BRIDGING DOCUMENTS

BASIS OF DESIGN NARRATIVE

OLD TOWN NEWHALL PARKING STRUCTURE

Prepared for:
CITY OF SANTA CLARITA

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WALKER
PARKING CONSULTANTS

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PROJECT SCOPE

The Redevelopment Block Project site, located on property owned by the City of Santa Clarita is bordered by Lyons Avenue to the north, by Railroad Avenue to the east, by Main Street to the west, and by 9th Street to the south. There are three developments planned for the site, consisting of a retail/residential mixed-use project, an art house movie theater, and the Old Town Newhall Parking Structure. Previous one-story buildings have been removed from the site with concrete slabs and foundations remaining and a portion of the site is currently being used for surface parking.

The Old Town Newhall Parking Structure site is located at the southeast corner of the redevelopment block bordered by 9th Street to the south and by Railroad Avenue to the east. The proposed parking structure will provide approximately 370 parking spaces to serve the retail and theater components of the Redevelopment Block Project, as well as other business in the immediate area.

The parking structure site has been selected so that vehicles will only enter the parking structure from 9th Street. Access to the adjacent subterranean residential parking structure will be accessed through the Old Town Newhall Parking Structure.

PARKING FUNCTIONAL DESIGN

This section discusses our approach to determining the site planning, parking functional design requirements, and pedestrian accommodations.

SITE PLANNING

Old Town Newhall Parking Structure is to be located on the southeast corner of the development with street frontage along 9th Street and Railroad Avenue. The parking structure building site is approximately 186'x 130'.

Vehicular access to the parking structure will be from 9th Street only. Vehicular access to the adjacent residential parking shall be through the Old Town Newhall Parking Structure. Main pedestrian access to the Old Town Newhall Parking Structure will be from the Mixed-Use Public Plaza and from 9th Street. An additional pedestrian exit is planned for the northeast corner of the structure, exiting to the public right of way along Railroad Avenue. Additionally, bicycle parking is being provided and shall be accessed from 9th Street.

PARKING FUNCTIONAL DESIGN REQUIREMENTS

Space Requirements

The numbers of spaces provided are as follows:

Total Number of Vehicle Spaces (Base Design)	374 Spaces
Total Number of Usable Vehicle Spaces (Add Alt #1)	353 Spaces
Total Number of Vehicle Spaces (Add Alt #2)	370 Spaces

All design variations shall include:

Accessible Spaces	8 Spaces
Electrical vehicle charging stations	12 Spaces
(Only infrastructure allowing for future installation of charging units)	
Alternative fuel /Clean Air	6 Spaces
Carpool/Van pool	12 Spaces
Bicycle Parking (5% of visitor parking total)	18 spaces

Dimensions and Clearances

The minimum vertical clearance from the finished floor to the underside of any structural element, ductwork, piping or other obstructions is a minimum of 8'-2" where any accessible parking is located and along the vehicular path to/from the accessible parking (ground level and lower level of the parking structure). At all supported decks without accessible parking, the minimum vertical clearance is 7'-0".

The ground floor finished elevation will allow for a pedestrian connection to/from the Old Town Newhall Parking Structure to the adjacent Mixed-Use Public Plaza, while the lower level finished elevation will allow for a vehicular connection to/from the Old Town Newhall Parking Structure to the adjacent residential parking structure.

Parking Geometrics

Parking geometrics used in the design are:

Standard Spaces:	9'-0" x 18'-0"
Compact Spaces:	Not permitted
Accessible Spaces:	9'-0" x 18'-0" plus 5'-0" wide access aisle
Van Accessible Spaces:	12'-0" x 18'-0" plus 5'-0" wide access aisle
2-way Drive Aisle:	26'-0"

Striping

All parking spaces will be clearly marked on the pavement surface using painted lines 4 inches wide. Single lines can be used to designate all spaces. Accessible spaces and access routes will be striped and marked as required by Code.

- Water based traffic paint shall be used. The paint must meet requirements of Federal Specification TT-P-1952D, Type I or Type II classification and be VOC compliant.

- Color of paint for striping will be white.

- Paint color for blue accessible parking space pavement markings will match specified federal color.

Parking Design Parameters

Parking design parameters at locations within the parking, driving and pedestrian areas shall conform with the criteria specified below to afford an acceptable level of convenience to patrons.

- Vertical Clearances: Clearance at all accessible spaces and vehicular routes to accessible spaces and back to exit shall be 8'-2" minimum. Clearance at all levels not provided with accessible parking shall be 7'-0" minimum.
- Driveway Clearances:
  - Lane Width, with no parking 11'-0"
  - One Lane: 11'-0"
  - Multiple Lanes: 11'-0" each
  - At Entry/Exits 10'-0"
  - Lane Width, in the parking bay, 2-way traffic 26'-0" (per City standard)

- Parking Module Width (Drive Aisle plus Stalls)
  - Two-Way, standard stalls, 90° Parking 62'-0" Clr. Bay Min.

- Parking Area Clearances:

  Turning Bay Width (Clear between Columns):
  - One Lane, One-Way: 15'-0" Minimum
  - Two Lanes, Concentric Turns 25'-0" Minimum
    A minimum 20' inside turning radius will be maintained.

- Clearance to Obstructions: 1'-0"
- Maximum Slope of Parking Ramps: 5%

Entrance and Exit Lane Design

The garage shall be designed with:

- Vehicular entrance/exit location from 9th Street at the ground level.
- Vehicular entrance/exit location from adjacent residential parking (by others) at the lower level.
- The lanes are configured to accommodate the peak hour volume of inbound traffic and peak hour volume of outbound traffic.

Internal Traffic Circulation

- The garage will be designed for two-way traffic on the primary circulation path. Signage, graphics, and vehicular way-finding signs are provided to direct and control

garage internal traffic to parking areas, entrances and exits and locations of accessible spaces.

- Dividers will be used to direct vehicle and pedestrian traffic. Bollards shall be used for car barriers and for protecting pipes or other facilities susceptible to damage. Bollards will be provided at all elevator cores and stairs. Concrete wheel stops shall be used at ADA parking stalls to prevent vehicles from encroaching into accessible pathway

- Curbs shall be used only to form islands at entrance and exit lanes.

Ramping System

Vertical traffic circulation will be by means of a two-way internal parking ramp. Slopes on ramps are maximum of 5%. Local warping of slabs will be avoided except where required for drainage or to reduce ramp slopes.

PEDESTRIAN ACCOMMODATIONS

Within the limits of the work, provisions have been made for the safe and secure flow of pedestrians to and from their auto to the elevators and required exits. The main destination of parkers is toward the public plaza located to the north of the Old Town Newhall Parking Structure. The design encourages pedestrian flow in this direction in a way that enhances safety and security of pedestrian movements.

Pedestrian circulation within the garage shall be clearly visible and marked. Stair and elevator access shall be apparent and orientation in the garage shall be clear. To the greatest extent possible and practical, pedestrians will not be required to cross vehicle traffic as they travel from their parking space to the stairs and/or elevators. Where it is unavoidable, pedestrian traffic will cross vehicular traffic lanes in clearly designated crossing zones, preferably at right angles to oncoming traffic. Special pavement markings or textures and signage can be used to delineate crossing zones. The design accommodates disabled pedestrians as required under ADA and California State Building Code.

The main pedestrian entry/exit portals to the structure are located on north side of the structure. These vertical circulation elements consist of one elevator and two stair towers. The stair and elevator located in the northwest corner of the structure is considered to be the connection point between the parking structure and the adjacent public plaza. The ground level lobby for this stair and elevator will have upgraded architectural finishes and lighting.

Concrete filled metal bollards, which serve as vehicle barriers, shall be provided around stair and elevator landings on all levels. Bollards shall also be used for the placement of ADA parking signs and protection of accessible pathways.

Base Design - Minimum of two exit stairways are to be provided. Additionally, a single flight stair shall be provided from the roof level down to the fifth level, giving exit access to the stair

located in the northeast corner of the parking structure. The ground level exit from the northeast stair (exiting towards Railroad Avenue) is to be exit only. Above grade, stairways shall be open to the interior of the parking structure with open railings provided to promote safety, security and visibility from public areas, providing passive security. The portion of the exit stairs connecting the below grade level with the ground level shall be enclosed with 2-hr construction to meet code requirements. The pedestrians are encouraged, thru signage and design, to use the primary pedestrian access point at the northwest corner of the parking structure.

All stairs are concrete filled metal pan stairs with broom finish. All landings and stair treads shall have minimum slope to prevent standing water from accumulating. All guardrails shall have vertical pickets spaced to meet current code requirements. Handrails shall match material and finish of guardrails. All railings and metal stair stringers to be galvanized and painted. Stair treads will have non-slip grit impregnated in the surface and have grooved warning stripe at leading edge of treads as required.

Pedestrian lobbies at stair/elevator landings include the following pedestrian amenities:

- Increased illumination levels.
- Level indication signage and graphics.
- Emergency Blue Phone
- Accommodations for future Pay-by-Space equipment

Lighting layout and controls have the capacity of providing the following minimum maintained foot-candle level measured at the floor:

Average Maintained	
Interior drive aisles	10.0 fc
Interior parking areas at vehicle door	5.0 fc
Interior parking areas at front of each vehicle	1.0 fc
Stairway, elevators, elevator lobbies	20.0 fc
Entry/Exit areas	50.0 fc

Light distribution is important. The average maximum to minimum ratio will not exceed 10:1.

Pedestrian elevators are 3,500 lb. gurney accessible traction type elevators. Elevators are sized for disabled access per state and federal standards, and include textured cab interior and door trims and finishes to minimize vandalism. Basis of Design is Otis Gen2 elevator.

Floor slabs in the parking structure are sloped so the potential water accumulation shall be diverted away from all elevator and stair areas. Raised areas at elevator core areas will be provided. All electrical conduits and connections will be concealed within the slab or walls.

Roof Level Event Area (Add Alternate #1)

The flat portion of the parking structure's roof level shall be designed to accommodate occasional assembly events. Consideration to be given to:

- Roof level slab to be designed to accommodate assembly loading (100 psf)
- Stair width increased to accommodate increased occupant load at the roof level – Occupancy load of 1 occupant per 15 sq. ft
- Exit stairs shall be fully enclosed with minimum 2-hour construction for the full height of the parking structure.
- Additional electrical outlets - 1 dual convenience outlet to be provided at each column around event area.
- Fire alarm notification devices (audible and visible)
- Portable barriers (stanchions and chain) at the top of the ramp to separate event area from parking spaces.

MATERIALS, COLORS AND TEXTURES

The design of the public facing facades shall conform to the City's Community Character and Design Guidelines and be consistent with the existing "Main Street Commercial" and Western Victorian" architectural style of the Old Town Newhall area.

Exposed portions of the parking structure will be covered with façade elements to conceal the concrete structural framing of the parking structure. Architectural façade elements shall be permitted to project across the parking structure property lines.

Façade elements to include:

- Steel stud "curtain wall" framing with cement plaster finish.
- Architectural foam shapes with plaster skim coat.
- Aluminum storefront mullion system
- Metal awnings
- Metal architectural fins
- Banner blade signs

The back side of façade elements that are visible to the interior of the parking structure shall be finished to match the same exterior condition.

Building materials and finishes will be chosen for durability and ease of maintenance. Graffiti resistant materials or treatments will be used where necessary.

Façade elements shall be designed to minimize the possibility of birds nesting and/or roosting along upper ledges of the parking structure. Bird control devices shall consist of one or more of the following:

- Netting
- Electric Track
- Bird slope

PAINTING, GRAPHICS AND SIGNAGE

Garage interior concrete beams, ceilings and walls shall be painted white to enhance visibility and light reflection. Paint shall be as per technical specifications. Visible portions of the parking structure exterior shall also be painted per technical specifications. Exterior elevations within the preliminary design drawings shall serve as guideline for colors. Color boards, material mock-ups, and 3D renderings shall be presented to the City for review prior to making final selections.

A complete graphics and signage/vehicular guidance system shall be employed for the project including site directional, building exterior, garage entry, parking level/available parking and directional signs, pedestrian orientation, life safety and accessibility signage.

The building graphics shall be developed to enhance the appearance of the building, be easily maintained and graffiti resistant, and make the garage easy to use.

Sufficient graphics shall be provided so as to direct and identify the most convenient means of vehicular and pedestrian access and egress. Signs indicating direction to pedestrian exits and elevators shall be provided. Graphics will be simple, easy to read, clearly visible, and uncluttered.

Graphics shall be used on each floor to provide color coding and numbering to assist in identification of parking locations. Floor levels shall be numbered and color coded (use corresponding colors and color coding in the elevator cabs) to aid the driver and/or pedestrian.

Signs shall be incorporated at all points of decision to provide driver destination choices to available parking or vehicle exits. Minimum vertical clearance signs (bang bars) will be provided at vehicular entrances, and inside the garage in areas beyond the disabled persons parking spaces where the headroom clearance becomes reduced.

Striping, painted directional arrows on the driving deck and ADA required floor painted signs shall also be provided.

PARKING ACCESS AND REVENUE CONTROL SYSTEMS (PARCS)

The Old Town Newhall Parking Structure shall be provided with the infrastructure (embedded conduits for power and data, spare circuits, etc.) to accommodate future Pay-by-Space stations at each stair/elevator location at each level.

Roll-up fire separation door shall be provided on the parking structure side of the vehicular access to the residential parking. Roll-up grille and access controls to residential parking is outside of the Old Town Newhall Parking Structure and shall be by others.

SECURITY

The facility shall be designed to provide an optimum level of safety and security for retail visitors, employees, and other parking structure users.

Garage security consists of passive security and active components. Visibility from surrounding property, walks, streets, etc. and clear lines of sight within the facility will be provided to the maximum extent possible. Stairs are developed to be as open as possible, and will be well lit to "glow" at night.

The facility design has incorporated features that maximize passive security, i.e. increased lighting levels, visibility, elimination of dark corners and confined spaces, vandal and graffiti resistant finishes and deterrent graphics and signage.

The facility design has incorporated active security measure features, i.e. security cameras are to be provided at each level to allow recording of each elevator and stair lobby/landing. Recordings to be stored on site within dedicated room.

Blue light Emergency Phones will be provided at each level serving each elevator and stair lobby/landing.

Electrical Room, Communication Room, and Storage Rooms shall be equipped with alarm system and have keypad access. Alarm notification shall go to location designated by owner.

All light fixtures, plumbing items, signs and other equipment will be installed with "tamper-proof" hardware to minimize vandalism and theft.

STRUCTURAL DESIGN RECOMMENDATIONS

1. General

The parking structure consists of one parking level below grade (SOG) with 6 supported levels with approximately 374 total parking spaces. Plan dimensions are 186'-0"x130'-0". Floor to floor height is 12'-0" below grade and varies from 11'-2" to 10'-2" above grade. Minimum height clearance to bottom of beams shall be 8'-2" at grade and lower levels. Minimum height clearance to bottom of beams shall be 7'-0" at above grade levels.

The garage floor decks shall be designed to accommodate a loading of 40 psf, except for the roof level. This level, where occasional assembly events will take place shall accommodate a loading of 100 psf.

2. Geotechnical

Per Geotechnical study report by GEOCON West, Inc. dated 11/10/2015, the site is located within the Transverse Ranges geomorphic province between the San Gabriel and San Andreas fault zones. The State of California Seismic Hazard Map for the Newhall Quadrangle indicates that the site is not located in an area designated as "liquefiable" and liquefaction potential is very low. Seismic hazards except from the strong ground shaking were not found to be present at the site.

Site class was identified as D and site specific design spectral response acceleration for short periods, S_{ds} and design spectral response acceleration for 1-second period, S_{d1} were reported as 1.972g and 0.918g, respectively per 2013 California Building Code (CBC). According to the report the site is partially located in a seismic hazard zone and based on 2013 CBC, a site specific ground motion is required. GEOCON West, Inc. had developed a site specific response spectrum and per this analysis, the site specific design response parameters were given as: S_{ds} = 1.972g and S_{d1} = 0.981g for 5% damping.

3. Foundations

Shallow spread and continuous footings are suitable resting on compacted fill benched into native materials. The required depth of compacted fill shall be 3 feet or as required by the Soils Engineer of Record and the City of Santa Clarita Engineering Services, Public Works. Shallow footings to be founded at least 12" below the lowest final grade with a minimum width of 24". The net allowable dead plus live load bearing value is 3000 psf which can be increased by 4000 psf for each additional foot of excavation depth and/or footing width up to 7000 psf maximum.

Lateral load resistance is provided by friction based on dead load with a coefficient of friction of 0.35 and a passive earth pressure of 300 psf per foot of depth up to a maximum of 3000 psf for footings resting on recommended base material.

Approximate column load takedowns were done and preliminary spread footing sizes were provided. A lateral load allowance was also taken into account for the columns based on the preliminary seismic load calculations which will be discussed in the subsequent paragraphs.

Largest column loads are expected for the interior columns that support girders near the end bays thus the footing sizes and depth are larger than the exterior columns. Moment frame footings are required to be sized for both gravity and seismic load affects considering sliding and overturning. All perimeter footings shall be eccentric.

4. Gravity System

Gravity system for this structure is recommended to be cast-in-place concrete columns, post-tensioned one way slabs with post-tensioned beams. This system is very common in long span construction and it is superior to precast systems for durability and vibration control. 5" thick slabs and 14" wide x 36" deep beams are recommended and prevalent in this area. Beams are recommended to be spaced at 17'-0" center to center and the column size is selected to be 24" square. The 24" column width allows enough space for post-tensioned tendon placement and also ensures required minimum column stiffness for lateral resistance. It also helps to alleviate beam-column joint congestion. At the turning bays the columns are omitted and a 24" wide x 36" deep transfer girder is used spanning between 24"x36" transfer girder columns.

5. Lateral System

Seismic design category based on site specific response spectra is "D". Per ASCE7-05 Table 12.2-1, for this seismic design category and considering the expected levels of seismic loading, it is recommended that the lateral load resisting systems for this structure are to consist of special reinforced concrete moment resisting frames in the short plan direction (north-south) and reinforced concrete moment resisting frames in the long plan direction (east-west).

The lateral load resisting capability of a moment resisting frame is characterized by the flexure of beams and columns and rotation at the joints. Moment resisting systems have performed satisfactorily in past earthquakes. Moment resisting frame has an R value of 8.

Geometry, material strength and detailing are major factors to consider in order to achieve the desired levels of seismic performance in the latter stages of design. Shear walls are recommended to be located at gridlines A and C. Placement of shear walls at the exterior edges increases the resistance to torsion which may be caused by seismic effects. Placing the shear walls in the short direction is not feasible as it will obstruct the vehicular traffic within the garage and decrease the number of available parking spaces.

Special reinforced concrete moment resisting frames are recommended in the short direction. At the exterior edges of the structure, upturned ductile beams are recommended which also serve as bumper walls. 24" wide x 49" deep upturned ductile beams and 8" thick x 49" deep exterior bumper walls are recommended and are commonly used in the parking construction industry.

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CIVIL ENGINEERING

GENERAL

The purpose of this design narrative is to describe the civil engineering program scope and approach to the design implementation of the multi-level parking structure at the corner of Railroad Avenue and 9th Street in the City of Santa Clarita.

The design criteria represent the minimum acceptable standards, systems, and configurations.

The scoping documents, performance specifications, and schematic plans are an effort to assist the Design-Build Team in the design and construction of the parking structure. It is expected the site work to construct the parking structure will include demolition, rough grading, material export, shoring, fine grading, drainage, storm water handling, hardscape, street improvements, water and sewer improvements, street lighting, and dry utility improvements.

SITE CONSIDERATIONS

The existing site bounded by Railroad Avenue, Lyons Avenue, Main Street, and 9th Street is to be redeveloped with new retail and commercial buildings. The new parking structure will provide parking for this redevelopment and surrounding areas. The site for the proposed parking structure is located at the northwest corner of Railroad Avenue and 9th Street intersection. The parking structure is expected to cover approximately 0.57 acres of the overall approximately 1.7 acre site.

Following Phase II Environmental Site Assessment activities, the location of the parking structure is currently covered with gravel and contains abandoned utility facilities. No utilities are present which are known to be active. The adjacent sites for the new retail and commercial buildings contain asphalt concrete paving, concrete pavement, and concrete building slabs remaining from previous building and site demolition activities. The adjacent Railroad Avenue and 9th Street existing roadway features include concrete curb and gutter, concrete sidewalk, decorative street lights, plus above and below ground utilities.

DESIGN CRITERIA

<u>Codes and Standards</u>

Site design shall conform to the following:

- City of Santa Clarita Standard Plans and Specifications
- Standard Plans and Specifications for Public Works Construction (Greenbook)
- Newhall County Water District Standard Specifications for Construction
- Los Angeles County Drainage Manuals
- California Building Code
- California Plumbing Code

- California Fire Code
- Los Angeles County Fire Department, Fire Prevention Division
- County of Los Angeles MS4 and Low Impact Development (LID) Permit
- Project Geotechnical Reports

Demolition

The Design-Builder shall be responsible for complete demolition and removal of existing on-site improvements within the limits of work and work, as required, to provide adequate access to the site and/or existing utilities.

Demolition limits are dictated by the limits of the proposed improvements and the limits of excavation for the placement of the structural foundations, including the 1:1 layback areas as shown on Plan Sheet C2.2.

Utilities in the vicinity of construction shall be located. Properly cap or plug pipes to be relocated and abandoned. Excavation and construction in the vicinity of existing utilities shall be performed with hand-operated equipment to protect the facilities. Abandoned utilities shall be removed.

Existing street lights impacted shall be salvaged. Existing trees impacted shall be removed.

Grading

The rough and finish grading for the project site will be completed in accordance with the project geotechnical reports, standard engineering practice, City of Santa Clarita requirements, and applicable sections of the California Building Code. Design-Build Team shall conduct an independent Geotechnical Investigation to verify and revise if needed, any specifications contained in the Bridging Documents or other documents provided as part of this RFP. The independent Geotechnical Report will be submitted to the City of Santa Clarita Engineering Services, Public Works for review and approval prior to commencing with any onsite construction activities.

Shoring is anticipated to be necessary to construct the foundations along 9th Street and Railroad Avenue. Shoring shall be designed by a licensed structural engineer registered in the State of California. Railroad Avenue shall remain open at all times during construction. 9th Street is allowed to be closed for westbound traffic but must remain open for eastbound traffic.

Finished grading and building components shall be coordinated with the proposed development to the west and north of the parking structure.

Grading and excavation activities on-site, outside the parking structure property line boundaries, shall only be allowed within the construction staging area designated by the

laydown limits for the foundation excavation. The Design-Build team shall coordinate directly with the site developer to confirm accessibility.

Access for grading operations, ramping, and transporting of soil may be possible through the adjacent mixed-use parcel however, this has not been confirmed. Design-Builder will be required to negotiate directly with Serrano Development. It should be assumed that stockpiling will not be permitted and the Design-Builder will be required to export the surplus excavation soil.

Street Improvements

Street improvements are expected to include construction of a right turn pocket with new pavement section on Railroad Avenue approaching 9th Street, a new driveway approach on 9th Street for the access into the parking structure, re-construction of the curb ramp at the northwest corner of Railroad Avenue and 9th Street, a traffic island at the intersection of 9th Street and Railroad Avenue to prevent northbound Railroad Avenue left turn movements onto 9th Street, pavement repair/replacement as necessary on 9th Street due to the placement of the infiltration basin and/or grading layback, grinding and overlaying AC pavement on 9th Street, sidewalk and curb & gutter along 9th Street and Railroad Avenue within the limits of the parking structure, parkway culverts to divert overflow into the 9th Street gutter, and traffic striping and marking on Railroad Avenue and 9th Street. The overlay along 9th Street shall include the full with of 9th Street from the cross walk at Main Street to a match line as approved by the City of Santa Clarita. The match line will be determined during the design of the added right turn pocket along the projects east property line (Railroad Avenue).

In addition, decorative pavers will be installed for the sidewalk, curb ramp, traffic island, and the westerly crosswalk at the intersection of 9th Street and Railroad Avenue to match the existing improvements on Main Street.

The Design-Builder shall be responsible for new signing and striping including provisions for the new right turn lane on southbound Railroad Avenue and the new restriction for left turns on northbound Railroad Avenue.

All work within the street right of way shall require a separate permit from the City of Santa Clarita Public Works Department.

Drainage and Storm Water

Site drainage design shall be completed in accordance with the Los Angeles County drainage manuals, requirements and standards, latest edition. A final project specific drainage report shall be prepared by the Design-Build Team.

Drainage design shall incorporate current requirements of the Los Angeles County MS4 permit and Low Impact Development (LID) treatment facilities. The purpose of the LID is to provide on-site storm water runoff pre-treatment and detention and to maximize infiltration.

In accordance with the requirements of the geotechnical report, the area under the parking structure can be used for infiltration. Although hydro-consolidation and/or liquefaction is highly unlikely to occur on-site, to reduce the potential of an occurrence within the structure's vicinity, the location for the Infiltration System will be within the 9th Street Right-of-Way. The general location of the system will be between the alley on the south side of 9th Street and Railroad Avenue. The exact location will be based on existing and proposed underground utilities in the.

The infiltration system is expected to be a chamber type with a single row. Catch basin inlets with trash and debris filters should be installed along the 9th Street sidewalk to initially treat the parking structure roof runoff before entering the infiltration system. A junction structure with access is expected to be constructed between the catch basin and infiltration system.

In the event the infiltration system reaches capacity, the system should be designed such that the overflow will be diverted into parkway culverts that outlet onto the 9th Street gutter and into the local curb opening catch basin on the southwestern corner of the Railroad Avenue and Lyons Avenue intersection.

A final project specific LID report shall be prepared by the Design-Build Team incorporating the elements required for the final design and location of the system.

Utilities

The City of Santa Clarita has contracted with Southern California Edison to design and construct a Backbone System that will provide power to the Mixed Use, Theater and Parking Structure. The Backbone System will start at a pole locate in the alley on the south side of 9th Street, enter 9th Street to Railroad Avenue and parallel the north side of Railroad Avenue from 9th Street to Lyons Avenue. Conduits for the Parking Structure Transformer will be installed between the north wall of the Parking Structure and Theater. The City will pay for the Backbone Systems and for the removal of the Overhead Power Poles. Edison will allocate the cost for the Backbone System and removal of the Power Poles to all three projects on a fair share basis.

The existing utility plan was prepared from available as-built plans. The plan has been prepared at a schematic level depicting known utilities. Additional utilities on-site may exist. It is expected on-site utilities are abandoned, however, the Design-Build Team will need to verify prior to starting rough grading operations.

A fire flow test was conducted for the fire hydrant located adjacent to the parking structure site on Railroad Ave. The results indicate that the fire hydrant receives adequate fire flow per Fire Code requirements. Per Fire Code requirements, the site requires a minimum of one fire hydrant. The fire hydrant shall be located such that the maximum distance from any point on the fire access road to the hydrant is 250 feet. It is assumed that Railroad Avenue and 9th Street

will serve as fire access roads for the parking structure and will not be accessible through the proposed plaza.

The City has had general conversations with all Utility Companies that will serve the project and those that have systems within the project work zones. At this time the City has identified an underground AT&T telephone duct system within the north sidewalk area on 9th Street. The duct system runs from Railroad Avenue to Main Street. The proposed 9th Street shoring appears to be in the same alignment as the AT&T duct system. The City is scheduled to Pothole the north sidewalk area on 9th Street at 5 locations to locate and as-built any buried systems that may impact the installation of the 9th Street Shoring. The Potholing is scheduled to be completed by June 22nd and the results will be shared by the City.

Fire service for the parking structure sprinkler system is available from an existing 10" AC main in Railroad Avenue. Service will be installed by the Newhall County Water District in accordance with their standards and requirements. A fire department connection (FDC) will be installed and located by NCWD in accordance with local fire department and California Fire Code requirements. The new water service shall be paid for by the Design-Builder. Design-Builder will need to coordinate with NCWD for their service installation work schedule. Design-Builder will prepare the plan for the new service and fire hydrant and pay the associated fees.

Irrigation water service is expected to be required for the landscape areas adjacent to the parking structure. Service is available from an existing 10" AC main in Railroad Avenue. Service is anticipated to be installed by the Newhall County Water District in accordance with their standards and requirements. The Design-Builder shall locate and install the backflow protection in accordance with Newhall County Water District standards and requirements. Water service, including meter, shall be paid for by the Design-Builder. Design-Builder will need to coordinate with NCWD for their service installation work schedule.

Sewer service for the parking structure will not be required. Existing sewer laterals shall be capped at the property line using City standards.

Electrical service for the parking structure will be required and the existing facilities relocated due to impacts by the construction of the proposed improvements. The City has submitted an Application for Design to SCE for the removal of the overhead systems including the power poles. The Application also includes the design of the backbone system that will serve the City's new parking structure and the future mixed-use development. Overhead electrical facilities will be relocated to an underground duct bank that will run from the alley located south of the property to along 9th Street toward Railroad Avenue, then north on Railroad Avenue providing a service to the site. The duct bank will terminate near the northeasterly corner of the site. SCE will complete the installation of the undergrounding and the City of Santa Clarita shall be responsible for the payment and coordination of the system. Serrano Development will be responsible for their fair share cost that benefits the mixed-use development.

Street lights will be removed during demolition. The Design-Builder shall salvage these street lights or install new street lights as determined by the City on 9th Street and Railroad Avenue using the same spacing and light poles as exist on Main Street.

Cable and telephone facilities will be provided for the site. It is assumed the telephone and cable facilities will be placed within the new underground duct bank to provide service to the site. Design-Build Team shall verify with local utilities.

Property Limits

Serrano Development is processing the revised parcel map through the City. The revised Parcel Map will include the new property lines for the City's new parking structure and the right turn lane along 9th Street. The Design-Builder is not anticipated to prepare any right of way related documentation.

Construction Staging & Traffic Detour

The City will allow construction staging along 9th Street and Main Street. The right of way adjacent to the new parking structure will be accessible to the Design-Builder. The 9th Street Staging Area will start at centerline of the street and run from the crosswalk at Main Street to Railroad Avenue. The Main Street Staging Area will start at the centerline of the street and run from Lyons Avenue to the cross walk at 9th Street. The Main Street Staging Area will not include the sidewalk area, the 9th Street Staging Area will include the sidewalk area. These staging areas are available throughout the life of the construction of the parking structure.

In addition to the adjacent right-of-ways, the Design Builder has the option to lease adjacent properties from the developer for use during construction.

The Design-Builder shall submit a construction staging plan to the City for review and permitting.

MECHANICAL DESIGN RECOMMENDATIONS

General

This narrative gives a general overview and outline specification of the proposed HVAC and Plumbing materials, methods and systems for the new parking structure in Santa Clarita, CA. Detailed information and plan dimensions are presented in the parking structure bridging documents. All references to equipment sizing are based upon preliminary design estimates and are subject to adjustment as the design progresses.

Codes

- 2013 California Building Standards Administrative Code
- 2013 California Electrical Code
- 2013 California Building Code – based on 2012 IBC with California-specific amendments (Title 24, Part 2)
- 2013 California Mechanical Code – based on 2012 UMC with California-specific amendments (Title 24, Part 4)
- 2013 California Plumbing Code – based on 2012 UPC with California-specific amendments (Title 24, Part 5)
- 2013 California Fire Code as amended (2014) by the Los Angeles County Fire Department (Title 24, Part 9)
- 2013 California Green Building Standards Code (Title 24, Part 11, aka CalGreen)
- 2013 California Energy Code (Title 24, Part 6)
- 2010 ASME A17.1 Safety Code for Elevators and Escalators
- City of Santa Clarita Amendments
- Los Angeles County Fire Department, Fire Prevention Division

Standards

- Underwriters Laboratories (UL)
- National Electrical Manufacturer's Association (NEMA)
- Institute of Electrical and Electronics Engineers (IEEE)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- American Society of Heating, Ventilating, and Air Conditioning Engineers (ASHRAE)
- ASTM International
- American Refrigeration Institute (ARI)
- Air Movement and Control Association International, Inc. (AMCA)
- National Electrical Contractors Association (NECA) - National Electrical Installation Standards
- National Commercial and Industrial Insulation (NIA) Standards
- Occupational Safety and Health Administration (OSHA)
- Americans with Disability Act (ADA)
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

Code Compliance, Energy Conservation and Sustainable Design

1. Project Energy and Sustainability Requirements
   i. 2013 California Green Building Standards Code (Title 24, part 11, aka CalGreen)
   ii. 2013 California Energy Code (Title 24, part 6)

2. Mechanical Project Sustainable Requirements:
   i. The applicable codes in the project jurisdiction require that all new HVAC equipment have a SEER, EER or IEER which is in compliance with the California Mechanical Code Tables 4-1 through 4-11.

Seismic Requirements

1. Mechanical seismic requirements will be performed as design-build and will provide seismic bracing for ceiling mounted or suspended equipment. Other HVAC and Plumbing equipment shall be provided with seismic restraints in accordance with ASCE 7.

PLUMBING SCOPE OF WORK

Storm Drainage System

1. Area Drains in Garage and intake/Exhaust shafts
2. A separate storm drainage system will be provided for the building storm water parking garage area drains. The storm drain stacks will be routed through the structure down to the below grade storm drain system.
3. The building storm drainage system will be sized in accordance with tables and flow rates as stated in the 2013 California Plumbing Code – Chapter 11. Per the code, tables will be modified to reflect the local rainfall rate of three inches per hour for a 1-hour duration and 100-year period.
4. An industrial sand/oil interceptor system will be used for all area drains in the parking structure that receive storm water. The interceptor will discharge to a duplex sump pit, where the waste will then be pumped, if required, up to the nearest storm water system site main where it will flow by gravity. Interceptor(s) for sand and similar heavy solids will be so designed and located as to be readily accessible for cleaning. Sand/oil interceptor(s) shall be reinforced precast concrete construction by local manufacturer or a plastic sand/oil interceptor acceptable to the local authorities having jurisdiction. Size and construction of sand/oil interceptor(s) shall comply with the 2013 California Plumbing Code Chapter 10, and with the local Authority Having Jurisdiction.
5. Where interceptors(s) are located in areas subject to traffic loads, construction of interceptor(s) shall be rated for AASHTO H-20 Loading.
6. Cleanouts in storm piping shall be placed at intervals of 75'.

Sanitary System

1. Waste piping 4" and larger shall be sloped not less than 1/4" per foot, while sanitary waste 3" and smaller shall be sloped not less than 1/4" per foot.
2. Sump pumps for traction elevators shall be permitted to discharge indirectly to the sanitary waste system.
3. Cleanouts in sanitary piping shall be placed at intervals of 75'.

Basic Materials

1. Piping:
   - Storm Water Underground: Schedule 40 solid wall PVC DWV pipe and fittings or service Weight Cast Iron with Hub & Spigot fittings.
   - Storm Water Aboveground: Hubless Cast Iron soil pipe.
   - Waste/Vent Underground: Schedule 40 solid wall PVC DWV pipe and fittings or service Weight Cast Iron with Hub & Spigot fittings.
   - Waste/Vent Aboveground: Hubless Cast Iron soil pipe.

2. Floor Drains and Area Drains
   - Manufacturer: Zurn or approved equal

3. Pumps
   - Storm Water Sump Pumps, duplex
     - Basin shall be either fiberglass reinforced, cast in place concrete, or pre-cast concrete.
     - Cover shall be Epoxy coated steel or aluminum gusseted round cover. Provide completely flush access cover for discharge piping, vent and conduits enter and exiting the sump pit under the slab with holes for discharge piping, vent and conduit(s). Where sump pumps are located in areas subject to traffic loads, provide access cover rated for AASHTO H-20 loading.
     - Manufacturers: ABS Pumps, Inc., FLYGT, Weil Pumps Company, or equal.
   - Elevator Sump Pumps, simplex.
     - A remote high level alarm with NEMA 4X enclosure, terminal block, 5 amp isolated alarm contract, alarm horn, alarm light, test-automatic-silence switch and mechanical float switch.
     - Manufacturers: ABS Pumps Inc., FLYGT, Weil Pumps Company, or equal.

HVAC SCOPE OF WORK

Systems

1. Split Systems shall be provided according to the following specification.
   i. Split systems shall meet the efficiency requirements (SEER) of the Title 24 Energy Code.
   ii. Maximum size for new split systems shall be 4 tons (48,000btuh).
   iii. Each split system shall be provided with a manufacturer supplied 7-day programmable thermostat.
   iv. Manufacturers: LG, Mitsubishi, Daikin or equal.

2. Inline Exhaust Fan
    i. Provide with programmable thermostat.
    ii. Interlock with motorized damper.
    iii. Exhaust ductwork will be sized at 0.08 inch wg/100' of duct pressure loss.
    iv. Manufacturers: Cook, Greenheck, PennBerry, Twin city, or equal
3. Wall mounted propeller garage Supply and Exhaust Fan
    i. Provide VFD motor and wall sleeve and security cage around fan that is facing the garage.
    ii. Interlock with CO and NO2 monitoring system.
    iii. Manufacturers: Cook, Greenheck, PennBerry, Twin city, or equal
4. Garage circulating Fan
    i. Fans shall be suspended and supported form deck above.
    ii. Manufacturers: Air King or equal

Basic Materials

1. Ductwork:

    Material Type
    - Galvanized steel: Gage thickness shall meet SMACNA guidelines.

    Duct Pressure Class
    - Exhaust Air Ducts: 1 inches water gauge, negative pressure.

    Duct Sealing
    - Exhaust ducts under positive pressure will be sealed to meet SMACNA Seal Class A.
    - Seal externally insulated ducts prior to insulation installation.

2. Insulation
    i. Insulation types will comply with ASTM and UL standards, meeting UL flame spread and smoke developed ratings.
    ii. Thickness of insulation will comply with the energy code and the fire code.
    iii. Refrigerant lines shall be insulated with flexible unicellular or fiberglass insulation.

Service	Materials
Refrigerant piping	0.5", 0.27 K thick flexible Elastomeric

Test and Balance

1. Air Systems will be balanced within 5% of exhaust fan designed airflow.
2. Contractor will perform all required system acceptance tests per Title 24.

Detailed Space Requirements

1. Parking Garage

i. Open garage above grade: No mechanical ventilation is required for the parking garage. The above grade parking garage meets the natural ventilation requirements in California building Code section 406.5.2: the exterior side of the structure shall have uniformly distributed openings on two or more sides, the area of such openings in exterior walls on the tier shall be not less than 20 percent of the total perimeter wall area of each tier, the aggregate openings considered to be providing natural ventilation shall be not less than 40 percent of the perimeter of the tier.

ii. Lower level enclosed garage: Provide mechanical ventilation with dedicated fans serving the lower level.
   a. Enclosed parking areas will be exhausted at a rate of 0.75 CFM/SF as required by code directly to the outdoors. Dedicated exhaust fans will be utilized with variable frequency drives to serve all areas. Exhaust airflow will be modulated based on space CO and NO2 levels. The exhaust air opening will have a maximum air velocity of 1000 fpm.
   b. Dedicated makeup air fans will provide makeup air from the outdoors. Makeup air fans will be provided with variable frequency drives to modulate fan airflow to maintain a negative space pressure compared to adjacent occupied spaces. The outside air openings that are fan assist shall have maximum air velocity of 1000 fpm. If makeup air fans are not installed, the opening maximum opening air velocity will be maximum 500 fpm.
   c. Circulating fans shall be provided throughout the lower level to provide even air movement throughout the space. The fan shall be mounted as high as possible, away from drive aisles and parking spaces to avoid damage and maintain parking height.
   d. A Vehicle Emissions Monitoring System (VEMS) consisting of central control panel with visible and audible alarm and space CO and NO2 sensors will be provided for each parking area. CO and NO2 sensors will be spaced on 40 foot radiuses. The maximum average concentration of CO shall be 50 parts per million during any 8 hour period and a maximum concentration not greater than 200 parts per million for period not exceeding one hour. The maximum average concentration of NO2 shall be 3 parts per million.

2. Elevators
   i. The elevator machine/control room will be served by a dedicated split system. The unit cooling will be sized to meet the heat rejection of the elevator motor and controls. The condensing unit shall be located on the parking garage near the elevator machine room away from the car parking and pedestrian walkway. Bollards will be located around the unit to prevent any damage.

3. Electrical Room
   i. These spaces will be ventilated using grilles above doors with a motorized damper and transfer fans with temperature sensor control. Provide ventilation to meet the minimum 0.5 CFM/sf to offset the heat rejection of the transformer(s) in the space. The temperature shall not exceed 10 degrees above exterior ambient temperature.

4. Telecommunication Room

i. This space will be conditioned to maintain 72 degrees and 50% RH. The ductless AC system shall be sized to meet all equipment heat rejection in the space. The condensing unit shall be located on the parking garage near the telecommunication room away from the car parking and pedestrian walkway. Bollards will be located around the unit to prevent any damage.

5. Utility rooms
   i. Spaces with Pumps: These spaces will be ventilated using grilles above the door with motorized damper and transfer fan with temperature sensor controls. Ventilation shall be sized to meet the all the motor heat rejection when all motors are in operation and maintain max 100F space conditions.
   ii. Space without pumps: The space will be ventilated using grilles above door and transfer fans with temperature sensor control with minimum 0.5 CFM/sf.

Elevator Hoistway Ventilation

1. Provide Louver or relief hood at top of elevator shaft with a minimum free area of 3 sq. ft. Provide motorized damper, heat sensor and smoke sensor in the shaft.

END OF MECHANICAL NARRATIVE

ELECTRICAL DESIGN RECOMMENDATIONS

General

This narrative gives a general overview and outline specification of the proposed Electrical materials, methods, and systems for the new parking structure in Santa Clarita, CA. Detailed information and plan dimensions are presented in the parking structure bridging documents. All references to equipment sizing are based upon preliminary design estimates and are subject to adjustment as the design progresses.

Codes

- 2013 California Building Standards Administrative Code
- 2013 California Electrical Code
- 2013 California Building Code – based on 2012 IBC with California-specific amendments (Title 24, Part 2)
- 2013 California Green Building Standards Code (Title 24, Part 11, aka CalGreen)
- 2013 California Energy Code (Title 24, Part 6)
- 2010 ASME A17.1 Safety Code for Elevators and Escalators

Standards

- Underwriters Laboratories (UL)
- National Electrical Manufacturer's Association (NEMA)
- Institute of Electrical and Electronics Engineers (IEEE)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- National Electrical Contractors Association (NECA) - National Electrical Installation Standards
- Occupational Safety and Health Administration (OSHA)
- Americans with Disability Act (ADA)

Seismic Requirements

1. The seismic classification will be identified by the structural engineer. Reference the structural narrative for additional information.
2. Seismic bracing, restraints, and controls for all electrical systems shall be designed and installed in accordance with applicable Building Codes.

General Facility Power and Systems Infrastructure Interface:

1. Southern California Edison (SCE) distribution class service shall be routed from the service point identified by SCE to the SCE furnished and installed primary side isolation switch and pad-mount transformer mounted on a slab meeting SCE standards. The proposed transformer location is indicated on parking structure bridging documents. Contractor will be responsible for public and private installation of primary underground duct bank and

associated pill boxes. Duct bank conduit size, quantity, and installation requirements will be provided by SCE. SCE will furnish, install, and terminate the primary cable at the applicant's expense. The Design-Build Team will verify requirements with SCE and obtain final construction drawings.

2. Contractor will be responsible for the 480Y/277VAC, three-phase, four-wire secondary electrical service infrastructure from the facility transformer to the distribution equipment located in the electrical room located in the lower level of the structure indicated on parking structure bridging documents. The conduit size and quantity will be based on estimated service size of 800 amps. The infrastructure shall be underground within the structure. Provided one spare conduit of equal diameter in each duct bank.
3. 480Y/277VAC main distribution equipment as well as ventilated, dry-type, 208Y/120VAC step-down transformer and associated distribution equipment will be housed in the electrical room. The main distribution equipment main breaker will be furnished with adjustable long time, short time instantaneous trip settings. The 208Y/120VAC power panel shall have an isolated ground in support of the data/communications room equipment.
4. Transformer grounding shall be provided meeting SCE requirements.
5. Power, control, and communication infrastructure to facility systems shall be via conduit embedded within the structure to the greatest extent possible. Minimum conduit size will be 1" with one spare of like size to all locations. Conduit infrastructure for power, data, and communications shall be installed to the following systems which include but are not limited to the following:
    i. Parking structure exhaust fan system.
    ii. Elevator machine room and pit.
    iii. All Structure lighting, power, and control. All lighting will be surface mounted LED with pole mounted, shoebox style LED on the upper level parking.
    iv. Storm water and elevator pit duplex sump pump system(s).
    v. Automated collection system stations (Pay Kiosks). Locations are as described under the Parking Access and Revenue Control Systems (PARCS) section.
    vi. Raised curb vehicle entry/exit gate equipment indicated on parking structure bridging drawings.
    vii. Parking structure vehicle count and dynamic parking availability sign equipment indicated on parking structure bridging drawings.
    viii. Lower level entry/exit fire door operation and notification interface.
    ix. Event area receptacles, shown on parking structure bridging drawings. Event area receptacles will be GFCI, wall recessed with weatherproof while-in-use covers. Each receptacle shall be powered by a dedicated 20 amp lighting control panel circuit, relay control located in the electrical room.
    x. GFCI convenience receptacles will be provided in the elevator machine room and elevator pit.
    xi. Convenience receptacles will be provided in electrical distribution equipment and data/communications rooms and near the parking collection/structure entry and exit equipment. Receptacles in the public areas will be housed in locked junction boxes.
    xii. Future upper level photovoltaic system infrastructure stub out (Three 2") to the lower level electrical room.
    xiii. Event area sound system interface with communications room rack mounted sound system equipment (two 2").

xiv. HVAC systems supporting the data, elevator machine, and electrical distribution rooms.
xv. Lower level air quality monitoring equipment (CO and O2) and associated headend notification equipment.
xvi. Fire detection/headend notification equipment and autodialer system.
xvii. Closed circuit television (CCTV) cameras and headend monitoring equipment monitoring stairwell, elevator level entries, and rampways.
xviii. Access control to authorized personnel only areas through security doors.
xix. Parking structure emergency phone (blue phone) system end devices and headend equipment.
xx. Elevator emergency phone.
xxi. Emergency lighting system battery bank and centralized inverter equipment.
xxii. Electric vehicle (EV) charging station. CalGreen Code identifies a dedicated 40 amp, single phase 208 service to each active EV. Estimated infrastructure for 18 stations total with 6 active as shown on parking structure bridging drawings.
xxiii. Electric track bird control equipment.
xxiv. Weatherproof device covers and weatherproof lighting fixtures shall be provided where required by the Elevator Code.

6. Disconnect isolation of elevator cabin and pit lighting and power shall be housed in the elevator machine room. Also housed in the elevator machine room will be the elevator main disconnect switch interlocked with the main distribution equipment circuit breaker shunt trip serving the elevator. Provide all required interlocks with Fire Alarm & Fire Protection System.
7. Metering provisions shall be provided in accordance with SCE requirements.

GLOBAL DESIGN CRITERIA

The following outlines the general requirements for all power systems:

General

1. Energy
   i. Title 24 requirements shall be used for lighting power density and for disaggregation of the power distribution system.
2. Power Distribution
   i. In general, large equipment will be served at 480V, three-phase, 60 hertz. The interior and exterior building lighting will be LED lighting served at 277V, single-phase, 60 hertz. General purpose receptacles, computer equipment, and some specialty lighting (if needed) will be served at 120V, single-phase, 60 hertz. Motors larger than 3/4 horsepower will be served at 480V or 208V, three-phase, three-wire, 60 hertz. Motors 3/4 horsepower or less will be served at 277V or 120V, single-phase, two-wire, 60 hertz.
   ii. Short circuit and arc flash hazard analysis will be performed per 2014 NEC and 2015 NFPA 70E requirements.

Security Systems

1. All security system equipment rough-in provisions, consisting of all backboxes and conduit with pull strings, will be provided per Security Consultant or Owner's requirements.

Telecommunication Systems

1. AT&T communications service shall be routed from the service point identified by the provider. Contractor will be responsible for public to private installation of primary underground duct bank. Duct bank conduit size, quantity, installation and cable requirements will be as required by the provider. The Design-Build Team will verify requirements with the provider.
2. Time Warner Cable (TWC) data service shall be routed from the service point identified by the provider. Contractor will be responsible for public to private installation of primary underground duct bank. Duct bank conduit size, quantity, installation and cable requirements will be as required by the TWC. The Design-Build Team will verify requirements with TWC.
3. Telecommunication system rough-in provisions, consisting of all backboxes and conduit with pull strings, will be provided per Technology Consultant and Owner's requirements.
4. 4'x8' backboard, painted with two coats of grey fire-retardant paint, will be in installed in this room, secured on all four corners of the backboard with an isolated ground four-plex installed adjacent to the backboard.
5. Provide bushings on all conduit ends.
6. Telecommunications ground bar.

STRUCTURE LIGHTING SYSTEMS REQUIREMENTS

The following outlines the general requirements for structure lighting systems:

General

1. LED lighting will be as described in the beginning of this Basis of Design narrative and as indicated on the parking structure bridging documents. A 7-year extended warranty, which will be evaluated on a case by case basis with each individual manufacturer.
2. LED shoebox style fixtures on the roof deck will be provided with 25' tall standard steel poles. Pole mounted fixtures shall be separately controlled to turn off, on, daylighting, and dimmable.
3. Stairway lighting shall have high, low, and off control through occupancy sensors and auto time switch per Title 24.
4. LED down lighting and decorative wall sconces at building entry areas.
5. Ground level elevator shall be designed with high end lighting fixtures for a suspended ceiling.

Code Requirements

1. The minimum lighting feeder and panelboard capacity will be designed in accordance with the CEC.

Light Levels per Space

1. Minimum foot-candle level in the garage will be designed to 1.0 FC.

Lighting Power Density Targets

1. Energy code compliance must be demonstrated.

Light Fixtures and Materials

1. LED Light Fixtures and Driver Specifications
    i. Drivers shall be high-efficiency, high power factor, with maximum 20% THD, and ROHS compliant.
    ii. Fixtures will be non-dim where not required by energy code.
2. Emergency Lighting
3. Emergency lighting will be designed to meet or exceed minimum levels prescribed by code. Under emergency lighting conditions, an average illumination of 1 foot-candle will be targeted with a minimum of 0.1 foot-candle between fixtures and maximum of 40 fc beneath fixtures.
4. All emergency lighting will be powered by battery bank and inverter. Inverter must be installed in an air-conditioned space with ventilation of battery space based on electrolytic volume.
5. Exit signs will be low wattage LED type with red letters. Exit sign locations shall be as indicated on the parking structure bridging drawings.

Light Switches and Cover plates

1. Lighting switches will be quiet type, toggle or key type, specification grade, color as desired by Architect or Owner.
2. Cover plates for wall devices will be coordinated with lighting controls and will match wiring device covers. All plates for multiple gang requirements will be one-piece combination.

LIGHTING CONTROL SYSTEMS REQUIREMENTS

The following outlines the general requirements for structure lighting control systems:

General

1. In general, a relay based automatic central control lighting system consisting of lighting control relay panels shall be provided with timed automatic control of spaces. All lighting, including garage lighting, exterior lighting, security lighting, and stairway lighting shall be provided and coordinated to meet the requirements of the Owner's operations and requirements of energy code Title 24, Part 6.
2. Automatic perimeter daylight harvesting will be provided (per energy code requirements) where required based on open free area of the garage walls. Daylight dimming will be used to modulate electric lighting based on amount of natural lighting in the space. The daylighting control system will be compatible with the automatic lighting control system.

3. Emergency lighting will be provided with emergency shunt relays for bypass of occupancy sensors during power loss.
4. Exterior lighting will be controlled by photocells either individually mounted on each luminaire or through the relay system.
5. Daylighting controls shall incorporate step dimming.
6. Fixtures shall be occupancy sensor controlled to allow power reduction to 30%.
7. Exit/entrance areas shall have transitional lighting zones which offers vehicle operator visual adjustment from exterior to parking structure interior and visa versa transitioning.

END OF ELECTRICAL NARRATIVE

FIRE PROTECTION DESIGN

This narrative gives a general overview and outline specification of the proposed Fire Protection materials, methods and systems for the new parking structure in Santa Clarita, CA. Detailed information and plan dimensions are presented in the parking structure bridging documents. All references to equipment sizing are based upon preliminary design estimates and are subject to adjustment as the design progresses.

APPLICABLE CODES

The parking structure fire protection services shall meet the requirements outlined in the following codes:

- 2013 California Building Standards Administrative Code
- 2013 California Electrical Code
- 2013 California Building Code – based on 2012 IBC with California-specific amendments (Title 24, Part 2)
- 2013 California Mechanical Code – based on 2012 UMC with California-specific amendments (Title 24, Part 4)
- 2013 California Plumbing Code – based on 2012 UPC with California-specific amendments (Title 24, Part 5)
- 2013 California Fire Code as amended (2014) by the Los Angeles County Fire Department (Title 24, Part 9)
- 2013 California Green Building Standards Code (Title 24, Part 11, aka CalGreen)
- 2013 California Energy Code (Title 24, Part 6)
- 2010 ASME A17.1 Safety Code for Elevators and Escalators

APPLICABLE STANDARDS

The parking structure fire protection services shall meet the requirements outlined in the following standards:

- Underwriters Laboratories (UL)
- National Electrical Manufacturer's Association (NEMA)
- Institute of Electrical and Electronics Engineers (IEEE)

- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- American Society of Heating, Ventilating, and Air Conditioning Engineers (ASHRAE)
- ASTM International
- American Refrigeration Institute (ARI)
- Air Movement and Control Association International, Inc. (AMCA)
- National Electrical Contractors Association (NECA) - National Electrical Installation Standards
- National Commercial and Industrial Insulation (NIA) Standards
- Occupational Safety and Health Administration (OSHA)
- Americans with Disability Act (ADA)
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

SEISMIC REQUIREMENTS

Seismic bracing, restraints, and controls for all fire protection systems shall be designed and installed in accordance with NFPA 13 and applicable Building and Fire Codes.

FIRE SPRINKLER SYSTEM

The below-grade level of the parking garage shall be provided with an automatic fire sprinkler system. The system shall be designed and installed in accordance with the requirements of National Fire Protection Association (NFPA) Standards and the applicable Building and Fire Codes.

The below-grade parking level shall be provided with a wet-pipe sprinkler system, hydraulically designed in accordance with NFPA 13. The fire sprinkler system shall be supplied by a 6-inch cement lined ductile iron fire protection service. A minimum Ordinary Hazard Group 1 design criteria (0.15 GPM/SF over 1500 SF hydraulic remote area) throughout all parking areas and storage areas. Minimum 250 GPM hose allowance is to be included at base of riser.

The five above-grade levels of the open parking garage are not required to be sprinklered in accordance with the California Building Code.

All levels of the parking structure shall be provided with a Class I manual wet standpipe system.

A fire pump may be required, pending water flow analysis, to meet the pressure demands of the sprinkler system. The pump will be sized to provide the flow and pressure demand of the sprinkler system as determined by system hydraulic calculations. Final size and necessity of the fire pump will be determined once water flow test information is received.

All piping in the parking structure shall be installed as follows:

- All piping 2-inch and smaller: ASTM A135 or 795, Grade A, Schedule 40, ERW, black steel pipe, threaded or roll grooved ends. All 1-inch piping shall have threaded ends.
- All piping 2-1/2" and larger: ASTM A135 or 795, Grade A, Schedule 10, ERW, black steel pipe, roll grooved ends.
- All piping on the exterior of the building shall be externally galvanized.

A double check detector backflow preventer assembly shall be installed on the fire entry line. The backflow preventer shall be located outside, above ground or in a precast, reinforced concrete vault, in accordance with AHJ requirements.

The sprinkler system shall be provided with a freestanding, 4-inch Storz type fire department connection. The fire department connect shall be an aluminum body with threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose connection inlet; 18-inch high brass sleeve; and round escutcheon plate. FDC outlet shall be provided with a 30 degree elbow. Hose connection shall match that of the local fire department.

A separate fire department connection shall also be provided for the manual wet standpipe system. The fire department connection shall be a 4-inch Storz similar to the sprinkler system FDC. Fire department connections shall be located within 25 feet from the nearest fire hydrant per Los Angeles County requirements.

Automatic fire sprinklers shall be installed as follows:

- Sprinklers: type and style as required by application. Sprinkler operating temperatures to comply with NFPA 13. Sprinklers in all areas shall be quick response type.
- Sprinklers shall be located to avoid obstructions as required by NFPA 13.
- Hydraulic elevators shall be provided with a sidewall sprinkler within 2' of the elevator pit per NFPA 13. Sprinkler protection will also be required in the elevator machine rooms.

Automatic fire sprinkler finishes as are follows:

- Parking garage: Upright type, rough bronze finish.
- Unfinished/exposed areas: Upright, pendent and sidewall type, rough bronze finish.
- Provide sprinkler guards on all exposed fire sprinklers in the parking garage.

Standpipe System

A Class I, manual wet standpipe system will be provided for all levels in accordance with NFPA 14 and local requirements. Fire Department hose connections will be provided in the building stairways with 2-1/2-inch valved and capped connections at each intermediate landing. Hose connections may be installed at the main landing levels if approved by the Authority Having Jurisdiction.

Fire Sprinkler Monitoring

A fire sprinkler system monitoring panel shall be provided in accordance with NFPA 13 and NFPA 72. The control panel shall monitor waterflow and supervisory initiating devices (e.g. valve tamper switches).

The control panel shall be UL listed, microprocessor based fire alarm control/communicator that provides addressable point monitoring or supports a minimum of 5 zones providing supervising station service. Microprocessor shall be capable of continuously monitoring and reporting system status of AC, standby battery, inputs and telephone line connections. In the event of a fault condition a local audible sound shall be activated and reported to supervising station.

The monitoring system shall have one notification appliance circuit for connection of the exterior bell or horn/strobe.

A keypad shall be provided and mounted adjacent to the fire sprinkler monitoring panel. Power requirements: primary power, 120-V ac, 60 Hz, 600 mA max; secondary rated 18-V ac, 40 VA. Backup battery: 12-V dc, 7 AH min to 14 AH max, lead acid (gel type).

Provide two telephone lines for off-site system monitoring in accordance with NFPA 72. Other monitoring methods permitted by NFPA 72 may be used subject to Engineer approval.

Subject to compliance with requirements, provide products manufactured by the following manufacturers: Fire-Lite, Potter, or an Engineer Approved Equal.

Fire Alarm System

A fire alarm system is not required to be installed in open or closed parking garages in accordance with the California Building Code.

END OF FIRE NARRATIVE

SECURITY AND TELECOMMUNICATION DESIGN REQUIREMENTS

General

This narrative gives a general overview and outline specification of the proposed Security and Telecom materials, methods and systems for the new parking structure in Santa Clarita, CA. Detailed information and plan dimensions are presented in the parking structure bridging documents. All references to equipment sizing are based upon preliminary design estimates and are subject to adjustment as the design progresses.

Codes

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- ASTM International
- American Refrigeration Institute (ARI)
- National Electrical Contractors Association (NECA) - National Electrical Installation Standards
- National Commercial and Industrial Insulation (NIA) Standards
- Occupational Safety and Health Administration (OSHA)
- Americans with Disability Act (ADA)

Seismic Requirements and Structural Considerations

Refer to structural for seismic requirements.

SECURITY

General

- This narrative describes the Electronic Security Systems planned for the secure operation and monitoring of the parking structure. The planning for systems described within this narrative presume the video surveillance system will be recorded locally and that authorized users will be able to access the system on site to review recorder video and administer system.
- The Electronic Security System (ESS) shall consist of a number of independent and discrete sub-systems, integrated to provide the user with a single system presentation for control and monitoring of security devices. Sub-systems comprising the ESS shall include an Access Control System, Video Surveillance System, and Emergency Call Box System.
- All electronic security sub-systems shall have a level of immunity to power interruptions as afforded by a UPS battery backup, be time synchronized, and employ a level of redundancy or failure recovery so as to minimize the loss of data, monitoring, and control.
- Manufacturers for installed equipment shall be as proposed by the selected Electronic Security System contractor, as selected from a list of established and proven manufactures provided within the project specifications.
- Security equipment shall be on emergency power with a 30-minute UPS battery backup to allow an orderly system shutdown in the event of commercial power failure.
- Facility security shall contain multiple access permissions levels, generally grouped as follows:
    1. Access class from most to least restrictive
        i. General public
        ii. Event staff and shows
        iii. Outside service personnel, vendors
        iv. City maintenance staff
    2. Facility security sub-systems shall generally be applied as outlined below, presented from the least to more secure general areas:
- Parking, pedestrian, and event areas:
    i. Video Surveillance
    ii. Emergency "blue box" wired call phones
- Utility (electrical, mechanical, telecom) rooms
    1. Video Surveillance
    2. Access Control
        i. Door control
        ii. Intrusion Detection

Equipment Rooms

1. Security system headend equipment shall reside principally within the Telecommunications Room as coordinated with the telecom design.
2. Dedicated floor mounted locking equipment cabinets having environmental and access monitoring shall be provided for security equipment.
3. All security cabling shall be routed in conduit from device installation location to the shared cable tray system, or be installed completely in conduit back to the serving security

equipment cabinet where cabling is not installed above accessible ceilings. Where installed about accessible ceilings, J-hooks and cable tray will be used.
4. Low voltage cable tray design shall accommodate security cabling where practicable.

Coordination

1. All pathways (raceways) shall be coordinated with Division 26 and 27; all cabinet locations shall be coordinated with Division 27. Firestopping components shall be coordinated with Division 7.

System Communications

1. Security systems shall reside on a converged facility Ethernet network utilizing a dedicated VLAN for security-related device connectivity.
2. Network switches shall provide Power over Ethernet (PoE), full output for each port, for powering cameras and other PoE capable security devices.
3. Network connected IP devices installed in excess of 290' from a network switch shall be connected by fiber optic cabling and low voltage copper power wiring.

Video Surveillance System

1. Video Surveillance system shall provide both live and recorded high quality images to assist security staff in assessing alarm situations, providing general surveillance, and to facilitate forensic investigations of security events.
    i. Cameras shall utilize IP (network) technology for both power (Power over Ethernet – PoE) and transmission of digital video streams over the security network.
    ii. These cameras shall be remotely viewable and recordable from an authorized network device.
    iii. Multicast network switching capability shall be provided to facilitate multiple station live viewing locations.
    iv. A centralized, server based Video Management System (VMS) shall reside on the security network for management and recording of video images.
    v. VMS shall be capable of:
        a. Remote access
        b. Multiplexed monitor viewing
        c. Simultaneous live and recorded viewing of video
        d. "Pushing" video to client alarm monitor stations
        e. Forensic image pixel searching
        f. Integration with Access Control System
        g. Providing simultaneous service to both local and remote users
        h. Mobile viewing of video (iPad, Smartphone, etc.)
    vi. Video Recording elements include:
        a. Direct attached storage to VMS servers
        b. RAID 5 hard drive storage arrays
        c. Sufficient hard drive space for:
            1. 30 days of video recording

2. Mildly compressed H.264 video files
   15 frames per second video

vii. Camera elements include:
   a. 1, 3, and 5 megapixel resolutions as the field of view requires for the level of detail needed
   b. 360 degree cameras where viewing of simultaneous approaches to an areas are needed.
   c. Power Over Ethernet (PoE)
   d. Wide Dynamic Range capable
   e. Low light capable
   f. Utilize H.264 compression
   g. IP 66 rating for exterior applications
   h. Have dedicated power when used outdoors to facilitate blowers or fiber optic media conversion.
   i. Cameras, both internal and external to the facility, shall be recorded by the VMS.

Emergency Call Box System

1. An Emergency Call Box system shall be deployed in pedestrian areas under control and management of the owner.
   i. Emergency call stations shall be easily identifiable and accessible from anywhere within the parking area.
   ii. Call activation shall be by single button for hands-free communication to the central monitoring service.
   iii. Call stations and peripheral areas shall be observable from the video surveillance system to assist staff with call assessment and situational awareness.
   iv. Secondary alarm reporting to the Access Control system to facilitate immediate remote alarm assessment through automated video surveillance image call-ups.

TELECOMMUNICATIONS/BASIC TELECOMMUNICATIONS ELECTRONICS REQUIREMENTS

1. A converged Ethernet and Internet Protocol (IP) based data network that utilizes a single data network backbone for transporting IP based connectivity to all building systems, applications, and users. This includes, but is not limited to:
   i. Administrative Data (Computers, Printers, and Scanners)
   ii. Building Management Systems, Building Systems Controllers (HVAC and Lighting)
   iii. IP Telephone
   iv. IP Surveillance Cameras, IP Security Controllers, Security Management System
   v. Wireless LAN Intranet (Wi-Fi), Wireless Public Internet (Wi-Fi)
   vi. Other data communications to be determined
2. The IP Network Electronics will be a combination of Core, Edge and Power over Ethernet (PoE) switches and routers providing Layer 3, routing, switching, traffic shaping, class of service (CoS), quality of (QoS), traffic prioritization, and IEEE 802.1q VLANs, etc. to provide secure separation of the various converged devices.

i. Core or Backbone Switches - Fully redundant Core/Backbone Switches with identical equipment specifications and mirrored configuration of the Primary Core Switch. The Core/Backbone Switches shall be modular and support a chassis configuration at the Core/Backbone Layer to support modularity, availability, and scalability with complete redundancy and support N+1 functionality. The Data Network shall be a multi-layer, that will support Ethernet based technologies such as Gigabit Ethernet (10/100/1000 Mbps), and 10-Gigabit Ethernet (10,000 Mbps), and other evolving high-speed interfaces such as 40 and 100 gigabit Ethernet for a variety of networks and network applications.

ii. Access or Edge Switches (IC Rooms) - Chassis-type and/or stackable-type with 48-port 10/100/1000 Mbps Ethernet supporting full power over Ethernet (PoE+) on each port.

iii. Internet, DMZ Network Switches and Firewall Appliances (Layered Security Infrastructure) Security and VPN Capabilities: Full featured, high performance firewall, intrusion prevention (IPS), content security, and Secure Socket Layer/IP Security (SSL/IPsec) VPN technologies delivering robust application security, user based and applications based access control, worm and virus mitigation, malware protection, content filtering, and remote user/site connectivity.

3. The voice communication system shall be a pure IP based system referred to as Voice over Internet Protocol (VoIP).
   i. Voice streams shall be digitized and packetized into IP datagrams between a VoIP call server and VoIP end-point (e.g., IP telephone or IP mobile phone). The VoIP communication system shall function and offer users the same fundamental features and functions as any legacy PBX voice communication system. VoIP desktop phones will connect to PoE+ powered RJ-45 ports for power, physical connectivity, and IP address assignment.
   ii. E911 VoIP connections must be enabled with the highest level of availability, redundancy, and alternate path communications and dual Telco entrance and demarcation points
4. The Wi-Fi Network will contain a Centralized Control Unit allowing management of the Controller and the connected wireless devices from any secured station within the network. A variety of indoor and outdoor access points with directional, multi-directional or high density antennas will be located throughout the parking structure to provide coverage of both internal and external areas around the facility.
5. The Distributed Antenna System (DAS) shall be a single broadband radio frequency (RF) infrastructure that supports a wide range of current and future wireless technologies, protocols, and services. It shall be able to supply wireless services to multiple applications concurrently.
   i. Will be a Neutral-Host System with a minimum of four (4) carrier distributed antenna systems to support all major and local Cellular Carrier signals, Public Safety Networks (PSN) and subsequent enhancement to support Wireless Service Providers (WSP) for Cellular Telephones and/or EWU-Facilities Radio System. The DAS coverage will be throughout the facility in all public and non-public areas and must be fully compliant with, meet and exceed the NFL Wireless Standards for 3G/4G DAS and Wireless Local Area Networks.

ii. Will be LTE, MIMO and AWS Ready including any and all formats, frequencies and standards available in the public and commercial cellular transmission and reception space.
iii. Will cover frequencies from 620-2700 MHz and shall include provisioning for Emergency Responder radio repeaters and Public Safety communications in collaboration with City of Santa Clarita, as well as the owner 2 way radio requirements.
iv. DAS design shall be developed and optimized using wireless software such as iBwave for establishing antenna locations based on electronic architectural drawings and various wireless frequency bands. Construction materials shall be inputted into the software program for structure, walls, floors, and ceilings. This software shall be used to predict antenna locations. Exact locations will need to be field verified using onsite wireless surveys as well as coordinating locations with Owner and Architect for approval.

BASIC TELECOMMUNICATIONS INFRASTRUCTURE REQUIREMENTS

1. Backbone/Riser Distribution:
   i. Main Communications Room / Data Center has single-mode OS2 fiber optic cables for interfacing LAN switch uplink connections between Core Backbone Switches and Edge Access Switches or Optical Line Terminals (OLT) and inter-room connections to servers and other data network equipment.
   ii. Each Intermediate Communications Room has single-mode OS2 fiber optic cables originating from the Main Communications Room / Data Center for interfacing LAN switch uplink connections between Core Backbone Switches and Edge Access Switches or Optical Line Terminals (OLT).
   iii. The Distributed Antenna System (DAS) Room has single-mode OS2 fiber optic cables and/or copper cables distributed to the Main Communications Room / Data Center for monitoring and control of the neutral host system.
   iv. The Demarcation/Service Entrance room has single-mode OS2 fiber optic cables and/or copper cables distributed to the Main Communications Room / Data Center for connection to internet service provider networks and local telephone company connections.

2. Horizontal/Riser Distribution:
   i. Each Intermediate Communications Room has single-mode OS2 fiber optic cables for interfacing devices on the optical distribution network (ODN); Category 6A cables for interfacing with traditional copper connections and hybrid (fiber optic/copper) cables for devices beyond 290' and requiring PoE.

3. Patch Cords:
   i. Connectivity to every network equipment port (fiber, copper, stack cables, etc.). This includes ALL equipment and/or device that are connected to the network as well as connecting the network equipment themselves. This is typical of Station Devices to Equipment (Computer, IP Telephone, etc.); IP Telephone to Computer Equipment; Patch Panels to Access Level Switches; Patch Panels to Core Level Switches, and

Interconnection of Network Components (Routers, Firewalls, DMZs, Data Center Switches, Servers, Service Provider Demarcation (WAN and PSTN), Analog Telephone Gateways, etc.).

ii. Single-Mode Fiber Optic Cable: Duplex LC Connectors with 2-strands single-mode fiber optic cable.

iii. Cat 6A: (#) RJ45/RJ45 Cat. 6A, 4-pair patch cords.

4. Pathways
   i. Cable Tray: Ladder type tray shall be a pre-fabricated structure consisting of two longitudinal members (side rails) with transverse members (rungs) welded to the side rails, for supporting and routing cables or conductors within the structure. Rungs shall be spaced on 6 inches on center. Rung spacing in radius fittings shall be 9 inches measured at the center of the trays width. Rungs shall have a minimum cable bearing surface of ¾ inches with radius edges. No portion of the rungs shall protrude below the bottom plane of the side rails
   ii. All telecom cabling shall be routed in conduit from device installation location to the shared cable tray system, or be installed completely in conduit back to the serving ICs where cabling is not installed above accessible ceilings. Where installed above accessible ceilings, J-hooks and cable tray will be used.

5. Fire Stopping
   i. Approved fire stopping will be provided at penetrations of all rated horizontal and vertical barriers.

6. Grounding
   i. All communication rooms will be provided with a ground bar and # 6 ground conductor connected to building grounding electrode system.

7. Lightning Protection (provided by electrical)
   i. As the result of the completion of a Lightning Risk Assessment as prescribed in Annex L of the 2013 edition of NFPA 780 – "Standard for the Installation of Lightning Protection Systems" it has been determined that a lightning protection system should be installed for this project.
   ii. A complete master label "Franklin" type lightning protection system will be provided in accordance with U.L. and NFPA requirements.
   iii. Down lead cables will be concealed in the exterior building walls and be bonded to ground loop.

BASIC TELECOMMUNICATIONS MATERIALS

1. Data Room
   i. Data Racks: Industry -standard, 19" x 7' Equipment racks shall be provided to support patch panels, network storage and transport equipment, and rack mounted uninterruptible power supply (UPS).
   ii. 7' H x 8" W vertical cable managers shall be provided on both sides of every rack.

iii. 2RU double sided horizontal cable managers shall be provided above and below all patch panels
iv. 2RU single sided horizontal cable managers shall be provided below all network switch gear
v. 1RU single sided horizontal cable managers shall be provided below all fiber enclosures
vi. Fiber cabling shall terminate in rack mounted fiber enclosures; separate fiber enclosures shall be provided for each TR being served from the Main TR. Adapter plates shall be provided to facilitate the termination of all fibers installed; blank plates shall be provided to fill unused positions.
vii. Horizontal copper cabling shall terminate on rack mounted modular patch panels in sequential order

2. Wireless Access (Wi-Fi) - High Density
   i. Wireless LAN Controller: A primary and redundant Wireless LAN Controller shall be provided; shall be installed with a minimum of (2) 10Gigabit Ethernet ports; shall support up to (5000) Access Points; Redundant power supplies and modules; WLAN configurations and management; shall support IEEE 802.11 a, b, g, IEEE 802.11 n draft 2.0, and 802.11 ac Wave 2 standards.
   ii. Wireless Access Points: Shall support IEEE 802.11 a, b, g, n, ac, (or highest available standard at time of procurement).

TELECOMMUNICATIONS SERVICE

1. General:
   i. Incoming telecommunications services to the development will ideally be fed to the parking structure by the local telecommunications companies. The utility companies will provide telecommunications services (telephone/Internet, Cellular, CATV, etc) to the site from their existing distribution vaults.
2. Interior Devices:
   i. Miscellaneous Spaces:
      a. The telecommunication and Wi-Fi outlets, each wired with two (2) full bandwidth data ports each shall be incorporated at various locations coordinated with the room layout
   ii. Parking, pedestrian, and event areas
      a. WIFI receptacles shall be incorporated to cover the locations
   iii. Electric vehicle charging stations
      a. Telecommunication outlets, each with two (2) data/voice receptacles, shall be coordinated with charging station equipment

MISCELLANEOUS EQUIPMENT CONNECTIONS

1. Data/Telephone connections will be provided to each elevator controller/emergency phone.
2. Telephone data wiring to ATM's.

END OF TECHNOLOGY NARRATIVE