

JUDGE DOYLE SQUARE - CITY OF MADISON PARKING FACILITY

MADISON, WI

PRE-DESIGN REPORT

NOVEMBER 23, 2016



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Introduction

Judge Doyle Square has been an opportune development site in downtown Madison for many years. A history of the development is included in the appendix, titled “Project Background”. This relates the process which culminated in the execution of the agreement with Beitler Real Estate Services to develop the property in a joint effort with the City of Madison. The selected team has been assembled to initially develop the City’s below grade parking facility which will serve as the foundation for the private development of apartments and retail above grade.

A Project Description

1 Comprehensive Development

The Judge Doyle Square development is located in the Central Area of Madison Wisconsin between East Doty and East Wilson Streets and consists of two blocks – Block 88 and Block 105 – on the east and west sides of South Pinckney Street. Block 88 is shared with the existing Madison Municipal Building, a four story limestone building of classical revival style that is listed on the National Register and has City of Madison Landmark status.

The development of Block 88 is programmed for an apartment building of approximately 155 units on ten floors with associated resident parking above grade, and a 600 car public parking facility in 5 levels below grade. The below grade facility will be built, owned and operated by the City of Madison, and the above grade residential development will be privately constructed.

Block 105 envisions a second apartment building of approximately 210 units and a hotel of approximately 250 rooms. Parking for this parcel will be in two levels underground, serving the hotel and residential with approximately 250 spaces.

Between the two blocks, Pinckney Street will be renovated to serve as not only a two lane street connecting Doty and Wilson Streets, but also a paved and landscaped public “piazza”. As the parking structure for Block 88 will extend beneath Pinckney to approximately the middle of the right-of-way, significant utility work and reconstruction will be necessary. The improvements envision a fountain in the middle of the “piazza” with sculptures celebrating bicycling. Landscape and exterior lighting will be incorporated into the design.

2 Parking Structure

The initial phase of the development will be the construction of the City of Madison’s below grade parking facility. It is the subject of this project to design the City’s Parking Facility. However, as an integral part of the overall program for these sites, the public and private program requirements will necessarily be accommodated and/or coordinated as part of the project.

The details of the program development will be outlined in the Program and Design Criteria sections to follow. In general, the parking garage will house approximately 600 cars, including a section for approximately 40 City fleet vehicles, motorcycle and bicycle parking.

B Project Team

Through competitive solicitation, the City of Madison awarded the Judge Doyle Square Development to the Chicago-based Beitler Real Estate Services (“Beitler”). For the City parking facility, Beitler advises the City as Development Consultant. The design team assembled by Beitler throughout the project, consists of Lothan Van Hook DeStefano Architecture, as Architects, with Halvorson and Partners, Structural Engineers, Affiliated Engineers, Inc. as MEP/FP Engineers, Walker Parking Consultants for parking design, Mead and Hunt, Inc. as Civil Engineers, Insite Consulting Architects as Associate Architects and Evans Consulting for cost consulting. Other consultants to the project, yet to be identified are: landscape architect and graphics and signage.

Services of CGC consultants for geotechnical engineering and JSD Professional Services for surveying have also been retained by the City.

Beitler’s design team has been directly contracted by the City of Madison for the development of the City garage design and through construction.

A project organization chart is included in the Appendix.

C Summary of Pre-Design Phase

1 Review of Project Phases and Design Schedule

The project schedule consists of six phases and their durations:

- Phase I: Pre-Design Phase – two months
- Phase II: Schematic Design Phase – two months
- Phase III: Design Development Phase – two months
- Phase IV: Construction Documents Phase – three months
- Phase V: Bidding Phase – four months
- Phase VI: Construction Phase – twelve months

The overall schedule for design is included in the Appendix.

2 Pre-Design Meetings and Process

The purpose of the Pre-Design phase is to gather information, generally define the program, physical requirements and constraints of the various elements of the project in order to inform the design phases. This process involved meeting with the various City department representatives including utilities planning, zoning, fire, building, traffic, and project designated representatives in September and October of 2016. In addition, private utilities and City subcontractors for geotechnical were consulted as well as entities representing the Madison bicycling community.

Meetings were held on September 2, September 21, October 12, and November 9, 2016 at Monona Terrace Community and Convention Center in Madison. In addition, Mead and Hunt, Inc., Civil Engineer, and AEI, MEP Engineer met with the various utilities on October 20, 2016.

D Project Schedule and Entitlements

1 Overall Project Schedule

The parking facility project schedule is based on a completion date of December 12, 2018. The garage completion is necessary before significant construction can occur above for the retail and residential portions of Block 88, and before the parking structure on Block 105 can be demolished.

2 Entitlement Process and Schedule

The entitlement process is as follows and is also included on the schedule in the appendix.

<u>Land Use Approvals</u>	<u>Start</u>	<u>Finish</u>
Request for State Historic Preservation Officer Review	12/14/16	2/14/17
Initial meeting with City Development Assistance Team	12/15/16	12/15/16
Presentation to Capitol Neighborhoods	12/14/16	12/14/16
Informational Presentation to Landmarks Commission	1/9/17	1/9/17
Informational Presentation to UDC	1/11/17	1/11/17
Written Pre-Application Notice	1/11/17	2/10/17
Landmarks Commission Applications	2/15/17	4/14/17
Two-Lot CSM Application	2/15/17	4/28/17
Land Use/UDC Application	2/8/17	4/7/17

E Program

1 Parking Facility

The City parking facility program calls for a minimum of 600 vehicles. This includes parking for approximately 40 City vehicles. In addition, at least six motorcycle spaces and a minimum of twenty short term bicycle spaces are to be provided. Access and egress for autos and pedestrians is to be provided from both Doty and Wilson Streets.

The Parking Utility has the following program/facility requirements:

- Access control system for public parking shall be the same as used in other City Parking Utility facilities. This shall include a car count system at each entrance that informs the customer of the number of available spaces.
- Pay on foot stations shall be provided at elevator lobbies at the street levels at both Doty and Wilson Streets, and other locations such as near the Customer Service Office as determined by the Parking Utility.
- Parking spaces to be 9 ft by 18 ft at a 90 degree parking angle. Aisles are to be 24 ft wide with a 26 ft wide end aisle.
- Clear overhead height is to be 8'2" clear at a minimum through any areas for accessible van parking and for City vehicle parking.
- The slope on speed ramps will be 10 to 12 percent, with shallower slopes at the transitions at the end of the ramps.
- A minimum of 2% of the number of public parking spaces will be signed and marked for use by vehicles with valid disabled plates or hangtags displayed.
- City fleet vehicle storage to be located on the second lower level below Wilson St. entry level.
- Provisions are to be made for electric vehicle charging stations. The 40 city fleet vehicles and eighteen additional spaces should have electric provisions, with capability to add more in the future. These provisions are rough-in only to facilitate future installation of charging stations.
- Lighting is to be dimmable LED. City Parking Utility staff shall review and approve proposed fixtures.
- All ceilings, walls, and columns to be white stained or light concrete.
- Maintenance and life cycle cost of options to be provided by parking consultant.
- Elevator lobbies to be glazed for visibility.
- Security cameras to be provided throughout facility, including all stairwells.
- Repeaters to be installed for below-grade cell and city radio service to maintain service on all levels.
- A central customer service office shall be provided near the entrance at Wilson Street. Office shall be a minimum 30' X 20', with room for a video monitor wall, two work stations, lockers, refrigerator, microwave oven, kitchen style sink, bathroom, employee break table, storage cupboards, security glass & transaction tray, heated and air conditioned air, and utility sink. Bathroom entrance should be out of line of sight of customers and accessible only from within the office.
- Variable overhead signage controlled by City staff in the central customer service office to be provided.

- Access and egress for motorcycle and bicycles is to be provided from Wilson Street via a dedicated path separate from the gated auto entrance. Provision for metered motorcycle parking shall be provided.
- Exterior signage shall be provided to clearly identify the public parking entrances.
- Ventilation shall include a fresh air system for the parking utility customer service central office and maintenance office.
- Parking bays shall have keyed 1.5" water hose connections at every level.
- Keyed ¾" hose bibs and drains in stairwells shall be provided.
- Stair treads should be poured in place and flush with stairs.
- Stairwells should have electrical outlets with locks every second level. Electrical circuits shall allow these electrical outlets to be turned off separately from other electrical equipment and lighting.
- Lighting in stair towers should be accessible from a ladder.
- Stairwells should have as much glass area as possible for security.
- Stairwells shall have stainless steel railings.
- Maintenance office to be provided with work bench, heated and air conditioned air, year round water, slop sink, drain, storage cabinets, an overhead door and a side door.
- Sweeper Room to be provided with a minimum 23' wide x 16'8" deep and minimum 9'11" w x 8'2" h overhead door and a side door.
- Parking Utility fiber optic cable service to Government East garage shall be maintained through the duration of the project.
- Sidewalks to have a minimum 6' wide clearance for plowing.
- The garage ventilating system will include variable speed fans with carbon monoxide and nitrogen dioxide sensors to control fans.
- The parking garage will be washed down on a semiannual schedule. Wash down water shall have provision to be diverted to the sanitary sewer.
- Sump pits and catch basins must be able to be cleaned by city. Currently the city's Vactor trucks clean these in other facilities, however they cannot clear sump pits and catch basins that are far below the ground level. Designer to propose system that will allow convenient access to cleaning by city.
- A small wood bumper, 18" w x 12" h, or similar surface, should be provided at the end of each space to provide an area for staff to post No Parking signs to take spaces out of service.
- Communication network plan to be coordinated with Parking Utility and City IT staff.
- Emergency/standby generator. A Separate backup natural gas turbine and generator to be provided for the public garage.

2 Building Utility Infrastructure

The public garage and the private development will require utility services that will require entrance at or below the first lower level. These will include:

- Electrical transformer vault. Vault requires direct ventilation to the exterior as well as direct access by Madison Gas and Electric.
- Electrical service entrance/distribution – separated for the garage and private developments.
- Incoming water, booster pumps and fire pump.
- Storm water and sewage ejector pumps
- Gas meter room
- Telecommunications service room

Additionally, garage ventilation will be required to extend through all levels of the garage, with fans located at or near first lower level. A combination of carbon monoxide and nitrogen dioxide sensors will be used as part of the ventilation control sequence to maintain minimum acceptable levels of air quality.

See the appendix for the infrastructure program analysis chart which details anticipated utility and program elements for the garage and the development above that must be accommodated.

3 Bicycle Center

The City of Madison has entertained the concept of a bicycle center in the downtown area since 2010 when the City commissioned a study with the consultants Kimley-Horn and Associates team. This document was made available to the design team to incorporate this facility into the program.

The City has prepared an RFP, with the assistance of Downtown Madison, Inc., for an independent entity to complete the development, lease, and operate the bicycle center. Although the program will be dependent to large extent on the successful operator's financial feasibility, the program for the facility would include:

- Bicycle storage, expandable in the future
- Lockers
- Showers and changing rooms
- Bicycle wash stations
- Bicycle repair
- Bicycle rentals
- Bicycle accessory sales

Program area is estimated at approximately 3,500 square feet; however, 5,000 square feet is being reserved in the design program at this time.

Location should be visible on the street with access on Pinckney Street.

4 Public Infrastructure and Utilities

- a. Utilities: There are utilities within the Pinckney Street right-of-way that will require relocating in order to construct the underground parking structure. These utilities include storm sewer, water main, sanitary sewer, and city owned electric (street lighting) and city owner fiber optic (traffic signals). There is also an existing telephone line (owner unknown) that shows up on the ALTA survey that would require relocation. Madison Gas & Electric (MG&E) has a live 2 inch gas line in Pinckney near the Wilson Street intersection that may require relocation. There is also a retired 6 inch gas main that has been abandoned in-place. MG &E has no electrical in Pinckney. There are no other known utilities in Pinckney Street. Charter has fiber communications facilities on the east side of Wilson Street. There are also many other utilities located in Doty Street and Wilson Street. MG&E can service the building from either Wilson or Doty. Affiliated Engineers has stated that a gas service from Wilson is preferred. MG&E prefers to service the project with electrical from the intersection of Doty & Pinckney. A meeting was held with the utility representatives from the City of Madison on October 20, 2016. For a detailed recap of this meeting please refer to the meeting minutes included in the Appendix. At this point City utility connections are planned to be made in Wilson Street with a possible second water lateral from Doty Street.
- b. Madison Planned Infrastructure Improvements: There are planned improvements, but solid dates have not been set. The planned improvements include repaving Wilson and Doty Streets, and upgrading the water mains looped around the isthmus. Sanitary and storm sewer are reviewed and considered for replacement when street reconstruction occurs.
- c. Pinckney Street Hardscape and Landscape. It is a goal of the design team to develop the Pinckney Street between Blocks 88 and 105 as a "room". This is envisioned as a piazza, created with a unit paving throughout, central fountain feature, and trees along the curved perimeter. These materials would bleed on to Wilson and Doty Streets in a manner to create a transition.
- d. Pinckney Street Fountain and ROW Development
Pinckney Street is an important north-south connector between the one way streets of Doty and Wilson, particularly when Martin Luther King Street to the west is closed for pedestrian festival type events. Accordingly, it is necessary to provide two lane traffic both east and westbound and also bicycle lanes. Bus stops will be required on a temporary basis for travel in both directions when rerouted during the MLK closures.

Traffic lanes to be minimum eleven foot width. Bicycle lanes to be six foot width. Sidewalk widths are six foot minimum; eight foot preferred.

Due to the nine foot elevation difference between Wilson and Doty Streets, the streets and sidewalks will be sloped and it will be necessary to interrupt the slope for entries to the building. This suggests multiple levels of the building "grade" level.

The envisioned center fountain will also need to step down the slope.

A 3 foot easement to establish a bicycle lane will be necessary on the northwest of Block 105. The requisite sidewalk widths will make it necessary to step the ground floor of that building away from the property line.

e. Site Photo Metrics

Site lighting and photo metrics are important concerns for safety, wayfinding, pedestrian comfort, and project identity. City of Madison street lighting standards will be incorporated as appropriate, although special considerations will need to be made for the site specific development requirements. Sustainable lighting needs to be evaluated as well. All these considerations will be part of the evaluation in design. This an item that is acknowledged, but is not yet addressed in the predesign phase.

5 Site Logistics

Again, this is a subject which will require more definition than can be presented at this phase of project development, but some general issues are noted as “programmatic”.

- It will be necessary to keep Pinckney Street open during construction. As the City parking structure will encroach into the Pinckney ROW, this may constrict this temporarily to a one-way condition. Access to the existing parking structure will need careful evaluation.
- Construction of the “private” phase of Block 88 over the “public” phase will be necessary while the parking garage is occupied and operational. This will require including protection of occupants in the structure, protection of cars and pedestrians entering and exiting the facility, access and protection of emergency responders, and protection and safety of pedestrians and vehicles on the adjacent thoroughfares.
- Placement of a construction crane during the construction of the private portion of the project

6 Sustainability

The consultant team and City of Madison are committed to planning and building an environmentally responsible facility. Although LEED does not recognize parking garages as a category for recognition, the Parksmart Certification program does. The points to be achieved to obtain this certification fall into four categories, including Management, Programs, Technology and Structure Design, and Innovation. Certification levels are Bronze, Silver and Gold, with a minimum of twenty points achieved in all categories.

Identification of the targeted points in each category will be a joint effort of the design team and the City during the design phases. The Parksmart Certification categories and points are included in the appendix.

F Design Criteria

1 Planning

a) Block 88

The Planning Criteria for Block 88 relates to the two basic elements, the below grade five level public parking facility and the above grade private, commercial, parking, and residential facility and the inter-relationship between them. It is essential that the relationship be complimentary and seamless. The public parking facility located below grade will only add to and enhance a context sensitive development. Its program criteria as delineated in the Walker Parking component of this report will ensure a first class facility. The nature of the below grade facility limits its above grade functional and aesthetic exposure to its vehicle and pedestrian access portals which will require sensitive aesthetic and graphic incorporation into the above grade development and the surrounding environment, while providing visibility for unfamiliar people looking for parking.

The challenge of the below grade portion of the parking facility is to create a facility that is functionally and operationally excellent with an environment that is organizationally clear, sustainable, and user friendly with communication and advertising technology throughout.

b) Landmarks /Historic Relationships

The adjacent MMB (Madison Municipal Building) to the west of the site on Block 88 is a historic building, listed on the National Register and declared a landmark building by the City of Madison.

The MMB is currently in progress with a large renovation project, part of which will be an addition to the east side of the building where the existing docks are located. In addition to the historic relationships to be addressed, the MMB project will require schedule and construction logistics coordination.

The relationship to the historic Madison Municipal Building impact on the development both by the public parking facility and the private component of the development will be addressed during the next design phase and as part of the entitlement process.

c) Planning and Zoning

The project site is located in the Madison Central area and the zoning district is the Downtown Core District. The Statement of Purpose for Downtown and Urban Districts is state as follows:

- Recognize and enhance Downtown as the civic and cultural center of the City and region; the seat of state, county, and city government, and a significant retail, entertainment, and employment center;
- Recognize and enhance the unique characteristics of Downtown neighborhoods;
- Recognize the architectural heritage and cultural resources of Downtown neighborhoods;
- Facilitate context-sensitive development;
- Foster development with high-quality architecture and urban design; and,
- Protect important views as identified in the Downtown Plan.

The project is located in the Capital View Preservation Limit area which limits building height to the elevation of the Capitol building column capitals, or elevation, Madison City datum. (Some exceptions apply for chimneys, elevator overruns, and equipment screening on existing buildings) Upper level setbacks are not applicable to the site.

Buildings of over 20,000 square feet or four stories must receive Conditional Approval and review by the Urban Design Commission.

A zoning analysis is included in the appendix.

The planning and zoning criteria as stated in the DC – Downtown Core District – Design Standards 28-071(3) (a) through (g) – which are summarized in the zoning analysis - indicate specific criteria that may conflict with the approved Judge Doyle Square Concept Submission. The development of the Schematic Design Phase will address these specific issues.

d) Site Access and Egress

Access and egress for Block 88 is delineated as follows:

Public Parking

Primary access and egress will occur off of Wilson Street. Secondary access and egress will occur off of Doty Street.

Private Parking

Access and egress will occur off of Doty Street.

Loading

Loading dock access will occur off of Wilson Street.

Public Parking Pedestrian Access

Pedestrian access will occur off Doty and Wilson Streets.

Residential Pedestrian Access

Residential access will occur off of Pinckney Street.

Bicycle Center Pedestrian / Bicycle Access

Pedestrian / Bicycle access will occur off of Pinckney Street.

Retail Pedestrian Access

Pedestrian access will occur off of Doty and Wilson Streets.

e) Block 105

The planning criteria for Block 105 have been modified from the original concept submission to include a below grade two level parking facility eliminating the above grade parking facility originally planned. In addition, the concept modification has reoriented the residential component allowing the concave portion of the tower to face east. These modifications allowed for the creation of a residential on grade access drive and drop off on the Northern edge of Block 105. Finally, this modification allowed the upper level terrace between the hotel and residential towers create a wider separation between the two towers for light and air on Doty Street and Wilson Street. The hotel remains in its former location, framing the Pinckney Street right of way.

Access and egress for Block 105 is delineated as follows:

Hotel Parking

Access and egress will occur off of Wilson Street.

Residential Parking

Access and egress will occur off of Wilson Street.

Loading

Loading dock access will occur off of Wilson Street.

Hotel Pedestrian Access and Drop Off

Hotel access and drop off will occur off of Pinckney Street.

Residential Pedestrian Access and Drop Off

Residential access and drop off will occur off of the new (to be named) access drive to the north.

f) Pinckney Street Right of Way

“A bold vision for the South-East area of the Central Business District”

In response to the goal stated above for the Judge Doyle Square Redevelopment, our team has responded to the challenge.

Perhaps the key element of this response is the Pinckney Street ROW component. Our concept is to create a unique urban “piazza” framed by the two concave buildings, creating an urban room or place. The area will incorporate the functional requirements of multiple lanes, bike lanes, bus stops, and drop offs; but in the context of an urban piazza with continuous paved surfaces and landscaping to delineate the sense of place. As in most traditional piazzas, some form of symbolism is incorporated to pay homage and define the space. The island basins with fountains are intentionally separated in the middle allow a 360° view of the urban room or place. To finish this vision, the two fountains will include motion in the sculptural form of bicyclers in action, enhanced by the use of the fountains. The nature and recognition of bicycles in the Madison Community and the overall environment became the motivation for the symbolism proposed.

2 Building Code

- a) The applicable building code for the City of Madison is the Wisconsin State Administrative Code, SPS 301-, Buildings, Safety and Environment, as applicable. The referenced adopted code is the International Building Code (IBC) 2009, however there is consideration being made to adopt the 2015 version of the IBC. As this is anticipated to be adopted in 2017, the 2015 code is the basis of the design for the Judge Doyle Square parking facility and subsequent phases. A code analysis has been prepared, and is included in the appendix.
Two meetings were held with Madison Fire Prevention to review the project.

b) High-rise Development

The building below and above grade will be considered as one building and as the height above grade is over 120 feet to the top occupied floor, it is classified as a High Rise Building of Type IA construction. Following are the features:

In accordance with the High Rise Provisions of the code, the fire resistance ratings may be decreased from Type IA to Type IB, except for columns.

Automatic sprinklers are required throughout per NFPA 13 (IBC 903.3.1.1). Water supply to the fire pump shall be via two mains located in different streets. Quick response sprinklers will be provided to the R occupancy areas (apartments) and the unheated garage levels will be a dry pipe system.

The following emergency systems will be provided:

- Smoke detection (IBC 907.2.13.1)
- A Class I Fire alarm system (IBC 907.2.13)
- A Class I standpipe system (IBC 905.3)
- Emergency voice/ alarm communication system (IBC 907.5.2.2)
- Emergency responder radio coverage (IFC 510)
- A Fire command center adjacent to the main lobby
- Mechanical or natural smoke removal at the building perimeter
- Standby Power for:
 - Fire command center power and lighting
 - Ventilation and fire detection for smoke proof enclosures
- Elevators
 - Manual start and transfer switches to be provided in the FCC for one car at a time in each bank.
- Emergency power for:
 - Exit lighting
 - Elevator car lighting
 - Emergency voice/alarm communication system
 - Automatic fire detection systems
 - Fire alarm system
 - Fire pump
- Two Fire Service Access elevators with Fire Access lobbies on each floor.
- Stairs serving the levels over 75 feet above grade will be pressurized.
- Phones in all elevators and fire command center.

3 Structure

a) Structural Description and Options

(i) Foundations

The foundations will consist of reinforced concrete spread footings approximately 5 stories below grade. Due to the dense granular soils at this depth, a very high maximum allowable bearing pressure of 30ksf has been proposed by the geotechnical engineer, CGC, in their 2010 reports, and will thus allow for reasonably sized footings. A concrete slab-on-grade above a permanent under-slab drainage system will form the lowest level of the parking garage structure. The perimeter reinforced concrete foundation walls will resist the horizontal pressures from the subgrade soils and water.

A temporary earth retention system will be required to facilitate construction of the underground parking levels. The first 4 underground levels are envisioned to consist of a conventional soldier pile and lagging wall with tiebacks or soil nails with shotcrete system. The lowest underground level may require a substantially more expensive secant pile or slurry wall approach needed to prevent water infiltration into the excavation.

Three options to the base scheme for the floor framing and floor to floor heights have been studied to determine the impact to the depth of the excavation. See attached drawings diagramming the following options:

- Option 2. 5 levels of parking with 45'-0" structural bays. Lowest level at elevation +836'-0".
- Option 3. 4 levels of parking with 45'-0" structural bays. Lowest level at elevation +846'-6".
- Option 4. 4 levels of parking with 30'-0" structural bays. Lowest level at elevation +851'-6".

The 30'-0" bays decrease structural framing depth and thus reduces required floor to floor height though slightly reduces available parking spaces. Option 2A minimizes structure and general floor to floor height as much as possible to provide the most cost effective alternative. It is believed that option 2A does not require the secant/slurry wall earth retention system, but still provides for ample parking spaces.

(ii) Parking Structure

Floor framing to consist of reinforced concrete slabs, beams, and columns. The garage layout consists of 3 rows of parking, with the east row ramping between levels. Typical column spacing is 30'-0". Slabs will be 8" thick with 6" thick drop panels, for a total structure thickness of 14". An optional floor framing layout which eliminates a row of columns along the North and South foundation walls creates a 45'-0" span, which would utilize wide, 26" deep concrete beams. The 26" deep beams will require additional floor to floor height. While the long span option does allow for some additional parking spaces, it may not justify the extra cost required for the beam framing and the more substantial excavation costs.

Entry and exit ramps utilize the South bay of parking and will generally be supported by the same slab and column layout. Where ramps divide the main bay, additional beams will be utilized.

The North bay of the parking garage extends below Pinckney Street. The roof level of this area will support the subgrade, paving, and live loads of Pinckney Street. Structural depths to accommodate the heavy loading required vary depending upon the column spacing option selected. 2'-0" thick for the 30'-0" bay option; 4'-0" thick for the 45'-0" bay option.

(iii) Above Grade Structure

A reinforced concrete apartment tower and parking / retail podium will be placed above the underground parking structure. The podium structure will continue the lower level structural framing systems and column layout upward. The columns, walls, and elevators will also extend vertical from the garage levels into the apartment tower levels to the greatest extent possible. Due to the curved outline of the apartment floor plan, some of the tower columns will need to transfer above the parking floors. This will be accomplished with reinforced concrete transfer beams. Post-tensioned reinforcement could be utilized to reduce the required depth of transfers. Transfer columns will be placed along the N-S grids of the garage columns such that columns only need to transfer in one plan direction. The typical residential tower floor system is envisioned to be 8" post-tensioned concrete slabs.

It may be desirable to transfer one or two podium columns above the parking garage entry ramps to facilitate traffic flow. This could be accomplished with story deep transfer girders at the level above the entry. Wall locations need to be coordinated with programming on that floor and would not be able to have openings.

Construction sequencing may dictate that the level 1 slab which would act as the roof over the parking garage would need to be designed to support heavy loading for trucks and material storage or shoring support of the floors above.

(iv) Structural Design Criteria – See Appendix

4 Mechanical, Plumbing, Fire Protection and Electrical Systems

a) HVAC

- (i) A point-of-use refrigerant-based, cooling system shall be provided for the elevator machine room.
- (ii) A point-of-use air handling system with refrigerant-based (cooling) and natural gas (heating) shall be provided for the parking attendant office space.

b) Parking Ventilation

- (i) Below ground parking garage ventilation system
The below ground parking garage shall be ventilated using a combination of supply and exhaust fans. Fans will operate at 480 volts and be direct-drive. Transfer fans and/or ductwork shall be used to draw outside air across all levels of the parking deck and avoid zones of stagnant air.

Two supply fans shall be located at each corner of the East Wilson Street side of the garage (four supply fans in total). Each corner shall have a common supply intake served from either an area well or a street level louver. Two exhaust fans shall be located on each corner of the East Doty Street side of the garage (four exhaust fans in total). Each corner shall have a common exhaust point served from either an area well or above grade louver assembly. Placement of intake and exhaust points shall be designed in accordance with ASHRAE 62.1 2016.

The speed of supply and exhaust fans shall be controlled by Variable Frequency Drives (VFD), linked to carbon monoxide and nitrous oxide sensors to vary the ventilation rate and maintain acceptable minimum levels of air quality. In accordance with the Wisconsin Building Code, automatic operation of the system shall not reduce the ventilation rate below 0.05 cfm per square foot of floor area and the system shall be capable of producing a ventilation rate of 0.75 cfm per square foot of floor area. The system shall be arranged to operate automatically upon detection of carbon monoxide at a level of 35 parts per million (ppm) by automatic detection devices. Alternate control sequences will be evaluated during detailed design, including minimum run times and durations, to determine the most energy efficient, control strategy while maximizing equipment life.

(ii) Pressurization of the fire access stair

A supply fan shall be used to create positive pressurization of the fire access stair in accordance with Code requirements, with space heating provided for freeze protection.

c) Electrical

(i) Normal Power Electrical Service

The facility will be fed from an electrical service from the serving utility company, MG&E. Dual 13.8 kV primary service feeders will be provided to an owner owned, MG&E controlled, vault located below grade along the East Wilson Street side of the building. Vault shall be adjacent to an outside wall to accept MG&E service. Vault construction and space planning shall comply with MG&E required standards. At this time, it is anticipated that the vault will be a network design which will contain (2) oil-filled transformers and some switching components to serve both the City of Madison parking structure and the private development above. Additional transformers may be necessary, pending estimated building loads.

The utility will provide a single (480V) secondary service from the networked vault to connect to the service entrance switchboard located in the main electrical room of the building. A second secondary service, sized to accommodate locked rotor in-rush, will also come from the vault to feed the normal side of an electric driven fire pump ATS that is part of the fire protection system. Except in the electrical room, fire pump room and outside the building, fire pump feeder shall be 2-hour rated.

The primary system service capacity will be designed to serve the calculated connected load of the facility plus anticipated future loads.

(ii) Emergency/Standby Power System

Emergency power for the facility will consist of an Emergency Power Supply (EPS) coupled to an Emergency Power Supply System (EPSS). The EPS will include a single diesel-operated engine generator set. The emergency power system will be a Level 1 system per NFPA 110.

The Emergency/Standby generator will be located in an exterior weatherproof and sound attenuated (target 63dB) enclosure. The emergency electrical room will be located adjacent to the generator. The generator will also feed the emergency side of an electric driven fire pump Automatic Transfer Switch (ATS) that is part of the fire protection system.

The emergency/standby power will be distributed to multiple automatic transfer switches segregated by system, per the National Electrical Code (NEC 700, 701, and 702).

d) Lighting

At a minimum, the lighting, including illuminance levels, shall meet standard design practices recommended by the Illuminating Engineering Society of North America (IESNA) as outlined in their recommended practice *Lighting for Parking Facilities*.

Normal Use Illuminance Criteria (fc)				
Garage Parking	Average Horizontal	Minimum Horizontal	Uniformity Horizontal Max/Min	Minimum Vertical ³
Vehicular Entries				
Night	5-10	2.0	10:1	0.5
Parking/Ramps	3-5	1.0	10:1	0.5
Elevator Lobby	15-20	5.0		
Stairs	10-20	5.0		

Horizontal illumination levels shall be measured at the floor and 30” above floor level. Point-by-point photometric computer analyses will be conducted to verify proposed lighting layouts meet illumination criteria.

In addition to following IESNA guidelines, the lighting shall meet the following objectives and requirements.

- Provide high level of visibility achieved by a combination of horizontal and vertical illumination to increase detection of pedestrian/vehicular traffic, particularly at intersections and corners. Special consideration shall be given to minimizing glare for drivers, by shielding direct view of lamp sources.
- Signage shall be easily readable, regardless of mounting elevation.
- The lighting system and its components shall be energy efficient. Only fixtures incorporating LED lamping shall be used. The installed Lighting Power Density (LPD) shall not exceed 0.2 W/sqft.
- Lighting shall operate at 277 volts.
- Innovative control strategies shall be utilized that allow automatic energy reduction for portions of the building during periods of infrequent occupant use. At a minimum, the lighting control system shall enable automated time-of-day and occupant-based control of all areas.

e) Plumbing

(i) Storm and Clearwater Drainage

A storm drainage system will be provided to convey rainwater from flat roofs and canopies to the existing site storm sewers. Secondary roof drainage will be accomplished by using a dedicated piped overflow drainage system separate from the primary storm drainage system which will discharge onto grade. Clearwater waste from air handling units and other devices and equipment that discharge clearwater will be conveyed by gravity flow through a separate piping system and will connect to the building storm drain.

Storm and clearwater drainage systems which cannot discharge to the storm sewer by gravity flow will be drained by gravity to a sump with duplex pumps and will be pumped into the building storm drainage system. Sump pumps will be connected to the emergency (standby) power system to permit operation during a loss of normal power.

(ii) Sub-soil Drainage

Sub-soil drainage will convey groundwater from exterior, below-grade walls and lowest level floor slab to a sump. The effluent will be piped into the building storm drainage system. Design criteria for the subsoil drainage system will be defined by the Geotechnical Report.

(iii) Sanitary Waste and Vent

A sanitary waste and vent system will be provided for all plumbing fixtures and other devices that produce sanitary waste. Plumbing fixtures will be drained by gravity through conventional soil, waste and vent stacks, building drains and building sewers to the existing site sewer. All fixtures will have traps and will be vented through the roof. Vent terminals will be located away from air intakes, exhausts, doors, openable windows and parapet walls at distances required by the plumbing code.

Sanitary wastes which cannot discharge to the sewer by gravity flow will be drained by gravity to duplex sewage ejectors and will be pumped into the sanitary drainage system. Sewage ejectors will be connected to the emergency (standby) power system to permit operation during a loss of normal power

(iv) Domestic Water

A combined domestic water and fire service will be provided, connected to City of Madison water utility. Two service laterals (currently estimated at 8" each) will extend from the existing 16" water main below East Wilson Street. A butterfly valve will be installed in the existing water main, between the service laterals, to provide redundant paths of flow into the building.

Domestic water will be provided to all toilet room fixtures, sinks, hose bibs, and any other devices that require a domestic water supply. Hot water at 120°F will be provided to all domestic fixtures and devices that require hot water. Hot water will be generated/stored using forced draft, natural gas condensing hot water heaters.

(v) Natural Gas

Natural gas will be piped to equipment as required to meet building needs. Gas pressure will be determined based on equipment requirements.

f) Fire Protection

A combined domestic water and fire service will be provided. Refer to the Plumbing section for additional information.

(i) Sprinkler Systems

The building will be protected throughout with hydraulically calculated sprinkler systems, which except for the below-grade parking levels and special protection needs, will be wet pipe systems. All areas of the building will be protected per NFPA 13, including electrical rooms, stair towers and mechanical rooms. Areas of the building subject to temperatures below 40°F will be protected by a dry pipe sprinkler system.

(ii) Fire Pump

The building standpipe and sprinkler systems will be served by a UL Listed centrifugal fire pump. The fire pump will be installed in a dedicated fire pump room. Per conversations with the City of Madison Fire Department, direct access from the building exterior is not required. At least 2 remotely-located fire department connections will be provided on the exterior of the building, at each elevation, in accordance with the Fire Department's requirements

(iii) Standpipe System

For automatic standpipe systems in a fully sprinklered building, the standpipe system will be designed and hydraulically calculated to provide a flow of 250 gpm at 100 psig residual pressure at the highest fire department valve located on the most remote standpipe. An additional flow of 250 gpm will be added at the next highest valve on that standpipe. Finally, 250 gpm flows will be added at the two next remote standpipes, bringing the total to 1,000 gpm.

G Program and Cost Implications and Comparisons for Depths of Basements

In development of the parking facility's program elements and the structure, the design team explored options to achieve the program with the minimum costs. The additional space needed to extend the firefighter's elevator core to the lower levels and accommodate incoming services rooms, along with more precise design input generally, made it likely that the program of 560 public parking spaces plus 40 City vehicles would require levels below a fourth lower level.

Working with CGC, the geotechnical engineers, it was also identified that a depth below approximately elevation 845 would incur significant costs as this was reaching below the lake levels. Costs in excavation, structure, waterproofing and construction means and methods significantly increase the costs at these levels. In analyzing this issue, the team continued to identify and examine several options to maximize the program and stay within the budget.

Evans Construction Consulting prepared an initial budget for the parking facility construction based on the initial proposed drawings of February 24, 2016. The Pre- Design Phase has identified the program requirements for the public parking facility in more detail which in turn required that additional options be generated for the owner's consideration. The base case and the options that are subsequently being examined at this point are discussed below:

Base Case (Option 1):

The base case for original budget purposes consisted of four levels at 10'-0" floor to floor and a 30 foot column bay short span structure. The fourth lower level was at elevation 850. The number of vehicles is 600. The base case budget is \$29,940,000. This initial section was based on concept information. With the additional design criteria and structural input generated during the Pre-design stage, the following additional options were generated.

Option 2:

This option maximized spaces on each floor by creating long-span bays of 45 feet on the North and South aisles of the plan. However, the structural depth of creating these long spans increases the floor to floor depth by an average of 10" per floor. Losses of area efficiencies, as discussed above, drive the program numbers down to a partial fifth level and a depth to elevation 836 with a total of 640 vehicles.

Option 3:

This option utilizes the long span bays and limits the depth to above lake level at elevation 846.5. This achieved 556 vehicles in four levels.

Option 4:

This option creates less efficient parking by reducing the structural spans back to the 30 foot column bay, but reduced the structural floor thickness. This achieved 540 vehicles in the four levels with the lowest level at elevation 851'-6".

The preliminary cost estimates of all the options generated during the Pre-Design Phase are over the base case (option 1) by 1.2% to 30%. It should be understood that the costs represented here are very preliminary and do not represent designed solutions, but conceptual planning solutions embedded with many assumptions. As the team develops the schematic design, more investigations and refinements will be necessary to keep the project within budget. The resolution of this item is the most critical element in defining the direction of the design and the priorities for program and the resulting cost implications for the public parking facility. These issues will be resolved in the Schematic Design stage.

H Summary and Next Phases

This pre-design report summarizes the information gathering, study, planning and progress of the project team over the last two months of September and October of 2016. Our team has developed the enclosed criteria, incorporated comments, requirements and recommendations through our meetings with the City of Madison to serve as a basis of the project design going forward. We look forward to continued positive interaction with the City in the future months in making the Judge Doyle Square project a success for everyone involved.

Next Phase: Schematic Design

Upon review and written approval based on the City Representatives Review of the November 3, 2016 "Pre-Design" Documents, the LVDA Team will incorporate comments / revisions and submit 5 sets of the Pre-Design Package to the City's Designated Representative.

The next steps will be Phase II – Schematic Design, which will continue the process and provide the following:

- Further definition of the design and engineering of the parking facility incorporating spaces relating the future apartment building above on Block 88.
- Discussion / implementation of sustainability options relative to Parksmart Certification
- Statement of Standard Cost of Block 88 / Parking Facility and site improvements
- Prepare documents to assist the City to obtain approvals relative to City Fire Marshall, City Engineering, Storm Water Management, Traffic Engineering, Madison Gas and Electric.
- Review site planning concepts with various City Agencies.
- Develop Project Time Schedule.

I Appendix

- a. Project Background
- b. Context Photos and Landmark Properties
- c. Project Organization Chart
- d. Project Schedule
- e. Parking Utility Program
- f. Building Infrastructure Program Analysis Chart
- g.
- h. Zoning Analysis
- i. Code Analysis
- j. Structural Design Criteria
- k. Construction Cost Estimate and Comparative Analysis
- l. Pre-Design Concept Drawings for Block 88
- m. Pre-Design Concept Drawings for Block 105
- n. Meeting Minutes

a. Project Background



Judge Doyle Square is a two-block area in downtown Madison, Wisconsin. It is the site of the Madison Municipal Building (MMB) (Block 88), Government East (GE) parking garage (Block 105) and has been identified by the city as a location with significant redevelopment potential.

This two-block area within the city has a rich and long history. In 1909 John Nolen created the Lake Monona Approach, a plan to tie the new Wisconsin State Capitol to Lake Monona by way of a Capital Mall lined by significant buildings. Later, in 1929 the Federal government built the United States Courthouse and Post Office on the east side of the mall between Doty Street and Wilson Street as the first of a series of civic buildings.

Judge James E. Doyle was a United States federal judge in the District Court of the Western District of Wisconsin, as well as a leader in the Democratic Party. Judge Doyle was nominated by President Lyndon B. Johnson April 29, 1965 and was confirmed by the United States Senate on May 21, 1965. He served as chief judge from 1978-1980 and presided for much of his career in a courtroom on the second floor in the United States Courthouse.

In 1979, under Mayor Paul Soglin, the City of Madison purchased the Federal courthouse building and Federal functions were relocated elsewhere. Renamed the Madison Municipal Building (MMB) by the City, the building was placed on the National Register of Historic Places on November 27, 2002. The building was also designated a City of Madison landmark by the Madison Landmarks Commission and Common Council. To this day, the building houses municipal offices. Judge Doyle's courtroom is now known as Room 260 and much of the history of the room remains.



The 520 space Government East parking garage was constructed in 1958, and is located on Block 105 (east of Pinckney Street, between Doty Street and Wilson Street). It has served a variety of parking functions over the years, but currently offers about 80% of its spaces to the public on an hourly basis while about 20% of the spaces are reserved for monthly pass holders. The GE garage is approaching the end of its useful life and it has become financially challenging for the City to continue to invest in its ongoing maintenance.

The Judge Doyle Square (JDS) site is bounded by Martin Luther King, Jr. Boulevard on the west, Doty Street on the north, Wilson Street on the south and on the east by a group of buildings that front mainly on King Street. (See map below) Pinckney Street runs through the site and defines Block 88 from Block 105. The eastern portion of Block 88, which is currently a surface parking lot for the MMB and the GE garage on Block 105 are currently identified in the Madison Downtown Plan (2012) as potential redevelopment and infill sites.

In 2010, the City recognized the development opportunity of this area and initiated a master planning project to form a bold vision for the South-East area of the Central Business District. Future planning for this area will place an emphasis on transit-oriented development (TOD), which will include enhancements to pedestrian, bicycle, local and intercity bus, and potential intercity passenger rail transportation. The redevelopment will include parking on both blocks and public improvements to create a lively, welcoming streetscape and urban environment as well as to better connect Judge Doyle Square to the Capitol Square, the Monona Terrace Community and Convention Center and John Nolen Drive.

In 2011 and early 2012, a planning team led by Kimley Horn and Associates developed a master plan for Block 105, and the City separately studied with Marcus Hotels and Resorts and Urban Land Interests options to develop additional hotel rooms on Block 88 to support the Monona Terrace Community and Convention Center. In July 2012, the Madison Common Council received the work products from those two planning initiatives along with staff recommendations, and directed that this Request for Qualifications/Request for Proposals process be initiated. The Council also directed that a hotel feasibility study be prepared to accompany the RFQ. These studies and reports can be found in the Gallery section.

The priority of this project was reinforced in July of 2012, when the Madison Common Council adopted a new Downtown Plan. This plan provides a vision for the next 20 years along with a comprehensive set of recommendations on how to achieve that vision, including one that reads: "Pursue the development of Judge Doyle Square to incorporate public parking, active ground floor retail uses and streetscapes, a significant amount of private development and a bicycle center, among other components, while respecting the historic characteristics of the Madison Municipal Building and surrounding historic properties."

A Committee has been appointed to oversee the solicitation of qualifications and proposals and the selection of the private development partner for Judge Doyle Square. The selection process will be in two phases: (1) Request for Qualifications (RFQ), from which it is anticipated that a short list of qualified teams will be selected; and (2) Request for Proposals (RFP), for the project design, construction, financing, ownership and management.

On February 5, 2013, the Madison Common Council authorized the issuance of the Judge Doyle Square RFQ. On April 30, 2013, four responses to the RFQ were received by the City of Madison. The Judge Doyle Square Committee conducted an initial review of the submittals, held public interviews, performed reference checks and recommended that JDS Development LLC of Madison, WI and the Journeyman Group of Austin, TX be invited to participate in the second stage, RFP process. On July 16, 2013, the Madison Common Council concurred in the Committee's recommendations and authorized the issuance of the Judge Doyle Square RFP. RFP responses were received from both teams on September 30, 2013.

The Judge Doyle Square Committee completed its analysis of the two RFP responses on February 3, 2014, and found that JDS Development LLC offered the best combination of project features, feasibility and development attributes which would strike the most advantageous balance for achieving the City's Judge Doyle Square goals and the potential best overall value. Having held 18 meetings since the Committee members were appointed by the Common Council in October 2012, it concluded its work and recommended that the Common Council provide negotiating instructions for the Mayor and the City Negotiating Team for a final development agreement. On February 25, 2014, the Common Council concurred and directed that the City enter into negotiations with JDS Development LLC to undertake a mixed use development called Judge Doyle Square and to report back by to the Common Council by August 15, 2014.

The Mayor appointed the City Negotiating Team on March 10, 2014. A total of twelve negotiating sessions were held through August 15, 2014 with the Negotiating Team reporting back to the Board of Estimates on six occasions during that period. On August 22, 2014, the City Negotiating Team issued its Report to the Common Council requesting that the negotiation period be extended through October 15, 2014 to allow the City Negotiating Team and JDS Development LLC to frame alternatives to significantly lower the level of City investment for further consideration and direction. On September 2, 2014, the Common Council extended the negotiation period with JDS Development LLC, directing the City Negotiating Team to work to significantly reduce the level of city financial participation for the project and to report back to the Common Council by November 1, 2014.

Five additional negotiating sessions were held and the City Negotiating Team provided updates to the Board of Estimates on two additional occasions. On November 3, 2014, the City Negotiating Team issued its report to the Common Council recommending that negotiations continue with JDS Development LLC based on the developments concepts presented in its report with a final development term sheet to be completed for Common Council consideration by May 1, 2015.

On December 2, 2014, the Common Council considered the Report of the City Negotiating Team and directed that negotiations with JDS Development LLC be terminated and a new Request for Proposals document be drafted for the Judge Doyle Square project to come back to the Council for consideration. At the January 6, 2015 Common Council meeting, a resolution was introduced for referral to the Board of Estimates to authorize the issuance of a new RFP for Judge Doyle Square.

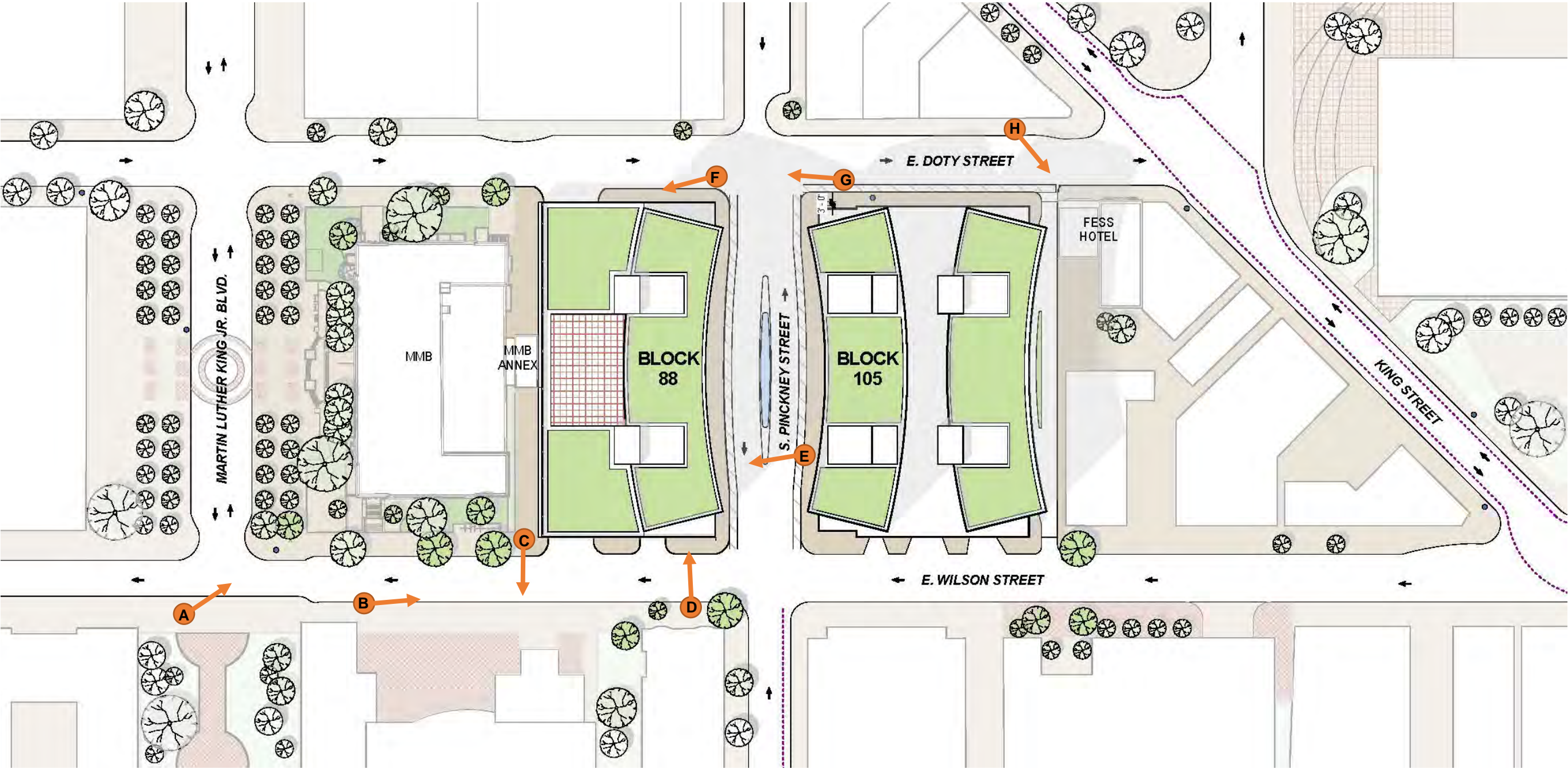
Four RFP responses were received on May 1, 2015 from Beitler Real Estate Services Joint Venture of Chicago, IL; Doyle Square Development, LLC, a joint venture of Urban Land Interests of Madison, WI, and the North Central Group of Middleton, WI; JDS Development, LLC, a joint venture of the Hammes Company of Madison, WI and Majestic Realty of Los Angeles CA; and Vermillion Enterprises, LLC of Chicago, IL.

The JDS Development LLC response proposed to locate the Exact Sciences corporate headquarters and research facility at Judge Doyle Square in a 250,000 square foot facility as a component of the project. On May 19, 2015, the Common Council directed that the City proceed to enter into an exclusive negotiation period with JDS Development LLC and Exact Sciences prior to negotiating with the other three proposers. Following the Common Council's action, the City Negotiating Team entered into negotiations with JDS Development LLC and Exact Sciences. On July 7, 2015, the Common Council approved a preliminary development agreement (which was executed on July 15, 2015), and directed the City Negotiating Team to continue negotiations on a final development agreement and to report back by August 25, 2015. On September 29/30, 2015, the Common Council considered an Amended and Restated Development Agreement and approved the agreement, directing the City Negotiating Team to work toward an anticipated real estate closing in December of 2015.

On November 2, 2015, Exact Sciences announced that it had decided to focus its future facility planning on its existing facilities at the University of Wisconsin-Madison Research Park and to end its plans for a downtown location. Following this announcement, on November 17, 2015, the Common Council adopted a resolution authorizing the next steps in the Judge Doyle Square development process. Consistent with its earlier direction on May 19, 2015, the Common Council directed that the City consider the three other teams that submitted development proposals on May 1, 2015, now that the exclusive negotiations with JDS Development LLC and Exact Sciences had concluded. The development teams were given until January 19, 2016 to make any desired revisions to their respective proposals and to address the City's required elements, and to submit those changes to the City. On January 19, 2016, the City received two updated responses to its Request for Proposals (RFP) to develop Judge Doyle Square from Beitler Real Estate Services Joint Venture of Chicago, IL and Vermillion Enterprises, LLC of Chicago, IL. The City's Board of Estimates conducted Interviews with each development team on March 9, 2016. On April 19, 2016, the Common Council received the Judge Doyle Square Negotiating Team's Report and the recommendations of the City's Board of Estimates, and adopted Resolution RES-16-00317 selecting Beitler Real Estate Services, LLC as the Judge Doyle Square Development Team with which to commence negotiations on proposal version B. The Common Council directed the Judge Doyle Square Negotiating Team to immediately initiate negotiations with the selected development team and to report back to the Board of Estimates by June 27, 2016 with a final term sheet.

The City Negotiating Team concluded negotiations with Beitler Real Estate Services and presented a proposed development agreement to the Board of Estimates on June 27, 2016. The Common Council adopted Resolution RES-16-00510 on July 5, 2016, accepting the recommendation of the Board of Estimates, authorizing the Mayor and City Clerk to Execute the Development Agreement with Beitler Real Estate Services LLC for the Judge Doyle Square Project, and directing follow-up actions by the City as described and agreed to in the Development Agreement.

b. Context Photos and Landmark Properties



KEY PLAN FOR SITE CONTEXT PHOTOS

JUDGE DOYLE SQUARE
CITY OF MADISON PARKING FACILITY
CONTEXT PHOTOS



A. The Madison Municipal Building from the Southwest



C. The Hilton and Capitol Chophouse to the East of the site



B. View North on Wilson Street



D. The existing site from East Wilson Street



E. Existing site and Madison Municipal Building from Pinckney Street



G. Doty Street looking West from Pinckney



F. Existing site and Madison Municipal Building from the Pinckney and Doty intersection



H. The Fess Hotel (Great Dane Pub and Brewing), National Register Listing and Madison Landmark

City of Madison – Public Parking Garage Block 88 – Site Information and Zoning

Neighborhood Name – Capitol Neighborhoods

Neighborhood Association Contact Information:

Jeff Vercauteren, PO Box 2613, Madison, WI 53701-2613, (H)608-445-

9384, president@capitolneighborhoods.org

Scott Kolar, P.O. Box 2613, Madison, WI 53701-2613, info@capitolneighborhoods.org

Neighborhood Association Meetings:

Place: Madison Central Library

Address: 201 W. Mifflin St.

Date: Executive Council: Fourth Tuesday of each Month (with adjustment in Nov & Dec depending on holidays). General Membership Meetings: Fourth Thursday of each month (may vary).

Time: 5:15 p.m.

Please contact neighborhood association to confirm meeting date, location, and time.

Adjacent Historic Landmarks:



215 Martin Luther King, Jr. Blvd. The monumental U. S. Post Office and Federal Courthouse (now the Madison Municipal Building) was erected in 1928-1929 to the designs of U. S. post office architect James Wetmore. It is one of the finest Neoclassical revival designs remaining in the city. The loading dock in the rear of the building is not historic and should not be included in a landmark nomination.



The Fess

Hotel (now the Great Dane Pub & Brewing) was established in 1856 by English immigrant George Fess. The original building was located westward of the current buildings, where the parking ramp is today. Around 1880 the cream brick section was built in a design to match the original building. The Queen Anne style east section was built in 1901, and designed by Madison architects Gordon and Paunack. The building was operated as a hotel by the Fess family until 1973, making it one of the longest running hotels in the city. The Fess Hotel is individually listed on the National Register and is a Madison Landmark.

TID District: 25

Urban Design District: We are not in an urban design district however our project will still need to be reviewed by the urban design commission as it includes a residential building complex, a large retail development (40,000 sf or more), and they also review signage.

Public Officials Having Jurisdiction and Contact Info:

Aldersperson: **Michael E. Verveer** - District 4 - district4@cityofmadison.com

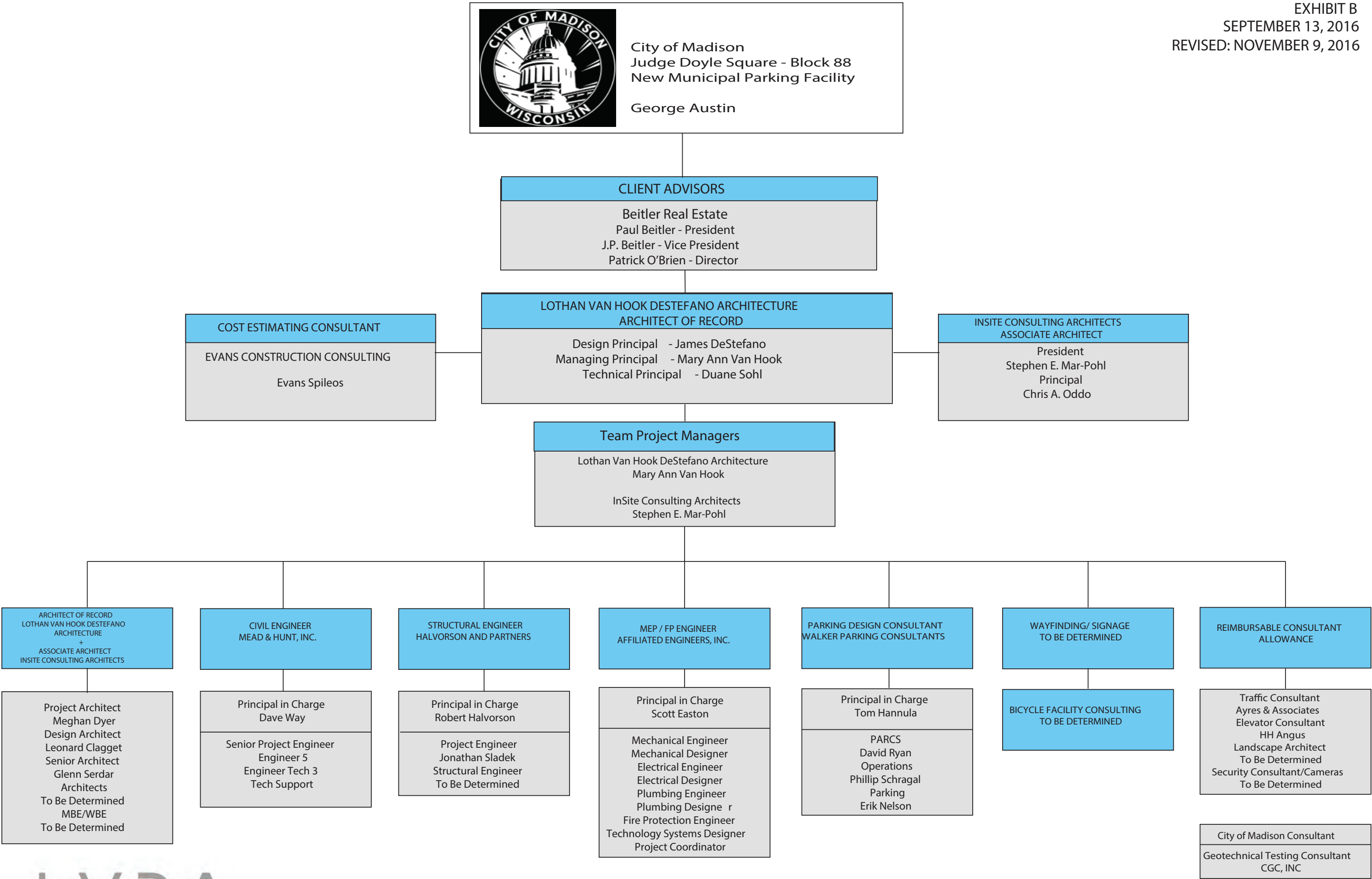
Dane County Board of Supervisors: Mary Koler - Cell: (608) 886-2640 kolar.mary@countyofdane.com

State Representative: Chris Taylor – Assembly District 76 - rep.taylor@legis.wisconsin.gov

State Senator: Fred Risser – Senate District 26 – (608) 266-1627

Zoning District: DC Downtown Core

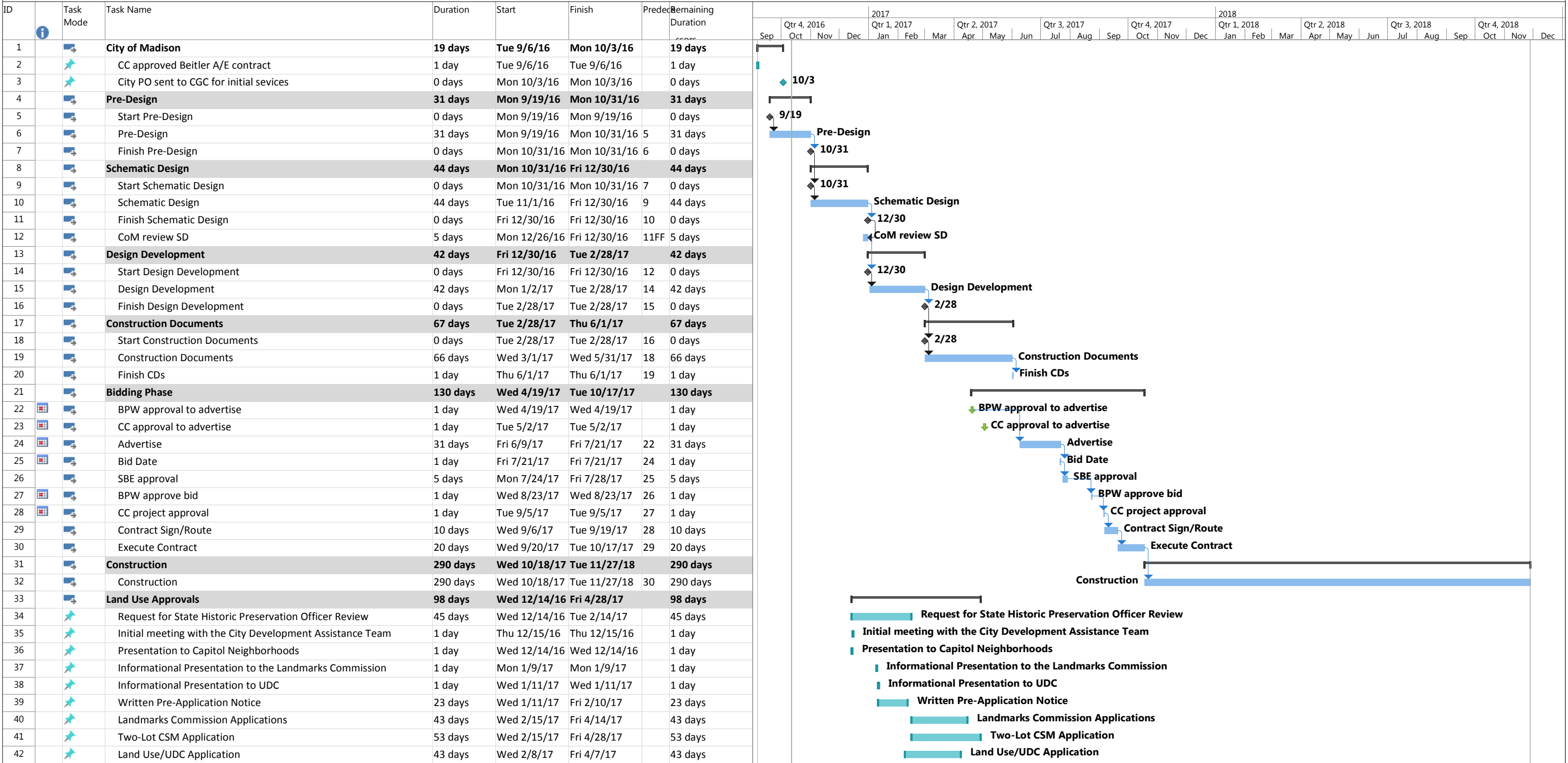
c. Project Organization Chart



d. Project Schedule

PLANNING SCHEDULE

JUDGE DOYLE PARKING STRUCTURE



e. Building Infrastructure Program Analysis Chart

program element	Resid/retail/garage	Location	Requirements	Access	Phase 1 = Garage 2 = Private Devel.	Area estimate	Room Dimensions (LxWxH)	Adjacency Requirements (Next to another room, exterior wall, etc)	Comments/Questions
Electrical Vault	resid, retail and garage	LL-1	Exterior wall for service entry	Elect company access		1 500 sf or 1000 sf	25' x 20' x 13' (for pair of network transformers per MG&E). Room size doubles if load requires additional transformer	Exterior wall with double doors for transformer removal, or area well if below grade.	Confirmed with MG&E this can be below grade with area well access for equipment removal and ventilation, with access through parking structure for "routine" inspection/maintenance.
			Elect company access Equipment replacement			If more than one transformer is needed to meet the facility load, the vault size will double to 1000 sf.			
Emergency Generator - shared facility?	resid, retail and garage	Assume mezzanine over ramp	Air intake and exhaust			1 450 sf		At least 20' away from any outside air intakes.	Two generators (one natural gas for City of Madison parking services, one emergency generator for the entire combined high rise development).
			Diesel exhaust						
Electrical service entrance / distribution - car park	garage	LL-1	close vicinity to vault	Garage engineers		1 300 sf	20' x 15' x 9' (minimum clear height)	Locate adjacent to MG&E vault	Combined electrical service(s) entrance and power distribution for City of Madison parking ramp.
Residential switchgear	residential	LL-1	Concrete encased conduits	Residential engineers		2 500 sf	TBD - based on program needs	Locate this at the private parking level.	
Water meter/ pumps	resid, retail and garage	LL-1	Exterior wall for service entry	Garage engineers		1 375 sf	15' x 25' x 9'	Exterior wall is preferred	
			Fire Dept access Water Dept access Fire pump(s), domestic pumps	Residential engineers Fire Dept Water Dept					
Ejector pumps			2 hour enclosure			1 225 sf	15' x 15' x 8.5'	Prefer exterior wall near point of Civil tie-in on lowest level of ramp	Need to determine if any storm water reuse is desired. This would require a storage tank and water treatment, i.e. additional space.
			Storm sewer and sanitary sumps and pumps	Garage/residential engineers					
Garage Ventilation System	garage	1st, LL-1 thru 5	Supply fan and OA intake louver			1 Two locations at 375 sf each	20' x 33' x 8.5' Includes 80 sf of shaft space within this footprint.	Prefer exterior wall locations as indicated on attached plans.	Ideally locate OA intake and exhaust air at opposite corners of building. Intake/exhaust air area wells and/or ducted to louvers required.

program element	Resid/retail/garage	Location	Requirements	Access	Phase 1 = Garage 2 = Private Devel.	Area estimate	Room Dimensions (LxWxH)	Adjacency Requirements (Next to another room, exterior wall, etc)	Comments/Questions
			Exhaust fan and louver			1 Two locations at 375 sf each	20' x 45' x 8.5' Includes 80 sf of shaft space within this footprint.	Prefer exterior wall locations as indicated on attached plans.	
Gas Meter Room	resid, retail	LL-1	Exterior wall for service entry	Residential engineers	1, 2	200 sf		At this time we assume placement on exterior wall and no boosters necessary. Refer to plan markups	Area completely dependent on quantity of meters (currently assume one per tenant on 1st and 2nd floors, one for all of the residential units and one for the City parking ramp)
Telecommunicaitons Service Room (MDF)	residential	LL-1	Exterior wall for service entry	Residential engineers		1 200 sf	12' x 16' x 9'	Prefer exterior wall at point of fiber service entry	
Garage passenger elevators (2 banks)	garage	1 to -5 level	Pits at LL5 elevator machine room Vestibules	Public Garage engineers Public		600 sf / flr			
Fireman's elevator	resid, retail, garage	All floors	4000 lb cab for stretcher			80 sf			
Fireman's elevator lobby	resid, retail, garage	All floors				150 sf / flr			
Triple basin		Lowest Level(?)							We are not anticipating this to be necessary, but confirmation is required.
Garage Exit stairs	garage	1 to -5 level		Garage engineers Public		350 sf / floor			
Residential exit stairs	residential	level 1	Residential stair discharge	residents		200 sf each			
Residential lobby and elevators	residential	level 1	Elevators for residential Security / office mailboxes	residents residential mgmt.					

program element	Resid/retail/garage	Location	Requirements	Access	Phase 1 = Garage 2 = Private Devel.	Area estimate	Room Dimensions (LxWxH)	Adjacency Requirements (Next to another room, exterior wall, etc)	Comments/Questions
			Pits at LL-1 (suspended)	Private engineers					
			Dock access to service car	Private engineers					
Sprinkler valve closet	garage	1 to -5 level	heated closet	Garage engineers		20 sf / floor			
Garage Customer Service office	garage	LL-1 or 1	Access from main entry	Garage mgmt., Public		600 sf			
Employee washroom	garage	LL-1	Adjacent to management office	Garage mgmt.		50 sf			
Maintenance Office	garage	LL-2	Adjacent to Vehicle storage	Garage mgmt.		500 sf			
SSCo Sweeper Room	garage	LL-2	In vehicle storage	Garage mgmt.		700 sf			
Frances Sweeper Room	garage	LL-2	In vehicle storage	Garage mgmt.		450 sf			
Vehicle Storage	garage	LL-2		Garage mgmt.		40 spaces			
Bicycle Parking	garage	LL-1 or 1 for garage	Near entries	Public		20 spaces - temporary			
Bicycle Parking	retail	Assume outdoors	Within 100' of retail entry.	Public		22 bikes - Rack type			
Bicycle Parking	residential	Assume level 3	1/2000 sf guest type spaces Convenient access off street. 90% long-term..	Residential		156 long-term spaces - 3000 sf			
Loading Dock	Residential	Level 1	128,200 sf resid = 2 spaces @ 10' x 50' ²	Off Doty or Wilson		1200 sf			
			Dock platform			100 sf			
			Trash and recycling room			200 sf			
Dock staging / storage	retail, residential	Level 1							
Dock office	retail, residential	Level 1				100 sf			

¹ Parking garage requirements not clear. Assume 2 spaces for employees.

² Provisions exist for combining loading for "adjacent" uses

f. Parksmart Certification Standard



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Introduction

Did you know that transportation in the U.S. now emits more greenhouse gas emissions than power plants,¹ and that parking is one of the largest land uses in cities?² Over the next 20 years, the number of cars in the world is projected to increase even more—to grow from 1.2 billion to almost 2 billion.³ Vehicles are parked for roughly 95% of their lifetimes,⁴ yet we rarely think about how parking spaces affect the environment. In fact, in the U.S., there are upwards of 2 billion parking spaces for roughly 300 million vehicles.⁵

In a time of growing desire for more livable communities alongside a rising concern about our planet, sustainable mobility has become a growing movement. A century after the emergence of the Model T Ford, parking facility owners, developers, planners, architects, operators, policy makers and others are moving from a narrow “Where do we put the cars?” approach toward an integrated vision enabling more varied and sustainable means of mobility. This emerging approach integrates evolving technologies, multimodal mobility, connected cars, consumer choice, smart parking and intelligent transportation innovations.

The parking industry has a unique opportunity: buildings and transportation are the two biggest drivers of CO₂ emissions globally and investors, property owners and consumers are looking for greener solutions. How we operate our parking can significantly reduce our environmental impacts, especially regarding carbon emissions, pollution and fuel consumption. Through collaborative, integrated and innovative green parking practices, we can promote sustainable mobility for all.

Enter Parksmart – formerly Green Garage Certification – the world’s only rating system defining and recognizing sustainable practices in parking structure management, programming, design and technology. Developed by industry experts, the Parksmart framework is a voluntary, consensus-driven standard that guides projects toward innovative, solutions-oriented strategies.

Serving both existing and new parking structures in all markets, including commercial, university, municipal, hospital, retail and hospitality, Parksmart certification allows parking structures to:

- Increase energy efficiency and performance
- Reduce environmental impact
- Offer better lighting and ventilation
- Develop efficient parking structure management
- Promote alternative modes of transportation

- Integrate sustainable mobility services and technologies
- Diversify their mobility options and create stronger community relationships

The Parksmart standard outlines 48 approaches garages can employ to achieve certification and is organized in three major categories, with an added area for innovations:

- Management highlights ways in which garage operations can maximize the use of a parking asset while minimizing waste. Embracing these practices ensures facility staff utilizes resources to their full potential.
- Programming guides garages to new revenue sources, greater customer satisfaction and stronger community relations. Green parking programs ensure effective vehicle ingress/egress, provide access to alternative mobility solutions, and leverage the garage’s potential as a public space.
- Technology and Structure Design measures outline the physical attributes a garage can deploy to increase energy efficiency, lower waste and support customer mobility choice.
- Innovative sustainability initiatives not yet included within the program are incorporated through an Innovation category.

The 48 elements of the Parksmart program offer a menu of options for enhancing the sustainability of a parking structure, allowing asset owners to select those initiatives that are most well suited for their operation. Points are assigned to specific measures based on environmental impact, achievability in new and existing structures and relevance to the economics of the asset. A total of 248 points are available, with Parksmart achieved by meeting minimum thresholds for existing and new parking structures.

We know that today’s parking structures, practices and business models will not be the same as tomorrow’s. Parksmart accelerates the transformation of the parking and mobility marketplace to improve the quality of our built space, mitigate the current challenges associated with parking and enhance sustainable mobility.

1 Plummer, B. (2016, July 13). Power plants are no longer America's biggest climate problem - Transportation is. Retrieved August 11, 2016, from www.vox.com/2016/6/13/11911798/emissions-electricity-versus-transportation

2 Curry, M. (2014, March 20). Rock Star or Comedian? Donald Shoup Takes His Parking Show to Berkeley. Retrieved August 11, 2016, from www.la.streetsblog.org/2014/03/20/ucla-prof-shoup-talks-parking-in-berkeley/

3 Shepard, S., & Jerram, L. (2015). Transportation Forecast: Light Duty Vehicles - Light Duty Stop-Start, Hybrid Electric, Plug-In Hybrid Electric, Battery Electric, Natural Gas, Fuel Cell, Propane Autogas, and Conventional Vehicles: Global Market Forecasts, 2015-2035 (Executive Summary). Navigant Research. www.navigantresearch.com/research/transportation-forecast-light-duty-vehicles

4 Barter, P. (2013, February 22). "Cars are parked 95% of the time": Let's check! Retrieved August 11, 2016, from www.reinventingparking.org/2013/02/cars-are-parked-95-of-time-lets-check.html

5 Chester, M., & Horvath, A. (2011). Parking Infrastructure and the Environment. Access, 39 (Fall 2011), 28-37. University of California Transportation Center. www.accessmagazine.org/wp-content/uploads/sites/7/2016/01/access39_parking.pdf

Elements of Parksmart Certification

Management	Max Points
Parking Pricing	6
Shared Parking	6
TMO/TMA	4
Recycling Program	4
Sustainable Purchasing Program	2
Proactive Operational Maintenance	6
Cleaning Procedures - Occupied Spaces	2
Cleaning Procedures - Parking Decks	6
Building Systems Commissioning	8
Construction Waste Management	6
Regional Materials	6
Regional Labor	4
Reused/Repurposed/Recycled Materials	6
Third Party Sustainability Certification	12
Credentialed Management	4
Life-cycle Assessment	8
Total Management Points	90

Programs	Max Points
Placemaking	6
Access to Mass Transit	4
Wayfinding Systems - External	4
Wayfinding Systems - Internal	4
Traffic Flow Plan	4
Carshare Program	6
Rideshare Program	6
Low-emitting and Fuel-efficient Vehicles	4
Alternative Fuel Vehicles	6
Alternative Fuel Fleet Vehicles	4
Bicycle Parking	6
Bicycle Sharing/Rental	6
Marketing/Educational Program	4
Total Programs Points	64

Technology and Structure Design	Max Points
Idle Reduction Payment Systems	4
Fire Suppression Systems	2
No/Low VOC Coatings, Paints, Sealants	2
Tire Inflation Stations	2
EV Charging Stations	6
HVAC Systems - Occupied Spaces	6
Ventilation Systems - Parking Decks	6
Lighting Controls	8
Energy-efficient Lighting System	8
Stormwater Management	6
Rainwater Harvesting	4
Greywater Reuse	2
Indoor Water-efficiency	2
Water-efficient Landscaping	2
Roofing Systems	6
Renewable Energy Generation	12
Design for Durability	6
Energy Resiliency - Storage	4
Total Technology & Structure Design Points	88

Innovation	Max Points
Innovative Approach	6
Total Innovation Points	6

Total Parksmart Points	248
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Parksmart Award Levels / Existing Facilities	
Certification level	Points
Parksmart Pioneer	90+

Required minimums in Management, Programs and Technology & Structure Design categories: 15 in each category

Parksmart Award Levels / New Construction	
Certification level	Points
Parksmart Bronze	110 - 134
Parksmart Silver	135 - 159
Parksmart Gold	160+

Required minimums in Management, Programs and Technology & Structure Design categories: 20 in each category

g. Zoning Analysis

Zoning District:	DC – Downtown Core District
Permitted Uses: (Table 28E-2)	Most uses are permitted or conditionally permitted except warehouses, 1-3 family dwellings.
Height and Setbacks: (28-071(2))	Height limit: Capitol View Preservation Limit - Setbacks: Not applicable
Design Standards: (28-071(3))	<p>(a) Parking: Must be in structures, underground, or behind principal buildings. Entrance doors must be min 10' from front property line, max 16' high, max 22' wide.</p> <p>(b) Entrances: Primary entrance must face the primary abutting street and be architecturally delineated with overhangs, landscaping, canopies, etc.</p> <p>(c) Façade articulation: Facades over 40' in width to be modulated with vertical divisions, window bays, balconies, etc.</p> <p>(d) Story heights: Ground floor min height 12', max 18'. Upper stories not to exceed 14'. Average ground floor elevation not lower than grade, nor higher than 18".</p> <p>(e) Door and window openings: Ground floor non-residential to be min 50% glazed. Upper levels, min 15% glazed. Glazing to be clear or slightly tinted. Spandrel glass may be used at service areas.</p> <p>(f) Façade materials to be per table 28E-1.</p> <p>(g) Equipment must be screened. Rooftop equipment to be set back 1-1/2 times its height.</p>

Downtown Core District (28.071)	Design Review: Buildings over 20,000 sf or 4 stories must receive Conditional Approval and to be reviewed by the Urban Design Commission. Director of Planning may approve minor adjustments.
Maximum Building Height: (17-4-0407)	No maximum, but PD required if over limits stated above.
Building Height (28.134(1), (3))	<p>(b) Principal buildings: height is the average height of all building facades, measured from grade to the highest point on the roof. No façade shall be more than 15% above the maximum height of the zoning district.</p> <p>(c) For new buildings height shall be measured from the natural grade prior to redevelopment</p> <p>No portion of the building shall exceed the elevation of the base of the columns of the Capitol Building, or 187.2 ft City datum. (City datum 0.00 ft = 845.6 ft above sea level.)</p>
Open Space (28.140(1))	<p>(a) Usable open space at ground level to be compact, min 200 sf, min 8' on a side, no greater than 10% grade.</p> <p>(b) May not include driveways, parking. May include 5' path.</p> <p>(c) In Central area, required landscape may be included as usable open space.</p> <p>(d) Roof decks and balconies may constitute up to 75% of open space. Balconies min 4.5' dimension. Roof decks min 15' dimension, open to all occupants.</p>
Off-Street Parking: (28.141)	Minimum: No minimum (Central Area) Maximum: Residential: 2.5 / dwelling unit Retail: 1/200 sf Hotel: 1.5 per bedroom Shared parking may be authorized per 28.141(7)

Bicycle spaces:	Residential: 1 per unit up to 2 bedrooms, ½ space per add'l bedroom, 1 guest space per 10 units. 90% must be long term- enclosed and secured – 2.5' x 6' with 5' aisle. 25% may be vertical or wall mount. See 28.141(11) Retail: 1 per 2,000 sf – min 90% guest – within 100' of principal entrance Hotel: 1 per 10 bedrooms – min 90% guest – within 100' of principal entrance.
Off Street Loading: (28.141 (13))	Locate min 25' from intersection. Min size 10' x 50' x 14' high for over 20,000 sf. For lodging: 2 spaces 50k to 200k sf. Retail: 2 spaces for 20k to 100k sf. (Note Shared Loading – 2 or more uses on <i>adjacent zoning lots</i> may share a loading area.)
Landscaping (28.142)	See section for calculation of landscape points.
Development Adjacent to a Landmark (28.144)	Subject to review by the Landmark Commission
Mixed Use and Non-Residential Building Forms (28.173)	Principal entry directly off primary abutting street. Ground floor façade on primary street to be min 40% storefronts, stoops and patios. Maximum building length on primary street 160 ft without significant façade articulation. Facades facing streets to be articulated max 40' intervals. Entrances to be provided at least every 40 ft.
Parking Building	Upper floors to be designed to not express sloping floors. Windows or openings to reflect adjacent structures. Max length 300' without significant articulation. Facades facing streets to be vertically articulated at min 40' intervals.

h. Code Analysis

**JUDGE DOYLE SQUARE
PUBLIC PARKING FACILITY
Madison, Wisconsin
Building Code Analysis**

November 1, 2016

1. Applicable Codes

- A. Madison Code of Ordinances:
Chapter 6: Fire Department and Fire Regulations
Chapter 18: Plumbing Code
Chapter 19: Electrical Code
Chapter 28: Zoning Code
Chapter 29: Building Code (dwellings)
Chapter 34: Fire Prevention Code
Adopting: The International Fire Code – Current, as modified by this chapter
- B. Wisconsin Administrative Code
Chs. SPS 361-366 Commercial Building Code
Adopting: The International Building Code – 2009 as modified by SPS 362
The International Energy Conservation Code – 2009 w/ SPS 363
The International Mechanical Code – 2009 w/ SPS 364
The International Fuel Gas Code – 2009 w/ SPS 365
In anticipation of adoption of the 2015 IBC, this analysis reflects 2015 codes.
Chs. SPS 380-387 Plumbing Code
Chs. SPS 314 Fire Prevention
Adopting: NFPA 1– 2012 as modified by SPS 314 (Excludes design reqm's)
Chs. SPS 316 Electrical Code
Adopting: NFPA 70– 2011 NEC as modified by SPS 316
- B. Accessibility Code:
Americans with Disabilities Act Accessibility Guidelines (ADAAG)

2. Use and Occupancy Classification

- 2.1 Use Groups and Occupancy Classifications

Storage: Low Hazard – Group S-2 IBC 311.3
- 2.2 Accessory Occupancies IBC 508.2
Accessory occupancies are subsidiary to the main occupancy of the building or portion thereof. Aggregate accessory occupancies shall not occupy more than 10% of the area of the story in which they are located and shall not exceed the tabular values in Table 503 for allowable height and area without allowed increases for such accessory occupancies.
- 2.3 Mixed Occupancies / Nonseparated Occupancies IBC 508.3
- 2.3.1 Parking garages shall be separated from other occupancies IBC 406.4.6

- 2.4 Mixed Occupancies / Separated Occupancies IBC 508.4
- 2.4.1 Code requirements shall apply to each fire area of the building based on the individual occupancy classification of that portion of the building. IBC 508.4.1
- 2.4.2 In each story, the building area shall be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area for each occupancy shall not exceed one. IBC 508.4.2
- 2.4.3 Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.3.3. IBC 508.4.4
- 2.4.4. Separations shall be fire barriers (Section 707) or horizontal assemblies (Section 712), or both, so as to completely separate adjacent occupancies. IBC 508.4.4.1

3. Special Detailed Requirements

This section is applicable as the parking garage structure is part of the proposed high-rise structure above.

- 3.1 High-Rise Buildings IBC 403
- 3.1.1 Type of construction may be reduced when each floor has sprinkler control valves equipped with supervisory initiating devices and water flow initiating devices.
For buildings less than 420', Type IA can reduced to Type IB, except columns supporting floors cannot be reduced.

Type IB may be reduced to IIA

Shafts other than stair and elevators may be reduced to 1 hour if sprinklers are installed at alternate floors.
- 3.1.2 Automatic sprinklers are required per 903.3.1.1 and secondary water supply per 903.3.5.2. Water supply to the fire pump shall be via two mains located in different streets. IBC 403.3
- 3.1.3 The following emergency systems are to be provided: IBC 403.4
Smoke detection per 907.2.13.1
Fire alarm system per 907.2.13
Standpipe system per 905.3
Emergency voice/ alarm communication system per 907.5.2.2
Emergency responder radio coverage per IFC 510
Fire command center
Smoke removal windows max 50' intervals, min 40 sf/50'
May be mechanical per 403.4.6.2
Standby Power for:
Fire command center power and lighting
Ventilation and fire detection for smokeproof enclosures

	Elevators	
	Manual start and transfer switches to be provided in the FCC.	
	Emergency power for:	
	Exit lighting	
	Elevator car lighting	
	Emergency voice/alarm communication system	
	Automatic fire detection systems	
	Fire alarm system	
	Fire pump	
3.1.4	Means of egress	IBC 403.5
	Egress stairs must be min 30' separation or ¼ the diagonal of the floor they serve, measured in a straight line between points of the stair enclosure.	
	Stairway doors may be locked from the stairway side with automatic fail-safe unlocking. If locked provide 2-way communication every 5 th floor.	
	Stairs serving floors more than 75 ft above lowest fire dept. access must be pressurized with vestibules per 1023.11 and 909.20	
	Note: markings within exit enclosures – see 1024.2	
	Elevators may be used for occupant evacuation per 3008.	
3.2	<u>Underground Buildings</u>	IBC 405
	Parking garages with automatic sprinkler systems per 405.3 are excepted from the provisions of this section.	IBC 405.1
3.2.1	The highest level of exit discharge and all levels below must be protected with an automatic sprinkler system per 903.3.1.1.	IBC 405.3
3.3	<u>Motor Vehicle Related Occupancies</u>	IBC 406
3.3.1	Height: Clear height shall be min 7'. Van accessible parking shall conform to ICC A117.1.	IBC 406.4.1
3.3.3	Vehicle barriers not less than 2'-9" high shall be at ends of all drive lanes and parking spaces with more than 1' change in elevation. Loading per 1607.8.3.	IBC 406.2.4
3.3.4	Ramps: shall not be considered exits unless pedestrian facilities are provided. Vehicle ramps used for pedestrian circulation may not exceed a slope of 1:15.	IBC 406.2.5
3.3.5	Floors: Shall be concrete or similar material	IBC 406.2.6
3.3.6	Heating equipment shall be installed per the Int'l Mech code	SPS 362.0406

3.4	<u>Enclosed Parking Garages</u>	IBC 406.6
3.4.1	Height and area: Shall be per table 503	IBC 406.4.1
3.4.2	Mechanical ventilation shall be provided per the Int'l Mech Code	IBC 406.4.2

4. General Building Heights and Areas

4.1	<u>Definitions</u>	IBC 502.1
4.1.1	Basement – basement is a story that is not a story above grade plane.	
4.1.2	A story having it's finished floor level entirely above grade plane, or when the level above is more than 6' above grade plane or more than 12' above grade at any point.	
4.1.2	Building Area – area within exterior and fire walls exclusive of vent shafts and courts. Areas without surrounding walls shall be included in building area if covered by roof or floor above.	
4.1.3	Building Height – Vertical distance from grade plane to average height of the highest roof surface.	
4.1.4	Grade Plane – a reference plane representing the average of finished ground level adjoining the building at exterior walls. Where it slopes away from the walls, the lowest point within the area between the building and a point six feet from the building, or property line if it is closer.	
4.2	<u>General Height and Area Limitations</u>	IBC 503
4.2.1	Allowable Height and Building Areas	IBC 504, 506

Use Group	Construction Type	Allowable Stories / with Approved Automatic Sprinkler System 903.3.1.1	Allowable Height in Feet / with Approved Automatic Sprinkler System 903.3.1.1	Allowable Area per Floor / with Approved Automatic Sprinkler System 903.3.1.1
S-2	I-A	UL	UL	unlimited / UL
	I-B*	12*	180*	237,000*
R-2	I-A	UL	UL	UL
	I-B*	12	180	UL
•				

4.2.3	Building Area	IBC 506
	Frontage increase – Where a building has more than 25	IBC 506.3



percent of its perimeter on a public way or open space having a minimum width of 20 feet, the increase in allowable area is calculated as per 506.3.

Note: As this increase is granted for ease of fire department access to the exterior of the building, the logic of this provision is dubious for an underground structure and for this project, allowable area is unlimited as a type 1A below grade.

4.2.4 Mixed Use and Occupancy IBC 508
Each portion of the building must conform to the requirements of 508.2 (Accessory occupancies), 3 (Non-separated occupancies) and/or 4 (Separated occupancies). (As the parking levels below grade are separated per 510.2 and are Type 1A construction, and the residential levels above are Type 1B unlimited area, either separated or non-separated occupancies can be used, and therefor the approach will be to do separated occupancies because the exception in 508.3.3 will require this separation above grade anyway.)

4.2.5 Special Provisions IBC 510.2
A horizontal building separation per this provision can be effected to separate the structure into two buildings for height and area limitations. This requires: 3 hr separation, Type 1A construction for the building below, two hour shafts through the horizontal assembly. In this case, this will permit the levels above grade to be of Type IIA construction.

5. Types of Construction – Chapter 6 IBC

5.1 Fire-Resistance Rating Requirements (hours) IBC Tables 601, 602

Building Element	Type I-A	Type I-B	Type II-A
Structural frame: columns, girders, trusses	3	2	1 ¹
Bearing Walls			
Exterior	3	2	1
Interior	3	2	1
Nonbearing exterior walls and partitions 10-30 ft separation ²	1	1	1
Nonbearing exterior walls and partitions over 30'	0	0	0
Nonbearing walls and partitions	0	0	0
Floor construction – and secondary members	2	2	1
Roof construction – and secondary members	1 1/2	1	1

1 In reducing to IIA from IB per section 403, columns may not be reduced
For separations less than 10 ft, see table 602

See section 603 for combustible materials permitted in type I and II construction.

6. Fire-Resistance Rated Construction

- 6.1 Fire resistance ratings and fire tests – See section 703. Note IBC 703 per 703.7 fire walls, barriers, partitions and smoke partitions to be marked. For firewalls, see also SPS 362.0706.
- 6.3 Exterior Wall Fire-resistance Ratings IBC 705.5
As required by tables 601, 602.
Rating of exterior walls with a fire separation distance of greater than 10 feet shall be rated for exposure to fire from the inside; with 10 feet or less, rated for exposure from both sides.
- 6.4 Exterior Wall Allowable Area of Openings IBC 705.8/705.8.1
See table 705.8. Opening protectives not required with window sprinklers.

Maximum Area of Exterior Wall Openings (% of area of exterior wall per floor)								
Classification of Opening	Fire Separation Distance (feet)							
	0-3 f	>3-5	>5-10	>10-15 d	>15-20 d	>20-25 d	>25-30 d	>30
Unprotected	Not Permitted	Not Permitted	10% i	15% i	25% i	45% i	70% i	No Limit
Unprotected with AASS	Not Permitted	15%	25%	45%	75%	No Limit	No Limit	No Limit
Protected	Not Permitted	15%	25%	45%	75%	No Limit	No Limit	No Limit

- Buildings whose exterior bearing wall, exterior nonbearing wall and exterior structural frame are not required to be fire-resistance rated by Table 601 or 602 shall be permitted to have unlimited unprotected openings.
- 6.5 Exterior Wall Vertical Separation of Openings IBC 705.8.5
Openings in exterior walls in adjacent stories shall be separated vertically per this section. Not applicable to buildings with an automatic fire suppression system.
- 6.6 Exterior Wall Vertical Exposure IBC 705.8.6
For buildings on same lot, opening protectives having a fire-protection rating of not less than ¾ hour shall be provided in every opening that is less than 15 feet vertically above the roof of an adjoining building or adjacent structure that is within a horizontal fire separation distance of 15 feet of the wall in which the opening is located.
- 2 Exception: Openings protectives are not required where the roof construction has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet from the adjoining building, and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.

- 6.7

Exterior Wall Parapets

IBC 705.11
- Parapets shall be provided on exterior walls except where:
1. wall is not required to be fire-resistance rated due to fire-separation distance.

2. building has an area of not more than 1,000 square feet on any floor.

3. walls terminate at roofs of not less than 2-hour fire-resistance-rated construction or where roof, including the deck and supporting construction, is constructed entirely of noncombustible materials.

4. one-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab provided: see IBC for 4 requirements.

5. For Groups R-2 and R-3 – see IBC.

6. the wall is permitted to have at least 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance.
- 6.8

Parapet Construction

IBC 705.11.1
- Parapets shall have same fire-resistance rating as supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches, including counterflashing and coping materials. Height shall be not less than 30 inches above point where roof surface and wall intersect. Where roof slopes toward a parapet at greater than two units vertical in 12 units horizontal, the parapet shall extend to same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall the height be less than 30 inches.
- 6.11

Fire Barriers

IBC 707
- See this section for rating requirements for shafts, exit enclosures, exit passageways, horizontal exits, incidental and separated occupancies, and fire areas. Supporting construction shall be of a rating no less than the fire barrier supported.

Fire Barrier Fire-resistance Rating					
IBC	Element	Reference	Rating (Hours)		
707.3.1	Shaft Enclosures	713.4	2 hours connecting 4 or more stories		
			1 hour connecting less than 4 stories		
707.3.2	Exit Enclosures	1023.1	2 hours connecting 4 or more stories		
			1 hour connecting less than 4 stories		
707.3.3	Exit Passageways	1024.3	1 hour but not less than a connecting exit enclosure		
707.3.5	Horizontal Exits	1026.2	2 hours		
707.3.6	Incidental Use Areas	509	See Below		
707.3.8	Separation of Mixed Occupancies	508.4		AASS	
			S2 to M	1	
			S2 to R	1	
707.3.9	Single-occupancy Fire Areas	707.3.9	M, R, S2	2	

- Fire-Resistance Rating for Non-Structural Elements (sprinklered)
- Public corridors (Use S)

0

IBC 1020.1
- Standby or emergency generator room

2 hours

IBC 403.4.8.1
- Rooms containing fire pumps

2 hours

NFPA
- Trash rooms and chutes

2 hours (>4 stories)

IBC 713.13.4
- 6.12

Exterior Walls as Fire Barrier

IBC 707.4
- Exterior walls part of a rated shaft or exit enclosure shall comply with 705 and rated enclosure requirement shall not apply.
- 6.13

Fire Barrier Continuity

IBC 706.5 / SPS362.0707
- Constructed from top of foundation or horizontal assembly to and securely attached to underside of floor, roof slab or deck above, continuous through concealed spaces such as suspended ceilings. Supporting structure shall be protected to same rating as fire barrier supported, except for 1-hour rated incidental use area separations as required by 508.2 in buildings of Type II-B and IIIB construction.
- 6.14

Fire Barrier Fireblocking

IBC 707.5.1
- Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with 718.2 at every floor level.
- 6.15

Fire Barrier Openings

IBC 707.6
- Openings in a fire wall shall be protected per 716, and shall be limited to a maximum aggregate width of 25 percent of the length of the wall and a maximum of 156 sf. Openings in exit enclosures and exit passageways shall also comply with 1019, 1023.4 and 1024.5, respectively.
- Exceptions:
1. Fire doors serving an exit enclosure.

2. Openings shall not be limited to 156 square feet or an aggregate width of 25 percent of the length of the wall where the opening protective assembly has been tested in accordance with ASTM E119 and has a minimum fire-resistance rating not less than the rating of the wall.

3. Fire windows permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
- 6.16

Fire Barrier Penetrations: comply with 714.

IBC 707.7
- 6.17

Fire Barrier Prohibited Penetrations

IBC 707.7.1
- Penetrations into an exit enclosure or an exit passageway shall be allowed only when permitted by 1019, 1023.5 or 1024.6, respectively.
- 6.18

Fire Barrier Joints: Comply with 715.

IBC 707.8
- 6.19

Fire Barrier Ducts and Transfer Openings: Comply with 717.

IBC 707.10

- 6.20 Shaft Enclosures IBC 713.2
Vertical shaft enclosures required to protect openings or penetrations through floor/ceiling or roof/ceiling assemblies shall be constructed as fire barriers in accordance with 707, or horizontal assemblies in accordance with 711, or both.
- 6.21 Shaft Enclosure Fire-resistance Rating IBC 713.4
2 hours connecting 4 or more stories; 1 hour connecting less than 4 stories
Number of stories connected shall include basements but not mezzanines.
Rating shall not be less than the floor assembly penetrated, but need not exceed 2 hours.
- 6.22 Shaft Enclosure Continuity IBC 713.5
Fire barrier shaft enclosures shall have continuity in accordance with 707.
Horizontal assembly shaft enclosures shall have continuity in accordance with 711.
- 6.23 Shaft Enclosure Openings IBC 713.7
Openings in a shaft enclosure shall be protected per 716 as required for fire barriers. Doors shall be self- or automatic closing by smoke detection in accordance with 716.5.9.3.
- 6.24 Shaft Enclosure Prohibited Openings IBC 713.7.1
Openings other than those necessary for the purpose of the shaft shall not be permitted.
- 6.25 Shaft Enclosure Penetrations: comply with 714 as for fire barriers. IBC 713.8
- 6.26 Shaft Enclosure Enclosure at the Bottom IBC 713.11
Shafts that do not extend to the bottom of the building shall:
1. Be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
2. Terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by a fire barrier having a fire-resistance rating and opening protectives at least equal to the protection required for the shaft enclosure, or
3. Be protected by approved fire dampers at the lowest floor level within the shaft enclosure.
- Exceptions to 713.11:
1. The fire-resistance-rated room separation is not required, provided there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by 718.3.1 for draftstopping, or the room shall be protected by an AASS.
2. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required, provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

- 6.27 Shaft Enclosure at the Top IBC 713.12
Shafts that do not extend to the underside of the roof sheathing, deck or slab of the building shall be enclosed at the top with construction of the same fire-resistance rating as the topmost floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
- 6.28 Waste and linen chutes shafts shall not be used for any other IBC 713.13
purpose, shall be accessed from access rooms and not corridors.
Doors shall be self-closing. Access rooms to be 1 hr w/ ¾ hr door.
Waste discharge room rating and openings to match shaft rating.
- 6.28 Elevator Shaft Enclosures per 713 and Chapter 30.) IBC 713.14
- 6.29 Elevator Lobby IBC 3006
An enclosed elevator lobby or other hoistway protection shall be provided at each floor per 3006.3.
- 6.30 Smoke Barrier Fire-resistance Rating IBC 709.3
A one hour fire-resistance rating is required.
- 6.31 Smoke Partitions Fire-resistance Rating IBC 710.3
Unless required elsewhere, a fire-resistance rating is not required.
- 6.32 Smoke Partition Continuity IBC 710.4
Constructed from top of floor to underside of floor, roof sheathing, deck or slab above, or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.
- 6.33 Smoke Partition Openings IBC 710.5
Windows shall be sealed to resist the free passage of smoke or be automatic self-closing upon detection of smoke.
- 6.34 Horizontal Assemblies Fire-resistance Rating IBC 711.2
Fire-resistance rating of floor and roof assemblies shall not be less than that required by the building type of construction; where separating mixed occupancies, not less than that required by 508.4.
- 6.35 Horizontal Assemblies Continuity IBC 711.2.2
Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and section 712.
- 6.36 Ceiling panels with insufficient weight to resist uplift of 1 psf IBC 711.2.5
require approved devices to prevent uplift.
- 6.37 Vertical Openings – see section 712 IBC 712
Two story openings permitted per 712.1.9
Vertical openings in parking garages permitted per 712.1.10

- 6.38

Shaft Enclosures – see section 713

IBC 713
- 6.39

Penetrations – see section 714

IBC 714
- 6.40

Fire-Resistant Joint Systems: See IBC section 715

IBC 715
- 6.41

Opening Protectives

IBC 716
- 6.42

Fire resistance rated glazing- permitted per their listing

IBC 716.2
- 6.43

Alternate means for determining protection ratings – see 715.3

IBC 716.4
- 6.44

Fire door and shutter assemblies.

IBC 716.5

Table 716.5

See full table for glazing, sidelight and transom requirements

Fire Door and Fire Shutter Fire Protection Ratings		
Type of Assembly	Required Assembly Rating	Minimum Fire Door and Fire Shutter Assembly Rating (hours)
Fire Walls and Fire Barriers > 1Hour Rating	4	3
	3	3
	2	1 1/2
	1 1/2	1 1/2
Enclosures for shafts, exit stairs and ramps	2	1 1/2
Fire Barriers of 1 Hour Rating; Shaft, Exit Enclosure and Exit Passageway Wall	1	1
Other Fire Barriers	1	3/4
Fire Partitions: Corridor Walls	1	1/3
	1/2	1/3
Other Fire Partitions	1	3/4
	1/2	1/3
Exterior Walls	3	1 1/2
	2	1 1/2
	1	3/4
Smoke Barriers	1	1/3

- 6.45

Fire doors in corridors and smoke barriers must be tested per NFPA 252 or UL 10C.
Fire door assemblies shall also meet smoke and draft control per UL 1784.
Doors in exit enclosures and passageways shall meet temperature rise requirements of not more than 450 deg @ 30 min.

IBC 715.4.3

- 6.46

Fire-Protection-Rated Glazing

IBC 715.5

Fire Window Assembly Fire Protection Ratings		
Fire Walls	All	Not Permitted except as specified in 716.2
Fire Barriers	>1	Not Permitted except as specified in 716.2
	1	
Smoke Barriers	1	3/4
Fire Partitions	1	¾
	1/2	1/3

Exterior Walls	>1	1 1/2
Exterior Walls	1	3/4
Party Wall	All	Not Permitted except as specified in 715.2

- 6.47

Glazing material

IBC 716.5.8
- 6.48

Ducts and Air Transfer Openings, Dampers

IBC 717
- 6.49

Concealed Spaces

IBC 718
- 6.50

Thermal and Sound Insulating Materials

IBC 720
- 6.51

Prescriptive Fire Resistance

IBC 721
- 6.52

Calculated Fire Resistance

IBC 722

7. Interior Finishes – Chapter 8

- 7.1

Wall and Ceiling Finishes - ASTM E84 Classifications

IBC 803.1

Classification*	Flame Spread Index	Smoke-Developed Index
Class A	0 to 25	0-450
Class B	26 to 75	0-450
Class C	76 to 200	0-450

* Interior wall or ceiling finish materials, other than textiles, may be alternately classified in accordance with NFPA 286 and shall comply with IBC 803.2.1. Textiles may be tested per NFPA 265. See section 803 for foam plastics, timber, vinyl wall coverings and other provisions.

IBC 803

- 7.2

Interior Wall and Ceiling Finish Material Requirements
ASTM E84 Classifications where Sprinklered in accordance with 903.3.1.1, except that materials, other than textiles, tested in accordance with NFPA 286 and complying with IBC 803.2.1 are permitted where ASTM E84 Class A classification is required.

IBC 803.5

Group	Exit enclosures and exit passageways (a)	Corridors	Rooms and enclosed spaces
S (sprinklered)	C	C	C

- 7.3

Suspended acoustical ceiling systems shall be installed in accordance with ASTM C635 and C636, and where part of a fire-resistance rated assembly, they shall be installed in same manner used in the assembly tested and shall comply with IBC Chapter 7.

IBC 808

- 7.4

Interior floor finish and floor covering materials shall comply with Section 804 except those of traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not comprised of fibers.

IBC 804.1

7.5 Interior Floor Finish determined by NFPA 253 IBC 804.4

Classification	Critical Radiant Flux
Class I	0.45 watts per square centimeter or greater
Class II	0.22 watts per square centimeter or greater

7.6 Interior Floor Finish Requirements by Occupancy IBC 804.4
Sprinklered in accordance with 903.3.1.1 IBC 804.4.1

Group	Exit enclosures and exit passageways	Corridors	Rooms or Spaces not separated from corridors by full-height partitions from floor to ceiling
A, B, U	DOC FF-1 "pill test" Compliant	DOC FF-1 "pill test" Compliant	DOC FF-1 "pill test" Compliant

8. Fire Protection Systems – Chapter 9

8.1 Group S-2 – An automatic sprinkler system shall be provided IBC 903.2.10.11
throughout enclosed parking garages of over 12,000 square feet or when
beneath other occupancies. Also required when there are stories without
exterior openings.

8.2 Sprinklers shall be installed throughout in accordance with IBC 903.3.1.1
NFPA 13. Exempt areas per SPS 362 are any rooms or spaces where
Sprinklers are considered undesirable because of the nature of the contents, where
approved by the department.

8.3 Supervision and Alarms – All valves, tanks, pumps, water levels, IBC 903.4
air pressures, waterflow switches shall be monitored by a fire alarm
control unit, shall be monitored by an approved supervisory station. Exterior
alarms shall be provided.

8.4 Standpipe System – Shall be provided in new buildings and IBC 905.1
structures. Fire hose threads shall be approved and shall be compatible with fire
department hose threads. Location of fire department hose connections shall be
approved. Standpipe systems may be combined with an automatic fire
suppression system. A Class III standpipe system is required when the
lowest story is more than 30 ft below fire department access. Class I are
permitted in fully sprinklered buildings.

8.5 Location of Class I Standpipe Hose Connections IBC 905.4
1. In every required stairway, a hose connection shall be provided for each
floor level. Connections shall be located at an intermediate floor level
landing between floors, unless otherwise approved by the fire code official.

2. On each side of the wall adjacent to the exit opening of a horizontal exit.
Except: Where floor areas adjacent to a horizontal exit are reachable from
exit stairway hose connections by a 30-foot hose stream from a 100 feet
hose, a hose connection shall not be required at the horizontal exit.
3. Where the most remote portion of a floor or story is more than 200 feet from a
hose connection, the fire code official is authorized to require additional hose
connections be provided in approved locations.

8.6 Interconnection Class III – Where more than one standpipe is IBC 905.6
provided, the standpipes shall be interconnected per NFPA 14.

8.7 Cabinets – containing standpipes, fire hoses, fire extinguishers IBC 905.7
or fire department valves shall not be blocked from use or obscured from view.

8.8 Cabinet Equipment Identification – Cabinets shall be identified IBC 905.7.1
in an approved manner by a permanently attached sign with letters not less than 2
inches high in a color that contrasts with the background color, indicating the
equipment contained therein.

Except:
1. Doors not large enough to accommodate a written sign shall be marked
with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an approved visual identification clear glass panel or
a complete glass door panel are not required to be marked.

8.9 Dry Standpipes – shall not be installed except where subject to IBC 905.8
freezing and in accordance with NFPA 14.

8.10 Portable Fire Extinguishers – provide as required by International IBC 906.3
Fire Code – max area per extinguisher = 11,250 sf, max distance = 75’.

8.11 Fire Alarm and Detection Systems IBC 907.2
An approved manual, automatic, or manual and automatic fire alarm system
installed in accordance with this Code and NFPA 72 shall be provided in new
buildings in accordance with Section 907 unless required otherwise in the Code.
Where automatic sprinkler protection installed in accordance with 903.3.1.1 is
provided and connected to the building alarm system, automatic heat detection
required by this section shall not be required. The automatic fire detectors shall be
smoke detectors.

Single and multiple station smoke alarms shall be wired and equipped with battery
backup or emergency power. If with integral strobes, shall be connected to
emergency power.

8.12 Deep underground buildings – A manual fire alarm system shall IBC 907.2.19
be installed in underground buildings if more than 60’ from lowest level of
exit discharge.

8.13 Manual Fire Alarm Boxes – located within 5 ft of exits. IBC 907.2
Mount 42 – 48 inches above floor level.

- 8.14 Smoke Detectors – shall be connected to the building’s fire alarm control panel when a fire alarm system is required by 907.2. IBC 907.3
- 8.15 Occupant Notification shall be activated by annunciation at the fire alarm panel when activated by fire detectors, sprinkler waterflow devices, manual fire alarm boxes, or sprinklers. IBC 907.9.5
- 8.16 Audible Alarms – shall be provided. IBC 907.5.2.1
- 8.17 Visible Alarms – required in public and common areas. IBC 907.5.2.3
- 8.32 Fire Department Connections Location IBC 912.2
With respect to hydrants, driveways, buildings, and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the building for other fire apparatus. The location of fire department connections shall be approved.
- 8.33 Visible Location – Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the fire code official. IBC 912.2.1
- 8.34 Fire Department Connection Access – Immediate access shall be maintained at all times and without obstruction for a minimum of 3 feet. IBC 912.3
- 8.35 Fire Department Connection Signs – A metal sign with raised letters at least 1 inch in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: AUTOMATIC SPRINKLERS, STANDPIPES or TEST CONNECTION, or a combination thereof as applicable. IBC 912.4

Means of Egress – Chapter 10
9. General Means of Egress – Section 1003

- 9.1 Ceiling Height – 7 feet 6 inches (90 inches) min except where otherwise noted such as: IBC 1003.2
- .1 allowable projections – See IBC 1003.3.
 - .2 door height – See IBC 1008.1.1.
 - .3 80 inches minimum at stairs measured vertically above a line connecting the nosings, for full width of stair and landing. IBC 1009.2
 - .4 Parking garages – min 7 ft per 406.4.1
- 9.2 Protruding Objects – 80 inches min headroom for any walking surface, and for not more than 50 percent of ceiling area of a means of egress. IBC 1003.3.1
- Except: door closers and stops not less than 78 inches
Barrier: provide where vertical clearance is less than 80 inches high; leading edge of barrier maximum 27 inches above the floor.
- 9.3 Free-standing objects – See IBC 1003.3.2. IBC 1003.3.2

- 9.4 Horizontal projections (structural elements, fixtures or furnishings) – maximum 4 inches between heights of 27 and 80 inches above walking surface. IBC 1003.3.3
- Except: stair and ramp handrails may project 4.5 inches.
- 9.5 Clear width – protruding objects shall not reduce the minimum clear width of accessible routes required by Section 1104. IBC 1003.3.4
- 9.6 Floor Surface – of means of egress slip resistant and securely attached. IBC 1003.4
- 9.7 Elevation change – less than 12 inches in means of egress use sloped surface; slope > 1 in 20 use ramp in accordance with Section 1010 if difference 6 inches or less, use handrails or floor finish material that contrasts with adjacent floor. IBC 1003.5
- Except: where not required for accessibility, a stair with a single riser or two risers and a minimum 13 inch tread in accordance with Section 1009.3, and at least one handrail in accordance with Section 1012 within 30 inches of the centerline of the normal path of egress travel on the stair.
- 9.8 Means of egress continuity – path of egress travel along a means of egress shall not be interrupted by any building element other than a means of egress component. Obstructions shall not be placed in the required width of a means of egress except where projections are permitted. Capacity of a means of egress system shall not be diminished along the path of egress travel. IBC 1003.6
- 9.9 Elevator – shall not be used as a component of a required means of egress unless used an accessible means of egress in accordance with Section 1007.4. IBC 1003.7

10. Occupant Load – Section 1004

- 10.1 Floor Area, Gross, is the floor area within the inside perimeter of the exterior walls, exclusive of vent shafts and courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts. IBC 1002
- 10.2 Floor Area, Net, is actual occupied area not including unoccupied accessory areas such as corridors, stairways, toilet rooms, mechanical rooms and closets. IBC 1002
- 10.3 Design occupant load – Occupant load in a primary space shall include occupant load of primary space plus number of occupants egressing through it from any accessory area. IBC 1004.1

- 10.4

Occupant Load of Areas without Fixed Seating –
the number of occupants computed at the rate of an occupant per
unit of area as prescribed in Table 1004.1.1. For areas without fixed seating, not less
than number determined by dividing the floor area under consideration by the occupant
per unit of area factor in Table 1004.1.1. If not listed, the building official shall establish a
use based on a listed use that most nearly resembles the intended use.

IBC 1004.1.1
- Maximum Floor Area Allowances per Occupant

IBC 1004.1.1

Function of Space	Area (SF) per Occupant
Accessory storage areas, mechanical equipment room	300 gross
Parking garages	200 gross
- 10.5

Exiting from Multiple Levels - Where exits serve more than one
floor, the occupant load of each floor considered individually shall
be used in computing the exit capacity at that floor, provided that the exit
capacity shall not decrease in the direction of egress travel.

IBC 1004.4
- 10.6

Egress Convergence – Where means of egress from floors
above and below converge at an intermediate level, capacity at and
beyond point of convergence shall not be less than the sum of the two floors.

IBC 1004.5
- 10.7

Yards and courts – Must have egress as per interior spaces
and egress of the building through them must be cumulative.

SPS 362.1004
- 10.8

Multiple Occupancies – Means of egress requirements shall
apply to each portion of building shall be based on occupancy of that space. Shared
portions of means of egress shall meet most stringent requirements.

IBC 1004.9
11.

Egress Sizing – Section 1005
- 11.1

Egress Width per Occupant

IBC 1005.1

Minimum required egress width

Stairways

Other egress components

0.3 (inches per occupant)

0.2 (inches per occupant)

Multiple means of egress shall be sized such that loss of any one means
of egress shall not reduce the available capacity to less than 50 percent of the required
capacity. The maximum capacity required from any story shall be maintained to the
means of egress termination.
- 11.2

Door Encroachment – Doors opening into path of egress travel
shall not reduce the required width to less than one-half during
the course of the swing. When fully open, the door shall not project
more than 7 inches into the required width.

IBC 1005.2

IBC 1008.1.5

12.

Number of Exits and Exit Access Doorways – Section 1006
- 12.1

Egress from spaces
Two means of egress are to be provided where the occupancy exceeds the maximum
number per table 1006.2.1. Three or more exits shall be provided for occupancies over
500 to 1000. Four are required for over 1000.

IBC 1006.1
- 12.2

See section 1006 for specific occupancy requirements.
13.

Exit and Exit Access Doorways Configuration– Section 1007
- 13.1

Two exits shall be separated by a distance no greater than ½ the diagonal dimension of
the room or floor, 1/3 the diagonal dimension for sprinklered buildings.
- 13.2

The separation distance shall be measured to any point on the doorway or the closest
riser in an exit access stair.
- 13.3

For three or more exits no less than two shall be separated as per the above.,
14.

Means of Egress Illumination – Section 1008
- 14.1

Illumination Required
The means of egress, and exit discharge, shall be illuminated at all times the
building space served by the means of egress is occupied.

IBC 1006.1
- 14.2

Illumination Level – not less than 1 foot candle at the walking
surface

IBC 1006.2
- 14.3

Illumination Emergency Power – normally provide by building's
electrical supply. In case of power failure, an emergency electrical system shall
automatically illuminate:
1. Aisles and unenclosed egress stairs in rooms requiring two or more means
of egress.
2. Corridors, exit enclosures and exit passageways in buildings requiring two
or more exits.
3. Exterior egress components at other than the level of exit discharge is
accomplished for buildings requiring two or more exits.
4. Interior exit discharge elements, as permitted by Section 1024.1, in
buildings requiring two or more exits.
5. Exterior landings, as required by Section 1008.1.5, for exit discharge
doorways in buildings required to have two or more exits.

IBC 1006.3
15.

Accessible Means of Egress – Section 1009
- 15.1

Accessible spaces shall be served by not less than one
accessible means of egress, and where more than one means
of egress is required from an accessible space, each accessible portion of
the space shall be served by not less than two accessible means of egress.

IBC 1009.1

	2. One accessible means of egress is required from an accessible mezzanine level in accordance with 1009.3, 1009.4 or 1009.5.			Maximum width – 48 inches per leaf. Minimum height – 80 inches. 32" not required for toilet stall doors	SPS 362.1008
15.2	Required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following: - accessible routes - stairways within vertical exit enclosures - exterior exit stairways - elevators - platform lifts - horizontal exits - ramps - areas of refuge	IBC 1009.2 1104 1009.3 and 1023 1009.3 and 1027 1009.4 1009.5 1026 1012 1009.6			
	Exceptions: 1. Where exit discharge is not accessible, provide an IBC 1007.8 exterior area for assisted rescue. 2. Where exit stairway is open to the exterior, the accessible means of egress shall include either a Section 1007.6 area of refuge or a 1007.8 exterior area for assisted rescue.				
15.3	Elevators required – In buildings where a required accessible floor is four or more stories above or below a level of exit discharge, at least one required accessible means of egress shall be a Section 1009.4 elevator.	IBC 1009.2.1			
15.4	Elevators – if used as an accessible means of egress, follow: emergency operation and signaling device requirements of ASME A17.1 Section 2.27; standby power requirements of IBC 2702 and 3003.	IBC 1009.4			
15.7	Signage – At exits and elevators serving a required accessible space but not providing an approved accessible means of egress, signage shall be installed indicating the location of accessible means of egress.	IBC 1009.10			
15.8	Exterior area for assisted rescue – must be open to the outside air and meet the requirements of Section 1009.7.1 - 4.	IBC 1009.7			
15.8.3	Two way communication shall be provided at the elevator landings on each accessible floor above or below the level of exit discharge; requirements and directions per 1009.8.1 and 1009.8.2.	IBC 1009.8			
16.	Doors Gates and Turnstiles– Section 1010				
16.1	Means of egress doors shall be readily distinguishable from the adjacent construction and finishes, such that the doors are easily recognizable as doors.	IBC 1010.1			
16.2	Size of doors - Minimum width sufficient for occupant load served and provide a clear opening of a single leaf door, or of one leaf in a pair, 32 inches with the door open 90 degrees, measured between the face of the door and the opposite stop.	IBC 1010.1.1			
16.3	Projections into required clear width – below 34 inches above the floor are prohibited; maximum 4 inches permitted between 34 and 80 inches above the floor, i.e. hardware.	IBC 1010.1.1.1			
16.4	Door swing – egress doors shall be side-hinged swinging. Except: Power-operated doors - See IBC 1010.1.3.2.	IBC 1010.1.2			
16.5	Door swing direction - swing in the direction of egress travel where serving an occupant load of 50 or more.	IBC 1010.1.2			
16.6	Operating force – interior swing door shall not exceed 5-pound latch-side force. For others, latch shall release with 15-pound latch-side force, door set in motion with 30-pound latch-side force, and swing to full-open position with 15-pound latch-side force.	IBC 1010.1.3			
16.7	Revolving doors – per 1010.1.4.1 May be used as egress for no more than 50 person capacity.	IBC 1010.1.4			
16.8	Power-operated doors – in event of loss of power, door must be manually operable with forces listed at 1010.1.3 except door set in motion with maximum 50-pound latch side force. Full-power-operated doors shall comply with BHMA A156.10. Power-assisted and low-energy doors shall comply with BHMA A156.19.	IBC 1010.1.4.2			
16.9	Floor elevation – provide level and clear floor area adjacent to all doors. Floor elevation to be the same elevation on each side of door, and level, except 0.25 in 12 (2%) slope permitted at exterior Except – variations due to differences in finish materials, but no more than 0.5 inch	IBC 1010.1.5			
16.9	Landings at doors – width not less than door width. Doors in fully open position shall not project more than 7 inches into the required width, and when open in any position shall not reduce the required width to less than one-half during the course of the swing.	IBC 1010.1.6			
16.10	Thresholds – ½ inch maximum with level changes greater than ¼ inch beveled not greater than 1 unit vertical to 2 horizontal (50% slope).	IBC 1010.1.7			
16.11	Door arrangement – minimum 48 inches between doors in series plus the width of any door swinging into the space. Doors shall swing in same direction, or away from the space. Where maneuvering space is provided, meet IBC 1101.2 so wheelchairs will not block the doors.	IBC 1010.1.8 SPS 362.1008			

- 16.12 Door operations – readily openable from the egress side without the use of a key or special knowledge or effort IBC 1010.1.9
- 16.13 Hardware height – hardware used to unlock, unlatch, and put door in motion shall be mounted between 34 and 48 inches above finished floor, with maximum projection of 4 inches. Locks for security not used for normal operation are permitted at any height. IBC 1010.1.9.2
- 16.14 Bolt locks – manually operated flush bolts or surface bolts are not permitted except on inactive leaf of a pair serving storage or equipment room. IBC 1010.1.9.4
- 16.15 Unlatching of any door or leaf shall not require more than one operation. IBC 1010.1.9.5
- 16.17 Stairway doors shall be openable from both sides without the use of a key or special knowledge or effort, except the discharge doors shall be openable from the egress side and shall only be locked from the opposite side. IBC 1010.1.9.11
- 16.18 Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet wide contain overcurrent devices, switching devices or control devices with exit access doors must be equipped with panic hardware and doors must swing in the direction of egress. IBC 1010.1.10

17. Stairways – Section 1011

- 17.1 Width – determined in accordance with 1005.1 except individual stair minimum 44 inches. IBC 1011.2
Except: if serving less than 50 occupants, then 36 inches minimum.
- 17.2 Head Room 80 inches minimum at stairs measured vertically above a line connecting the nosings down to the landings, for full width of stair and landing. IBC 1011.3
- 17.3 Treads and Risers IBC 1011.5.2
- | | | |
|----|-----------------------|----------------------------|
| .1 | Maximum riser heights | 7 inches nosing-to-nosing |
| | Minimum riser heights | 4 inches |
| .2 | Minimum tread depth | 11-inches nosing-to-nosing |
- 17.4 Dimensional Uniformity – greatest deviation between largest and smallest risers or treads in a flight shall be 0.375 inches. See IBC for requirements of exterior stairs meeting a sloping grade. IBC 1011.5.4
- 17.5 Profile – Nosing curvature maximum 9/16 inch; beveling of nosing maximum 9/16 inch. Risers shall be solid, vertical or sloped not more than 30 degrees from the vertical. Nosing projection maximum 1.25 inches over tread next below; all nosing shall be uniform including at landing or floor. IBC 1011.5.5

Except: Solid risers not required for stairs not required as accessible enclosed exit stair. However, riser opening shall not allow sphere of 4 inches diameter to pass.

- 17.6 Landings – are required at top and bottoms of stairs IBC 1011.6
- | | |
|----|--|
| .1 | Width of landing (perpendicular to gap between flights) equals width of stair minimum |
| .2 | Length of landing in direction of exit travel equals width of stair minimum, or need not exceed 48 inches if stair is straight run |
| .3 | Doors in fully open position shall not project more than 7 inches into the required landing width, and when open in any position shall not reduce the required landing width to less than one-half during the course of the swing. |
- 17.7 Construction – stairs shall be built of materials consistent with building construction type, except that wood handrails are permitted. IBC 1011.7
- 17.8 Walking surface – maximum slope 1 unit vertical in 48 horizontal (2-percent) in any direction with a solid, securely attached surface, openings in treads and landings permitted provided a sphere of 1-1/8 inches diameter cannot pass. IBC 1011.7.1
- 17.9 Outdoor – Outdoor stairways and outdoor approaches to stairways shall be designed so that water will not accumulate on walking surfaces. IBC 1011.7.2
- 17.10 Vertical rise between landings – maximum 12 feet IBC 1011.8
- 17.11 Handrails IBC 1011.11
- | | |
|----|--|
| .1 | Stairways shall have handrails at both sides of all stairs complying with Section 1014, and Section 2407 if made of glass. |
| .2 | Top of Handrail 34 inches to 38 inches above nosings or ramp |
| .3 | Reach Distance All portions of stairway width required for egress capacity within 30 inches of a handrail |
| .4 | Handrail Size (circular) 1-1/4 to 2 inches outside diameter or provide equivalent graspability (if not circular see Code for requirements) |
| .5 | Continuity handrail gripping surface continuous. |
| .6 | Handrail Extensions: must return to the wall |
| | Top Riser 12-inches |
| | Bottom Riser slope one tread length beyond bottom riser |
| .7 | Clear Space at Handrails 1-1/2 inches free of any sharp or abrasive elements |
| .8 | Stairway projections 4-1/2 inches at or below handrail height not limited above required headroom clearance |
- 17.12 Guards complying with 1015 required along stairs and landings IBC 1011.13

18. Ramps – Section 1012

- 18.1 Section 1010 applies to means of egress ramps except: IBC 1012.1
1. Curb ramps shall comply with ICC A117.1.
2. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 10120.3 through 1012.10 when they are not an accessible route serving accessible parking spaces, other required accessible elements or part of an accessible means of egress.
- 18.2 Slope – Ramps used as part of a means of egress shall have a IBC 1012.2
running slope not steeper than one unit vertical in 12 units horizontal (8-percent slope). The slope of other pedestrian ramps shall not be steeper than one unit vertical in eight units horizontal (12.5 percent slope).
- 18.3 Cross Slope – The slope measured perpendicular to the direction IBC 1012.3
of travel of a ramp shall not be steeper than one unit vertical in 48 units horizontal (2 percent slope).
- 18.4 Vertical Rise – for any ramp run shall be 30 inches maximum. IBC 1012.4
- 18.5 Minimum Dimensions – of means of egress ramp
Width – not less than required for corridors by Section 1020.2. IBC 1012.5.1
Clear width of a ramp and the clear width between handrails, if provided, shall be 36 inches minimum.
Headroom – in all parts shall not be less than 80 inches. IBC 1012.5.2
Restrictions – shall not reduce in width in the direction of egress IBC 1012.5.3
travel. Projections into the required ramp and landing width are prohibited. Doors opening onto a landing shall not reduce the clear width to less than 42 inches.
- 18.6 Landings – Ramps shall have landings at the bottom and top of IBC 1012.6
each ramp, points of turning, entrance, exits and at doors.
- 18.6.1 Slope – not steeper than one unit vertical in 48 units horizontal, IBC 1012.6.1
(2 percent) in any direction. Changes in level are not permitted.
- 18.6.2 Width – at least as wide as the widest ramp run adjoining the IBC 1012.6.2
landing.
- 18.6.3 Length – Landing length shall be 60 inches minimum. IBC 1012.6.3
Except: where the ramp is not part of an accessible route, the length of the landing shall not be required to be more than 48 inches in the direction of travel.
- 18.6.4 Changes in Direction – Where changes in direction of travel occur IBC 1012.6.4
at landings provided between ramp runs, the landing shall be 60 inches by 60 inches minimum.

- 18.6.5 Doorways – located adjacent to a ramp landing, maneuvering IBC 1012.6.5
clearances required by ICC A117.1 are permitted to overlap the required landing area.
- 18.7 Ramp Construction – materials shall be consistent with those IBC 1012.7
permitted for the type of construction of the building, except that wood handrails shall be permitted for all types of construction. Ramps used as an exit shall conform to applicable requirements of Sections 1020.1 through 1020.1.3 for exit enclosures.
- 18.7.1 Ramp Surface – shall be slip-resistant materials that are securely IBC 1012.7.1
attached.
- 18.7.2 Outdoor – ramps and approaches shall be designed so water IBC 1012.7.2
will not accumulate on walking surfaces.
- 18.8 Handrails – required on both sides for ramps with rise greater IBC 1012.8
than 6 inches.
- 18.9 Edge Protection – required on each side of ramp runs and ramp IBC 1012.10
landings. Except:
1. Not required for ramps not required to have handrails, provided they have flared sides that comply with ICC A117.1 curb ramp provisions.
2. Not required on sides of ramp landings serving an adjoining ramp run or stairway.
3. Not required on sides of ramp landings having a vertical dropoff of not more than 0.5 inch within 10 inches horizontal of the required landing area.
- 18.9.1 Curb, Rail, Wall or Barrier – shall be provided that prevents the IBC 1012.10.1
passage of a 4-inch diameter sphere, where any portion of the sphere is within 4 inches of the floor or ground surface.
- 18.9.2 Extended Floor or Ground Surface – shall extend 12 inches IBC 1012.10.2
minimum beyond the inside face of a handrail.
- 18.10 Guards – shall be provided where required by Section 1013 and IBC 1012.9
and constructed in accordance with 1015.

19. Exit Signs – Section 1013

- 19.1 Exits and exit access doors shall be marked by an approved IBC 1013.1
exit sign readily visible from any direction of egress travel.
Access to exits shall be marked by readily visible exit signs where the exit or path of egress travel is not immediately visible. Exit sign placement shall be such that no point in a corridor is more than 100 feet, or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign.
- Except:
1. Not required in rooms or areas that require only one exit or exit access.

2. Not required at main exterior exit doors or gates that are obviously and clearly identifiable as exits if approved by the building official.

- 19.2 Exit signs shall be internally or externally illuminated except Section 1011.3 tactile signs. IBC 1013.2
- 19.3 A visual and tactile sign, stating EXIT and complying with ICC A117.1 shall be provided adjacent to each door to an egress stairway, an exit passageway and the exit discharge. IBC 1013.3
- 19.4 Internally illuminated exit signs shall be listed and labeled, and installed in accordance with manufacturer's instructions and Chapter 27. Exit signs shall be illuminated at all times. IBC 1013.4
- 19.5 Externally illuminated exit signs shall comply with 1013.6.1 through 1013.6.3. IBC 1013.6
- 19.5.1 Graphics – Every exit sign and directional exit sign shall have plainly legible letters not less than 6 inches high with the principal strokes of the letters not less than 0.75 inch wide. "EXIT" shall have letters having a width not less than 2 inches wide, except "I", and the minimum spacing between letters shall not be less than 0.375 inch. If larger than minimum, widths, strokes and spacing shall be in proportion to height. IBC 1013.6.1
- "EXIT" shall be in high contrast with background and shall be clearly discernible when the means of exit sign illumination is or is not energized. If a chevron directional indicator is provided, construction shall be such that the direction of the chevron cannot be readily changed. IBC 1013.6.1
- 19.5.2 Face of externally illuminated exit sign shall have an intensity of not less than 5 foot-candles. IBC 1013.6.2
- 19.5.4 Exit signs shall be illuminated at all times. To ensure not less than 90 minutes illumination in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The emergency power system installation shall be in accordance with Section 2702. IBC 1013.6.3
- Except: Approved exit sign installation means that provide continuous illumination independent of external power sources for a duration of not less than 90 minutes, in case of primary power loss, are not required to be connected to an emergency electrical system.
- 20. Handrails – Section 1014**

- 20.1 Handrails for stairways and ramps shall be adequate in strength and attachment in accordance with Section 1607.8. IBC 1014.1
- 20.2 Height – measured above tread nosing or ramp finish surface, not less than 34 inches and not more than 38 inches. IBC 1014.2

- 20.3 Graspability – A circular cross-section with outside diameter of at least 1.25 inches and not greater than 2 inches, or equivalent graspability. If not circular, a perimeter dimension of at least 4 inches and not greater than 6.25 inches with a maximum cross-section dimension of 2.25 inches. Edges shall have a minimum radius of 0.01 inch. IBC 1014.3
- 20.4 Continuity – Handrail gripping surfaces shall be continuous, without interruption by newel posts or other obstructions. Except brackets or balusters attached to bottom of handrail that do not project horizontally beyond the sides of the handrail within 1.5 inches of the bottom of the handrail shall not be considered obstructions. For each 0.5 inch of additional handrail perimeter dimension above 4 inches, the vertical clearance dimension of 1.5 inches shall be permitted to be reduced by 0.125 inch. IBC 1014.4
- 20.5 Extensions – Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. At stairways where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrail shall extend horizontally above the landing 12 inches minimum beyond the top and bottom ramps. IBC 1014.6
- 20.6 Clearance – Clear space between a handrail and a wall or other surface shall be a minimum of 1.5 inches. A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements. IBC 1014.7
- 20.7 Projections – On ramps, clear width between handrails shall be 36 inches minimum. Projections into the required width of stairways and ramps at each handrail shall not exceed 4.5 inches at or below the handrail height. Projections into the required width shall not be limited above the minimum headroom height required in Section 1009.2. IBC 1014.8
- 20.8 Intermediate Stairway Handrails – all portions of the stairway width required for egress capacity are within 30 inches of a handrail. On monumental stairs, handrails shall be located along the most direct path of egress travel. IBC 1014.9

21. Guards – Section 1015

- 21.1 Guards – of strength and attachment required by Section 1607.8, and Section 2407 if made of glass, located along open-sided walking surfaces, mezzanines, industrial equipment platforms, stairways, ramps, and landings located more than 30 inches above the floor or grade below, and similarly along glazed sides of stairs, ramps and landings where glazing does not meet strength and attachment requirements of Section 1607.8. IBC 1015.2

- 21.2 Height – 42 inches measured vertically above leading edge of tread, adjacent walking surface or seatboard. IBC 1015.2
- 21.3 Openings – 4-inches diameter sphere cannot pass through any opening up to height of 36 inches, and 4 3/8-inches from 36 inches to 42 inches. IBC 1015.4
- Exceptions:
- 1. 6-inches diameter sphere cannot pass through triangular opening formed by riser, tread, and bottom rail of guard.
 - 2. 21-inches diameter sphere cannot pass guard at elevated walkway used to access or used for MEP systems or equipment.
- 21.4 Mechanical Equipment – guards required where appliances, equipment, fans, roof hatch openings or other components that require service are located within 10 feet of a roof edge or open side of a walking surface located more than 30 inches above floor, roof, or grade below. IBC 1015.6 IBC 1015.7
- 21-inches diameter sphere cannot pass such guard. Guard shall extend 30 inches beyond each end of each item near the edge.
- 22. Exit Access – Section 1016**
- 22.1 Egress shall not pass through intervening rooms or areas, except where such adjoining rooms or areas are accessory to area served, are not a high-hazard occupancy and provide a discernible path of egress travel to an exit. Egress shall not pass through storage rooms, kitchens or closets. Exit access shall not pass through a room that can be locked to prevent egress. IBC 1016.2
- Exception: In S occupancy if the intervening room or space is of the same or lesser occupancy group.
- Exit access is permitted through an enclosed elevator lobby, but not less than one required exit shall be provided without exiting through an elevator lobby.
- 22.2 Common path of egress travel shall not exceed 100 feet; for Group S with automatic sprinkler system. IBC 1014.3
- 23. Exit Access Travel Distance – Section 1017**
- 23.1 Exits shall be so located on each story such that the maximum length of the exit access travel, measured from the most remote point within a story to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in Table 1017.2. IBC 1017.3
- When sprinklered, in accordance with 903.3.1.1.
- Maximum Travel Distances
- Use S-2 400 feet (sprinklered)

- 24. Exit Access Stairways and Ramps – Section 1019**
- 24.1 Shall be enclosed per Section 713, except as listed in 1019.3 IBC 1019.3
- 25. Corridors – Section 1020**
- 25.1 Rating – 0 hours rating required for sprinklered S occupancy IBC 1020.1
- 25.2 Width – as required by Section 1005.1 but not less than 44 inches IBC 1020.2
- Except: 24 inches for access to and utilization of MEP systems and equipment; 36 inches with a required occupant capacity of less than 50;
- 25.3 Dead End – Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 50 feet in length (S Occupancy). IBC 1020.4
- 25.4 Air Movement – Corridors shall not serve as supply, return, Exhaust, relief or ventilation air ducts. IBC 1020.5
- 25.5 Ceiling Return Air Plenum – Permitted per IBC 1020.5.1
- 25.6 Continuity – Fire resistance rated corridors shall be continuous from point of entry to an exit, and shall not be interrupted by intervening rooms except foyers, lobbies, or reception rooms constructed as required for corridors. IBC 1020.6
- Other spaces may be open to corridors if: 1) Not a hazardous Use, 2) Not an incidental use (Table 508.2), 3) don't obstruct exiting. SPS 362.1018
- 26. Exits – Section 1022**
- 26.1 Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge. IBC 1022.1
- 27. Interior Exit Stairways and Ramps– Section 1023**
- 27.1 Interior exit enclosures shall not be used for any purpose other than a means of egress. Interior exit stairways and ramps shall be enclosed with fire barriers constructed in accordance with Section 707, or horizontal assemblies constructed in accordance with Section 711, or both. IBC 1023.1
- Shall discharge directly outside or through and exit passageway per 1023. Exceptions: see 1023.1
- 27.2 Openings in exit enclosures other than unexposed exterior openings shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure. IBC 1023.4

- 27.3 Where interior exit enclosures are extended to the exterior by an exit passageway, the door assembly from the exit enclosure to the exit passageway shall be protected by a fire door conforming to Section 716.5. IBC 1022.2.1
- 27.4 Elevators shall not open into an exit enclosure. IBC 1023.4
- 27.5 Penetrations into and openings through an exit enclosure are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communications and electrical raceway serving the exit enclosure and terminating at a steel box not exceeding 16 square inches. Such penetrations shall be protected in accordance with Section 715. IBC 1023.5
- 27.6 Ventilation – if required, see Code for requirements, location and enclosure of equipment and ducts. Exit enclosure ventilation systems shall be independent of other building ventilation systems. IBC 1023.6
- 27.7 Exterior walls of an exit enclosure shall comply with Section 705. Where non-rated walls or unprotected openings enclose the exterior of the stairway, and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees, the building exterior walls within 10 feet horizontally of a non-rated wall or unprotected opening shall be constructed as required for a minimum 1-hour fire resistance rating with ¾-hour opening protectives. This construction shall extend vertically from the ground to a point 10 feet above the topmost landing of the stairway or to the roof line, whichever is lower. IBC 1023.7
- 27.8 Discharge Identification Barrier
Stairway in exit enclosure shall not continue below level of exit discharge unless an approved barrier is provided at the level of exit discharge. Provide directional exit signs in accordance with 1011. IBC 1023.8
- 27.9 A sign shall be provided at each floor landing in interior vertical exit enclosures connecting more than three stories designating: the floor level; the terminus of the top and bottom of the stair enclosure; the stair identification; the story of discharge; the direction to the exit discharge, and the availability of roof access from the stairway. The sign shall be located 5 feet above the floor landing in a position which is readily visible when doors are open and closed. See 1023.9.1 for details. IBC 1023.9
- 27.10 At stair landings where two or more doors lead to the floor Level, any door with direct access to an enclosed elevator lobby shall have a sign adjacent to the door stating “Elevator Lobby”. IBC 1023.10
- 27.11 Interior stairways must be smokeproof enclosures IBC 1023.11

28. Exit Passageways – Section 1024

- 28.1 Exit passageway shall not be used for any purpose other than as a means of egress. IBC 1024.1
- 28.2 Width – as required by Section 1005.1 but not less than 44 inches Except: 36 inches with a required occupant capacity of less than 50. IBC 1024.2
- 28.3 Walls, floors, and ceiling not less than 1-hour fire-resistance IBC 1024.3
- 28.4 Shall terminate at an exit discharge or public way IBC 1024.4
- 28.5 Openings other than unexposed exterior openings shall be limited to those necessary for exit access to the exit passageway from normally occupied spaces and egress from the exit passageway. IBC 1024.5
- 28.6 Penetrations into and openings through an exit enclosure are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communications and electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches. Such penetrations shall be protected in accordance with Section 713. IBC 1024.6

29. Luminous Egress Path Markings – Section 1025

- 29.1 Not required in S or R-2 occupancies IBC 1025.1

30. Horizontal Exits – Section 1026

- 30.1 Horizontal exits shall not be the only exit from an area, nor more than half the exits. IBC 1026.1
- 30.2 Separation must be min 2 hours and the fire barrier must extend from exterior wall to exterior wall, completely dividing the floor. IBC 1026.2
- 30.3 Cross corridor doors must be automatic closed by smoke detector each side. IBC 1026.3
- 30.4 Capacity of each side shall be the occupancy of the side plus The exiting side at 3 sf /occup., and exits sized for both. IBC 1026.4

31. Exterior Exit Ramps and Stairways – Section 1027

- 31.1 Not permitted for high rise buildings IBC 1027.2

32. Exit Discharge – Section 1028

- 32.1 Exits shall discharge directly to the exterior of the building. IBC 1028.1
The exit discharge shall be at grade or shall provide direct access to grade. The exit discharge shall not reenter a building.
- Except:
1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following are met;
- 1. Such exit enclosures egress to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.
 - 2. The entire area of the level of discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
 - 3. The egress path from the exit enclosure on the level of exit discharge is protected throughout by approved automatic system. All portions of the level of discharge with access to the egress path shall either be protected throughout by a sprinkler system, or separated from the egress path in accordance with the requirements for the enclosure of exits.
2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met;
- 1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
 - 2. The depth from the exterior of the building is not greater than 10 feet and the length is not greater than 30 feet.
 - 3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.
 - 4. The area is used only for means of egress and exits directly to the outside.
- 32.2 Egress courts: See 1027.5 – if less than 10' wide must have 1 hr walls and protected openings. IBC 1028.4
- 32.3 Exit discharge shall provide a direct unobstructed access to a public way. IBC 1028.5

Accessibility – Chapter 11

33. Scoping Requirements

- 33.1 Sites, buildings, elements and spaces to be accessible except: IBC 1103.2
Employee work areas per 1103.2.3 and SPS 362.1103;
Raised areas for security, fire safety or life safety;
Limited access areas accessed by ladders, catwalks, etc;
Equipment spaces for maintenance.

34. Accessible Route

- 34.1 Accessible routes shall be provided from public transportation, parking, public streets, sidewalks, except if the only connection from the public way and the entrance is vehicular. IBC 1104.1
- 34.2 Accessible routes within the site shall connect all buildings, facilities and areas. IBC 1104.2
- 34.3 Accessible routes within a building shall connect all areas, except employee areas per 1104.3.1. IBC 1104.3
- 34.4 Accessible routes within a building shall connect all levels, except levels that do not contain elements per 1107 (dwelling and sleeping units) or 1108 (special occupancies). IBC 1104.4
- 34.5 Accessible routes shall coincide with general circulation IBC 1104.5
- 34.6 Security barriers shall not obstruct an accessible route IBC 1104.6

35. Accessible Entrances

- 35.1 Minimum of 60% of entrances shall be accessible, including: IBC 1105.1
Entrances from public parking,
Entrances from tunnels or walkways,
Restricted entrances,
Service entrances, if it is the only entrance to a building or tenant.
- At least one entrance shall be provided to each tenant or dwelling unit in a facility.

36. Parking and Passenger Loading Facilities

- 36.1 Accessible parking shall be provided per table 1106.1 IBC 1106.1
For 501 to 1000 spaces, provide 2%.
- 36.2 Accessible parking shall located on the shortest accessible Route to an accessible entrance. For parking facilities, the shortest accessible route to the pedestrian entry to the parking facility. If multiple entries, dispersed to those entries, except accessible van parking can be on one level. IBC 1107.6

37. Other Features and Facilities

- 37.1 Toilet rooms shall be accessible with at least one of each type of each fixture to be accessible and at least 5% of lavatories. Water closet compartments to be per ICC A117.1 IBC 1109.1
- 37.2 Where drinking fountains are provided, they shall be hi-lo IBC 1109.5
- 37.3 Where elevators are provided, comply with 3001.3 IBC 1109.6

- 37.4 Signage shall be provided in the following locations: IBC 1110.1
1) Parking spaces required per 1106 for the general public SPS 362.1110
shall be identified with signage specified in s. Trans 200.07. except
for parking for use only by employees.
2) Accessible passenger loading zones.
3) Accessible entrances where not all are accessible
4) Unisex toilet rooms
5) Exterior areas for assisted rescue per 1007.9
- 37.5 Directional signage or information about functional spaces or SPS 362.1110
Special accessibility provisions shall comply with ICC 117.1 and
be provided in the following locations:
1) Inaccessible building entrances
2) Inaccessible public toilets
3) Elevators not serving an accessible route
4) Single sex toilet rooms directing to the nearest family toilet room
5) Exits not providing an accessible means of egress.
- 37.6 Signage shall also be provided at: IBC 1110.3
1) At each area of refuge, egress stairs, exit passageways, etc.
2) At exterior areas for assisted rescue, provide signage per 1007.11
3) At two way communication, provide signage per 1007.8.2
4) Within exit enclosures, provide signage per 1022.8
- 38. Interior Environment – Chapter 12**
- 38.1 Ventilation – Buildings shall be provided with natural ventilation in IBC 1203.1
accordance with Section 1203.4 or mechanical ventilation in
accordance with the International Mechanical Code.
- 38.2 Ventilation and exhaust systems for occupancies and operations IBC 1203.5
involving flammable or combustible hazards or other contaminant
sources shall be provided in accordance with the International Mechanical Code and
International Fire Code.
- 38.3 Toilet rooms shall have a smooth, hard, non-absorbent floor IBC 1210.1
surface and base of a minimum 6 inches high.
- 38.4 Toilet rooms shall have a smooth, hard, non-absorbent wall IBC 1210.2
surface within 2 feet of urinals and water closets to a height of 4
feet above the floor, and except for structural elements, the materials used
in such walls shall be of a type that is not adversely affected by moisture. Accessories,
such as grab bars, towel bars, paper dispensers and soap dishes, provided on or within
walls, shall be installed and sealed to protect structural elements from moisture.

39. Plumbing Fixture Requirements – Chapter 29

- 39.1 Minimum Number of Plumbing Fixtures IBC 2902.1
Not required for parking garages
- 39.2 Garage floor area wastewater. SPS 382.34
Garages for public buildings and facilities:
Where a drain will be installed to receive the wastewater from floor areas of public
buildings and facilities on which vehicles can be driven, the wastewater shall discharge
using one of the following methods:
In areas where vehicles will be driven or stored, the wastewater shall discharge through
a floor drain equipped with a solid bottom sediment bucket, garage catch basin or oil
interceptor.

40. Elevators – Chapter 30

- 40.1 Referenced Standards: Except as provided in chapter 30 SPS 362.3001
or SPS 362, elevators shall comply with SPS 318.
- 40.2 Hoistway enclosures to comply with IBC 713.
- 40.3 Four or more cars serving all or the same portion of a building IBC 3002.2
must be in at least two separate hoistways. Maximum of 4 cars per hoistway.
- 40.4 Except for elevators for egress per 1007.4 or 3008, signage IBC 3002.3
must be provided at the call station to direct occupants to use
stairs in case of fire.
- 40.5 At least one elevator serving all floors for buildings with SPS 362.
levels 4 floors or more above or below grade must have an elevator
of size to accommodate a stretcher.
Stretcher: 24 inches by 84 inches with not less than 5-inch
radius corners, in the horizontal, open position.
Except where all of a building's elevators are large enough for fire department
emergency access, all elevator cars that are provided for fire department emergency
access shall be identified by the international symbol for emergency medical services,
star of life. The symbol may not be less than 3 inches high and shall be placed on both
sides of the elevator hoistway door frame on all floor levels, approximately 60 inches
above the floor.
- 40.6 Emergency doors shall be provided in blind hoistways.
- 40.7 Elevators shall not be in a common shaft with a stair.

41. Emergency Operations

- 41.1 Standby and emergency power to be per 3003.1.3. Hoistway venting to be on emergency power. IBC 3003.1
- 41.2 Elevators to be provided with fireman's recall per ASME IBC 3003.2

42. Machine rooms

- 42.1 Elevator machine rooms must be independently ventilated or air conditioned to prevent overheating of equipment. IBC 3005.2
- 42.2 Machine rooms serving pressurized hoistways must be pressurized on activation of a heat or smoke detector in the machine room or control room. IBC 3005.3
- 42.3 Machine rooms shall be rated per the hoistway requirements IBC 3005.4

43. Elevator Lobbies and Hoistway Opening Protection

- 43.1 Hoistway protection and enclosed elevator lobbies are required: IBC 3006.1
To comply with 3007.6 for fire service access elevators;
To comply with 3008.6 for occupant evacuation elevators
- 43.2 Hoistway opening protection is required per 3006.3 for elevators over 3 stories in high rise buildings if the elevator hoistway is over 75 ft. IBC 3006.2
Exception: not required at level of exit discharge for sprinklered bldgs.
- 43.3 Hoistway protection is to be one of the following: IBC 3006.3
1. A one hour lobby per 3006.3.1
2. For a fully sprinklered building, a smoke protected lobby
3. Additional doors protecting the hoistway openings per 3002.6
4. Hoistway pressurization per 909.2.1

44. Fire Service Access Elevator

- 44.1 Two are required by 403.6.1 for high-rise over 120 ft IBC 3007.1
- 44.2 An approved method shall be employed to prevent water from the sprinkler system from entering the hoistway. IBC 3007.3
- 44.3 Structural integrity of the hoistway construction shall meet the requirements of 403.2.3. Hoistway shall be lit to min 1 foot candle throughout its height when emergency operation is active. IBC 3007.5

- 44.4 Fire service elevator shall open into a fire service access elevator lobby that: IBC 3007.6
Has direct access to an interior stairway;
Is enclosed with smoke barriers of min 1 hour rating (other than exit level);
Has 3/4 hr smoke rated doors per UL 1784;
Is min 150 sf, with no dimension less than 8 ft.
Has identified per 3006.6.5

Egress is permitted through the lobby per 1016.2.

- 44.5 Fire service access elevator shall be continuously monitored at the FCC.

- 44.6 See 3007.8 for electrical power requirements

- 44.7 A class I standpipe hose connection shall be provided in the exit stair having direct access from the fire service access lobby. IBC 3007.9
The exit enclosure shall have access to the floor without passing through the fire service access lobby.

- 44.8 Note: See section 1009 for Elevators for accessible egress.

45. Special Construction – Chapter 31

Automatic Vehicular Gates

- 45.1 Shall comply with ASTM F 2200 and with UL 325.

END OF ANALYSIS

i. Structural Design Criteria

Judge Doyle Square Parking Garage

Structural Design Criteria

3 November 2016

Project Name: Judge Doyle Square Parking Garage

H+P Project Number: 1605877

Owner: Beitler Real Estate / City of Madison

Architect: Lothan Van Hook DeStefano Architecture LLC

Geotechnical Engineer: CGC, Inc.

MEP Engineer: Affiliated Engineers, Inc.

Parking Consultant: Walker Parking Consultants

1.0 Structural Design Criteria

1.1 Design Standards and Codes

Building Codes:

- Wisconsin State Code, Latest Edition
- International Building Code, 2015

Structural Concrete Design:

- American Concrete Institute, Building Code Requirements for Structural Concrete ACI 318-11

Structural Steel Design:

- American Institute of Steel Construction, Specification for Structural Steel Buildings – Load and Resistance Factor Design Specification for Structural Buildings AISC 13th Edition, 2005

Welding:

- American Welding Society, Structural Welding Code - Steel (AWS D1.1-92)

Reinforced Masonry Design:

- American Concrete Institute, Building Code Requirements for Masonry Structures (ACI 530-92 / ASCE 5-92 / TMS 402-92) [Also refer to 2005 edition]

Seismic Design:

- International Building Code, 2015

1.2 Structural Materials

1.2.1 Concrete

Normal weight Reinforced Concrete (145 pcf) with 28-day min. compressive strengths as follows:

- | | |
|-----------------------------|----------|
| • Spread Footings | 6000 psi |
| • Grade beams, Mats | 6000 psi |
| • Foundation Walls | 6000 psi |
| • Columns | 8000 psi |
| • Core Walls and Link Beams | 6000 psi |
| • Floor Slabs and beams | 6000 psi |

1.2.2 Reinforcement

- ASTM A615, Grade 60, reinforcing bars
- Epoxy coat reinforcing bars to ASTM A775 at all garage areas, and any exposed area
- ASTM A185, welded wire reinforcing
- Epoxy coat welded wire reinforcing to ASTM A884 at all garage areas, any exposed area
- ASTM A706, weldable reinforcing bars

1.2.3 Steel

- Wide Flanges, WT's: ASTM A992 (Fy = 50 KSI)
- Channels, Angles: ASTM A36 (Fy = 36 KSI)
- Misc. Plates: ASTM A36, unless noted otherwise
- Column Base Plates: ASTM A36 (Fy = 36 KSI)
- Continuity Plates: ASTM A992 (Fy = 50 KSI)
- Rectangular Tubes (HSS): ASTM A500, Grade C (Fy = 50 KSI)
- Round Tubes (HSS): ASTM A500, Grade C (Fy = 50 KSI)
- Round Pipes: ASTM A53, Type S, Grade B (Fy = 35 KSI)
- Anchor Bolts: ASTM F1554 Grade 36, unless noted otherwise.

1.2.4 Shear Studs/Connectors

- 0.75" diameter headed shear studs per ASTM A108 (lengths vary with slab thickness)

1.2.5 Welding

- AWS E70XX electrodes for shop welding
- AWS E7018 electrodes for field welding

1.2.6 Bolts, Nuts, and Washers

- ASTM A325; ASTM A490 where noted.
- 3/4" diameter minimum.

1.2.7 Structural Steel Fireproofing

- Spray-on or board cementitious fireproofing to meet code requirements.
- See Architectural drawings and specifications for additional requirements.

1.2.8 Masonry

- Normal weight CMU with f'm = 2,500psi, type S mortar.

1.3 Design Loads

1.3.1 General

- Occupancy/Risk Category II

1.3.2 Floor Loads

SDL = Superimposed Dead Load (in addition to self-weight of the structure)

LL = Live Load

Live Load Reductions taken in accordance with the International Building Code.

- Demising walls and partitions shall be of lightweight steel studs and drywall, except where indicated on the Architectural (Structural) Drawings.
- Weight of masonry partitions shall be in addition to the loads listed below where:
8 inch CMU = 55 PSF (wall surface area)

- Glass Exterior Façade = 15 PSF (wall surface area)

	Occupancy	SDL (PSF)	LL (PSF)
1	Slab-On-Grade	---	250
2	Parking MEP Allowance – 5psf	5	50
3	Stair	---	100
4	Public / Retail Floor Finish – 5psf Partitions – 10psf MEP Allowance – 5psf	20	125
5	Mechanical MEP Allowance – 5psf Misc. – 15psf	20	50 + equip. wt
6	Residential Floor Finish – 5psf Partitions – 10psf MEP Allowance – 5psf	20	40
7	Storage Floor Finish – 5psf MEP Allowance – 5psf	10	125
8	Loading Dock MEP Allowance – 5psf Misc. – 50psf	55	250
9	Pinckney Street 9" Asphalt paving – 110psf 1'-0" concrete road base (150pcf) – 150psf 6'-0" soil – 720psf Geofoam (3pcf) – 15psf 4" concrete protection slab(150pcf) – 50psf Waterproofing– 5psf MEP Allowance – 5psf	1055	1000
12	Green Roof – Non Accessible 12" Omni Ecosystem –60psf MEP Allowance – 5psf Ceiling – 5psf	65	25 + DRIFT
13	Terrace Roof 2" paver – 25psf Waterproofing/Pedestals – 5psf MEP Allowance – 10psf Ceiling – 5psf	45	100

1.3.3 Wind Loads

IBC code minimum wind design loads shall be based on the following:

- Basic wind speed, V: 90 mph
- Wind importance factor, Iw: 1.15
- Building category: II
- Wind exposure category (typical): C
- Internal pressure coefficient, GCPI: 0.18

1.3.4 Seismic Loads

IBC code minimum seismic design loads shall be based on the following:

- Seismic importance factor, Ie: 1.25
- Seismic use group: II
- Mapped spectral response accelerations:
 - Ss: 0.084 g
 - Sl: 0.046 g
- Site class: C
- Spectral response coefficients:
 - Sds: 0.068 g
 - Sdl: 0.052 g
- Seismic Design Category: A
- Basic Seismic-Force-Resisting System(s): Reinforced Concrete Shear Walls
- Seismic response coefficient(s)
 - Cs (north-south): x
 - Cs (east-west): x
- Response modification factor(s), R: x
- Analysis procedure used:
 - Equivalent Lateral Frame Method

1.3.5 Snow Loads

Code minimum snow loads based on the following:

- Ground snow load, Pg: 30 psf
- Flat-roof snow load, Pf: 21 psf
- Snow exposure factor, Ce: 0.9
- Snow load importance factor, Is: 1.0
- Thermal factor, Ct: 1.1

1.3.6 Ice Loads

- Per IBC 1614

1.3.7 Rain Loads

- Per IBC 1611

1.3.8 Temperature Effects

- Per Section 2.3.5 of ASCE 7

1.4 Strength Design

1.4.1 Load Cases

- D = Dead load
- E = Combined effect of horizontal and vertical earthquake induced forces
- F = Load due to fluid pressures
- H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials
- L = Live load, except roof live load, including any permitted live load reduction
- Lr = Roof live load including any permitted live load reduction
- R = Rain load
- S = Snow load
- T = Self-straining force arising from contraction or expansion resulting from temperature change, shrinkage, moisture change, creep in component materials, movement due to differential settlement or combinations thereof
- W = Load due to wind pressure

1.4.2 Load Combinations

- 1.4(D + F)
- 1.2(D + F + T) + 1.6(L + H) + 0.5(Lr or S or R)
- 1.2(D + F) + 1.6(Lr or S or R) + 1.6H + (f1L or 0.5W)
- 1.2(D + F) + 1.0W + f1L + 1.6H + 0.5(Lr or S or R)
- 1.2(D + F) + 1.0E + f1L + 1.6H + f2S
- 0.9D + 1.0W + 1.6H
- 0.9(D + F) + 1.0E + 1.6H
- Where:
 - f1=1.0 for Assembly areas with LL>100 and Parking Garages; 0.5 for other live loads
 - f2=0.7 for non-shedding roofs; 0.2 for other roofs

1.5 Serviceability Design

1.5.1 Load Combinations

- D + F
- D + H + F + L + T
- D + H + F + (Lr or S or R)
- D + H + F + 0.75(L + T) + 0.75(Lr or S or R)
- D + H + F + (0.6W or 0.7E)
- D + H + F + 0.75(0.6W) + 0.75L + 0.75(Lr or S or R)
- D + H + F + 0.75(0.7E) + 0.75L + 0.75(Lr or S or R)
- 0.6D + 0.6W + H
- 0.6(D + F) + 0.7E + H

1.5.2 Floor Framing Deflections

- Deflections limited per IBC Table 1604.3

CONSTRUCTION	<i>L</i>	<i>S</i> or <i>W</i> ^f	<i>D + L</i> ^{d, g}
Roof members: ^e			
Supporting plaster or stucco ceiling	//360	//360	//240
Supporting nonplaster ceiling	//240	//240	//180
Not supporting ceiling	//180	//180	//120
Floor members	//360	—	//240
Exterior walls:			
With plaster or stucco finishes	—	//360	—
With other brittle finishes	—	//240	—
With flexible finishes	—	//120	—
Interior partitions: ^b			
With plaster or stucco finishes	//360	—	—
With other brittle finishes	//240	—	—
With flexible finishes	//120	—	—
Farm buildings	—	—	//180
Greenhouses	—	—	//120

1.5.3 Lateral Deflections

- For service level wind pressures, the overall drift of the building would be limited to H/400.
- For service level wind pressures, the inter-story drift would be limited to H/400.

1.6 Other Criteria

1.6.1 Corrosion Protection of concrete reinforcement

- All reinforcement to be epoxy coated
- All concrete to contain corrosion inhibitor admixture
- Flat slabs shall be sloped to drain to avoid ponding
- Traffic coating membrane shall be applied to top of slab
- Waterproofing of the slab concrete could be achieved with a concrete admixture such as Xypex, to provide a very durable structure.

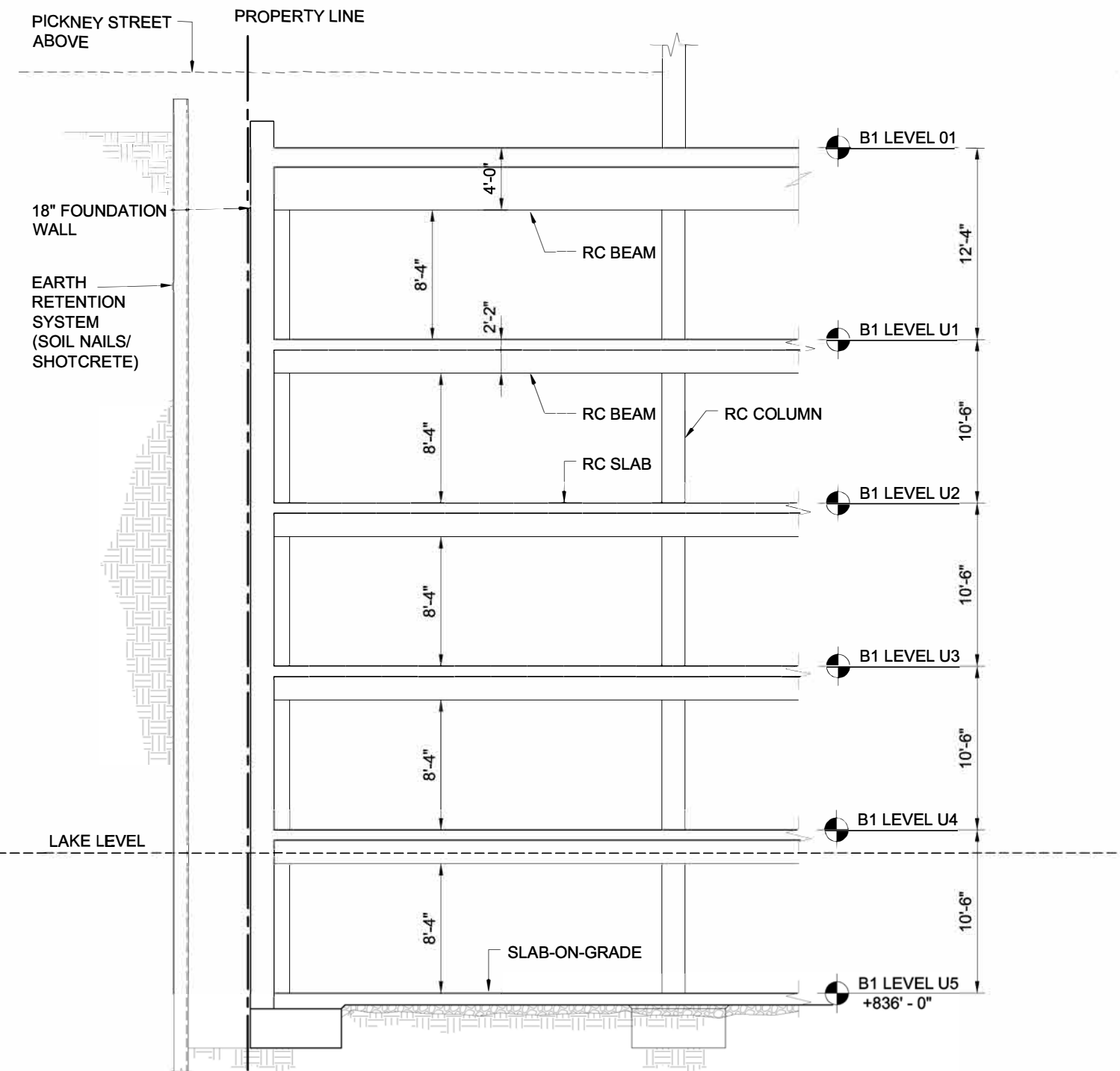
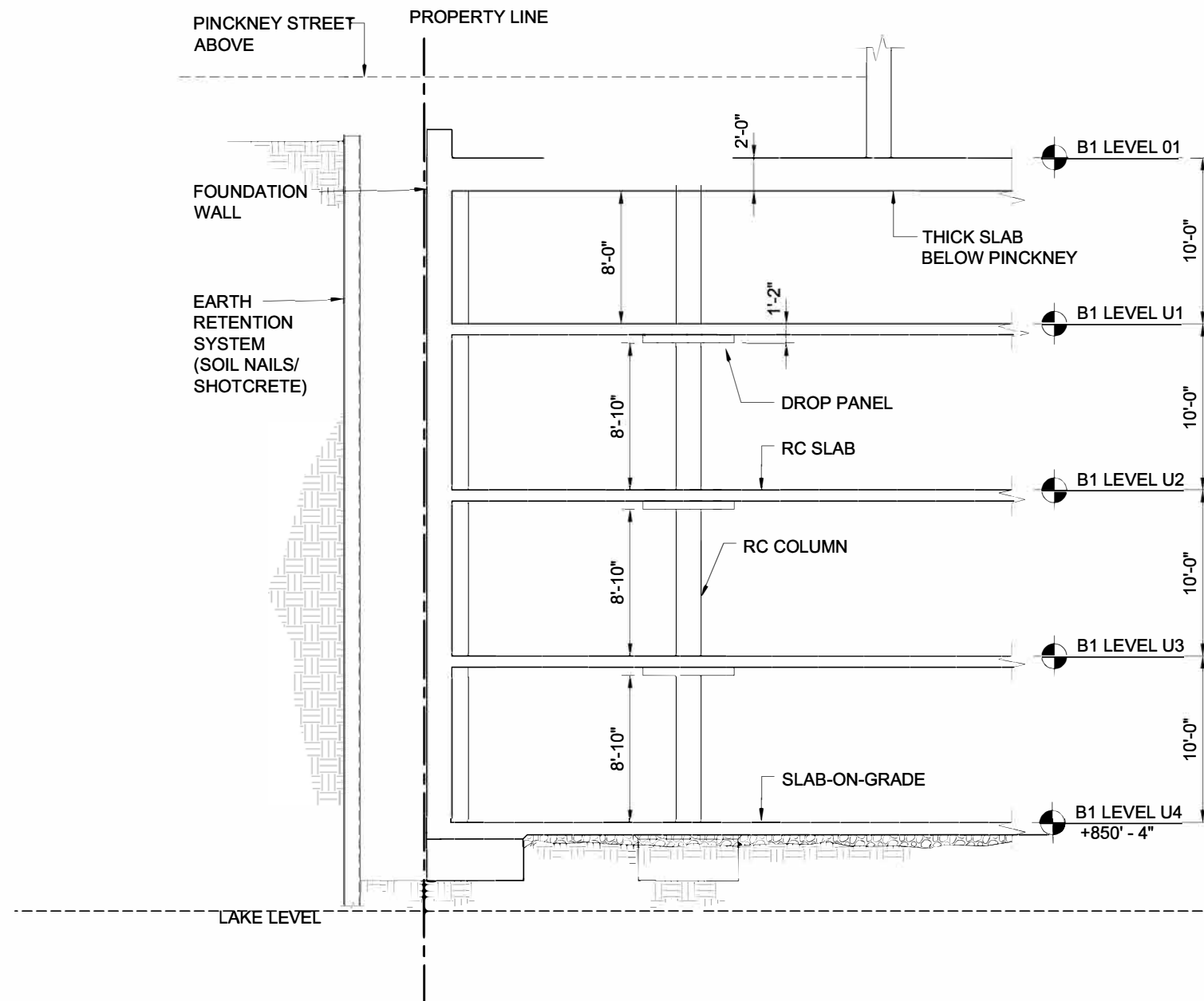
1.6.2 Fire Resistance

ACI 216.1-97
Table 2.1, utilizing Siliceous or Carbonate aggregate
Table 2.3, restrained concrete

j. Construction Cost Estimate and Comparative Analysis

OPTION 1
BASE SCHEME
 4 LEVELS
 30'-0" BAYS
 +850'-4"
 608 CARS

OPTION 2
 5 LEVELS
 45'-0" BAYS
 +836'-0"
 640 CARS

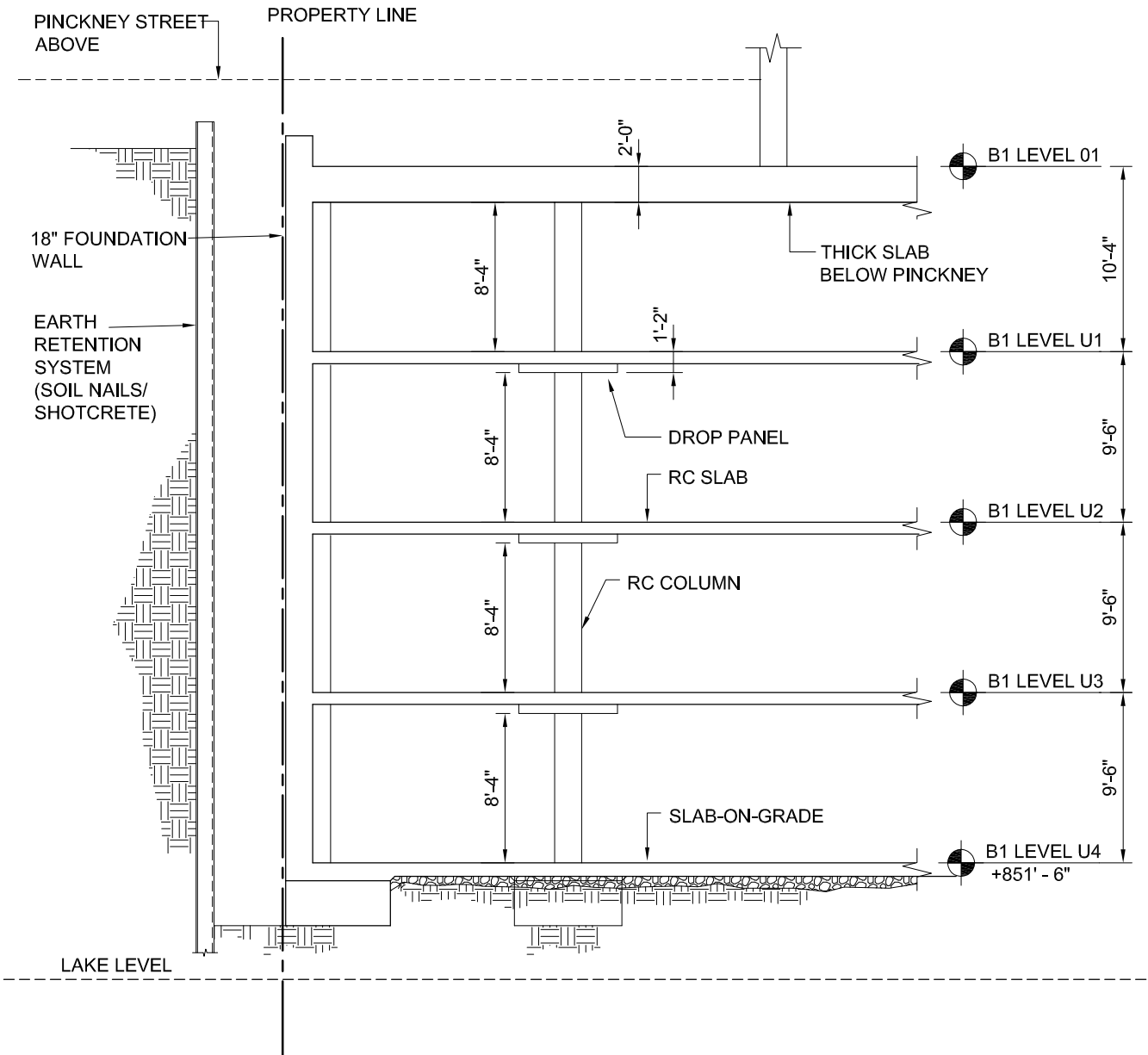
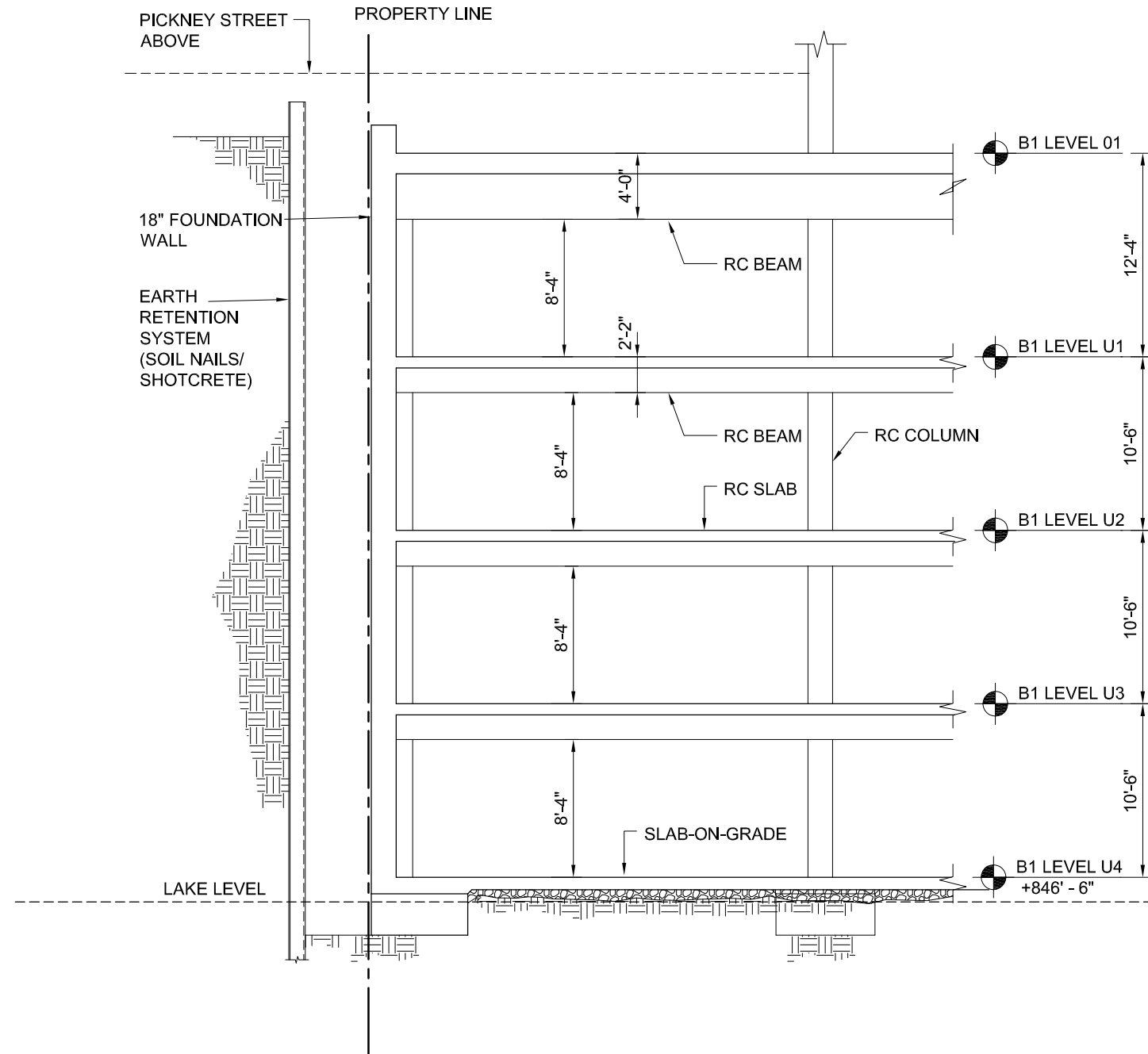


OPTION 3

4 LEVELS
45'-0" BAYS
+846'-6"
~556 CARS

OPTION 4

4 LEVELS
30'-0" BAYS
+851'-6"
~540 CARS



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CONSTRUCTION COST ESTIMATE

COMPARATIVE BUDGET ANALYSIS SUMMARY

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(UNDERGROUND PARKING DEVELOPMENT)
MADISON, WI
ARCHITECT: LOTHAN VAN HOOK DESTEFANO ARCHITECTURE, LLC

DIVISION #	TRADE / DESCRIPTION	OPTION - '1' - BASE SCHEME PER LVDA PROPOSAL DWGS. SET PER DATED 02/24/2016		OPTION - '2' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '3' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '4' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016	
		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT + PARTIAL LEVEL 5		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT	
		30'-0" BAYS		45'-0" BAYS		45'-0" BAYS		30'-0" BAYS	
		FL. TO FL. HT.	10'-0"	FL. TO FL. HT. VARIES	10'-10" (AVE)	FL. TO FL. HT. VARIES	11'-0" (AVE)	FLOOR TO FLOOR HT.	9'-9"(AVE)
		GRADE 890'-4" TO 850'-4" T.S.		GRADE 890'-4" TO 836'-0" T.S.		GRADE 890'-4" TO 846'-6" T.S.		GRADE 890'-4" TO 851'-6" T.S.	
		No. OF CARS =	608	No. OF CARS =	640	No. OF CARS =	556	No. OF CARS =	540
		ENCL. AREA IN SF =	191,600	ENCL. AREA IN SF =	231,100	ENCL. AREA IN SF =	198,600	ENCL. AREA IN SF =	198,600
		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF
2	SITEWORK								
	a. SITE IMPROVEMENT b. SITE UTILITIES / UNDERGROUND	(INCL. W/ BLDG.) (INCL. W/ BLDG.)		(INCL. W/ BLDG.) (INCL. W/ BLDG.)		(INCL. W/ BLDG.) (INCL. W/ BLDG.)		(INCL. W/ BLDG.) (INCL. W/ BLDG.)	
	TOTAL SITEWORK	\$0	\$0.00	\$0.00	\$0.00	\$0	\$0.00	\$0	\$0.00
2A	BUILDING FOUNDATION SYSTEM								
	a. CONCRETE SLURRY WALL RETENTION SYSTEM (BASE SCHEME ONLY) b. CAISSONS (BASE SCHEME ONLY) c. SOIL NAILS / SHOTCRETE SYSTEM (FOUR SIDES) (SCHEMES #2, #3, #4) d. ALLOWANCE FOR BELOW GRADE OBSTRUCTIONS e. DEWATERING SYSTEM f. ALLOWANCE FOR HAUL AWAY SLURRY SPOILS (BASE SCHEME ONLY)	\$4,279,000 \$1,650,000 \$150,000 \$250,000 \$500,000	\$22.33 \$8.61 \$0.78 \$1.30 \$2.61	\$3,369,000 \$150,000 \$270,000	\$14.58 \$0.65 \$1.17	\$2,752,000 \$150,000 \$150,000	\$13.86 \$0.76 \$0.76	\$2,458,000 \$150,000 \$150,000	\$12.38 \$0.76 \$0.76
	TOTAL BUILDING FOUNDATION SYSTEM	\$6,829,000	\$35.64	\$3,789,000	\$16.40	\$3,052,000	\$15.37	\$2,758,000	\$13.89
2B	EARTHWORK								
	a. EARTHWORK FOR 4 LEVELS OF BASEMENT (EXCAVATION / BACKFILL) b. EARTHWORK FOR 5th LEVEL OF BASEMENT (EXCAVATION / BACKFILL) c. EARTHWORK FOR WALL & COLUMN FOOTINGS (EXCAVATION / BACKFILL) d. COMPACTED FILL / CRUSHED STONE UNDER SLAB ON GRADE	\$3,878,000 \$146,000	\$20.24 \$0.76	\$4,113,000 \$695,000 \$1,328,000 \$152,000	\$20.71 \$3.50 \$6.69 \$0.77	\$4,076,000 \$976,000 \$152,000	\$20.52 \$4.91 \$0.77	\$3,616,000 \$951,000 \$152,000	\$18.21 \$0.77
	TOTAL EARTHWORK	\$4,024,000	\$21.00	\$6,288,000	\$27.21	\$5,204,000	\$26.20	\$4,719,000	\$23.76
3	CONCRETE SYSTEM TO GRADE								
	a. BASEMENT CONCRETE COLUMN & SLAB SYSTEM (BASE SCHEME) b. BASEMENT CONCRETE PERIMETER FOUND. WALL SYSTEM, SLABS, COLUMNS, DROP PANELS, CORE WALLS @ ELEVATORS & STAIRS, FOOTINGS c. PRECAST WHEEL STOP	\$7,714,000 \$49,000	\$40.26 \$0.26	\$15,470,000 \$51,000	\$77.90 \$0.26	\$12,680,000 \$45,000	\$63.85 \$0.23	\$11,660,000 \$43,000	\$58.71 \$0.22
	TOTAL CONCRETE SYSTEM TO GRADE	\$7,763,000	\$40.52	\$15,521,000	\$67.16	\$12,725,000	\$64.07	\$11,703,000	\$58.93



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CONSTRUCTION COST ESTIMATE

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		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT + PARTIAL LEVEL 5		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT	
		30'-0" BAYS		45'-0" BAYS		45'-0" BAYS		30'-0" BAYS	
		FL. TO FL. HT.	10'-0"	FL. TO FL. HT. VARIES	10'-10" (AVE)	FL. TO FL. HT. VARIES	11'-0" (AVE)	FLOOR TO FLOOR HT.	9'-9"(AVE)
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		No. OF CARS =	608	No. OF CARS =	640	No. OF CARS =	556	No. OF CARS =	540
		ENCL. AREA IN SF =	191,600	ENCL. AREA IN SF =	231,100	ENCL. AREA IN SF =	198,600	ENCL. AREA IN SF =	198,600
		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF
4	MASONRY								
	a. INTERIOR CMU WALL @ SLURRY WALL (BASE SCHEME)	\$529,000	\$2.76						
	a.1 INTERIOR CMU WALL @ BASEMENT WALL			\$0	\$0.00	\$0	\$0.00	\$0	\$0.00
	b. INTERIOR CMU WALL	\$24,000	\$0.13	\$236,000	\$1.19	\$211,000	\$1.06	\$194,000	\$0.98
	TOTAL MASONRY	\$553,000	\$2.89	\$236,000	\$1.02	\$211,000	\$1.06	\$194,000	\$0.98
5	METALS								
	a. HANDRAILS & GUARDRAILS @ CONCRETE STAIRS	\$30,000	\$0.16	\$38,000	\$0.19	\$30,000	\$0.15	\$30,000	\$0.15
	b. MISC. IRON, LINTEL, SEPARATOR METAL BEAMS @ ELEVATOR SHAFT, ETC.	\$208,000	\$1.09	\$139,000	\$0.70	\$122,000	\$0.61	\$122,000	\$0.61
	TOTAL METALS	\$238,000	\$1.24	\$177,000	\$0.77	\$152,000	\$0.77	\$152,000	\$0.77
6	ROUGH & FINISH CARPENTRY, MILLWORK								
	a. INSTALL DOORS, FRAMES & H.W. & MISC. BLOCKING	\$5,000	\$0.03	\$11,000	\$0.06	\$10,000	\$0.05	\$10,000	\$0.05
	TOTAL ROUGH & FINISH CARPENTRY, MILLWORK	\$5,000	\$0.03	\$11,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05
7	THERMAL AND MOISTURE PROTECTION								
	a. WATERPROOFING @ BASEMENT WALL	\$243,000	\$1.27	\$313,000	\$1.58	\$273,000	\$1.37	\$250,000	\$1.26
	b. TRAFFIC COATING @ PARKING AREA	\$659,000	\$3.44	\$748,000	\$3.77	\$646,000	\$3.25	\$646,000	\$3.25
	c. INSULATION @ BASEMENT (UNDER FIRST FLOOR LOBBY / RETAIL AREA)	\$35,000	\$0.18	\$35,000	\$0.18	\$35,000	\$0.18	\$35,000	\$0.18
	d. FIRE SAFING / FIRE STOPPING SYSTEM	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05
	e. CAULKING/JOINT SEALER	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05
	TOTAL THERMAL AND MOISTURE PROTECTION	\$957,000	\$4.99	\$1,116,000	\$4.83	\$974,000	\$4.90	\$951,000	\$4.79
8	DOORS, FRAMES, H.W.								
	a. HOLLOW METAL DOORS AND FRAMES	\$9,000	\$0.05	\$24,000	\$0.12	\$21,000	\$0.11	\$21,000	\$0.11
	b. O.H. DOORS @ PARKING ENTRY / EXIT	\$50,000	\$0.26	\$50,000	\$0.25	\$50,000	\$0.25	\$50,000	\$0.25
	c. FINISH HARDWARE	\$2,000	\$0.01	\$8,000	\$0.04	\$7,000	\$0.04	\$7,000	\$0.04
	TOTAL DOORS, FRAMES, H.W.	\$61,000	\$0.32	\$82,000	\$0.35	\$78,000	\$0.39	\$78,000	\$0.39



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		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF
9	INTERIOR FINISHES								
	a. TERRAZZO TILE @ PARKING ELEV. LOBBY	\$15,000	\$0.08	\$40,000	\$0.20	\$30,000	\$0.15	\$30,000	\$0.15
	b. RESILIENT FLOORING	\$0	\$0.00	\$10,000	\$0.05	\$9,000	\$0.05	\$9,000	\$0.05
	c. HARDENED & SEALED CONC. / FLOOR TREATMENT	\$2,000	\$0.01	\$2,000	\$0.01	\$2,000	\$0.01	\$2,000	\$0.01
	d. FINISH PAINTING	\$376,000	\$1.96	\$462,000	\$2.33	\$424,000	\$2.13	\$410,000	\$2.06
	TOTAL INTERIOR FINISHES	\$393,000	\$2.05	\$514,000	\$2.22	\$465,000	\$2.34	\$451,000	\$2.27
10	SPECIALTIES								
	a. CORNER GUARDS	\$25,000	\$0.13	\$25,000	\$0.13	\$25,000	\$0.13	\$25,000	\$0.13
	b. EXTERIOR BUILDING SIGNAGE AND GRAPHICS	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05	\$10,000	\$0.05
	c. INTERIOR SIGNAGE PER CODE	\$5,000	\$0.03	\$5,000	\$0.03	\$5,000	\$0.03	\$5,000	\$0.03
	d. FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES	\$8,000	\$0.04	\$8,000	\$0.04	\$8,000	\$0.04	\$8,000	\$0.04
	TOTAL SPECIALTIES	\$48,000	\$0.25	\$48,000	\$0.21	\$48,000	\$0.24	\$48,000	\$0.24
11	EQUIPMENT								
	a. PARKING CONTROL EQUIPMENT	\$100,000	\$0.52	\$100,000	\$0.50	\$100,000	\$0.50	\$100,000	\$0.50
	TOTAL EQUIPMENT	\$100,000	\$0.52	\$100,000	\$0.43	\$100,000	\$0.50	\$100,000	\$0.50
14	VERTICAL TRANSPORTATION SYSTEM								
	a. PARKING PASSENGER MRL ELEVATORS (4 EACH)	\$450,000	\$2.35	\$660,000	\$3.32	\$600,000	\$3.02	\$600,000	\$3.02
	b. FIRE ACCESS ELEVATORS (2 EACH)	N/A		N/A		N/A		N/A	
	c. CAB FINISHES ALLOWANCE FOR PARKING PASSENGER ELEVATORS (4 EACH)	(STD. CAB FINISHES)		(STD. CAB FINISHES)		(STD. CAB FINISHES)		(STD. CAB FINISHES)	
	d. CAB FINISHES ALLOWANCE FOR FIRE ACCESS ELEVATORS (2 EACH)	N/A		N/A		N/A		N/A	
	TOTAL VERTICAL TRANSPORTATION SYSTEM	\$450,000	\$2.35	\$660,000	\$2.86	\$600,000	\$3.02	\$600,000	\$3.02



EVANS

Construction / Consulting

CONSTRUCTION COST ESTIMATE

COMPARATIVE BUDGET ANALYSIS SUMMARY

PRE-DESIGN REPORT

DATE: 11/22/2016

PROJECT: JUDGE DOYLE SQUARE DEVELOPMENT
(UNDERGROUND PARKING DEVELOPMENT)
MADISON, WI
ARCHITECT: LOTHAN VAN HOOK DESTEFANO ARCHITECTURE, LLC

DIVISION #	TRADE / DESCRIPTION	OPTION - '1' - BASE SCHEME PER LVDA PROPOSAL DWGS. SET PER DATED 02/24/2016		OPTION - '2' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '3' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '4' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016	
		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT + PARTIAL LEVEL 5		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT	
		30'-0" BAYS		45'-0" BAYS		45'-0" BAYS		30'-0" BAYS	
		FL. TO FL. HT.	10'-0"	FL. TO FL. HT. VARIES	10'-10" (AVE)	FL. TO FL. HT. VARIES	11'-0" (AVE)	FLOOR TO FLOOR HT.	9'-9"(AVE)
		GRADE 890'-4" TO 850'-4" T.S.		GRADE 890'-4" TO 836'-0" T.S.		GRADE 890'-4" TO 846'-6" T.S.		GRADE 890'-4" TO 851'-6" T.S.	
		No. OF CARS =	608	No. OF CARS =	640	No. OF CARS =	556	No. OF CARS =	540
		ENCL. AREA IN SF =	191,600	ENCL. AREA IN SF =	231,100	ENCL. AREA IN SF =	198,600	ENCL. AREA IN SF =	198,600
		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF
15	MECHANICAL SYSTEMS								
	a. FIRE PROTECTION SYSTEM	\$473,000	\$2.47	\$549,000	\$2.76	\$473,000	\$2.38	\$473,000	\$2.38
	b. PLUMBING SYSTEM	\$662,000	\$3.46	\$745,000	\$3.75	\$643,000	\$3.24	\$643,000	\$3.24
	c. HVAC/TEMPERATURE CONTROL SYSTEM (GARAGE VENTILATION SYSTEM)	\$1,419,000	\$7.41	\$1,639,000	\$8.25	\$1,412,000	\$7.11	\$1,412,000	\$7.11
	TOTAL MECHANICAL SYSTEMS	\$2,554,000	\$13.33	\$2,933,000	\$12.69	\$2,528,000	\$12.73	\$2,528,000	\$12.73
16	ELECTRICAL SYSTEM								
	a. ELECTRICAL/LIFE SAFETY SYSTEM	\$1,608,000	\$8.39	\$1,858,000	\$9.36	\$1,600,000	\$8.06	\$1,600,000	\$8.06
	b. ELECTRICAL / FIRE ALARM SYSTEM	\$125,000	\$0.65	\$150,000	\$0.76	\$125,000	\$0.63	\$125,000	\$0.63
	c. ELECTRICAL LOW VOLTAGE SPECIALTY / SECURITY SYSTEM	\$75,000	\$0.39	\$75,000	\$0.38	\$75,000	\$0.38	\$75,000	\$0.38
	d. CABLE TV, INTERCOM SYSTEM	N/A		N/A		N/A		N/A	
	TOTAL ELECTRICAL SYSTEM	\$1,808,000	\$9.44	\$2,083,000	\$9.01	\$1,800,000	\$9.06	\$1,800,000	\$9.06
17	HOISTING								
	MATERIAL / PERSONNEL HOISTING FOR ALL TRADES FOR FREE USE BY ALL TRADES INCLUDING OPERATOR	\$250,000	\$1.30	\$250,000	\$1.26	\$250,000	\$1.26	\$250,000	\$1.26
	TOTAL HOISTING	\$250,000	\$1.30	\$250,000	\$1.08	\$250,000	\$1.26	\$250,000	\$1.26
	SUB-TOTAL DIRECT COST	\$26,033,000	\$135.87	\$33,808,000	\$146.29	\$28,197,000	\$141.98	\$26,342,000	\$132.64



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CONSTRUCTION COST ESTIMATE

COMPARATIVE BUDGET ANALYSIS SUMMARY

PRE-DESIGN REPORT

DATE: 11/22/2016

PROJECT: JUDGE DOYLE SQUARE DEVELOPMENT
(UNDERGROUND PARKING DEVELOPMENT)
MADISON, WI
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DIVISION #	TRADE / DESCRIPTION	OPTION - '1' - BASE SCHEME PER LVDA PROPOSAL DWGS. SET PER DATED 02/24/2016		OPTION - '2' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '3' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016		OPTION - '4' SCHEME PER STRUCT. ENGR. HALVORSON BASEMENT SECTION DWG. DATED 11/21/2016	
		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT + PARTIAL LEVEL 5		4 FULL LEVELS OF BASEMENT		4 FULL LEVELS OF BASEMENT	
		30'-0" BAYS		45'-0" BAYS		45'-0" BAYS		30'-0" BAYS	
		FL. TO FL. HT.	10'-0"	FL. TO FL. HT. VARIES	10'-10" (AVE)	FL. TO FL. HT. VARIES	11'-0" (AVE)	FLOOR TO FLOOR HT.	9'-9"(AVE)
		GRADE 890'-4" TO 850'-4" T.S.		GRADE 890'-4" TO 836'-0" T.S.		GRADE 890'-4" TO 846'-6" T.S.		GRADE 890'-4" TO 851'-6" T.S.	
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		ENCL. AREA IN SF =	191,600	ENCL. AREA IN SF =	231,100	ENCL. AREA IN SF =	198,600	ENCL. AREA IN SF =	198,600
		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF
	SUB-TOTAL DIRECT COST	\$26,033,000	\$135.87	\$33,808,000	\$146.29	\$28,197,000	\$141.98	\$26,342,000	\$132.64
	CONSTRUCTION CONTINGENCY 5.00%	\$1,302,000		\$1,690,000		\$1,410,000		\$1,317,000	
	SUB-TOTAL	\$27,335,000	\$142.67	\$35,498,000	\$153.60	\$29,607,000	\$149.08	\$27,659,000	\$139.27
	GENERAL CONDITIONS / GENERAL REQUIREMENTS								
	GENERAL CONDITIONS: 2.50% (PRE-CONSTRUCTION/ PROCUREMENT/ CONSTRUCTION/ COMMISSIONING/ CLOSE-OUT) PROJECT OFFICE AND FIELD SUPERVISORY PERSONNEL INCLUDING PROJECT EXECUTIVE, PROJECT MANAGERS, ASST. PROJECT MANAGERS, GEN. & SR. SUPERINTENDENTS, ASST. SUPERINTENDENTS, TIME KEEPER, SCHEDULER, ADMIN, DATA PROCESSING AND PROJECT ACCOUNTING INCLUDING ALL APPLICABLE FEDERAL STATE AND LOCAL TAXES, FRINGE BENEFITS, AND OVERHEAD COSTS	\$683,000		\$887,000		\$740,000		\$691,000	
	GENERAL REQUIREMENTS: 4.00% (PRE-CONSTRUCTION/ PROCUREMENT/ CONSTRUCTION/ COMMISSIONING/ CLOSE-OUT) LAYOUT, DOCUMENT REPRODUCTION, FLAGMEN, TEMP UTILITY CHARGES, SMALL TOOLS AND CONSUMABLES, LABORERS FOR GENERAL CLEAN-UP, CARPENTERS FOR SAFETY AND PROTECTION, TEMPORARY STAIRS, HANDRAILS, TOEBOARD, OPENING PROTECTION, TEMPORARY PROTECTION OF FINISHES, SAFETY NETTING, TEMPORARY FIRE EXTINGUISHERS, FIRST AID STATIONS, POTABLE WATER STATIONS, TEMPORARY OFFICE FACILITIES/ EQUIPMENT/ PHONES/ CELL PHONES/ RADIOS, FIELD OFFICE SUPPLIES, SITE SECURITY, CONFERENCE TRAILER, DUST CONTROL, STREET CLEANING, VEHICLES, TRAVEL, LODGING TEMPORARY FACILITIES, TEMPORARY UTILITIES, SITE BARRICADES, SITE FENCING, TEMP SIGNAGE, TRASH CHUTES, DUMPSTERS, PEST CONTROL, MATERIAL / PERSONNEL HOISTING FOR ALL TRADES INCLUDING OPERATOR, FINAL CLEANING OF INTERIOR AND PUBLIC SPACES,	\$1,093,000		\$1,420,000		\$1,184,000		\$1,106,000	
	SUB-TOTAL	\$29,111,000	\$151.94	\$37,805,000	\$163.59	\$31,531,000	\$158.77	\$29,456,000	\$148.32
	FIVE YEAR PROJECT OWNER WRAP INSURANCE PROGRAM 1.25%	\$364,000		\$473,000		\$394,000		\$368,000	
	SUB-TOTAL	\$29,475,000	\$153.84	\$38,278,000	\$165.63	\$31,925,000	\$160.75	\$29,824,000	\$150.17
	GENERAL CONTRACTOR'S FEE 3.00% (INCL. HOME OFF. EXP.+ PRECONST. PROCUR. / CONST. / COMM. / CLOSE OUT)	\$884,000		\$1,148,000		\$958,000		\$895,000	
	TOTAL CONSTRUCTION COST	\$30,359,000	\$158.45	\$39,426,000	\$170.60	\$32,883,000	\$165.57	\$30,719,000	\$154.68
	COST PER CAR	\$49,900		\$61,600		\$59,100		\$56,900	
		No. OF CARS =	608	No. OF CARS =	640	No. OF CARS =	556	No. OF CARS =	540



EVANS

Construction / Consulting

CONSTRUCTION COST ESTIMATE

COMPARATIVE BUDGET ANALYSIS SUMMARY

PRE-DESIGN REPORT

DATE: 11/22/2016

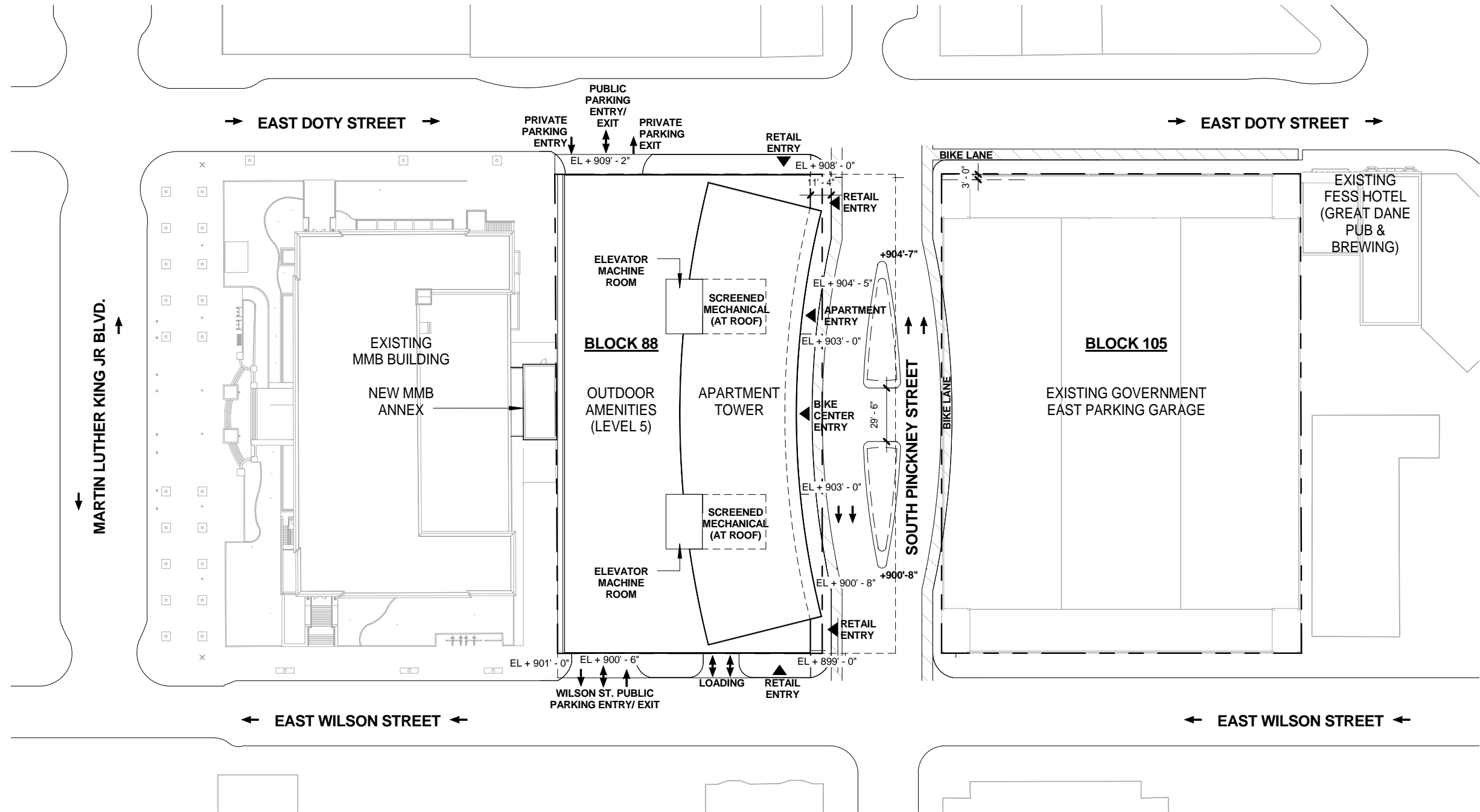
PROJECT: JUDGE DOYLE SQUARE DEVELOPMENT
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		30'-0" BAYS		45'-0" BAYS		45'-0" BAYS		30'-0" BAYS	
		FL. TO FL. HT.	10'-0"	FL. TO FL. HT. VARIES	10'-10" (AVE)	FL. TO FL. HT. VARIES	11'-0" (AVE)	FLOOR TO FLOOR HT.	9'-9"(AVE)
		GRADE 890'-4" TO 850'-4" T.S.		GRADE 890'-4" TO 836'-0" T.S.		GRADE 890'-4" TO 846'-6" T.S.		GRADE 890'-4" TO 851'-6" T.S.	
		No. OF CARS =	608	No. OF CARS =	640	No. OF CARS =	556	No. OF CARS =	540
		ENCL. AREA IN SF =	191,600	ENCL. AREA IN SF =	231,100	ENCL. AREA IN SF =	198,600	ENCL. AREA IN SF =	198,600
		TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF	TOTAL COST	COST/SF

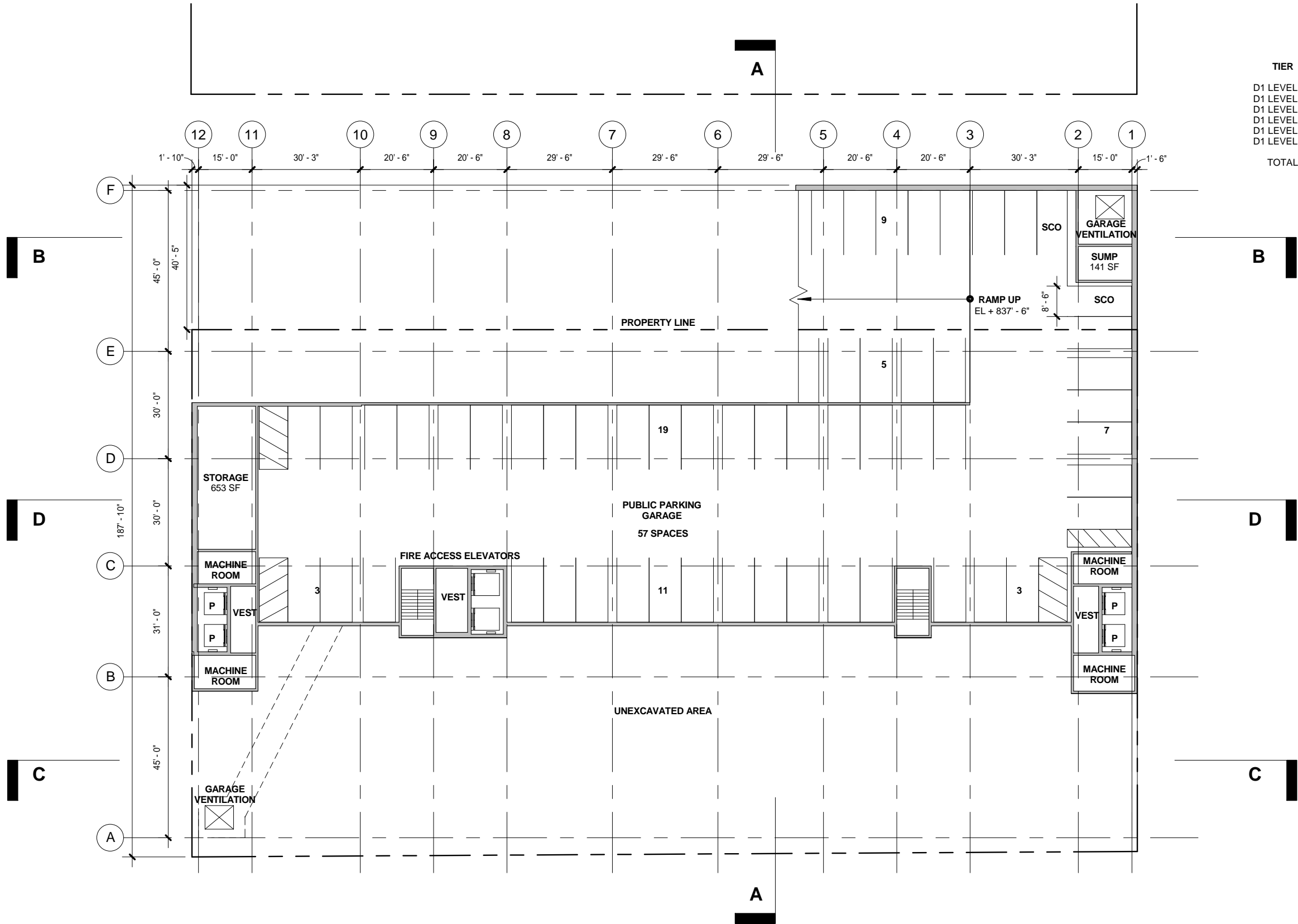
A.)	<u>MAJOR QUALIFICATION:-</u> <u>THIS BUDGET ESTIMATE IS BASED ON CURRENT MARKET CONDITIONS AND ASSUMES CONSTRUCTION START DATE OF THIRD QUARTER OF 2016.</u>
B.)	<u>MAJOR HARD COST BUDGET ESTIMATE EXCLUSIONS FROM ABOVE:-</u> PRECONDITION OR PRECONSTRUCTION DAMAGE SURVEY REPORT OF EXISTING OR ADJACENT STRUCTURES DEMOLITION / FOUNDATION / BUILDING PERMIT / WATER , SEWER TAPPING FEES ANY OFFSITE IMPROVEMENTS FEES BUILDERS RISK INSURANCE COVERAGE INCLUDING ASSOCIATED DEDUCTIBLES SITE SURVEY / PLAT , PRECONDITION OR PRECONSTRUCTION DAMAGE SURVEY CONSTRUCTION BARRICADE GRAPHICS BORINGS AND SOIL TESTING REPORT, ABATEMENT, CONCRETE, STEEL, FIREPROOFING, ETC. TESTING SERVICES. CURTAIN WALL TESTING OR CONSULTING FEES, LABORATORY FEES, WIND TUNNEL LABORATORY AND TESTING FEES. GENERAL CONTRACTOR OR SUB-CONTRACTORS PAYMENT & PERFORMANCE BONDS MADISON ELECT., TELEPHONE, SECURITY, AND / OR CABLE EXCESS FACILITY CHARGES RELOCATION OF MAJOR EXISTING UNDERGROUND SITE UTILITIES, TELEGRAPH LINES, IBT, CECO, PEOPLES GAS SERVICE MAINS AND WATER OR SEWER MAINS. COSTS ASSOCIATED WITH REMOVAL, RELOCATION AND REPLACEMENT OF ANY EXISTING STREET LIGHTING, TRAFFIC SIGNALS, PEDESTRIAN SIGNAGE, FIRE HYDRANTS, ETC. COSTS ASSOCIATED WITH PROVIDING ANY SPECIAL PROTECTIVE BONDS OR INSURANCE DURING CONSTRUCTION FOR ADJACENT PUBLIC OR PRIVATE PROPERTY ASBESTOS AND TOXIC WASTE INVESTIGATION REPORTS, THEIR REMOVAL OR ANY SCHEDULE DELAY IMPACTS.



k. Pre-Design Concept Drawings for Block 88



NOTE: AVERAGE ELEVATION FOR BUILDING HEIGHT = 903.5'



CAR COUNT PUBLIC				
9'-0" 90 DEGREE STANDARD SPACE				
TIER	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL
D1 LEVEL U5	57	0	0	57
D1 LEVEL U4	134	0	0	134
D1 LEVEL U3	134	0	0	134
D1 LEVEL U2	130	3	0	133
D1 LEVEL U1	118	6	2	126
D1 LEVEL U0	54	1	1	56
TOTAL	627	10	3	640

640 PARKING SPACES TOTAL w/ LONG SPAN STRUCTURE

NOTE: SHORT SPAN PARKING STRUCTURE OPTION -16 CARS FOR A TOTAL OF 624 CARS

TOTAL GROSS SF: 23,280 SF

LVDA FOR CITY OF MADISON AND BEITLER REAL ESTATE

lothan van hook destefano
ARCHITECTURE LLC

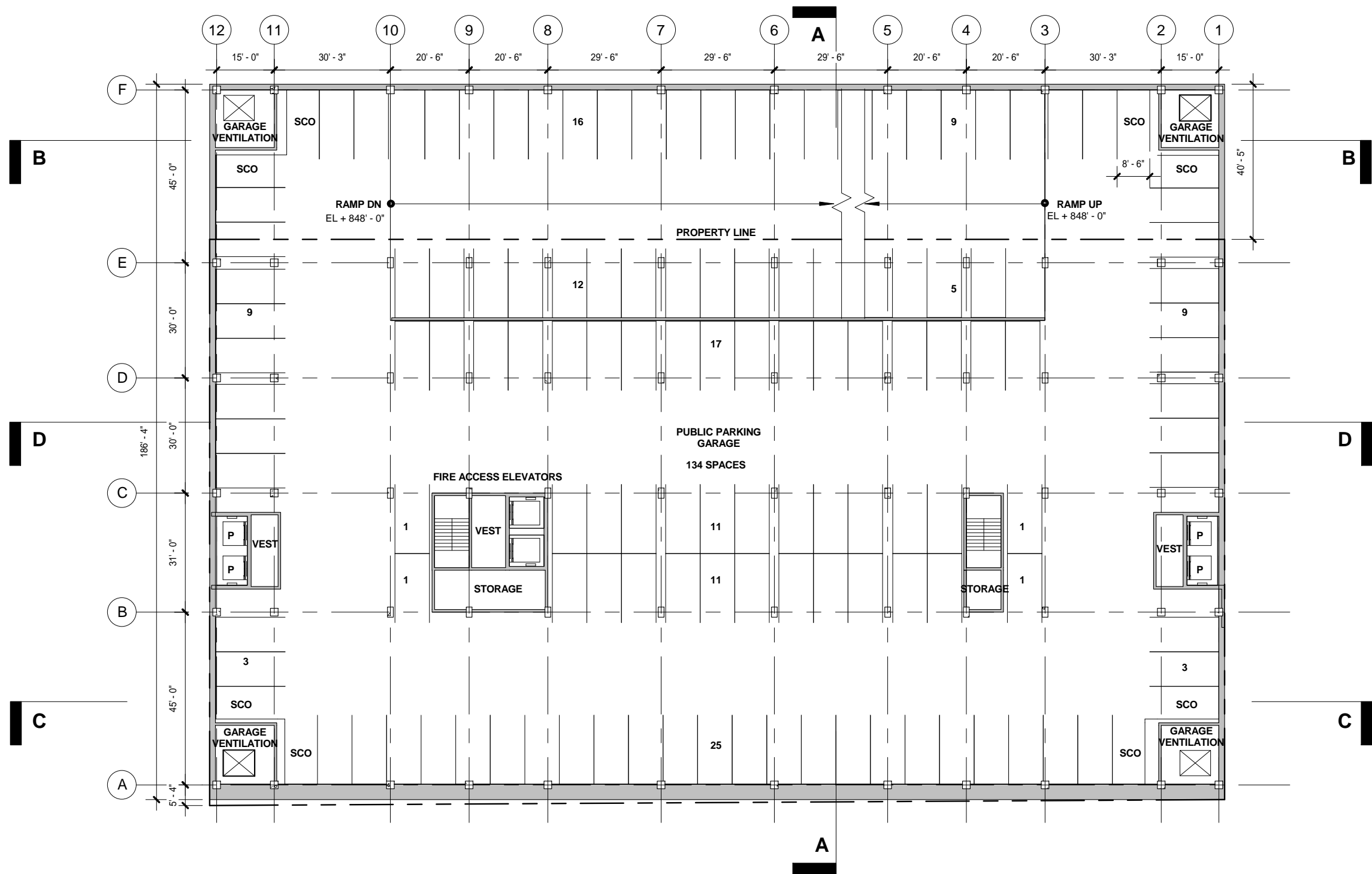
PARKING LEVEL U5

JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN

02

SCALE: 1" = 30'-0"

NOVEMBER 2, 2016



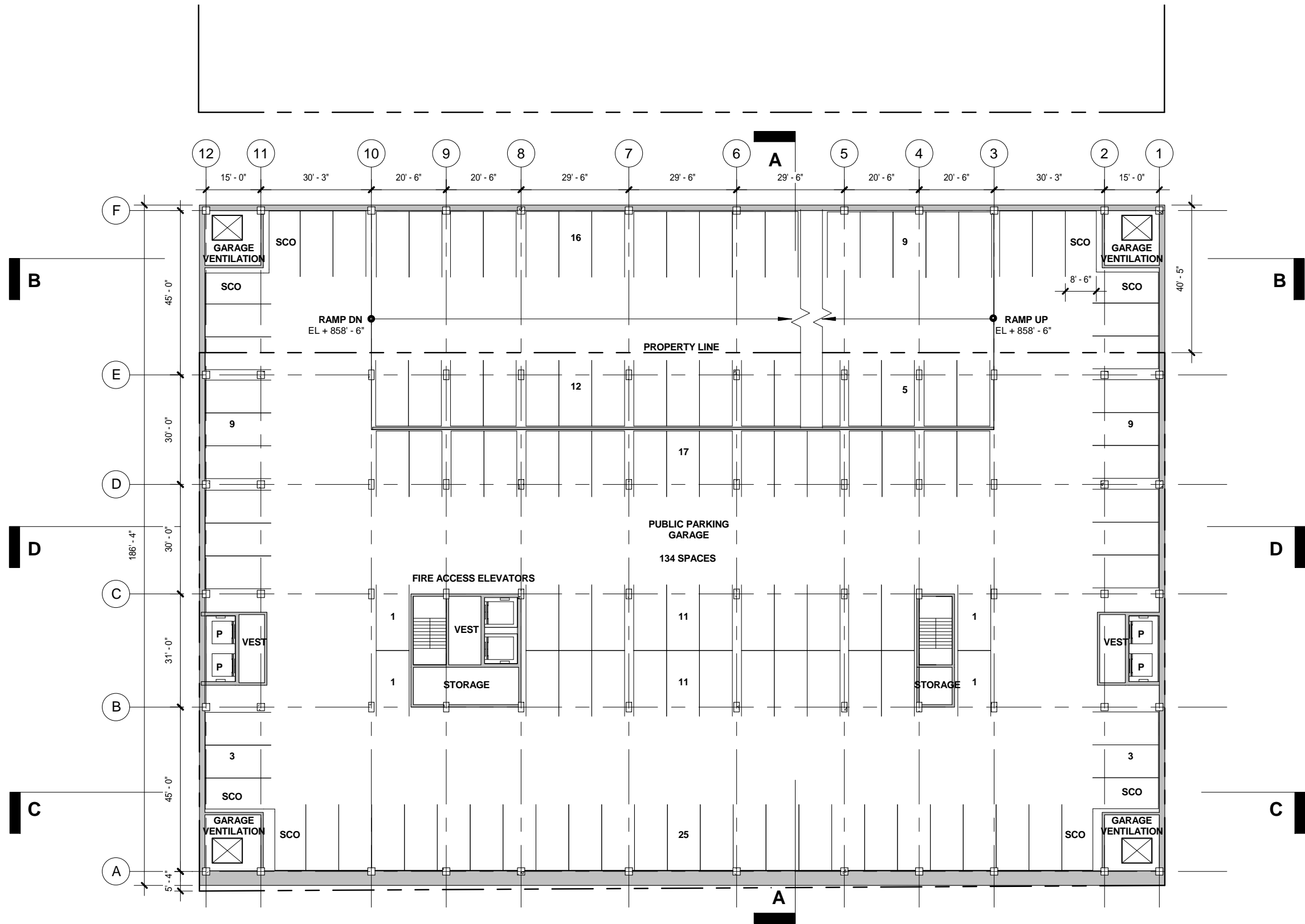
TOTAL GROSS SF: 49,250 SF

LVDA FOR CITY OF MADISON AND BEITLER REAL ESTATE

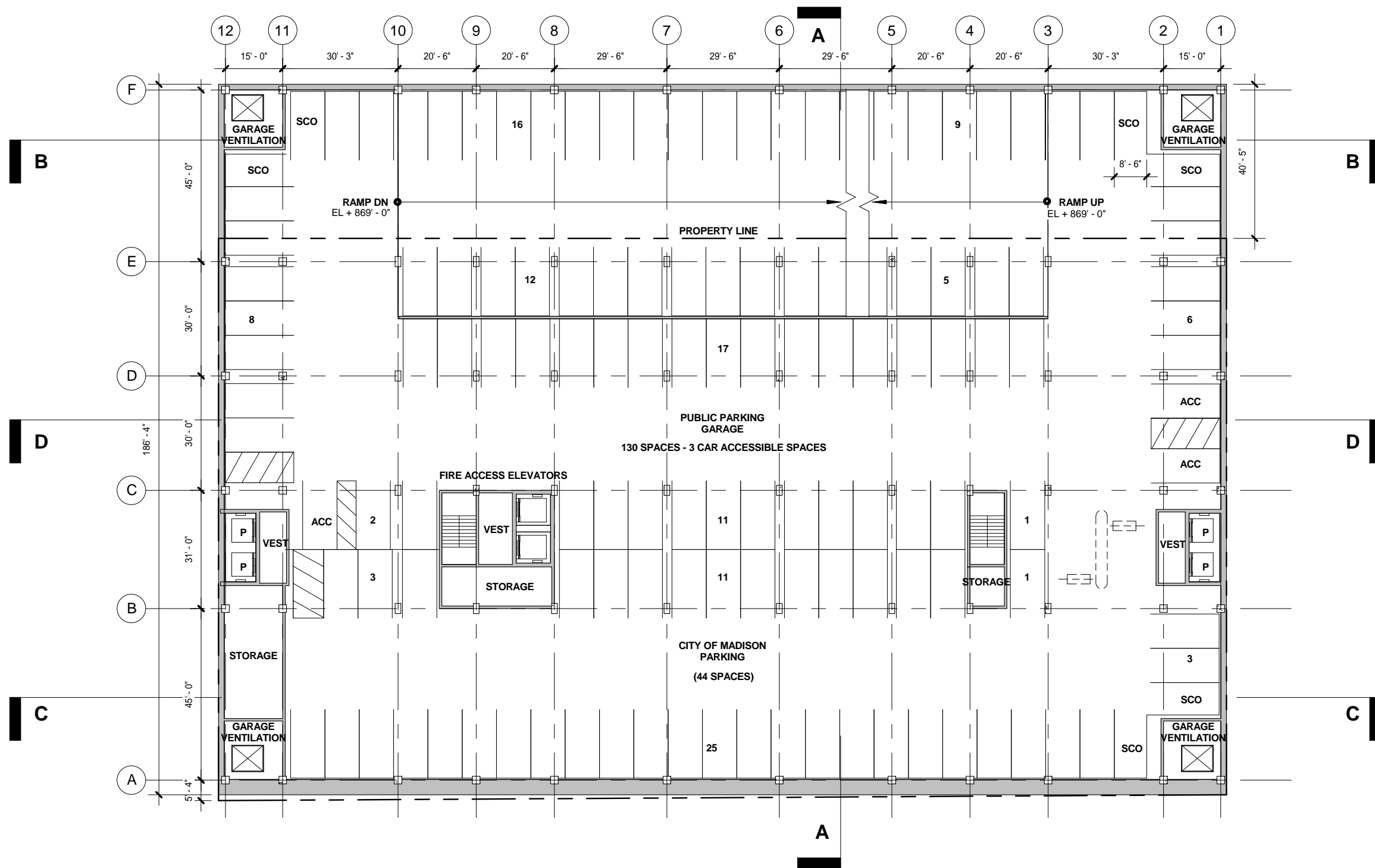
lothan van hook destefano
ARCHITECTURE LLC

PARKING LEVEL U4

JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN



TOTAL GROSS SF: 49,250 SF



TOTAL GROSS SF: 49,250 SF

LVDA FOR CITY OF MADISON AND BEITLER REAL ESTATE

lothan van hook destefano
ARCHITECTURE LLC

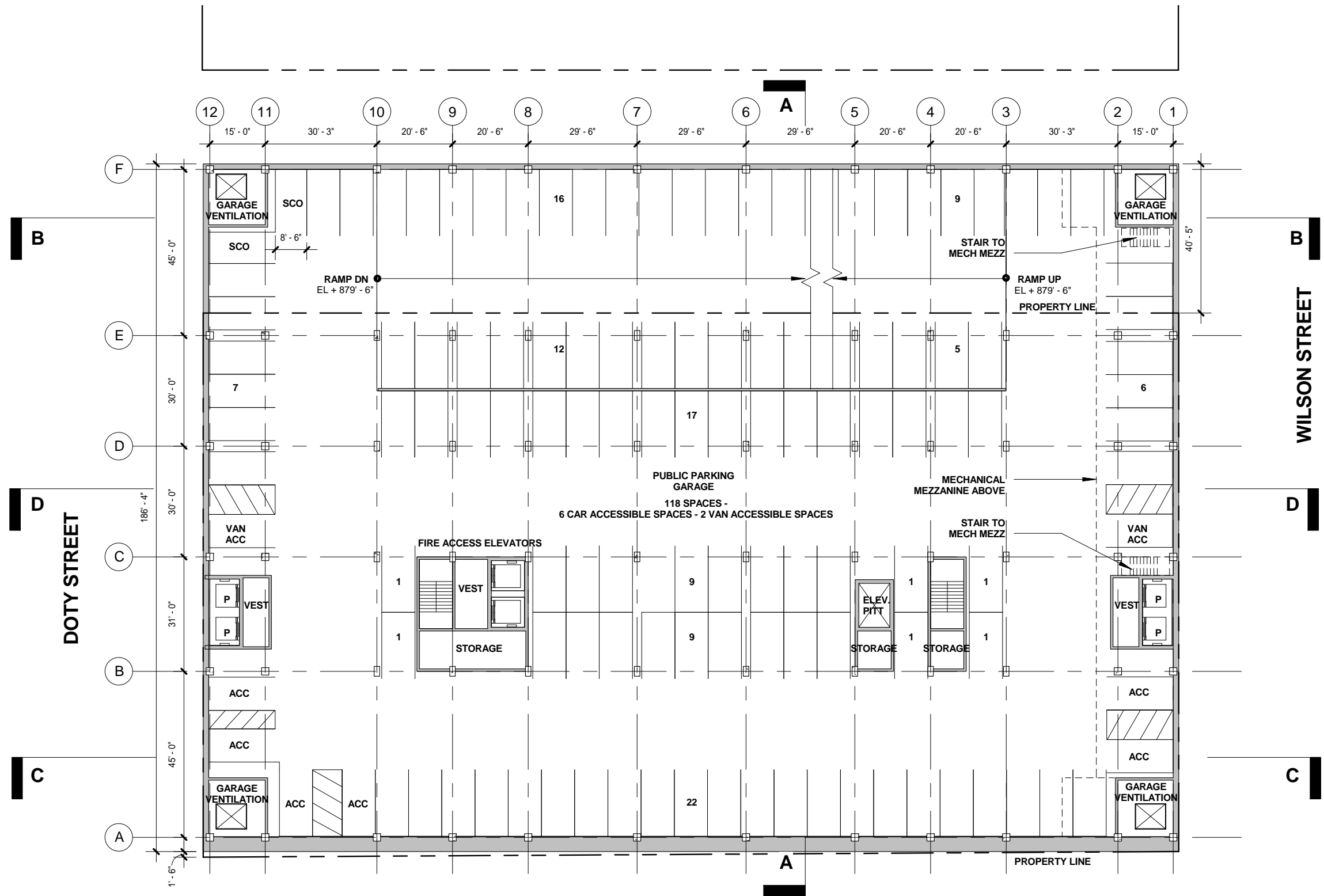
PARKING LEVEL U2

JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN

05

SCALE: 1" = 30'-0"

NOVEMBER 2, 2016



TOTAL GROSS SF: 49,250 SF

LVD *FOR CITY OF MADISON AND BEITLER REAL ESTATE*

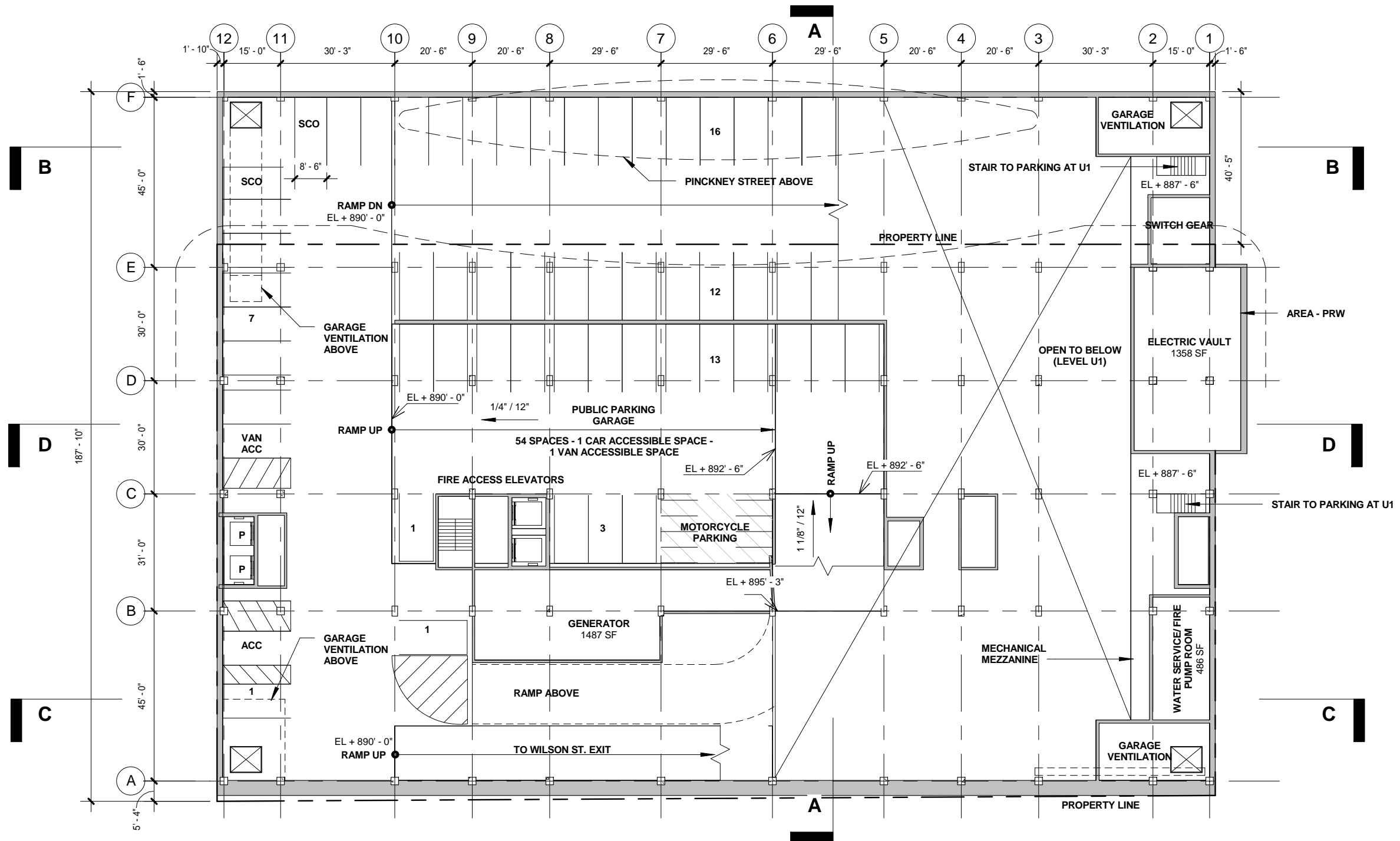
lothan van hook destefano
ARCHITECTURE LLC

PARKING LEVEL U1

JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN

06 
SCALE: 1" = 30'-0"

NOVEMBER 2, 2016



TOTAL GROSS SF: 36,100 SF

LVD *FOR CITY OF MADISON AND BEITLER REAL ESTATE*

lothan van hook destefano
ARCHITECTURE LLC

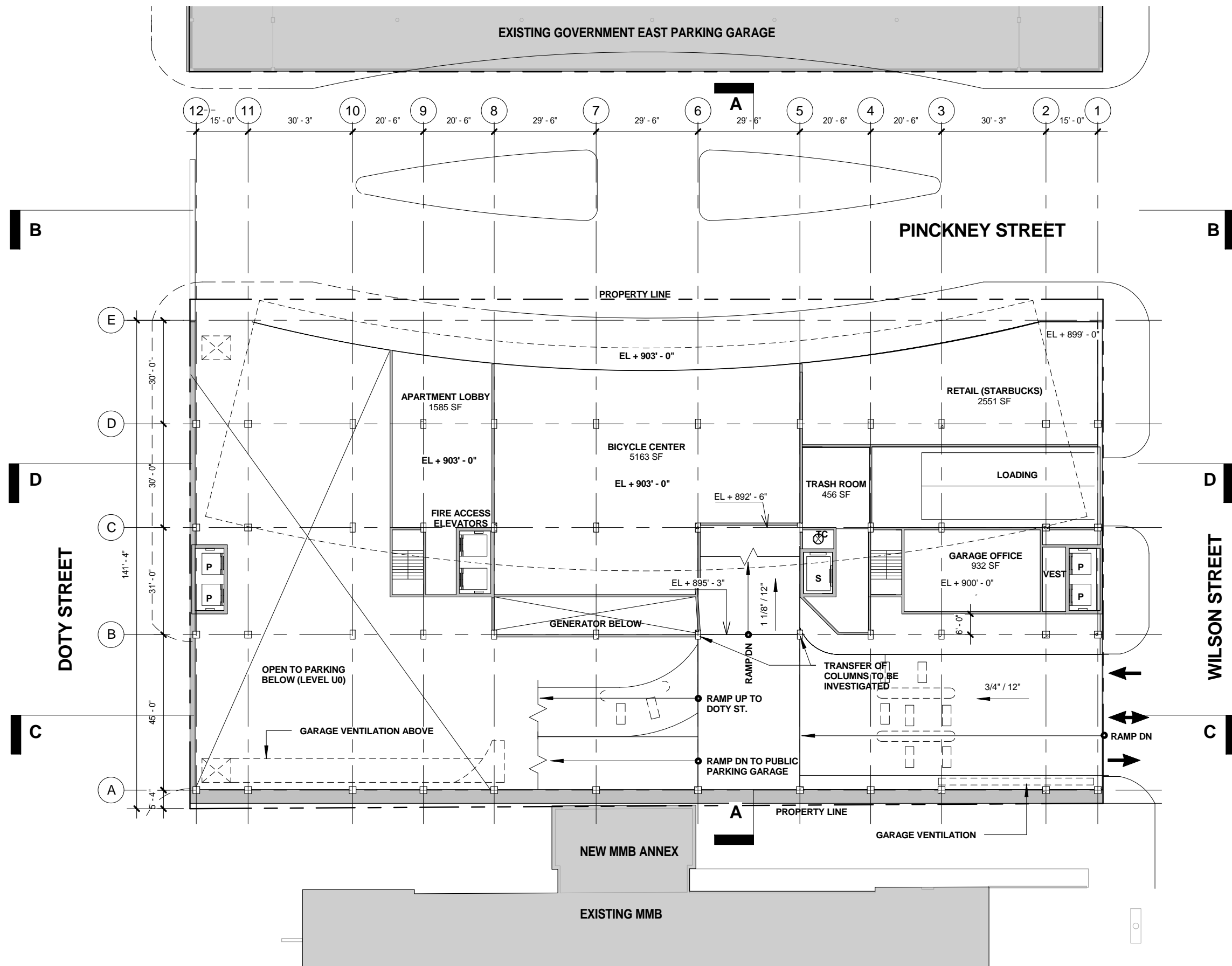
PARKING LEVEL U0

JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN

07

SCALE: 1" = 30'-0"

NOVEMBER 2, 2016



TOTAL GROSS SF: 25,050 SF

LVD FOR CITY OF MADISON AND BEITLER REAL ESTATE

lothan van hook destefano
ARCHITECTURE LLC

LEVEL 1 - WILSON ST. ENTRY

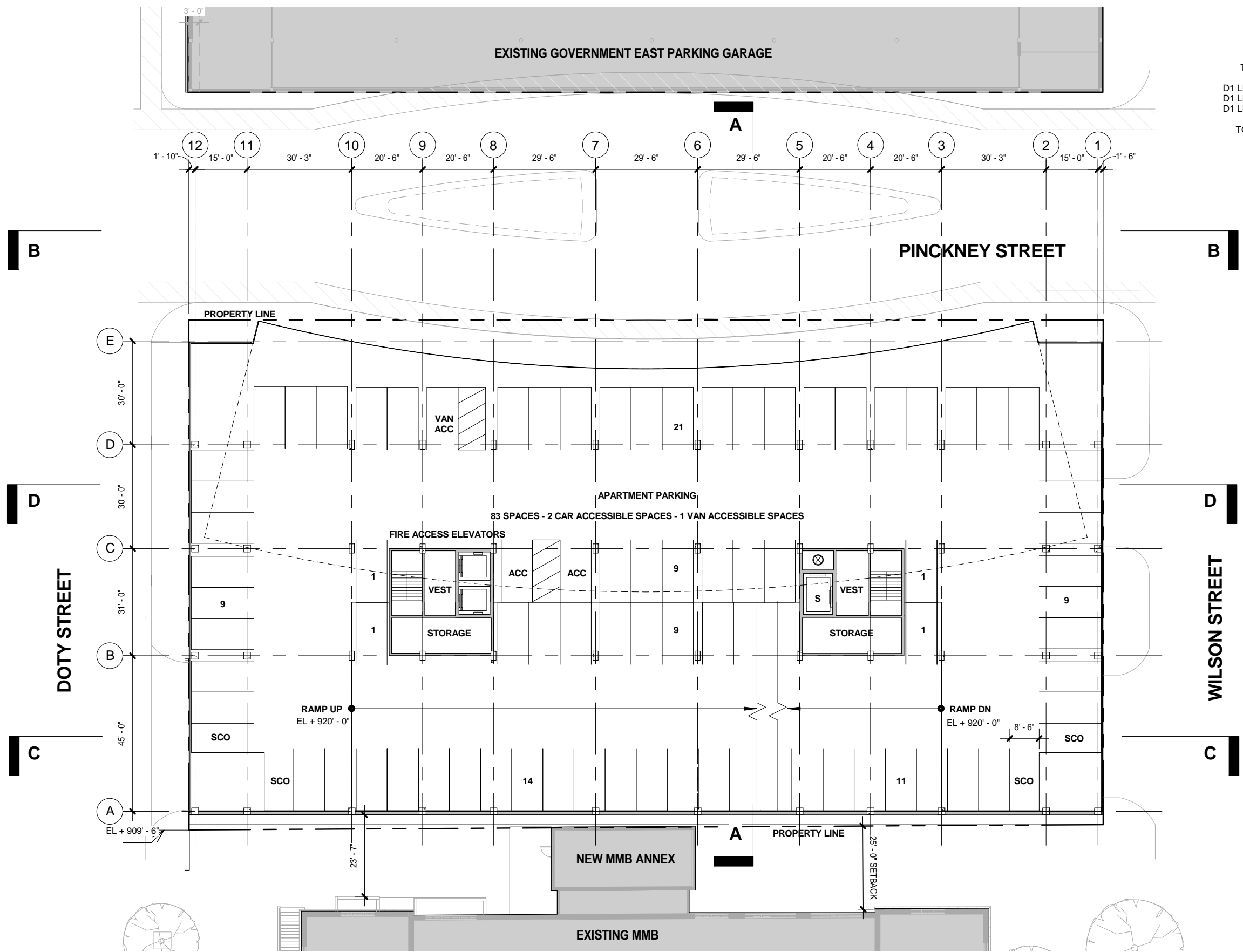
JUDGE DOYLE SQUARE - BLOCK 88 - PRE DESIGN

08

SCALE: 1" = 30'-0"

NOVEMBER 2, 2016



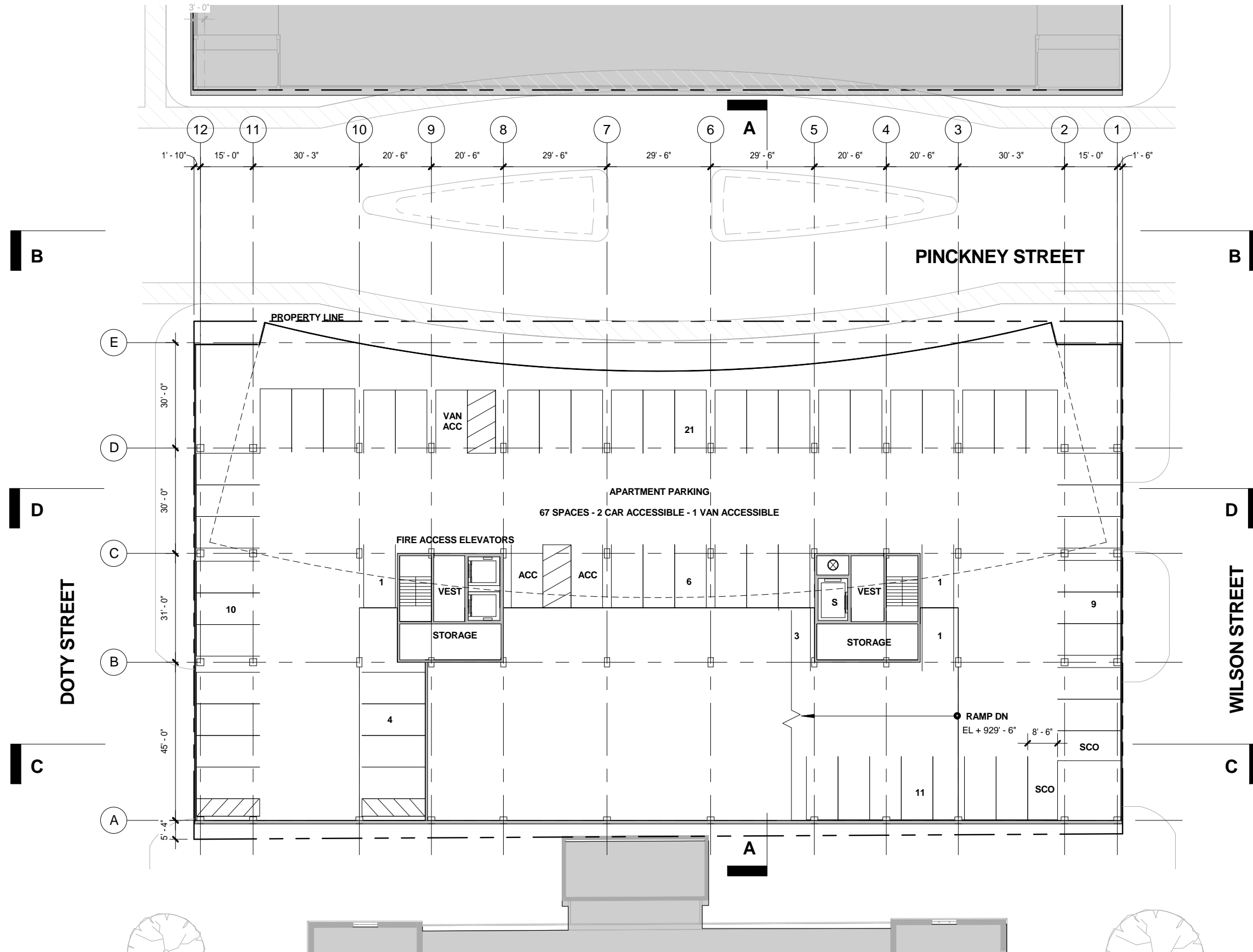


CAR COUNT RESIDENTIAL
9'-0" 90 DEGREE STANDARD SPACE

TIER	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL
D1 LEVEL 02	5	0	0	5
D1 LEVEL 03	83	2	1	86
D1 LEVEL 04	67	2	1	70
TOTAL	155	4	2	161

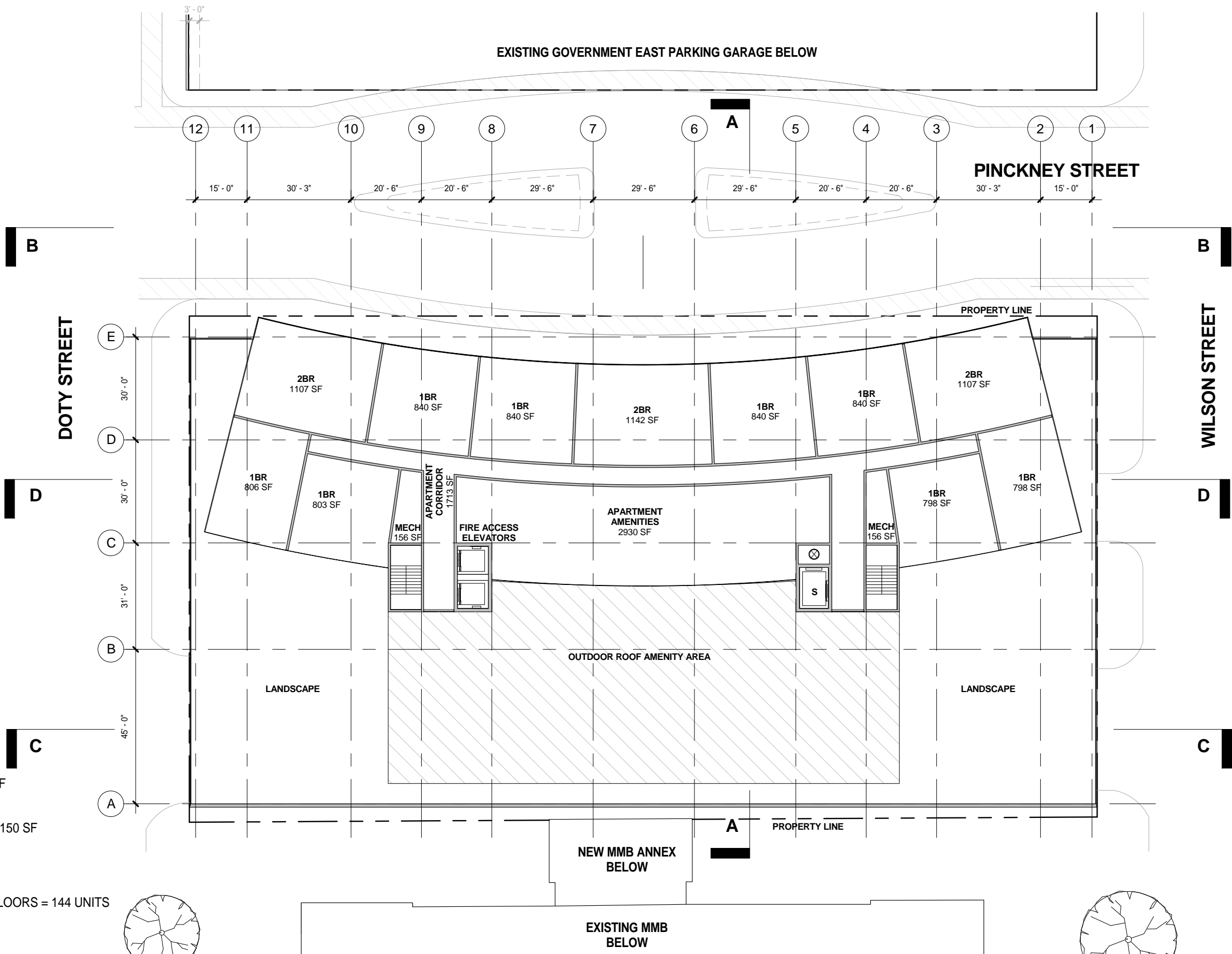
APARTMENT PARKING
TOTAL SPACES: 157

TOTAL GROSS SF: 34,985 SF



APARTMENT PARKING
TOTAL SPACES: 157

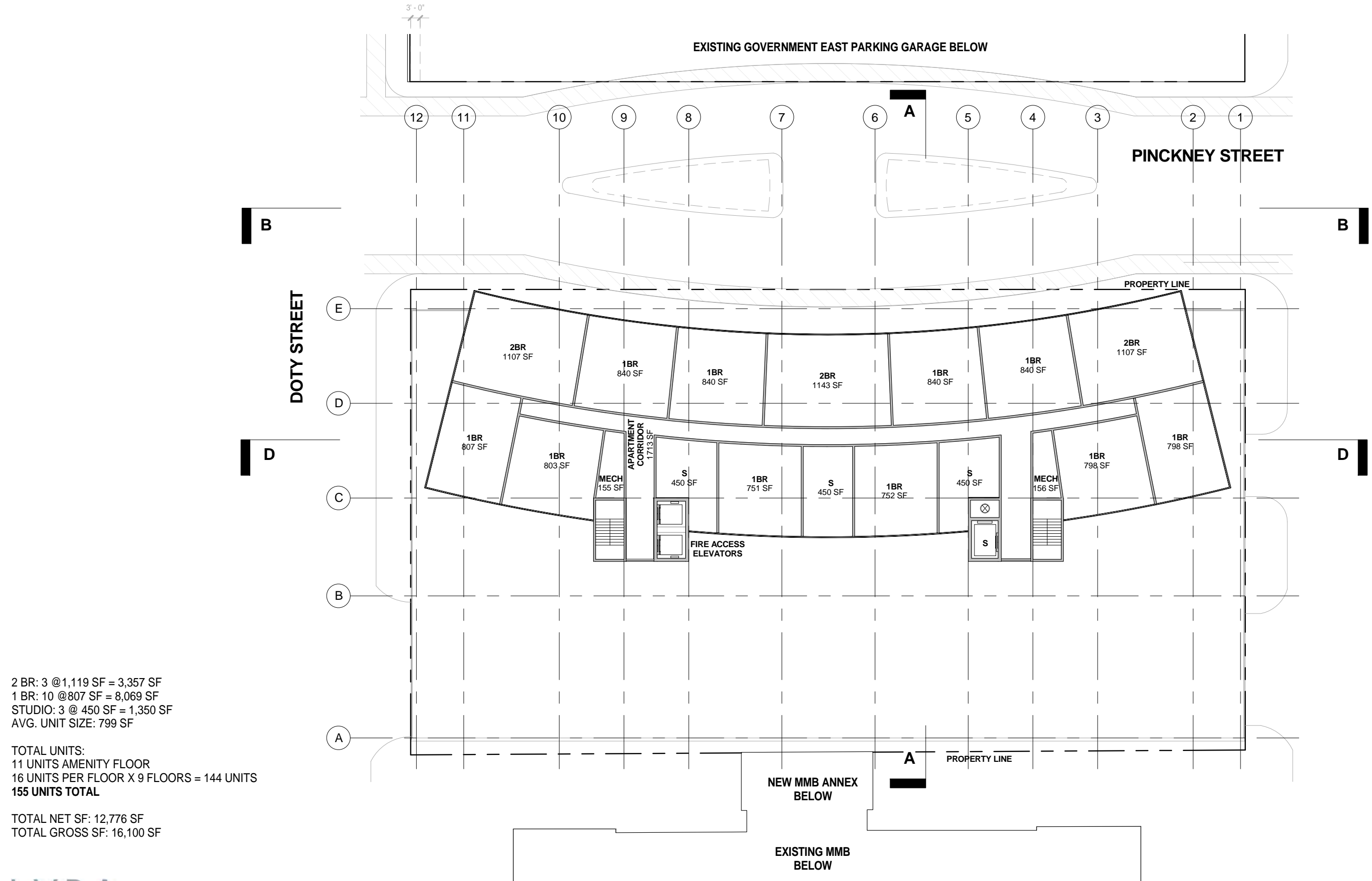
TOTAL GROSS SF: 34,985 SF



2 BR: 3 @ 1,119 SF = 3,356 SF
 1 BR: 8 @ 821 SF = 6,565 SF
 STUDIO: 0 @ 450 SF = 0 SF
 OUTDOOR AMENITY SF = 8,150 SF
 AVG. UNIT SIZE: 902 SF

TOTAL UNITS:
 11 UNITS AMENITY FLOOR
 16 UNITS PER FLOOR X 9 FLOORS = 144 UNITS
155 UNITS TOTAL

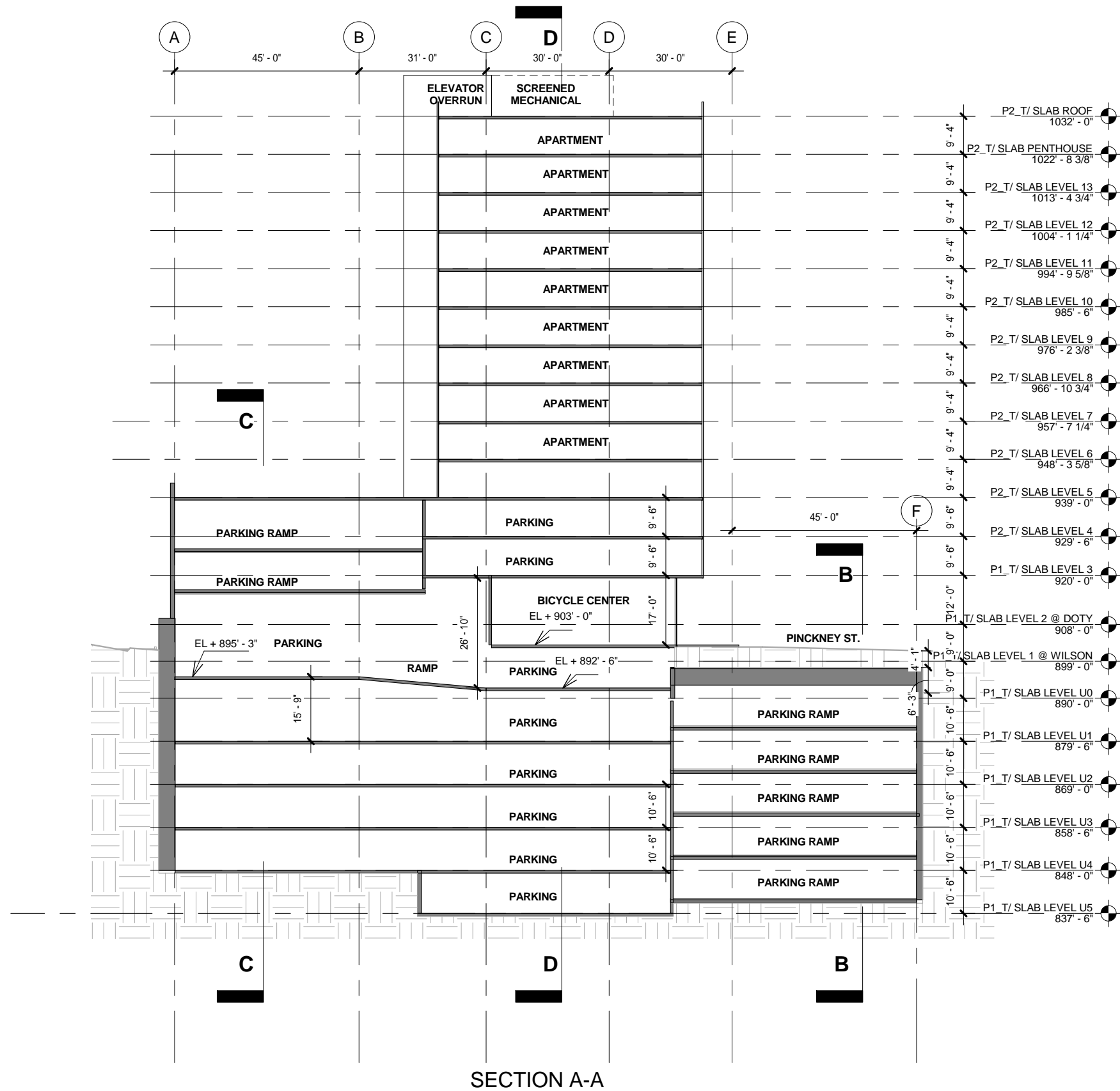
TOTAL NET SF: 11,145 SF
 TOTAL GROSS SF: 16,100 SF

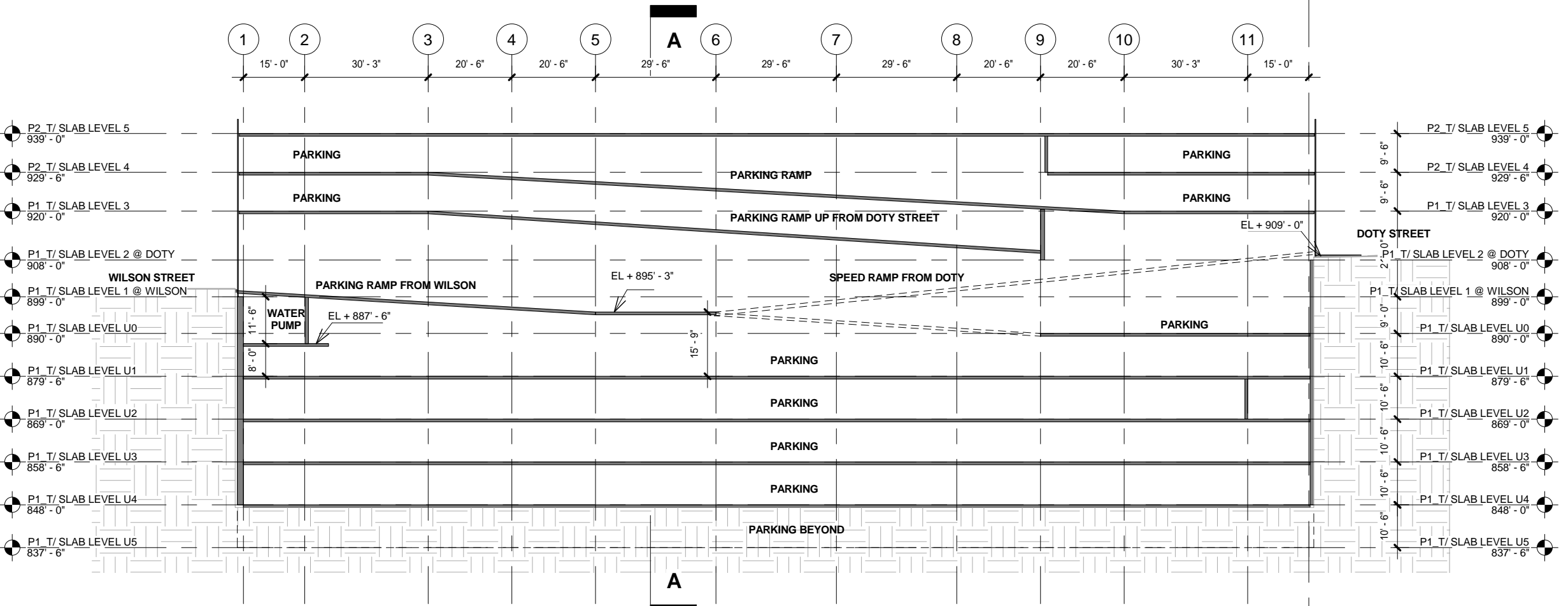
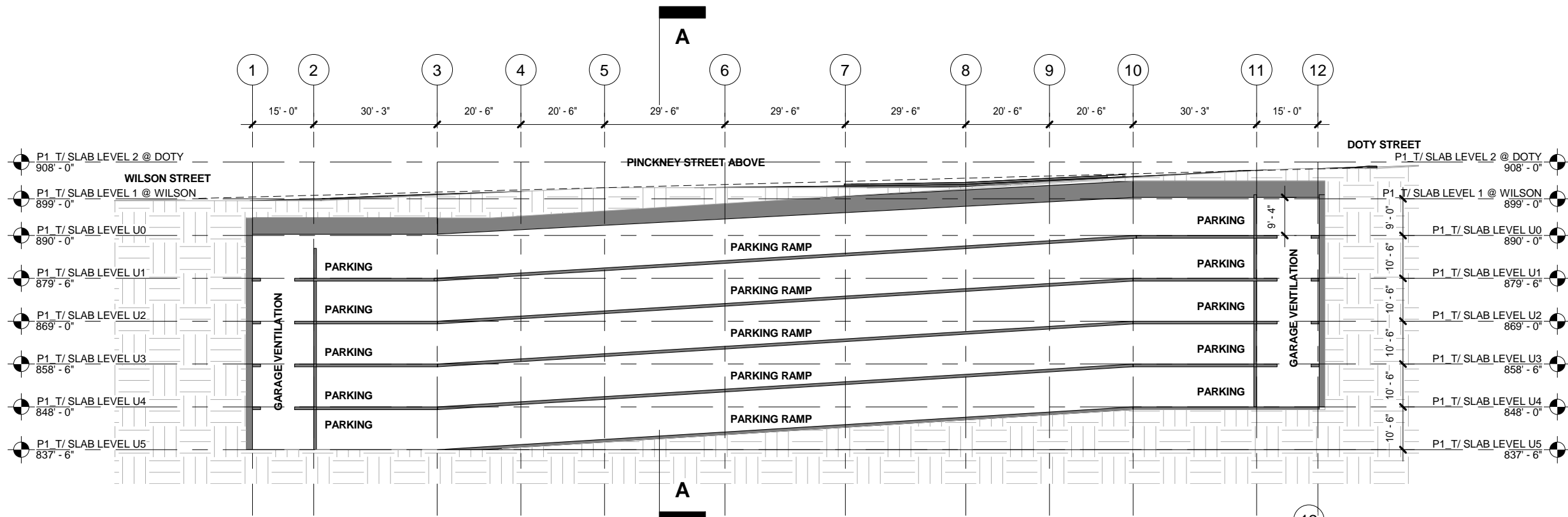


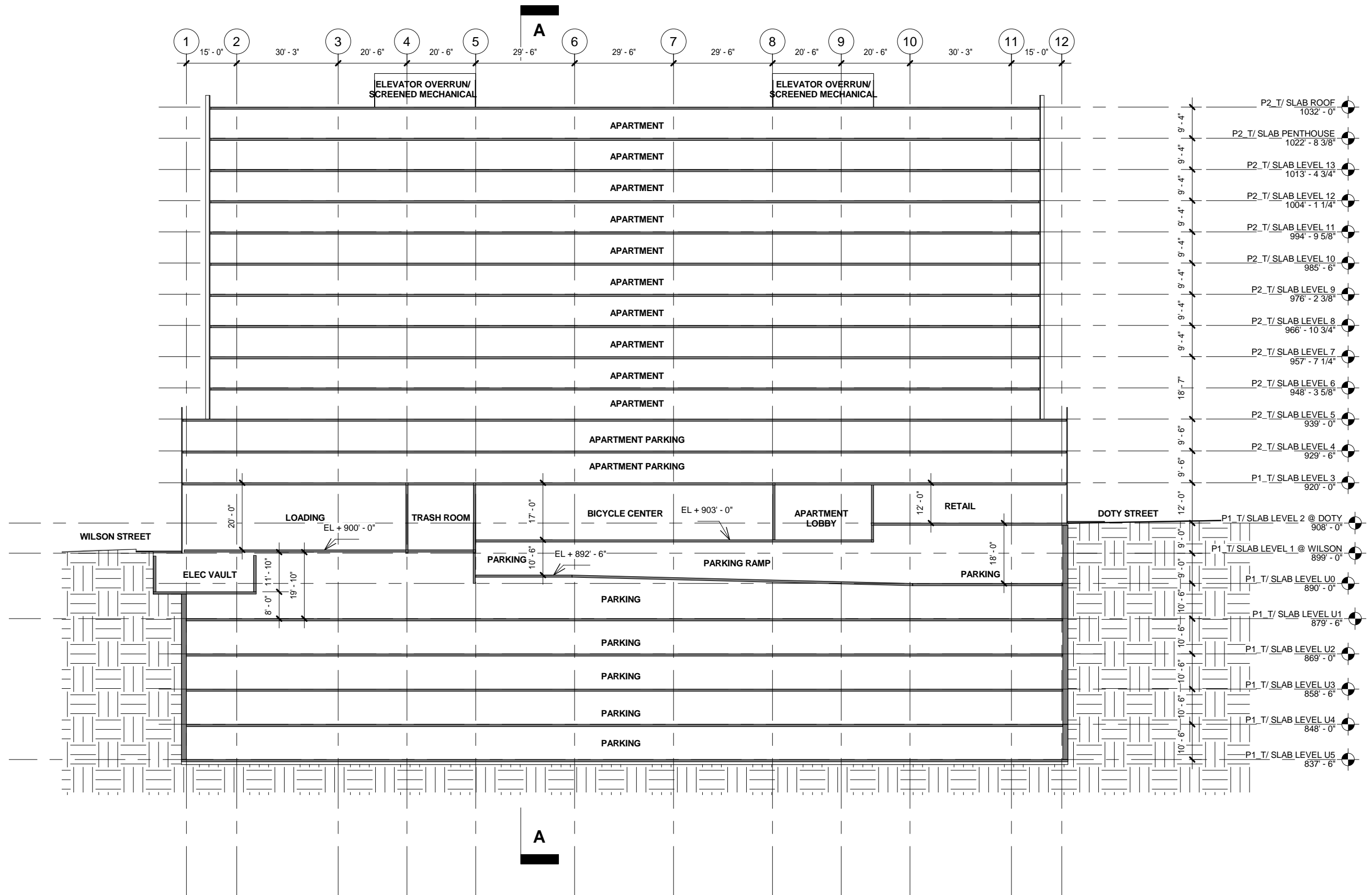
2 BR: 3 @ 1,119 SF = 3,357 SF
 1 BR: 10 @ 807 SF = 8,069 SF
 STUDIO: 3 @ 450 SF = 1,350 SF
 AVG. UNIT SIZE: 799 SF

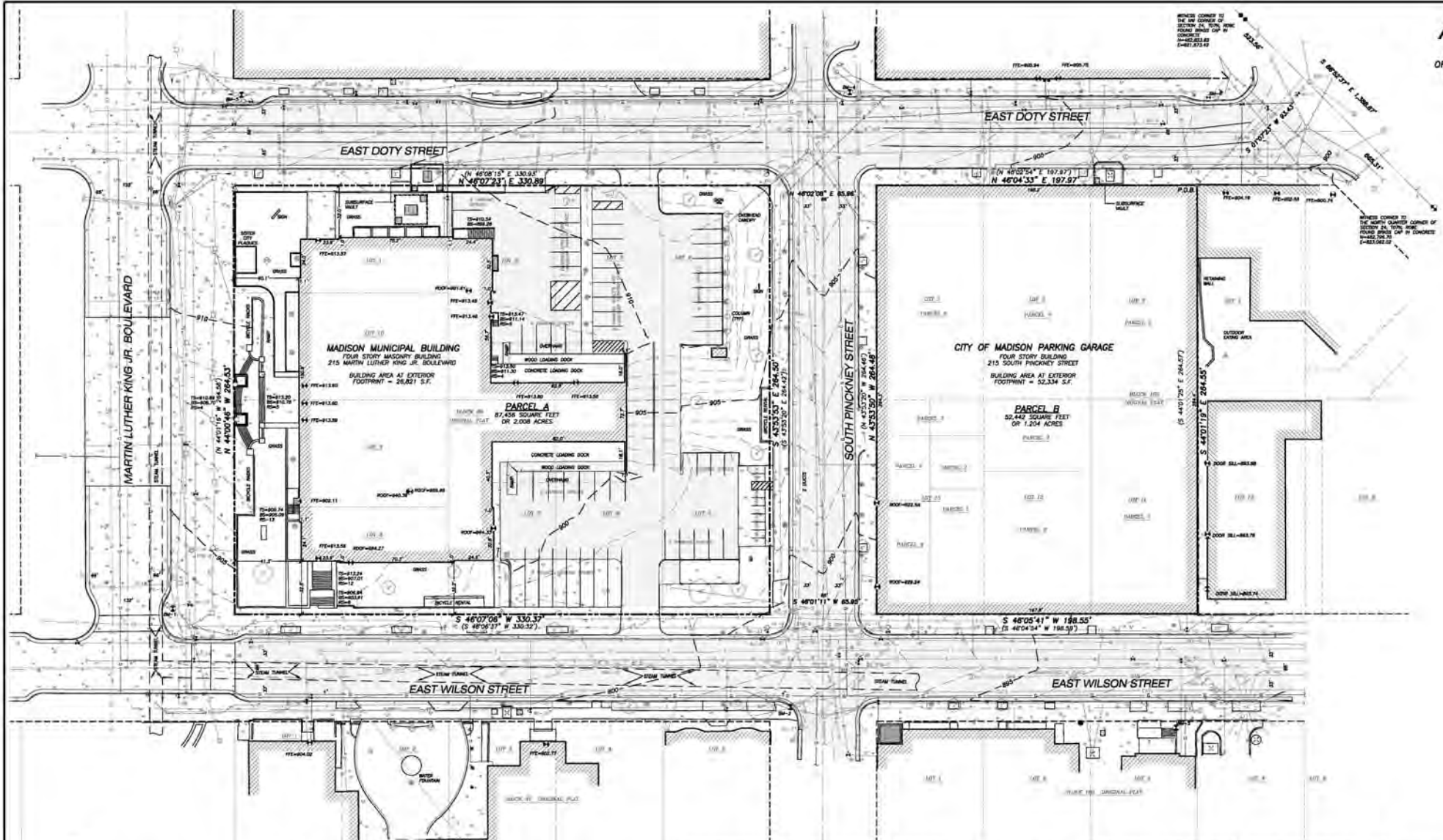
TOTAL UNITS:
 11 UNITS AMENITY FLOOR
 16 UNITS PER FLOOR X 9 FLOORS = 144 UNITS
155 UNITS TOTAL

TOTAL NET SF: 12,776 SF
 TOTAL GROSS SF: 16,100 SF









- LEGEND**
- GOVERNMENT CORNER
 - CHISELED "X" FOUND
 - CHISELED "X" SET
 - REINFORCED CONCRETE
 - FINISHED FLOOR SHOT LOCATION
 - MONITORING WELL
 - BOLLARD
 - FLAG POLE
 - SON
 - PARKING METER
 - SANITARY MANHOLE
 - CLEAN OUT
 - VENT PIPE
 - HYDRANT
 - WATER OR GAS VALVE
 - CURB STOP/SPACE VALVE
 - STORM MANHOLE
 - ROUND CASTED INLET
 - SQUARE CASTED INLET
 - CURB INLET
 - MANHOLE - UNVERIFIED TYPE
 - ELECTRIC MANHOLE
 - LIGHT POLE
 - TRAFFIC SIGNAL
 - WALL
 - TELEPHONE MANHOLE
 - DECIDUOUS TREE
 - CONIFEROUS TREE
 - HANDICAP PARKING
 - PARCEL BOUNDARY
 - SECTION LINE
 - RIGHT-OF-WAY LINE
 - CONCRETE
 - PLASTER LOT LINE
 - EDGE OF PAVEMENT
 - CONCRETE CURB & GUTTER
 - SANITARY SEWER
 - WATER LINE
 - STORM SEWER
 - NATURAL GAS
 - UNDERGROUND ELECTRIC
 - FIBER OPTIC
 - UNDERGROUND TELEPHONE
 - UNDERGROUND CABLE
 - BUILDING
 - INDEX CONTOUR
 - INTERMEDIATE CONTOUR
 - SPOT ELEVATION
 - BITUMINOUS PAVEMENT
 - RETAINING WALL
 - CONCRETE PAVEMENT
 - DISCONTINUED MARKED PIPE LINE
 - RENOTES RECORD DATA REPORTING THE SAME LINE ON THE GROUND

- NOTES**
- FIELD WORK PERFORMED BY JSD PROFESSIONAL SERVICES, INC. THE WEEK OF JUNE 22 & 27 AND JULY 06, 2015.
 - THIS SURVEY AND MAP ARE BASED ON THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), DANE COUNTY. THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 24, TOWNSHIP 07 NORTH, RANGE 09 EAST, CITY OF MADISON, DANE COUNTY, WISCONSIN, BEARS S 89°23'27" E.
 - ELEVATIONS ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) (1993). BENCHMARK IS FIRE HYDRANT AT THE CORNER OF WILSON STREET AND MARTIN LUTHER KING, JR. BOULEVARD. ELEVATION = 906.02.
 - CONTOUR INTERVAL IS 1 FOOT.
 - SPOT ELEVATIONS SHOWN ALONG CURB AND GUTTER REFERENCE THE TOP BACK OF CURB.
 - THE SURFACE UTILITIES AND FEATURES SHOWN ON THIS MAP HAVE BEEN APPROXIMATED BY LOCATING SURFICIAL FEATURES AND APPURTENANCES, LOCATING DIGGERS HOTLINE FIELD MARKINGS AND BY REFERENCE TO UTILITY RECORDS AND MAPS. DIGGERS HOTLINE TICKET NO. 20152919730, 20152919740, 20152919741, 20152919742, 20152919750 AND 20152919754, WITH A CLEAR DATE OF JUNE 25, 2015.
 - THE ACCURACY OF THE BENCHMARKS SHOWN ON THIS MAP SHALL BE VERIFIED BEFORE BEING UTILIZED. JSD PROFESSIONAL SERVICES, INC. DOES NOT WARRANT THAT THESE BENCHMARKS HAVE NOT BEEN DISTURBED SINCE THE DATE OF THIS SURVEY.
 - BEFORE EXCAVATION, APPROPRIATE UTILITY COMPANIES SHOULD BE CONTACTED FOR EXACT LOCATION OF UNDERGROUND UTILITIES, CONTACT DIGGERS HOTLINE, AT 1.800.242.8511.
 - UTILITY MARKING PROVIDED BY, CITY OF MADISON, CENTURKING, AT&T, ITS TELECOM.
 - TS=TOP OF STAIRS; BS=BOTTOM OF STAIRS; RS=NUMBER OF RISERS.
- NOTES CORRESPONDING TO TABLE A REQUIREMENTS:**
- ITEM 9 THERE ARE 61 PARKING SPACES AND 2 HANDICAP SPACES FOR A TOTAL OF 63 PARKING SPACES AND THERE ARE 9 MOTORCYCLE PARKING SPACES ON PARCEL A. THERE ARE 500 PARKING SPACES ON PARCEL B. THERE ARE A TOTAL OF 563 PARKING SPACES.
- ITEM 10(a) THERE ARE NO DIVISION OR PARTY WALLS DESIGNATED BY THE CLIENT WITH RESPECT TO ADJOINING PROPERTIES.
- ITEM 11(b) NOTE - WITH REGARD TO TABLE A, ITEM 11(b), SOURCE INFORMATION FROM PLANS AND MARKINGS WILL BE COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP A VIEW OF THOSE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURE CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DETERMINED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE NECESSARY.
- ITEM 20 THERE ARE NO OFFSITE EASEMENTS FOR THE SUBJECT PROPERTY.



- NOTES CORRESPONDING TO SCHEDULE B-SECTION TWO EXCEPTIONS (PARCEL A)**
(FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. MCS-733837-MAD, COMMITMENT DATE: JULY 02, 2015 AT 7:30 A.M.)
- (12) AFFIDAVIT RECORDED IN VOLUME 1027 OF RECORDS, PAGE 128, AS DOCUMENT NO. 1603842.
- (13) A RESOLUTION APPROVING THE SOUTH SQUARE REDEVELOPMENT PLAN RECORDED SEPTEMBER 21, 1994, AS DOCUMENT NO. 2933262.
- (14) GRANT OF RIGHT OF FIRST REFUSAL RECORDED APRIL 15, 1999, AS DOCUMENT NO. 3102647.
- (15) FIRST AMENDMENT TO GRANT OF RIGHT OF FIRST REFUSAL RECORDED SEPTEMBER 8, 2014, AS DOCUMENT NO. 5098923.
- (16) LEASE BETWEEN CITY OF MADISON, WISCONSIN AND US POSTAL SERVICE RECORDED IN VOLUME 1038 OF RECORDS, PAGE 374, AS DOCUMENT NO. 1810872.
- (17) LEASE BETWEEN CITY OF MADISON AND CITY EMPLOYEES CREDIT UNION RECORDED IN VOLUME 24818 OF RECORDS, PAGE 19, AS DOCUMENT NO. 2525524.
- (18) FIRST AMENDMENT TO LEASE RECORDED JULY 30, 1999, AS DOCUMENT NO. 3140120.
- (19) FIRST NOTICE OF LEASE RENEWAL RECORDED APRIL 3, 2002, AS DOCUMENT NO. 3470045.
- (20) SECOND NOTICE OF LEASE RENEWAL RECORDED APRIL 17, 2007, AS DOCUMENT NO. 4289900.
- (21) SECOND AMENDMENT TO LEASE RECORDED FEBRUARY 4, 2008, AS DOCUMENT NO. 434368.
- (22) THIRD NOTICE OF LEASE RENEWAL RECORDED MARCH 2, 2013, AS DOCUMENT NO. 4987634.
- (23) LEASE BETWEEN CITY OF MADISON AND CITY EMPLOYEES CREDIT UNION RECORDED IN VOLUME 24818 OF RECORDS, PAGE 19, AS DOCUMENT NO. 2525524.
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- (100) THIRD NOTICE OF LEASE RENEWAL RECORDED MARCH 2, 2013, AS DOCUMENT NO. 4987634.

- LEGAL DESCRIPTION (AS FURNISHED) (PARCEL A)**
(FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. MCS-733837-MAD, COMMITMENT DATE: JULY 02, 2015 AT 7:30 A.M.)
- ALL OF BLOCK 88, ORIGINAL PLAT OF THE CITY OF MADISON, IN THE CITY OF MADISON, DANE COUNTY, WISCONSIN.
- TAX KEY NUMBER: 251/0709-242-0701-6

- NOTES CORRESPONDING TO SCHEDULE B-SECTION TWO EXCEPTIONS (PARCEL B)**
(FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. MCS-733841-MAD, COMMITMENT DATE: JULY 02, 2015 AT 7:30 A.M.)
- (12) AGREEMENT RECORDED IN VOLUME 143 OF MISG, PAGE 423, AS DOCUMENT NO. 625862.
- (13) LEASE BETWEEN CITY OF MADISON, WISCONSIN AND US POSTAL SERVICE RECORDED IN VOLUME 1038 OF RECORDS, PAGE 374, AS DOCUMENT NO. 1810872.
- (14) FIRST AMENDMENT TO LEASE RECORDED JULY 30, 1999, AS DOCUMENT NO. 3140120.
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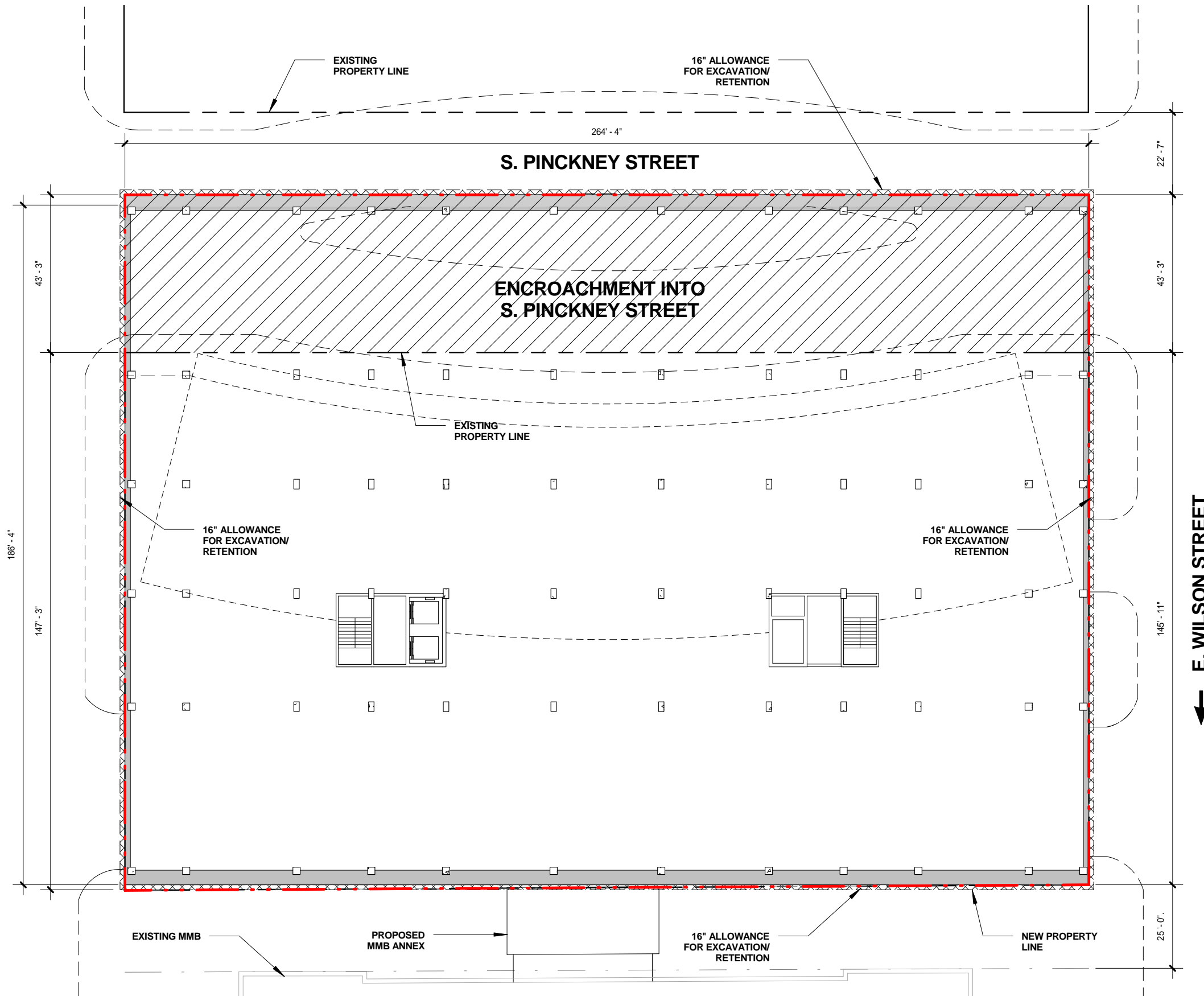
- SURVEYOR'S CERTIFICATE**
- TO:
- THE CITY OF MADISON,
 - FIRST AMERICAN TITLE INSURANCE COMPANY,
- THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 ANNUAL STANDARD DECIMAL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS AND INCLUDES ITEMS 1, 4, 5, 7(a), 8, 9, 10(a), 11(b), 22(a) AND 22 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 06, 2015.
- JORDY KRESS, S-1878
PROFESSIONAL LAND SURVEYOR
- DATE: _____

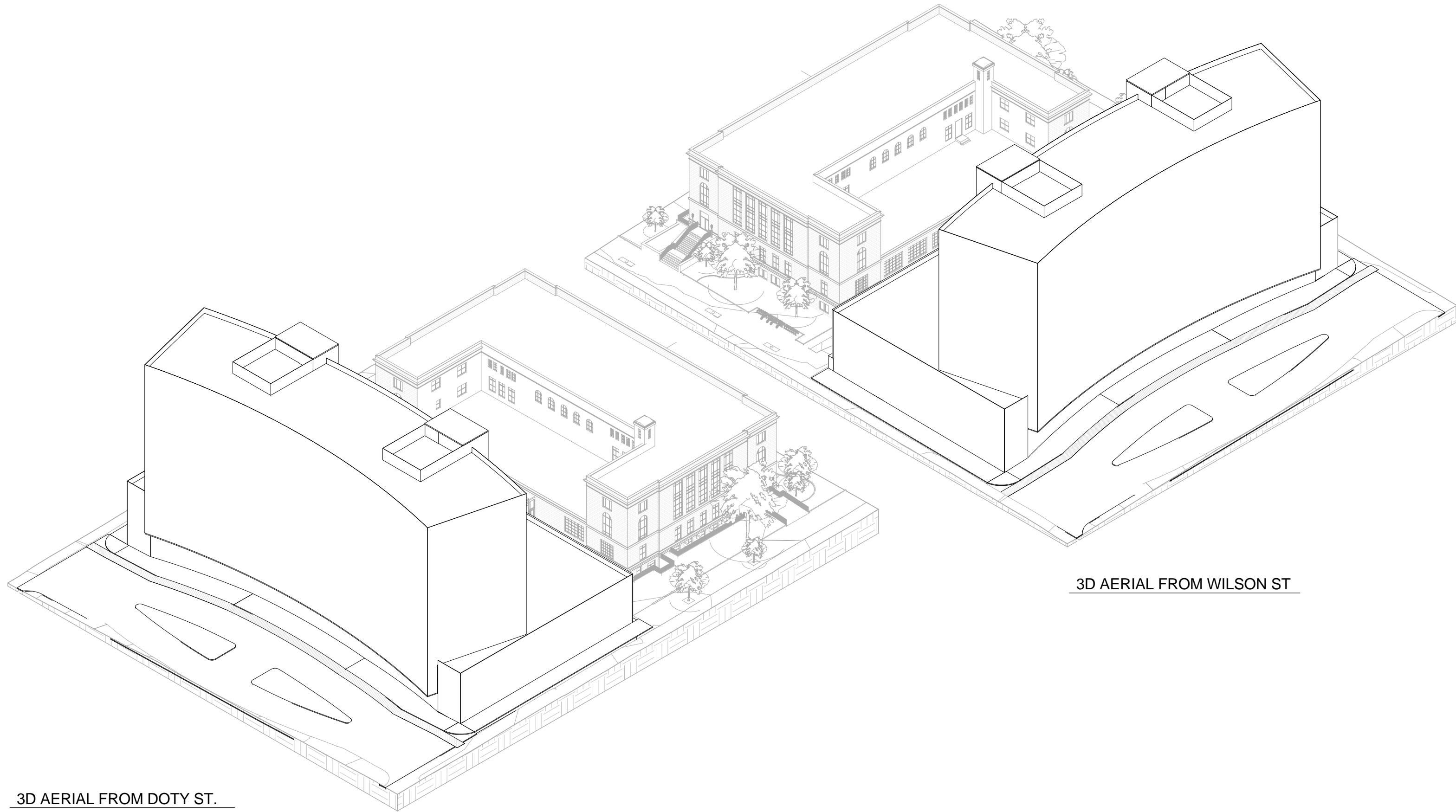
ALTA/ACSM LAND TITLE SURVEY

ALL OF BLOCK 88 AND LOTS 1, 2, 3, 11, 12 AND 13, BLOCK 105, ORIGINAL PLAT OF MADISON, BEING A PART OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 24, TOWNSHIP 07 NORTH, RANGE 09 EAST, CITY OF MADISON, DANE COUNTY, WISCONSIN.

STORM SEWER MANHOLES						
STRUCT. ID	RM	ELEV	INVERT	ELEVATION	PIPE SIZE	PIPE TY
STM-1	906.58	NE	902.77	12"	PVC	
		SE	903.02	12"	RCP	
		SW	902.78	24"	RCP	
STM-2	911.80	SE	902.78	12"	PVC	
STM-3	897.41	NW	898.21	18"	DI	
STM-4	897.89	SW	894.64	12"	RCP	
		SE	894.34	12"	RCP	
STM-5	899.23	SW	894.34	12"	DI	
		SE	894.08	12"	DI	
STM-6	898.99	NW	895.14	12"	CLAY	
		NE	895.07	12"	RCP	
		SW	895.55	12"	PVC	
STM-7	897.78	N	895.07	12"	RCP	
		S	894.63	24"	RCP	
STM-8	904.68	NE	894.56	10"	CLAY	
		S	894.35	10"	CLAY	

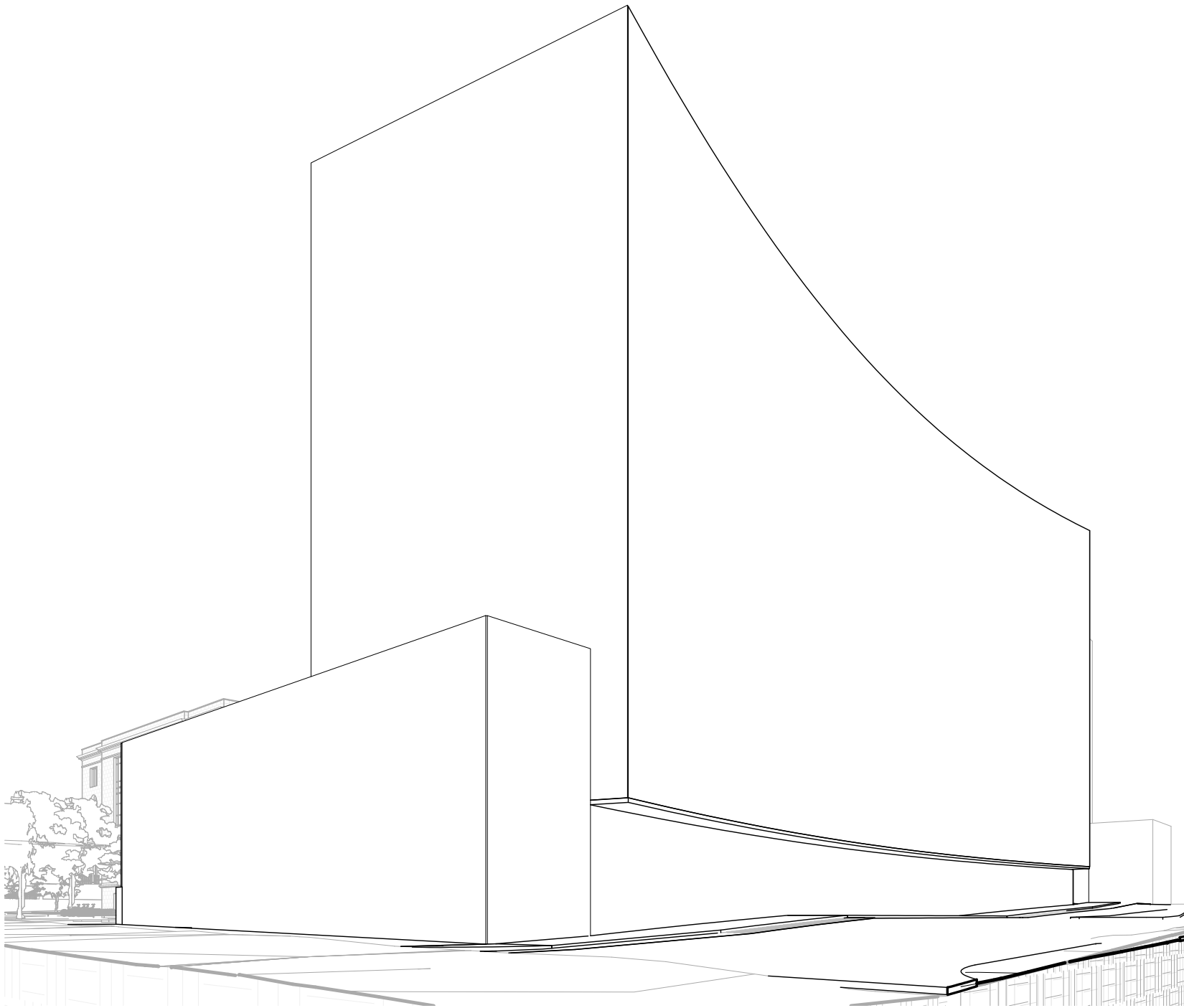
STORM SEWER INLETS						
INLET ID	RM	ELEVATION	INVERT	ELEVATION	PIPE SIZE	PIPE TYPE
INL-1	907.80	NW	904.90	4"	PVC	
INL-2	906.98	NE	904.40	10"	PVC	
INL-3	904.50	NW	904.58	8"	DI	
INL-4	902.94	SW	899.35	4"	PVC	
INL-5	906.29	NW	899.30	10"	PVC	
INL-6	902.30	NW	899.58	8"	PVC	
INL-7	-	-	-	-	-	-
INL-8	899.84	NE	895.99	12"	RCP	
INL-9	896.83	N	895.82	12"	PVC	
INL-10	897.02	NE	895.82	12"	PVC	
INL-11	897.03	NW	893.45	4"	PVC	
INL-12	902.37	NW	898.21	12"	PVC	
INL-13	902.90	NW	898.21	12"	PVC	
INL-14	903.17	SW	898.21	10"	RCP	
INL-15	909.34	NW	905.27	12"	PVC	
INL-16	909.42	SE	905.87	12"	RCP	



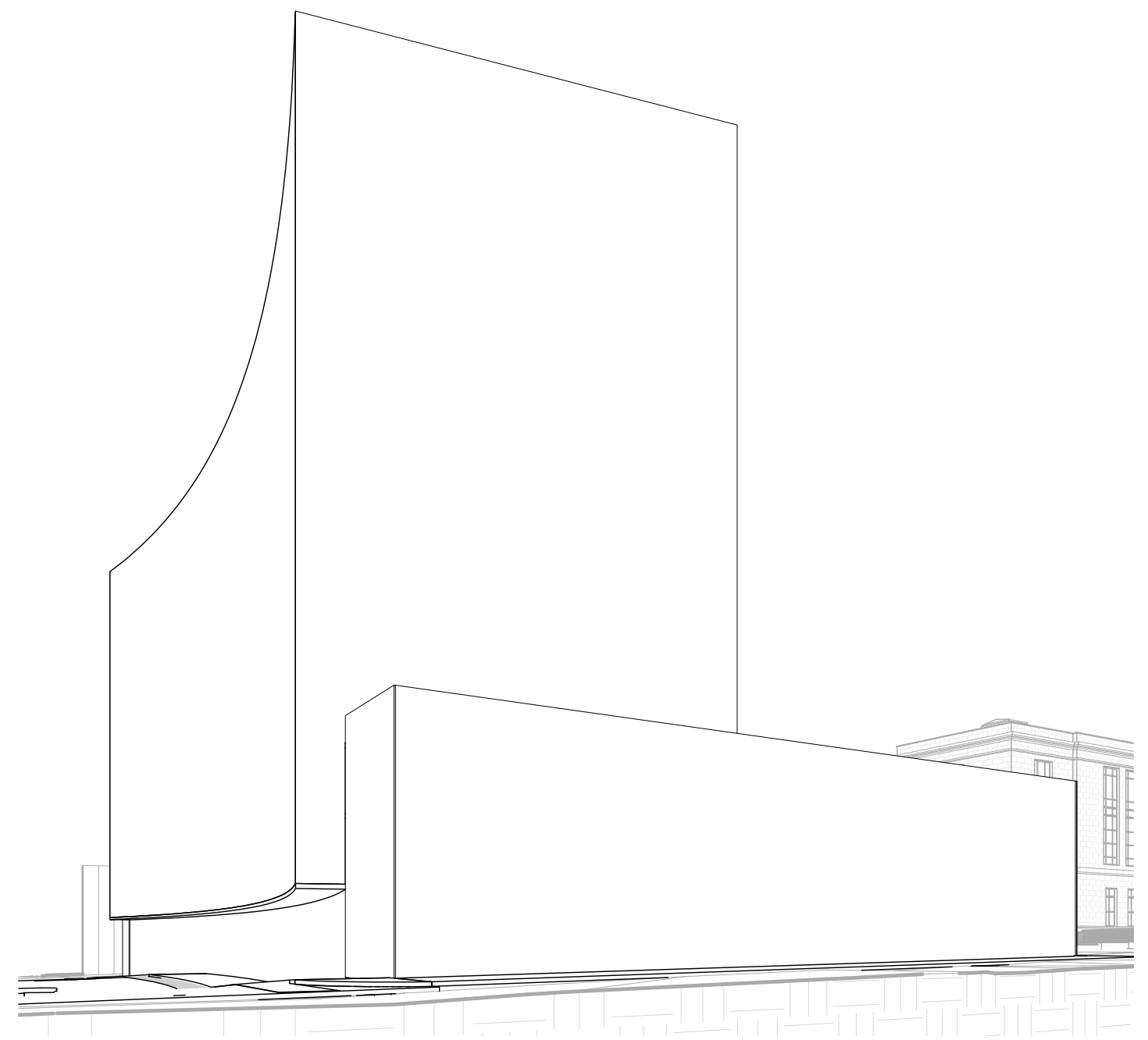


3D AERIAL FROM DOTY ST.

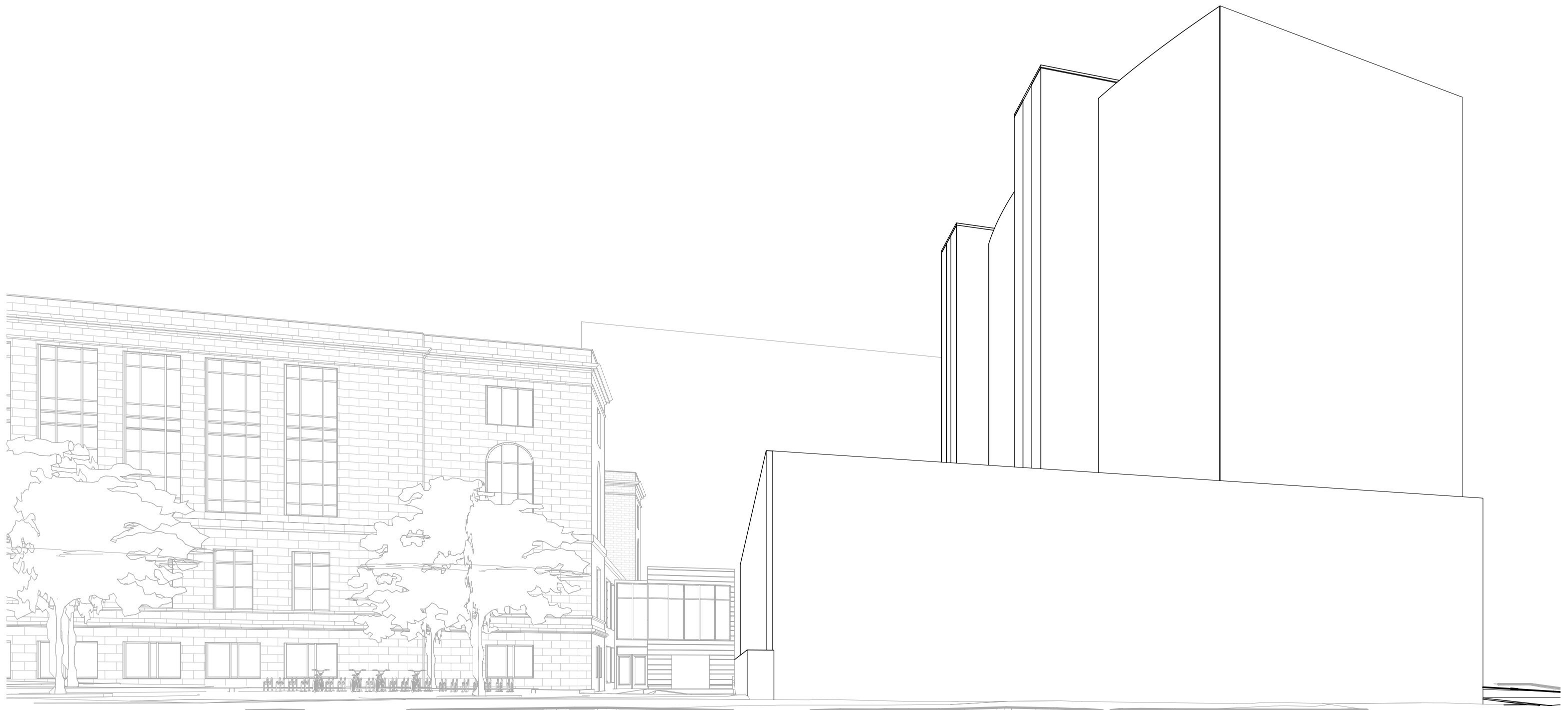
3D AERIAL FROM WILSON ST



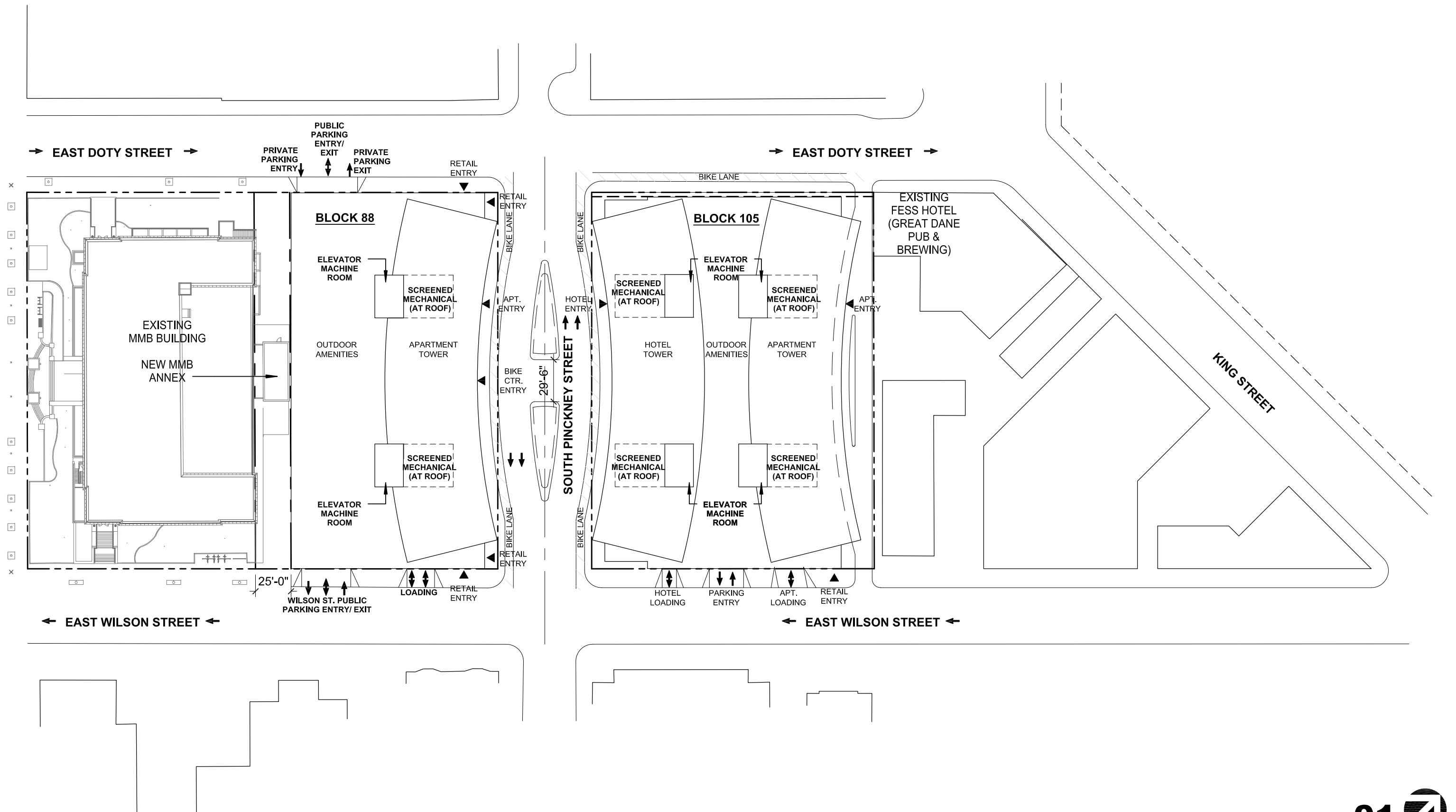
3D MASSING - WILSON ST

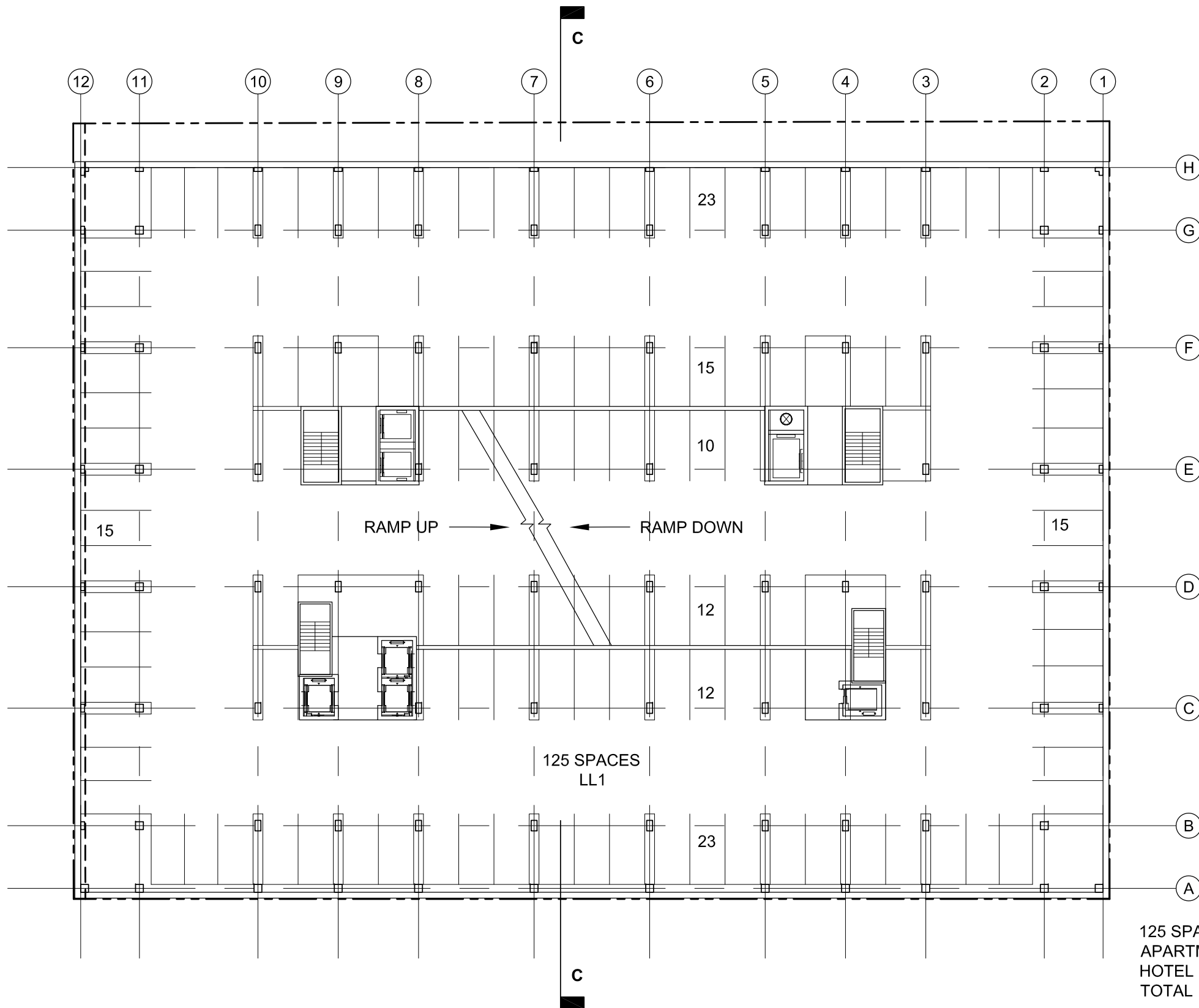


3D MASSING - DOTY ST



I. Pre-Design Concept Drawings for Block 105



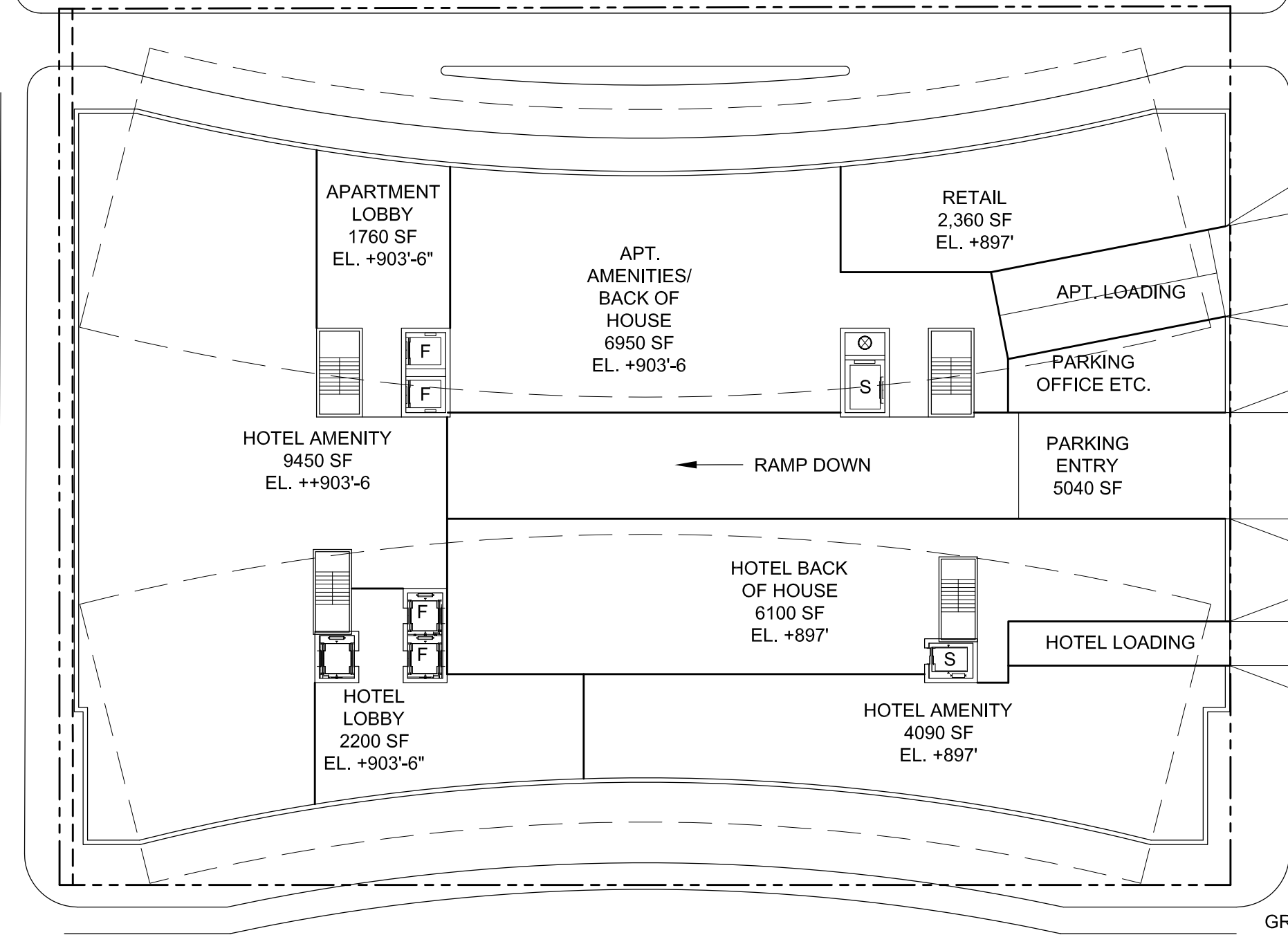


125 SPACES/FLR = 250 TOTAL
 APARTMENTS REQ. 172
 HOTEL 78
 TOTAL 250

GROSS AREA: 49,600 SF

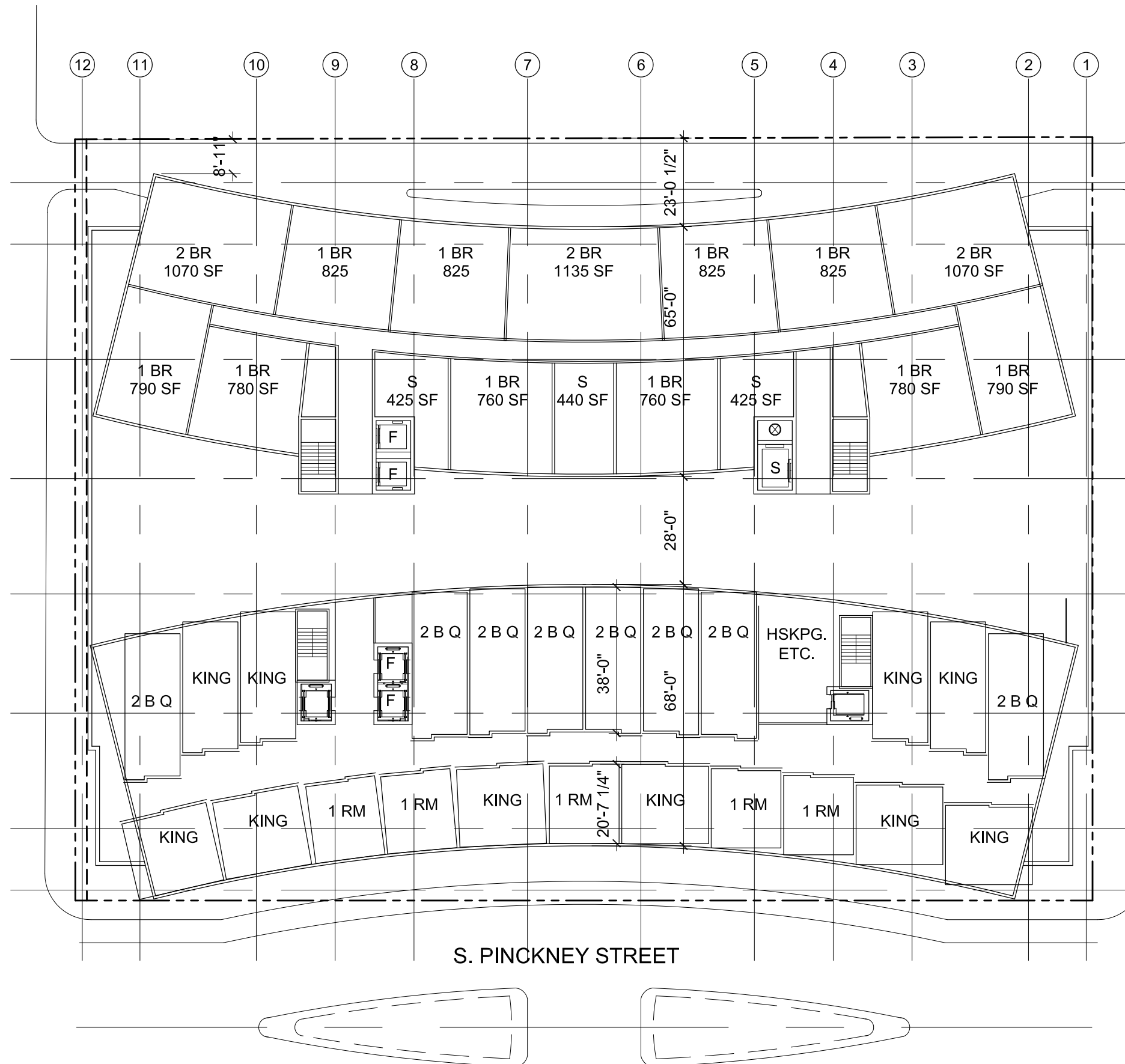
E. DOTY STREET
↑

E. WILSON STREET
↓



S. PINCKNEY STREET

E. DOTY STREET



2 BR: 3 @1100 SF = 3,300 SF
 1 BR: 10 @800 SF = 8,000 SF
 STUDIO: 3 @425 SF = 1,275 SF

TOTAL UNITS:
 11 UNITS AMENITY FLOOR
 16 UNITS PER FLOOR X 11 FLOORS = 176
 187 UNITS TOTAL

TOTAL NET SF: 12,575
 TOTAL GROSS SF: 16,100

E. WILSON STREET

STD. KING 5 @456 = 2,280 SF
 ACC. KING 1 @507 = 507 SF
 SHOTGUN KING 4@478 = 1,912 SF
 SHOTGUN 2 B. QUEEN 8@535 = 4,280 SF
 STD 1 ROOM 4 @361 = 1,444 SF
 ACC 1 ROOM 1 @ 389 = 389 SF

TOTAL KEYS/ FLOOR: 23 X 12 FLRS = 276

S. PINCKNEY STREET

TYP TOWER FLOOR 2 - 12

LVDA FOR BEITLER REAL ESTATE

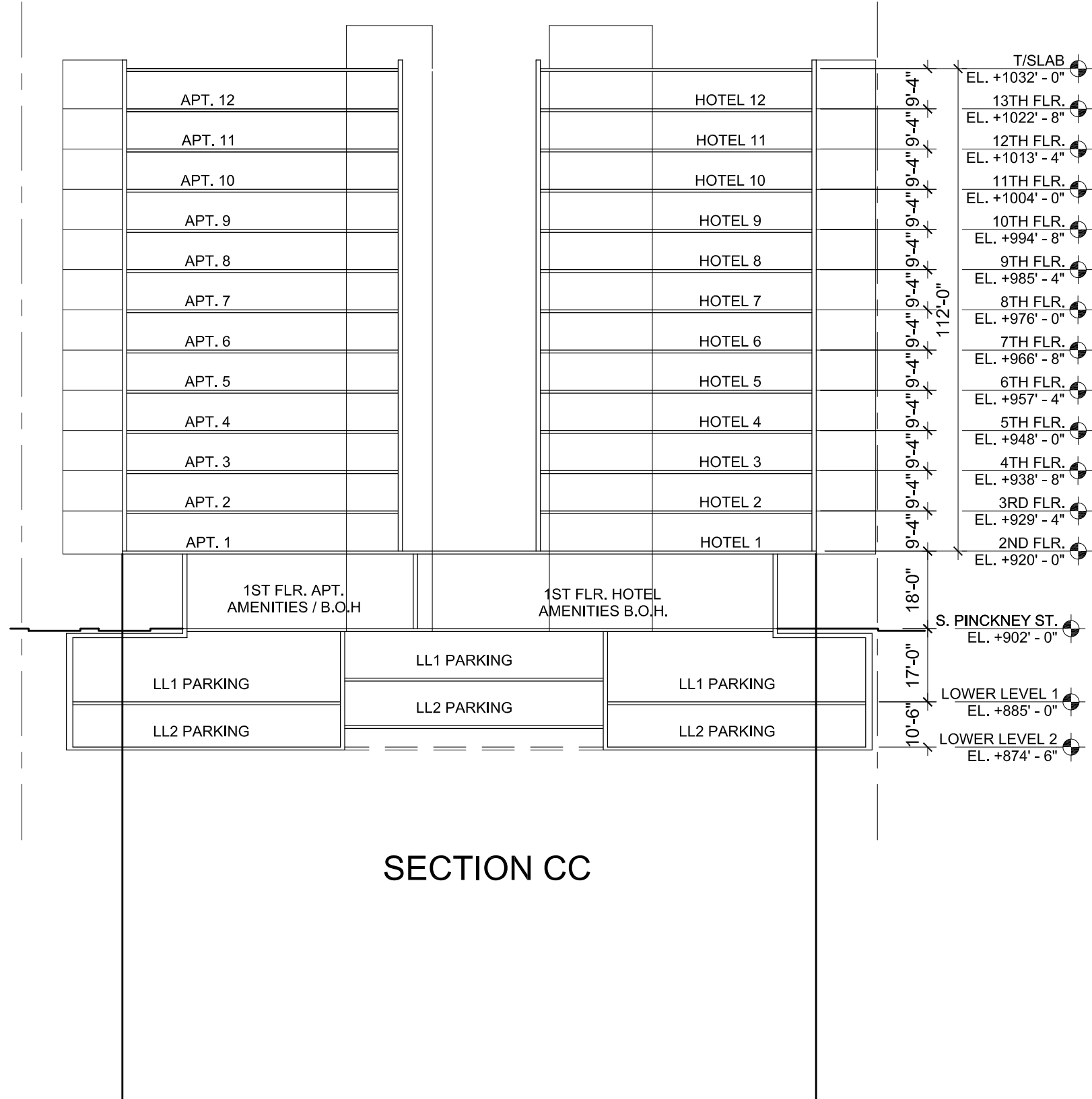
lothan van hook destefano
 ARCHITECTURE LLC

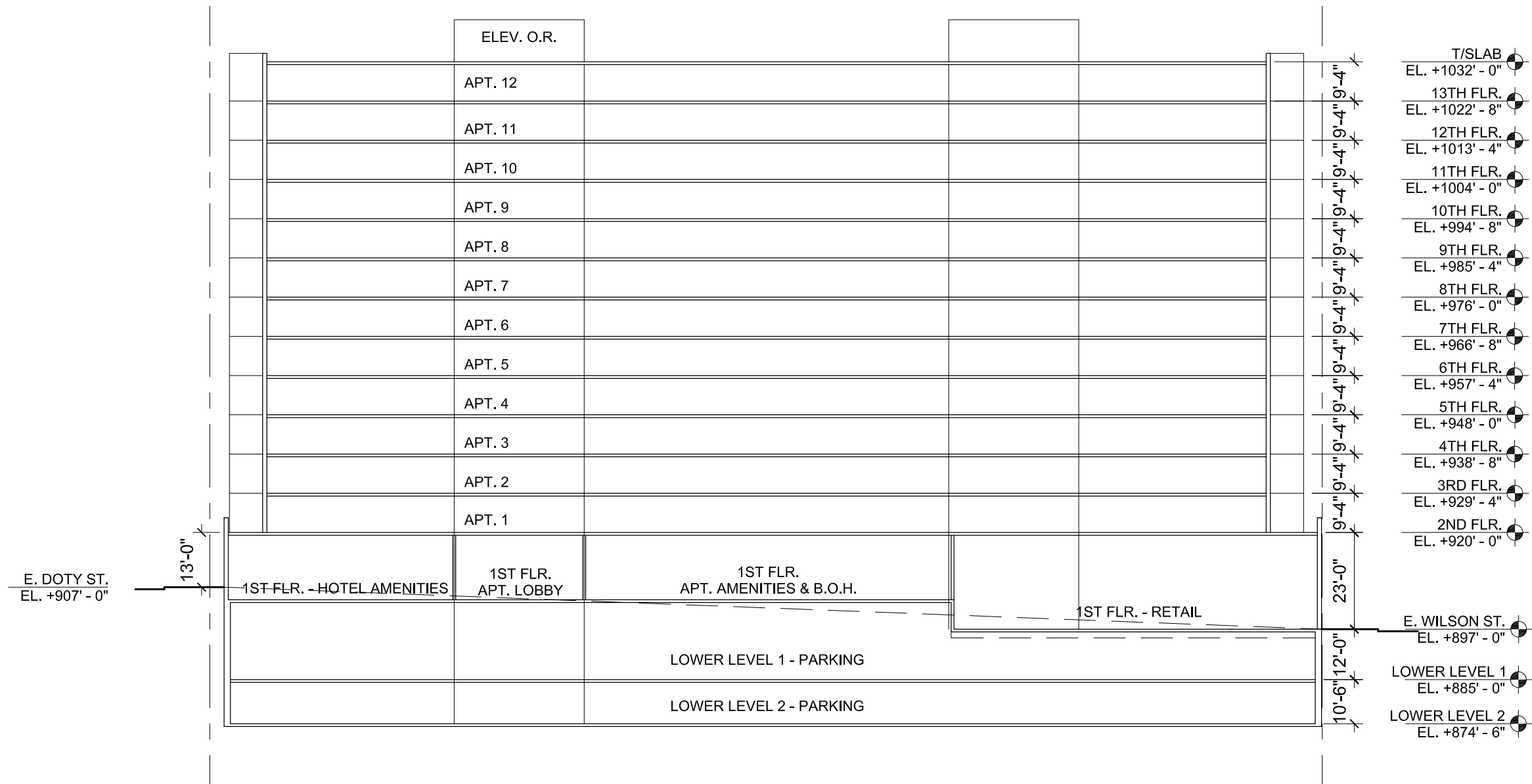
JUDGE DOYLE SQUARE DEVELOPMENT BLOCK 105

04

SCALE: 1" = 30'-0"

NOVEMBER 3, 2016





SECTION DD

MEETING #1

2 September, 2016

JUDGE DOYLE SQUARE
PARKING FACILITY

MEETING MINUTES

NUMBER

216-1066

MEETING DATE

1 September 2016

PRESENT

City of Madison
George Austin
Natalie Erdman

Beitler Real Estate Services LLC
J. Paul Beitler
John Paul Beitler III
Patrick O'Brien
Jacob Rowden

Lothan Van Hook DeStefano Architecture
James DeStefano
Mary Ann Van Hook
Duane Sohl
Meghan Dyer

PURPOSE

Pre-Design Milestones and Timeline

DISTRIBUTION

All Attendees

Item	Description	Action
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1.0	General	
1.1	LVDA discussed our design process. Jim stated that we use an interactive iterative design process that is most effective when combined with responsiveness from the client. LVDA will confirm the program with appropriate stakeholders/ city agencies and then study the impact of this program on the building. <ul style="list-style-type: none">George stated that he would be the point person for this project. He will coordinate the meetings and information flow between LVDA and the City of Madison.	

Item	Description	Action
1.2	Contracts: <ul style="list-style-type: none">An official Notice to Proceed will be issued to LVDA after the parking garage contract is signed by the City of MadisonGeorge stated that the City of Madison will hire the Geotechnical consultant.Mary Ann needs to discuss and finalize the details of some consultant contracts. Specifically, she would like more direction in regards to the Landscape contract and a possible Bicycle consultant contract.	
	Meetings: <ul style="list-style-type: none">The team set the dates for 3 meetings in Madison9/21/2016 – Programming Meeting10/5/2016 – Preliminary City Agency Meetings11/2/2016 – Review Pre-Design Options/ Client Approval MeetingThe City of Madison requested that LVDA provide meeting agendas and other meeting materials to the city at least one week prior to the meetings for their review in order to expedite the city approval process.	
	LVDA will provide the following deliverables at the end of the Pre-Design Phase: <ul style="list-style-type: none">Initial Program SummaryConceptual System Description options with evaluation criteriaPreliminary Conceptual Design Drawings – Including Site Plans, Floors Plans, Sections and ElevationsPreliminary Code Analysis	
2.0	Action Items: <ul style="list-style-type: none">Natalie to get back to LVDA/ Beitler Team with a written description of the entitlement process, including required meetings and drawings.Natalie/ George to give LVDA contact list for city agencies and utilities.George to send LVDA information regarding the commissioning agent the city uses and Park Smart/ LEED requirements.Mary Ann to forward Geotechnical consultant proposal to the City of Madison for their reviewMary Ann to send George revised contract exhibits and copy Kevin on this email.	Madison Madison Madison LVDA LVDA
3.0	Next Meeting: 21 September, 2016	
	Prepared by Meghan Dyer	

Item	Description	Action
1.3	<p>Structural Development and Placement</p> <ul style="list-style-type: none">Bob Halvorson discussed the preliminary structural concept for the parking structure. He stated that they are considering cast in place concrete floors. They are planning on a flat slab which is very shallow with drop panels at the columns. The column spacing will be in three zones. The zone at the MMB side of the site at the parking ramp will likely be a longer span to allow for more parking. The zone of the building below the future apartment building would potentially have smaller bays to allow for an easier column transfer for the curved shape of the future apartment building above. The area of the site under Pickney Street will have a longer span similar to the one at the MMB side of the site. There is also a second option that would have all short spans, however these would need to be evaluated for cost and parking implications.Mr. Halvorson discussed the possibility of placing the retaining structure at the MMB side of the site past the MMB property line in order to reduce the encroachment of the parking garage under Pickney street, however the City indicated that it would be preferable to encroach further under Pickney Street. The City is building a new annex onto the MMB building and the foundations of the building will be right at the edge of the 25' property line.LVDA indicated that we should coordinate the staging and timeline for the construction of the new MMB annex in regards to the construction of the parking garage and the proximity of the new foundations/ retaining wall relative to potentially undermining the MMB annex footings.The City of Madison noted that the plan was to move out of the MMB building November 2016 for the renovation of the MMB and the construction of the new annex.LVDA is to provide drawings to the City for their approval indicating how far the new parking garage will encroach under Pickney Street.HKSE and Walker Parking will develop a structural design criteria document including durability criteria. Bob Halvorson stated that he views this project as a public project requiring a long design life requiring minimal maintenance. The City indicated that this was correct and they would be looking for a 75-year design life with wash down capabilities.	

Item	Description	Action
1.4	<p>Fire Protection and Code Issues</p> <ul style="list-style-type: none">LVDA reviewed options for fire protection and life safety. They approached the public vs. private portions of the buildings as two separate buildings in terms of fire and life safety. Bill Sullivan from the Fire Department stated that they will require LVDA to treat the entire structure as one building for clarity of emergency response.The Fire Department emphasized the building must fully comply with code regulations throughout construction and stated that the contractor will need to take special consideration of this when planning the means and methods of construction.The fire command center will need to be at the main entrance of the building (e.g. if the address of the building is on Pickney Street then the command station must also be at that location).Mr. Sullivan stated that stairwell pressurization will be required in the basement levels, but temporary provisions may be taken until high rise systems are in place.A single stretcher/ ADA compliant freight elevator will need to stop on all floors of the parking garage and future apartment building.A Siamese connection is required on the address street and at least one is required at a remote location.IBC 2009 is the current code for the City of Madison, however they will be switching to IBC 2015 at an undetermined point in the near future. City officials indicated that the best way to proceed would be to design to IBC 2015 standards. IFC 2015 is currently required.The team discussed how to proceed with the permit process if the private portion of the project does not move forward at the same time as the public parking garage. The 'doomsday scenario' would be to plan a landscaped surface parking lot on top of the public parking garage. HKSE indicated that it would be possible to design the structure to accommodate this option. The team agreed that at this point we will proceed with the project as though the public and private portions will be on track to be built together with no delay and if at any time this does not appear to be the case the team will revisit this discussion with the possibility of designing the on grade landscaped parking lot for the interim condition.	

Item	Description	Action
1.5	<p>Geotechnical Issues</p> <ul style="list-style-type: none">Bill Wuellner from CGC provided a document that reviewed the findings of prior Geotechnical surveys of Block 88. (see attached report)Bill indicated that CGC noted a potential environmental concern with petroleum at the NW corner of the site. However, his firm is not an environmental consultant. David Schaller stated that there are quick ways for the City of Madison to address this issue and that the City would handle testing/ mitigating the environmental hazard during the construction process.Bill also stated that the water table for the site as taken in 2010/ 2011 is typically between elevation 857' and elevation 864' and there might need to be special considerations taken if excavation for the garage is deeper than elevation 855' and this may have an impact on the budget and schedule.	
2.0	<p><u>Parking Facility Program Requirements</u></p> <ul style="list-style-type: none">David Dryer to send LVDA the light traffic study that was completed previously. Natalie Erdman indicated that it would not be necessary to get a full traffic study unless the neighbors are particularly concerned about traffic during the community meetings. Paul Beitler noted that the community is typically concerned with the construction process and noise, and that this will be addressed by the General Contractor.The City of Madison and Walker Parking indicated the following would be required for the parking garage:<ul style="list-style-type: none">Walker parking is designing parking based on 9' wide x 18' deep parking spaces with 24' aisle and 26' turns on the end.40 spaces for City Vehicle storage should be on Underground L2 and should be wired for possible electric vehicle charging stations.18 electric vehicle stations should be provided (3%). No wash station is required for city vehicles.6 non-gated spaces for motorcycles were requested.Bicycle storage required (number to be provided by David Dryer)The park-on ramps should have a slope of approximately 6% and a speed ramp should have a slope of approx. 10-11%. A clear height of 8'-2" is planned throughout.	

Item	Description	Action
	<ul style="list-style-type: none">The City stated that one 20'x30' office should be provided off Wilson Street. This office should have space for 2 workstations, breakroom with kitchenette, employee lockers, single unisex toilet room for employees. There should be room for a video screen and a security glass/ transaction counter.Cameras should provide security for the entire structure. No panic buttons are required.Walker Parking will provide design of the signage and wayfinding in the parking garage. LVDA and signage consultant will work with the City of Madison relative to the Public/ Private exterior signage program.Pay on foot stations should be provided at all elevator lobbies and 2-3 stations will be required at the main entry/ exit.Hose bibs should be provided for manual garage wash down. The City has reviewed mechanical wash down systems in the past but would prefer to continue using the manual system.The garage will be mechanically ventilated. The City requested occupancy based light controls and dimmable lights.Paul Beitler said that boosters to ensure cell phone reception and wireless access are desirable. He also would like to see non-hydraulic underslung elevators with a hi-tech touchscreen system in the elevator cab and glass elevator lobbies.LVDA to determine elevator size/ speed with elevator consultant.Park smart certification would be preferable if the certification requirements are reasonable.Stairs should have stainless steel handrails.	

Item	Description	Action
3.0	<u>Bicycle Center Requirements</u> <ul style="list-style-type: none">The City passed out meeting notes highlighting the requirements for and history of the bicycle center. (see attached Notes from City)Paul Beitler is envisioning the bicycle center with a frontage at the corner of Doty St. and Pickney St. He indicated that the plan is to have a fitness center on Level 2 and a small retail/ coffee shop at the corner of Wilson St. and Pickney St.LVDA will allocate between 3500sf and 5000 sf of space for the bicycle center at the corner of Doty St. and Pickney St. and block out basic spatial relationships. The City is considering contacting operators and potentially will issue an RFP in October 2016 for a Bicycle Center consultant. They would work with LVDA to create more detailed requirements for the program.	
4.0	<u>Action Items:</u> <ul style="list-style-type: none">Walker Parking and the LVDA team will put together an updated plan showing the proposed layout of the new speed ramp in the 25' setback at the MMB and will provide this to the City for review by next Wednesday (9/28/2016)City of Madison to review new speed ramp in the 25' MMB setback off of Doty street and approve or alert the LVDA team to any issues with the options.David Dryer to follow up with LVDA relative to how many bicycle parking spaces are required in the public parking garage.LVDA to provide drawings to the City dimensioning how far the new parking garage will encroach under Pickney Street for the City's review and approval.HKSE and Walker Parking to create structural/ parking design criteria document and provide to the City for review and comments.David Dryer to send LVDA light traffic study that was completed previously.Sabrina Tolley and Bill Putnam to provide formal program for parking garage requirements.	<div>Walker/ LVDA</div> <div>City of Madison</div> <div>David Dryer</div> <div>LVDA</div> <div>Halvorson/ Walker</div> <div>David Dryer</div> <div>Sabrina Tolley and Bill Putnam</div>

Item	Description	Action
	<ul style="list-style-type: none">Paul Beitler to send Dave Dryer information on touchscreen elevators.Walker Parking to provide ParkSmart requirements to City for review.Dave Schaller to provide draft schedule to LVDA for review.LVDA to provide draft agenda for October 12 meeting to George Austin for review next week.	<div>Beitler</div> <div>Walker</div> <div>Dave Schaller</div> <div>LVDA</div>
4.1	<u>Additional Action Items</u> <ul style="list-style-type: none">Natalie Erdman to provide the LVDA/ Beitler Team with a written description of the entitlement process, including required meetings and drawings. Update 9/21/2016: Natalie indicated she will provide this to LVDA team next weekNatalie Erdman/ George Austin to give LVDA contact list for City agencies and utilities.	<div>Natalie Erdman</div> <div>Natalie Erdman/ George Austin</div>
5.0	Next Meeting: 12 October, 2016 – Location to be determined	
5.1	Prepared by Meghan Dyer, Lothan Van Hook DeStefano Architecture This constitutes our understanding of the items discussed and conclusions reached. All participants are requested to respond in writing to any errors and/or omission.	
5.2	Meeting Handouts Attached: <ol style="list-style-type: none">2016-0921-JDS-#2-Meeting 2 Agenda _ Provided by LVDA2016-0921-JDS-#2-Ramp Diagrams and Plans_ Provided by LVDA2016-0921 Program Analysis_ Provided by LVDA2016-0921-Halvorson Structural Handout_ Provided by Halvorson2016-0921-CGC Geotechnical Handout_ Provided by CGC2016-0921-Bike Notes from City_ Provided by City of Madison2016-0921 Bike Program Analysis_ Provided by LVDA2016-0921-Parking Req Outline from City_ Provided by City of Madison	

MEETING #3
13 October, 2016

JUDGE DOYLE SQUARE
PARKING FACILITY

MEETING MINUTES

PROJECT NUMBER	216-1066
MEETING DATE	12 October 2016 - 10:30am-2:30 pm
PRESENT	<p>City of Madison George Austin – JDS Project Manager Natalie Erdman – City of Madison Planning Jenny Frese – City Real Estate Jeff Quamme – City Engineering David Dryer – Traffic Engineering Bill Sullivan – Fire Prevention Chris Petykowski – City Engineering Alan J. Martin – Planning and Development Bill Putnam – City Parking Utility Sabrina Tolley – City Parking Utility Dave Schaller – City Engineering Dan McAuliffe – Inspection Unit Kevin Firchow – Planning Department Susan Schmitz – Downtown Madison Doug Poland – Downtown Madison Alan Artsen – Downtown Madison</p> <p>Beitler Real Estate Services LLC (Beitler) J. Paul Beitler - President John Paul Beitler III – Vice President</p> <p>Lothan Van Hook DeStefano Architecture (LVDA) James DeStefano – Principal Mary Ann Van Hook – Managing Principal Duane Sohl – Sr. Technical Architect Meghan Dyer – Project Architect</p> <p>Consultants Chris Oddo –Insite Consulting Architects Stephen Mar-Pol–Insite Consulting Architects Freddy Manengo- Insite Consulting Architects Ismael Al-Amoodi–Insite Consulting Architects Bob Halvorson – Halvorson and Partners Structural Engineers (H+P) Lew Kollmansberger – Mead & Hunt Scott Easton – AEI Tom Hannula – Walker Parking Bill Wueller – CGI, Inc. David Staab – CGI, Inc.</p>

PURPOSE	JDS Parking Pre-Design Workshop– City of Madison
DISTRIBUTION	All Attendees, Dave Way, Jonathan Sladek, Patrick O’Brien

Item	Description	Action
1.0	General	
1.1	<p>Parking Ramp Development Issues:</p> <ul style="list-style-type: none">• Tom Hannula discussed the revised updated parking layout options that had been sent to the City of Madison on 9/29/2016.• Option C shows a public parking ramp entry on Doty St. that encroaches approximately 12’ into the 25’ setback at the rear of the MMB building and two separate one-way public parking exit ramps on Doty St.• Option D shows a single reversible entry/exit ramp on Doty St. that connects to the public parking garage and does not encroach into the 25’ setback at the rear of the MMB building. The intent is that it would be an entry ramp in the morning and an exit ramp in the evening, though with proper electronic signage this could be adjusted as required for special events. The ramps to the apartment parking are also entered and exited on Doty St.• Both options C and D show the loading docks located at Doty St.• George Austin asked Tom which parking layout was preferred and Tom stated that he would prefer Option D because it would reduce the amount of cross traffic at the bottom of the ramp and would provide smoother interior operation. Jim DeStefano stated that Option D is also preferable because it will reduce column transfers and be a cleaner solution architecturally. Natalie Erdman said that Option D would also be the Planning Department’s preference because it would reduce the street frontage of the parking garage. Dave Dryer noted that it would be important to hang clear electronic signage in order for people to see in advance the direct of the Doty St. garage entry/ exit.• The team decided to move forward with parking garage Option D.	
1.2	<p>Site Development Planning Issues:</p> <ul style="list-style-type: none">• David Dryer said that though there are no zoning requirements to provide bicycle parking in the public parking garage, the City would like to provide at least 20 temporary bike parking spaces to replace the number that is currently in the Government East parking garage.	

Item	Description	Action
	<ul style="list-style-type: none">Paul Beitler mentioned that the City could provide 20 free bicycle parking spaces in the Bicycle Center if they would prefer not to lose any more car parking spaces in the parking garage. The City said they would consider that option if necessary.Jim DeStefano reviewed the updated architectural drawings indicating the Bicycle Center at the corner of Wilson St. and Pinckney St., the apartment lobby and retail at the center of Pinckney St., and a retail/ coffee shop at the corner of Doty St. and Pinckney St. All of these spaces have entries at grade. The drawings also indicated that the loading docks were moved from their previous location on Wilson St. to Doty St. This was necessary due to the way the parking ramps down under the retail and the necessity of connecting the loading dock to the freight elevator.There was a general discussion relative to the Doty St. location of the loading dock. Jim DeStefano noted that there wouldn't be a lot of loading/ unloading required for a coffee shop, bicycle shop, and fitness center. The primary use for the loading dock is for move-in/ out of the residential portion of the building. Paul Beitler indicated that this could be regulated by the timing/ schedule of the use of the dock.Jim also noted that the drawings show the elevator overruns extending up over the 1032' height limit as allowed by the zoning code for conditional uses in the City of Madison. The City indicated that this is allowed as long as the building elements extending over the 1032' height ceiling are as outlined in the zoning code. Paul Beitler indicated that we would potentially also want to have our cooling tower extend up over this height limit and the City indicated that this has also been allowed as long as the equipment is screened.Bill Sullivan noted that LVDA should make sure to include structure that would exceed the exceed the 187.2 CIM datum feet should be included (stairs to roof, roof hatches, railings, etc.)LVDA noted that the zoning code 28.134 "Height and Bulk Regulations" included provisions to apply to zoning as a conditional use.The City will work with LVDA on the conditional use approval.Paul also stated that we would have an unoccupied green roof on top of the apartment building.Lew Kollmansberger will set up meetings with water, sanitary, storm water, electric and other utilities as required. He will coordinate with LVDA and consultants to start the discussion on incoming utilities. Chris Petykowski will be Lew's point of contact at the City for utility issues.	

Item	Description	Action
	<ul style="list-style-type: none">The major issue for incoming utilities will be determining which utilities under Pinckney St. need to be relocated.Paul Beitler asked if fiber optics were available in the City of Madison. David Dryer stated that they are available and the Judge Doyle Square project can potentially connect back to the fiber the City uses at the MMB building.David Dryer indicated that the City has program requirements for the Right of Way (ROW). They would like Pickney street to be widened to two lanes and allow for a bus stop and provide enough room for Fire Department access. The City would also like to provide a bike lane on Pinckney St.David Dryer stated that the City will also need an additional 3 feet of right of way on Doty Street. 10/13/2016 Update: this additional 3 feet of ROW is required on the Government East Block, not Block 88LVDA to provide updated ROW drawings to the City for review by 10/19/2016.The City will need to create a permanent easement for the area of public sidewalk that crosses over the property line and is no longer in the right of way.	
1.3	<p>Structural Development, Placement, Geotechnical Concerns</p> <ul style="list-style-type: none">H+P and Walker Parking discussed the structure of the parking garage. Bob Halvorson discussed the 46' span underneath Pinckney St. In order to bear the loads of the earth, pavement and cars the beams and thickened concrete slab that span between column lines E and F will need to be approximately 4' deep. In order to reduce this structural depth, we would need to reduce the span which would also reduce the number of parking spaces that would be able to fit in that bay of parking. As we are currently providing 600 parking spaces this would require the parking garage to be excavated deeper to provide the 600 spaces requested by the City.Bill Wuellner from CGC stated that digging the parking garage deeper could cause problems as the current depth of Underground Level 4 is at elevation 846'. This is right at the water table level. Bill stated that they would be comfortable excavating the garage down to 846' but if the garage is to be excavated down further they would recommend switching from a typical soldier pile and wood lagging earth retention system to a secant pile earth retention system which could significantly increase the cost to construct the parking garage.	

Item	Description	Action
	<ul style="list-style-type: none">Jim DeStefano asked if the 600 cars requested by the city is a fixed number or if the number of cars could be reduced to avoid the geotechnical issues caused by constructing the building below the water table. The City asked the LVDA team to do a cost analysis that shows the cost impact of these options and quantifies these issues. LVDA, Walker Parking, CGC, and H+P to do a detailed cost analysis indicating impacts of the following options:<ul style="list-style-type: none">1) Base Option: Maximize the number of parking spaces that will fit on the site at or above elevation 846'. Placeholders should be indicated for MEP/ FP, storage, bike parking, and circulation in order to provide an accurate parking count.2) The cost impact of excavating below elevation 846' and switching part or all of the earth retention system to a secant pile system to provide all 600 parking spaces required by the City of Madison.3) Cost analysis and parking impacts on reducing the structural span between column lines E and F and adding additional columns.Bill Wuellner stated that the lowest level of the parking garage should be designed as a "bathtub" in order to reduce the cost and maintenance of a pumping system.	
1.4	<p>Fire Protection and Code Issues (break out meeting)</p> <ul style="list-style-type: none">LVDA reviewed their code systems synopsis with Bill Sullivan. Duane Sohl indicated that LVDA intends to provide a 3-hour separation between the public parking garage and the private development. Bill expressed skepticism that it would be possible to provide that separation at the Doty Street Public parking garage ramp. However, LVDA noted that if this was not feasible the building would be all construction type 1A.Due to the fact that the project is complying with IBC 2015 it will likely be required to have 3 stairs with standpipes. 2 stairs to meet egress requirements and 1 fireman's stair that is directly accessible from the fire elevator access lobby, and in proximity to the fire command center at the main entrance. Standpipes should be at the intermediate landings of the stairs.LVDA indicated that they do not intend to provide pressurization in the parking garage stairs with the exception of the aforementioned Fire access stair that goes through the entire building.	

Item	Description	Action
	<ul style="list-style-type: none">LVDA indicated that all of the parking garage elevators will be stretcher/ ADA compliant elevators. Additionally, standby power transfer capability will be required for at least one elevator in every elevator bank.Elevator hoistway venting is not required or desirable.Bill Sullivan noted that direct exterior access to the fire pump room is not necessary.A Siamese connection is required on the address street, one will also be required at both Doty St. and Wilson St. These Siamese connections should be remote from each other.Bill Sullivan indicated that in the past the City of Madison has been reluctant to allow the pouring of concrete floors if the floors below are occupied. He suggested that at the appropriate time the issue will need to be addressed with the Fire Department and the Building Inspection department.Natural gas is not permitted as a source of fuel for the emergency generator. A ships ladder might be allowed to access the emergency generator however LVDA should discuss this with the Building Inspection department to confirm that it is acceptable.Water is required by the IBC to be off two separate mains in two separate streets. LVDA indicated that the plan is to pull our water off both Doty St. and Wilson St. Bill Sullivan noted it was note necessary to be two streets, so long as the redundancy is ensured.Bill Sullivan asked that we avoid providing outdoor fire pits on the outdoor amenity deck. He stated that outdoor fireplaces can be acceptable but the Fire Department has found the open outdoor fire pits to be problematic.	
2.0	<p>Schedule</p> <ul style="list-style-type: none">George Austin and Dave Schaller provided an overall schedule based on LVDA issuance dates and city land use approvals. The schedule was agreed upon by all parties.	

Item	Description	Action
3.0	<u>Bicycle Center Requirements</u> <ul style="list-style-type: none">The Downtown Madison – DMI Transportation and Parking Committee reviewed their wish list for the programmatic requirements for the Bicycle Center. Their vision includes the following, if possible:<ul style="list-style-type: none">LockersBike Sales (potentially)Bike Repairs – self use productsBike RentalShowers/ changing roomsPublic RestroomsBike “Convenience Store”Paul Beitler noted that that the team toured the bicycle center in Millennium Park.George Austin noted that the LVDA team was directed to include approx. 5,000 sf for the bicycle center in the public parking garage portion of the building. LVDA has located the bicycle center at the corner of Pinckney St. and Wilson St.George Austin stated that the City is planning on putting out an RFP and would like to have a Bicycle Center vendor on board by February 1·2017. In order to meet that goal, the City will need to put out the RFP by November 1·2016 and is planning on a 45-day review process.	
4.0	<u>Action Items:</u> <ul style="list-style-type: none">LVDA, Walker Parking, CGC, and H+P to do a detailed cost analysis indicating impacts of the following options:<ol style="list-style-type: none">1) Base Option: Maximize the number of parking spaces that will fit on the site at or above elevation 846'. Placeholders should be indicated for MEP, storage, bike parking, and circulation in order to provide an accurate parking count.2) The cost impact of digging down below elevation 846' and switching part or all of the earth retention system to a secant pile system to provide all 600 parking spaces required by the City of Madison.3) Cost analysis and parking impacts of reducing the structural span between column lines E and F and adding additional columns.Lew Kollmansberger to up meetings with water, sanitary, storm water, electric and other utilities as required. Lew to coordinate these meetings with the City, LVDA, and applicable consultants.LVDA to provide updated ROW drawings to the City for review by 10/192016.	<div>LVDA/ H+P/ Walker</div> <div>Mead & Hunt</div> <div>LVDA</div>

Item	Description	Action
4.1	<u>Additional Action Items</u> <ul style="list-style-type: none">Natalie Erdman to provide the LVDA/ Beitler Team with a written description of the entitlement process, including required meetings and drawings. Update 9/21/2016: Natalie indicated she will provide this to LVDA team next weekNatalie Erdman/ George Austin to give LVDA contact list for City agencies and utilities.LVDA to provide drawings to the City dimensioning how far the new parking garage will encroach under Pickney Street for the City's review and approval.H+P and Walker Parking to create structural/ parking design criteria document and provide to the City for review and comments.David Dryer to send LVDA light traffic study that was completed previously.Sabrina Tolley and Bill Putnam to provide formal program for parking garage requirements.	<div>Natalie Erdman</div> <div>Natalie Erdman/ George Austin</div> <div>LVDA</div> <div>H+P/ Walker Parking</div> <div>David Dryer</div> <div>Sabrina Tolley and Bill Putnam</div>
5.0	Next Meeting: 9 November, 2016 – Location to be determined	
5.1	Prepared by Meghan Dyer, Lothan Van Hook DeStefano Architecture This constitutes our understanding of the items discussed and conclusions reached. All participants are requested to respond in writing to any errors and/or omission before the next meeting.	
5.2	Meeting Handouts Attached: <ol style="list-style-type: none">9. 2016-1012-JDS-#3-Meeting 3 Agenda Provided by LVDA10. 2016-1012-JDS - BLOCK 88 PRE-DESIGN DRAWINGS Provided by LVDA11. 2016-1012-JDS - PARKING RAMP DESIGN OPTIONS Provided by Walker12. 2016-1012-JDS - CODE SYSTEMS AND FEATURES Provided by LVDA13. 2016-1012-JDS - PROGRAM MATRIX Provided by LVDA/ AEI14. 2016-1012- JDS - PRE-DESIGN TASK LIST Provided by LVDA15. 2016-0926- SCHEDULE Provided by Dave Schaller	

MEETING #3

10 November, 2016

JUDGE DOYLE SQUARE
PARKING FACILITY

MEETING MINUTES

PROJECT NUMBER

216-1066

MEETING DATE

9 November 2016 - 10:00am-12:30 pm

PRESENT

City of Madison

George Austin – JDS Project Manager
Natalie Erdman – City of Madison Planning
Jeff Quamme – City Engineering
David Dryer – Traffic Engineering
Chris Petykowski – City Engineering
Bill Putnam – City Parking Utility
Sabrina Tolley – City Parking Utility
Dave Schaller – City Engineering
Kevin Firchow – Planning Department

Beitler Real Estate Services LLC (Beitler)

J. Paul Beitler - President
John Paul Beitler III – Vice President
Patrick O'Brien

Lothan Van Hook DeStefano Architecture (LVDA)

James DeStefano – Principal
Duane Sohl – Sr. Technical Architect
Meghan Dyer – Project Architect

Consultants

Chris Oddo –Insite Consulting Architects
Jonathan Sladek – Halvorson and Partners Structural Engineers

(H+P)

Lew Kollmansberger – Mead & Hunt
Scott Easton – AEI

PURPOSE

JDS Parking Pre-Design Workshop– City of Madison

DISTRIBUTION

All Attendees, Dave Way, Tom Hannula, Robert Halvorson, Bill Sullivan, Mary Ann Van Hook, Evans Spileos

Item	Description	Action
1.0	Pre-Design	
1.1	<p>Review Pre-Design Documents – Block 88:</p> <ul style="list-style-type: none">Jim DeStefano discussed the revised updated Pre-Design Drawings for Block 88. Jim noted that the drawings indicate a single reversible entry/exit ramp on Doty St. that connects to the public parking garage and does not encroach into the 25' setback at the rear of the MMB building, which was the Option D parking entry scheme previously presented to the City of Madison. Jim also noted that the loading dock had been relocated to the Wilson Street side of the site. The City of Madison indicated that loading off Wilson St. was preferable in the last meeting.The Bicycle center was relocated from the corner of Wilson St. and Pinckney St. to the center of the Pinckney St. elevation. Paul Beitler stated that he was in favor of the new location because it makes the Bicycle Center a showplace with the largest, most prominent street frontage and a better layout. Natalie Erdman was also in favor of this new location.Jim stated that 903'-6" would be the basis of the building height for the Block 88 development. This height is the average height of Doty St at the corner of Pinckney St. (approx. EL +908') and of Wilson St at the corner of Pinckney St. (approx. EL +899'). Kevin Firchow agreed that this was the correct calculation method.Jim reviewed the revised Right of Way drawings provided to the City on 10/24/2016. Jim noted that the drawings are currently showing a bike lane on both sides of the street and stated that if it was desirable, LVDA could also provide one two-way bike lane on the Block 88 side of the street and no bicycle lane on the Block 105 side. Other potential bicycle lane options discussed include having the lanes in the middle, along both sides of the fountain, or designing a cross traffic scheme. This issue will require further study however, the Planning Department stated that they will not require finalized ROW drawing information in order to approve the Pre-Design report and move forward into the Schematic Design Phase.The revised underground public parking scheme is similar to the underground parking scheme presented in the previous meeting. The main difference is the updated building core as required by the IBC 2015. This code requires 2 fire access elevators with a fireman's lobby and direct access to an egress stair. These elements are required to access every level of the building. This core is now provided and it accesses every level of the building from the lowest parking level to the highest apartment level.	

Item	Description	Action
	<ul style="list-style-type: none">Another development of the design is a need to extend the basement down to a 5th lower level in order to achieve the 600 vehicle program. Jim noted that the Underground Parking Level 5 puts the lowest level of the parking garage approximately 9' below the water table. This is discussed further in item 1.4.Lew Kollmansberger noted that he had had preliminary meetings with the Utility Companies and they did not foresee any major issues, however the Utility Companies indicated they would like to have 5' minimum coverage over the Public Parking Garage in the Pinckney street right of way in order to have enough room to run the utilities over the garage and under the street. Paul Beitler mentioned that he would like to avoid grates in the sidewalk and stated that LVDA would provide lift out panels in the loading dock area for Madison Gas and Electric (MG&E) assess to the vault beneath Level 1 in order to avoid grates. Scott Easton stated they believe MG&E would find this to be acceptable.LVDA indicated that they would like to schedule a meeting with the surveyor in order to locate the building site in relation to the ROW. The City of Madison will provide LVDA with the surveyor contact information.The City asked if the sidewalk along Doty Street had been reduced in width from the existing sidewalk thus potential creating a "pinch point". LVDA stated that the sidewalk had not been and was not anticipated to be reduced from the width shown on the survey.	
1.2	<p>Review Pre-Design Documents – Block 105:</p> <ul style="list-style-type: none">The private development on Block 105 has had some significant updates from the proposal submitted on 02/24/2016. Jim DeStefano reviewed the updates. The main change is that the apartment tower has been rotated 180 degrees to allow for a through block entry drive between Doty St. and Wilson St. Additionally, all the parking for Block 105 is now underground.Dave Dryer asked how LVDA was anticipating providing the second floor egress from the Great Dane Brewery that currently egresses out the Government East Parking Garage stair. LVDA stated that they are aware of the issue and still working on a design solution.George Austin noted that the Existing Government East building is already excavated down 1 – 1.5 stories underground, which might provide some cost savings for the future private development parking garage.The Planning Department stated that LVDA/ the landscape architect will need to take careful consideration with the paving material selection in the Pinckney Street plaza. The City wants to minimize maintenance. It's also possible, if a material such as pavers are selected, then the City might require the Developer to sign a maintenance agreement.	

Item	Description	Action
1.3	<p><u>Land Use Approvals</u></p> <ul style="list-style-type: none">Request for State Historic Preservation Officer Review – The City of Madison is responsible for this deliverable (12/14/2016-02/14/17)Initial Meeting with the City Development Assistance Team – A Site Plan and basic Elevations are required. LVDA will plan on an early City staff meeting on 12/07/2016 and a meeting with the Alder to follow on 12/08/2016. Natalie Erdman will take the lead on setting up these meetings.Presentation to Capitol Neighborhoods – A Site Plan and basic Elevations are required. This meeting needs to occur before 01/09/2017, however it would be preferable if the meeting can be scheduled before Christmas. Natalie Erdman will schedule this meeting.Informational Presentation to the Landmarks Commission (01/09/2017) and Informational Presentation to the UDC (01/11/2017). These presentations require very well developed ideas about elevations, fenestration, materials, and the pedestrian experience. Chris Oddo to provide sample UDC project to LVDA for reference.Written Pre-Application Notice (01/11/2017) Must be submitted 30 days prior to filing building permit application.The expectation is for LVDA to go through the land use approval process with both Block 88 and Block 105 at the same time.The City asked Beitler about the flag for the Hotel on Block 105. The Beitler Team indicated that they were still working on getting the flag finalized.LVDA inquired if a Commissioning Agent would be required. The City stated that they would operate as the Commissioning Agent on this project. LVDA will need to set up meetings in the near future to go through project requirements and scope. LVDA to contact Dave Schiller to get further information regarding the commissioning scope.	
1.4	<p>Foundation Design, Geotechnical Discussion</p> <ul style="list-style-type: none">LVDA, Walker Parking, CGC, and H+P in conjunction with Evans Spileos completed a detailed cost analysis indicating impacts of the following options:<ul style="list-style-type: none">1) Base Scheme 1: Design Option Drawings dated 02/24/16. Four (4) full levels of underground parking, 30' bays, with the lowest floor at EL +850'-4"2) Modified Base Option: LVDA Drawings dated 10/12/16. Four (4) full levels of basement + partial 5th level, 30' Bays, with the lowest floor at EL +839'3) Option #1: Long span scheme. Four (4) full levels of basement + partial 5th level, 45' Bays, with the lowest floor at EL +836'4) Option #2A: Short Span reduced floor to floor height scheme. Four (4) full levels of basement + partial 5th level, 30' Bays, with the lowest floor at EL +845'	

Item	Description	Action
	<p>4) Option #2A: Short Span reduced floor to floor height scheme. Four (4) full levels of basement + partial 5th level, 30' Bays, with the lowest floor at EL +845'</p> <ul style="list-style-type: none">All of the proposed options exceed the initial budget shown in Base Scheme 1 because providing the 600 City required vehicles in addition to further additions to the program, entails building a 5th level of underground parking which puts the lowest level of the parking garage below the water table (approximately EL + 845') and increases the complexity and cost of construction. Additionally, the Base Scheme 1 was conceptual and did not include mechanical spaces, and the required IBC 2015 Fireman's Elevators, Fireman's Lobby and Fireman's stair. Also, the geotechnical information was not available at the time.LVDA suggested considering reducing the number of cars required by the city which would eliminate the 5th level of underground parking and would bring the lowest level of underground parking up above the water table and reduce cost. Dave Dryer mentioned he was concerned with losing parking spaces in the downtown area however he would be willing to explore that option. LVDA also suggested lowering the required head room height in the bottom 3 levels from 8'-2" to 7'-6" which still allow car and SUV traffic and would help raise the parking garage out of the water table, however the City was concerned that the lower head height would create an oppressive atmosphere on those lower levels.LVDA will add a preface to the Construction Cost Estimate and Comparative Analysis section of the Pre-Design Report to indicate how the cost issues have been identified, the team is working on lowering the cost of the final scheme and will identify options to do so in the Schematic Design Phase of the project.LVDA, Walker Parking, CGC, and H+P will work with the cost estimator, Evans Spileos to provide the City a detailed cost analysis indicating impacts of the following additional options:<ul style="list-style-type: none">1) 4 full levels of underground parking, 45' bays, with the lowest level at EL +846'-6" (this will reduce the total parking count to approximately 557 cars)2) 4 full levels of underground parking, 45' bays at upper levels, 30' bays at lower levels, with the lowest level at EL +848'-6" (this will reduce the total parking count to approximately 549 cars)	
3.0	<p><u>Bicycle Center Discussion</u></p> <ul style="list-style-type: none">The City of Madison has issued a RFP for a bicycle center operator. The RFP was issued on 11/03/2016 and posted to the City's 2 vendor websites. Additionally, they have done some follow up outreach to large bicycle vendors in the area. Final proposals are due on 12/28/2016. The City of Madison is targeting to have a recommended operator shortly after the beginning of the year.	

Item	Description	Action
4.0	<p><u>Action Items:</u></p> <ul style="list-style-type: none">The City of Madison will provide LVDA with the surveyor contact information.LVDA to call Bill Sullivan from the Fire Department regarding the Pre-Design Report and any comments they may have.Natalie Erdman to set up Initial Meeting with the City Development Assistance Team (12/07/2016) and Meeting with Alder (12/08/2016)Natalie Erdman to set up Presentation to Capitol Neighborhoods prior to 01/09/2017, it would be preferable to have this meeting prior to the holidays.LVDA to contact Dave Schiller to get further information regarding the Commissioning Agent.LVDA will add a preface to the Construction Cost Estimate and Comparative Analysis section of the Pre-Design Report to indicate that the team is working on lowering the cost of the final scheme and will identify options to lower the cost in the Schematic Design Phase of the project.LVDA, Walker Parking, and H+P will work with the cost estimator, Evans Spileos to provide the City a detailed cost analysis indicating impacts of the following additional options:<ul style="list-style-type: none">1) 4 full levels of underground parking, 45' bays, with the lowest level at EL +846'-6" (this will reduce the total parking count to approximately 557 cars)2) 4 full levels of underground parking, 45' bays at upper levels, 30' bays at lower levels, with the lowest level at EL +848'-6" (this will reduce the total parking count to approximately 549 cars)	<p>City of Madison</p> <p>LVDA</p> <p>Natalie Erdman</p> <p>Natalie Erdman</p> <p>LVDA</p> <p>LVDA</p> <p>LVDA/ Walker Parking/ H+P</p>
5.0	<p>Next Meeting: TBD</p>	
5.1	<p>Prepared by Meghan Dyer, Lothan Van Hook DeStefano Architecture</p> <p>This constitutes our understanding of the items discussed and conclusions reached. All participants are requested to respond in writing to any errors and/or omission before the next meeting.</p>	
5.2	<p>Meeting Handouts Attached:</p> <p>16. 2016-1109-JDS-#4 Meeting 4 Agenda Provided by LVDA</p> <p>17. 2016-1109_JDS BLOCK 88 PRE DESIGN Provided by LVDA</p> <p>18. 2016-1109_JDS BLOCK 105 PRE DESIGN Provided by LVDA</p> <p>19. 04-2016-1109_JDS SCHEDULE Provided by LVDA</p> <p>20. 06-2016-1102 PreDesign Report Draft Provided by LVDA</p>	



Meeting minutes – City Utilities

Project name:	Judge Doyle Square – Phase 1	Client:	LVDA
Project location:	Madison, WI	Mead & Hunt, Inc. manager:	Lew Kollmansberger
Project number:	4484400-161676.01	Mead & Hunt, Inc. phone:	(608) 443-0480
Date:	10-20-2016		

Attendees	Representing
Lew Kollmansberger	Mead & Hunt
Eric Dundee	City Storm Sewer
Pete Holmgren	City Water Utility
Steve Mar-Pohl	Insite Architects
Scott Easton	Affiliated Engineers
Mark Moder	City Sanitary Sewer
Jim Wolfe	City Streets
Chris Petykowski	City Engrg.
George Austin	City JDS Proj. Mgr.

The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

Old business

1. This was the first meeting with city utility staff. All discussion is considered new business.

New business

1. Described overall project for City staff, including the infringement into the Pinckney Street Right of Way.
2. Reviewed City utility maps. Existing facilities as follows:
 - A. Doty Street:
 - 1) Water: 10” on west side of street, 6” near center of street.
 - 2) Sanitary: 6” in center of street.
 - 3) Storm: Storm sewer starts at the intersection of Doty and Pinckney and flows east under Pinckney toward Wilson.
 - 4) Note: There is also gas, electric, and telephone in Doty, but these facilities appear to be west of the curb on the block 88 side of the street.
 - B. Pinckney Street:
 - 1) Water: 4” located on block 88 side of street center.
 - 2) Sanitary: 8” located on block 88 side of street center.
 - 3) Storm: 12” located near curb on block 88 side of street.
 - 4) Electric: Street light feed located under sidewalk on block 88 side of street.
 - 5) Fiber: Traffic signal feed located under sidewalk on block 88 side of street.
 - 6) Telephone (non-city utility): Located near curb on block 88 side of street.
 - 7) Gas (non-city utility): Located on block 85 side of street center.
 - C. Wilson Street:
 - 1) Water: 16” on block 88 side of street near the curb. 6” near center of the street.
 - 2) Sanitary: 6” in center of street.
 - 3) Storm: Storm sewer starts at the intersection of Wilson and Pinckney and flows east under Pinckney.
 - 4) Electric: Street light feed located under sidewalk on block 88 side of street.
 - 5) Fiber: Located under sidewalk on block 88 side of street. Not sure if this is city owned or non-city utility.
 - 6) Telephone (non-city utility): Located near curb on block 88 side of street.
 - 7) Note: There is also gas, more electric, more telephone, a steam tunnel, and cable TV in Wilson, but these facilities appear to be located east of the curb on the block 88 side of the street.
3. Discussion of individual City utilities:
 - A. Water: If we tap into water on Doty, we would have to connect to the 10” on the west side of the street. We asked that the water utility consider if the 4” main in Pinckney can be abandoned. This is not likely but it will be considered. Assuming the main in Pinckney remains, it would have to be replaced with an 8” main and relocated east of the garage. It is believed that the top of the garage is 5 feet below grade. If this is the case, an option would be to place a new **insulated 8”** water main above the garage roof (4 feet of cover over pipe), to allow more room for utilities in Pinckney to be located north of the garage wall. If we connect to water in Wilson Street, we would tap into the 16” main on the north side of the street. It was noted that fire code requires that we have two laterals to the building. It was mentioned that the two laterals can come off one main as long as a butterfly valve is installed in that main between the laterals. This may allow us to have both laterals come from Wilson Street.



- B. Sanitary: It is not expected that we will connect to the sanitary main in Doty since this main would be at a higher elevation than the main in Wilson. The 8" main in Pinckney has a lateral that services the existing parking garage in block 85. To maintain this service, the main would have to be relocated north of the garage wall, but could be abandoned west of that service. Another option could be to remove the 8" main completely, and extend a temporary lateral with clean-outs from Wilson. Consideration must be given to how and where additional phase(s) in block 85 may connect to the sanitary sewer. It is expected that the block 88 phase will connect to the 6" main in Wilson. The city will require that we replace the 6" main in Wilson that is downstream of our connection with a new 8" main (this new 8" main would be required from our connection in Wilson north to the manhole in the intersection of Pinckney & Wilson). A new manhole will be required where we connect to the main in Wilson. There will also be a small forcemain to pump water collected in the parking garage drains to the sanitary sewer. Water collected in the garage floor drains may require treatment for oil and grease.
 - C. Storm: The existing storm sewer in Pinckney will have to be relocated north of the north garage wall. An option would be to remove the storm in Pinckney, and reroute the flow from the Doty/Pinckney intersection north under Doty Street through a new pipe, and connect into another storm pipe at the intersection of Doty and King Street. Either of these options require a substantial amount of new pipe and storm structures. The reroute north on Doty would involve street repairs and traffic control that otherwise would probably not be required, and thus would likely be more expensive. There will be a forcemain to pump groundwater from a drain-tile/sump system outside the garage walls to the storm sewer. The building roof is expected to drain through the building, and be piped to the storm sewer.
 - D. Storm water management: Since the existing at grade parking lot would be replaced with roof, storm water treatment would not be required. If for some reason parking remains at the surface (or on a roof), redevelopment storm water management ordinances would kick in, requiring treatment for suspended solids and infiltration. Space for any storm water treatment would be very difficult given the current design.
 - E. City fiber and electric in Pinckney: Contact Brian Smith at the City.
4. General discussion: The project will request updated hydrant flow tests to be performed at both the Doty/Pinckney and Wilson/Pinckney intersections. The flow test will be performed from hydrants connected to the larger sized mains. The City will provide bidding/construction plans for utility work within the Right-of-Way. The project will have to file a water service application to the City water utility. City staff mentioned that room must be provided in the sidewalks for tree plantings, and that street light bases are typically 8 feet deep.
5. ACTION ITEMS: Lew K will contact Brian Smith regarding the City fiber and electric in Pinckney, and will contact Pete H. to formally request hydrant flow tests. Pete H. will check to see if water can be completely removed from Pinckney, and otherwise check into the possibility of an insulated main located above the garage roof. Steve M-P. will check the depth of cover over the garage roof in Pinckney. Mark M. will check to see if oil and grease treatment is required in parking ramps

Please contact the author if it is believed that something has been omitted or misinterpreted, or if the represented discussion is not clear.

Respectfully submitted,

MEAD & HUNT, Inc.

Lew Kollmansberger

cc: To all attendees