain after the 2022 street resurfacing but will be eliminated as part of the reconstruction (parking issues are discussed again later in this document) and replaced with on-street parallel parking within the reduced roadway footprint. A full Main Street reconstruction can reclaim these spaces alongside the other behind-the-curb areas, creating a continuous street frontage that can be used for more engaging purposes.

MAIN STREET CONTEXT ZONES, OPPORTUNITIES AND CONSTRAINTS

Main Street presents many opportunities for activation, revitalization, and redevelopment between 700 South and 2100 South. Main Street has numerous local businesses that draw customers from around the Salt Lake Valley, for a broad range of purposes - all the way from bakeries to car dealerships. The Main Street corridor has also been a hot spot for redevelopment activity in recent years, and this is expected to continue as land uses densify and intensify in the corridor. Numerous multiunit housing developments have contributed to the population increase in the area, adding to the overall demand for services and amenities. Focused areas of opportunities and constraints are shown in the following figures, which also identify locations of current and trending redevelopment activities. The ongoing redevelopment and infill along Main Street will continue to increase demand for walking and biking facilities, bringing more people in closer to the destinations they would like to reach (such as shopping, schools, trails, restaurants, offices, and other land uses). The continued redevelopment in this area will increase pressure to improve conditions along Main Street for all uses, whether those are related to transportation needs, commercial activity, quality of life, or other purposes. Similar types of land uses and redevelopment tend to cluster together along the corridor, and several context zones can be seen as travelers move from north to south along Main Street.



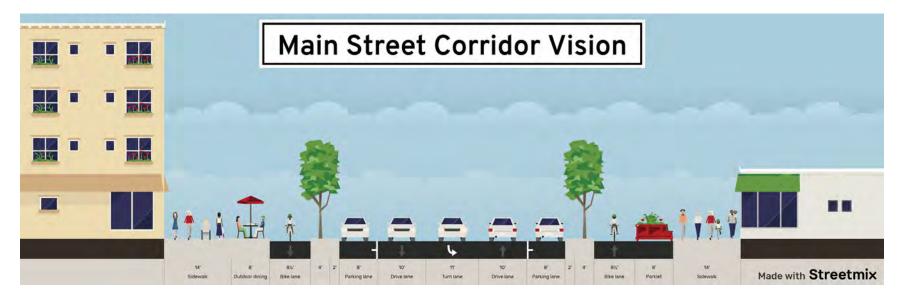
Main Street: Focused Areas of Leverage and Opportunities



Focused Areas of Constraints

PROPOSED CROSS SECTION

The future vision for Main Street takes advantage of the ample right-of-way space to add street trees, stormwater planters, wide protected bike lanes, widened sidewalks and flex space for other uses in the right-of-way. Depending on the land use context, these flex spaces could include bicycle corrals, sidewalk dining, additional green space, public art, or other uses. On-street parking can be retained to help support local business owners, although the cut-back parking will be eliminated. A proposed cross-section is shown below.



Main Street Vision Cross-Section

This vision for Main Street requires shifting the curbs inward to accommodate a narrower pavement width and reclaiming the space beyond the curbs to create places for people. Narrowing the pavement and rebuilding the curbs also provides an opportunity to remedy the steeply-sloped pavement crown and crumbling curb faces that can be seen today. The general layout can be varied depending on the needs and context of individual street segments.

Reclaiming the space behind the curb provides opportunities for placemaking, green infrastructure, and other spaces that complement the adjacent land uses. These photos provide ideas of how the reclaimed space might be used.



Source: Mirrored ceilings reflect surroundings of walkway at Australian university (dezeen.com)



Source: Covered walkway at UQ St Lucia Campus featuring Equideck roofing in COLORBOND steel | Architecture & Design (architectureanddesign.com.au)



Source: Mirrored ceilings reflect surroundings of walkway at Australian university (dezeen.com)



Source: full_Bus_Station_Tensile_Membrane_Structures_08.jpg (839×720) (archdaily.net)

KEY UNCONTROLLED PEDESTRIAN CROSSING LOCATIONS

At the top of the list of safety issues, stakeholders reported serious concern about uncontrolled crossings on Main Street. Uncontrolled crossings are where sidewalks intersect a roadway at a place where no traffic control measures (such as a stop sign or a traffic signal) are present. There have been 13 reported crashes involving pedestrians since 2016 on Main Street and six involving bicyclists, including a fatal pedestrian crash at the marked crosswalk at Coatsville Avenue and another at the Main Street intersection with 1300 South. High vehicle speeds, long crossing distances over multiple travel lanes, and minimal crosswalk infrastructure contribute to conditions in which driver yield compliance is irregular and pedestrians feel at risk. Whittier and Liberty Elementary Schools, both east of State Street, have boundaries that extend to I-15, drawing students to crossings on Main Street. Some strategies could be applied corridor-wide to improve pedestrian and bicyclist safety, such as improved street lighting, leading pedestrian intervals at signalized intersections, and prohibiting right turns at red lights. Improved safety features at crosswalks will also improve conditions for people walking and bicycling.

In the short term, crosswalk safety was improved with the 2022 resurfacing project that reconfigured the street as one travel lane in each direction with a center turn lane. This removed the multiple-threat condition where one vehicle on a multi-lane street stops for a pedestrian to cross, but another vehicle coming from the same direction does not stop.

With marked crossings spaced 600 feet apart on average, Main Street does not necessarily need more crossing opportunities,

but it needs better crosswalks. Of the ten unsignalized marked crosswalks between 900 South and 2100 South, particular crossings may warrant a greater level of emphasis due to pedestrian crossing volumes, connectivity, adjacent land uses, or other needs. The Federal Highway Administration's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations also provides recommendations for crosswalk treatments based on daily vehicle volumes and posted speed limits. Several key locations for crossing improvements are described below, along with recommended crossing treatment improvements that could apply to all the locations discussed.

RECOMMENDED CROSSING TREATMENT IMPROVEMENTS

The following crossing treatment improvements can be applied to the intersections discussed in the previous pages:

- Pedestrian refuge islands
- Rectangular Rapid Flashing Beacon (RRFB)
- Curb extensions to provide a shorter crossing distance for pedestrians and reduce the curb radii for vehicles turning from Main Street to slow vehicle speeds
- Crosswalk markings at all legs of the intersection
- Replace curb ramps that route pedestrians through the gutter with sidewalk-level connections that minimize sloping pathways
- Pedestrian-scale lighting
- High-visibility crosswalk markings
- Advanced "yield here to" markings and signage
- Raised crosswalks

The figure below illustrates how these features can be combined to create a comfortable pedestrian crossing on Main Street.



Sample Pedestrian Crossing Treatment



Walnut Avenue, Fremont, CA (Photo: Google Street View)



Quebec Street, Vancouver, BC (Photo: Google Street View)



West 10th Avenue, Vancouver, BC (Photo: Google Street View)



New York City

IMPLEMENTATION CONSIDERATIONS

PARKING ISSUES

The proposed reconstruction of Main Street will impact on-street parking. While the proposed cross-section maintains on-street parallel parking, there are multiple locations with angled parking behind the curb and gutter that currently cuts back into the parkstrip area. These parking spaces will ultimately be eliminated and replaced with on-street parallel parking.

Salt Lake City has, in the past, allowed business and property owners along Main Street to use these cut-back spaces contained within the public right-of-way as part of their required off-street parking. While these individuals may worry that removing the cut-back spaces will put them out of compliance with the City Code, the Planning Division has determined in similar cases (such as the 9 Line on 900 South) that the removal of these spaces does not represent a compliance issue for these businesses, since they would have been in compliance when they received their development permits.

Additionally, business owners may be concerned about the loss of the cut-back parking in front of their businesses. While many of these locations will still have parallel on-street parking in front of their buildings, the City could consider installing bicycle parking in front of businesses to support sustainable transportation to these locations, and partnering with an organization like Bike Utah to help promote businesses that have been impacted by the loss of vehicle parking.

ACTIVATING THE PUBLIC RIGHT-OF-WAY

The proposed reconstruction narrows the pavement significantly, reallocating that space for other uses that can better complement the businesses, residences, and public places that line the street. This additional space is an opportunity for Main Street citizens to enliven their streetscape with other activities. Each of these uses of the public right-of-way will likely have a different implementation process to be addressed, as discussed below. In addition, the City should expect that activating the public right-of-way will be highly customized depending on individual properties fronting the streetscape, and a one-size-fits-all approach to implementation may not be successful. However, a coordinated restoration effort will result in a more cohesive result, aesthetically and functionally.

The greatest opportunity for activation is within the flex space between the bikeway and the widened sidewalk. Activation could occur within this flex space, and within the widened sidewalk, provided that sufficient space remains for people walking on Main Street. In general, activating the flex space will be easiest if the flex space is at the same grade as the widened sidewalk. An early decision for the city will be whether to build the flex space with a standard parkstrip or some sort of structural element, such as a tree well or stormwater element.

For locations with a standard parkstrip, plantings can later be converted to a pervious paver or decomposed granite to provide an even grade that is permeable for tree health, if trees are planted to an appropriate depth and not mounded at the trunk. A benefit of designing this space with a standard parkstrip is that individual property owners could make these improvements, possibly through a permit process with the city, and the improvements could be made one parcel at a time. Over time, if an improvement district forms, the district may be able to assume maintenance responsibilities for these spaces.

Structural elements provide less flexibility for the corridor to evolve in its land uses, designs, and governance. These structural elements may be worth doing; however, care should be taken to ensure that their implementation does not cause a later hindrance to activation.

The following options describe how outdoor dining, greening and landscaping, drought-tolerant landscaping, and stormwater elements ("green streets") can be applied to the corridor.

OUTDOOR DINING

Restaurants and bars along Main Street could extend their outdoor seating space to include the public right-of-way behind the new curb line. This could be an economic benefit to eating establishments, allowing them to accommodate more customers with a minimal additional overhead expense. Salt Lake City currently has an **Encroachment Application Process** that allows restaurants to lease sidewalk space and **design guidelines** that apply to sidewalk dining. Current state requirements from the Utah Department of Alcoholic Beverage Control dictate that alcohol served outside can only be immediately adjacent to the business serving it and must be within a delineated space. This means that sidewalk or bicycling space needs to be maintained on the street side of any outdoor dining areas to comply with these regulations, so that alcohol is not crossing the traveled way while it is being served by the adjacent business.



PARK STRIP GREENING AND LANDSCAPING

Some sections of Main Street would benefit from more greenery and landscaping in the transformed spaces behind the new curb line. Increased landscaping and pervious surface offer multiple benefits: it makes a streetscape more attractive, it can improve air quality and reduce urban temperatures, and it can help with stormwater retention. Utilizing green street standards for stormwater treatment will provide both the needed water treatment and retention, and provide areas for snow storage and landscape areas instead of unused pavement areas.

Salt Lake City's Park Strip Landscaping ordinance (section 21A.48.060 of the City Code) will apply to these areas and requires that at least one-third of the park strip be covered with turf, perennial or low-growing shrub vegetation. It should be noted that management of park strips within Salt Lake City is a complex issue and that there is not a clear line of responsibility for these



spaces among City divisions and departments, so a high level of coordination will be needed to effect long-term change in these spaces. For example, maintenance and watering responsibilities typically fall to the adjacent property owner, but the Department of Public Utilities will maintain landscaping of Low Impact Development (LID) features. The City may wish to write design guidelines for these spaces to ensure that the desired look and feel is maintained throughout the corridor over time.

DROUGHT TOLERANT LANDSCAPING

The Salt Lake City-approved plant material list for streetscapes accounts for the climate patterns in the region and includes native and adaptive native plant materials. These plant types typically do not require continual irrigation after establishment. Careful consideration will need to be made in the selection of the plants due to the presence of salts from snow maintenance during the winter months.



UNDERGROUND UTILITIES

Most of Main Street between 700 South and 2100 South does not have conventional underground stormwater collection systems. Stormwater runoff is channeled via curb and gutter to intersecting underground storm drain networks that run eastwest on arterial streets (including 800 South, 900 South, 1300 South, 1700 South, and 2100 South). This management strategy is not unusual and technically meets the requirements and policies of the Department of Public Utilities. According to that Department's policies, the street itself can be used to channel stormwater runoff if the water does not regularly spread into the vehicle travel lanes, thereby obstructing travel.

There are downsides to this approach, however, particularly from an urban design perspective. All the pedestrian crosswalks intersect with gutters, creating significant elevation change: a pedestrian descends approximately six inches vertically from sidewalk level to the low point in the gutter, then gains 18 to 24 inches as they approach the center of Main Street. During dry conditions, this elevation change is mostly an inconvenience and can introduce challenges for people with mobility devices. During storm events, the gutter swells with water and creates a barrier for pedestrians. Additionally, sometimes the stormwater does not drain away immediately but leaves ponds of water to gradually evaporate.



A "green street" design strategy may be a long-term tool for addressing some of these issues. In green streets, stormwater planters can provide multiple functions for the street and users in addition to basic stormwater management. Water treatment is first and foremost why the planters are installed. However, well-placed and designed stormwater planters can be beneficial for capturing rainwater along a street, and help create a place along the street. Ideal locations are near existing storm drains and intersections with crosswalks. LID planters can be designed to both manage stormwater runoff and create an intersection extension for pedestrian crossings with a functional landscape and aesthetic benefits. In the winter months, these planters can also be used for snow storage. This multifunctional approach helps resolve many typical streetscape issues.



In the short term, one solution is to use curb extensions with piped gutters (also called "overheads") that bridge the waterway. This design requires an additional maintenance burden to clear debris, which is the reason this strategy has not been more common in Salt Lake City. Due to the intersectionality of departmental authority over gutter maintenance and related infrastructure, it has been historically difficult to coordinate the upkeep of the piped gutter systems despite the low cost and benefit to pedestrians. Also, because there are no underground stormwater collection systems, gutter flows may exceed the capacity of piped gutters. A road reconstruction project that includes an underground storm drain system would help resolve issues with drainage and ponding, and enable better pedestrian treatments.

Sanitary sewer and culinary water along Main Street are in the parkstrip area between the curb/gutter side of sidewalk. Both systems are at the end of their useful lifespan, which is around 75 to 100 years. Reconstruction of Main Street presents an opportunity to replace aged utilities, which is important as the area densifies and puts additional demand on the systems.

COST ESTIMATE

Cost estimates have been developed for a full reconstruction of Main Street from 700 South to 2100 South to reflect the Main Street Corridor Vision. The cost estimate assumes that all reconstruction will take place within the existing rightof-way, without the need to purchase additional property. The full-depth reconstruction would entail replacing the existing pavement with a typical asphalt pavement section (six inches of asphalt over an eight-inch road base), and curb and gutter systems shifted inward. By shifting the curb and gutter systems, space is available for behindcurb bike paths on both sides of Main Street, separated by stormwater planting strips. The design includes upgrades at unsignalized crosswalks throughout the corridor and adjustments of existing signalized intersections to be consistent with the new roadway layout. In addition, new drainage and sewer infrastructure would be included to replace aging or nonexistent lines. A cost summary and a more detailed cost estimate is provided to the right.

CONSTRUCTION ITEM CATEGORIES	LOW	HIGH
ROADWAY RECONSTRUCTION TOTAL	\$10,440,000	\$10,515,360
UTILITIES TOTAL	\$4,168,000	\$18,100,800
LANDSCAPING TOTAL	\$1,268,400	\$1,200,248
MULTI-MODAL INFRASTRUCTURE TOTAL	\$3,422,400	\$5,731,200
TOTAL 2023 COSTS	\$19,298,800	\$35,547,608
TOTAL 2030 COSTS	\$29,953,667	\$55,173,442

COST ESTIMATE

MAIN STREET HIGH INVESTMENT SCENARIO COST ESTIMATE

Γ	CONSTRUCTION ITEM CATEGORIES	LOW	cu	COMMENTS
	CONSTRUCTION ITEM CATEGORIES	LOW	HIGH	COMMENTS
	ROADWAY RECONSTRUCTION TOTAL	\$10,440,000	\$10,515,360	
	New Pavement	\$7,080,000	\$7,080,000	Assumes full reconstruction in both low and high scenarios
	Curb and Gutter	\$1,480,000	\$1,480,000	Same assumptions for low and high scenarios
	Concrete Driveways	\$1,320,000	\$1,320,000	Same assumptions for low and high scenarios
	Removals	\$464,000	\$539,360	Increased removal costs is high scenario due to removal of existing sidewalk prior to sidewalk widening
ı	Signage and Striping	\$96,000	\$96,000	Same assumptions for low and high scenarios
	UTILITIES TOTAL	\$4,168,000	\$18,100,800	
	LID Stormwater / Bioswale	\$400,000	\$400,000	Same assumptions for low and high scenarios
ı	Storm Drain System	\$2,424,000	\$2,424,000	Same assumptions for low and high scenarios, storm drain improvements will be necessary to narrow roadway
	Slip Line Existing Sewer	\$1,344,000	\$0	
	Full Sewer Replacement	\$0	\$13,836,800	Full sewer replacement only included in high scenario
	Lighting	\$0	\$1,440,000	New lighting only included in high scenario
	LANDSCAPING TOTAL	\$1,268,400	\$1,200,248	
	Park strip Restoration	\$308,400	\$240,248	Widened sidewalk reduces park strip restoration in high scenario
	General Landscaping	\$960,000	\$960,000	Same assumptions for low and high scenarios
ı	MULTI-MODAL INFRASTRUCTURE TOTAL	\$3,422,400	\$5,731,200	
	8.5 ft Separated Bike Paths	\$1,969,600	\$1,969,600	8.5 ft separated bike paths on both sides of Main Street, same assumptions for low and high scenarios
ı	New Sidewalk (Replace Damaged Sidewalk)/ Pedestrian Ramps	\$652,800	\$652,800	Same assumptions for low and high scenarios
	New 10' Sidewalks from Grove to 1700 South (West Side), Wood to Kensington (West Side) and 900 South to 700 South (both sides) (assumes 5,300 LF)	\$0	\$508,800	Replace existing sidewalk with 10' sidewalks in certain locations, included in high scenario only.
ı	Intersections / Crossings (Signal Upgrades) 1700, 1300, 900, 800, 700	\$800,000	\$800,000	Assumes \$100k per intersection to modify signals (includes design and contingencies)
	Intersections / Crossings (9 midblocks with RRFBs and curb extensions, 3 complete intersections with RRFBs, curb extensions and patterned crosswalks)	\$0	\$1,800,000	Assumes \$75k per midblock crossing and \$150k per complete intersection (includes design and contingencies)
	TOTAL 2023 COSTS	\$19,298,800	\$35,547,608	
	TOTAL 2030 COSTS	\$29,953,667	\$55,173,442	