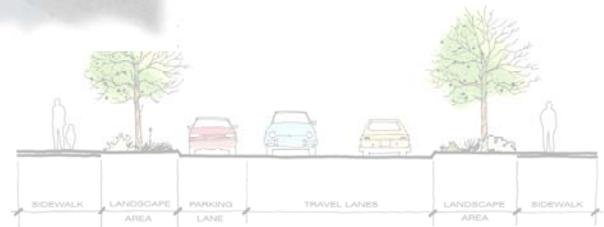


84th Avenue

Streetscape Improvement Project DESIGN CONCEPT REPORT



Prepared for the City of Peoria
FINAL
February 15, 2005



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1 INTRODUCTION

The 84th Avenue Streetscape Improvement Project is located in the Old Town District of Peoria, Maricopa County, Arizona (see Figure 1 and Figure 2). The 84th Avenue streetscape project was one of the goals identified in the *Central Peoria Revitalization Plan*, an implementation plan of the Revitalization and Redevelopment Element of the *Peoria General Plan*. As pointed out in the *Revitalization Plan*, the need to provide a safe pedestrian environment is a crucial part of revitalizing downtown Peoria. The public as well as city employees often walk between the various City facilities along 84th Avenue and the downtown core at 83rd and Washington. There are several religious buildings along 84th Avenue, together with the City Community Center, the future Performing Arts Theater, and two Park-and-Ride lots that serve an express bus route to downtown Phoenix, all of which draw people to the area.

The project limits include the right-of-way for 84th Avenue, from Peoria Avenue to Monroe Street. There is sufficient existing right-of-way to construct the project. No additional right-of-way is needed. Adjacent properties are privately owned or owned by the City of Peoria. The neighborhood is somewhat disenfranchised and many of the private properties are in varying states of disrepair. The City continuously invests in the Old Town by promoting projects such as the Performance Arts Theater, Park-and-Ride lots, future Osuna Park, 83rd Avenue improvements, and mixed use development projects. Revitalization of 84th Avenue is one of several other planned investments in the Old Town District. Currently, there are no other planned improvements for 84th Avenue.

The current streetscape is harsh and not pedestrian friendly. There is little to no shade, the existing sidewalk is narrow and not to Americans with Disabilities Act (ADA) standards, and unsightly overhead power lines border the east side of the street. The purpose of the project is to improve the pedestrian environment by providing larger landscaped areas that include mature shade trees, widening the sidewalks and making them ADA accessible, and installing additional pedestrian amenities.

The project will involve major work in moving curbs and gutters to provide room for large landscaped areas and wider sidewalks. There are several existing constructed items within the right-of-way including low aesthetic walls at two residential properties. The design concept will work with these features in order not to disturb them. The project involves undergrounding the overhead power lines and removing the poles.

History

Peoria began as a farming community in the 1880s with the first store opened in 1889. Peoria often served as a stop for people traveling from Wickenburg to Phoenix. In 1954, Peoria incorporated and has been growing ever since. However, like in other fast growing cities, businesses have been migrating away from the downtown toward the outlying areas and the downtown area is now suffering economic decline. Many Peoria residents feel strongly, as evidenced by the voter support of the *Peoria General Plan* and *Central Peoria Revitalization Plan*, that the downtown should still be a significant part of the community and is worthy of revitalization. 84th Avenue was in the original town plat and continues to serve as a main corridor in the Old Town District. Enhancing 84th Avenue is part of the revitalization plan to make the downtown more attractive to businesses, residents, and tourists, and to bring people back to the area.



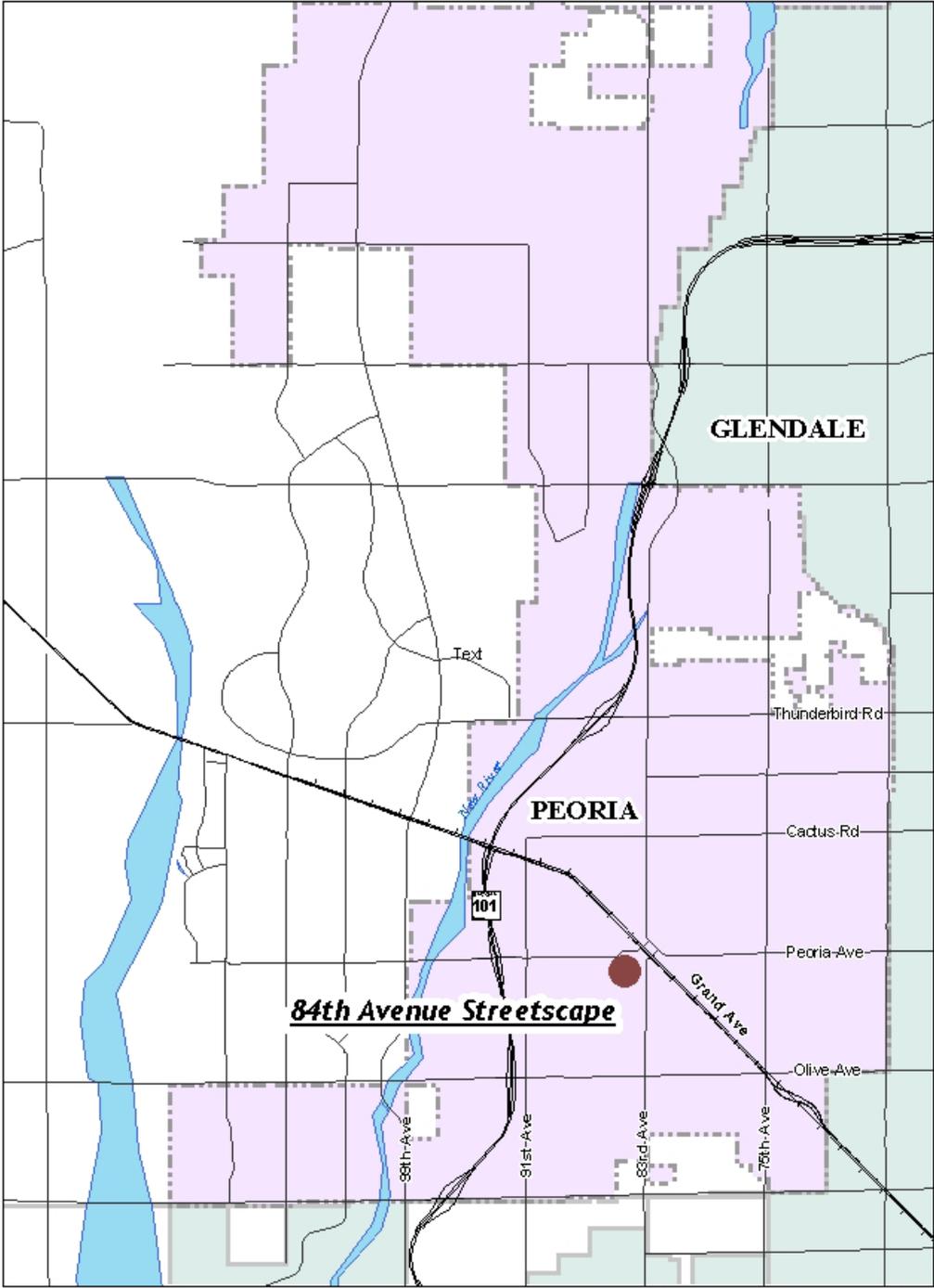


Figure 1. Location Map



Figure 2. Vicinity Map

2 BACKGROUND DATA

A) Existing Condition

The current roadway is a two-lane paved asphalt road. There is parallel and angled parking on both sides of the road. There is a 4 foot concrete sidewalk on both sides of the road behind the back of curb except for one block, on the east side, where it is set back 7 feet. There is centerline striping only on the block from Peoria to Washington. 84th Avenue has a stop condition at all the cross streets – Monroe, Madison, Jefferson, Washington, and Peoria. The cross streets do not stop. There are crosswalks painted at all the intersections and decorative pavers at the Washington Street intersection. The cross gutters at these intersections are fairly deep to carry drainage.

There are overhead power lines on the east side of the road from just north of Monroe continuing north almost to Peoria Avenue. The existing landscape is a collection of different themes from property to property. There are a few mature trees, some shrubs, river rock, decomposed granite, and turf.



Photo 1...View North from Monroe Street



Photo 2...View North from Madison Street

84th Avenue
Streetscape Improvement
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Photo 3...View South from Jefferson Street



Photo 4...View Across to Community Center



Note the person in wheelchair using the street.

Photo 5...View North from Jefferson Street



Photo 6...View North between Jefferson and Washington Streets



Photo 7...View North from Washington Street



Photo 8...Commercial Center at Peoria and 84th Avenues



Photo 9.. Washington Street Improvements



Photo 10.. Washington Street Improvements



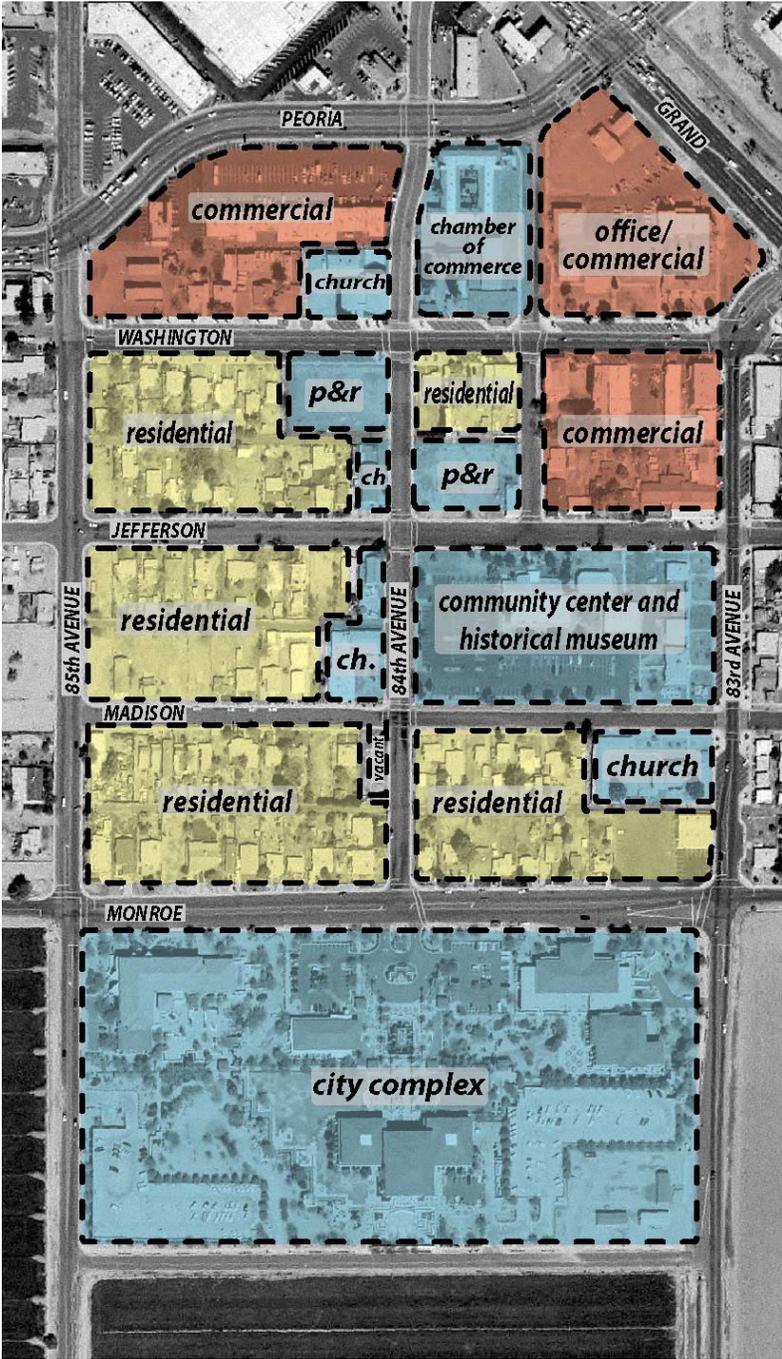
Photo 11.. 83rd Avenue Improvements



Photo 12.. 83rd Avenue Improvements

B) Existing Land Use

Existing land uses along 84th Avenue are mixed (see Figure 3). The most southerly block is residential with one vacant lot on the southwest corner of Madison and 84th. On the next block north there are two churches on the west side of the street and the City Community Center on the east. The next block north has two Park-and-Ride lots, one residential lot, and one church. The northern most block has a church and a retail strip mall on the west and the city Chamber of Commerce facilities on the east.



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84th Avenue Streetscape Improvement



Figure 3. Existing Land Use

C) Demographics

Information describing the demographics of the 84th Avenue Streetscape Improvement Project was obtained from the US Census. The area looked at extended approximately one-half mile in all directions from the intersection of 84th Avenue and Peoria Avenue. Within this focus area the population is approximately 2,900 people.

There are a total of 1,012 households in this focus area, with an average household size of 2.9 persons, slightly higher than the 2.7 average household size for Peoria overall.

Of the 1,132 housing units in this area, 11% are vacant. One-third of the occupied units are owner-occupied with the remaining two-thirds renter occupied. This contrasts to Peoria overall, where 84% of the occupied units are owner-occupied and 16% are renter occupied.

The ethnicity and race of the focus area population and the City of Peoria is shown in the following table.

	Total Population	White	Hispanic or Latino	Black/ African American	American Indian/ Alaska Native	Asian/ Pacific Islander	Other Race	Percent Minority
Focus Area	2,912	45%	47%	4%	1%	2%	1%	55%
City of Peoria	108,364	78%	15%	3%	1%	2%	2%	22%

Source: U.S. Census (2000)

As can be seen from the table, the minority population in the focus area is 250% higher than that of the City of Peoria. Hispanics make up the majority of the focus area's minority population.

The poverty status of households is defined as those whose median household income is at or below the Department of Health and Human Services poverty guideline. The poverty thresholds are revised annually to allow for changes in the cost of living.

Poverty status is described for Block Group census geography, a larger unit than the Census Block used to determine the focus area's minority population. In this somewhat larger area, 6% of the population has income at or below the poverty level, while overall the City of Peoria has a slightly lower poverty rate of 5%. While most of the Block Groups within the area of the project are at or below the poverty level for Peoria, the Block Group immediately north of Peo-

ria Avenue, on the south side of Grand Avenue, has 18% of the households below the poverty level.

Summary

- Renter-occupied housing in the focus area (67%) is significantly higher than for the City overall (16 percent).
- The minority population for the focus area (55%) is two and one-half times greater than that of the City of Peoria.
- The area immediately north of Peoria Avenue, on the south side of Grand Avenue, has 18% of the population below the poverty level, more than three times the percent of people in poverty for the City of Peoria overall.

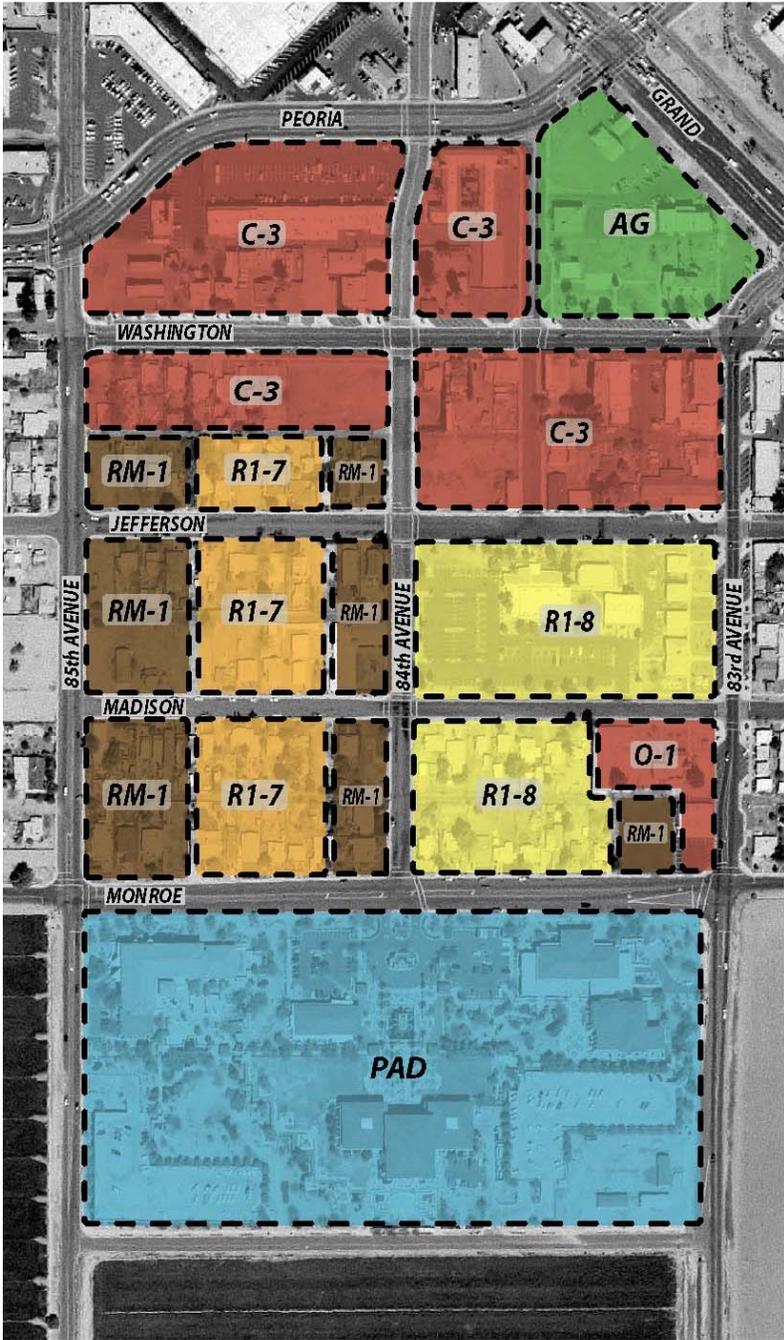
D) Existing Zoning

Existing zoning in the four block area is a mix of predominantly residential and commercial zoning categories (see Figure 4). The southern half of the project area is residential, with R1-8 and RM-1 fronting on 84th. The northern half is commercial (C-3), with one small area of RM-1. The uses allowed in these categories include:

ZONING CATEGORY	DESCRIPTION	USES ALLOWED
AG	General Agricultural District	Agricultural, General, Public and Quasi-public
R1-8	Single Family Residential District	Single Family detached homes, recreation centers, group homes, schools. Minimum lot size 8,000 sq. ft.
R1-7	Single Family Residential District	Single Family detached homes, recreation centers, group homes, schools. Minimum lot size 7,000 sq. ft.
RM-1	Multi-Family Residential District	Single Family, Two-family and Multi-family Dwellings, Group Homes, Schools
C-3	Central Commercial District	Retail establishments, medical offices, restaurants, theaters, recreation centers
O-1	Office District	Office buildings, banks, medical offices, schools, hospitals, churches
PAD	Planned Area Development	Peoria City Hall

Source: City of Peoria Zoning Ordinance





ZONING LEGEND
 AG- General Agricultural District
 R1-8 - Single Family Residential District
 R1-7 - Single Family Residential District
 RM-1 - Multi-Family Residential District
 C-3 - Central Commercial District
 O-1 - Office District
 PAD - Planned Area Development

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84th Avenue Streetscape Improvement
Figure 4. Existing Zoning



E) Other Construction Projects in the Area

There are several projects in the area that have either been recently completed or are underway. These are projects that are adjacent to or near 84th Avenue or may have impacts on the area in the future.

PROJECT	TYPE OF PROJECT	LEAD AGENCY
Washington Street and 83 rd Avenue Streetscape Improvements	Constructed	City of Peoria
83 rd Avenue Realignment Study	Design Concept Report	City of Peoria
83 rd Avenue-Peoria Avenue Pedestrian Improvements	Phase II Construction Drawings	City of Peoria
Grand Avenue Major Investment Study (MIS) Phase II	Transportation Planning	MAG
Community Center Parking Lot Renovation	Constructed	City of Peoria
Downtown Park & Ride Lots	Constructed	City of Peoria

F) Relationship to Other Regional Documents

Numerous documents and agencies were researched to determine what design criteria had been, or might be, applied relative to the 84th Avenue Streetscape Improvement Project. The documents and agencies included relate to transit, multi-modal, and planning issues. The documents were researched for how they might specifically apply to the project scope.

i) Transit

Valley Metro Website

There are two bus routes in the vicinity of 84th Avenue: the Grand Avenue Limited and Route 106. The Grand Avenue Limited is an express route that is targeted at rush hour, weekday riders. Morning hours are approximately 5:20am to 8:20am; the afternoon hours are 4:15pm to 7:00pm. The northern end of the route begins at the Park-and-Ride lot on the northeast corner of Jefferson and 84th Avenue. The other end of the route is in downtown Phoenix. Route 106-Peoria/Shea runs between Sun City and the Mayo Clinic in Scottsdale, at Shea and 136th Street. The route runs along Peoria Avenue past 84th Avenue. The 106 route has hours Sunday through Saturday.



ii) Bicycle and Pedestrian

Statewide Bicycle/Pedestrian Plan. Prepared by Arizona Department of Transportation. 2003.

Section 8.1 Bicycle Facility Design Guidelines.

- ◆ References the American Association of State Highway and Transportation Officials (AASHTO) 1990 *Guidelines for Development of Bicycle Facilities* and the *Manual on Uniform Traffic Control Devices* (MUTCD), Millennium Ed., Rev.
- ◆ Bike lanes of 5 feet to 6 feet are desirable. They should be striped, signed, and marked in accordance with the MUTCD.
- ◆ 4 foot bike lanes may be considered. However, the situations where 4 foot lanes were used do not generally apply to the 84th Avenue project.
- ◆ Bicycle riding on sidewalks should be discouraged and sidewalks should not be designated as a bicycle route.
- ◆ ADOT recommends that all new drainage grates open to bicyclists have a maximum gap of 4 inches in any direction of travel.

Section 8.2 Pedestrian Guidelines.

- ◆ The minimum clear width for comfortable walking is 5 feet, so two pedestrians can walk side by side; 6 feet is preferable. Clear width means without poles, signs, trees, benches, etc. Sidewalks adjacent to a roadway should preferably be 2 feet wider than one that is separated from the roadway. Separated sidewalks provide an area in which to put signs, poles, benches, and landscape.
- ◆ Shade is essential in Arizona. This can be achieved from trees, awnings, or other shade type elements.
- ◆ Lighting is critical for pedestrian safety at intersections, mid-block crossings, and along sidewalks. Lighting allows for longer hours of use. Pedestrian scale lights are preferred over relying on street lights.
- ◆ Pedestrian oriented signs should be considered to provide useful information. Signs should be pedestrian scale and indicate routes and destinations in the area.
- ◆ Connectivity to facilities is paramount.
- ◆ Pedestrians are at greatest risk at intersections and when crossing streets.
- ◆ Bicyclists riding on the sidewalk are a negative to pedestrians which is why they should be accommodated on the roadway.
- ◆ Consider pedestrian friendly intersections with bulb outs that decrease the distance a pedestrian has to cross a street.
- ◆ Elements of pedestrian friendly design include:
 - good transit access
 - shared parking
 - sidewalks adjacent to businesses and storefronts
 - lower speed limits in high pedestrian activity areas
 - intersections designed for blind and wheelchair users

- textured or colored crosswalks that draw attention to pedestrians and enhance aesthetics
- lighted or reflective markings at crosswalks that add nighttime visibility
- ◆ Streetscape features that add convenience and aesthetics to being on the sidewalk include:
 - bus shelters
 - benches
 - attractive street lights
 - matching street furniture
 - public art
 - food vendors
 - fountains
 - street performers
 - trees/landscape
 - textured/colored paving
 - attractive trash cans/news racks
 - clocks
 - banners/flags
 - kiosks
 - area wide logo/signage program
 - bicycle parking

Bicycle Transportation System Plan. Prepared by Maricopa County Department of Transportation. 1999.

- ◆ There is a misconception that bicycle facilities are for recreation, not transportation. This is not true, they are intended to provide transportation and increase mobility.
- ◆ The benefits of streets with wide paved shoulders are: fewer accidents; lower vehicle miles traveled; improved air quality; and enhanced quality of life.
- ◆ Bicycle lanes benefit pedestrians on the sidewalk by providing more distance from vehicles.
- ◆ Bicycle lanes benefit motorists by making it easier to exit driveways, providing bigger turn radiuses for larger vehicles, and a buffer for parked cars.
- ◆ Bicycle lanes benefit the streetscape by allowing room for tree canopies.

MAG Pedestrian Plan 2000 Final Report. Prepared by Maricopa Association of Governments. 1999.

- ◆ *Objective 1.1.* Provide and maintain a safe, convenient and enjoyable walking environment that responds to the varied needs of a diverse walking population.
- ◆ *Objective 5.2.* Link primarily transportation related pedestrian facilities to other pedestrian support facilities, such as urban trails, bicycle facilities, pathways, etc.
- ◆ *Objective 5.4.* Use pedestrian linkages to transit to maximize connections between origins and destinations.
- ◆ The amount of separation (or buffering) between the pedestrian travel way and moving traffic stream is a major factor in how pedestrians perceive the safety of their environment.

- ◆ On-street parking and bike lanes can act as a buffer for pedestrians from moving vehicles.

MAG Regional Bicycle Plan. Prepared by Maricopa Association of Governments. Revised January 1999.

- ◆ Most cyclists tend to ride short distances (less than 2 miles) and prefer to ride on streets without much automobile traffic. Most bike trips are for social/recreational purposes.
- ◆ Issues and Needs
 - Focus planning efforts on short trip cyclists
 - Provide intermodal connections and connection across city boundaries.
 - Provide a variety of facility types, with a focus on bicycle lanes and paths.
- ◆ Objectives
 - Adhere to national standards for planning and design guidelines (AASHTO, MUTCD, Planning, Design, and Management Manual for Multi-use Trails (Trails for the 21st Century)).
 - Encourage development of bicycle parking facilities at appropriate local daily trip destinations.
 - Promote public events to encourage bicycling for local trips, commuting, recreation, and exercise. Support “ride your bike” events, bike tours, organized bike rides, “bike to work” days, and bicycle races.
- ◆ The Regional Bicycle Plan map for on-road systems shows a designated bike route (#13) along Grand Avenue. The Regional Bikeway Plan inventory shows the Grand Avenue alignment as unclassified. The off-road system map indicates there are no facilities in the vicinity of the 84th Avenue project.

MAG Regional Off-Street System (ROSS) Plan. Prepared by Maricopa Association of Governments. February 2001.

- ◆ The ROSS is a region-wide system of off-street paths/trails for non-motorized transportation.
- ◆ The connectivity goal of ROSS is to connect origins and destinations with paths/trails, and link paths/trails to the existing on-street transportation system and other transportation modes.
- ◆ The closest ROSS facility to 84th Avenue is the railroad corridor along Grand Avenue and the Maricopa County Flood Control District project in the Agua Fria.

MAG Pedestrian Area Policies and Design Guidelines. Prepared by Maricopa Association of Governments. October 1995 (currently being updated).

The guidelines denote that the 84th Avenue project is a Level 2 pedestrian area and a Community pedestrian area type.

- ◆ Principles
 - 1. People will choose to walk a 10-minute trip or ¼ mile to a destination and even longer (up to 20 minutes or ½ mile) if the route is comfortable and safe or if the need is great.

- 2. People will choose to walk if the route is interesting.
- 8. The number of curb cuts for driveways along a walkway is inversely proportional to the pedestrian's perception of it as a desirable route.
- 10. Pedestrians like to be separated from moving traffic.
- 11. People will choose to walk if the walkway has sufficient capacity.
- 12. Pedestrians feel most comfortable in areas which have human scale in design elements.

◆ General Recommendations

- 5. Establish a Crime Prevention Through Environmental Design (CPTED) program. It is important to allow the walkway to be seen from the roadway so it can be "patrolled" by motorists and other passers-by.
- 8. Take advantage of the inherent link to economic development by encouraging tourists to walk. Tourists are often pedestrians by necessity.
- 9. Connect pedestrian areas to other types of pedestrian areas such as park and trail systems.
- 11. Establish a regular maintenance schedule for facilities adjacent to pedestrian areas (buildings in good repair, vacant lots free of trash and weeds, graffiti eradicated, infrastructure in good repair).
- 12. Identify and preserve or enhance the character of the pedestrian areas. Find out what is appealing and maintain or strengthen those qualities.
- 13. Provide walkways adjacent to roadways, but separate them from the curb whenever possible with landscaping, a bike lane, or on-street parking (on streets other than arterials and roads of regional significance).
- 14. Provide an identifiable and universally accessible surface and clearance for all pedestrian areas.
- 15. Promote the use of traffic calming techniques in pedestrian areas to make vehicular speed limits self enforcing.
- 17. Provide at least 50% afternoon and evening shade from May to September. Provide some shade year-round on the walkway.
- 18. Provide shade, sufficient seating, and a queue area at transit stops.

◆ Policies

- Encourage frequent community events, co-sponsored by merchants, with pedestrian activities such as street entertainers, vendor carts and sidewalk sales.
- Sponsor special cultural awareness or charity events that involve local residents, merchants, and visitors.
- Provide art, sculpture, music, street performance, and other cultural events on a regular basis.
- Use interpretive signs and brochures to educate visitors and tourists about buildings, history, views, and landmarks that are valuable to the area.

- The Level 2 walkway minimum effective width is 6 feet to 8 feet, not including area for amenities such as lights, signs, and landscaping.
- Limit curb cuts to one per business.
- Establish trash receptacles at pedestrian gathering places such as transit stops and mailboxes.
- Develop plazas and small green spaces adjacent to pedestrian areas.
- Provide pedestrian level lighting separate from roadway lighting at a minimum of 2 foot candles.

iii) Planning and Design

Central Peoria Revitalization Plan. Prepared by Design Workshop. November 1999.

- ◆ Businesses have been moving away from downtown to areas further north, along Bell Road and along the 101.
- ◆ The downtown is in outdated physical condition.
- ◆ Many Peorians feel strongly that the Old Town is the ‘heart and soul’ of the community.
- ◆ The downtown has potential in that it has mixed uses and vacant land for development.
- ◆ Design criteria that apply to 84th Avenue:
 - Development within the downtown and surrounding areas will combine architecture and landscape to create shaded walkways, courtyards, front patios, and spaces that foster outdoor activities.
 - A balance of architecture, landscape, signage, and parking will be created to reinforce an urban setting that invites pedestrian and automobile traffic.
- ◆ Revitalization Goals and Objectives that apply to 84th Avenue:
 - Include the quality of life standards and small town images, amenities and pedestrian scaled development features that attract both visitors and residents and have traditionally made Peoria a desirable place to live.
 - Eliminate small dirt parcels of land by developing small landscape areas that serve as a gathering place, “through-the-block” pedestrian connections to businesses and points of interest.
 - Strengthen the pedestrian, transit, and vehicular linkages.
 - Create ‘green links’ between, within, and along different neighborhoods, land uses, activities, and focal points of the area.
 - Improve traffic circulation and access to public transportation by pedestrian and park-and-ride users.
- ◆ Downtown Plan Components
 - 84th Avenue will be redesigned so as to allow for a stronger link between City Hall and Washington Street. The redesign would allow for pedestrian circulation as well

as vehicular parking. It would also allow for specialty events and open air markets, civic events, and parades.

◆ Implementation

- Expose public to a wide range of public art experiences of the highest quality.
- Introduce utilitarian art into public spaces and along the streetscape.
- Plant street trees in a regular pattern to add life, color, texture, and shade to sidewalks.
- Organize and regularly schedule a variety of events, entertainment, parades, competitions, etc. to attract people.
- Connect the City government complex, via vehicular, bicycle, and pedestrian systems, to locations that have supportive, interactive uses and activities.

Downtown Peoria Redevelopment Plan. Prepared by City of Peoria. 1987.

◆ Development objectives:

- Develop a unique and excellent physical appearance to downtown streetscapes, signing, parking, site planning, store-fronts, buildings, and landscapes.
- Keep the downtown image small in scale and small town in atmosphere in both private and public development.
- Tie City Hall in to the downtown/Old Town district.

◆ Guidelines for Implementation

- Downtown is the cultural and governmental center for Peoria and it will be developed as the front door or living room of the community.
- Distinctive characters for downtown will feature zero-setback store fronts, a pedestrian environment, and streets designed with traffic calming principles.

◆ Action Plan and Standards

- Landscaping provides a finished appearance to the street.
- On-street parking will be used to the greatest extent possible.

City of Peoria General Plan Revitalization and Redevelopment Element. Prepared by City of Peoria. 2002.

◆ Goals and Objectives.

- *Objective G-3.* Rejuvenate the original historic Town Center of Peoria.
- *Policy G-3f.* The City shall design and construct a streetscape plan for 84th Avenue to connect the city complex and Old Town.

Washington and 83rd Avenue Design Concept Report. Prepared by AGK Engineers, Inc. 1995.

- ◆ Raised medians in the roadway were considered but not used due to lack of public support and, in the case of the 83rd Avenue project, access for emergency vehicles.
- ◆ Use red brick pavers or red colored aggregate to tie features together.



- ◆ From public meeting input, there was a desire for: ornate, gas lamp-like street lights; widened sidewalks to allow for tree wells/landscape; and the use of pavers to enhance the visual character.

G) Public Scoping

A Community Visioning meeting was held on May, 11, 2004 to present the project to the attendees and gather input, concerns, and ideas for the project. Downtown residents and businesses were aware of the project from past public meetings related to other downtown projects. The visioning meeting was held to specifically gain design input. Announcement fliers were mailed to addresses within approximately a ½ mile radius of the project. Public notices were placed in local papers, *The Peoria Times* and the *Northwest Valley News*, two weeks in advance, and an announcement board was placed in the lobby of City Hall.

Approximately 22 people attended the meeting that was scheduled from 4:30 to 6:30 pm on May 11, 2004. Ideas for project elements were presented in a PowerPoint format followed by public input. Attendees were asked to describe constraints and opportunities within the downtown area and likes and dislikes of streetscape elements. Ideas for the 84th Avenue streetscape were prioritized by attendees for inclusion in the plan where feasible, based on site constraints and budget. The items most liked or concerned about were: 1) shade trees, 2) continue the 84th Avenue theme onto Grand, 3) start the project with large size trees, 4) need for a public restroom(s) downtown, and 5) parking is an issue downtown. The items most disliked were: 1) real gas lamps and 2) the Rose Capitol as a theme.

3 DESIGN ALTERNATIVES

The design team met several times to brainstorm ideas for the project based on comments from the public meeting and from Peoria staff. The chosen concept for the project was Peoria History and Future. The themes the public mentioned – Rose Capitol, agriculture, cotton – are all historic themes. But the public also stated they wanted the project to look to the future. Considerations the team kept in mind included: stay within the right-of-way, maintain some on-street parking near the Greek Orthodox Church where it now exists; keep structures such as the low walls at the two most southwestern properties; and maintain existing driveway access points.

One alternative included taking right-of-way at the southwest corner of Peoria and 84th Avenues in order to create a broader gateway entrance. However, at the time, purchasing right-of-way was not considered an option. During the public involvement phase it was determined that bicycle lanes were not needed for this street segment, as the level of bicycle traffic did not warrant it. Providing bike racks, especially at either end, however, was agreed on, as Peoria Avenue and Monroe Street do have bicycle traffic.



4 PROJECT DEVELOPMENT CONSIDERATIONS

A) Right-of-Way Requirements/TCEs

The right-of-way (ROW) is 70 feet wide by approximately 1,500 feet for a total area of approximately 2.5 acres. No new ROW is needed. Temporary construction easements (TCEs) may be needed because some improvements will be against the right-of-way line and construction workers will need access to both sides of the property line.

B) Utilities

There are a number of utilities that exist within the project area including water, sewer, gas, electric, telephone, and cable. The following is a list of utility companies with facilities in the project area. These utilities will need to be contacted and receive 30% plan sets for review in order to obtain utility clearance.

- ◆ Arizona Public Service (APS) (electricity)
- ◆ Salt River Project (irrigation)
- ◆ Southwest Gas (natural gas)
- ◆ Cox Communications (cable)
- ◆ Qwest Communications (phone)
- ◆ City of Peoria (water, sewer, traffic signals)

Undergrounding Overhead Lines

Undergrounding the overhead lines along the east side of 84th Avenue is one of the largest single components of the project. The lines belong to APS, who have been contacted regarding the probability of undergrounding the lines. During the design phase, APS will be contacted again and the timing of design plans will be worked out. Because of the downtown location of the project, it is expected by APS that the project will require extensive engineering and design. Since undergrounding the lines will need to be in the first phase of construction, once funding is in place, this portion of work should begin immediately.

C) Traffic

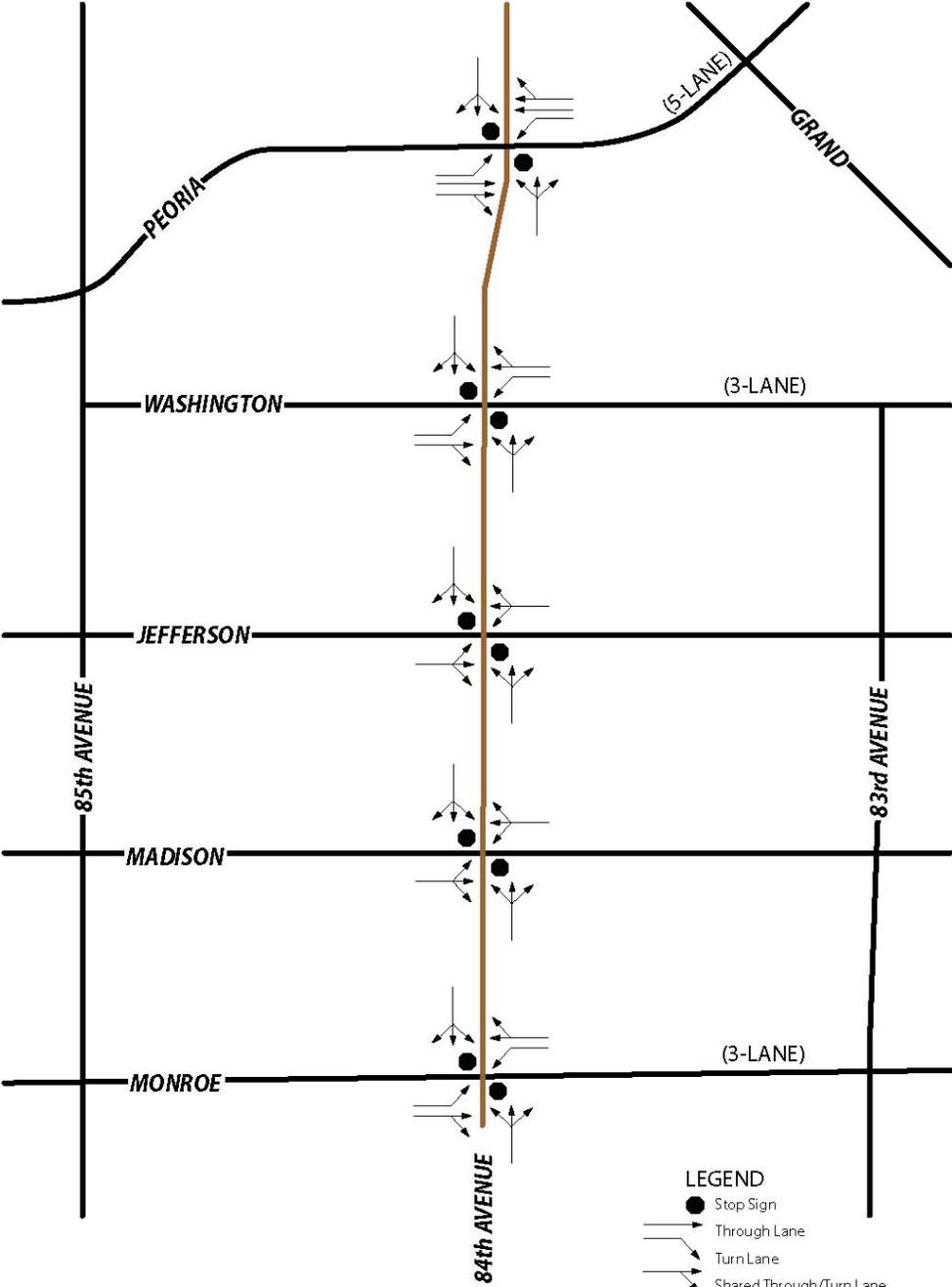
i) Background

Based on the Circulation Element of the *Peoria General Plan* dated December 2002, 84th Avenue is functionally classified as a local road. This road primarily serves the adjacent land uses with minimal through traffic movement. Additionally, 84th Avenue is within the designated Downtown Redevelopment Area. As part of this area, 84th Avenue is a gateway to the Peoria Municipal Office Complex that is envisioned to become a pedestrian friendly corridor with enhanced landscaping improvements.



84th Avenue is a local two-lane non-continuous street that terminates on the south end at Monroe Street directly opposite of the access drive for the Peoria Municipal Office Complex. Additionally, 84th Avenue extends north of Peoria Avenue and terminates at a stop sign controlled “T” intersection with Grand Avenue. 84th Avenue measures approximately 40 feet in width for most of the study section. Between Jefferson Street and Madison Street, 84th Avenue is 50 feet wide which includes the angled on-street parking on the west side of the street.

84th Avenue is under two-way stop sign control at its cross street intersections with Peoria Avenue, Washington Street, Jefferson Street, Madison Street, and Monroe Street. Figure 5 presents the existing lane and intersection configuration.



CITY OF PEORIA
84th Avenue Streetscape Improvement

Figure 5. Existing Intersection Configuration



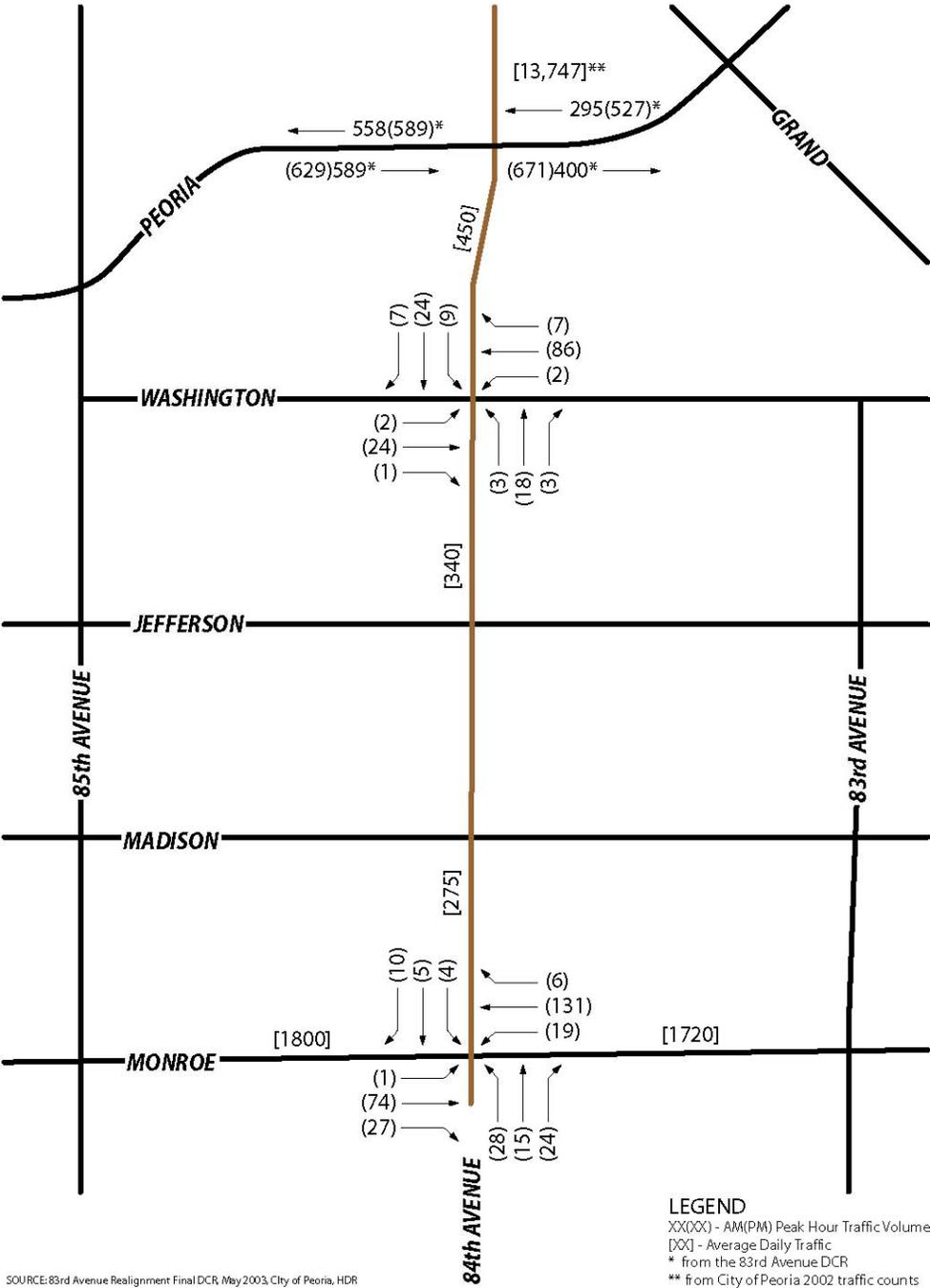
ii) Traffic Volumes and Operations

The City of Peoria typically collects traffic count data on all of their major section and half-section streets. In discussions with the City, there are no historical traffic counts along 84th Avenue or on the immediate cross streets. However, historical traffic count data is available between 83rd Avenue and 87th Avenue along Peoria Avenue.

In review of the report *83rd Avenue Realignment, From Mountain View Road to Peoria Avenue DCR*, dated May 2003, existing traffic counts were collected at selected locations in the spring of 2002. In the vicinity of 84th Avenue, these counts include peak hour turning movement counts at Monroe Street/83rd Avenue, Peoria Avenue/85th Avenue, and Peoria Avenue/Grand Avenue.

Afternoon peak hour traffic counts were collected on May 5, 2004 at the intersections of 84th Avenue/Monroe Street and 84th Avenue/Washington Street. These pm peak hour counts were then factored to reflect an Average Daily Traffic (ADT) count. A peak hour factor of 15% was used to determine the ADTs which is based on an urban local street from Table 2.1 of the *MCDOT Roadway Design Manual*, Maricopa Department of Transportation, November 1993. As can be seen from Figure 6, vehicular traffic flows along 84th Avenue are low. Estimated existing ADTs along 84th Avenue range from 275 vehicles a day north of Monroe Street to 450 vehicles a day south of Peoria Avenue.





SOURCE: 83rd Avenue Realignment Final DCR, May 2003, City of Peoria, HDR

CITY OF PEORIA
84th Avenue Streetscape Improvement

Figure 6 Existing Traffic Counts



The *Highway Capacity Manual 2000 (HCM 2000)* provides level of service criteria for minor arterials in urban settings that is based on travel speed. This is the lowest threshold of roadway classification in the HCM 2000. Local streets, such as 84th Avenue, serve the purpose of moving traffic over short distances and their primary objective is to provide accessibility, not speed. Thus, level of service criteria that are based on a minimum speed may not apply to local streets. Since ‘livability’ or pedestrian friendliness is the key objective of 84th Avenue, the level of service criteria should be based upon maximum volume.

Level of service (LOS) is a measure of roadway congestion ranging from LOS A; least congested with free travel flow to LOS F; most congested with unstable travel operations. The LOS concept is widely used and provides a common and consistent means of evaluating roadway operations.

As noted, the HCM 2000 only provides roadway capacities for facilities classified as minor arterials or higher. Subsequently, the *Roadway Design Manual* was reviewed as a source to determine roadway capacities. Based on Table 2.1 from the *Roadway Design Manual*, local urban streets are identified to have a peak hour lane capacity of 60 vehicles. Using the recommended ADT peak hour percent of 15% for an urban local classification from Table 2.1, this equates to a capacity of 800 ADT for a desired LOS A.

Current estimated traffic volumes along 84th Avenue range from approximately 275 ADT north of Monroe Street to 450 ADT south of Peoria Avenue. Using a capacity of 800 ADT, the existing traffic volume is nearly half of the available capacity at the highest count location and operates at a LOS A.

iii) Year 2020 Projections

There are no available historical traffic counts along 84th Avenue to develop year 2020 projected traffic trends. Therefore, traffic data was reviewed at surrounding streets where traffic data was available. This included 83rd Avenue, 87th Avenue, and Peoria Avenue.

Keep in mind that arterial roadways provide regional movement of traffic. Local streets, such as 84th Avenue serve short trips. Particularly since 84th Avenue is only continuous between Monroe Street and Grand Avenue, increase in traffic demand is not directly correlated with regional traffic increases. Therefore, applying a traffic growth rate similar to 83rd Avenue or Peoria Avenue would not be comparable of anticipated traffic growth rates along 84th Avenue. Subsequently, 87th Avenue immediately west of 84th Avenue was used to evaluate historical trends due to its close proximity, available traffic count data, and low traffic volumes.

Available traffic counts were obtained along 87th Avenue between Peoria Avenue and Mountain View Road from 1998 to 2003. In review of the traffic data, the trends along 87th Avenue for the six year period show an inconsistent pattern, primarily for the year 1999 where there was a large increase. Large variations with low traffic volume roadways are not unusual; however, using this historical rate creates a negative or decrease in traffic trends. Therefore,

the year 1999 traffic count was removed. The traffic growth rate was then determined to be approximately 1.1% a year which is reasonable for a roadway facility similar to 84th Avenue.

This growth rate of 1.1% a year was applied to current 84th Avenue volumes to project 2020 forecast traffic volumes. The 2020 projected volumes along 84th Avenue range from approximately 330 to 550 vehicles a day. The projected volumes along 84th Avenue for the year 2020 are still below the roadway capacity of 800 vehicles a day. Therefore, the projected traffic volumes can be accommodated with the existing two travel lanes with a LOS A.

iv) Crash Analysis

Crash information was obtained from the City of Peoria along the study corridor from Peoria Avenue to Monroe Street for a three year period from January 1, 2001 to December 31, 2003. In this period, a total of eight crashes were reported through this section of roadway with the majority being intersection related crashes.

The following table summarizes the crashes by year for the three years.

Location	Year	Number of Vehicles	Number of Injuries	Number of Fatalities	Crash Type	Intersection
84th Ave; 49 feet south of Peoria Ave	2002	2	0	0	Rear	No
84th Ave; 30 feet south of Peoria Ave	2001	2	0	0	Angle	No
84th Ave; 20 feet south of Peoria Ave	2002	2	0	0	Sideswipe	Yes
84th Ave/Peoria Ave	2002	2	1	0	Unknown	Yes
84th Ave/Peoria Ave	2003	2	0	0	Other Object	Yes
84th Ave/Peoria Ave	2003	2	0	0	Angle	Yes
84th Ave/Monroe St	2002	2	0	0	Angle	Yes
84th Ave/Washington St	2002	2	3	0	Angle	Yes

Source: City of Peoria, January 1, 2001 to December 31, 2003

In review of the crash information, over 60% of the crashes occurred in the year 2002 during this period. Half of the crashes from 2001 to 2003 along 84th Avenue involved angle crash types.

Of the eight crashes reported along the study corridor within this three year period, two of the crashes involved injuries. One of the injury crashes was located at the intersection of 84th Avenue and Peoria Avenue and the other was reported at 84th Avenue and Washington Street. Both of these injury crashes occurred in the year 2002. No fatal crashes were reported along the study corridor during this time period.

v) Crash Summary

In review of the crash data along 84th Avenue, the number of occurrences is low. Half of the crashes occurred at the intersection of 84th Avenue and Peoria Avenue. This could be attributed to the higher traffic flows and speeds along Peoria Avenue with the increased probability of crashes.

Since the number and frequency of crashes is low, crash trends along 84th Avenue are difficult to summarize and provide subsequent remedial actions.

vi) Traffic Management

The amount of existing traffic along 84th Avenue is low. There are several access drives located along 84th Avenue including Park-and-Ride lots located between Jefferson Street and Washington Street. Access is also provided for businesses on the northern end of the study corridor. The amount of traffic to be diverted during the reconstruction of 84th Avenue is minor and can be accommodated on the surrounding roadway network. However, local access for businesses and residences along 84th Avenue should be made available during the reconstruction.

Traffic control requirements will be addressed by references to the *MUTCD Traffic Control Manual* and/or by special provisions that will be prepared and coordinated with the City of Peoria.

vii) Review and Summary of Proposed Concept

In review of the 84th Avenue concept plan, traffic flow is accommodated safely and efficiently along the corridor. Narrowing the roadway width to 11 foot travel lanes provides a traffic calming effect due to the side friction of adjacent landscaping.

Due to the low existing and projected traffic volumes along 84th Avenue, exclusive left turn lanes are not needed, as indicated on the concept plan. The streetscape corridor, with narrowing of the roadway, provides improved channeling of vehicles.

D) Drainage

i) Federal Emergency Management Agency (FEMA)

The entire project lies within the Zone X of Flood Insurance Rate Map number 04013C1630G revised on July 19, 2001. See Appendix A for the FEMA Map. Zone X is described as the following:

“Areas of 500-year flood; areas of the 100-year flood with average depths of less than 1-foot or with drainage areas less than 1 square mile; and areas protected by levees from the 100-year flood.”

Figure 7 indicates the project location and surrounding area.



Figure 7. Project Location Map

ii) Existing Conditions

The existing drainage patterns for this section of 84th Avenue between Monroe Street and Peoria Avenue were evaluated. Currently, all intersections with 84th Avenue contain cross gutters conveying flow from east to west. The availability of area topography and as-built plans was researched with the City. The topography and as-builts are integral parts in determining the amount of flow contributing to the project site from off-site sources, i.e. the amount of area contributing to the runoff in the cross gutters. Due to the lack of topography and as-builts in the surrounding area it was determined that the flow calculations would be performed for 84th Avenue with the north and south boundaries being the centerline of Peoria Avenue and the centerline of Monroe Street respectively, and the east and west boundaries being the right-of-way, except in areas with alley ways. Offsite flows contributing to the cross gutters on 84th Avenue are not considered in the cross gutter capacity calculations. In addition, assumptions were made in determining the amount of area contributing to the street flow. The assumptions are as follows:

- ◆ All area within the ROW would contribute to the runoff in the street. All area outside of the ROW would be retained on site.
- ◆ Approximately 100 feet of alley way would contribute to the site.

A drainage exhibit indicating drainage areas and calculated flows is located in Appendix B. Figure 8 through Figure 13 indicate existing conditions.



Figure 8. Intersection of 84th Avenue and Monroe Street Looking North.



Figure 9. Intersection of 84th Avenue and Madison Street Looking North



Figure 10. Intersection of 84th Avenue and Jefferson Street Looking West



Figure 11. Intersection of 84th Avenue and Jefferson Street Looking North



Figure 12. Intersection of 84th Avenue and Washington Street Looking East



Figure 13. Intersection of 84th Avenue and Washington Street. Looking North

The amount of runoff contributing to the cross gutters from this site was calculated using the rational equation as outlined in the *Drainage Design Manual for Maricopa County, Arizona Volume I Hydrology*. The rational method was utilized to develop the peak runoff based on the Intensity-Duration Frequency (I-D-F) graph for the City of Phoenix. The Rational Formula is:

$$Q = C i A$$

where

Q = the peak discharge in cfs

C = runoff coefficient

i = the average rainfall intensity, in inches/hour (in/hr)

A = the contributing drainage area in acres

Table 3.2: C Coefficients for Use with the Rational Method in the *Drainage Design Manual* indicates the following:

Land Use	Return Period 100 Year
Business Areas	
Downtown	0.94-0.95
Neighborhood	0.69-0.81
Streets and Roads	
Paved Roads	0.94-0.95
Gravel Roads	0.75-0.88

The project site is mixed between business property and residential property. The main portion of the drainage area is paved roadways. A conservative value of 0.95 was used for all drainage areas.

The rainfall intensity is estimated based upon the time of concentration at the point being analyzed. The Maricopa County I-D-F Graph was used to estimate the average rainfall intensity.

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} I^{-0.38}$$

- where:
- T_c = time of concentration in minutes
 - L = the length of the longest flow path in miles
 - K_b = the watershed resistance coefficient
 - S = the slope of the longest flow path in ft/mile
 - I = the average rainfall intensity in in/hr

The minimum time of concentration, T_c , is ten (10) minutes.

Results of the rational method are summarized below. The calculations are located in Appendix B of this report.

Drainage Area	Area (ac)	i (in/hr)	C	T _c (min)	Q (cfs)
DA-1	0.13	6.76	0.95	10	0.83
DA-2	0.58	6.76	0.95	10	3.70
DA-3	0.58	6.76	0.95	10	3.76
DA-4	0.11	6.76	0.95	10	0.73
DA-5	0.13	6.76	0.95	10	
DA-6	0.50	6.76	0.95	10	3.23
DA-7	0.12	6.76	0.95	10	0.76
DA-8	0.55	6.76	0.95	10	3.56



iii) Review and Summary of Proposed Concept

A consistent 70 foot ROW was used to determine the contributing on-site runoff throughout the project site for the existing conditions. The proposed improvements will not infringe further than the 70 foot ROW. In addition, the highpoints along 84th Avenue will remain in place. Therefore, the contributing drainage areas will not increase due to the improvements. Section 6 of this report contains typical sections and sketches of the proposed improvements mentioned below.

The improvements between Peoria Avenue and Washington Street include an 8 foot planting area, separating the curb and the sidewalk. The east side will contain an 8 foot sidewalk and the west side will contain a 6 foot sidewalk. The sidewalk and ROW will drain towards the planting area. Once this area is saturated, the flow will overtop the planting area and drain towards the roadway. The street flow will be conveyed to the gutters. The runoff will then flow, in a historic matter, towards the existing cross gutters at the street intersections. This drainage pattern is typical where the planting area and detached sidewalk are proposed. Towards the north end of the block, a raised median is proposed. This median will not contribute additional flow to the street or impede flows.

The improvements along the remainder of the project are very similar to the improvements between Peoria Avenue and Washington Street. The improvements between Washington Street and Jefferson Street will include an 8 foot planting area and 8 foot sidewalk on both the west and east side of the roadway. The runoff will historically flow towards the intersection cross gutters. The improvements between Jefferson Street and Madison Street include an 8 foot planting area and detached 6 foot sidewalk on the east side and an 6 foot sidewalk and parallel parking on the west side. In addition, a center street ramada area has been proposed. This area will be flush with the pavement, while maintaining the existing two-way crown, and have shaded areas and trees. It will not increase the drainage area or the runoff. The east side of the roadway will drain according to the description above, to the street gutters. The west side will drain into a proposed valley gutter located east of the parallel parking spaces. This valley gutter will convey the flow towards the cross gutters at the intersections. The improvements between Madison Street and Monroe Street will include an 8 foot planting area with a 6 foot detached sidewalk on both the west and east side. This area will flow towards the existing intersection cross gutters. The contributing flow to the cross gutters in all areas will remain consistent to the flows calculated for the existing conditions. Please see the drainage exhibit located in Appendix B for calculated flows.

E) Environmental Considerations

i) Wetland and Riparian Areas

There are no wetlands or riparian areas in the project vicinity; therefore, there will be no impact to wetlands as a result of this project.



ii) 100-year Floodplain

A review of the Federal Emergency Management Agency Flood Insurance Rate Map for the project area indicates that no portion of this project is located within a 100-year floodplain; therefore, there will be no involvement with a 100-year floodplain as a result of this project. The project is located in Zone X. The definition of Zone X is: Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. Also refer to the drainage study in this report, Section D.

iii) Clean Water Act Sections 404 and 401

The proposed construction activities do not appear to involve the discharge of dredged or fill material into waters of the US. Whether a Clean Water Act Section 404 permit or Section 401 certification is required should be determined during the Environmental Determination process.

iv) Section 4(f)

There are no publicly owned public parks, recreation areas, or wildlife and waterfowl refuges, or any significant historic sites in the project area; therefore, no Section 4(f) involvement with the construction of this project is anticipated.

v) Sole Source Aquifer

This project is not within the limits of a designated sole source aquifer area; therefore, this project will not require a Safe Drinking Water Act Section 1424(e) review.

vi) Noise

The nature of this project is not likely to increase current noise levels or present a negative impact. Construction noise will be controlled in accordance with the Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, Section 104.08 (2000 Ed.), special provisions, and City of Peoria rules or ordinances.

vii) Air Quality

This project is located in the Maricopa County Non-Attainment Area for Particulate Matter (PM₁₀) and the Maricopa County Non-Attainment Area for Carbon Monoxide and Ozone (O₃). As a bicycle and pedestrian facility, this project is exempt from conformity regulations. This project will not have a negative impact on the air quality in the area.

Some deterioration of air quality may be expected due to the operation of equipment during construction; however, this should be localized and will cease when the project is complete.

viii) Hazardous Materials

No determination as to whether a hazardous materials site assessment is needed had been made at the time of this report. It will be decided as part of the Environmental Determination whether this is required.

ix) Arizona Pollutant Discharge Elimination System

Because this project will result in 1 or more acres of ground disturbance, an Arizona Pollutant Discharge Elimination System general permit may be required. A stormwater pollution prevention plan may also be needed.

x) Scenic/Historic Route

The project is not located on a route that is designated scenic or historic.

xi) Cultural

A cultural sites search was out of the scope of this report.

F) Title VI

The proposed concept plan does not negatively impact Environmental Justice or Title VI communities. The proposed plan improves the streetscape by widening sidewalks, increasing landscaping, and creating an overall enhanced pedestrian environment. The proposed plan improves the streetscape, but the impact is not expected to be so extensive as to substantially increase property values, which would impact landowners and potentially increase rental rates for the high percentage of residents in the area who rent (66 percent of households are renter-occupied).

5 ESTIMATED COSTS

The cost estimate is based on a conceptual plan so exact quantities of materials were not available. Every effort was made to include all possible construction items along with an estimated quantity. Arizona Public Service Company was contacted regarding the undergrounding of the power lines. They were able to provide an approximate estimate for the undergrounding, not including the trenching or conduit installation.

84th Avenue Streetscape
Draft Cost Estimate

ITEM	UNIT	QUAN	UNIT PRICE	TOTAL	FEDERAL FUNDS 94.3%	SPONSOR FUNDS 5.7%
SITE TOPOGRAPHIC SURVEY (2%-5% of construc. cost)	LS	1	4,000.00	4,000	3,772	228
SCOPING DOCUMENT	LS	1	60,000.00	60,000		60,000
ENVIRONMENTAL DETERMINATION	LS	1	15,000.00	15,000		15,000
HAZARDOUS MATERIALS ASSESSMENT	LS	1	1,200.00	1,200		1,200
PLANS, SPECS AND ESTIMATE (10-20%)	LS	1	100,000.00	100,000		100,000
GEOTECHNICAL INVESTIGATION	LS	1	5,000.00	5,000		5,000
STORM WATER POLLUTION PREVENTION PLAN	LS	1	5,000.00	5,000		5,000
RIGHT-OF-WAY ACQUISITION	LS	1	0.00	0	0	0
STORMWATER POLLUTION PREVENTION (5% of construc. cost)	LS	1	53,487	53,487	50,438	3,049
SITE PREPARATION	LS	1	10,000.00	10,000	9,430	570
REMOVE ASPHALT	SY	1667	2.00	3,334	3,144	190
REMOVE CURB AND GUTTER	LF	3000	4.00	12,000	11,316	684
REMOVE CONCRETE SIDEWALK	SF	12000	2.00	24,000	22,632	1,368
MISCELLANEOUS DEMOLITION	EA	1	10,000.00	10,000	9,430	570
UTILITY RELOCATION (INC. ITS CONDUIT AND NEW STREET LIGHTS)	LS	1	275,000.00	275,000		275,000
CURB & GUTTER	LF	2760	12.00	33,120	31,232	1,888
AGGREGATE BASE	CY	264	40.00	10,560	9,958	602
ASPHALT	TON	358	60.00	21,480	20,256	1,224
PAVEMENT MARKINGS	LF	3000	0.40	1,200	1,132	68
REPLACE CHAIN LINK FENCE WITH DECORATIVE FENCING	LF	485	30.00	14,550	13,721	829
OUTLETS FOR POWER FOR EVENTS	EA	40	200.00	8,000	7,544	456
VEHICULAR SIGNAGE	LF	1	2,000.00	2,000	1,886	114
REPLACE/REPAIR FLOOD IRRIGATION ITEMS	LS	1	10,000.00	10,000	9,430	570
COLORLED CONCRETE SIDEWALK	SF	13800	4.00	55,200	52,054	3,146
CONCRETE PAVER SIDEWALK	SF	13800	8.00	110,400	104,107	6,293
CONCRETE PAVERS IN CROSSWALK	SF	4480	10.00	44,800	42,246	2,554
PEDESTRIAN ADA RAMP	SF	3000	12.00	36,000	33,948	2,052
PEDESTRIAN LIGHTING	EA	28	3,000.00	84,000	79,212	4,788
TREES 36" BOX	EA	70	500.00	35,000		35,000
TREES 15 GAL.	EA	40	75.00	3,000	2,829	171
SHRUBS 5 GAL.	EA	400	20.00	8,000	7,544	456
SHRUBS 1 GAL.	EA	200	8.00	1,600	1,509	91
DECOMPOSED GRANITE	CY	190	50.00	9,500	8,959	542
TOPSOIL	CY	100	35.00	3,500	3,301	200
REGRADE AND REBERM	SY	366	3.00	1,098	1,035	63
TURF SOD (REPLACEMENT)	SY	366	3.50	1,281	1,208	73
BOULDERS	EA	30	250.00	7,500	7,073	428
DRIP IRRIGATION SYSTEM	SF	23750	0.80	19,000	17,917	1,083
DIRECTION BORE	LF	260	50.00	13,000	12,259	741
LANDSCAPE ESTABLISHMENT (4.5% of landsc. cost)	LS	1	4,611.56	4,612	4,349	263
BENCHES	EA	8	800.00	6,400	6,035	365
SEATWALLS	LF	500	75.00	37,500	35,363	2,138
BIKE RACKS	EA	4	350.00	1,400	1,320	80
TRASH RECEPTACLES	EA	10	250.00	2,500	2,358	143
DRINKING FOUNTAINS	EA	2	3,000.00	6,000	5,658	342
TREE GRATES	EA	70	500.00	35,000	33,005	1,995
SHADE STRUCTURES	EA	3	30,000.00	90,000	84,870	5,130
ALLEY ENTRANCE	EA	6	1,200.00	7,200	6,790	410
DRIVEWAY ENTRANCE	EA	11	1,000.00	11,000	10,373	627
CONTRACTOR MOBILIZATION (8% of construc. cost)	LS	1	85,579	85,579	80,701	4,878
TRAFFIC CONTROL (0-8% of construc. cost)	LS	1	53,487	53,487	50,438	3,049
CONSTRUCTION SURVEY & LAYOUT (1% of construc. cost)	LS	1	10,697	10,697	10,087	610
CONSTRUCTION CONTINGENCIES (5% of construc. cost)	LS	1	53,487	53,487	50,438	3,049
CONSTRUCTION ADMINISTRATION (18% of construc. cost)	LS	1	213,947	213,947	201,752	12,195
TOTAL PROJECT COST				1,730,619	1,164,057	566,562



6 PROPOSED CONCEPT

The first priority of the concept is to create a safe and comfortable environment for pedestrians. The street is narrowed by moving the curb and gutter in, leaving two 11-foot wide vehicle travel lanes. This serves the dual purposes of traffic calming and providing room for landscape buffers between the sidewalk and the vehicular traffic. Where right-of-way allows, the sidewalk is 8 feet wide and the landscape buffer is also 8 feet wide. In the southern most block and the west side of the northern most block, right-of-way width limits the sidewalk to 6 feet.

Large shade trees will be planted in the 8 foot landscape buffer and, where room allows, on the outside of the sidewalk. All the intersection corner ramps will be rebuilt and provided with ADA accessible ramps and tactile warning paving. Crosswalks will be highlighted with pavers to match the style used on Washington (see Concept Image 1), except at either end of the plaza where the plaza pavers will be used to highlight the intersection.



Concept Image 1. Existing Crosswalk Pavers

Peoria History and Future is the overall concept for the project. This revolves around the core of a Mexican plaza or 'zocalo' (see Concept Image 2 and Concept Image 3), which reflects the heritage of many Peorian residents. The third block south (Jefferson to Madison) differs from the other blocks in that a wide plaza area is provided between the two traffic lanes. This is the main pedestrian area for this block and the center of activity for all four blocks and can be closed down for festivals or other events. During events, vendor tents can be set up in the vehicular lanes, leaving the plaza area for pedestrian movement.

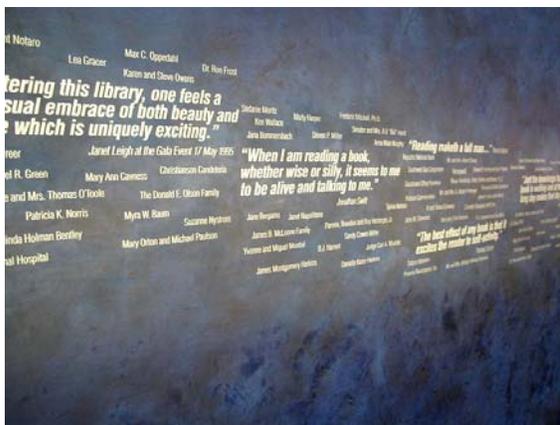


Concept Image 2. A Typical Zocalo

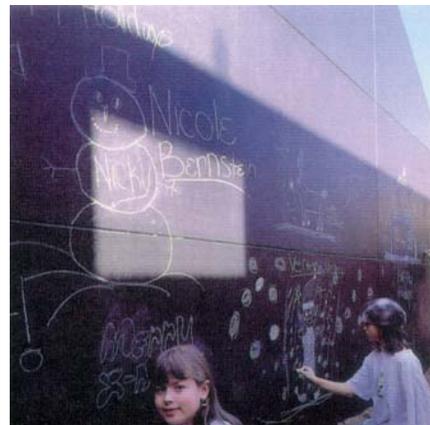


Concept Image 3. A Typical Zocalo

Each block will have a theme – Rose Capitol, cotton, brick, and the future, starting at Peoria with the Rose Capitol theme and ending at City Hall with the future. Graphic elements that represent each theme will be designed by artists, chosen by the Peoria Arts Commission. Seating along the street is provided on seatwalls. The seatwalls are designed in combination with low walls that provide vertical surfaces for these graphic images or text (Concept Images 4 through 13 suggest ways to include art on vertical and horizontal surfaces). Depending on the location, the length of wall and bench will be 30 feet or 60 feet. The sidewalk paving adjacent to the bench and walls provides a horizontal surface for theme elements (see Concept Images 14, 15 and 16). The intent of the artistic elements is to be representational and tell the story of Peoria either in image or text. Materials can include but are not limited to metal, stone, tile, and sand blasting or imprinting concrete. The sidewalk in front of the benches and walls will be stained a lighter shade of color than the walls themselves. The colors and simple shapes reflect the design style of the Mexican architect, Luis Barragan.



Concept Image 4. Quotes on Wall



Concept Image 5. Blackboard Wall



Concept Image 6..Wall Directory



Concept Image 7..Paving Art



Concept Image 8..Sandblasted Design



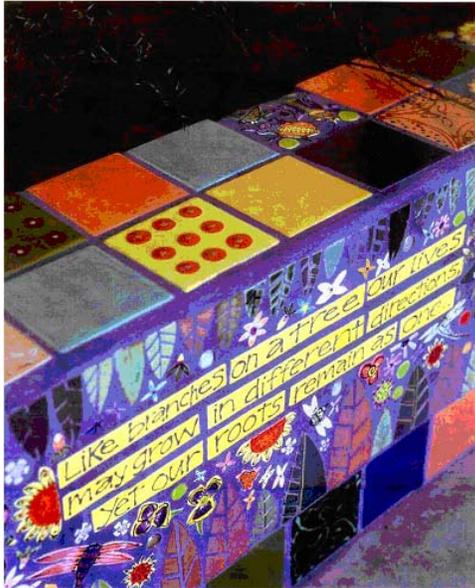
Concept Image 9..Wall Art



Concept Image 10. Quotes in Paving



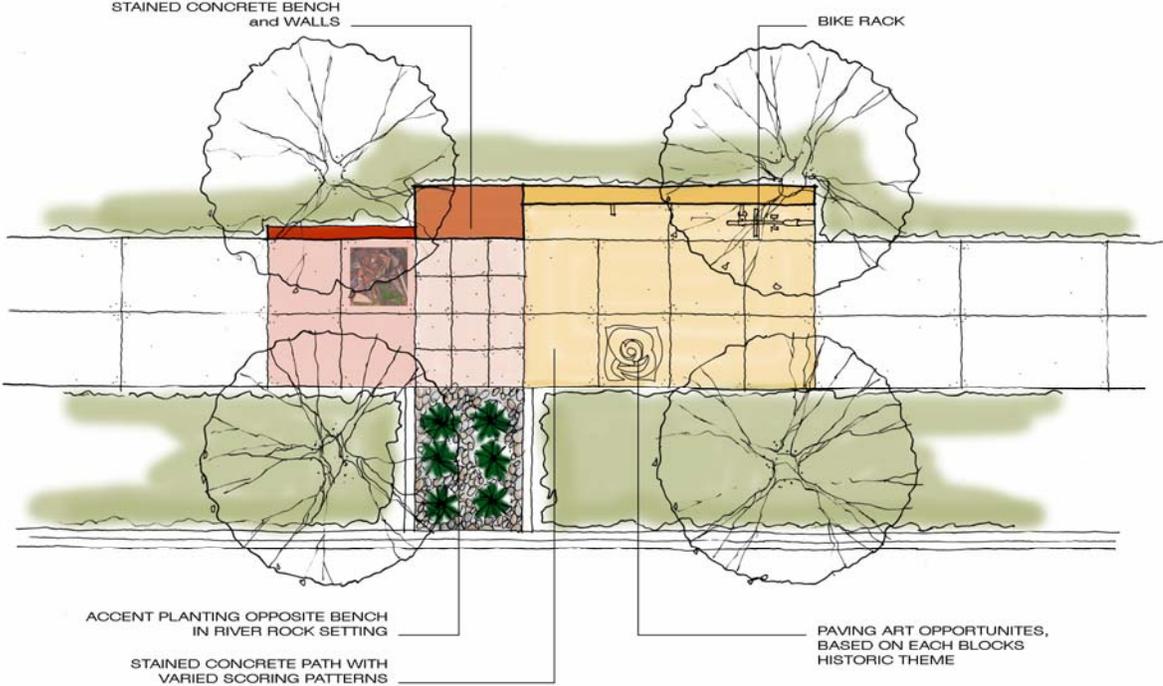
Concept Image 11. Rose Tile Mosaic



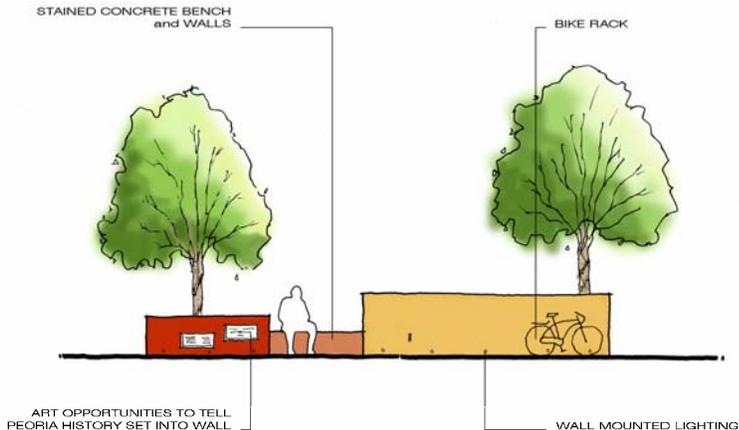
Concept Image 12. Bench as Art



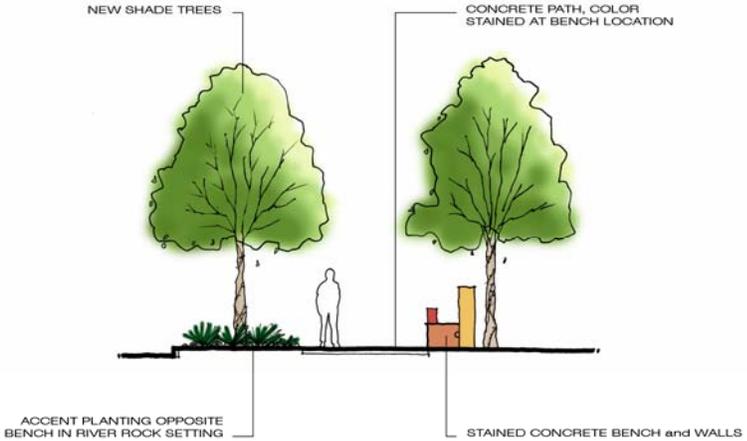
Concept Image 13. Street Name at Corner



Concept Image 14. Bench Plan



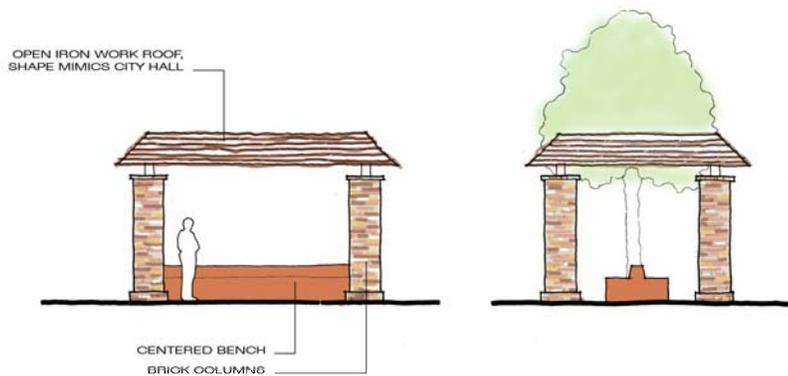
Concept Image.15. Bench Elevation



Concept Image.16. Bench/Sidewalk Section

The Zocalo

The plaza area will have ramadas (see Concept Image 17), trees, and specialty paving. The ramadas will have large brick columns (the Brick Theme block, see Concept Image 18) supporting an open work metal trellis roof (see Concept Image 19), shaped to mimic the form of the roof of City Hall. The open metal work will keep the ramadas from feeling heavy and dominating the block but still provide light shade. The layout of the plaza will allow for event tents to be set up in the traffic lane, leaving the middle plaza area for walking and gathering. The plaza specialty paving (see Concept Image 20) would extend out into the intersections at either end of the block, drawing attention in toward the plaza. The plaza layout would also allow for traffic turning movements in and out of the adjacent uses during non-event times.



Concept Image 17. Plaza Ramadas



Concept Image.18..Brick.Ramada.Columns



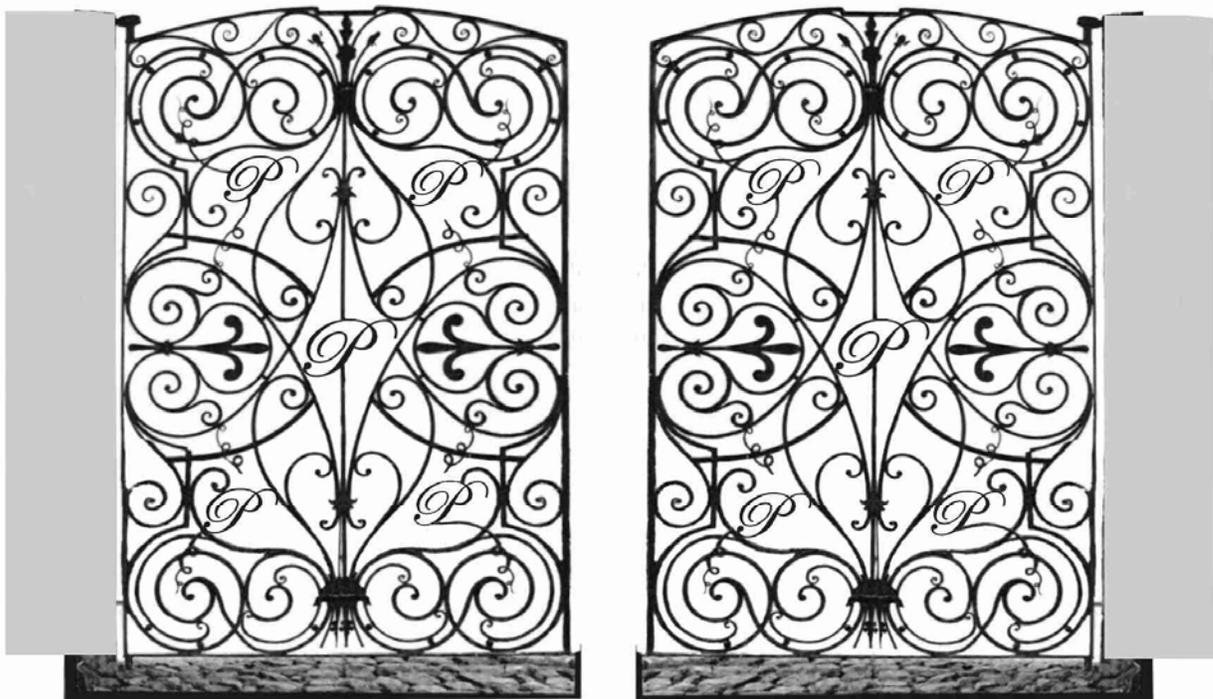
Concept Image.19..Open.Style.Trellis.Roof



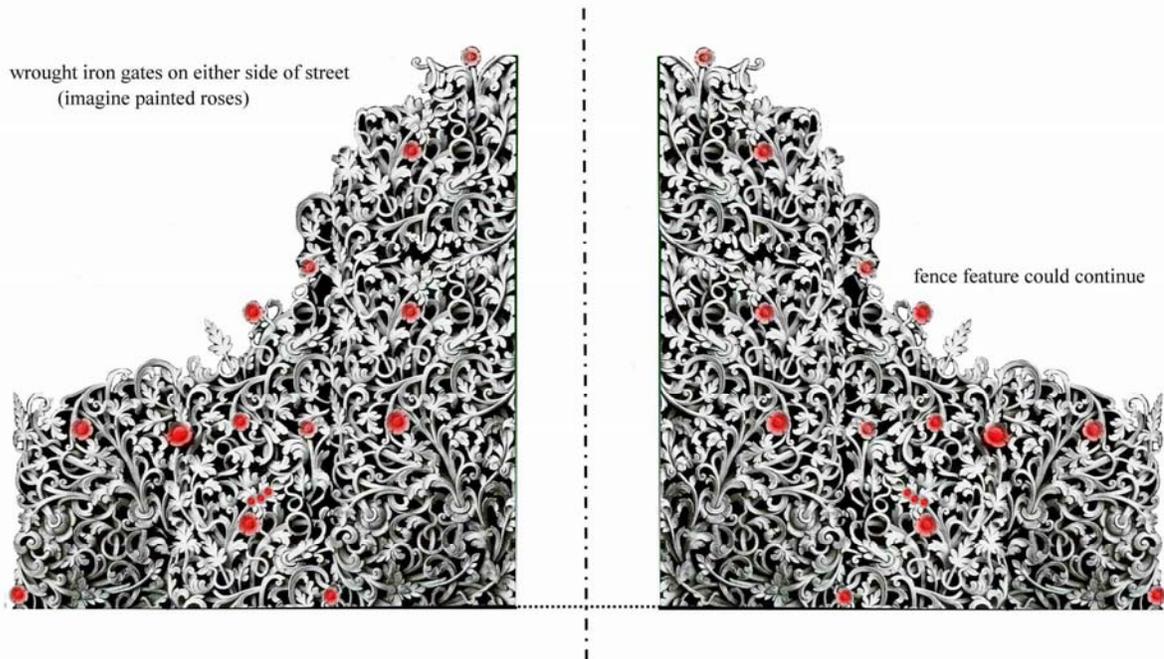
Concept Image.20..Plaza.Paving

The concept for the gateway to 84th Avenue is to have a really large (12 to 15 feet tall) iron gate on each side of the street, i.e. "the gates to the city that are always open" (see Concept Image 21 and Concept Image 22). In Gateway Style One, the "P" in the "P for Peoria" gate could be replaced with a rose or the seal of the City of Peoria, or some other theme object. In Gateway Style Two, the gates could incorporate objects that relate to the city (farming, business, subdivisions, developments, Circle Ks, religious relics, cattle brands of local ranches, etc.). These gates would fit in with the Barragan style walls and zocalos.

The Gates of Peoria



Concept Image 21... Gateway Style One



Concept Image 22. Gateway Style Two

Pedestrian lighting for the project will create a comfortable ambiance to the evening streetscape. The light fixture used on 83rd Avenue (see Concept Image 23) has characteristics that lend themselves to the ‘zocalo’ theme. The concept is to use this fixture on 84th Avenue as well, thereby not adding yet another light fixture style to the downtown. Included with the electrical system for the pedestrian lighting will be lighting for the ramadas and electrical outlets, both low down and at the tops of the light fixtures, for holiday lighting. Ramadas, trees, and other plaza amenities will be protected by bollards, which match the style of the pedestrian lighting fixtures (see Concept Image 24). Trash receptacles would be a simple, park like style (see Concept Image 25). They would be located near the benches and along the plaza.



Concept Image 23. Pedestrian Light

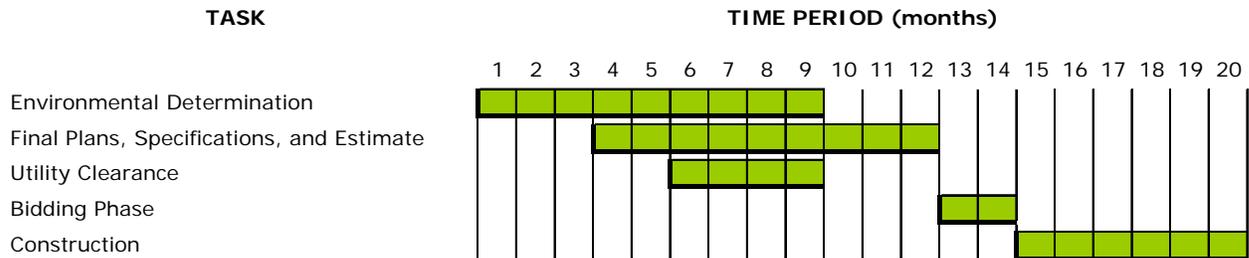


Concept Image 24. Bollard



Concept Image 25. Trash Receptacle

7 FINAL DESIGN AND CONSTRUCTION SCHEDULE



It is recommended that the Environmental Determination (ED) be started relatively soon, as it will take approximately six to nine months to complete. It appears that it should be fairly straightforward but in the event something turns up, enough time should be allowed to get clearance. Once completed, the ED is good for two to three years, as long as the scope and existing conditions of the project remain reasonably the same. Plans, specifications, and estimate should also take about six to nine months to complete. The City has chosen to be self-administering for this project if they receive Transportation Enhancement funding. Given that, the plans and specifications can be to City standards and will require only one review by the Arizona Department of Transportation (ADOT) Enhancement Section. Utility clearance will need ADOT approval. Bidding will be through the standard City of Peoria process. Construction can be administered by the City or their agent but must meet the requirements of a federally funded project.

8 CONSTRUCTION CONSIDERATIONS

The Contractor will need to coordinate driveway installation and the timing with each individual property owner. There are no seasonal restrictions; however, the contractor should contact the City to verify the dates of special events that occur throughout the year including Pioneer Days, Mexican Fiesta, Christmas Days, and the Greek festival. Construction activity should be limited to weekdays. There are no rush hour restrictions; however, businesses and residents shall have access to their properties at all times.

Design Criteria

- ◆ AASHTO "Geometric Design for Local Roads and Streets", current version, will be the acceptable minimum.
- ◆ It is recommended that ADOT Standards and Standard Specifications be used.
- ◆ Pavement Design shall be in accordance with ADOT Materials Preliminary Engineering and Design Manual
- ◆ The minimum lane width will be 11 feet.
- ◆ A traffic control plan will be required if Federal-aid is obtained. An estimate of the number of traffic control devices and cost will be required. The ADOT Signing & Marking Standard Drawings should be used for signing and marking. If not, a detail will have to be included in the project plans.



9 PLAN SHEETS

Base Information

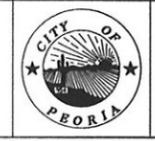




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DESIGNED BY:				
DRAWN BY:				
CHECKED BY:				
DATE CHECKED:				

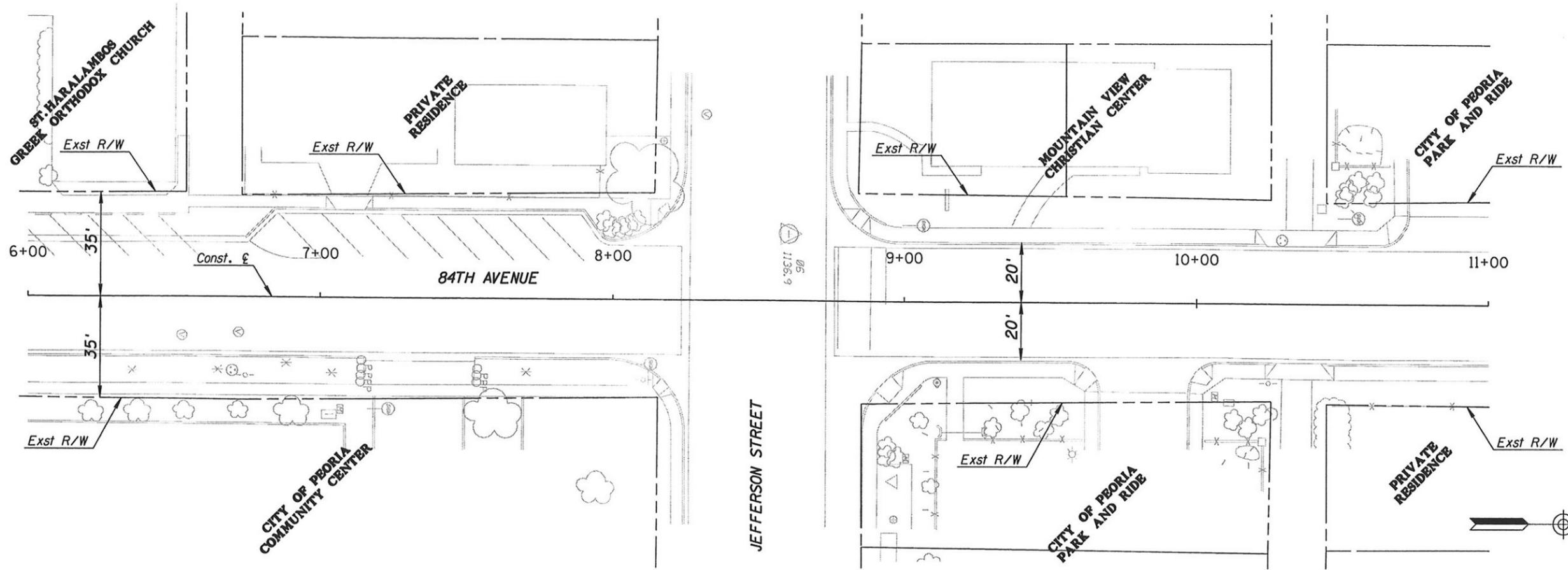
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ENGINEERING DIVISION
8401 WEST MONROE STREET - ROOM 210
PEORIA, ARIZONA 85345 - (623) 773-7212



HDR
HDR Engineering, Inc.

84TH AVENUE STREETSCAPE
IMPROVEMENTS
TRACS NO. xxxx xxxx

PROJECT NUMBER: P-04-0015
SCALE:
SHEET NUMBER: OF



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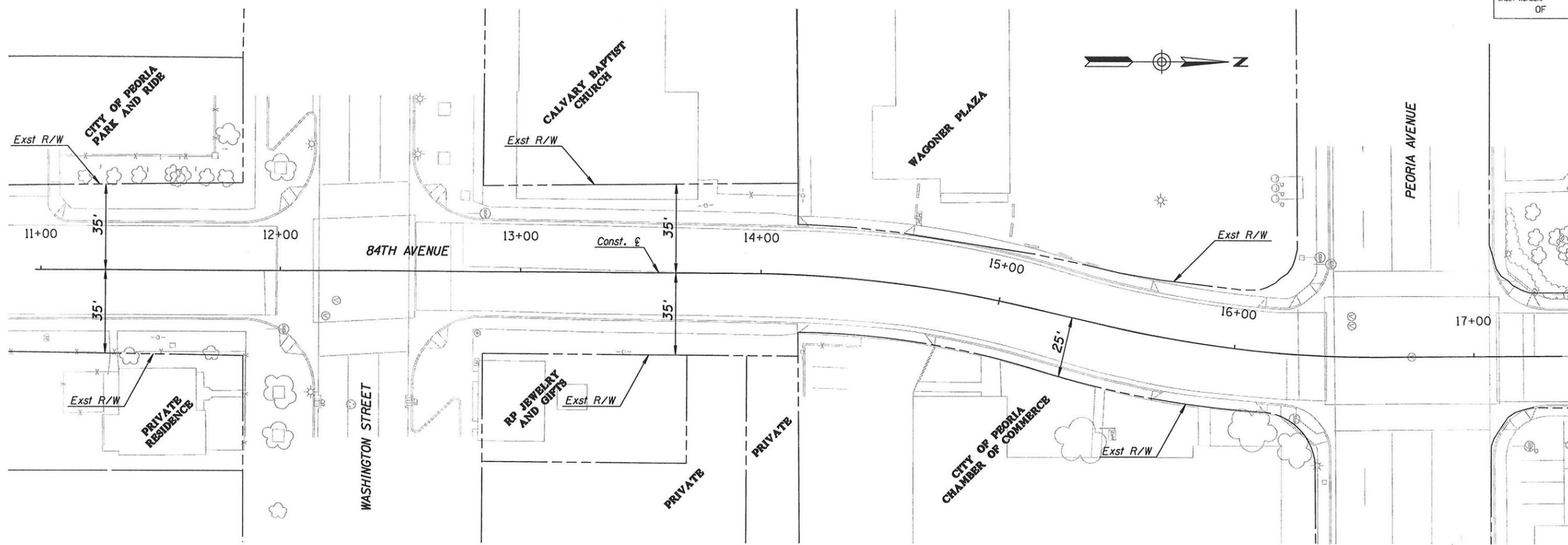
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NO.	AUTHORIZED BY	REVISION	MADE BY	DATE

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HDR
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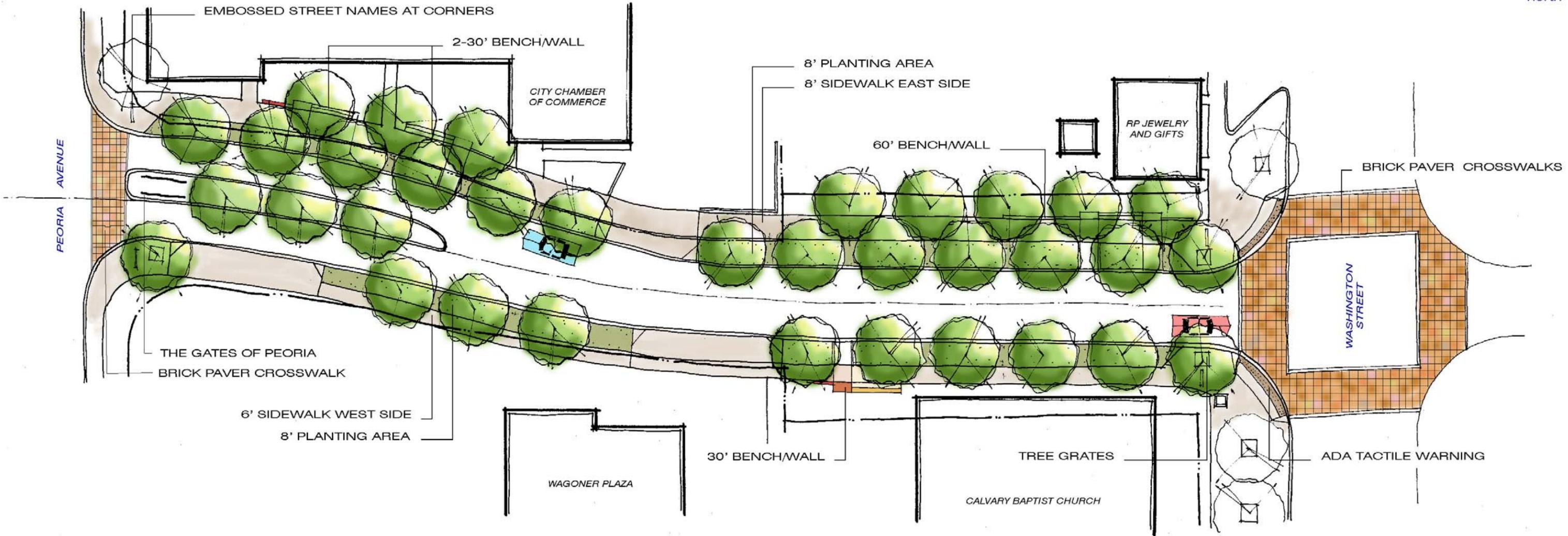
84TH AVENUE STREETSCAPE
IMPROVEMENTS
TRACS NO. xxxx xxxx

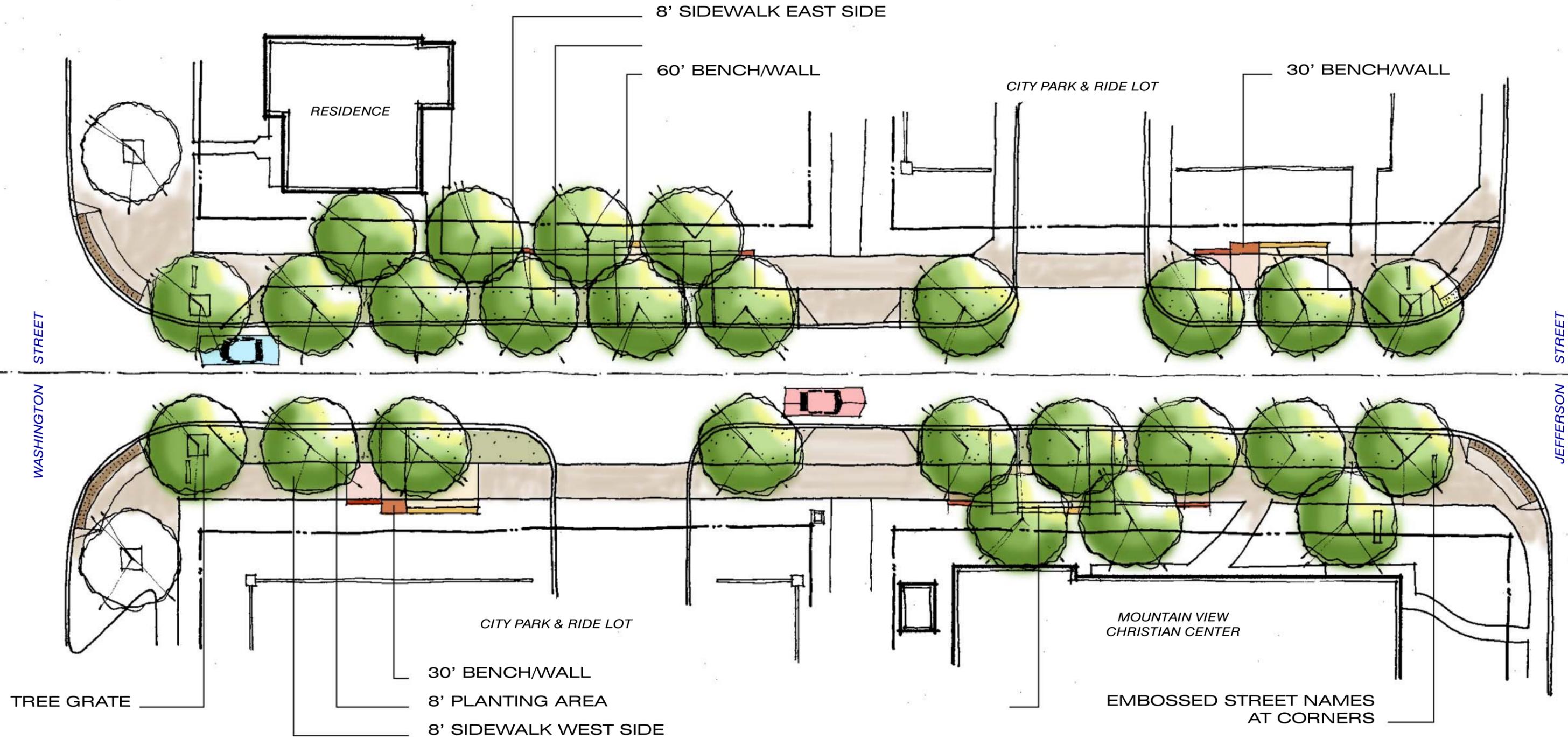
PROJECT NUMBER: P-04-0015
SCALE:
SHEET NUMBER: OF

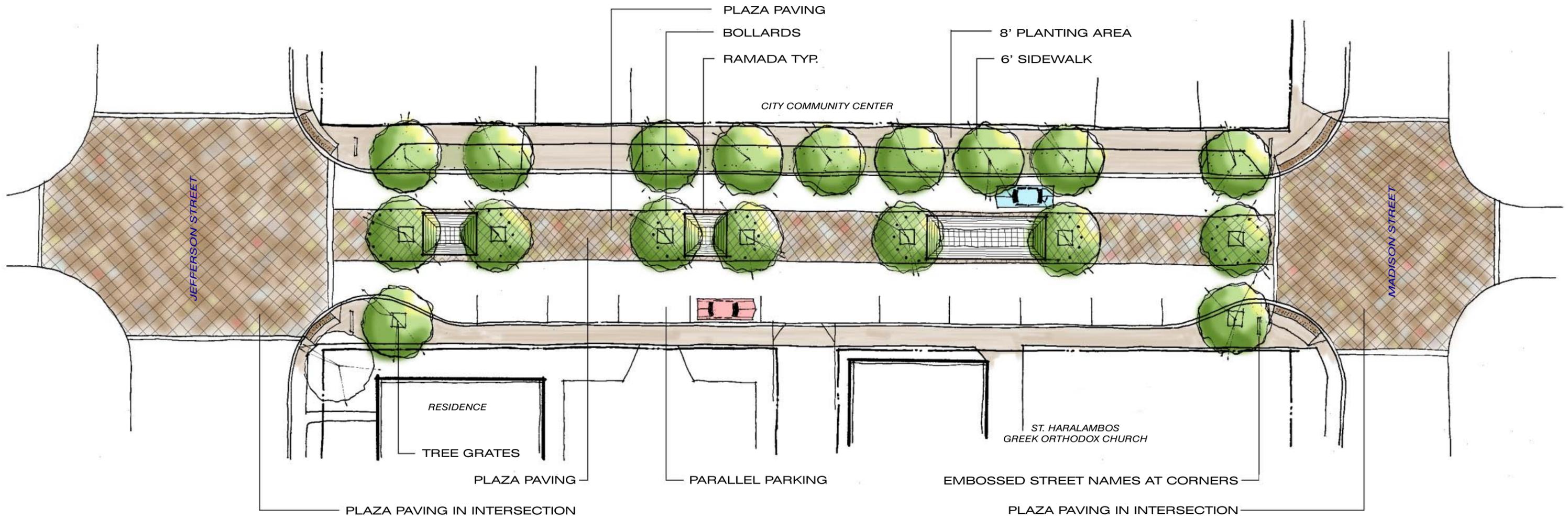
10 CONCEPT PLAN

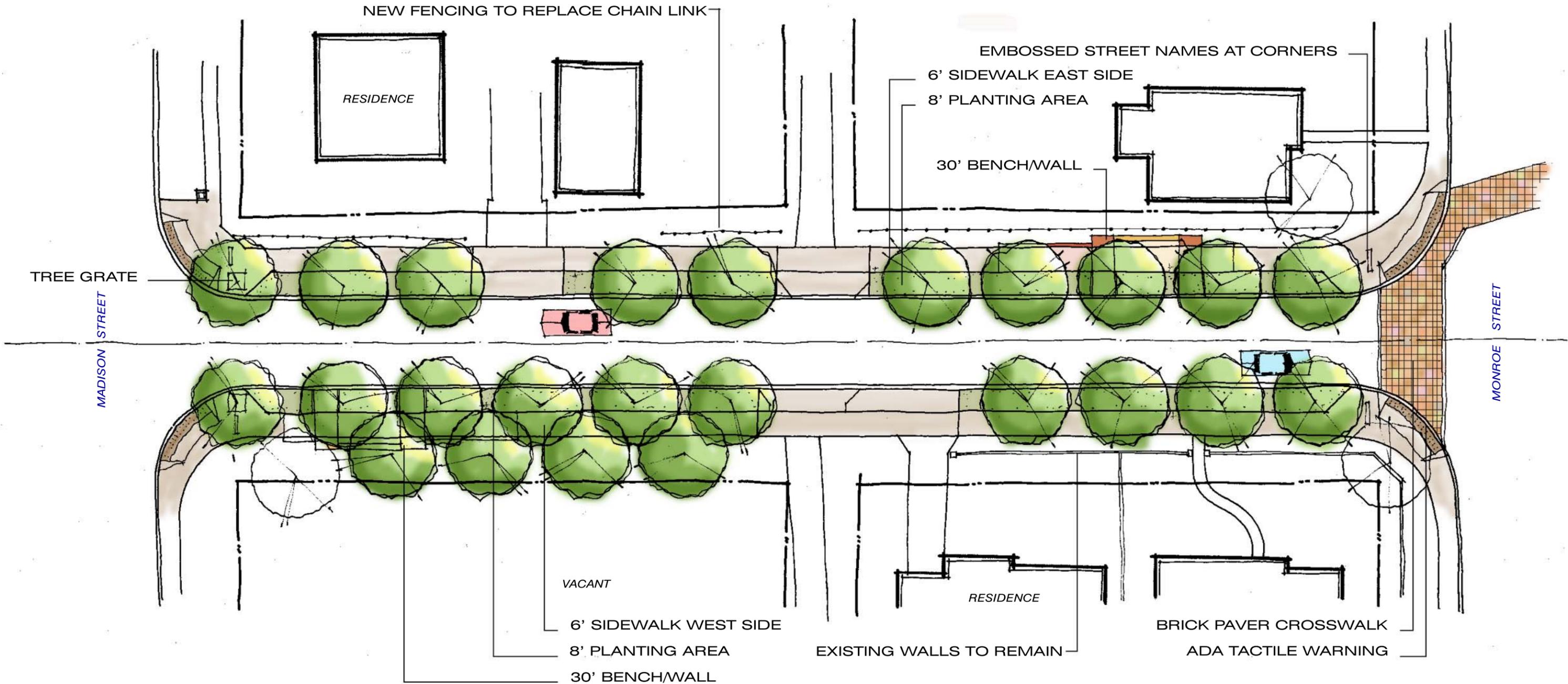
Plan Sheets







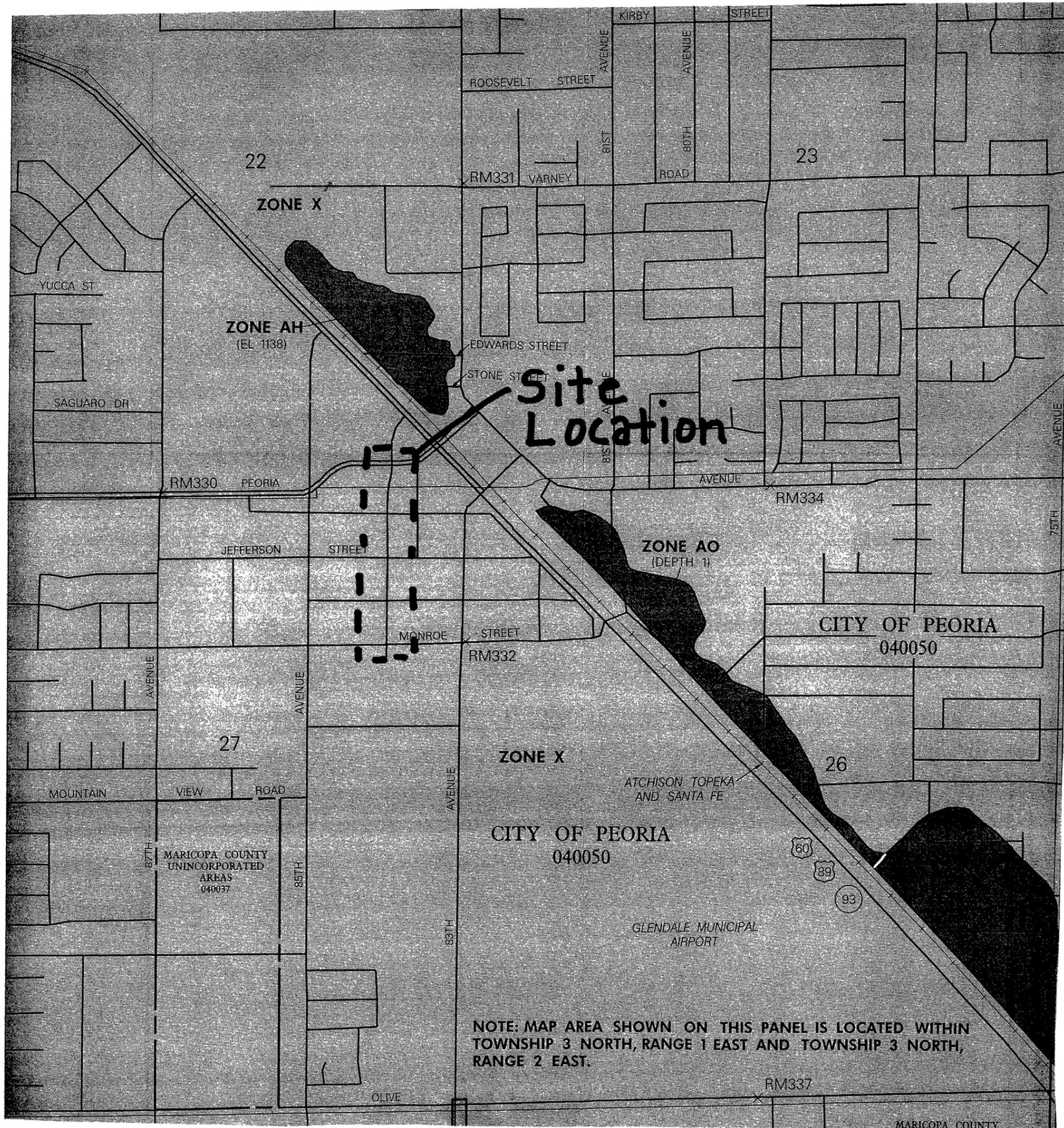




11 APPENDIX A

FIRM Map





NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 3 NORTH, RANGE 1 EAST AND TOWNSHIP 3 NORTH, RANGE 2 EAST.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY,
ARIZONA AND
INCORPORATED AREAS

PANEL 1630 OF 4350

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
GLENDALE, CITY OF	040045	1630	G
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1630	G
PEORIA, CITY OF	040050	1630	G

MAP NUMBER
04013C1630 G

MAP REVISED:
JULY 19, 2001



Federal Emergency Management Agency

12 APPENDIX B

Drainage Computations



Job No.

Computation

Project: Peoria/84th Avenue Streetscape	Computed EC	Date	3/3/2004
Subject: Existing Conditions Drainage	Checked	Date	
Task: Determine Q for DA-1 using Rational Method			

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.13 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.046$

Rational Equation Parameters:

Watercourse length (L) : 0.01 mi
 Upstream Elevation: 1136.90 ft
 Downstream Elevation: 1136.50 ft
 Watercourse slope (S): 43.50 ft/mi
 Resistance Coefficient (Kb): 0.046

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.068 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

	Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
	60	2.50	2.42	2.92
	30	4.00	3.86	2.44
	20	5.10	4.93	2.23
	10	7.00	6.76	1.98
Design Tc	10		6.76	1.98

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 0.83 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape
 Subject: Existing Conditions Drainage
 Task: Determine Q for DA-2 using Rational Method

Computed EC	Date 3/3/2004
Checked	Date

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.58 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.041$

Rational Equation Parameters:

Watercourse length (L) : 0.06 mi
 Upstream Elevation: 1136.90 ft
 Downstream Elevation: 1135.70 ft
 Watercourse slope (S): 18.76 ft/mi
 Resistance Coefficient (Kb): 0.041

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.222 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	9.53
30	4.00	3.86	7.97
20	5.10	4.93	7.27
10	7.00	6.76	6.44
Design Tc	10	6.76	6.44

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 3.70 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape
 Subject: Existing Conditions Drainage
 Task: Determine Q for DA-3 using Rational Method

Computed EC	Date 3/3/2004
Checked	Date

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.58 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.041$

Rational Equation Parameters:

Watercourse length (L) : 0.06 mi
 Upstream Elevation: 1137.30 ft
 Downstream Elevation: 1135.90 ft
 Watercourse slope (S): 25.09 ft/mi
 Resistance Coefficient (Kb): 0.041

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.189 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	8.13
30	4.00	3.86	6.80
20	5.10	4.93	6.20
10	7.00	6.76	5.50
Design Tc	10	6.76	5.50

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 3.76 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape
 Subject: Existing Conditions Drainage
 Task: Determine Q for DA-4 using Rational Method

Computed EC	Date 3/3/2004
Checked	Date

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.11 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.046$

Rational Equation Parameters:

Watercourse length (L) : 0.01 mi
 Upstream Elevation: 1137.30 ft
 Downstream Elevation: 1137.10 ft
 Watercourse slope (S): 23.38 ft/mi
 Resistance Coefficient (Kb): 0.046

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.080 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	3.43
30	4.00	3.86	2.87
20	5.10	4.93	2.62
10	7.00	6.76	2.32
Design Tc	10	6.76	2.32

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 0.73 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape	Computed EC	Date	3/3/2004
Subject: Existing Conditions Drainage	Checked	Date	
Task: Determine Q for DA-5 using Rational Method			

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.13 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.045$

Rational Equation Parameters:

Watercourse length (L) : 0.01 mi
 Upstream Elevation: 1137.40 ft
 Downstream Elevation: 1137.20 ft
 Watercourse slope (S): 17.98 ft/mi
 Resistance Coefficient (Kb): 0.045

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.098 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	4.22
30	4.00	3.86	3.53
20	5.10	4.93	3.22
10	7.00	6.76	2.86
Design Tc	10	6.76	2.86

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 0.86 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape
 Subject: Existing Conditions Drainage
 Task: Determine Q for DA-6 using Rational Method

Computed EC	Date 3/3/2004
Checked	Date

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.50 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb
 $K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.042$

Rational Equation Parameters:
 Watercourse length (L) : 0.05 mi
 Upstream Elevation: 1137.20 ft
 Downstream Elevation: 1135.40 ft
 Watercourse slope (S): 35.18 ft/mi
 Resistance Coefficient (Kb): 0.042

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.164 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	7.05
30	4.00	3.86	5.89
20	5.10	4.93	5.37
10	7.00	6.76	4.76
Design Tc	10	6.76	4.76

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 3.23 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape	Computed EC	Date	3/3/2004
Subject: Existing Conditions Drainage	Checked	Date	
Task: Determine Q for DA-7 using Rational Method			

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.12 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.046$

Rational Equation Parameters:

Watercourse length (L) : 0.01 mi
 Upstream Elevation: 1135.50 ft
 Downstream Elevation: 1135.40 ft
 Watercourse slope (S): 9.27 ft/mi
 Resistance Coefficient (Kb): 0.046

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.119 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
60	2.50	2.42	5.13
30	4.00	3.86	4.29
20	5.10	4.93	3.91
10	7.00	6.76	3.47
Design Tc	10	6.76	3.47

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 0.76 cfs

Job No.

HDR Computation

Project: Peoria/84th Avenue Streetscape
 Subject: Existing Conditions Drainage
 Task: Determine Q for DA-8 using Rational Method

Computed EC	Date 3/3/2004
Checked	Date

Rational Method: Q=CIA

Project Location: T3NR1E
Drainage Area: 0.55 acres
Rainfall Runoff Coefficient 0.95 From Table 3.2

Resistance Coefficient, Kb

$K_b = m \log A + b$ From Table 3.1
 Type : A; Commercial / Industrial Areas
 $K_b = 0.042$

Rational Equation Parameters:

Watercourse length (L) : 0.05 mi
 Upstream Elevation: 1135.50 ft
 Downstream Elevation: 1134.30 ft
 Watercourse slope (S): 22.98 ft/mi
 Resistance Coefficient (Kb): 0.042

Time of Concentration

$$T_c = 11.4 L^{0.5} K_b^{0.52} S^{-0.31} i^{-0.38} \quad \text{Equation 3.2}$$

$$T_c = 0.189 i^{-0.38}$$

$$i_{100} = i_p \frac{P_{10}^6}{2.07} \quad \text{Equation 3.3}$$

10-yr, 6 hr precip, $P_{10}^6 = 2.00$ in/hr, Figure 2.4

Trial and Error:

	Tc (min)	i_p^{**} (in/hr)	i_{100}	Tc (calc)
	60	2.50	2.42	8.10
	30	4.00	3.86	6.77
	20	5.10	4.93	6.18
	10	7.00	6.76	5.48
Design Tc	10		6.76	5.48

** i_p is derived from Figure 3.2, 100-yr storm

Discharge Calculation

Q= 3.56 cfs

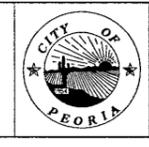


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NO.	AUTHORIZED BY	REVISION	MADE BY	DATE

DESIGNED BY: _____
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84TH AVENUE STREETScape
 IMPROVEMENTS
 DRAINAGE EXHIBIT

PROJECT NUMBER	P-04-0015
SCALE	NTS
SHEET NUMBER	1 OF 1