

DEPARTMENT OF ENTERPRISE SERVICES

General Administration Building Predesign Update

November 28, 2012

Project No. 2012-218

SRG



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GA Building Predesign Update – Project #12-218**

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EXECUTIVE SUMMARY

The purpose of this report is in response to Engrossed Substitute House Bill 1497 Chapter 48, Laws of 2011. It updates previous predesigns for the renovation of the GA Building. Our findings match the findings of predesigns done in both 1992 and 2006 that the building has serious life safety, environmental and systems deficiencies and needs major renovation to bring it to today's standards. The deficiencies include inadequate structural earthquake resistance, no automatic fire sprinklers system, no exterior wall or window insulation, and the electrical, mechanical and plumbing systems are beyond their useful life. There are also deficiencies with other building code requirements. This will need to be corrected. The Structural Analysis, Mechanical Analysis and the Electrical Analysis in this report outline what improvements are required to bring those systems up to code.

We attempted in this study to develop a low cost scenario (Scenario #1) that proved to be very difficult because in order to upgrade the building's mechanical, electrical and plumbing systems and to get the building to meet current structural seismic requirements, the interiors of the building need to be demolished, except for those areas outlined in the Historic Analysis that would be protected and saved. In building back the interior spaces, we would also be required to meet the code requirements outlined in the Architectural Review and Code Analysis.

We developed six alternative building scenarios, and it will not be possible, even with the least expensive of the options, to meet the legislative intent that "The predesign must limit the scope of the project to a price that can be financed with the fund balance and expected annual revenue in the Washington State Heritage Center account and the current level lease payments of the tenants expected to move into the building at the time of occupancy."

It should be noted that when the building design is developed, we have assumed that the heavy loaded areas, like the library, occur on the lower three floors because of structural load limits in the upper floors. There may also be some requirements to limit assembly type areas to the lower floors. This would only affect large classroom or auditorium type spaces and would usually be on lower floors anyway. Neither of these code related issues should present design issues but the cost models use these assumptions.

The existing exterior walls have no insulation and the exterior glass is not insulated. In order to meet the state energy code and the state mandated LEED Silver standard as outlined in the Environmental Analysis, these would need to be replaced or upgraded. It is assumed that the windows would be replaced and the wall area would be insulated.

We reviewed in the Civil Analysis the requirements for improvements of the surrounding site area and those requirements are included in the costs. We also reviewed the west retaining wall both in the Civil and Structural Analysis and found if the existing recommendations are followed, construction should not affect the retaining wall's stability.

The scenarios are shown in the following table: (It should be noted that all costs assume that the building is not occupied during renovation because the extent of the renovation requires building systems to be shut down.)

Scenario	Gross Square Feet	Total Project Cost-OFM Form	MACCS\$ Per GSF OFM Form	Pros	Cons
#1 Partial Systems Upgrade	282,682	\$94,761,000	\$240	-Lowest cost renovation	-Reuses old systems but only gives a 15 to 20 year systems life. -Requires major cost for limited building life. -Will be difficult to meet required LEED Silver.
#2 Full Upgrade	282,682	\$132,100,000	\$336	-Brings the building up to current codes. -Gives the building another 50 years of use.	-Cost is almost as much as a new building. -Long distance from center of building to exterior wall.
#3 Full Upgrade with Light Well	237,743	\$124,574,000	\$375	-Brings the building up to current codes. -Gets all spaces to an acceptable distance to the exterior wall.	-Cost is almost as much as a new building -Less Gross Square Feet
#4 New Replacement Building	282,682	\$161,067,000	\$412	-Would be a building designed to current standards without compromise of existing building.	-Highest cost
#5 Full Demo with Lawn	0	\$8,040,000	N/A	-Relocates tenants now from a deteriorating building rather than waiting for it to fail without a plan. -Separates cost of demolition from new construction cost. -Allows for thoughtful planning of campus north edge with clear landscape.	-Would need to find permanent new space for existing tenants. -Reduces rsf on campus in the F & S model
#6 Board Up and Leave	0	NA	NA	-If renovation is not affordable now, this gives an option to wait. -Relocates tenants now from a deteriorating building rather than waiting for it to fail without a plan.	-Would be a campus eyesore and not desirable -Reduces rsf on campus in the F & S model

We have calculated the cost for the interior tenant improvements on a cost per square foot basis assuming tenant improvements for the following type of spaces:

Washington State Heritage Center	50,000 Gross Square Feet
Limited Archives Display	included in above
Washington State Library	50,000 Gross Square Feet
State Patrol and other state agencies	137,743 SF to 182,682 Gross Square Feet
A small cafeteria	included in above

The reason for the area range in the above tenant improvement areas is because in Scenario #3 we suggest that you can improve the quality of the building work environment by building a light shaft in the middle of the building. See the Environmental Analysis section for description of this scenario. There have been numerous studies showing that worker productivity is greatly improved with close proximity to natural light. The existing GA Building has very large floor plates that cause people not to have close proximity to exterior natural light.

The comparative scenario of a new building did not assume a monumental structure. None of the option analyses include relocation costs nor tenant improvements for new/temporary housing of existing tenants. A strategy to address the security and parking requirements for visitor and agency vehicles to support the designated tenants is not included. The study does not take into account whether these options meet the requirements of the campus master plan nor the State Capitol Committee's guidelines for the highest and best use of the building or the site. A thoughtful analysis of what should be located on campus to support the citizens of Washington for the future and how, or who, best fulfills meeting those priorities of government was not included in the limited scope of this study. Descriptions of the designs scenarios are as follows:

Scenario #1

Full structural upgrade, limited mechanical, electrical and voice/data upgrade, new elevators, full exterior wall upgrade, all tenant areas built out new except for preservation of some historic areas, all civil and site work. Building size is 282,682 GSF. This scenario would extend the life of the building 15 to 20 years. We have assessed that some systems still have useful life but the systems that need replacement, plus the required structural upgrades required, makes the amount of work expensive for the limited added building life. **This scenario would not be recommended.**

Scenario #2

Full structural upgrade, full mechanical and electrical upgrade, new elevators, full exterior wall upgrade, all tenant areas built out new except for preservation of some historic areas, all civil and site work. Building size is 282,682 GSF. This scenario would bring the building to new building code and life safety standards. It does not solve an inherent problem with the environment quality of the spaces because of the distance from building interiors to the exterior wall. **This scenario would not be recommended.**

Scenario #3

Full structural upgrade, full mechanical and electrical upgrade, new elevators, full exterior wall upgrade, all tenant areas built out new except for preservation of some historic areas, all civil and site work. You

have a much better work environment with better access to natural light. Building size is 237,743 GSF. This scenario would add a light and ventilation opening in the center of the building and would solve many of the environmental issues of the existing building. It would bring it to both current code standards and environmental standards. There is an extended discussion of this in the environmental section of this report. The area of the resulting building is reduced by 44,930 GSF or by 16%. That area could be added back if needed, but for this report we did not study that option. **This scenario would be recommended.**

Scenario #4

This scenario would be to build a new 282,682 GSF building on the existing GA building site. This would be a building that would meet all the current code and environmental standards without compromises that come with fitting into an existing building. **This scenario would be recommended.**

Scenario #5

This scenario is to demolish the existing building and replace with lawn. This is included so that the cost for that option is included. This would cause all the remaining tenants to be located in other vacant campus space or in leased space. This would take 282,682 GSF out of the campus inventory. **No recommendation either way on this option.**

Scenario #6

This scenario is to mothball the building until such a time you can afford renovation or replacement. This is included so that the cost and timing of demolition does not jeopardize funding for a replacement. This option would require all remaining tenants to relocate to other long-term space. It would buy time if a renovation is preferred and you decide not to continue to occupy a substandard building. **No recommendation either way on this option.**

This report has a large appendix which includes a 1992 predesign, a 2004 PRR and a section from the 2006 predesign for the EOP/Heritage Center covering the GA Building along with cost estimates from 1992 and 2006. In reviewing this report, it is important to put this predesign update into that 20 year context of those reports.

This report does not develop a predesign concept, nor do we lay out the tenants in the building. That work would be in the range of \$200,000 to \$300,000 which is outside the limits of the legislation. That effort will not change the cost results of this report.

Summary and Recommendations

This building has been studied for over 20 years. All the studies have concluded that the building needs major improvements to meet current life safety standards. This report substantiates those conclusions. We would advise either renovate the building to standards described in Scenario #3 or build a new building as described in Scenario #4.

CERTIFICATION OF ENROLLMENT
ENGROSSED SUBSTITUTE HOUSE BILL 1497

Chapter 48, Laws of 2011
(partial veto)

62nd Legislature
2011 1st Special Session

2011-2013 CAPITAL BUDGET--FUNDING OTHER THAN BOND PROCEEDS

EFFECTIVE DATE: 06/15/11 - Except sections 7022-7025 and 7027,
which become effective 07/01/11.

NEW SECTION. **Sec. 1025. FOR THE DEPARTMENT OF GENERAL ADMINISTRATION**

Reuse GA Building for Heritage Center, State Library, and State
Patrol (92000003)

The appropriation in this section is subject to the following conditions and limitations: The appropriation is provided solely for the preparation of an updated predesign for renovation of the "GA Building." Tenants in the renovated facility must include the Washington state heritage center, the Washington state library, the state patrol, and other possible state agency tenants. The Washington state heritage center shall occupy approximately 50,000 square feet, the Washington state library shall occupy approximately 50,000 square feet, and the state patrol and other state agencies shall occupy the remaining space. A small cafeteria with public space may be included in a part of the building that provides view of the Olympic Mountains, Budd Bay, and Capital Lake. The predesign must limit the

scope of the project to a price that can be financed with the fund balance and expected annual revenue in the Washington state heritage center account and the current level lease payments of the tenants expected to move into the building at the time of occupancy. The department shall also review the suitability of the space in "OB2" that will be vacated by the department of information services for expanding archive storage space. The space in the renovated "GA Building" must be limited to the exhibition of historically significant documents from the state archives and may include online access to state archive records, and must not include permanent storage of state archive documents.

Appropriation:

Washington State Heritage Account--State	\$150,000
Prior Biennia (Expenditures)	\$0
Future Biennia (Projected Costs)	\$0
TOTAL\$150,000

Excerpted: ESHB 1497, Section 1025 specific to GA Bldg Reuse for Heritage Center, State Library (Project 12-218)

2. BUILDING REVIEW

REPORT OVERVIEW

Scope of Work

This report is in response to Engrossed Substitute House Bill 1497 Chapter 48, Laws of 2011, and Section 1025 For the Department of General Administration Reuse GA Building for Heritage Center, State Library, and State Patrol. This was an appropriation to preparation of an updated predesign for the renovation of the "GA Building" (see pages 1.5 – 1.6).

Tenants in the renovated facility are assumed to include the Washington State Heritage Center, the Washington State Library, the State Patrol, and other possible state agency tenants. Approximate areas for these agencies are as follows:

Washington State Heritage Center	50,000 Gross Square Feet
Washington State Library	50,000 Gross Square Feet
State Patrol and other state agencies	the remaining area
A small cafeteria with public space	may be included in a part of the building that provides views of the Olympic Mountains, Budd Bay, and Capitol Lake
Archives space	limited to the exhibition of historically significant documents and online access and not permanent storage of state archive documents

The price for the renovation was limited to what can be financed with the fund balance and expected annual revenue in the Washington State Heritage Center account and the current level lease payments of the tenants expected to move into the building at time of occupancy.

Process

We first reviewed documents that have been prepared for the Washington State Department of General Administration over the last 20 years that we have used as background in this updated predesign. They include but were not limited to:

- General Administration Drawing List as of 2009
- Predesign Executive Office Plaza/Heritage Center, Project # 2006-117, September 2006. With particular attention to section 3.B.3 General Administration Building Assessment, Section D. Codes/Regulations - GA Building and Predesign Estimate in Section 9 of the appendix.
- Project Request Report, Submitted by Department of General Administration for GA Building Rehabilitation, September 1, 2004.
- General Administration Building, Renovation Predesign Study, Prepared by Zimmer Gunsul Frasca Partnership, August 1992.
- Predesign Estimate by Rider Hunt Levett & Bailey, August 4, 2006
- United States Department of the Interior National Park Service, National Register of Historic Places Registration Form for the General Administration Building dated July 1, 2006.
- Hillside Evaluation and Preliminary Design Olympia Campus, Olympia, WA (08-076), by Golder Associates, March 17, 2010
- General Administration Building Soldier Pile Wall Inspection, GA# 08-076, by Golder Associates Inc, dated July 20, 2010.

- Basic Structural Checklist for Building Type C2 and Structural Calculations
- Chapter 39.35D RCW – High Performance Public Buildings
- General Administration Building - Generators

Note: The above documents are included in the appendix.

With this background information, we determined that the first step in our work would be to update the basic building technical requirements of a renovation that would be required to just bring the base building up to minimum code and occupancy standards. We reviewed what was concluded in 1992, 2004 and 2006 reports. A building walk through, lead by those who have maintained the building over the last few years, was done on July 12, 2012. We reviewed current codes and requirements to determine what has changed since those reports were done.

This report gives those findings and develops an estimate for those improvements. In addition, the cost estimate develops what the tenant build out costs would be for the required tenants on a cost per square foot basis. These costs listed for five scenarios of development, each scenario is listed as the recommended direct cost budget on page 45 of the cost section. Those costs are shown in the Office of Financial Management’s Capital Budget System Cost Estimate Summary and Detail Report with owner costs added to arrive at a total project cost for each scenario.

The next step in this process, if required, would be to develop a conceptual layout of the proposed tenants in the building which could happen in a follow-on phase. This should not be done until a selected direction is established since it would represent a further study cost in the range of \$200,000 to \$300,000.

GENERAL ADMINISTRATION BUILDING

The GA Building is a six-story building plus a penthouse located on the north edge of the State of Washington Capitol Campus. It has two stories below the first story, three occupied floors above the first story and a mechanical penthouse at the roof level. The building was constructed between 1954 and 1956 with completion in May of 1956.

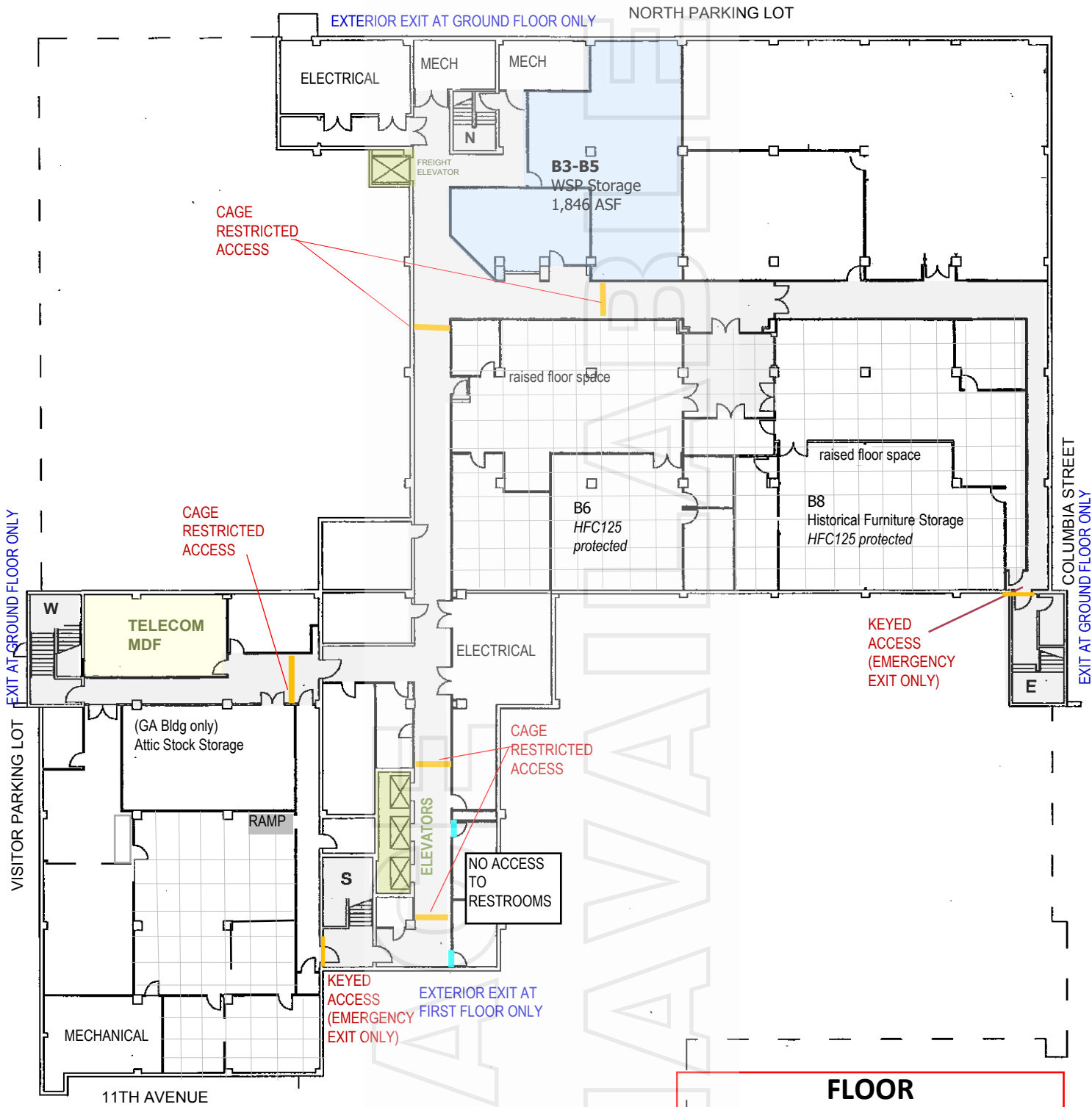
The floor areas and floor-to-floor heights are as follows (note - these areas vary slightly in various documents; these areas are shown on the following floor plans):

	Gross Sq. Ft	Floor to Floor Ht
Basement	28,601	13'-1 1/2"
Ground Floor	48,425	13'-1 1/2"
First Floor	49,739	15'-9 1/2"
Second Floor	49,301	13'-1 1/2"
Third Floor	49,301	13'-1 1/2"
Forth Floor	49,301	12'-11"
Penthouse	8,014	17'-0"
Total	282,682	

The following floor plans show who the current building tenants are and the Assignable Square Feet for each. The plans show the total Gross Square Feet by floor in the building.

The floor-to-floor heights are shown on the building section included following the floor plans.

Following the section are current photos of the exterior of the building taken July 12, 2012.



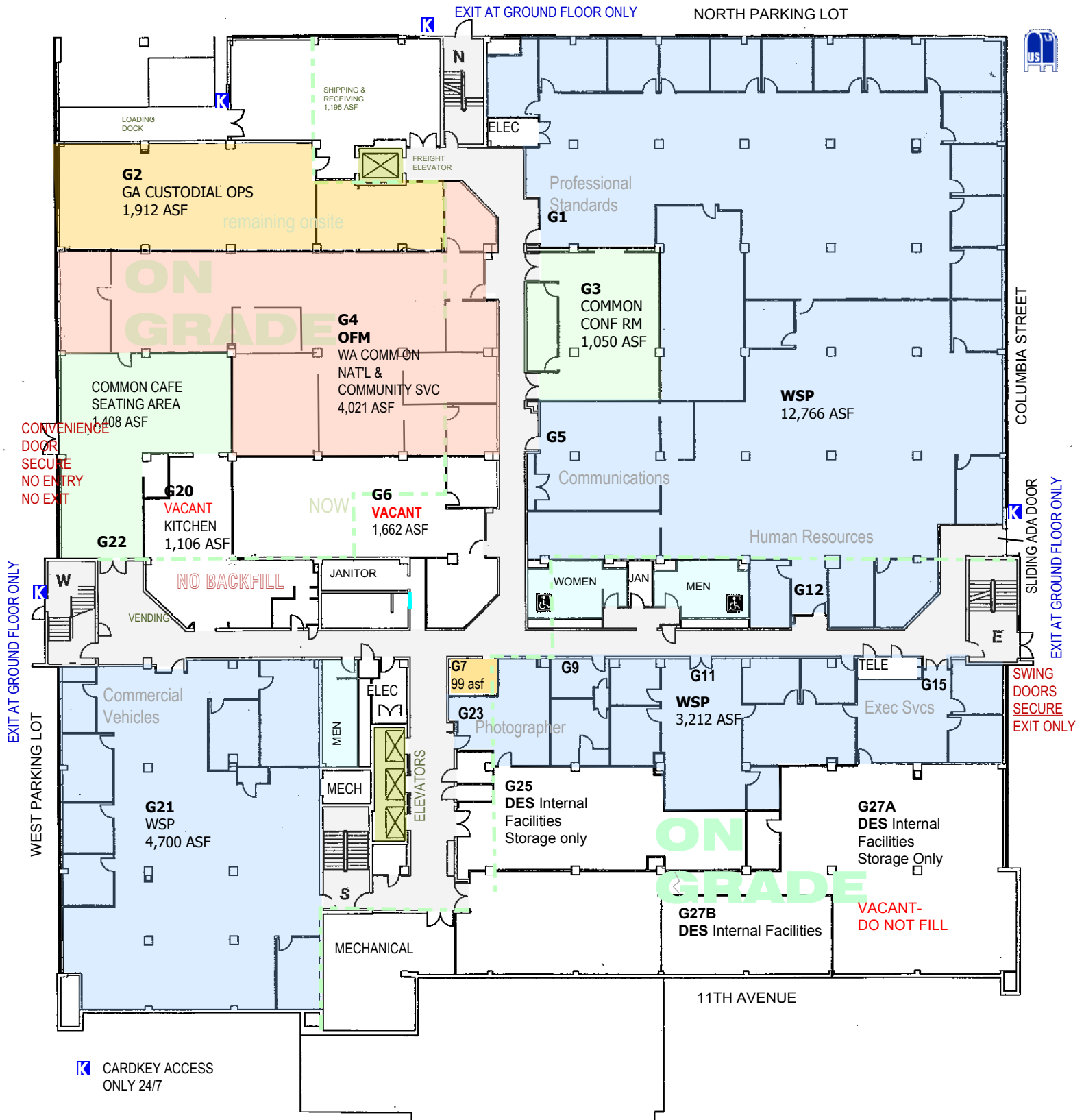
FLOOR
MOTHBALLED
(no backfill)
LIMITED ACCESS ONLY


Washington State Patrol 1,846 ASF
 (records storage only)

BASEMENT TOTAL SPACE - 28,601 GSF



GA Building
BASEMENT



 CARDKEY ACCESS ONLY 24/7

Washington State Patrol	20,678 ASF
Enterprise Services	2,008 ASF
OFM (Americorp)	4,021 ASF
Common Space	3,653sf
VACANT Space (Excl G25-G27)	2,768 ASF

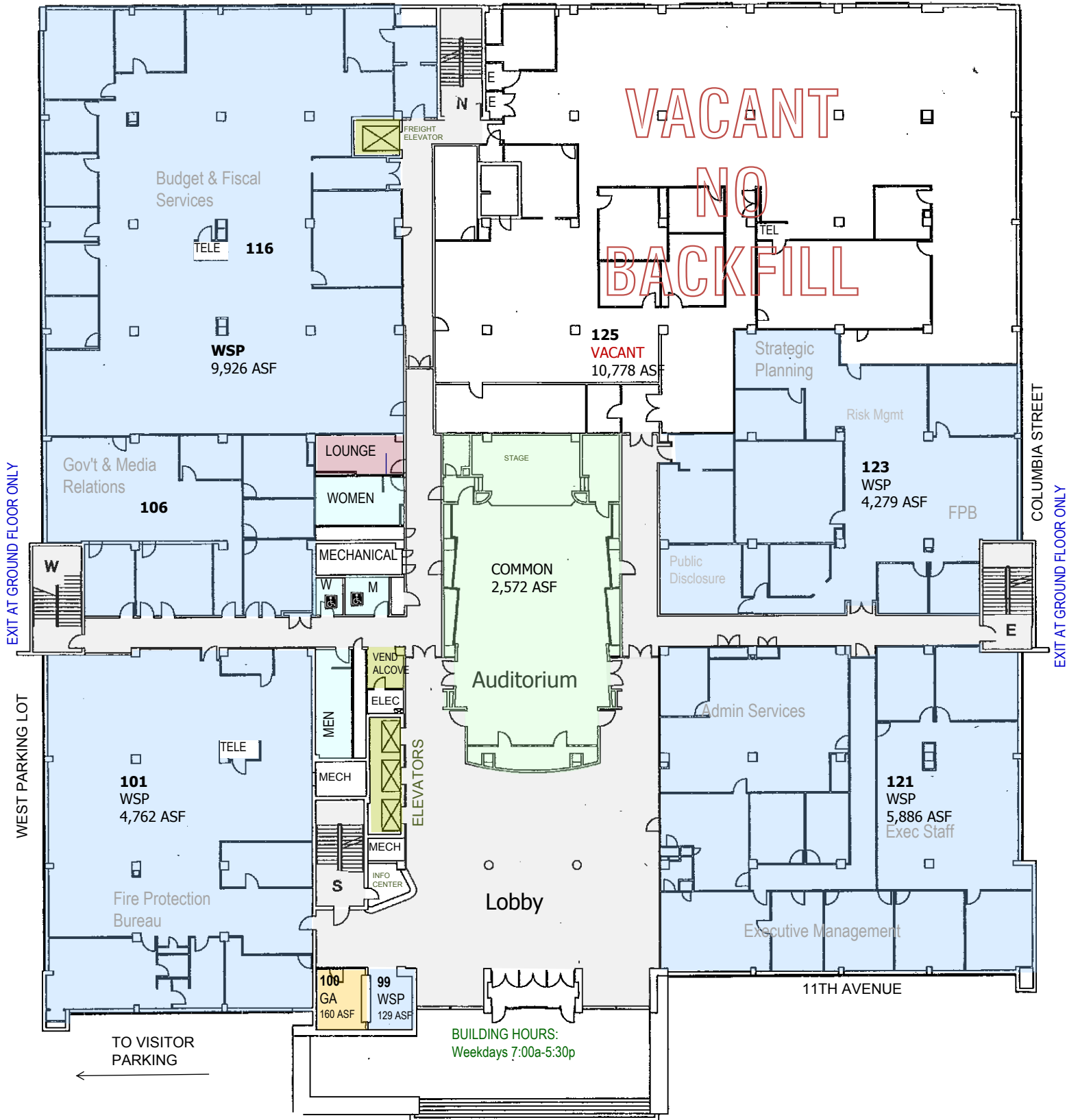
GROUND FLOOR TOTAL SPACE - 48,425 GSF



GA Building GROUND FLOOR

EXIT AT GROUND FLOOR ONLY

NORTH PARKING LOT

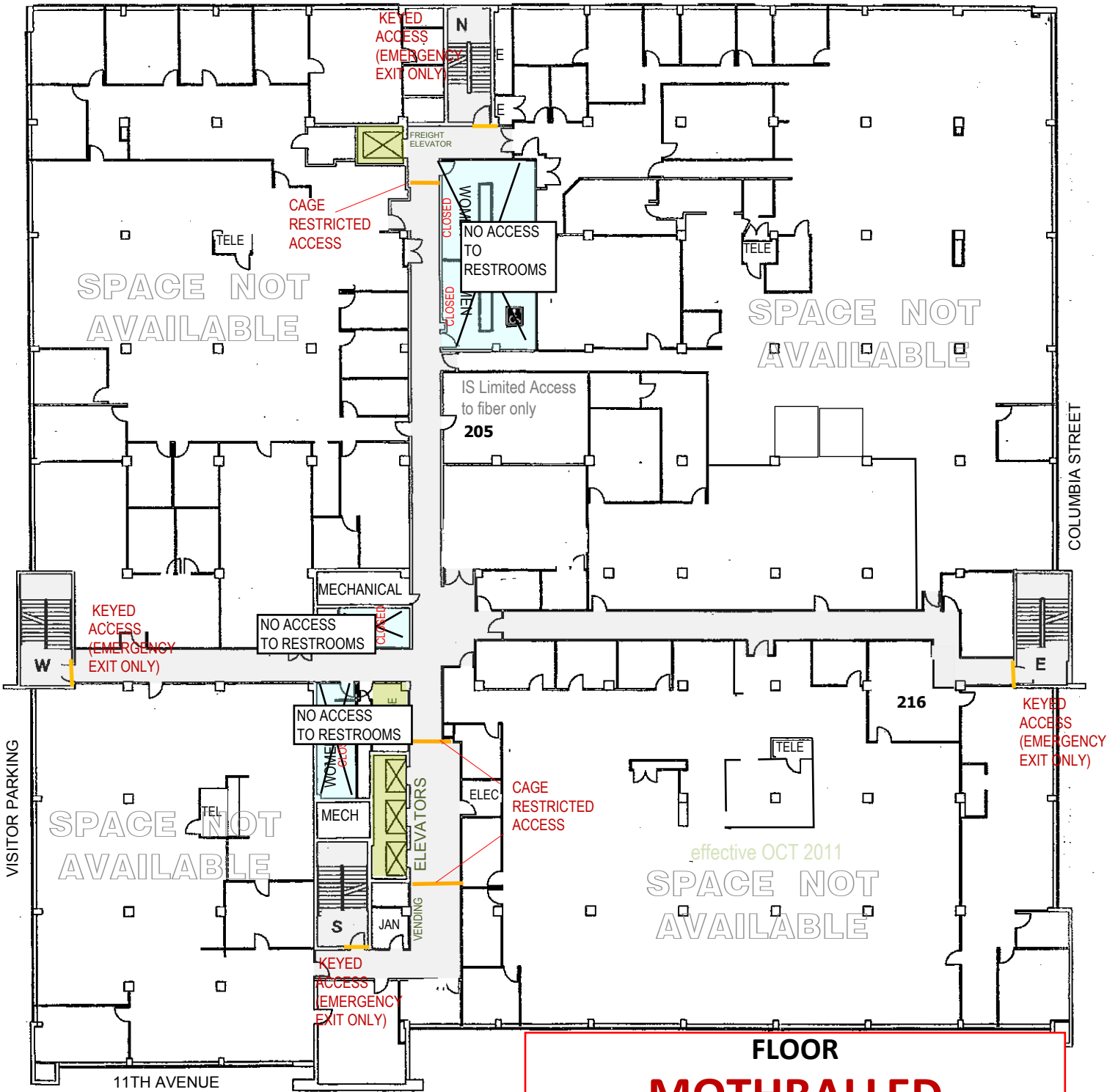


Washington State Patrol	24,982 ASF
Enterprise Services	160 ASF
Common Space	2,572sf
VACANT Space	10,778 ASF

FIRST FLOOR TOTAL - 4,9739 GSF



GA Building FIRST FLOOR



SECOND FLOOR TOTAL SPACE
49,301 GSF

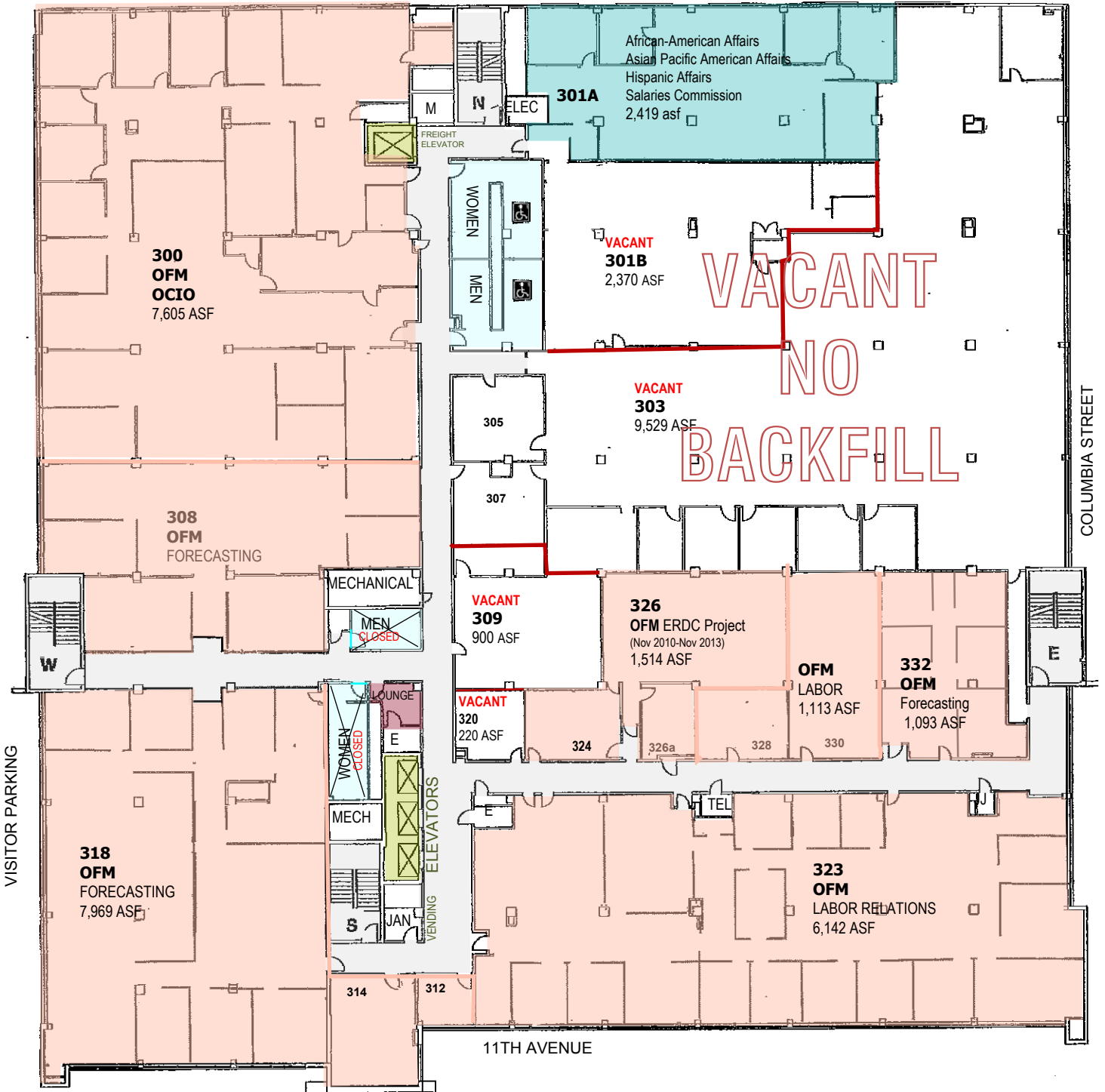
FLOOR
MOTHBALLED
(no backfill)
ACCESS FOR MAINTENANCE ONLY

GA Building
SECOND FLOOR



NORTH STAIR IS DESIGNATED
AREA OF REFUGE - EXIT AT GROUND FLOOR

NORTH PARKING LOT



Minority Commissions	2,419 ASF
Office of Financial Mgmt	25,436 ASF
OCIO	7,605asf
Forecasting	9,062asf
ERDC	1,514asf
Labor Relations	7,255asf
VACANT Space	13,019 ASF

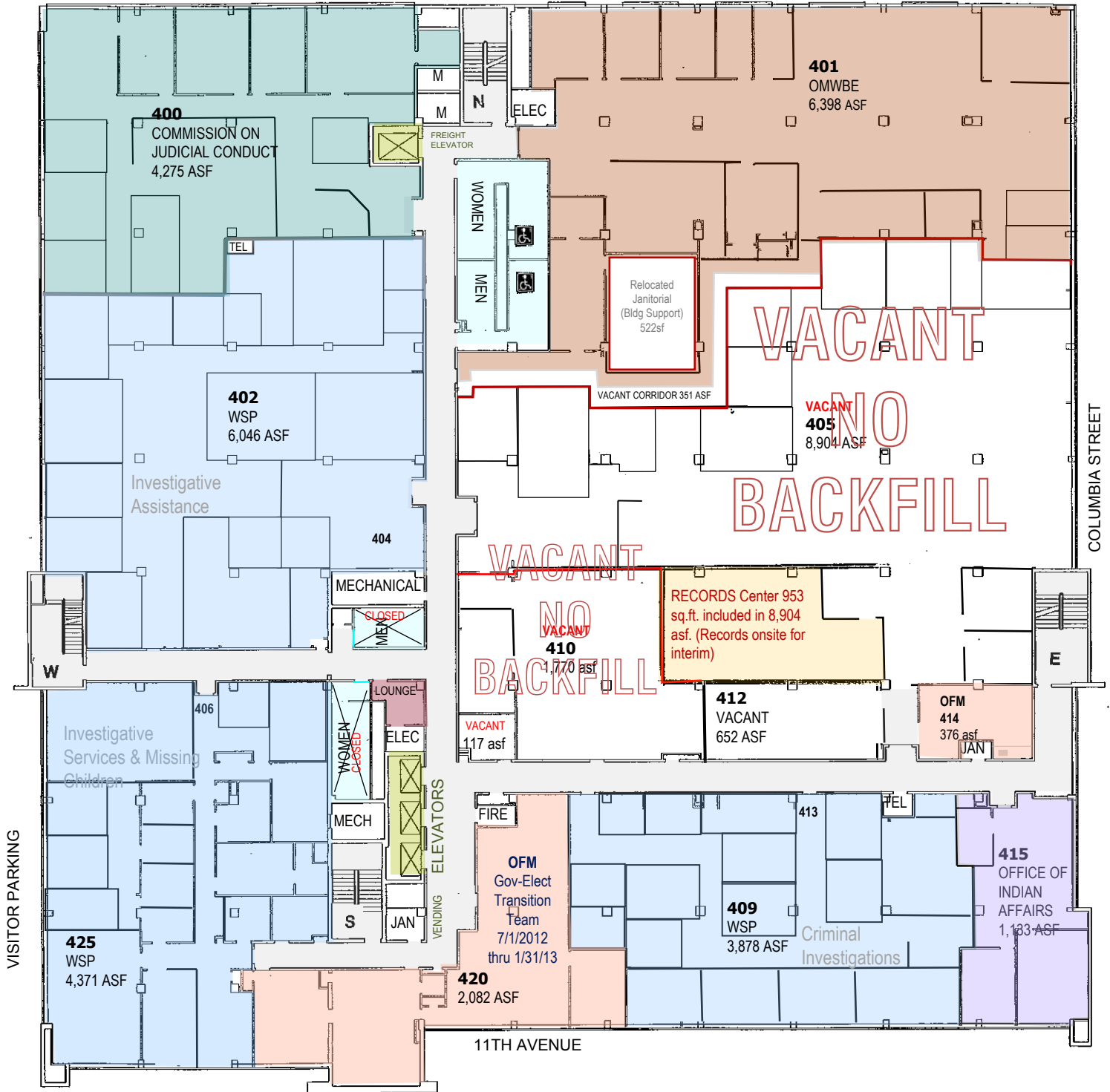
THIRD FLOOR TOTAL SPACE - 49,301 GSF



GA Building
THIRD FLOOR

NORTH STAIR IS DESIGNATED
AREA OF REFUGE - EXIT AT GROUND FLOOR

NORTH PARKING LOT

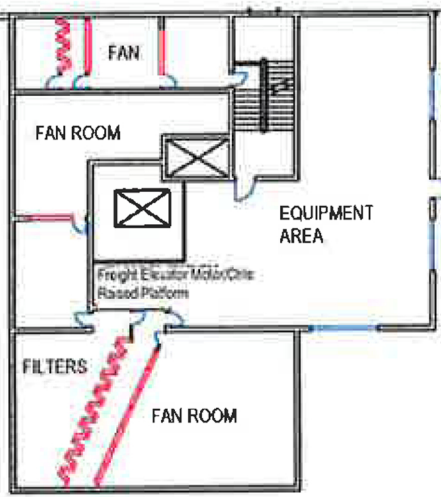


Washington State Patrol	14,295 ASF
Minority & Women's	
Business Enterprises	6,398 ASF
Comm on Judicial Conduct	4,275 ASF
Indian Affairs	1,133 ASF
VACANT Space	13,901 ASF

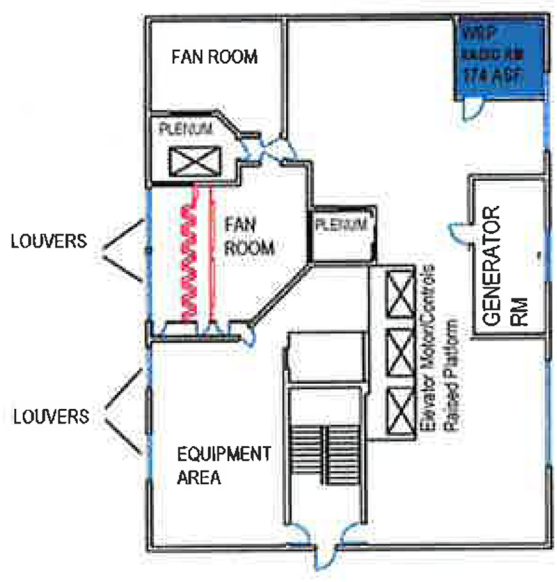
FOURTH FLOOR TOTAL SPACE - 49,301 GSF



GA Building
FOURTH FLOOR



NORTH
PENTHOUSE NO 2



SOUTH
PENTHOUSE NO 1

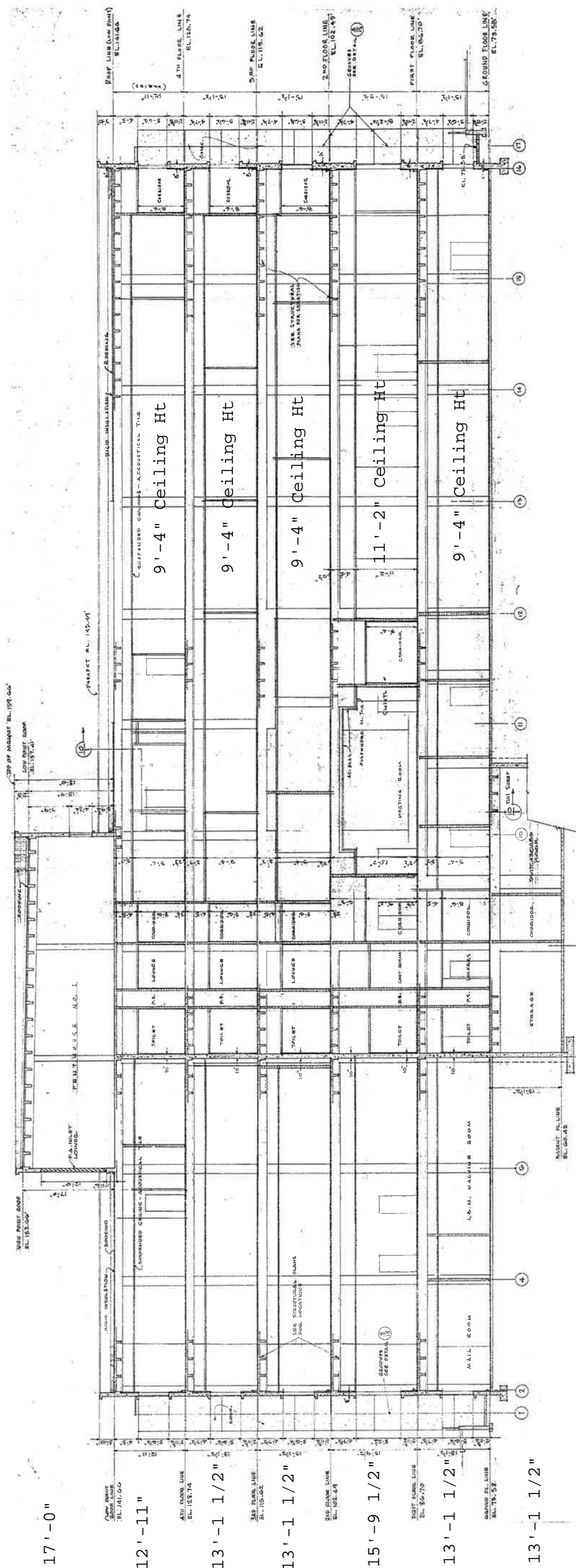
SCALE: 1" = 30'
APRIL 17, 2009



STATE PATROL
174 ASF

GENERAL ADMINISTRATION BUILDING ROOF/PENTHOUSE PLAN

TOTAL ASSIGNABLE FLOOR AREA = 174 ASF
TOTAL COMMON FLOOR AREA = 0
TOTAL USABLE FLOOR AREA = 174 ASF



CROSS SECTION AT LINE H-I
 SCALE: 1/8" = 1'-0"
 (LOOKING NORTH)



GA Building South Side



GA Building East and South Side



GA Building North Side



GA Building West Side

ARCHITECTURAL REVIEW

Exterior Walls

The exterior wall systems are un-insulated, painted precast exterior wall panels with painted plaster interior side with aluminum single glazed operable windows with tile window sills. Many exterior windows have been fitted out with vertical blinds. Main exterior entry doors are un-insulated glazed panels with aluminum frames. Other minor exterior doors are hollow metal in hollow metal frames. A front stone panel section wall houses the state seal. In all renovation scenarios the exterior wall will be insulated and the glass in the exterior windows and doors will be replaced with insulated glass.

Roof

The roof is built up roofing on 1½ inch insulation board. The roof was last replaced in 1996 and will be 20 years at the time any renovation would be completed, so in all renovation scenarios the roofing will be replaced.

Floors

The typical interior floor finishes include mostly carpet from many different periods with some areas of either VCT (vinyl composite tile) or VAC (vinyl asbestos tile) or rubber tile. There are ceramic tile floors in toilet areas. The entry lobby has a terrazzo floor. The basement storage areas and mechanical areas are mostly smooth troweled concrete. Much of the upper floors have electrical and commutation floor ducts. In all renovation scenarios the floor finishes will be replaced unless they need to be saved due to historic value or can be reused as they are.

Walls

The typical interior walls are a combination of glazed tile block in toilet areas, painted plaster or gypsum drywall on stud walls in some corridors and rooms. Many of the tenant areas have a demountable wall system made by "Hausserman" combined with newer demountable panels by "Ultrawall" with the remaining walls typical painted gypsum drywall on studs. There is a wide range of wall base materials including wood, aluminum (original in main corridors), rubber and vinyl. In all renovation scenarios the demolition required for structural, mechanical, electrical and building reconfiguration will cause demolition of most interior partitions except those that need to be saved due to historic value. Interior partitions will be replaced with gypsum wallboard on metal stud and will receive special finish where required.

Ceilings

Typical interior original ceilings are hung 1/2" gypsum plaster base with 1/2" plaster finished with an acoustical ceiling panel. In addition to that system, there are combinations of lay in ceiling tile, painted plaster or finished gypsum board ceilings or exposed structure. There are many isolated areas where the ceiling was renovated and has different ceilings from the rest of the building. In all renovation scenarios the demolition required for structural, mechanical, electrical and building reconfiguration will cause demolition of the ceilings. Ceilings will be replaced with a combination of lay in acoustical tile ceilings, open ceilings to structure and special ceilings where needed.

Interior Doors and Relights

Interior doors are a mix of everything including glazed wood doors, doors that came with partition systems, painted hollow metal doors and aluminum and glass doors with aluminum frames. Much of the door hardware is solid brass with distinctive bullet shaped hinges. Interior relights vary similarly to the variances in door types. In all renovation scenarios the demolition required for structural, mechanical, electrical and building reconfiguration will cause replacement of most doors. Where doors and relights have historic value or can be reused, they will be.

Special Finished Areas

There are two areas that have special finishes; they are the main lobby and auditorium. The main lobby has terrazzo floor, finished walls have tile with an asbestos spray texture on upper few feet, aluminum wrapped columns, a corrugated, translucence ceiling, and aluminum base and detailing. Doors are aluminum with glass relights in aluminum frames. Graphics in the lobby are done in aluminum plate. There is a display cabinet on the east wall (tenant owned) and an Information Center on the west wall. There is an 11' x 32' mosaic wall mural in the lobby. This mural will remain and be protected in all renovation scenarios. The auditorium and lobby are assumed to be saved and upgraded as appropriate.

The auditorium has some wood trimmed walls and a detailed plaster ceiling with recessed stage lights. It has a stage in front with a roll down screen in the ceiling. There are abandoned movable wall tracks in the back. This area will be reused and upgraded in all renovation scenarios.

Stairways

The main stairways are cast-in-place concrete stairs with steel pipe handrails and guardrails. Rail spacing is approximately 12". There are four major exit stairs, three exit to outside grade and one exits into the lobby. These stairs will remain and revised as needed to meet current code.

Elevators

There are four elevators in the building; three passenger sized elevators and one freight sized elevator. They travel to all floors of the building except for the penthouse. The elevator equipment is located in the roof penthouse. The passenger elevators are the original elevators with original controls. The freight elevator originally went from the ground floor to the basement but now travels to all floors except the penthouse. The existing freight elevator is not original to the building. The building elevators are beyond their useful life and will be replaced.

Other Special Construction

The building has multiple areas that have been finished for special use. Some of these are still being used and some are abandoned. These areas include:

- The building has a loading dock with two bays. These will remain.
- There are several security vaults in the building. These will be reviewed for historic value.
- There is an Information Center in the lobby. This will be reviewed for historic value.
- There is a vacant cafeteria kitchen on the ground floor. This will be removed.
- There is an abandoned mail chute serving the upper floors with a letter box in the lobby area. This will be reviewed for historic value.
- There is also an abandoned rubbish chute serving all floors. This will be reviewed for historic value.

- There are some areas with raised computer floors. These will all be removed.
- There are fusible linked fire doors separating the basement into two areas. These will be revised as needed.
- There are chain link dividers located in the basement storage area. May be eliminated.
- Most areas seem to have life safety and wayfinding signage that has evolved over many years. The renovated building will have new signage.
- Many areas have fire extinguisher cabinets. These will be redone to current codes.
- Many areas have clocks. These will be replaced, if required.

Architectural Code Analysis

This section reviews the current building code as it would apply to any significant renovation. It is assumed that what will need to be done to make the building habitable for the long term would force code compliance as follows. We have done a complete code analysis to inform all the cost development for each scenario. We are confident that we can accommodate the assumed occupancies in a renovated building within the cost parameters established in the cost section of this report.

CODES / REGULATIONS ANALYSIS

- Washington State adopted the 2009 International Building Code in July 2010 with amendments.
- The existing building meets the requirements of IBC Type II-B construction and meets the allowable area and height criteria, with limitations on the area and stories of A-3 occupancies.
- Floors with more than 500 occupants require three exits. The basement has three exits; all other floors have four exits.
- Depending on the mix of assembly and office occupancies, each floor will require 11 – 22 toilets or urinals and 6 -12 lavatories split evenly between men and women. (See fixture count breakdown in Chapter 29 summary below.)
- Openings through two or more floors are permissible.

Chapter 3: Use and Occupancy Classification

Occupancy Groups:

- Group B - Business Group (offices)
- Group A-3 Assembly (library)
- Group A-2 (cafeteria)
- These are the main occupancy groups; see incidental and accessory uses below.

Summary:

- Primary Occupancy is Group B.
- Based on construction Type II-B (see chapter 6 summary below), we anticipate that the building will be classified as group B Occupancy on all floors with some A-2 and A-3 occupancy on the lower three floors. Other accessory use areas to the primary group are limited to less than 10% of the floor area. Any incidental use areas to the main occupancy group do not need to be considered different occupancy and only need to be separated with a fire barrier and/or approved sprinkler system, if required, as defined in incidental use areas.

Chapter 4: Special Requirements Based On Use and Occupancy

This will be designed as an essential facility by Washington State Patrol.

Chapter 5: General Building Heights and Areas

Area included within surrounding exterior walls (or exterior wall and fire walls) exclusive of vent shafts and courts. (Section 502.1)

- Assuming Construction Type II-B (refer to Chapter 6):
- Allowable Building Height – 55 feet. (see Table 503)
 - Maximum area: no single story shall exceed allowable area/floor
 - 23000 SF/floor for group B
 - 9500 SF/floor for group A-2 and A-3
 - Maximum # stories:
 - 4 stories for group B
 - 2 stories for group A-2 and A-3
 - Maximum height: measured to average height of highest roof surface
 - 55 feet above “grade plane” for type II-B construction
 - Grade Plane: Plane representing the average of finished ground level adjoining the building at exterior walls. With building set into hillside, the approximate average grade plane can be averaged from the southeast corner to the northeast corner of the building as those are the highest and lowest points of grade.
- Height and Area Modifications (Section 504.2 and Section 506):
 - May increase maximum height by 20’ and 1 additional story if protected with sprinkler system.
 - Maximum Number of Stories: 4+1 story sprinkler modification = 5 stories max.
 - Max building Height: 55 feet +20 feet sprinkler modification = 75 feet.

May increase maximum areas per calculations as part of the general area modifications (Section 506.1) if protected with sprinkler system. This includes additions due to a frontage increase (Section 506.2):

Group B:

$$A_a = \{A_t + [A_t \times I_f] + [A_f \times I_s]\} = 23,000 + [23,000 \times 0.75] + 23,000 \times 2 = 86,250 \text{ SF per story.}$$

Group A-2/A-3:

$$A_a = \{A_t + [A_t \times I_f] + [A_f \times I_s]\} = 9,500 + [9,500 \times 0.75] + 9,500 \times 2 = 35,625 \text{ SF per story.}$$

- Area Increase for Multi-story building. (Section 506.4.1.2 & 3)
 - For construction Type II-B:

Maximum Allowable Building area (Group B):

$$86,250 \text{ SF/floor} \times 3 = 258,750 \text{ SF.}$$

Maximum Allowable Building area (Group A-3):

$$35,625 \text{ SF/floor} \times 3 = 106,875 \text{ SF.}$$

	Group B	Group A-2/A-3	Total
Ground Floor	24,000 SF	25,600 SF	49,600 SF
1 st Floor	24,000 SF	25,600 SF	49,600 SF
2 nd Floor	24,000 SF	25,600 SF	49,600 SF
3 rd Floor	49,600 SF	0 SF	49,600 SF
4 th Floor	49,600 SF	0 SF	49,600 SF
Total	171,200 SF	76,800 SF	248,000 SF

- Maximum Allowable Building Area (Section 508.4.2):
 - Ground Floor through 2nd floor

Group B = $24,000/86,250 = 0.278$; Group A-2/A-3 = $25,600/35,625 = 0.718$
 $0.278 + 0.718 = 0.996 < 1.000$. Therefore area per floor is allowable.

3rd Floor and 4th Floor

Group B = $49,600/86,250 = 0.575$ which is < 1.000 .
Therefore area per floor is acceptable.

- Mixed Occupancy Multi-Story Area Determination (Section 506.5.2)
Group B = $171,200/258,750 = 0.662$; Group A-2/A-3 = $76,800/106,875 = 0.718$
 $0.662 + 0.718 = 1.38 < 3.00$. Therefore total allowable building area is acceptable.

Summary

The Building is within maximum allowable area, maximum number of stories and maximum allowable height for construction type II-B.

Accessory use areas (Section 508.2)

- Incidental accessory use areas not in table 508.2 are not required to be separated if the accessory use area is less than 10% of the area of the floor on which it is located and does not exceed Table 503 values for such use group.
- Accessory assembly areas less than 750 SF are not considered separate occupancies.

Incidental Accessory Use Areas (Table 508.2.5)

- Incidental accessory occupancies listed in Table 508.2.5 shall be separated from the remainder of the building or equipped with an automatic fire extinguishing system, or both, in accordance with Table 508.2.5.
- Some incidental use possibilities: Furnace rooms with equipment over 400,000 Btu per hour input, rooms with boilers with equipment over 15 psi and 10 horsepower, waste collection room over 100 square feet and fire pump rooms.

Occupancy Separations (see Section 508.4 and Table 508.4)

- In general there is a 2-hour occupancy separation between type B and type A-3 occupancies with reduction to one hour permitted when sprinklers are provided.

Chapter 6: Types of Construction

Anticipated Construction Type: **Type II-B.**

Type II construction is a type of construction in which all building elements listed in Table 601 are of non-combustible materials.

Fire resistance-rating requirements of building elements, Type II-B (see Table 601):

Structural Frame:	0 hours
Bearing walls (interior and exterior):	0 hours
Nonbearing exterior walls (per table 602):	0 hours (w/ min. fire separation distance of 10')
Nonbearing interior walls:	0 hours
Floor Construction:	0 hours
Roof Construction:	0 hours

Chapter 7: Fire Resistance-Rated Construction

This Chapter describes materials and assemblies to be used when required to be built of fire-resistive rated construction by the code. Some fire rated construction to note:

Stairway Enclosures	2 hr. when greater than 4 stories (Section 1022.1)
Area Separation (Fire Walls)	2 hr. - none anticipated. (Section 706.1)
Shaft Enclosures (Section 708.4)	1 hr. if less than 4 stories, 2 hr. if greater than 4 stories
Protected Elevator Lobby	Not required if building is sprinkler protected (707.14.1)
Corridors	See Section 10.18 & Table 1018.1. (Not required if sprinklered)
Occupancy Separation	See Chapter 3 summary above
Building Elements	See Chapter 6 summary above

Table 715.4 – Fire door and fire shutter protective ratings:

- Firewalls and fire barriers with 2-hour rating require 1.5-hour rated doors
- Shaft exit enclosures and exit passageways with a 1-hour rating require 1-hour rated doors
- Other fire barriers with 1-hour rating require 0.75-hour rated doors
- Corridor walls requiring a 1-hour rating require 20min rated doors

715.4.8 Fire doors shall be self-closing in accordance with this section

715.4.8.3 Requirements for automatic closing by actuation of smoke detector apply to the cross-corridor doors at exit stairs.

Chapter 8: Interior Finishes

Wall and Ceiling Finishes: see section 803.1 for Class A, B, and C requirements for flame spread and smoke developed.

Flame Spread of finish materials per Table 803.9 for sprinklered buildings by occupancy group:

	<u>Group A-3</u>	<u>Group B</u>
Exit Enclosures & Passageways:	Class B	Class B
Corridors:	Class B	Class C
Rooms:	Class C	Class C

Interior floor finishes per section 804

Chapter 9: Fire Protection Systems

Complying automatic sprinkler systems are defined in this chapter, and sprinklers are used as reason for a number of height and area modifications and other exceptions throughout the code.

Sprinklers are not required for occupancy group B (see Section 903.2)

Sprinklers are only required for occupancy group A-3. (See Section 903.2.1.3) if the A-3 fire area exceeds 12,000 SF or has an occupant load of 300 or is located on a floor other than level of exit discharge.

It is our intention to equip the building with automatic sprinkler systems throughout.

Chapter 10: Means of Egress

Minimum height of egress path: 7’-6” (Section 1003.2) throughout, 6’-8” minimum at stairs. (Section 1009.2)

Occupant Load determination (Section 1004): the largest load number calculated by both designed occupant use as well as occupant load calculated per values given by Table 1004.1.2.

Occupant Load Factors (Table 1004.1.2)

Assembly Areas/Lobbies:	7net (15 net at tables and chairs)
Office& Business Areas:	100 gross

Kitchens, commercial:	200 gross
Parking Garage:	200 gross
Storage Rooms:	300 gross
Mechanical Rooms:	300 gross

Do not sum up the floors. Each floor is independent of the other. (1004.4)

Egress width per person served

Stairways	0.3" per person w/ sprinkler system, not less than 48" (1007.3)
Other egress components	0.2" per person w/ sprinkler system, not less than 44" at corridors

Door encroachment: no more than 7" when fully open. (Section 1005.2)

Accessible Means of Egress (Section 1007.1): provides accessible route to an area of refuge, horizontal exit or public way. (Section 1002) Accessible spaces shall have minimum of one accessible means of egress or two accessible means from a space required to have more than one exit. See also Section 1007.3 – an enclosed stair can be considered part of accessible means of egress and per 1007.3 exception #2 and #3, a 48" required clear width and a defined area of refuge at enlarged landings is not required if building is fully sprinklered.

Buildings with four or more stories (Section 1007.2.1): One accessible means of egress shall be via a complying elevator when a floor is four or more stories above or below an exit discharge.

Roof Stair: One stairway up to the roof is required in buildings 4 or more stories in height (Section 1009.13). Roof stairway access is required through a penthouse (walls, floor and roof) complying with section 1509.2 (Sections 1009.13.1)

Egress through intervening spaces (Section 1014.2): Only permitted when intervening space is accessory to the area served.

Common path of egress travel (Section 1014.3): Maximum 75' travel before two means of egress are available.

Exit Access Doorways Required (Table 1015.1): Greater than 50 occupants requires two exit access doorways.

Exit Access and Travel Distance (Table 1016.1): With a sprinkler system, the maximum travel distance is 250 feet for Group A occupancy and 300 feet for Group B occupancy.

Corridors in Group B and Group A occupancies shall be 1-hour rated without a sprinkler system or 0-hour rated with a sprinkler system. (Table 1018.1)

Maximum dead end corridors: 20 feet, 50 feet with a sprinkler system in group B occupancy. (Section 1018.4)

Minimum Number of Exits (Section 1021):

Room or spaces with occupant load of 1-500 requires access to 2 exits (Table 1021.1)

Occupied Roof shall have access to exits as required for stories (Section 1021.1)

Vertical Exit Enclosures (Section 1022):

2-hour rated when connecting greater than 4 stories

1-hour rated when connecting less than 4 stories

- Exterior walls of vertical exit enclosures shall be rated per Section 704 for exterior walls. Where non-rated or unprotected openings enclose the stair and are exposed to other parts of the building by less than 180 degrees, the building exterior walls within 10 feet shall be rated to minimum 1-hour to a point 10 feet above top most landing or the roof line whichever is lower.

Exit Discharge (Section 1027.1)

50% of exits can exit through areas on level of discharge if:

- Egress has a free and unobstructed path of travel to an exterior exit door
- The entire area of the level of exit discharge is separated from areas below with a fire-resistance rating for the exit enclosure.
- All portions of the egress path are fully sprinklered.

Chapter 11: Accessibility

In addition to 2009 IBC and any Washington State amendments, it is also anticipated that the design team will discuss accessibility goals with the state that meet universal design standards that may be more stringent than required by any codes or regulations.

Chapter 12: Interior Environment

Applicable ventilation, temperature, lighting and sound transmission provisions.

Chapter 13: Energy Efficiency

Refer also to mechanical and electrical systems narratives.

Applicable codes and guidelines to be reviewed with authorities having jurisdiction:

International Energy Conservation Code

Washington State Energy Code

Energy Life Cycle Cost Analysis (ELCCA)

Leadership in Energy and Environmental Design (LEED) per RCW 39.35 D

2009 Washington State Energy Code Minimum Building Envelope Requirements (Table 13-1)

Non -Residential		
Opaque Elements	Assembly Max.	Insulation Min. R-Value
<i>Roofs</i>		
Insulation Entirely above deck	U-0.034	R-30 c.i.
<i>Walls, Above Grade</i>		
Mass	U-0.150	R-5.7 c.i.
Steel Framed	U-0.064	R-13 + R-7.5 c.i.
<i>Walls, Below Grade</i>		
Below grade wall	U-0.150	R-5.7 c.i.
<i>Slab-On Grade Floors</i>		
Heated	F-0.0360	R-10 c.i. (w/thermal break)
<i>Opaque Doors</i>		
Swinging	U-0.600	
Fenestration 0-40% of Wall	Assembly Max.	Assembly Max SHGC
	U	
<i>Vertical Fenestration</i>		
Metal framing: fixed/operable	U-0.40	SHGC-0.40 all OR SHGC-0.45 all
Entrance doors	U-0.60	PLUS perm. PF>0.50 on West, South, & East

Chapter 14: Exterior Walls

Applicable definitions: Stone (natural), concrete

Chapter 15: Roof Assemblies and Rooftop Structures

The enclosed mechanical area is considered a penthouse (Section 1509.2)

Chapter 16, 17 and 18: Structural requirements and standards. Refer to structural narrative

Chapter 19, 20, 21, 22, 23, 24, 25, 26: Building materials requirements and standards

Chapter 27: Electrical

Electrical requirements and standards. Refer to electrical narrative.

Chapter 28: Mechanical Systems

Mechanical requirements and standards. Refer to mechanical narrative.

Chapter 29: Plumbing Systems

Refer also to plumbing systems narrative.

Minimum number of Required Plumbing Facilities (Table 2902.1)

Fixture Counts per floor									
	Sq. Ft.	Male				Female			DF
		Occ. Ct.	WC	Urinals	Lavs	Occ. Ct.	WC	Lavs	
Ground									
Group A	25,600	427	2	5	4	427	7	4	
Group B	24,000	60	2	2	2	60	4	2	
Total	49,600	487	4	7	6	487	11	6	4
1st Floor									
Group A	25,600	427	2	5	4	427	7	4	
Group B	24,000	60	2	2	2	60	4	2	
Total	49,600	487	4	7	6	487	11	6	4
2nd Floor									
Group A	25,600	427	2	5	4	427	7	4	
Group B	24,000	60	2	2	2	60	4	2	
Total	49,600	487	4	7	6	487	11	6	4
3rd Floor									
Group A	0	0	0	0	0	0	0	0	
Group B	49,600	124	2	3	3	124	5	3	
Total	49,600	124	2	3	3	124	5	3	2
4th Floor									
Group A	0	0	0	0	0	0	0	0	
Group B	49,600	124	2	3	3	124	5	3	
Total	49,600	124	2	3	3	124	5	3	2
GSF/Total	248,000	1709	16	27	24	1709	43	24	16

Occupancy

Group A = 76,800 SF @ 30 SF per occupant = 2562 occupants = 1281 Men & 1281 Women
Group B = 171,200 SF @ 200 SF per occupant = 856 occupants = 428 Men & 428 Women

Occupancy Counts

	Square Feet			Male		Female			Total
	Group A	Group B		Group A	Group B	Group A	Group B		
Ground	25,600	24,000		427	60	427	60		974
1st Floor	25,600	24,000		427	60	427	60		974
2nd Floor	25,600	24,000		427	60	427	60		974
3rd Floor	0	49,600		0	124	0	124		248
4th Floor	0	49,600		0	124	0	124		248
Total	76,800	171,200		1,281	428	1,281	428		
Grand Total	248,000			1,709		1,709			3,418

Chapter 30: Elevators and Conveying Systems

Hoistway Enclosure protection: see 3002.1

Elevator Car to accommodate ambulance stretcher required in buildings of 4 stories or more (3002.4)

Emergency Operations per section 3003

Hoistway venting required per section 3004

Elevator Machine Rooms per section 3006

CIVIL AND SITE ANALYSIS

The following is a summary of existing and proposed conditions in regard to civil site work and utilities for the future improvements of the General Administration (GA) Building.

Topography

A large retaining/shoring system and steep slope border the site on the west that continues down into Heritage Park and Capitol Lake. The northern half of the West Campus experiences a 30 foot elevation change that slopes down from the Winged Victory and Tivoli Fountain north to Union Street. Therefore, the project generally slopes northerly with a topographic relief of roughly 13 feet from 11th Avenue to Union Avenue.

Accessibility

The building site is surrounded by existing streets, asphalt parking, and other buildings. Public access to the current building is from 11th Avenue. A parking lot located along the west side of the GA Building provides visitor parking. A parking lot on the north side of the GA Building provides parking for campus staff. The parking garage located to the east provides both public and employee parking; however this building has structural restrictions and has been listed as needing to be replaced. A receiving area is located at the northwest and lowest corner of the building.

The concrete sidewalks on the north and east sides of the building are aged and cracked (**Photo 1**). Many of the cracks are greater than 0.25-inch wide and show signs of spalling. While not mandatory, the sidewalks have surpassed their design life and should be replaced. Construct 380 SY concrete sidewalk.

The sidewalk adjacent to the west wall of the building is being encroached by vehicle bumper overhang due to a lack of wheel stops in the angled parking stalls adjacent to the building (**Photo 2**). Twenty-one (21) concrete or recycled rubber wheel stops should be installed in the west parking lot adjacent to the building. Construct 21 EA wheel stops.

The sidewalk adjacent to the north side of the building gradually slopes downward from east to west until reaching a ramp at the receiving area in the northwest corner of the building. The access door in the north face of the building has a railing extending two-thirds of the way across the sidewalk, restricting the usable width of the walk and rendering the sidewalk non-ADA compliant (**Photo 3**). Demolish 3 LF railing.

The east entrance of the building is an ADA accessible entrance; however, a railing is protruding perpendicular to the double-doors into the required clear space (**Photo 4**). Demolish 3 LF railing.

The three existing curb ramps (two on 11th Avenue and one on Columbia Street at 11th Avenue) are no longer meeting current ADA standards and should be replaced with the project (**Photos 5 through 7**). There are no curb ramps on the northeast corner of the building at Columbia Street and Union Avenue; however, marked crosswalks are present across Columbia Street and across the parking lot entrance. The sidewalk adjacent to the west side of the building ends on the northwest corner of the building without a curb ramp; however, a marked crosswalk to the bus shelters is painted there (**Photo 8**). There is an asphalt wedge used as a curb ramp from the north parking lot to the north sidewalk west of the building entrance (**Photo 9**). The grades and construction of this ramp are not in conformance with ADA standards. Construct 7 EA curb ramps.

There are two ADA parking stalls in the west parking lot at the southwest corner of the building. A concrete ramp extends from that general vicinity easterly to the main entrance (**Photos 10 and 11**). The ramp is no longer compliant with current ADA standards, as it is longer than 30 feet horizontally and steeper than 2 percent grade without providing a level landing. A multi-stage accessible path with ramps no steeper than 1V:12H and landings every 30 inches of vertical rise is required to meet ADA standards. Due to the grade difference from the entrance plaza to the sidewalk on the southwest corner of the building (approx. 5.7 feet), complete removal and replacement of the existing ramp will be required. Construct 27 SY concrete ramp minimum.

There is another concrete ramp/walk on the east side of the building beginning at the northeast corner and climbing to the entrance at the middle of the building on the east face (**Photo 12**). This ramp is marked with an accessibility sign; however, the ramp is not compliant with current ADA standards, as it lacks the requisite landings. The ramp will require reconstruction. Construct 50 SY concrete ramp minimum.

Geotechnical/Soils

The steep slope and retaining wall west of the project are known to exhibit symptoms of instability. The cause of this condition is known to have been due to fill soils being placed within the existing gully that crossed the campus. The fill was not placed in a dense condition, and settlement/slumping has been an ongoing problem within the sloped zone.

Golder Associates provided stabilization alternatives for the slope in their report *Hillside Evaluation and Preliminary Design Olympia Capitol Campus, Olympia Washington (08-076)*, dated March 17, 2010, submitted to Washington State Department of General Administration. The alternatives were:

- No Action
- Observation/Instrumentation/Maintenance
- In-situ Reinforcement of Slope
- MSE Wall (or Reinforced Slope)
- Soldier Pile Wall (with or without Tiebacks)

General Administration moved forward with observation, instrumentation, and maintenance. Several piezometers, inclinometers, and survey points were established on the slope and wall area. Golder Associates provided a report on the instrumentation and monitoring titled *Capitol Campus Slopes: Instrumentation and Monitoring Report GA# 08-076*, dated June 30, 2010.

Golder Associates conducted an inspection of the soldier pile wall west of the GA building and documented their findings in their report *General Administration Building Soldier Pile Wall Inspection GA# 08-076*, dated July 20, 2010. Golder Associates found voids behind the wall, which were likely present at the time of construction. Golder Associates also noted that approximately 30% of the lagging boards were deteriorated and needed replacement.

As a result of this report General Administration performed repairs on the soldier pile wall including replacing deteriorated lagging and filling voids behind the wall. In addition to the repairs, Golder Associates recommended an inspection and maintenance program for the wall. The program included:

- Annual vegetation control on the face of the wall.
- Annual visual inspection.
- Annual monitoring of instruments and survey monuments.
- Specialty inspection of the wall by a qualified geotechnical or civil engineer every five to ten years.

Water

Water service within the campus is currently provided by a city water main circulating throughout the campus. Portions of the water main are owned and operated by the State of Washington. According to city utility maps, a 12-inch diameter cast iron water main is located on the east side of Capitol Way. A 6-inch diameter cast iron water main is located within Union Avenue and Columbia Street. Another water main is also located within 11th Avenue and is designated as a State-owned, 10-inch diameter, ductile iron pipe. Fire sprinkler and domestic service for the existing GA Building is provided from the 6-inch city water main in Columbia Street.

The City water system is supplied by a reservoir to the south at Stevens Park. The main on Capitol Blvd feeds three water meters on campus. Water pressure at the meters feeding the campus is 70-75 psi. However, low pressure is realized inside some buildings on campus. This may be caused by obstructions anywhere on campus between the meter and the buildings or at backflow prevention apparatus at or inside the buildings.

Fire hydrants are currently located at the following locations:

- On 11th Avenue at the intersections of Water Street, Columbia Street, and Capitol Way
- Northeast corner of the intersection of Union Avenue and Capitol Way
- Mid-block on Columbia Street fronting the existing GA Building

The City of Olympia requires that all portions of a building be within 150 feet of a fire hydrant. The existing hydrant locations do not meet that requirement. Two additional hydrants are needed on site to adequately provide coverage for the GA Building.

A new fire service and domestic service should be provided, as well. It is expected that the existing 6-inch water main located on Columbia Street between Union Avenue and 11th Avenue will be replaced with a larger size pipe to improve fire flow conditions. Construct 460 LF 10 inch ductile iron water main; 360 LF 6 inch ductile iron water main; 2 fire hydrant assemblies; and domestic water service line. A fire booster pump may be required depending upon available pressure at the hydrant.

Storm Drainage

The project site contains and is surrounded by several storm drainage systems of varying sizes and pipe types. The city sewer and storm drainage maps indicate that some roadway drainage is connected to the sanitary sewer system.

Storm drainage for the campus is regulated by the City of Olympia Storm Water Manual dated October 2009. The manual states that redevelopment projects *“shall comply with all the Minimum Requirements for all impervious surfaces if...the valuation of proposed improvements – including interior improvements – exceeds 25% of the assessed value of the existing site improvements, minimum \$500,000. The \$500,000 value shall be inflation adjusted from January 2005 to today’s dollars using Engineering News Record (ENR) national 20-city construction cost index (the index value was 7297 January 2005). The square footage and improvement value thresholds shall be cumulative and include all projects permitted on or after January 1, 2000. The total cost of stormwater improvements to mitigate existing impervious surfaces shall be capped at 30% of the total project costs.”*

The redevelopment will likely exceed this threshold; therefore the project must comply with all requirements of the manual.

The regulation requires that quantity control be provided for new and redeveloped impervious surfaces. However, the project site is located in a drainage basin that is exempt from flow control. Therefore, detention will not be required.

The regulation requires that runoff from pollution generating surfaces be treated before being discharged from the project site. Treatment for paved areas subject to vehicular traffic will be treated with the use of underground treatment systems. Roof runoff is considered “clean” and does not require treatment before discharge to the city storm system. Construct 14 StormFilter cartridges in 8 foot by 11 foot vault under north parking lot. Approx. \$48,000.

Sanitary Sewer

Sanitary sewer service is provided by City of Olympia. Sewer service for the existing GA Building is provided on the east side of the building by a 4-inch diameter cast iron pipe extending to a manhole located at the intersection of Union Avenue and Columbia Street. An existing 8-inch diameter vitreous clay sewer main is located along the west and north sides of the existing GA Building. This main continues northerly and westerly through the existing parking lot, where it turns north within Columbia Street. The vitreous clay line is considered to be at a high risk for failure due to pipe age and material.

Due to the age of the building, the existing side sewer should be inspected for breaks, clogs, sags, or root intrusion. Inspection may reveal localized areas of concern or damage along the length of the pipe. Construct 660 LF 8-inch ductile iron sanitary sewer pipe and 30 LF 6 inch ductile iron sanitary sewer pipe.

Photo 1. Cracked Sidewalk



Photo 2. Vehicle Overhang



Photos 3. Railing Encroachment



Photo 4. Railing Encroachment



Photo 5. Curb Ramp



Photo 6. Curb Ramp



Photo 7. Curb Ramp



Photo 8. No Curb Ramp



Photo 9. Asphalt Ramp



Photo 10. Concrete Ramp (Top)



Photo 11. Concrete Ramp (Bottom)



Photo 12. Concrete Ramp



STRUCTURAL ANALYSIS

Existing Building Structure Description

The General Administration (GA) Building is a six-story, 282,682 square foot, concrete framed structure constructed in the 1950s. The gravity load resisting system consists of concrete pan joist and girder framing supported on concrete walls and columns.

The lateral force (wind and seismic) resisting system consists of concrete floor and roof diaphragms and concrete shear walls. The concrete shear walls are primarily concentrated around the stair and elevator cores at the south and west portion of the building. The building has gone through two major earthquakes in 1965 and 2000 without any destructive investigation.

Gravity Loads

The existing gravity load supporting system was designed to support the following superimposed live loads:

- Ground Floor 125 – 150 pounds per square foot (psf)
- First Floor 100 psf
- Second, Third and Fourth Floors 50 psf

In addition to the live loads noted above, each floor was designed to support an additional superimposed partition load allowance of 20 psf. We have performed structural calculations on representative elements of the gravity system (joists, girders, columns, and foundations) and confirmed that the structural system is adequate for the original design loads. However, our calculations indicate that there is very little reserve capacity for additional loading on this system.

As we understand it, the uses of the new proposed program and corresponding Code-stipulated superimposed live loads are as follows:

- Washington State Patrol (WSP) Headquarters
 - Admin and Office Areas 50 psf (plus 20 psf partition load)
 - Public Areas 100 psf
 - Storage Areas 125 psf
- Library
 - Reading Room 60 psf
 - Stack Areas 150 psf
 - Compact Shelving 300 psf
- Heritage Center
 - Public Areas 100 psf
 - Galleries/Exhibit Areas 150 psf

Findings

With the exception of the WSP Admin and Office and Library Reading Room areas, the live loads for the proposed new uses exceed the capacity of the Second, Third and Fourth floors of the existing structure. Ideally, uses such as the Library Stack areas and Heritage Center Galleries would be located on the Ground and First floors. In the event that they cannot, and/or there are floors where the new loads exceed the capacity of the existing floors, the existing concrete structure will require strengthening. A discussion of the issues related to the floor framing and columns/foundation is below.

framing. However, based on our spot check calculations and our experience with similar structures, it is unlikely that the upper floors can be shown to be adequate for the required loading at the Library and Heritage Center.

Options for strengthening the existing floor framing include:

- *Fiber-Reinforced Polymer (FRP) Overlay*
This option requires adhering multiple layers of FRP to the sides and bottom of the joists and girders to increase their capacity. Because the joists frame into the sides of the girders, the FRP solution may not be practical for the beams in some cases. The advantage of this system is that it is very thin and therefore has no impact on the overall structural depth. A key disadvantage is that it is relatively expensive.
- *Epoxy-Bonded Steel Plate Overlay*
This option requires adhering steel plates to the existing concrete framing using an epoxy bonding system. The plates are anchored to the existing concrete with small diameter concrete anchors, leaving a gap that is filled with pressure-injected epoxy. This system works similar to the FRP solution but could involve less cost. The overall thickness is slightly greater than the FRP system, but still relatively thin in profile. Steel plates could be added above the framing within the existing topping slab space to increase the continuity of the joists at the girder intersections. It is our understanding that the steel plates would require fire protection to achieve the code-required fire-resistive rating requirements of the primary structural frame.
- *Steel Framing*
This option requires adding new steel beams between the existing concrete joists and strengthening the existing girders by anchoring steel plates or channels to the sides of the beams or adding a new steel beam below the existing concrete beams. This option is likely less expensive than the FRP system, but it will require increasing the overall structural depth, especially at the girders, so ceiling clearances could be impacted.
- *Concrete Framing*
This option involves drilling and epoxying rebar to the existing joists and beams and pouring new concrete to increase the size of each. This option has significant costs, due to the requirement for extensive formwork, and has the disadvantage of adding significant weight to the structure. This added weight can significantly impact the marginal benefits of the strengthening provided.
- *Demolish and Rebuild*
This option involves selective demolition of overloaded bays of the existing slab and joists and rebuilding with steel beams and composite concrete on metal decking. This option could be more economical, depending on the level of strengthening required and the extent of such strengthening. Temporary lateral bracing of the columns could be required in the areas where the existing framing is removed.

Columns and Foundations

Our analysis indicates that the columns and foundations have slightly more reserve capacity than the floor framing, and unlike the floor framing, the columns and foundation capacities could benefit from testing of the in-situ materials and a detailed geotechnical investigation of the site soils. If the increased loading for the Library and Heritage Center is confined to distinct locations in the upper floors (for example, only one floor for each column location), then we

expect that additional investigation, testing, and analysis could justify the revised loading. If strengthening is required, then it would likely consist of concrete overlayment around the existing columns to increase their sizes and increased footing sizes.

Lateral Loads

The Seismic Evaluation completed as part of the SRG 2006 Pre-design report was based on an ASCE 31 Life Safety Performance Objective, which accepts that the building could suffer significant structural damage but with low risk of life-threatening injury, and that building occupants could safely exit the building. Further, this performance objective does not ensure that the building could be immediately occupied following a significant earthquake and in fact may require significant repair in order to be occupied.

Based on current conversations with GA, WSP has determined that the building must meet **essential facility** performance requirements. As such, MKA has updated the seismic evaluation based on the Immediate Occupancy performance objective of ASCE 31.

The detailed summary of the evaluation and ASCE 31 checklists are included in Appendix.

Findings

The GA Building was designed and constructed prior to the adoption of modern seismic codes; there have been no global seismic improvement projects at the building. Although the building possesses a complete seismic-force-resisting system, the system lacks adequate lateral strength to achieve the Immediate Occupancy seismic performance objective of ASCE 31. In addition, there are several structural irregularities present in the building which make it more susceptible to earthquake-related damage than a more regular building.

Specific seismic deficiencies related to Immediate Occupancy performance are as follows:

- *Vertical Discontinuity*
A few concrete walls stop before reaching the foundation. This increases the load on basement beams and columns which must resist the seismic overturning demand from the walls and the ground level diaphragm that must transfer the loads out of the discontinuous shear walls.
- *Shear Stress*
The shear stress in the shear walls of the existing structure exceeds the defined limits for all floors of the GA Building. Therefore, we conclude that the GA Building lacks adequate lateral strength to achieve the ASCE 31 Immediate Occupancy performance objective.
- *Connection Inadequacy*
The steel reinforcement in diaphragm to shear wall connections for some walls is insufficient for shear transfer. The lap length for foundation dowels was also found to be too short to be able to develop the required strength for the seismic performance objective.
- *Deflection Compatibility*
The concrete columns do not possess adequate reinforcing steel to prevent brittle shear failures that could be caused by excessive deflections (building movement).

The combined result of all of the identified deficiencies is that the level of structural damage (including concrete cracking and spalling) following a design level earthquake would likely exceed the threshold for the re-occupancy of the building prior to implementation of costly and time-consuming structural repairs. It should be noted, however, that the expected performance is consistent with the seismic performance implicit with the original design criteria for the building. That is, it is consistent with a 1950s vintage office building.

Recommendations for Seismic Retrofit

The identified deficiencies in the lateral system can be resolved with the addition of shear walls in each direction for the full height of the structure. Adding approximately 6 bays of 12-inch thick by 24-foot long shear walls in the East-West direction, and 3 bays of similar shear walls in the North-South direction, is required in order to sufficiently improve the system's lateral strength and stiffness. In conjunction with the added shear walls, the seismic upgrade would involve new foundation elements at shear walls and new collector elements to connect the shear walls to the existing floor diaphragms.

The length of the new wall required is primarily a function of reducing the seismic forces in the relatively stiff, yet weak, existing concrete walls to a level consistent with Immediate Occupancy performance. Additional shear walls may be required at the basement level below the discontinuous shear walls. Further analysis is necessary to determine whether the addition of the shear walls would eliminate the necessity to strengthen the diaphragm connections, but we expect that efficient placement of the new shear walls will reduce the diaphragm connection forces to acceptable levels.

Existing West Hillside Shoring Wall

A soldier pile and timber lagging shoring wall was constructed in 1988–1989 to help stabilize the hillside to the west of the existing GA Building following mud slides that had occurred during the winters of 1987 and 1988. The wall is located approximately 100 feet west of the existing GA Building and 75 feet north of the existing Greenhouse. The height of the wall varies from approximately 8 feet at the north and west edges, to a maximum of 34 feet at the center of the wall; the total length appears to be 175 feet. The wall is constructed with steel wide flange soldier piles spaced approximately 6 to 8 feet on center. The soldier piles are tied back with one to two rows of grouted anchors, depending on the height of the wall. 4x6 timber lagging (appears to be pressure treated) spans between the soldier piles to retain the upslope soil.

An inspection of the wall was performed by Golder Associates in July 2010 in order to determine the condition of the timber lagging and determine the cause of soil settlement which had occurred behind the wall. Golder Associates' report outlines recommended restoration measures. They recommend that these measures be implemented within the next year (i.e. by July 2011). It does not appear that these measures have been implemented.

Golder Associates provided MKA with copies of the following information relating to the soldier pile wall:

- General Administration Building Soldier Pile Wall Inspection Report GA#08-076 by Golder Associates, dated July 20, 2010.
- Soils report for the permanent shoring wall prepared by GeoEngineers, dated October 10, 1988.
- Shoring wall design drawings prepared by Sverdrup Engineers, dated October 1988.
- Several GeoEngineers, Inc. letters and inspection reports addressing construction and inspection issues related to the construction of the wall.

Based on a review of this information and a conversation with Deborah Ladd at Golder Associates (who performed the July 2010 inspection), we have determined the following:

- The wall was designed as a permanent solution to stabilize the hillside.

- GeoEngineers' recommended lateral earth pressures do not specifically address seismic soil surcharge pressures, which are a requirement of current building codes, but was not typically provided for at the time the wall was designed.
- Golder's report did not comment on the soldier pile or tieback conditions, but Deborah indicated that they saw no evidence of deterioration during their investigation.
- Golder's report did not comment on any out-of-plane deflection of the piles which may have caused or contributed to the soil settlement. However, Deborah indicated that monitoring points do not suggest that the piles have defected or that the tiebacks have yielded.

Recommendations

MKA recommends the following:

- The repair and remediation measures in Golder Associates' report be implemented.
- GeoEngineers, Inc. or Golder Associates should be retained to comment on whether the recommended design lateral earth pressures are adequate with respect to seismic surcharge loading.

MECHANICAL ANALYSIS

The existing building is a six-story, 282,682-square foot office building originally constructed in 1954. The structure is composed of cast-in-place concrete with joist and beam floor framing, and concrete walls around the stair and elevator shafts. The exterior skin is composed of cast-in-place concrete spandrel beams with drop-in window frames. The foundation consists of spread footings.

Existing Mechanical

Heating

Campus steam serves two converters in the ground floor mechanical room which provide heating hot water for the perimeter finned tube radiation system. There are five independent perimeter heating zones, the north, east, south, west exposures and the ground floor northeast zone. Zone temperature sensors in the respective zones control the on/off status of the zone pumps. The heating hot water supply temperature is set and reset by the outside air temperature. No further control or flow subdivision exists for the four compass zones, so each entire zone is controlled to the same heating respective hot water temperature. The ground floor northeast zone has benefited from the addition of room thermostats and control valves to provide individual room heating control.

Cooling

Campus chilled water serves the air handling units throughout the building that provides supply air to all the spaces. There is a chilled water booster pump in the building to boost the system pressure during high cooling loads for the campus. When the building was constructed in 1952, there was no cooling in the building. In 1979 the building was connected to the campus chilled water system.

Main Air Handling

The majority of the building is served by 2 major fan systems, S-1/E-1 and S-4/E-4. Systems S-1/E-1 is located in the south penthouse on the building roof and serves the south half of the building on the ground floor, 1st floor, 2nd floor, 3rd floor and the southeast area of the 4th floor. System S-4/E-4 is located in the north penthouse on the building roof and serves the north half of the building on floors 1 through 4. These fan systems were intended to provide heating season tempered air (steam coils) and ventilation only (no cooling) when they were installed as part of the original construction in 1956. It should be noted that the outside air intake louvers are undersized, resulting in too high an intake velocity, rainwater entrainment, and seasonal problems with soggy filters.

In 1979, cooling coils and associated chilled water piping were installed in these air handlers to provide mechanical cooling using chilled water from the campus central plant. Both units also benefit from outside air economizer control which provides cooling with outside air under favorable ambient conditions. Discharge temperature reset control was also added in 1979, but is reported not working today since the temperature is manually reset.

Both systems were constant volume type systems until 1989, when the systems were retrofitted to provide some variable air volume (VAV) control and to improve zone circulation. Modulating dampers and static pressure control were added to the main supply and return fans, and zone series fans with zone modulating dampers were installed on each floor to provide from two to four VAV terminal zones per floor. Zone supply air temperature is controlled by modulating the amount of primary air, and zone supply

air temperature is reset based upon zone return air temperature. In order to enhance air circulation, formerly deactivated system S-6/E-6, located in the north mechanical penthouse, was reactivated in series with system S-4/E-4, and with a new zone fan to serve the 1st floor NE.

Air Distribution/Delivery

The majority of the building is still served by the original rectangular duct distribution system which is not insulated nor lined. Air delivery is still predominantly through the original combination supply/return diffusers so the return is ducted. A number of areas have been updated with separate supply and return diffusers. Access above the concealed spline ceiling is difficult so volume damper axles cannot be reached through the ceiling throughout the building. The 1st floor lobby and all corridors are ventilated and not cooled.

System S-2/E-2 is a single zone, heating only system which serves the 1st floor auditorium. It is located in the south penthouse.

System S-12/E-13 serves the basement north area. It is a system that uses variable inlet vanes on the main fans to modulate air volume. Cooling coils and heating coils exist at the supply fan. The air handling unit is located in the basement mechanical room at the north exterior of the building. The outside air intake is located about 12 feet above the north building grade and about 60 lateral feet from the loading dock area. The occupied zones are served by VAV terminal units with terminal air delivery via linear diffusers. The remodeling to convert this area to a VAV system occurred in 1984.

System S-13/E-14 serves the ground floor north. It is a VAV system similar to system S-12/E-13. The air handling unit is located in roof's north penthouse. The remodeling to convert this area to VAV occurred in 1984.

The southwest area of the basement is served by a constant volume multizone air handling unit S-7 provided with a central chilled water coil and zone steam heating coils.

Air Handling/Distribution/Delivery Deficiencies

- Energy-wasteful system which does not meet comfort needs and air circulation rates required for occupants.
- Building uses approximately twice the energy per unit area that a similar, modern office building would use.
- VAV zone resolution inadequate, noisy zone fans, no delineation between perimeter and interior zones.
- Existing dual mode supply/return diffusers are inadequate and outdated.
- Majority of ductwork is uninsulated.
- Operable sash adversely affects cooling capacity.
- Size of louvered outside air openings allows rain water entrainment, soaking filters.
- Location of outside air intake near loading docks results in poor air quality.
- Poor ventilation/balancing results in cafeteria smells migrating to all areas of building.
- Very limited operator control due to lack of central coordinated control system.

Heating Deficiencies

- Zone resolution inadequate, does not meet variable comfort needs.
- Lack of control integration with air side allows simultaneous heating and cooling.

Plumbing Deficiencies

- Galvanized domestic water distribution system corrosion and scaling result in flow reduction, leaks and discoloration.
- Discontinuous pipe chase at 2nd floor results in leaks which affect occupied space below.

Fire Protection Deficiencies

- Only a small percentage of the building is currently sprinklered, so adequate protection does not exist.

PURPOSE OF THIS STUDY

The purpose of this study is to identify the work required to upgrade the building under three different scenarios. Scenario 1 is to upgrade the existing systems to meet present day codes and extend their life for a minimum of 15 to 20 years at a minimum construction cost. Scenarios 2 and 3 includes the replace the systems in the building using present day design standards for a high performance building with a minimum life of 50 years.

SCENARIO - 1

Mechanical

Heating System

The existing hot water heating system will be removed including all piping, heat exchangers, pumps, finned tube radiation and accessories.

The existing steam system using campus steam will remain including the steam coils in the air systems, piping and valves.

The steam control valves, traps, condensate pumps and insulation will be replaced.

Cooling System

The existing chilled water system using chilled water from the campus system will remain. The chilled water control valves on the air systems will be replaced.

Air Systems

The following is a list of existing air systems and their proposed use;

Air Systems			
Systems Numbers	Service	Status	Cubic Feet per Minute
S-1/E-1	Ground to 4 th Floors South	To be reused.	90,000/84,000
S-2/E-2	Auditorium	To be replaced.	5,000/ 4,500
S-3/E-3	4 th Floor West	To be replaced	5,000/4,500
S-4/E-4	1 st and 2 nd Floors North	To be reused	50,000/40,000

S-5/E-5	Ground Floor North	To be reused	30,000/24,000
S-6/E-6	1st Floor Northeast	To be reused	13,000/10,000
S-7	Basement Northeast	To be replaced	17,000
E-7	4 th Floor Hood	To be demolished	
S-8	Ground Floor Room 12	To be demolished	
E-8	4 th Floor Room 426 Exhaust	To be demolished	
S-9	Ground Floor Room 39	To be demolished	
E-9	Toilet Exhaust	To be replaced	5,000
S-10 and S-11	Entrance 148	To be replaced	300 ea.
E-10	Transformer Vault Exhaust	To be replaced	3,000
E-11	Corridor 22	To be demolished	
E-12	Hood Exhaust Room 156	To be demolished	

Where the system status is indicated “To be reused” means that the existing fans will be provided with new bearings, sheaves, belts, motors, variable frequency drives, vibration isolation and flexible connections. Fan wheels to be balanced and fan housings to be cleaned and painted. All automatic dampers to be replaced with new damper operators. For the supply systems, the heating and cooling coils are to be steam cleaned, drain pans replaced and new steam and chilled water control valves provided. Provide new filter racks and filters.

Where the system status is indicated “To be replaced” means that the existing air handling system will be replaced with a new factory assembled air handling system. Provide with new variable frequency drives, vibration isolation and flexible connections. All automatic dampers to be replaced with new damper operators. The new equipment will include filters, steam heating coil, cooling coil, supply and return fans and automatic control dampers.

Where the status is indicated “to be demolished”, the equipment and all associated ductwork will be removed from the site.

For systems “To be reused or To be replaced”, the main ducts between the mechanical rooms and the spaces will remain. All other supply and exhaust distribution ductwork in the spaces will be demolished. The existing ductwork to remain will be cleaned and insulated.

All the remaining air systems will become variable air volume systems with terminal VAV boxes for zone control. Fan powered boxes with electric heating coils will be provided for all the perimeter zones. Interior zones will be provided with pinch down VAV boxes. All VAV devices will be pressure independent with direct digital controls. New duct distribution will be provided up and downstream of the VAV boxes terminating at ceiling diffusers.

The ceiling plenum will be used for return air back to the trunk ducts terminating in the space. Ceiling grilles will be provided in the hung ceiling to complete the return air path.

Heating alternate: Provide a new hot water system to be connected to hot water heating coils in the fan powered boxes. Hot water will be generated by campus steam in the mechanical room on the Ground Floor. The new hot water system will include heat exchangers, pumps, piping, insulation and controls

New direct digital controls (DDC) will be provided as an extension to the existing central campus Johnson Controls Metasys control system.

Miscellaneous

The underground fuel oil tank will be reused and a new fuel oil transfer system for emergency generators will be provided.

All the stairways and elevator hoistways will be provided with pressurization systems in accordance with the high rise section of the building code.

Plumbing

Provide new domestic cold water, hot water and hot water circulation distribution systems. Provide new steam fired hot water generators for domestic hot water. Provide new plumbing fixtures and trim.

Replace all existing toilet fixtures as follows:

- Lavatories: American Standard, vitreous china self rimming oval in stone countertop with steel supports
- Urinals: American Standard, wall hung, vitreous china watersaver with flush valves.
- Water Closets: American Standard, wall hung, vitreous, china with flush valves.
- Water Coolers: 4 per floor – Elkay Barrier-Free – single 1 per floor –
Elkay Barrier-Free – double

Plumbing and Service Piping:

Replace Domestic cold water, hot water and hot water circulation distribution system – copper typical.

Replace steam fired domestic hot water generators:

- 1 – 1 million BTU's for domestic HW
- 1 – 250,000 BTU's for the kitchen

Replace sanitary waste and vent system with cast iron pipe. Provide trap primers for floor drains.

Fire Protection

A new dry standpipe system will be provided in the stairwells. Fire protection systems consisting of wet sprinkler will be provided for the entire building.

Automatic Temperature and Building Control Systems

Requirements: Provide a BACNet based building management computer based system capable of controlling central plant equipment, fans, HVAC units, and designed for expandability by using plug-in modules.

Locate central building management system components in the building Engineer's office.

Provide local stand-alone field control modules in each major mechanical room.

System Overview: Provide a Direct Digital Control (DDC) system with full control of mechanical equipment. Provide BMS to monitor environmental data and control the function of the following equipment installed in the facility:

- Shell & Tube heat exchangers
- Pumps
- Air handling units
- Exhaust fans
- Ventilation systems
- Domestic hot water systems
- Security system interface
- Fire alarm system interface
- Energy meters
- Other designated functions/systems

The building management system will be set up to easily trend logs and sequentially download them for long-term data storage.

SCENARIOS – 2 and 3

It is assumed in these scenarios that all the existing mechanical systems will be removed and replaced with new modern energy efficient systems that will result in a high performance building.

Mechanical Systems

Chilled Water Systems

Campus chilled water supply and return will be delivered to the Northeast corner of the Ground Floor via an utilidor.

There will be two chilled water systems in the building;

High temperature chilled water at 60 degrees F to be used for the chilled beams.

The normal temperature chilled water systems will be provided with separate thermal storage tanks to store cooling energy at night for use during the day. This will reduce the impact on the peak capacity requirement of the Campus chilled water plant. The thermal storage tanks will utilize Eutectic material.

Plate frame heat exchangers will be provided between the campus primary chilled water system and the secondary systems in the building.

When outdoor temperatures permit, the condensing water system will be interconnected with the high temperature chilled water system to provide hydronic free cooling that can be stored during the nighttime hours.

Heating Hot Water System

Campus high pressure steam and condensate return will be delivered to the Northeast corner of Floor B via an utilidor.

The heating source for the building will be provided via two (2) shell and tube heat exchangers connected to the campus 100 psi steam loop. Heating hot water will be distributed throughout the building at 150°F by three circulation pumps (each sized at 50% of total capacity) with variable speed drives.

Condensate will be collected in a tank that will contain a tube bundle to pre heat domestic hot water. The condensate will then be pumped back to the campus boiler plant.

Heating, Ventilation, and Air Conditioning Systems

Chilled Beam – Overhead cooling source using chilled water in a active chilled beam in the hung ceiling. Room thermostats control chilled water flow through the chilled beams for local temperature control.

Ventilation Air – Constant volume overhead supply air system for air distribution to the active chilled beams. The air system uses 100% outside air to provide ventilation air to the space. The system will also provide heating the perimeter spaces using hot water heating coils during the winter season. Each air handling system will be provided with heat recovery coil to recover heating and cooling energy from the exhaust air. In addition each system will be provided with a heating coil, cooling coil, filters, supply and exhaust fans. Assume 4 systems in the building.(25,000 cfm ea.)

Radiant Floor – Hot water radiant heating system in the floor for space heating. The water temperature is modulated to maintain room temperature setpoint. This system is planned for use in lobbies and used in conjunction with air systems using displacement air distribution. Displacement air distribution utilizes large air outlets near the floor supplying air at very low velocities in the occupied zone. Assume 5,000 sq. ft. of radiant floor.

CAV – Constant air volume system use for large single zone spaces that require special temperature and humidity conditions or fixed air quantities. This system is planned for use in the auditorium. Assume 1 system in the building for the auditorium. (10,000 cfm)

Kitchen Hood Exhaust Systems

All kitchen exhaust ducts will be constructed using welded black iron, slope towards the intake hood and have gasketed access doors for inspection at all 90° elbows. The kitchen exhaust ducts will need to be enclosed in rated construction, or wrapped in fir wrap. Assume 3M Fire Barrier Duct for quality standard. Assume 1 kitchen exhaust system in the building. (10,000 cfm)

Toilet Ventilation Systems

Each toilet room will be ventilated through a toilet exhaust system ducted to exhaust fan located at the high roof. The system shall be capable of exhausting a minimum of 2 cfm/sf or 10 air changes per hour, whichever is greater. Assume 1 toilet exhaust system in the building. (8,000 cfm)

Electric Closet Ventilation System

The electrical closet on each floor will be ventilated using a transfer air fan. Each electrical closet will be provided with a return air/make up air opening with fire damper above the finished ceiling of the adjoining space. Assume 10 fans.

Elevator Machine Rooms, IDF and MDF Rooms

The elevator machine rooms and IDF and MDF rooms will be air-conditioned using split air cooled systems. Assume 5 2 ton systems. Elevator machine rooms shall be constructed with smoke-proof enclosures for smoke management purposes.

Stairway and Hoistway Pressurization

All the stairways and elevator hoistways will be provided with pressurization systems in accordance with the high rise section of the building code.

Plumbing

Provide new domestic cold water, hot water and hot water circulation distribution systems. Provide new steam fired hot water generators for domestic hot water. Provide new plumbing fixtures and trim.

Replace all existing toilet fixtures as follows;

- Lavatories: American Standard, vitreous china self rimming oval in stone countertop with steel supports
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Automatic Temperature and Building Control Systems

- (1) Requirements: Provide a BACNet based building management computer based system capable of controlling central plant equipment, fans, HVAC units, and designed for expandability by using plug-in modules.
- (2) Locate central building management system components in the building Engineer's office.
- (3) Provide local stand-alone field control modules in each major mechanical room.
- (4) System Overview: Provide a Direct Digital Control (DDC) system with full control of mechanical equipment. Provide Building Management System (BMS) to monitor environmental data and control the function of the following equipment installed in the facility:
 - Shell & Tube heat exchangers
 - Pumps
 - Air handling units
 - Chilled beams control
 - Thermal storage
 - Exhaust fans
 - Lighting system (interior and exterior) time clocks
 - Ventilation systems
 - Domestic hot water systems
 - Security system interface
 - Fire alarm system interface
 - Energy meters
 - Other designated functions/systems

The BMS will be set up to easily trend logs and sequentially download them for long-term data storage.

ELECTRICAL ANALYSIS

Existing System

The existing electrical services and the associated distribution system was upgraded in 1998. Existing equipment is generally in good condition.

The facility is currently fed via two (2) electrical service, the North and South substations. Each substation has a medium voltage transformer rated at 1000/1150/1529KVA. The transformers steps down 12.47KV to 120/208V/3PH.

Each substation medium voltage transformer feeds 5000A distribution switchboard, with each utilizing two (2) 2500A/3P circuit breakers (split-bus system). One of the 2500A/3P circuit breakers feeds the basement floor (via distribution panel), and the second breaker feeds 2500A/3P electrical busway. The busway feeds rest of floors (Ground Level thru Fourth Level and the mezzanine).

Distribution panelboards are utilized throughout the facility to feed lighting, plugs, mechanical and other misc. loads.

The peak demand load for the North substation during the last 12-month period was 1038KW, which was registered on 9/23/2011. As for the South substation, we did not have access to the last 12-month load profile. However, the Powerlogic meter installed in the equipment did show peak demand load of 1057KW, which was registered on 11/9/1999.

Facility maintenance personnel have indicated that there is currently issues with water flooding the North substation electrical vault. The water is pumped out the exterior via a portable pump on regular basis to prevent it from getting to the main service equipment. This situation needs to be remedied.

The South substation meter is currently showing ground fault current (25A during visit) in the system. This is a very serious issue and need to be addressed as soon as possible.

Based on the demand load data we have reviewed, both utility service transformer are currently loaded to about 70% of their capacity, which leaves us with about 30% of spare capacity.

Lighting Systems and Controls

Existing System

Recessed and surface mounted fixtures with T12 and T8 fluorescent lamps are utilized throughout the facility. Compact fluorescent lamps are also utilized.

There is no central lighting control system in the building. Lighting systems in each floor are controlled separately via GE lighting control relay panel (GE RC12XX).

Occupancy sensors, dimming ballasts, in conjunction with daylight harvesting are generally not utilized in the facility.

Existing lighting and control systems is not in compliance with current city and state energy codes.

Fire Alarm System

Existing System

Currently the facility is monitored via central fire alarm system. Smoke detectors, horns/strobes devices, pull stations and other alarm/annunciation devices are located throughout the building.

FA zone modules are installed on all floors to communicate back to the central panel.

The fire alarm control panel was installed in 1998.

Proposed Solutions Under SCENARIO – 1

Electrical

The scenario assumes that no significant loads are added to the building electrical load.

Existing electrical service two (2) MV transformers and the associated distribution switchboards located in building basement are only 13 years old and should remain. The service switchboards and transformers have ample of space capacity to accommodate new loads and to add new circuit breakers if needed.

Existing 120/208/3-PH distribution panels, located throughout the facility, will remain.

Existing two (2) 2500A/3P electrical busway currently feeding Ground Floor thru 4th Floor will remain.

Existing lighting systems are outdated. More efficient system (T5 and LED sources) should be utilized to replace existing fixtures.

Existing lighting control systems will need to be replaced. The new system will be comprised of a central panel and sub-control panels. Low voltage light relay panels will be utilized.

Occupancy sensors and dimming ballasts will be provided to reduce energy consumption via dimming control and/or daylight harvesting design strategies. The new panel will be IP based system to allow for system integration and for ease of accessibility.

Existing flooding issue in the medium voltage vault need to be addressed ASAP.

The ground fault current currently detected in the South utility service also need to be addressed as soon as possible. Ground fault current represents danger to facility maintenance crew.

Existing auxiliary systems (Security & Access control, Master Clock System and sound system) will remain.

Existing emergency and standby power diesel generators (100KW and 80KW) will remain, along with automatic transfer switches and the associated distribution panels.

Existing Data and Voice cabling (copper and fiber) will remain.

Proposed Solutions Under SCENARIOS – 2 and 3

We assume that the facility will have more electrical loads added to it.

Existing medium voltage substation transformer will need to be replaced with larger VPI (Vacuum Pressure Impregnated) transformers, rated at 1000/1350/1800 KVA.

Two (2) new 6000A distribution switchboard/switchgears with LVPCB should be provided to replace existing service equipment.

Existing power distribution panelboards will be replaced with new system.

Existing lighting systems are outdated. More efficient system (T5 and LED sources) should be utilized to replace existing fixtures.

Existing lighting control systems will need to be replaced. The new system will be comprised of a central panel and sub-control panels. Low voltage light relay panels will be utilized.

Occupancy sensors and dimming ballast will be provided to reduce energy consumption via dimming control and/or daylight harvesting design strategies. The new panel will be IP based system to allow for system integration and for ease of accessibility.

Existing emergency and standby generators will be replaced with new 250KW diesel unit. New automatic transfer switches and distribution systems will be provided.

All existing Data/Voice cabling (copper and fiber) will be replaced with new. New pathways and rough-in will be provided.

Existing auxiliary system (Security & Access Control, Central Clock System and Sound Systems) will be replaced with new systems.

HISTORICAL ANALYSIS PROJECT SCOPE

Peter Meijer Architect, PC (PMA) was retained by SRG Partnership, Inc. to conduct a historic assessment of the General Administration Building in Olympia, Washington as part of the General Administration Building Pre-Design Update for the Department of Enterprise Services, Olympia.

The building, constructed in 1956, is historically significant for its Modern architectural design and for its representation of Washington State capitol growth following World War II, specifically the re-centralization of government to Olympia in 1954.

Washington State Executive Order 05-05 requires that all state agencies with capital improvement projects integrate the Department of Archaeology and Historic Preservation (DAHP), the Governor's Office of Indian Affairs (GOIA) and concerned tribes into their capital project planning process. Due to the building's National Register designation, historic preservation standards and regulations will be part of any renovation or demolition to the GA Building. Generally, preservation standards require that historic features be retained in a way that sufficiently conveys the character and historic significance of a property.

PMA prepared the following Historic Report to describe and prioritize the character-defining features of the General Administration Building and provide insight on how preservation regulations and historic design review could impact a major renovation to the building. Recommendations are provided with preservation strategies specific to the building.

The features are culled from the National Register nomination and PMA's observations of the building. The nomination includes sound research regarding the character-defining features, integrity, and historic significance of the building and its features. Historic review entities such as DAHP will use the nomination, as well as this report as the basis for informing comments and regulations.

PMA's analysis concludes that there are no historic preservation concerns that would inhibit the retention and rehabilitation of the historically significant GA Building.



Circa 1960 aerial photograph



GA Building under construction c. 1954

EXCERPT FROM NOMINATION

The building was designed by prominent Tacoma architect, Allen Gordon Lumm, in the International style which is distinctive for its horizontal cubical form and spare ornamentation. Its exterior minimalist appearance and interior architectural flexibility, including movable steel wall panels, demonstrate a growing aesthetic for modular space able to easily accommodate changing space and technology requirements. In this case, a building which was needed to serve a diversity of state agencies that would be housed in one structure.

HISTORICAL ANALYSIS PRESERVATION PRIORITY ZONES

The building's significance is conveyed through several features that are character defining of its International Design, as well as materials that are expressive of the building's significant role in post-war Capitol development.

This report provides an analysis of Lumm's original architectural drawings for the building overlaid with color to indicate preservation priority zones. PMA assigned a preservation priority (high, medium, low) to each feature.

It is important to note that although the building today has four full floors above the basement and ground levels, the original elevation drawings illustrate only the south half of the building at full height and the north half without the 3rd and 4th floors. Architectural floor plan drawings illustrate that this change was made during the original period of construction through a change order issued in 1956. The available drawings elevation drawings from 1953 augmented with PMA's colored overlays, coupled with current photographs, remain sufficient to accurately portray the overall design features and assign preservation priority zones. The original floor plans, which generally include a "Plan A" and "Plan B" for each floor, have been stitched together to provide a seamless illustration of the historic layout and circulation patterns.

HIGH PRESERVATION PRIORITY

High priority features are the most character-defining features of the building that best convey the significant themes associated with the building. These features are to be maintained and preserved. Alterations to finishes may be acceptable, although the form and overall design should be retained. Work to high priority features will be closely reviewed.

MEDIUM PRESERVATION PRIORITY

Medium priority features help to convey the significance of the building, but are not crucial character-defining features. If medium priority feature were to be removed, the building would still retain its significance, although some unique aspects may be lost. Often, the overall design aspect of the feature is of medium priority, while the finishes or materials may be of a lower priority. Work to medium priority features require review and may elicit some commentary although contemporary methods, materials, and designs may be sensitively incorporated. If several of the same medium priority features exist, representative examples or collections are to be retained, although retaining the entire inventory of a feature is unnecessary. The overall project should reach a balance of retaining some medium priority features to allow for alterations to other medium priority features. Alterations should be compatible with the overall historic character of the building.

LOW PRESERVATION PRIORITY

Low priority features are part of the building design, but have little historic character or contribution to the historic significance of the building. Low priority features include service spaces, heavily-altered features, or additions not associated with the period of significance. Alterations to low preservation priority features, while sympathetic to the historic qualities and character of the building, may incorporate extensive changes or total replacement through the introduction of contemporary methods, materials, and designs. DAHP will still review proposed work to low preservation priority features in order to monitor the impact to the overall character and significance of the building.



Historic photograph of building and fountain, c. 1955-1960. Fountain is demolished.

EXCERPT FROM NOMINATION

Common characteristics of the International Style include a radical simplification of ornamentation, concrete, steel and glass as the preferred building materials, designs logically supporting the function of the building, and the construction itself embraces industrialized mass-production techniques.

HISTORICAL ANALYSIS

SITE

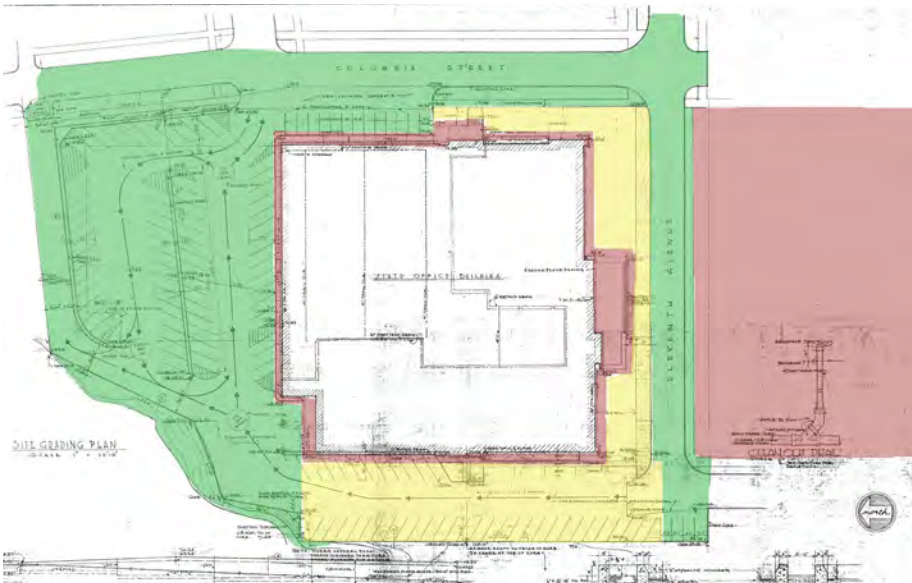


Current aerial view

The General Administration (GA) building is bordered by 11th Avenue SW on the south, Columbia Street SW on the east, a concrete surface parking lot on the north, and a vegetated slope at the northwest corner and along the west. Views from upper levels of the building overlook the north end of Capitol Lake. The Capitol Conservatory and greenhouses, along with the Sunken Garden and Washington Supreme Court building are located nearby to the southwest of the GA Building.

Overall, the site reflects the Capitol campus setting that existed in 1956 when the building was constructed. A large formal lawn with mature trees creates a wide buffer of open space along the south edge of the building. The lawn provides views of the building's south (front) facade, particularly the sandstone pylon and Washington State seal. A World War II memorial, designed by Simon Kogan and dedicated in 1999, has been installed near the northeast edge of the lawn.

The site would be visually impacted if new construction were to occur on the lawn that would detract from the building's visual presence as a significant resource on the Capitol campus.



SITE PLAN

SITE

HIGH PRIORITY FEATURES

- Perimeter of building
- Open space/formal landscape to south of building

MEDIUM PRIORITY FEATURES

- Entrance patio (off south)
- West drive and parking lot

LOW PRIORITY FEATURES

- Sloped Landscape
- Rear (north) parking lot
- Streets/sidewalks



Historic setting and landscape, 1962



Current setting and landscape



Historic aerial view of Capitol and campus, 1955

HISTORICAL ANALYSIS EXTERIOR ELEVATIONS

The GA building's International Modern design is primarily characterized by exterior design elements. The overall form and massing of the 4+ story building is defined by its horizontal emphasis, created by bands of multi-pane aluminum hopper windows, etched concrete panels, and inset boxed ledge canopies. Large, slightly projecting vertical elements interrupt the horizontal bands on each facade, although the most prominent and ornamental is the sandstone pylon with the Washington State seal on the south elevation. The rear stairwell and penthouse exterior comprise this vertical design element on the north elevation. Although each facade is slightly different, the materials and overall design concepts remain consistent on all elevations of the building. These key character-defining features are to remain unaltered in a building renovation.



1958 Historic photo

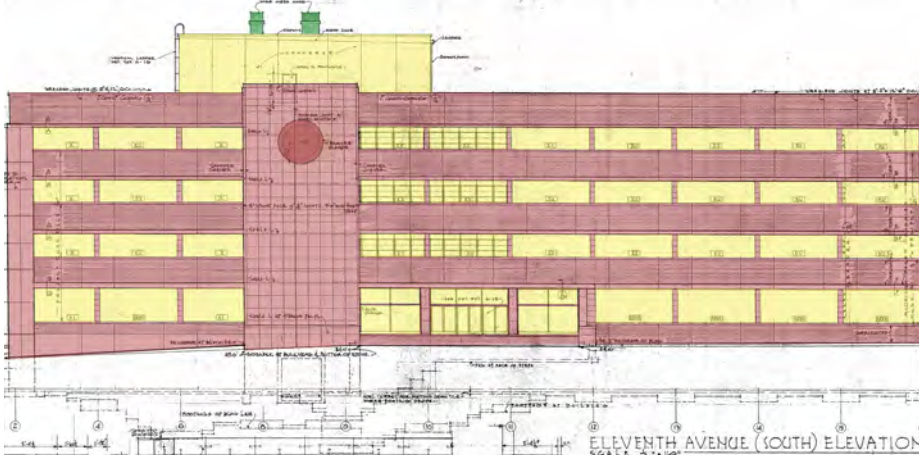


South elevation



Main entrance

Preservation standards would not necessarily inhibit alterations to specific materials, but instead would require that the overall design concepts are retained. Window replacement, for example, would require retaining the original window openings and horizontal bands of lights, but the window materials could be replaced with a more energy efficient multi-pane aluminum or other metal window.



SOUTH ELEVATION



Window detail



Holocene light and secondary entrance

OVERALL EXTERIOR

HIGH PRIORITY FEATURES

- Overall form and massing
- Horizontal bands of windows, boxed ledge canopies, and concrete walls
- Etched concrete
- Vertical design features, including pylons and visible stairwell shafts that span the height of the building

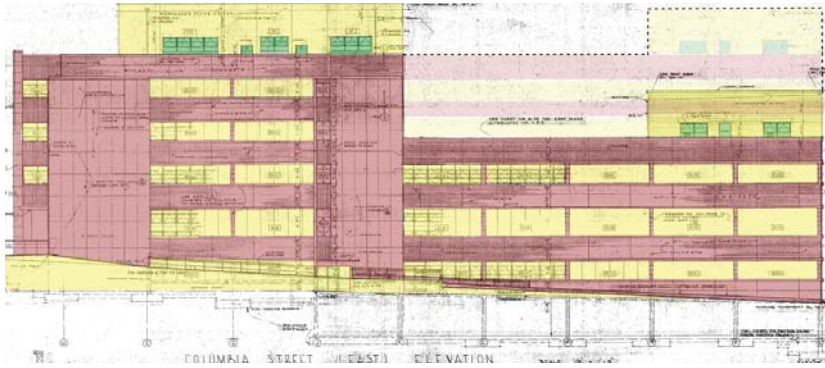
MEDIUM PRIORITY FEATURES

- Window materials (although aluminum or other metal replacements would be recommended)
- Penthouses
- Entrance doors
- Convex Holocene lights

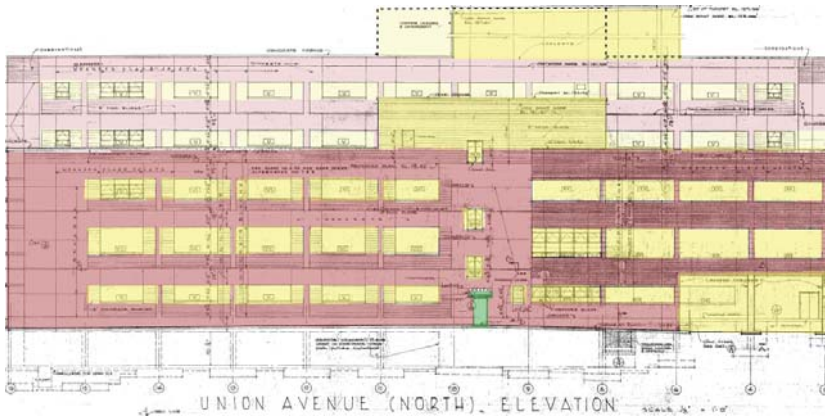
LOW PRIORITY FEATURES

- Secondary entrances
- Penthouse fenestration

**HISTORICAL ANALYSIS
EXTERIOR ELEVATIONS**



EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION

ADDITIONAL FEATURES

SOUTH ELEVATION

- Wilkesen sandstone pylon (high)
- Washington State Seal (high)
- Entrance location (high)

WEST ELEVATION

- Sloped landscape (medium)

NORTH ELEVATION

- Verticality of stairwell shaft and penthouse (high)
- Loading dock (medium)

EAST ELEVATION

- Sloped Landscape (medium)
- Ground floor entrance (medium)

PRESERVATION PRIORITY ZONES

- HIGH PRIORITY
- MEDIUM PRIORITY
- LOW PRIORITY



West elevation



North elevation



East elevation

HISTORICAL ANALYSIS INTERIOR FLOOR PLANS

The historic character of the interior is defined by the spatial qualities of specific public spaces, as well as various elements and fixtures that convey the architectural and historical significance of the General Administration building

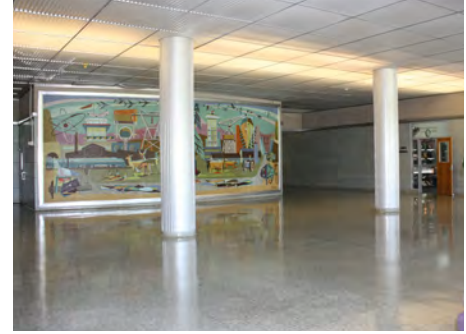
The main lobby and conference room on the first floor embody unique design elements that characterize the building. These spaces are to be considered with high preservation priority. Alterations to the lobby will be strictly reviewed and should be extremely limited.

Elevator lobbies, primary corridors, and public spaces on all floors are of medium priority. Alterations may occur to materials in the elevator lobbies while retaining the locations and spatial qualities of their primary circulation function.

Stairwells at exterior walls on the north, west, and east elevations are considered medium priority features due to their circulation function and for the vertical emphasis they provide as exterior design features.

The building's flexible wall configuration is a significant element of the building, intended to maintain a flexible floor plan without adhering to strict or consistent design principles. The movable walls are of medium preservation priority. This priority does not require that all moveable walls be retained in their current locations, but selective areas should maintain this historic design element, particularly in areas that may be more utilized by the public in the future.

New materials, such as carpeting or wall materials, should evoke the spirit of the building's architectural significance and historic period of construction.



Entrance lobby and mosaic mural

OVERALL INTERIOR

HIGH PRIORITY FEATURES

- Entrance Lobby
- Conference Auditorium
- Mosaic Mural
- Steel Elevator Bays

MEDIUM PRIORITY FEATURES

- Elevator lobbies
- Primary corridors
- Stairwells at exterior walls
- Moveable walls
- Flexible office spaces
- Operable hopper windows
- Mail chute
- Drinking fountains
- Lighting
- Door hardware (bullet hinges, knobs)
- Ceiling diffuser vents
- Vaults
- Toilet room tiles
- Fire door in basement

LOW PRIORITY FEATURES

- Floor materials (aside from terrazzo)
- Wall surfaces(aside from tile)
- Secondary corridors
- Elevator finishes
- Metal doors
- Executive restrooms
- Fire extinguisher cabinets
- Rubbish bins



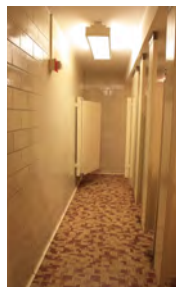
Typical office and view



Typical office with moveable walls



Lobby alcove



Toilet room tiles



Bullet hinge



Drinking fountain

HISTORICAL ANALYSIS
INTERIOR FLOOR PLANS



Information Center desk



Directory, clock, mail

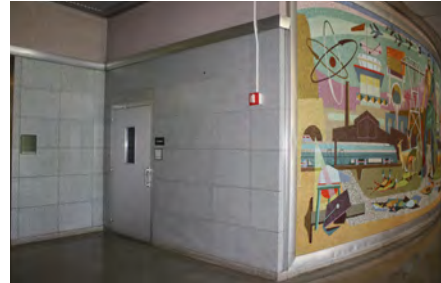
ENTRANCE LOBBY

The entrance lobby is the most significant and historic space inside the GA building, defined by its distinctive materials, design, spatial qualities, and mosaic mural. The various features that comprise the lobby are to be retained as high priority features.

Although the mural was installed in 1959, after the building's construction, and suffered some earthquake damage, it retains excellent integrity and is also a high preservation priority resource.



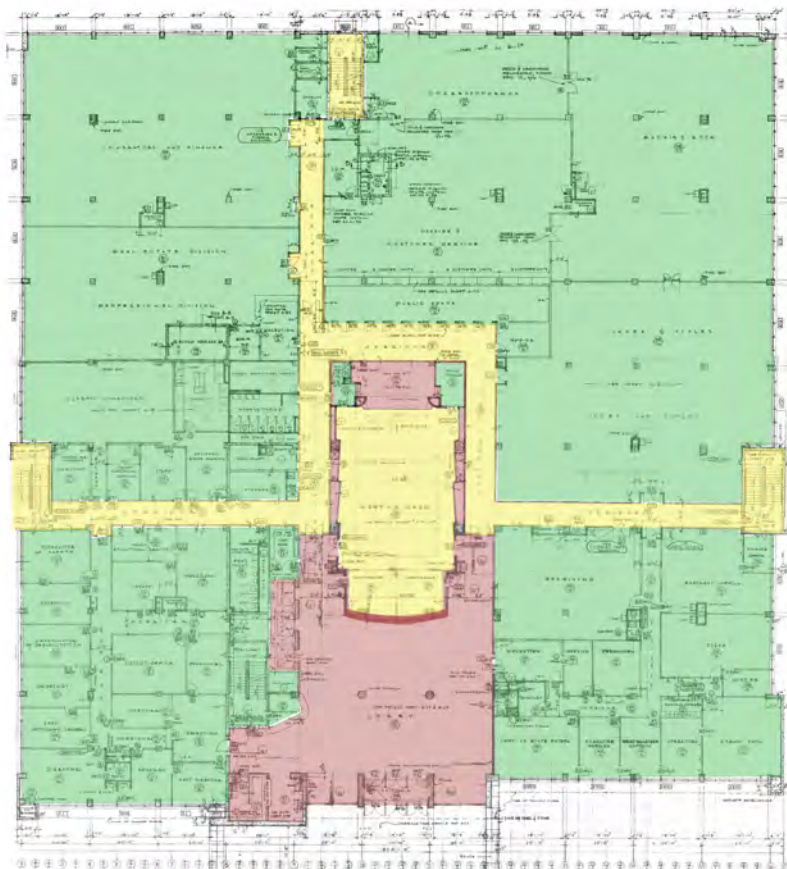
Entrance vestibule, alcove, column



Mural and Conference auditorium entrance

CONFERENCE AUDITORIUM

The 1st floor Conference Auditorium is overall a significant meeting space and historic feature in the building. While new floor and wall coverings may be acceptable, the majority of design elements are to be retained in this highly used and character-defining space.



1ST FLOOR PLAN

ADDITIONAL FEATURES

ENTRANCE LOBBY

- Open Floor Plan (high)
- Entrance Vestibule (high)
- Mosaic Mural (high)
- Corrugated aluminum columns (high)
- Corrugated aluminum skirting at information counter (medium)
- Terrazzo floor (high)
- Green tile walls (high)
- Suspended Plexiglas ceiling (high)
- Aluminum Picture Rail (medium)
- Mail chute (medium)
- Directory (medium)
- Clock (medium)
- Lighting (medium)
- Elevator surrounds (high)

CONFERENCE AUDITORIUM

- Floor Plan (high)
- Stage (high)
- Curved "Flexwood" birch veneer walls (high)
- Entry doors (medium)
- Ceiling diffuser vents (medium)
- Recessed lighting (low)
- Wall divider ceiling tracks (low)
- Carpet/wall finishes (low)



1st floor Auditorium and stage

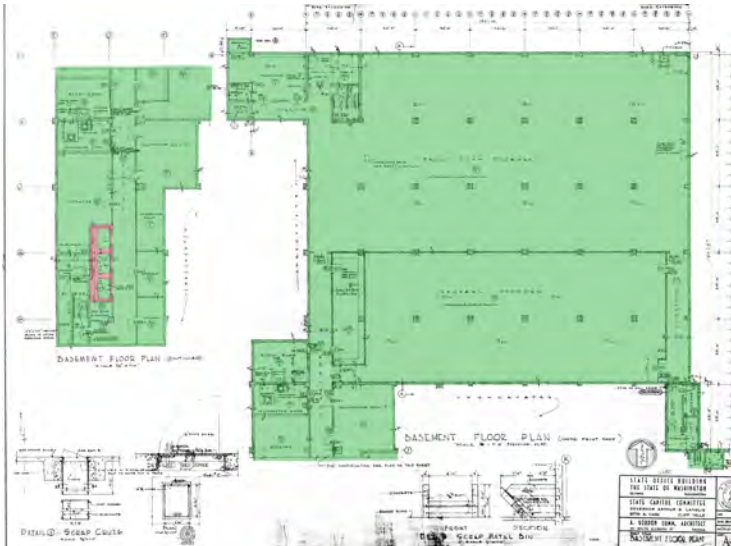
HISTORICAL ANALYSIS INTERIOR FLOOR PLANS

The basement and ground floors are considered service areas and have very few historic features of medium or high priority and could accommodate a number of alterations without eliciting review commentary or regulation.

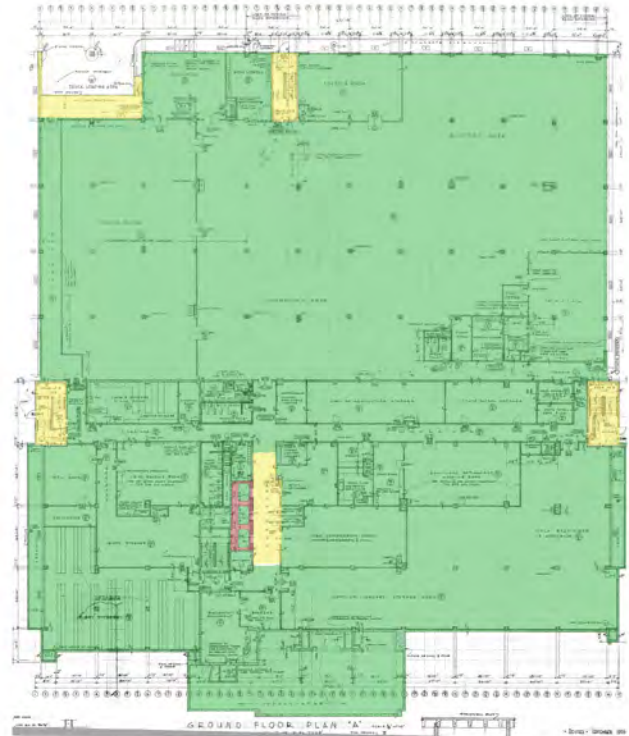
The elevator shafts are high preservation priority throughout the entire building. The elevator lobbies and elevator surrounds have been altered although the overall spatial qualities of the space remain a medium priority. The historic steel fire door in the basement is of medium preservation priority. The loading dock at the ground floor, a medium priority feature due to its exterior visibility, as are the stairwell shafts at the exterior walls.

PRESERVATION PRIORITY ZONES

	HIGH PRIORITY
	MEDIUM PRIORITY
	LOW PRIORITY



BASEMENT FLOOR PLAN



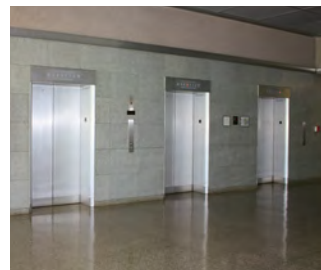
GROUND FLOOR PLAN



Basement elevator lobby



Ground floor elevator lobby



First floor elevator lobby



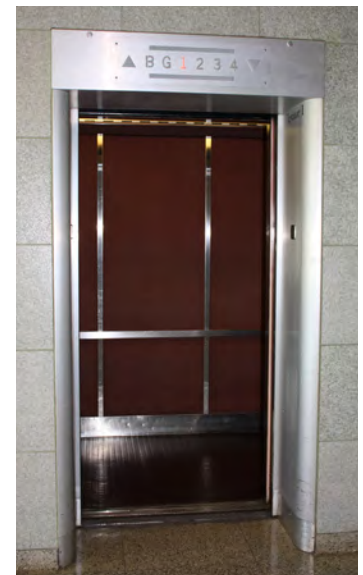
Second floor elevator lobby



Third floor elevator lobby



Fourth floor elevator lobby



Elevator cab

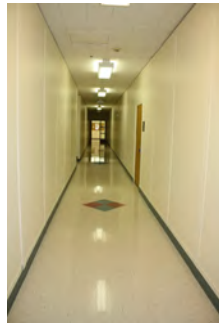
HISTORICAL ANALYSIS
INTERIOR FLOOR PLANS



Fourth floor corridor

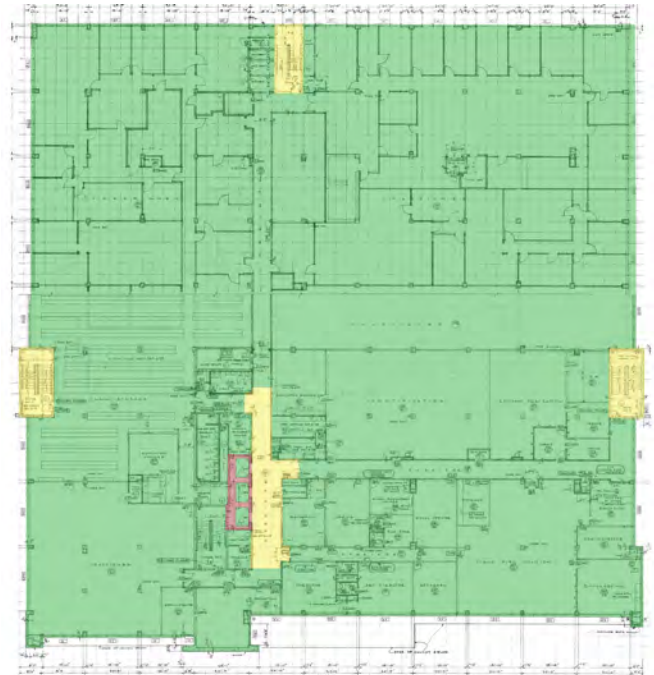


Typical office

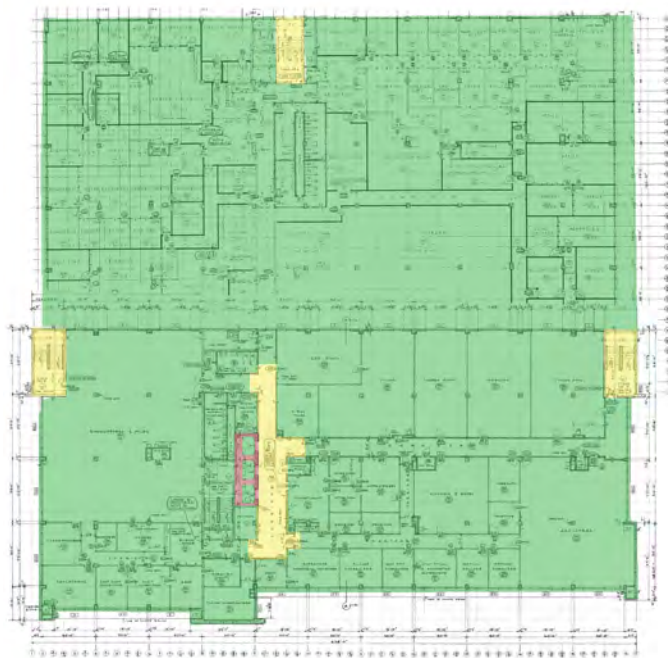


Second floor corridor

Floors 2-4 share identical preservation priority zones, with high priority given to the elevator shafts, medium priority given to the elevator lobbies and immediate corridor, medium priority to the stairwell shafts at the exterior walls as part of primary circulation patterns. Alterations vary with finishes and the retention of historic fixtures and elements. The 2nd floor retains more of the movable walls than other floors. Historic door hardware predominately remains on all floors.



2ND FLOOR PLAN



3RD FLOOR PLAN



4TH FLOOR PLAN

HISTORIC STRUCTURES REPORT

1. If the building is to be retained, complete a proper Historic Structures Report (HSR) for the building as was intended for the Pre-Design. An HSR is essential to planning for a renovation/rehabilitation. The purpose of the HSR is to:
 - a) document and analyze the building's initial construction and subsequent alterations through historical, physical and pictorial evidence;
 - b) document the current state of the building's architectural materials and overall structural stability;
 - c) select and appropriate historic preservation treatment
 - d) establish priorities for project work items; and
 - e) make an estimate of project costs. When complete the Report becomes the planning document

HISTORIC FEATURES

2. Retain the etched concrete exterior and design aspects of the bands of windows as historic features that define the exterior of the building.
3. While the penthouses contribute to the vertical elements that interject the horizontal emphasis of the exterior, changes that do not disrupt the overall massing and form of the building will be acceptable.
4. Preserve the main lobby and mural as-is, retaining all materials, columns, fixtures, and design elements. The lobby is the most definitive and visible space in the entire building, and preserving all elements of the space may help to balance alterations to other, potentially less-significant and less visible features in the building.
5. Preserve the overall floor plan, wall system, and stage in the Conference Room/Auditorium. Changes to floor or wall coverings are not likely to elicit commentary from regulatory or review entities.
6. In general, the building's upper floors do not retain significant or high-priority preservation areas, although medium priority historic building fixtures, elements, and hardware remain in public corridors. Retain and reuse these elements where possible, especially in areas where various features are clustered together or where they are visible to a wide audience.
7. Historic interior fixtures, such as drinking fountains, mail and rubbish chutes, are not required to be retained as an entire collection. Instead, preserve representative elements in selective locations, particularly in heavily trafficked public areas such as the ground floor, lobbies or in spaces that will have a strong public use in the future.
8. Retain movable walls in selective areas as a historic design element, particularly in areas that may be more utilized by the public in the future. This feature is extremely expressive of the building's modern era and emphasizes the historic character of the interior.



Glass-stone mosaic mural by Jean Cory Bealle

HISTORICAL ANALYSIS
PRESERVATION STRATEGIES

NEW MATERIALS

9. New materials, such as carpeting or wall materials, should evoke the spirit of the building’s architectural significance and historic period of construction.

10. Consider the overall historic design features of the windows when analyzing replacements, such as the uninterrupted bands of glass, metal materials, mullions, and operable function. An energy efficient multi-pane aluminum or other metal replacement that retains these aspects will be better-received in a regulatory or review situation than a replacement that disregards the design details conveyed through these features.

ADVOCACY

11. Work with local preservation groups such as DoCoMoMo WeWA or historical societies with an emphasis on modern history to highlight and publicize the significant history of the GA Building and the importance of renovating and preserving the building as part of the Capitol Campus landscape. Use the publicity, collaboration and “story” of the building to leverage the potential for government funding allocation or other funding opportunities.

12. Provide opportunity for the Washington State Department of Archaeology and Historic Preservation (DAHP) to review the Pre-Design and any future renovation plans. Involving DAHP in the process at an early stage will help to develop a common understanding of the opportunities and challenges associated with the project, maintain consistency of expectations, and could provide preliminary concurrence for proposed work.



Windows and etched concrete exterior

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Printed on 100% post-consumer paper.

ENVIRONMENTAL ANALYSIS

Washington State High-performance Green Building Requirement

In April of 2005 the Governor of Washington State signed a bill into law mandating that all new publically funded state buildings meet, or exceed the US Green Building Council's (USGBC) Leadership in Environmental Design (LEED) Silver standard. This mandate applies to all state funded new building construction over 5,000 square feet, and to all renovation projects where the projected cost of renovation is greater than 50% of the current assessed building value. Given the current state of the Mechanical, Electrical and Plumbing systems (MEP) in the building, LEED Silver should be considered part of the owner's project requirements for any GA building renovation scenarios.

Aside from achieving a LEED silver or better rating, the mandate requires public agencies to monitor, and document ongoing savings from the project. The mandate however is unclear on how these "ongoing savings" metrics are to be reported. A measurement and verification plan that is followed in accordance with the LEED credits will likely satisfy this requirement. The measurement and verification plan can be implemented provided that permanent building wide metering is installed or spot metering is conducted using hand held equipment.

The bill also encourages, but does not require, the use of Washington State based resources such as: building materials, products, industries, manufacturers, and in-state business partners. Simply following the Materials Resource credit category, specifically for construction waste management, use of recycled content materials, and local manufacturing should meet the intent of this requirement.

The stated goals and expectations in enacting this bill are to: save money, improve worker productivity, reduce worker absenteeism, and to cut energy and utility costs. While LEED Silver buildings can meet these goals, the program is based on a series of optional points. Thus, it is possible to create a lowest cost scenario to certify the project without fundamentally reaching these goals. As cost is paramount to this project, the team evaluated three scenarios with budget as well as environmental impacts in mind. Scenarios 1 and 2 consider if the project can achieve LEED certification at a low first cost and to which LEED points would need to be targeted. Scenario 3 focuses on achieving a high performance green building that meets the LEED requirement as well as the full intent of the state mandate.

Keeping the General Administration Building: Environmental Benefits

The General Administration Building has value beyond its historical significance. Beyond the cultural value of the artifact, the building contains a number of environmental assets that could continue to be utilized by the state. As viewed through the lens of embodied energy, if re-used, the building would consume fewer raw resources and have less environmental impact from the avoided deconstruction emissions associated with new construction. As documented in a study performed by the Preservation Green Lab of the National Trust for Historic Preservation entitled *The Greenest Building: Quantifying the Environmental Value of Building Reuse*, it takes 10 to 80 years for a new building that is 30 percent more efficient than an average-performing existing building to overcome, through efficient operations, the negative climate change impacts related to the construction process¹.

The General Administration Building has an estimated 7,542 tons of concreteⁱⁱ built into its structure. This equates to the equivalent of about 3,040 MWh of electricityⁱⁱⁱ (equivalent to 264 U.S. homes annual energy use^{iv}) of embodied energy, or a carbon footprint of 1305 tons^v (equal to the carbon produced by 228 American cars per year^{vi}). Note that this calculation only considers for the concrete structure and does not reflect any of the additional embodied energy/carbon that the rest of the building is storing, such as that found in steel, glass, and aluminum.

All of this embodied Energy/Carbon (E/C) was environmentally accounted for in the 1950's and is locked away in the building. Any embodied E/C that is removed from the building in the form of waste ends up being lost and has to be replaced with new E/C. Since there is a negative value associated removing E/C and installing new E/C, any modifications made to the General Administration Building must be offset by quantifiably positive impacts such lowering energy bills or increasing worker productivity, which both align with the goals of the legislation.

Scenario #1: Minimum Code Compliant Upgrades

The cost for the required updates to the building for Scenario 1 as stated elsewhere in this report likely exceeds the 50% assessed value threshold, thus triggering the need for the project to achieve LEED Silver Rating under the new State mandate. Achieving a LEED Silver Rating would require at least 10% energy savings over that of existing conditions energy use. If any systems needed for general operations were improved, the baseline would be that of a new code compliant system, not of the existing system.

With only minor changes being proposed to the Heating Ventilation and Cooling (HVAC) the project will likely be unable to attain the 10% energy savings prerequisite. Additionally, the requirement for LEED Silver would mean an upgrade to all plumbing systems, high efficiency lighting, and the building automation system beyond those required for code compliance. Thus, Scenario 1 will not be enough to meet the Washington High Performance mandate and a variance of some kind would need to be granted to move forward with it.

Scenario #2: Selective Upgrades to Meet LEED Silver

The cost for the required updates to the building for Scenario 2 as stated elsewhere also are likely to exceed the 50% value threshold requiring at least a 10% energy savings target over that of existing conditions. To satisfy the 10% energy savings target the following systems would likely need to be replaced or renovated to achieve a LEED Silver Rating:

- Envelope: The current windows are single pane and lack sufficient weather stripping to be repaired, likely requiring a retrofitting of the building using code compliant Insulated Glazing Units, as required per Washington State's energy code.
- HVAC: The systems are past the end of their service life and the building has difficulty achieving thermal comfort and fresh air requirements, both of which are part of the LEED program.
- Lighting: The systems are past the end of their service life and use substantially more energy than modern low-watt daylight controlled lighting systems that are typical of LEED certified buildings.
- Plumbing: The fixtures in the building would need to be upgraded to current low-flow standards

In order to accomplish this low cost certification, the project would need to selectively target specific LEED points while upgrading the building MEP systems. However, the building would not require drastic changes that would affect the current floor layout and configuration of the base building shell. This selective replacement strategy would result in a LEED Silver building with a scorecard roughly that as shown in Figure 1.

Paladino ⁺		LEED™ NC 2009 - Scorecard	
WA GA Building: Scenario 2		August 13, 2012	
54 Total Project Score		Possible Points 110	
Certified: 40 to 49 points Silver: 50 to 59 points Gold: 60 to 79 points Platinum: 80 to 110 points			
19 Sustainable Sites Possible Points 26		8 Materials and Resources Possible Points 14	
easy		easy	
<input checked="" type="checkbox"/> Y	SSp1 Construction Activity Pollution Prevention	Req'd	MRp1 Storage and Collection of Recyclables Req'd
<input type="checkbox"/> 1	SSc1 Site Selection	1	2 MRc1.1 Building Reuse - Maintain Existing Walls, Floors and Roof
<input type="checkbox"/> 5	SSc2 Development Density and Community Connectivity	5	MRc1.2 Building Reuse - Maintain 50% of Interior Non-Structural Elements
<input type="checkbox"/>	SSc3 Brownfield Development	1	2 MRc2 Construction Waste Management
<input type="checkbox"/> 6	SSc4.1 Alternative Transportation, Public Transportation Access	6	1 MRc3 Materials Reuse
<input type="checkbox"/> 1	SSc4.2 Alternative Transportation, Bicycle Storage and Changing Rooms	1	2 MRc4 Recycled Content Materials
<input type="checkbox"/> 3	SSc4.3 Alternative Transportation, Low Emitting and Fuel Efficient Vehicles	3	1 MRc5 Local / Regional Materials
<input type="checkbox"/> 2	SSc4.4 Alternative Transportation, Parking Capacity	2	MRc6 Rapidly Renewable Materials
<input type="checkbox"/>	SSc5.1 Site Development, Protect or Restore Habitat	1	1 MRc7 Certified Wood
<input type="checkbox"/>	SSc5.2 Site Development, Maximize Open Space	1	
<input type="checkbox"/>	SSc6.1 Stormwater Design: Quantity Control	1	
<input type="checkbox"/>	SSc6.2 Stormwater Design: Quality Control	1	
<input type="checkbox"/>	SSc7.1 Heat Island Effect: Non-Roof	1	
<input type="checkbox"/> 1	SSc7.2 Heat Island Effect: Roof	1	
<input type="checkbox"/>	SSc8 Light Pollution Reduction	1	
4 Water Efficiency Possible Points 10		9 Indoor Environmental Quality Possible Points 15	
easy		easy	
<input type="checkbox"/>	WEp1 Water Use Reduction, 20% Reduction	Req'd	Y EQp1 Minimum IAQ Performance Req'd
<input type="checkbox"/>	WEc1 Water Efficient Landscaping	4	Y EQp2 Environmental Tobacco Smoke Control Req'd
<input type="checkbox"/>	WEc2 Innovative Wastewater Technologies	2	EQc1 Outdoor Air Delivery Monitoring
<input type="checkbox"/> 4	WEc3 Water Use Reduction, 30-40%	4	1 EQc2 Increased Ventilation
			1 EQc3.1 Construction IAQ Management Plan, During Construction
			EQc3.2 Construction IAQ Management Plan, Before Occupancy
			1 EQc4.1 Low-Emitting Materials, Adhesives and Sealants
			1 EQc4.2 Low-Emitting Materials, Paints and Coatings
			1 EQc4.3 Low-Emitting Materials, Flooring Systems
			1 EQc4.4 Low-Emitting Materials, Composite Wood and Laminate Adhesives
			1 EQc5 Indoor Chemical and Pollutant Source Control
			1 EQc6.1 Controllability of Systems, Lighting
			EQc6.2 Controllability of Systems, Temperature and Ventilation
			1 EQc7.1 Thermal Comfort, Compliance
			EQc7.2 Thermal Comfort, Monitoring
			EQc8.1 Daylighting
			EQc8.2 Views
9 Energy and Atmosphere Possible Points 35		4 Innovation and Design Process Possible Points 6	
easy		easy	
<input checked="" type="checkbox"/> Y	EAp1 Fundamental Commissioning	Req'd	<input type="checkbox"/> 1 IDc1.1 Green Education
<input checked="" type="checkbox"/> Y	EAp2 Minimum Energy Performance	Req'd	<input type="checkbox"/> 1 IDc1.2 Green Housekeeping
<input checked="" type="checkbox"/> Y	EAp3 CFC Reduction in HVACandR Equipment	Req'd	<input type="checkbox"/> 1 IDc1.3 Innovation in Design, Low-Mercury Lighting
<input type="checkbox"/> 2	EAc1 Optimize Energy Performance	19	IDc1.4 Innovation in Design, LEED-CI EQc4.5, Low Emitting Furniture
<input type="checkbox"/>	EAc2 On-Site Renewable Energy	7	IDc1.5 Innovation in Design, Wall and Ceiling Systems
<input type="checkbox"/> 2	EAc3 Enhanced Commissioning	2	<input type="checkbox"/> 1 IDc2 LEED Accredited Professional
<input type="checkbox"/> 2	EAc4 Enhanced Refrigerant Management	2	
<input type="checkbox"/> 3	EAc5 Measurement and Verification	3	
<input type="checkbox"/>	EAc6 Green Power	2	
1 Regional Priority Possible Points 4			
easy			
<input type="checkbox"/>	RPc1 Regional Priority		
<input type="checkbox"/>	RPc1 Regional Priority: EAc1 44% over existing		
<input type="checkbox"/>	RPc1 Regional Priority: MRc7		
<input checked="" type="checkbox"/> 1	RPc1 Regional Priority: SSc1		
<input type="checkbox"/>	RPc1 Regional Priority: SSc5.1		
<input type="checkbox"/>	RPc1 Regional Priority: SSc6.1		

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Figure 1: Scenario2 LEED Scorecard

In order to meet LEED silver requirements under General Administration Building retrofit Scenario 2 there will need to be significant changes to the existing MEP systems. Overall the changes in the MEP would need to result in significant upgrade in energy performance to achieve a greater than 10% energy improvement that will be challenging to achieve without addressing both HVAC and building envelope improvements. Additionally, the HVAC system changes would need to comply with the LEED thermal comfort requirements, and achieve an increase of 30% or greater of fresh air ventilation above ASHRAE 62 standards.

The main changes in electrical systems would focus on decreasing energy demand with regard to lighting requirements. The current building design does not allow for effective use of natural day to reduce lighting loads, and would instead require upgrades such as high efficiency LED lighting, and the use of occupancy sensors.

Plumbing changes required to achieve the Water Efficiency category points needed would include the installation of low-flow toilets, low-flow sinks, and waterless urinals. These would aid in a goal water use reduction of 40%.

Scenario #3: Building Improvements to Fulfill All Goals

Meeting the actual intent of the bill means the General Administration Building project team must think beyond picking the low hanging fruit within the LEED program. While following the basic roadmap to certification under Scenario 2 would satisfy the legislative requirement to achieve LEED Silver, it would leave a number of the legislative goals, and the intent of the bill unfulfilled. Specifically, the desire for the building design to “save money, improve worker productivity, reduce worker absenteeism, and to cut energy and utility costs.” The current floor plate is extremely deep, which limits the ability for occupants to work within a naturally ventilated and daylit environment. Finding a way to provide these two amenities provides the greatest opportunity to meet the intent of the green building requirement. Studies have shown that daylighting and fresh air have the greatest potential to improve worker productivity and health^{vii}.

In order to create a high performance workplace, a solution should be implemented that solves the LEED requirement and addresses the goals of the legislation. The building floor plate has significant area that will remain un-daylit, be located greater than 30’ from a window wall, and likely be an unpopular place to work. The implications of the floor plan likely means that worker productivity would be significantly lower than their potential. In order to satisfy the intent and requirements of the legislation the project team would need to be proactive, and consider altering the current floor plate.

The most effective means is to open up the center of the building and create an outdoor central courtyard space that increases the overall perimeter to core space ratio. The proposed courtyard would be created by puncturing the roof and continuing downwards through the floors of the 4th and 3rd levels. The second floor would become the base of the courtyard with a useable outdoor green space. Skylights could be integrated into the base of this courtyard to allow further penetration of daylight into the first floor auditorium and the floor space directly to the North of it.

This solution provides for both a significant improvement in exceptional work spaces, but also includes enhancements to energy performance. While the current building has both daylit area and natural ventilation, the benefits of these are only for occupants located 15’ from the façade. By implementing the Scenario 3 courtyard, including daylight controls and increasing the amount of daylit area, the building would likely improve energy performance in the range of 15-20% for lighting systems. As the climate in Olympia is well suited for natural ventilation, the project would be able to operate passively or ventilation assisted for roughly 25-30% of the year, a much greater increase over Scenario 2 due to the ability to implement cross ventilation and capture a greater area of the floor plate. Both of these attributes would significantly improve the LEED score for Scenario 3 as is seen in Figure 2.

64 Total Project Score				Possible Points 110			
Certified: 40 to 49 points				Silver: 50 to 59 points			
Gold: 60 to 79 points				Platinum: 80 to 110 points			
19 Sustainable Sites		Possible Points 26		8 Materials and Resources		Possible Points 14	
easy				easy			
Y	SSp1	Construction Activity Pollution Prevention	Req'd	MRp1	Storage and Collection of Recyclables	Req'd	
1	SSc1	Site Selection	1	2	MRc1.1 Building Reuse - Maintain Existing Walls, Floors and Roof	3	
5	SSc2	Development Density and Community Connectivity	5		MRc1.2 Building Reuse - Maintain 50% of Interior Non-Structural Elements	1	
	SSc3	Brownfield Development	1	2	MRc2 Construction Waste Management	2	
6	SSc4.1	Alternative Transportation, Public Transportation Access	6	1	MRc3 Materials Reuse	2	
1	SSc4.2	Alternative Transportation, Bicycle Storage and Changing Rooms	1	1	MRc4 Recycled Content Materials	2	
3	SSc4.3	Alternative Transportation, Low Emitting and Fuel Efficient Vehicles	3	1	MRc5 Local / Regional Materials	2	
2	SSc4.4	Alternative Transportation, Parking Capacity	2		MRc6 Rapidly Renewable Materials	1	
	SSc5.1	Site Development, Protect or Restore Habitat	1	1	MRc7 Certified Wood	1	
	SSc5.2	Site Development, Maximize Open Space	1				
	SSc6.1	Stormwater Design: Quantity Control	1	14 Indoor Environmental Quality			
	SSc6.2	Stormwater Design: Quality Control	1	Possible Points 15			
	SSc7.1	Heat Island Effect: Non-Roof	1	easy			
1	SSc7.2	Heat Island Effect: Roof	1	Y	EQp1	Minimum IAQ Performance	Req'd
	SSc8	Light Pollution Reduction	1	Y	EQp2	Environmental Tobacco Smoke Control	Req'd
				1	EQc1	Outdoor Air Delivery Monitoring	1
4 Water Efficiency				Possible Points 10			
easy				easy			
Y	WEp1	Water Use Reduction, 20% Reduction	Req'd	1	EQc2	Increased Ventilation	1
	WEc1	Water Efficient Landscaping	4	1	EQc3.1	Construction IAQ Management Plan, During Construction	1
	WEc2	Innovative Wastewater Technologies	2		EQc3.2	Construction IAQ Management Plan, Before Occupancy	1
4	WEc3	Water Use Reduction, 30-40%	4	1	EQc4.1	Low-Emitting Materials, Adhesives and Sealants	1
13 Energy and Atmosphere				Possible Points 35			
easy				easy			
Y	EAp1	Fundamental Commissioning	Req'd	1	EQc4.2	Low-Emitting Materials, Paints and Coatings	1
Y	EAp2	Minimum Energy Performance	Req'd	1	EQc4.3	Low-Emitting Materials, Flooring Systems	1
Y	EAp3	CFC Reduction in HVACandR Equipment	Req'd	1	EQc4.4	Low-Emitting Materials, Composite Wood and Laminate Adhesives	1
6	EAc1	Optimize Energy Performance	19	1	EQc5	Indoor Chemical and Pollutant Source Control	1
	EAc2	On-Site Renewable Energy	7	1	EQc6.1	Controllability of Systems, Lighting	1
2	EAc3	Enhanced Commissioning	2	1	EQc6.2	Controllability of Systems, Temperature and Ventilation	1
2	EAc4	Enhanced Refrigerant Management	2	1	EQc7.1	Thermal Comfort, Compliance	1
3	EAc5	Measurement and Verification	3	1	EQc7.2	Thermal Comfort, Monitoring	1
	EAc6	Green Power	2	1	EQc8.1	Daylighting	1
				1	EQc8.2	Views	1
5 Innovation and Design Process				Possible Points 6			
easy				easy			
				1	IDc1.1	Green Education	1
				1	IDc1.2	Green Housekeeping	1
				1	IDc1.3	Innovation in Design, Low-Mercury Lighting	1
					IDc1.4	Innovation in Design, LEED-CI EQc4.5, Low Emitting Furniture	1
				1	IDc1.5	Innovation in Design, Wall and Ceiling Systems	1
				1	IDc2	LEED Accredited Professional	1
1 Regional Priority				Possible Points 4			
easy				easy			
					RPc1	Regional Priority	
					RPc1	Regional Priority: EAc1 44% over existing	
					RPc1	Regional Priority: MRc7	
1					RPc1	Regional Priority: SSc1	
					RPc1	Regional Priority: SSc5.1	
					RPc1	Regional Priority: SSc6.1	

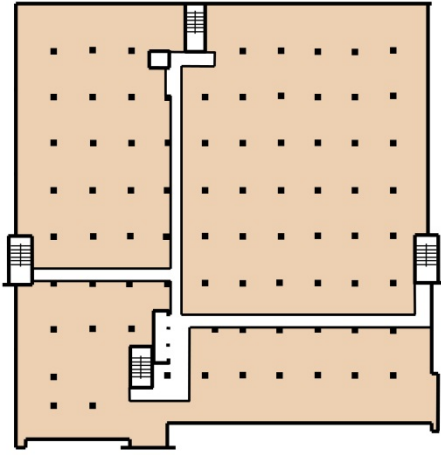
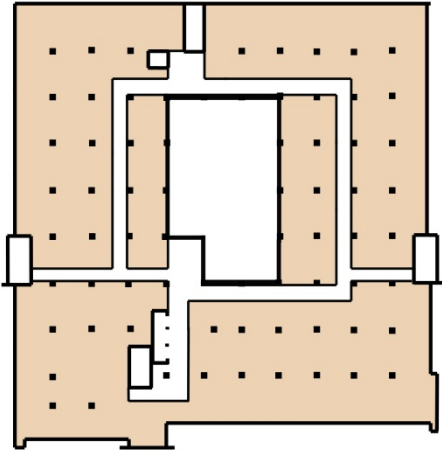
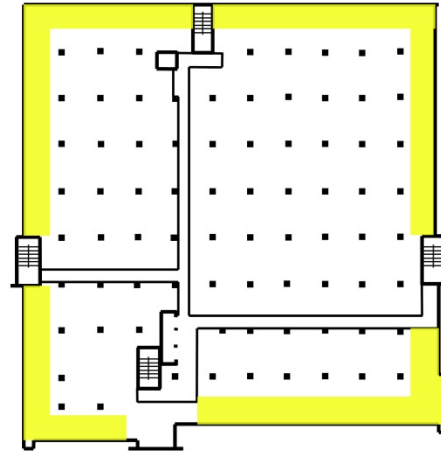
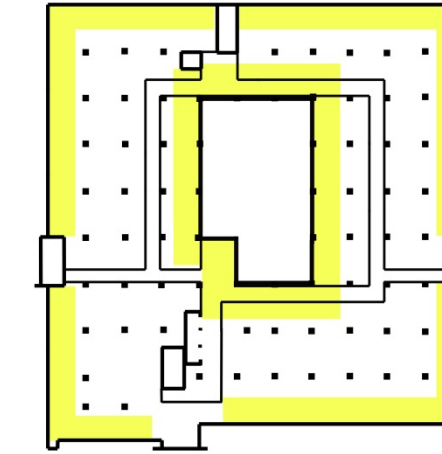
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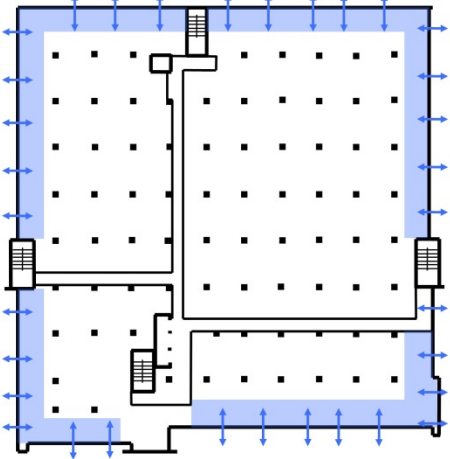
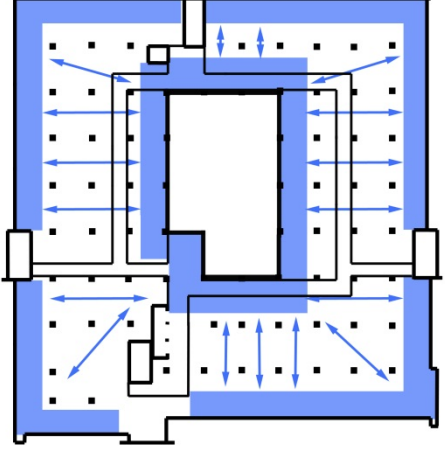
Figure 2: Scenario 3 LEED Scorecard

This solution was identified by SRG study in the 2006 Predesign Study cost estimate and offers significant improvements in nearly all metrics associated with the state's green building legislation. The courtyard can be achieved along existing column lines, and does not require additional structural elements beyond the requirements for seismic retrofit if the building were maintained in its current configuration. The walls of the inner building core could integrate shear wall needs, be used to re-route MEP systems, and be constructed of operable window walls. As such, the cost of creating this central core can be partially shared with the cost of the required building upgrades.

Scenarios 2 and 3 Comparison

With appropriate changes to the interior office wall layout, Scenario 3 shows a significant improvement over Scenario 2 in nearly every metric that is implied by the state's green building requirement.

	Scenario 2	Scenario 3
Gross Area	 <ul style="list-style-type: none"> • Typical plan of floors 2,3,4 • ~ 209,000 useable SQFT 	 <ul style="list-style-type: none"> • Typical plan of floors 2,3,4 • ~ 176,200 useable SQFT
Daylighting	 <ul style="list-style-type: none"> • 46% of floors 2,3,4 with access to daylight within 30' of window walls 	 <ul style="list-style-type: none"> • 80% of building with access to daylight within 30' of window walls • Decreased annual lighting operating costs of about 16%.^{viii}

<p>Natural Ventilation</p>	 <ul style="list-style-type: none"> • Natural ventilation limited to spaces within 15' of exterior windows, ~ 23% • ~ 6% of year that natural ventilation in Olympia is feasible option.^{ix} 	 <ul style="list-style-type: none"> • Natural ventilation available for ~ 90% of floor area • ~25-30% of year that natural ventilation in Olympia is feasible option^x
<p>HVAC Load</p>	<ul style="list-style-type: none"> • Total system replacement required 	<ul style="list-style-type: none"> • Total system replacement required • Lower upfront cost due to smaller size of system needed • Decreased annual operating energy cost
<p>Historic Elements</p>	<ul style="list-style-type: none"> • Remain untouched 	<ul style="list-style-type: none"> • Remain untouched
<p>Green Spaces</p>	<ul style="list-style-type: none"> • Potential green roof space 	<ul style="list-style-type: none"> • Potential green roof space • Potential center core courtyard green space
<p>Earthquake Retrofit</p>	<ul style="list-style-type: none"> • Stand alone cost element 	<ul style="list-style-type: none"> • Cost share with the creation of the central core space.
<p>Embodied Energy Retained</p>	<ul style="list-style-type: none"> • Roughly about 3,040 MWh of electricity (concrete only) 	<ul style="list-style-type: none"> • Roughly about 2,927 MWh of electricity (concrete only)
<p>WA State Green Building Requirement</p>	<ul style="list-style-type: none"> • LEED Silver only, does not achieve all goal statements 	<ul style="list-style-type: none"> • LEED Gold and full achievement of legislative goals

Recommendation

A renovation of the General Administration Building can meet the state’s green building requirement and retain all of the building’s historic features and embodied energy as represented in its current state.

Meeting just the LEED Silver requirement can be accomplished through select system replacement as represented by Scenario 2. However, meeting the full intent of the requirement likely means a more significant alteration as represented by Scenario 3. Provided that Scenario 3 includes a significant commitment to daylight and natural ventilation, Scenario 3 meets all of the goals of the legislation and likely creates a high performance workplace that would rival that of new construction. As such, from the lens of sustainability, Scenario 3 is a preferred alternative to both Scenario 2 and that of a full replacement of the building.

ⁱ *The Greenest Building: Quantifying the Environmental Value of Building Reuse*, Preservation Green Lab of the National Trust for Historic Preservation

http://www.preservationnation.org/information-center/sustainable-communities/sustainability/green-lab/lca/The_Greenest_Building_lowres.pdf

ⁱⁱ Assuming that 1-cubic-foot of concrete weighs about 143 lbs and that the General Administration Building has 6” poured slab floors with concrete structural members, that the average column is 16” x 16” and that the interior structural walls are 4” thick

- floor slabs = 75 lb/sf,
- column = 4200 lb/column per floor or 510,000 lbs/floor,
- exterior walls and interior structural walls such as stairwells and elevator shafts = 220,000 lbs/floor

ⁱⁱⁱ Assuming the use 40 MPa ready mix concrete that has an embodied energy of 1.6 MJ/kg

^{iv} Assuming the Energy Intensity Average annual electricity consumption for a U.S. residential utility customer for 2010 of 11,496 kWh

^v Assuming that the electricity is generated locally on the NWPP energy sub region grid, 114.16 Kg of CO₂/MBtu of electricity

^{vi} Assuming Environmental Protection Agency rate for the year 2000 of 11,450 lbs of carbon per American driver

^{vii} See Building Investment Decision Support study available at

http://www.aia.org/aiaucmp/groups/ek_public/documents/pdf/aiap080050.pdf

^{viii} Calculated assuming that there is a 15’ daylighting zone from each window

^{ix} Assuming a thermal comfort range of 68-75 degrees F, this number does not include any hours in which internal heat gains would aid in the use of natural ventilation due to the lack of cross ventilation

^x Assuming a thermal comfort range of 68-75 degrees F and the inclusion of internal heat gains with cross ventilation

3. COST ANALYSIS

CONCEPTUAL COST PLAN

for

**GA Building
Renovation Options Study
Olympia, WA**

SRG Partnership Inc
110 Union Street
Suite 300
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8/27/2012 (updated 10.30.12)

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BASIS OF COST PLAN

<u>Cost Plan Prepared From</u>	Received
Conceptual floor plan drawings; unnumbered	8.6.12
Scope and system matrix (revised 8.8.12)	8.8.12
Scope discussion	8.6.12
Updated mechanical systems capacities	8.13.12

BASIS OF COST PLAN

Conditions of Construction

The pricing is based on the following general conditions of construction

A start date of August 2012

A construction period of 12 months

The general contract will be competitively bid with qualified general and main subcontractors on a design/build basis

There will not be small business set aside requirements

The contractor will be required to pay prevailing wages

The general contractor will have full access to the site during normal business hours

INCLUSIONS

The conceptual cost plan considers five scenarios for the existing building:

Scenario 1 - generally minimal improvements to satisfy code and meet the needs of the program for the building. Comprises new shear walls for seismic upgrade, replacement of existing windows and insulation of exterior walls, replacement of the majority of interior partitions to meet the requirements of the re-planned space, replacement of necessary finishes to a typical office standard, replacement of essential function equipment to suit re-planning, replacement of elevators. replacement of existing plumbing fixtures and H&CWS piping, replacement or repairs of central AHU and secondary HVAC distribution replacement of convenience power and lighting, replacement of low voltage systems to suit re-planning, and addition of wet sprinkler system throughout. Key areas of the existing building, such as the main lobby, and other elements have an historic significance and will be renovated in a manner that is responsive to that significance.

Scenario 2 - generally as above, but with the addition of replacing all plumbing systems, all HVAC systems, incorporating a chilled beam solution, and all electrical systems within the existing building.

Scenario 3 - as option 2 above, but also providing a central courtyard passing through floors 2,3 & 4 that will improve daylighting and overall environmental improvement. Note however that this solution reduces the GSF of the building by some 15-20%.

Scenario 4 - considers full replacement of the existing building, comprising 282,682 GSF on six levels, no basement, assumed to be situated on the existing site.

Scenario 5 - includes complete demolition of existing building with footprint returned to existing grade level and infilled with lawn.

EXCLUSIONS

Owner supplied and installed furniture, fixtures and equipment
Loose furniture and equipment
Audio visual equipment
Temporary space
Hazardous material handling, disposal and abatement
Third party testing and inspection fees
Assessments, taxes, finance, legal and development charges
Environmental impact mitigation
Builder's risk, project wrap-up and other owner provided insurance program
Land and easement acquisition
Increased costs arising from delayed buyout (anticipated early 4Q2012)
Cost escalation beyond a start date of August 2012

OVERALL SUMMARY

	Scenario 1 (Renovation) \$ x 1,000		Scenario 2 (Renovation) \$ x 1,000		Scenario 3 (Renovation) \$ x 1,000		Scenario 4 (Replacement) \$ x 1,000		Scenario 5 (Replacement) \$ x 1,000	
	GSF		GSF		GSF		GSF		GSF	
Direct costs	282,682	42,406	282,682	58,990	237,743	54,981	282,682	72,526	282,682	2,693
Building & Site Components		42,406		58,990		54,981		72,526		2,693
Estimating Contingency	15.00%	6,361	15.00%	8,849	15.00%	8,247	15.00%	10,879	15.00%	404
Subcontractor Bonds	1.00%	424	1.00%	590	1.00%	550	1.00%	725	1.00%	27
MACC Contingency	2.00%	848	2.50%	1,475	2.50%	1,375	2.00%	1,451	2.00%	54
Reimbursable Expenses	4.00%	1,696	4.00%	2,360	5.00%	2,749	4.00%	2,901	4.00%	108
Subtotal		51,735		72,263		67,902		88,482		3,285
Phasing premium	0.50%	259	0.50%	361	0.50%	340	0.00%	0	0.00%	0
GC/CM Fee	4.50%	2,328	4.50%	3,252	4.50%	3,056	4.50%	3,982	4.50%	148
General Conditions	12.00%	6,208	12.00%	8,672	12.00%	8,148	12.00%	10,618	12.00%	394
Estimated MACC (Oct 2012)		60,530		84,548		79,445		103,081		3,827

SCENARIO 1 AREAS & CONTROL QUANTITIES

Areas

	GSF	GSF	GSF
Enclosed Areas			
Basement	28,601		
Ground	48,425		
1st	49,739		
2nd	49,301		
3rd	49,301		
4th	49,301		
Penthouse	8,014		
 SUBTOTAL, Enclosed Area	<hr/>	282,682	
 Covered area			
 SUBTOTAL, Covered Area @ ½ Value	<hr/>		
 TOTAL GROSS FLOOR AREA		<hr/>	282,682

SCENARIO 1 COMPONENT SUMMARY

Gross Area: 282,682 GSF

	\$/GSF	\$x1,000
1. Foundations	2.81	794
2. Vertical Structure	3.79	1,071
3. Floor & Roof Structures	12.17	3,441
4. Exterior Cladding	16.04	4,534
5. Roofing, Waterproofing & Skylights	4.69	1,327
<i>Shell (1-5)</i>	39.50	11,166
6. Interior Partitions, Doors & Glazing	13.21	3,734
7. Floor, Wall & Ceiling Finishes	22.28	6,298
<i>Interiors (6-7)</i>	35.49	10,033
8. Function Equipment & Specialties	2.91	822
9. Stairs & Vertical Transportation	3.14	889
<i>Equipment & Vertical Transportation (8-9)</i>	6.05	1,711
10 Plumbing Systems	2.42	683
11 Heating, Ventilating & Air Conditioning	16.21	4,581
12 Electric Lighting, Power & Communications	21.76	6,151
13 Fire Protection Systems	3.80	1,074
<i>Mechanical & Electrical (10-13)</i>	44.18	12,489
Total Building Construction (1-13)	125.22	35,399
14 Site Preparation & Demolition	10.24	2,894
15 Site Paving, Structures & Landscaping	12.12	3,426
16 Utilities on Site	2.43	687
Total Site Construction (14-16)	24.79	7,007
TOTAL BUILDING & SITE (1-16)	150.01	42,406
RECOMMENDED DIRECT COST BUDGET	150.01	42,406

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
1. Foundations				
Excavation				
Light excavation for seismic upgrade- includes mob/demob	344	CY	33.00	11,352
Fill				
Backfill at retaining walls with native and import fill	344	CY	22.00	7,568
Seismic				
Provide seismic repair and foundation upgrades as required, Allow	5,600	LF	82.00	459,200
Waterproofing walls below grade				
Waterproof exposed foundation	22,400	SF	8.50	190,400
Subsurface drainage				
Repair perimeter drain pipe as required	1,000	LF	9.00	9,000
Trenching				
Utility trenching	500	LF	32.00	16,000
Site access and area protection	1	LS	50,000.00	50,000
Temporary work				
Temporary shoring and covers	1	LS	50,000.00	50,000
				793,520
2. Vertical Structure				
Columns and pilasters				
Structural steel columns - allow 5 psf plus 10% for connections	18	T	3,000.00	54,000
Concrete columns and beams, repair	1	LS	150,000.00	150,000
Retaining walls				
Reinforced concrete retaining walls, repair	15,979	SF	17.76	283,787
Shear walls (6 bays 12" thick)	11,520	SF	50.00	576,000
Fireproofing on steelwork				
Spray-on fireproofing	18	T	380.00	6,840
				1,070,627
3. Floor and Roof Structure				
Floor on grade				
Reinforced concrete slab on grade; repair	28,601	SF	2.10	60,062
Suspended floors				
Fiber reinforced repair	246,067	SF	9.00	2,214,603
Concrete repair, suspended floors	246,067	SF	2.22	546,269
Flat roofs				
Seismic repair	49,301	SF	6.95	342,642

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Miscellaneous				
Equipment pads and curbs	282,682	SF	0.23	65,017
Miscellaneous metals, allow .5#/SF	71	T	3,000.00	212,012
				3,440,604

4. Exterior Cladding

Exterior wall system				
Repair as required at window areas	40,480	SF	26.00	1,052,480
Windows and glazing				
Aluminum framed window system - to match existing remove and replace	19,026	SF	160.00	3,044,096
Allowance for metal louvers	1	LS	24,000.00	24,000
Interior finish to exterior walls				
Repair interior wall at windows	40,480	SF	7.01	283,765
Sealants and waterproofing including testing	40,480	SF	3.20	129,536
				4,533,877

5. Roofing, Waterproofing & Skylights

Waterproofing walls below grade				
Waterproofing and protection board to retaining walls				<i>INC</i>
Insulation				
Building insulation -general	49,301	LF	3.75	184,879
Roofing				
Single-ply membrane roofing system including insulation and protection underlayment	49,301	SF	12.00	591,612
Roof or deck traffic surface				
Allow for walkway pads	1	LS	4,675.00	4,675
Roofing upstands and sheetmetal				
Galvanized metal parapet caps, flashing and sheetmetal; allow	49,301	SF	1.30	64,091
Rough carpentry; allow	49,301	SF	0.85	41,906
Roof access and ventilation				
Roof hatches and access ladders	1	LS	2,975.00	2,975
Fall-protection system	1	LS	12,750.00	12,750
Caulking and sealants				
Caulking, sealants and firestopping	282,682	SF	1.50	424,023
				1,326,911

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
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6. Interior Partitions, Doors & Glazing

Interior partitions Including metal studs, gypsum board on each side and insulation (including exterior wall)	285,509	SF	12.00	3,426,106
Extra over for Shaft walls/fire rated enclosures	1	LS	92,000.00	92,000
Interior doors, frames and hardware Allow	181	EA	1,195.00	216,295
				3,734,401

7. Floor, Wall & Ceiling Finishes

Floors Floor finishes	282,682	SF	10.00	2,826,820
Walls Wall finishes	285,509	SF	6.00	1,713,053
Ceilings Ceiling finishes	282,682	SF	6.22	1,758,282
				6,298,155

8. Function Equipment & Specialties

Chalkboards, insignia and graphics, etc. Code signage	282,682	SF	0.13	36,749
Light and vision control Allow for horizontal window blinds	19,026	SF	8.00	152,205
Amenities and convenience items Fire extinguishers and cabinets	20	EA	510.00	10,200
Casework and millwork	282,682	SF	2.00	565,364
Restroom specialties	282,682	SF	0.15	42,402
General equipment	282,682	SF	0.05	15,389
				822,309

9. Stairs & Vertical Transportation

Staircase flights - floor to floor

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
New stairways and rails	12	FLT	32,000.00	384,000
Elevators - new- 5 stop	2	EA	220,000.00	440,000
Machine room rebuild	1	LS	56,000.00	56,000
Interior finishes- cabs	1	LS	9,000.00	9,000
				889,000

10. Plumbing Systems

Sanitary fixtures and connection piping				
Plumbing fixtures	150	EA	1,500.00	225,000
Sanitary waste, vent and service piping				
Floor drains and sinks	30	EA	1,285.00	38,550
Hose bibbs/wall hydrants	12	EA	1,045.00	12,540
Rough in to plumbing fixtures; H&CWS, existing waste and vent reused.	150	EA	1,900.00	285,000
Water treatment, storage and circulation				
Domestic HW generation, pumps and CW booster pumps etc	1	LS	45,000.00	45,000
Gas and fuel oil distribution				
Oil storage and pumping for generators	300	GAL	40.00	12,000
Oil distribution piping and ancillaries	1	LS	25,000.00	25,000
Miscellaneous				
Enabling work	1	LS	20,000.00	20,000
Other remedial work	1	LS	20,000.00	20,000
				683,090

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
11. Heating, Ventilation & Air Conditioning				
Thermal storage and circulation pumps Allow for minor remedial work and testing of existing pumps and ancillaries	1	LS	25,000.00	25,000
Piping, fittings, valves and insulation Replace existing steam and condensate valve sets to central AHU, including localized repairs to insulation	9	EA	10,000.00	90,000
Replace existing control valve sets to central AHU, including localized repairs to existing insulation	9	EA	10,000.00	90,000
Air handling equipment Refurbish existing AHU	183,000	CFM	1.50	274,500
New AHU/supply fans	27,600	CFM	5.50	151,800
VAV boxes with electric reheat (new)	470	EA	1,150.00	540,500
Sound attenuation	27,600	CFM	0.75	20,700
Air distribution and return Clean existing galvanized steel ductwork primary distribution	113,000	LB	2.00	226,000
New secondary distribution ductwork and ancillaries	169,600	LB	6.80	1,153,280
Flexible ducting	1,300	LF	14.50	18,850
Duct volume dampers	260	EA	80.00	20,800
Duct fire dampers	47	EA	2,000.00	94,000
Duct insulation	169,500	SF	3.50	593,250
Diffusers and return air grilles Ceiling/wall diffusers and return air grilles	260	EA	150.00	39,000
Controls, instrumentation and balancing Extend and modify existing DDC control system to align with mechanical system modifications	282,682	SF	2.75	777,376
Testing and commissioning (set all systems to work and rebalance)	2,500	HR	95.00	237,500
Attendance on third part commissioning	750	HR	95.00	71,250
Independent exhaust ventilation New exhaust fans	8,000	CFM	0.90	7,200
Pressurization to stairways and elevators	1	LS	50,000.00	50,000
Miscellaneous Enabling work	1	LS	50,000.00	50,000
Other remedial work	1	LS	50,000.00	50,000
				4,581,006

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
12. Electrical Lighting, Power & Communication				
Main service and distribution etc.				
Main transformers, primary switchgear, secondary transformers, secondary distribution, switchboards, MCC's and feeders				N/A
Power metering				N/A
Emergency power				
Generators, paralleling switchgear, transfer switches, and feeders				N/A
Machine and equipment power				
Connections and switches, including new HVAC equipment	700	EA	615.00	430,500
User convenience power				
Receptacles including conduit and wire	3,300	EA	300.00	990,000
Lighting				
Lighting fixtures including conduit and wire and including exit lighting	282,682	SF	8.00	2,261,456
Lighting and power specialties				
Grounding system - repair ground fault problem in south service entry.	1	LS	25,000.00	25,000
Lighting controls	282,682	SF	1.50	424,023
Telephone and communications systems				
Cable trays	2,829	LF	40.00	113,160
Telephone/data outlets including conduit only in reconfigured spaces	840	EA	180.00	151,200
Telephone/data horizontal cabling system in reconfigured spaces	840	EA	550.00	462,000
AV systems rough in to reconfigured spaces	282,682	SF	0.90	254,414
Clocks system to reconfigured spaces	282,682	SF	0.50	141,341
Alarm and security systems				
Fire alarm devices including conduit and wire in reconfigured spaces	960	EA	625.00	600,000
Access control to reconfigured spaces	282,682	SF	0.70	197,877
Miscellaneous				
Enabling work	1	LS	50,000.00	50,000
Other remedial work	1	LS	50,000.00	50,000
				6,150,971

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
13. Fire Protection Systems				
Fire sprinkler systems Automatic wet sprinkler system and dry pipe risers in stairwells	282,682	SF	3.80	1,074,192
				1,074,192
14. Site Preparation & Building Demolition				
Site protective construction Erosion control; allow	50,000	SF	5.00	250,000
Building demolition				
Remove for disposal existing plumbing fixtures and H&CW distribution	150	EA	300.00	45,000
Remove for disposal existing HHW system including all piping, HX, pumps and finned tube radiation	282,682	SF	0.25	70,671
Remove for disposal existing AHU/fans	11	EA	1,500.00	16,500
Remove for disposal existing secondary ductwork and ancillaries	282,682	EA	0.25	70,671
Remove for disposal existing redundant controls equipment and ancillaries	282,682	SF	0.25	71,926
Remove for disposal existing electrical services convenience power in office areas	282,682	SF	0.26	73,497
Remove for disposal existing lighting installation complete	282,682	SF	0.36	101,766
Remove for disposal existing LV systems in office areas	282,682	SF	0.26	73,497
Building structural elements and finishes	282,682	SF	7.50	2,120,115
				2,893,642
15. Site Paving, Structures & Landscaping				
Vehicular paving and curbs				
Asphalt paving at driveway for temporary loading and emergency vehicle access	50,000	SF	8.00	400,000
Allowance for road markings and directional arrows	1	LS	15,500.00	15,500
Re-pave existing asphalt parking lot	85,000	SF	8.00	680,000
Pedestrian paving				
Concrete sidewalk, ramps and rails	7,500	SF	9.00	67,500

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Drainage				
Site drainage	49,739	SF	6.50	323,304
Lighting and power specialties				
Allow for site lighting	1	LS	120,000.00	120,000
Landscape planting and maintenance				
Allow for re-landscape a combination of groundcover plantings, shrubs, lawn and trees, topsoils, mulch and irrigation	150,000	SF	12.00	1,800,000
Landmarking	1	LS	20,000.00	20,000
				3,426,304

16. Utilities on Site

Storm water quality management	1	LS	325,000.00	325,000
Utility rework and connections	1	LS	325,000.00	325,000
Utility management through construction	1	LS	37,000.00	37,000
				687,000

SCENARIO 2 COMPONENT SUMMARY

Gross Area: 282,682 GSF

	\$/GSF	\$x1,000
1. Foundations	2.81	794
2. Vertical Structure	3.83	1,082
3. Floor & Roof Structures	14.35	4,056
4. Exterior Cladding	16.88	4,772
5. Roofing, Waterproofing & Skylights	4.46	1,261
Shell (1-5)	42.32	11,964
6. Interior Partitions, Doors & Glazing	16.20	4,579
7. Floor, Wall & Ceiling Finishes	24.90	7,039
Interiors (6-7)	41.10	11,619
8. Function Equipment & Specialties	4.40	1,244
9. Stairs & Vertical Transportation	3.14	889
Equipment & Vertical Transportation (8-9)	7.55	2,133
10. Plumbing Systems	3.67	1,037
11. Heating, Ventilating & Air Conditioning	41.90	11,843
12. Electric Lighting, Power & Communications	41.60	11,759
13. Fire Protection Systems	3.80	1,074
Mechanical & Electrical (10-13)	90.96	25,714
Total Building Construction (1-13)	181.94	51,430
14. Site Preparation & Demolition	10.24	2,894
15. Site Paving, Structures & Landscaping	14.08	3,979
16. Utilities on Site	2.43	687
Total Site Construction (14-16)	26.74	7,560
TOTAL BUILDING & SITE (1-16)	208.68	58,990
RECOMMENDED DIRECT COST BUDGET	208.68	58,990

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
1. Foundations				
Excavation				
Light excavation for seismic upgrade- includes mob/demob	344	CY	33.00	11,352
Fill				
Backfill at retaining walls with native and import fill	344	CY	22.00	7,568
Seismic				
Provide seismic repair and foundation upgrades as required, Allow	5,600	LF	82.00	459,200
Waterproofing walls below grade				
Waterproof exposed foundation	22,400	SF	8.50	190,400
Subsurface drainage				
Repair perimeter drain pipe as required	1,000	LF	9.00	9,000
Trenching				
Utility trenching	500	LF	32.00	16,000
Site access and area protection	1	LS	50,000.00	50,000
Temporary work				
Temporary shoring and covers	1	LS	50,000.00	50,000
				793,520
2. Vertical Structure				
Columns and pilasters				
Structural steel columns - allow 5 psf plus 10% for connections	18	T	3,000.00	54,000
Concrete columns and beams, repair	1	LS	150,000.00	150,000
Retaining walls				
Reinforced concrete retaining walls, repair	16,600	SF	17.76	294,816
Shear walls (6 bays 12" thick)	11,520	SF	50.00	576,000
Fireproofing on steelwork				
Spray-on fireproofing	18	T	380.00	6,840
				1,081,656
3. Floor and Roof Structure				
Floor on grade				
Reinforced concrete slab on grade; repair	246,067	SF	2.10	516,741
Suspended floors				
Fiber reinforced repair	246,067	SF	9.00	2,214,603
Concrete repair, suspended floors	246,067	SF	2.22	546,269
Flat roofs				

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Seismic repair	49,301	SF	6.95	342,642
Miscellaneous				
Equipment pads and curbs	282,682	SF	0.23	65,017
Misc metals, structural steel and connections	124	T	3,000.00	370,710
				4,055,981

4. Exterior Cladding

Exterior wall system				
Repair as required at window areas address surrounding areas	49,650	SF	26.00	1,290,900
Windows and glazing				
Aluminum framed window system - to match existing remove and replace	19,026	SF	160.00	3,044,096
Allowance for metal louvers	1	LS	24,000.00	24,000
Interior finish to exterior walls				
Repair interior wall at windows	40,480	SF	7.01	283,765
Sealants and waterproofing including testing	40,480	SF	3.20	129,536
				4,772,297

5. Roofing, Waterproofing & Skylights

Waterproofing walls below grade				
Waterproofing and protection board to retaining walls				INC
Insulation				
Building insulation -general	49,301	LF	3.75	184,879
Roofing				
Single-ply membrane roofing system including insulation and protection underlayment	49,301	SF	12.00	591,612
Roof or deck traffic surface				
Allow for walkway pads	1	LS	4,675.00	4,675
Roofing upstands and sheetmetal				
Galvanized metal parapet caps, flashing and sheetmetal; allow	49,301	SF	1.30	64,091
Rough carpentry; allow	49,301	SF	0.85	41,906
Roof access and ventilation				
Roof hatches and access ladders	1	LS	2,975.00	2,975
Fall-protection system	1	LS	12,750.00	12,750
Caulking and sealants				

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Caulking, sealants and firestopping	238,626	SF	1.50	357,939
				1,260,827

6. Interior Partitions, Doors & Glazing

Interior partitions				
Including metal studs, gypsum board on each side and insulation (including exterior wall)	285,509	SF	12.00	3,426,106
Extra over for				
Shaft walls/fire rated enclosures	1	LS	92,000.00	92,000
Specialty walls	282,682	SF	2.97	839,566
Interior doors, frames and hardware				
Allow - 1 per 35 lf of partition length	181	EA	1,195.00	216,295
Sealants	1	LS	5,500.00	5,500
				4,579,466

7. Floor, Wall & Ceiling Finishes

Floors				
Floor finishes	282,682	SF	10.00	2,826,820
Walls				
Wall finishes	285,509	SF	6.00	1,713,053
Ceilings				
Ceiling finishes	282,682	SF	6.22	1,758,282
Specialty wall features	285,509	SF	2.60	741,244
				7,039,399

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
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8. Function Equipment & Specialties

Chalkboards, insignia and graphics, etc. Code signage	282,682	SF	0.13	36,749
Light and vision control Allow for horizontal window blinds	19,026	SF	12.00	228,307
Amenities and convenience items Fire extinguishers and cabinets	20	EA	510.00	10,200
Casework and millwork	282,682	SF	3.00	848,046
Restroom specialties	282,682	SF	0.15	42,402
General equipment	282,682	SF	0.28	78,303
				1,244,007

9. Stairs & Vertical Transportation

Staircase flights - floor to floor New stairways and rails	12	FLT	32,000.00	384,000
Elevators - new- 5 stop	2	EA	220,000.00	440,000
Machine room rebuild	1	LS	56,000.00	56,000
Interior finishes- cabs	1	LS	9,000.00	9,000
				889,000

10. Plumbing Systems

Sanitary fixtures and connection piping Plumbing fixtures	150	EA	1,500.00	225,000
Sanitary waste, vent and service piping Floor drains and sinks	30	EA	1,285.00	38,550
Hose bibbs/wall hydrants	12	EA	1,045.00	12,540
Rough in to plumbing fixtures	150	EA	2,600.00	390,000
Water treatment, storage and circulation Domestic HW generation, pumps and CW booster pumps etc	1	LS	45,000.00	45,000
Surface water drainage RD/OD	80	EA	450.00	36,000
Drain piping; insulated	4,600	LF	55.00	253,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Gas and fuel oil distribution				
Oil storage and pumping for generators	300	GAL	40.00	12,000
Oil distribution piping and ancillaries	1	LS	25,000.00	25,000
				1,037,090

11. Heating, Ventilation & Air Conditioning

Heat generation and chilling				
Heat exchangers; steam to HHW	2	EA	40,000.00	80,000
Condensate receiver/pumps	1	EA	12,500.00	12,500
CHW heat exchangers	1	EA	65,000.00	65,000
CHW storage	1	LS	500,000.00	500,000
Water treatment	1	LS	40,000.00	40,000
Thermal storage and circulation pumps				
HHW circulating pumps	3	EA	7,500.00	22,500
CHW circulating pumps; (high temp)	1	LS	8,000.00	8,000
CHW circulating pumps; (normal temp)	1	LS	7,000.00	7,000
Vibration isolation to pumps	1	LS	8,000.00	8,000
Expansion tanks and air separators	1	LS	12,000.00	12,000
Piping, fittings, valves and insulation				
Steam and condensate piping within building fed from site distribution	282,682	SF	0.40	113,073
HHW piping, valves & insulation - radiant floor & AHU etc.	282,682	SF	6.00	1,696,092
CHW piping, valves & insulation - chilled beams & normal	282,682	SF	8.00	2,261,456
Air handling equipment				
Air handling units	110,000	CFM	5.50	605,000
Local cooling units	10	TN	1,500.00	15,000
Sound attenuation	110,000	CFM	0.75	82,500
Air distribution and return				
Galvanized steel ductwork	319,000	LB	6.80	2,169,200
Flexible ducting	1,300	LF	14.50	18,850
Duct volume dampers	260	EA	80.00	20,800
Duct fire dampers	228	EA	2,000.00	456,000
Duct insulation	191,400	SF	3.50	669,900
Diffusers and return air grilles				
Ceiling/wall diffusers and return air grilles	260	EA	150.00	39,000
Controls, instrumentation and balancing				
DDC control system	282,682	SF	4.75	1,342,740
Testing and commissioning	3,300	HR	95.00	313,500
Attendance on third part commissioning	990	HR	95.00	94,050
Heaters and coolers without ductwork				
Radiant floor system	5,000	SF	15.00	75,000
Chilled beams	735	EA	1,400.00	1,029,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Independent exhaust ventilation				
Kitchen exhaust fans	10,000	CFM	1.50	15,000
Toilet exhaust fan	8,000	CFM	0.90	7,200
Electric closet exhaust fans	10	EA	1,500.00	15,000
Pressurization to stairways and elevators	1	LS	50,000.00	50,000
				11,843,360

12. Electrical Lighting, Power & Communication

Main service and distribution etc.				
Main transformers, primary switchgear, secondary transformers, secondary distribution, switchboards, MCC's and feeders	12,000	AMP	325.00	3,900,000
Emergency power				
Generators, paralleling switchgear, transfer switches, and feeders	250	KW	895.00	223,750
Machine and equipment power				
Connections and switches, including new HVAC equipment	282,682	EA	3.50	989,387
User convenience power				
Receptacles including conduit and wire	3,900	EA	300.00	1,170,000
Lighting				
Lighting fixtures including conduit and wire and including exit lighting	282,682	SF	8.00	2,261,456
Lighting and power specialties				
Grounding system	1	LS	56,500.00	56,500
Lighting controls	282,682	SF	1.50	424,023
Telephone and communications systems				
MDF/IDF rough-in	1	LS	96,000.00	96,000
Cable trays	2,830	LF	40.00	113,200
Telephone/data outlets including conduit only	990	EA	180.00	178,200
Telephone/data passive equipment(racks, patch panels, termination blocks etc.	1	LS	254,400.00	254,400
Telephone/data horizontal cabling system	990	EA	550.00	544,500
Telephone/data backbone cabling	1	LS	113,000.00	113,000
AV systems rough in	282,682	SF	0.90	254,414
Clocks system	282,682	SF	0.50	141,341
Alarm and security systems				
Fire alarm control panel and annunciator	1	LS	135,000.00	135,000
Fire alarm devices including conduit and wire in reconfigured spaces	1,130	EA	625.00	706,250
Access control to reconfigured spaces	282,682	SF	0.70	197,877

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
				11,759,298

13. Fire Protection Systems

Fire sprinkler systems				
Automatic wet sprinkler system and dry pipe risers in stairwells	282,682	SF	3.80	1,074,192
				1,074,192

14. Site Preparation & Building Demolition

Site protective construction				
Erosion control; allow	50,000	SF	5.00	250,000
Building Demolition				
Remove for disposal existing plumbing system, complete	282,682	SF	0.50	141,341
Remove for disposal existing HVAC system, complete	282,682	SF	0.75	212,012
Remove for disposal existing electrical system, complete	282,682	SF	0.60	170,853
Building structural elements and finishes	282,682	SF	7.50	2,120,115
				2,894,321

15. Site Paving, Structures & Landscaping

Vehicular paving and curbs				
Asphalt paving at driveway for temporary loading and emergency vehicle access	50,000	SF	8.00	400,000
Allowance for road markings and directional arrows	1	LS	15,500.00	15,500
Re-pave existing asphalt parking lot	85,000	SF	8.00	680,000
Pedestrian paving				
Concrete sidewalk, ramps and rails	10,000	SF	9.00	90,000
Drainage				
Site drainage	49,739	SF	6.50	323,304
Lighting and power specialties				
Allow for site lighting	1	LS	150,000.00	150,000
Landscape planting and maintenance				

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Allow for re-landscape a combination of groundcover plantings, shrubs, lawn and trees, berms, topsoils, mulch and irrigation	150,000	SF	12.00	1,800,000
Specialty Site features	1	LS	250,000.00	250,000
Benches, bike racks, storage, etc	1	LS	250,000.00	250,000
Landmarking	1	LS	20,000.00	20,000
				3,978,804

16. Utilities on Site

Storm water quality management	1	LS	325,000.00	325,000
Utility rework and connections	1	LS	325,000.00	325,000
Utility management through construction	1	LS	37,000.00	37,000
				687,000

SCENARIO 3 COMPONENT SUMMARY

Gross Area: 237,744 GSF

	\$/GSF	\$x1,000
1. Foundations	3.12	742
2. Vertical Structure	5.77	1,372
3. Floor & Roof Structures	16.87	4,010
4. Exterior Cladding	24.12	5,735
5. Roofing, Waterproofing & Skylights	5.04	1,199
Shell (1-5)	54.92	13,057
6. Interior Partitions, Doors & Glazing	13.31	3,165
7. Floor, Wall & Ceiling Finishes	24.90	5,920
Interiors (6-7)	38.21	9,085
8. Function Equipment & Specialties	5.01	1,192
9. Stairs & Vertical Transportation	3.74	889
Equipment & Vertical Transportation (8-9)	8.75	2,081
10. Plumbing Systems	3.95	939
11. Heating, Ventilating & Air Conditioning	44.51	10,581
12. Electric Lighting, Power & Communications	46.35	11,019
13. Fire Protection Systems	3.80	903
Mechanical & Electrical (10-13)	98.60	23,442
Total Building Construction (1-13)	200.49	47,666
14. Site Preparation & Demolition	11.15	2,650
15. Site Paving, Structures & Landscaping	16.74	3,979
16. Utilities on Site	2.89	687
Total Site Construction (14-16)	30.77	7,316
TOTAL BUILDING & SITE (1-16)	231.26	54,981
RECOMMENDED DIRECT COST BUDGET	231.26	54,981

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
1. Foundations				
Excavation				
Excavation for seismic upgrade and new footings- includes mob/demob	440	CY	33.00	14,520
Fill				
Backfill at retaining walls with native and import fill	440	CY	22.00	9,680
Concrete				
Reinforced footing and tie in	155	CY	475.00	73,748
Epoxy tie	1	LS	16,000.00	16,000
Seismic				
Provide seismic repair a, Allow	4,500	LF	82.00	369,000
Waterproofing walls below grade				
Waterproof exposed foundation	15,750	SF	8.50	133,875
Subsurface drainage				
Repair perimeter drain pipe as required	1,000	LF	9.00	9,000
Trenching				
Utility trenching	500	LF	32.00	16,000
Site access and area protection	1	LS	50,000.00	50,000
Temporary work				
Temporary shoring and covers	1	LS	50,000.00	50,000
				741,823
2. Vertical Structure				
Columns and pilasters				
Structural steel columns and brace frames	62	T	3,000.00	186,000
Structural tie in each floor	5	FL	30,500.00	152,500
Concrete columns and beams, repair	1	LS	150,000.00	150,000
Retaining walls				
Reinforced concrete retaining walls, repair	15,979	SF	17.76	283,787
Shear walls (6 bays 12" thick)	11,520	SF	50.00	576,000
Fireproofing on steelwork				
Spray-on fireproofing	62	T	380.00	23,560
				1,371,847

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
3. Floor and Roof Structure				
Floor on grade				
Reinforced concrete slab on grade; repair	28,601	SF	7.50	214,508
Suspended floors				
Fiber reinforced repair	237,744	SF	9.00	2,139,692
Concrete repair, suspended floors	237,744	SF	2.22	527,791
Flat roofs				
Seismic repair	34,511	SF	6.95	239,849
Structural reinforcement to courtyard opening	34,511	SF	18.00	621,193
Miscellaneous				
Equipment pads and curbs	237,744	SF	0.23	54,681
Miscellaneous metals, allow	71	T	3,000.00	212,012
				4,009,724

4. Exterior Cladding

Exterior wall system				
Repair as required at window areas	40,480	SF	26.00	1,052,480
Exterior cladding to courtyard - metal panel system and glazing	11,890	SF	96.00	1,141,440
Windows and glazing				
Aluminum framed window system - to match existing remove and replace	19,026	SF	160.00	3,044,096
Allowance for metal louvers	1	LS	24,000.00	24,000
Interior finish to exterior walls				
Repair interior wall at windows	40,480	SF	7.01	283,765
Interior finish to courtyard walls	11,890	SF	5.00	59,450
Sealants and waterproofing including testing	40,480	SF	3.20	129,536
				5,734,767

5. Roofing, Waterproofing & Skylights

Waterproofing walls below grade				
Waterproofing and protection board to existing retaining walls				<i>INC</i>
Waterproofing and protection board to courtyard walls below grade	1,554	SF	9.00	13,986
Insulation				
Building insulation -general	34,511	SF	3.75	129,415
Roofing				

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Parapet at courtyard overview	34,511	SF	1.33	45,899
Single-ply membrane roofing system including insulation and protection underlayment	34,511	SF	12.00	414,128
Roof or deck traffic surface				
Allow for walkway pads	1	LS	4,675.00	4,675
Roofing upstands and sheetmetal				
Galvanized metal parapet caps, flashing and sheetmetal; allow	34,511	SF	1.30	44,864
Rough carpentry; allow	34,511	SF	2.80	96,630
Roof access and ventilation				
Skylights, allow	800	SF	96.00	76,800
Roof hatches and access ladders	1	LS	2,975.00	2,975
Fall-protection system	1	LS	12,750.00	12,750
Caulking and sealants				
Caulking, sealants and firestopping	237,744	SF	1.50	356,615
				1,198,738

6. Interior Partitions, Doors & Glazing

Interior partitions				
Including metal studs, gypsum board on each side and insulation (including exterior wall)	240,121	SF	12.20	2,929,475
Extra over for				
Shaft walls/fire rated enclosures	1	LS	92,000.00	92,000
Interior doors, frames and hardware				
Allow	120	EA	1,195.00	143,400
				3,164,875

7. Floor, Wall & Ceiling Finishes

Floors				
Floor finishes	237,743	SF	10.00	2,377,430
Walls				
Wall finishes	240,121	SF	6.00	1,440,726
Ceilings				
Ceiling finishes	237,743	SF	6.22	1,478,761
Specialty wall features	240,121	SF	2.60	623,407
				5,920,324

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
8. Function Equipment & Specialties				
Chalkboards, insignia and graphics, etc. Code signage	237,743	SF	0.13	30,907
Light and vision control Allow for horizontal window blinds	28,026	SF	12.00	336,307
Amenities and convenience items Fire extinguishers and cabinets	20	EA	510.00	10,200
Casework and millwork	237,743	SF	3.00	713,229
Restroom specialties	237,743	SF	0.15	35,661
General equipment	237,743	SF	0.28	65,855
				1,192,159
9. Stairs & Vertical Transportation				
Staircase flights - floor to floor New stairways and rails	12	FLT	32,000.00	384,000
Elevators - new- 5 stop Machine room rebuild	2	EA	220,000.00	440,000
	1	LS	56,000.00	56,000
Interior finishes- cabs	1	LS	9,000.00	9,000
				889,000
10. Plumbing Systems				
Sanitary fixtures and connection piping Plumbing fixtures	130	EA	1,500.00	195,000
Sanitary waste, vent and service piping Floor drains and sinks	22	EA	1,285.00	28,270
Hose bibbs/wall hydrants	11	EA	1,045.00	11,495
Rough in to plumbing fixtures	130	EA	2,600.00	338,000
Water treatment, storage and circulation Domestic HW generation, pumps and CW booster pumps etc	1	LS	40,000.00	40,000
Surface water drainage RD/OD	80	EA	450.00	36,000
Drain piping; insulated	4,600	LF	55.00	253,000
Gas and fuel oil distribution Oil storage and pumping for generators	300	GAL	40.00	12,000
Oil distribution piping and ancillaries	1	LS	25,000.00	25,000
				938,765

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
11. Heating, Ventilation & Air Conditioning				
Heat generation and chilling				
Heat exchangers; steam to HHW	2	EA	40,000.00	80,000
Condensate receiver/pumps	1	EA	12,500.00	12,500
CHW heat exchangers	1	EA	65,000.00	65,000
CHW storage	1	LS	500,000.00	500,000
Water treatment	1	LS	40,000.00	40,000
Thermal storage and circulation pumps				
HHW circulating pumps	3	EA	7,500.00	22,500
CHW circulating pumps; (high temp)	1	LS	8,000.00	8,000
CHW circulating pumps; (normal temp)	1	LS	7,000.00	7,000
Vibration isolation to pumps	1	LS	8,000.00	8,000
Expansion tanks and air separators	1	LS	12,000.00	12,000
Piping, fittings, valves and insulation				
Steam and condensate piping within building fed from site distribution	237,744	SF	0.40	95,097
HHW piping, valves & insulation - radiant floor & AHU etc.	237,744	SF	6.00	1,426,461
CHW piping, valves & insulation - chilled beams & normal	237,744	SF	8.00	1,901,948
Air handling equipment				
Air handling units	100,000	CFM	5.50	550,000
Local cooling units	10	TN	1,500.00	15,000
Sound attenuation	110,000	CFM	0.75	82,500
Air distribution and return				
Galvanized steel ductwork	288,000	LB	6.80	1,958,400
Flexible ducting	1,200	LF	14.50	17,400
Duct volume dampers	244	EA	80.00	19,520
Duct fire dampers	218	EA	2,000.00	436,000
Duct insulation	172,000	SF	3.50	602,000
Diffusers and return air grilles				
Ceiling/wall diffusers and return air grilles	220	EA	150.00	33,000
Controls, instrumentation and balancing				
DDC control system	237,744	SF	4.75	1,129,282
Testing and commissioning	3,000	HR	95.00	285,000
Attendance on third part commissioning	980	HR	95.00	93,100
Heaters and coolers without ductwork				
Radiant floor system	5,000	SF	15.00	75,000
Chilled beams	728	EA	1,400.00	1,019,200
Independent exhaust ventilation				
Kitchen exhaust fans	10,000	CFM	1.50	15,000
Toilet exhaust fan	8,000	CFM	0.90	7,200
Electric closet exhaust fans	10	EA	1,500.00	15,000
Pressurization to stairways and elevators	1	LS	50,000.00	50,000
				10,581,108

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
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12. Electrical Lighting, Power & Communication

Main service and distribution etc.

Main transformers, primary switchgear,
 secondary transformers, secondary
 distribution, switchboards, MCC's and
 feeders

12,000 AMP 325.00 3,900,000

Emergency power

Generators, paralleling switchgear, transfer
 switches, and feeders

250 KW 895.00 223,750

Machine and equipment power

Connections and switches, including new
 HVAC equipment

237,744 EA 3.50 832,102

User convenience power

Receptacles including conduit and wire

3,800 EA 300.00 1,140,000

Lighting

Lighting fixtures including conduit and wire
 and including exit lighting

237,744 SF 8.00 1,901,948

Lighting and power specialties

Grounding system

1 LS 56,500.00 56,500

Lighting controls

237,744 SF 1.50 356,615

Telephone and communications systems

MDF/IDF rough-in

1 LS 96,000.00 96,000

Cable trays

2,800 LF 40.00 112,000

Telephone/data outlets including conduit
 only

980 EA 180.00 176,400

Telephone/data passive equipment(racks,
 patch panels, termination blocks etc.

1 LS 250,000.00 250,000

Telephone/data horizontal cabling system

980 EA 550.00 539,000

Telephone/data backbone cabling

1 LS 113,000.00 113,000

AV systems rough in

237,744 SF 0.90 213,969

Clocks system

237,744 SF 0.50 118,872

Alarm and security systems

Fire alarm control panel and annunciator

1 LS 135,000.00 135,000

Fire alarm devices including conduit and
 wire in reconfigured spaces

1,100 EA 625.00 687,500

Access control to reconfigured spaces

237,744 SF 0.70 166,420

11,019,077

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
13. Fire Protection Systems				
Fire sprinkler systems Automatic wet sprinkler system and dry pipe risers in stairwells	237,744	SF	3.80	903,425
				903,425
14. Site Preparation & Building Demolition				
Site protective construction Erosion control; allow	52,000	SF	5.00	260,000
Building Demolition				
Remove for disposal existing plumbing system, complete	237,744	SF	0.50	118,872
Remove for disposal existing HVAC system, complete	237,744	SF	0.75	178,308
Remove for disposal existing electrical system, complete	237,744	SF	0.60	143,692
Building structural elements and finishes	237,744	SF	7.50	1,783,076

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Site preparation				
Drainage layer at court yard	2,000	SF	13.00	26,000
Courtyard features	2,000	SF	70.00	140,000
				2,649,948

15. Site Paving, Structures & Landscaping

Vehicular paving and curbs				
Asphalt paving at driveway for temporary loading and emergency vehicle access	50,000	SF	8.00	400,000
Allowance for road markings and directional arrows	1	LS	15,500.00	15,500
Re-pave existing asphalt parking lot	85,000	SF	8.00	680,000
Pedestrian paving				
Concrete sidewalk, ramps and rails	10,000	SF	9.00	90,000
Drainage				
Site drainage	49,739	SF	6.50	323,304
Lighting and power specialties				
Allow for site lighting	1	LS	150,000.00	150,000
Landscape planting and maintenance				
Allow for re-landscape a combination of groundcover plantings, shrubs, lawn and trees, berms, topsoils, mulch and irrigation	150,000	SF	12.00	1,800,000
Specialty Site features				
Benches, bike racks, storage, etc	1	LS	250,000.00	250,000
Landmarking				
				3,978,804

16. Utilities on Site

Storm water quality management	1	LS	325,000.00	325,000
Utility rework and connections	1	LS	325,000.00	325,000
Utility management through construction	1	LS	37,000.00	37,000
				687,000

SCENARIO 4 AREAS & CONTROL QUANTITIES

Areas

	GSF	GSF	GSF
Enclosed Areas			
Ground floor	48,500		
First floor	48,500		
Second floor	48,500		
Third floor	48,500		
Fourth floor	48,500		
Fifth floor	40,182		
 SUBTOTAL, Enclosed Area	<hr/>	282,682	
 Covered area			
 SUBTOTAL, Covered Area @ ½ Value		<hr/>	
 TOTAL GROSS FLOOR AREA			<hr/> 282,682

Control Quantities

			Ratio to Gross Area
Number of stories (x1,000)	6	EA	0.021
Gross Area	282,682	SF	1.000
Enclosed Area	282,682	SF	1.000
Covered Area	0	SF	0.000
Footprint Area	48,500	SF	0.172
Volume	4,522,912	CF	16.000
Basement Volume	0	CF	0.000
Gross Wall Area	99,108	SF	0.351
Retaining Wall Area	0	SF	0.000
Finished Wall Area	99,108	SF	0.351
Windows or Glazing Area	40.00%	39,643 SF	0.140
Roof Area - Flat		48,500 SF	0.172
Roof Area - Sloping		0 SF	0.000
Roof Area - Total		48,500 SF	0.172
Roof Glazing Area		2,668 SF	0.009
Interior Partition Length		0 LF	0.000
Finished Area		282,682 SF	1.000
Elevators (x10,000)		4 EA	0.142

SCENARIO 4 COMPONENT SUMMARY

Gross Area: 282,682 GSF

	\$/GSF	\$x1,000
1. Foundations	7.94	2,244
2. Vertical Structure	7.15	2,022
3. Floor & Roof Structures	32.37	9,151
4. Exterior Cladding	28.91	8,172
5. Roofing, Waterproofing & Skylights	10.43	2,950
Shell (1-5)	86.81	24,539
6. Interior Partitions, Doors & Glazing	16.20	4,579
7. Floor, Wall & Ceiling Finishes	24.90	7,039
Interiors (6-7)	41.10	11,618
8. Function Equipment & Specialties	4.40	1,244
9. Stairs & Vertical Transportation	5.88	1,661
Equipment & Vertical Transportation (8-9)	10.28	2,905
10. Plumbing Systems	4.40	1,244
11. Heating, Ventilating & Air Conditioning	41.90	11,844
12. Electric Lighting, Power & Communications	41.60	11,760
13. Fire Protection Systems	3.80	1,074
Mechanical & Electrical (10-13)	91.70	25,922
Total Building Construction (1-13)	229.88	64,983
14. Site Preparation & Demolition	8.99	2,543
15. Site Paving, Structures & Landscaping	10.61	3,000
16. Utilities on Site	7.08	2,000
Total Site Construction (14-16)	26.68	7,543
TOTAL BUILDING & SITE (1-16)	256.56	72,526
RECOMMENDED DIRECT COST BUDGET	256.56	72,526

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>1. Foundations</u>				
Piling				
Micro piles	67	EA	3,300.00	221,100
Reinforced concrete including excavation				
Conventional foundation system	282,682	SF	6.93	1,958,359
Elevator pit	4	EA	10,100.00	40,400
Subsurface drainage				
Perimeter drain	1,035	LF	23.43	24,250
				2,244,109
<u>2. Vertical Structure</u>				
Columns and pilasters				
Structural steel columns	373	T	3,000.00	1,119,360
Shear bracing	187	T	3,700.00	690,272
Fireproofing on steelwork	560	T	380.00	212,678
				2,022,310
<u>3. Floor and Roof Structure</u>				
Floor on grade				
SOG	48,500	SF	14.91	723,101
Suspended floors				
Structural steel framing	1,368	T	3,000.00	4,105,200
Metal deck & reinforced concrete fill	234,182	SF	9.58	2,244,529
Flat roofs				
Structural steel framing	192	T	3,000.00	575,520
Metal deck & reinforced concrete fill	48,500	SF	9.58	464,851
Miscellaneous allowance				
Pads and curbs	282,682	SF	0.37	104,573
Misc. metals	212,012	LB	1.60	339,862
Fireproofing on steelwork	1,560	T	380.00	592,891
				9,150,526
<u>4. Exterior Cladding</u>				
Wall framing, furring and insulation				
Support steel at glazed elements	39,643	SF	3.83	151,984
Metal stud exterior wall framing	56,492	SF	8.52	481,289

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Batt insulation	56,492	SF	1.18	66,494
Applied exterior finishes				
Metal panel (assume 57% of wall area)	56,492	SF	45.00	2,542,140
Interior finish to exterior walls				
Painted drywall	56,492	SF	2.61	147,553
Windows and glazing				
Glazed elements (assume 43% of wall area), including sun shades	39,643	SF	90.00	3,567,870
Exterior doors, frames and hardware				
Doors	282,682	SF	0.96	272,522
Fascias, bands, screens and trim etc.				
Sunshades, screens, etc.	99,108	SF	5.86	581,053
Soffits	282,682	SF	1.28	361,251
				8,172,157

5. Roofing, Waterproofing & Skylights

Waterproofing				
Slabs at lowest level	48,500	SF	3.73	181,047
Insulation				
Roof insulation	48,500	SF	3.75	181,875
Roofing				
Green roof	48,500	SF	32.00	1,552,000
Roof or deck traffic surface				
Walkway pads	7,275	SF	6.39	46,485
Roofing upstands and sheetmetal				
Parapet caps, flashings, rough carpentry, etc.	282,682	SF	0.54	152,106
Roof lights				
Skylights	2,668	SF	96.00	256,128
Roof access and ventilation				
Hatch / ladders - allow	2,668	SF	0.21	568
Caulking, sealants and firesafing	282,682	SF	1.50	424,023
Miscellaneous items	282,682	SF	0.55	155,274
				2,949,506

6. Interior Partitions, Doors & Glazing

Interior partitions				
Framing, drywall, balustrades, interior glazing, and doors	282,682	SF	16.20	4,579,448

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
				4,579,448
<u>7. Floor, Wall & Ceiling Finishes</u>				
Finishes				
Floor, wall and ceiling finishes	282,682	SF	24.90	7,038,782
				7,038,782
<u>8. Function Equipment & Specialties</u>				
Equipment				
Equipment including barriers and bumpers, shelving, millwork, toilet compartments and accessories, chalkboards, insignia and graphics, light & vision control etc.	282,682	SF	4.40	1,243,801
				1,243,801
<u>9. Stairs & Vertical Transportation</u>				
Staircase flights - floor to floor				
Feature stair	1	FLT	100,000.00	100,000
Stairs	13	FLT	32,000.00	416,000
Ladders and fire escape				
Allow	282,682	SF	0.12	34,858
Elevators				
Passenger	18	STP	44,000.00	792,000
Freight elevator	6	STP	53,000.00	318,000
				1,660,858
<u>10. Plumbing Systems</u>				
Plumbing systems	282,682	SF	4.40	1,243,801
				1,243,801
<u>11. Heating, Ventilation & Air Conditioning</u>				

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Mechanical systems	282,682	SF	41.90	11,844,376
				11,844,376
<u>12. Electrical Lighting, Power & Communication</u>				
Electrical systems	282,682	SF	41.60	11,759,571
				11,759,571
<u>13. Fire Protection Systems</u>				
Fire sprinkler systems - complete	282,682	SF	3.80	1,074,192
				1,074,192
<u>14. Site Preparation & Building Demolition</u>				
Building demolition				
Demolish and remove existing building, allow	1	LS	1,450,000.00	1,450,000
HAZMAT abatement	EXCLUDED			
Site protective construction				
Erosion control	1	LS	55,000.00	55,000
Site clearing and grading				
Imported Fill	22,000	CY	40.00	880,000
General site clearance and grading	1	LS	100,000.00	100,000
Allowance for disposal of contaminated soils	EXCLUDED			
Cutting and drilling				
Sawcutting	1	LS	7,500.00	7,500
Selective demolition and removal				
Miscellaneous site demolition	1	LS	50,000.00	50,000
				2,542,500
<u>15. Site Paving, Structures & Landscaping</u>				
Site development - new building - allow	1	LS	3,000,000.00	3,000,000
				3,000,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
16. Utilities on Site				
Site utilities - allow	1	LS	2,000,000.00	2,000,000
				<hr/> 2,000,000

SCENARIO 5 COMPONENT SUMMARY

Gross Area: 282,682 GSF

	\$/GSF	\$x1,000
1. Foundations	0.00	0
2. Vertical Structure	0.00	0
3. Floor & Roof Structures	0.00	0
4. Exterior Cladding	0.00	0
5. Roofing, Waterproofing & Skylights	0.00	0
<i>Shell (1-5)</i>	0.00	0
6. Interior Partitions, Doors & Glazing	0.00	0
7. Floor, Wall & Ceiling Finishes	0.00	0
<i>Interiors (6-7)</i>	0.00	0
8. Function Equipment & Specialties	0.00	0
9. Stairs & Vertical Transportation	0.00	0
<i>Equipment & Vertical Transportation (8-9)</i>	0.00	0
10. Plumbing Systems	0.00	0
11. Heating, Ventilating & Air Conditioning	0.00	0
12. Electric Lighting, Power & Communications	0.00	0
13. Fire Protection Systems	0.00	0
<i>Mechanical & Electrical (10-13)</i>	0.00	0
Total Building Construction (1-13)	0.00	0
14. Site Preparation & Demolition	8.82	2,493
15. Site Paving, Structures & Landscaping	0.53	150
16. Utilities on Site	0.18	50
Total Site Construction (14-16)	9.52	2,693
TOTAL BUILDING & SITE (1-16)	9.52	2,693
RECOMMENDED DIRECT COST BUDGET	9.52	2,693

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>1. Foundations</u>				0
<u>2. Vertical Structure</u>				0
<u>3. Floor and Roof Structure</u>				0
<u>4. Exterior Cladding</u>				0
<u>5. Roofing, Waterproofing & Skylights</u>				0
<u>6. Interior Partitions, Doors & Glazing</u>				0
<u>7. Floor, Wall & Ceiling Finishes</u>				0
<u>8. Function Equipment & Specialties</u>				0
<u>9. Stairs & Vertical Transportation</u>				0

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
				0
<u>10. Plumbing Systems</u>				0
<u>11. Heating, Ventilation & Air Conditioning</u>				0
<u>12. Electrical Lighting, Power & Communication</u>				0
<u>13. Fire Protection Systems</u>				0
<u>14. Site Preparation & Building Demolition</u>				
Building demolition				
Demolish and remove existing building, allow HAZMAT abatement	1	LS	1,450,000.00	1,450,000
	EXCLUDED			
Site protective construction				
Erosion control	1	LS	55,000.00	55,000
Site clearing and grading				
Imported Fill	22,000	CY	40.00	880,000
General site clearance and grading	1	LS	100,000.00	100,000
Allowance for disposal of contaminated soils				
	EXCLUDED			
Cutting and drilling				
Sawcutting	1	LS	7,500.00	7,500
				2,492,500

15. Site Paving, Structures & Landscaping

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Landscape planting and maintenance				
Topsoil, fertilizer and grading	70,000	SF	1.25	87,500
Lawn seeding	70,000	SF	0.75	52,500
Irrigation				
Watering hose points	1	LS	10,000.00	10,000
				150,000

16. Utilities on Site

Disconnect and make safe existing utility connections to building	1	LS	50,000.00	50,000
				50,000

COMPARISON SUMMARY

	Scenario 1 282,682 GSF		Scenario 2 282,682 GSF		Scenario 3 237,744 GSF		Scenario 4 282,682 GSF		Scenario 5 282,682 GSF	
	\$/SF	\$x1,000	\$/SF	\$x1,000	\$/SF	\$x1,000	\$/SF	\$x1,000	\$/SF	\$x1,000
1. Foundations	2.81	794	2.81	794	3.12	742	7.94	2,244	0.00	0
2. Vertical Structure	3.79	1,071	3.83	1,082	5.77	1,372	7.15	2,022	0.00	0
3. Floor & Roof Structures	12.17	3,441	14.35	4,056	16.87	4,010	32.37	9,151	0.00	0
4. Exterior Cladding	16.04	4,534	16.88	4,772	24.12	5,735	28.91	8,172	0.00	0
5. Roofing & Waterproofing	4.69	1,327	4.46	1,261	5.04	1,199	10.43	2,950	0.00	0
<i>Shell (1-5)</i>	39.50	11,166	42.32	11,964	54.92	13,057	86.81	24,539	0.00	0
6. Interior Partitions, Doors & Glazing	13.21	3,734	16.20	4,579	13.31	3,165	16.20	4,579	0.00	0
7. Floor, Wall & Ceiling Finishes	22.28	6,298	24.90	7,039	24.90	5,920	24.90	7,039	0.00	0
<i>Interiors (6-7)</i>	35.49	10,033	41.10	11,619	0.00	9,085	41.10	11,618	0.00	0
8. Function Equipment & Specialties	2.91	822	4.40	1,244	5.01	1,192	4.40	1,244	0.00	0
9. Stairs & Vertical Transportation	3.14	889	3.14	889	3.74	889	5.88	1,661	0.00	0
<i>Equipment & Vertical Transportation (8-9)</i>	6.05	1,711	7.55	2,133	8.75	2,081	10.28	2,905	0.00	0
10. Plumbing Systems	2.42	683	3.67	1,037	3.95	939	4.40	1,244	0.00	0
11. Heating, Ventilating & Air Conditioning	16.21	4,581	41.90	11,843	44.51	10,581	41.90	11,844	0.00	0
12. Electric Lighting, Power & Communications	21.76	6,151	41.60	11,759	46.35	11,019	41.60	11,760	0.00	0
13. Fire Protection Systems	3.80	1,074	3.80	1,074	3.80	903	3.80	1,074	0.00	0
<i>Mechanical & Electrical (10-13)</i>	44.18	12,489	90.96	25,714	0.00	23,442	91.70	25,922	0.00	0
Total Building Construction (1-13)	125.22	35,399	181.94	51,430	0.00	47,666	229.88	64,983	0.00	0
14. Site Preparation & Demolition	10.24	2,894	10.24	2,894	11.15	2,650	8.99	2,543	8.82	2,493
15. Site Paving, Structures & Landscaping	12.12	3,426	14.08	3,979	16.74	3,979	10.61	3,000	0.53	150
16. Utilities on Site	2.43	687	2.43	687	2.89	687	7.08	2,000	0.18	50
Total Site Construction (14-16)	24.79	7,007	26.74	7,560	30.77	7,316	26.68	7,543	9.52	2,693
TOTAL BUILDING & SITE (1-16)	150.01	42,406	208.68	58,990	231.26	54,981	256.56	72,526	9.52	2,693
RECOMMENDED DIRECT COST BUDGET	150.01	42,406	208.68	58,990	231.26	54,981	256.56	72,526	9.52	2,693

Cost Estimate Summary

2013-15 Biennium

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Cost Estimate Number: 433
 Cost Estimate Title: GA BLDG: Partial Systems Upgrade - SCENARIO 1
 Version: AM Asset Management
 Project Number: 30000688
 Project Title: GA Building - PreDesign Update Options
 Project Phase Title:

Report Number: CBS003
 Date Run: 11/14/2012 6:08PM

Agency Preferred: No

Contact Info Contact Name: Davis Langdon Contact Number: 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,820
 Space Efficiency: 85%
 MACC Cost per Sq. Ft.: 214
 Escalated MACC Cost per Sq. Ft.: 240
 Remodel? Yes
 Construction Type: Office Buildings
 A/E Fee Class: B
 A/E Fee Percentage: 7.62%

Schedule

	<u>Start Date</u>	<u>End Date</u>
Predesign:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	

Cost Summary Escalated

Acquisition Costs Total		0
Pre-Schematic Design Services		0
Construction Documents		2,767,036
Extra Services		470,597
Other Services		1,321,953
Design Services Contingency		794,674
Consultant Services Total		5,354,260
Site work		7,656,490
Related Project Costs		0
Facility Construction		60,245,109
Construction Contingencies		11,582,461
Non Taxable Items		0
Sales Tax		6,915,114
Construction Contracts Total		86,399,174
Maximum Allowable Construction Cost(MACC)	67,901,599	
Equipment		0
Non Taxable Items		0
Sales Tax		0
Equipment Total		0
Art Work Total		0
Other Costs Total		1,796,507
Project Management Total		1,210,592
Grand Total Escalated Costs		94,760,533
Rounded Grand Total Escalated Costs		94,761,000

Additional Details

Alternative Public Works Project: No

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 433
Cost Estimate Title: GA BLDG: Partial Systems Upgrade - SCENARIO 1
Version: AM Asset Management
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:

Report Number: CBS003
Date Run: 11/14/2012 6:08PM
Agency Preferred: No

Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Additional Details

State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012
Project Administration By: DES
Project Admin Impact to DES that is NOT Included in Project Total: \$0

Cost Estimate Detail

2013-15 Biennium

*

Cost Estimate Number: 433 **Analysis Date:** October 23, 2012
Cost Estimate Title: GA BLDG: Partial Systems Upgrade - SCENARIO 1
Detail Title: SCENARIO 1
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:
Location: Olympia, WA
Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,820
 Rentable Sq. Ft.:
 Space Efficiency: 85%
 Escalated MACC Cost per Sq. Ft.: 240
 Escalated Cost per S. F. Explanation

Construction Type: Office Buildings
 Remodel?: Yes
 A/E Fee Class: B
 A/E Fee Percentage: 7.62%
 Contingency Rate: 15.00%
 Contingency Explanation

Projected Life of Asset (Years): 15
 Location Used for Tax Rate: Olympia, WA
 Tax Rate: 8.70%
 Art Requirement Applies: No
 Project Administration by: DES
 Higher Education Institution?: No
 Alternative Public Works?: No

Project Schedule

	<u>Start Date</u>	<u>End Date</u>
Pre-design:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month and Year:	11-2012	

Project Cost Summary

MACC:	\$ 60,529,609
MACC (Escalated):	\$ 67,901,599
Current Project Total:	\$ 81,053,642
Rounded Current Project Total:	\$ 81,054,000
Escalated Project Total:	\$ 94,760,533
Rounded Escalated Project Total:	\$ 94,761,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSULTANT SERVICES				
<u>Construction Documents</u>				
A/E Basic Design Services				2,767,036
		<u>0</u>	1.0647	
SubTotal: Construction Documents				<u>2,767,036</u>
<u>Extra Services</u>				
Commissioning (Systems Check)	100,000			
Testing	35,000			
Leadership Energy & Environment Design List(LEED)	40,000			
Voice/Data Consultant	40,000			
Value Engineering Participation & Implementation	50,000			
Constructability Review Participation	50,000			
Environmental Mitigation Services (EIS)	50,000			
Landscape Consultant	40,000			
As-Built Records (\$5,000 per large project)	10,000			
Document Reproduction (\$2,000 per large project)	2,000			
Fire/Life Safety Consultant	25,000			
SubTotal: Extra Services		<u>442,000</u>	1.0647	<u>470,597</u>
<u>Other Services</u>				
Bid/Construction/Closeout				1,243,161
Historical Structures Report	50,000			
Destructive Investigation	20,000			
		<u>70,000</u>	1.1256	
SubTotal: Other Services				<u>1,321,953</u>
<u>Design Services Contingency</u>				
Design Services Contingency	76,800			
Design Services Contingency	601,530			
Change Order Fees - Design Related	27,670			
SubTotal: Design Services Contingency		<u>706,000</u>	1.1256	<u>794,674</u>
Total: Consultant Services		<u>1,218,000</u>	4.3959	<u><u>5,354,260</u></u>
CONSTRUCTION CONTRACTS				
<u>Site work</u>				
G10 - Site Preparation	2,893,642			
G20 - Site Improvements	3,426,304			
G30 - Site Mechanical Utilities	325,000			
G40 - Site Electrical Utilities	362,000			
SubTotal: Site work		<u>7,006,946</u>	1.0927	<u>7,656,490</u>
<u>Facility Construction</u>				
A10 - Foundations	793,520			
B10 - Superstructure	4,511,231			
B20 - Exterior Closure	4,533,877			
B30 - Roofing	1,326,911			
C10 - Interior Construction	4,556,710			
C20 - Stairs	384,000			
C30 - Interior Finishes	6,298,155			
D10 - Conveying	505,000			
D20 - Plumbing Systems	683,090			
D30 - HVAC Systems	4,581,006			
D40 - Fire Protection Systems	1,074,192			

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSTRUCTION CONTRACTS				
D50 - Electrical Systems	6,150,971			
General Conditions	10,656,000			
Phasing Premium	259,000			
Estimating Contingency @ 15%	6,361,000			
MACC Contingency	848,000			
SubTotal: Facility Construction		53,522,663	1.1256	60,245,109
Maximum Allowable Construction Cost (MACC)		60,529,609	1.1200	67,901,599
<u>Construction Contingencies</u>				
Allowance for Change Orders	9,079,441			
Management Reserve @ 2%	1,210,592			
SubTotal: Construction Contingencies		10,290,033	1.1256	11,582,461
Sales Tax		6,161,309	1.1223	6,915,114
Total: Construction Contracts		76,980,951	1.1223	86,399,174
OTHER COSTS				
Hazardous Material Remediation/Removal	300,000			
Project Signage	1,000			
B&G Support	25,000			
City Building Permit 2% X MACC	750,000			
City Plan Review 65% of Building Permit	487,500			
In-Plant Services .032 X MACC	19,369			
Site Representative \$12,548/mo X 24 X 20%	60,230			
Advertise for Bid/Release of retainage	1,000			
Total: Other Costs		1,644,099	1.0927	1,796,507
PROJECT MANAGEMENT				
E&AS Fee for Projects Over \$20 million	1,210,592			
Total: Project Management		1,210,592	1.0000	1,210,592

Cost Estimate Summary and Detail

2013-15 Biennium

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Cost Estimate Number: 433

Report Number: CBS003

Cost Estimate Title: GA BLDG: Partial Systems Upgrade - SCENARIO 1

Date Run: 11/14/2012 6:08PM

<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Associated or Unassociated	Associated	Associated
Biennium	2013-15	2013-15
Agency	179	179
Version	AM-A	AM-A
Project Classification	*	All Project Classifications
Capital Project Number	30000688	30000688
Cost Estimate Number	433	433
Sort Order	Cost Estimate Title	Title
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

Cost Estimate Summary

2013-15 Biennium

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Cost Estimate Number: 435
 Cost Estimate Title: GA BLDG: Full Upgrade - SCENARIO 2
 Version: AM Asset Management
 Project Number: 30000688
 Project Title: GA Building - PreDesign Update Options
 Project Phase Title:

Report Number: CBS003
 Date Run: 11/14/2012 6:04PM

Agency Preferred: No

Contact Info Contact Name: Davis Langdon Contact Number: 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,280
 Space Efficiency: 85%
 MACC Cost per Sq. Ft.: 299
 Escalated MACC Cost per Sq. Ft.: 336
 Remodel? Yes
 Construction Type: Office Buildings
 A/E Fee Class: B
 A/E Fee Percentage: 7.24%

Schedule

	<u>Start Date</u>	<u>End Date</u>
Predesign:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	

Cost Summary Escalated

Acquisition Costs Total		0
Pre-Schematic Design Services		0
Construction Documents		3,679,213
Extra Services		720,802
Other Services		1,731,772
Design Services Contingency		1,067,824
Consultant Services Total		7,199,611
Site work		8,260,207
Related Project Costs		0
Facility Construction		86,658,923
Construction Contingencies		16,178,532
Non Taxable Items		0
Sales Tax		9,665,496
Construction Contracts Total		120,763,158
Maximum Allowable Construction Cost(MACC)	94,919,130	
Equipment		0
Non Taxable Items		0
Sales Tax		0
Equipment Total		0
Art Work Total		0
Other Costs Total		2,446,217
Project Management Total		1,690,850
Grand Total Escalated Costs		132,099,836
Rounded Grand Total Escalated Costs		132,100,000

Additional Details

Alternative Public Works Project: No

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 435
Cost Estimate Title: GA BLDG: Full Upgrade - SCENARIO 2
Version: AM Asset Management
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:

Report Number: CBS003
Date Run: 11/14/2012 6:04PM

Agency Preferred: No

Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Additional Details

State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012
Project Administration By: DES
Project Admin Impact to DES that is NOT Included in Project Total: \$0

Cost Estimate Detail

2013-15 Biennium

*

Cost Estimate Number: 435 **Analysis Date:** November 02, 2012
Cost Estimate Title: GA BLDG: Full Upgrade - SCENARIO 2
Detail Title: SCENARIO 2
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:
Location: Olympia, Thurston Co
Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,280
 Rentable Sq. Ft.:
 Space Efficiency: 85%
 Escalated MACC Cost per Sq. Ft.: 336
 Escalated Cost per S. F. Explanation

Construction Type: Office Buildings
 Remodel?: Yes
 A/E Fee Class: B
 A/E Fee Percentage: 7.24%
 Contingency Rate: 15.00%
 Contingency Explanation

Projected Life of Asset (Years): 50
 Location Used for Tax Rate: Olympia, Thurston
 Tax Rate: 8.70%
 Art Requirement Applies: No
 Project Administration by: DES
 Higher Education Institution?: No
 Alternative Public Works?: No

Project Schedule

	<u>Start Date</u>	<u>End Date</u>
Pre-design:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month and Year:	11-2012	

Project Cost Summary

MACC:	\$ 84,548,539
MACC (Escalated):	\$ 94,919,130
Current Project Total:	\$ 113,153,197
Rounded Current Project Total:	\$ 113,153,000
Escalated Project Total:	\$ 132,099,836
Rounded Escalated Project Total:	\$ 132,100,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSULTANT SERVICES				
<u>Construction Documents</u>				
A/E Basic Design Services				3,679,213
		<u>0</u>	1.0647	
SubTotal: Construction Documents				<u>3,679,213</u>
<u>Extra Services</u>				
Geotechnical Investigation	17,000			
Commissioning (Systems Check)	100,000			
Testing	45,000			
Leadership Energy & Environment Design List(LEED)	90,000			
Voice/Data Consultant	40,000			
Value Engineering Participation & Implementation	50,000			
Constructability Review Participation	50,000			
Environmental Mitigation Services (EIS)	50,000			
Landscape Consultant	45,000			
Document Reproduction & Distribution	10,000			
Fire/Life Safety Consultant	25,000			
Models/Renderings/Presentations	40,000			
Security & Access Consultant	45,000			
Specialty Lighting Consultant	10,000			
Stakeholder Outreach	30,000			
Conveyance Consultant	30,000			
SubTotal: Extra Services		<u>677,000</u>	1.0647	<u>720,802</u>
<u>Other Services</u>				
Bid/Construction/Closeout				1,652,980
Historic Structures Report	50,000			
Destructive Investigation	20,000			
		<u>70,000</u>	1.1256	
SubTotal: Other Services				<u>1,731,772</u>
<u>Design Services Contingency</u>				
Design Services Contingency	112,050			
Design Services contingency @ 15%	799,829			
Change Order Fees - Design Related	36,792			
SubTotal: Design Services Contingency		<u>948,671</u>	1.1256	<u>1,067,824</u>
Total: Consultant Services		<u>1,695,671</u>	4.2459	<u><u>7,199,611</u></u>

CONSTRUCTION CONTRACTS

Site work

G10 - Site Preparation	2,893,642			
G20 - Site Improvements	3,978,804			
G30 - Site Mechanical Utilities	325,000			
G40 - Site Electrical Utilities	362,000			
SubTotal: Site work		<u>7,559,446</u>	1.0927	<u>8,260,207</u>

Facility Construction

A10 - Foundations	793,520			
B10 - Superstructure	5,137,637			
B20 - Exterior Closure	4,772,297			
B30 - Roofing	1,260,827			
C10 - Interior Construction	5,823,473			
C20 - Stairs	384,000			

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSTRUCTION CONTRACTS				
C30 - Interior Finishes	7,039,399			
D10 - Conveying	505,000			
D20 - Plumbing Systems	1,037,090			
D30 - HVAC Systems	11,843,360			
D40 - Fire Protection Systems	1,074,192			
D50 - Electrical Systems	11,759,298			
General Conditions	14,874,000			
Estimating contingency @ 15%	8,849,000			
MACC Contingency	1,475,000			
Phasing Premium	361,000			
SubTotal: Facility Construction		76,989,093	1.1256	86,658,923
Maximum Allowable Construction Cost (MACC)		84,548,539	1.1200	94,919,130
<u>Construction Contingencies</u>				
Allowance for Change Orders	12,682,281			
Management Reserve - 2%	1,690,971			
SubTotal: Construction Contingencies		14,373,252	1.1256	16,178,532
Sales Tax		8,606,195	1.1231	9,665,496
Total: Construction Contracts		107,527,986	1.1231	120,763,158
OTHER COSTS				
Hazardous Material Remediation/Removal	400,000			
Project Signage	1,000			
Advertise for Bid/Release of Retainage (\$1,000)	1,000			
City Building Permit = 2% X MACC	1,024,831			
City Plan Review = 65% of Building Permit	666,140			
B&G Support	25,000			
In-Plant Services = 0.032% X MACC	30,374			
Site Rep = \$12,548/mo X 24 Months X 30%	90,345			
Total: Other Costs		2,238,690	1.0927	2,446,217
PROJECT MANAGEMENT				
E&AS Add'l Fee for Project over \$20m	1,690,850			
Total: Project Management		1,690,850	1.0000	1,690,850

Cost Estimate Summary and Detail

2013-15 Biennium

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Cost Estimate Number: 435

Report Number: CBS003

Cost Estimate Title: GA BLDG: Full Upgrade - SCENARIO 2

Date Run: 11/14/2012 6:04PM

<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Associated or Unassociated	Associated	Associated
Biennium	2013-15	2013-15
Agency	179	179
Version	AM-A	AM-A
Project Classification	*	All Project Classifications
Capital Project Number	30000688	30000688
Cost Estimate Number	435	435
Sort Order	Cost Estimate Title	Title
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 436
 Cost Estimate Title: GA BLDG: Full Upgrade w/Light Well - SCENARIO 3
 Version: AM Asset Management
 Project Number: 30000688
 Project Title: GA Building - PreDesign Update Options
 Project Phase Title:

Report Number: CBS003
 Date Run: 11/14/2012 5:55PM

Agency Preferred: No

Contact Info Contact Name: Davis Langdon Contact Number: 206.343.8119

Statistics

Gross Sq. Ft.: 237,744
 Usable Sq. Ft.: 202,082
 Space Efficiency: 85%
 MACC Cost per Sq. Ft.: 334
 Escalated MACC Cost per Sq. Ft.: 375
 Remodel? Yes
 Construction Type: Office Buildings
 A/E Fee Class: B
 A/E Fee Percentage: 7.31%

Schedule

	<u>Start Date</u>	<u>End Date</u>
Pre-design:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	

Cost Summary Escalated

Acquisition Costs Total		0
Pre-Schematic Design Services		0
Construction Documents		3,489,505
Extra Services		906,592
Other Services		1,646,541
Design Services Contingency		1,048,731
Consultant Services Total		7,091,368
Site work		5,563,814
Related Project Costs		0
Facility Construction		83,693,515
Construction Contingencies		15,202,225
Non Taxable Items		0
Sales Tax		9,087,981
Construction Contracts Total		113,547,535
Maximum Allowable Construction Cost(MACC)	89,257,329	
Equipment		0
Non Taxable Items		0
Sales Tax		0
Equipment Total		0
Art Work Total		0
Other Costs Total		2,345,757
Project Management Total		1,588,928
Grand Total Escalated Costs		124,573,588
Rounded Grand Total Escalated Costs		124,574,000

Additional Details

Alternative Public Works Project: No

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 436
Cost Estimate Title: GA BLDG: Full Upgrade w/Light Well - SCENARIO 3
Version: AM Asset Management
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:

Report Number: CBS003
Date Run: 11/14/2012 5:55PM

Agency Preferred: No

Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Additional Details

State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012
Project Administration By: DES
Project Admin Impact to DES that is NOT Included in Project Total: \$0

Cost Estimate Detail

2013-15 Biennium

*

Cost Estimate Number: 436 **Analysis Date:** November 02, 2012
Cost Estimate Title: GA BLDG: Full Upgrade w/Light Well - SCENARIO 3
Detail Title: SCENARIO 3
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:
Location: Olympia, Thurston Co
Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Statistics

Gross Sq. Ft.: 237,744
 Usable Sq. Ft.: 202,082
 Rentable Sq. Ft.:
 Space Efficiency: 85%
 Escalated MACC Cost per Sq. Ft.: 375
 Escalated Cost per S. F. Explanation

Construction Type: Office Buildings
 Remodel?: Yes
 A/E Fee Class: B
 A/E Fee Percentage: 7.31%
 Contingency Rate: 15.00%
 Contingency Explanation

Projected Life of Asset (Years): 50
 Location Used for Tax Rate: Olympia, Thurston
 Tax Rate: 8.70%
 Art Requirement Applies: No
 Project Administration by: DES
 Higher Education Institution?: No
 Alternative Public Works?: No

Project Schedule

	<u>Start Date</u>	<u>End Date</u>
Pre-design:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month and Year:	11-2012	

Project Cost Summary

MACC:	\$ 79,446,384
MACC (Escalated):	\$ 89,257,329
Current Project Total:	\$ 106,628,006
Rounded Current Project Total:	\$ 106,628,000
Escalated Project Total:	\$ 124,573,589
Rounded Escalated Project Total:	\$ 124,574,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSULTANT SERVICES				
<u>Construction Documents</u>				
A/E Basic Design Services				3,489,505
		<u>0</u>	1.0647	
SubTotal: Construction Documents				<u>3,489,505</u>
<u>Extra Services</u>				
Geotechnical Investigation	17,000			
Commissioning (Systems Check)	139,500			
Testing	65,000			
Leadership Energy & Environment Design List(LEED)	110,000			
Voice/Data Consultant	40,000			
Value Engineering Participation & Implementation	50,000			
Constructability Review Participation	50,000			
Environmental Mitigation Services (EIS)	50,000			
Landscape Consultant	50,000			
Document Reproduction & Distribution	25,000			
Models/Renderings/Presentations	65,000			
Specialty Lighting Consultant	45,000			
Stakeholder Outreach	30,000			
Conveyance Consultant	40,000			
Fire/Life Safety Consultant	25,000			
Security & Access Consultant	50,000			
SubTotal: Extra Services		<u>851,500</u>	1.0647	<u>906,592</u>
<u>Other Services</u>				
Bid/Construction/Closeout				1,567,749
Historic Structures Report	50,000			
Destructive Investigation	20,000			
		<u>70,000</u>	1.1256	
SubTotal: Other Services				<u>1,646,541</u>
<u>Design Services Contingency</u>				
Design Services Contingency	138,225			
Design Services Contingency @ 15%	758,588			
Change Order Fees - Design Related	34,895			
SubTotal: Design Services Contingency		<u>931,708</u>	1.1256	<u>1,048,731</u>
Total: Consultant Services		<u>1,853,208</u>	3.8265	<u><u>7,091,368</u></u>

CONSTRUCTION CONTRACTS

Site work

G10 - Site Preparation	426,000
G20 - Site Improvements	3,978,804
G30 - Site Mechanical Utilities	325,000
G40 - Site Electrical Utilities	362,000

SubTotal: Site work

5,091,804

1.0927

5,563,814

Facility Construction

A10 - Foundations	741,823
B10 - Superstructure	5,381,571
B20 - Exterior Closure	5,734,767
B30 - Roofing	1,198,738
C10 - Interior Construction	4,357,034
C20 - Stairs	384,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSTRUCTION CONTRACTS				
C30 - Interior Finishes	5,920,324			
D10 - Conveying	505,000			
D20 - Plumbing Systems	938,765			
D30 - HVAC Systems	10,581,108			
D40 - Fire Protection Systems	903,425			
D50 - Electrical Systems	11,019,077			
F20 - Selective Demolition	2,223,948			
General Conditions	14,503,000			
Estimating Contingency @ 15%	8,247,000			
MACC Contingency	1,375,000			
Phasing Premium	340,000			
SubTotal: Facility Construction		74,354,580	1.1256	83,693,515
Maximum Allowable Construction Cost (MACC)		79,446,384	1.1200	89,257,329
<u>Construction Contingencies</u>				
Allowance for Change Orders	11,916,958			
Management Reserve - 2%	1,588,928			
SubTotal: Construction Contingencies		13,505,886	1.1256	15,202,225
Sales Tax		8,086,847	1.1238	9,087,981
Total: Construction Contracts		101,039,117	1.1238	113,547,535
OTHER COSTS				
Hazardous Material Remediation/Removal	400,000			
Advertise for Bid/Release of Retainage (\$1,000)	1,000			
Project Signage	1,000			
City Building Permit = 2% X MACC	962,986			
City Plan Review = 65% of Building Permit	625,941			
B&G Support	25,000			
In-Plant Services = 0.032% X MACC	25,423			
Site Rep = \$12,548/mo X 24 mo X 35%	105,403			
Total: Other Costs		2,146,753	1.0927	2,345,757
PROJECT MANAGEMENT				
E&AS Fee for Project over \$20m	1,588,928			
Total: Project Management		1,588,928	1.0000	1,588,928

Cost Estimate Summary and Detail

2013-15 Biennium

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Cost Estimate Number: 436

Report Number: CBS003

Cost Estimate Title: GA BLDG: Full Upgrade w/Light Well - SCENARIO 3

Date Run: 11/14/2012 5:55PM

<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Associated or Unassociated	Associated	Associated
Biennium	2013-15	2013-15
Agency	179	179
Version	AM-A	AM-A
Project Classification	*	All Project Classifications
Capital Project Number	30000688	30000688
Cost Estimate Number	436	436
Sort Order	Cost Estimate Title	Title
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 437
 Cost Estimate Title: GA BLDG: Replacement - SCENARIO 4
 Version: AM Asset Management
 Project Number: 30000688
 Project Title: GA Building - PreDesign Update Options
 Project Phase Title:

Report Number: CBS003
 Date Run: 11/15/2012 7:46PM

Agency Preferred: Yes

Contact Info Contact Name: Davis Langdon Contact Number: 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,280
 Space Efficiency: 85%
 MACC Cost per Sq. Ft.: 367
 Escalated MACC Cost per Sq. Ft.: 412
 Remodel? No
 Construction Type: Office Buildings
 A/E Fee Class: B
 A/E Fee Percentage: 5.00%

Schedule

	<u>Start Date</u>	<u>End Date</u>
Predesign:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	

Cost Summary Escalated

Acquisition Costs Total		0
Pre-Schematic Design Services		0
Construction Documents		2,930,548
Extra Services		1,221,211
Other Services		1,372,903
Design Services Contingency		952,180
Consultant Services Total		6,476,841
Site work		6,657,275
Related Project Costs		737,573
Facility Construction		109,160,054
Construction Contingencies		20,997,166
Non Taxable Items		0
Sales Tax		11,967,030
Construction Contracts Total		149,519,098
Maximum Allowable Construction Cost(MACC)	116,554,902	
Equipment		0
Non Taxable Items		0
Sales Tax		0
Equipment Total		0
Art Work Total		0
Other Costs Total		3,008,966
Project Management Total		2,061,639
Grand Total Escalated Costs		161,066,544
Rounded Grand Total Escalated Costs		161,067,000

Additional Details

Alternative Public Works Project: No

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 437
Cost Estimate Title: GA BLDG: Replacement - SCENARIO 4
Version: AM Asset Management
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:

Report Number: CBS003
Date Run: 11/15/2012 7:46PM

Agency Preferred: Yes

Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Additional Details

State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012
Project Administration By: DES
Project Admin Impact to DES that is NOT Included in Project Total: \$0

Cost Estimate Detail

2013-15 Biennium

*

Cost Estimate Number: 437 **Analysis Date:** November 02, 2012
Cost Estimate Title: GA BLDG: Replacement - SCENARIO 4
Detail Title: SCENARIO 4
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:
Location: Olympia, Thurston Co
Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Statistics

Gross Sq. Ft.: 282,682
 Usable Sq. Ft.: 240,280
 Rentable Sq. Ft.:
 Space Efficiency: 85%
 Escalated MACC Cost per Sq. Ft.: 412
 Escalated Cost per S. F. Explanation

Construction Type: Office Buildings
 Remodel?: No
 A/E Fee Class: B
 A/E Fee Percentage: 5.00%
 Contingency Rate: 15.00%
 Contingency Explanation

Projected Life of Asset (Years): 50
 Location Used for Tax Rate: Olympia, Thurston
 Tax Rate: 8.70%
 Art Requirement Applies: No
 Project Administration by: DES
 Higher Education Institution?: No
 Alternative Public Works?: No

Project Schedule

	<u>Start Date</u>	<u>End Date</u>
Pre-design:	07-2013	06-2014
Design:	07-2014	06-2015
Construction:	11-2015	11-2017
Duration of Construction (Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month and Year:	11-2012	

Project Cost Summary

MACC:	\$ 103,746,937
MACC (Escalated):	\$ 116,554,902
Current Project Total:	\$ 139,908,304
Rounded Current Project Total:	\$ 139,908,000
Escalated Project Total:	\$ 161,066,545
Rounded Escalated Project Total:	\$ 161,067,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSULTANT SERVICES				
<u>Construction Documents</u>				
A/E Basic Design Services				2,930,548
		<u>0</u>	1.0647	
SubTotal: Construction Documents				<u>2,930,548</u>
<u>Extra Services</u>				
Geotechnical Investigation	27,000			
Commissioning (Systems Check)	170,000			
Testing	175,000			
Leadership Energy & Environment Design List(LEED)	120,000			
Voice/Data Consultant	40,000			
Value Engineering Participation & Implementation	50,000			
Constructability Review Participation	50,000			
Environmental Mitigation Services (EIS)	50,000			
Landscape Consultant	100,000			
Document Reproduction & Distribution	30,000			
Conveyance Consultant	50,000			
Models/Renderings/Presentations	85,000			
Fire/Life Safety Consultant	40,000			
Security & Access Consultant	60,000			
Specialty Lighting Consultant	70,000			
Stakeholder Outreach	30,000			
SubTotal: Extra Services		<u>1,147,000</u>	1.0647	<u>1,221,211</u>
<u>Other Services</u>				
Bid/Construction/Closeout				1,316,623
Historic Structures Report	50,000			
		<u>50,000</u>	1.1256	
SubTotal: Other Services				<u>1,372,903</u>
<u>Design Services Contingency</u>				
Design Services Contingency	179,550			
Design Services Contingency	637,076			
Change Order Fees - Design Related	29,305			
SubTotal: Design Services Contingency		<u>845,931</u>	1.1256	<u>952,180</u>
Total: Consultant Services		<u>2,042,931</u>	3.1704	<u>6,476,841</u>
CONSTRUCTION CONTRACTS				
<u>Site work</u>				
G10 - Site Preparation	1,092,500			
G20 - Site Improvements	3,000,000			
G30 - Site Mechanical Utilities	1,000,000			
G40 - Site Electrical Utilities	1,000,000			
SubTotal: Site work		<u>6,092,500</u>	1.0927	<u>6,657,275</u>
<u>Related Project Costs</u>				
Relocate Campus Fiber Hub (now in B21)	675,000			
SubTotal: Related Project Costs				<u>737,573</u>
<u>Facility Construction</u>				
A10 - Foundations	2,244,109			
B10 - Superstructure	11,172,836			
B20 - Exterior Closure	8,172,157			
B30 - Roofing	2,949,506			

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSTRUCTION CONTRACTS				
C10 - Interior Construction	5,823,249			
C20 - Stairs	550,858			
C30 - Interior Finishes	7,038,782			
D10 - Conveying	1,100,000			
D20 - Plumbing Systems	1,243,801			
D30 - HVAC Systems	11,844,376			
D40 - Fire Protection Systems	1,074,192			
D50 - Electrical Systems	11,759,571			
F20 - Selective Demolition	1,450,000			
General Conditions	18,226,000			
Estimating Contingency @ 15%	10,879,000			
MACC Contingency	1,451,000			
SubTotal: Facility Construction		96,979,437	1.1256	109,160,054
Maximum Allowable Construction Cost (MACC)		103,746,937	1.1200	116,554,902
<u>Construction Contingencies</u>				
Allowance for Change Orders	15,562,041			
Management Reserve @ 3%	3,092,158			
SubTotal: Construction Contingencies		18,654,199	1.1256	20,997,166
Sales Tax		10,648,900	1.1238	11,967,030
Total: Construction Contracts		133,050,036	1.1238	149,519,098
OTHER COSTS				
Hazardous Material Remediation/Removal	500,000			
Advertise for Bid/Release of Retainage	5,000			
Project Signage	3,500			
City Building Permit = 2% X MACC	1,249,478			
City Plan Review = 65% of Building Permit	812,161			
In-Plant Services = 0.032% X MACC	32,983			
Site Rep = \$12,548/mo X 24 mo X 35%	150,576			
Total: Other Costs		2,753,698	1.0927	3,008,966
PROJECT MANAGEMENT				
E&AS Fee for Project over \$20m	2,061,639			
Total: Project Management		2,061,639	1.0000	2,061,639

Cost Estimate Summary and Detail

2013-15 Biennium

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Cost Estimate Number: 437
Cost Estimate Title: GA BLDG: Replacement - SCENARIO 4

Report Number: CBS003
Date Run: 11/15/2012 7:46PM

<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Associated or Unassociated	Associated	Associated
Biennium	2013-15	2013-15
Agency	179	179
Version	AM-A	AM-A
Project Classification	*	All Project Classifications
Capital Project Number	30000688	30000688
Cost Estimate Number	437	437
Sort Order	Cost Estimate Title	Title
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

Cost Estimate Summary

2013-15 Biennium

*

Cost Estimate Number: 438
 Cost Estimate Title: GA BLDG: Full Demo/Plant Lawn - SCENARIO 5
 Version: AM Asset Management
 Project Number: 30000688
 Project Title: GA Building - PreDesign Update Options
 Project Phase Title:

Report Number: CBS003
 Date Run: 11/13/2012 8:15PM

Agency Preferred: No

Contact Info Contact Name: Davis Langdon Contact Number: 206.343.8119

Statistics

Gross Sq. Ft.: 0
 Usable Sq. Ft.: 0
 Space Efficiency:
 MACC Cost per Sq. Ft.: 0
 Escalated MACC Cost per Sq. Ft.: 0
 Remodel?
 Construction Type: Other Non-Building Projects
 A/E Fee Class: D
 A/E Fee Percentage: 8.55%

Schedule

Start Date End Date

Pre-design:
 Design: 07-2013 12-2013
 Construction: 05-2014 09-2014
 Duration of Construction (Months): 4

Cost Summary Escalated

Acquisition Costs Total		0
Pre-Schematic Design Services		0
Construction Documents		246,035
Extra Services		237,029
Other Services		163,058
Design Services Contingency		103,040
Consultant Services Total		749,162
Site work		4,419,097
Related Project Costs		815,256
Facility Construction		0
Construction Contingencies		869,454
Non Taxable Items		0
Sales Tax		531,030
Construction Contracts Total		6,634,837
Maximum Allowable Construction Cost(MACC)	5,234,353	
Equipment		0
Non Taxable Items		0
Sales Tax		0
Equipment Total		0
Art Work Total		0
Other Costs Total		656,002
Project Management Total		0
Grand Total Escalated Costs		8,040,001
Rounded Grand Total Escalated Costs		8,040,000

Additional Details

Alternative Public Works Project: No

Cost Estimate Summary

2013-15 Biennium

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Cost Estimate Number: 438
Cost Estimate Title: GA BLDG: Full Demo/Plant Lawn - SCENARIO 5
Version: AM Asset Management
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:

Report Number: CBS003
Date Run: 11/13/2012 8:15PM
Agency Preferred: No

Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Additional Details

State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012
Project Administration By: DES
Project Admin Impact to DES that is NOT Included in Project Total: \$0

Cost Estimate Detail

2013-15 Biennium

*

Cost Estimate Number: 438 **Analysis Date:** November 02, 2012
Cost Estimate Title: GA BLDG: Full Demo/Plant Lawn - SCENARIO 5
Detail Title: SCENARIO 5
Project Number: 30000688
Project Title: GA Building - PreDesign Update Options
Project Phase Title:
Location: Olympia,Thurston Co
Contact Info **Contact Name:** Davis Langdon **Contact Number:** 206.343.8119

Statistics

Gross Sq. Ft.:
 Usable Sq. Ft.:
 Rentable Sq. Ft.:
 Space Efficiency:
 Escalated MACC Cost per Sq. Ft.:
 Escalated Cost per S. F. Explanation

Construction Type: Other Non-Building Projects
Remodel? No
A/E Fee Class: D
A/E Fee Percentage: 8.55%
Contingency Rate: 15.00%
Contingency Explanation

Projected Life of Asset (Years): 0
Location Used for Tax Rate: Olympia,Thurston C
Tax Rate: 8.70%
Art Requirement Applies: No
Project Administration by: DES
Higher Education Institution?: No
Alternative Public Works?: No

Project Schedule Start Date End Date

Pre-design:
Design: 07-2013 12-2013
Construction: 05-2014 09-2014
Duration of Construction (Months): 4
State Construction Inflation Rate: 3.00%
Base Month and Year: 11-2012

Project Cost Summary

MACC: \$ 5,007,992
MACC (Escalated): \$ 5,234,353
Current Project Total: \$ 7,350,165
Rounded Current Project Total: \$ 7,350,000
Escalated Project Total: \$ 8,040,001
Rounded Escalated Project Total: \$ 8,040,000

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSULTANT SERVICES				
<u>Construction Documents</u>				
A/E Basic Design Services				246,035
		<u>0</u>	1.0261	
SubTotal: Construction Documents				<u>246,035</u>
<u>Extra Services</u>				
Voice/Data Consultant	55,000			
Environmental Mitigation Services (EIS)	50,000			
Landscape Consultant	100,000			
Models/Renderings/Presentations	25,000			
Document Reproduction & Distributions	1,000			
SubTotal: Extra Services		<u>231,000</u>	1.0261	<u>237,029</u>
<u>Other Services</u>				
Bid/Construction/Closeout				110,538
Historic Structures Report	50,000			
		<u>50,000</u>	1.0504	
SubTotal: Other Services				<u>163,058</u>
<u>Design Services Contingency</u>				
Design Services Contingency	42,150			
Design Services Contingency	53,486			
Change Order Fees - Design Related	2,460			
SubTotal: Design Services Contingency		<u>98,096</u>	1.0504	<u>103,040</u>
Total: Consultant Services		<u>379,096</u>	1.9762	<u><u>749,162</u></u>

CONSTRUCTION CONTRACTS				
<u>Site work</u>				
G10 - Site Preparation	1,443,642			
G20 - Site Improvements	150,000			
G30 - Site Mechanical Utilities	25,000			
G40 - Site Electrical Utilities	25,000			
General conditions	676,625			
Estimating Contingency	403,875			
MACC Contingency	53,850			
Demolition	1,450,000			
SubTotal: Site work		<u>4,227,992</u>	1.0452	<u>4,419,097</u>
<u>Related Project Costs</u>				
City Utilities Relocation	105,000			
Relocate Campus Fiber Hub (now in B21)	675,000			
SubTotal: Related Project Costs		<u>780,000</u>	1.0452	<u>815,256</u>
Maximum Allowable Construction Cost (MACC)		5,007,992	1.0500	5,234,353
<u>Construction Contingencies</u>				
Allowance for Change Orders	751,199			
Management Reserve @ 2%	76,537			
SubTotal: Construction Contingencies		<u>827,736</u>	1.0504	<u>869,454</u>
Sales Tax		507,708	1.0459	<u>531,030</u>

<u>ITEM</u>	<u>Base Amount</u>	<u>Sub Total</u>	<u>Escalation Factor</u>	<u>Escalated Cost</u>
CONSTRUCTION CONTRACTS				
Total: Construction Contracts		6,343,436	1.0459	6,634,837
OTHER COSTS				
Hazardous Material Remediation/Removal	500,000			
Advertise for Bid/Release Retainage	2,500			
Project Signage	3,500			
In-Plant Services = 0.032% X MACC	5,000			
Building Permit = 2% X MACC	46,386			
Plan Review = 65% of Building Permit	30,151			
Site Rep = \$12,548/mo X 4 mo X 50%	25,096			
B&G Support	15,000			
Total: Other Costs		627,633	1.0452	656,002

Cost Estimate Summary and Detail

2013-15 Biennium

*

Cost Estimate Number: 438

Report Number: CBS003

Cost Estimate Title: GA BLDG: Full Demo/Plant Lawn - SCENARIO 5

Date Run: 11/13/2012 8:15PM

<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Associated or Unassociated	Associated	Associated
Biennium	2013-15	2013-15
Agency	179	179
Version	AM-A	AM-A
Project Classification	*	All Project Classifications
Capital Project Number	30000688	30000688
Cost Estimate Number	438	438
Sort Order	Cost Estimate Title	Title
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids