

8.0 DESIGN STANDARDS

Whereas Section 6 defined the overarching vision and a set of qualitative recommendations, this section of the MDP provides specific quantitative design performance standards as they relate to future development.

Recommendations for each parcel are organized based on the following key development standards and terminology. Refer to Figure 16, Design Standards matrix for a summary of the quantitative standards outlined below.

Refer to Section 10.5 for a description on the process for amendments or deviations to the MDP.

8.1 Land Use Standards

8.1.1 Land Use

Creating a vibrant and successful mixed-use community on the Rail Yards site will in large measure depend on the type, location and organization of uses on the site. Accordingly, the Master Plan provides recommendations for preferred land use types and locations based on a thorough analysis of project goals, site context, and community input. The site has special zoning, SU-2/Historic Locomotive Shops (HLS), that allows for a wide range of permissive uses, including multifamily residential (R-3), office (O-1), community commercial such as retail, restaurants, services (C-2), and light industrial (I-P).

Refer to Chapter 6 for Qualitative-characteristics of each preferred land use and the locations for each on the site. As stated prior, these recommendations are not intended to restrict the existing approved land uses found in the underlying SU2-HLS zone. Throughout the site, all permissive uses, as outlined in the SU2-HLS, will continue to be allowed and all restricted uses will likewise remain conditional or prohibited. However, the Master Plan recommends that the City seek

to amend the SU2-HLS in order to make Laboratory Uses permissive. Businesses that focus on innovation, research and development and light manufacturing may require laboratory uses, and such an amendment would strongly support the job creation ethos of the Rail Yards redevelopment.

8.1.2 Parcel Area

As described in Section 6, the Rail Yards site is divided in 10 distinct parcels. The Parcel Area is a measurement of the existing surface land area of the underlying proposed Parcel. This base measurement will be used to calculate allowable built area. The total of all parcel areas will equal 27.3acres.

8.1.3 Existing Historic Resources

A list of all Historic resources recommended for Preservation/Adaptive Reuse that reside on each parcel.

8.1.4 Existing Built Area

The total amount of existing building area currently under roof contained within the subject parcel.

8.1.5 Floor Area Ratio (FAR)

Floor Area Ratio (FAR) is the relationship between the total allowable building area and the Parcel Area (defined previously). It is essentially a measurement of allowable development density. For example;

A Parcel with a Parcel Area of 10,000sf and an FAR (1) would have an allowable building area of $(1) \times 10,000\text{sf} = 10,000\text{sf}$.

Likewise if FAR (2), that same parcel would have an allowable building area of $(2) \times 10,000\text{sf} = 20,000\text{sf}$.

The Master Plan recommends use of the Floor Area Ratio (FAR) mechanism for regulation of allowable building area and therefore the

control of project density that must be maintained in order to preserve the spatial hierarchy of the existing historic buildings. Accordingly, the Master Plan proposes an average site density of only FAR (.75).

8.1.6 Allowable Building Area

The product of the Parcel Area multiplied by the FAR. The total allowable building area for any given parcel.

8.1.7 Building Heights

Allowable building heights should not exceed those standards contained under the current SU-HLS zoning, namely no greater than 67ft (five stories) at a minimum distance of 100ft from any single-family residential zone; a height that comports roughly with the existing 70ft maximum height of the Machine Shop. All occupiable building height limits shall conform to this requirement with the exception of the proposed Rebuilt Smokestack which is recommended to be constructed to its original 230ft height. In many areas, the Master Plan recommends a more restrictive building height limit in order to comport with neighboring residential uses and to maintain the necessary visual hierarchy between the existing historic buildings and new infill development, the former of which should remain the dominant visual elements of the site. Non-occupiable rooftop appurtenances required for the building may be able to exceed the height limit by a maximum of 15ft.

Architectural Features, which are non-occupiable, non-conditioned, exterior only design elements (eg. historic examples; spires, turrets, bell towers, clock towers, canopies, chimneys and cupolas) shall be permitted to extend above the required height limit in two specific locations on Parcels 1 and 6 respectively. In both cases, the proposed Architectural Feature is a rooftop glass canopy; one over the Perpendicular Walk and one over the Amphitheater. The intent of the Architectural Feature is to acknowledge and permit a dynamic architectural “flourish” to an otherwise regulated and consistent

roofline. The allowable height limit for the Architectural Feature is outlined in Figure 16, Design Standards Matrix.

8.1.8 Setbacks

The required setback distance between building edge and property/parcel line. Given the urban nature of the Rail Yards site, setbacks should be minimal to encourage an active pedestrian street edge. Street facing setbacks as currently required per the SU-HLS zone of 10ft will be preserved. Setbacks between parcels are not required.

8.1.9 Access Easements

The Rail Yards site, given its unusual “superblock” configuration of 600ft of width opening essentially onto only one public right-of-way at First/Second Street, creates an inherent problem of access. Because of this configuration, Parcels 1, 7 and 8 do have direct street access and therefore will require an easement over Parcels 4 and 6 respectively to satisfy access requirements. The Master Plan has been designed to take this fact into consideration by assigning Parcels 4 and 6 a public open space designation with little or no allowable building area assigned to them. These parcels will operate almost like internal streets under which utilities may be conveyed and pedestrian/emergency access requirements satisfied. Small roadway easements may also be required to convey subterranean parking access rights to the various parcels.

8.1.10 Parking Covenants

The provision of required parking for parcels that themselves do not have parking must be achieved through some form of parking covenant. At project completion, all site parking will reside in below grade structures located only on Parcels 1, 2, and 10. All other parcels will be without parking and subsequently will require an allocation to satisfy minimum parking requirements. Allocations may be based on total allowable building area, use considerations, or specific tenant requirements in place at the time.

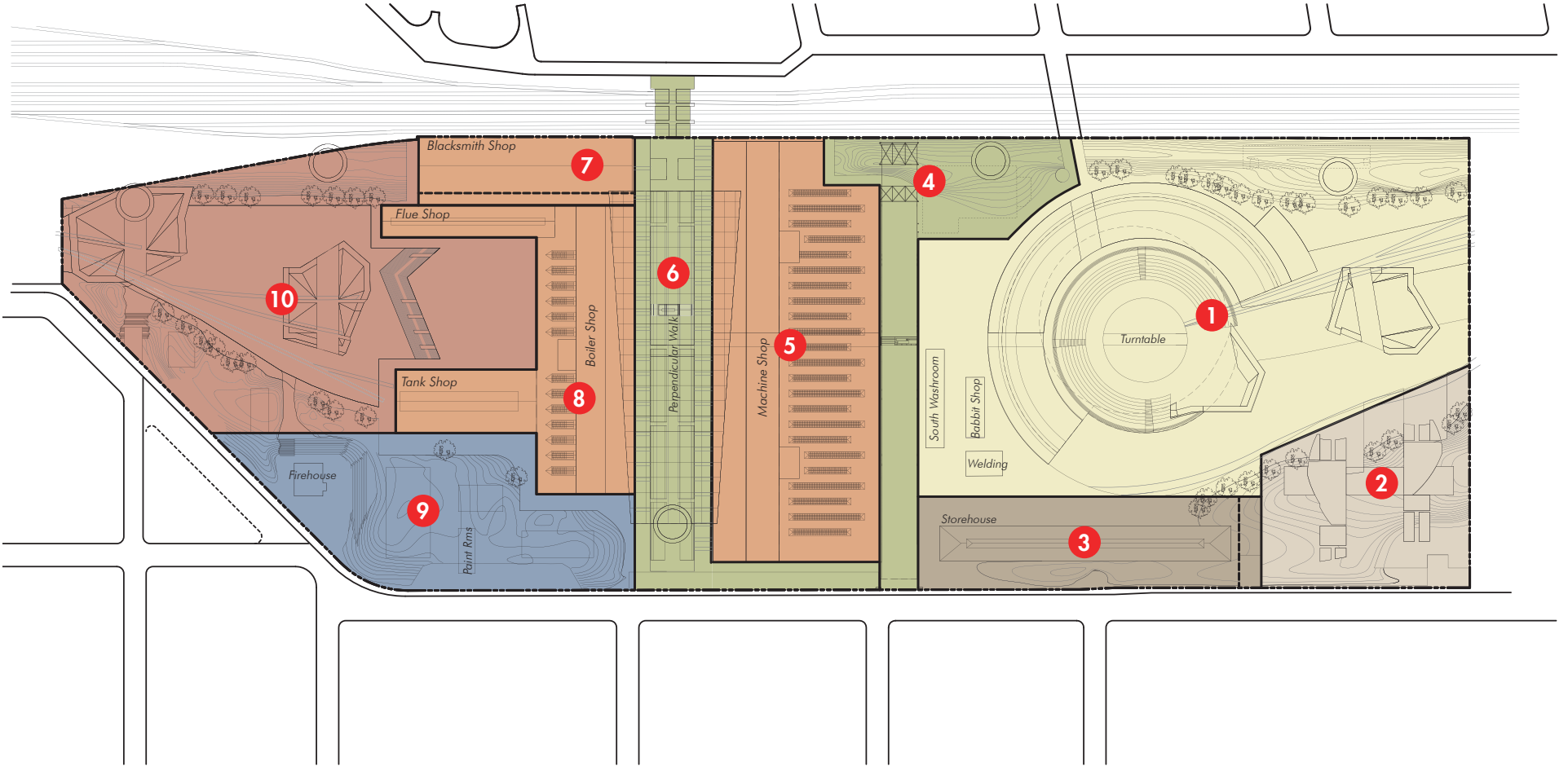


Figure 15: Design Standards Reference Diagram

Parcel ID #	Key	Parcel Area (sf)	Proposed Floor Area Ratio (FAR)	Existing Historic Resources	Existing Built Area (sf)	Allowable Buildable Area (sf)	Recommended Use	Recommended Height Limits (ft)	Street Facing Setbacks (ft)	Parking (stall qnty)
1		342,143	0.65	Turntable, Babbit Shop, Welding Shop, South Washroom, Roundhouse (Rebuilt)	20,829	222,393	Cultural Facilities; Museum, Performing Arts	67 +30 (Arch Feature)	N/A	551
2		77,264	1.00	Platform	N/A	77,264	Work-Force Housing	45	10	90
3		63,582	0.50	Storehouse	18,900	31,791	Cultural Facilities; Museum, Live Work	45	10	N/A
4		68,080	N/A	Bridge Crane, Smokestack (Rebuilt), Orig Powerhouse (Present)	N/A	N/A	Open Space; Accessory Retail, Education, Public Art Venue	45 230 (Smokestack)	10	N/A
5		142,747	1.50	Machine Shop	165,000	214,121	Business/Professional Uses; Office, Light Manufacturing, Training/Education, R&D, Media. Accessory Cultural Uses	67	N/A	N/A
6		79,893	N/A	Transfer Table	N/A	N/A	Open Space	67 +20 (Arch Feature)	10	N/A
7		30,298	1.50	Blacksmith Shop	24,867	45,447	Business/Professional Uses; Office, Light Manufacturing, Training/Education, R&D, Media	67	N/A	N/A
8		89,989	1.50	Boiler Shop, Tank Shop, Flue Shop	85,542	134,984	Business/Professional Uses; Office, Light Manufacturing, Training/Education, R&D, Media	67	N/A	N/A
9		98,216	0.25	Firehouse, Waste & Paint Rooms	5,520	24,554	Open Space/Commercial; Retail, Restaurant, Service	30	10	N/A
10		197,390	0.65	Sheet Metal House (Present)	N/A	128,304	Business/Professional Uses; Office, Light Manufacturing, Training/Education, R&D, Media	30	10	355
TOTALS		1,189,602	0.74		320,658	878,856				996

Figure 16: Design Standards Matrix

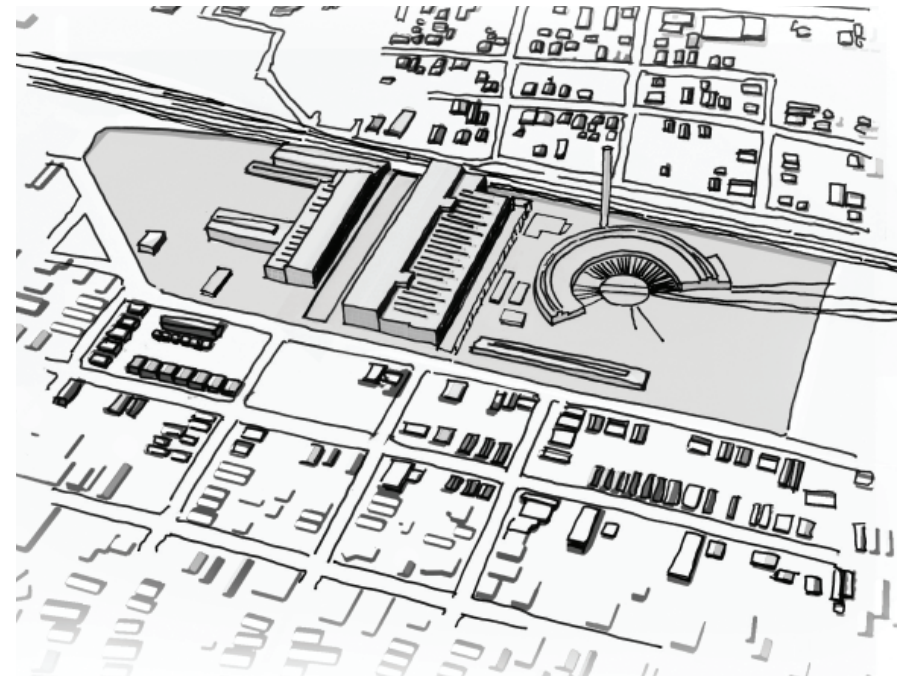
8.2 Preservation and Adaptive Reuse Standards

In keeping with the goals and policies stated in Section 5 and with conceptual recommendations stated in Section 6, the Master Plan seeks to preserve and adaptively reuse the vast majority of historic resources on site. However, while all buildings and structures (site features) tell some part of the story, not all building and site features are equally significant. In addition, the viability of arranging new uses for all existing buildings depends upon their condition and the opportunity to match a building configuration with a suitable reuse.

The plan currently indicates that a few of the smaller buildings may fall into the category of those that are difficult to reuse for a variety of reasons. The planning team has begun and will continue to work closely with the SHPO's staff to determine appropriate mitigation measures. If no viable alternative can be identified, at the very least, the buildings will be recorded photographically and drawings of the plans and elevations and significant details will be developed to provide a record of their functions and contribution to the lessons taught by the site.

The Treatment Inventory included as Appendix C lists each historic resource and its intended treatment as being developed in consultation with project conservation architect, Giora Solar, local preservation consultants, Cherry/See/Reames Architects, the SHPO's office and the City of Albuquerque historic preservation staff.

As the redevelopment of the site progresses and new uses are determined, the detailed design of each building and preserved site feature will develop. The Secretary of the Interior's Standards for Rehabilitation and associated Guidelines for Rehabilitation will provide the criteria for preservation and adaptive reuse treatment.



RAIL YARDS, DIAGRAM MASSING OF KEY HISTORIC RESOURCES

8.3 Architectural Standards

The performance standards described in this section pertain more generally to infill (new) construction, whereas any requisite work to existing historic buildings will be governed by the Adaptive Reuse standards referenced in the preceding Section 8.2.

8.3.1 Architectural Character / Style

The historic resources of the Rail Yards site are extraordinary examples of machine-age architecture where the full prowess of American Ingenuity was brought to bear on building technology. The buildings may be understood as machines themselves, products of engineering, less products of a stylized architectural language (with the possible exception of the Fire House). The modern age in architecture is characterized by the idiom "Form Follows Function" and few sites in the United States can boast such pure expression of this ethos than the Rail Yards.

Accordingly, infill development must respect this context by not attempting to mimic the machine-age aesthetic by using a stylized architectural language. Rather the Master Plan recommends three appropriate architectural responses for infill development, as follows;

- Infill development that is simple, volumetric and without a recognizable architectural language.
- Infill development that does not appear as architecture at all but rather something more elemental, primitive, of the land.
- Infill development that captures the spirit of the Rail Yards by itself being a product of advanced technology or engineering.

The goal of these architectural responses is to produce infill development that is both compatible with the historic resources and yet clearly distinct; a goal that is critical from a preservation perspective given that the entirety of the Rail Yards site will likely be listed to the National Registry of Historic Places. In such a case, the Secretary of the Interior Standards for infill development must also be met.

8.3.2 Massing / Shape

Massing is a term describing how the basic building blocks of a structure are arranged in three dimensions. The Rail Yard's existing structures are almost universally simple boxes that are generally two to four times as long as they are wide. They usually have only a few, small scale offsets in plan or elevation. This massing is a direct expression of their function as rail based workshops. To ensure that redevelopment is compatible with this massing, the Master Plan recommends that infill development of this type be generally simple in massing with flat roofs as described in the architectural responses detailed in the prior section.

8.3.3 Orientation

Recommendations for the orientation of infill development shall follow standards contained within the SU-HLS zone, as summarized in Section 4. As a general principle, new development along First and Second Streets shall be oriented to the street with entrances and window openings directly onto the street frontage. Buildings housing retail and residential uses especially shall engage the street facade and participate in the creation of a vibrant and active urban landscape.

8.3.4 Building Materials

"The variety of buildings and structures that make up the Rail Yards complex demonstrate the full range of industrial materials and building techniques used during the first half of the twentieth century, such as: steel framing, glass curtain walls, reinforced concrete, brick and wood-timber framing." (Dodge, 2013)

The varied materials, however, are united in the raw and basic manner in which they are assembled. There are no composite wall assemblies; all materials are expressed equally whether inside or outside the building. The construction methodology is easily legible compared to modern building techniques that seek to hide building infrastructure beneath a layer of finish. The buildings of the Rail Yards by contrast are fully exposed and pure in their expression of building technology.

Infill development must similarly strive to find this raw expression of materiality. Recommended wall, floor and roof types are as follows;

Wall / Structure Types

The relatively few pieces of new construction proposed by the Master Plan should be built using the palette of materials described above; steel, concrete, stone, masonry, and/or glass. In addition, earthwork/landscaping may be considered an appropriate building material. Modern and innovative expressions of these basic materials is acceptable and depending on the application, recommended.

Examples include; all glass facades, cable net structures, cast-in-place concrete set in computer numerically controlled (cnc) milled formwork, laser cut steel components, etc. Structural systems necessary to support infill development shall be expressed in the design language. The use of high performance, all-glass facades is recommended for certain infill buildings where the provision of natural daylight is critical and where the infill building may be juxtaposed against a historic building. In such a location, the goal of the infill building is both to defer to the historic building and when seen, to be clearly recognizable as a modern element. An all-glass facade yields a level of abstraction that is useful in support of this goal.

Roof Types

Nearly all roof structures proposed as infill development are to be walkable. Occupiable roof surfaces need to include a wearing layer to accommodate pedestrian traffic. Roof surfaces may consist of light weight concrete pavers or other similar products. Acoustic Mound roof surfaces are intended as Green Roofs and will either be intensive or extensive varieties depending on location and proposed pedestrian access.

Skylights, clerestories, and other methods of providing daylight through the roof structure shall be considered appropriate and are in keeping with the design language of the existing Rail Yards buildings. Skylights shall be designed to minimize glare and maximize thermal performance and may also be designed to be operable.

Existing building roof structures shall be repaired to match original conditions where possible. New elements such as Photovoltaic panels may be added to existing structures provided they are designed to lay flat and coincident with the plane of the existing roof slopes and provided the roof structure can accept the additional loading requirements.

Floor Types

Existing Rail Yard floor types consist of concrete slabs, creosoted wood blocks, railroad tracks, and large expanses of dirt and gravel in the exterior areas. Due to its function as a locomotive repair facility, the interior of the Machine Shop contains a series of concrete wells running cross axially to the orientation of the building and set below finish floor by approximately 3ft. In addition, both the Transfer Table and Turntable contain below grade “troughs” necessary to accommodate the rolling/rotating mechanisms.

Recommended interior floor types within both historic and infill buildings are not a subject of this Master Plan as they will be determined in the future based on specific user/tenant requirements. The exception to this being the creosoted wood block flooring in the Machine and Boiler Shops that should be preserved and rehabilitated if technically feasible. Exterior floor types, however, excluding those contained in the roof section, shall be as follows;

Site paving, where part of the proposed storm water infiltration system, shall be permeable. Paving, where located atop the subterranean garage, shall be similar in character but non-permeable. Public sidewalk improvements discussed in Section 9 shall be designed in coordination with the paving palette designed for the proposed Edge Walk such that the sidewalk becomes a literal extension of the Rail Yards project into the neighborhood fabric. Areas of special purpose such as the Quadrangle, Perpendicular Walk, Meandering Path or Machine Shop Plaza may be designed with special paving unique to the requirements of the particular space in which its contained.

Railroad tracks are considered highly valuable urban design elements within the public space that should be retained and incorporated into the redeveloped Rail Yards project where possible. Design studies shall be performed to assess options for maintaining rail tracks whilst also accommodating ADA accessibility standards. A few select rail

tracks as identified in Section 6 shall be preserved for future possible Rail operation. Guidelines for flooring materials at the proposed at-grade crossing are included in Section 9.

8.4 Landscape - Edges & Public Spaces

The site is to be landscaped with a drought tolerant and indigenous palette with plants and trees placed for both beauty and shade. The proposed Site Plan indicates the placement of a number of berms which will be strategically placed around the periphery of the project in order to minimize the visual and noise impacts of the development on the surrounding neighborhoods. Refer to Section 7, Landscape Master Plan for complete analyses and recommendations.

8.5 Access / Site Circulation

The Site Plan specifies the locations of both pedestrian and vehicular access to the site. An entire linkage system for pedestrian access is also included on the plan diagrams previously shown, including the proposed pedestrian retail bridge connecting to the South Broadway neighborhood and at-crossings, both of which are described in detail in Section 9.

8.6 Parking

As previously described in Section 6, the Master Plan recommends that to the degree possible, surface parking should be avoided and rather contained in a below grade structure. Design standards for each configuration are as follows;

8.6.1 Subterranean Parking

The water table under the site is at approximately 25-28' which will allow one level of underground parking. The underground parking

is a proposed feature that, as a concept, reflects the need to provide parking and the preference that it not be a visibly dominant feature of the site. Requirements for Subterranean Parking are as follows;

- Parking garage shall be designed to meet all ADA accessibility and building code requirements.
- Garage shall be designed with ample space for on-site vehicle queuing so as to not impact Second Street traffic.
- Garage shall be designed with ample lighting and security features to provide a safe and inviting space. Courtyard openings that bring natural light into the garage shall be encouraged although must be designed in tandem with garage exhaust and fire code requirements.
- Electrical vehicle charging stations and preferred spaces for carpool drivers shall be included in order to encourage sustainable practices.
- Quality of garage user experience must be a priority; visitors to the site will make first impressions of the redevelopment based on this experience. Spaces shall be easy to locate, visibility shall be good, layout shall be well organized, and circulation paths easy to follow with integral wayfinding signage. Garage must be designed to the same high standards as the balance of the project.
- Current best practices for ticketing / payment systems shall be utilized to simplify use of garage and prevent long wait times at entry/egress.

8.6.2 Surface Parking

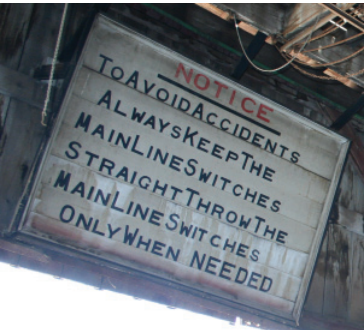
Although not preferred, surface parking will likely be required during early phases of development until such time as development thresholds



"Wayfinding" signage, Babbit Shop



Safety signage, Babbit Shop



Safety signage, Sheet Metal Shop



Sandstone facade of Firehouse with integral Logo



Masonry facade of Blacksmith Shop with painted and integral logo/window



Cast-in-place concrete structure of Storehouse Building with painted logo



Cast-in-place concrete structure of Machine Shop with integral logo



Machine Shop Crane specification/signage

Figure 17: Existing Palette



Rail Lines adjacent Transfer Table



*Machine Shop Floor,
3" thick Kreolite creosoted woods blocks sit on a 6" thick concrete floor to dampen sound*



Turntable, Steel rail tracks and wood railroad ties



Perimeter street lighting and welding lines



Machine Shop, Stair to Mezzanine



Machine Shop, Existing High Bay Lighting



Transfer Table, "Le Pissour"

are met to trigger subterranean garage construction. Per the SU-2/HLS zone, off-street parking should be screened by buildings where possible and not front on streets. Parking that is adjacent to the street because of the configuration of existing buildings must be screened by landscaping or a solid wall or fence 3ft in height. Refer to Section 10 of the Master Plan to see the proposed Preliminary Phase Parking plan that has been designed to accommodate all the zoning requirements of the SU-HLS zone stated above.

8.7 Loading

Project loading requirements will depend heavily on the uses ultimately incorporated into the Rail Yards redevelopment. For example, if light industrial uses are incorporated (although not preferred), the site will likely require accommodation of some sort of truck or rail loading facilities. If the site remains more business/office related, loading requirements will be much less. Regardless, the Master Plan must be designed with sufficient flexibility to accommodate all possible future configuration. Basic loading concepts are as follows;

8.7.1 Rail

- Direct rail access will be preserved to the South portion of the site by virtue of the existing BNSF turntable easement that currently remains in place. Future rail loading operations may be incorporated using this access if required, although this would need to be coordinated with the currently recommended use designations for Parcel 1.
- Direct rail access may also need to be incorporated at the North portion of the site likewise through use of one of the Spur lines that historically connected the Rail Yards site to the main BNSF lines.

8.7.2 Truck

- Truck access to the site is relatively limited given that the existing

historic buildings constrain access to a large portion of the Second Street elevation. The only opportunity for loading operations along the South portion of the site is either directly from Second Street, which should be avoided, or by turning onto the site at the proposed Preliminary Parking access point under the Bridge Crane and immediately adjacent the north end of the Storehouse. Truck loading access could be accommodated within the 50ft width under the historic bridge crane (Parcel 4) and adjacent the south elevation of the Machine Shop. The Master Plan, however, recommends that this area be used for limited loading and delivery operations only in support of the public market and cultural facilities planned for the Southern portion of the site.

- Truck access to the North is less constrained and if required, may be accommodated at the far north portion of the site within the proposed northerly courtyard where direct vehicle access may be provided off First Street. Note that this option is not currently shown in the Master Plan and would be incorporated only if required.
- The vacated portion of First Street north of Hazeldine Avenue may be useful in providing a location for intermittent and off-hours loading for adjacent retail and restaurant uses.
- The Master Plan recognizes the potential incompatibility between loading operations of public use/enjoyment of the site. Truck loading in support of possible light industrial uses must be hidden and screened from public view. If more significant loading operations are required, the Master Plan may need to be adjusted to better accommodate such

8.8 Utilities / Screening

To ensure the overall aesthetic quality of the Rail Yards Site:

- All new electric and telecommunication distribution lines within the Site shall be placed underground.
- All permanent utilities serving irrigation systems and other landscape site amenities will be placed below grade. When an above-ground backflow prevention device is required by the City, the enclosure shall be constructed of materials compatible with the architectural materials used as the main elements of the building or better, shall be enclosed within the proposed Acoustic Mound features.
- Transformers, utility pads, HVAC equipment, and telephone boxes shall be appropriately screened from public view. Appropriate location options include within the Acoustic Mound elements along the western and eastern perimeters of the site.

Refer to Section 9 for a complete technical analysis of site infrastructural requirements.

8.9 Signage

The AT&SF rail line is well known for its characteristic Santa Fe logo of the simple square cross bound within a circle. Long before today's age of branding, this logo was a symbol of high quality transit and a commitment to high quality design. The Santa Fe logo is incorporated throughout the Rail Yards complex (See Figure 17) as an integral design element that should be used to inform future signage standards, as follows;

- Signage is to be used only where required and should be kept to a minimum. The spaces of the Rail Yards should be free from excessive signage and no commercial advertising of products and services is to be allowed on the grounds other than required for

business identification.

- Sign size, locations, materials and methods of installation should consistently be employed across the entire Rail Yards site.
- Where possible, signage should be an integrated design element of the structure.
- For the purposes of the section, Historic Markers shall be considered part of the signage program. Markers shall be incorporated to provide a narrative walking path around the site, connecting historic structures and helping to tell the story of the Rail Yards.
- Buildings recommended for "Presentation" as defined in Section 6 shall be memorialized by signage similar to the Historic Markers.
- Traditional and digital murals dedicated to non-commercial purposes shall not be considered signage and will be instead regulated as Public Art, see Section 8.12.

8.10 Exterior Lighting

Exterior lighting standards and recommendations for the Rail Yards site are as follows;

- Placement of fixtures and standards shall conform to State and local safety and illumination requirements. All exterior installations must be provided with ground-fault interruption circuits.
- Shielded-source light fixtures shall be used to prevent light spillage and avoid unnecessary glare or reflection on adjacent properties, buildings, or roadways in compliance with the City Comprehensive Zoning Code.

- Lighting should be integrated into the design of the buildings and structures; light sources should be concealed to the degree possible and fixtures should not become focal elements of the project.
- Building lighting is appropriate if it is low-level and consistently employed. For example, existing stone and cast-in-place concrete facades of the historic structures may be uplit. Architectural features may also be illuminated.
- Controlled, directional lighting should be used to highlight public spaces and walkways. The use of walkway level lighting, such as all pocket lights, is encouraged to accent pedestrian areas.
- Landscape lighting is encouraged to enhance certain landscape features. Landscape lighting should be concealed at grade.
- Lighting shall be chosen based on energy efficiency, low level of maintenance and availability of parts should replacement or repairs be required.

8.11 Noise

Given its proximity to neighboring residential areas and the intention for the Rail Yards to become a vibrant mixed-use community with a significant public presence, noise mitigation is a critical design concern for the project. The proposed Acoustic Mound design feature described in Section 6 is a direct response of this need to control potential noise pollution emanating *from* the site and likewise to control noise pollution emanating *to* the site from outside sources such as the active BNSF railway immediately to the east. The Acoustic Mound is a buffering and absorptive mechanism.

The City of Albuquerque's noise ordinance provides a baseline

standard that states noise levels shall not exceed 50dba at any noise sensitive property line between 10pm and 7am. Where ambient levels exceeds 50dba, the criteria shall be ambient plus 5dba.

During normal operation, the Rail Yards shall operate within all such established standards, however, there will likely be times when special event programs may require alternative measures. For example, the Roundhouse Amphitheater may someday accommodate outdoor public events which could include music concerts with amplified sound. Master Plan noise standards must therefore be designed with sufficient flexibility to accommodate sound levels above those defined under the Ordinance under special circumstances. Exceptions for short-term special events may be allowed on a case-by-case basis under a temporary permit through the Environmental Health Department. If approved, this would allow limited, short duration, non-compliance with the Noise Ordinance standards. The event operator would be responsible for monitoring noise levels to ensure it meets the special provisions afforded it by said permit.

For additional consideration, the proposed rebuilt Smokestack may be designed to include an analogue "whistle" that references back to its historic functionality. The "whistle" may be used to coincide with special events occurring at the Rail Yards.

8.12 Security

Given its relatively large 27.3 acre footprint and the likely mixed-use nature of its occupancy, the Rail Yards development will require a constant security presence. The juxtaposition of private professional users alongside public oriented Cultural, Retail and Housing users will require additional safeguards not normally required of a single-use, more predictable user environment. Recommended security standards are as follows;

- The Rail Yards will require a full-time, 24-hour security presence.

- Similar to the control of public park facilities, the Rail Yards may need to incorporate hours of operation limitations to control after hours use.
- Given it's 2,000ft long frontage along First and Second Streets, access to the Rail Yards site is not intended to be controlled, and in fact, is not feasible to achieve given other urban design requirements. Access to buildings and parking facilities, however, will be controlled.
- Installation of a network of CCTV security cameras should be considered to assist with site security.

8.13 Public Art

The Rail Yards Master Plan is founded in a deep commitment to Art and Architecture. From the beauty of the existing structures to the quality of design required of all proposed infill development, the Rail Yards is intended to become a world-class center for Art and Architecture; a center not in terms of its collection of Art Museums and Galleries, but a center in terms of the unparalleled integration of Art and Architecture in the creation of public space. Public Art recommendations are provided as follows;

- The Master Plan acknowledges and accepts the concept of Architecture as Art.
- The Rail Yards will include venues for artistic expression and will celebrate Albuquerque's vibrant art community.
- Traditional and digital murals are appropriate mediums of artistic expression.
- The Rebuilt Smokestack may be developed as a venue for Public Art.

8.14 Sustainability

The design of all new elements and facilities is encouraged to incorporate sustainable design features. At a minimum, new facilities shall comply with the current City of Albuquerque adopted Energy Codes and shall be LEED equivalent rated.

Sustainable design features include, but are not limited to the following:

8.14.1 Energy Conservation

The mixed-use character of the Master Plan reduces automobile dependence and consumption of petroleum. The plan encourages visitors to park once and walk from there to a variety of closely clustered uses. The proposed Transit Plaza at the center of the Rail Yards site will serve as the hub of this type of arrangement. Convenience of mass transit, connections to walking and bicycle paths, also contribute to reduced automobile use.

Rail Yards development should minimize energy consumption using the following measures, keeping in mind that such measures need to also comport with historic building requirements;

- Exterior Envelope Design: Provide building insulation at all new roof, wall and below grade retaining wall assemblies (at conditioned spaces only). Seal buildings against air infiltration. Encourage passive solar design (trombe walls, direct gain) where feasible. Incorporate cool roof construction techniques (high reflectance, green roof concepts) to minimize heat island effects.
- Solar Fenestration: Provide east-west building orientation to facilitate solar control. Minimize west and north exposures. Maximize south exposures. Use insulated glazing at all new construction where possible.

- Daylighting: Maximize natural Daylighting to reduce electrical lighting loads.
- Natural Ventilation: Incorporate operable windows where operation (open vs. closed) can be monitored.
- Lighting: Use energy efficient light fixtures (i.e. LED's) both inside and at exterior locations.
- Light Controls: Provide occupancy sensors at all tenant spaces to limit power consumption when spaces are not in use.
- HVAC Systems: Use high efficiency equipment, programmable thermostats, incorporate economizer cycles. Analyze potential use of centralized HVAC for the Rail Yards site to increase efficiency and conservation of resources. Consider cogeneration systems that utilize heat energy to simultaneously generate electricity and useful heat.
- Appliances: Use high efficiency type appliances.

8.14.2 Water Conservation

Water conservation efforts as described in Section 9 in the Infrastructure Section of this Master Plan are required by code or are strongly encouraged. Additional measures are as follows;

- Incorporate rain water harvesting for supplemental landscape irrigation and non-potable water use. Where possible, use above ground cisterns to catch roof water runoff for reuse in landscape irrigation. The collection of rainwater into cisterns reduces the amount of water that needs to be handled by stormwater detention ponds. Above ground cisterns avoid the problem of saturating subsoils. In the event of a leak in the system, the flow occurs above ground, and if not allowed to pond, can avoid

saturating the subsoils. The benefit to the City is a reduced need for stormwater improvements for the Rail Yard. The benefit for the tenant is a source for landscape water that is not dependent on potable water sources. The benefit for the community is a City-wide model for water management and conservation.

- Incorporate on-site water retention and infiltration through storm water management.
- Use high efficiency, low flow plumbing fixtures.
- Use low water irrigation techniques (drip, etc) and specify native and drought tolerant plan species. Use xeriscape principles of design.
- Reuse gray water for non-potable water needs (e.g., toilet flushing) and irrigation.

8.14.3 Alternative Energy Sources

- Provide Photovoltaic panels/membranes for on-site electricity generation.
- Consider Solar panels for hot water generation and hot air systems.
- Passive solar design (trombe walls, direct gain)
- Consider opportunities to use or add alternate energy sources such as fuel cells, distributed energy generation, solar, thermal exchange, etc.
- Consider wind-powered electric generators, where feasible. (size, location, and placement is a major issue in context to the historic structures.)

8.14.4 Pollution Control

To create a plan that reduces pollution, the Master Plan proposes the treatment of storm water runoff by water harvesting, constructed swales, bio-remediation and other techniques to minimize non-point pollution from surface runoff. See Section 9, Infrastructure for more information.

The Master Plan strongly encourages the utilization of non-polluting materials by avoiding polluting materials or treatments in the construction and maintenance of buildings and sites. Polluting materials can include creosote, petroleum based paints and sealers, high volatile organic compound (VOC) solvents, insecticides, etc.

- Install trash containers/recycling containers throughout the Rail Yards site.

8.15 Air Quality

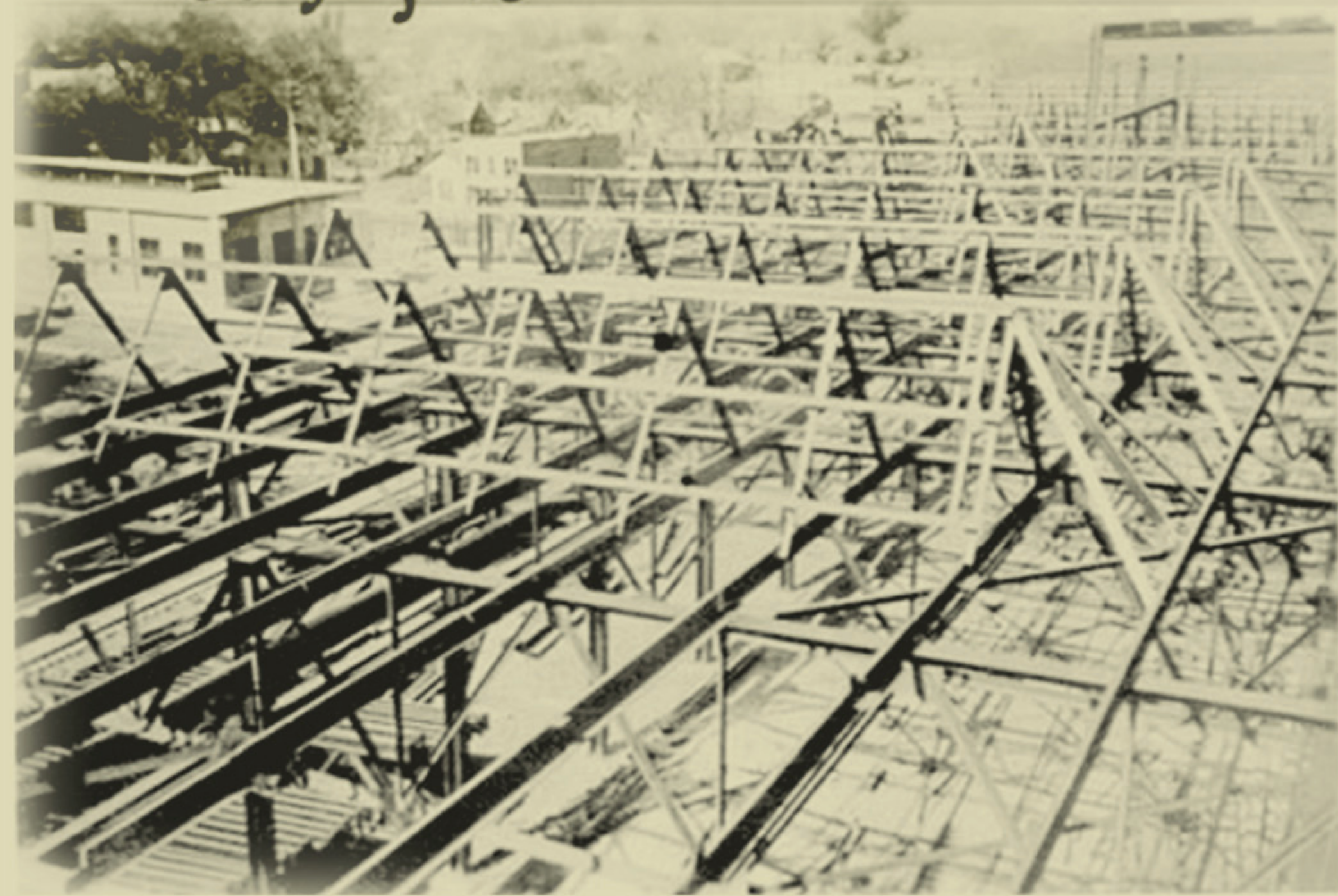
During the Master Planning process, community concerns were voiced regarding the potential for the Acoustic Mounds proposed along the east side of the site to exacerbate existing air quality problems associated with rail traffic along the BNSF rail lines. Specifically it was mentioned that BNSF trains are often left idling on the tracks adjacent residential communities in South Broadway and San Jose neighborhoods, leaving the diesel exhaust to accumulate. The concern is that the Acoustic Mounds will create a tunnel effect that further traps these fumes from escaping, thereby worsening an already significant problem.

The Master Plan recommends that further analysis of the existing problem be undertaken and the potential effects of the Acoustic Mounds be studied, including the possibility that the Mounds might ameliorate the condition by creating a landscape edge that can absorb harmful pollutants. It might also be determined that existing

practices by the BNSF rail line need further review and evaluation.

The Mounds remain a conceptual idea only for treatment of the project edges. They are designed and intended to be a positive community asset that help solve many different site considerations. If they are determined to have negative air quality impacts, alternative edge concepts will be explored.

Skylights-



9.0 INFRASTRUCTURE

The Infrastructure section deals broadly with systems designed to convey utilities and circulation to and from the Rail Yards site. Systems are analyzed to determine existing capacity and against this baseline, the development proforma of the Master Plan is evaluated and recommendations for its accommodation are provided. The following Infrastructure documentation was compiled and analyzed from multiple sources; credits are provided at the beginning of each section.

9.1 Infrastructure - Executive Summary:



The redevelopment of the Albuquerque Rail Yards located at 2nd Street SW and Santa Fe Avenue SW has been investigated. Infrastructure needed to support the proposed redevelopment has been analyzed. The analysis will review the existing adjacent infrastructure and capacities, to meet the full proposed build-out of the redevelopment, estimated at 30 work force residences, and 819,766 square feet of "heavy commercial" land use. This master plan will show existing capacities available for both wet and dry utilities; as well as demands and concept improvements for future redevelopment.

At this time, analysis of the infrastructure to support phasing of the project in order to minimize working capital and maintenance requirements has not yet been undertaken. Rather the current examination is to show the amount of infrastructure required to support the full build-out of the project only.

9.1.1 Water Distribution System

Significant improvements must be made to the potable water distribution system between Hazeldine Avenue and Cromwell Avenue along 2nd Street SW to satisfy fire flow demands for the future development. The Rail Yard appeared to have had its own private water line, consisting of both 6-inch and 8-inch pipes. The recommendation is to replace the existing old on-site system with

the a proposed public distribution system that will consist of 8-inch pipes, with the appropriate placed fire hydrants, valves, service meters, and a large cistern that will be used to augment fire flows. Each building will be sized for its own independent water meter; and will also be analyzed for the number of fire hydrants that are required for its building type to meet fire code requirements. Requests to the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) have been made to prepare a fire flow test for the existing distribution system adjacent to the Rail Yard. The results of this analysis have not been received so for the purposes of the master plan, the assumption is that a maximum fire demand for the existing infrastructure of 1,500 gallons per minute (GPM), is achievable. The existing public line in 2nd Street SW will be connected in several locations to the new proposed line within the development.

All new hydrants will be located by the City Fire Marshal's office, and subsequent utility plans will need to be prepared and approved, by the ABCWUA. Public easements will be required for the proposed on-site distribution system.

The site will require an on-site cistern with an additional water supply volume of 46,300 cf; with a peak potable demand of 520 gpm and a maximum fire demand of 4000 gpm; for a two hour duration. Wilson & Company has addressed these requirements in the body of this master plan. The 46,300 cubic foot cistern with booster pump will be required to support the existing infrastructure to provide fire flow for the project. The cistern and the booster pump may need to be installed during the first phase of the project in case the existing system pressure in 2nd Street SW drops below 20 psi, to address an emergency situation.

The project is also planned to have open space areas, which will be irrigated; with low flow or special irrigation to prevent the unnecessary use of potable water.

9.1.2 Wastewater Collection

Wastewater generated from the proposed developed site will be collected by a series of internal private systems. The proposed system will connect to the existing 8-inch line in 2nd Street SW at 2 locations: near the crossing streets of Atlantic Avenue SW; and Santa Fe Avenue SW. The existing 8-inch line has a capacity of 0.85 cfs. The existing 8-inch line is required to be upsized to a 12-inch line as part of this project. A third connection will be made to the proposed 12-inch line in 2nd Street SW south of Pacific Avenue in order to handle the additional flows. The proposed 12-inch line has a capacity of 2.52 cfs. The line at the intersection of Cromwell Avenue SW and 2nd Street SW is a 12-inch line. The existing capacity of the 12-inch line is 2.52 cfs. Each proposed 8-inch sanitary sewer line has capacity of 0.85 cfs. The technical discussion in the body of this master plan shows the peak demand at each of the proposed sanitary connections within the development.

The existing on-site sanitary system will be completely replaced for the purpose of this master plan.

9.1.3 Stormwater Management System

Stormwater management is a critical element for the proposed development. Drainage patterns will remain similar to those of the existing condition; however, no detention is currently provided for the mostly impervious Rail Yard. Through an existing agreement with the City of Albuquerque, the proposed project will be allowed to release at a rate of 2.75 cfs per acre of development. The existing drainage patterns, with very flat slopes running from east to west, show 3 natural drainage basins, which will be similar for final grading of the proposed site. Each basin (Basin A-1 located at the northern end of the development, Basin A-2 located in the middle of the development and Basin A-3, located in the southern portion of the development) will provide its own detention areas, whether by underground cistern, porous landscape techniques, bio-swales, rain gardens, or other

general low impact improvements accepted for high density urban environments. The onsite system for collection and detention will be a private system connecting to the public gravity system located in 2nd Street SW. It is anticipated that each of the basins will require:

- Basin A-1; total volume of storage required 17,978 cf, with max discharge of 20.1 cfs
- Basin A-2; total volume of storage required 20,309 cf, with max discharge of 22.6 cfs
- Basin A-3; total volume of storage required 28,807 cf, with max discharge of 32.2 cfs

For the purposes of this master plan, Wilson & Company proposes to incorporate an extensive array of best management practices that respect the flat topography; which reflect the stormwater criteria and regulations. We propose a gravity system consisting of swales, ditches, small diameter piping, and shallow ponds, while attenuating peak discharges, which also adhere to a sustainable design practice for open space and landscape areas.

9.1.4 Dry Utilities

- Gas availability; Contact was made with the New Mexico Gas Company. Based on the general concepts of the site plan, it was determined that there will be no problem servicing the anticipated load.
- Century Link availability; Contact was made with Century Link. Its main copper and fiber optic facilities located at 4th Street SW, between Coal and Bridge can be extended to serve the Rail Yard development.
- Comcast availability; Contact was also made with Comcast;

Capacity is available to provide service to the proposed Rail Yard site.

- PNM availability; An existing sub-station is located at the northern end of the project across 2nd Street SW that has been estimated to provide 1.5 meg-watts. The assumption for the development is that the electricity demand will exceed 8 meg-watts; requiring the existing sub-station to be expanded, along with the construction of primary distribution lines to the proposed development. Additional analysis through PNM will be required to develop a final conceptual plan for this development.

9.2 Water Distribution

This section of the master plan is intended to address the future water distribution system for the Albuquerque Rail Yard. The proposed public water distribution system within the site is intended to serve a dual function of domestic service, as well as fire protection flows. Based on the proposed Parcel Map, Floor Area Ratios (FAR), and Projected Usages prescribed within the Master Plan, the demands on the water service system have been estimated as outlined within this section of the master plan.

9.2.1 Existing Infrastructure

According to municipal maps, a private water distribution system within the Rail Yard did exist at one time. It has since been abandoned and its size and condition is unknown at this time. Therefore, for the purposes of master planning within this section of the master plan, it has been deemed infeasible to re-use the existing on-site system. Instead, this section will schematically layout a new system designed to specifically meet the requirements of the proposed development.

The existing public potable water distribution system to the west of the site within 2nd Street SW consists of a 6" main. An 8" main also

exists within Commercial Street SE to the east. However, due to the feasibility and potential expense of crossing the existing railroad tracks to reach the main in Commercial Street the recommendation of this document is that water services be obtained from 2nd Street SW.

*Note: If additional resources can be identified through working with the Albuquerque Bernalillo County Water Utility Authority this could be revisited during the initial designs.

9.2.2 Proposed Development

The proposed development will consist of numerous buildings, both existing to be rehabilitated and new construction. The site has been divided into ten parcels as part of the master planning process. Each of these parcels was assigned a floor area ratio (FAR) and proposed use. The FAR and parcel area then dictated the potential build-out for development within each parcel. It is these fully built-out square footages that were used in the calculations of the domestic and fire demands.

9.2.3 Domestic Demand Calculation

The Volume II – Design Criteria, Chapter 25: Waste System Design Criteria of the Albuquerque Development Process Manual does not dictate a method for estimating design flows. Therefore, the domestic demand has been calculated by use of the sanitary sewer flows based on the potential build-out outlined above. The sanitary sewer flows were modified to approximate domestic demand by assuming a 20% water consumption rate. Domestic demands for the proposed development are as follows:

Parcel ID	Proposed Use (Per Master Plan)	Domestic Demand (MGD)
1	Cultural Facilities: Museum, Performing Arts	0.174
2	Work-Force Housing	0.122
3	Cultural Facilities: Museum, Live Work	0.029
4	Open Space; Accessory Retail	N/A
5	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media. Accessory Cultural Uses.	0.157
6	Open Space	N/A
7	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media	0.040
8	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media	0.104
9	Open Space/Commercial: Retail, Restaurant, Service	0.023
10	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media	0.100

9.2.4 Fire Flow Demand Calculation

Fire flows for the proposed development were approximated using the International Fire Code Table B105.1. Building Type IIB was assumed for both existing structures to be rehabilitated and proposed new structures. Type IIB was selected due to its non-combustible, non-rated classification. The flow rates from the table were then reduced by 50%

due to the assumption that all buildings will be sprinkled as allowed by the Fire Code. The required flow durations were also obtained based on the projected demands. See the table below for a summary:

Parcel ID	Buildable Area (SF)	Construction Type*	Fire Flow** (GPM)	50% Reduction for Sprinklers (GPM)	Flow Duration As Required by Code (Hours)
1	240,567	IIB	8000	4000	4
2	77,264	IIB	6000	3000	3
3	31,791	IIB	4750	2375	2
4	N/A	N/A	N/A	N/A	4
5	214,121	IIB	8000	4000	4
6	N/A	N/A	N/A	N/A	4
7	45,447	IIB	4750	2375	2
8	134,984	IIB	7750	3875	3
9	24,554	IIB	4750	2375	2
10	128,304	IIB	7500	3750	3

9.2.5 Proposed System Layout and Design

The proposed water distribution system on site was laid out with two main objectives. The first was to provide infrastructure to fully service various connection points throughout the parcel as well as place new fire hydrants to meet the spacing requirements. The second objective was to provide an independently looped system within the boundaries of the site. By doing so it allows fire demands for the development to be met by a single cistern and pump system, which will be installed during the initial phasing of the project.

At the time this document was prepared, no existing flow data was available for the municipal water distribution system adjacent to the site. It has been assumed that the 6" water main in 2nd Street SW will not have an ability to sufficiently supply fire flows for the proposed development. Therefore, it is proposed a booster pump and cistern system be centrally located within the site's water distribution

network to meet the demands estimated in the table above. The proposed cistern size of 46,300 cf and pump size of 2,500 GPM is intended to supplement a projected draw of 1,500 GPM from the city infrastructure to meet the maximum flow of 4,000 GPM for a maximum duration of 2 hours.

It is important to note that the Code requires flow durations in excess of that which the pump system can supply. This non-compliance with Code has been disregarded due to the nature of the flows that have been calculated. The flows are calculated using bulk buildable square footages for different parcels of the site that in many cases include multiple structures. During the formal design of the development more accurate, building specific calculations will be performed that will result in lower flow values and durations. The conceptual fire system is, therefore, conservative and appropriate for planning purposed as the project moves forward. Also use of fire rated construction in larger buildings can be used to reduce demand.

Attachments:

Existing Water Infrastructure Map
Proposed Water Infrastructure Map
Domestic Demand Calculations
Fire Demand Calculations

Albuquerque Rail Yard - Domestic Demand Estimation

Parcel ID	Proposed Use (Per Masterplan)	Parcel Area (SF)	Proposed FAR	Buildable Area (SF)	Proposed Use (For Utility Sizing)*	Design Flow Per Sanitary* (MGD)	Usage Factor	Domestic Demand (MGD)
1	Cultural Facilities: Museum, Performing Arts	370,103	0.65	240,567	Heavy Commercial	0.145	1.2	0.174
2	Work-Force Housing	77,264	1.00	77,264	80 DU (~1,000SF/DU)	0.101	1.2	0.122
3	Cultural Facilities: Museum, Live Work	63,582	0.50	31,791	Heavy Commercial	0.024	1.2	0.029
4	Open Space; Accessory Retail	40,120	N/A	N/A	N/A	N/A	N/A	N/A
5	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media. Accessory Cultural Uses.	142,747	1.50	214,121	Heavy Commercial	0.131	1.2	0.157
6	Open Space	79,893	N/A	N/A	N/A	N/A	N/A	N/A
7	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	30,298	1.50	45,447	Heavy Commercial	0.033	1.2	0.040
8	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	89,989	1.50	134,984	Heavy Commercial	0.087	1.2	0.104
9	Open Space/Commercial: Retail, Restaurant, Service.	98,216	0.25	24,554	Heavy Commercial	0.019	1.2	0.023
10	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	197,390	0.65	128,304	Heavy Commercial	0.083	1.2	0.100

* - Per Albuquerque Development Process Manual - Chapter 24 - Sanitary Sewer Design Criteria

Albuquerque Rail Yard - Fire Demand Estimation

Parcel ID	Proposed Use (Per Masterplan)	Parcel Area (SF)	Proposed FAR	Buildable Area (SF)	Construction Type*	Fire Flow** (GPM)	50% Reduction for Sprinklers (GPM)	Flow Duration (Hours)
1	Cultural Facilities: Museum, Performing Arts	370,103	0.65	240,567	IIB	8000	4000	4
2	Work-Force Housing	77,264	1.00	77,264	IIB	6000	3000	3
3	Cultural Facilities: Museum, Live Work	63,582	0.50	31,791	IIB	4750	2375	2
4	Open Space; Accessory Retail	40,120	N/A	N/A	N/A	N/A	N/A	4
5	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media. Accessory Cultural Uses	142,747	1.50	214,121	IIB	8000	4000	4
6	Open Space	79,893	N/A	N/A	N/A	N/A	N/A	4
7	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media	30,298	1.50	45,447	IIB	4750	2375	2
8	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media	89,989	1.50	134,984	IIB	7750	3875	3
9	Open Space/Commercial: Retail, Restaurant, Service	98,216	0.25	24,554	IIB	4750	2375	2
10	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	197,390	0.65	128,304	IIB	7500	3750	3

* - Construction Type IIB assumed for all buildings: non-combustable, non-rated

** - Fire Flows per IFC Table B105.1

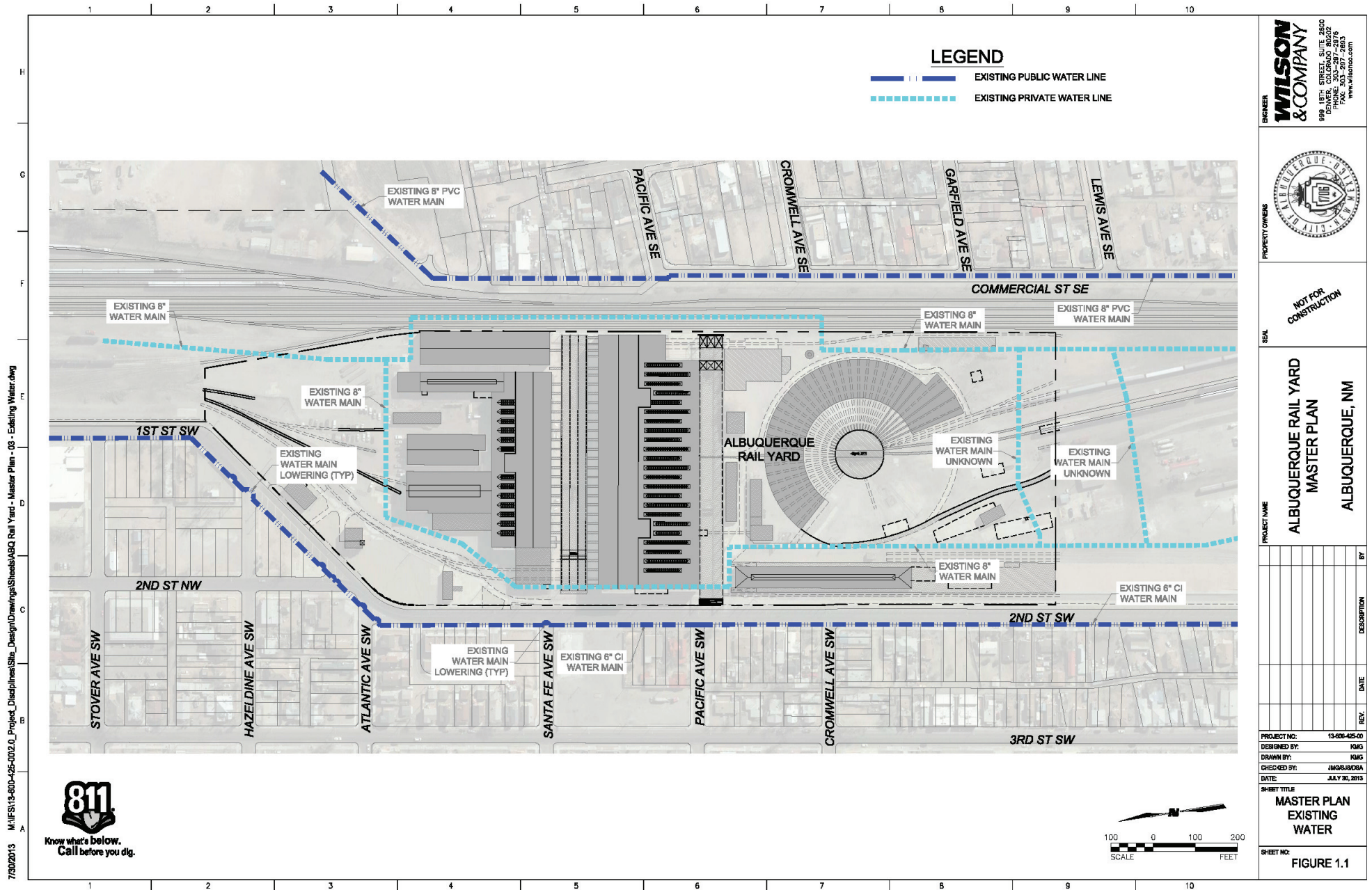


Figure 18a: Master Plan - Existing Water

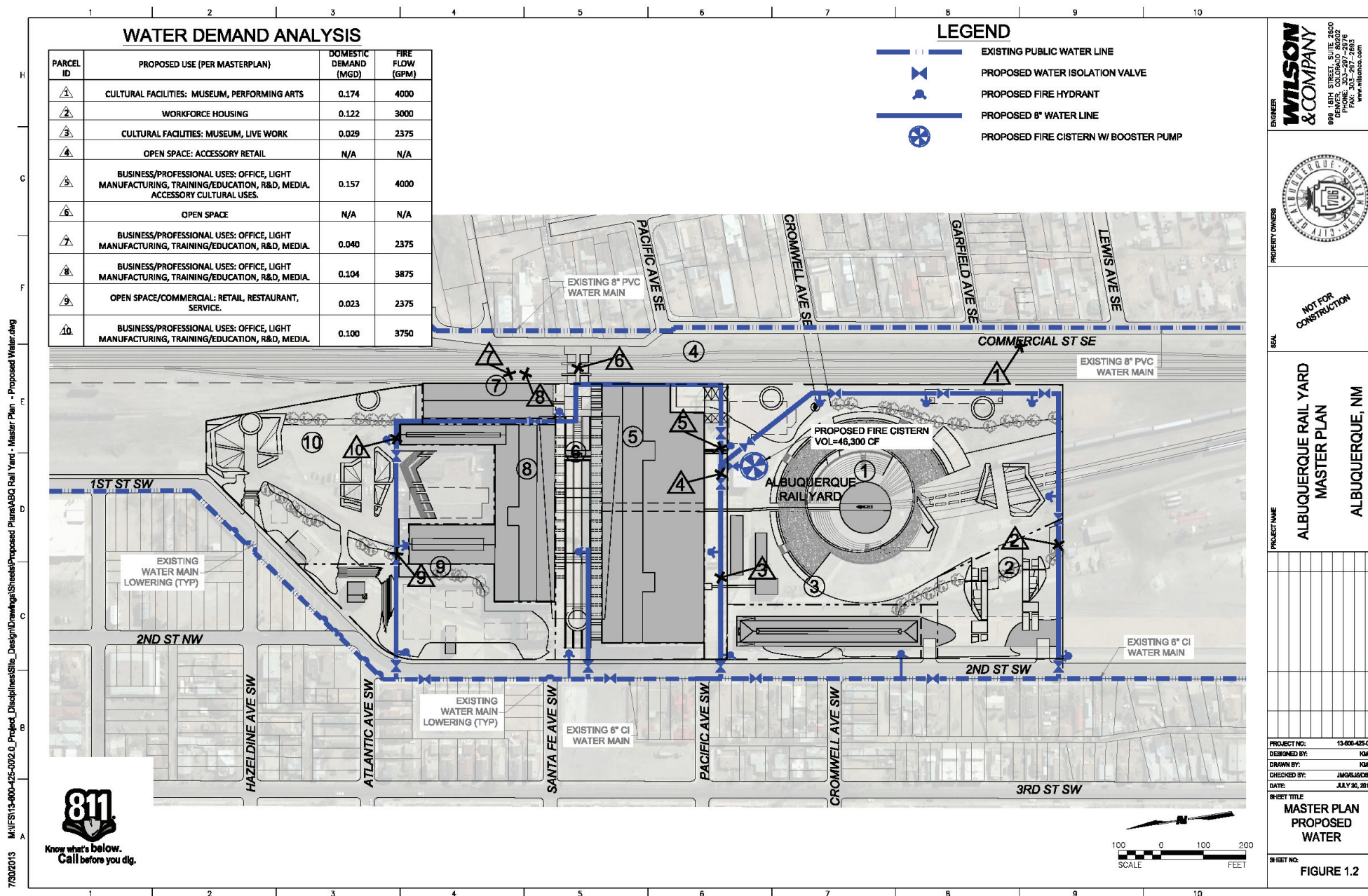


Figure 18b: Master Plan - Proposed Water

9.3 Wastewater Collection

This section of the master plan is intended to address the proposed sanitary flows that will be contributed from the Albuquerque Rail Yard. The proposed development will be comprised of a minimum 30 dwelling units and 5 analysis points of mixed commercial use that has a total parcel area of 992,325 square feet, of which 819,766 square feet is the allowable buildable area. The analysis points are laid out as such:

- Analysis point 1 consist of Parcels 9 and 10
- Analysis point 2 consist of Parcels 5, 7, and 8,
- Analysis point 3 consist of Parcels 1, 2, and 3,
- Analysis point 4 is the combination of analysis points 1 and 2, and
- Analysis point is the combination of analysis point 1 and 4

****Note:** See attached Master Plan Proposed Sanitary for analyses point locations and Parcel ID.

The following calculations have been prepared to meet the requirements of Volume II – Design Criteria, Chapter 24: Sanitary Sewer Design Criteria of the Albuquerque Development Process Manual.

- Analysis Point 1 Proposed Flow

$$\text{Avg Flow} = (5,968 \text{ GPD/AC})(6.79 \text{ AC})(10-6) = 0.040 \text{ MGD}$$

$$\text{Peak Flow} = 2.5(0.040)0.8875 = 0.145 \text{ MGD}$$

$$\text{Design Flow} = (1.2)(0.145 \text{ MGD})(1.547) = 0.270 \text{ cfs}$$

$$\text{Total Design Flow for Analysis Point 1}$$

$$\text{Total Design Flow} = 0.27 \text{ cfs}$$
- Analysis Point 2 Proposed Flow

$$\text{Avg Flow} = (5,968 \text{ GPD/AC})(6.04 \text{ AC})(10-6) = 0.036 \text{ MGD}$$

$$\text{Peak Flow} = 2.5(0.036)0.8875 = 0.131 \text{ MGD}$$

$$\text{Design Flow} = (1.2)(0.145 \text{ MGD})(1.547) = 0.243 \text{ cfs}$$

$$\text{Total Design Flow for Analysis Point 2}$$

$$\text{Total Design Flow} = 0.24 \text{ cfs}$$

- Analysis Point 3 Proposed Flow
 Commercial Portion

$$\text{Avg Flow} = (5,968 \text{ GPD/AC})(9.96 \text{ AC})(10-6) = 0.059 \text{ MGD}$$

$$\text{Peak Flow} = 2.5(0.059)0.8875 = 0.204 \text{ MGD}$$

$$\text{Design Flow} = (1.2)(0.204 \text{ MGD})(1.547) = 0.379 \text{ cfs}$$

 Dwelling Portion

$$\text{Avg Flow} = (80 \text{ DU})(2.5 \text{ People/DU})(110 \text{ GPD/Person})(10-6) = 0.022 \text{ MGD}$$

$$\text{Peak Flow} = 2.5(0.022)0.8875 = 0.084 \text{ MGD}$$

$$\text{Design Flow} = (1.2)(0.084 \text{ MGD})(1.547) = 0.157 \text{ cfs}$$

$$\text{Total Design Flow for Analysis Point 3}$$

$$\text{Total Design Flow} = 0.157 \text{ cfs} + 0.379 \text{ cfs} = 0.54 \text{ cfs}$$

The above mentioned results are the quantities that were obtained using the heavy commercial sanitary average flows provided by Volume II – Design Criteria, Chapter 24: Sanitary Sewer Design Criteria of the Albuquerque Development Process Manual. The heavy commercial sanitary flows were chosen to be conservative when projecting the additional flows and were compared the City and Country of Denver Department of Public Works Sanitary Sewer Design Technical Criteria Manual (See attached CCD Table 2.04.3 – Commercial/Industrial Flow Factors), in order to allow for reasonable assumptions to be made. No data on existing sanitary sewer conditions have been provided prior to this report, such as slope and sanitary flows.

Analyses were performed using FlowMaster software to determine the allowable capacities of the existing sanitary sewer system. The

analysis revealed the existing 8" Vitrified Clay Pipe, VCP, running along the west side of the future development had an allowable capacity of 0.85 cfs, assuming the current system runs at a 0.5% slope. Thus the 0.27 cfs calculated at analysis point 1 (See attached Proposed Sanitary Site Layout for location) could flow into the existing 8" VCP with a remaining capacity of 0.58 cfs (68.2%). Analysis point 4, which is a second proposed connection to the above mentioned existing 8" VCP pipe in 2nd Street SW, will be the combination of the flows from analysis points 1 and 2, which have a total projected flow of 0.51 cfs. The additional 0.51 cfs could be added to the existing 8" VCP sanitary with a remaining 0.34 cfs (40.0%). These analyses were done separate due to the lack of data provided on current conditions.

South of analysis point 5, the master plan proposes the replacement of the 8" VCP with a 12" PVC sanitary pipe, due to the additional flow that will be contributed from analysis point 5, which is a combination of analysis point 1, 2, and 3. The project flow at this portion of the sanitary sewer system will be 1.05 cfs. An analysis was done using FlowMaster to determine the allowable capacity in the proposed 12" PVC pipe. The results of the FlowMaster analysis it was determined the allowable flow capacity of the proposed 12" PVC pipe was 2.52 cfs, therefore a remaining capacity of 1.47 cfs (58.3%) would be allowable for future developments.

With the above mentioned results, it is assumed that with the additional flows and the proposed change to the portion of the existing 8" VCP to a 12" PVC sanitary pipe, between Pacific Avenue SW and Cromwell Avenue SW, that there will be adequate capacities to handle proposed and existing flows.

Attachments: Master Plan Existing Sanitary
 Master Plan Proposed Sanitary
 Spread Sheet of Analysis Points with Calculated Flows
 Section 2 of Chapter 24: Sanitary Sewer Design Criteria
 CCD Table 2.04.3 – Commercial/Industrial Flow
 Factors
 FlowMaster Worksheet for Existing 8" VCP @ Assumed
 0.5% (Allowable Capacity)
 FlowMaster Worksheet for Existing 12" PVC @ Assumed
 0.5% (Allowable Capacity)

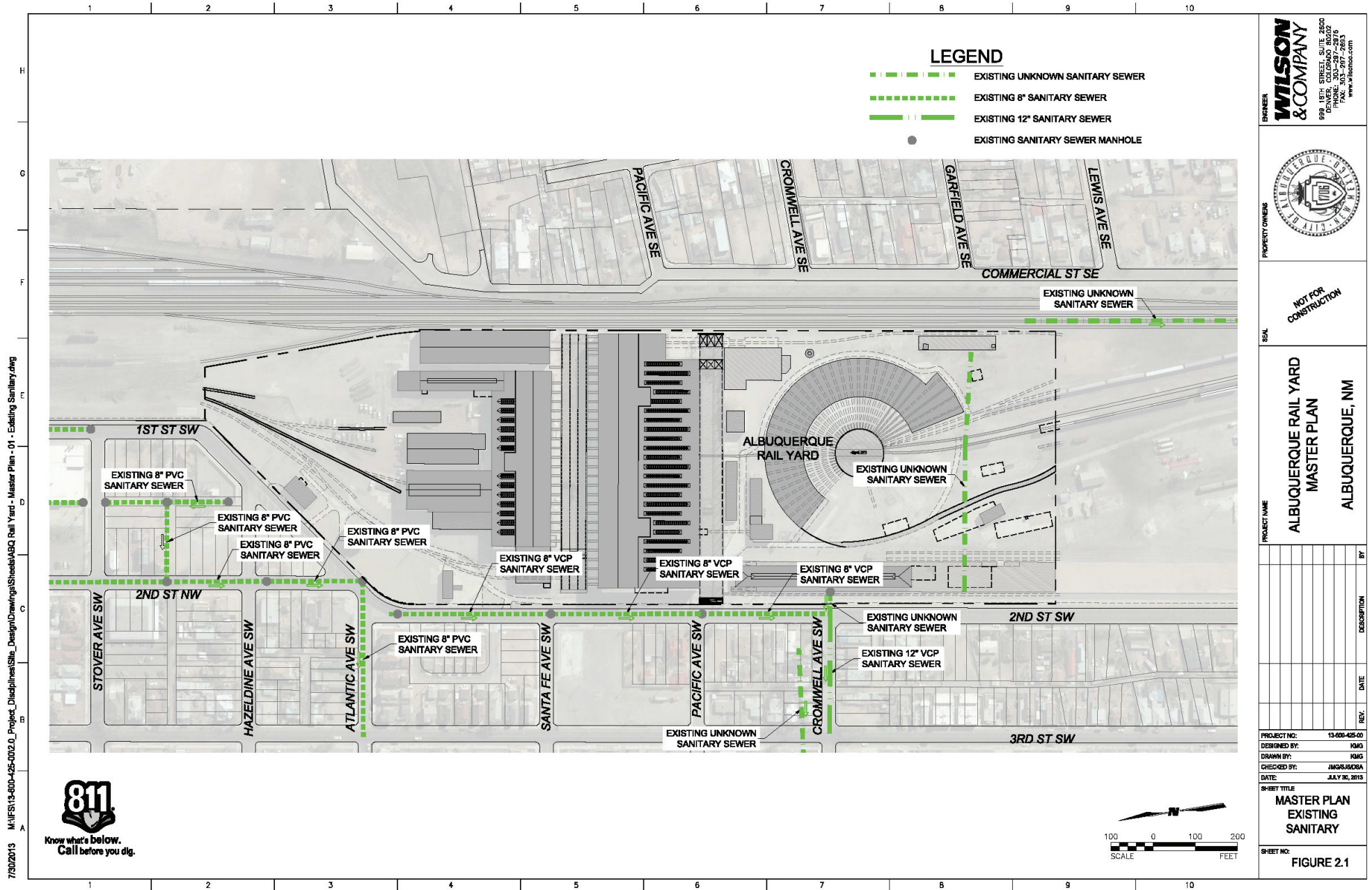


Figure 19a: Master Plan - Existing Wastewater

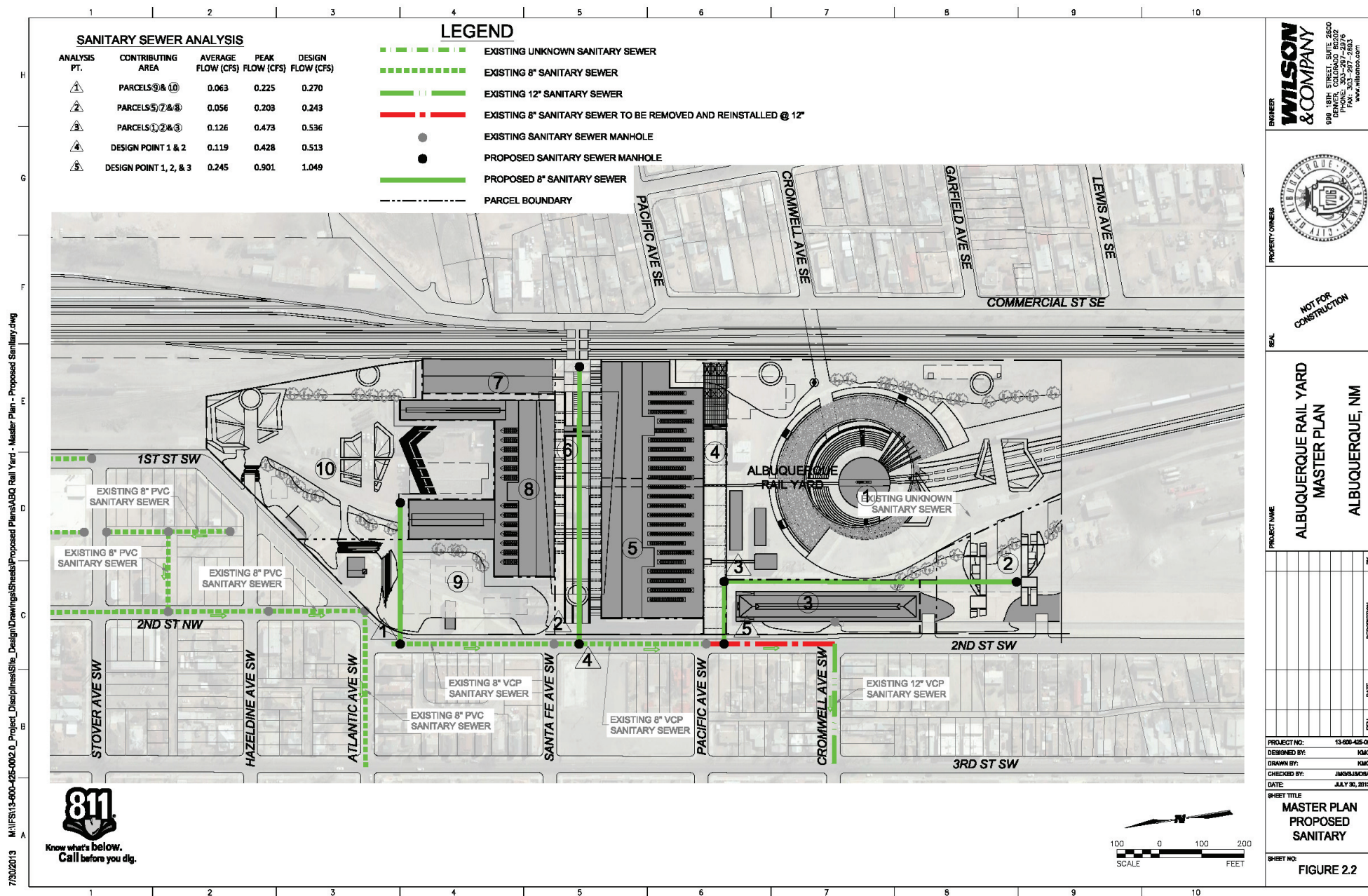


Figure 19b: Master Plan - Proposed Wastewater

Analysis Point 3

Parcel ID	Proposed Use (Per Masterplan)	Parcel Area	Proposed FAR	Buildable Area	Proposed Use (For Utility Sizing)*
1	Cultural Facilities: Museum, Performing Arts	370,103	0.65	240,567	Heavy Commercial
2	Work-Force Housing	77,264	1.00	77,264	80 DU (~1,000SF/DU)
3	Cultural Facilities: Museum, Live Work	63,582	0.50	31,791	Heavy Commercial

Total area (minus WFH Parcel 2 & Open Space Parcel 4) (SF) 433,685

	MGD	CFS
Ave Flow	0.059	0.092
Peak Flow	0.204	0.316
Design Flow	0.245	0.379

Work-Force Housing Population

2.5 persons/DU	200	
	MGD	CFS
Ave Flow	0.022	0.034
Peak Flow	0.084	0.131
Design Flow	0.101	0.157

	MGD	CFS
Total Design Flow for Analysis Point 3	0.346	0.536

Analysis Point 2

Parcel ID	Proposed Use (Per Masterplan)	Parcel Area	Proposed FAR	Buildable Area	Proposed Use (For Utility Sizing)*
5	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media. Accessory Cultural Uses.	142,747	1.50	214,121	Heavy Commercial
7	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	30,298	1.50	45,447	Heavy Commercial
8	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	89,989	1.50	134,984	Heavy Commercial

Total area (minus open space Parcel 6) (SF) 263,034

	MGD	CFS
Ave Flow	0.036	0.056
Peak Flow	0.131	0.203
Design Flow	0.157	0.243

	MGD	CFS
Total Design Flow for Analysis Point 2	0.157	0.243

Analysis Point 1

Parcel ID	Proposed Use (Per Masterplan)	Parcel Area	Proposed FAR	Buildable Area	Proposed Use (For Utility Sizing)*
9	Open Space/Commercial: Retail, Restaurant, Service.	98,216	0.25	24,554	Heavy Commercial
10	Business/Professional Uses: Office, Light Manufacturing, Training/Education, R&D, Media.	197,390	0.65	128,304	Heavy Commercial

Total area (minus open space Parcel 6) (SF) 295,606

	MGD	CFS
Ave Flow	0.040	0.063
Peak Flow	0.145	0.225
Design Flow	0.174	0.270

	MGD	CFS
Total Design Flow for Analysis Point 1	0.174	0.270

	MGD	CFS
Total additional flow	0.678	1.048

No water or sanitary sewer service accounts shall be sold to any development project prior to issuance of a Water and Sanitary Sewer Availability Statement for that specific project. No property may develop or take service in such a manner that leaves adjacent unserved properties without means to obtain service. In accordance with the Water and Sewer Expansion Policies, line extensions are required to cover all frontage of the property requesting service unless all adjacent properties have other means of being served.

Section 2. ENGINEERING DESIGN CRITERIA

Unless modified for a specific project, specifications for pipe and other construction materials and specifications for construction will be as required in the current City of Albuquerque Standard Specifications for Public Works Construction and Standard Details.

A. Design Capacity Criteria Section, Development and Development Service

- Off-site flows will be typically determined by the Planning Department/Utility Development.
- In areas with a mix of residential, commercial, industrial, etc., roughly representative of the city as a whole, the population of the contributing area is determined and the design flows are calculated as follows:

$$\begin{aligned} \text{Average Flow} &= 110 \times \text{Population}/10^6, \text{ in MGD} \\ \text{Peak Flow} &= 2.5 \times (\text{Avg.})^{.8875}, \text{ in MGD} \\ \text{Design Flow} &= 1.2 \times \text{Peak, in MGD} \\ &\text{(for cfs, multiply MGD by 1.547)} \end{aligned}$$

- Population loadings are assumed to be:
 - 2.5 persons per DU for apartments, townhouses and mobile homes
 - 3.0 persons per DU for R-1 single-family homes

Where DU = Dwelling Unit

- In primarily non-residential areas, design flows are determined by other methods as may be appropriate with the approval of the Planning Department/Utility Development, Development & Building Services Center. Following is a summary of non-residential sewer use categories and estimated demand currently used by City staff in the Albuquerque Sewer Analysis Model (ASAM) of the City's major sewer lines:

NOTE: The following land use categories and associated sewer use loading values are established for use with development within the City of Albuquerque Wastewater collection basin. The Land Use Categories relate to standard "Sewer Use Unit Hydrographs" within the City's computer model of the sewer system, Albuquerque Sewer Analysis Model (ASAM). Alternative loadings may be considered or required when justified for a specific development. Impact fees analysis may reflect variations in flows.

LAND USE CATEGORY	AVERAGE FLOW (gpd / Acre)	PEAK FLOW (gpd / Acre)

Light Commercial	1,230	1,621
Heavy Commercial	5,968	7,600
Light Institutional	226	310
Heavy Institutional	1,788	2,448
Light Industrial	447	745
Medium Industrial	1,680	1,982
Heavy Industrial	9,266	10,300

Section 4 of this chapter contains a detailed listing of Land Use Codes and classifications for nearly all possible developed uses, as they are applied in ASAM. Contact Planning Department /Utility Development for assistance in applying rates and determining applicable loadings.

- Design is for full pipe flow at the design flow.

- Manning's Formula is to be used for determination of pipe flow velocities and capacities using a value for Manning's "n" = 0.013.

- Peak velocity = Velocity at peak flow conditions
- Average velocity = Velocity at average flow conditions

B. Manhole Criteria

- Manholes must generally be located on the centerline of street right-of-way or of street width if the street is not concentric with the right-of-way. Manholes for straight lines in curved streets may be located as much as 5' off from centerline of street or right-of-way; however, required clearances from other utilities must be maintained. The offset of such manholes is to be dimensioned from center of manhole barrel to the centerline of the street or right-of-way. In narrow, curving, residential streets, greater than 5' offset may be appropriate to maintain separation from other utilities. Avoid locating manholes in the "wheel path" on arterial and collector roadways, and keep them out of "Parking" lanes and spaces. Manhole locations that conflict with centerline monumentation required for subdivisions, should be shifted, when practical, to eliminate the conflict. Manholes will not be allowed outside of public right-of-way within residential areas except in private streets or within multifamily housing with public easements. All manholes must be accessible by sewer maintenance truck. Manhole locations in residential rear or side yards are not acceptable.

- Standard minimum manhole depth is 6.0', measured from rim to invert. Manhole depths greater than 20 feet shall be avoided.

- The required inside diameter for a manhole is determined as follows:

- Minimum inside diameter is 4.0'.
- A minimum 9" wide shelf must be provided on each side of each main line within the manhole.

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

SECTION 2: SANITARY PLANNING CRITERIA

TABLE 2.04.3 - COMMERCIAL/INDUSTRIAL FLOW FACTORS

Type of Establishment Future Average Flow	(GPD/1000 Gross Building sq. ft.)
Office Buildings	200
Restaurants	500
Bar & Lounges	300
Hotels & Motels	350
Neighborhood Stores	200
Department Stores	200
Laundries & Dry Cleaning	1000
Banks & Financial Buildings	300
Medical Buildings & Clinics	300
Warehouses	100
Meat & Food Processing Plants	2800
Car Washes	1900
Service Stations	20
Auto Dealer, Repair & Service	150
Super Market	200
Trade Businesses - Plumbers, Exterminator, etc.	200
Mobile Home Dealer, Lumber Co., Drive-In Movies, Flea Markets	300
Places of Assembly - Churches, Schools, Libraries, Theaters	600
Factories - Manufacturing raw products into finished products	800
Hospitals	450 gal/bed

Worksheet for 8" Sewer - Capacity

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00500 ft/ft
Normal Depth	0.67 ft
Diameter	0.67 ft
Discharge	0.85 ft³/s

Results

Discharge	0.85 ft³/s
Normal Depth	0.67 ft
Flow Area	0.35 ft²
Wetted Perimeter	2.09 ft
Hydraulic Radius	0.17 ft
Top Width	0.00 ft
Critical Depth	0.44 ft
Percent Full	100.0 %
Critical Slope	0.00848 ft/ft
Velocity	2.45 ft/s
Velocity Head	0.09 ft
Specific Energy	0.76 ft
Froude Number	0.00
Maximum Discharge	0.92 ft³/s
Discharge Full	0.85 ft³/s
Slope Full	0.00500 ft/ft
Flow Type	SubCritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.00 %

Worksheet for 12" Sewer - Capacity**Project Description**

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013
Channel Slope	0.00500 ft/ft
Normal Depth	1.00 ft
Diameter	1.00 ft
Discharge	2.52 ft ³ /s

Results

Discharge	2.52 ft ³ /s
Normal Depth	1.00 ft
Flow Area	0.79 ft ²
Wetted Perimeter	3.14 ft
Hydraulic Radius	0.25 ft
Top Width	0.00 ft
Critical Depth	0.68 ft
Percent Full	100.0 %
Critical Slope	0.00770 ft/ft
Velocity	3.21 ft/s
Velocity Head	0.16 ft
Specific Energy	1.16 ft
Froude Number	0.00
Maximum Discharge	2.71 ft ³ /s
Discharge Full	2.52 ft ³ /s
Slope Full	0.00500 ft/ft
Flow Type	SubCritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.00 %

Worksheet for 12" Sewer - Capacity**GVF Output Data**

Normal Depth Over Rise	100.00 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.00 ft
Critical Depth	0.68 ft
Channel Slope	0.00500 ft/ft
Critical Slope	0.00770 ft/ft

Worksheet for 8" Sewer - Capacity**GVF Output Data**

Normal Depth Over Rise	100.00 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.67 ft
Critical Depth	0.44 ft
Channel Slope	0.00500 ft/ft
Critical Slope	0.00848 ft/ft

9.4 Stormwater Management System

This section of the master plan is intended to address the drainage analysis for the Rail Yards, and the proposed detention volumes that can be expected with the various basins of the proposed project. The following calculations have been prepared to meet the requirements of Volume II – Design Criteria, Chapter 22: Drainage, Flood Control and Erosion Control of the Albuquerque Development Process Manual (The Manual).

The proposed conditions are obtained from the Master Plan for the site. The Land Treatments for the site have been weighted with 90% Impervious (Treatment D) to comply with a Commercial development per The Manual. In the interest of being conservative and because the final ground cover for the site is unknown, the remaining 10% is assumed to be Treatment C. The site is located between the Rio Grande and the San Mateo, and therefore has been determined that the site falls within the Zone '2' precipitation zone. Due to the existing drainage patterns observed on site and the proposed layout of the Master Plan we have analyzed the site with three separate drainage basins: A-1, A-2, and A-3. The 100-year 6-hour event was used as the principal design storm per The Manual. A summary of the hydrology for each basin is as follows:

100-Year 6-Hour Storm Hydrology

- Basin A-1:
 - Area = 7.37 ac
 - P360 = 2.35 in
 - Excess Precipitation = 2.021 in
 - Peak Intensity = 5.05 in/hr
 - C100 Coefficient = 0.899
 - Peak Discharge = 33.2 cfs

- Basin A-2:
 - Area = 8.23 ac
 - P360 = 2.35 in
 - Excess Precipitation = 2.021 in
 - Peak Intensity = 5.05 in/hr
 - C100 Coefficient = 0.899
 - Peak Discharge = 37.4 cfs
- Basin A-3:
 - Area = 11.71 ac
 - P360 = 2.35 in
 - Excess Precipitation = 2.021 in
 - Peak Intensity = 5.05 in/hr
 - C100 Coefficient = 0.899
 - Peak Discharge = 53.2 cfs

The allowable peak discharge for the site post development has been established at 2.75 cfs/acre per the city engineering department. The peak discharge for the developed site is projected to be 4.54 cfs/acre. Therefore, stormwater volume detention will be necessary to reduce the peak discharge to the allowable rate. Per the Master Plan, stormwater detention volumes will be captured and stored within numerous cisterns on the site. The cistern water captured within the cisterns will be released to the municipal storm sewer system at a rate no larger than allowable discharge rate. Stormwater runoff may also be retained in cisterns for use of irrigation at elevations less than the outfall to the municipal system. Should this option be exercised during final design of the storm system, the retained volume cannot exceed 10 acre-ft.

As defined by The Manual, the Hydrograph for Small Watershed method was used to determine the volume of stormwater that must be detained to meet allowable discharge rates for the site. Each

of the three (3) basins was analyzed separately. Each basin will contain multiple cisterns so the volumes calculated below represent the total that must be detained. During the formal design process of the campus, it may be determined that it is more feasible to slow discharge for some cisterns and allow other areas of the site to discharge at a rate faster than that allowed or even freely discharge. This design approach would be acceptable as long as two criteria were met: 1) the total site discharge were to be below the allowable rate of 2.75 cfs/acre; and 2) no cistern were to retain water for a period greater than 6 hours. Should drain times exceed the 6 hour limit, design storms in excess of the 100-year 6-hour storm must be analyzed.

Below is a summary of the analysis for the three (3) major basins of the proposed site. Hydrographs representing the 100-year 6-hour design storm were plotted using the parameters defined by The Manual. The allowable discharge was also plotted on the hydrograph. The area between the two is representative of the detention volume necessary. See the attached Hydrographs for more information.

- Basin A-1:
 Peak Discharge = 33.2 cfs
 Allowable Discharge = 20.1 cfs
 Base Time, t_b = 0.713 hours
 Time to Peak, t_p = 0.198 hours
 Peak Duration = 0.225 hours
 Detention Volume = 17,978 cf
 = 0.413 ac-ft
- Basin A-2:
 Peak Discharge = 37.4 cfs
 Allowable Discharge = 22.6 cfs
 Base Time, t_b = 0.712 hours
 Time to Peak, t_p = 0.198 hours

$$\begin{aligned}\text{Peak Duration} &= 0.225 \text{ hours} \\ \text{Detention Volume} &= 20,309 \text{ cf} \\ &= 0.466 \text{ ac-ft}\end{aligned}$$

- Basin A-3:
 Peak Discharge = 11.71 cfs
 Allowable Discharge = 32.2 cfs
 Base Time, t_b = 0.712 hours
 Time to Peak, t_p = 0.198 hours
 Peak Duration = 0.225 hours
 Detention Volume = 28,807 cf
 = 0.661 ac-ft

In summary, the resultant volumes yielded are approximately 2,500 cf of storage required for each acre of the parcel. The consistent unit storage volume is due to use of the uniform Land Treatment of 90% impervious and the uniform allowable discharge of 2.75 cfs/acre. Assumptions made for the non-impervious Land Treatment as well as the time of concentration were conservative. Therefore, the unit storage rate of 2,500 cf/acre is appropriate for future conceptual layout of cisterns as the development of the campus moves forward and drainage basins shift to accommodate desired grading and surface treatments. Use of Low Impact Design techniques such as rain gardens or infiltration swales in the design of the site would result in necessary detention volumes decreasing.

Attachments:	Drainage Map
	Hydrologic Calculations
	Basin A-1 Hydrograph
	Basin A-2 Hydrograph
	Basin A-3 Hydrograph
	Section 2 of Chapter 22: Drainage, Flood Control and Erosion Control

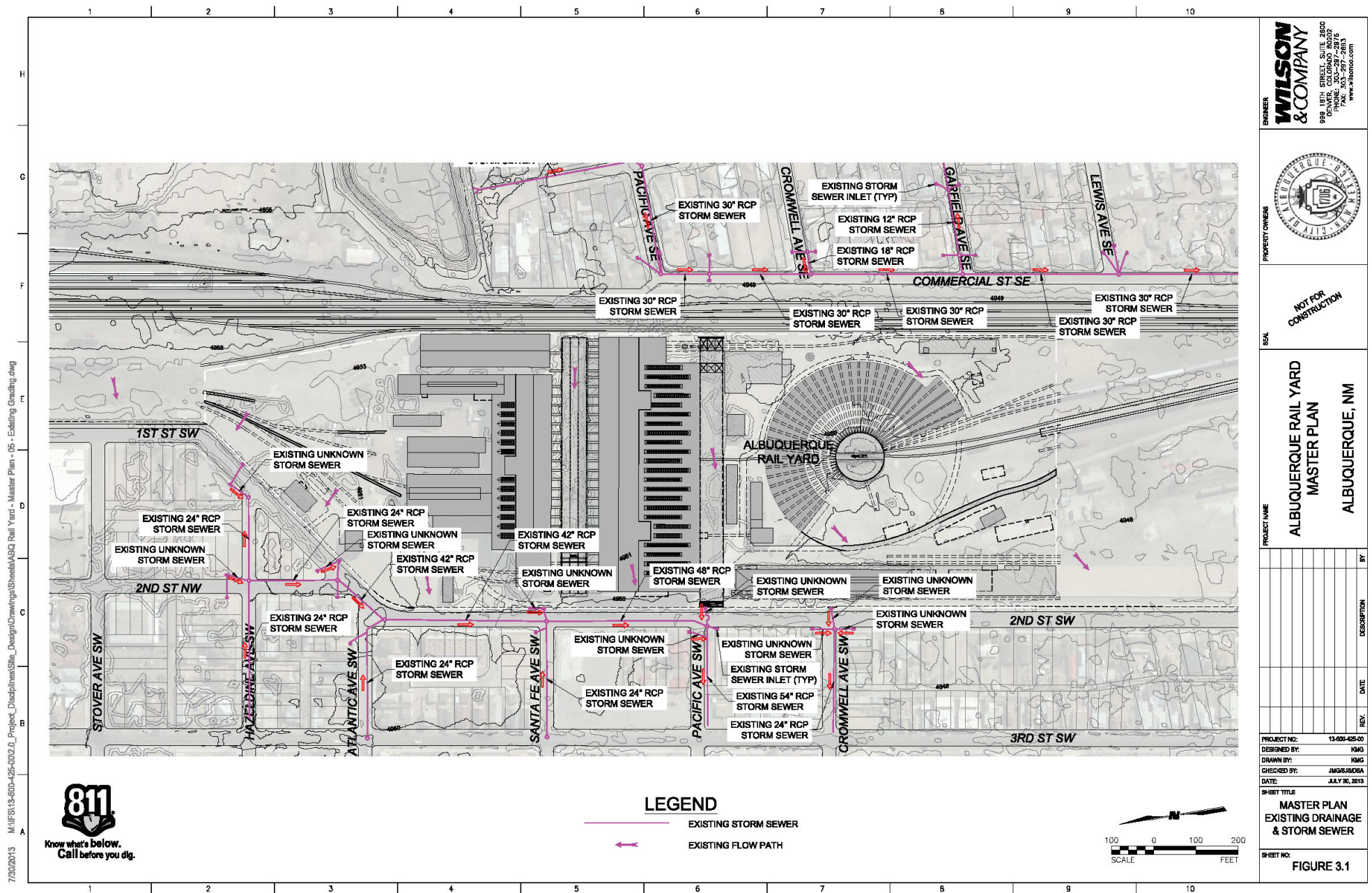
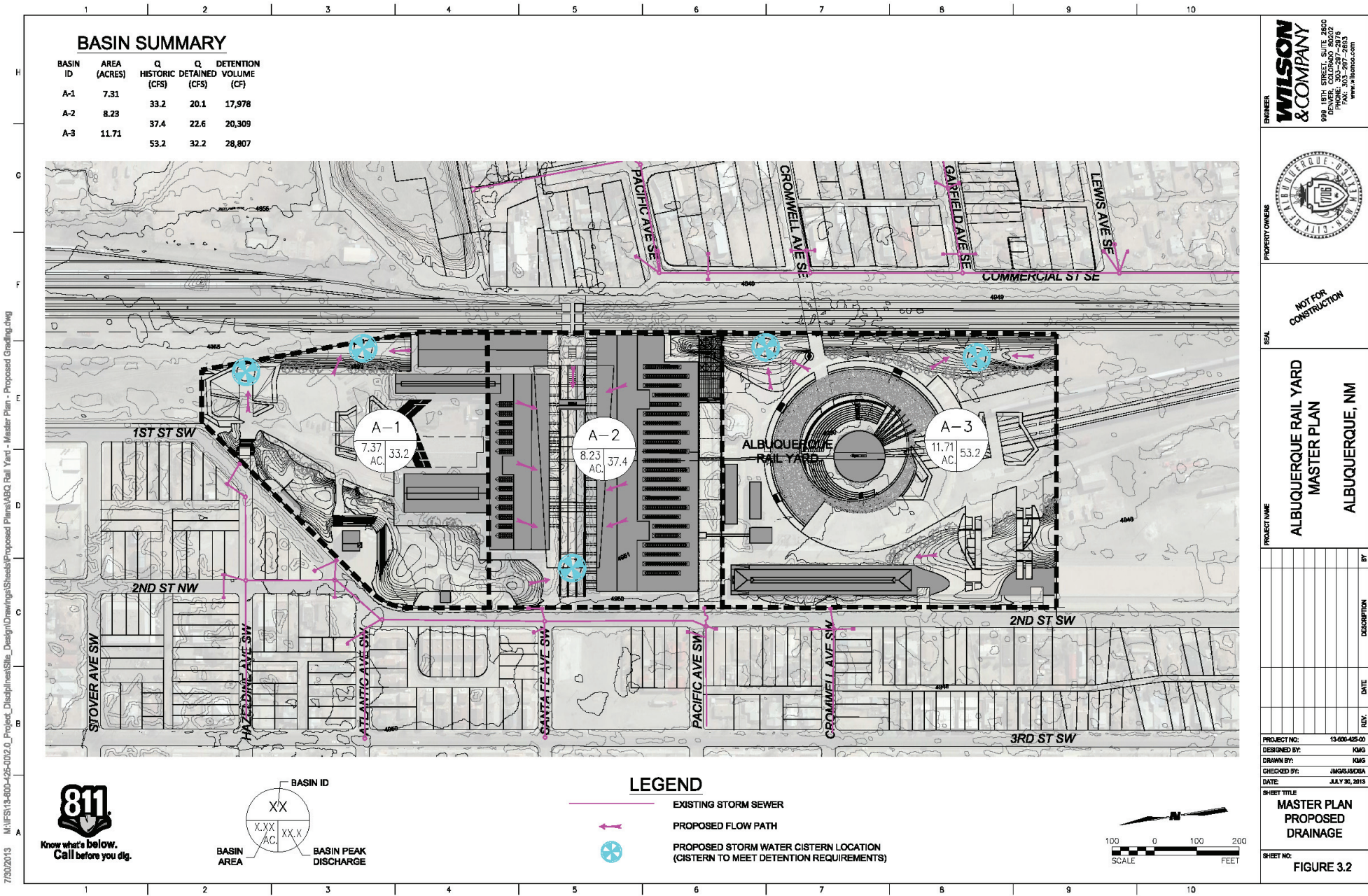


Figure 20a: Master Plan - Existing Drainage



COMP: MWK DATE: 7/9/13 WILSON & COMPANY LOC: FILE:
 CK: DATE: PROJ: ABQ RAIL YARD
 SUBJ: SHEET: 1 OF

HYDROLOGIC CALCULATIONS

100-YEAR EVENT

DETERMINE EXCESS RUNOFF

LAND TREATMENT CALCULATION

→ COMMERCIAL = 90% IMPERVIOUS (PER TABLE A-5)
 * USE 90% TREATMENT 'D' → $E = 2.12^*$
 * USE 10% TREATMENT 'C' → $E = 1.13^*$

* E VALUES FOR 100-YEAR, 6-Hour, ZONE 2 EVENT

$$E = (0.1)(1.13) + (0.9)(2.12) = 2.021 \text{ IN}$$

DETERMINE PEAK DISCHARGE RATES

→ ASSUME $T_c = 0.2 \text{ HR}$ TO BE CONSERVATIVE

$$\begin{aligned} 90\% \text{ 'D'} &= 4.70 \text{ CFS/AC}^* \\ 10\% \text{ 'C'} &= 3.14 \text{ CFS/AC} \Rightarrow 4.544 \text{ CFS/AC} \end{aligned}$$

* PEAK 100-YR DISCHARGE PER TABLE A-9

$$Q_{p-A1} = (4.544)(7.31) = 33.2 \text{ CFS}$$

$$Q_{p-A2} = (4.544)(8.23) = 37.4 \text{ CFS}$$

$$Q_{p-A3} = (4.544)(11.71) = 53.2 \text{ CFS}$$

→ CHECK VALUES W/ RATIONAL METHOD

$$\begin{aligned} I &= 5.05 \text{ (TABLE A-10)} \\ 90\% \text{ 'D'} &\Rightarrow C = 0.93 \Rightarrow C = 0.899 \text{ (TABLE A-11)} \\ 10\% \text{ 'C'} &\Rightarrow C = 0.62 \end{aligned}$$

$$\begin{aligned} Q_{p-A1} \text{ CHECK} & \quad Q_{p-A2} \text{ CHECK} & \quad Q_{p-A3} \text{ CHECK} \\ Q = CIA = 33.2 \checkmark & \quad Q = CIA = 37.4 \checkmark & \quad Q = CIA = 53.2 \checkmark \end{aligned}$$

COMP: MWK DATE: 7/9/13 WILSON & COMPANY LOC: FILE:
 CK: DATE: PROJ: ABQ RAIL YARD
 SUBJ: SHEET: 2 OF 3

HYDROLOGIC CALCULATIONS

100-YEAR EVENT

DETERMINE ALLOWABLE DISCHARGE

$$Q_{\text{allow}} = 2.75 \text{ CFS/ACRE PER CITY ENGINEER}$$

$$Q_{A1} = (2.75)(7.31) = 20.1 \text{ CFS}$$

$$Q_{A2} = (2.75)(8.23) = 22.6 \text{ CFS}$$

$$Q_{A3} = (2.75)(11.71) = 32.2 \text{ CFS}$$

DETERMINE STORAGE VOLUME

HYDROGRAPH FOR SMALL WATERSHED EQUATIONS (IN HOURS)

$$t_B = (2.107 \times E \times A_T / Q_p) - (0.25 \times A_D / A_T)$$

$$t_p = (0.7 \times t_c) + [(1.6 - (A_D / A_T)) / 12]$$

$$D_p = 0.25 \times A_D / A_T$$

PER ASSUMPTIONS
 $A_D = 90\%$
 A_T

→ VALUES ABOVE ARE CALCULATED FOR EACH BASIN AND HYDROGRAPHS PLOTTED PER FIGURE A-3 IN CAD SOFTWARE. STORAGE VOLUME UNDER HYDROGRAPH CALCULATED IN CAD.

BASIN A-1

$$t_B = (2.107 \times 2.021 \times 7.31 / 33.2) - (0.25 \times 0.9) = 0.713 \text{ HRS}$$

$$t_p = (0.7 \times 0.2) + [(1.6 - 0.9) / 12] = 0.198 \text{ HRS}$$

$$D_p = 0.25 \times 0.9 = 0.225 \text{ HRS}$$

$$V_D = 17,978 \text{ CF} \Rightarrow 0.413 \text{ ACRE-FT (SEE ATTACHED HYDROGRAPH)}$$



COMP: MWR DATE: 7/9/13 WILSON & COMPANY LOC: FILE:
 CK: DATE: PROJ: ABC RAIL YARD
 SJBL: SHEET: 3 OF 3

HYDROLOGIC CALCULATIONS 100-YEAR EVENT

BASIN A-2

$$t_B = (2.107 \times 2.021 \times 8.23 / 37.4) - (0.25 \times 0.9) = 0.712 \text{ HRS}$$

$$t_p = (0.7 \times 0.2) + [(1.6 - 0.9) / 12] = 0.198 \text{ HRS}$$

$$D_p = 0.25 \times 0.9 = 0.225 \text{ HRS}$$

$$V_0 = 20,309 \text{ CF} \Rightarrow 0.466 \text{ ACRES/FT (SEE ATTACHED HYDROGRAPH)}$$

BASIN A-3

$$t_B = (2.107 \times 2.021 \times 11.71 / 53.2) - (0.25 \times 0.9) = 0.712 \text{ HRS}$$

$$t_p = (0.7 \times 0.2) + [(1.6 - 0.9) / 12] = 0.198 \text{ HRS}$$

$$D_p = 0.25 \times 0.9 = 0.225 \text{ HRS}$$

$$V_0 = 28,807 \text{ CF} \Rightarrow 0.661 \text{ ACRES/FT (SEE ATTACHED HYDROGRAPH)}$$

DRAIN TIME CHECK

→ CONFIRM DRAIN TIME IS LESS THAN 6 HOURS

$$\text{DRAIN TIME} = \frac{V_0}{Q_A} \times \frac{1 \text{ HR}}{3600 \text{ SEC}}$$

BASIN A-1

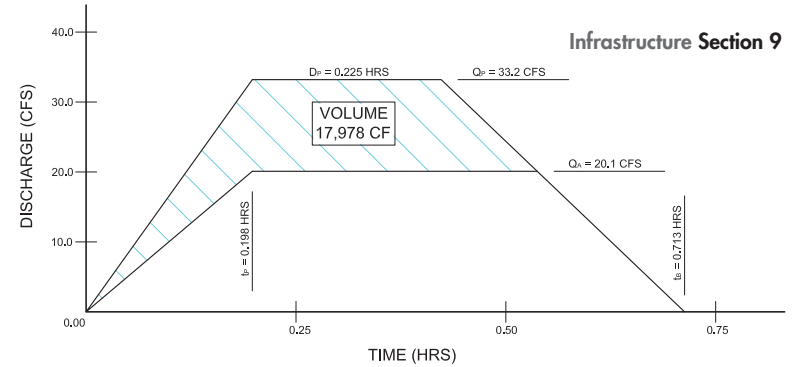
$$\frac{17,978}{20.1} \times \frac{1}{3600} = 0.25 \text{ HRS} \checkmark$$

BASIN A-2

$$\frac{20,309}{22.6} \times \frac{1}{3600} = 0.25 \text{ HRS} \checkmark$$

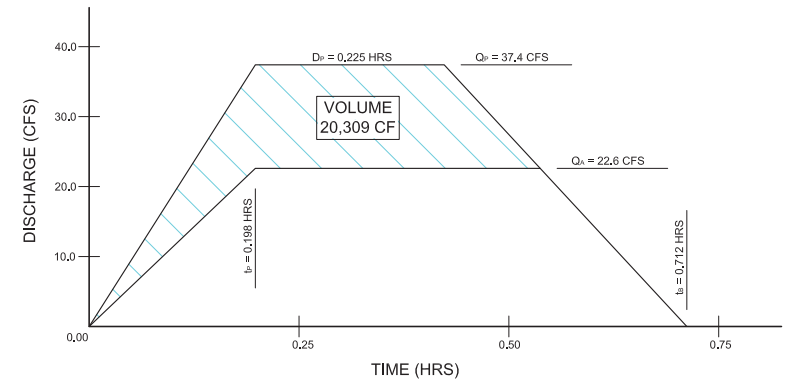
BASIN A-3

$$\frac{28,807}{32.2} \times \frac{1}{3600} = 0.25 \text{ HRS} \checkmark$$



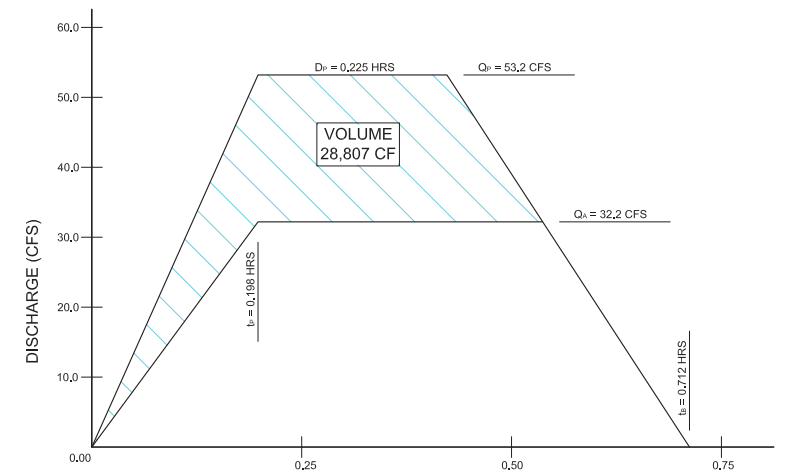
BASIN A-1 HYDROGRAPH

WILSON & COMPANY



BASIN A-2 HYDROGRAPH

WILSON & COMPANY



BASIN A-3 HYDROGRAPH

WILSON & COMPANY



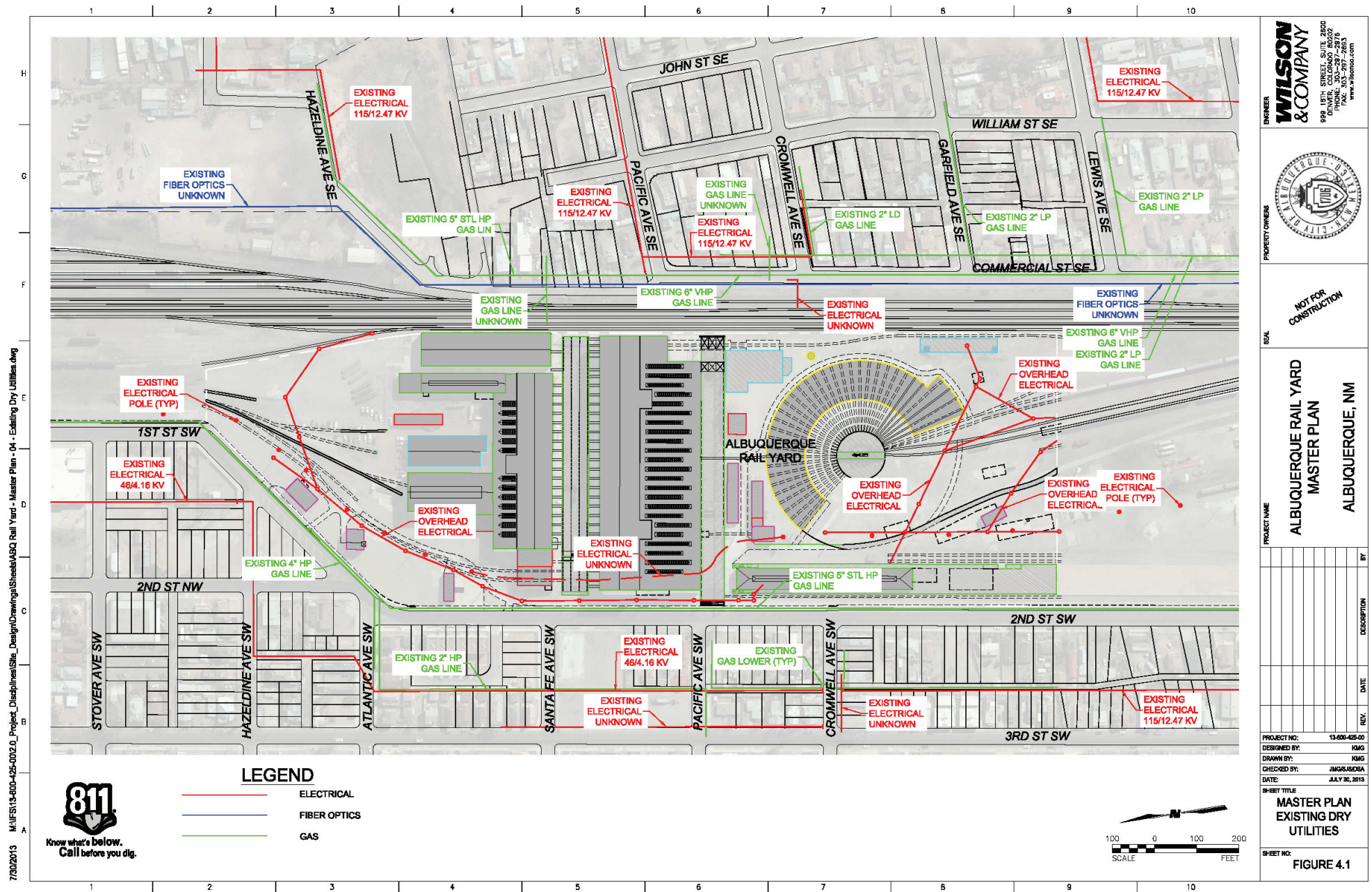


Figure 21a: Master Plan - Existing Dry Utilities

Figure 21b: Master Plan - Proposed Dry Utilities (Pending)

9.5 Transportation & TIS Recommendations

(Note: Additional analysis currently underway by Terry O. Brown is forthcoming but not included herein except excerpts from prior 2010 report.)

9.5.1 Vehicular Site Access

The City of Albuquerque completed a Transportation System Report on May 5, 2010. The purpose of the study was to assess the available development that could be accommodated within the existing transportation system. The existing transportation system is not likely to change in any significant way in the future. Development of this site has enormous benefits to the surrounding neighborhoods and the City as a whole through the creation of a vital, economic driver that provides jobs, housing, and public space in the heart of the City. Subsequent sections discuss alternative modes of transportation as a viable strategy to reduce the impact of the Rail Yard redevelopment on the existing street network.

The primary access route associated with the Rail Yard Master Development Plan will be Second Street. Third Street will act as a secondary access for the project, but will most likely provide an accommodation for traffic that currently passes through the neighborhood on Second Street today. These two streets are designated as collectors by MRCOG and have a capacity of 11,000 vehicles per day. These streets have an excess capacity of 6,100 and 7,900 vehicles per day respectively.

The project should be designed so impact is minimized to Pacific, Santa Fe, Cromwell, Atlantic, and Hazeldine Avenues. Those five streets are local residential streets with single family residential driveways. Generally speaking, the City of Albuquerque policy is to minimize traffic on minor residential streets so that the volume typically does not exceed 1,000 vehicles per day. The project location benefits from direct access to the existing street grid to the west and

its proximity to Bridge Boulevard to the south and Coal and Lead Avenues to the north.

Second Street south of Coal Avenue has recently been reconfigured into a two-way street, as was mandated by the City Council. Second Street was recently classified as a Collector Roadway on the Long Range Roadway Map for the Albuquerque Metropolitan Area. Parallel parking is permitted along the west side of the street. The posted speed limit is 30 mph. Third Street is currently configured as a two-way street with delineated parking on both sides of the street to the south of Coal Avenue. The posted speed limit is 30 mph.

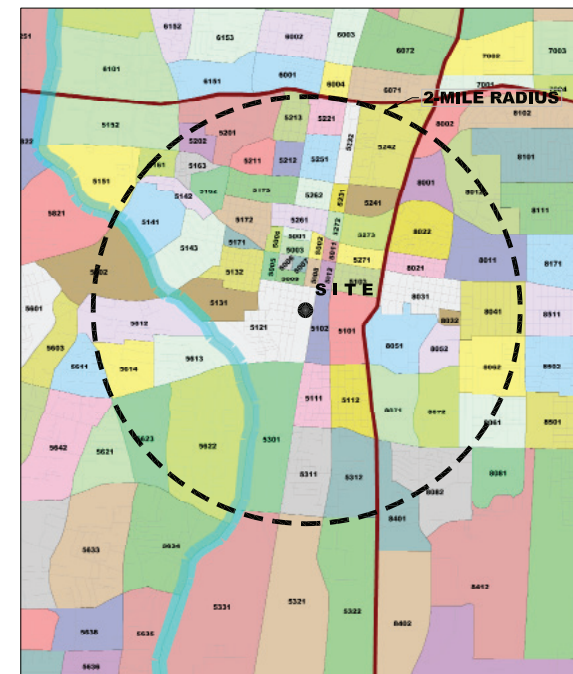
9.5.2 Updated Traffic Impact Study

As part of the Master Plan process, the City determined that an update to the 2010 Transportation System Report that responds to the proposed Rail Yards development should be completed. The transportation consultant met with City Transportation staff in June 2013 to determine the scope of the study. The purpose of the update is to determine the impact on the adjacent transportation system and recommend any improvements to mitigate the impact. Based on the traffic scoping meeting, the Traffic Impact Study (TIS), which is on-going, includes the following elements:

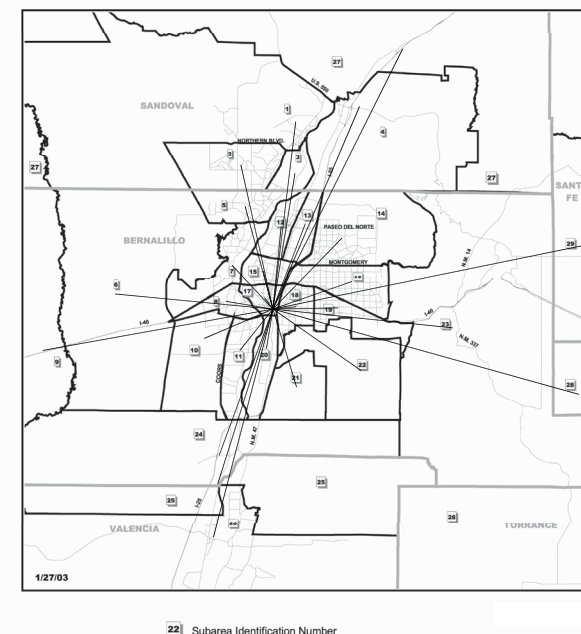
- Complete trip generation volumes based upon the Master Development Plan site concept and parcelization map, including assumed land uses, square footages, and location and number of driveway access points to the Rail Yards property.
- Perform a.m. and p.m. peak hour traffic counts for Bridge Boulevard / Second Street, Coal Avenue / Second Street, and Lead Avenue / Second Street.
- Determine the trip distribution and trip assignments of the newly generated traffic based on the Mid-Region Council of



Rail Yards, Aerial Map showing roadway infrastructure, Terry O. Brown, 2010



Rail Yards, Data Analysis Subzone (DASZ) Map, Terry O. Brown, 2010



Rail Yards, Trip Distribution Subarea Map, Terry O. Brown, 2010

Governments' Socio-economic Forecasts for the implementation year (+/-2018). The trip distribution / trip assignments will be calculated based on population within a two-mile radius for commercial development, on population City-wide for office development, and employment City-wide for residential development.

- The implementation year “No build” and “Build” traffic volumes to perform signalized and/or unsignalized intersection analyses for the following intersections: Bridge Boulevard / Second Street, Coal Avenue / Second Street, and Lead Avenue / Second Street, and site driveways.
- Re-analyze problematic intersections assuming certain percentages of development rates to determine if issues are forecasted. Bracket development analysis to determine the level of development that will not overburden the transportation system.
- Complete a written report of analysis and findings to the City, make recommendations for necessary measures to mitigate the impact of development on the adjacent transportation system, and address any comments from the City regarding the technical aspects of the traffic impact study.

Recommendations from the Traffic Impact Study will be incorporated into the MDP. Responsibility for off-site infrastructure shall be in accordance with the Master Plan Agreement between the City and the Master Developer.

9.5.3 Transit Access

Transit service for the Rail Yards property and Second Street is limited at this time. However, it is anticipated that services will be expanded to serve the project. The Alvarado Transportation Center is located approximately ½ mile to the north of the property and is a major hub

for ABQ Ride, the RailRunner, and regional bus service. Fourth Street is approximately ¼ mile to the west of the property. Both of these are walkable distances for future employees at the Rail Yard property. The Master Plan proposes a major Transit Plaza located at the heart of the Rail Yards site along Second Street located adjacent to the Machine Shop and Transfer Table. Existing transit routes include the following:

ABQ Ride, north-south bus route along Fourth Street:

- Bus Route 54 ‘Bridge-Westgate’ with several stops in the vicinity of the Rail Yards;
- Bus stops southbound are just south of Cromwell Avenue, just south of Santa Fe Avenue, and at Stover Avenue; and
- Bus stops northbound are between Barelás Road and Cromwell Avenue; between Atlantic Avenue and Santa Fe Avenue, and at Stover Avenue.

North-south bus route along Broadway Boulevard:

- Bus Route 16/18 ‘Broadway-University-Gibson’; and
- North and southbound bus stops between Coal Avenue and Iron Avenue.

East-west bus routes along Coal Avenue:

- Bus Route 217 ‘Downtown-KAFB Limited’ and ‘Downtown-Airport Express’; and
- Bus stop is east of Broadway Boulevard.

In addition to the recommendation of increased ABQ Ride transit service to the site, the Rail Yards Master Plan supports the “String of Pearls” express shuttle/trolley system concept referenced in the

Barelas SDP and contained as part of the Downtown 2010 Plan. Such a system would link the Zoo, Tingley Beach, the Hispano Cultural Center, 4th Street in Barelas and Downtown Albuquerque to the Rail Yards site.

9.5.4 Rail Access

The Rail Yards Master Plan is supportive of future attempts to bring direct public rail access to the Rail Yards site whether it be for the Rail Runner running along current BNSF rail lines or other future options as become available. The future station would be located at the eastern terminus of the Perpendicular Walk under the Retail Pedestrian Bridge proposed to connect the South Broadway neighborhood to the Site. Such a location would mirror the proposed Transit Plaza at the western terminus of the Perpendicular Walk, creating a full multi-modal transit hub at the center of the project.

Other options for Rail connectivity include extension of the narrow gauge rail line that currently runs along Tingley Drive adjacent the Bosque from its current terminus at the Zoo southward and eastward to connect to the National Hispano Cultural Center and ultimately to

the Rail Yards site. Such a novel method of site access would relate to the history of the Rail Yards and provide convenient access to other major cultural amenities.

9.5.5 Pedestrian and Bicycle Access

The City of Albuquerque recently improved Second Street with sidewalk and ADA ramp improvements on the west side only and added bike lanes (sharrows) as well. Refer to Figure 18. The City also recently completed significant improvements to Coal and Lead Avenues that included streetscape, sidewalk widening, bike lanes, and street furniture. One advantage to the property is the relationship to these new facilities. With the development of the Rail Yards property the pedestrian facilities and experience will be improved and enhanced.

The eastern sidewalk immediately adjacent the Rail Yards site along First and Second streets, however, remains unimproved and in most cases, completely missing. In addition, there are no ADA ramp improvements or pedestrian crosswalks to connect the Barelas neighborhood to the Rail Yards site. The proposed Edge Walk concept in the Master Plan requires a safe, generous, and convenient street side pedestrian path leading from the Alvarado Transportation Center directly to the Rail Yards site. The lack of existing sidewalk improvements, however, creates an opportunity for them to be incorporated and designed as integral components of the Edge Walk concept.

Currently, there is not a good connection from the property to the South Broadway neighborhood to the east due to the railroad tracks. The only connections that currently exist are to the north via Coal Avenue and to the south via Bridge Avenue. Both of these routes include significant out of direction travel. A more direct connection to the east, while difficult, would provide a significant improvement. Accordingly, the Rail Yards MDP proposes two options for connection to the South Broadway neighborhood, with requirements for each as follows;



Circulation along the Bosque includes a narrow gauge rail line and pedestrian/bike path.

9.5.6 Bridge Crossing

The Pedestrian Retail Bridge is a critical feature of the Master Plan that will directly connect the Barelás and South Broadway neighborhoods through the heart of the Rail Yards project. The bridge will provide both pedestrian and bicycle access across the tracks and is intended to operate not only as a bridge but also as a series of retail spaces and as a primary visual gateway announcing the redevelopment of the Rail Yards project to rail passengers. At a minimum, requirements for this bridge crossing shall include the following;

- Provide 24-hour convenient, easy-to-use and ADA accessible points of access at both sides of the track (stair/elevator access).
- Provide security / safety features that will prevent falling, throwing of objects onto the track, etc.
- Be designed with adequate lighting

9.5.7 At-Grade Crossing

Members of the South Broadway community expressed concerns that the Bridge concept may not be financially feasible and have asked for an At-Grade option to be included in the Master Plan to ensure site access. Accordingly, the MDP proposes the direct extension of Cromwell Avenue from its terminus at Commercial Avenue across the Rail Lines and onto the southern part of the site. Provision of an at-grade crossing will require approvals from the Federal Railroad Administration (FRA), the owner of the Rail Line, BNSF, and state and local agencies in order to ensure the highest level of pedestrian safety. At a minimum, requirements for at-cross crossing shall include the following;

- Pedestrian crossings will require gates.
- All crossing sub-grade will be constructed to standard practice for

rail and pedestrian interaction.

- Sub-base will be designed for low maintenance.
- Crossings shall be ADA compliant.
- Crossing shall have rubber filler in the gaps between the rail and the crossing surface resulting in the safest operation with a high volume of pedestrian traffic. The filler fits snugly against the field and gauge side of rail to form a barrier between crossing material and rail that blocks out moisture and protects the rail fastening system. It also provides an easy walking and safe surface at rails.

In summary, it is critical to the success of the project to provide a safe and convenient direct connection from the South Broadway neighborhood into the site. Construction of the bridge feature that is proposed by the Master Plan, or similar structure, is a significant public infrastructure investment that should be prioritized in an early phase.

9.5.8 Site Reconfiguration

On June 25, 2012, the Department of Municipal Development of the City of Albuquerque (DMD) and the Department of Family and Community Services of the City of Albuquerque (DFCS) entered into a Memorandum of Understanding (MOU) concerning two portions of land that are directly related to the Rail Yards project. As part of the work required to convert 2nd Street into two-way traffic, approximately 5,800sf of the former Rail Yards site would be conveyed to the DMD by the DFCS for roadway realignment purposes in exchange for a 15,934sf portion of 1st Street that would be vacated as part of the effort.

Subsequent to this MOU, the DFCS and the City of Albuquerque Metropolitan Redevelopment Agency (MRA) entered into a separate MOU whereby the operations and management of the Rail Yards was transferred from the DFCS to the MRA.

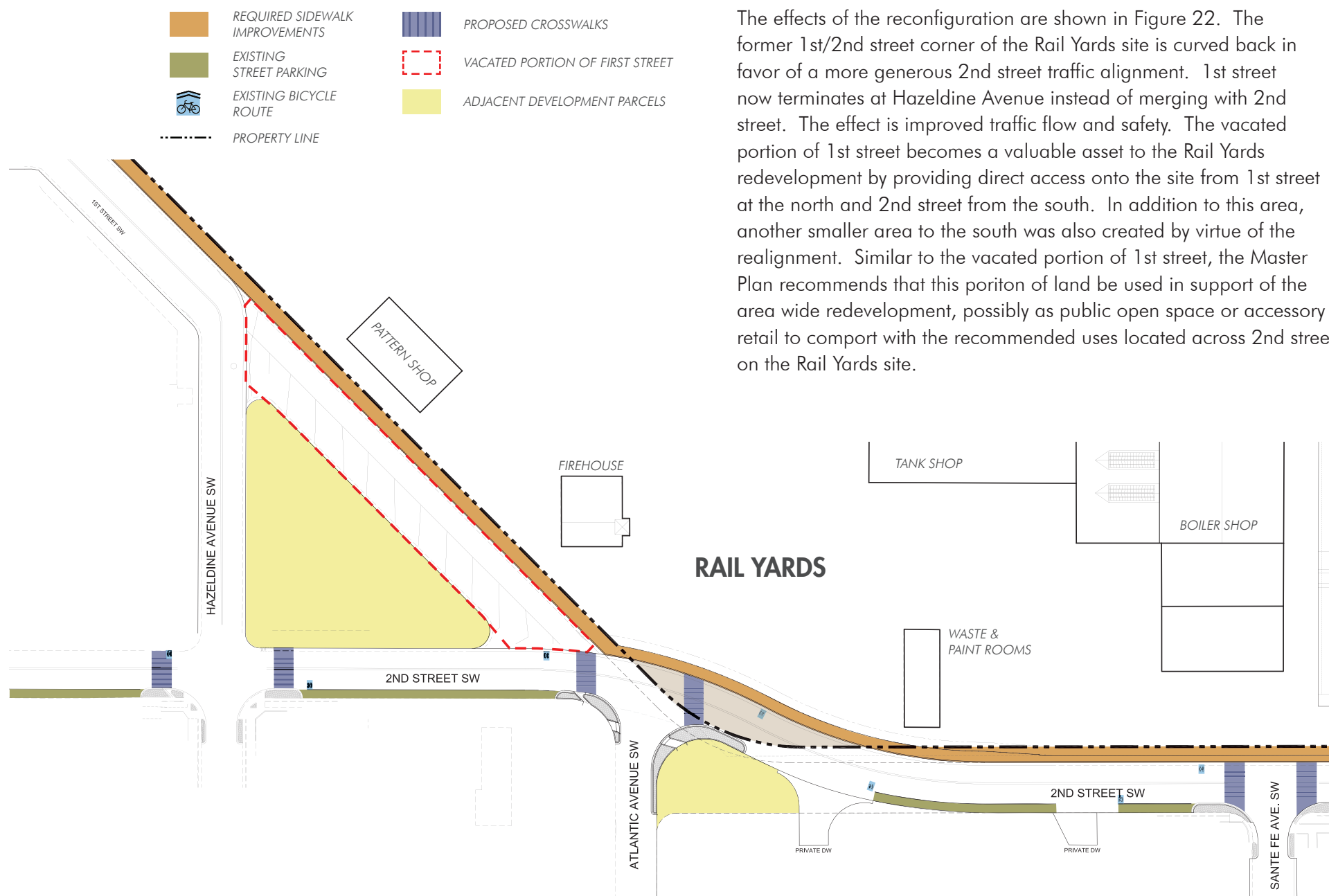


Figure 22: Enlarged Street Plan

9.5.9 Off-site Parking

Parking is a critical part of the infrastructure necessary for the development of the Rail Yard property. It is anticipated that parking will be phased in as the project develops; with the permanent solution including two underground parking garages (one on the north side and one on the south side of the property). This site is anticipated to be well served by transit services, pedestrian facilities, and bicycles. The goal is to develop the right amount of parking, but not overpark the site. This will encourage the use of alternative modes of travel by visitors, patrons, and employees.

In addition to the above, there is limited on-street parking on Second Street in Barelás and on Commercial Street in South Broadway. During the Master Planning process, there was expressed concern that the redevelopment of the Rail Yards project would create parking pressures on these adjacent neighborhoods and that visitors, for example, would park on the street rather than enter into a subterranean garage. Likewise, visitors might consider it more convenient to park in South Broadway along Commercial Street and enter the Rail Yards site via the Pedestrian Retail Bridge or the Cromwell at-grade crossing.

If the above problems arise, one of the only mitigations available is to develop neighborhood-only restrictive parking zones. The Master Plan recommends that these actions be taken only if absolutely necessary as the use of on-street parking by Rail Yards users and patrons will contribute to a more vital urban environment.



Map showing proposed fiber connectivity path between Rail Yards and 505 Marquette

9.6 Fiber Telecommunications - ABQG (Aguiles Alex Trujillo)

The University of New Mexico (UNM) via the Albuquerque GigPOP (ABQG) has developed key telecommunications infrastructure throughout Downtown Albuquerque, the State of New Mexico, and the United States over the last 10 years. The infrastructure includes but is not limited to Dark Fiber, Metro Ethernet, and traditional Telecommunication services. UNM will extend their infrastructure to provide diverse Dark Fiber and Lit Services to the Rail yards Project and establish a Point of Presence (POP) on the Facility.

The ABQG is located in downtown Albuquerque at 505 Marquette AVE NW. 505 Marquette is known as a telco hotel. It has connectivity from multiple local and national carriers. Centurylink, Time Warner Telecom, Comcast, AT&T, Verizon, Level 3, 360, Cogent and ENMR are all connected to the ABQG as well as New Mexico State, Central New Mexico College, New Mexico Tech, and New Mexico Highlands. All of these carriers and Institutions participate in an Internet Exchange that emphasizes keeping New Mexico Internet Traffic within the State of New Mexico. More importantly the ABQG is a member of research Networks like MERIT and the National Lambda Rail.

The ABQG offers a rich set of services to all of the participants. Bandwidth can be delivered in 5 mbp increments or Multiple Gigabit increments. It will also make other services available by offering cross connects to all of the various carriers mentioned above in order to deliver more traditional telecommunication services to potential businesses in the Rail Yards development. Additionally clients in the Rail yards can have access to the research Universities and Institutions that participate in the National Lambda Rail. The ABQG has provided connectivity when needed to various production facilities throughout the country for the movie industry as well other economic development opportunities in Albuquerque.

Overall the facility will be one of the most connected in Albuquerque with short intervals to turn up services. The facility will have access to all carriers at a minimum of a 100mbp connection and many carries at a Gigabit 1000mbps and above.

9.7 Environmental Remediation

The environmental condition of the site has been extensively studied and there are now few, if any, data gaps. However, although recent investigations have identified and filled data gaps, the data from the various reports have not been compiled into a comprehensive conceptual site model, nor has a work plan been prepared to address the remaining contamination. This should be done as soon as possible in order to inform the placement of prospective uses on the site and the order of development.

The work plan for remediating remaining contamination should be developed by an environmental consultant in concert with the City and the developer in a collaborative process in which the desired uses of each area within the site informs the level of remediation and, reciprocally, the difficulty and cost of remediation to residential versus industrial standards informs the selection of uses.

Once the remedial work plan has been completed through the collaborative process described above, the site can be divided into legal parcels that correspond to both the intended use and the required level of remediation. Parcelization will facilitate appropriate non-wasteful remediation, appropriate institutional controls (deed restrictions and ongoing monitoring and mitigation of residual contamination), financing, development and, ultimately, occupation, productive use and job creation.



Placing
bolts

10.0 IMPLEMENTATION AND PHASING

The redevelopment and platting of the Rail Yards property is anticipated to occur over several phases. Once the MDP is approved by the City Council, there will be a number of technical studies required prior to any site development or platting action at the Rail Yards property. These studies include a master grading and drainage plan to be approved by City Hydrology and a master utility plan (water and sanitary sewer) to be approved by the ABCWUA, per the City's Subdivision Ordinance and Development Process Manual. The timeframe for completing these technical studies is within six months of City Council approval of the MDP. A Transportation System Report was completed in May, 2010.

10.1 Infrastructure

The master grading and drainage plan and the master utility plan (water and sanitary sewer) will provide the strategies for phased implementation and the recommendations for both short and long term solutions. (Refer to Section 9 for complete analysis). A key aspect of the water portion of the master utility plan will be fire suppression, which will require review and approval by the City Fire Marshal. As individual projects are implemented at the Rail Yards property, it is anticipated that detailed infrastructure plans will be submitted and approved for water and sanitary sewer availability statements from the ABCWUA and the Fire Marshal's office.

Outside of the City site development process, the master developer shall coordinate with the dry utility providers for electric, gas, and fiber optic services. This should be done simultaneously with the other infrastructure master plans to avoid delay in provision of services.

10.2 Transportation

The Rail Yards property is uniquely situated on the edge of the Barel

neighborhood and the street grid of residential streets that connect to the commercial and mixed use Fourth Street Corridor. Second Street was recently changed from one way to 2 way traffic flow and improved with new paving, signage, bump-outs for on-street parking, etc.

Individual projects and phases should be reviewed by the City Traffic Engineer in regard to access, parking, and use of alternative modes of travel. It is not anticipated that Traffic Impact Studies will be prepared for each project, but rather, a review of the overall redevelopment of the Rail Yards property relative to jobs/housing balance, transit services (including connection to the Alvarado Transportation Center), bicycle and pedestrian access, ingress/egress, and parking.

10.3 Platting

The Rail Yards property will be platted in order to facilitate acquisition and development of individual projects and phases. Since all projects are required to have additional review (other than the workforce housing and the WHEELS Museum as approved by the City Council), it is anticipated that bulk land variances will be requested for future phases consistent with the master infrastructure plans. Platting may occur simultaneously with the DRB's review of Site Development Plans for Building Permit.

10.4 Site Development Plan Approval Process

Specific projects at the Rail Yards property are required to complete a Site Plan for Building Permit, as defined by the City Comprehensive Zoning Code. The exception to this is the WHEELS Museum and the workforce housing, which are allowed to go directly to building permit review prior to the adoption of the MDP, per the Barel Sector Development Plan. The Site Plan for Building Permit shall include a site development plan, landscape plan, grading and drainage plan, utility plan, and building elevations.

The MDP provides for a streamlined administrative approval through a public hearing process before the Development Review Board (DRB). The public hearing process requires notification to the affected neighborhood associations, including Barelás and South Broadway and any other impacted neighborhood as determined through the Office of Neighborhood Coordination. In order for the Site Plan for Building Permit to be approved, it must be demonstrated that the project and proposed use are consistent with the goals, policies, and the design standards contained in the MDP. A pre-application review meeting and/or design review meeting with the Urban Design and Development Division of the Planning Department is strongly recommended to ensure a smooth site development plan approval process.

In addition to the regular DRB members, the review of Site Plans for Building Permit shall include the City's Land Landmarks and Urban Conservation Commission (LUCC) planner and the Metropolitan Redevelopment planner. The intent is to ensure proposed projects at the Rail Yards property comply with the MDP and any requirements due to the historic landmark designation of the Firehouse and any other structures that may be determined to be "contributing" by future studies. This will also help to ensure coordination with the LUCC on projects that require its review and approval.

10.5 Deviations and Amendments to the Master Plan

The MDP is intended to provide the framework for development of the Rail Yards over time. However, it is recognized that conditions may change that require a deviation or amendment to the MDP. As previously stated in Section 10.4, development of individual projects at the Rail Yards that are consistent with the MDP shall not require EPC approval.

A deviation to the MDP is defined as any departure from the

measurable standards, design requirements, structure orientation, etc. as described in the adopted MDP. Deviations shall require review and approval by the Planning Director in accordance with the Comprehensive City Zoning Code.

An amendment to the MDP is defined as any text change to the Goals and Policies (Section 5), Master Plan (Section 6), or Design Performance Standards (Section 8) in the adopted MDP. Proposed amendments to the Master Plan or Design Performance Standards shall require submittal to the EPC. Proposed amendments to the Goals and Policies shall require the review and recommendation of the Rail Yards Advisory Board prior to submittal to the EPC.

A pre-application meeting with the Urban Design and Development Division of the Planning Department is strongly recommended to determine the correct approval process to follow.

10.6 Project Phasing

A phasing plan is provided in Figure 23 as a general framework for the relative sequencing of project buildout over time. Phases are organized by parcel designations previously discussed in Sections 6 and 8. Although the Master Plan includes these preliminary recommendations, it is critical to the future success of the project that there remain ample flexibility to respond and adapt to the changing conditions of the future marketplace. The general concepts underlying the phasing plan are as follows;

Phase 1 - Stimulate Interest in the Rail Yards

A preliminary Phase I concept should be implemented to stimulate interest in the Rail Yards project from a future user/tenant perspective, to set the tone and standards of design quality for the future buildout and most importantly, to get the community engaged and reconnected to their site. The proposed Phase I scheme should strive to embody the energy of the future development and have the greatest public

visibility possible for the least initial investment of cost. Specific Phase 1 recommendations are as follows;

- Machine Shop Plaza / Farmer's Market under the Bridge Crane: Refer to Section 10.9 for a detailed description of the concept.
- Firehouse Cafe: The adaptive re-use of the historic Firehouse building into a public cafe complete with outdoor seating should be considered in Phase 1.

Phase 2 - Develop Job Core

The adaptive reuse of the existing buildings into a vital and innovation-based job center is the business model and economic engine that will drive the successful redevelopment of the Rail Yards. Phase 2 implementation must be adaptable to a dynamic market and must be able to be processed in a timely manner to accommodate user/tenant requirements for occupancy.

Phase 2 contains both a south component (Parcel 5) and a north component (Parcels 7, 8) which may be developed together or sequentially depending on project needs. Surface parking to accommodate this phase will be developed according to Tableau 8: Preliminary Phase Parking Plan included on the following page. Preliminary phase parking is designed to provide the same number of parking spaces as will eventually be accommodated in the proposed below grade structures; approximately 642 in the proposed south lot (including existing parallel parking spaces located directly west of the Storehouse Building) and 353 in the proposed north lot. Although interim in nature, surface parking must be well designed and properly integrated with other concepts contained within the Master Plan. Considerations for each surface parking area are as follows;

North Lot

- Access is by a driveway located at the intersection of Hazeldine Avenue and First Street.

- Parking is oriented north-south to comport with the axial configuration of the existing buildings.
- A dedicated lot is provided to serve the Firehouse Cafe. Loading access will be provided. All other parking will be shared by other development parcels.
- Where possible, parking must not be located immediately in front of, and therefore blocking, existing buildings.
- Parking is screened from the street by landscaping.
- ADA parking is located in closest proximity to intended use destination.

South Lot

- Access is by a driveway located at the original entrance to the historic Rail Yard, at the intersection of Pacific Avenue and Second Street.
- Primary parking is organized around, and uses the historic foundations of, the original Roundhouse. BNSF easement access to the Turntable is preserved.
- The existing surface lot with parallel parking serving the Storehouse building will be preserved but improved to accommodate better traffic flow through the addition of a egress driveway to Second Street located at the south of the site.
- Parking is screened from the street by the Storehouse building and existing platform. Depending on the timing of Phase 2, the Workforce Housing component may also screen parking from the street.
- Parking provided will generally serve the entire Rail Yards site

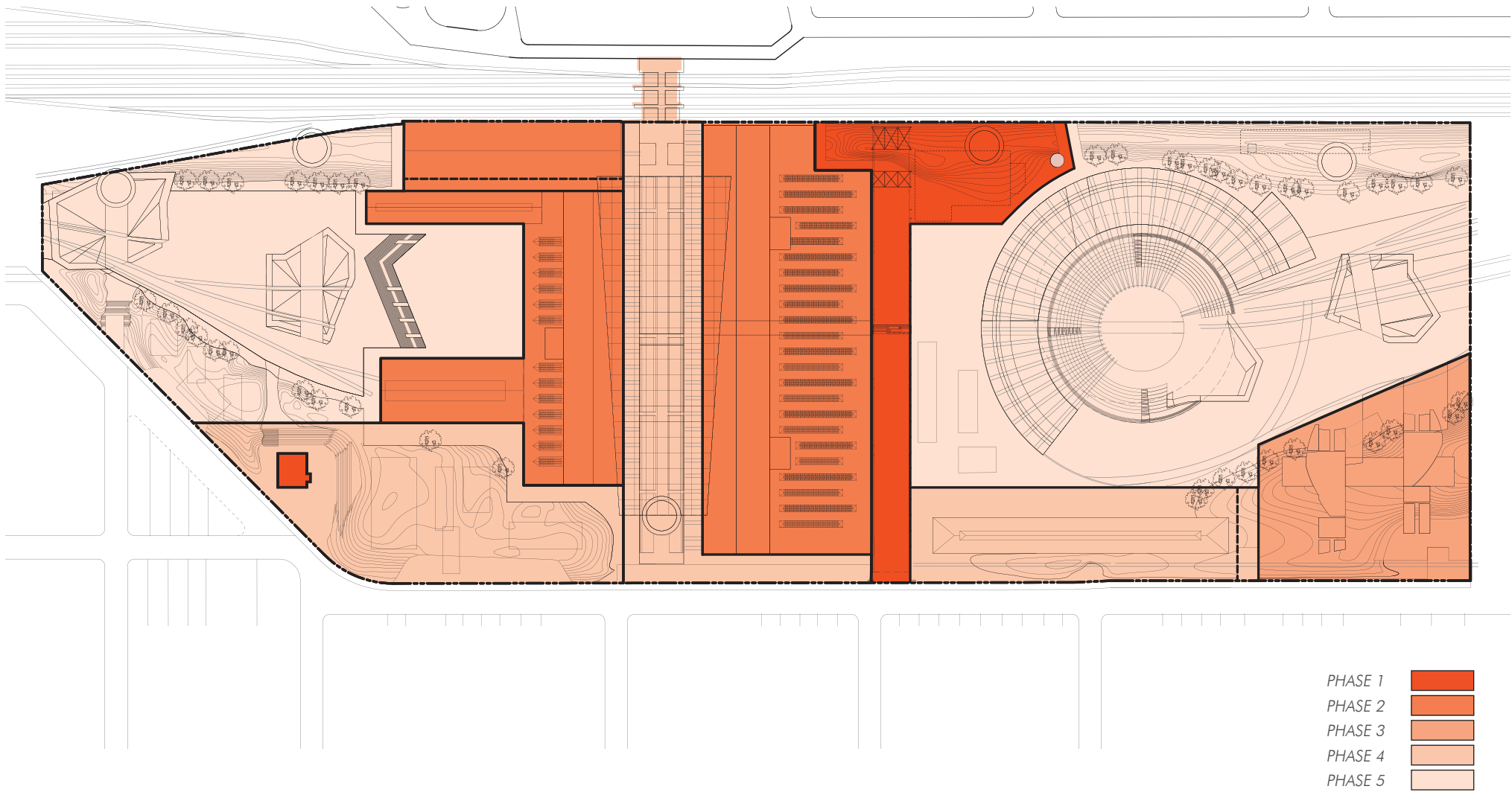


Figure 23: Phasing Plan Diagram

KEY NOTES

- 1 PRIMARY ACCESS POINTS TO NORTH AND SOUTH SURFACE PARKING LOTS.
- 2 ADJOINING PARCEL NOT CONTROLLED BY CITY BUT WITH STRATEGIC IMPORTANCE TO MASTER PLAN. MDP RECOMMENDS ITS INCLUSION.
- 3 MAIN NORTH-SOUTH DRIVE AISLE FOLLOWS APPROXIMATE POSITION OF ORIGINAL FIRE ROAD.
- 4 USE EXISTING FIRE ROAD FOR LOADING TO FIREHOUSE CAFE.
- 5 DISCOURAGE PARKING ALONG EDGE OF EXISTING BUILDINGS, PLACE ROADS/PEDESTRIAN ACCESS AGAINST EDGES TO KEEP OPEN.
- 6 FIREHOUSE CAFE AND PLAZA MAY BE DEVELOPED EARLY IN THE PROJECT.
- 7 ADD STRATEGIC LANDSCAPING ALONG EDGE OF SURFACE PARKING WHERE SHOWN TO MINIMIZE VISUAL IMPACT OF VEHICLES. POSSIBLY USE POTTED LANDSCAPE SUCH THAT IT MAY BE REUSED DURING FUTURE BUILDOUT PHASES.
- 8 GUEST PARKING FOR FIREHOUSE CAFE.
- 9 LINE OF RECONFIGURED SECOND ST. CUTS INTO THE FORMER 1ST/2ND ST. CORNER OF THE RAIL YARDS SITE.
- 10 PORTION OF LAND CREATED BY THE RECONFIGURATION OF 2ND ST. IS OF STRATEGIC IMPORTANCE TO MASTER PLAN, MDP RECOMMENDS ITS INCLUSION.
- 11 LINE OF ORIGINAL POSITION OF 2ND ST. DEMARCATION OF NEW PARCEL AREA TO THE EAST REFERENCED IN KEYNOTE 10.
- 12 PORTION OF ORIGINAL FIRE ROAD USED TO CONNECT SOUTH AND NORTH PARKING LOTS, POSSIBLY USED FOR PEDESTRIAN CIRCULATION OR EMERGENCY ACCESS ON INTERIM LEVEL.
- 13 PARALLEL PARKING SERVED BY ONE-WAY DRIVE AISLE TO SERVE EXISTING WHEELS MUSEUM.
- 14 LOCATION FOR PROPOSED PHASE I BRIDGE CRANE MARKET.
- 15 MODERN POWER HOUSE TO BE REMOVED.
- 16 LOCATION FOR PROPOSED REBUILT SMOKESTACK ATOP ORIGINAL FOUNDATION.
- 17 LOCATION FOR PROPOSED REBUILT ROUNHOUSE ATOP ORIGINAL FOUNDATION, ALSO SERVES AS PRINCIPLE ORGANIZATIONAL MECHANISM FOR SOUTH SURFACE PARKING LOT.
- 18 LOCATION FOR PROPOSED REBUILT ROUNHOUSE ATOP ORIGINAL FOUNDATION, ALSO SERVES AS PRINCIPLE ORGANIZATIONAL MECHANISM FOR SOUTH SURFACE PARKING LOT.
- 19 PROPOSED PEDESTRIAN AT-CROSS CROSSING

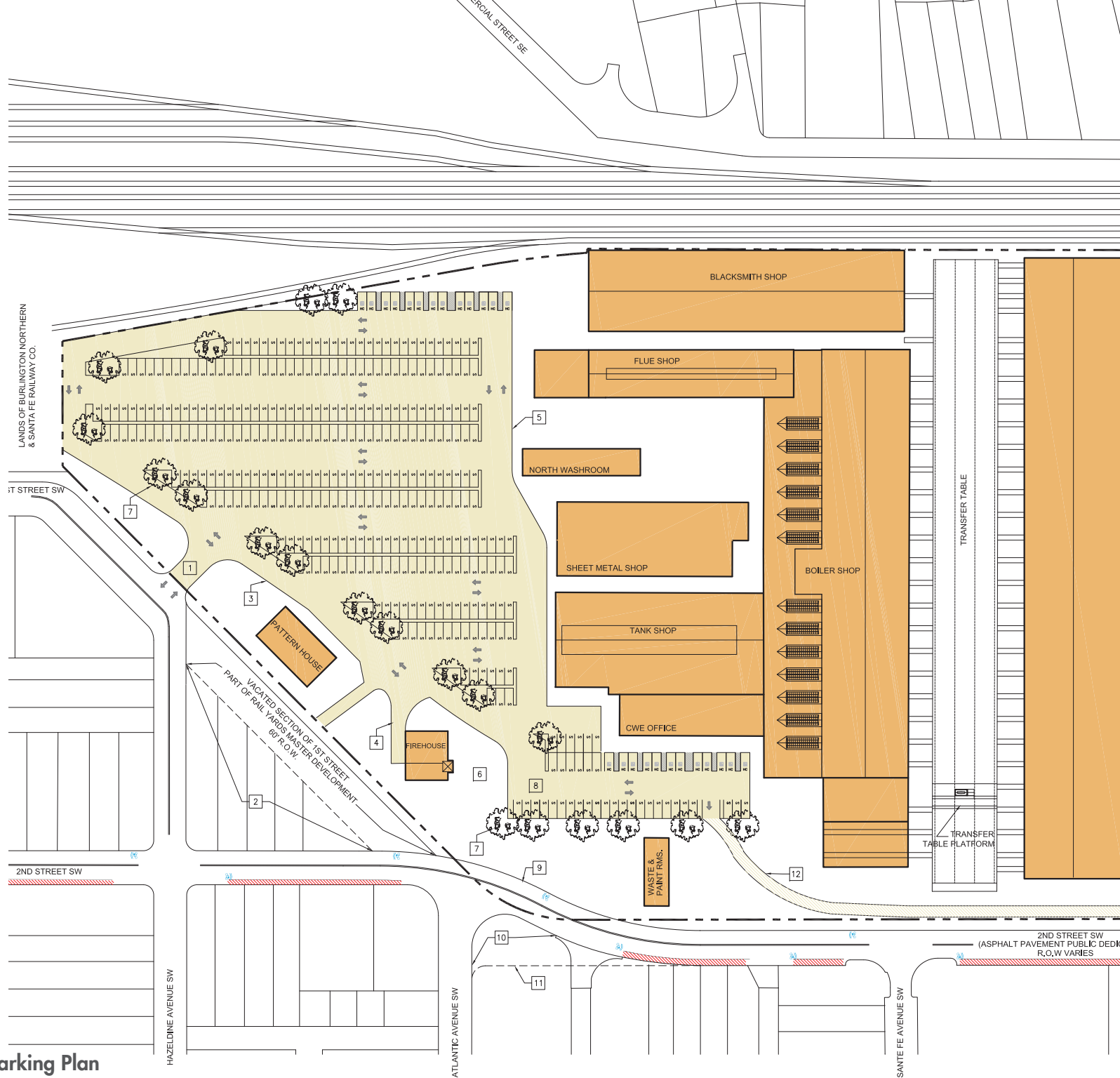
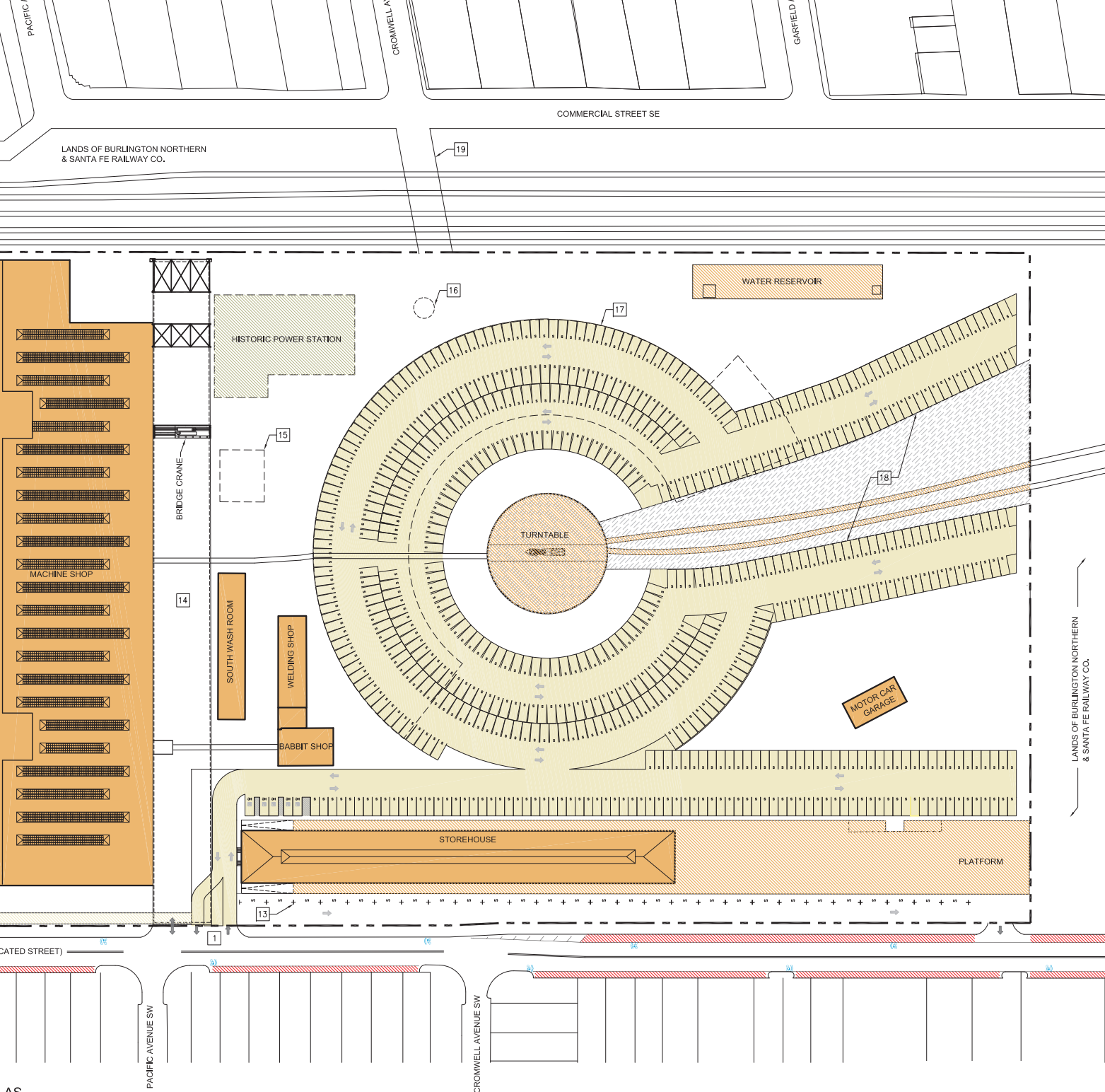







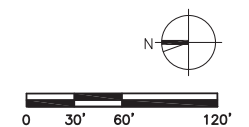


TABLEAU 8: Preliminary Phase Parking Plan



LEGEND

-  PRESERVE (OUTDOOR ELEMENT SHOWN HATCHED)
-  SURFACE PARKING (INTERIM PHASES ONLY)
-  TURNABLE ACCESS EASEMENT
-  PARKING ACCESS
-  INTERMITTENT LOADING/DELIVERY/FIRE ACCESS
-  ON-STREET PARKING
-  BICYCLE LANE



- during these preliminary phases.
- At-grade crossing is provided from the South Broadway neighborhood as extension of Cromwell Avenue.
- Intermittent loading and emergency access is provided just north of the proposed driveway access under the extension of the Bridge Crane at Second Street. Significant loading operations will be required to accommodate proposed Grower's Market located in the Machine Shop Plaza.

Phase 3 - Workforce Housing

Based on feedback during the Master Planning process, it was recommended that the Workforce Housing component of the project located on Parcel 2 be implemented as soon as possible within the development timeframe of the overall project. The timing of housing development, however, will need to take into consideration various factors, including but not limited to the nature of ongoing development activity on the rest of the site and the impacts that future on-site residents may experience if housing is developed in an early phase. Given the recommended location along Second Street, early development of the Housing component necessarily will block construction access to the balance of the site and may impact considerations such as the timing of underground parking construction.

Notwithstanding the above, when Workforce Housing is ultimately developed will depend on many factors, including when a housing developer is selected and when sufficient funds for the project can be secured. The Master Plan shall consider implementation of the Housing component as early as feasible.

Phase 4 - Retail Edges and Connective Tissue

Having developed the core infrastructure in Parcel 2, development of Phase 4 will proceed from the center of the project outward and will include construction of the Transit Plaza, Perpendicular Walk and

Pedestrian Retail Bridge (Parcel 6), the Acoustic Mounds and Retail component adjacent Second Street (Parcel 9) and any additional improvements required for the Storehouse Building (Parcel 3) should there be a desire to increase density or change of use.

Phase 5 - Paseo / Subterranean Garages

Phase 5 includes construction of the North and South Paseo Buildings and the subterranean parking garages located beneath them (Parcels 1 and 10). Phase 5 also includes the rebuilding of the Roundhouse and Smokestack buildings that are intended as the Cultural anchors of the project. Construction of the Paseo Buildings will necessarily cause the temporary displacement of parking and therefore it is recommended that Parcel 10 be developed first since it has significantly less impacted parking that could be more easily accommodated within the surface parking lot located on Parcel 1. In addition, parking requirements for Parcel 1 will be significantly less until such time as the Parcel 1 improvements are constructed.

10.7 Development Thresholds

Although the phasing plan is provisional, the issue of when certain improvements are made or phases “triggered” is an important subject for consideration in the Master Plan. Although subject to change, the various thresholds for commencement of each of the development phases is proposed as follows;

- Phase 1: Approval of Master Plan, MDDA document, and project financing. Approval of adaptive reuse of historic buildings as described in the Master Plan document.
- Phase 2: Approval of Master Plan, MDDA document, and project financing. Approval of adaptive reuse of historic buildings as described in the MDP document.
- Phase 3: Approval of Master Plan and MDDA. Selection of a housing developer (if different than Master Developer), project

financing and determination of phasing impacts of Phase 3 development to itself and all current and future phases of development.

- Phase 4: Completion/Tenant Buildout of 50% of Phase 2 total allowable building area. Approval of adaptive reuse of historic buildings as described in the MDP document.
- Phase 5: Completion/Tenant Buildout of 75% of Phase 2 total allowable building area. Reconstruction of Historic Roundhouse and Smokestack will require approvals as described in the MDP document.

10.8 Interim Use

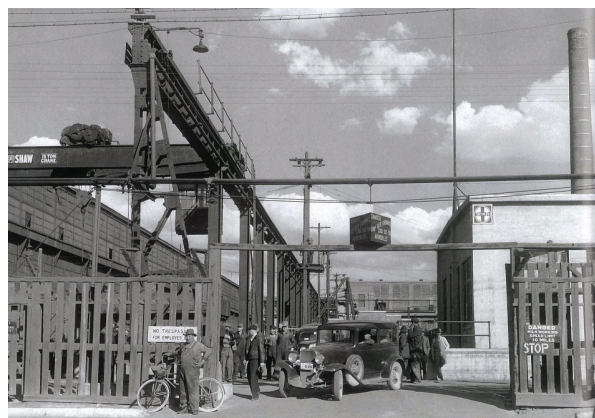
The SU-2/HLS zone defined in the Baretas Sector Development Plan was recently amended to allow for building permits to be issued for repairs and/or improvements needed for interim uses *before* the Master Development Plan Approval. According to the proposed text, “Building permits for such work shall only be issued after the Mayor has submitted and the City Council has approved an Executive Communication that describes, in detail, the types of interim use and work to be completed and identifies the funding source(s) for making improvements.” The purpose of the text amendment was to

encourage community activities on the City-owned Rail Yards property prior to adoption of a Master Development Plan for the permanent re-use of the Albuquerque Rail Yards site.

Based on this amendment, the City has moved forward on an interim proposal to temporarily re-use the Blacksmith Shop as a public events venue. There would not be a long-term entitlement for interim uses to continue to exist in a particular location should another, more permanent user come along that furthers the objectives of the overall Master Plan. Although the proposed interim use does not comport with the recommendations of the Master Plan, the general initiative to activate the site on an interim level is supported, provided it does not interfere with the long-term aspirations for the Rail Yards site as contained herein.

10.9 Case Study - Phase 1 Implementation

The purpose of this section is to present a detailed case study of the open-air Farmer’s Market concept recommended as the initial Phase 1 development and the first action taken toward implementation of the Master Plan. The concept proposes utilizing the approximately 50ft wide space immediately to the south of the Machine Shop within and below the area served by a 15-ton Bridge Crane that once was used to transport supplies and equipment laterally across the full width of



PAST



PRESENT



FUTURE - OPEN CANOPY

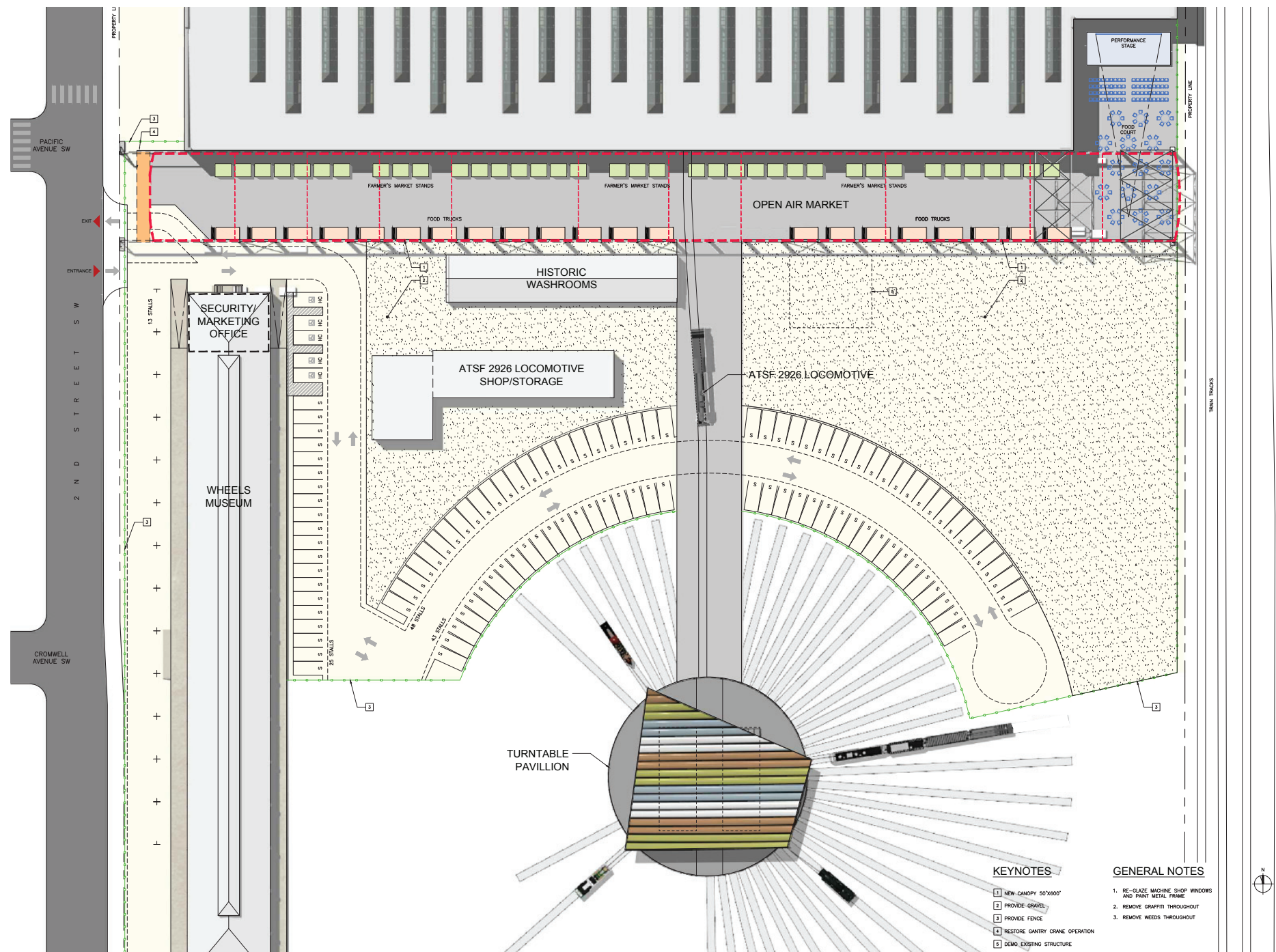
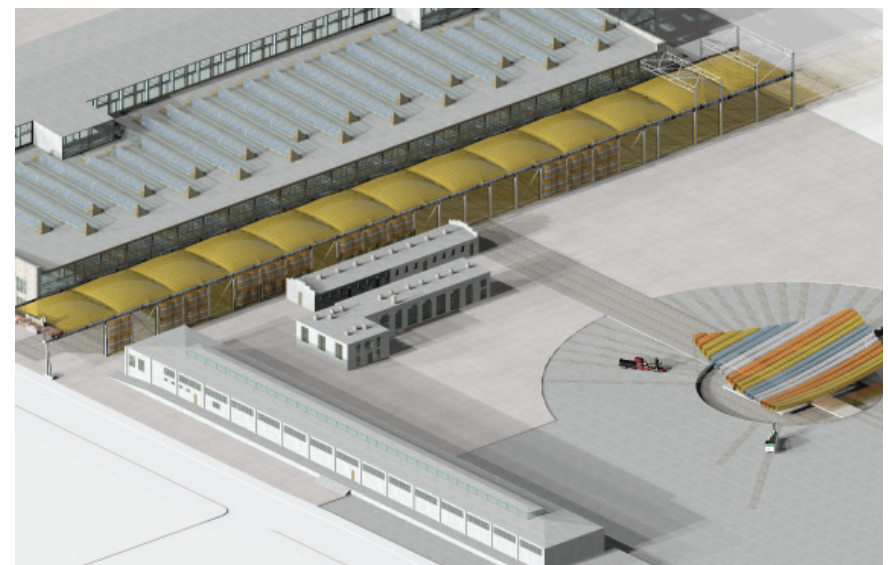
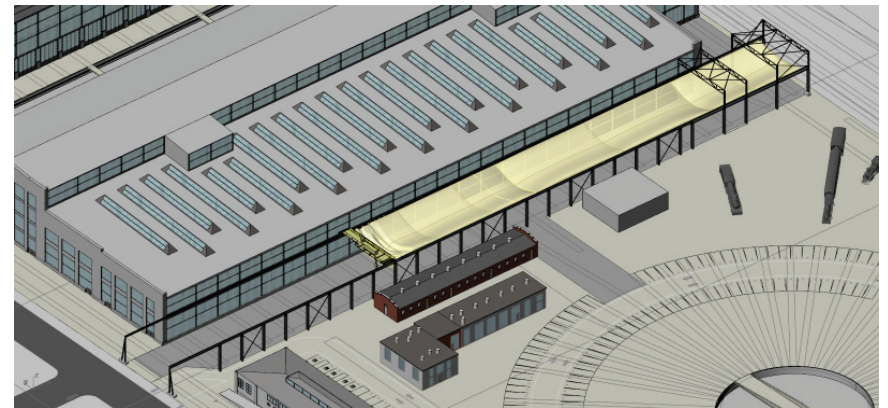
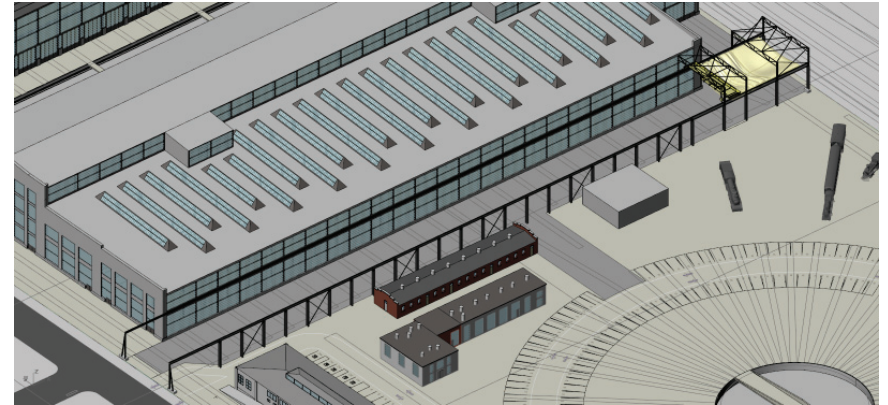


FIGURE 24: Phase 1 Site Plan Concept

the site. The Bridge Crane is supported on the north by a beam and track system connected directly to the facade of the Machine Shop whereas the south is supported by a steel wide flange beam and column colonnade.

Below is a summary of benefits of the proposed Phase 1 concept;

- Provides early stage public use of the site, creates enthusiasm for the Rail Yards redevelopment. Provides direct connection to the Barelbas Neighborhood from Second Street, extends Pacific Avenue onto Rail Yards site.
- Re-opens historic entrance to the Rail Yards site, refer to photo on preceding page.
- Provides high level of off-site visibility from Avenida Cesar Chavez (39,000 cars per day), affords a great number of Albuquerque residents to know that the Rail Yards are under redevelopment.
- Utilizes innovative, state-of-the art engineering strategy for canopy structure. Creates new, vibrant canopy that would bring life to the existing Bridge Crane structure and Rail Yards site in general.
- Takes advantage of south exposure providing ample sun when cool and ample canopy shade when hot.
- Provides direct connection with historic structures; Re-opens historic entrance to the Rail Yards site, refer to photo on preceding page, uses the Machine Shop as a backdrop and allows the potential early stage adaptive reuse of the smaller historic buildings located adjacent the site; South Washroom, Babbit Shop and Welding Shops.



Phase 1 Concept showing Bridge Crane canopy operation



Phase 1 Concept Rendering, Market under Bridge Crane canopy



Phase 1 Concept Rendering, Night view From Avenida Cesar Chavez

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Troweling floor
Mach. Shop.