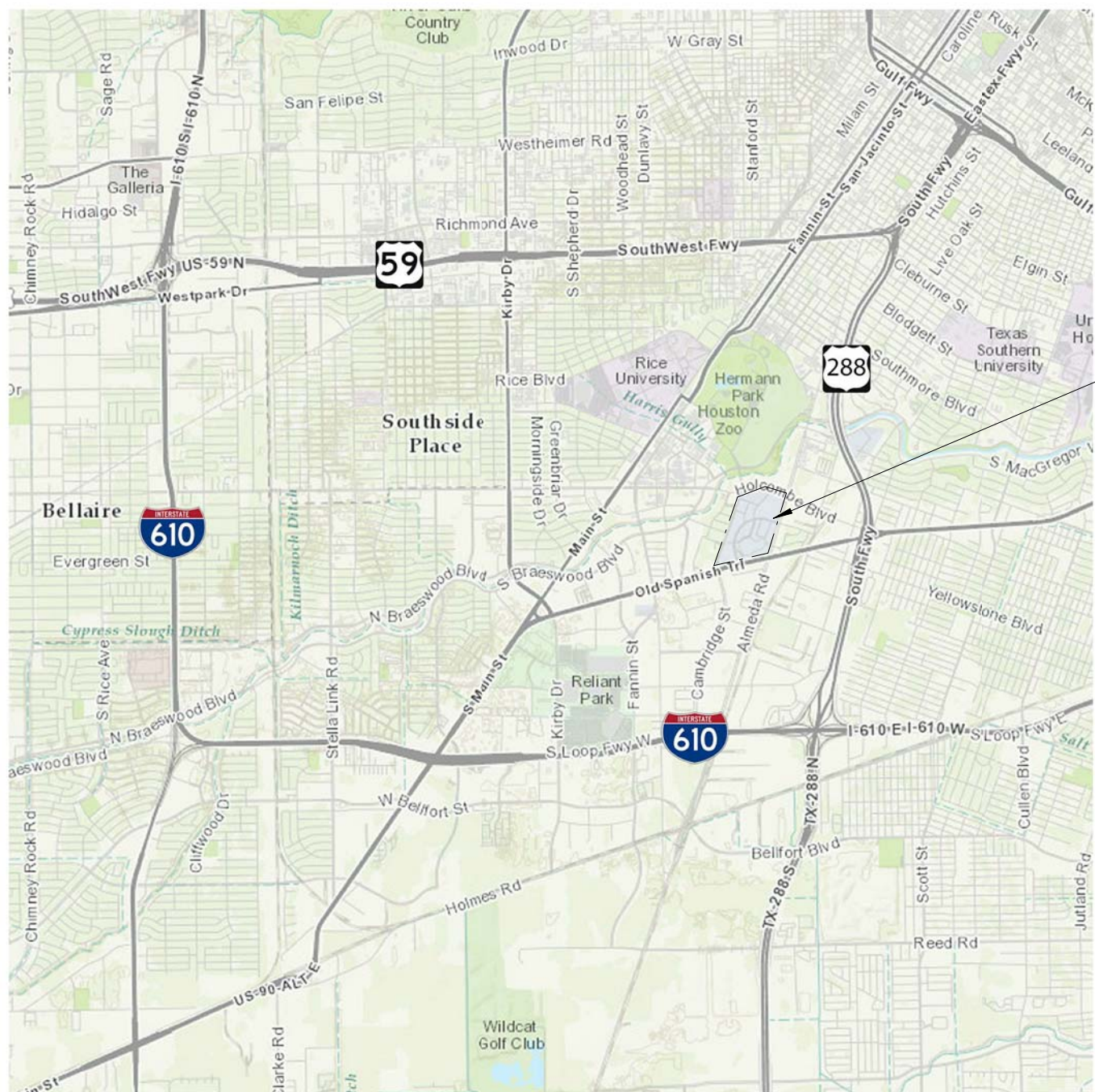


MICHAEL E. DEBAKEY VA MEDICAL CENTER

BUILD PARKING GARAGE A

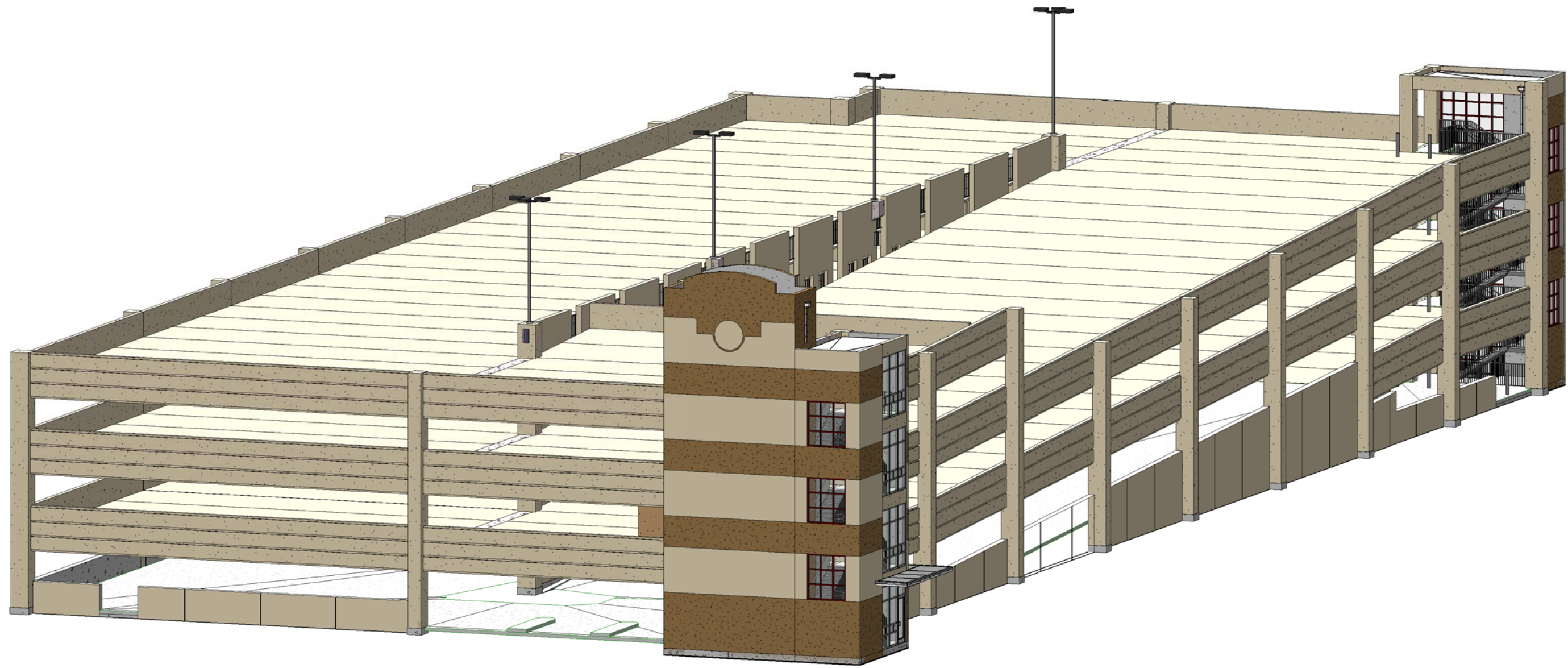
100% CONSTRUCTION DOCUMENTS



LOCATION MAP



LOCATION MAP



OWNER

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MEDICAL CENTER

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SHEET LIST

SHEET  
NUMBER SHEET NAME

GENERAL	
G1000	COVER SHEET
G1101	CODE ANALYSIS
G1102	LIFE SAFETY PLANS
G1103	LIFE SAFETY PLANS
G1104	DEDUCT ALTERNATE ISOMETRICS
CIVIL	
CD101	SITE DEMO PLAN
CD101	SITE GRADING AND MITIGATION PLAN
CS101	DRAINAGE AREA MAP
CS102	SITE LAYOUT PLAN
CS103	STORM WATER POLLUTION PREVENTION PLAN
CS104	STORM SEWER PLAN AND PROFILE
CS105	PAVEMENT JOINT AND SIGN PLAN
CS201	PAVING DETAILS
CS203	STORM WATER POLLUTION PREVENTION PLAN DETAILS
CU101	SITE UTILITY PLAN
CU201	UTILITY DETAILS
STRUCTURAL	
SI001	ABBREVIATIONS AND SYMBOLS
SI002	GENERAL NOTES
SI003	LOAD MAP
SB101	FOUNDATION PLAN
SB401	ENLARGED FOUNDATION PLANS
SB501	TYPICAL FOUNDATION DETAILS
SB502	FOUNDATION SECTIONS AND DETAILS
SB601	FOUNDATION SCHEDULES AND DETAILS
SF101	SLAB ON GRADE LEVEL 1
SF102	FRAMING PLAN LEVEL 2
SF103	FRAMING PLAN LEVEL 3
SF104	FRAMING PLAN LEVEL 4
SF201	BUILDING ELEVATIONS
SF202	CAST IN PLACE WALL ELEVATIONS
SF203	SHEARWALL ELEVATIONS AND SCHEDULES
SF204	PRECAST ELEVATIONS AND SCHEDULES
SF401	ENLARGED STAIR PLANS
SF501	TYPICAL PRECAST DETAILS
SF502	FRAMING SECTIONS AND DETAILS
SF901	ISOMETRICS
ARCHITECTURAL	
AS301	ARCHITECTURAL SYMBOLS AND ABBREVIATIONS
AS101	LEVEL 1 - FLOOR PLAN
AS102	LEVEL 2 - FLOOR PLAN
AS103	LEVEL 3 - FLOOR PLAN
AS104	LEVEL 4 - FLOOR PLAN
AS251	ROOF PLANS
AS301	BUILDING ELEVATIONS
AS302	BUILDING ELEVATIONS
AS311	ENLARGED EXTERIOR ELEVATIONS
AS312	STOREFRONT ELEVATIONS & DETAILS, DOOR SCHEDULE & DETAILS
AS411	WALL SECTIONS
AS421	STAIR SECTIONS
AS422	RAILING ELEVATIONS AND DETAILS
AS501	ENLARGED STAIR PLANS
AS601	INTERIOR ELEVATIONS
FUNCTIONAL	
AP101	LEVEL 1 PLAN - ARCHITECTURAL PARKING
AP102	LEVEL 2 PLAN - ARCHITECTURAL PARKING
AP103	LEVEL 3 PLAN - ARCHITECTURAL PARKING
AP104	LEVEL 4 PLAN - ARCHITECTURAL PARKING
AP105	ALTERNATE 2 PLAN - ARCHITECTURAL PARKING
AP106	ALTERNATE 3 PLAN - ARCHITECTURAL PARKING
AP401	ENLARGED EQUIPMENT PLAN
AP501	STRIPPING DETAILS
AP601	SIGN SCHEDULE AND SIGNAGE DETAILS
AW101	LEVEL 1 PLAN - WATERPROOFING
AW102	LEVEL 2 PLAN - WATERPROOFING
AW103	LEVEL 3 PLAN - WATERPROOFING
AW104	LEVEL 4 PLAN - WATERPROOFING
AW501	WATERPROOFING DETAILS
MECHANICAL	
M1001	MECHANICAL NOTES, ABBREVIATIONS, AND LEGEND
M1401	ENLARGED MECHANICAL PLAN AND SCHEDULES
PLUMBING	
PI100	PLUMBING NOTES, ABBREVIATIONS, AND LEGEND
PI101	LEVEL 1 - PLUMBING PLAN
PI102	LEVEL 2 - PLUMBING PLAN
PI103	LEVEL 3 - PLUMBING PLAN
PI104	LEVEL 4 - PLUMBING PLAN
PP301	STORM DRAINAGE AND DOMESTIC WATER ISOMETRIC
ELECTRICAL	
EE001	ELECTRICAL LEGEND
EE101	LEVEL 1 & 2 ELECTRICAL PLANS
EE102	LEVEL 3 & 4 ELECTRICAL PLANS
EE401	ELECTRICAL ENLARGED PLANS
EE501	ELECTRICAL LIGHT FIXTURE SCHEDULE AND DETAILS
EE502	ELECTRICAL DETAILS
EE601	ELECTRICAL DISTRIBUTION ONE LINE DIAGRAM
EE602	ELECTRICAL DISTRIBUTION PANELBOARD SCHEDULES
ES101	ELECTRICAL SITE - UTILITIES PLAN
EY101	LIGHTNING PROTECTION SHEET
FIRE SUPPRESSION	
FX101	LEVEL 1 - FIRE SUPPRESSION PLAN

DEDUCT ALTERNATES

- DEDUCT 1  
a. REMOVE ELEVATOR #2 CAB AND EQUIPMENT. ELEVATOR HOIST WAY TO REMAIN.  
b. REMOVE CARPARKING COUNT SYSTEM.  
c. REMOVE STOREFRONT FROM STAIR SHAFTS
- DEDUCT 2  
a. DEDUCT LEVEL 4 PRECAST CONCRETE STRUCTURE AND ASSOCIATE ITEMS TO COLUMN LINE 7.  
b. REDUCE STAIR AND ELEVATOR TOWER 1 LEVEL.
- DEDUCT 3  
a. DEDUCT LEVEL 4 PRECAST CONCRETE STRUCTURE AND ASSOCIATE ITEMS FROM COLUMN LINE 7 TO LEVEL 3 RAMP COLUMN LINE 3.  
b. REDUCE NORTH STAIR TOWER 1 LEVEL.  
c. REMOVE SILANE SEALER ON ALL LEVELS.

PARKING SUMMARY

DESCRIPTION	9'-0" SPACE	8'-6" SPACE	TOTAL	AREA (S.F.)
LEVEL 4	88	-	88	29,400
LEVEL 3	113	7	120	38,200
LEVEL 2	107	12	119	38,200
LEVEL 1	94	11	105	37,500
TOTAL	402	30	432	143,300

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100% CONSTRUCTION DOCUMENTS			
Drawing Title COVER SHEET	Project Title BUILD PARKING GARAGE A	Guidon Design Project # 14.1037 Building Number 123	OFFICE OF FACILITIES MANAGEMENT
Approved for Design Concept: FACILITY MANAGEMENT DIVISION MANAGER	Location Michael E. DeBakey VAMC, Houston, TX	Drawing Number G1000	VA Project Number 580-321
Date 2015/10/16	Checked By: UJ	Drawn By: ARO	VA U.S. Department of Veterans Affairs



ICC, International Building Code, 2012 edition (IBC)  
ASCE-07-10  
ACI 318-11  
ACI 530-11  
AISC 341-10  
AISC 360-10  
PCI MNL 120-10, Design Handbook  
NFPA 101, *Life Safety Code*, 2012 edition (LSC)  
NFPA 13, Standard for the Installation of Sprinkler Systems  
NFPA 14, Standard for the Installation of Standpipe and Hose Systems  
2013 edition.

NFPA 10, Standard for Portable Fire Extinguishers, 2013 edition.  
NFPA 24, Standard for the Installation of Private Fire Service Mains and their Appurtenance, 2013 edition.  
NFPA 72, *National Fire Alarm Code*, 2013 edition.  
NFPA 70, *National Electric Code*, 2014 edition.  
NFPA 80, Standard for Fire Doors and Other Opening Protectives, 2013 edition.  
NFPA 88A, Standard for Parking Structures, 2011 edition.  
NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems, 2012 edition.

NFPA 220, Standard Types of Building Construction, 2009 edition.  
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants, 2010 edition.  
ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace, 2009b edition.  
NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems, 2013 edition.  
ASTM E2072-04, Specification for Photoluminescent (Phosphorescent) Safety Markings, 2004 edition.

International Plumbing Code  
ASHRAE 90.1-2010  
ASHRAE 62.1 – 2007  
ANSI A117.1-2009 Standard on Accessible & Usable Buildings and Facilities  
2010 ADA Standards for Accessible Design

VA Parking Design Manual & Demand Model, April 2013  
VA Barrier Free Design Guide  
Architectural  
Electrical  
HVAC  
Plumbing  
Site Utilities  
Auto Transport  
Interior Design  
Structural  
Fire Protection, Sixth Edition Revised September 2011  
Physical Security Design Manual: Life-Safety Protected  
Facilities

### A. OCCUPANCY CLASSIFICATION

1. The parking garage is classified as low-hazard storage facilities, a Group S-2 Occupancy.
2. The parking garage is considered an open parking structure openings shall comply with the following:
  - a. Open Parking Structure: A parking structure that meets the requirements of NFPA 88A Section 4.7.1.
    - i. Each parking level shall have wall openings to the atmosphere for an area of not less than 1.4 square feet for each linear foot of the exterior perimeter.
    - ii. Opening shall be distributed over a minimum of 40% of the building perimeter or uniformly over two opposing sides.
    - iii. Interior wall lines and columns shall be at least 20% open, with openings distributed to provide ventilation.
3. This parking garage is classified as a Ramp Type Parking Structure: A parking Structure that utilizes sloped ramps for vertical vehicle circulation.

1. The parking garage is to be constructed in accordance with the provisions of NFPA 88A as defined in NFPA 220. Construction type for a building exceeding 25 feet in height shall be Type I, Type II(222) or Type II(111). An open parking garage of these construction types may be unlimited in height and area.
2. The Parking Garage has four levels above grade and is classified as an open parking structure. The construction classification is Type IIA based upon the occupancy and area of the building.
3. Primary structural elements of Primary structural elements of Type II(111) buildings will be 1-hour rated. Primary structural elements supporting a roof only will be 1-hour rated, and all floor construction will have a fire resistance rating of 1-hours.
4. Primary structural members are considered to be bearing walls, columns, and the girders, beams, trusses and spandrels having direct connections to columns and bracing members designed to carry gravity loads. The members of floor or roof panels which have no connection to the columns and do not carry a gravity load are considered secondary members and are not part of the structural frame of a building.

The Garages will be designed as nonseparated mixed uses. Incidental uses are not anticipated, so no fire rated separation is required between occupancies. Interior building elements that require fire resistance ratings are listed below:

BUILDING ELEMENT	FIRE RESISTANCE RATING	CODE REFERENCE
Enclosed Exit stairs	Open (1,2)	NFPA 88A, 4.1.5
Non-enclosed Exit Stairs	0	NFPA 88A, 4.1.5
Ramps	Open (1,2)	NFPA 101 42.8.3.1.1
Mechanical Exhaust and Supply duct systems where the duct system is located within the garage and serves only the garage	0	IBC 708.2 Excep. 15
Other shafts which connect 2 or more stories	2 (1)	NFPA 101 42.8.3.1.1
Elevator machine rooms	2 (2)	IBC 3006.4
Emergency generator (if provided)	2	NFPA 70

- (1) Supporting structural members (located within one structural bay) must have the same fire resistance rating. The fire resistance rating must be carried through all structural members; extending to the foundation. In addition, the shaft construction must maintain the same fire rating as the floor construction.
- (2) Where nonrated 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 3.048 m (10 ft) horizontally of a nonrated wall or unprotected opening must have a fire resistance rating of not less than 1-hour. Openings within such exterior walls must be protected by opening protectives having a fire protection rating of not less than ¾-hour. This construction must extend vertically from the ground to a point 3.048 m (10 ft) above the top most landing of the stairway or to the roof line, whichever is lower.

1. Mechanical equipment rooms incidental to the use of the building are not required to be separated by an occupancy separation. Special hazard rooms such as general storage and furnace/boiler rooms and electrical switchgear rooms shall be separated per NFPA 70 and potentially IBC Table 508.2.
2. Cashier and attendant booths are not required to be separated. NFPA 88A 5.2.4.

3. An office, waiting area or restrooms not having a total area exceeding 3,000 s.f. shall be separated by partitions built to resist the passage of smoke. NFPA 88A 5.2.4. Areas exceeding the total of 3,000s.f. shall be separated by the occupancy separation per IBC Section 508.3.3.
4. Fire barriers will extend from the top of the floor below to the underside of the floor or roof deck above. The openings and penetrations in required exit enclosures will be protected with self-closing or automatic-closing opening protectives. Openings in fire resistance rated walls will be protected in accordance with the following:

COMPONENT	WALLS AND PARTITIONS (HR) IBC 709	FIRE DOOR ASSEMBLIES (MIN) IBC 715
Elevator Hoistways, Elevator Machine Rooms	2	90
Vertical Shafts (including enclosed exit stairways)	2	90
Fire Barriers	1 2 3	45 90 180

Piping, conduit, and wire penetrations of fire rated construction will be protected by materials or systems of the same hourly rating listed by Underwriters Laboratories (UL), Factory Mutual (FM), or a National Recognized Testing Laboratory (NRTL). Duct, air transfer openings, and other penetrations through floors, shaft enclosures and other fire rated construction will be protected in accordance with the IBC.

5. **Pedestrian Walkways:** Covered walkway shall comply with Section 3104 of the 2102 International Building Code. Walls of connecting buildings are not required to have a fire resistive rating where the buildings are separated by more than 10 feet and the walls of the walkways are more than 50% open. If the walls are not 50% open then the walkway must be protected with automatic sprinklers.

The code requires the exterior walls of buildings to be protected from one another based on the fire separation distance between buildings, or to a lot line. Fire separation distance is defined as the distance measured from the face of a building to one of the following three points:

1. The closest interior lot line;
2. To the centerline of a street, an alley or public way; or;
3. To an imaginary line between two buildings on the property.

No fire rated separation is required where the parking structure is separated by 10 feet. NFPA 88A 5.2.2

Interior wall and ceiling finish to be designed in accordance with the NFPA 101.

1. Class A, B and C finish is permitted for interior walls and ceilings in rooms, and corridors. Class A or B finish is permitted for exits.
2. Per the IBC Section 406.2.6 all floor surfaces shall be of concrete or other similar non-combustible and non-absorbent materials. Floor Finish shall not be less than Class II.

Emergency egress lighting will be provided throughout the common portions of the means of egress in accordance with The Life Safety Code

1. These areas include: drive lanes, corridors, exit access spaces within areas requiring two (2) or more means of egress, the lobby/entrance areas, exit stairs, and the exit discharge areas (including exterior locations until the public way).
2. Each required exit will be identified with an exit sign, including exit access, and within areas requiring multiple exits. Directional exit signs will also be provided to direct occupants toward the closest exit so that no occupant is more than 100 feet from an exit sign.
3. The egress lighting and exit signs will be provided with a secondary source of power in the event that the primary power source is disrupted. The secondary power source will consist of either internal batteries or a connection to an emergency power system.

Means of egress shall be in compliance with LSC and as modified by NFPA 88A. Egress requirements are based upon a non-sprinklered building. Exits must be so located on each story such that the maximum length of exit access travel, measured from the most remote point within a story along the natural and unobstructed path of egress travel to an exterior exit door at the level of exit discharge, an entrance to a vertical exit enclosure, an exit passageway, a horizontal exit, an exterior exit stairway or an exterior exit ramp, may not exceed the distances allowed by the Code. Egress requirements are outlined below.

1. Maximum travel distance: open parking garage – 300 feet
2. Common path of travel: 50 feet
3. Dead ends: 50 feet
4. Number of exits: At least two exits shall be provided from every floor/tier. In certain conditions ramps may be substituted for an egress stair.
5. Egress Width Factor: LSC Table 7.3.3.1 requires a minimum egress width of 0.2 in per occupant for doors, ramps, and corridors and a minimum egress width of 0.3 in per occupant for stairs.
6. Occupant Load factor: LSC Table 7.3.1.2 requires an Occupant load factor of 500 s.f. per person be applied to storage use type facilities other than storage and mercantile occupancies. Parking garages are classified by chapter 42 of the LSC as storage type occupancies.
7. Remoteness of exits: Where two or more exits or exit access doorways are required from any portion of the exit access, at least two of the exit doors or exit access doorways must be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between exit doors or exit access doorways.
8. Stairs Design (per the LSC 7.2.2):
9. Maximum Riser Height: 7 inches
- Minimum Tread Length: 11 inches
- Minimum Stair Width: 36 inches
- Guard: 42 inches( Required where elevation change exceeds 30 inches. Design shall prevent the passage of a 4 inch Sphere.)
- Handrail: 30-38 inches
- Minimum Clearance: 6 feet 8 inches (Measured vertically from nose of tread.)
- Signage: Required at each floor level per LSC 7.2.2.5.4
10. Ramp Design: per the LSC 7.2.5):
- Maximum Slope: 1/12
- Guard: 42 inches(Required where elevation change exceeds 30 inches. Design shall prevent the passage of a 4 inch Sphere.)
- 4 inch curbs required for drop off edge of ramp
- 30-38 inches (required for ramps with more than a 6 inch rise.
11. Areas Of Refuge: Not required in open parking garages

Elevator will have a Smoke detector, located in its respective lobby, on each floor level where the lobby is enclosed. A heat detector is permitted where the lobby is open to the environment. Upon activation of a lobby heat detector or machine room smoke detector, the elevators served by that lobby or machine room will be recalled to the main level of the building, one at a time. In the event that the alarm is on this designated level, the elevators will be recalled one at a time to an alternate level. It is proposed to recall only the elevator or group of elevators served by the affected lobby or elevator machine room.

After returning to the appropriate level, the elevators will stop, the doors will open, and the elevators will be rendered inoperable without the use of the fireman's key or until such time that they are manually reset to the normal operating mode. This mode of operation is provided for fire department use to allow for access to all levels served by the elevators.

Not required in open parking garages

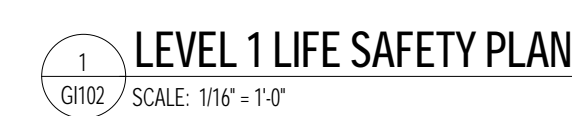
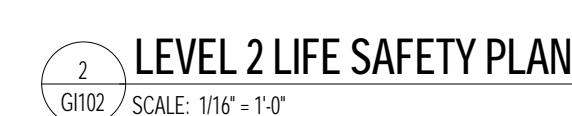
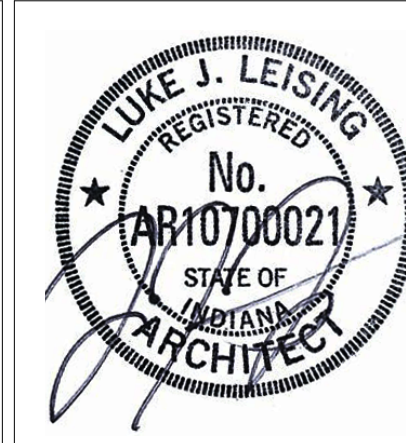
Class I Standpipes are **not required** in open parking garages not exceeding 50 feet in height.



1. Portable fire extinguishers will be provided throughout the garages as required by IFC section 906.1 and spaced in accordance with NFPA 10, 2010 edition.

Not required in open parking garages

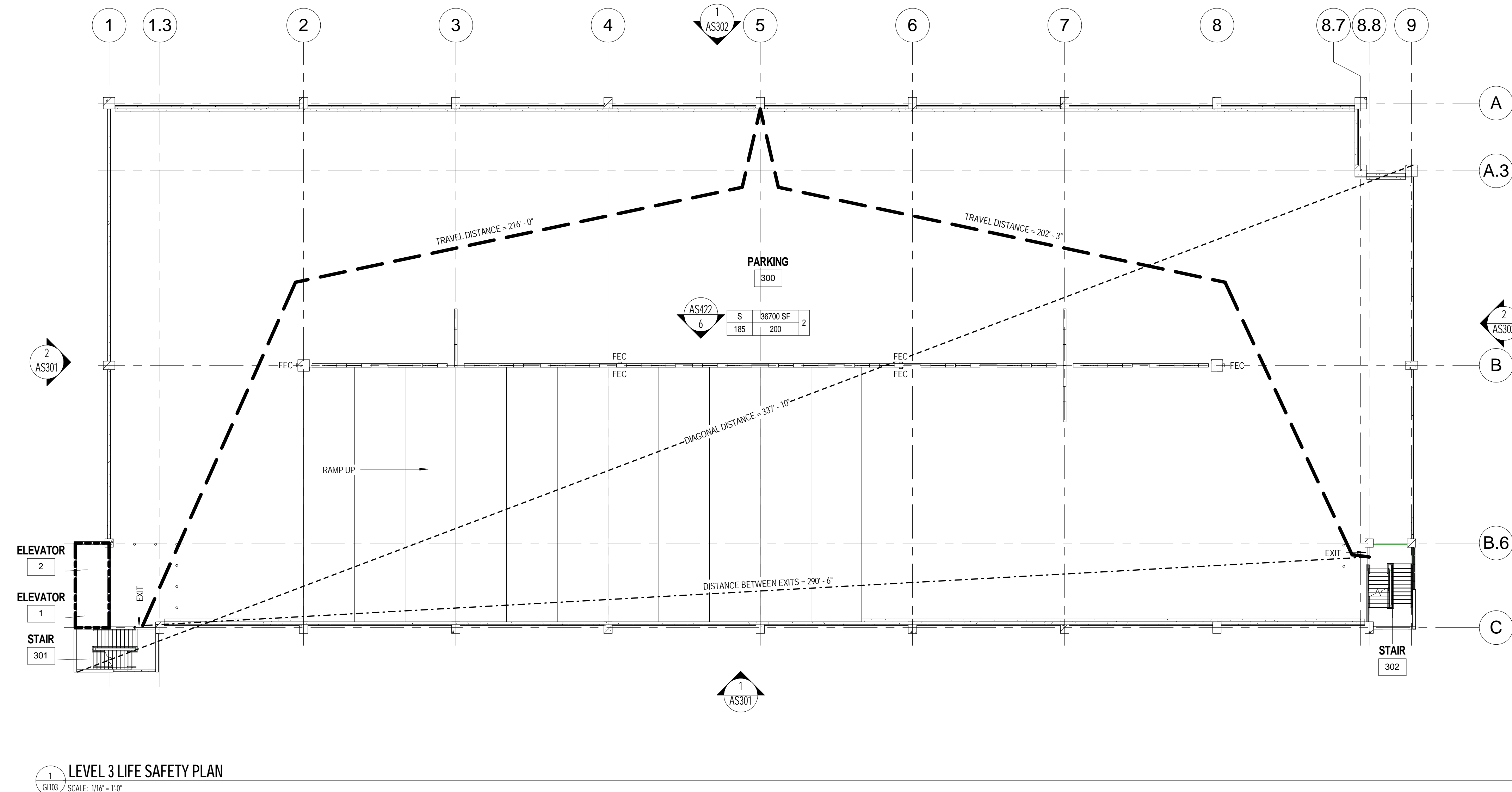
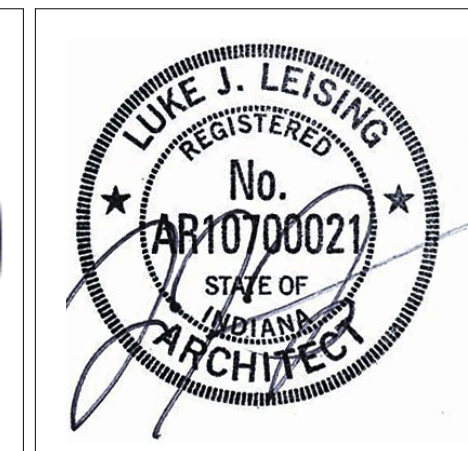
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Drawing Title <b>LIFE SAFETY PLANS</b>	Project Title <b>BUILD PARKING GARAGE A</b>			Guidon Design Project # <b>14.1037</b>	<b>OFFICE OF FACILITIES MANAGEMENT</b>
				Building Number <b>123</b>	
Approved for Design Concept: <b>FACILITY MANAGEMENT DIVISION MANAGER</b>	Location <b>Michael E. DeBakey VAMC, Houston, TX</b>			Drawing Number <b>GI102</b>	VA Project Number <b>580-321</b>
	Date <b>2015/10/16</b>	Checked By: <b>UJ</b>	Drawn By: <b>ARO</b>	 	



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Drawing Title  
**LIFE SAFETY PLANS**

Approved for Design Concept:  
**FACILITY MANAGEMENT  
DIVISION MANAGER**

Project Title  BUILD PARKING GARAGE A	Guidon Design Project # 14.1037
	Building Number 105

Location	Michael E. DeBakey VAMC, Houston, TX

Guidon Design Project #  
14.1037

Building Number  
103

123
Drawing Number

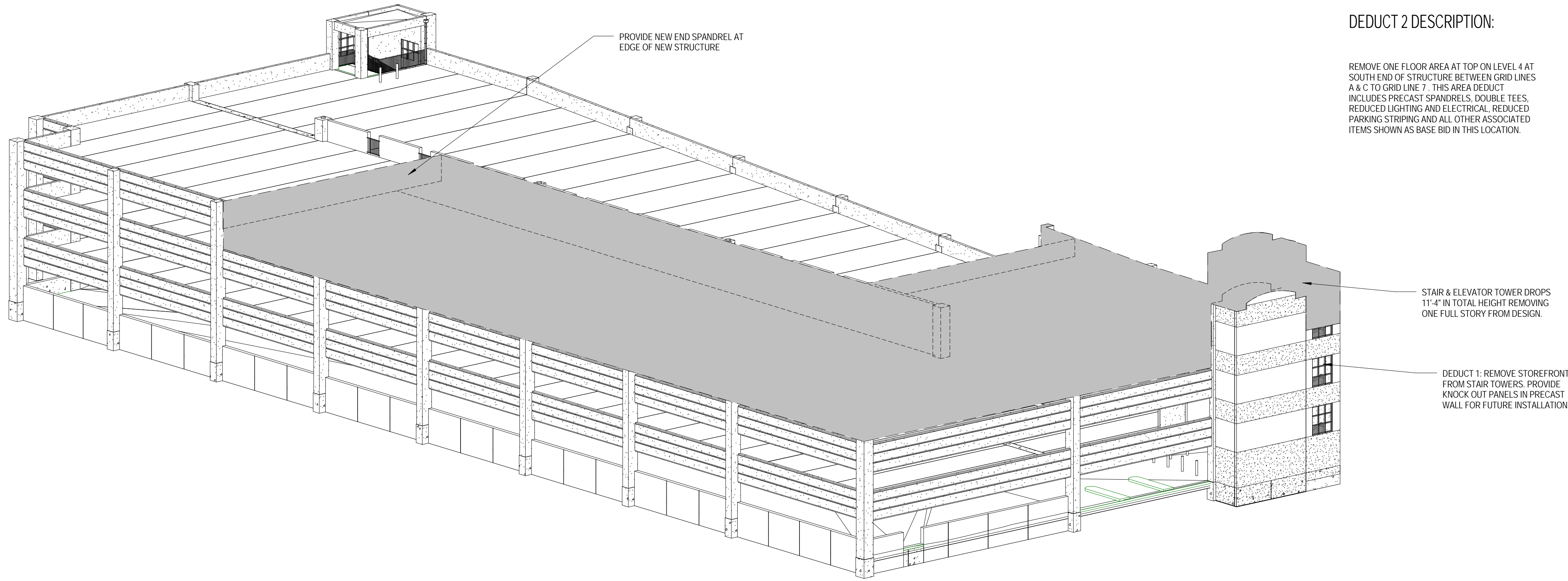
OFFICE OF  
FACILITIES  
MANAGEMENT

VA Project Number  
580-321



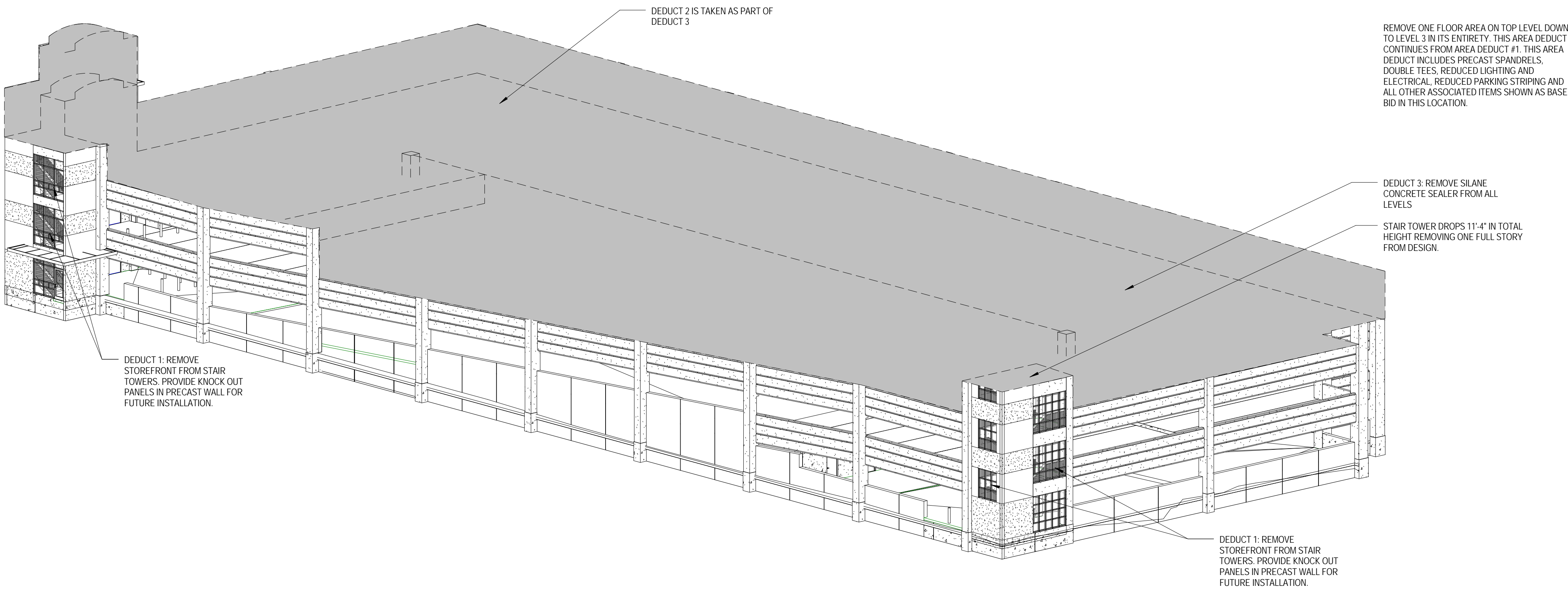


DEDUCT ALTERNATES	
1.	DEDUCT 1 a. REMOVE ELEVATOR #2 CAB AND EQUIPMENT. ELEVATOR HOIST WAY TO REMAIN. b. REMOVE CARPARKING COUNT SYSTEM. c. REMOVE STOREFRONT FROM STAIR SHAFTS
2.	DEDUCT 2 a. DEDUCT LEVEL 4 PRECAST CONCRETE STRUCTURE AND ASSOCIATE ITEMS TO COLUMN LINE 7. b. REDUCE STAIR AND ELEVATOR TOWER 1 LEVEL.
3.	DEDUCT 3 a. DEDUCT LEVEL 4 PRECAST CONCRETE STRUCTURE AND ASSOCIATE ITEMS FROM COLUMN LINE 7 TO LEVEL 3 RAMP COLUMN LINE 3. b. REDUCE NORTH STAIR TOWER 1 LEVEL. c. REMOVE SILANE SEALER ON ALL LEVELS.



3  
GRID A SCALE

SOUTHWEST PERSPECTIVE



2  
GRID A SCALE

NORTHEAST PERSPECTIVE

Revisions:

Date

VA

U.S. Department of Veterans Affairs

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Drawing Title  
**DEDUCT ALTERNATE ISOMETRICS**

Approved for Design Concept:  
**FACILITY MANAGEMENT  
DIVISION MANAGER**

Project Title  
**BUILD PARKING GARAGE A**

Location  
**Michael E. DeBakey VAMC, Houston, TX**

Date  
**2015/10/16**

Checked By:  
**UJ**

Drawn By:  
**ARO**

Guidon Design Project #  
**14.1037**

Building Number  
**123**

Drawing Number  
**G1104**

OFFICE OF FACILITIES MANAGEMENT

VA Project Number  
**580-321**

U.S. Department of Veterans Affairs