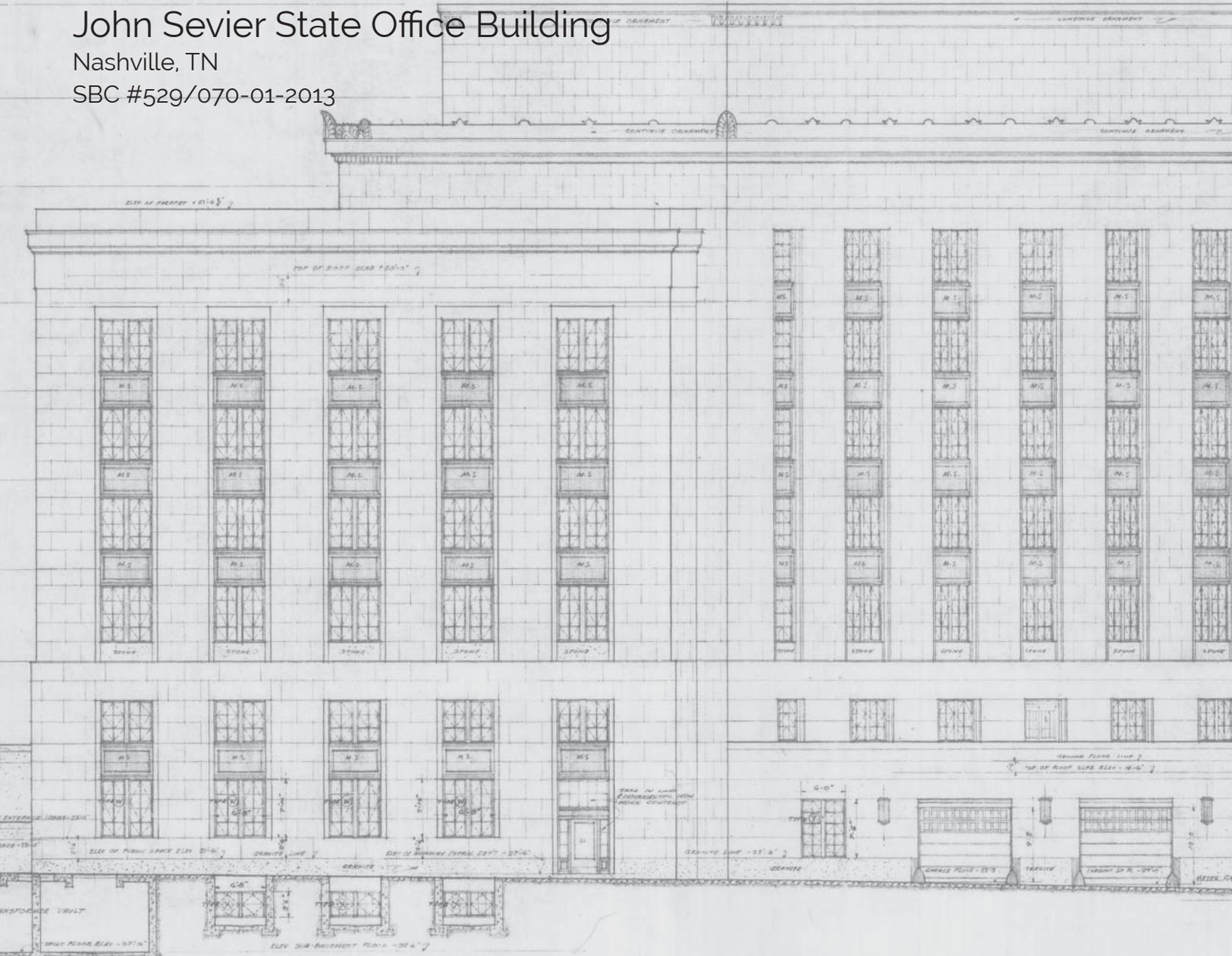


SIXTH FLOOR ELEVATOR EXTENSION STUDY

John Sevier State Office Building

Nashville, TN

SBC #529/070-01-2013



August 22, 2015

for
STATE OF TENNESSEE GENERAL SERVICES ADMINISTRATION
Nashville, TN

by
HFR Design, Inc
Brentwood, TN
HFR Project No. 2013203.00

I C Thomasson Associates, Inc
Nashville, TN

FIFTH · AVE · ELEVATION
OFFICE · BUILDING
FOR THE
STATE · OF · TENNESSEE
NASHVILLE · TENNESSEE
THE OFFICE OF EMMONS H. WOODRIDGE - ARCHITECT
THE AMERICAN IRON WORKS · NASHVILLE · TENNESSEE
THE STATE OF TENNESSEE BUILDING COMMISSION
GOVERNOR'S DESIGN SPONSOR, CHAIRMAN

SCALE
1" = 1'-0"
DATE
8-22-15

FEDERAL · UNIVERSITY · ADMINISTRATION
OF PUBLIC WORKS
DOCKET NO. TENN 1500-#

16

SIXTH FLOOR ELEVATOR EXTENSION STUDY
JOHN SEVIER STATE OFFICE BUILDING

Nashville, Tennessee
SBC #529/070-01-2013
August 22, 2015

For

STATE OF TENNESSEE
GENERAL SERVICES ADMINISTRATION
Nashville, Tennessee

By

HFR Design, Inc.
Brentwood, TN
HFR Project No. 2013203.20
and
I C Thomasson Associates, Inc.
Nashville, TN

Purpose: The purpose of this study is to evaluate the scope and cost involved in extending one of the three existing elevators from the 5th to the 6th Floor. The 6th floor of the John Sevier Office building currently does not have elevator service.

Scope: In studying how to provide elevator service to the Sixth Floor, we considered five options:

- Option A: Extend travel of existing Elevator No. 1 from Fifth to Sixth Floor using existing platform and car, front opening, and 2500# capacity.
 - Cost: \$365,114
- Option A.1: Demo existing Elevator No. 1 system and provide new elevator system from Ground to Sixth Floor using new platform and car, front *and rear* opening, and 2100# capacity.
 - Cost: \$521,701
- Option B: Provide new elevator from Fifth to Sixth Floor in location away from Elevator Lobby; 3500# capacity.
 - Cost: \$381,149
- Option C: Provide new, 7-stop, elevator in empty shaft, with travel from Basement to Sixth Floor, front opening, and 2500# capacity.
 - Cost : \$587,228

- Option C.1: Provide new, 7-stop, elevator in empty shaft, with travel from Ground to Sixth Floor, front *and rear* opening, and 2100# capacity.
 - Cost: \$552,613

Recommendation: Our recommendation is to go with Option B for the following reasons:

- Impracticality of reusing the existing shafts.
- Complications imposed by existing structural conditions.
- Ease of providing a two-stop elevator from Fifth Floor to Sixth Floor.
- More cost effective.

Methodology:

In coming up with our recommendations we:

- Visited the site to examine and photograph existing conditions.
- Examined the original architectural and structural drawings from the 1930s.
- Developed AutoCAD based floor plans and building sections.
- Reviewed the 2011 Lerch Bates “Modernization Survey.”

Evaluation:

Options A and C: During our research several obstacles became apparent to the extension of an existing elevator to the Sixth Floor. The existing conditions that would preclude the use of an existing elevator are:

1. Under Option A, extending an existing elevator, extensive remodeling of the existing shaft and elevator system would require a disruption of the building’s elevator service for an indeterminate amount of time. Under Option C, placing a new elevator in the currently unused shaft would provide a minimal disruption to normal activities in the building we think.
2. If the existing, extended elevator (A) or a new elevator (C) were to open with the same orientation as the floors below (front opening), we encounter a headroom issue. The headroom is limited because of existing reinforced concrete beams the bottoms of which are at 6’-6” above finished floor.
3. It is also likely the existing roof slab will have to be cut out, reinforced and capped to accommodate over travel for either elevator scenario.
4. In our opinion the removal of the existing beams and alteration of existing floor and roof structures are a drastic measure and likely would be cost prohibitive.
5. In consideration of the existing concrete beams and headroom issues associated with a front opening cab on the Sixth Floor, we explored the possibility of opening the door(s) to

the rear of the cab and exiting out through one of the existing rooms adjacent to the existing elevator shafts. This orientation is common to both Options A.1 and C.1.

6. According to the Lerch Bates study, Elevators #1, #2, and #3 have a rated capacity of 2,500 pounds, and a rated speed of 500 fpm. The platform size (left to right) is 7'-0" wide by 5'-0" deep (front to back) with a net inside area of 6'-8" wide by 4'-6" deep. Therefore, ideally, we would not like to provide any less capacity and speed than what the building already has.
7. Initial research into elevator cabs regularly offered by Otis, Thyssen Krupp, and Schindler, indicate 5'-9-1/2" is the minimum depth necessary for a platform with both front and rear openings; more than the existing platform can accommodate. The minimum shaft width is 9'-4" per manufacturer's data. According to original drawings, the existing shaft width is 8'-3"; once again, not enough for a commercially available platform with front and rear openings.
8. As we continued to research the possibilities, we found the Kone "EcoSpace" and the Otis "Gen2."
9. The Kone "EcoSpace" would seem to work (see insert below). The minimum shaft dimensions are 7'-4" x 6'-3-1/2", but capacity goes down to 2000#. Remember the building's other elevators have a capacity of 2500#. There's also seismic considerations. If Kone engineers require the elevator be designed for seismic, then Kone's system won't work. After speaking with our structural engineer, we are unclear on what criteria Kone engineers use to invoke this seismic criteria.
10. There is promise in the "Gen2" by Otis. Otis's literature (see insert below) indicates a front and rear opening, 2500# capacity elevator can be had that will fit the existing shaft. The only issue with this solution is the cost. Whether we replace existing elevator #1 (Option A.1) or insert a new elevator in the empty shaft (Options C and C.1), this scheme comes in at the higher price points.
11. We researched the use of a custom made platform and cab that will fit within the existing shaft and accommodate front and rear openings. The major restriction with this approach is the Americans with Disabilities Act Accessibility Guidelines (ADAAG). In order to meet ADAAG, a new cab will have to meet the following dimensions:
 - a. Clear Door Width: 3'-6"
 - b. Inside Car, Side to Side: 6'-8"
 - c. Inside Car, Back Wall to Front Return: 4'-3"
 - d. Inside Car, Back Wall to Inside Face of Door: 4'-6"
12. Micah Moss, the local Otis Elevator representative, told Mr. Garton that costs could range from \$150,000 for an off-the-shelf elevator to \$225,000 for a custom made elevator. Mr. Moss also mentioned that a custom elevator would not be "all Otis made" components. Otis usually subcontracts out custom elevators such as the one under

consideration here. Lastly, Mr. Moss noted this will be an extremely challenging job to stage; parts will have to be flown in from overhead, he stated.

13. Our research with Thyssen Krupp indicated that a custom platform and elevator cab could be constructed with front and rear openings, would fit the dimensional restrictions placed upon it by the existing shaft, and could be made to meet the Americans with Disabilities Act Accessibility Guidelines.

14. We spoke to Sam Chitty, project manager, and Larry Yarbrough, elevator modernization manager, both with Nashville Machine, the local Thyssen Krupp distributor and installer. In an email to Mr. Garton, Mr. Yarbrough said,

“... there is an ADA compliant elevator that can be installed in the existing hoistway with front and rear doors. It would be a 2100 lb. capacity elevator with a clear inside of 5'-8" x 4'-3". This would still require a complete rearrangement of the existing machine, relocation of the counterweight and all guide rails.”

15. Changing the existing platform, car, shaft, and mechanisms to rear opening would require extensive remodeling according to Mr. Chitty. In an email to Mr. Garton, Mr. Chitty said,

“In order to convert a traction elevator with front openings only to a front and rear car, the platform must be cut down to accommodate the rear door and its associated mechanical equipment (this will also reduce the capacity of the car), the rear mounted counter weights will have to be moved to the side (this will require the relocation of the counter weight rails and possible the main guide rails). The machine and any structural machine beams will have to be moved to accommodate the relocation of the counterweights (if the speed is increased a new motor will be required) and finally a new controller will be need to be installed in order to operate the new rear landing.”

So, with Thyssen Krupp, altering an existing platform and car or having a new platform and car to provide for a rear opening would reduce the capacity of the elevator from 2500# to 2100#; thus degrading service to the building in general. We deem this to be undesirable.

Based on the above conditions, *we believe it to be physically and economically impractical to extend an existing elevator to the Sixth Floor or reuse the existing shafts to install a new elevator*, thus eliminating Options A and C. This leaves Option B as the only viable alternative in our opinion.

Option B: Provide new elevator from Fifth to Sixth Floor in a new location across the corridor from the existing Elevator Lobby. As we stated earlier, this is the option HFR supports and recommends. The advantages outweigh the disadvantages as we think the reader will agree.

1. Below are the advantages and disadvantages of Option B:

Advantages:

- All new equipment; long service life; efficient use of electricity.
- No loss of elevator service; no existing elevators will be taken out of service while the work is being done.
- Car size, speed, and capacity can be optimized.
- Shaft may not require roof penetration or roof pop up for over travel.
- Take the opportunity to correct electrical code problems and perform needed power upgrades. See electrical commentary below.
- Allows the State's concept to modernization existing elevators to proceed as planned.
- All off-the-shelf components from a single manufacturer.

Disadvantages:

- Cost of all new equipment.
 - Cutting into and reinforcing existing 6th floor construction will disrupt Fifth Floor routine.
 - Travelers will have to cross the hall to complete the trip to Sixth Floor.
 - Only offers travel from Fifth to Sixth Floor.
 - Takes up square footage on Fourth, Fifth, and Sixth Floors.
 - Will require reinforcing of 4th floor for impact load of falling cab and passengers.
2. In considering the new elevator, we recommend an AC gearless traction, 2-stop, front opening, passenger elevator that does not require a machine room. There are many configurations from which to choose and most manufacturers offer such a layout.
3. Given that the three existing cabs with a 2,500 pound capacity each will be feeding passengers to the new elevator, we recommend the new elevator have a higher capacity. A 3,500 pound or 4,000 pound capacity would not be out of the question. Since travel distance is limited, some 15 feet or so, speed will not be a significant factor; 150 fpm should be adequate.
4. Cab height should be at least 8'-0", but others are available, 9'-0" for example. The only limitation will be the over travel and whether or not a roof pop up is required. We recommend keeping this in mind when selecting a ceiling height.
5. Of course, the elevator will require all the normal electronics and controls, and will need electricity to power it. Refer to the passages on electrical from IC Thomasson below. This elevator can either be hooked up to an emergency power system or a battery backup. We recommend battery backup.
6. One unique consideration to putting a 2-stop elevator in the upper portions of this building is that it will require a pit. We are used to pits at the bottoms of shafts. Keep in mind the bottom of this shaft will be on the Fourth Floor. So some minor amount of

square footage will be required of the Fourth Floor. Again, see our sketch floor plans for the Fourth Floor.

7. Cab interior design could be presented either of two ways. We could replicate in detail the existing cabs or we could give homage to the original design, but with a new twist. This would be a more honest presentation of cab finishes; stating that this cab is obviously new and not part of the building's original design. We recommend the latter choice.
8. Exterior hallway entrances, lanterns, arrows, buttons, and other features would be better if they copied the original designs, we think. At least on the Fifth Floor where there is a precedent to match. We could go more modern and simpler on the Sixth Floor where there isn't something to match.
9. It goes without saying that the new elevator and everything about it should be handicapped accessible and should be compliant with the Americans with Disabilities Accessibility Guidelines (ADAAG).
10. As part of any option, the electrical distribution system will need to be reworked. Currently, existing 400A, 120/208V panel 'PA' and existing load center 'PA-1' are located in the elevator machine room. Panels located in the elevator machine room are a violation of current elevator codes. ICT recommends providing new panels in a new electrical closet outside of the machine room and re-feed existing loads.
11. Additionally, these panels appear to be loaded to the rated ampacity of the panel. ICT would recommend providing a new 400A fusible switch in the main switchboard in the basement with a new feeder consisting of 2 sets EA: 4 #4/0, #2 GND, 2-1/2" C to the new electrical closet terminating in a new 400A, 120/208V, 3P, 4W, 42-circuit panel. The new panel shall feed the new elevator and would also allow for capacity to feed any new loads on the future renovated 6th floor.

The reader is encouraged to examine the photos and accompanying commentary, as well as the drawings and sketches attached to this report.

Prepared by,



Rex Garton AIA CCS LEED AP



Photo 1: Upper Elevator Machine Room; existing hoist machine, governor, and reinforced concrete floor that would have to be relocated if one of the existing elevators were extended to Sixth Floor.



Photo 2: Upper Elevator Machine Room; view of existing intermediate reinforced concrete floor and machine room floor that would have to be demolished and reconstructed if existing elevator were extended to Sixth Floor.

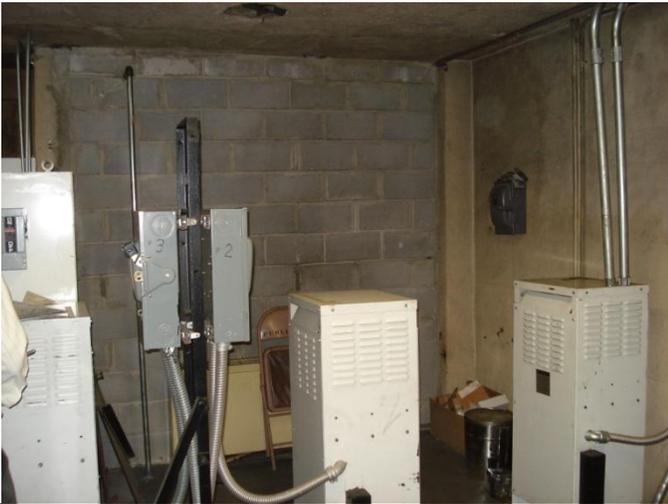


Photo 3: Upper Elevator Machine Room; view of unused shaft closed in with CMU; also seen is various electrical and control equipment boxes.

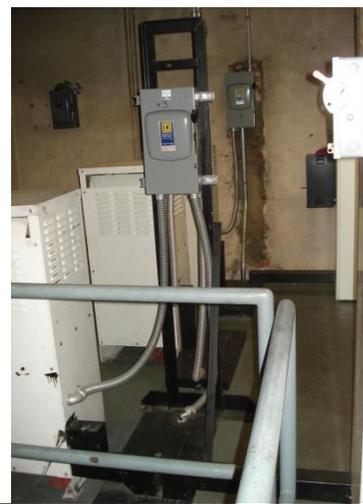


Photo 4: Upper Elevator Machine Room; another view of various electrical and control equipment boxes.



Photo 5: Sixth Floor, Elevator Machine Room; view looking from inside room to corridor; note electrical boxes that need to be removed from room. Also seen here are the reinforced concrete beams overhead, 6'-6" clear headroom; note wood door header in background is behind and above bottom of beam.



Photo 6: Sixth Floor, Elevator Machine Room; other side of room; view looking from inside room to corridor; note electrical boxes that need to be removed from room. Also seen here are the reinforced concrete beams overhead, 6'-6" clear headroom; note concrete beam is below wood door header.



Photo 7: Typical roller guide inside shaft (not the John Sevier Building); roller guide such as this one would have to be removed and relocated if a side opening were realized; deemed impractical.



Photo 8: Typical counterweight system inside shaft (not the John Sevier Building). From discussion with Nashville Machine, we believe counterweights in this picture are oriented similarly to those in John Sevier. Image presented to illustrate what would have to be removed and reworked if rear opening idea were pursued.



Photo 9: Sixth Floor Corridor; illustrating short walk necessary if Option B is selected.



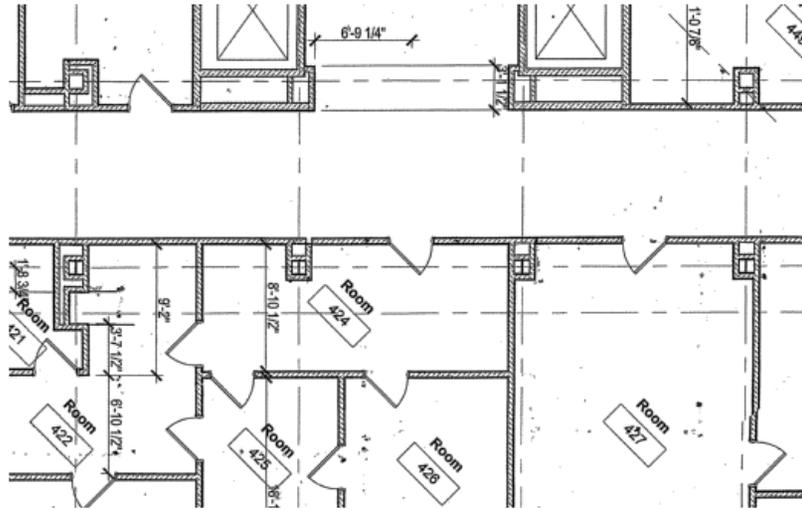
Photo 10: Sixth Floor; looking into space that would become the new elevator entrance; opposite existing Elevator Machine Room.



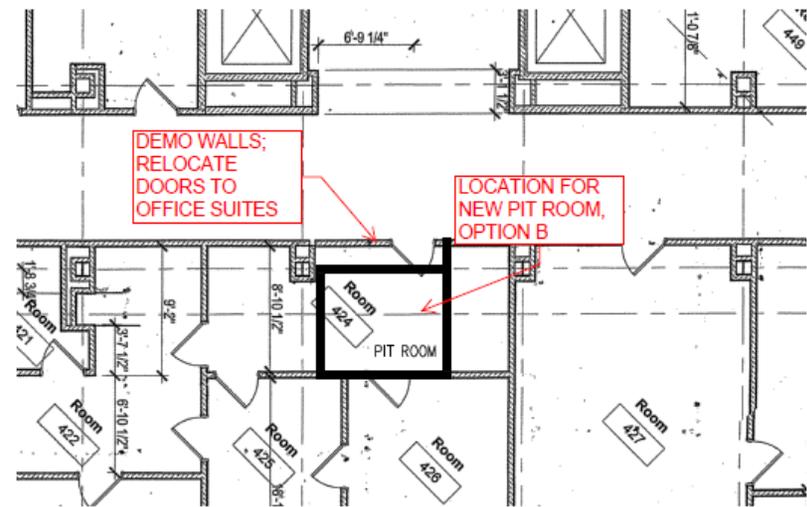
Photo 11: Roof Over Existing Elevator Machine Room; note existing pop up; likely would have to be demolished and raised to accommodate over travel for extended elevator.



Photo 12: Roof over area contemplated in Option B; relatively unencumbered; should fit between existing exhaust fan and parapet wall on the left.

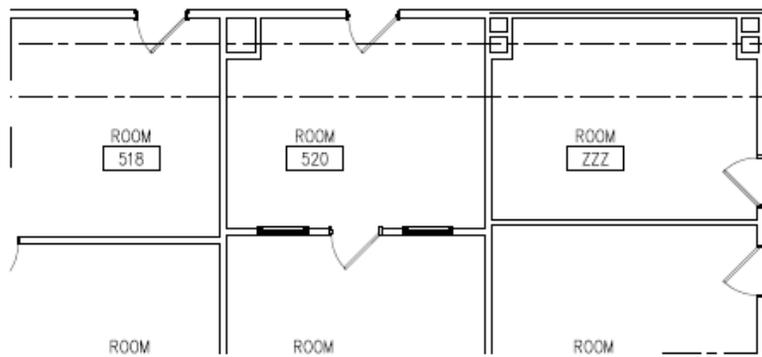
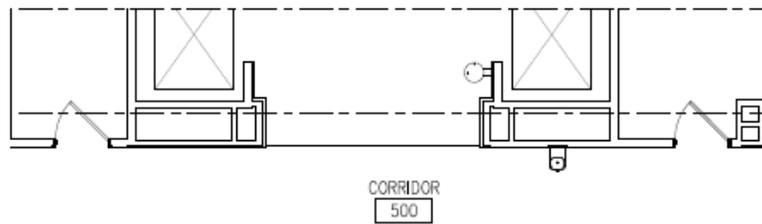


PARTIAL EXISTING 4TH FLOOR
NOT TO SCALE

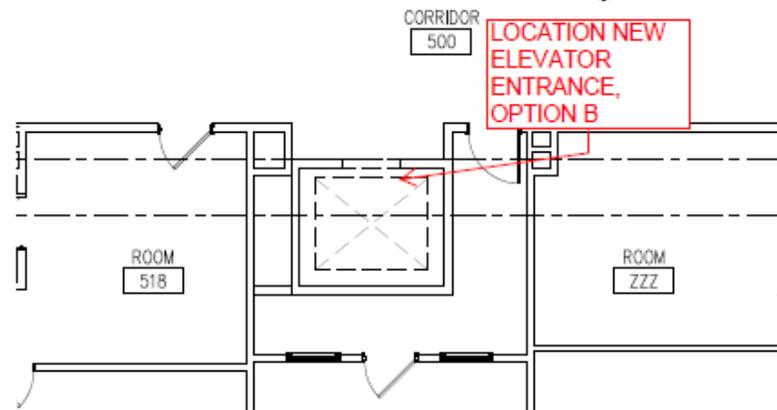
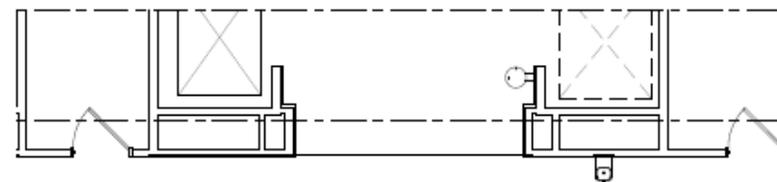


PARTIAL NEW 4TH FLOOR
NOT TO SCALE

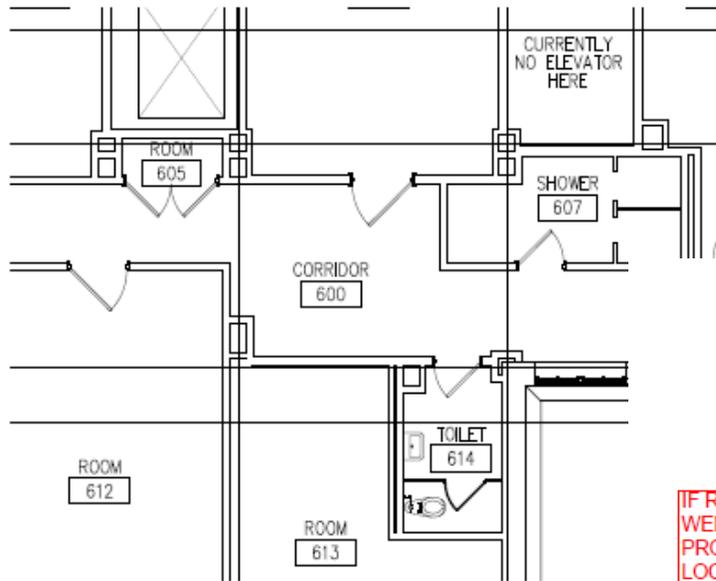
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JOHN SEVIER STATE OFFICE BUILDING
Nashville, Tennessee
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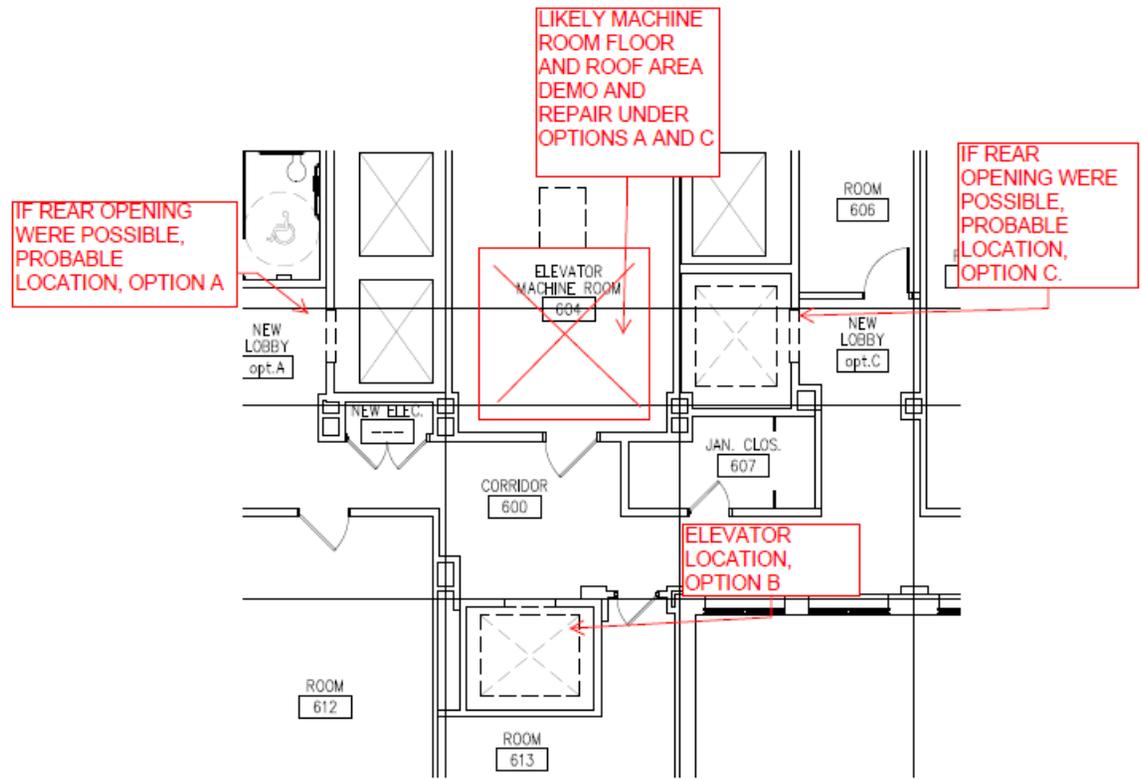
PARTIAL EXISTING 5TH FLOOR
NOT TO SCALE



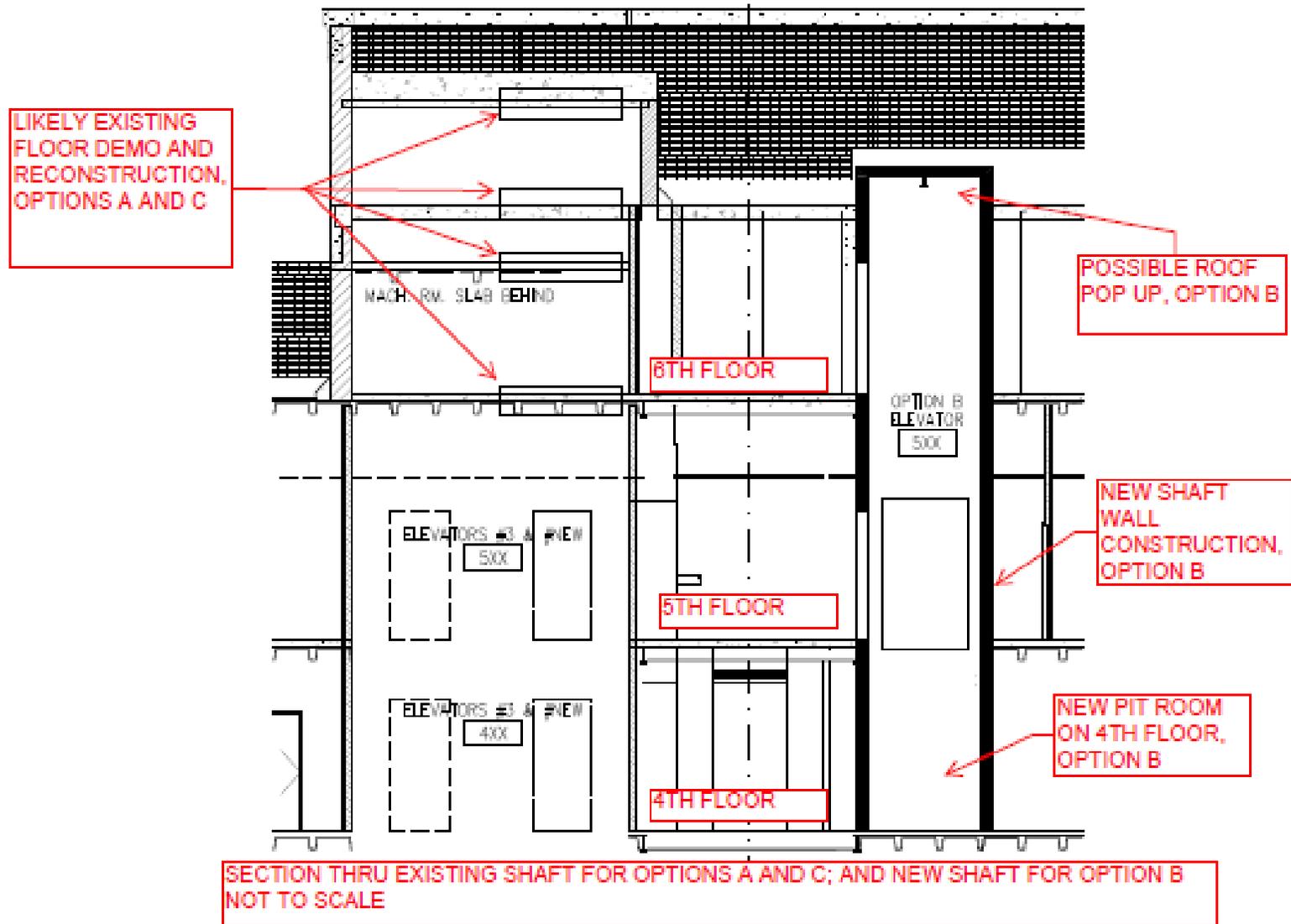
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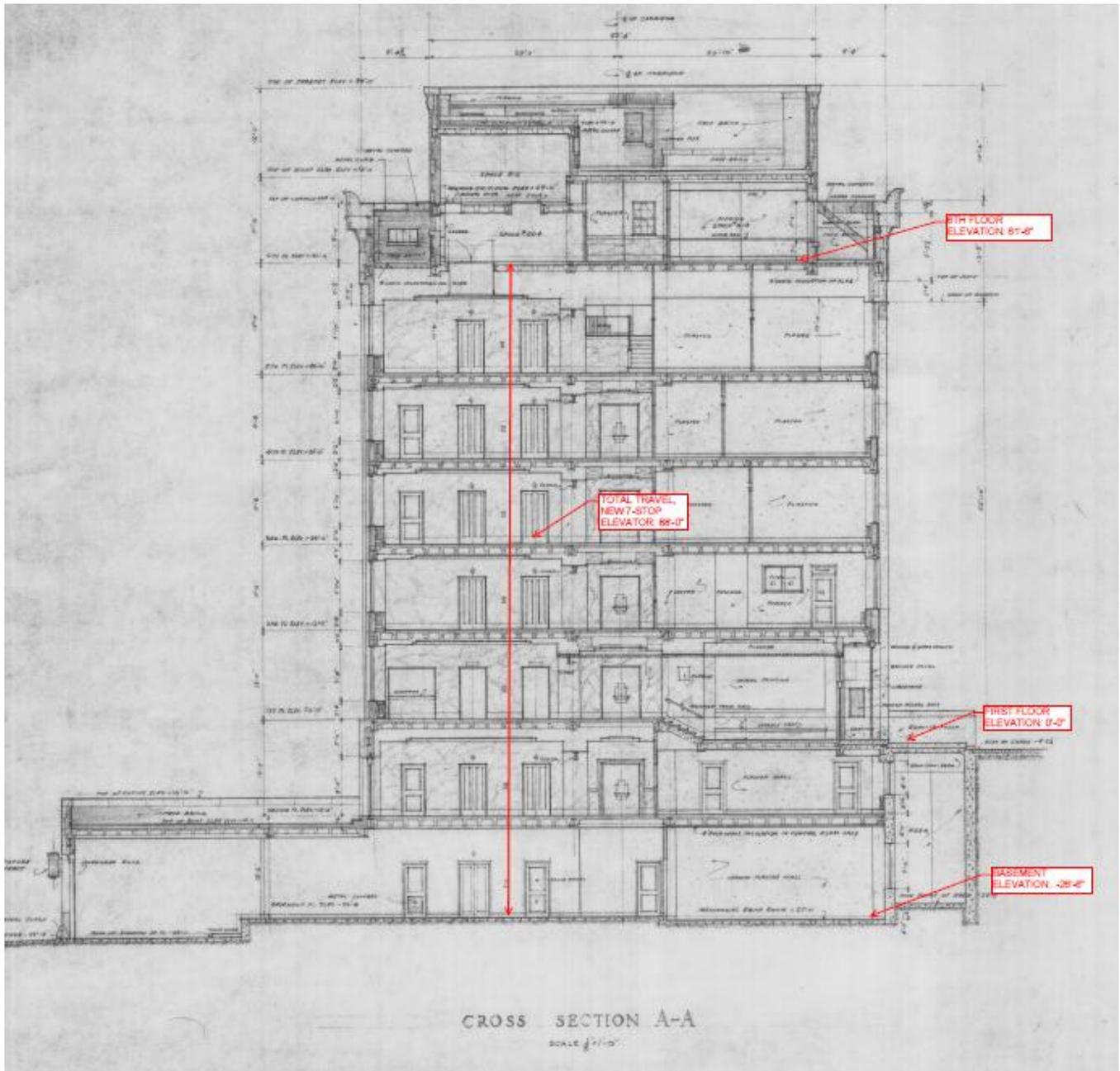


PARTIAL EXISTING 6TH FLOOR
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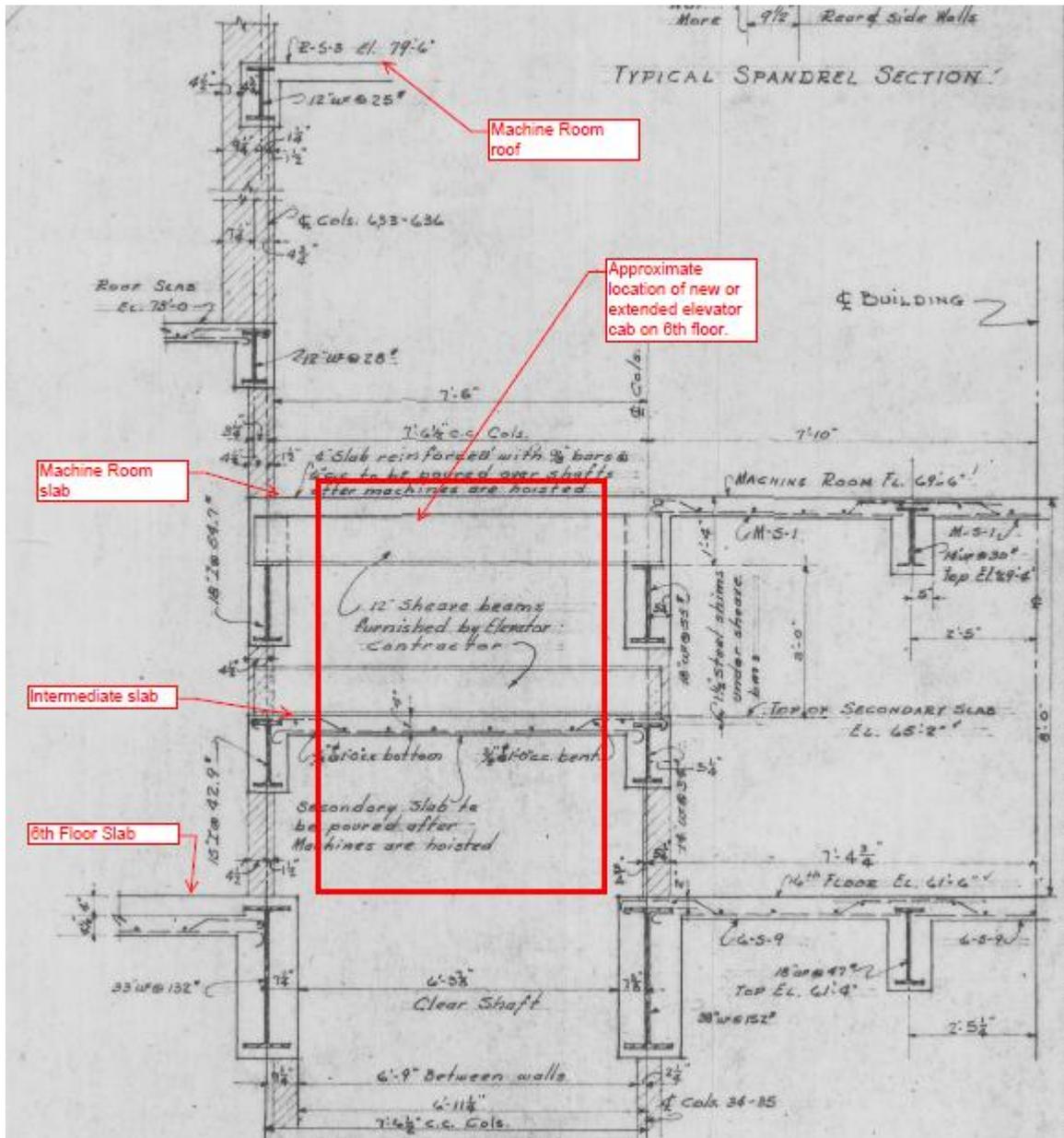


PARTIAL NEW 6TH FLOOR
 NOT TO SCALE

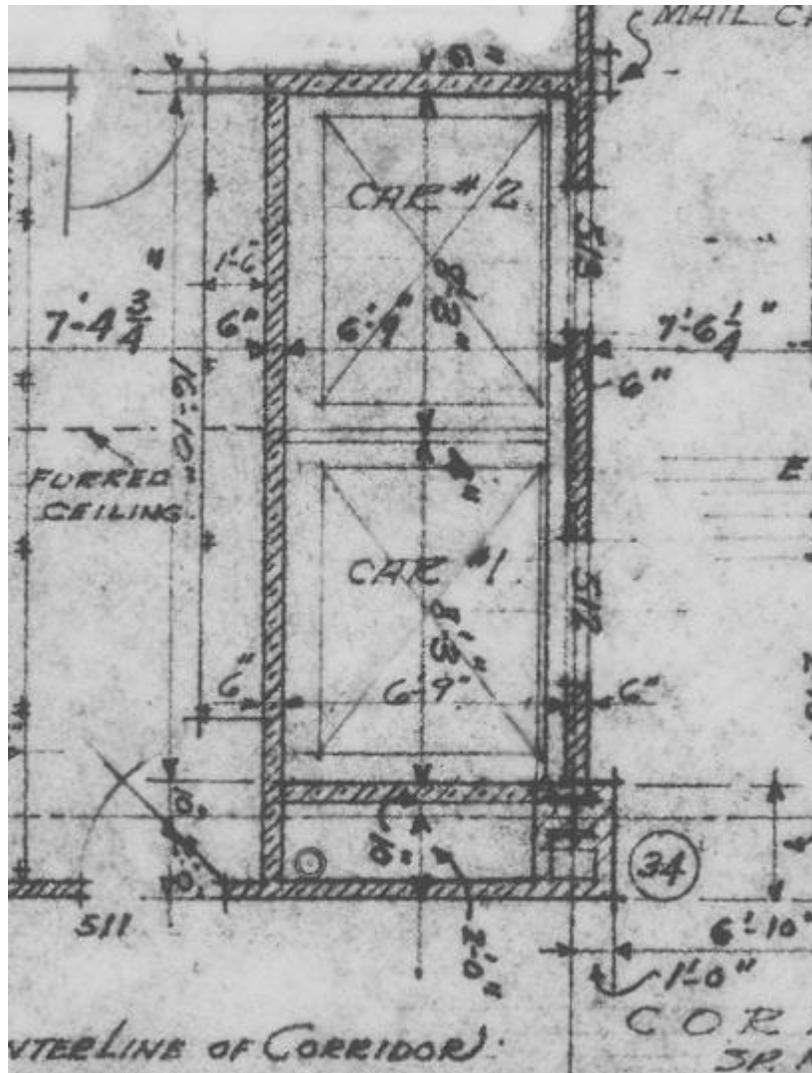




Section through existing building illustrating the travel of a new 7-stop elevator in the unused shaft.



Structural section through top of shaft illustrating existing intermediate slab, Machine Room floor, and Machine Room roof that would need demolition and reconstruction.



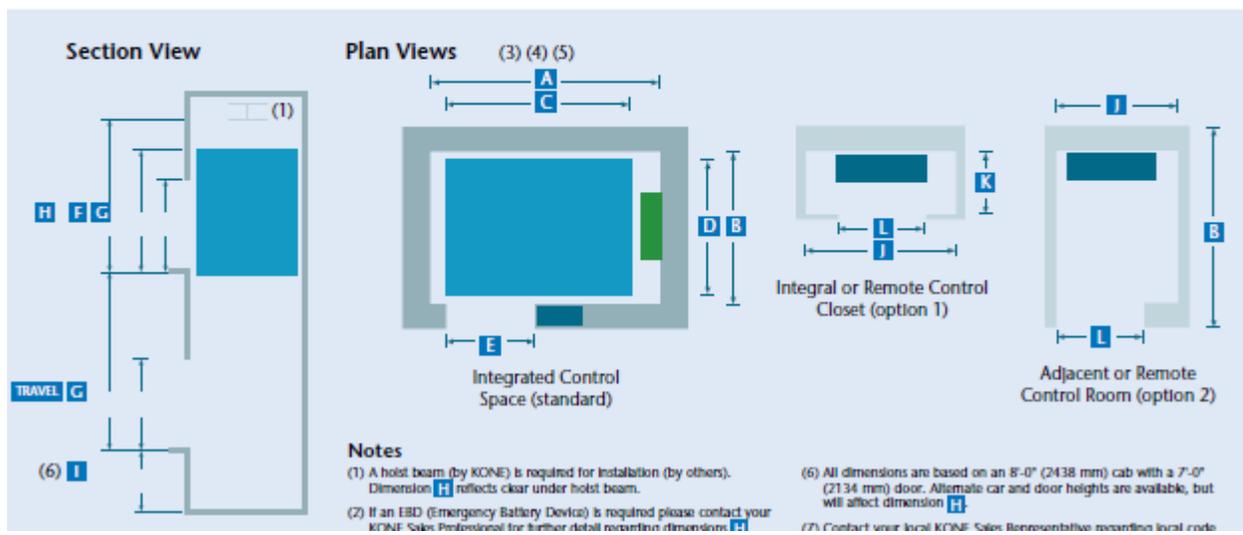
Existing shaft, 6'-9" x 8'-3".

KONE EcoSpace™ Planning Guide

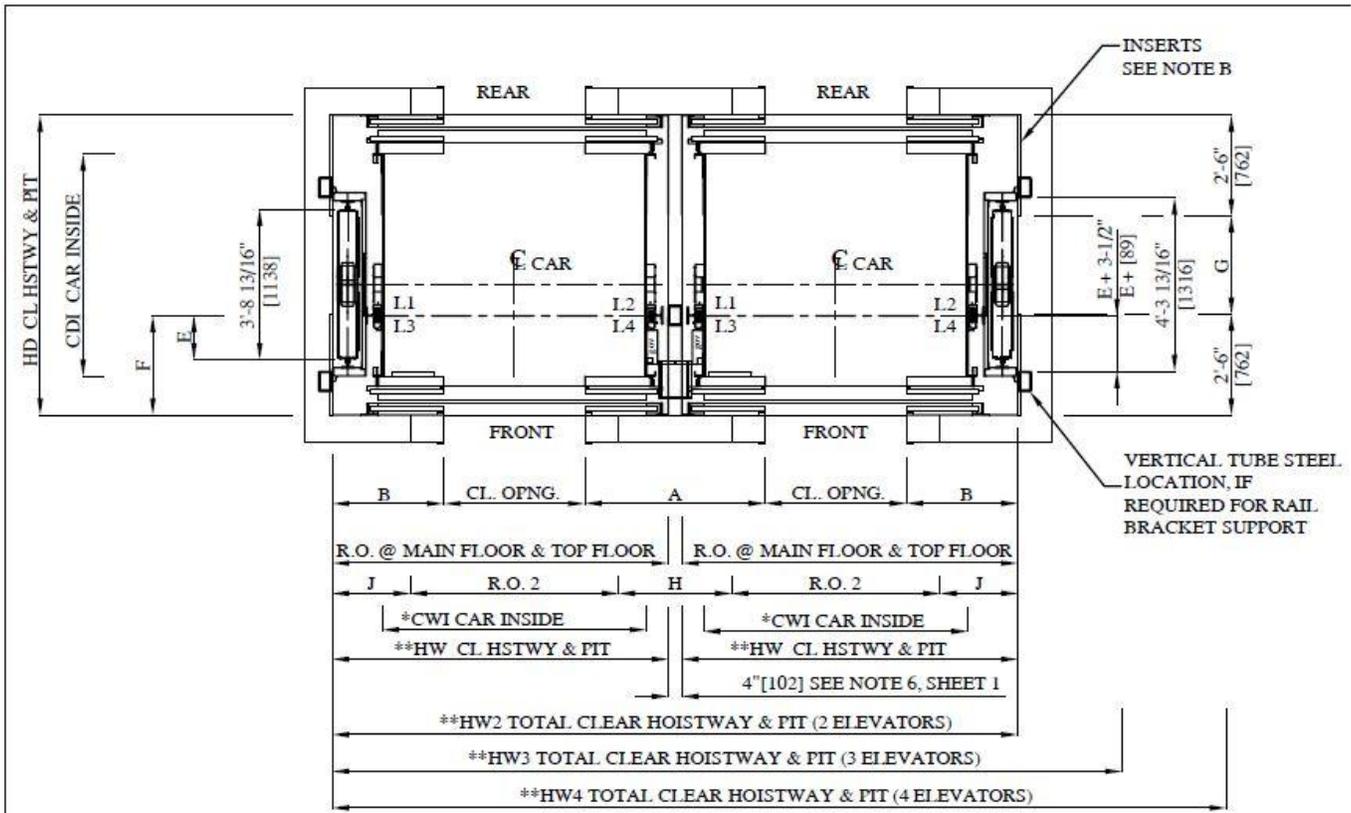
Max Travel⁽⁶⁾
 150 ft. (45.7 m)
Max Landings⁽⁸⁾
 15
Speed^(8,9)
 150, 200, 350 fpm
 (.75, 1.0, 1.78 m/s)
Car Height F
 8, 9 or 10 ft.
 (2438, 2743 or 3048 mm)
Entrance Height G
 7, 8 or 9 ft.
 (2134, 2438 or 2743 mm)

				A		A SEISMIC		B		C		D		E	
		CAPACITY LBS. (kg)	OPENING TYPE	HOISTWAY WIDTH (mm)	HOISTWAY WIDTH (mm)	HOISTWAY WIDTH (mm)	HOISTWAY DEPTH (mm)	HOISTWAY DEPTH (mm)	INTERIOR WIDTH (mm)	INTERIOR DEPTH (mm)	INTERIOR WIDTH (mm)	INTERIOR DEPTH (mm)	DOOR WIDTH (mm)	DOOR WIDTH (mm)	DOOR WIDTH (mm)
Front Opening	PASSENGER	2000 (907)	SSP	7'-4" (2235)	7'-8" (2337)	5'-9" (1753)	5'-8" (1727)	4'-3" (1295)	3'-0" (914)						
		2500 (1134)	SSP-CD	8'-4" (2540)	8'-8" (2642)	5'-9" (1753)	6'-8" (2032)	4'-3" (1295)	3'-6" (1067)						
		3000 (1361)	SSP-CD	8'-6" (2591)	8'-8" (2642)	6'-3" (1905)	6'-8" (2032)	5'-0" (1524)	3'-6" (1067)						
		3500 (1588)	SSP-CD	8'-6" (2591)	8'-8" (2642)	6'-11" (2108)	6'-8" (2032)	5'-6 1/2" (1681)	3'-6" (1067)						
	SERVICE	4000 (1814)	CO	9'-4" (2845)	9'-4" (2845)	6'-11" (2108)	7'-5 1/2" (2281)	5'-6 1/2" (1681)	4'-0" (1219)						
	SERVICE	4500 (2041)	ZSP	7'-4" (2235)	7'-4" (2235)	9'-2" (2794)	5'-6 1/2" (1681)	7'-7 1/2" (2323)	4'-0" (1219)						
	SERVICE	5000 (2268)	ZSP	7'-4" (2235)	7'-4" (2235)	10'-2 1/2" (3105)	5'-6 1/2" (1681)	8'-9 1/2" (2672)	4'-0" (1219)						
Front & Reverse Opening	PASSENGER	2000 (907)	SSP	7'-4" (2235)	7'-8" (2337)	6'-3 1/2" (1911)	5'-8" (1727)	4'-3" (1295)	3'-0" (914)						
		2500 (1134)	SSP-CD	8'-4" (2540)	8'-8" (2642)	6'-3 1/2" (1911)	6'-8" (2032)	4'-3" (1295)	3'-6" (1067)						
		3000 (1361)	SSP-CD	8'-6" (2591)	8'-8" (2642)	6'-11" (2108)	6'-8" (2032)	5'-0" (1524)	3'-6" (1067)						
		3500 (1588)	SSP-CD	8'-6" (2591)	8'-8" (2642)	7'-5 1/2" (2267)	6'-8" (2032)	5'-6 1/2" (1681)	3'-6" (1067)						
	SERVICE	4000 (1814)	CO	9'-4" (2845)	9'-4" (2845)	7'-5 1/2" (2267)	7'-5 1/2" (2281)	5'-6 1/2" (1681)	4'-0" (1219)						
	SERVICE	4500 (2041)	ZSP	7'-4" (2235)	7'-4" (2235)	10'-1 1/2" (3086)	5'-6 1/2" (1681)	7'-7 1/2" (2323)	4'-0" (1219)						
	SERVICE	5000 (2268)	ZSP	7'-4" (2235)	7'-4" (2235)	11'-3 1/2" (3435)	5'-6 1/2" (1681)	8'-9 1/2" (2672)	4'-0" (1219)						

CONTROL SPACE					CLEAR OVERHEAD H AND PIT DEPTH I						
CAPACITY LBS. (kg)	CONTROLLER SPACE	WIDTH (mm)	DEPTH (mm)	DOOR WIDTH (mm)	CAPACITY LBS. (kg)	150 FPM (.75 m/s)		200 FPM (1.00 m/s)		350 FPM (1.78 m/s)	
						Pit Depth (mm)	Clear Overhead (mm)	Pit Depth (mm)	Clear Overhead (mm)	Pit Depth (mm)	Clear Overhead (mm)
2000 to 5000 (907 to 2268)	Integral or remote closet	4'-0" (1219)	1'-8" (508)	3'-6" (1067)	2000 to 3500 (907 to 1588)	5'-0" (1524)	13'-0" (3962)	5'-0" (1524)	13'-1" (3988)	5'-6" (1676)	13'-4" (4064)
2000 to 5000 (907 to 2268)	adjacent room	5'-0" (1524)	dimension (B)	3'-0" (914)	4000 to 5000 (1814 to 2268)	5'-0" (1524)	13'-0" (3962)	-	-	-	-



From Kone literature, a front and read opening cab has a side opening cab and would require alteration of cab entrances below; not desirable; plus dimensions don't work.



CENTER OPENING ENTRANCE ARRANGEMENT
 (AVAILABLE WITH 3000, 3500, 4000, CAPACITIES)

* CAB WITH STANDARD 9/16" [15] WALL PANELS							
CAPACITY	HD	**HW	**HW2	**HW3	**HW4	*CWI	CDI
2100	6'-3 1/4"	7'-7"	15'-6"	23'-5"	31'-4"	5'-8 5/16"	4'-4 1/8"
2500	[1911]	[2311]	[4724]	[7136]	[9549]	[1735]	[1324]

This clip from Otis's "Gen2" brochure indicates dimensions for a front and rear opening cab that may work with John Sevier's existing shaft.

ESTIMATE FOR
ELEVATOR EXTENSION STUDY
JOHN SEVIER STATE OFFICE BUILDING

Nashville, TN

SBC #529/070-01-2013

HFR JOB NO. 2013203.20

HFR DESIGN, INC.

BRENTWOOD, TENNESSEE

26-Aug-15

OPTION A	\$365,114
Extend travel of either existing Elevator No. 1 from Fifth to Sixth Floor; front opening car; 2500# capacity.	
OPTION A.1	\$521,701
Demo existing Elevator No. 1 system and provide new elevator system from Ground to Sixth Floor using new platform and car, front and rear opening, and 2100# capacity	
OPTION B	\$381,149
Provide new elevator from Fifth to Sixth Floor in location away from Elevator Lobby; front opening car; 3500# capacity.	
OPTION C	\$587,228
Provide new, 7-stop, elevator in empty shaft, with travel from Basement to Sixth Floor; front opening car; 2500# capacity.	
OPTION C.1	\$552,613
Provide new, 7-stop, elevator in empty shaft, with travel from Basement to Sixth Floor; front and rear opening car; 2100# capacity.	

HFR JOB NO. 2013203.20
HFR DESIGN, INC.
BRENTWOOD, TENNESSEE
26-Aug-15
ELEVATOR EXTENSION STUDY
OPTION A

Extend travel of either existing Elevator No. 1 from Fifth to Sixth Floor; front opening car; 2500# capacity.

GRAND TOTAL, OPTION A \$365,114

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST		COST	
				MAT.	LABOR	MAT.	TOTAL
	DEMO EXISTING FIFTH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING INTERMEDIATE SLAB	130	SF	\$2.00	\$25.00	\$260	\$3,510
	DEMO EXISTING ELEVATOR MACHINE ROOM SLAB	500	SF	\$0.00	\$25.00	\$0	\$12,500
	DEMO EXISTING 6TH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING ROOF SLAB	500	SF	\$2.00	\$25.00	\$1,000	\$13,500
	DEMO EXISTING OPENINGS IN WALLS	250	SF	\$2.00	\$10.00	\$500	\$3,000
	REWORK STRUCTURE FIFTH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	REWORK STRUCTURE 6TH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	REWORK STRUCTURE ELEVATOR MACHINE ROOM SLAB	500	SF	\$25.00	\$25.00	\$12,500	\$25,000
	REWORK STRUCTURE FOR WALL OPENINGS	250	SF	\$5.00	\$15.00	\$1,250	\$5,000
	REWORK STRUCTURE ROOF SLAB	500	SF	\$25.00	\$25.00	\$12,500	\$25,000
	NEW WALLS, CEILING, AND FINISHES FOR NEW ELEVATOR LOBBY	750	SF	\$10.00	\$25.00	\$7,500	\$26,250
	UPGRADES TO EXISTING PLATFORM, CAB, CONTROLLER, MACHINES, COMPLETE OVERHAUL	1	LS	\$10,000.00	\$20,000.00	\$10,000	\$30,000
	RELOCATE EXISTING ELECTRICAL PANELS	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000
	NEW 400A SERVICE FOR ELEVATOR	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000

SUBTOTAL MAT.	\$85,510	
		SUBTOTAL TOTAL
		\$243,760
SALES TAX ON MATERIALS	9%	\$7,696
		SUBTOTAL INCL TAXES
		\$251,456
GENL CONTR'S OVERHEAD	10%	\$25,146
		SUBTOTAL
		\$276,601
		PROFIT
	10%	\$27,660
		SUBTOTAL
		\$304,262
CONTINGENCY	20%	\$60,852
GRAND TOTAL, OPTION A		\$365,114

HFR JOB NO. 2013203.20
HFR DESIGN, INC.
BRENTWOOD, TENNESSEE
26-Aug-15
ELEVATOR EXTENSION STUDY
OPTION A

Demo existing Elevator No. 1 system and provide new elevator system from Ground to Sixth Floor using new platform and car, front and rear opening, and 2100# capacity

GRAND TOTAL, OPTION A \$521,701

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST		COST	
				MAT.	LABOR	MAT.	TOTAL
	DEMO EXISTING FIFTH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING INTERMEDIATE SLAB	130	SF	\$2.00	\$25.00	\$260	\$3,510
	ELEVATOR MACHINE ROOM SLAB	130	SF	\$0.00	\$25.00	\$0	\$3,250
	DEMO EXISTING 6TH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING ROOF SLAB	500	SF	\$2.00	\$25.00	\$1,000	\$13,500
	DEMO EXISTING OPENINGS IN WALLS	250	SF	\$2.00	\$10.00	\$500	\$3,000
	REWORK STRUCTURE FIFTH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	REWORK STRUCTURE 6TH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	ELEVATOR MACHINE ROOM SLAB	130	SF	\$25.00	\$25.00	\$3,250	\$6,500
	REWORK STRUCTURE FOR WALL OPENINGS	250	SF	\$5.00	\$15.00	\$1,250	\$5,000
	REWORK STRUCTURE ROOF SLAB	500	SF	\$25.00	\$25.00	\$12,500	\$25,000
	NEW WALLS, CEILING, AND FINISHES FOR NEW ELEVATOR LOBBY	500	SF	\$10.00	\$25.00	\$5,000	\$17,500

DEMO EXISTING PLATFORM, CAB, CONTROLLER, MACHINES, EVERYTHING.	1	LS	\$5,000.00	\$15,000.00	\$5,000	\$20,000
NEW PLATFORM, CAB, CONTROLLER, MACHINES, COMPLETE OVERHAUL	1	LS	\$65,000.00	\$85,000.00	\$65,000	\$150,000
RELOCATE EXISTING ELECTRICAL PANELS	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000
NEW 400A SERVICE FOR ELEVATOR	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000

SUBTOTAL MAT. \$133,760

SUBTOTAL TOTAL \$347,260

SALES TAX ON MATERIALS 9% \$12,038

SUBTOTAL INCL TAXES \$359,298

GENL CONTR'S OVERHEAD 10% \$35,930

SUBTOTAL \$395,228

PROFIT 10% \$39,523

SUBTOTAL \$434,751

CONTINGENCY 20% \$86,950

GRAND TOTAL, OPTION A \$521,701

HFR JOB NO. 2013203.20
HFR DESIGN, INC.
BRENTWOOD, TENNESSEE
26-Aug-15
ELEVATOR EXTENSION STUDY
OPTION B

Provide new elevator from Fifth to Sixth Floor in location away from Elevator Lobby; front opening car; 3500# capacity.

GRAND TOTAL, OPTION B \$381,149

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST		COST	
				MAT.	LABOR	MAT.	TOTAL
	DEMO EXISTING FIFTH FLOOR SLAB	150	SF	\$2.00	\$25.00	\$300	\$4,050
	DEMO EXISTING INTERMEDIATE SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING ELEVATOR MACHINE ROOM SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING 6TH FLOOR SLAB	150	SF	\$2.00	\$25.00	\$300	\$4,050
	DEMO EXISTING ROOF SLAB	150	SF	\$0.00	\$0.00	\$0	\$0
	DEMO EXISTING 6TH FLOOR TOILETS	100	SF	\$2.00	\$25.00	\$200	\$2,700
	DEMO EXISTING OPENINGS IN WALLS	0	SF	\$2.00	\$10.00	\$0	\$0
	REWORK STRUCTURE FIFTH FLOOR SLAB	150	SF	\$25.00	\$25.00	\$3,750	\$7,500
	REINFORCE 4TH FLOOR FOR IMPACT LOAD	150	SF	\$25.00	\$25.00	\$3,750	\$7,500
	REWORK STRUCTURE 6TH FLOOR SLAB	150	SF	\$25.00	\$25.00	\$3,750	\$7,500
	REWORK STRUCTURE ELEVATOR MACHINE ROOM SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	REWORK STRUCTURE ROOF SLAB	150	SF	\$25.00	\$25.00	\$3,750	\$7,500
	REWORK STRUCTURE FOR WALL OPENINGS	0	SF	\$5.00	\$15.00	\$0	\$0
	NEW WALLS, CEILING, AND FINISHES FOR NEW ELEVATOR LOBBY FOR FRONT OPENING CABS	100	SF	\$10.00	\$25.00	\$1,000	\$3,500
	NEW PLATFORM, CAB, CONTROLLER, MACHINES, COMPLETE NEW SYSTEM	1	LS	\$50,000.00	\$70,000.00	\$50,000	\$120,000
	RELOCATE EXISTING ELECTRICAL PANELS	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000
	NEW 400A SERVICE FOR ELEVATOR	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000

SUBTOTAL MAT.	\$106,800	
		SUBTOTAL TOTAL \$264,300
SALES TAX ON MATERIALS	9%	\$9,612
		SUBTOTAL INCL TAXES \$273,912
GENL CONTR'S OVERHEAD	10%	\$27,391
		SUBTOTAL \$301,303
		PROFIT 10% \$30,130
		SUBTOTAL \$331,434
CONTINGENCY	15%	\$49,715
GRAND TOTAL, OPTION B		\$381,149

HFR JOB NO. 2013203.20
HFR DESIGN, INC.
BRENTWOOD, TENNESSEE
HFR JOB NO. 2013203.20
ELEVATOR EXTENSION STUDY
OPTION C

Provide new, 7-stop, elevator in empty shaft, with travel from Basement to Sixth Floor; front opening car; 2500# capacity.

GRAND TOTAL, OPTION C \$587,228

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST		COST	
				MAT.	LABOR	MAT.	TOTAL
	DEMO EXISTING FIFTH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING INTERMEDIATE SLAB	130	SF	\$2.00	\$25.00	\$260	\$3,510
	DEMO EXISTING ELEVATOR MACHINE ROOM SLAB	500	SF	\$2.00	\$25.00	\$1,000	\$13,500
	DEMO EXISTING 6TH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING ROOF SLAB	500	SF	\$2.00	\$25.00	\$1,000	\$13,500
	DEMO DOOR OPENINGS, FLOORS B, 1 - 5	6	EA	\$150.00	\$350.00	\$900	\$3,000
	DEMO EXISTING OPENINGS IN WALLS	250	SF	\$2.00	\$10.00	\$500	\$3,000
	REWORK STRUCTURE FIFTH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	REWORK STRUCTURE ELEVATOR MACHINE ROOM SLAB	500	SF	\$25.00	\$10.00	\$12,500	\$17,500
	REWORK STRUCTURE 6TH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	NEW DOOR OPENINGS, FLOORS B, 1 - 5	6	EA	\$2,500.00	\$2,500.00	\$15,000	\$30,000
	REWORK STRUCTURE FOR WALL OPENINGS	250	SF	\$5.00	\$15.00	\$1,250	\$5,000
	REWORK STRUCTURE ROOF SLAB	500	SF	\$25.00	\$25.00	\$12,500	\$25,000
	NEW WALLS, CEILING, AND FINISHES FOR NEW ELEVATOR LOBBY FOR FRONT OPENING CABS	750	SF	\$10.00	\$25.00	\$7,500	\$26,250
	COMPLETE NEW PLATFORM, CAB, CONTROLLER, MACHINES, ALL NEW SYSTEM.	1	LS	\$65,000.00	\$85,000.00	\$65,000	\$150,000
	RELOCATE EXISTING ELECTRICAL PANELS	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000
	NEW 400A SERVICE FOR ELEVATOR	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000

SUBTOTAL MAT. \$157,410

		SUBTOTAL TOTAL	\$390,260	
SALES TAX ON MATERIALS	9%		\$14,167	
		SUBTOTAL INCL TAXES	\$404,427	
GENL CONTR'S OVERHEAD	10%		\$40,443	
		SUBTOTAL	\$444,870	
		PROFIT	10%	\$44,487
		SUBTOTAL	\$489,357	
		CONTINGENCY	20%	\$97,871
		GRAND TOTAL, OPTION C	\$587,228	

HFR JOB NO. 2013203.20
HFR DESIGN, INC.
BRENTWOOD, TENNESSEE
HFR JOB NO. 2013203.20
ELEVATOR EXTENSION STUDY
OPTION C

Provide new, 7-stop, elevator in empty shaft, with travel from Basement to Sixth Floor; front and rear opening car; 2100# capacity.

GRAND TOTAL, OPTION C \$552,613

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST		COST	
				MAT.	LABOR	MAT.	TOTAL
	DEMO EXISTING FIFTH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING INTERMEDIATE SLAB	130	SF	\$2.00	\$25.00	\$260	\$3,510
	ELEVATOR MACHINE ROOM SLAB	130	SF	\$2.00	\$25.00	\$260	\$3,510
	DEMO EXISTING 6TH FLOOR SLAB	0	SF	\$2.00	\$25.00	\$0	\$0
	DEMO EXISTING ROOF SLAB	500	SF	\$2.00	\$25.00	\$1,000	\$13,500
	DEMO DOOR OPENINGS, FLOORS B, 1 - 5	6	EA	\$150.00	\$350.00	\$900	\$3,000
	DEMO EXISTING OPENINGS IN WALLS	250	SF	\$2.00	\$10.00	\$500	\$3,000
	REWORK STRUCTURE FIFTH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	ELEVATOR MACHINE ROOM SLAB	130	SF	\$25.00	\$10.00	\$3,250	\$4,550
	REWORK STRUCTURE 6TH FLOOR SLAB	0	SF	\$25.00	\$25.00	\$0	\$0
	NEW DOOR OPENINGS, FLOORS B, 1 - 5	6	EA	\$2,500.00	\$2,500.00	\$15,000	\$30,000
	REWORK STRUCTURE FOR WALL OPENINGS	250	SF	\$5.00	\$15.00	\$1,250	\$5,000
	REWORK STRUCTURE ROOF SLAB	500	SF	\$25.00	\$25.00	\$12,500	\$25,000

NEW WALLS, CEILING, AND FINISHES FOR NEW ELEVATOR LOBBY	750	SF	\$10.00	\$25.00	\$7,500	\$26,250
COMPLETE NEW PLATFORM, CAB, CONTROLLER, MACHINES, ALL NEW SYSTEM.	1	LS	\$65,000.00	\$85,000.00	\$65,000	\$150,000
RELOCATE EXISTING ELECTRICAL PANELS	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000
NEW 400A SERVICE FOR ELEVATOR	1	LS	\$20,000.00	\$30,000.00	\$20,000	\$50,000

SUBTOTAL MAT. \$147,420

SUBTOTAL TOTAL \$367,320

SALES TAX ON MATERIALS 9% \$13,268

SUBTOTAL INCL TAXES \$380,588

GENL CONTR'S OVERHEAD 10% \$38,059

SUBTOTAL \$418,647

PROFIT 10% \$41,865

SUBTOTAL \$460,511

CONTINGENCY 20% \$92,102

GRAND TOTAL, OPTION C \$552,613