Carson City JAC Transit Center Study

Final Report

July 17, 2023

Prepared for the

Carson City Department of Public Works

Prepared by LSC Transportation Consultants

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Prepared by

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TABLE OF CONTENTS

CHAPTER *PAGE*

Chapter 1: Introduction 1

Chapter 2: Existing Conditions 3
- Existing Downtown Transfer Plaza 3
- Recent Planning Documents 4
- JAC Operations and Ridership 5
- Transit Center Benefits to Ridership 7
- Regional Transit Services 9
- Existing Zoning Ordinances and Allowable Land Uses 10
- Staff Interviews 11

Chapter 3: Transit Center Program Needs and Potential Sites 13
- Long-Term Program 13
- Near-Term Upgrades to the Existing Site 15
- Potential Locations 16

Chapter 4: Public Outreach 23
- Online Community Survey 23
- On-Site Pop-Up Outreach 26

Chapter 5: Site Analysis and Initial Recommendations 27
- Operational Impact by Site 27
- Initial Site Ranking and Preliminary Recommendations 27

Chapter 6: Detailed Analysis of Three Conceptual Sites 31
- Existing Downtown Transfer Plaza Site – Long-Term 31
- Robinson Street Site 39
- Spear Street Site 44

Chapter 7: Benefit Cost Analysis 49
- Analysis of Transit Ridership Impacts 49
- Analysis of Quantifiable Transit Benefits 50

Chapter 8: Focused Site Scoring and Comparison 57
- Analysis of Focus Sites 57

Chapter 9: Study Findings and Recommendations 59
- Key Study Finding 59
- Recommendations 60

LIST OF TABLES

TABLES *PAGE*

Table 1: JAC Fleet Inventory 6
Table 2: JAC Transit Fixed Route Annual Ridership 6
Table 3: Average Daily Ridership 7
Table 4: JAC Fixed Route Ridership by Hour of Day 8
Table 5: JAC Transit Facility Space Requirements 14
Table 6: Survey Summary of Questions 1, 2, 4, 5, and 6 23
Table 7: Blocks Deviated from Route by Site 27
Table 8: Scoring of Initial Site Alternatives 29
Table 9: North Plaza Street Southbound Traffic Counts 36
Table 10: Existing Site Transit Center Cost Estimate 38
Table 11: Robinson Street Site Transit Center Cost Estimate 43
Table 12: Spear Street Site Transit Center Cost Estimate 47
Table 13: Transit Benefits—Base Year 51
Table 14: Motorist Travel Cost Reduction Benefits 51
Table 15: Air Emission Reduction Benefit 52
Table 16: Safety Benefits 53
Table 17: Annual Costs and Benefit-Cost Ratio 55
Table 18: Updated Weighted Score of Site Alternatives 57

LIST OF FIGURES

FIGURES *PAGE*

Figure 1: Average Hourly Boarding by Route -- Weekday 8
Figure 2: Average Hourly Boarding by Route -- Saturday 9
Figure 3: JAC Transit Center Site Options 17
Figure 4: Question 3 - Why Do You Not Use the JAC Transit Services 24
Figure 5: Question 9 - What Sorts of Amenities Would You Like to See Added to This Location? 25
Figure 6: Question 10 - How Do You Feel About Relocating the Transit Center 25
Figure 7: Potential JAC Transit Center at Existing Site 32
Figure 8: Cross Section of N. Plaza St. with Transit Center at Existing Site 33
Figure 9: Potential JAC Transit Center at Robinson Street Site 40
Figure 10: Cross Section of E. Robinson St. with Transit Center 41
Figure 11: Potential JAC Transit Center at E. Speak St. Site 45

Appendix A: Driver Survey Results
Appendix B: Potential Site Information

Chapter 1
INTRODUCTION

Public transportation is an important service in and around Carson City. Transit services provide mobility to residents, including access to important educational, medical, recreational, social, and economic services. In addition to being important to residential quality of life in Carson City and beyond, public transit services assist in supporting educational programs, public and private employers and social service programs throughout the region.

In an effort to better serve Carson City, the City commissioned LSC Transportation Consultants to conduct the following study to explore the possible relocation and/or expansion of the existing transit center (the Downtown Transfer Plaza) along the east side of Plaza Street south of Washington Street to better serve existing passengers as well as to accommodate future transit service growth. This facility would serve as the hub for the Jump Around Transit (JAC) public transit service, as well as the key downtown Carson City stop for other regional transit services such as Washoe RTC Regional Connector service to Reno, Tahoe Transportation District service to Minden/Gardnerville, and Eastern Sierra Transit Authority service to Bishop and Reno.

This document first presents a review of the existing transit center followed by a summary of other plans regarding the transit service and the downtown area. Future transit center needs are then evaluated, including input from transit staff. An initial set of potential sites are described and assessed followed by a summary of public outreach efforts, including an on-site popup workshop and public survey. A focused set of three sites is then evaluated. Based on this detailed analysis, recommendations are presented towards a preferred site.

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Chapter 2
EXISTING CONDITIONS

EXISTING DOWNTOWN TRANSFER PLAZA

The current transit hub of the JAC fixed route system is the Downtown Transfer Plaza. This limited facility consists of the curb along the eastern side of N. Plaza Street between E. Robinson Street and E. Washington Street, as well as a portion of the curb on eastbound E. Washington Street just east of Plaza Street and a portion of the curb on westbound Robinson Street just east of Plaza Street. This site is adjacent to the Federal Building, which encompasses the entire block. There is a total of 260 feet of curb length available for buses along Plaza Street, excluding a driveway to a parking lot. This is sufficient to accommodate up to six vehicles at one time. At present, up to four JAC buses are at the Plaza at peak times (at 30 minutes past each hour). Up to approximately 40 passengers can be waiting for buses at peak times.

Beyond the curbside bus loading locations, this facility consists of a 14-foot-wide sidewalk (sufficient for wheelchair loading and unloading), along with an 8-foot-long shelter at the south end and a 20-foot-long shelter at the north end. There are three 6-foot benches and a bike rack.

Existing Site Conditions: Strengths and Weaknesses

The current transit center location has both benefits and challenges. The current transit center provides a reasonably convenient location with regards to downtown activity centers as well as efficient bus movements into and out of the site. It is also well located within the fixed route system. However, there are numerous challenges to the existing transit plaza, including the following:

- It lacks restroom facilities for drivers. Drivers currently have to depart their buses (requiring all passengers to disembark) and go into the Carson Nugget to use their restrooms (on a “gratis” basis). This additional walk time can add roughly five minutes to the layover time at the transit plaza and can add to service delays.

- It provides insufficient protection from the elements. In particular, the west facing shelters lack adequate seating capacity for peak waiting loads, provide little to no shade in the late afternoon on hot summer days, and deliver scant protection from wind-driven rain and snow.

- Because of the limited seating and shade opportunities, passengers are tempted to wander into the landscaping areas of the Federal Building, potentially causing damage.

- Lighting is limited to two streetlights and low lighting in the shelters. As a result, passengers are often boarding and alighting in dark locations, adding to safety concerns.

- Walks of up to 400 feet are required between Intercity and JAC buses, inconveniencing passengers and increasing the delays as passengers transfer between services.

RECENT PLANNING DOCUMENTS

JAC Transit Development and Coordinated Human Services Plan (2019)

The Carson City Regional Transportation Commission (RTC), using funding through the Nevada Department of Transportation (NDOT) and the Carson Area Metropolitan Planning Organization (CAMPO), retained LSC Transportation Consultants, Inc. to prepare a Transit Development and Coordinated Human Services Plan (TDCHSP) for the Jump-Around-Carson (JAC) public transit program and the CAMPO service area in 2019. This planning process provided an opportunity to develop integrated short- and long-range recommended alternatives for the JAC public transit program while meeting the needs of the region's human services organizations by promoting coordination amongst agencies.

As a long-term capital investment, the plan stressed the importance for a transit center that would be able to accommodate the needs of the transit program for at least the next twenty years. The following describes design elements and site consideration the plan recommended for consideration.

Design Elements

Specific design elements that should be considered in the redesign of the future transit center should include the following:

- Bus Loading Area: The facility needs to accommodate up to four JAC fixed route buses as well as a Washoe Intercity bus or a TTD bus. The space should also accommodate a downtown microtransit shuttle vehicle. Lighting should be provided for all loading areas.

- Passenger Facilities: A climate controlled indoor waiting area should be provided with a minimum floor area of 600 square feet (such as 15' X 40'). This waiting area should have clear lines of sight for security purposes, as well as a clear view of approaching buses. Public restrooms are not necessary so long as public restrooms are available within a block walk. In addition, outdoor shaded passenger waiting areas should be provided with benches, totaling approximately 1,500 square feet in area.

- Bicycle racks or other bicycle parking should be provided.

- Driver Facilities: As the key facility for the transit drivers, restroom facilities should be provided. In addition, a separate entrance (with key card access) should be provided to a portion of the space that includes a driver break room as well as the restrooms.

- Improved Passenger Information: "Real time" information screens should be provided in the facility that provides information on schedules, service interruptions and public notices.

- A small utility space (approximately 160 square feet) should be provided for custodial storage.

Site Location Considerations

The following are key elements in considering the location of a transit center. These key elements were considered in the creation of the potential site criteria evaluated in Chapter 5.

- Adequate size to accommodate the transit program.
- Proximity to the center of the local transit service area, to minimize out-of-direction travel time and costs. Given the many times per day that transit vehicles travel to and from the site, even an additional distance of a few blocks can add thousands of dollars to the annual operating costs.
- Convenient access for regional transit routes that minimize out-of-direction travel.
- Adequate access, thus avoiding excessive delays for transit routes.
- Convenience to major trip destinations. As the single location most accessible by public transit, it benefits the overall effectiveness of transit services if there is a concentration of transit trip generators (shopping, community facilities, public offices, etc.) within a convenient walk distance of the transit center.
- High visibility that enhances the community's awareness of transit services.
- Personal security and safety. Locations in areas with a high crime reputation (deserved or not) should be avoided, and locations that have greater vehicle and pedestrian activity are preferable.
- Appropriate zoning and consistency with community plans.
- Availability of adequate utilities.
- Lack of known hazardous soils.

In addition to transit center facility study recommendation, the plan also suggested rerouting specific routes, improving various bus stops, and implementing a strong marketing plan.

JAC OPERATIONS AND RIDERSHIP

Fleet Inventory

As shown in Table 1, the JAC transit program has a total of 17 vehicles in the fleet, along with a staff car, including 5 designated for fixed route service, 5 used for paratransit service, and 7 which are used in either fixed route or demand responsive service. The demand response vehicles range from a seating capacity of 5 to 21 seats and one wheelchair position, although additional seats may be moved to accommodate up to three wheelchairs at a time. The fixed route vehicles range in capacity from 21 to 32 seats and have one or two wheelchair positions and a two-capacity bike rack. Vehicles are stored at 3770 Butti Way and maintained at fleet maintenance facility located at 3505 Butti Way.

Table 1: JAC Fleet Inventory

Model Year	Vehicle #	Type	Use	Length
2008	2233	JAC Explorer	Staff	--
2012	4238	JAC Bus	Para	21'
2012	4239	JAC Bus	Para	21'
2015	4241	JAC Bus	Para	24'
2015	4242	JAC Bus	Para	24'
2016	4243	JAC Bus	Fixed	35'
2016	4244	JAC Bus	Fixed	35'
2016	4245	JAC Bus	Fixed	35'
2019	4249	JAC Bus	Fixed	34'
2019	4250	JAC Bus	Fixed	34'
2020	4253	JAC Van	Para	--
2020	4251	JAC Bus	P1/F	24'
2020	4252	JAC Bus	P1/F	24'
2022	4254	JAC Bus	P/F1	28'
2022	4255	JAC Bus	P/F1	28'
2022	4256	JAC Bus	P/F1	28'
2022	4257	JAC Bus	P/F1	28'
2022	4258	JAC Bus	P/F1	28'

Source: Carson City Department of Public Works, 2023

Historical Annual Ridership

Overall JAC ridership along fixed routes has varied over the last decade with pre-COVID levels resulting in a decrease in ridership by 11 percent (Table 2). During that time, the route that experienced the greatest decline was Route 3 with a decrease in ridership by 23 percent between FY 2014-15 and FY 2018-19. Over the pre-COVID fiscal years of 2017-18 and 2018-19 overall ridership declined by 10 percent, with the greatest decrease in ridership occurring along Route 3 (a drop of 14 percent). However, since Covid-19, ridership has grown to close to the pre-covid systemwide ridership (168,519 passengers). This is an increase of 27 percent from FY 2020-2021, the start of the Covid-19. This shows the system's ability to recover and demonstrates a continued need for public transit in the region.

Table 2: JAC Transit Fixed Route Annual Ridership

	Fiscal Years								Pre-Covid Trends		Post Covid Trend
JAC Route	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	5 Yrs	2 Yrs	2020-2021
Route 1	54,213	54,092	50,840	53,453	48,095	-	-	-	-11%	-10%	-
Route 2A	43,657	44,360	42,318	45,587	41,243	-	-	-	-6%	-10%	-
Route 2B	39,117	36,947	37,062	42,451	39,680	-	-	-	1%	-7%	-
Route 3	59,790	56,223	47,986	53,636	46,166	-	-	-	-23%	-14%	-
WNC	264	228	224	33	--	-	-	-	--	--	-
Total	197,041	191,850	178,430	195,160	175,184	166,286	132,760	168,519	-11%	-10%	27%

Note: Ridership by Route for FY 2019 through 2021 was unavilable at the time of this report.
Source: Ridership by Route Data, Carson City Public Works Department, Received March 15, 2019

Pre-COVID Ridership by Route

Weekly ridership along each route is depicted in Table 3. As shown, weekday ridership is greatest on Route 1, with 185 passengers per day, followed by Route 3 with 180 passengers per day. The average daily weekday ridership along all routes is 665 passengers per day. The average ridership on Saturdays is 108 passengers along Route 1, followed by 92 passengers along Route 2A. The total ridership along all routes is 345 passengers on Saturdays.

Table 3: Average Daily Ridership

	Route 1	Route 2A	Route 2B	Route 3	*Total*
Weekday	185	155	144	180	665
Saturday	108	92	81	64	345

Source: Ecolane JAC Ridership data provided March, 2019

Hourly ridership illustrates how many passengers will possibly need to use the transit center at one time. As depicted in Table 4 and Figures 1 and 2, hourly ridership peaks around noon with 86 passengers, followed by 8:00 AM with 67 passengers. On Saturdays the peak is 63 passengers around 3:00 PM. Note that many passengers stay on the bus while at the transit center.

Based on this data, it is estimated that approximately 360 passengers passed through the existing transit center over the course of an average weekday prior to the pandemic. Of these, approximately 240 passengers transfer between buses and an additional 120 passengers ride through without changing buses.

TRANSIT CENTER BENEFITS TO RIDERSHIP

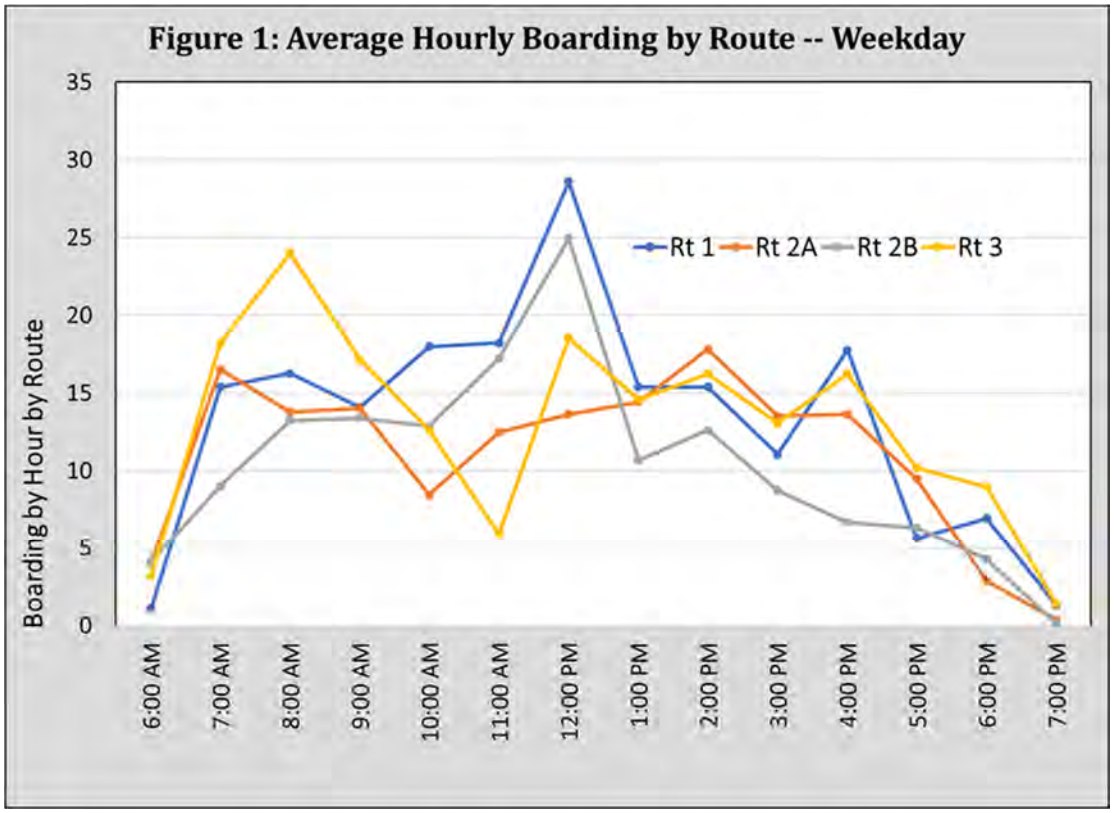
The professional literature regarding the ridership increase generated by new transit facilities is limited. This is in large part because service enhancements are typically implemented along with a new center, making it difficult to define the ridership benefit specifically resulting from the new facility. Bus Rapid Transit planning guides[1] indicate anecdotal evidence ranging from a negligible impact up to a 10 percent increase. Given the importance of a central transit center to the JAC transit system and as a stop to serve the surrounding region (through other regional services), a modest (4 percent) increase in ridership on the routes serving the new potential transit center can be applied. Based on pre-COVID ridership (FY 2018-19), this would be equal to an additional 7,000 passenger-trips per year.

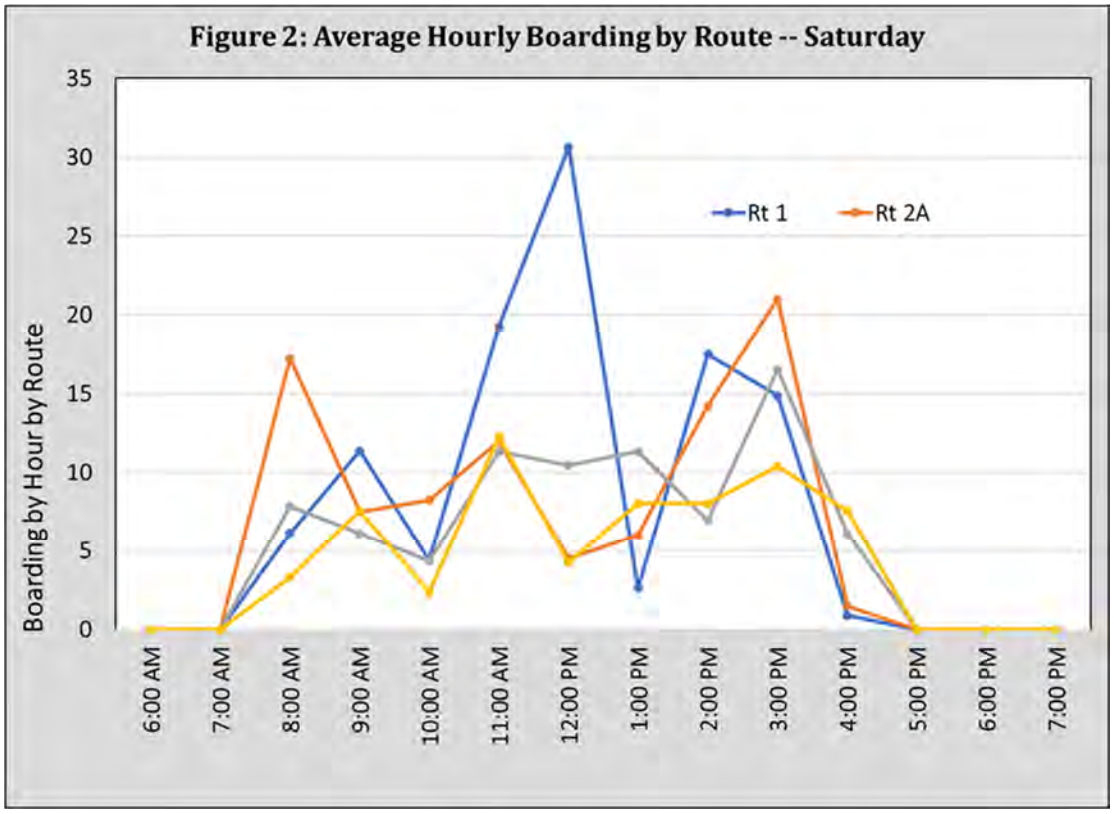
[1] *Such as the Transit Cooperative Research Program Report 90: Bus Rapid Transit, 2003.*

Table 4: JAC Fixed Route Ridership by Hour of Day

Hour Beginning	Average Weekday					Average Saturday				
	Rt 1	Rt 2A	Rt 2B	Rt 3	Total	Rt 1	Rt 2A	Rt 2B	Rt 3	Total
6:00 AM	1	4	4	3	12	--	--	--	--	--
7:00 AM	15	17	9	18	59	--	--	--	--	--
8:00 AM	16	14	13	24	67	6	17	8	3	35
9:00 AM	14	14	13	17	59	11	7	6	8	33
10:00 AM	18	8	13	13	52	4	8	4	2	19
11:00 AM	18	12	17	6	54	19	12	11	12	55
12:00 PM	29	14	25	19	86	31	4	10	4	50
1:00 PM	15	14	11	15	55	3	6	11	8	28
2:00 PM	15	18	13	16	62	18	14	7	8	47
3:00 PM	11	14	9	13	46	15	21	17	10	63
4:00 PM	18	14	7	16	54	1	1	6	8	16
5:00 PM	6	9	6	10	32	--	--	--	--	--
6:00 PM	7	3	4	9	23	--	--	--	--	--
7:00 PM	1	0	0	1	3	--	--	--	--	--
TOTAL	185	155	144	180	665	108	92	81	64	345

Source: Ecolane data. Totals for March 2019, factored by hourly ridership proportions for Sept and Oct 2017.





REGIONAL TRANSIT SERVICES

Regional transit services are essential for transit dependent community members needing to get to medical appointments, job opportunities, and social services. The transit plaza currently facilitates the connection of three regional routes, as described in further detail below.

Tahoe Transportation District (TTD) Service

The TTD operates Route 19X (Lake and Valley Express Service) connecting Carson City with Gardnerville, along with Route 22 that provides service between Gardnerville and South Lake Tahoe. The Tahoe Transportation District Route 19X serves a stop on the south side of E. Washington Street east of N. Plaza Street. This stop is served five times a day but not at the same time as JAC. Both routes provide daily connections between the South Shore area of Lake Tahoe and the Carson Valley. Route 19X offers service from 7:00 AM until 7:40 PM. This route begins in Gardnerville, Nevada at the Douglas County Community and Senior Center located at 1329 Waterloo Lane and continues north along the US 395 corridor through Minden, Nevada.

The northbound route ends at the Downtown Transfer Plaza in Carson City, where it turns around before heading south for the return trip of this bi-directional route through Carson Valley. Transfers to Route 22 at the Douglas County Community and Senior Center provide access to Stateline, Nevada in the Tahoe Basin. Northbound buses arrive at the Downtown Transfer Plaza at 7:40 AM, 9:40 AM, 4:10 PM,

6:10 PM and 7:40 PM, while southbound departures are provided at 6:15 AM, 7:45 AM, 9:45 AM, 4:15 PM and 6:15 PM.

Washoe Regional Transportation Commission (RTC) Regional Connector Service

The Washoe RTC Regional Connector service consists of commuter transportation between Reno and Carson City between 5:47 AM and 6:37 PM. The route serves five stops in total, including three in Reno (4th Street Station, Meadowood Mall, and the Wal-Mart at Damonte Ranch) and two in Carson City (including the Downtown Transfer Plaza and the southern terminus at the NDOT offices on Little Lane). Southbound, six runs per day are operated, arriving in Carson City at 6:35 AM, 7:05 AM, 7:35 AM, 3:59 PM, 4:59 PM and 6:24 PM. Northbound, runs depart Carson City at 6:50 AM, 7:20 AM, 7:50 AM, 4:17 PM, 5:17 PM and 6:42 PM.

The RTC Regional Connector service provides connections to both JAC and TTD services. Transfers to the JAC service can be made in Carson City at the Downtown Transfer Plaza. TTD passengers on most runs will need to first transfer to JAC before transferring to RTC Intercity.

Eastern Sierra Transit Authority (ESTA) Service

ESTA currently operates their Hwy 395 routes running between Reno, Nevada and Lancaster, California. The 395 North Route leaves Lone Pine at 6:10 AM and arrives in Carson City at 11:17 AM, making a stop Walmart in northern Carson City on to Reno and Sparks (it does not serve a stop in the downtown area). Southbound, this route departs Reno at 1:30 PM, stopping at Walmart in Carson City at 2:15 PM. This route runs Monday through Friday and does not operate during federal holidays. As a part of their Short Range Transit Plan, consideration is being given to providing service seven days a week.

EXISTING ZONING ORDINANCES AND ALLOWABLE LAND USES

The Carson City Downtown Mixed-Use Consolidated Development Code established a form-based zoning code for the area. It is designed to accommodate a variety of uses based on how they relate to one another. The Downtown Mixed Use (DT-MU) areas established in downtown Carson City include the following sub areas:

- Main Street Mixed-Use: Provides opportunities for infill and redevelopment, while retaining the traditional "Main Street" character and scale of Carson Street. To support this objective, building heights will be limited along the Carson Street frontage and adjacent to the State Capitol Complex and other historic structures, but will be permitted to "step up" away from the street – providing for a broader range of development opportunities. Active uses, such as retail shops and restaurants, as well as urban residential units, are desired throughout the character area to promote a lively street environment and expanded hours of activity.

- Urban Mixed-Use: Provides for urban-intensity mixed-use development in areas of Downtown that contain larger tracts of vacant or underutilized land. It is intended to provide opportunities

for concentrations of active uses such as convention space, casinos, hotels, urban residential or similar uses which typically have more intensive land requirements than could be readily accommodated in other areas of Downtown. To support these objectives, building heights in this area are permitted to be higher than in other character areas within Downtown, provided appropriate transitions are provided to the more modest scale of development found along Carson Street, the surrounding neighborhoods, and the State Capitol Complex.

- Neighborhood Transition: Provides a more gradual transition between the more urban patterns of development desired in other locations within Downtown and the surrounding residential neighborhoods. To support this objective, building heights are much more restrictive than in other character areas and are required to "step down" towards the surrounding neighborhood and building design becomes less blocky and urban and more residential in character. Uses in this area will tend to be primarily a mix of office and residential, however, a broad range of uses is permitted provided the design of the uses is compatible with the established character of the area.

Each of these districts permit a "Transit Passenger Facility" as an allowed, primary permitted use.

Land Use Compatibility Analysis

Sites 2 through 5 are within 400 feet of the existing Transfer Plaza. The area is characterized by commercial businesses, government offices, and large surface parking lots. When considering equity to the area, these sites are not expected to result in any new or increased impacts to the area due to the potential sites being such a short distance to the existing site with no adjacent sensitive land uses. Site 6 however is within 100 feet of a residential neighborhood boundary. For this reason, the use of Site 6 may generate inequitable impacts to adjacent residents.

In addition, redevelopment of the area has been long planned by nearby parcel owners. Evaluation and an ultimate recommendation for a long-term transfer center site may be affected by redevelopment. A downtown transfer center in this area of Downtown Carson City can enhance possible land uses by providing options for transportation mode and alternatives to auto access. Working in partnership with existing development or planned redevelopment could provide additional, mutual benefit to all parties.

STAFF INTERVIEWS

A series of questions were distributed in the form of a paper survey to drivers during a safety meeting conducted during September. Questions ranged from types of preferred amenities to how many passengers are typically observed at any given time at the existing transit center. The four completed surveys are included under Appendix A and the results summarized below.

Question 1: What are some pros and cons about the existing location along Plaza Street by the Federal Building?

- Pros included the following:
  - Wide parking area to pull in and out from.
  - Central location in town.
  - Close proximity to casinos.
- Cons included the following:
  - Fire hydrant location is too close to curb.
  - No restrooms.
  - No food or beverage options.
  - Lack of designated bus bays.

Question 2: As a driver, what should site planners consider when evaluating a site for a transit center (access, circulation, etc.)

- Need for restrooms.
- Parking provision.
- Shelter orientation that blocks weather.
- Marked bus bays for each bus.
- Accessible pedestrian walkways.

Question 3: What are some transit center features you would like to see included in the new location?

- Of the amenities listed in the survey, security cameras and lighting and restrooms for drivers ranked as the most desirable amenities.
- Public restrooms, additional seating, and a small office space ranked lowest.

Question 4: What is the greatest number of people you have seen waiting at the current Plaza Street stop?

- Two drivers mentioned that they typically observe between 10 to 20 people waiting at one time while the other two noted 20 to 30 and 30 to 40 people at one time.

Question 5: Is there anything else you would like to share regarding the evaluation of a future transit center?

- Only two drivers replied to this question. One mentioned that the transit center should be driver friendly with a one-way in and out for bus traffic only. The other asked what the future size and make of JAC vehicles would be.

Overall, it appeared that there is a need for driver restrooms. They also had input on the existing location needing some improvements regarding improving passenger shelter, security and the location of the fire hydrant if this site was to remain the Downtown Transfer Plaza.

Chapter 3
TRANSIT CENTER PROGRAM NEEDS AND POTENTIAL SITES

A potential site program was developed for two general scenarios: an optimal long-term improvement scenario (for a variety of sites) as well as a near-term update to the existing transfer site.

LONG-TERM PROGRAM

A development program for the transit center has been prepared, based on the following:

- Discussions with City and JAC staff, as well as the driver surveys.
- Evaluation of the existing and recent (pre-pandemic) service and ridership data.
- Review of forecasts for transit service and for growth in the Carson City area.
- Review of transit centers that have proven effective and efficient in similar-sized communities and transit systems with a hub route design.

The following have been indicated as desired and needed for a future transit center to accommodate service and ridership growth. A summary of these perceived needs, as well as their estimated space requirements, is shown in Table 5. The following describes what will be included in the new transit center:

- A small climate-controlled building with the following features:
    - Indoor and outdoor passenger waiting areas. "Indoor" areas may consist of a large shelter or shelters with heating elements.
    - One staff restroom.
    - One small office space for JAC staff, including a public counter area that can be locked.
    - Real-time public information, including a screen showing mapped location of buses and a departures screen.
    - Vending machines for snacks/drinks.
    - Closet for janitorial supplies, with space for electronics.

    In total, this building should be approximately 1,306 square feet in floor area to accommodate long-term demand.

- Vehicle bays as follows:
    - Seven total bus bays including:
        - Four bus bays accommodating 35' buses for current service, with a potential of two additional bays for future growth.
        - One bus bay accommodating a 40' Intercity (RTC, TTD, ESTA) bus.

Table 5: JAC Transit Facility Space Requirements

Program Element	Sq.Ft. per Unit Standard	Square Feet of Floor Area
Office Space		
Office Space/Counter	250	250
Subtotal: Administrative Space		*250*
Building Support Space		
Restrooms (One single stall restroom w/no public access)	150	300
Janitor Closet	36	36
Utility space (electronics, water heater)	120	120
Subtotal: Building Support Space		*456*
Indoor Passenger Waiting Area		
Standing (20 passengers)	10	200
Sitting (20 passengers)	20	400
Subtotal Waiting Area		600
Subtotal Building Footprint		1,306
Landscape/Plaza Area		
Outdoor waiting area (benches)		600
Pedestrian Circulation		1,600
Bicycle Racks (5 racks)	19	95
Subtotal Plaza Area		2,200
Landscaping Area (25 percent of Plaza)		550
Total Landscape/Plaza Area		2,750
Total Building Footprint and Landscape/Plaza Area		4,056
Bus Bays (Seven Bus Bays at 35' - 40')	800	5,600
JAC Assist/Operational Parking (2 parking spots)	360	720
Total Site Development Program		**10,376**

- One parking space for JAC Assist vehicle (25') that could also be used for crew van or supervisor vehicle.
- Optimally, 1 space (at center or nearby) to stage one additional JAC bus in order to swap buses over the course of the day.

- Bike parking for up to 10 bikes. Should be covered and provide locking capability. No need for bike lockers.
- One single stall restroom for staff (not accessible to the general public).
- Security improvements (lighting and cameras).
- Optimally, some park-and-ride auto spaces would be provided as part of the facility, or nearby. This would be for intercity (Regional Connector or TTD) service, as there is no demand for JAC park-and-ride parking. Typical park-and-ride patterns for intercity service are that passengers tend to use the last stop served in a community rather than in the center of a community, which reduces the need for park-and-ride spaces in downtown Carson City.

NEAR-TERM UPGRADES TO THE EXISTING SITE

Depending on funding availability, staff availability and the need to coordinate with adjacent property owners, implementing the full site program discussed above may take several years or more. It is thus useful to also define a set of improvements to this existing site that can meet some of the project goals (enhancing the passenger environment, improving security, and reducing conflicts with adjacent properties) at a lower cost.

Upgrade the existing site would generally include the enhancement of features to address the most of basic of identified challenges to provide immediate short-term site safety and security solutions. The following is a summary of the upgrades:

- Expanded Bus Shelters – The existing shelters only provide covered seating for up to 8 riders. Given current ridership activity and the sometimes harsh environment, the lack of shelter impacts waiting passengers. In particular, summer heat drives some passengers to use nearby trees on private property for shade. Seating within shelters for a minimum of 24 passengers should be provided. Note that seating should be designed to deter sleeping in the shelters. Depending on the size of shelters available, this would consist of 2 to 4 additional shelters. Sign holders should be included in the shelters to enhance the ability to provide service information.

- Additional Benches – Benches should be provided at the bus stop along E. Washington Street and E. Robinson Street.

- Improved Fencing -- The existing chain-on-post fencing along the back of sidewalk should be replaced with a higher fence (on the order of 3 feet in height) to discourage use of the adjacent lawn area. Note that this would not change the access to the existing monument.

- Upgraded Lighting – At present, lighting is limited to a single central streetlight and lighting within the shelters. Additional street lighting illuminating the sidewalk (lower height, placed at the back of the sidewalk) consisting of 4 to 6 additional fixtures would enhance security.

- Relocation of the Fire Hydrant or other roadside elements – At present, there is a fire hydrant located behind the face of curb on the east side of N. Plaza Street opposite E. Caroline Street. It conflicts with the ability to load/unload passengers, and particularly to deploy the wheelchair lift, and should be relocated to the back of the sidewalk.

- Pavement Patching and Reconstruction – A moderate level of pavement and sidewalk improvements are warranted for ADA Compliance to fix cracking, potholes, damaged curb and gutter and uneven pavement.

- Signing and Striping – A monument sign (on the order of 3 feet in height and 6 feet in width) should be provided stating “Carson City Transit Center” within the existing right of way on the southeast corner of N. Plaza Street and E. Washington Street (just to the north of the existing

utility poles). In addition, pavement striping to designate the outer edge of the bus loading zones should be provided, and a painted crosswalk across N. Plaza Street south of E. Washington Street.

These upgrades do not preclude the construction of any future improvements on this or another site.

According to the *Transit Capacity and Quality of Service Manual*, 3rd Edition (TCRP, 2017) (p 4-4) 7 to 10 square feet per standing waiting passenger is recommended for a transit facility. Sitting passengers require approximately 20 square feet per passenger. Assuming that half are standing and half are sitting (as the "pulse" nature of the JAC system means than many passengers wait only a few minutes), this indicates that the provision of between 450 and 600 square feet of waiting area should be considered for a future transit center, preferably the higher figure. A similar area should be provided for outdoor waiting areas.

Including bus bays, parking areas, building area and landscaping areas, as shown in Table 5 the space that is selected would ideally require between 8,400 and 11,300 square feet total to accommodate near term and future growth.

POTENTIAL LOCATIONS

In discussion with City and JAC staff, a total of six potential locations for a future transit center were identified. Reflecting the results of the Transit Development/Coordinated Human Services Plan, only sites within the general downtown area (which provides for efficient transit operations) were considered. These sites are described in further detail below and shown in Figure 3. A more in-depth page summary of each site is also included under Appendix B. In addition, for the purpose of this study, strengths and weaknesses of each site are discussed, focusing on the availability of the site, impact on transit/traffic opportunities, impact on access to nearby transit destinations, constructability factors such as onsite utilities, and impacts on downtown parking spaces.

Additional sites may be available in the future because of changes to land use and redevelopment; however, any potential downtown transit center should be centrally located in this general region as it provides the best option of the JAC operations and passengers. In addition to the six sites, the existing site (Site 1) was evaluated both regarding a long-term new facility as well as for a minimum alternative to provide short-term benefits to JAC, its passengers, and the adjacent property owner, as was discussed further in the previous section.

Site 1 – Downtown Transfer Plaza

This is the existing site located west adjacent to the Federal Building on the east side of Plaza Street between Robinson Street and Washington Street. It consists of approximately 200 feet of curb length and is sufficient enough to accommodate up to six vehicles at one time. At present, up to four JAC buses are at the Plaza at the peak times (at the bottom of the hour). In its current configuration, there is a limitation in its space to accommodate more than six vehicles at one time. There is also not sufficient space in the existing 14-foot-wide sidewalk to provide a building.

Figure 3
JAC Transit Center Site Options

A potential option to develop a transit center at this site would be to convert N. Plaza Street to one way (northbound) between E. Robinson Street and E. Washington Street. With 54 feet between the existing west curb face and the eastern back of sidewalk and elimination of on-street parking on the west side of the street, sufficient width would be available to provide a single northbound travel lane as well as space for a building site (with pedestrian circulation) and bus bays to the north and/or south.

- Strengths: Familiarity and functionality at current service levels. High visibility along Washington Street.

- Weaknesses: The current property owners and employees of the Federal Center parcel do not like the loitering that occurs on site. There is also a lack of existing space to expand and include any amenities for drivers and passengers such as restrooms or weatherproof shelter. However, removal of on-street parking on the west side of Plaza Street and/or conversion to one-way northbound operation could provide the footprint needed for a facility building. As the lack of adequate shelter (such as from the sun) is a factor in waiting passengers entering the Federal Building site, improving the facility along with fencing could reduce the loitering issue. Traffic reconfiguration associated with one-way street conversion.

Site 2 - V&T Train Station

The building originally constructed as the Virginia and Truckee Train Station is located along the south side of Washington Street just west of Plaza Street. Currently owned by the Masonic Lodge, it is an existing structure of approximately 6,000 square feet. The owner has indicated they are not currently interested in a sale or a joint use. Even so, the site could potentially provide several benefits to downtown and to JAC.

Bus bays would remain along Plaza Street with three bays proposed in the northbound directions, and three bays proposed in the southbound direction. One additional bay and space for a JAC crew car would be located along Washington Street. This configuration would require JAC riders to cross the street; however, curb extensions and enhanced crosswalk features could be added at both the Washington Street and Caroline Street intersections. The majority of the V&T Station would continue function without change. The restroom and office facilities would be located in the eastern end of the existing building. These facilities could be jointly shared by the owners of the building, by the drivers, and available for the public.

- Strengths: Location convenient to downtown land uses. The building has a history of public transportation use. Adjacent to existing downtown transfer center area. Familiarity and functionality at current service levels. High visibility along Washington Street. Partnership with the building owner to provide services and maintenance of the new public facilities. The building likely has heating and utility connections.

- Weaknesses: The current property owners are currently not interested in a partnership with the City. Once constructed, there would be limited opportunity to expand and include future

amenities in the building for drivers and passengers. The building would have limited indoor passenger waiting area as the lack of adequate shelter (such as from the sun) is a factor in waiting passengers of the existing site in front of the Federal Building site, but this could be mitigation with additional shelters of canopies. The station is listed on the National Register of Historic Places and as such would require particularly close coordination with the State Historic Preservation Office.

The site is not recommended for further analysis as part of this current study, due to the owner's current lack of interest. If the owner reconsiders a future partnership with the City, this location provides an optimal location to meet the basic facility needs for JAC. The V&T Station can continue to serve as a transportation hub for Carson City preserving the long history of the building.

Site 3 - Coin Lot

This site is located along the north side of Caroline Street and the west side of Plaza Street from Caroline Street south to Robinson Street. This is the northeast portion of the small block formed by Caroline Street, Plaza Street, Robinson Street and Carson Street and is currently the site of Carson City Coin (in the southwest corner) with the remainder consisting of a surface parking lot. The owner indicates that the existing parcel is not available. Setting aside the private lot, the use of existing public right-of-way was considered. Caroline Street could be converted to one-way eastbound operation, providing adequate width on the south side of the right-of-way for the transit center building (closing the eastern access point to the coin lot, but preserving the western access point).

One bus bay could be provided on the south side of Caroline Street between the western lot driveway and the building, and two bus bays could be provided on the west side of Plaza Street between Caroline Street and Robinson Street. However, other bus bays would need to be provided across Caroline Street along the west side of Plaza Street and on the east side of Plaza Street. This would require JAC passengers to cross streets while transferring between buses.

- Strengths: Location convenient to downtown land uses.

- Weaknesses: Traffic changes of one-way street conversion, including changes to parking lot access and impact to Shell station access. Requires passengers to cross travel lane while transferring between buses. Constrained space between surface parking and public streets would provide less potential for landscaping and less attractive environment.

Site 4 - Robinson Street

Under this site, the transit center would be located along the north side of Robinson Street between Stewart Street and Plaza Street, with some bus bays on the east side of Plaza Street just north of Robinson Street. This stretch has a wide (16 foot) existing sidewalk and is currently where the RTC Regional Connector serves passengers heading northbound to Reno. Given the traffic activity on Robinson Street, it is probably not feasible to convert it to one-way traffic. Expanding the area available

for a transit center by narrowing the existing 32-foot wide street would therefore be limited to reducing Robinson Street to two 12-foot travel lanes (an additional 8 feet), yielding 24 feet total without using Federal Building land. Considering the need for an ADA-accessible sidewalk and the building floor area identified in Table 5, use of this site would require some land from the Federal Building parcel (such as the western 12 parking spaces in the southernmost row of perpendicular parking spaces.

- Strengths: The site is already being used by Washoe RTC Regional Connector and is likely a familiar location being less than a block from the existing transit center. It is also the most efficient in access by existing routes, though as mentioned above, these impacts are minor.

- Weaknesses: As Robinson Street is too busy to close or convert to a 1-way street, this site would require land from the Federal government, which may be very difficult to negotiate. It could also have many of the similar weaknesses the current transit center location experiences including lack of space for amenities and its location on federally owned parcel with negative employee opinions regarding the stop location.

Site 5 - Spear St. West

This site consists of the westernmost block of Spear Street just east of the Carson Nugget (between Fall Street and Stewart Street. The existing-curb-to-curb width (34 feet) is not sufficient to provide a transit center building, and the owner of the adjacent parking lots to the north and south indicates that the private parcels are not available. However, the existing public right-of way is approximately 66 feet in width (north-south dimension) by 200 feet in length (east-west dimension). This is sufficient to accommodate a center island for the building, with an eastbound one-way bus lane to the north and a westbound one-way bus lane to the south, sufficient to accommodate up to 8 buses at peak time. As shown in Appendix B, at present, off-street parking spaces encroach on the right-of-way. Reconfiguring the lots to provide the transit center space would reduce the total number of spaces by approximately 17 (along with 14 on-street spaces). In addition, as there is not sufficient space for a bus passing lane, buses could be delayed if a bus in front does not depart in a timely manner (such as delays for securing a wheelchair passenger).

- Strengths: As this site is bound by surface parking lots and located at the end of Spear Street that terminates into a parking lot, there are no immediate adjacent land use incompatibility concerns. A center island layout would provide conveniently short walk distances between buses, and the building amenities would be close to all bus loading locations.

- Weaknesses: This site would require removing the existing encroachments (surface parking spaces) to the north and south, resulting in a 31-space reduction in total parking supply. Bus operations could be delayed as buses must depart in the same order they arrive. This location is also non-signalized and could cause issues with left-turns into the stations and with pedestrians crossing the area.

Site 6 – Spear Street East

This would be located along the south side of Spear Street between Stewart Street and North Valley Street. It is currently adjacent to a surface parking lot. The owner of this lot has indicated that the lot (which consists of two parcels) is potentially available for a long-term ground lease. (Note that Federal transit funds are typically available for use on leased sites, so long as the lease term is at least 20 years). This site is approximately 172 feet in the east-west dimension and 85 feet in the north-south dimension. This is sufficient (along with the adjacent Spear Street travel lane) to allow buses to circulate past the individual bus bays.

- Strengths: Sufficient land to provide a central transit plaza allowing convenient walk distances between the bus bays, close proximity between the bays and the transit building, and independent operation of the individual bus bays.

- Weaknesses: This site is adjacent to residential uses to the east and south and lodging uses (including the Nugget Inn) to the north. It is a farther walk from destinations in the area, such as along Carson Street. Buses circulating east of the site could also impact residences.

Other Sites Considered

Other sites were discussed, including the Library and Community Center, but each were found to be too far from the center of the route system and thus would be inefficient to serve. The Old V&T railyard site (N. side of Washington/E side of Stewart Street) was not viable due to possible contamination and lack of an overall master plan for the property.

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Chapter 4
PUBLIC OUTREACH

During the month of October 2021, LSC led a public outreach effort including a community-wide online survey and an on-site outreach event. The survey was advertised on Carson NOW and posted to Carson City municipality Facebook pages.

ONLINE COMMUNITY SURVEY

Questions 1 – 6 – Getting to know our participants.

Questions 1 through 6 were asked to better understand who was taking our survey. As shown in Table 6, 39 percent of participants were between the age of 45 and 64 years old. Ages 25 to 44 years old (25 percent) and 65 to 74 years old (25 percent) made up the second most popular age groups participating in the survey.

Table 6: Survey Summary of Questions 1, 2, 4, 5, and 6

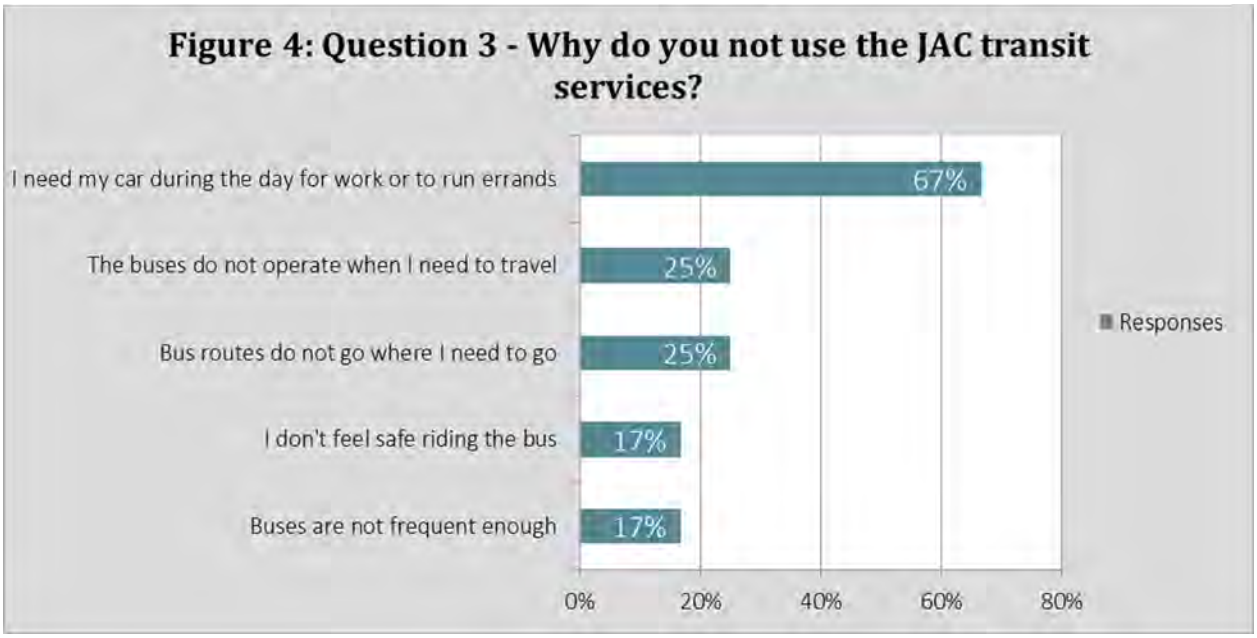
Question		Responses #	Responses %
Q1	What is your age?		
	17 years old or younger	0	0.0%
	18 to 24 years old	1	3.6%
	25 to 44 years old	7	25.0%
	45 to 64 years old	11	39.3%
	65 to 74 years old	7	25.0%
	75 years or older	2	7.1%
Q2	Have you ever used JAC transit services before?		
	Yes	15	53.6%
	No	13	46.4%
Q4	How often do you use JAC transit?		
	5 or more times per week	4	26.7%
	1 to 4 times per week	2	13.3%
	1 to 4 times per month	1	6.7%
	Less than once a month	3	20.0%
	1 to 2 times per year	5	33.3%
Q5	When riding JAC, do you start your ride or transfer buses at the current transit center on Plaza Street near the Federal Building?		
	Yes	7	50.0%
	No	7	50.0%
Q6	How do you typically get to or from the transit center?		
	I walk	2	25.0%
	I ride a bike	1	12.5%
	I drive	0	0.0%
	I get dropped off or picked up by a vehicle	0	0.0%
	I transfer between buses	5	62.5%

More than half (53.6 percent) of respondents had used JAC transit services before. Of these participants, 33.3 percent use JAC 1 to 2 times per year, followed by about 26.7 percent who use JAC 5 or more times per week. The number of participants who either start their ride at or transfer through the existing JAC transit center was 50 percent with 62.5 percent of these respondents getting to the transit center by transferring from another bus. Another 37.5 percent either walk or bike.

The survey asked participants why they don't use JAC transit services (Figure 4). Over half responded that they need their car during the day to work or run errands. Others indicated that the buses don't go where they need to go (25 percent) or that the bus doesn't operate when they need them (25 percent).

Question 7 – What do you like about the existing transit center?

Participants indicated that they like the general location of the existing transit center. Comments included that the transit center is within 5 blocks of their home and feels very centralized.

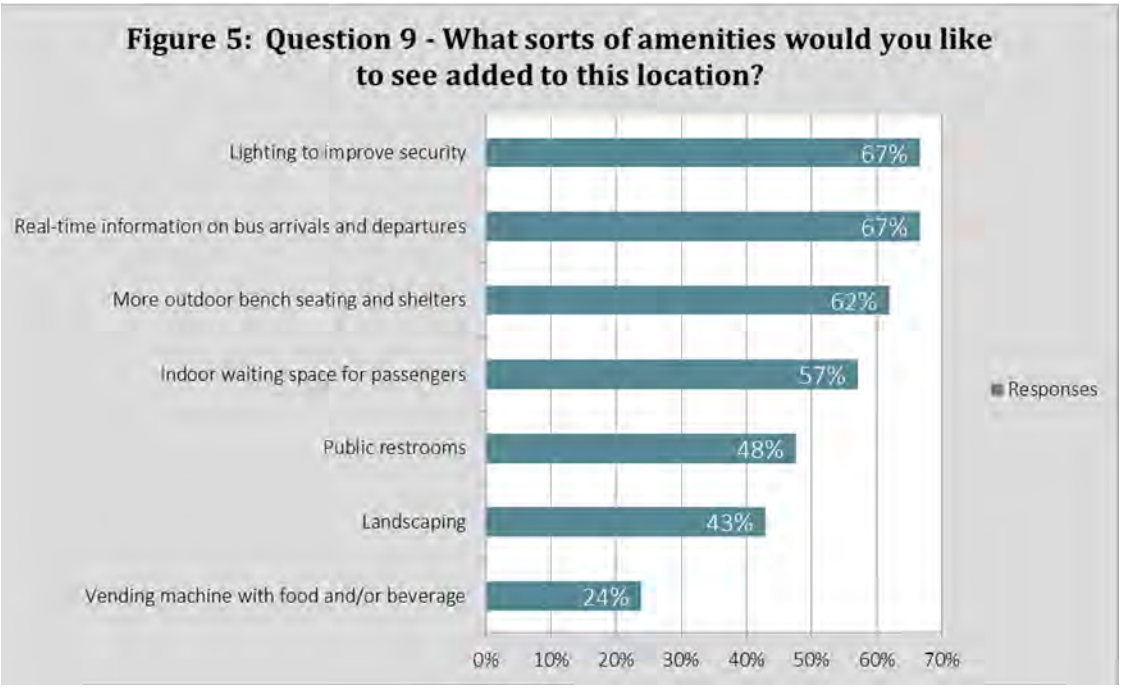


Question 8 - What do you not like about the existing transit center location?

Respondents indicated that the existing transit center doesn't feel safe due to lack of sufficient lighting and/or security. Others indicated that having no public amenities or restrooms is an issue for them. The lack of protection from seasonal weather was also disliked. One respondent indicated that they don't feel safe due to the homelessness population and loitering at the site.

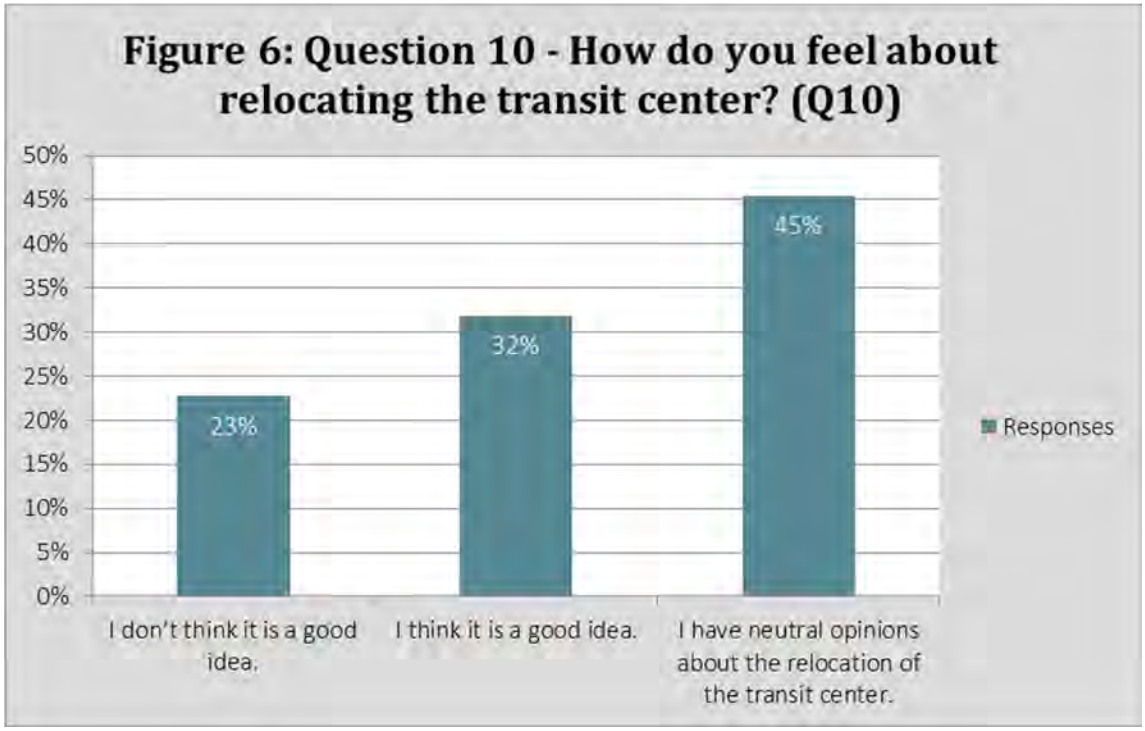
Question 9 - What sorts of amenities would you like to see added to this location?

Participants were asked to select all amenities they would like to see at a new transit center. As shown in Figure 5, providing lighting to improve security (66.7 percent) and real-time information on bus arrivals and departures (66.7 percent) are the most desired amenities for transit center improvements. Adding more outdoor bench seating and shelters were also requested by 61.9 percent of participants, followed by indoor waiting space (57.1 percent).



Question 10 - How do you feel about relocating the transit center?

When asked about the potential relocation of the transit center, 45.5 percent of participants had neutral opinions about it (Figure 6). Another 31.8 percent thought it is a good idea, followed by 22.7 percent who did not think it is a good idea.



Question 11 - Is there anything else you would like to add for our consideration?

Additional comments for consideration included amenity requests (coffee, WiFi, and landscaping). Others commented that they were not aware of the existing center and that it needed to be marketed more.

ON-SITE POP-UP OUTREACH

LSC Transportation Consultants conducted an on-site public outreach event between 11:00 AM and 4:00 PM on October 28th. A questionnaire was distributed to various passengers and JAC drivers. The survey was simple and asked two questions: "What do you like about the existing JAC transit center?" and "What do you not like about the existing transit center? Of the 15 participants, many respondents indicated that the existing site was conveniently located and easy to access. Characteristics that people did not like about the existing transit center included that there is currently no schedule information displayed, there is not enough shelter to protect from poor weather, and that there are no restrooms.

Chapter 5
SITE ANALYSIS AND SCREENING RECOMMENDATIONS

This chapter presents the results of an initial site analysis and screening process, in order to focus the study on the sites with the highest potential.

OPERATIONAL IMPACT BY SITE

Table 7 represents site impacts by how many blocks the existing routes would need to deviate to accommodate the change in transit center location. The existing site was determined by how many blocks each route travels from their turn off Roop Street. Each alternative site was then measured against the existing, resulting in a total deviated block count by each route (as shown at the bottom of Table 7). As shown, Site 2 resulted in the most deviated blocks from existing route paths, followed by Site 3. These blocks were then converted to miles per year and multiplied by $0.82 (cost per mile). As depicted, the differences in annual operational cost were very small (between $500 less than current and $1,000 more than current cost conditions).

Table 7: Blocks Deviated from Route by Site

	Blocks Deviated Per Site											
	Site 1		Site 2		Site 3		Site 4		Site 5		Site 6	
Route	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
1	7	9	9	9	9	7	5	11	6	6	6	4
2A	7	1	10	3	9	4	6	3	4	5	4	7
3	5	2	6	3	5	2	6	4	5	6	6	7
4	5	7	8	6	7	5	3	9	2	4	3	1
Difference by Site												
1	-	-	2	0	2	-2	-2	2	-1	-3	-1	-5
2A	-	-	3	2	2	3	-1	2	-3	4	-3	6
3	-	-	1	1	0	0	1	2	0	4	1	5
4	-	-	3	-1	2	-2	-2	2	-3	-3	-2	-6
Total by Direction			*9*	*2*	*6*	*-1*	*-4*	*8*	*-7*	*2*	*-5*	*0*
Total Both Direction			**11**		**5**		**4**		**-5**		**-5**	
Total Miles per hour			**0.49**		**0.22**		**0.18**		**-0.22**		**-0.22**	
Total Miles per year			**1,279**		**582**		**465**		**-582**		**-582**	
Cost Impact per year			**$1,000**		**$500**		**$400**		**($500)**		**($500)**	

INITIAL SITE RANKING AND SCREENING RECOMMENDATIONS

LSC conducted a two-step analysis in order to evaluate and screen the initial list of sites. First, the sites were reviewed based on the two following "screening" criteria:

1. Site Availability – As Site 2 (V&T Station) is not available, it was screened from further consideration as part of this study. While the Coin Lot (Site 3) is not available, it is included as the program could be accommodated in the right-of-way.

2. Site Capacity – If a site cannot accommodate the program presented above in Table 5 (including the number of bus bays, building floor area, etc.), it would be screened from further consideration. As all sites have this adequate capacity, none were screened out by this criteria.

Next, in an effort to quantify the above-mentioned site-factors, LSC created a set of six site factors to differentiate various characteristics amongst each potential site, as shown in Table 8. The sites were evaluated based on the following six factors:

1. Construction Cost – Is there any extra associated costs with implementing a transit center on the site (obvious utilities, additional need for street reconfiguration, etc)? Note that a relatively high cost is reflected in a relatively low score.

2. Parking Impact – Will existing parking be eliminated?

3. Downtown Area Goals – Does it align with the Downtown Area Goals?

4. Transit Efficiency & Access – Does it negatively impact transit operating costs or accessibility along the existing routes? This reflects both the excess bus circulation as well as the potential for buses to be delayed due to site design complaints.

5. Passenger Safety and Convenience – Can passengers conveniently walk between buses? Are bus bays close to the transit building amenities?

6. Adjacent Land Use Compatibility – Is a transit center use consistent with existing surrounding land uses?

These various factors were then weighted based on feasibility of project implementation, project benefits to the community, and potential operational impacts. Based on the Consultant's experience and discussions with JAC staff, the Consultant has assigned weights reflecting the relative importance, on a scale of 0.0 (no importance) to 1.0 (highest importance).

Next, a score was identified for each site and for each factor, on a scale of 1 (worst score) to 5 (best score), based on the site characteristics. Each score was multiplied by the factor weight and then summed over all factors to determine a weighted score. As shown, four sites (Site 1 – Existing Site, Site 2 V&T Station, and Site 5 – Spear Street West, all rank relatively high and close in value (between 18.8 and 22.5). These are followed by Site 6 – Spear Street East, and Site 3 - Coin Lot. However, as Site 2 is not currently available, it is dropped from further analysis as part of this study. Based on this analysis and the background information, LSC recommends further analysis of providing an improved transit center on the following sites:

- Site 1 – Existing Site
- Site 4 – Robinson Street
- Site 5 – Spear Street West

Table 8: Scoring of Initial Site Alternatives

	Factor Weight (0 to 1)	Scoring (1 = Very Poor to 5 = Very Good) Site 1 - Existing Site	Site 2 - V&T Station	Site 3 - Coin Lot	Site 4 - Robinson St.	Site 5 - Spear St. West	Site 6 -Spear St. East
Site Availability (Screening)	*NA*	*Yes*	*Possibly*	*Limited to ROW*	*Possibly*	*Yes*	*Yes*
Adequate Site Capacity (Screening)	*NA*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Construction Cost	0.50	2	4	3	3	4	3
Parking Impact	0.75	5	5	3	3	2	3
Downtown Area Goals	1.00	5	5	5	5	5	4
Transit Efficiency & Access	0.75	4	5	4	4	3	4
Passenger Safety & Convenience	1.00	4	3	1	4	5	4
Adjacent Land Use Compatibility	1.00	4	5	3	3	5	2
Weighted Score		**20.8**	**22.5**	**15.8**	**18.8**	**20.8**	**16.8**

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Chapter 6
DETAILED ANALYSIS OF THREE CONCEPTUAL SITES

Based on the screening process described in the previous chapter, the following three sites have been identified as those with the highest potential to meet the needs of the service in a cost-effective manner:

- *Existing Downtown Transfer Plaza Site*—This could include use of existing Plaza Street travel lanes. Not that this site is evaluated both for the long-term full program as well as for an interim limited set of improvements.

- *Robinson Street Site*—This consists of the north side of Robinson Street, east of Plaza Street.

- *E. Spear Street Site*—This consists of the existing public right-of-way between N. Fall Street on the west and N. Stewart Street on the east.

This chapter presents a detailed evaluation of each site.

EXISTING DOWNTOWN TRANSFER PLAZA SITE – LONG-TERM

Under this site option, the transit hub would remain in its current location along the east side of N. Plaza Street between E. Washington Street and E. Robinson Street, adjacent to the Federal Building. The facility would be improved as shown in Figure 7 and as follows:

- Between E. Robinson Street and E. Washington Street, the eastern curb would be extended approximately 19 feet to the west. This segment of N. Plaza Street would be converted to one-way northbound traffic only. As shown in the cross section provided in Figure 8, the remaining street width would be 28 feet (excluding curb and gutter), sufficient to provide 9 feet for a northbound bus parking lane and a 19-foot northbound travel lane. Parking along the west side of N. Plaza Street would be prohibited for this portion of the block.[2]

- The curb extension would yield a building pad/plaza area 32 feet in width and 150 feet in length north of the northern Federal Building parking lot driveway. This space would be used to provide:

[2] Consideration was given to converting only the portion north of the northern driveway to one-way, leaving the segment between E. Robinson Street and this northern driveway two-way. However, this could be potentially confusing to drivers.

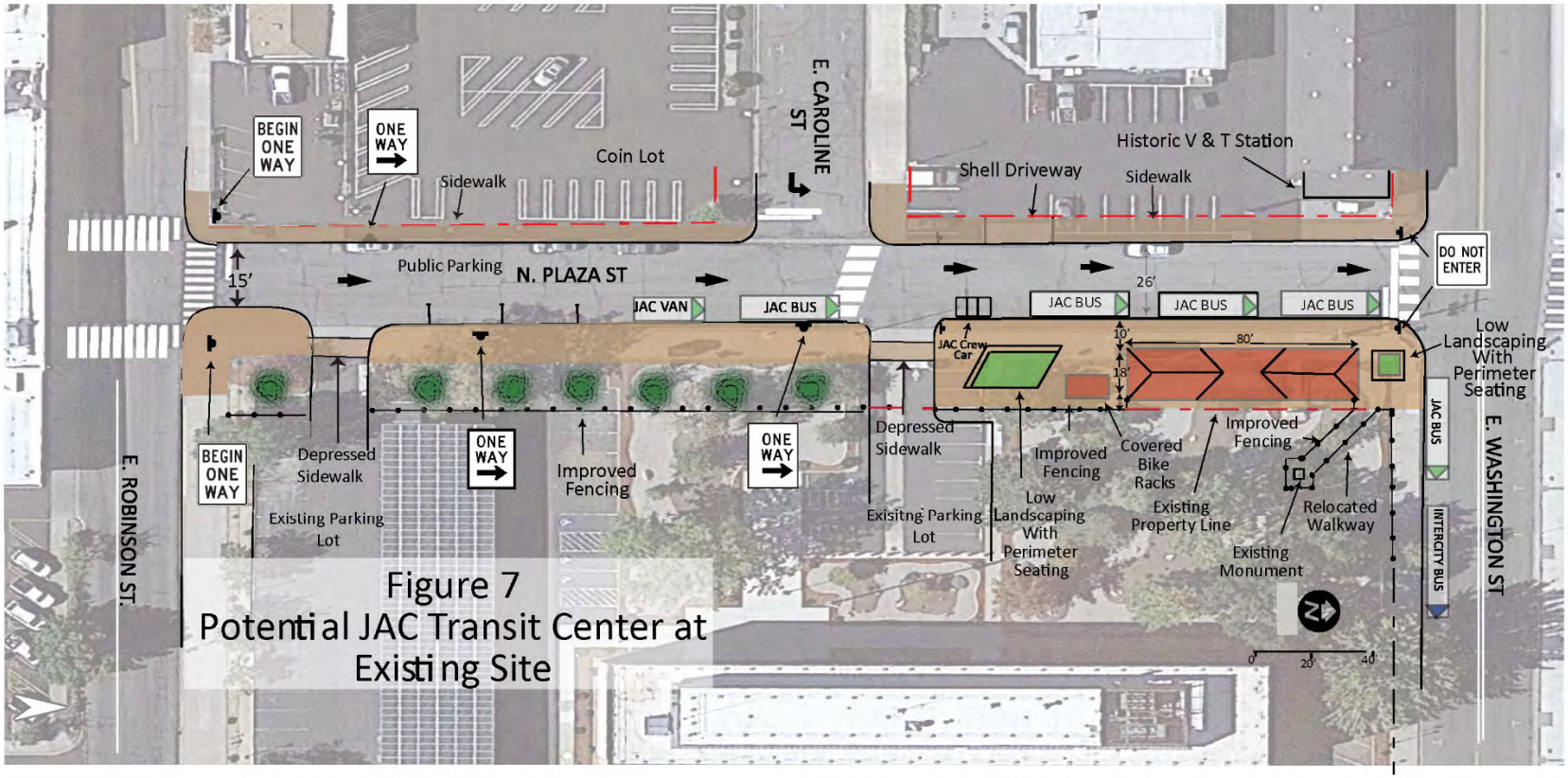
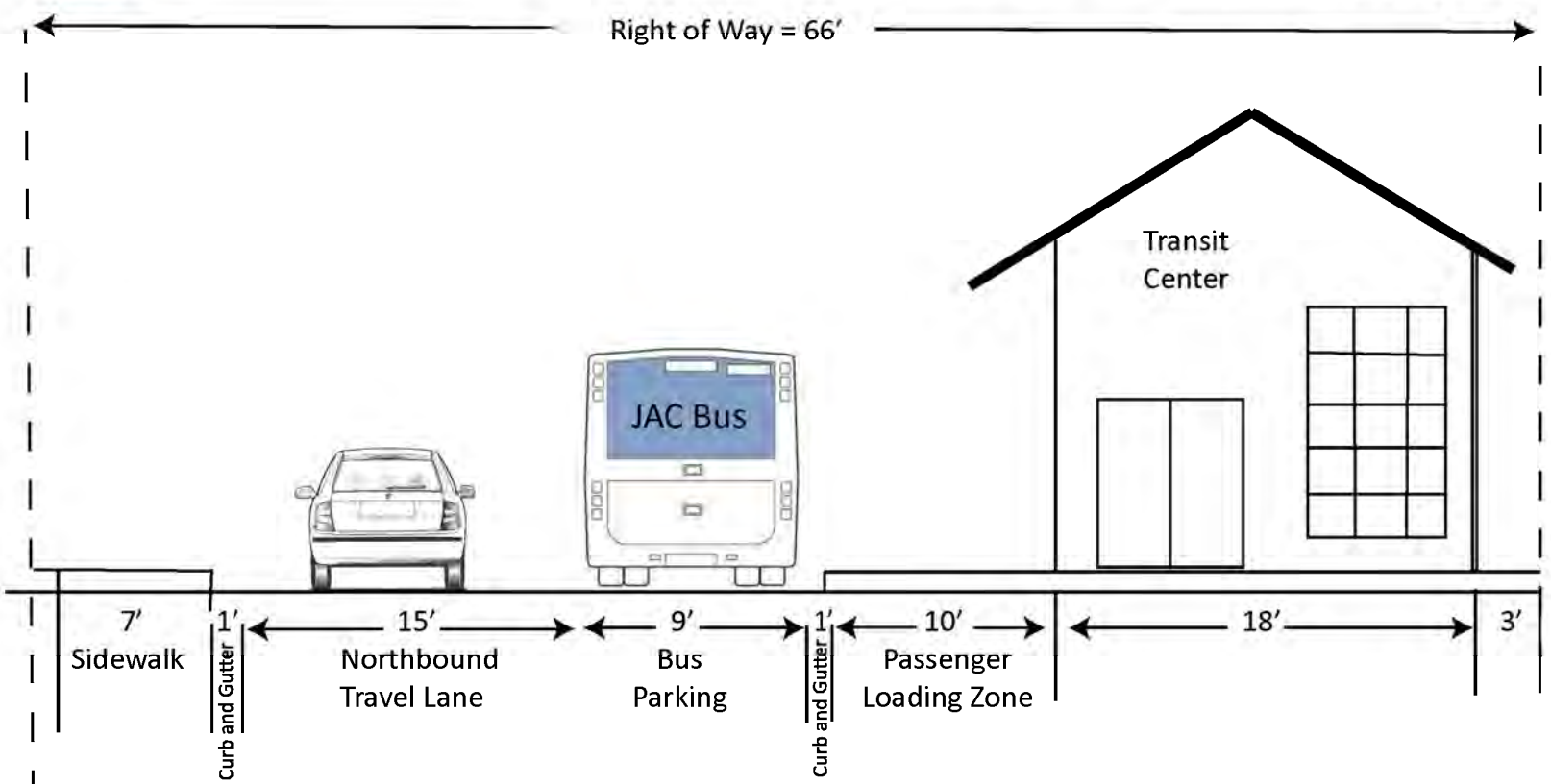


Figure 7
Potential JAC Transit Center at Existing Site

Figure 8
Cross Section of N. Plaza St with Transit Center at Existing Site
Looking North



- A single-story transit center building approximately 1,450 square feet in floor area, providing passenger waiting space, restrooms, JAC counter and operational space and custodial space. The center portion of this building could have a raised roof section to provide some architectural interest; Low landscaping areas to the north and south with perimeter passenger seating. Landscaping in these areas would be designed to provide good line of sight across the plaza for security reasons; and

- A set of covered bike racks.

- An improved fence would be provided along the east side of N. Plaza Street, as well as along the south side of E. Washington Street eastward to the first driveway. This fencing would preferably incorporate artwork (such as steel cutouts) and would be designed to stop direct access into the Federal Building property. It would tie into the corners of the transit center building to eliminate pedestrian access behind the building. The existing short walkway to the monument would be relocated to avoid the transit center building.

- Three JAC bus bays would be provided on N. Plaza Street along the extended curb, while the fourth JAC bus bay needed for regular service would be provided along E. Washington Street. Space for an intercity (RTC, ESTA, TTD) bus would also be provided on E. Washington Street.

- To the south of the northern Federal Building driveway on N. Plaza Street, space would be available for a layover JAC bus (such as when buses are being switched out) and a JAC Assist van. The existing sidewalk would be shifted to the west and a new landscaping strip provided along the eastern right-of-way line. Optimally, one of the two existing driveways serving the Federal Building lot would be eliminated. As passenger loading/unloading would typically not occur in this area, no benches or shelters would be provided. Curb parking could be provided to the south. If battery electric bus charging equipment is needed at the transit center in the future, this area would be the appropriate location and there would be more than adequate space available for the equipment.

National Historic Preservation Act Considerations

This site is immediately across the street from the Virginia and Truckee Railroad Depot, which is listed on the National Register of Historic Places. As such, any federal funding for a transit center project would trigger the need to comply with Section 106 of the National Historic Preservation Act of 1966. Any site that would have a visual impact on the Depot (e.g., could be seen from the Depot) would need to conform to the Section 106 process of consultation and review. This should include a discussion of the plan with the Carson City Historic Resources Commission. In discussing the potential project with the Nevada State Historic Preservation Office, the Office indicated that while the project proponent would need to go through this process, there is no reason to expect that it would prohibit a transit center on this site. It was also concluded that shifting the building location to the southern end of the block would not change the process, as in both cases the building could be seen from the Depot.

Traffic Impact of One-Way Street Conversion

Any conversion of an existing street to one-way operation warrants careful consideration of the impact on existing drivers and traffic movements. As a basis for this review, LSC conducted traffic counts over a weekday afternoon peak period. As shown in Table 9, these counts focused on tracking the southbound movements from E. Washington Street through the site to their destination or exit location. A review of these counts indicates the following:

- The observed peak hour of southbound traffic occurred between 2:45 PM and 3:45 PM, when a total of 13 southbound vehicle-movements were observed. Of these, 5 made southbound through movements from N. Plaza Street north of E. Robinson Street), 5 made westbound left turns off of E. Washington Street and 3 made eastbound right turns from E. Washington Street.

- Most of these drivers departed the area by making a southbound left turn movement from N. Plaza Street to eastbound E. Robinson Street (9), while 2 parked along the west side of N. Plaza Street (including a JAC bus), 1 pulled into the Shell station and 1 pulled into the Coin Lot.

Based on these observed patterns, most of the vehicles eliminated from N. Plaza Street southbound would shift to N. Stewart Street. The few drivers heading to the Shell station or Coin Lot would likely shift to Carson Street to the west. At most, the greatest shift would be 5 southbound through movements at Plaza/Washington that would shift to southbound left turn movements. Given these low volumes and the generally good traffic conditions in the area, there is no potential for any significant traffic issues or driver delays, beyond the need for a low number of drivers to circle the block. Access to individual adjacent parcels would be provided as follows:

- The Shell station would lose southbound ingress to the driveway on N. Plaza Street, as well as eastbound egress to the south on N. Plaza Street. However, inbound drivers can easily go around the block to Stewart Street or Carson Street to use one of the other four access points, and outbound drivers can exit onto E. Caroline Street less than 100 feet away.

- While southbound movements in and out of the Coin Lot at the two driveways on Plaza Street would be eliminated, this lot also has access drives on both Caroline and Robinson Streets. The few drivers from the north on N. Plaza Street can easily go around the block to Stewart or Carson.

Access to the Federal Building would remain unchanged, except that southbound ingress on N Plaza Street would be eliminated. As the larger lot on the south side of the parcel also has access off of N. Stewart Street, drivers from the north would shift to that street. For the smaller 13-space lot, drivers from the north would largely access via Carson Street and Caroline Street. Left turns out of this smaller lot would still be provided.

TABLE 9: North Plaza Street Southbound Traffic Counts

Location: North Plaza Street, Carson City, Nevada
Date: Monday, January 10, 2022
Time: 2:30pm-5:30pm

Southbound Peak Hour Shown in Blue

Number of Vehicles by Southbound Entry Movement and Destination

	1 - Shell Gas			2 - Fed Bldg Small Lot			3 - E Carolina Street			4 - Coin Parking Lot		
	EBR	SBT	WBL	EBR	SBT	WBL	EBR	SBT	WBL	EBR	SBT	WBL
2:30 PM												
2:45 PM												
3:00 PM												
3:15 PM	1											
3:30 PM												1
3:45 PM												
4:00 PM												
4:15 PM												
4:30 PM												
4:45 PM												
5:00 PM												
5:15 PM												
Total	1	0	0	0	0	0	0	0	0	0	0	1

	5 - Fed Bldg Large Lot			6 - SBR E Robinson St			7 - SBL E Robinson St			Parked on Plaza Street		
	EBR	SBT	WBL	EBR	SBT	WBL	EBR	SBT	WBL	EBR	SBT	WBL
2:30 PM												
2:45 PM							1	1	1			1
3:00 PM								1				1
3:15 PM								1				
3:30 PM							1	2	1			
3:45 PM								1			1	
4:00 PM				1			1	1				
4:15 PM									1			
4:30 PM									1			
4:45 PM		1						1				
5:00 PM								1				
5:15 PM												
Total	0	1	0	1	0	0	3	9	4	0	1	2

	Total Northbound			JAC Buses
	NBL	NBT	NBR	
2:30 PM	1		3	
2:45 PM	1	1	1	
3:00 PM		2	4	
3:15 PM		2	2	4
3:30 PM	1	2	1	
3:45 PM		2		
4:00 PM	2	1	1	
4:15 PM		3	1	4
4:30 PM		2		
4:45 PM			1	
5:00 PM	1	5	2	
5:15 PM		2	2	4
Total	6	22	18	12

Total			
SB	NB	Total	
0	4	4	
4	3	7	
2	6	8	Peak Hr
2	8	10	
5	4	9	
2	2	4	
3	4	7	
1	8	9	
1	2	3	
2	1	3	
1	8	9	
0	8	8	
23	58	81	
13	21	34	Peak Hr

Transit Operations During Construction

Construction at this site would require staging to allow continuance of JAC operations during construction. Bus bays would be relocated to the south (south of Caroline Street) and the existing northern shelter would be relocated temporarily to the south. In the limited periods when Plaza Street north of Caroline Street is closed for construction, buses would exit via Caroline Street westbound. Once construction north of Caroline Street is complete, the relatively simple construction south of Caroline Street could be completed by shifting to the new bus bays to the north. When this segment is closed, buses would access the busy bays via Caroline Street eastbound. The temporarily relocated bus shelter would then be removed and made available for another location in the JAC system.

Construction Cost Estimate – Full Program

Table 10 presents a planning-level cost estimate for development of a transit center on the existing site. This estimate applies standard unit costs provided by Carson City Department of Public Works for many of the standard roadway and streetscape islands, and unit costs defined by LSC for similar previous studies regarding the transit-specific items. Items of note in this cost estimate are as follows:

- A unit cost of $660 per square foot is assumed for the transit center building. This factor can vary widely based on the quality of finish and the degree to which custom architectural features are incorporated. While this is consistent with other transit center projects, it reflects a high level of finish and could well be lower if a more utilitarian design approach is used.

- Roadway costs assume full removal and replacement of Plaza Street between E. Robinson Street and E. Washington Street, including adjacent areas of Robinson and Washington Streets to allow transitions.

- Costs are included for the removal of the existing fencing and replacement with a non-standard custom designed fence (that could incorporate artwork).

- Sidewalk/plaza area is assumed to be removed and replaced from E. Robinson Street around to the existing Federal Building driveway on Washington Street.

- It is assumed that the existing fire hydrant south of the northern driveway can remain in the current location.

- Costs for enhanced lighting is included.

- Costs are included for the additional mobilization and relocation of the bus shelter to allow for staged construction.

- “Soft costs” are included for contingency, design/engineering, construction management and project administration.

TABLE 10: Existing Site Transit Center Cost Estimate

ITEM	QTY	UNIT	UNIT PRICE	TOTAL ESTIMATE	Subtotal
Site Preparation					
Mobilization and Demobilization	1	EA	$50,000	$50,000	
Erosion and Sediment Control	1	LS	$5,000	$5,000	
Construction Staking / Survey	1	LS	$10,000	$10,000	
Temporary Fence	1,210	LF	$6.00	$7,260	
Utility Relocation	1	EA	$10,000	$10,000	$166,760
Remove Existing Sidewalk	6,660	SF	$4.50	$29,970	
Remove Existing Curb Ramp	3	EA	$800	$2,400	
Remove Existing Curb and Gutter	1,005	LF	$10.00	$10,050	
Remove Existing Roadway	19,200	SF	$1.15	$22,080	
QC/Materials Testing	1	LS	$20,000	$20,000	
Earthwork					
Fine Grading	27,350	SF	$0.50	$13,700	$13,700
Road, Parking Lot, Curb, Sidewalk					
Circulation Aggregate Base	375	CY	$80.00	$30,000	
Site Concrete	78	CY	$250	$19,500	
5" Bituminous Pavement	3,602	SF	$4.20	$15,100	
Concrete Ribbon Curb	1,110	LF	$45.00	$50,000	
Concrete ADA Ramp	10	LS	$4,800	$48,000	$447,500
Plaza and Walkways	10,870	SF	$20.00	$217,400	
Planting Beds/Perimeter Seating	550	SF	$50.00	$27,500	
Landscaping/Irrigation	--	LS	--	$30,000	
Miscellaneous	1	LS	$10,000	$10,000	
Facilities, Furnishings, Lighting					
Transit Building	1,458	SF	$660	$962,280	
Benches	8	LS	$1,500	$12,000	
Facility Furnishings	1	LS	$50,000	$50,000	
Covered Bicycle Rack	120	SF	$100	$12,000	$1,185,000
Enhanced Fencing	500	LF	$100	$50,000	
Lighting	9	EA	$7,080	$63,720	
Utility Connections	1	EA	$30,000	$30,000	
Miscellaneous	1	LS	$5,000	$5,000	
Signing & Striping					
Monument Sign	1	LS	$4,000	$4,000	
Misc Signs	28	LS	$650	$18,200	$72,400
Crosswalk Markings	9,000	SF	$5.50	$49,500	
Pavement Markings	120	LF	$6.00	$700	
Total Construction Cost					$1,885,360
Contingency (15%)					$282,800
Subtotal					$2,168,160
Design & Engineering (15%)					$325,200
Construction Management/Oversight (10%)					$216,800
Project Administration (5%)					$10,800
TOTAL DEVELOPMENT COSTS -- 2022					**$2,720,960**
Land Acquisition					
Land Value	0	Acre	**$700,000**	$0	
Closing Costs	**5%**			**$0**	**$0**
Appraisal	0	EA	$10,000	$0	
TOTAL ESTIMATE - 2022					***$2,720,960***
2022 to 2028 Escalation Factor - 3 years at 5% per year, 3 years at 3% per year					**1.26**
TOTAL ORDER OF MAGNITUDE ESTIMATE - 2028					***$3,430,000***

To reflect that the project will require several years to obtain funding and prepare plans and contracts, costs are increased to reflect estimated 2028 values. 2022 values are increased assuming 3 years of 5 percent inflation and 3 years of 3 percent inflation.[3]

As indicated, total project construction and development costs are estimated to be $3,430,000. Of this total, just over half consists of the transit facility building costs and associated soft costs.

Construction Cost Estimate – Interim Improvements

A cost estimate was also developed for interim improvements at the existing site (Site 1), as discussed above. Note that quantities for repairs to existing pavement and curb are estimates only and would require a detailed evaluation for final costing. No costs regarding design and engineering were included, given the simplicity of the improvements. In addition, the construction year was assumed to be 2025, rather than 2028. As indicated, a 2025 cost estimate of $233,800 was identified.

ROBINSON STREET SITE

This site consists of the north side of E. Robinson Street between N. Plaza Street and N. Stewart Street, and also makes use of the southern portion of the existing transit center sidewalk area along N. Plaza Street. As shown in Figure 9, to provide a footprint for the transit center building it would be necessary to negotiate purchase (or long-term lease) of a portion of the existing Federal Building parcel in the northeast corner of the Plaza/Robinson intersection. This land area is approximately 88 feet in east-west dimension and 28 feet in north-south dimension (2,464 square feet). It would allow the existing driveway on Plaza Street to remain unchanged but would require the elimination of eight existing parking spaces. As shown in the cross-section provided in Figure 10, Robinson Street would provide 2 24' travel lanes.

The Transit Center building is configured to wrap partially around the corner to provide good line of sight and pedestrian travel paths. To the east, the existing sidewalk area would include shelters and benches for passengers waiting for the buses queuing farther east along Robinson Street. Enhanced fencing would be provided between the transit uses and the Federal Building. All buses would line up along the north side of E. Robinson Street (facing westbound), with room for a van or crew vehicle along the existing curb on N. Plaza Street. This site alternative would require no changes to existing streets or circulation.

East of Fell Street, the Robinson Street centerline would need to transition approximately 8 feet to the north over a 110' distance, in order to align with the eastbound left turn lane at Stewart Street. As the through movement vehicles do not need to shift, this is effectively a bay taper for the eastbound left turn vehicles. Section 9.7.2.3 of the *Manual on Uniform Traffic Control Devices* (American Association of State Highway and Transportation Officials, 2018) indicates a minimum bay taper length of 100 feet, indicating that this restriping can be accommodated.

[3] The Congressional Budget Office forecasts consumer inflation for 2023 at 2 to 4 percent. However, construction costs are expected to increase by 5 percent in 2023 per the firm of CBRE.

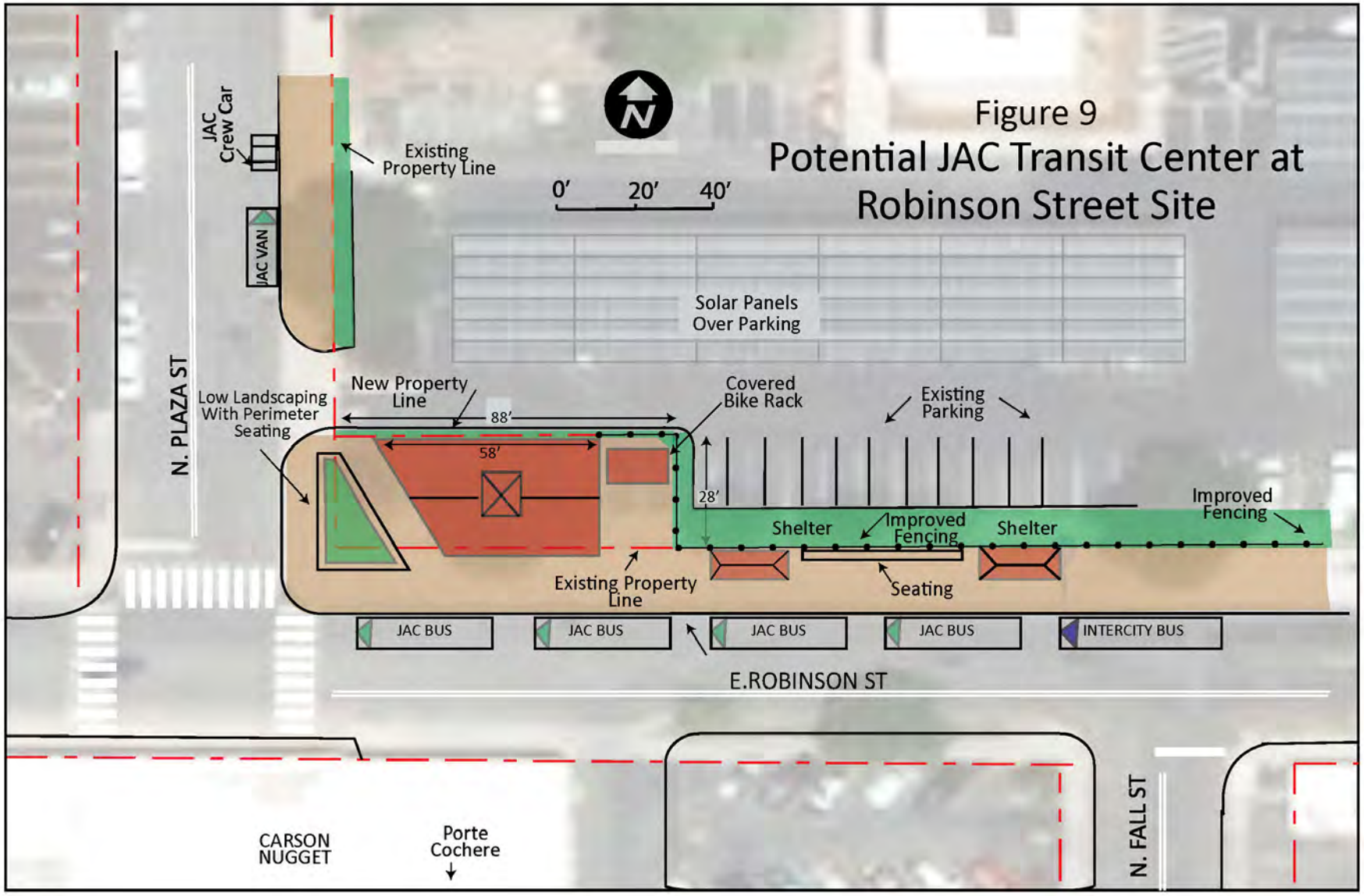


Figure 9
Potential JAC Transit Center at Robinson Street Site
JAC Crew Car
JAC VAN
Existing Property Line
0′ 20′ 40′
Solar Panels Over Parking
N. PLAZA ST
Low Landscaping With Perimeter Seating
New Property Line
88′
58′
Covered Bike Rack
Existing Parking
28′
Improved Fencing
Shelter
Improved Fencing
Shelter
Existing Property Line
Seating
JAC BUS
JAC BUS
JAC BUS
JAC BUS
INTERCITY BUS
E.ROBINSON ST
CARSON NUGGET
Porte Cochere
N. FALL ST

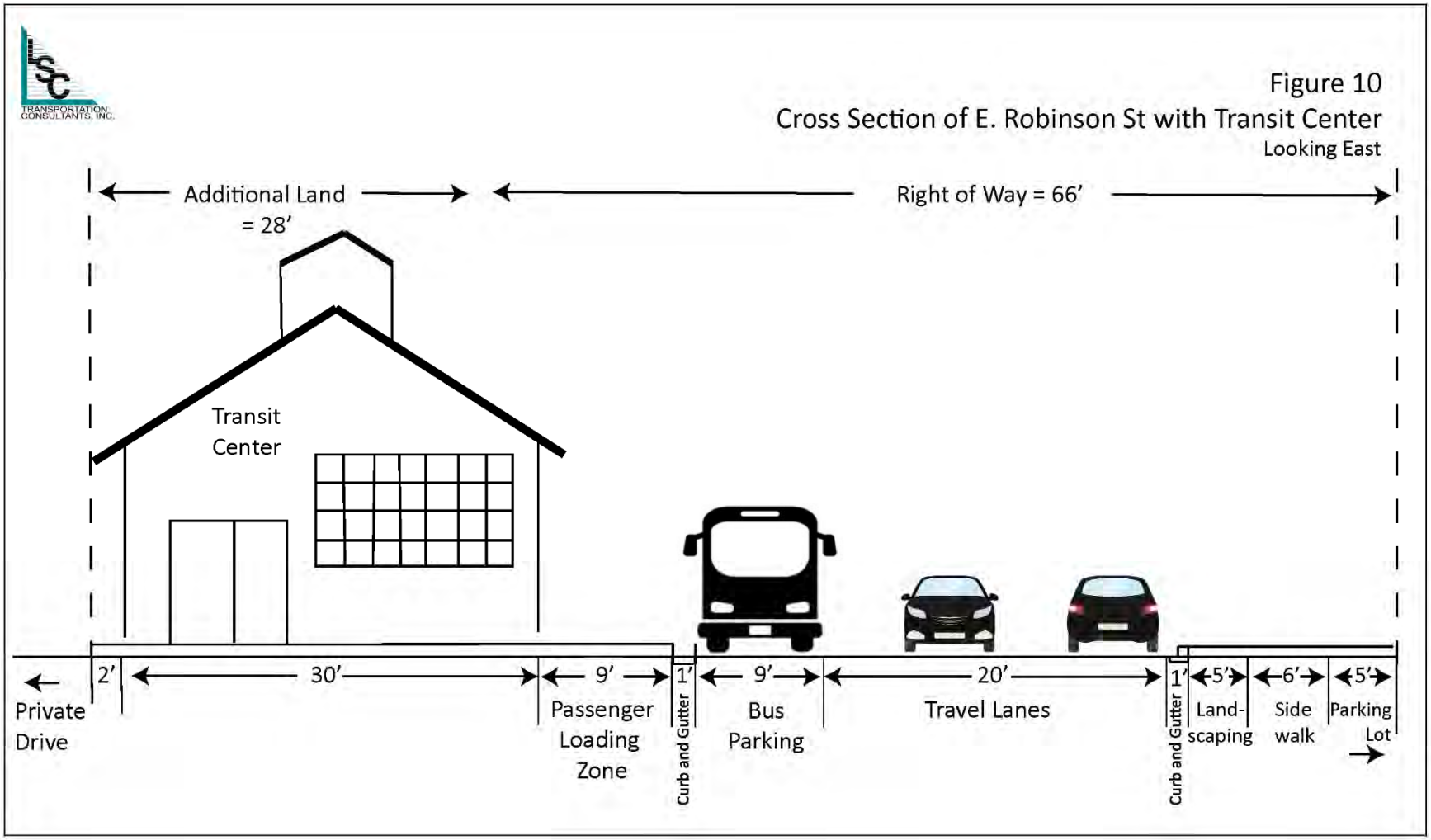


Figure 10
Cross Section of E. Robinson St with Transit Center
Looking East
Additional Land
= 28'
Right of Way = 66'
Transit
Center
2'
30'
9'
1'
9'
20'
1'
5'
6'
5'
Private
Drive
Passenger
Loading
Zone
Curb and Gutter
Bus
Parking
Travel Lanes
Curb and Gutter
Land-
scaping
Side
walk
Parking
Lot

To allow adequate distance for the eastbound through lane shift entering the site, the existing 40' yellow curb taxi loading zone directly south of Plaza Street (between the existing crosswalks) would need to be eliminated with a red curb, reducing capacity by two loading vehicles. The loading zone west of the western crosswalk would remain.
One option to this plan would be for the overall project to include "decommissioning" of the existing transit center by reducing the existing sidewalk width and expanding landscaping into this area.

Construction Cost Estimate

A cost estimate for development at this site is shown in Table 11, consistent with the approach used for the existing site cost estimate. Items of note in this cost estimate are as follows:

- A unit cost of $660 per square foot is assumed for the transit center building. This factor can vary widely based on the quality of finish and the degree to which custom architectural features are incorporated. While this is consistent with other transit center projects, it reflects a high level of finish and could well be lower if a more utilitarian design approach is used.

- Roadway costs assume full removal and replacement of the north side of E. Robinson Street from N. Fall Street and N. Plaza Street.

- Costs are included for the removal of the existing fencing and replacement with a non-standard custom designed fence (that could incorporate artwork).

- Sidewalk/plaza area is assumed to be removed and replaced from the existing southern Federal Building driveway on Plaza Street and along the north side of E. Robinson Street as far east as N. Fall Street. East of this point, a relatively new sidewalk is already in place that appears to be adequate.

- Costs for enhanced lighting is included.

- $5,000 is included for decommissioning of the existing transit center site, including removal of shelters and benches and minor pavement repair.

- "Soft costs" are included for contingency, design/engineering, construction management and project administration.

- Land acquisition costs are included, assuming current land value of $700,000 per acre for commercial land in central Carson City and including appraisal costs and closing costs.

As indicated, total project construction, land acquisition and development costs are estimated in 2028 to be $2,890,000. This is approximately $540,000 less than for the existing site option, largely due to the smaller area of street reconfiguration.

TABLE 11: Robinson Street Site Transit Center Cost Estimate

ITEM	QTY	UNIT	UNIT PRICE	TOTAL ESTIMATE	Subtotal
Site Preparation					
Mobilization and Demobilization	1	EA	$50,000	$50,000	$115,485
Erosion and Sediment Control	1	LS	$5,000	$5,000	
Construction Staking / Survey	1	LS	$10,000	$10,000	
Temporary Fence	600	LF	$6.00	$3,600	
Utility Relocation	0	EA	$10,000	$0	
Remove Existing Sidewalk	3,660	SF	$4.50	$16,470	
Remove Existing Curb Ramp	2	EA	$800	$1,600	
Remove Existing Curb and Gutter	180	LF	$10.00	$1,800	
Remove Existing Roadway	6,100	SF	$1.15	$7,015	
QC/Materials Testing	1	LS	$20,000	$20,000	
Earthwork					
Fine Grading	5,000	SF	$0.50	$2,500	$2,500
Road, Parking Lot, Curb, Sidewalk					
Circulation Aggregate Base	333	CY	$80.00	$26,700	$244,600
Site Concrete	125	CY	$250	$31,200	
5" Bituminous Pavement	8,520	SF	$4.20	$35,800	
Concrete Ribbon Curb	390	LF	$45.00	$17,600	
Concrete ADA Ramp	3	LS	$4,800	$14,400	
Plaza and Walkways	2970	SF	$20.00	$59,400	
Planting Beds/Perimeter Seating	390	SF	$50.00	$19,500	
Landscaping/Irrigation	--	LS	--	$30,000	
Miscellaneous	1	LS	$10,000	$10,000	
Facilities, Furnishings, Lighting					
Transit Building	1,440	SF	$660	$950,400	$1,172,880
Bus Shelters (Custom)	2	EA	$20,000	$40,000	
Benches	6	LS	$1,500	$9,000	
Facility Furnishings	1	LS	$50,000	$50,000	
Covered Bicycle Rack	120	SF	$100	$12,000	
Enhanced Fencing	290	LF	$100	$29,000	
Lighting	6	EA	$7,080	$42,480	
Utility Connections	1	EA	$30,000	$30,000	
Decommissioning of Existing Site	1	EA	$5,000	$5,000	
Miscellaneous	1	LS	$5,000	$5,000	
Signing & Striping					
Monument Sign	1	LS	$4,000	$4,000	$14,550
Misc Signs	10	LS	$650	$6,500	
Crosswalk Markings	700	SF	$5.50	$3,850	
Pavement Markings	500	LF	$0.42	$200	
Total Construction Cost					$1,550,015
Contingency (15%)					$232,500
Subtotal					$1,782,515
Design & Engineering (15%)					$267,400
Construction Management/Oversight (10%)					$178,300
Project Administration (5%)					$8,900
TOTAL DEVELOPMENT COSTS					**$2,237,115**
Land Acquisition					
Land Value	0.06	Acre	$700,000	$42,000	**$54,100**
Closing Costs	5%			$2,100	
Appraisal	1	EA	$10,000	$10,000	
TOTAL ESTIMATE - 2022					***$2,291,215***
2022 to 2028 Escalation Factor - 3 years at 5% per year, 3 years at 3% per year					1.26
TOTAL ORDER OF MAGNITUDE ESTIMATE - 2028					***$2,890,000***

SPEAR STREET SITE

The final site under consideration consists of the existing right-of-way of E. Spear Street between N. Fall Street and N. Stewart Street. While the existing right-of-way is currently used as part of parking lots on both the north and south sides of Spear Street, the existing right-of-way is 66 feet in width, which is sufficient to accommodate the transit center site program (with reconfiguration of the existing adjacent parking lots), as shown in Figure 11.

To provide a footprint adequate for the transit center building as well as adequate width for passenger loading/unloading at five bus bays, it is necessary to configure the site as a central plaza area with one-way 15-foot-wide transit-only drive lanes on the north and south sides. These one-way lanes need to be eastbound on the north side and westbound on the south side.

As there is not sufficient right-of-way width to provide transit lanes with width to allow buses to pass each other, bus drivers would typically need to pull as far forward as possible upon entering. Bus drivers would also need to wait for buses in front to depart before they can depart. This could create some delays of a few minutes at times, such as when the bus in front is loading a wheelchair user. Typically, JAC buses are scheduled to only be at the transit center for a few minutes. The Washoe RTC and ESTA routes also are on-site only as long as needed to deboard and board passengers. At present, only the TTD route uses Carson City as a layover point, which could necessitate a longer stay. Depending on the specific schedule overlap with JAC schedules, it may be necessary for the TTD bus to deboard passengers and then exit the transit center to lay over at another location (such as along the north side of Telegraph Street to the south) in order to not delay the JAC bus using the other bus bay on the north side.

This layout is convenient for passengers transferring between buses, as the walk distances between buses are relatively short. This also allow the transit center building to be conveniently located close to all five bus bays. However, there is very limited space for snow storage provided by this site design.

To ensure that entering buses are not blocked in a manner that stops traffic on Stewart Street, the bus bays on the south side of the transit plaza would be shifted to the west, providing space for an additional bus to pull into the transit lane even with three buses present on the south side of the plaza.

The lot to the north would need to be restriped to eliminate the existing 13 angled spaces along the south side (partially on City right-of-way) but would allow 1 more head-in space on the east side for a net loss of 12 spaces. In the lot to the south, 14 angled spaces partially on City right-of-way would be eliminated but six parallel spaces could be provided for a net loss of 8 spaces. Overall, 20 parking spaces would be eliminated.

The lot to the south of Spear Street is currently used for the Carson Farmers Market, which operated on Saturdays in June through September, from 8:30 AM to 1:00 PM. Use of the full right-of-way for the transit center would eliminate the northernmost 10 feet of the existing lot (or roughly 5 percent of the existing lot area).

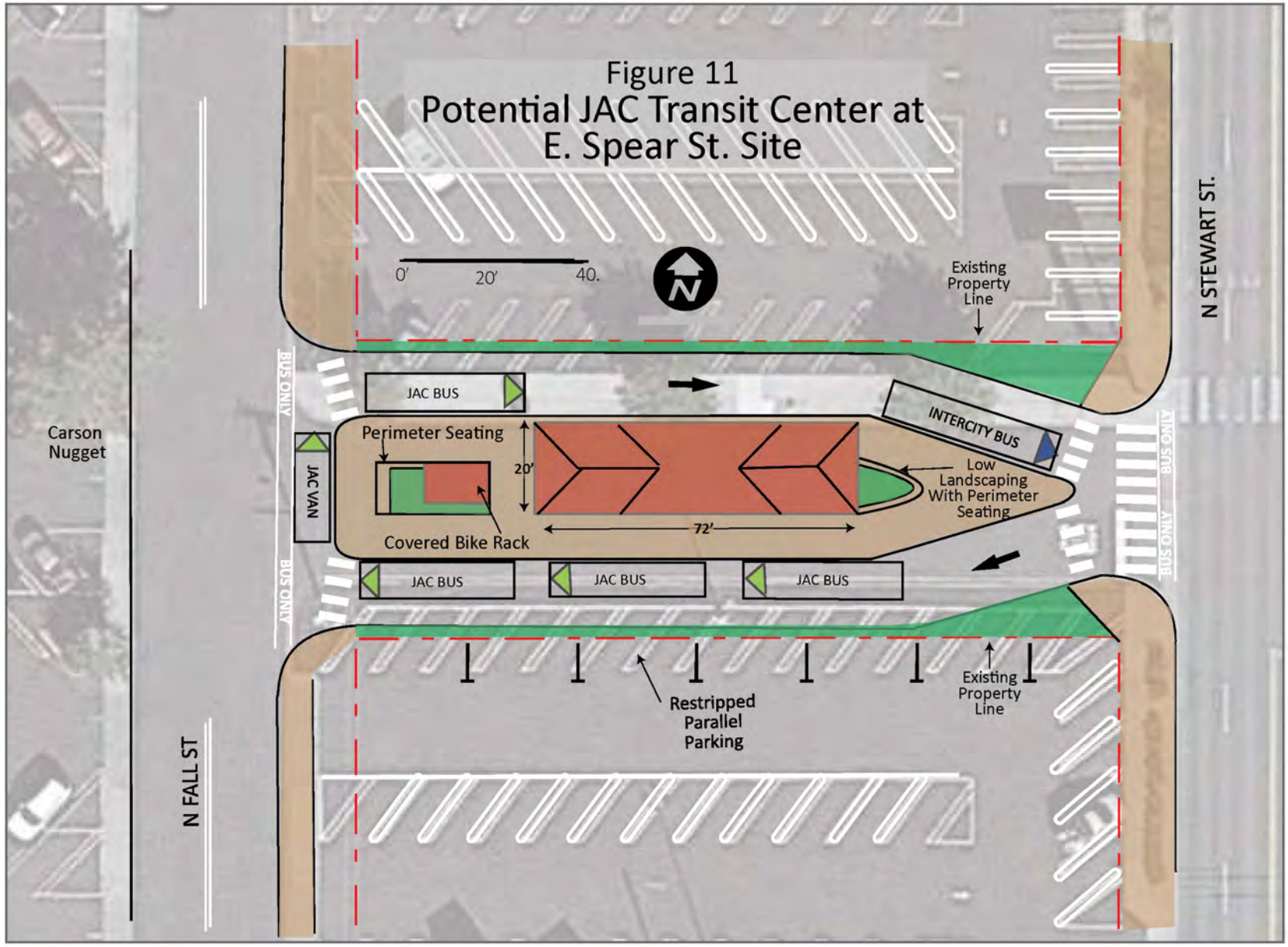


Figure 11
Potential JAC Transit Center at
E. Spear St. Site
0'
20'
40.
N
Existing
Property
Line
N STEWART ST.
BUS ONLY
JAC BUS
INTERCITY BUS
Carson
Nugget
Perimeter Seating
JAC VAN
20'
Low
Landscaping
With Perimeter
Seating
72'
Covered Bike Rack
BUS ONLY
JAC BUS
JAC BUS
JAC BUS
BUS ONLY
Restripped
Parallel
Parking
Existing
Property
Line
N FALL ST

Traffic Discussion

This site option would require the closure E. Spear Street west of N. Stewart Street to general public traffic. This 200-foot-long roadway effectively only serves as internal circulation to Carson Nugget parking lots. Existing traffic activity exclusive of special events is exceptionally low. Given that alternative access is provided both 200 feet to the north via Robinson Street and 200 feet to the south via Telegraph Street and considering the good overall traffic conditions in the vicinity, there is no chance that the relocation of existing traffic would create any significant traffic issues.

The bus circulation plan does present an unusual condition at the intersection of Spear Street and Stewart Street. Buses entering from Stewart Street will need to pass to the left of buses waiting to exit onto N Stewart Street. Exiting drivers will need to be aware that entering drivers from the north will pass in front of them. Given that only bus drivers will be making these movements, they can be trained to be aware of this condition. In addition, there is good driver sight distances in all directions. Signage and pavement markings would need to clearly identify that access is limited to buses only. In addition, the presence of the traffic signal on Stewart Street 200 feet to the north at Robinson Street creates gaps in southbound traffic that helps exiting bus drivers to pull onto Stewart Street. Given these factors, it is likely that no significant traffic safety impacts would be created. However, if this site is pursued a detailed traffic operations and safety analysis should be conducted.

Construction Cost Estimate

As shown in Table 12, the cost estimate for development at this site reflects the following (in addition to the factors discussed above):

- Removal of all roadways, parking lot pavement, sidewalk and curb and gutter within the Spear Street right-of-way and to the centerlines on Fall Street and Stewart Street is assumed.

- Costs are included for reconstruction of curbs at the new edges of the parking lots, as well as fencing between the transit center and adjacent lots.

- Costs are included for new sidewalks along the east side of Fall Street and the west side of Stewart Street between Telegraph Street and Robinson Street.

- $5,000 is included for decommissioning of the existing transit center site, including removal of shelters and benches and minor pavement repair.

In total, and including soft costs, development of a transit center on this site is estimated to require total costs of $2,990,000 in 2028 dollars. This is $100.000 more than the estimated cost of the E. Robinson Street site, and $300,000 less than the existing site.

TABLE 12: Spear Street Site Transit Center Cost Estimate

ITEM	QTY	UNIT	UNIT PRICE	TOTAL ESTIMATE	Subtotal
Site Preparation					
Mobilization and Demobilization	2	EA	$50,000	$100,000	$179,260
Erosion and Sediment Control	1	LS	$5,000	$5,000	
Construction Staking / Survey	1	LS	$10,000	$10,000	
Temporary Fence	530	LF	$6.00	$3,180	
Temporary Relocation of Shelter	1	LS	$2,000	$2,000	
Utility Relocation	1	EA	$10,000	$10,000	
Remove Existing Streetlight	2	EA	$650	$1,300	
Remove Existing Sidewalk	2,200	SF	$4.50	$9,900	
Remove Existing Curb Ramp	0	EA	$800	$0	
Remove Existing Curb and Gutter	500	LF	$10.00	$5,000	
Remove Existing Roadway	11,200	SF	$1.15	$12,880	
QC/Materials Testing	1	LS	$20,000	$20,000	
Earthwork					
Fine Grading	13,200	SF	$0.50	$6,600	$6,600
Road, Parking Lot, Curb, Sidewalk					
Circulation Aggregate Base	243	CY	$80.00	$19,500	$300,100
Site Concrete	150	CY	$250	$37,500	
5" Bituminous Pavement	3,870	SF	$4.20	$16,300	
Concrete Ribbon Curb	830	LF	$45.00	$37,400	
Concrete ADA Ramp	8	LS	$4,800	$38,400	
Plaza and Walkways	2900	SF	$20.00	$58,000	
Sidewalks along Fall and Stewart Sts.	4000	SF	$12.00	$48,000	
Planting Beds/Perimeter Seating	300	SF	$50.00	$15,000	
Landscaping/Irrigation	--	LS	--	$20,000	
Miscellaneous	1	LS	$10,000	$10,000	
Facilities, Furnishings, Lighting					
Transit Building	1,440	SF	$660	$950,400	$1,134,880
Bus Shelters (Custom)	0	EA	$20,000	$0	
Benches	4	LS	$1,500	$6,000	
Facility Furnishings	1	LS	$50,000	$50,000	
Covered Bicycle Rack	120	SF	$100	$12,000	
Enhanced Fencing	340	LF	$100	$34,000	
Lighting	6	EA	$7,080	$42,480	
Utility Connections	1	EA	$30,000	$30,000	
Decommissioning of Existing Site	1	EA	$5,000	$5,000	
Miscellaneous	1	LS	$5,000	$5,000	
Signing & Striping					
Monument Sign	1	LS	$4,000	$4,000	$22,390
Misc Signs	16	LS	$650	$10,400	
Crosswalk Markings	1,380	SF	$5.50	$7,590	
Pavement Markings	1,000	LF	$0.42	$400	
Total Construction Cost					$1,643,230
Contingency (15%)					$246,500
Subtotal					$1,889,730
Design & Engineering (15%)					$283,500
Construction Management/Oversight (10%)					$189,000
Project Administration (5%)					$9,500
TOTAL DEVELOPMENT COSTS					**$2,371,730**
Land Acquisition					
Land Value	**0**	Acre	**$700,000**	$0	
Closing Costs	5%			$0	**$0**
Appraisal	**0**	EA	$10,000	$0	
TOTAL ESTIMATE - 2022					***$2,371,730***
2022 to 2028 Escalation Factor - 3 years at 5% per year, 3 years at 3% per year					**1.26**
TOTAL ORDER OF MAGNITUDE ESTIMATE - 2028					***$2,990,000***

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Chapter 7
BENEFIT COST ANALYSIS

A new transit center for Carson City would have many benefits that are not possible to quantify, including the following:

- Raising the overall perception of public transit in the community as an attractive mobility option. The current facility does not provide an inviting environment to encourage "discretionary" travelers to use public transit.

- Addressing the existing lack of convenient driver restroom and break facilities.

- Addressing the existing impacts on the adjacent properties. The current lack of amenities on the site causes passengers to encroach on the adjacent Federal Building property, particularly in search of shade. An improved center can also accommodate improvements in fencing and security systems to minimize impacts on adjacent properties.

- Providing indoor climate-controlled waiting areas for passengers. This is particularly important for persons travelling on intercity buses with lower service frequency (Washoe RTC, ESTA, TTD).

Beyond these "intangibles," the US Department of Transportation's *Benefit-Cost Analysis Guidance for Discretionary Grant Programs* (January 2023) provides a framework for evaluating quantitative financial benefits, specifically the net present value benefits over a 20-year period (2027—the first year that a transit center is assumed to be open—to 2046). Per the guidelines, benefits are calculated at a seven percent annual discount rate.

Some of the potential quantifiable benefits identified for transit center proposals in other communities do not pertain for the Carson City proposal. As the existing center is in a good, centralized location and the potential alternative sites are within a few blocks of the existing site, there is no appreciable reduction in transit operating costs. The existing facility also accommodates all the buses in a convenient timed-transfer schedule, so a new center does not allow improved connections between buses (and associated reductions in passenger travel times). There is therefore no direct reduction in passenger travel time that would accrue from a new transit center.

ANALYSIS OF TRANSIT RIDERSHIP IMPACTS

The basis for this benefit analysis is an evaluation of how the project elements will expand transit ridership. The Carson City Transit Center would provide an improvement in amenities, including expanded indoor passenger waiting area, space for public information systems and greater visibility/public profile.

The professional literature regarding the ridership increase generated by new transit facilities (absent any reduction in travel time, as discussed above) is limited. This is in large part because service enhancements are typically implemented along with a new center, making it difficult to define the ridership benefit specifically resulting from the new facility. Bus Rapid Transit planning guides[4] indicate anecdotal evidence ranging from a negligible impact up to a 10 percent increase. Given the importance of the downtown Transit Center site as a key junction in the JAC transit system and as a transfer facility for other intercity transit services, a moderate (4 percent) increase in JAC fixed route ridership is applied. This is equal to an additional 11,700 passenger-trips per year. In addition, a modest (2 percent) increase in ridership on the Washoe RTC Regional Connector. The ridership impact on TTD and ESTA services is expected to be minimal. In sum, the transit center is estimated to increase existing annual ridership by 8,400 passenger-trips.

ANALYSIS OF QUANTIFIABLE TRANSIT BENEFITS

The transit improvement program will generate the quantifiable benefits discussed below.

Transit Rider Transportation Cost Savings

The increased transit ridership will reduce overall travel-related costs, as the operating costs for auto use are higher than transit fares. As shown in Table 13, the ridership estimates were divided by an average vehicle occupancy (over all trip types) of 1.67, per the BCA Guidance document, to yield the eliminated annual one-way vehicle-trips for each service. Multiplying by the average person-trip length on each service corridor yields the reduction in annual Vehicle-Miles of Travel (VMT). The cost savings per VMT rate is calculated at an average operating cost per vehicle-mile of 46 cents (per the BCA Guidance document) minus the average fare per person-mile for the various routes multiplied by the average vehicle occupancy. The ridership is expected to grow at the forecast rate of Carson City annual population growth (0.2 percent per year). As shown in Table 14, this benefit is $6,000 in 2027, increasing to $6,300 in 2046 with growth in ridership. The net present value of this benefit is $58,357.

Air Emission Benefits

The reduction in private vehicle (auto, light truck, and SUV) use will yield overall reductions in air pollutant emissions, even when the additional transit service is considered. The analysis of this benefit, as shown in Table 15, is based upon the VMT reductions (identified in Table 14) multiplied by standard auto emission cost factors. This yields a relatively small benefit of $700 per year. Over the 20-year analysis period this yields a net present value benefit of $7,799.

[4] Such as the Transit Cooperative Research Program Report 90: Bus Rapid Transit, 2003.

TABLE 13: Transit Benefits -- Base Year

	JAC Fixed Route	Washoe RTC Regional Connector	Total
Existing Annual Ridership (2018)	*195,160*	*30,000*	
Ridership Increase	7,800	600	**8,400**
Percent Increase	4%	2%	
Average Avoided Vehicle Occupancy	1.67	1.67	
Eliminated 1-Way Vehicle-Trips (1)	4,700	400	
Average Trip Length (Miles)	2.5	28	
Reduction in Private Vehicle VMT	11,800	11,200	**23,000**

TABLE 14: Motorist Travel Cost Reduction Benefits

Year	Annual Reduction in VMT by Transit Service: JAC Fixed Route	Annual Reduction in VMT by Transit Service: Washoe RTC Regional Connector	TOTAL	Annual Value	Discounted at 7 Percent
2027	12,000	11,400	23,400	$6,000	$5,189
2028	12,100	11,500	23,600	$6,100	$4,907
2029	12,100	11,500	23,600	$6,100	$4,563
2030	12,100	11,500	23,600	$6,100	$4,244
2031	12,100	11,500	23,600	$6,100	$3,947
2032	12,200	11,600	23,800	$6,200	$3,731
2033	12,200	11,600	23,800	$6,200	$3,469
2034	12,200	11,600	23,800	$6,200	$3,227
2035	12,200	11,600	23,800	$6,200	$3,001
2036	12,300	11,600	23,900	$6,200	$2,791
2037	12,300	11,700	24,000	$6,200	$2,595
2038	12,300	11,700	24,000	$6,200	$2,414
2039	12,300	11,700	24,000	$6,200	$2,245
2040	12,400	11,700	24,100	$6,200	$2,088
2041	12,400	11,800	24,200	$6,300	$1,973
2042	12,400	11,800	24,200	$6,300	$1,835
2043	12,400	11,800	24,200	$6,300	$1,706
2044	12,500	11,800	24,300	$6,300	$1,587
2045	12,500	11,900	24,400	$6,300	$1,476
2046	12,500	11,900	24,400	$6,300	$1,372
TOTAL					$58,357

TABLE 15: Air Emission Reduction Benefit

Year	Annual Reduction in Auto VMT	Annual Value of Auto Air Emission Reduction: Particulate Matter (PM)	Nitrous Oxides (NOx)	Sulfur Oxides (SOx)	Volatile Organic Compunts (VOC)	Carbon Dioxide	Net Annual Value	Discounted at 7 Percent
Value ($ per VMT) (1)		*$0.01893*	*$0.00602*	*$0.00039*	*$0.00219*	*$0.00520*		
2027	23,400	$400	$100	$0	$100	$100	$700	$605
2028	23,600	$400	$100	$0	$100	$100	$700	$563
2029	23,600	$400	$100	$0	$100	$100	$700	$524
2030	23,600	$400	$100	$0	$100	$100	$700	$487
2031	23,600	$400	$100	$0	$100	$100	$700	$453
2032	23,800	$500	$100	$0	$100	$100	$800	$481
2033	23,800	$500	$100	$0	$100	$100	$800	$448
2034	23,800	$500	$100	$0	$100	$100	$800	$416
2035	23,800	$500	$100	$0	$100	$100	$800	$387
2036	23,900	$500	$100	$0	$100	$100	$800	$360
2037	24,000	$500	$100	$0	$100	$100	$800	$335
2038	24,000	$500	$100	$0	$100	$100	$800	$311
2039	24,000	$500	$100	$0	$100	$100	$800	$290
2040	24,100	$500	$100	$0	$100	$100	$800	$269
2041	24,200	$500	$100	$0	$100	$100	$800	$251
2042	24,200	$500	$100	$0	$100	$100	$800	$233
2043	24,200	$500	$100	$0	$100	$100	$800	$217
2044	24,300	$500	$100	$0	$100	$100	$800	$201
2045	24,400	$500	$100	$0	$100	$100	$800	$187
2046	24,400	$500	$100	$0	$100	$100	$800	$174
TOTAL								$7,799

Note 1: Based on emission rates identified in *Methods to Fiind the Cost-Effectiveness of Fundinig Air Quality Projects -- Emission Factor Tables*, California Air Resources Board, September 2019.

Safety Benefits

As fatality/injury rates per mile traveled are significantly lower for bus passengers than for auto (and light truck/SUV) passengers, the increase in transit ridership resulting from the transit center would provide a safety benefit. Existing crash rates were defined from NDOT Office of Traffic Safety data. Based on National Safety Council data[5], the fatality rate (deaths per million passenger-miles) for light duty motor vehicles (passenger cars, light trucks, SUVs) for the ten years between 2009 and 2018 was 0.488, while the rate over the same period for buses was 0.047.

This indicates that the ratio of bus fatality rate to light duty motor vehicle rate was 9.63 percent (a crash modification factor of 90.4). This in turn can be used to identify the number and severity of crashes that would be avoided due to the shift of motorists to transit use. These are multiplied by the costs associated with crashes by severity, as identified in *Benefit-Cost Analysis Guidance for Discretionary*

[5] Death by Transportation Mode, Website: https://injuryfacts.nsc.org/home-and-community/safety-topics/deaths-by-transportation-mode/, 2007-2018

Grant Programs to yield the safety benefit. As shown in Table 16, the annual safety benefits are estimated to be $6,505 in the 2027. In total, the 20-year net present value of safety benefits is found to be $62,656.

TABLE 16: Safety Benefits

Year	Annual Reduction in Auto Million Passenger-Miles by Transit Service: JAC Fixed Route	Washoe RTC Regional Connector	TOTAL	Annual Value	Discounted at 7 Percent
2027	0.0200	0.0190	0.0391	$6,505	$5,626
2028	0.0202	0.0192	0.0394	$6,561	$5,277
2029	0.0202	0.0192	0.0394	$6,561	$4,908
2030	0.0202	0.0192	0.0394	$6,561	$4,564
2031	0.0202	0.0192	0.0394	$6,561	$4,245
2032	0.0204	0.0194	0.0397	$6,616	$3,981
2033	0.0204	0.0194	0.0397	$6,616	$3,702
2034	0.0204	0.0194	0.0397	$6,616	$3,443
2035	0.0204	0.0194	0.0397	$6,616	$3,202
2036	0.0205	0.0194	0.0399	$6,643	$2,990
2037	0.0205	0.0195	0.0401	$6,672	$2,793
2038	0.0205	0.0195	0.0401	$6,672	$2,597
2039	0.0205	0.0195	0.0401	$6,672	$2,416
2040	0.0207	0.0195	0.0402	$6,698	$2,255
2041	0.0207	0.0197	0.0404	$6,728	$2,107
2042	0.0207	0.0197	0.0404	$6,728	$1,959
2043	0.0207	0.0197	0.0404	$6,728	$1,822
2044	0.0209	0.0197	0.0406	$6,754	$1,701
2045	0.0209	0.0199	0.0407	$6,784	$1,589
2046	0.0209	0.0199	0.0407	$6,784	$1,478
TOTAL					$62,656

Benefit-Cost Analysis

Costs will consist of capital costs (design, engineering, construction, land acquisition and project management) as well as ongoing maintenance costs. These costs were defined as follows:

- The middle of the three site cost estimates was assumed ($2,990,000).
- Ongoing facility maintenance costs also need to be considered. A reasonable planning-level estimate is as follows:
    - Custodial and Grounds—$40,000
    - General building maintenance—$15,000
    - Utilities—$6,000
    - Security/Cameras/IT—$4,000.

This indicates a total annual facility cost of $65,000 per year. Annualized over the period from 2027—2046, the net present value of all costs is $4,201,050 as shown in Table 17. The various benefits discussed above, as shown in the bottom portion of Table 17, total $128,812 in present value. Dividing this figure by the total present value of all costs, the Benefit-to-Cost Ratio is found to be 0.04.

TABLE 17: Annual Costs and Benefit-Cost Ratio

Year	Capital Costs	Maintenance Costs	Total Annual Costs	Discounted at 7 Percent
2027	$2,990,000	$65,000	$3,055,000	$2,642,270
2028	$0	$65,000	$65,000	$52,283
2029	$0	$65,000	$65,000	$48,623
2030	$0	$65,000	$65,000	$45,220
2031	$0	$65,000	$65,000	$42,054
2032	$0	$65,000	$65,000	$39,111
2033	$0	$65,000	$65,000	$36,373
2034	$0	$65,000	$65,000	$33,827
2035	$0	$65,000	$65,000	$31,459
2036	$0	$65,000	$65,000	$29,257
2037	$0	$65,000	$65,000	$27,209
2038	$0	$65,000	$65,000	$25,304
2039	$0	$65,000	$65,000	$23,533
2040	$0	$65,000	$65,000	$21,886
2041	$0	$65,000	$65,000	$20,354
2042	$0	$65,000	$65,000	$18,929
2043	$0	$65,000	$65,000	$17,604
2044	$0	$65,000	$65,000	$16,372
2045	$0	$65,000	$65,000	$15,226
2046	$0	$65,000	$65,000	$14,160
TOTAL				$3,201,050

Benefits	Net Present Value
Rider Travel Cost Savings	$58,357
Air Emission Reductions	$7,799
Safety Benefits	$62,656
TOTAL	$128,812

Benefit-Cost Ratio	
Benefit	$128,812
Cost	$3,201,050
Ratio	0.04

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Chapter 8
FOCUSED SITE SCORING AND COMPARISON

ANALYSIS OF FOCUS SITES

Chapter 5 of this study prepared as part of this study presented a ranking/weighting system for evaluation of potential sites. This was used to narrow down the six original site options to the three discussed in this document. Using the results of the additional design and analysis documented in previous chapters of this document, this analysis was updated, as shown in Table 18.

Table 18: Updated Weighted Score of Site Alternatives

	Factor Weight (0 to 1)	Scoring (1 = Very Poor to 5 = Very Good)		
		Existing Site	Robinson St.	Spear St. West
Site Availability (Screening)	*1.00*	*Yes*	*Possibly*	*Yes*
Construction Cost	0.50	2	3	3
Parking Impact	0.75	4	3	3
Downtown Area Goals	1.00	5	5	5
Transit Efficiency & Access	0.75	4	4	3
Passenger Safety & Convenience	1.00	5	4	3
Adjacent Land Use Compatibility	1.00	4	4	5
Expandability/Flexibility	0.75	4	3	1
Weighted Score		**24.0**	**22.0**	**19.8**

These scores were defined as follows:

- Construction Cost— The Existing Site costs would be higher than the other two sites (due to the larger roadway reconstruction area), scoring slightly lower on this factor.

- Parking Impact—The Existing Site would reduce on-street parking by a net five spaces, while the Robinson Street Site would reduce parking supply by 8 spaces (along with two taxi loading spaces) and the Spear Street Site would reduce parking by 20 spaces.

- Downtown Area Goals—All sites align with Downtown Area Goals.

- Transit Efficiency and Access—As discussed in Chapter 5, the transit mileage needed to serve any of the sites are remarkably similar (within $400 per year of operating costs). The potential for buses at the Spear Street site to be blocked from exiting due to the presence of other buses is a disadvantage to that site.

- Passenger Safety and Convenience—All three sites allow passengers to transfer between buses without the need to cross public streets or driveways, which is a safety benefit. The Spear Street Site has a convenience benefit in that bus bays are closer together (reducing walk distance) than for the other two sites. However, the Spear Street Site is a one block longer walk to trip destinations along Carson Street. The Existing Site benefits in this regard by the relatively low traffic volumes on Plaza Street compared with Robinson Street.

- Adjacent Land Use Compatibility—Both the Existing Site and the Robinson Street Site would keep the transit functions immediately adjacent to the Federal Building, which has been an issue in the past. While the site improvements are expected to address this issue, the Spear Street Site avoids the issue altogether. Assuming the slight 5 percent reduction in the parking lot to the south of the site does not have a substantial impact on the Farmers Market, the Spear Street Site ranks slightly higher than the other two sites.

- Expandability/Flexibility – While each of the sites can accommodate the currently-foreseeable site program, as a long-term facility investment there is always the potential for new technologies or site requirements to be accommodated. Examples may include charging equipment for battery electric transit vehicles or providing space for a bike share or scooter share program. The relatively large amount of space provided at the Existing Site due to the viability of reducing Plaza Street to a single lane provides a clear benefit in this category.

Consideration was given to also adding a "Traffic Impact" category, as two options (existing and Spear Street) change current traffic access patterns slightly. As none of the options were found to have any significant traffic/circulation impacts, however, adding this category would not change the relative weighted rankings.

As shown, all sites yield an overall score within a relatively narrow range of 19.8 to 24.0. This analysis, however, does indicate a modest overall advantage to the Existing Site at 24.0, compared with 22.0 for the Robinson Street Site and 19.8 for the Spear Street Site. As mentioned in Chapter 5, the scoring analysis did not include Site 0 – Upgrade Existing, as it remains a short-term option regardless of the final recommendation and selection of a long-term location.

Chapter 9
STUDY FINDINGS AND RECOMMENDATIONS

KEY STUDY FINDINGS

Ultimately, after assessing existing transit center site challenges, generating potential new sites, exploring each site for feasible viability in development and operations, and determining cost impacts to implementation, the key findings of this study are as follows:

- The JAC fixed route service is important to many Carson City residents. As a "hub and spoke" "pulse" system, a transit center for bus transfers in this general area of downtown is a key element of the service. It also serves as a connection point for regional transit services providing service to Reno/Sparks and Lake Tahoe.

- The existing Downtown Transfer Plaza consists only of a wide sidewalk with 2 shelters, 3 benches, and a bike rack along the sidewalk adjacent to the east side of North Plaza Street. This facility has numerous existing deficiencies:

    - It lacks sufficient shelter for the existing peak passenger loads.
    - It does not provide driver break facilities, such as restrooms.
    - Lack of lighting is a potential safety issue.
    - The poor facilities result in some passengers encroaching onto nearby properties (in particular, the Federal Building) in search of seating and shade.
    - The current configuration results in long walking distance for passengers transferring between some buses.
    - The facility does not provide a positive public image for the transit service, nor does it have adequate wayfinding signage, real-time information, or marketing for the services it accommodates and links together.

- An improved transit center would warrant the provision of a modest enclosed building of approximately 1,500 square feet of floor area, providing a passenger waiting area, staff break facilities and office, and restrooms. Transit bays to accommodate up to 7 buses are also warranted.

- None of the three sites evaluated in detail (Site 1, Site 4, or Site 5) fully meet the space requirements identified in Table 5. Changes to adjacent land use, redevelopment of adjacent parcels, and further coordination with nearby building owners may present new partnership opportunities over the long-term that could result in a Downtown Transfer center that meets all the stated requirements.

- The City should carefully consider short and long-term costs of the site, not only for construction, but also for ongoing maintenance and care of the facility.

RECOMMENDATIONS

With these findings in mind and based on a detailed analysis of each site, it is recommended to pursue construction on the existing site along Plaza Drive. Of the options analyzed, and with these findings in mind, Site 1 at the existing location along Plaza Drive is the best long-term location for the Downtown Transfer Center. Advantages of this site over the others considered are as follows:

- It does not require the purchase of additional property.
- It provides greater flexibility to provide for future modifications, such as for electric vehicle charging.
- It has less impact on other adjacent uses. By providing better facilities on site, in fact, it can reduce the existing nuisance use of the Federal Building lawn area.
- It provides for better pedestrian safety than the other locations.

However, there are additional challenges and questions to be addressed prior to recommending this site for construction in the short-term. Therefore, the following two recommendations are made:

1) Proceed with design and construction of interim improvements at Existing Site 1 to address short-term challenges with the site.
2) Continue to monitor changes to adjacent land use and continue open dialog and coordination with nearby building owners related to future opportunities in addressing the long-term goals for JAC.

Implementation

Achieving a new transit center for Carson City is a substantial endeavor. Key implementation steps consist of the following for the short-term recommendation:

- Pursue Federal funding for planning and construction, such as existing transit funding apportioned for JAC operations, or by perusing the Federal Transit Administration's Section 5339 Grants for Buses and Bus Facilities program.
- Coordinate with the property owners of the adjacent Federal Building parcel. While the transit center project will not require additional land, it will affect this parcel. Discussions are needed regarding access to the monument, modifications to the central driveway, and changes to fencing and landscaping areas.
- Begin design of the facility including by conducting a review and identification of potential environmental mitigations.

For the long-term transit center to be successful, the following are key steps:

- Coordinate with all adjacent the property and building owners to understand future plans and partnership opportunities.

- Through the environmental process, present the proposed project to the Carson City Historic Resources Commission and discuss how the project center can minimize impacts on the Virginia and Truckee Railroad Station and best be compatible with this historic asset.

- Pursue federal funding for ongoing maintenance and operations, including on-site staffing by JAC or contractor personnel.

- Conduct a focused traffic study to support the conversion of Plaza Street to one-way northbound.

- Conduct a procurement process to retain an architectural/engineering firm to develop plans for the new facility.

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Appendix A

DRIVER SURVEY RESULTS

Carson City JAC Transit Center Facility Feasibility Study
– Bus Driver Interview Questions –

In the 2019 Carson City Transit Development Plan, the need for an improved JAC transit center was identified. Carson City has hired LSC Consultants, Inc to complete a feasibility study to identify needs, conduct outreach, and to evaluate the existing downtown transfer site as well as other potential locations to consider for a future transit station. As a part of these efforts, we would like to ask the bus drivers a few questions.

This is only a study; future action requires direction from the Carson City Regional Transportation Commission

1. What are some pros and cons about the existing location along Plaza Street by the Federal Building?

Pros	Cons
	- Fire Hydrant need remove

2. As a driver, what should site planners consider when evaluating a site for a transit center (access, circulation, etc.)?

* Need to build a public restroom!

Use back if needed

3. What are some transit center features you would like to see included in the new location? (Check the following)

Amenities	Yes	No
Indoor waiting area	✓	
Driver Restrooms	✓	
Public Restrooms	✓	
Security (Cameras and Lighting)	✓	
Bicycle Racks	✓	
Additional seating	✓	
Small Office Space	✓	
Storage Area	✓	
Vending Machine (Food and Drinks)	✓	

4. What is the greatest number of people you have ever seen waiting at the current Plaza Street stop? (Check the best answer) ☐ Less than 10 people ☐ 10-20 people ☒ 20-30 people ☐ 30-40 people ☐ 40-50 people ☐ More than 50, specifically my best estimate is _____

5. Is there anything else you would like to share regarding the evaluation of a future transit center?

Carson City JAC Transit Center Facility Feasibility Study
– Bus Driver Interview Questions –

In the 2019 Carson City Transit Development Plan, the need for an improved JAC transit center was identified. Carson City has hired LSC Consultants, Inc to complete a feasibility study to identify needs, conduct outreach, and to evaluate the existing downtown transfer site as well as other potential locations to consider for a future transit station. As a part of these efforts, we would like to ask the bus drivers a few questions.

This is only a study; future action requires direction from the Carson City Regional Transportation Commission

1. What are some pros and cons about the existing location along Plaza Street by the Federal Building?

Pros

Wide parking area

Cons

Not always enough time to get to restroom
no Food plaza close by

2. As a driver, what should site planners consider when evaluating a site for a transit center (access, circulation, etc.)?

plenty of parking
Restroom Employee accessable only
waiting area

Use back if needed

3. What are some transit center features you would like to see included in the new location? (Check the following)

Amenities	Yes	No
Indoor waiting area	X	
Driver Restrooms	X	
Public Restrooms		X
Security (Cameras and Lighting)	X	
Bicycle Racks	X	
Additional seating		
Small Office Space		
Storage Area	X	
Vending Machine (Food and Drinks)	X	

4. What is the greatest number of people you have ever seen waiting at the current Plaza Street stop? (Check the best answer) ☐ Less than 10 people ☒ 10-20 people ☐ 20-30 people ☐ 30-40 people ☐ 40-50 people ☐ More than 50, specifically my best estimate is _____

5. Is there anything else you would like to share regarding the evaluation of a future transit center?

make it Driver freindy one way in/out for Bus Traffic only

Carson City JAC Transit Center Facility Feasibility Study
– Bus Driver Interview Questions –

In the 2019 Carson City Transit Development Plan, the need for an improved JAC transit center was identified. Carson City has hired LSC Consultants, Inc to complete a feasibility study to identify needs, conduct outreach, and to evaluate the existing downtown transfer site as well as other potential locations to consider for a future transit station. As a part of these efforts, we would like to ask the bus drivers a few questions.

This is only a study; future action requires direction from the Carson City Regional Transportation Commission

1. What are some pros and cons about the existing location along Plaza Street by the Federal Building?

Pros	Cons
1. General location in town.	1. Position of fire hydrant?

2. As a driver, what should site planners consider when evaluating a site for a transit center (access, circulation, etc.)?

1. Direction of weather?
2. Safety of clients in wait.
3. Transfers?
4.

Use back if needed

3. What are some transit center features you would like to see included in the new location? (Check the following)

Amenities	Yes	No
Indoor waiting area		
Driver Restrooms	X	
Public Restrooms		
Security (Cameras and Lighting)	X	
Bicycle Racks	X	
Additional seating		
Small Office Space		
Storage Area		
Vending Machine (Food and Drinks)		

4. What is the greatest number of people you have ever seen waiting at the current Plaza Street stop? (Check the best answer) ☐ Less than 10 people ☒ 10-20 people ☐ 20-30 people ☐ 30-40 people ☐ 40-50 people ☐ More than 50, specifically my best estimate is _____

5. Is there anything else you would like to share regarding the evaluation of a future transit center?

What type of vehicles are in the transit future?
Electric / Battery?

Carson City JAC Transit Center Facility Feasibility Study
– Bus Driver Interview Questions –

In the 2019 Carson City Transit Development Plan, the need for an improved JAC transit center was identified. Carson City has hired LSC Consultants, Inc to complete a feasibility study to identify needs, conduct outreach, and to evaluate the existing downtown transfer site as well as other potential locations to consider for a future transit station. As a part of these efforts, we would like to ask the bus drivers a few questions.

This is only a study; future action requires direction from the Carson City Regional Transportation Commission

1. What are some pros and cons about the existing location along Plaza Street by the Federal Building?

Pros:
EASY TO PULL INTO
NEARBY CASINO
STREET IS WIDE
EASY TO PULL OUT from

Cons:
FIRE HYDRANT NEAR CURB.
NO Designated BAYS for Buses
CARS Sometimes INTERFERE by PARKING too close.

2. As a driver, what should site planners consider when evaluating a site for a transit center (access, circulation, etc.)?

PEDESTRIAN WALKWAYS
BAYS FOR EACH BUS
Shelter for Bad weather

Use back if needed

3. What are some transit center features you would like to see included in the new location? (Check the following)

Amenities	Yes	No
Indoor waiting area	✓	
Driver Restrooms	✓	
Public Restrooms		✓
Security (Cameras and Lighting)	✓	
Bicycle Racks		✓
Additional seating	✓	
Small Office Space	✓	
Storage Area	✓	
Vending Machine (Food and Drinks)	✓	

4. What is the greatest number of people you have ever seen waiting at the current Plaza Street stop? (Check the best answer) ☐ Less than 10 people ☐ 10-20 people ☐ 20-30 people ☒ 30-40 people ☐ 40-50 people ☐ More than 50, specifically my best estimate is _____

5. Is there anything else you would like to share regarding the evaluation of a future transit center?

NO

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Appendix B

POTENTIAL SITE INFORMATION

Site 1 - Existing Site Summary

Site Information

Site Address	705 N Plaza Street
APN	426202
Owners	US Government
Zoning	Public Regional
Allowable Use	Yes

Site 2 - V&T Freight House Summary

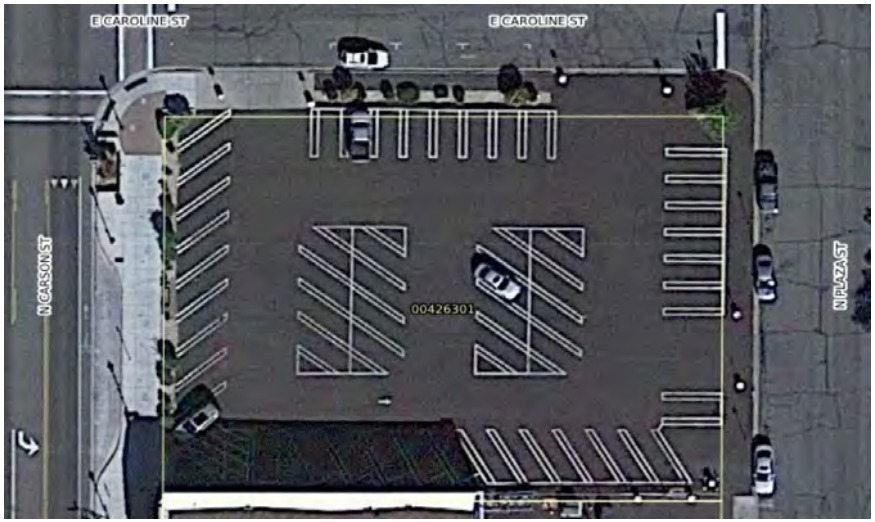
Site Information

Address	113 E Washington Street
APN	426101
Owners	Masonic Lodge, Carson
Size	0.2 Acres
Zoning	Downtown Mixed Use
Allowable Use	Yes

Site 3 - Coin Lot

Site Information

Address	617 N Carson Street
APN	426301
Owners	Adams N Carson LLC
Size	0.51 Acres
Zoning	Downtown Mixed-Use
Allowable Use	Yes



Site 4 - Robinson St.

Site Information

Address	705 N Plaza Street
APN	426202
Owners	US Government
Zoning	Public Regional
Allowable Use	Yes

Site 5 - Spear St. West

Site Information

Address	East Spear Street between Fall Street and Stewart Street
APN	00422407, 00422408, & 00422402
Owners	Adams N Carson LLC
Zoning	Downtown Mixed Use

Site 6 – Spear Street East

Site Information

Addresses	Spear Street between Stewart Street and Valley Street
APN	00422306 & 00422307
Owners	Adams N Carson LLC
Zoning	Downtown Mixed Use