



MURRAY CENTRAL STATION

MASTER PLAN

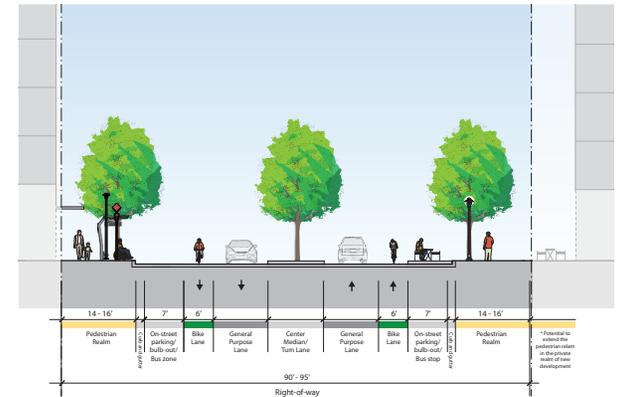
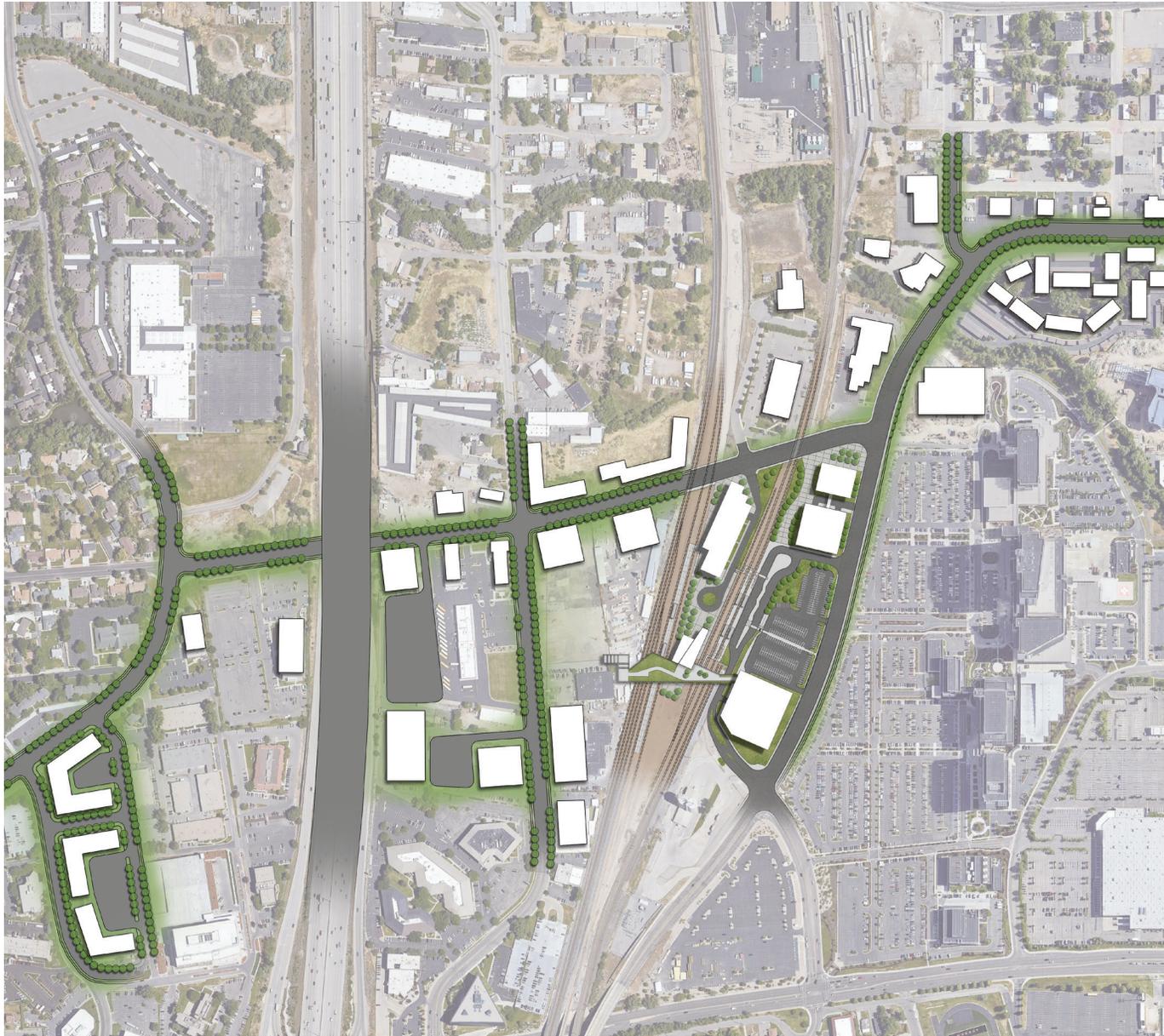


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INTRODUCTION

Background, Setting and Purpose

The Murray Central Station is a place of connections and linkages, where people arrive and depart on their way to destinations near and far. Located in the heart of the Salt Lake Valley, the station and surrounding area is undergoing major transformation and development pressure.

Situated adjacent to the flagship hospital of Intermountain Healthcare and next to downtown Murray, the station is a place where patients, caregivers, business operators, shoppers and residents come together, all in the context of superlative transit opportunities. In fact, the Murray Central Station Area is the only rail location outside of downtown Salt Lake City where TRAX and Frontrunner trains meet, providing unparalleled opportunity to create a superlative transit and mixed-use place. Development interest is spreading from downtown and the fringes of the station area to the center of the district, hinting at the rich role the area will play in the ongoing transformation of the city center.



A general vision for the area was established through recent planning efforts, most notably the recently-adopted *Murray City General Plan (2017)*. This plan embraces the work and vision underlying those efforts while digging deeper to ensure that future development is matched to the opportunities, needs and constraints of the site and its surroundings. This was achieved through detailed research and analysis, as follows:

- Assessment of the study area's built environment, current development patterns and growth potential;
- Understanding of the underlying physical and environmental implication of the area's location within the Smelter Site Overlay District (SSOD), including clarification of the opportunities, constraints and impacts that these conditions have on the potential locations and types of development;
- Clarification of the market potential of the station area, including the synergies of commercial, mixed-use and residential uses as part of creating a viable mixed-use transit district within a redeveloping urban center; and
- Understanding the connections and access to and from the station area for vehicles, transit, pedestrians and cyclists.



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Overview of Planning Process

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This plan is focused on answering three primary questions:

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How do contaminated lands affect the Central Station Area?

What are the market potentials of the area?

How do you create a great station area with the best possible transportation and land use conditions?

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Answers emerged through a process that began by documenting existing conditions, focusing on establishing environmental, economic, transportation and land use conditions and needs. Since a specific area describing the planning area had not been determined, initial research addressed a relatively large area that extended well beyond Murray Central Station (see Figure 1). This area was later reduced, focusing on the Vine Street Corridor from State Street to Murray Boulevard.

Once existing conditions and opportunities were understood, a series of planning alternatives were developed and vetted. Initial outreach efforts focused on working with key stakeholders as part of Technical Committee and Steering Committees composed of city staff, local representatives, property owners, UTA and other project stakeholders. Interviews were also held with Intermountain Medical Center property managers, other key property owners, UTA staff, and local developers. Two alternatives with distinctly different station concepts emerged, each reflecting Planning and Development Principles identified earlier in the process. These were eventually detailed and refined as options to guide future development of the station area, and are both contained in the *Murray Central Station Master Plan* presented here.

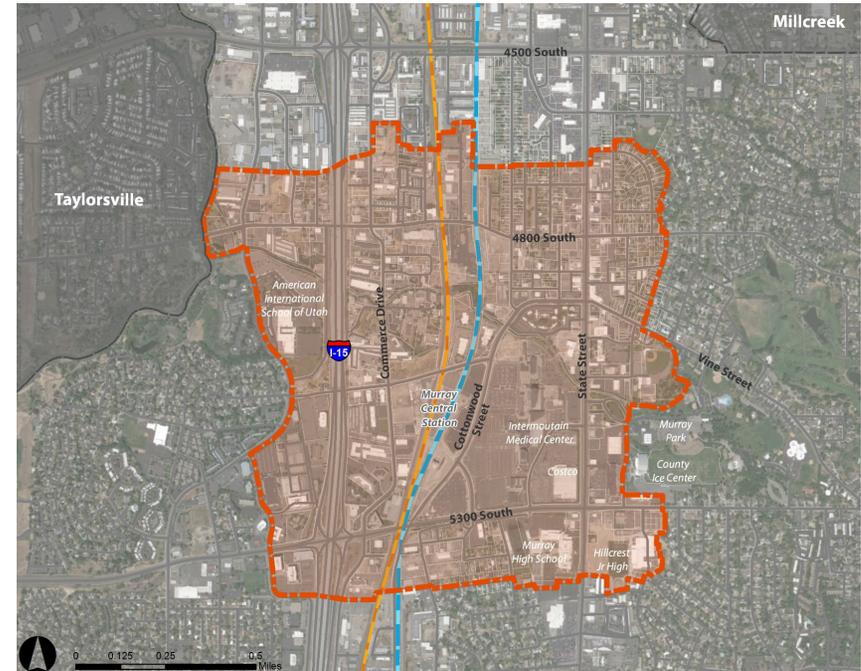


Figure 1 - Study Area Map

Planning and Development Principles

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General

- Align planning and design of the station and station area with the vision contained in the Murray General Plan.
- Balance the creation of a quality station with environmental constraints and other limitations.
- Transform the station from vehicle-oriented to human-oriented places.
- Leverage the power, reach, and investment of the station's transit service to create a vibrant hub.
- Encourage flexible interpretation of the plan to address emerging and unanticipated opportunities as they arise.

Environmental

- Protect human health and environment
- Accommodate human-scaled uses that are compatible with the environmental status of the site.
- Integrate decisions that were made 20+ years ago related to environmental mitigation and cleanup in the area

Economics

- Create value in the surrounding area by leveraging the enhanced station amenities with new development
- Leverage the existing public and private investment in the area.
- Take the long view when making decisions – not just from an economic perspective, but for all other aspects of the site,
- Create a flexible framework that is responsive to market changes and unforeseen futures.
- Work with development partners to create a funding methodology that works for all parties involved.

Transportation

- Connect the station to existing and proposed destinations in Murray and the surroundings.
- Create a new public realm that is inherently walkable and easy to navigate.
- Capitalize on the opportunity to transform Vine Street into an activated, multi-modal urban corridor.

- Reconfigure the station's circulation and operations to emphasize walkability and public space.

Land Use / Urban Design

- Acknowledge that the IMC properties are not necessarily aligned with the creation of a better station area.
- Facilitate market-driven changes from light industrial uses to more urban mixed-uses, with residential uses to limited areas outside the SSOD boundary.
- Acknowledge the zone of influence of the station and the need for transitions to adjacent neighborhoods and districts.
- Locate viable uses in the station areas that contribute to the creation of a new station district.
- Do it right – invest in high-quality buildings, pedestrian enhancements and urban spaces.
- Create a landmark station and associated great spaces to attract attention and help define the area.



Example of a landmark station entrance

EXISTING CONDITIONS, ANALYSIS & IMPLICATIONS

This section of the master plan documents and analyzes key conditions at the Murray Central Station and surrounding areas. **Environmental and Economic** conditions were assessed in the earliest stages of the planning process, providing a baseline of key opportunities and constraints to be considered when transforming the site. **Transportation and Land Use** assessments followed, clarifying current conditions and future opportunities to be considered as part of creating a different type of place.

Environmental

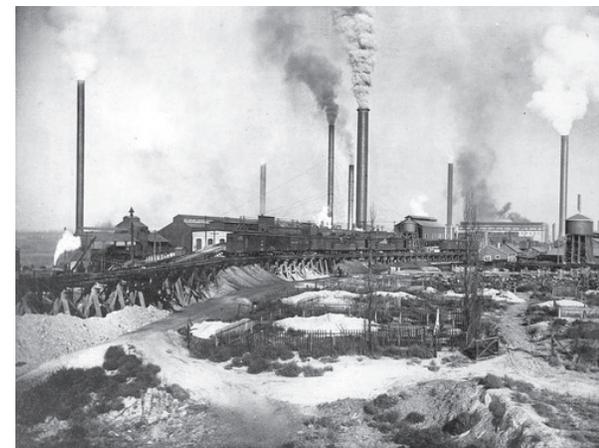
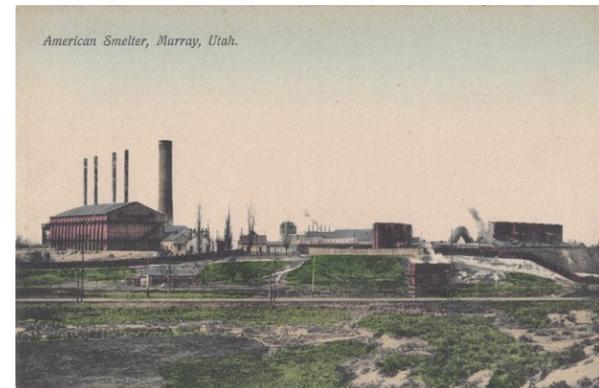
Environmental conditions at the former Murray Smelter Site were analyzed to help clarify the types of land uses and potential markets that can be supported in the area.

History

The Germania Smelter operated on the site from 1872-1902, processing 180 tons of material a day. The smelter was purchased by American Smelting and Refining Company (Asarco) in 1899 and operated until the Murray smelter began operations in 1902. The Murray Smelter processed 1,500 tons of lead and silver ores per day through 1949, eventually closing operations in the early 1950's. Much of slag was used as ballast for railroads and highways in the area. Operations facilities on site included an extensive network of railroad tracks, two smoke stacks, several blast furnaces, ore storage bins and other support facilities.

By the mid 1990's, on-site remnants of the smelter operation included two large smoke stacks, a foundation wall of one building, the old office building and the slag piles. In 1994 the U.S. Environmental Protection Agency (EPA) recommended that the Murray Smelter site be placed on the National Priorities List (NPL). This is the list of hazardous waste sites in the United States that are eligible for long-term remedial action (cleanup) financed under the federal Superfund program. The NPL listing was never finalized and the site was never designated as a Superfund site.

Several studies and site investigations were conducted between 1994 and 197, describing site contamination. Site investigations noted that lead and arsenic were identified as primary contaminant of concern in soil. Shallow groundwater was also found to be contaminated with



Historic photos of the Germania / ASARCO Smelter

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arsenic and elevated arsenic concentrations were also measured in Cottonwood Creek. In 1996 the EPA and Murray City signed a Memorandum of Understanding (MOU), creating a formal role for Murray in the assessment of potential land uses, development of cleanup options, and implementation/enforcement of institutional controls. A working group was formed with Murray, EPA, UDEQ, Asarco, and land/business owners in the area.

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In 1998 the EPA issued a Record of Decision (ROD) for the selected site remedial action, and Murray City passed an ordinance establishing the Smelter Site Overlay District, or “SSOD.” The establishment of these institutional controls were part of the selected remedial action. The actions were performed from 1998 to 2001, and in 2003 the first EPA 5-year review was performed and findings documented. The results indicate that the remedy is expected to protect human health and the environment, and immediate threats were addressed.

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In 2008 Asarco settled with the US government after filing for Chapter 11 bankruptcy in 2005, agreeing to pay \$1.79 billion for contamination at the various sites. The funds were allotted to the EPA for cleanup and monitoring at 26 sites around the country, including the Murray Smelter Site.

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In 2009 the second EPA 5-year review was performed, which indicated that the remedy at the Murray Smelter Site is protective of human health and the environment, that source control measures continue to function, institutional controls are effective, and contaminant levels are consistent with expectations at the time of the ROD. The third and most recent EPA 5-year review was performed in 2014, with similar results to those conducted in 2003 and 2008. Annual monitoring is performed and funded by a trust set up by Asarco.

1998 Record of Decision (ROD)

The EPA issued a Record of Decision (ROD) for the selected site remedial action in 1998. The ROD is a document that describes site characteristics and contamination risks, alternatives for remediation, and the selected remediation strategy for cleanup. The goals of the selected remedy for the Murray Smelter Site are to protect the aquifer, restore the shallow groundwater, protect Little Cottonwood Creek, and remediate surface soils to levels that are protective of the reasonably anticipated future land use.

A critical piece of the ROD includes a summary of site risks and corresponding Remedial Action Objectives (RAOs). A baseline risk assessment was performed and used to characterize the current and potential threats to human health and the environment as a result of contamination. The baseline risk assessment was used to determine the RAOs which establish the acceptable levels of contamination that protect public health and the environment. The RAOs were determined based on the assumption that future land uses will be commercial and/or light industrial.



Figure 2 - Smelter Site Boundary

The selected remedy for cleanup was described in the 1998 ROD and was subsequently performed between 1998 and 2001. As indicated in the most recent EPA 5-year review, the selected remediation strategy has been effective in meeting the RAOs.

Smelter Site Overlay District (SSOD) Site Overview

The SSOD was established as part of the remedial action described in the 1998 ROD. The SSOD is bounded by 5300 South Street to the south, State Street to the East, Little Cottonwood Creek to the north, and railroad tracks to the west (see Figure 2). The total site is 142 acres.

The purpose of SSOD is to ensure appropriate uses and redevelopment on site as well as protection of the cap and barrier system. The SSOD includes zoning to prevent residential and contact-intensive industrial uses within the former smelter operational areas and to require maintenance of the barriers, caps, and controls on excavated subsurface material within this area. Zoning allows for commercial and light industrial land uses. The SSOD also prohibits construction of new wells or use of existing wells. All current and future redevelopment activities in the SSOD must conform to requirements described in Chapter 17.25 of the Murray Municipal code in addition to the overlying zoning which is C-D, a commercial development mixed use district described in Chapter 17.160 of the code.

The four categories of materials defined by the 1998 ROD and referenced in the SSOD development regulations are described below and illustrated in Figure 3. For each category, a description of contamination, remediation, site location of materials, and relevant SSOD regulations on development are provided. In addition, contamination of shallow groundwater and surface water are discussed.

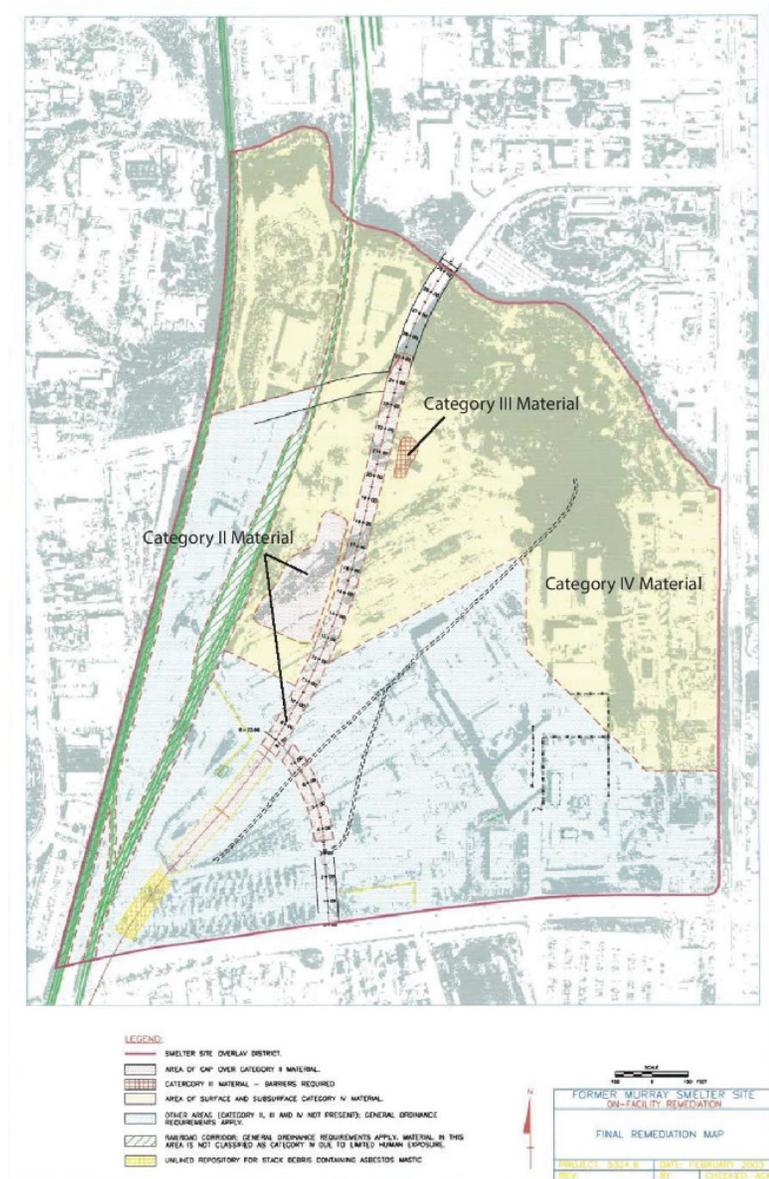
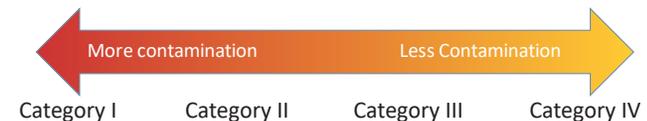


Figure 3 - SSOD Remediation Map



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Category I Materials

Description of Contaminated Materials: Residual smelter materials associated with the arsenic trioxide process and considered undiluted flue dust. This material contained the highest arsenic concentrations (average approximately 140,000 mg/Kg). Identified as a potential health risk and as being a major source of arsenic to shallow groundwater.

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Remediation Performed: Excavation and removal of material (580 tons) to an off site permitted hazardous waste treatment, storage, and disposal facility.

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Current Location of Category I Materials: There are no Category I materials on site.

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SSOD Regulations on Development: N/A.

Category II Materials

Description of Contaminated Materials: Residual material associated with smelter flue dust operations (blast furnace flues, bag-house, roasting plant flues and Cottrell electrostatic precipitator) and consisted diluted flue dust. Contains lower arsenic concentrations (average approximately 9,000 mg/Kg) and a total volume of 90,000 cubic yards (from 5-year review; ROD says 68,000 cubic yards). Identified as a potential health risk and as being a source of arsenic to shallow groundwater.

Remediation Performed: Excavation and on-site consolidation of material with screening, crushing, and blending prior to placements in an on-site facility repository system. Cap over Category II materials at fully-encapsulated and lined with geo-membrane. Designed as the base for a new access road. Subsequent, site development (UTA parking lot; road) has occurred over the repository.

Current Location of Category II Materials: Under the length of Cottonwood Street between Little Cottonwood Creek and 5300 South and Woodrow Lane from Cottonwood Street to 5300 South. Also underlies the southern end of the UTA parking facility on the west side of Cottonwood Street.

SSOD Regulations on Development: Excavation or breaks in the cap over Category II materials is prohibited.

Category III Materials

Description of Contaminated Materials: Residual smelter material and contaminated soils that contained arsenic or lead above levels that posed a potential health risk to site workers (arsenic > 1,200 mg/Kg or lead > 5,600 mg/Kg), but were not sources of arsenic to groundwater. Once Category II materials were removed, it was found that relatively small amounts of Category III were present; approximately 600 cubic yards of Category III materials were removed from the rail line area to the west and relocated to the central portion of the on-facility area.

Remediation Performed: Removed materials from the western portion of the site and place in a then undeveloped area with access controls in place. Barrier was placed over Category III materials to prevent direct contact. Material was covered with subsequent redevelopment in 2008 (IMC hospital parking).

Current Location of Category III Materials: East side of Cottonwood Street in an area that currently serves as parking for IMC hospital.

SSOD Regulations on Development: No subsurface soils identified as Category III materials shall be disposed of off site unless a party complies with the appropriate off site rule as set forth in the code of federal regulations.

Category IV Materials

Description of Contaminated Materials: Smelter slag has relatively high levels of lead (8,000 to 16,000 mg/Kg), but is present in a physical form (vitrified iron silicate) that limits the release of metals. Slag was therefore not identified as a source of metals to groundwater or surface water and was not a current human health risk. The slag may have the potential to release metals over the long term if the vitrified materials breaks down due to weathering. Human health risks associated with exposure to slag under a commercial/light industrial scenario were predicted to be within EPA acceptable risk range.

Remediation Performed: Material to be eventually covered as site is redeveloped in the future. Site development resulted in the construction of barriers over the slag ensuring no exposure to slag in the future.

Current Location of Category IV Materials: Largely on the northern and eastern end of the SSOD. See Figure 2. SSOD Regulations on Development: No category IV materials shall be deposited on the surface of the ground.

Description of Contamination: Groundwater is comprised of three distinct aquifers: shallow aquifer, intermediate aquifer, and deep aquifer. Shallow groundwater was found to be contaminated with arsenic and selenium.

Remediation Performed: Monitored natural attenuation to address the residual groundwater contamination within and down-gradient of source areas. Natural attenuation to continue until shallow groundwater achieves Average Contaminant Level (ACL) for dissolved arsenic of 5.0 mg/L. The intermediate aquifer to be monitored to demonstrate continued compliance with the Maximum Contaminant Level (MCL) for dissolved arsenic of .05 mg/L (MCL changed to .01 mg/L in January of 2001).

SSOD Regulations on Development: Construction of new wells prohibited.

Off-Facility Areas

Off-facility areas were established in the 1998 ROD as those residential and commercial areas that surrounded the smelter site where airborne emissions from the smelters impacted the environment or where contamination in shallow ground water may be transported in the future. The off-facility area is comprised of approximately 30 acres to the west of the SSOD, 106 acres to the south and southeast, and a small area to the east of the SSOD.

The RAO for off-facility soils were established as <1,200 mg/kg (range 630-1260) for lead and there was no RAO established for arsenic. For offsite areas where soil RAOs are not met, remediation was performed. Remediation consisted of excavation of the top 18 inches of soil and replacement with clean fill. There are currently no restrictive development regulations in the off-facility areas.

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ENVIRONMENTAL PLANNING AND DEVELOPMENT PRINCIPLES

- Protect human health and environment
- Accommodate human-scaled uses that are compatible with the environmental status of the site.
- Integrate decisions that were made 20+ years ago related to environmental mitigation and cleanup in the area

What Does this Mean for Future Development?

Based on the 1998 ROD, development is limited to commercial and light industrial within the SSOD. Outside of the SSOD, general zoning applies.

The EPA and UDEQ has indicated that in order to redevelop the site for any land use other than commercial and light industrial, the 1998 ROD must be amended. The 1998 ROD established remediation based on future commercial and light industrial uses. In order to allow other uses (i.e. residential) an updated risk assessment must be performed and new RAOs must be established through the ROD amendment process. Murray does not support residential or other uses that require additional assessments.

Economics

The following summarizes existing and projected economic and demographic conditions in the Murray Central Station Small Area Planning area.

Current Demographics & Employment

The planning area is the area surrounding the Murray Central Station of the TRAX Blue Line and Frontrunner commuter rail. Figure 4 provides current population for the planning area, Murray and Salt Lake County. The study area represents less than ½ half of 1 percent of County-wide population and 8 percent of Murray population. Households in the study area are smaller than those in the County as a whole and the rest of Murray.

Figure 4: Current Demographics - 2018 Estimated

	Population	Households	Employment
Study Area	4,096	1,715	17,332
Murray City	49,295	19,742	54,763
Salt Lake County	1,114,711	390,334	764.669

Source: WFRC/MAG Demand Model V 8.1 - March, 2017

The most important current demographic indicator is employment. The study area is a job rich area of Murray and Salt Lake County. The ratio of jobs to population in the study area is 4.23. By contrast the jobs to population ratio in Murray is 1.11 and 0.69 County-wide. The study area represents 32 percent of Murray City jobs and 2 percent of County jobs.

According to 2015 data, 99 percent of the jobs in the study area are filled by people who live elsewhere either in Murray or other parts of the Wasatch Front. For Murray City as a whole, 93 percent of the jobs are filled by people who live elsewhere. Five percent of the jobs in Murray are filled by people who live in Murray. For the study area, less than 1 percent of the jobs are filled by people who live in the study area.

Figure 5: Worker Profiles Study Area & Murray 2015

	Jobs in the Area	Employed in Area / Live in Area	Employed in Area / Live Elsewhere	Live in Area / Employed Elsewhere
Study Area	12,298	66	12,232	1,386
Murray City	40,803	2,954	37,849	20,416

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015)

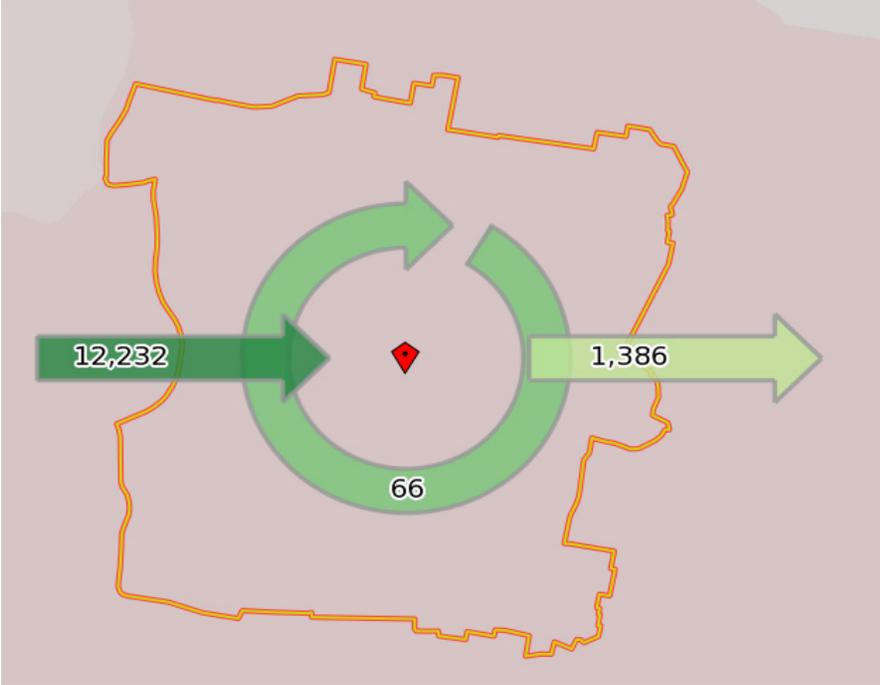


Figure 6 - Live / Work Patterns - Study Area

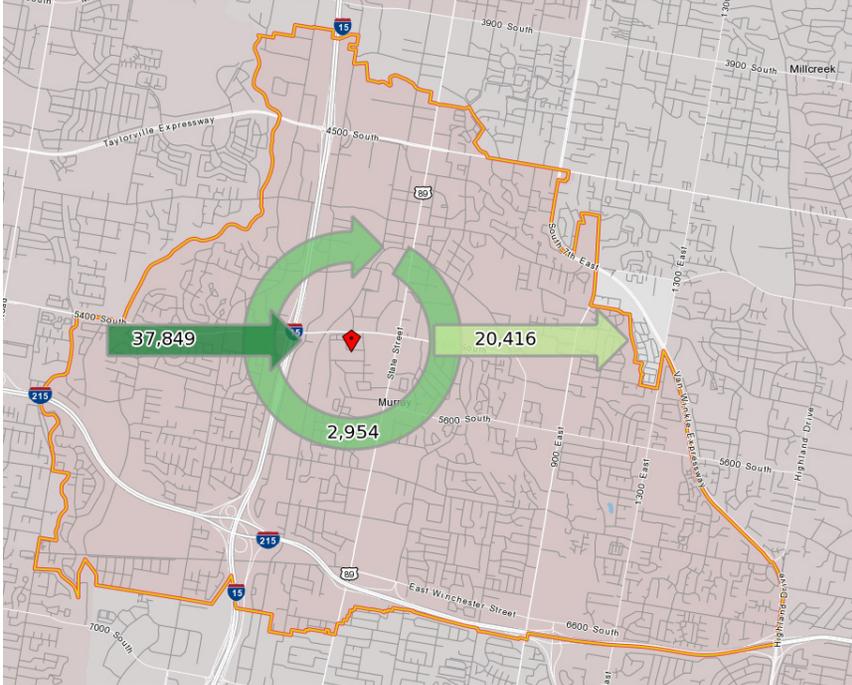


Figure 7 - Live / Work Patterns - Murray

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Figure 8: Jobs by NAICS Industry Sector Study Area & Murray 2015

	Study Area	% Of Study Area	Murray	% of Murray	Study Area as % of Murray
Agriculture, Forestry, Fishing and Hunting	0	0%	2	0.005%	0%
Mining, Quarrying, and Oil and Gas Extraction	46	0%	49	0.12%	94%
Utilities	50	0%	103	0.25%	49%
Construction	469	4%	2,861	7%	16%
Manufacturing	300	2%	1,807	4%	17%
Wholesale Trade	282	2%	1,807	4%	18%
Retail Trade	985	7%	6,087	15%	16%
Transportation & Warehousing	38	0%	393	1%	10%
Information	192	1%	783	2%	25%
Finance & Insurance	1,777	13%	3,667	9%	48%
Real Estate, Rental & Leasing	280	2%	933	2%	30%
Professional, Scientific, & Technical Services	1,093	8%	3,580	9%	31%
Management of Companies & Enterprises	2	0%	293	1%	1%
Administration & Support, Waste Management & Remediation	690	5%	2,512	6%	27%
Educational Services	1,022	8%	2,002	5%	51%
Health Care & Social Assistance	4,482	34%	9,068	22%	49%



Arts, Entertainment & Recreation	78	1%	261	1%	30%
Accommodation & Food Services	446	3%	2,349	6%	19%
Other Services (excluding Public Administration)	321	2%	1,287	3%	25%
Public Administration	728	5%	1,209	3%	60%
TOTAL	13,281	100%	40,803	100%	33%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015)

Jobs in the health care and social assistance category represent a significant proportion of the jobs in the study area and in Murray. Figure 8 compares jobs by North American Classification Systems (NAICS) category in the study area and Murray as a whole. Although retail jobs represent the second highest category of job in Murray, only 7 percent of study area jobs are in retail. The second highest job category in the study area is finance and insurance, with 48 percent of Murray’s finance and insurance jobs in the study area.

The study area is clearly an important jobs center for Murray.

Projected Growth

Salt Lake County’s population is projected to grow to almost 1.5 million people by 2040, a 33 percent increase over today’s population. The study area population is projected to grow by 75 percent in the same time period. Projected population in the study area represents 13 percent of Murray’s projected future population. This is a 4 percent increase over the percent of current Murray population living in the study area. This means that 41 percent of Murray’s population growth and 36 percent of new households are anticipated to occur in the study area. The projected growth will require an additional 1,500 households within the study area.

Figure 9: Projected Demographics - 2040 Projected

	Population	Households	Employment
Study Area	7,158	3,216	26,890
Murray City	56,786	23,931	70,565
Salt Lake County	1,477,873	572,823	989,728

Source: WFRC/MAG Demand Model V 8.1 - March, 2017

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Employment is also projected to grow in Salt Lake County, Murray and the study area. Thirty-two percent of Murray’s jobs are currently located in the study area. This is expected to increase to 38 percent by 2040. This means 60 percent of Murray’s projected 15,800 new jobs will be located in the study area. Figure 10 provides a breakdown of future jobs by NAICS category if the area adds jobs in the same categories as are currently found in the study areas.

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The study area plan will need to identify the appropriate balance of housing and employment to either capture the projected number of households and jobs or to determine the appropriate balance for the area.

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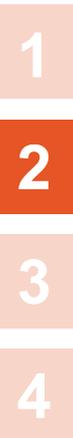
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Figure 10: New Jobs by NAICS Category - 2040

	Study Area	Murray	Study Area as % of Murray
Agriculture, Forestry, Fishing and Hunting	0	1	0%
Mining, Quarrying, and Oil and Gas Extraction	33	19	174%
Utilities	36	40	90%
Construction	338	1,108	30%
Manufacturing	216	700	31%
Wholesale Trade	203	603	34%
Retail Trade	709	2,357	30%
Transportation & Warehousing	27	152	18%
Information	138	303	46%
Finance & Insurance	1,279	1,420	90%
Real Estate, Rental & Leasing	201	361	56%
Professional, Scientific, & Technical Services	787	1,286	57%
Management of Companies & Enterprises	2	293	1%

Administration & Support, Waste Management & Remediation	497	973	51%
Educational Services	735	775	95%
Health Care & Social Assistance	3,225	3,512	92%
Arts, Entertainment & Recreation	56	101	56%
Accommodation & Food Services	321	910	35%
Other Services (excluding Public Administration)	231	498	46%
Public Administration	524	468	112%
TOTAL	9,558	15,802	60%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015)



Area Ownership & Parcels

Figure 11 identifies parcels or groups of parcels in the study area of five acres or greater in single ownership. Much of the area is dominated by small lots with fragmented ownership but there are several areas with the larger developer parcels. The locations outlined in red are currently under development or are in the planning and development pipeline.

The large purple parcel east of the station is owned by Intermountain Health Care and is the location of the Intermountain Medical Center and related medical office and support buildings. IHC’s long-term plans for the area will impact the overall station area.

In addition to parcel size and consolidated ownership another factor in redevelopment opportunities is the current status of the parcel, i.e. vacant or underutilized. Figure 12 is a graphic representation of the building to land ratio on parcels in the study area. Lighter colors indicate land values that are equal to or greater than the value of buildings on the property. The darker colors indicate building values higher than the underlying land values. If a parcel is light green, yellow or white it is ripe for reinvestment or redevelopment.

Of the approximately 920 acres in the study area, 53 are identified as vacant by the Salt Lake County assessor. Figure 14 is a breakdown of vacant acreage by property type. Figure 14 illustrates the properties in the study area with building to land value ratios of 1.0 or lower (light green or yellow properties in Figure 12.)

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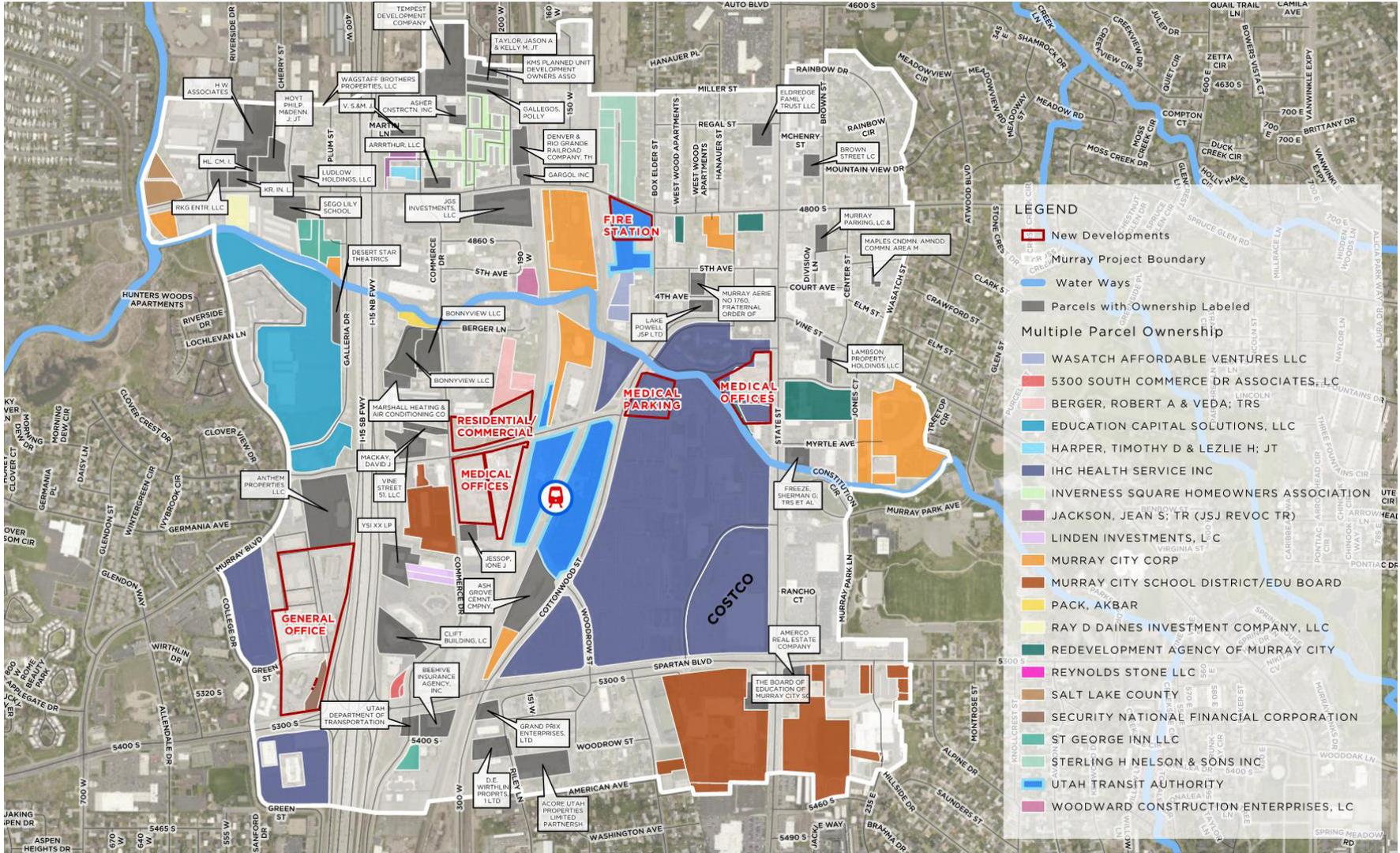


Figure 11 - Murray Central Station Area Property Ownership Map

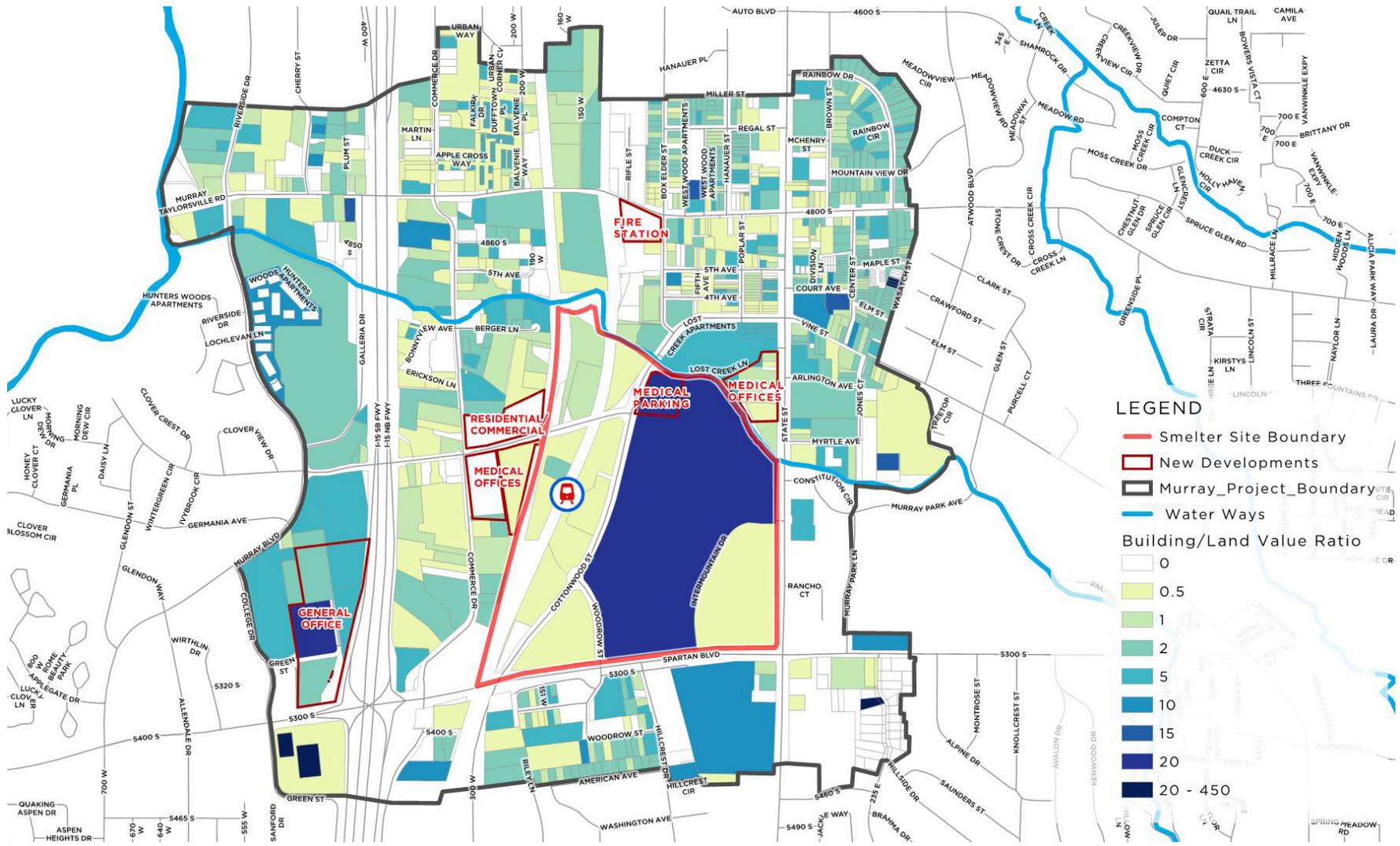


Figure 12 - Murray Central Station Area Underutilized Properties Map

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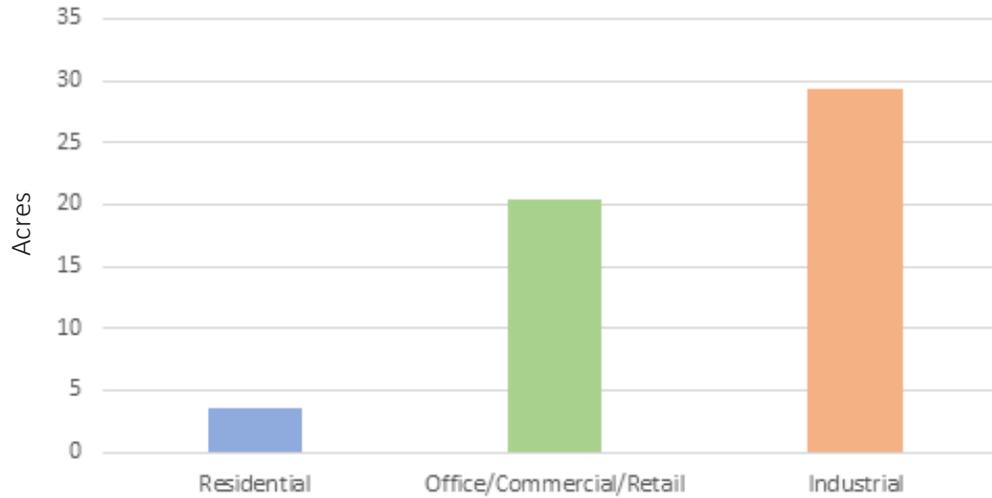


Figure 13 - Murray Central Station Area Vacant Property by Type

Under-Utilized Properties by Type

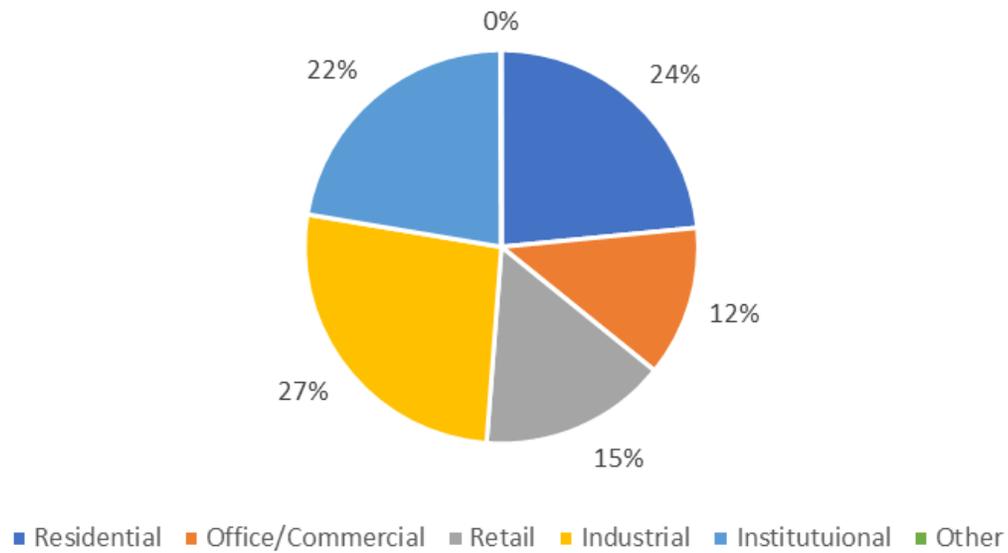


Figure 14 - Murray Central Station Area Under-Utilized Property Type

The vacant and underutilized properties in the area include almost 20 acres that are owned by UTA. Most of UTA's properties are adjacent to the TRAX and Frontrunner stations. Vacant and underutilized properties represent 42 percent of the 920-acre study area. The current count of vacant and underutilized properties does not include parcels with large parking fields that can be redeveloped into higher performing office, retail and residential buildings.

Real Estate Market

The Murray Central Station area current land uses include residential, institutional, office, medical, retail and industrial.

Residential

The residential market in Salt Lake County has been strong for several consecutive years. All indicators predict that it will continue strong for the foreseeable future. Statewide growth and the related strong household formation has resulted in a housing shortage across most product types and price classes.

Murray is projected to grow by almost 4,200 households by 2040. The study area is projected to capture 1,500 of those units, or 36 percent of the projected new households. County-wide household growth in the same time period is projected to be more than 180,000, meaning Murray City can expect to capture 2 percent of new housing development in the period 2018 through 2040.

Residential property represents 29 percent of the acreage in the study area as of 2017. Of the approximately 268 residential acres, three acres are currently vacant and 80 are undervalued. This provides limited opportunity to develop the needed 1,500 new housing units on existing residential property.

Office

There are a total of 92 acres of commercial office property in the study area. An additional 323 acres are dedicated to institutional uses, including a hospital, schools, and governmental offices. Office-based employment in the study area is estimated at 8,554 in 2015, or 64 percent of the total.

The Intermountain Medical Center (IMC) is the flagship hospital of intermountain Health Care (IHC). The IMC is the primary employer and anchor use in the study area. Its campus is immediately east of the TRAX and Frontrunner stations, creating a natural market for medical office development. The majority of new medical office development is anticipated on the IMC-site although related medical office development will occur in surrounding areas. Currently, there are approximately six acres of medical office development in the study area, almost half of which is owned by IHC Medical Services for a dialysis center.

Office-based employment in the study area is projected to grow by 6,156 jobs by 2040, a 72 percent increase. This will require additional office square footage to accommodate the additional activity. At an average of 200 gross square feet per employee an estimated 1.2 million square feet will be needed, 52 percent of which is anticipated to be medically related.

The Salt Lake County office market averages just under 1 million square feet net absorption annually. The geographic submarket in which the study

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area is located captures approximately 35 percent of the Salt Lake County total. This means an average of 330,000 square feet is absorbed in the central submarket annually. The study area would need to capture approximately 17 percent of the submarket net absorption to meet projections. Future office demand will require between 22 and 46 acres of property, depending on whether structured or surface parking is used.

2

There are currently 20 acres of vacant property identified for commercial office or retail development and an addition 42 acres of undervalued commercial office property.

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Retail

The retail real estate market is in flux as a result of online shopping and changes in shopper behavior. More emphasis is put on restaurants, entertainment and experiential retail as the key attractors for retail formats. The study area currently represents 16 percent of Murray’s retail jobs and is projected to grow by 72 percent by 2040. At current ratios this represents an additional 56 acres of retail space by 2040. Some of this retail space will come from ground floor retail in mixed use buildings and some will come from stand alone retail development. As indicated above, there are 20 acres of vacant property in the study area identified for commercial office and retail development. In addition, there are approximately 52 acres of undervalued retail property in the area.

4

Opportunities

Although the study area is currently a high-performing area of the City, there are additional opportunities within walking and biking distance of the TRAX and Frontrunner stations. There is also an opportunity to increase the value of existing development through the development of “human-oriented” space such as trails, plazas and gathering places in the vicinity of the two transit stations. Figure 15 illustrates future development opportunities that have emerged as part of the preliminary analysis.

To capitalize on the total opportunity, repurposing approximately 324 acres of current uses is needed. Much of this can occur on UTA-owned “institutional” property immediately adjacent to the TRAX and Frontrunner stations, with the medical office opportunity occurring on IHC Health Services property or other nearby locations.

Figure 15: Study Area Development Opportunity - 2018-2040

Land Use	Current Acres	2040 Acres	New Acres
Residential	268	502	235
Office / Commercial	110	144	34
Retail	78	134	56
Industrial	157	157	0
Institutional	306	306	0
Other	0	0	0
TOTAL	919	1,243	324

Source: WFRC/MAG Demand Model V 8.1 - March, 2017

ECONOMIC PLANNING AND DEVELOPMENT PRINCIPLES

- Create value in the surrounding area by leveraging the enhanced station amenities with new development
- Leverage the existing public and private investment in the area.
- Take the long view when making decisions – not just from an economic perspective, but for all other aspects of the site,
- Create a flexible framework that is responsive to market changes and unforeseen futures.
- Work with development partners to create a funding methodology that works for all parties involved.

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Transportation

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The following summarizes the existing conditions for transportation and streets in the Murray Central Station Plan area, analyzing the following conditions:

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- Transportation context
- Modal networks – transit, pedestrian, bicycle, and vehicle
- Street network
- Public space
- Transportation demand management

4

The analysis concludes with a discussion of major assets, challenges, and opportunities for transportation and streets in the station area.

Context

The transportation context of the Murray Central Station is defined by four main aspects:

- **Existing destinations:** The station is surrounded by many existing (and planned) regional and city-level destinations. It is important to understand how well the station is connected to them, and how well they are connected to one another.
- **The potential for the future fabric of the area:** Much of the station area is likely underutilized in terms of land use when one considers the power of the station – Murray Central provides one-seat, high frequency trips to the major centers of the region, including the three largest downtowns, the state’s two largest universities, other colleges, and many other employment centers. An important transportation consideration is how these underutilized/re-developable areas of the station area can change into urban fabric that complements its destinations and leverages the station investment and power.
- **Two networks:** The interplay between two transportation networks that create two “worlds” – the auto network and the “rideable” network of transit, walking, bicycling and other non-single occupant vehicle modes.
- **The station itself:** There are many elements in play at the station and the configuration of the station itself strongly influences the station area.

These elements set the stage for understanding the best opportunities for a sustainable transportation network in the Murray Central Station area.

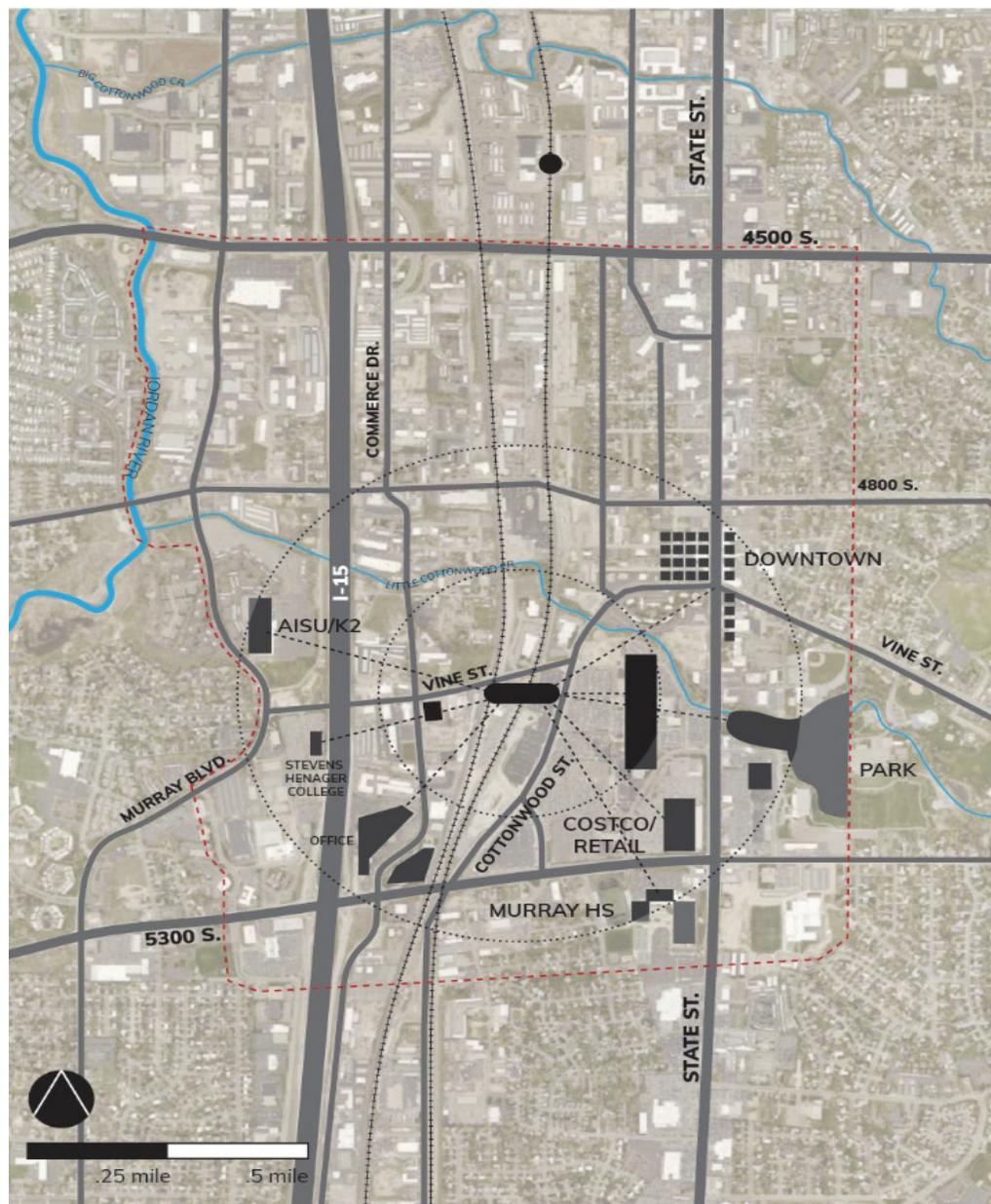
Destinations and connections

In many ways this plan is about making quality connections from the station to the many community and regional destinations within a half-mile of it. There are multiple destinations important to the region and the city of Murray within this relatively small area, such as Intermountain Medical Center, Downtown Murray, Murray Park, a major big box/retail area, and Murray High School. Figure 16 identifies these destinations.

These destinations represent thousands of jobs and high visitation rates. This plan aims to strengthen connections to these destinations, especially for active transportation.

Observations:

- Space between the destinations is largely filled with parking lots.
- There are multiple destinations within ½ mile, but only the medical center within ¼ mile.
- Several new projects are creating new destinations in the area west of the station.
- There are major barriers in the area, although there are relatively good connections across them (see pedestrian network section for details).



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Figure 16 - Murray Central Station Area destinations within 1/4 and 1/2 mile radii.

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Future Fabric

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As previously established, the Murray Central Station area contains a wide array of uses that are of regional and citywide importance. The station is also important for how it connects people around it with destinations throughout the region.

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Figure 17 demonstrates the area that is accessible in a one-seat (direct, no transfer) ride from Murray Central within the Salt Lake Valley. Several destinations in Davis, Weber, and Utah counties are also accessible via a direct FrontRunner ride.

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It is vital to reconsider the use of much of the land in the station area that appears to be underutilized. While the study area contains many existing and planned destinations, it also encompasses a lot of area with vacant land and lower-intensity land uses that could likely be redeveloped.

Key questions encountered are what will this underutilized area be and how will it be connected. Answers to these questions rests on the ability of the land to be redeveloped within the area of environmental constraints.

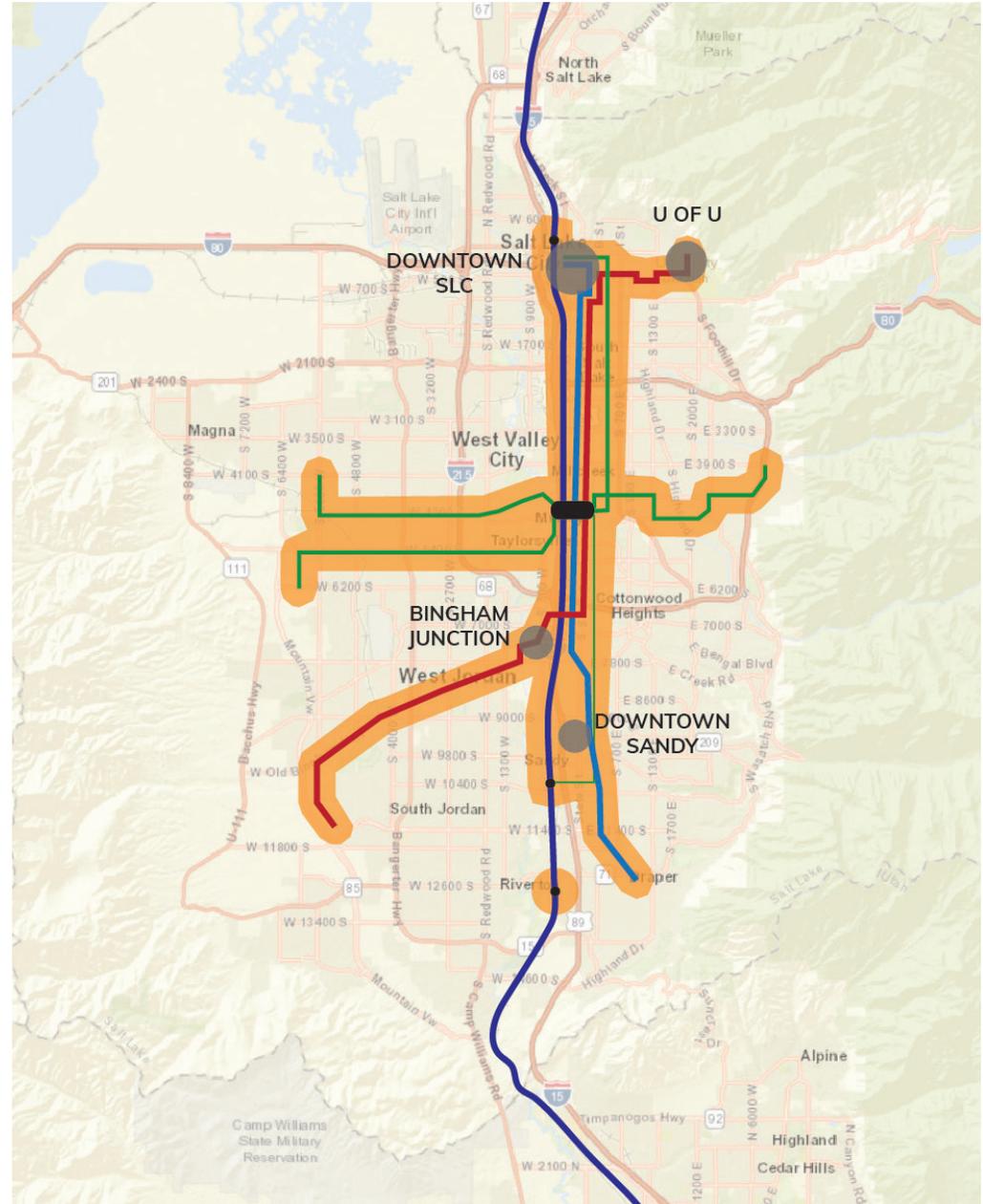
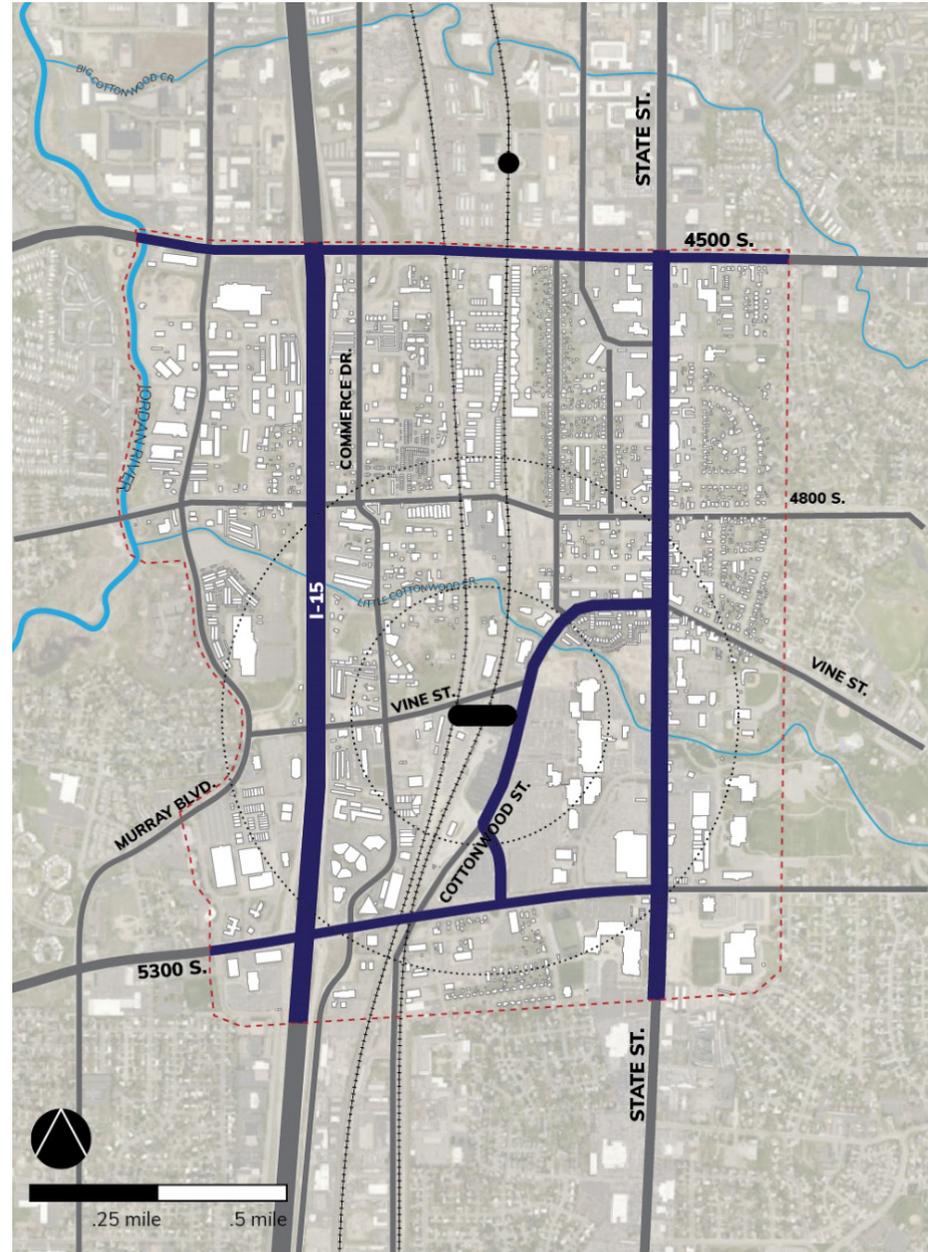


Figure 17 - Area in Salt Lake Valley reached by direct, one-seat ride from Murray Central Station Area and a short (1/2 mile) walk.

Two Networks

When considering how to access the destinations outlined above, redevelop other areas in the station area into complementary urban fabric, and leverage the value of transit station, it is useful to think about two parallel networks functioning in the study area.

The auto network is dominated by single-occupant vehicles driving to destinations in the study area and parking to access their destinations. Since the station area contains the link between the regional freeway network it will remain vital to the conventional auto network. Streets that make up this network are I-15, 5300 South, 4500 South, State Street, and Cottonwood Street and other accessways to IMC.

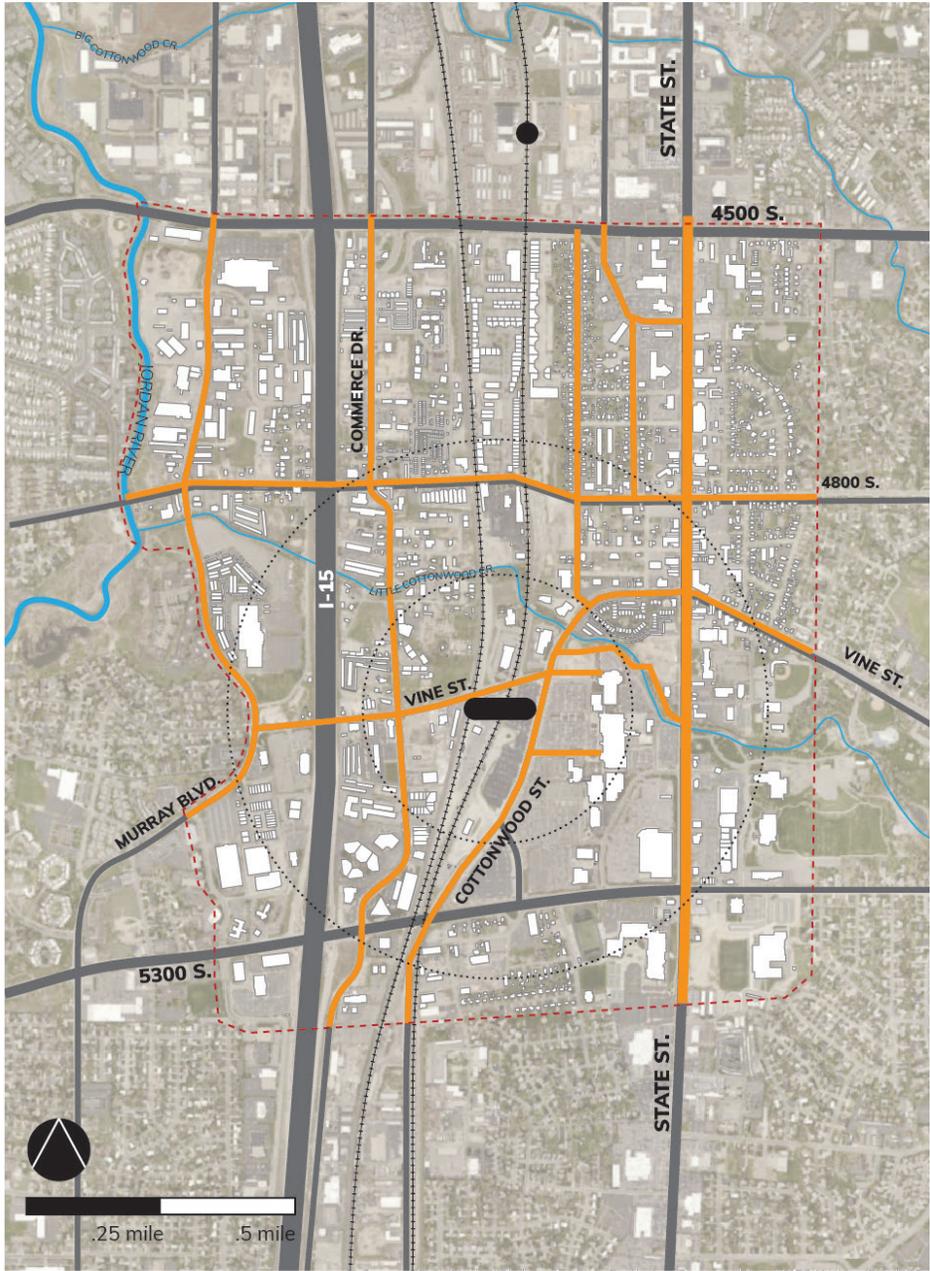


REGIONAL TRAFFIC NETWORK

Figure 18 - Regional Traffic Network

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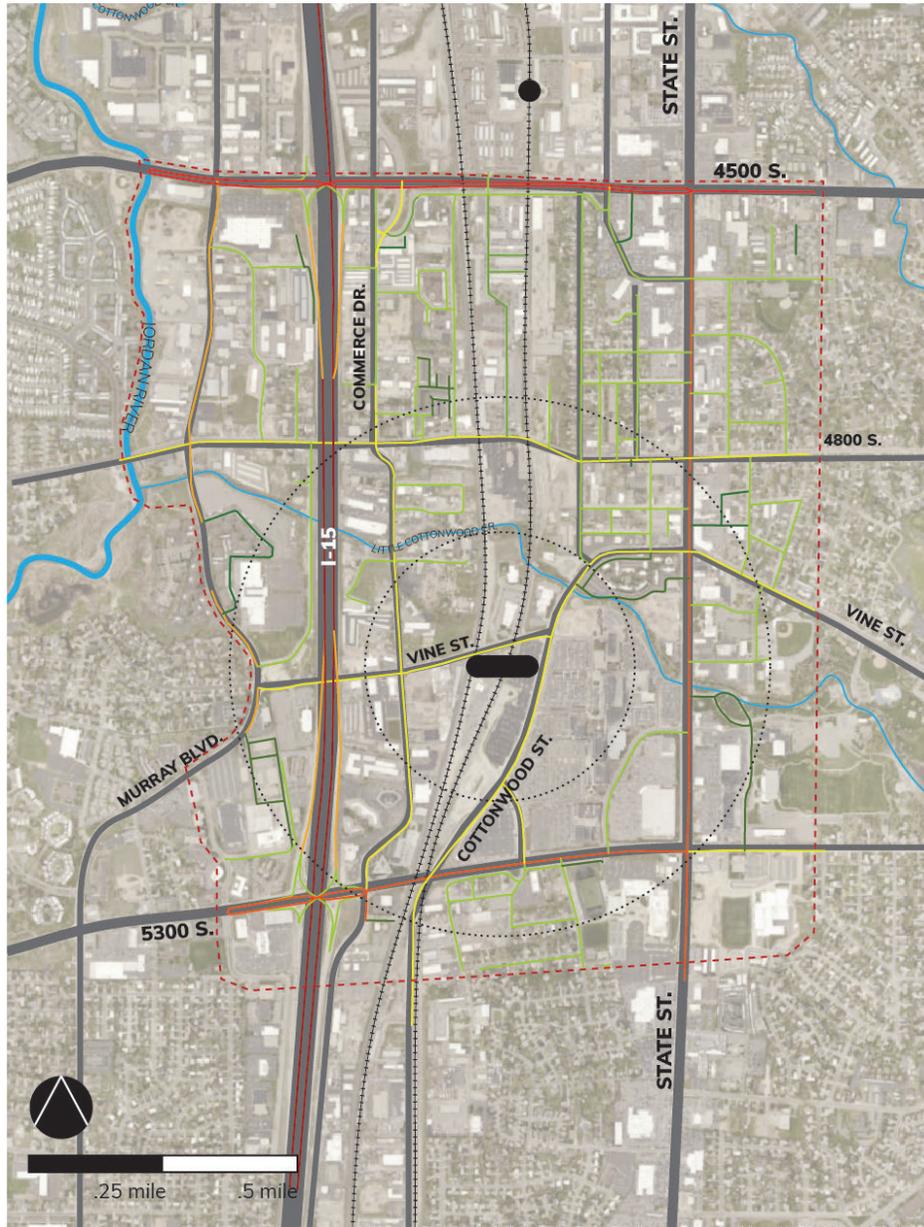


POTENTIAL RIDEABLE NETWORK

Figure 19 - Potential rideable network of streets in Murray Central Station Area

The station area also contains the potential for another network to complement the auto network: the rideable network (see figure 19). In the station area, there is a large space where the regional auto-focused network is not prioritized. One of the major assets of the station area is a set of collector-level streets that are secondary to the regional auto network. These include 5100 South/Vine Street; Commerce Drive; Murray Boulevard; and 4800 South. This rideable network also needs to include Cottonwood Street and State Street, which are also major auto network priorities.

This idea of a rideable network is critical to this plan as it leverages the station investment and the power of the Murray Central Station by complementing trips to the station with attractive options for connecting trips to area destinations.



SPEED LIMITS

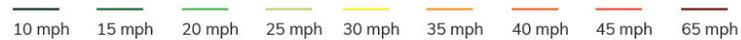


Figure 20 - Speed Limit of Streets in Murray Central Station Area

The speed limits provide an idea of the distinction between these two networks. Figure 20 shows the speed limits of station area streets and how many of the collector-level streets have 30 m.p.h. or below speed limits that could be conducive for a slower environment.

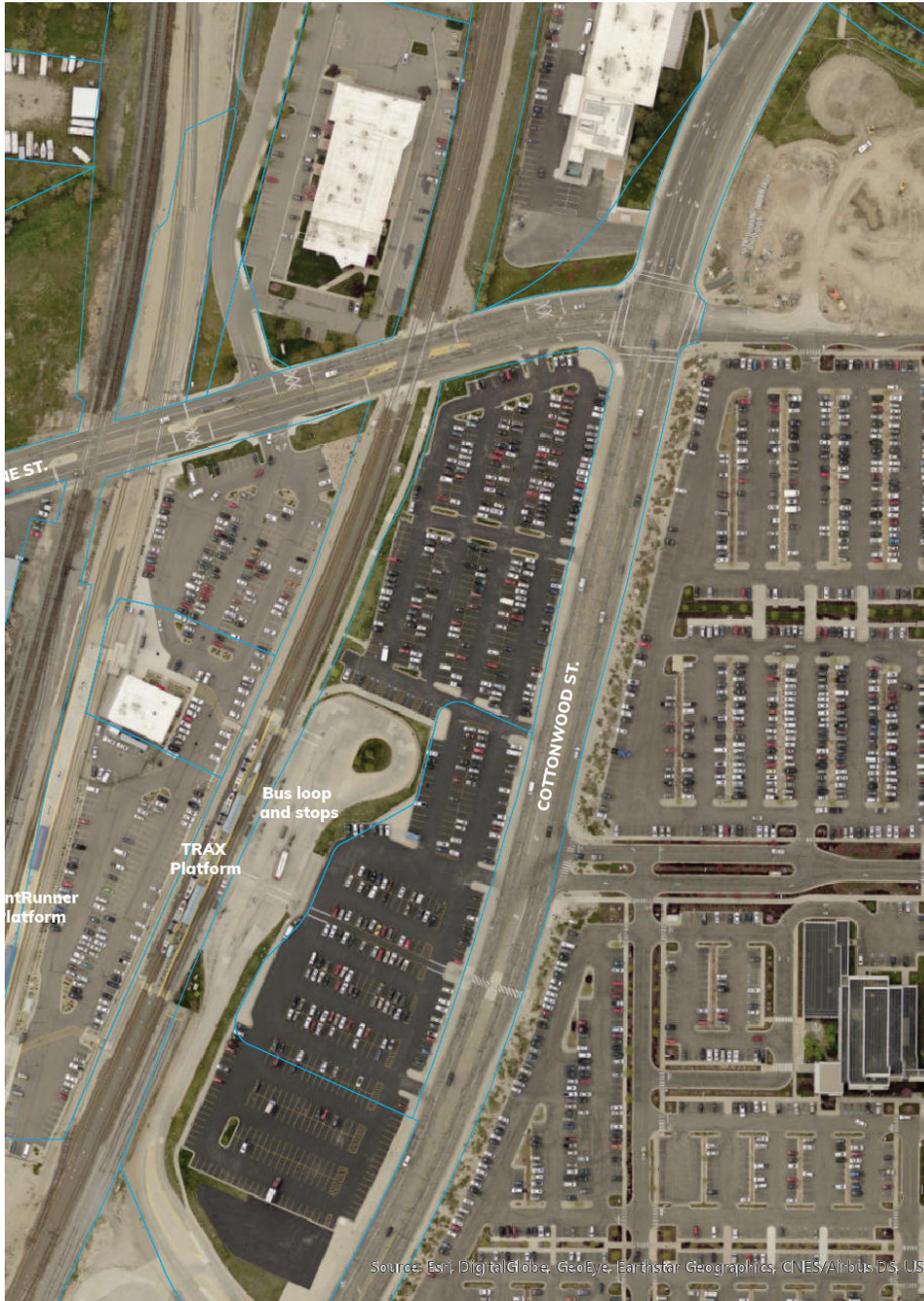
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

Figure 21 - Murray Central Station

Murray Central Station

Murray Central Station has developed in a patchwork fashion over time, the result of different transportation projects. It is a highly utilitarian place, focused on the narrow mission of people boarding and disembarking the train or bus, parking, and vehicle and pedestrian circulation.

This plan helps clarify the role of the Station in 1) reimagining it as a civic centerpiece and 2) streamlining its overall transportation function and 3) laying the groundwork for a good relationship to transit oriented development around it.

Mode Networks

In order to understand the opportunities related to the fabric, networks and station, it is important to understand the networks for the individual modes: transit, pedestrian, bicycle, and vehicle.

Transit

Station Overview

The Murray Central Station was developed through a series separate actions by UTA. The first was a TRAX stop on the Blue Line. When the TRAX stop was built, a bus loop was added. When UTA acquired the Union Pacific right-of-way, it built the FrontRunner stop here, due in part to the hospital bus system and because this is one of the rare places where the two mainline tracks are close enough for easy transfers.

When UTA built the FrontRunner station, it built a surface parking lot on the triangular piece of land between the FrontRunner and TRAX stations. As illustrated in Figure 22,, the station is now served by two TRAX lines; FrontRunner (running north to Ogden and south to Provo); and several local bus routes heading west (54 and 47); east (45); north (200); and south (201). A bus rapid transit (BRT) line is being planned and designed to connect Murray Central Station with Salt Lake Community College and the West Valley City center via the Taylorsville corridor and 2700 West.

These connections provide the station with significant transit power. A one-seat ride on a frequent (15 minute) service and standard half-mile walk, for example, provides access to much of the region, specifically the key job centers and educational institutions. This means that people living here can access jobs and schools as part of an easy and frequent ride. Conversely, people living on the Wasatch Front can easily access jobs around the Murray Central Station.

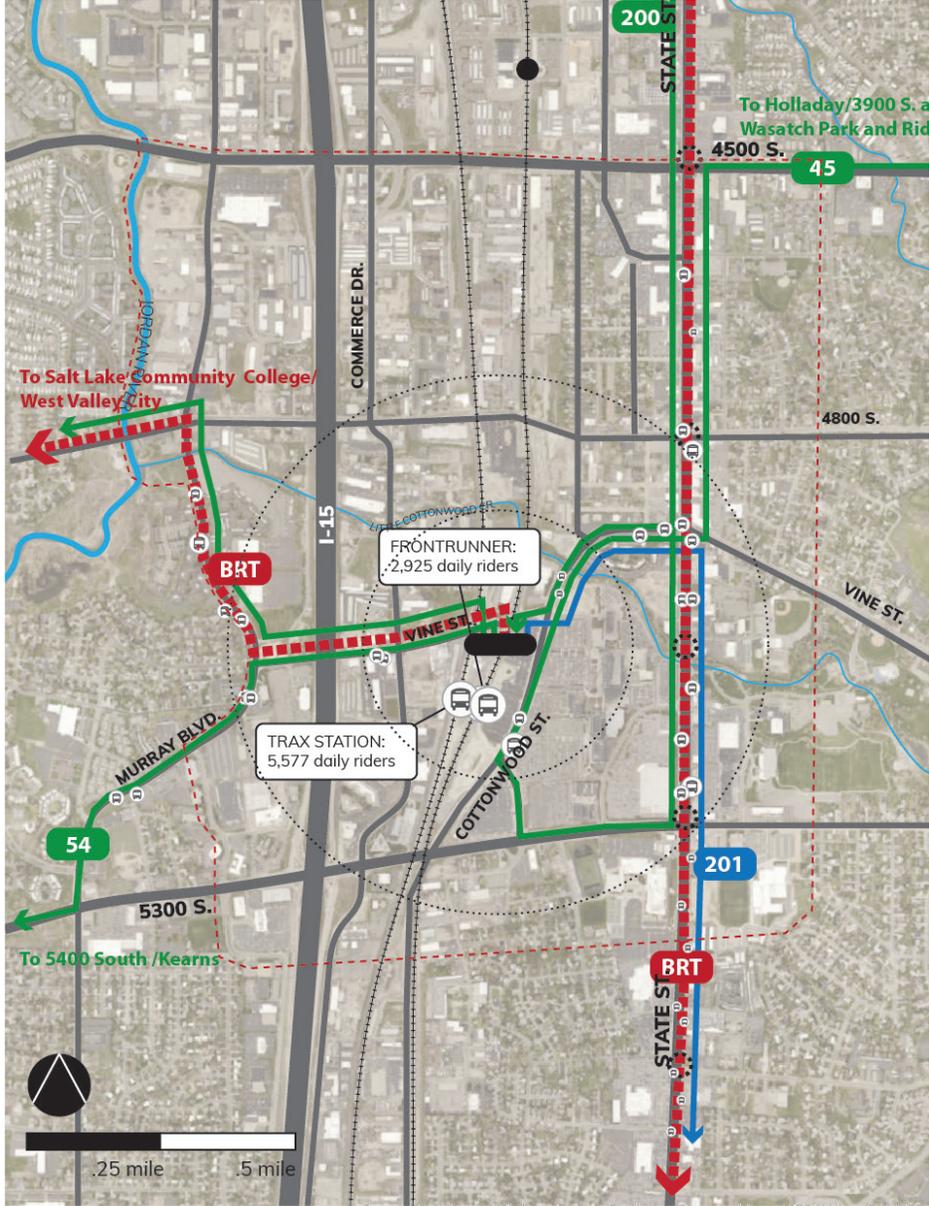


Figure 22 - Transit network of Murray Central Station Area

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As a result, this is one of the busiest stations in the UTA rail system. Approximately 8,500 TRAX/FrontRunner riders use the station each day.

2

UTA on-board survey data indicates that the Murray Central is an attractive choice for accessing key regional jobs and destinations. Riders at Murray Central Station are about 25 percent more likely to commute to work than the average systemwide rider (51 percent compared to 40 percent). Riders at Murray Central Station are about 33 percent more likely to be “choice” riders (having access to using a car) than systemwide riders (60 percent compared to 46 percent).

3

Connecting Bus Lines

The station is served by five bus lines: the 200, 201, 54, 47, and 45. A few observations about these connecting routes follows:

4

- The bus routes are almost evenly distributed in all cardinal directions. The eastward connection to Taylorsville and Kearns (Route 54) and the westward connection to Holladay (Route 45) provide important connections to places not otherwise served by high frequency transit. The north and south connections (200 and 201) somewhat mimic the service areas of TRAX but are enough removed that they serve a separate corridor along State Street.
- Almost all are high-frequency (15 minute) routes. This means there are high-quality transit connections in all directions.
- No flex/circulator routes serve the station. Considering the number of destinations in the station area, a local circulator could be an opportunity to consider.

Station Program and Design

The station is comprised of two center platforms (one for TRAX, one for FrontRunner), a bus loop with bus waiting and boarding areas, and two parking areas (1,070 stalls) – one to the east of the station (100 stalls are currently being leased to the IMC) and one in between the two platforms. This parking area also includes a UTA police station.

UTA has identified the following issues with the current and future function of the station:

- The triangle parking lot has circulation challenges. There is only one entry / exit point to and from the triangular parking area between the two platforms. This is located on the south side of 5100 South. This lack of multiple ingress/egress causes circulation challenges for people parking, pulling out and dropping off passengers.
- There is a lack of connectivity to the west: The Union Pacific tracks to the west of the FrontRunner tracks form a major barrier to connections westward of the station.
- UTA recently built a pedestrian crossing of the TRAX rails on the south end of the station – the north side crossing was getting congested and the agency wanted to provide another option.
- UTA has identified a need for additional park-and-ride spaces at this station.
- It is unclear how the Taylorsville-Murray Bus Rapid Transit (BRT) line will come into the station and pick up and drop off passengers.
- UTA sees an opportunity to build a TRAX side platform that could be shared with buses on the east side. This could also be a good way to integrate the new BRT line into the station.

Future BRT

The Taylorsville – Murray Bus Rapid Transit (BRT) project is in preliminary design for Phase 1 (from Murray Central Station to Salt Lake Community College). Phase 2 (from the community college to West Valley City Center) is in the planning Stage 1.

Key aspects of the BRT line for this plan is how the line comes into the station area (route, transit priority features, stop locations, and stop design) and 2) how the line terminates at the Murray Central Station (circulation, location and design of stop).

Other Transit Opportunities

In addition to the existing and planned transit, the presence of numerous employers and destinations creates the potential opportunity for a privately run shuttle providing first/last mile connections to these destinations.

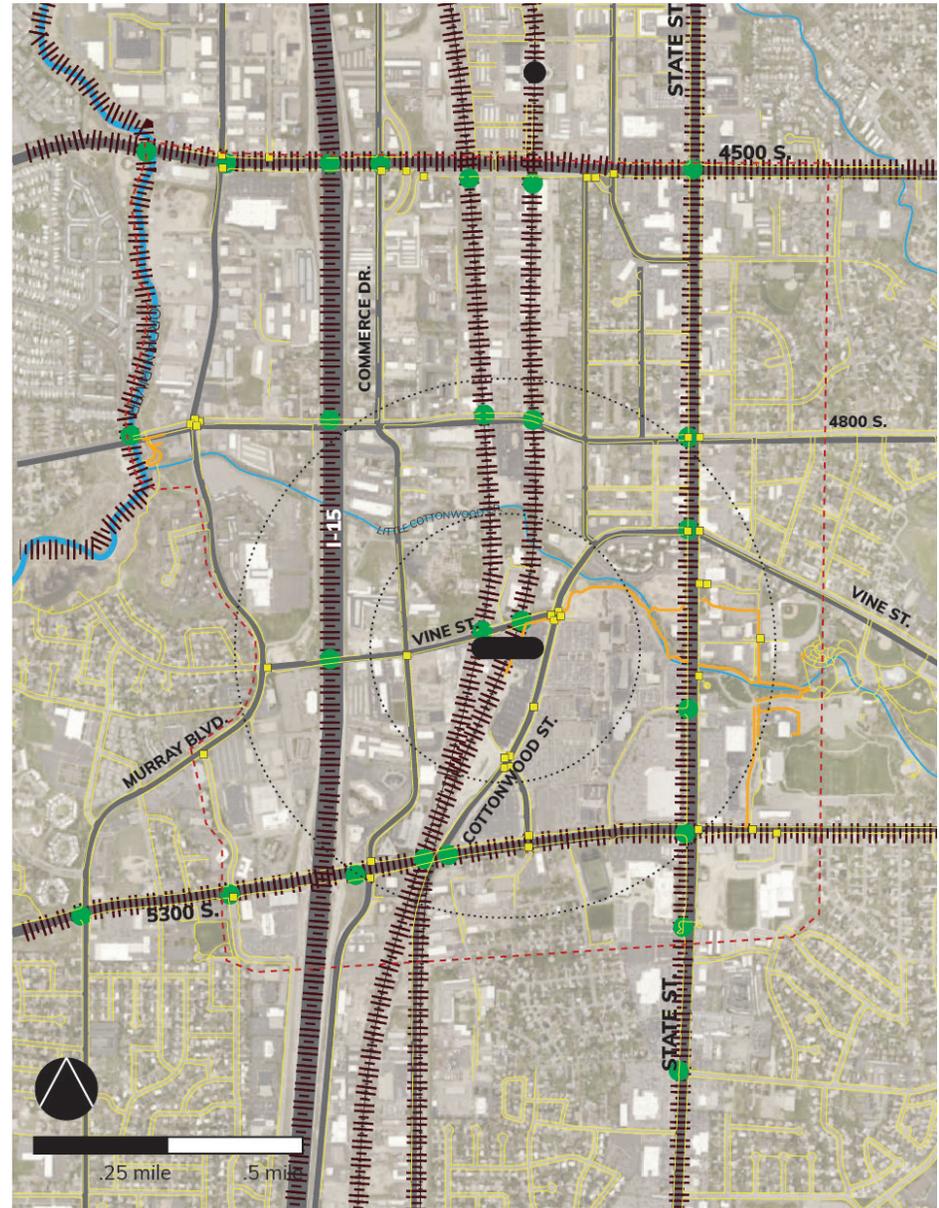
Pedestrian

Being able to walk to, from and around the station is generally the most important transportation aspect of a station area. Approximately 55 percent of people accessing Murray Central Station walk to it.

The Murray Central Station area presents some unique and extreme pedestrian conditions, including large uses not built for pedestrians, major parking lots, and industrial areas built without pedestrians in mind.

Pedestrian Environment Quality

This describes the quality of the areas dedicated to pedestrians, such as sidewalks and paths, buffers from moving traffic, and the character of adjacent areas. While the adjacent parking lot is in opposition to a quality pedestrian environment, the best pedestrian environment in the area is actually on the IMC parking lot drive aisles.

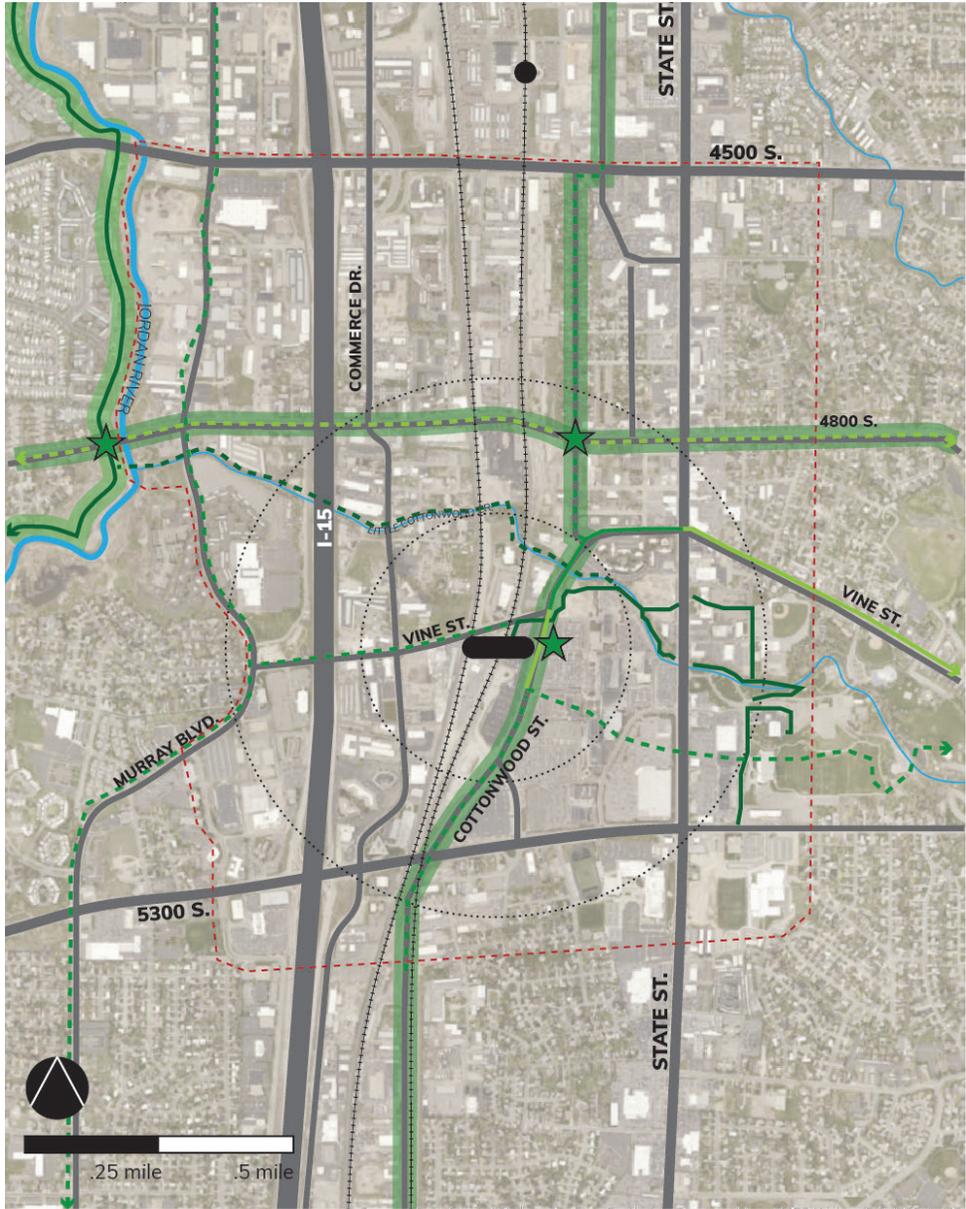


PEDESTRIAN NETWORK



Figure 23 - Existing pedestrian network of the Murray Central Station Area

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BICYCLE NETWORK



Figure 23 - Existing and planned Bicycle network of the Murray Central Station Area

In the potentially rideable network, there is potential to improve the pedestrian realm, since large rights-of-ways and multiple redevelopment areas provide opportunities to create a better pedestrian environment.

Street Crossings

The pedestrian crossings of major streets fall into the following key categories:

- Station crossing of Cottonwood Street: This is a high-quality midblock crossing on the direct path from the station to IMC. The crossing includes a high-visibility crosswalk, a median refuge, and flashing beacon.
- Other Cottonwood Street crossings: At traffic signals - 5100 South/Vine Street and 100 West, which have standard crosswalk markings.
- West side crossings: Pedestrian crossings of streets such as 5100 South/Vine Street and Commerce Street. While relatively lightly trafficked streets with short crossings, these have poor markings and corner environments.
- Arterial crossings: Pedestrian crossings of State Street and 5300 West traverse long distances and have relatively minimal pedestrian infrastructure. There is one unsignalized pedestrian crossing of State Street in downtown Murray.

Barriers and Across Barrier Connections

Murray Central Station lies amid major north-south regional transportation facilities, including I-15, State Street, the U.P. rail line, FrontRunner, and TRAX. This creates major barriers for people walking and bicycling in the area.

Bringing this regional network down to the scale of the pedestrian is necessary for connectivity. A key concern is the balance or decision between improving existing streets as connections to long-term major destinations or addressing pedestrian issues as part of a new type of urban place.

Bicycle

Network

The Murray Central Station is important to the bike network at multiple levels – both regionally and locally. About seven percent of people access the station by bike, more than twice the system average.

Figure 23 indicates the important bike network links running through the plan area. First, the station provides a nearly unparalleled opportunity to connect local cyclists with distant regional destinations. Also, a number of existing and potential regional bike corridors run through and around the station area:

- Main Street/Box Elder/Cottonwood Street corridor, which is an important regional north-south corridor and runs directly to the station.
- The Jordan River Parkway, which runs within $\frac{3}{4}$ to a mile from the station.
- The 4800 South corridor, which connects to Taylorsville in the west and Holladay to the east and runs within about $\frac{1}{2}$ mile of the station.

The corridors above connect with key regional bike nodes, as follows:

- 4800 South/Jordan River Parkway
- 4800 South/Box Elder Street
- Cottonwood Street/Murray Central Station

In addition, both Murray City and the Regional Transportation Plan identify planned bike routes on plan area streets and corridors:

- Cottonwood Street
- Box Elder Street
- 5100 South/Vine Street (West)
- Vine Street (East)
- Murray Boulevard
- Little Cottonwood Creek
- Murray Park

While not identified in plans, Commerce Street presents an opportunity for north-south connectivity between the barriers of I-15 and the rail tracks. Currently, the only routes in the immediate station area with marked and/or dedicated facilities are Cottonwood Street between the intersection with 5100 South and State Street and the pathway along a short segment of Little Cottonwood Creek. However, there are clear ways to connect bicyclists with the station with dedicated facilities and/or marked routes. The local routes can combine with the regional corridors to create a regional bicycle hub that is also useful at the local level.

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Bicycle Environment Quality

The streets in the station area include few dedicated bike facilities. As noted above, the only marked and/or dedicated facilities are a bike lane along Vine Street from Cottonwood Street to State Street and shared lane markings on Cottonwood Street. However, many of the station area streets are lightly trafficked and can provide decent bike environments. Additional planning will need to take place to formalize these street environments.

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Street crossings

Similar to the area's pedestrian crossings, there are major active transportation barriers in the area.

3

Amenities

The station contains some bicycle amenities to note. For example, both bike racks and bike lockers are available, as is a bike station with a pump and tools.

4

Vehicle

Serving auto traffic is a critical function of the area around the Murray Central Station. This is especially true for the area east and south of the station, the major destinations of IMC, the big box retail cluster and Murray High School. A series of routes in the area are critical links for auto traffic such as I-15, State Street, 5300 South and 4500 South, all of which provide access to most of the destinations. The network of collector-level streets is also important to linking IMC traffic from these arterial streets to the medical center's parking areas.

Driving is also an important aspect of station access – about 37 percent of station users access it by car, although nearly half of those are dropped off, which is much higher than system-wide. The station has a higher (yet still low) rate of carpooling than the system-wide rate of five percent. Based on nine parking utilization surveys conducted by UTA, the 1,070 stalls in the park-and-ride lot are 67 percent full on average.

Traffic volumes

Figure 24 illustrates traffic volumes for most major streets.

Street network

Connectivity

Street connectivity in the Murray Central Station area is inconsistent. On one hand, streets are connected to one another and lead to the station, forming the “bones” of a connected network. Even in the hospital parking area surrounding the IMC, the drive aisles/streets form a connected network around the barrier of the hospital complex. However, the area suffers from two related issues. First, the network has a low density; there are not many streets in the area. Second, the area is dominated by large land uses that, in part, create low density.

In the future, lack of network density should be able to be corrected if new streets can fill in the large areas without streets. Some of the problem will remain because of the number of barriers such as I-15 and the Union Pacific tracks.

Figure 24: Traffic Volumes in Murray Central Station Area

Street Segment	2016 AADT	Estimated Daily Capacity Used at LOS D
State Street	39,000	85%
State Street	36,000	78%
State Street	30,000	65%
5300 South	28,000	61%
4800 South	10,000	89%
Murray Blvd.	9,200	82%
Vine Street	7,700	68%
Commerce Street	4,000	36%
Cottonwood Street	2,100	19%

Source: UDOT

Rideability

Rideability describes the quality of having an attractive choice to the single-occupant vehicle. Rideability is achieved through a rideable network, which leverages and connects several different modes, such as transit, walking, bicycling, private shuttles, ridesharing and connected and autonomous vehicles.

As established, Murray Central Station and the surrounding area has enormous potential for enhancing its rideable network. The station itself creates the foundation for regional rides to and from the study area. This plan can help extend those non-SOV ride trips to and from existing, planned and new destinations in the station area and beyond .

Several existing streets create the structure of a rideable network: Cottonwood Street, 5100 South/Germania, and Commerce Street. These are the primary major streets within ¼ mile of the station and are also critical to the rideability for different reasons. Cottonwood Street provides access to the station from the east side, to transit and to the IMC. 5100 South/Germania provides access to the station across the major station area barriers, to transit trunk lines from the east, and to future redevelopment opportunity. Commerce Street provides north/south connectivity, and redevelopment opportunity.

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Each of these key links were assessed at a broad level to determine their rideability. This assessment considered a number of factors that generally provide a slower, more human-scaled environment with the service and infrastructure of other modes. Other factors assessed include:

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- vehicle speed
 - space allocation for other modes
 - pedestrian environment quality
 - pedestrian crossing frequency and quality
 - transit service and infrastructure
 - travel demand management practices
- The results are as follows:
- Cottonwood Street: 45/100 points.
 - Vine Street/5100 South (west of station): 31/100 points
 - Commerce Street: 14/100 points

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Results indicate that there is significant opportunity for improvement on each of these streets. While the speeds on these roads are relatively slow and demonstrate a high level of transit service, they are not designed as a pedestrian environment. They have poor transit waiting environments and poor land use frontage.

Public Space

The station area contains very little public space. The FrontRunner drop-off area and at the bus loop are the main public spaces in the area and both are utilitarian in nature. They have very few pedestrian amenities such as benches and street trees.

IMC is surrounded by parking which challenges the idea of human-scale public space. There are some plaza/garden areas but they are largely inside the medical campus. The major public space in the greater station area is Murray Park. However, opportunities to connect the park with newer retail/food development have been missed and it is quite distant from the station. Other, smaller public spaces include the pathway along Little Cottonwood Creek which is blocked by roads at several locations.

Travel Demand Management (TDM)

Intermountain Medical Center (IMC) has some travel demand management (TDM) in place. These include a discounted transit pass program and a shuttle that runs throughout campus and stops at Murray Central Station.

Transportation and Urban Design Assets, Challenges, and Opportunities

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Destinations and connections

Assets

- IMC – approximately 20 percent of employees use transit to get work.
- Wide range of diverse uses and destinations
 - Office uses
 - Murray civic uses – park, ice skating, pool, City Hall
 - Murray downtown
 - Big box/major retail – Costco, Best Buy
 - Emerging complementary medical uses
 - Educational uses
 - Murray High School
- Little Cottonwood Creek trail – does not exist west of State Street and is highly fragmented
- Nice infrastructure to connect directly to IMC from the station – crossing, streetscape in parking lot
- Direct line of 5100 South/Vine to west from station
- Network within the area is relatively connected – crossings over barriers, such as I-15 and rail lines, are in the right places
- Signalized intersection at State Street to IMC
- Bus lines provide additional connections to destinations, within the study area

Challenges

- Destinations tend to be farther than ¼ mile (walking distance) from the station
- Parking lots are a major use within ¼ mile of station, especially to the east
- Difficult to incorporate crossings to rail tracks
- Little Cottonwood trail only extends for short segments
- IMC is an east-west barrier to pedestrian movement
- Topography, north of the station physically separates the two areas
- Most street connections have poor pedestrian qualities
- The street network is low density
- Parking is free for IMC employees, patients, and visitors, which does not incentivize transit use
- The most desired IMC parking spaces are concentrated in lots in north and east, creating congestion.

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Opportunities

- Extend Little Cottonwood Creek trail west to the Jordan River – though challenging considering the blockages that will need to be overcome
- Improve crossings on State Street for pedestrians/cyclists
- Leverage Cottonwood, Vine, and Commerce Street as a rideable street network and improve accordingly
- Create transit/shuttle options for first/last mile/longer distance destinations from station
- TDM for large entities – consider the establishment of a single Transit Management Association (TMA)
- Grade-separated, active transportation crossing of tracks from the south end of station
- Explore ways to better overcome topographic challenges at the north end of the area
- Encourage IMC to provide a public connection across State Street to the park and surrounding civic district

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Future Fabric

Assets

- Underutilized land uses west of the station
- Cottonwood, Vine, and Commerce as the basis for a connected, urban street/block network
- Little Cottonwood Creek as a placemaking asset

Challenges

- Environmental conditions/contaminated land
- The IMC's parking area is a contingency/reconfiguration zone for the future – not an explicit place for new development
- The area to the west of I-15 is disconnected from the station area
- Rail tracks – Vine Street is the only connection

Opportunities

- Create better urban fabric off of Cottonwood, Commerce, and Vine Street that is denser, better connected and has walkable streets.
- Transit (bus) corridor along 5100 South/Vine
- Consider making quality connections to existing neighborhoods if new station area provides attractive dining/shopping/restaurant destinations
- IMC is expanding vertically; they could provide opportunity to modify parking to create complementary uses and a more active streetscape
- Potential for a great public space by connecting the station with IMC.

Two Networks

Assets

- Key auto links (apart from I-15) appear to be under-capacity
- The inherent strength of Murray Central Station to reach regional destinations
- General separation of auto streets and potentially rideable streets
- Connected network of streets not very important to autos – specifically, Vine and Commerce
- High levels of bus transit

Challenges

- Multiple demands on Cottonwood Street from IMC vehicle access and part of rideable network
- State Street is important auto corridor but also has vision for BRT, is key part of Downtown Murray, and needs better pedestrian crossings
- Potential backbones of rideable network are not very rideable

Opportunities

- Improve key links of potential rideable network for riding
- Create a creative complete street design for Cottonwood Street
- Explore ways to have State Street continue to move traffic while also becoming better for downtown Murray, pedestrian crossing, and future BRT access

The Station Itself

Assets

- High frequency service that provides direct access to a very large part of the region, including the largest job centers and entertainment destinations
- TRAX, FrontRunner and buses are close together geographically

Challenges

- Connections between TRAX, Frontrunner and bus are somewhat clumsy
- Parking between TRAX and FrontRunner has circulation/speed issues
- Parking lot between TRAX and FrontRunner precludes opportunity for great people space in this part of the station
- Buses must take a circuitous route to get to the bus drop off loop, especially from the west and north
- UTA believes it needs more parking in the future
- People getting off the train first see a mass of parking
- Institutional materials contribute to lack of sense of place – chain link, etc.
- The Union Pacific rail line to the west of the station is a formidable barrier barrier

Opportunities

- Better use of the area between the stations
- A great public space – possibly between the stations
- Better drop off area for TRAX and FrontRunner
- Grade-separated link across the tracks on south end of station?
- More direct/elegant/connected bus circulation, especially for planned BRT
- Potential to have a shared platform with bus and TRAX to make for more elegant transfers
- Create better view/character than so much parking when one gets off the train.

TRANSPORTATION PLANNING AND DEVELOPMENT PRINCIPLES

- Connect the station to existing and proposed destinations in Murray and the surroundings.
- Create a new public realm that is inherently walkable and easy to navigate.
- Capitalize on the opportunity to transform Vine Street into an activated, multi-modal urban corridor.
- Reconfigure the station's circulation and operations to emphasize walkability and public space.

1

Land Use

A thorough Site Analysis was conducted to ensure the planning and design concepts that emerged are aligned with the opportunities and constraints that currently exist. As illustrated in Figure 25 – Station Area of Influence and Site Analysis Diagram, several conditions were considered as part of understanding the structure and relationships of land uses in the study area.

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Existing Land Use

Land uses in the area are predominantly light industrial north, south and west of the station, with a mix of commercial and public service uses to the east. The station area is dominated by large parking lots, which serve the station and IMC to the east near State Street. Discussions with representatives of IMC indicate that the large, sprawling campus is controlled by a separate master plan, and that any changes for improving the relationship between the station and medical campus will be determined outside of this planning effort.

Natural Features

The primary natural features found in the area are Cottonwood Creek, an east-west waterway that joins the Jordan River near the western extents of the study Area. In contrast to several of the other seven waterways associated with the Salt Lake Valley section of the Wasatch Mountain canyons, the creek has not been piped and has open flow conditions at the surface. Unfortunately, the waterway is highly segmented by roadways, rail embankments, the freeway and other blockages, resulting in limited opportunity as a continuous greenway or trail corridor.

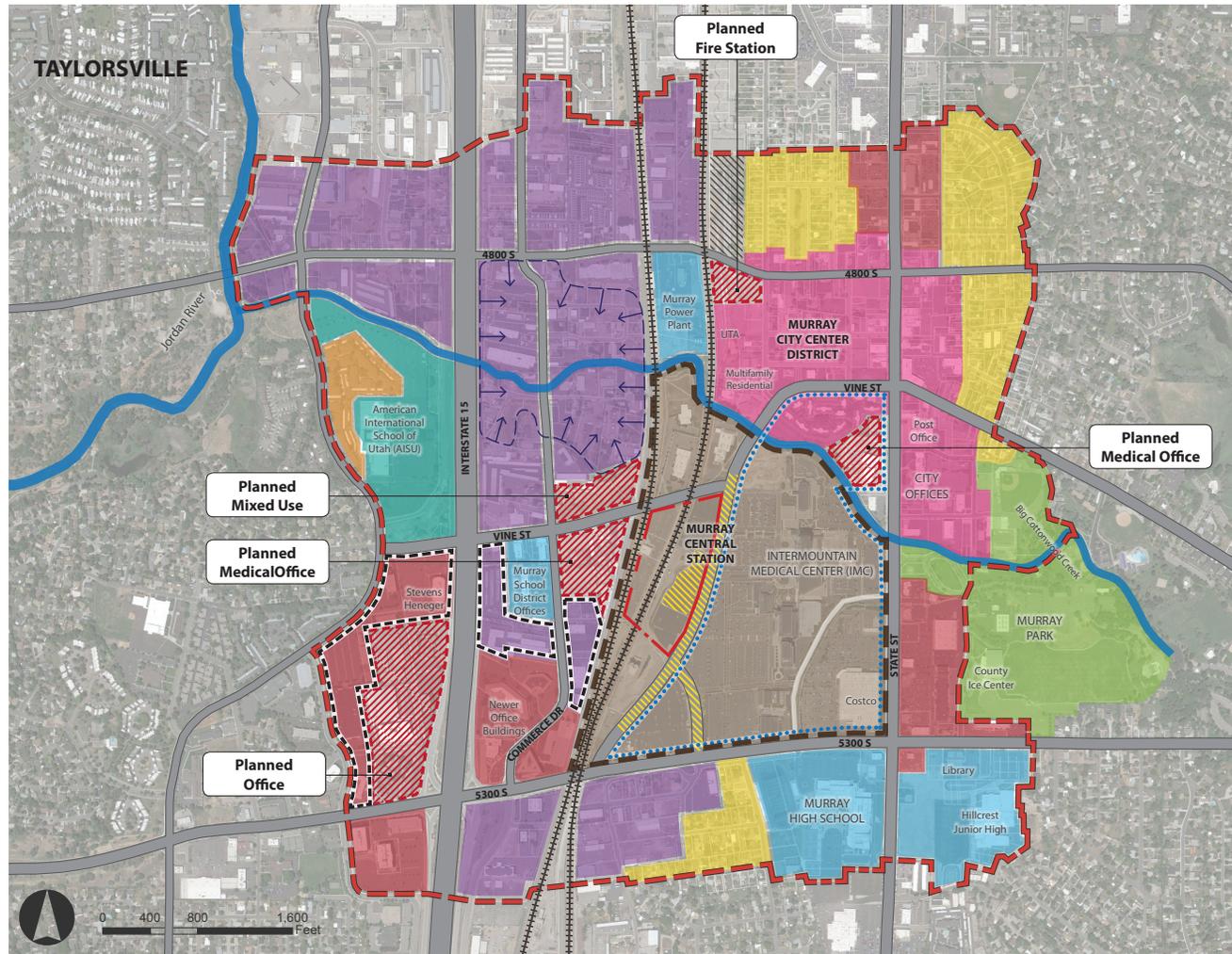
Man-made Features

This includes the station itself, a range of buildings and structures of various forms and heights, roadways of different sizes and diverse functions, large and small parking lots, two rail lines and associated embankments, in addition to frequent subsurface infrastructure and utility lines.



MURRAY CENTRAL STATION MASTER PLAN

Central Station Area of Influence and Site Analysis



EXISTING LAND USE & ZONING

Commercial/Office	Single-Family Residential
Light Industrial	Institutional
Murray City Center Mixed Use District	AISU Campus
Multifamily Residential	Parks and Open Space

OTHER KEY CONDITIONS AND CONSIDERATIONS

Remediation Zone - Contaminated land impacts opportunity to change or modify uses	"Gully" / Topographic Depression
Remediation Zone - No change or disturbance	Planned Development
Vacant Land	IMC Boundary
Central Station Study Boundary	

Figure 25 - Central Station Area of Influence and Site Analysis

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OVERVIEW

A thorough Site Analysis was conducted to ensure planning and design concepts are aligned with existing opportunities and constraints.

The Site Analysis investigated the physical structure of the study area, as follow:

- **Land Use and Zoning**
- **Natural Features** such as creeks and open space corridors
- **Man-made Features** such as buildings and structures, infrastructure and utility lines, roadways and railways
- **Environmental Conditions** with particular emphasis on acknowledging the limitations of contaminated lands and remediation strategies, plans and requirements that are in place
- **Planning and Design Concepts for Adjacent and Outlying Areas** were documented to understand the influence of the Murray Central Station Area and how it relates to adjacent districts
- **Site Impediments and Blockages** such as rail embankments, freeway, fences and steep slopes

Key Findings/Considerations

- Murray Central Station is the heart of the project. Redevelopment of the station area is essential for creating a superlative Central Station District
- Contaminated lands have been remediated according to specific agreements. Change and modification is controlled by those decisions.
- No residential development is allowed in the remediated areas.
- Redevelopment with non-residential uses is possible in much of the remediated area, although it will come at higher costs than at clean sites.
- Specific segments of the remediated land cannot be modified or disturbed and must be incorporated into the planning and design concepts for the area.
- The IMC properties are controlled by a separate planning process. The master plan should maintain positive and mutually-beneficial relationships with the IMC properties as feasible.
- Significant projects have been developed or are planned in proximity to the station. Coordinating these projects and others yet to come is essential for creating a unified station district.
- Vine Street plays a critical role for linking Murray Central Station and the surrounding areas together as part of a discernible district.
- Adjacent neighborhoods and districts have significant residential and mixed use redevelopment potential

1

Environmental Conditions

Environmental conditions associated with the contaminated lands and existing remediation statutes, plans and requirements define the station area and immediate environs. The affected area extends eastward from the TRAX line and station area to encompass the IMC campus, and from Big Cottonwood Creek in the north to 5300 South.

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The light industrial neighborhood north of the station is located in a low-lying area associated with the Big Cottonwood Creek. The neighborhood is surrounded by high embankments of I-15 to the west, a tall rail embankment to the east, and new buildings and development areas to the south, which effectively creates the sense of disconnection and isolation from the station and other nearby uses. The area is indicated as a future mixed-use neighborhood in the Murray General Plan.

4

Planning, Zoning and Design Districts

Planning, Zoning and Neighborhood Districts have been established in the existing Murray City General Plan, each with a particular purpose, vision and function. These include the Murray City Center District northeast of the station, the Murray Park/Civic Center District east of IMC, an educational campus west of I-15 between Vine Street and Big Cottonwood Creek, a mixed-use district northwest of the station, and a small office district west of I-15 and north of 5300 South. Determining where these stop and the station area begins is not clear in many cases.

Site Impediments and Blockages

I-15, the two rail lines and State Street are key physical impediments, effectively limiting connections on either side with access limited to the primary east-west road system. The light industrial neighborhood northwest of the station is located in a low-lying area associated with Big Cottonwood Creek. This area is surrounded by high embankments of I-15 to the west, a tall rail embankment to the east, and new buildings and development areas to the south, resulting in an isolated and disconnected feeling.



Summary of Findings

- Murray Central Station is the heart of the project. Redevelopment of the station area as part of creating a superlative station district is essential for if change is to take place.
- Contaminated lands have been remediated according to specific agreements. Change and modification is controlled by those decisions. As a result, opportunities for modifications and enhancement are limited and highly controlled.
- No residential development will be allowed in the remediated areas. Redevelopment with non-residential uses is possible in much of the remediated area, although it will come at higher costs and is likely to take more time than non-contaminated sites.
- Smaller portions of the remediated land cannot be modified and must be incorporated into the planning and design of the site.
- The IMC properties are controlled by a separate planning process. This master planning effort should maintain positive and mutually-beneficial relationships with the IMC properties as feasible.
- Significant projects have been developed or are planned in proximity to the station. Ensuring that these projects are aligned with this effort is essential for creating a unified station district.
- Vine Street plays a critical role in linking Murray Central Station and the surrounding areas together as part of a discernible district.
- Adjacent neighborhoods and districts have significant residential and mixed use redevelopment potential

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LAND USE PLANNING AND DEVELOPMENT PRINCIPLES

- Acknowledge that the IMC properties are not necessarily aligned with the creation of a better station area.
- Facilitate market-driven changes from light industrial uses to more urban mixed-uses, with residential uses to limited areas outside the SSOD boundary.
- Acknowledge the zone of influence of the station and the need for transitions to adjacent neighborhoods and districts.
- Locate viable uses in the station areas that contribute to the creation of a new station district.
- Do it right – invest in high-quality buildings, pedestrian enhancements and urban spaces.
- Create a landmark station and associated great spaces to attract attention and help define the area.

MURRAY CENTRAL STATION MASTER PLAN

Introduction

The opportunities for significant modification and redevelopment are relatively limited due in large part to the decisions that were made more than twenty years ago related to environmental mitigation and cleanup in the station area. Based on the 1998 ROD, future development within the SSOD is limited to commercial and light industrial. The challenges posed by those decisions are further reinforced by other conditions that are beyond the reach of this plan, including the fact that planning of the extensive IMC campus is controlled by independent planning policies that are not necessarily aligned with the creation of a better station area.

As illustrated in Figure 26, the challenging site and management conditions in this area are demonstrated by a Planning Concept that links a redeveloped and intensified Murray Central Station with other contributing uses along Vine Street as part of a Station Boulevard. According to this concept, redeveloping **Murray Central Station** into a landmark destination is essential for creating a superlative station district. Beyond the station, **Vine Street** is transformed into a linear boulevard, linking the station with supportive uses along the roadway from State Street to the west side of I-15. Supporting development efforts along this route will take place as **Primary, Secondary and Tertiary** projects, the hierarchy indicating proximity to the corridor and the relationship each zone has with the corridor and station area.

Since Vine Street links the various uses into a discernible linear district, it is essential that the roadway be planned and designed to support **TOD development and multi-modal traffic movements**, with a distinct shift toward the creation of a pleasant and safe pedestrian and cycling environment. It is assumed that there will be a distinct focus on higher-density residential uses along the street, compensating for the lack of residential development in the environmentally-challenging portions of the site.

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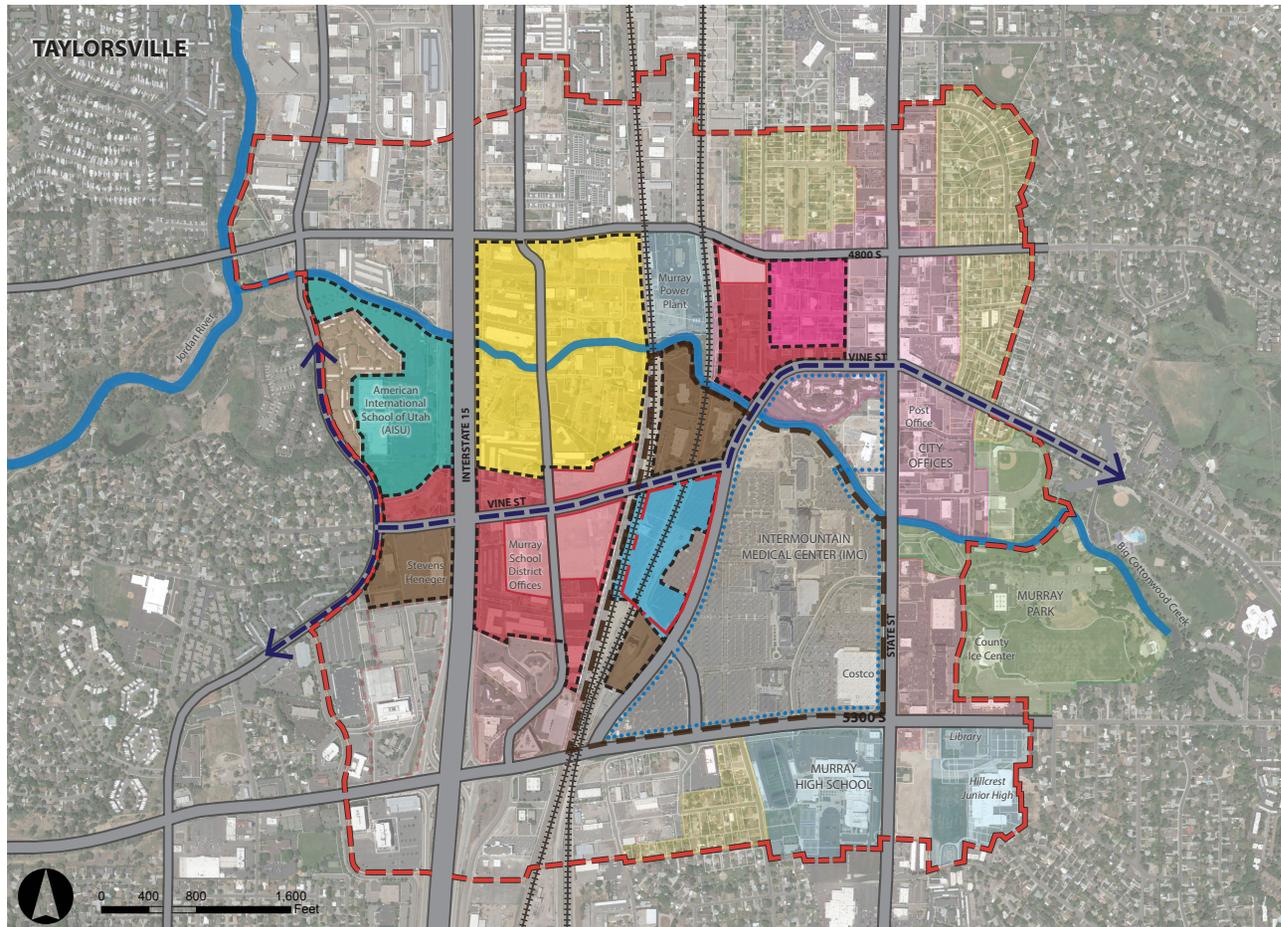


Examples of superlative pedestrian environments that are envisioned along a re-imagined Vine Street Boulevard

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MURRAY CENTRAL STATION MASTER PLAN

Areas of Focus and Planning Concept Diagram



DEVELOPMENT ZONES

- Murray Central Station Redevelopment Area
- Primary Redevelopment Area - Vine Street frontage properties and/or sites with a strong relationship to Murray Central Station
- Secondary Redevelopment Area - Sites in the Murray City Center District adjacent to Vine Street should merge the planning and design principles of both areas
- Secondary Redevelopment Area - Mixed use development area with a focus on higher density residential uses and transit-oriented development
- Secondary Redevelopment Area - AISU campus. Possible intensification of the campus and large parking lot for transit-oriented development
- Tertiary Redevelopment Area - Future development to be aligned with the Murray Central Station District principles

OTHER KEY CONDITIONS AND CONSIDERATIONS

- Projects Currently Planned or Under Development
- Vine Street - Links Murray Central Station and uses fronting the roadway to create a pedestrian friendly boulevard
- Central Station Study Boundary
- IMC Properties - Planned and developed according to a long-term IMC Site Master Plan. The Murray Central Station Master Plan should strengthen and acknowledge the relationship that exists between the IMC site, the station and surrounding uses

OVERVIEW

After thoroughly analyzing the site and surroundings and determining the opportunities and challenges that presently exist, a preferred planning concept emerged that links a redeveloped and intensified Murray Central Station with other contributing uses along Vine Street as part of a Station Boulevard.

The following diagram illustrates this concept and identifies Areas of Focus for realizing the vision.

Key Concepts:

- Murray Central Station is the heart of the project. Redevelopment of the station area is essential for creating a superlative station district is at the core of this study.
- Vine Street is transformed into a linear boulevard, linking the station with supportive uses along and immediately adjacent to the roadway
- Realization of the vision will occur as part of Primary, Secondary and Tertiary projects.
- Because Vine Street links the various uses into a discernible linear district, it is essential that the roadway be planned and designed to support transit-oriented development and multi-modal traffic.

Figure 26 - Areas of Focus and Planning Concept

Detailed planning and design ideas for the Vine Street Corridor and Murray Central Station follow. These include two distinct Station Concepts, each providing achievable redevelopment and implementation ideas.

1

Vine Street Corridor Concept

2

As the central connective corridor for the Murray Central Station area, Vine Street plays a critical role for creating a multi-modal station area. While many of the major streets surrounding the station are high-volume, high-speed arterials important to the regional traffic network (such as 5300 South, State Street, and I-15), Vine Street is the single corridor with good potential to connect through the entire station area in a pedestrian-supportive way. It connects directly to the station and has redevelopment opportunities along it. The main issues along Vine Street are the same that emerge at the station: pedestrian design, public space, connections to existing destinations, cyclist comfort and safety, facilitation of new walkable urban fabric, bus circulation and transfers, bus rapid transit (BRT) station interfaces, and private vehicle drop off and parking.

3

4

Walkable Street Concept

Figure 27 illustrates a generalized concept of a walkable street for a collector-level street such as Vine Street, identifying many of the elements that need to be integrated together if a walkable environment is to be achieved. Transforming Vine Street into a truly walkable street corridor is a complex endeavor, and will require careful design and political-will to be achieved.

Strategies for Vine Street

Figure 28 illustrates the transportation context of the Vine Street corridor, which runs from the historic east side neighborhoods of Murray through Downtown Murray, past the northern edge of the Intermountain Medical Center campus, along the north side of Murray Central Station and across the rail tracks and Interstate 15 to the west side neighborhoods of Murray and the Jordan River Parkway.

The corridor runs through an array of destinations of citywide and regional significance, intersecting with important regional streets such as State Street, encompassing a series of regional bicycle routes and transit routes along the way. The Vine Street Corridor also includes the planned Mid-Valley connector bus rapid transit route.

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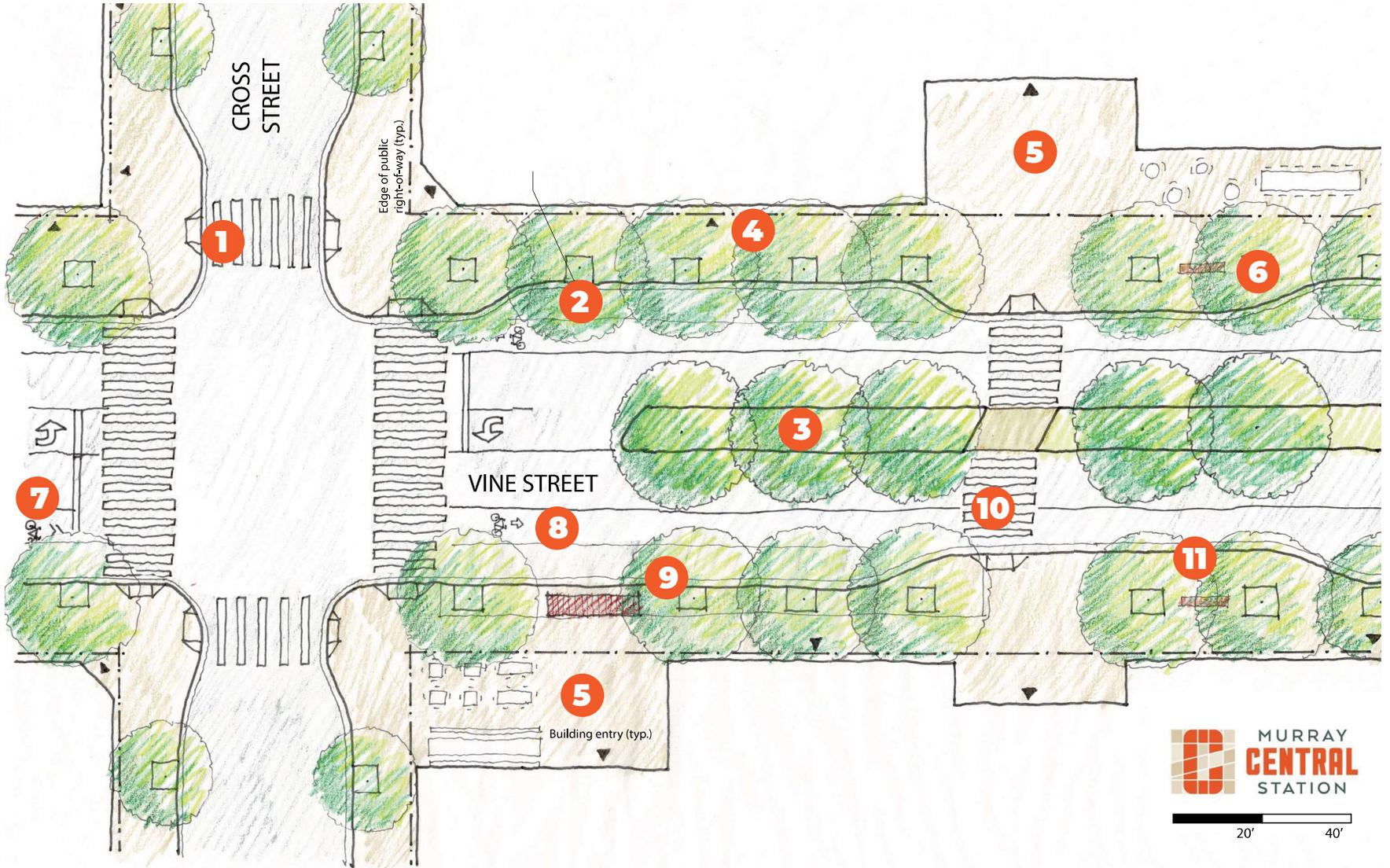


Figure 27 - Vine Street: Strategies to create a walkable corridor

1

Pedestrian-oriented intersection design

Vine Street's intersections can support pedestrians with short crossings, bulb-outs when possible, high-visibility crosswalks, and directional or full-corner curb ramps.



2

On-street parking

An essential ingredient for walkable streets and should be alternated with bulb-outs, transit stops, and shared mobility zones (see item #9).



3

Planted median

Where practicable, include a planted median to reduce the scale of the street and add life to it.



4

Walkable frontage

Property frontage is walkable when buildings meet the sidewalk with windows, frequent entries, outdoor dining, and entry courts.



5

Small patios, plazas, and other public/semi-public spaces

Vine Street can create opportunities for small, dining and gathering spaces in front or to the side of buildings along the street.



6

Street trees

Regularly spaced street trees provide shade, greenery, and help create outdoor "rooms."



7

Right turns/Queue jumps

Allow for places for a right-turn lane or bypass of traffic by buses in a "queue jump" lane; it can also be marked for shared use with cyclists.



8

Design for cyclists and mid-speed mobility

Vine Street can support bicyclists and others traveling in the 5 to 25 mile-per-hour speed range. In this corridor's busy, multi-modal, constrained environment, these users can best be supported by requiring and designing for slow speeds of autos, increasing motorist awareness of these users, marking conflict areas, and, where possible, designating bicycle lanes.



9

Transit and shared mobility zones

Consider curbside for high quality bus stops and pick-up and drop-off of shared mobility options, including shuttles, shared bikes and scooters, and transportation network companies such as Lyft and Uber.



10

Mid-block crossings

Look for opportunities to connect across the street at key mid-block points, aligned with entries with median pedestrian refuges.



11

Streetscape and pedestrian amenities

Streetscape amenities provide places for seating, bike racks, maps and signs, public art, lighting, and other elements to make the street hospitable.



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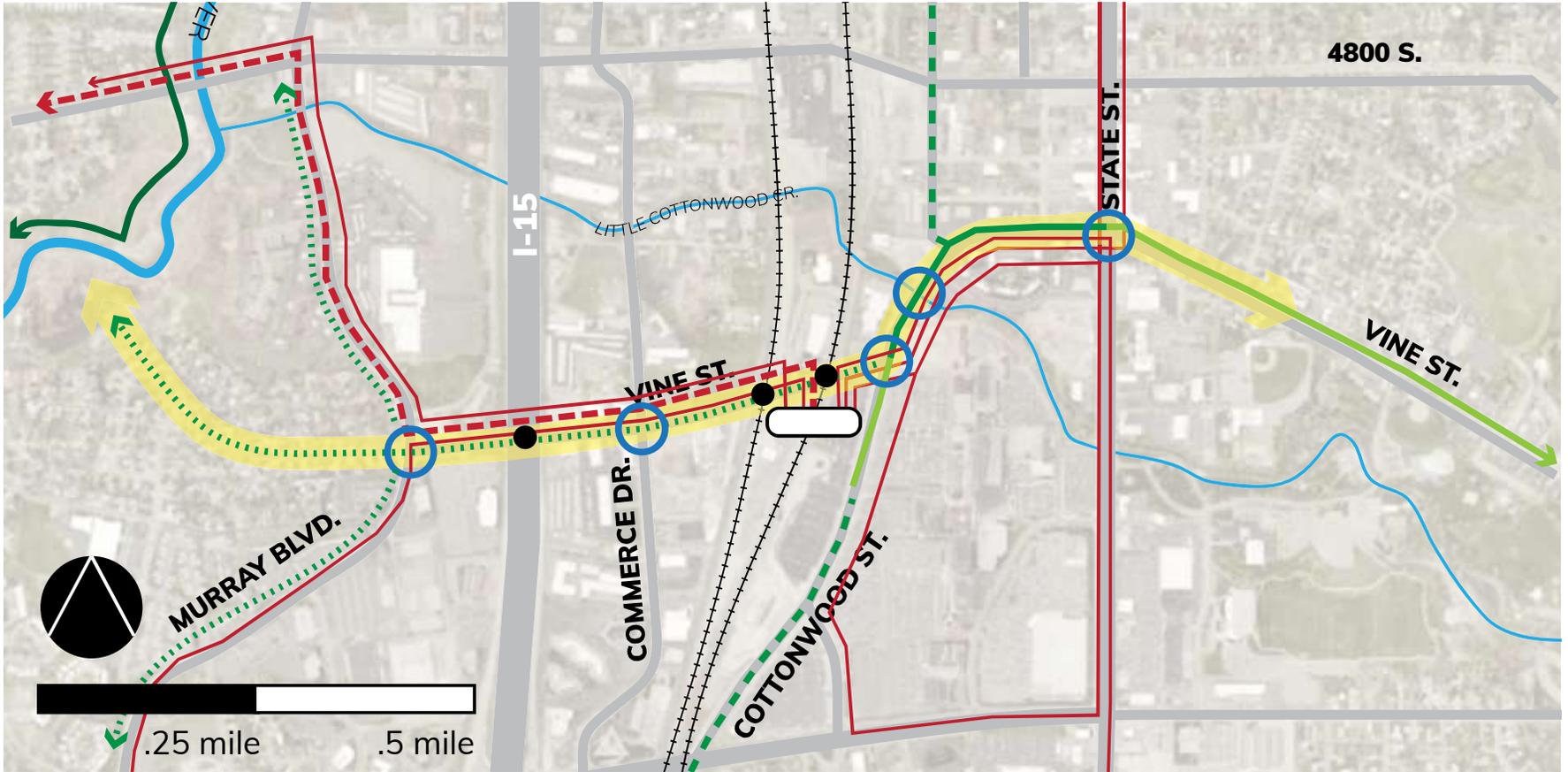


Figure 28 - Vine Street Transportation Concept

Key intersections



Places where Vine Street crosses major barriers such as Interstate 15 and rail tracks



Multi-modal networks

- Existing transit route
- Planned Midvalley Connector bus rapid transit
- Existing bike lane
- Existing bike route
- Planned bike lane
- Proposed bikeway (lane or route)
- Connection westward: Through neighborhood; to Jordan River Parkway.
- Connection eastward: Through downtown and historic Murray neighborhoods.

Proposed Vine Street Segments and Roadway Sections

The mile-long stretch of Vine Street between State Street and Murray Boulevard is envisioned to become a parkway that connects the station to other destinations in the region. At present the Vine Street right-of-way width varies significantly and is generally quite limited. Murray City intends to achieve a future right-of-way width of 90 to 95' throughout the mile-long corridor which will help ensure all movements are met.

The following **segment concepts** illustrate how Vine Street can be modified to transform the corridor into a unified and walkable street environment. Since this short length of roadway is marked by a range of conditions, it is divided into four separate segments that indicate characteristics related to right-of-way width, redevelopment opportunities and traffic conditions along the route. They are presented consecutively from west to east, beginning at Murray Boulevard and concluding at State Street.

SEGMENT 1: Murray Blvd. to Commerce Dr. SEGMENT 2: Commerce Dr. to Murray Central Station



Figure 29 - Proposed Vine Street Segments

SEGMENT 3: Murray Central Station



SEGMENT 4: Cottonwood St. to State St.



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Segment 1: Murray Boulevard to Commerce Drive

Constraints: Existing I-15 bridge restricts this segment to three general purpose lanes

Opportunities: Redevelopment opportunities on both sides of I-15 could create section shown below

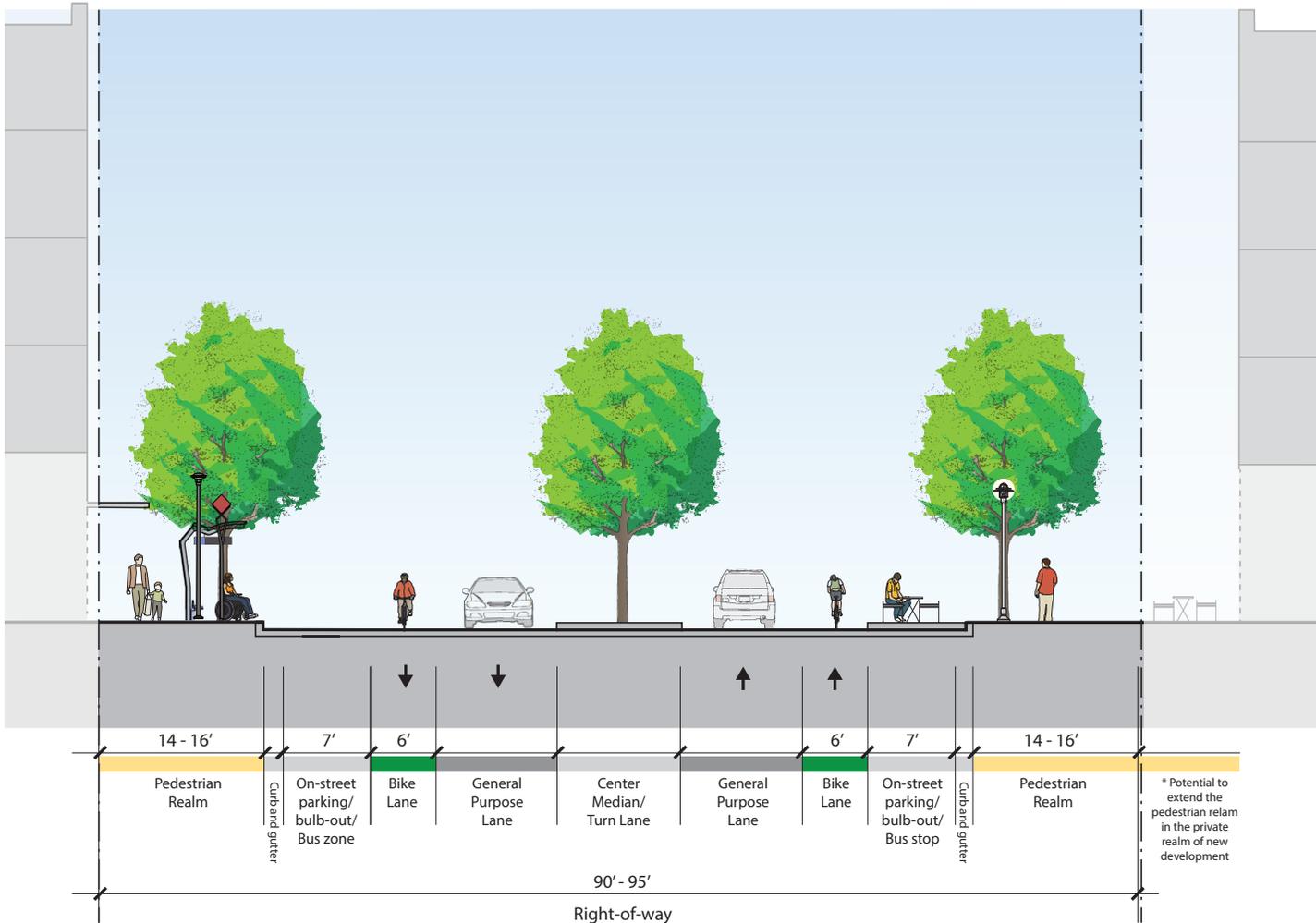
Existing right-of-way: 45' - 60'

2

Potential cross section for Vine Street between Murray Boulevard and Commerce Drive

3

4



Segment 2: Commerce Drive to Murray Central Station

Constraints: High traffic pressure because of Vine’s crossing of rail tracks; Vine Street currently being reconfigured to 5 lanes and 90-foot right-of-way between new Murray Crossing and EMI developments with the cross section below

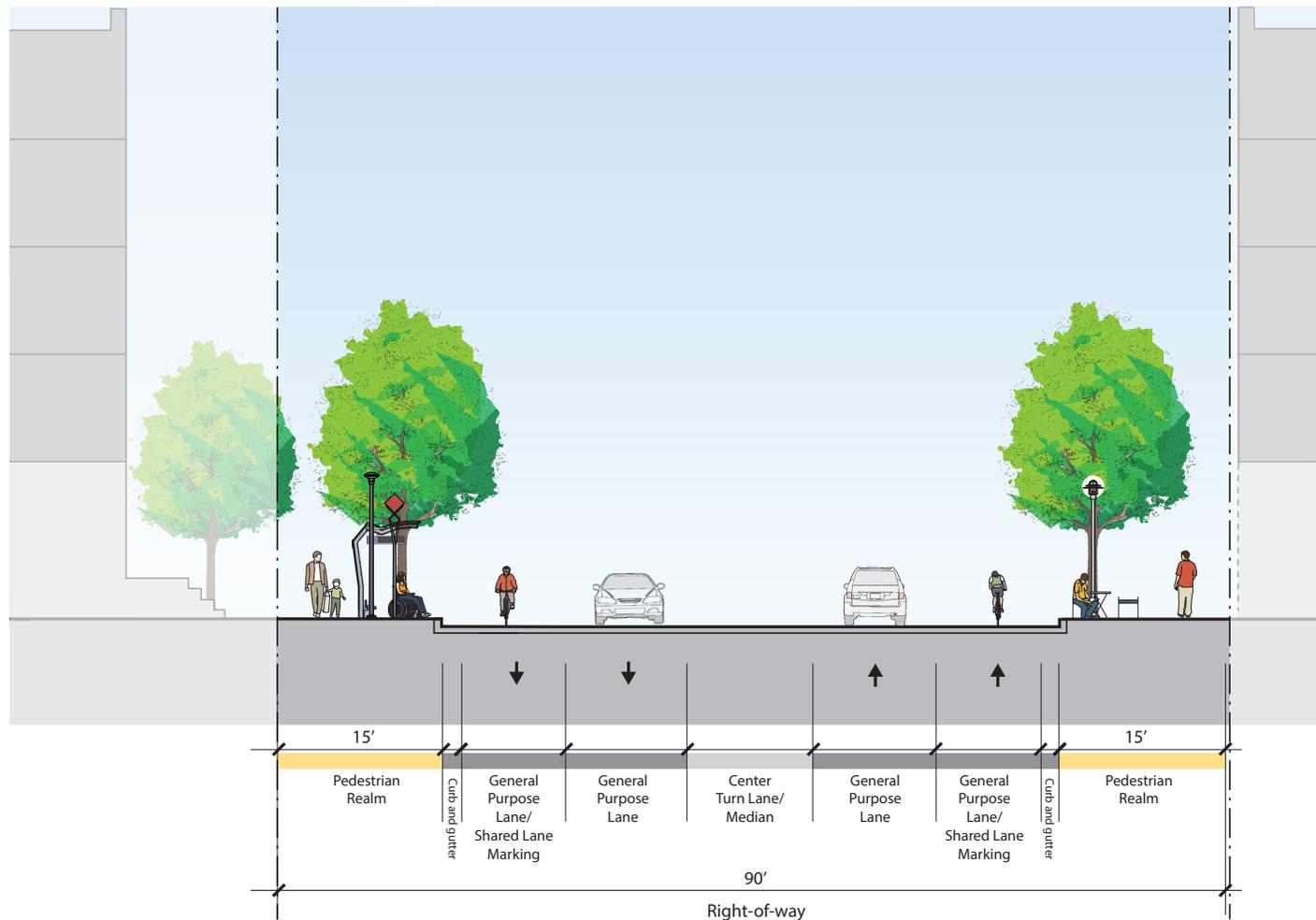
Opportunities: Within 5-lane configuration shown below, can add streetscape amenities and quality transit stops

Existing right-of-way: 60’ - 70’



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Potential cross section for Vine Street between Commerce Drive and Murray Central Station



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Segment 3: Murray Central Station

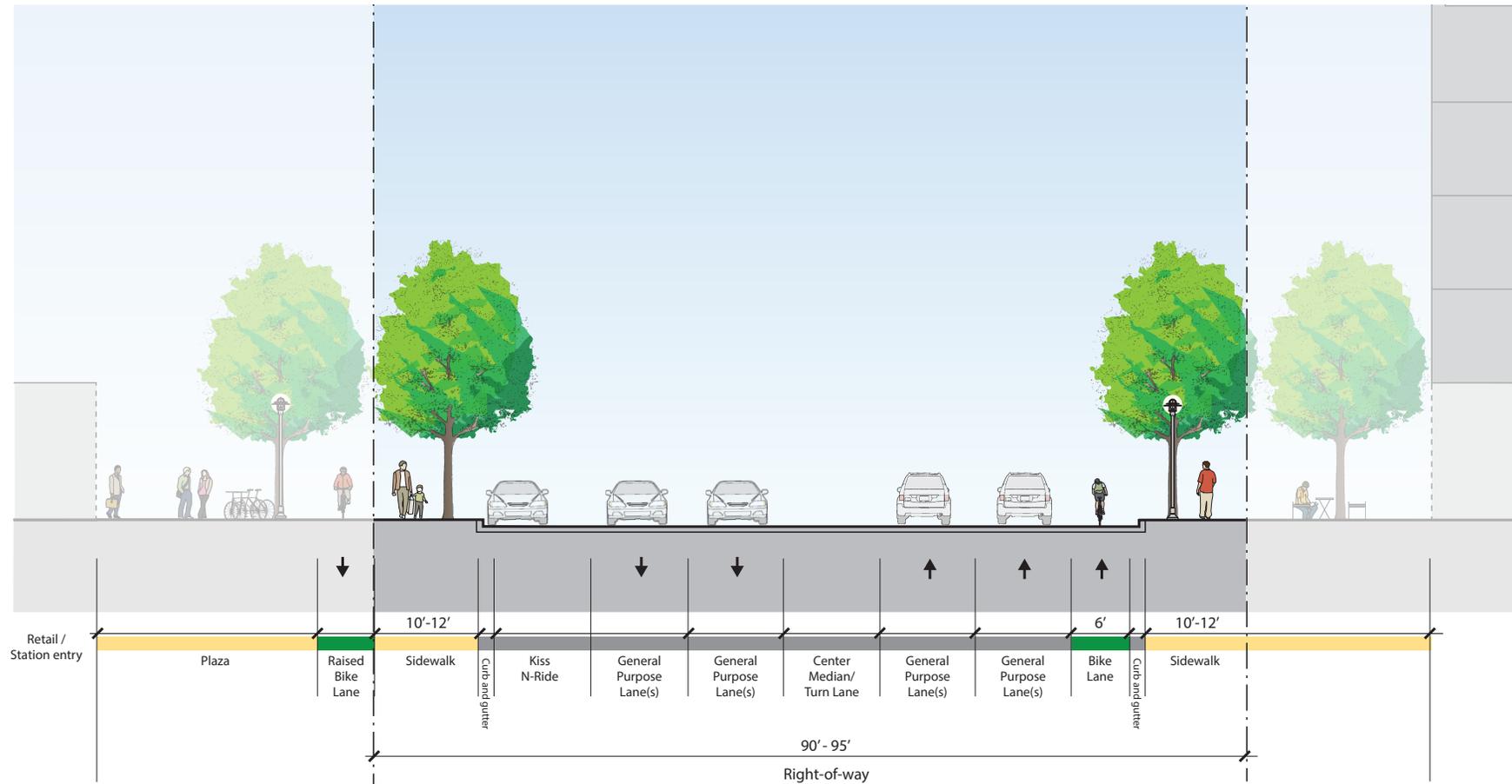
Constraints: Need to stack autos between and on either side of the rail tracks necessitates 4 general purpose lanes. Need for bicyclist access to station and safety as well as pedestrian space and vehicle drop-off creates more elements than there is space for

Opportunities: Increased presence and pedestrian orientation of station on Vine Street creates directive for high quality pedestrian space where station meets street, with complementary pedestrian space on the north side of the street (would happen with redevelopment). Pedestrian space would have to occur on UTA property

Existing right-of-way: 70' - 85'



Potential cross section for Vine Street at Murray Central Station



Segment 4: Cottonwood Street to State Street

Constraints: Desire to maintain flexibility in existing asphalt width

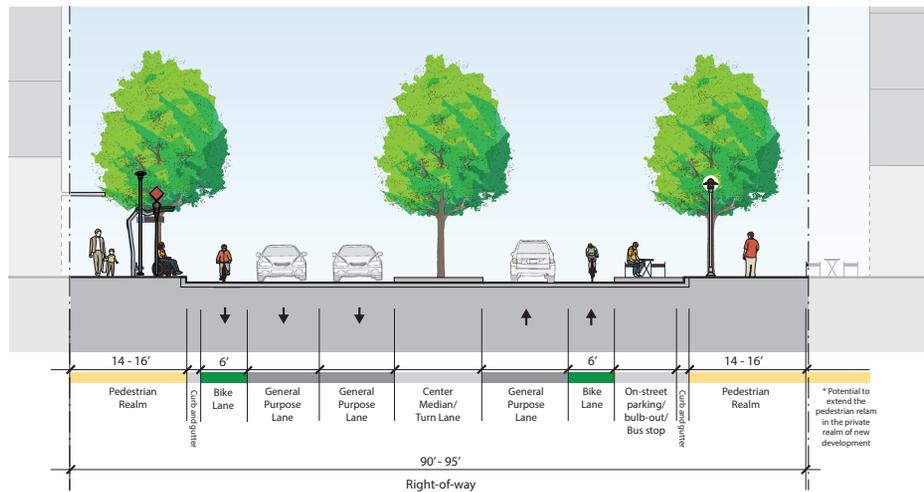
Opportunities: Amount of traffic projected for this segment would allow a reconfiguration to three general purpose lanes, bike lanes, and a parking lane with occasional bulb-outs, within the existing asphalt. Future redevelopment along this segment could help implement a wider, high quality pedestrian realm, which would need an expansion to a 90' - 95' right-of-way

Existing right-of-way: 70' - 90'

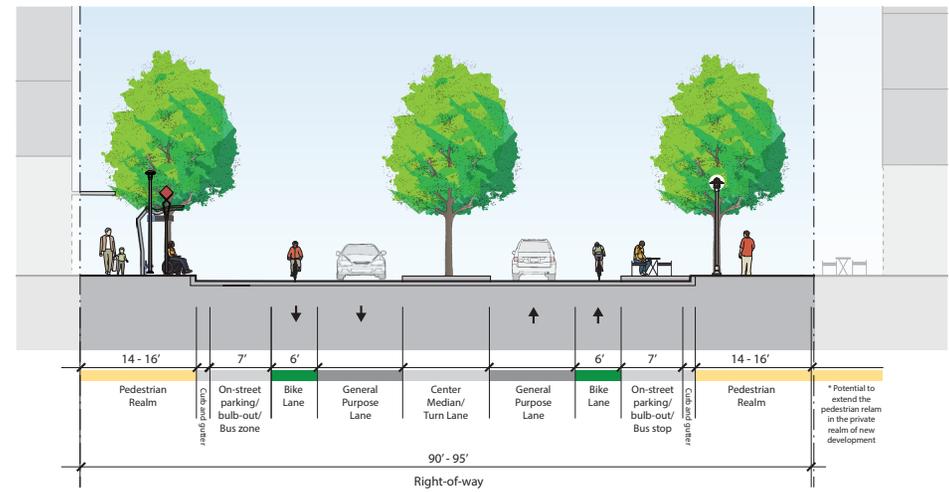


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Cross section options for Vine Street between Cottonwood Street and State Street



Cross section options for Vine Street between Cottonwood Street and State Street



1

Vine Street Corridor Transit Treatment

2

One reason Vine Street is such a good opportunity for the station area is it is the only corridor where a range of bus routes connecting to the station merge – making it a high-frequency transit corridor with connections nearly as diverse as the station itself. In order to meet the intensive transit needs of this area, transit treatments should include:

3

- Upgraded stops
- Bus pullouts in parking lane
- Strategic intersection operational treatments such as transit signal priority or queue jumps
- The incorporation of micro-transit

4

Vine Street Corridor Bicycle Treatment

While most of Vine Street is not a designated as a regional or local bicycle corridor, it is crossed by and links with several important bike corridors, including those on Cottonwood Street/Box Elder Street, Vine Street east of State Street, and along the Jordan River Parkway.

Due to the need for seamless and safe bicycle environment in the area, the Vine Street bicycle treatment should include the following:

- Application of a consistent bike treatment wherever possible, despite the range of conditions and opportunities within each segment of the corridor
- Trade-offs of bike lane on Vine versus shared lane markings (assuming a slow enough traffic speed), with space savings
- Wayfinding for connections to Jordan Parkway and Cottonwood/Box Elder corridor
- Potential bike station/hub near Little Cottonwood Creek

Vine Street nodes

The Vine Street corridor passes through a series of street intersections which are characterized here as “nodes” because of their potential to become integrated places and hubs of activity. Each node presents very different opportunities – the following is a summary of the recommended strategies for each node.

Murray Boulevard

- Bike wayfinding/conflict marking
- District gateway
- Convenient transit stops
- Explore smaller curb radii

Commerce Street

- Major transit stops
- High visibility crosswalks on all segments
- Shorten pedestrian crossings

Cottonwood Street

- Intersection/gateway improvements to emphasize unified Vine
- Consider creation of and IMC Gateway District
- Bike node for north-south regional bicycle corridor

Little Cottonwood Creek

- Connection to IMC path to west
- Consider crosswalk here
- Potential extension of path to west/north

State Street

- Reinforce pedestrian crossings
- Major transit stops

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General Design and Redevelopment Strategies

Pedestrian Circulation

Pedestrian circulation should be the centerpiece of a re-developed Murray Central Station. Currently, pedestrians must find their way between the motor vehicle parking and circulation areas – both within and adjacent to the station, and extending between the platforms for the two rail services. A new station is envisioned which is predicated on the design of great pedestrian spaces that are generous in scale, comfortable, convenient, and which provide safe connections and clear wayfinding clues for all users.

A Central Plaza and Connections to Platforms

One of the most important transformations envisioned is the creation of a pedestrian space in the wedge-shaped area between the TRAX and FfrontRunner platforms. This area is currently used for parking, vehicle circulation, drop-off, and the UTA police, and should instead become a central meeting place for the range of users and visitors passing through the area.

Pedestrian bridges

Crossing the rail track barriers is a challenge for existing station users. While costly, pedestrian bridges are essential infrastructure to safely and elegantly move people to and from the station. Pedestrian bridges can help unify both rail systems to the station itself. The most critical pedestrian bridge connection is over the Union Pacific tracks at the south end of the station. Providing a crossing in this location would help provide a missing link to the emerging employment uses southwest of the station.

1

Connections to Vine Street

As part of a vision focused on transforming the Vine Street Corridor into a special parkway that links the station to destinations near and far, it is important that a re-designed station includes high-quality pedestrian connections to Vine Street. These should go well beyond utilitarian sidewalks, emerging as linear plazas and pathways with active frontage with new buildings that are emerging and planned for the area.

2

Rail Transit

Rail transit will likely remain relatively unchanged at the re-imagined Murray Central Station. The platforms should remain in the same places, and there is the potential for a second TRAX platform that would be shared with the BRT service. Instead, access to the rail transit and places in and around the station that should change.

3

Bus Transit

Murray Central Station is a busy bus terminal, with five routes reaching all corners of Salt Lake Valley. Bus service is expected to increase in the future. The station's bus hub is currently conveniently located immediately on the east side of the station. The Plan's concepts for a re-designed station area maintains the bus area in the same general location, although it is recommended that some small refinements to bus circulation be made. Currently, buses must run circuitously south to Cottonwood Street to get out of the station. Direct connections to either Vine Street or Cottonwood Street would reduce transit travel times in a way that would not likely overburden those streets. A re-built bus loop should also provide for more bus active bay and layover bay capacity.

4

Mid-Valley Connector Bus Rapid Transit (BRT)

The most important near-future programmatic change at Murray Central Station is the arrival of the Mid-Valley Connector bus rapid transit (BRT) service, which is anticipated to be implemented in the upcoming years and will terminate at the station. The BRT route links destinations to the west through Taylorsville and the Salt Lake Community College Redwood Road Campus and will eventually link with West Valley City center.

The way the Mid-Valley Connector integrates with Murray Central Station is critical to both the BRT service and to the station. From the perspective of this Plan, the BRT station should be well-integrated into both the bus and TRAX rail areas of the station. With BRT often acting as a light rail emulation service, the BRT could benefit from sharing a second TRAX platform with the rail service – this would be the ultimate integration of the BRT into the station.

Vehicles – drop off and parking

Since it is recommended that pedestrian circulation and public space take the central role in Murray Central Station, the following strategies are proposed for reconfiguring parking, circulation and drop-off areas:

- Keep convenient drop-off space and provide an adequate amount of parking
- Transition to structured parking
- Formalize drop-off within the station “wedge”, including looping systems to facilitate access to the station plaza
- Consider moving private vehicle drop-off area to east side of station, next to (but separated from) the bus area
- Consider a small, supplemental drop-off area on Vine Street near the station frontage

As illustrated in more detail for the two station concepts that follow, each drop-off and parking concept should be implemented in a way that complements and does not intrude on the pedestrian circulation and public spaces that will be the centerpiece of a re-designed station.

Shared mobility

Shared mobility refers to the provision of a range of transportation services that offer rides on shared vehicles and infrastructure, which typically include bike share, electric scooter, car share modes. At transportation centers like Murray Central Station, shared mobility can provide critical “first-last mile” links between the station and ultimate origins and destinations. It is critical for a re-designed station to provide places for shared mobility in convenient, integrated ways. In order to enable the widest range of trips through Murray Central Station without a private vehicle, shared mobility infrastructure should be located at different areas of Murray Central Station.

Murray Central Station Concept 1

As illustrated in Figure 30 (Station Concept 1 - Concept Illustrative), Murray Central Station is marked by a new station building near the southern extents, which is linked with a landmark pedestrian bridge structure that links the station to surrounding businesses and pedestrian traffic. The figure also illustrates plan details for the station and surrounding Vine Street Corridor, as well as precedent images for the pedestrian bridge. The design includes a formalized drop-off within the station “wedge”, is supported with structured parking garages skinned with new office and retail buildings, links with buses from Cottonwood Street, and includes small public spaces along the Vine Street interface and near the pedestrian bridge.

Figure 31 (Massing and Square Footage) illustrates the general heights and massing of the various buildings, in addition to square footage that can be supported and the parking that results. It should be noted that both concepts maintain the total number of parking spaces required by UTA through structured parking. A schematic illustration from the pedestrian bridge (Figure 32) indicates the envisioned activities that might occur at the pedestrian bridge, and the forms and the relationship to the surrounding buildings and uses that will result.

1

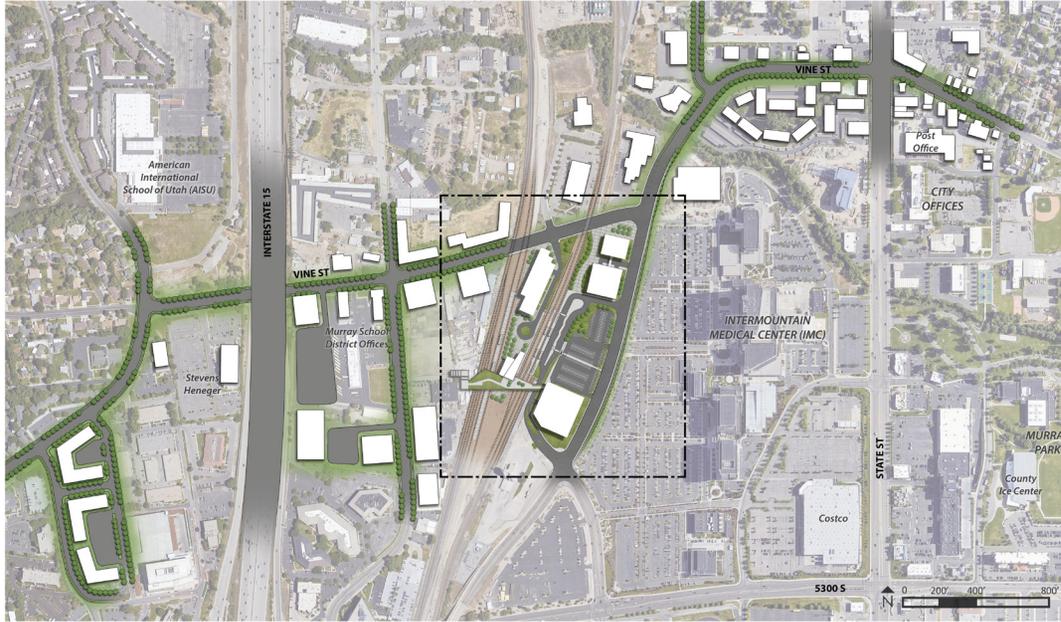
MURRAY CENTRAL STATION MASTER PLAN

Station Concept One - Concept Illustrative

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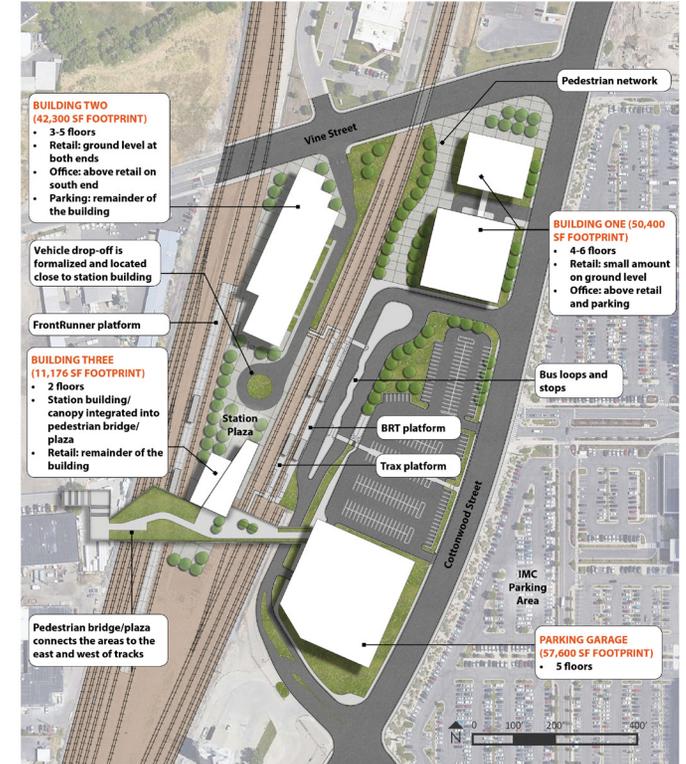
PRECEDENT IMAGES



Figure 30 - Murray Central Station Concept 1

STATION CONCEPT ONE - DETAIL

Major pedestrian bridge/plaza with station building | Formalize vehicle drop-off in station wedge | Link bus access to north | Infill station wedge with parking structure skinned on north and south



MURRAY CENTRAL STATION MASTER PLAN

Station Concept One - Massing and Square Footage

MAJOR PEDESTRIAN BRIDGE/ PLAZA WITH STATION BUILDING | FORMALIZE VEHICLE DROP-OFF IN STATION WEDGE | LINK BUS ACCESS TO COTTONWOOD | INFILL STATION WEDGE WITH PARKING STRUCTURE SKINNED ON NORTH AND SOUTH

PARKING ASSUMPTIONS

1/1	MAINTAIN EXISTING
1/1	UTA PARKING REPLACEMENT
3/1000	RETAIL/COMMERCIAL
3/1000	OFFICE
3/1000	STATION
350	SQFT PER PARKING SPACE

BUILDING FOOTPRINT (sqft)

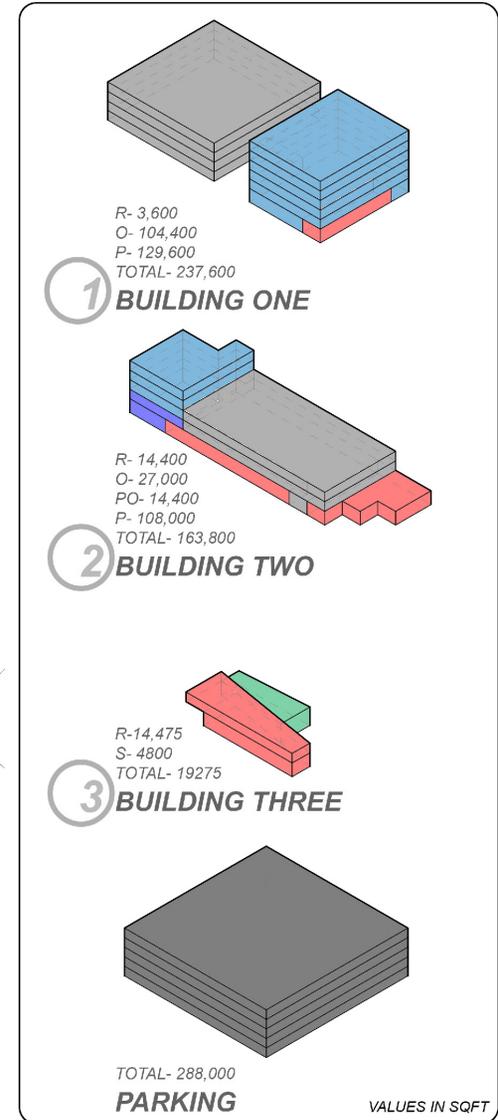
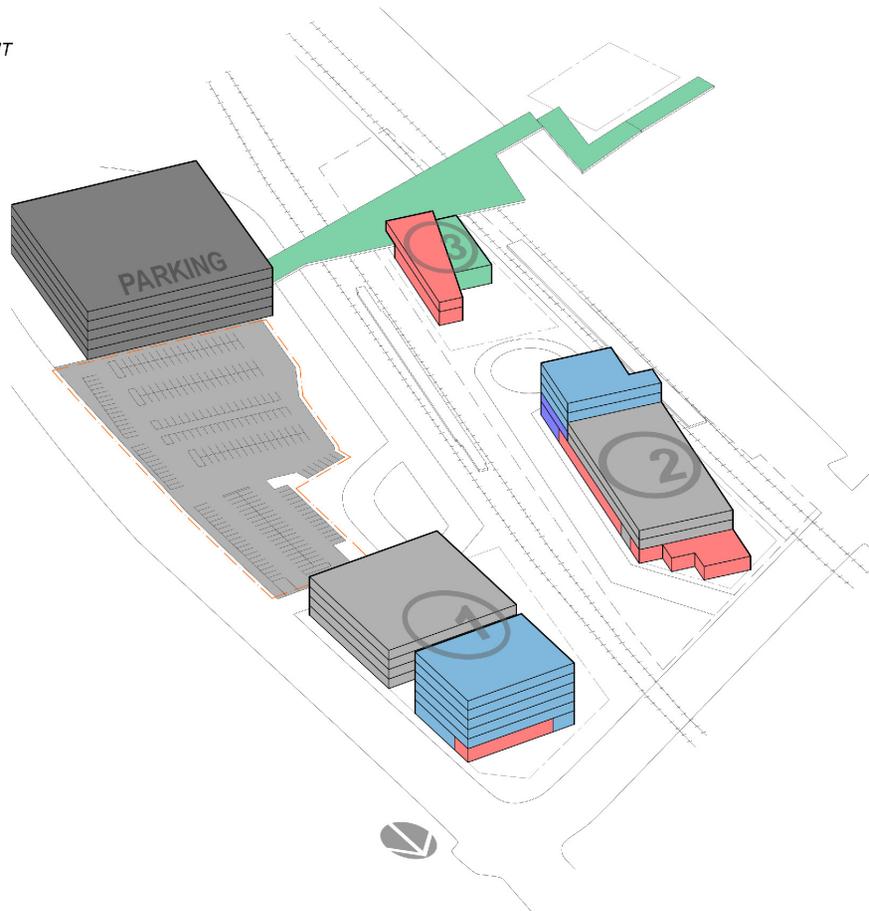
BUILDING ONE: 50,400
 BUILDING TWO: 42,300
 BUILDING THREE: 11,176
 PARKING: 57,600

TOTAL SQUARE FOOTAGE PER CONCEPT (sqft)

RETAIL/ COMMERCIAL: 32,475
 OFFICE: 131,000
 STATION: 4800
 POLICE: 14,400
 PARKING: 525,600

LEGEND

	RETAIL - COMMERCIAL (R)
	OFFICE (O)
	POLICE (PO)
	STATION (S)
	PARKING (P)
	REPLACEMENT PARKING
	ENVIRONMENTAL AREA



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- 4

Figure 31 - Murray Central Station Concept 1 - Mass & Square Footage

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Figure 32 - Murray Central Station Perspective - Concept 1: View to West from Pedestrian Bridge

Murray Central Station Concept 2

Figure 33 (Station Concept 2 – Concept Illustrative), conceptualizes the function of a re-imagined station. In contrast to Concept 1, the station building is moved toward Vine Street, providing a direct link with the parkway environment of the roadway and a streetside entrance and drop-off plaza. A landmark canopy links the pedestrian bridge structure, extending the reach of station and related office/retail uses to the east and merging the tracks and lanes as part of a unified station destination. The figure also illustrates plan details for the station and surrounding Vine Street Corridor, as well as precedent images for the pedestrian bridge.

The parking garages and other buildings located on the east edge of the station area are similar to those in Concept 1, with the exception that the parking garage on the south end of the site is shorter and the police station is incorporated into the station building rather than the garage. A utilitarian bridge links the station to the surrounding businesses and pedestrian traffic flows to the south and west. The design includes a formalized drop-off within the station “wedge”, which is supported with structured parking garages “skinned” with new office and retail buildings. Links with buses from Cottonwood Street are also incorporated, in addition to small public spaces along Vine Street that link the streetside plaza with the pedestrian bridge.

Figure 34 (Massing and Square Footage) illustrates the general heights and massing of the various buildings, in addition to square footage that can be supported and the parking that results. It should be noted that both concepts maintain the total number of parking spaces required by UTA as currently exist.

Figure 35 is a perspective concept of the station and surrounding Vine Street Corridor, providing a view from the Vine Street Plaza toward the station. The strong presence of the building, the positive plaza spaces near the street, and the unifying effect of the large canopy combine to create a landmark destination.

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MURRAY CENTRAL STATION MASTER PLAN

Station Concept Two - Concept Illustrative

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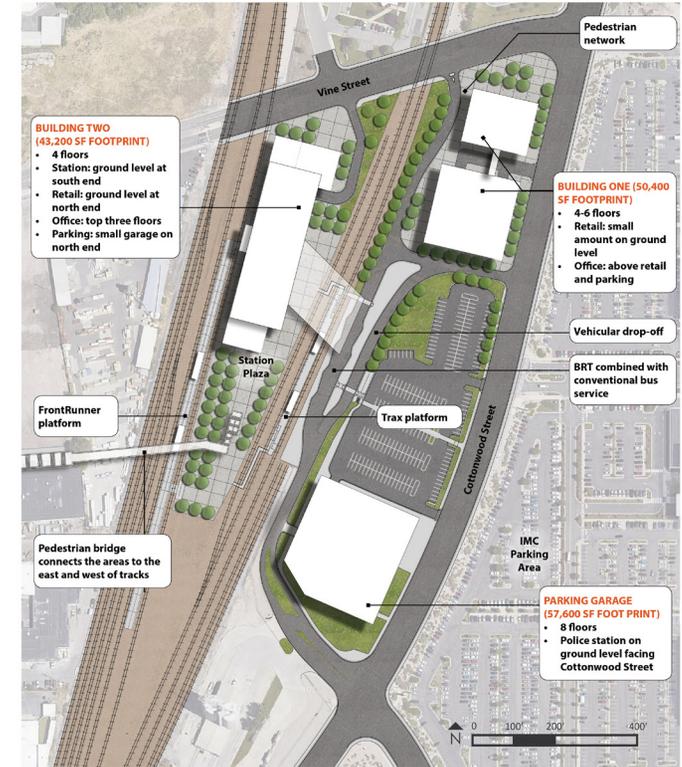
PRECEDENT IMAGES



Figure 33 - Murray Central Station Concept 2

STATION CONCEPT TWO - DETAIL

Bus loop in station wedge | Vehicle drop-off/parking structure on east | New buildings oriented to Vine



MURRAY CENTRAL STATION MASTER PLAN

Station Concept Two - Massing and Square Footage

BUS AND VEHICLE CIRCULATION ON EAST, IN SEPARATE DRIVES | STATION ORIENTATED TO VINE WITH NEW BUILDING AND PLAZA | CANOPY SYSTEM OVER TRACKS/LANES UNIFYING STATION | PARKING STRUCTURE TO THE SOUTHEAST.

PARKING ASSUMPTIONS

1/1	MAINTAIN EXISTING
1/1	UTA PARKING REPLACEMENT
3/1000	RETAIL/COMMERCIAL
3/1000	OFFICE
3/1000	STATION
350	SQFT PER PARKING SPACE

BUILDING FOOTPRINT (sqft)

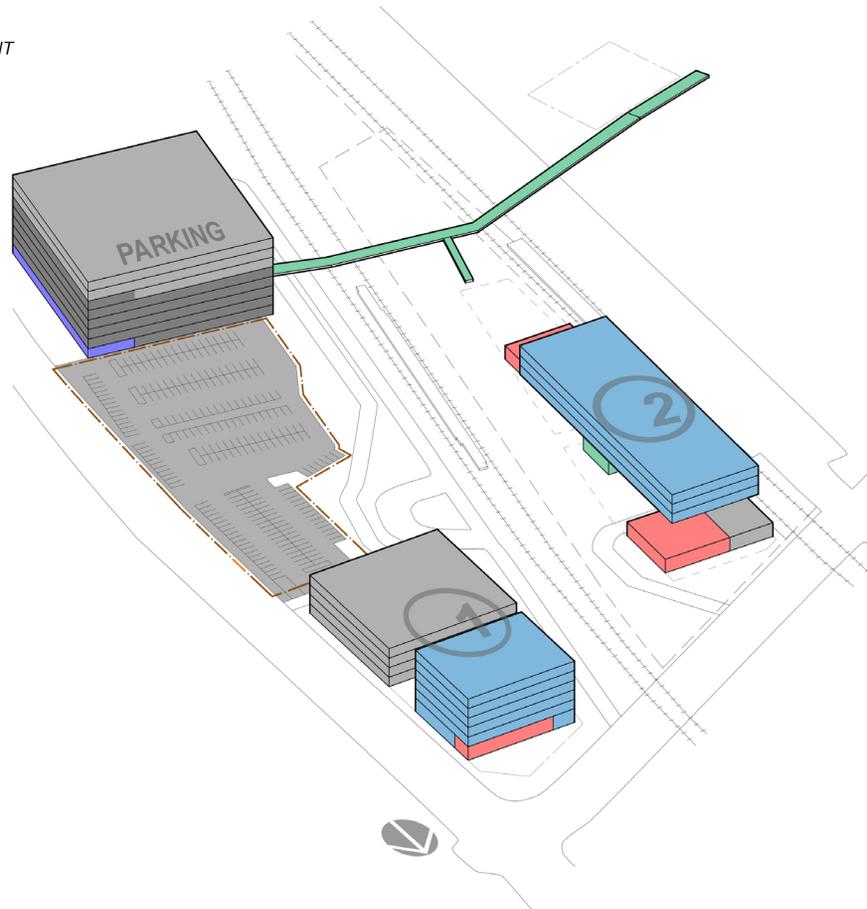
BUILDING ONE: 50,400
 BUILDING TWO: 45,000
 PARKING: 57,600

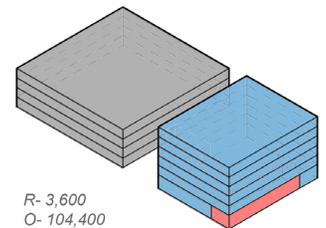
TOTAL SQUARE FOOTAGE PER CONCEPT (sqft)

RETAIL/ COMMERCIAL: 27,900
 OFFICE: 234,000
 STATION: 7,200
 POLICE: 14,400
 PARKING: 589,500

LEGEND

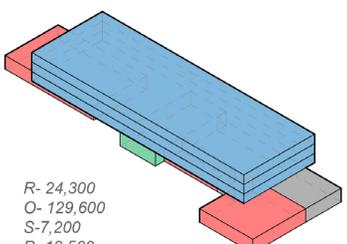
- RETAIL - COMMERCIAL (R)
- OFFICE (O)
- POLICE (PO)
- STATION (S)
- PARKING (P)
- REPLACEMENT PARKING
- ENVIRONMENTAL AREA





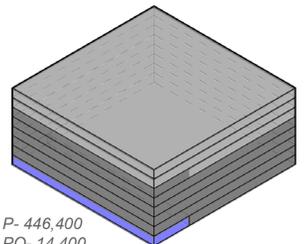
R- 3,600
 O- 104,400
 P- 129,600
 TOTAL- 237,600

1 BUILDING ONE



R- 24,300
 O- 129,600
 S- 7,200
 P- 13,500
 TOTAL- 174,600

2 BUILDING TWO



P- 446,400
 PO- 14,400
 TOTAL- 172,800

PARKING

VALUES IN SQFT

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Figure 34 - Murray Central Station Concept 2 - Mass & Square Footage



Figure 35 - Murray Central Station Perspective - Concept 2: View from Vine Street Plaza to South

DESIGN & IMPLEMENTATION GUIDELINES

Introduction

Murray Central Station area has been influenced and defined by the industry in the area. It was the site of a major smelting operation in the Salt Lake valley, and in 1994 the area was identified by the U.S. Environmental Protection Agency as contaminated at a level requiring remedial action. In 2001 appropriate remedial action was completed in the area for redevelopment into a commercial area.

The Murray Central Station area is now a major medical employment area and the home of Intermountain Health Care's flagship medical facility and related services. The area's environmental past will continue to influence the urban form and redevelopment in the station area, as follows:

- Residential development is not allowed in the immediate station area (as defined by the Murray City's SSOD zoning designation)
- Contaminated materials capped beneath roads and parking lots must be handled in accordance with EPA and UDEQ approved guidelines
- Cottonwood Street and an the existing TRAX station parking lot cannot be disturbed

Within this context there are opportunities for enhancing the Murray Central Station area by providing employment, retail, public space and residential (outside of the SSOD) uses. Developing a new urban district around the existing transit amenities can prioritize the pedestrian experience and provide visual and aesthetic interest. The combination of transportation and employment destination already in place within the Murray Central Station area provides an opportunity to create a landmark station and destination unlike any other within the current transit system that is:

- A regional transit hub bringing together FrontRunner, TRAX and BRT in the center of the valley
- A destination for medical services
- A lively neighborhood for locals and visitors

Future design and development in the Murray Central Station Area should improve the walkable and human scale of the area. Attention to the following design details will ensure that future development will foster pedestrian activity and increase the value of development within the station area.



Example of New Station Area Development

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Design Values

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In order for the Central Station area to meet its potential, it is critical to take advantage of community investments in transit and increase values and opportunities in the core of Murray City. The design should accommodate all travel modes, including pedestrian, bicycle, bus, and car. Development should focus on encouraging pedestrian traffic by creating multiple building entrances on the street level and minimize blank walls by including generous planes of glass.

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All future developments and improvements in the Murray Central Station area should be based on solid urban design principles that create a welcoming pedestrian environment to the Station area. This should be a place designed for people, where uses foster activity on the street and create great and comfortable places. The presence of the FrontRunner and Trax stations, Intermountain Medical Center and nearby stable neighborhoods create a more varied destination. Human-scaled façades and building masses as well as street level interests should be the highest priority for the station area.



The guidelines that follow are intended to help establish the character of the Murray Central Station District as it is implemented. They provide references and ideas for the city, UTA and other stakeholders to consider as future designs, plans, projects and ordinances are developed and implemented. The guidelines provide direction for the treatment of the various buildings, built environments, landscapes, streetscapes and nodes to ensure the site is unified and coordinated.

A unified design and development strategy will enhance the special “sense of place” and character of the project. It should embrace what the existing site offers while incorporating anticipated uses as part of a coordinated plan. In general, the waterways and open spaces affiliated with Big Cottonwood Creek and the Jordan River should be enhanced so they can serve as places for recreation, as connecting greenways, and for visual relief within the intensely developed built environment.



Architecture and Built Form Guidelines

General guidelines and preferences for the architectural character of buildings constructed in the Murray Central Station area help establish a unified look and character for the station area. Well-designed buildings contribute to a “sense of place and arrival”. Key buildings include the new station building and bridge to connect the existing FrontRunner and Trax station area with new office and residential buildings along Vine Street and with activity zones to the east and west. Buildings in the Murray Station development area will reflect the distinctive requirements of that zone. Although specific buildings west and north of the station area are not addressed, it is assumed that they will reflect mixed-use and transit-oriented design principles, creating a transition from the landmark station area to existing neighborhoods and development areas in the west and northwest areas of the City.

Criteria for the station buildings include forms that:

- Create a sense of destination and are identifiable as unique to the station;
- Reflect connectivity of the three transit lines (FrontRunner, Trax & BRT);
- Are visible from beyond the station area;
- Enhance the functionality of the station area by seamlessly connecting the station areas, accommodating passenger flows, and creating new room for commercial spaces; and
- Reflect Murray’s role as a transportation hub in the Salt Lake Valley

New buildings within the station planning area should:

- Orient the front façade of all new buildings to Vine Street or Cottonwood Street;
- Locate parking and vehicle access away from entries, open space and street interactions;
- Create logical and intuitive access corridors for all modes of travel;
- Utilize simple and straightforward building forms and include practical, utilitarian use of space;
- Incorporate pedestrian scale lighting and amenities;
- Provide clear expressions as stand-alone structures surrounded by open space;
- Focus on street-level design and the creation of positive pedestrian connections;
- Incorporate versatile, durable, and long-lasting materials including metal, glass and stone;
- Reflect and respond to existing neighborhood context and vernacular expressions;
- Express an appropriate sense of scale, massing and form that matches the setting of the site; and
- Establish a design relationship with the adjacent medical center that enhances and frame view corridors to the landmark station building.



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Parking Structure Design

These buildings should be skinned with pedestrian-friendly uses to create visual interest from a distance and close-up. Where possible, ground level office or retail uses should be adjacent to pedestrian ways, adhering to building permeability criteria, incorporating human scaled elements on façades and using stair and tower elements as landmark design elements.

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Miami, Florida Parking Structure



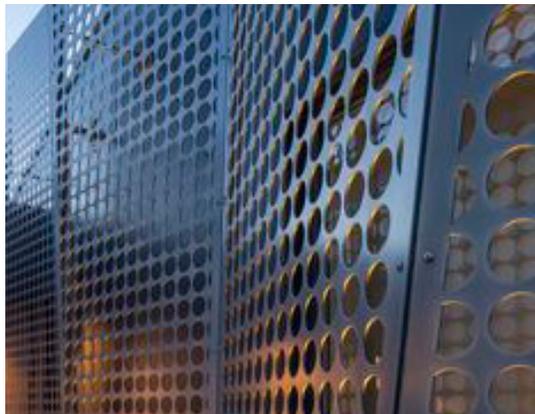
Columbus, Indiana Parking Structure



Santa Monica, California Parking Structure

Building Permeability

Life on the street and a vibrant pedestrian environment depend on windows and doors at the street level. Building permeability connects businesses to pedestrians. Requiring new and redeveloped spaces to make interiors visible via doors, windows and wall openings significantly reduces the distinction between indoor and outdoor places and activities.



Materials

Materials should be versatile, durable, and long lasting, including metal siding and panels, horizontal and vertical metal siding patterns in prefinished colors, natural metal finishes, including weathered steel, in addition to exposed board-formed concrete, stone and glass.



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Building Orientation

Building design and siting should consider solar orientation, climatic conditions, wind patterns, and other environmental conditions. Parking should be to the rear and between buildings or provided as part of screened and shared lots. The exterior of buildings should include windows and openings and architectural features that are coordinated on all sides of the building in order to achieve harmony and continuity.



1

Architectural Screening

Roof top and ground level mechanical units, condensing units, electrical equipment and transformers, dumpsters, and service loading areas should be screened from view. Screening for all equipment and dumpsters should be integrated and complementary to the design of the site and buildings. Service and loading areas will need to be considered early on in the site planning process to accomplish effective screening.

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Architectural Signage

Building signage on office and landmark structures should create a sense of place and reflect the role of the station area as a regional transit hub. Street level signage plays a critical role in the human scale of an area. The locations and types of signs can establish the personality of an area in a way that will encourage people to return to discover new destinations each time they pass through Murray Central Station.

Correct signage placement is critical for orienting pedestrians, particularly in an area with competing pedestrian flows (like an area with multiple transit platforms.) Businesses need visibility and ease of customer access. Pedestrian focused signage should be scaled and reflect a pedestrian travel speed of approximately three miles per hour. Pedestrian focused signage can include building façade signs.



Public Realm Guidelines

The treatment of the areas surrounding the buildings – the streets, plazas, parking lots, pedestrian bridges and streetscape - should exude a contemporary and refined appearance, which is appropriate for such high activity areas. A limited palette of materials should be used, helping to merge the stations, buildings, plazas, paths, and parking lots into a singular place. Trees and vegetation, for example, should typically be laid out in geometric patterns, emphasizing the flow of circulation traffic and helping to direct motorists, pedestrians and cyclists to nearby locations. This will also help merge the landscape with the hard edges of adjacent buildings, providing visual relief while screening the adjacent parking lots and service areas. The use of manicured lawns and other environmentally-challenging and high-maintenance treatments are out-of-character and should be avoided. Shade trees should be located in proximity to sidewalks, and pathways, providing shade and shelter to cyclists and walkers.

Fences, walls and berms should be used sparingly. They should be limited to the edges of exposed parking lots and service areas where screening is desired. When used, they should complement the design concept for the station area as part of creating a unified appearance. Such features should only be as tall as necessary and installed in a craftsman-like fashion, using the palette of materials that matches the look of surrounding buildings and structures.



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Streetscapes

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The manner in which Vine Street is treated will have significant impact on the establishment of a unified look for the district. The edges of the streets should include a unified system of street lights, furnishings, and hardscape treatments and be generously landscaped with trees, vegetation and special landmark treatments at entrances and gateways. In recognition of the differences that exist along the length of the roadway, minor variations in the design, materials, colors and plant species should be encouraged to emphasize those distinctions rather than attempting to deny them. For example, rows of street trees should be planted within the park strips where possible, extending across the street and into the medians where they exist. This will help create a unified “allee” appearance from near and far. Trees and plants should be utilized that are well-suited to the local climate. They should be unified with the landscape treatments of surrounding private developments, and incorporate water-conserving design concepts as detailed in these guidelines.

While additional design input is necessary to determine the final configuration of specific edge treatments, the sidewalks and walkways along the street edge should be highly urban, matching the look and feel of the stations and adjacent plazas. They should be constructed of concrete, unit pavers or similar materials in accordance to specific design needs and functional requirements. Pavement colors should be carefully considered to ensure these facilities fit with the surrounding landscape.



Street Design

New or retrofitted streets in the Murray Central Station area should be carefully designed to be oriented to pedestrians and cyclists. Streets should accommodate motor vehicles as well, but pedestrians and other active modes are the top priorities. Most if not all new and retrofitted streets in the Plan area are expected to be “Local” level streets – with the exception of Vine Street, which is addressed separately.

The following are elements of new streets in the area:

- Comprehensive pedestrian realm: Streets should have foremost a generous, complete pedestrian realm, with:
 - A through zone where people walk;
 - A furnishings zone, for street trees, street furniture, pedestrian-scale lighting. This zone is also used as a buffer for pedestrians from moving traffic.
 - A frontage zone, where the land uses can “spill out” onto the street with outdoor dining, display, seating, plantings or other uses.
- A roadway designed for low vehicle speeds – 25 miles per hour or lower.
- The awareness of cyclists through on-street markings and signage, especially in conflict areas. For the local-level streets that these new streets will be, dedicated bike lanes will likely not be necessary if the traffic speeds of the street can be kept low.
- An on-street parking lane, with bulb-outs and other uses where appropriate, such as pedestrian crossings.
- Segments of curb dedicated to shared mobility such as micro-transit or transportation network companies.



FURNISHING ZONE:

Space acting as a pedestrian buffer from moving traffic and space for amenities such as benches and other street furniture and lighting and utility poles



THROUGH ZONE

Space for people to walk. The Through Zone should be able to accommodate wheelchairs passing, and, depending on the environment and amount of pedestrians, people or pairs of people walking past one another.



FRONTAGE ZONE

Space for things associated with the adjacent land use such as plantings, dining, seating or display.

1

Intersection Design

Intersections are a special area of street design where conflicts between users are usually at their highest potential. Intersections in walkable areas need special design care. Intersections in the Murray Central Station area should emphasize:

- Short pedestrian crossings
- Frequent pedestrian crossings
- High-visibility pedestrian crossings
- Areas with conflicts between bicyclists and motor vehicle traffic, such as right-turn lanes, identified with green paint
- Medians and refuges
- High-quality corner environments, with directional curb ramps



Development Frontage

While streets can establish comfortable, convenient, and safe environments for pedestrians, the nature of the built environment on the adjacent blocks completes the pedestrian environment, especially to create places where people feel comfortable and want to be. In this way, the frontage of development forms a critical complementary piece of the pedestrian environment.

Creating pedestrian-supportive development frontage rests on establishing a human scale that is tailored all aspects of the urban environment. A human scale includes things like comfort, greenery, visual interest, and social encounters. These needs are addressed through elements like trees in the street, lots of windows in buildings, frequent building entries, small courtyards and plazas, places to sit, public art, and details on building facades.

The following are policy and design tools that can be used to create a walkable frontage for development – many, if not all, could be part of a form-based code:

- **Building placement guidelines and standards:** These are design and policy mechanisms that require buildings to be built either directly along a street frontage property line or a maximum distance back of it. This approach is the exact opposite of the conventional building placement approach, which uses minimum distances back, or setbacks, from the street frontage property line. Usually, the requirement is that a minimum percentage of the street frontage property line be built to the build-to line.
- **Active uses:** promote uses on the ground floor of buildings that help to animate the pedestrian environment. These could be a range of uses, from shops to residences to offices. These active uses should extend into the pedestrian realm of the street as much as possible – in the form of dining, seating, goods display or other uses.
- **Transparency and human-scale design:** The facades of the buildings housing the active ground floor should be designed to be inviting, comfortable and interesting to people walking along the street. This means, for example, a minimum required frequency of entries, a minimum percentage of glazing on building facades. This sense of transparency and human scale should also include the spaces in front of and between the buildings.
- **Frontage types:** these which typically consist of a set of coordinated design standards for pedestrian-oriented site frontages for different contexts – such as a “Main Street,” an office environment, multifamily residential, or parks.
- **Vehicular use area placement and design:** The placement and design of vehicular use areas like parking lots can have a major impact on the character of walkable areas. Development standards should require that parking or other vehicular areas be located in the back or to the side of buildings, that driveway curb cuts be minimized on streets, and that street-side vehicular areas be buffered by an acceptable set of walls or landscaping.



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Lighting and Furnishings

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Streetlights and furnishings should be coordinated, providing a highly refined and unified look for the corridor while encouraging a sense of individuality at the station area and other destinations along Vine Street. Furnishings should be limited to a select range of benches, bollards, bike racks, trash receptacles, and other basic elements appropriate for the active setting. Street lights should complement the look and feel of the stations, with nighttime lighting concepts developed to help establish the station as the primary destination along the route. Specific light fixtures should be selected from a single model-line, the poles, bollards and fixtures complementing the feel of the district. All lighting and furnishing elements should be high quality and “Night Sky” compliant, with powder-coated steel, aluminum and similar durable materials preferred for poles and lighting housings.



Parking Lots and Service Areas

Parking lots and service areas are essential components of the project. The design of these areas should be treated with the same care as the adjacent streets. A well-conceived shading strategy should be developed that provides a level of order and structure that will help transform parking lots into a clearly articulated, safe, comfortable and visually interesting spaces. Wherever possible, parking lots and service areas should be landscaped with a mix of shade trees with heavy canopies to help provide good shade and filter pollutants. The trees and vegetation used in parking areas should be water conserving, avoiding root systems that are likely to heave paving or are otherwise difficult to maintain. Parking lot

vegetation are typically planted in rows within barrier islands, although clustered groupings of trees may be preferable under special conditions. Where parking is visible from Vine Street and adjacent pedestrian areas, trees should help buffer the visual impact of the parking lots. Lighting should be provided in all parking lots, utilizing poles and fixtures that complement the urban feel of each node.

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Street Trees and Vegetation

A variety of shade trees should be used to transform the station district into a lush and inviting place. In general, shade and street trees should be selected that are large at maturity, since this will reinforce the formation of a pleasant and unified district character. Trees and other vegetation should be selected to meet the specific design and environmental intent of the area, reflecting regionally-appropriate water-wise design and implementation concepts. They should have a broad canopy that helps mitigate wind and summer heat.



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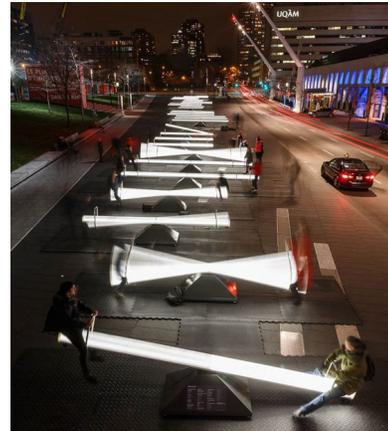
Public Art

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Public art brings an air of imagination and creativity to public spaces, encouraging curiosity and at times, interaction. Public art can also provide visual relief and lively energy to otherwise indistinct places. The metered use of public art can help create a unified station expression. It is assumed that such features will be focused at the station and surrounding plazas, at key intersections, corners and near entrances to station buildings as part of facilitating way finding. This will help establish a sense of entry and create a distinct look for the station district. If water features are utilized they should be simple and easy to maintain. Water features such as stylized springs, runnels and mist-producing nozzles can be highly effective and engaging.



Sustainability Goals

The responsible use of resources is an important consideration for this project. As the station area and Vine Street are modified and developed, changes should be made that will make the district a more sustainable place while improving the quality of life and well-being of the area. In order to ensure that design and development efforts are sustainable, it is recommended that an environmental evaluation and rating system be used to ensure implementation matches the environmental benchmarks established for the district and Murray City. Of the various “green building” evaluation and rating systems in use nationwide, two might be considered for the Murray Station Area: Leadership in Energy and Environmental Design (LEED) and the Sustainable Sites Initiative™ (SITES™), both of which are administered by the U.S. Green Building Council (USGBC).

LEED (<http://www.usgbc.org/leed>) has developed guidelines for a wide range of project types, including building design and construction, interior design and construction, building operation and maintenance, neighborhood development, and homes. The LEED system addresses the planning design, and construction process; the location of projects and transportation options; materials and resources; water efficiency; energy and atmosphere; sustainable sites; indoor environmental quality; innovation; regional environmental priorities; neighborhood pattern and design; and green infrastructure and buildings.

While LEED applies primarily to buildings and building systems, the SITES™ Rating System (<http://www.sustainablesites.org/>) focuses on sustainable land design and development. SITES™ is applicable to a full range of project types as well, and evaluates projects in ten categories, including site context; pre-design assessment and planning; water; soil and vegetation; materials selection; human health and well-being; construction; operations and maintenance; education and performance monitoring; and innovation and exemplary performance.

Applied together, the LEED and SITES™ rating systems form a comprehensive system of green development strategies which can help ensure that the Murray Central Station district evolves into a high-quality and attractive place with a thoughtful network of streets, pathways, open spaces, plazas, and corridors.



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