ATTACHMENT A:

KING COUNTY COURTHOUSE REVITALIZATION
BUILDING SYSTEMS REPORT

14798

King County Courthouse Revitalization

Building Systems Report

Ordinance 18239 Section 41 Proviso P5 Response
Project No. 1124472

Department of Executive Services
Facilities Management Division

Capital Planning Section
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3 Executive Summary

The Facilities Management Division is pleased to present this Proviso Response to the King County Council in response to Proviso P5 Ordinance 17941 dated 12/16/2015 project 1124472 Courthouse System Revitalization as described in the Ordinance text. The response is based on the assumption that the County continues to need the King County Courthouse to provide public services to the citizens of King County. The issues raised in this report have been identified to promote action to ensure the short and long term viability of the King County Courthouse, improve the building energy performance, stabilize the building envelope, and promote uninterrupted delivery of King County services to the community.

A team of consultants was engaged to investigate the building and prepare a report that responds to the questions in the proviso request. The consultant's report is included as Exhibit A. The team consisted of the following firms:

Architect:	Clark Design Group PLLC
Structural Engineer:	Coughlin Porter Lundeen, Inc.
Electrical and Mechanical Engineer	Glumac
Cost Estimator:	Rider, Levett, Bucknall
Risk Analysis and Scheduling	McMillen Jacobs Associates
Legal Counsel/Land Use Attorney	McCullough, Hill, Leary PS
Elevator Inspection	Architectural Elevator Consulting LLC
Fire Suppression:	Viking Automatic Sprinkler Company

The team reviewed the facility through inspection tours conducted by building operators of the plumbing, mechanical and electrical systems. The team also reviewed as-built records including many detailed reports and investigation records in County files. Specialty consultants inspected the elevators and the fire protection system and prepared reports. The Architect conducted zoning and code reviews with support from Land Use Attorneys.

Over the last 5 years, three separate project teams of engineers and architects have investigated the King County Courthouse architectural mechanical, electrical and plumbing systems. Based on analysis by these three groups it is apparent that the facility requires significant investment by King County to maintain the facility for the next 25 to 50 years.

An overriding consideration of any major investment in this facility is the City of Seattle Substantial Alteration[1] code application that may come into effect should a major project be undertaken. Should a Substantial Alteration declaration become a reality, this may

[1] Appendix 6 Tip 314 Seattle Building Code for Substantial Alterations to Existing Buildings

add significant work scope and cost to the project by requiring all life safety systems to be brought up to current code throughout the building.

This Proviso response also briefly considers 8 alternatives to an overall Revitalization project that could be considered in lieu of the Revitalization project. The consultant report indicates that a Revitalization of the Courthouse could cost $32M (short term option or $160M (long term option). A replacement option was estimated to be to be an 8 to 10 year process to achieve full operational status in a new facility which suggests the Courthouse would need to remain operational for at least another 8 to 10 years.

In that time information can be developed to inform a decision to remain in the Courthouse or relocate to a new facility. This information necessary to make a long term Courthouse facility decision will be developed in a master plan effort for the County in the downtown campus. This initiation phase of the planning process will be proposed in the 2017/2018 Executive proposed budget to fund a combination of visioning and facility needs analysis work outlined in the Downtown Civic Campus Scoping Report. This proposed budget will include a recommendation to form a steering committee with membership likely to be drawn from the County Council, separately elected officials, and the Executive Office.

As required by the proviso this response describes the system repairs and replacements that would be undertaken if a Revitalization of the King County Courthouse was ultimately selected as the course of action. The report also includes opinions of cost, net present value analysis, and prioritization of the proposed projects, as well as detailing existing risks and project risks stemming from a Revitalization project. Mitigation strategies for each item are identified in the Risk Register contained in Appendix 7 Risk Matrix.

Historical designations, limitations, impacts on individual projects and mitigation strategies are described in the report. The most historically significant work will occur on the exterior of the building and restore the building to a closer approximation of the original design.

Funding for the project is discussed including public and private sector sources. The report also describes the available energy subsidies and rebates that may be available for energy efficiency projects implemented by Council. Since the scope of the project exceeds the financial capacity of the Major Maintenance and Repair Fund and given the state of the General Fund balance, the only viable option for the necessary improvements may be a Voter approved levy.

4 Ordinance 18239 Section 41 Proviso P5:

Ordinance 18239 appropriated project 1124472 DES FMD KCCH System Revitalization and included a proviso (P5) for this project as follows:

"P5 PROVIDED FURTHER THAT:

Of the appropriation for capital project 1124472, Courthouse System Revitalization, $500,000 shall not be expended or encumbered until the executive transmits a report on the King County Courthouse building systems and a motion that approves the report and the motion is passed by the council. The motion shall reference the subject matter, the proviso's ordinance, ordinance section and proviso number in both the title and body of the motion. The report shall include, but not be limited to:

A. A building alternative analysis;
B. A list of possible projects, reported by system or task;
C. The estimated costs for each possible project, reported by system or task;
D. A risk assessment and any risk mitigation plans for possible projects;
E. A prioritization for possible projects;
F. The estimated timelines for possible projects;
G. The status of locating as-built structural documentation;
H. A discussion of the historical significance of the building and how the
I. historical designation could affect the project; and
J. Any work done to investigate or access state, federal or other funding sources
K. In support of the project.

The executive must file the report and motion required by this proviso by April 1, 2016, in the form of a paper original and an electronic copy with the clerk of the council, who shall retain the original and provide an electronic copy to all councilmembers, the Council chief of staff, the policy staff director and the lead staff for the budget and fiscal management committee or its successor."

5 Background

The King County Courthouse Revitalization project was originally developed as a project to ***mitigate high cost long term deferred maintenance in the King County Courthouse*** as identified in recent reports prepared by the and DLR Group (DLR Group, 2013), MENG Analysis, (MENG Analysis, 2014) Clark Design Group (Clark Design Group, 2016). This project was not developed or intended to address broader functional programming issues within the facility, or outside the facility in the context of a redeveloped downtown Civic Campus.

Proviso P5 does not request information regarding the study of current interior space planning in the Courthouse, programming for future growth inside the Courthouse, or re-design of interior spaces to improve operational efficiencies in the Courthouse. Interior space planning issues would be studied as part of the broader Campus Planning effort, where sufficient resources can be brought to bear on studying planning and future growth and needs issues, engaging stakeholders in a planning process, and preparing responses for Council consideration.

As originally conceived, the scope of this project involved a project titled King County Courthouse Revitalization that would undertake to repair the buildings systems, primarily the mechanical, electrical and plumbing systems (MEP) and exterior building envelope.

Therefore the scope of this Proviso response is limited to issues surrounding the Courthouse arising out of repairing the facility for continued use, and a high level examination of alternatives for a replacement facility. The issues include planning, design and implementation of repairs to the following building components:

- service, repair or replacement of the main electrical buss ducts through the building, including code upgrades to electrical rooms;
- replacement of the entire domestic water system, including fixtures
- repairs to the toilet exhaust systems;
- Code upgrades to the Fire Protection sprinkler system
- repairs to the chilled water system including evaluation and replacement of the main chilled water distribution piping as necessary;
- evaluation and replacement of the main heating hot water distribution piping as necessary;
- repairs to the perimeter induction heating system;
- replacement of the fan floor with modern fan equipment;
- replacement of exterior aluminum window system with thermally efficient and historically accurate windows and re-attachment of the brick cladding;
- Repairs and reconstruction of the dual duct, single fan Variable Air Volume air handling system.
- Repair of outside air intakes and addition of heat recovery systems
- Completion of ongoing digital building controls replacements

- Testing balancing and commissioning for the entire building
- Repair and stabilization of the exterior masonry cladding
- Addition of accessible toilet rooms in Jury rooms
- Replacement of fluorescent lighting with LED lighting including new controls

In 2013, in response to Council Proviso, King County Facilities Management Division (FMD) engaged a building assessment firm to conduct a Facility Condition Assessment (FCA) (MENG Analysis, 2014) of all facilities managed by FMD. This FCA study was an update of the Carter Burgess study completed in 2000 and included evaluation of the King County Courthouse building systems (based on UniFormat level 4 categories) using site rapid visual assessment methodologies. Observation and recording of the existing condition of those building "systems" (at the time of the survey in 2013) was performed.

The FCA final report included a detailed review of the condition of each building system; the planned useful life of each building system; an evaluation or estimate of the actual remaining useful life of each system as it existed at the time of the survey; and a list of "observed deficiencies" for each building system. In addition, the report produced a database which calculated the cyclical replacement cost (based on estimated remaining useful life) and Observed Deficiencies cost for the systems expressed in terms of net present value, and the unescalated and undiscounted cost based on their remaining useful life. "Observed Deficiencies" were defined as system failure issues that required correction within 6 years of the completion of the FCA survey.

The FCA report for the King County Courthouse[2] identified significant high cost mechanical electrical infrastructure, and window system related "Observed Deficiencies" and overdue cyclical replacements of major building systems. The Observed Deficiencies[3] were valued at $31,553,471 over a six year period and the 20 year cyclical system replacement cost was valued at over $155,854,306. A list of those systems and their deficiencies is attached in Appendix 1 MENG Facility Condition Assessment (FCA) Report King County Courthouse. The size of this problem exceeds by an order of magnitude the current funding levels of the Major Maintenance and Repair program.

In response to the MENG survey findings, in 2013 FMD engaged the architectural firm DLR Group to prepare a report based on the MENG findings. DLR's scope of work was to review the MENG findings, conduct on site investigations and evaluations, and assemble hands on operator feedback on the mechanical, electrical and plumbing (MEP) systems. DLR's scope also included evaluating existing building envelope system reports, and to recommend repairs to windows and masonry cladding systems. DLR was also tasked with preparing cost estimates for Mechanical Electrical and Plumbing (MEP) and Building envelope repairs, and suggesting phasing scenarios for implementation of a project to repair the high cost aging building systems. DLR

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[2] MENG Survey King County Courthouse Appendix 1
[3] Detailed Assessment – Observed Deficiencies Appendix 1

executed their scope of work, and their final report was delivered to the County in April of 2013. The intent of DLR's report was to investigate the findings of the MENG Survey noted above, and develop project cost estimates and phasing for the replacements and observed deficiencies contained in the MENG survey noted above.

Following receipt of DLR's report FMD developed project scenarios to repair the Courthouse infrastructure. A budget request was submitted to commence planning for a repair project for the 2015/16 biennial budget. The project was appropriated by Council, with a proviso noted in Section 4 above.

6 Building Alternatives Analysis

Proviso P5 mandated that “a building alternatives analysis” be included in the Executive’s Proviso response to Council regarding the Courthouse Revitalization project.

The Alternatives presented in this report are suggested only in the context of alternatives to repair and/or replacement of the Courthouse. These alternatives are not intended to address wider campus planning issues, which can be addressed using the methodology outlined in the FMD Downtown Civic Campus Scoping Report. The following alternatives were examined:

1. No Action
2. Short Term Repair Strategy
3. Long Term Repair Strategy
4. Repairs/Upgrades/Alterations to KCCH
5. Vacate and Mothball KCCH and Lease/Purchase somewhere else
6. Vacate and Mothball KCCH and Replace the Courthouse on another site
7. Demolish the KCCH and replace on site
8. Sell KCCH, Construct new KCCH on New Site

6.1 Alternative 1: No Action:

An alternative of No Action would cause deferred and backlog maintenance levels to increase above already high levels. Costs are already beyond the MMRF fund ability to pay. Some systems in the building are reaching a point where emergency repairs would probably be required at some point in the near future which would be disruptive to County operations. With some systems now far beyond industry standard replacement cycles, a failure of any of these systems would require total replacement on an emergency replacement basis. Based on historical experience, emergency repairs tend to be expensive, as the County will lose its market leverage under this scenario, with the result that the facility may be out of service for an extended period. Under this alternative, risks continue to increase.

Cost Opinion: Difficult to estimate given that costs may be higher if there is an infrastructure failure rather than planned facility rehabilitation projects.

Timeline for Implementation: Ongoing as needed

6.1.1 Short Term Repair Strategy

A short term strategy would involve repairs to the facility on a smaller scale. Highest priority repairs would be under taken first. In 2011, MENG Analysis estimated

Observed deficiencies backlog for this facility at $32 million. MENG defined Observed Deficiencies as systems that would" fall below an established minimum level of condition/performance" within 6 years[4].

The immediate short term repairs as of 2010 were listed as "Observed Deficiencies" as follows:

Deficiency Repair (Observed Deficiency) Costs Markup By System 2011-2016

System	Construction Cost	Contingency	Contractor Overhead Cost	Project Soft Cost	Total Cost	Total
Exterior Closure	$ 2,790,000	$ 837,000	$ 725,400	$ 2,176,200	$ 6,528,600	$ 6,282,259
Interior Finishes	$ 699,000	$ 209,700	$ 181,740	$ 545,220	$ 1,635,660	$ 1,543,962
Vertical Transportation	$ 705,000	$ 211,500	$ 183,300	$ 549,900	$ 1,649,700	$ 1,587,454
Plumbing	$ 1,064,000	$ 319,200	$ 276,640	$ 829,920	$ 2,489,760	$ 2,395,816
HVAC	$ 4,665,500	$ 1,399,650	$ 1,213,030	$ 3,639,090	$ 10,917,270	$ 10,436,702
Electrical	$ 4,338,989	$ 1,301,697	$ 1,128,137	$ 3,384,411	$ 10,153,233	$ 9,307,275
						$ 31,553,468

Of these listed Observed Deficiencies, some projects have been partially funded by Council through the Major Maintenance and Repair Fund, however most projects are only partially funded and are therefore incomplete due to lack of funding. A short term strategy would continue these projects under the current scenario and likely include small portions of other projects listed above as well.

In the immediate short term it is recommended that several important partially funded projects should be completed including:

- Planning, design and implementation for replacement of the vertical electrical distribution system.
- Replacement of the all 120/208 volt electrical distribution panels (only about 60% are funded for replacement at this time).
- Replacement of the Domestic Water system and it's fixtures
- Installation of elevator machine room cooling, and miscellaneous elevator repairs
- Water main verification and replacement for domestic water service and fire suppression

Cost Opinion: $32M

Timeline for Implementation: 5 Years

[4] Meng Analysis Facility Condition Assessment Appendix H6

6.1.2 Long Term Repair Strategy

A longer term repair strategy would require the County to adopt more risk of catastrophic failure of critical system, the consequence of disruption of County operations, the resulting significant increase in the cost of repairs, and the potential for long term disruption of the use of the building. Taking a long term view of the problem would also require a steadily increasing ongoing maintenance investment to keep the physical plant operational as systems are operated until failure, rather than replaced as they become due for replacement.

Of greatest concern are the systems that are already more than 50 years old dating back to the 1967 renovation. These include the main electrical distribution system, heating and cooling systems, and the domestic water system and fixtures. For these systems, the risk of catastrophic failure is increasing with age. Some of these systems such as the electrical buss duct (there are two such vertical distribution systems) and major piping systems are beyond their normal useful life by 2 times. The Clark report (Clark Design Group, 2016) characterized the main electrical buss duct as follows:

> *"As electrical equipment ages, the insulation inside of it becomes brittle. Any motion or contact with the equipment can cause brittle insulation to break, which allows for electrical arcing (sparking) to occur, which ultimately can lead to explosions and/or fires.*
>
> *While life expectancy of insulation ranges based on the ambient temperature, 30-40 years is a typical life expectancy (Siemens is a major electrical equipment manufacturer, and they design products with a 30 year expectancy under normal conditions).*
>
> *While no one can say exactly when catastrophic failure would (if ever) occur, no known authority can indicate that the bus duct is reasonably safe, as the bus duct is older than the expected 30-40 year life expectancy."*

Courthouse major building systems were evaluated in 2011 and an updated evaluation conducted again in 2014. System remaining useful life was updated into the database. In addition to the Observed Deficiencies and Cyclical Renewals noted in the MENG FCA, there are numerous code compliance issues both with Building Code and Americans with Disabilities Act that need correction, and well as significant energy inefficiencies.

A long term repair strategy should include projects to correct Observed Deficiencies and implement Cyclical Renewals of major building systems. This strategy should also repair remaining Observed Deficiencies noted the MENG survey. Observed Deficiencies and Cyclical Renewals are listed in the Appendix 1 MENG Facility Condition Assessment (FCA) Report King County Courthouse and total $155,854,306.

At present levels of funding, there is clearly no way for the MMRF fund to accomplish the required system replacements and renewals unless or until another source of funding, or a Revitalization project is undertaken.

Cost Opinion: $155,854,306

Timeline for Implementation: 14 years

6.2 Repairs/Upgrades/Alterations to the KCCH

This option is contemplates Revitalization of the Courthouse. The intent of this option is to identify for repair or replacement aged building systems, improve energy performance and water conservation, upgrade code compliance triggered by a "Substantial Alteration[5]" improvement project and address indoor air quality issues all while reducing ongoing long term high cost maintenance inputs. This proposed work scope does not and would not address programmatic changes to the building which could include an analysis of how the space could be used more efficiently. The scope of work as defined in this report provides for upgrades to Mechanical, Electrical, Plumbing and other systems, and was derived from three sources: the 2011 MENG Facility Condition report (MENG Analysis, 2014), the Courthouse Systems analysis performed by the DLR Group (DLR Group, 2013), and the Courthouse Revitalization Proviso Response (Clark Design Group, 2016) report prepared by Clark Design Group.

The 2016 report prepared by Clark Design Group (Clark Design Group, 2016) identifies in greater detail, proposed work scope for this project, schedules for execution, and cost opinions regarding probable cost. The intent of the work scope identified in this option is to identify repairs necessary to provide for the long term viability of the Courthouse.

Consultants hired to investigate the building systems noted that the building is a robust facility, and has the potential to last many years, with an investment by County. All three consultants noted that the facility, with investment, can continue to serve the public interest for many years.

According to past experience Impact to the County's operations, duration of the work and probable cost would be minimized if the Revitalization project is completed as a single project. The impact, duration, cost would be maximized if done as discreet individual projects over many years. A series of partially funded projects would substantially increase probable project cost and is difficult to predict with certainty.

A revitalization project would also examine the non-structural seismic risk to building occupants from materials and equipment falling from the building both inside and outside of the building. This hazard represents significant risk to occupants and the Public and needs to be addressed.

[5] Appendix 6 Tip 314 Seattle Building Code Requirements for Existing Buildings

In order to execute a project of this work scope, relocations would need to occur similar to those experienced in the Courthouse Seismic Project. Relocation of a large block of occupants could occur into the Yesler building, which could serve as the “empty chair” for the revitalization project. With 66,000 square feet of space available in Yesler, a significant portion of the Courthouse could be made available for upgrades at any one time at an estimated cost of $7.3M. By making more of the Courthouse available to contractors, this approach would decrease project risk, and schedule. A cost to provide limited tenant improvements in Yesler and time limited lease payments has been included in the Revitalization overall project budget.

A project of this type would be considered by the Authority having Jurisdiction as a **“Substantial Alteration[6]”** and trigger code upgrades for the building. The Clark report studied the Courthouse for compliance with current Building Codes including life safety, mechanical, electrical, fire protection systems and identified those systems that would require updating to meet current code. The Clark Report listed specific improvements to those systems to meet code. The results are contained in that report (Clark Design Group, 2016).

Cost Opinion: $267 million (without exterior seismic/window repairs cost opinion is $161million.

Timeline for Implementation: 6 Years

6.3 Vacate and Mothball KCCH and Lease/Purchase somewhere else:

Any option that contemplates relocation of the Courthouse should be carefully examined for zoning risk. Recent experience with CCD illustrates the difficulty in siting Work Release and similar functions, other than where they currently are located in the Courthouse.

The lease option requires active participation of the private sector to develop suitable facilities. Without new construction (beyond currently planned projects in the area) to support a lease, there are few, if any, contiguous 450k to 550k sf office complexes available, no institutional options, and none that offer the amenities and cultural significance of the Courthouse and none that are proximal to the King County Correction Facility. An RFP for proposals may identify opportunities in the marketplace for this option, although results for this type of approach for the Children and Family Justice Center were not successful. An RFP to evaluate market interest for leasing a facility of this type is beyond the currently authorized project.

[6] Appendix 6 Tip 314 Seattle Building Code Requirements for Existing Buildings

The Courthouse is a facility with unique occupancy and use. Several current Courthouse tenants such as Work Release, and the FMD Shops would not fit well into currently available typical triple A office lease space in the immediate area. Both these current Courthouse tenants would have to be relocated elsewhere, should the County elect to continue these programs. Work Release would be very difficult to site, based on the issues with CCD relocation that stalled the Yesler Redevelopment Project. In addition, transfer of in-custody prisoners into and out of a leased, shared public building would likely be subject to complex negotiations with a landlord.

Leasing would also run contrary to the Real Asset Management Plan (RAMP) which promotes use of County owned buildings. Another issue is the movement of large amounts of County revenue out of the County, i.e. rents paid to landlords vs rents paid back to the County, which would further strain cash flow and already badly underfunded General funds.

6.4 Vacate and Mothball KCCH and Purchase:

In the purchase option the building would be prepared for mothballing, and a new building purchased to replace the Courthouse. Purchase of an existing facility presents challenges some of which are mentioned above. There are no Courthouse buildings readily available nearby the current KCCF for purchase. According to CBRE a national real estate firm, recent purchase prices for triple A office space in Seattle are exceeding $560 per square foot. Locating and closing a real estate transaction for an appropriate site for such a specialized function is unlikely, especially given the siting restraints required by proximity to the KCCF.

A major disadvantage with this option is the inability of the County to realize the economic value of the Courthouse property if it was mothballed.

If it is determined that the property has economic value it could be monetized to help repay the existing bond debt incurred in the 2005 Courthouse seismic project. The ongoing cost of a mothballed Courthouse would add expense to the operating budget of the County for costs such as security.

6.5 Vacate and Mothball KCCH and Build a Replacement Courthouse on another site

Replacing the Courthouse on another site would have to address high replacement cost, parking requirements, satisfy severely restricted co-location criteria and be sited on currently available property in the local market and preferably located on existing County property. There would be several ways to deliver this type of project: a developer delivered 63-20 lease leaseback transaction such as the Chinook Building, a

GCCM delivery or a Design Bid Build project done under RCW 39.10 Alternative Public Works.

The Goat Hill site immediately adjacent to the King County Correctional Facility could potentially house this type of Facility.

Regardless of the delivery method selected by Council, any replacement project contemplated would have to go through Major Institutional Master Planning process or a Community Development planning process, Master Use Permitting (MUP), Environmental Impact Statement reporting, and other lengthy administrative processes to address demolition and relocation of the Courthouse. Permitting this option is a 5 year process from the start of planning as shown below and in pages 17 – 21 in the report prepared by Clark Design Group.

Site Rezone:	540 -740 Days
Land Use Amendment:	365-540 Days
PCD Process:	360 days
Design Procurement:	200 Days
Design:	365 Days
Construction Procurement:	365 Days
Construction	840 – 1000 days
Mothball Process:	120 Days
Total Duration:	3,155 days or 8.6 Years

This duration assumes no legal challenges and a willing City Council to approved re-zoning and land use amendments. There would be two possible locations that could potentially address siting issues regarding proximity to the KCCF: the Goat Hill property or the Admin Building Site.

Cost Opinion:	Goat Hill	$557,352,402,	618,420 GFAC
	Admin Building Site	$976,281,515	1,279,185 GFAC

Timeline for Implementation: 8-10 years

6.6 Demolish the KCCH and replace on site

The Courthouse is the seat of King County Government and a designated historical building with both exterior and interior building features designated as historically significant. Demolition of this facility would be highly controversial and likely legally contested. Lawsuits or injunctions could delay this option by several years.

Rental/Lease cost for temporary location would make this option very expensive including the cost to move everyone to a new location and move them all back into the same site. This option was studied during the CSP project, and rejected as unworkable by the executive project oversight committee at that time.

6.7 Sell KCCH, Construct new KCCH on New Site

Selling the existing Courthouse would be expensive for the County. The marketability and re-use of the Courthouse building is extremely limited due to Historic Landmarked status of the building, HAZMAT issues, lack of any parking, odd floor to floor heights which makes the building very inefficient, access problems on the upper floors, actual construction of the upper floors particularly the old KCCF portion, major code compliance issues, and an uphill battle to obtain a re-zone or change in use, especially given the lack of parking. There is also the impact of the current use of City Hall park, which would affect commercial marketability of a private sector re-use of the Courthouse.

Before any decision is made a full property appraisal should be performed. An appraisal may indicate that the raw land would be worth more than the land with the building.

Cost Opinion:	Goat Hill	$557,352,402,	618,420 GFA
	Admin Building Site	$976,281,515	1,279,185 GFA

Timeline for Implementation: 8-10 years

6.8 Location and Logistical Constraints

Any review of alternatives must include consideration of the fundamental issues regarding the Courthouse location, occupants and uses, zoning and land use, process duration, market timing and its proximity to other County buildings particularly the King County Correctional Facility (KCCF) and its functions. A fundamental planning criteria for locating a replacement courthouse or moving its functions to a new site is the location itself. Challenges related to the re-location of the Courthouse function to a new site include:

A. **Connection to the King County Correction Facility (KCCF)** – The Courthouse relocation options are limited particularly due to the need to retain a physical connection to the King County Corrections Facility for in custody trail and arraignment. The cost of transporting prisoners to any new Courthouse site if the KCCF is not directly connected to the courthouse would be very expensive and create a potentially large long term operating expense impact. This operational model was studied during planning of the Maleng Regional Justice Center (MRJC) where the project team demonstrated the added costs associated with detention not being directly connected to courts, courts not connected to King County Prosecuting Attorney's Office etc. That is the reason those services are co-located together regionally in the MRJC and at other sites. Further examples of colocation of Detention and Justice include Children and Family Justice Center, Oregon; San Diego County, California and Washoe County, Nevada as specific sites used in comparison.

B. **Relocation of Work/Educational Release (WER) –** is currently located on the 10-11th floors of the Courthouse. If the County decides to continue this service, City zoning rules for work release centers are very restrictive. The County's has a very old agreement with the City for temporary use of 10 & 11 for WER. Currently City legislation allows only 50 beds in a single location and a certain number of miles between each location. The current population is approximately 75 in that facility. This service continues to be extremely difficult to re-site.

C. **Limited Resale Value** – This building is Historically Landmarked by the King County Landmarks Commission, and needs extensive repair particularly the mechanical, electrical, plumbing (MEP) systems and the exterior envelope should the building continue to house County services over the long term. The courthouse interior layout, size and shape are inefficient and have floor to floor heights that were specifically planned for use as courts and court related activities. According to Clark Design Group these features do not translate well for other types of commercial office, hospitality or residential uses. The market would likely be quite limited. A detailed property appraisal should be conducted, prior to any decision being made. Though it's unlikely that the community is interested in demolishing the historic Courthouse a full appraisal process could address if the property may be more valuable as raw land.

D. **Prior & Recent Investments (Sunk Costs)** –The Major Maintenance and Reserve Fund has spent (in 2016 inflation adjusted dollars), over $27M[7] since 2000 on Major Maintenance on this building. In 2003-2004 the CH Seismic Project spent $104M to upgrade the structure. In 2007 ESCO projects spent $3.6m for energy upgrades at the KCCH and KCCF. Current Bond debt on the Courthouse Seismic project stands at $46.5M. Annual debt service is approximately $5.6 million through 2025.

E. **Cost of a new Structure** – A ROM cost opinion prepared by Rider Levett Bucknall for replacement of the same square footage as currently exists in the courthouse is described in Chapter 1 at $492 per sq. ft. based on recent similar projects including the now cancelled Snohomish County Courthouse. This figure does not include purchase of a site, the cost of the required underground parking

[7] Appendix 3 Courthouse Major Investments and MMRF Expenditures

structure that would be required for any re-development, demolition and/or mothballing of the existing Courthouse building and other allied costs that would be very significant. In 1998 the Courthouse Seismic Project project team cost opinion of a replacement courthouse located on Goat Hill was $219M which in 2016 dollars amounts to $322M. This would not include tunnel or connection costs to the KCCF. Another recent courthouse construction cost example is the GSA managed Federal Courthouse on Stewart Street which is a 600,000 sf high rise. The MACC for this project in 2004 was $200M, inflated to 2015 would be $254M. Again, this cost does not include site costs or parking mitigation or design and other allied costs. Greg Smith of Urban Visions spoke in the Government and Accountability Committee hearing on July 12 stating that construction costs are $600 per sq. ft. in the Pike Place apartment his firm is building near the Pike Place market. Current estimates for three new building alternatives are described below.

F. **Site Selection, Major Institution Master Planning, Zoning & Environmental Impact Statement** – Any new building construction in this area would trigger site selection zoning and Major Institution Master Planning processes (MIMP) and SEPA determination processes which make the schedule for any new building action longer than a repair/upgrade project with the work currently identified in the King County Courthouse Revitalization Project.

   Other siting and zoning risks associated with this type of approach include trying to site the Work Release program if the program was continued, and finding a location for the FMD shops. Re-siting Work Release could be a significant zoning and permit risk similar to the CCD situation with the Yesler Redevelopment. Another limiting regulatory factor is the glide slope ceiling created by Northwest Air Ambulance Service onto the Harborview Parking Structure. This limits heights of buildings on the Goat Hill site, and adjacent sites whose height could potentially impact the aircraft glide slope to the Helipad at Harborview Hospital. These potential impacts on building height are shown in the Clark Design Group report (pg. 24, 25 and 31).

G. **Availability of Land (in vicinity**) – There is little available land to locate a new Courthouse where a cost effective connection to the existing King County Correctional Facility (KCCF) could be made. One candidate is the property immediately south of the KCCF (called Goat Hill). If the property is to be developed, consideration of future KCCF needs could be integrated for a more comprehensive and efficient planning process. Another is the Administration building site, although this option would need to include approximately 234K sq. ft. in “empty chair” alternative space for existing employees while a new building was constructed.

H. **Historic and Cultural Importance** – Within a five block radius there are numerous projects underway or completed that are restoring and upgrading systems in buildings of the same vintage and cultural importance as the courthouse. While vacating the Courthouse is technically possible, the historical and cultural considerations are significant.

Logistics - If the County were to build a new building, ideally when the project was complete, staff would relocate from the existing Courthouse into the new building and when relocation was complete repurposing of the old building could occur. This would avoid temporary relocation altogether. These issues were presented in August 1998 to the Courthouse Seismic Project oversight committee. At that time, the committee felt that it was not productive to carry this line of thought beyond comparing the cost of the proposed Seismic Standalone project to a replacement on Goat Hill. And, that it was not cost effective to further compound costs by relocating the occupants, triggering an EIS (to rebuild on the same spot), paying 4-5 years of rent, demolishing the courthouse and then rebuilding it on the same spot and moving the occupants back onto the same site.

7 List of Possible Projects

The primary objective of this project, if initiated by Council would be to perform repairs to the mechanical, electrical, plumbing, exterior window and masonry cladding systems that make up the King County Courthouse Revitalization project. The King County Courthouse Revitalization project would consist of infrastructure repairs to the mechanical distribution systems, electrical distribution systems, lighting, exterior windows and cladding as well as other systems. Included within the project objectives are the following proposed Individual projects[8]:

No.	Scope of Work	Duration	Cost
1	Service, repair or replacement of the main electrical buss ducts through the building	2 years	$16,283,413
2	Replacement of the domestic water system, storm and sanitary waste systems	4 years	$13,095,726
3	Repairs of the toilet exhaust systems	1 year	$435,029
4	Evaluation and replacement of the main chilled and heating water distribution piping as necessary; installation of a condensate drainage system.	4 years	$24,531,659
5	Repairs to the perimeter induction heating system	3 years	$3,960,561
6	Dual Duct Variable air Volume conversion to dual duct dual fan system.	3 years	$40,127,970
7	Replacement of the lighting systems with energy efficient lighting and modern controls	3 years	$20,295,677
8	Replacement of exterior aluminum windows with thermally efficient historically accurate windows;	4 years	$37,503,376
9	Adding jury ADA bathrooms and bringing public restrooms up to code	3 years	$4,485,896
	Subtotal without Seismic Work		**$160,719,307**
10	Seismically stabilize and securely attach exterior cladding system	4 years	$106,521,348

[8] Clark Design Group report cost opinions July 2016 with project "soft" costs applied

Secondary objectives for the project would include the following:

- Be a partner in an economically, socially, and environmentally sustainable neighborhood
- Promote Equity and Social Justice by maintaining Social Services to taxpayers at the least cost
- Promote Sustainability and Energy Initiatives in the County
- Significantly reduce the cost of long term maintenance
- Extend the life of the facility for the future

7.1 Replacement of Electrical System Main Buss Ducts (East and West), and other electrical system issues.

The electrical power in the building is delivered to the upper floors via two buss ducts, one for the west side of the building, and one for the east side. The buss ducts were installed in the 1967 system upgrade project and have a recommended life cycle of twenty years[9]. This system requires replacement as soon as possible, particularly if the decision is made to remain in the Courthouse for the foreseeable future. A failure of a section of this system would shut down the building for occupancy until repairs could be affected.

Figure 1 4000 amp buss electrical buss duct (East Riser)

"As electrical equipment ages, the insulation inside of it becomes brittle. Any motion or contact with the equipment can cause brittle insulation to break, which allows for electrical arcing (sparking) to occur, which ultimately can lead to explosions and/or fires. (Glumac)[10]"

Another problem with the age of this system is the unpredictable nature of the system, and the lack of replacement parts. Electrical contractors, specialty buss duct inspection firms, and engineers are all concerned that any work on this system may cause a system failure which would be impossible to correct or repair for lack of parts. There is currently no redundancy to deliver power to the upper floors of the building.

In addition, the existing electrical rooms are far smaller than required by code consequently safety clearances for workers are not acceptable. Some rooms are not accessible at all due to

[9] Department Of Energy Design Life: Standard System Design Life Tables
[10] King County Courthouse Proviso Report Clark Design Group 22 July 2016

interference from ductwork and piping risers (figure 2 and 3 below). Also, there is no Arc Flash warning system in place. Due to this worker risk, no work should occur in this space until clearances are corrected, out of service date equipment is replaced, and adequate labeling and warning systems are in place. A Selective Coordination Study should be performed to insure that coordination exists at all levels from the Service Switchboard down to branch circuit before an Arc Flash study is performed. This study should be performed by a registered electrical engineering firm whose specialty includes the performance of Arc Flash reports.

Figure 2 Access to floor 1A east electrical room by crawling under ductwork, a serious safety hazard and code violation

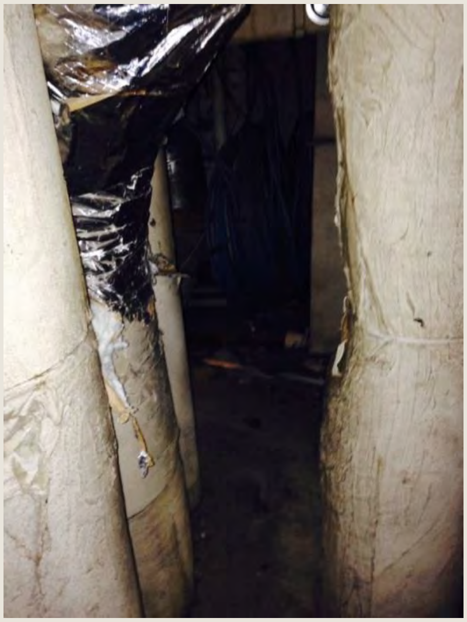

Figure 3 Access to floor 1A east electrical room (part two) by crawling through an 8" wide space between heating riser pipes. Extracting an injured worker from behind here would be next to impossible.

The existing original 208Y/120V switchboards and panelboards have exceeded their useful life and are currently being partially replaced by an MMRF project currently in the design phase. However, once this MMRF project is completed, more than 40% of these panels and their associated transformers still remain to be replaced.

The recommended scope of work for this project would be to construct new electrical rooms adjacent to the restroom on the east and west sides of the building, install new buss duct risers and buss plugs, and install feeders conduits and wire into the old electrical rooms. This would allow the work to advance without interruption of the existing electrical service. Cutovers from old to new would then be done at night and on weekends to minimize disruption due to power outages.

7.2 Domestic Water System

The Domestic Water system remains a problem and still utilizes some piping dating from the 1929 addition. Approximately 5% of the domestic system water piping is original galvanized piping dating back to 1930. This piping is badly rusted and should be replaced immediately
.
Other problem noted include missing backflow prevention that should be installed to meet current code. Recirculation lines for heated domestic water lines should be replaced, and balancing valves should be installed. Redundant pipe risers and re-circulation dead piping legs should be removed and consolidated. Once circulation and piping problems are eliminated, the main riser supply pumps should be moved up the building to the 9th floor to reduce pump energy use.

Figure 4 Pipe Sample from Courthouse domestic water system

In the 2012 report prepared by FSi Engineers, it was estimated that the Domestic Water system wastes over 179,000 gallons of water per year based on the current plumbing fixtures. The report also noted severe corrosion in piping and stagnant water in dead piping runs has increased the risk of contamination and disease. Water and sewer use rates for this site are higher than necessary due to an inefficient system. The option of doing nothing would continue ongoing waste, impact on the climate, operating cost and health concerns for employees and the public.

There has been ongoing work on the domestic water system for many years. The 2012, FSI study identified the following problems with the existing domestic water system that included:

- 180,000 gal. per year of wasted water use
- Excessive Energy Use: wasted heating, heat recovery and pumping energy
- Distasteful water.
- Ineffective hot water circulation and supply
- Scalding hazards
- Lack of backflow prevention at contamination sources
- Nearly clogged water mains and branch piping
- Flooding hazards and associated damage to building finishes, records, and building infrastructure (especially for the electrical buss duct)
- Contamination from biohazards

This project would replace the entire system with new piping, water saving fixtures and pumps.

7.2.1 Heat Recovery for Domestic Water System:

Current code requires domestic water heat recovery. The current system lacks this feature. There is potential for recovering heat from the condenser water system to pre heat the domestic hot water. A new heat exchanger should be provided for the domestic hot water system to recover this heat.

7.2.2 Trap Primers

Trap primers for fan coil units are currently emitting foul sewer smell. New trap primers should be installed to replace existing at locations where they are dry and nonperforming.

7.2.3 Biohazards

Previous investigations noted above identified numerous dead legs in the existing piping arrangements. As written in the Emerging Infection Diseases journal, stagnant water in uncontrolled distribution systems can be a source for distasteful water and biohazards including coliform bacteria, environmental mycobacteria, Legionella spp, and filamentous fungi. Testing for potable water quality should be done due to the age and condition of the system. All piping should be revised and reconfigured to remove dead leg hazards.

7.2.4 Water Service Mains

The west facing 3" water service main pipe on 3rd Avenue delivering potable water from the City owned pipe in the street are seriously clogged with mineralization and is probably effectively a 1" pipe due to mineralization. The South water connection is a 6" steel pipe installed in 1968 that was replaced from the building to the water meter in 2014 with an 8" line. The City owned line from the meter to the water main in the street remains at 6" and it likely badly clogged with mineralization. This pipe from the meter to the street main should be replaced. This situation should also be reviewed by a Fire Protection engineer to ensure that the system has adequate capacity to support the fire suppression system.

Camera investigations inside the south water supply pipe showed a 6" pipe reduced to a 3" diameter by mineralization. The 3rd Avenue supply pipe, installed in the 1920 era is probably much worse. This section of piping should also be replaced to provide redundant water supply to the Courthouse, particularly in support of the fire sprinkler system.

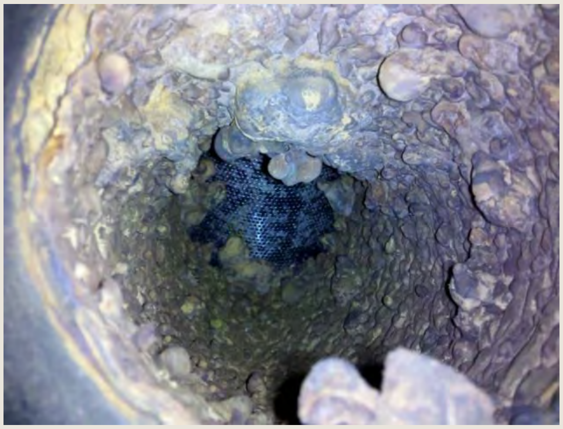

Figure 5 Camera picture of inside south water main to building similar to the west water main

There is also concern that the water supply to the building may not be adequate particularly for the fire protection system, which relies on water mains for its source of water. Current code requires a large tank to store fire water for this very reason. The revitalization project would restore the 3rd Avenue water connections and add 30,000 gallon tank to provide fire sprinkler water supply.

7.3 Toilet Exhaust System Repairs

This system serves as the exhaust system for toilet rooms for the entire building. There are two systems, one for the east half of the building, and one for the west half of the building. The east half of the system is fully functional and has been balanced with correct air flows. The west side has gaps in the ductwork of several feet in various locations which short circuit the upstream toilet room's air flows. This is a code violation and introduces toilet odors into return air system of the building. This Code violation situation must be corrected. Duct work should be reconnected, pressure tested and then balanced with the rest of the system

7.4 Heating and Chilled Water Piping System and Set Point

As a result of system issues described in other areas of this report, the chilled water system is not operating efficiently and does not provide necessary cooling or occupant comfort due to a high set point temperature. When the set point is maintained at the design temperature, this setting creates condensation on the cooling coils throughout the building which in turn drips from the coils and causes leaking damage to building ceilings and infrastructure throughout the building. The cause of this problem is that the majority of chilled water cooling coils in the building do not have functioning drain pans with drainage piping to capture condensate dripping from the coils. In order to avoid condensation and consequential dripping through ceilings below, the chilled water system temperatures are kept high to avoid dew point condensation on the coils. As a result, the chilled water system in the building is not even close to realizing its full potential. Occupant comfort is compromised, and energy use is much higher than necessary due to fans being operated at higher levels to mitigate the problem. This problem could be corrected by installation of drainage pans and piping on all cooling coils and fan coil units throughout the building.

Chilled water piping is older dating from 1967 and needs to be examined for replacement. Normal useful life for this type and use of pipe is 50 years and several engineers have recommended replacement. The Chilled water piping system should be tested for corrosion, and replaced if necessary. Some sections of the piping do not have any pipe insulation creating further energy waste. Uninsulated sections of pipe should have insulation installed.

The Chillers are in good condition and have 20 to 25 years of remaining life. Cooling Towers, however are aged and should be upgraded or replaced. The Chilled water system conformed to the codes when it was installed. However, if any system upgrades are done, current codes would have to be met. Current code requirements include variable frequency drives for Cooling Tower fan motors. Adding Variable Frequency Drive (VFD) to existing Cooling Tower fans would increase energy efficiency of the towers and lower energy consumption costs. VFDs can stop fan rotating in opposite direction (due to wind milling effect). VFD's would allow for allow for flexibility in tower automation and performance monitoring.

Chilled Water and Cooling discharge air temperature reset would result in significant energy savings and increased occupant comfort. Chiller Optimization with chiller optimization package software installed and interfaced with existing sequence of operations for chilled water system would dramatically improve the efficiency and function of the chilled water system.

7.4.1 Heating Water Piping Systems

The Heating Generating System was refurbished in 2009. The boilers and pumps on the roof have sufficient remaining life, and meet the current Energy Code except that the Boilers need isolation valves. Large diameter heating hot water piping (8" and 10") rises vertically from the basement in two shafts (East and West) to the boilers located on the roof. The heating piping distribution system inside the building, however, similar to chilled water piping system, is more than 50 years old and should be examined for replacement. Pipe samples should be taken and reviewed by corrosion specialists to determine remaining useful life. Piping replacement for this system is a large and significant scope of work in itself.

7.5 Perimeter Induction Heating System

The interior building perimeter space is conditioned by a system of fan coil units that are provided with hot water heating and chilled water cooling coils. There is a drain pan below most of the fan coils, but not all. Also, where drain pans are in place they are not connected to drainage piping. If the chilled water coils are allowed to use chilled water at the design temperature for the chilled water supply (i.e. below the dew point of the space), water condense on the coils, fill the drain pans and overflow onto the suspended ceiling. Consequently the chiller water set point is set higher than it should be, compromising the entire chiller system. This is overcompensated by running fans at very high output to circulate air. This action wastes significant amounts of energy.

7.6 Dual Duct System, Fan Floor Equipment, Heat Exchangers and Exterior Intakes

The HVAC system includes the Dual Duct Variable Air Volume (DDVAV) system, perimeter HVAC (induction units) the exhaust systems and controls for these systems. The Fan Floor Air plenums, and equipment date back to 1967 and are beyond their useful life. The air plenums leak badly causing pressure loss, which increase fan energy usage. Due to pressure loss in the system the heating supply air temperature is set higher than design. By correcting pressure loss, and reducing the discharge air temperature, considerable energy savings in pump and fan energy would be saved.

The following are some of the issues observed and reported with the systems:

Aged equipment:

- Perimeter system fans: Casings have cracked at the upper scroll to sidewall connection and been welded back in place. Bearings are worn.
- Dual duct system fans: Similar in condition to Perimeter System fans.
- Mechanical Penthouse: All of the plenum walls are beyond their useful life and leak air badly.
- Motors for the induction units should be tested to verify that the windings are in good condition.

Sources of moisture:

- Condensate pans below the dual duct system cooling coils in the mechanical penthouse have overflowed and caused water to appear in the Council Chamber ceiling. A drainage system should be installed on these coils.

There is no cooling provided for the elevator machine rooms. Installation of cooling is recommended by two recent studies done by elevator engineers. Currently the cooling provided for the machine room is insufficient and these rooms overheat during warm weather, and as a result are slowly compromising the electric elevator motor windings and may compromise the elevator control modules if not corrected soon.

The recommended project for this area is total replacement of all Fan Floor equipment, plenums, controls, and associated works.

Figure 6 1965 era Dual Duct Single Fans

7.6.1 Repairs to the Heating and Ventilating (HVAC) System

There are two systems in the building that deliver conditioned air to the occupant spaces; one is the dual duct air system serving in interior spaces of the building footprint, and a second induction air system that serves the perimeter of the building footprint. The existing dual duct air handling system fan equipment located on the fan floor is at the end of its useful life. The system uses far more energy than is required or allowed by current energy code, and produces poor climate control for the occupants. Dual duct single fan systems are no longer allowed by code primarily because they can and do heat and cool simultaneously. The dual duct system does not conform to current energy code and lacks any heat recovery system, has very poor pressure control, and uses 100% outside air year round. The Energy Use Index or EUI of this building is very high, more than twice that of similar buildings types in Seattle.

KCCH Energy Use and Cost Data	
Site	**Energy Use Index (EUI) (kBTU/SF)**
KCCH	115
US EPA/CBECS Benchmark	93
Jackson Federal Building	47
Seattle Courthouse	49
US Court of Appeals - Nakamura Bldg.	37

Figure 7 Energy Use Index Seattle Courthouses

There has been a significant amount of work done in the Courthouse over the years. As a result, outside air ventilation rates for spaces with large numbers of people may not be sufficient to meet current code requirements. The current design and actual air volumes should be compared to current requirements to ensure the correct amount of outside air is provided

Widespread duct air leakage and pressure loss is occurring throughout the system. All duct work should be pressure tested, repaired and sealed to bring the amount of air loss to at least current industry standards. This would save energy for fan power and may allow lower pressure set points. The duct insulation should be replaced where it has been damaged or is simply missing. Areas with insulation in relatively undisturbed condition may remain as-is.

Lack of automated control dampers on floor return air pathways prevents balanced pressurization and air delivery to the floors. Ad-hoc repair and correction of controls and air handling systems in the building alone may worsen this problem until these dampers are added. Providing automatic Direct Digital Control (DDC) of air volumes entering and leaving each floor would be necessary to allow for a rational sequence of construction and avoid any loss of work accomplished during the earlier phases by work in the later phases. Testing, adjusting, and balancing of the air flow is incomplete and should be totally re-done throughout the building once all improvements have been completed.

The recommended scope of work would include development of conformed as-built drawings, document the leaking ductwork in the system, re-seal ductwork and pressure testing the system. The project would also convert the Single Fan Dual Duct system to a Dual Fan Dual Duct system which would eliminate simultaneous heating and cooling. DDC would be completed on the portion of the system not yet completed and a new sequence of operation developed and installed. Floor pressure control dampers would be installed. The entire system would be tested, balanced and commissioned.

7.7 Lighting system and controls

Lighting Systems and Lighting Controls are out of date and are the largest consumer of electrical energy. Modern LED lighting could reduce energy consumption by up to 30% creating significant operational savings. Digital lighting controls should be installed for all lighting circuits. Fluorescent fixtures with T-12 lamps should be modified to conform to code mandated requirement for lamps to be T-8 or smaller. To better manage energy consumption Seattle codes require separate metering: for HVAC System, Lighting System, Plug Load System, and Miscellaneous Loads. New metering should be installed to allow better monitoring and control of energy use.

7.8 Aluminum Panel Windows

In 1967, aluminum curtain wall single glazed window systems were installed overtop of historical wood windows. This action covered up existing wood windows and allowed for what was then thought of as a modernization of the courtrooms. Due to age, the existing aluminum window systems have failed over the 50 years they have been in service. The windows are deteriorated and leaking, particularly on the South and West (weather) side of the building and due to the single glazed configuration, sweat on the interior sides of the frames. The leaking around the aluminum curtain wall introduces water into the brick cladding, which then compromises the mortar bond attaching the brick to the building.

Limited, poor quality Insulation in the panel system (less than 1” of poor quality Styrofoam), causes the panels to radiate substantial amounts of energy out of the building creating substantial heat gain in the summer and heat loss during the winter. Poor air sealing of the aluminum window system creates air pressure losses thru the exterior skin, which unbalances the HVAC system, and causes significant fan and heating/cooling plant energy losses.

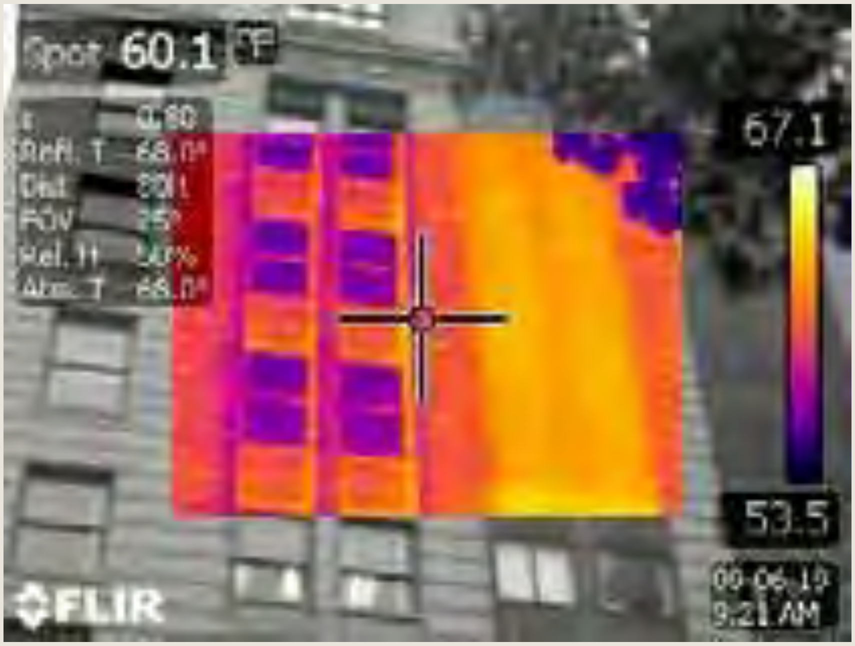

Figure 8 Infrared photo shows heat loss (yellow) through panel section on right compared to high efficiency windows on the left. Outdoor Temp is 53 degrees in this picture.

The projected benefits from the studies performed by McKinstry[11] report included the statements of significant savings for electricity and natural gas; the benefits of providing natural daylighting; and reducing pollution from consumption of fossil fuels.

- Annual electrical savings of 1.3 million kWh, and an annual saving of 6,000 Therms of natural gas.
- The use of natural day lighting has the potential for post construction energy savings after installation of perimeter daylighting controls. (NOTE: while this retrofit is possible for energy savings, the payback for installation of perimeter daylighting controls would be quite long, and is not likely to be cost effective from an overall energy savings standpoint).
- Potential for utility incentives and Federal efficiency grants to help defray costs.
- Savings of 1,000 metric tons of CO2
- Creation of 200 local jobs
- Allowing for natural daylight into the building interior promotes healthier work environment.

Replacement of the aluminum curtainwall windows and restoration of the original window system with modern thermally efficient double glazed windows would provide a weather tight, thermally efficient exterior building envelope and provide a design that would restore courtrooms interiors to a historically acceptable approximation of their original 1916 design. New window and glazing systems and exterior wall improvements

[11] Appendix 4 Courthouse Window Upgrade

would comply with the requirements of the Seattle Energy Code. The original windows would be restored with historically-appropriate replacement window units.

7.9 Seismic Stabilization

The exterior walls (and some remaining interior partitions) of the Courthouse are constructed of hollow clay tile masonry units which infill between structural columns and the floor plates. On the exterior face of the exterior walls, cladding consists of brick and granite veneer with terra cotta trim. Inside the building, there are partition walls constructed from this same hollow clay tile material. Hollow clay tile assemblies are classified as unreinforced masonry and can be prone to collapse in a strong seismic event. Typically, these types of walls lack mechanical (reinforced) connections to the abutting construction and utilize very weak, gravity type connections.

The exterior walls were subject to previous inspection by architects[12], engineers[13] and nationally recognized forensic structural engineers[14]. Clark's report recommends extensive seismic reinforcement of exterior and interior hollow clay tile walls in order to "mitigate life safety risks associated with unreinforced masonry materials". Clark's report also states "Strong earthquakes can cause the partial or complete collapse of unreinforced masonry walls, endangering both the building occupants and pedestrians nearby who could be exposed to falling masonry debris".

Installation of helical anchors, strong backs and/or carbon fiber wrapping is recommended. Refer to page 290 in the Clark report for detailed description of the risks and solutions presented. This work should be undertaken at the same time as the window replacement work noted in section 7.8 above.

7.10 Code Compliance Issues

7.10.1 Restroom Fixtures

Analysis of current code by Clark indicates that there are insufficient numbers of existing restroom fixtures to meet current code standards for the public restrooms, and insufficient ADA accessible toilets in Jury Assembly rooms. This report recommends that public restroom be renovated to accommodate the code compliant number of fixtures (based on occupancy load), and a unisex ADA compliant toilet room be added to each Jury Room area.

7.11 Fire Suppression System

[12] Rolluda Architects memorandum 12/12/2011
[13] DCI Engineers memorandum 11/16/2011
[14] Weiss Janney Elstner and Associates memos 7/31/2102 and 8/3/2012

An inspection by licensed Fire Protection engineers was prepared for this report. While the system met code at the time of installation, their report identified several issues that do not meet current code including

- Seismic bracing fasteners for the piping for the system
- Lack of an adequate secondary water supply and/or confirmation of the fire protection water supply main on 3rd Avenue
- Standpipe Pressure Relief Valves and addition standpipe connections
- Other miscellaneous corrections

8 Projects Cost Opinions

King County Courthouse Cost Opinions:

			Long Term Repair Option		Short Term Repair Option		Revitalization Option	
System	**SubsystemCode**	**Subsystem Name**	**System Cost Opinion**	**Category Total**	**System Cost Opinion**	**Category Total**	**System Cost Opinion**	**Category Total**
	B1010	Floor Construction	$ -		$ -		$ 2,879,762.00	
	B2010	Exterior Walls	$ 5,780,022.00		$ -		$ 19,311,587.00	
	B2011	Exterior Wall Finishes	$ 5,128,684.00		$ 1,900,000.00		$ -	
	B2020	Exterior Windows	$ 8,087,847.00		$ 840,000.00		$ 7,986,650.00	
	B2030	Exterior Doors	$ 265,242.00		$ -		$ -	
		Clerestory Glazing	$ -		$ 50,000.00		$ -	
	B3010	Roof Coverings	$ 945,028.00		$ -		$ -	
	B3020	Roof Openings	$ -		$ -		$ 54,755.00	
Shell				**$ 8,635,394.51**		**$ 2,790,000.00**		**$ 90,736,683.75**
	C1010	Partitions Interior	$ 2,946,081.00		$ -		$ 4,005,640.00	
	C1020	Doors Fittings	$ 4,060,261.00		$ -		$ 48,800.00	
	C1030	Stair	$ 227,342.00		$ -		$ 1,317,461.00	
	C2010	Construction Stair	$ 638,276.00		$ -		$ 722,400.00	
	C2020	Finishes	$ 42,601.00		$ -		$ -	
	C3010	Wall Finishes	$ 3,402,098.00		$ -		$ 5,843,335.00	
	C3020	Floor Finishes	$ 8,050,244.00		$ 699,000.00		$ 282,064.00	
	C3030	Ceiling Finishes	$ 4,910,592.00		$ -		$ 1,120,021.00	
Interiors				**$ 10,374,997.94**		**$ 699,000.00**		**$ 40,036,115.99**
	D1010	Elevators and Lifts Elevators	$ 4,776,747.00		$ 705,000.00		$ -	
	D1011	Cab Interiors Plumbing	$ 129,585.00		$ -		$ -	
	D2010	Fixtures Detention	$ 2,347,795.00		$ 212,000.00		$ 2,199,798.00	
	D2019	Plumbing Fixtures Domestic	$ 786,881.00		$ -		$ -	
	D2020	Water Distribution Sanitary	$ 3,112,329.00		$ 852,000.00		$ 6,068,544.00	
	D2030	Waste Rain	$ 780,988.00		$ -		$ 71,950.00	
	D2040	Water Drainage	$ 354,398.00		$ -		$ 126,160.00	
	D2090	Other Plumbing Systems	$ -		$ -		$ 126,160.00	
	D3010	Energy Supply	$ 26,052.00		$ -		$ -	
	D3020	Heat Generating Systems	$ 2,093,523.00		$ -		$ 10,844.00	
	D3021	Boilers	$ 3,685,606.00		$ -		$ -	
	D3030	Cooling Generating Systems	$ 1,871,826.00		$ -		$ 2,792,400.00	
	D3031	Chillers	$ 4,220,286.00		$ -		$ -	
	D3033	Cooling Towers	$ 3,010,318.00		$ 40,000.00		$ -	
	D3041	Air Distribution	$ 8,134,900.00		$ 1,420,000.00		$ 8,355,461.00	
	D3043	Hydronic Distribution	$ 682,026.00		$ -		$ -	
	D3044	Hydronic Pumps Heating	$ 669,035.00		$ -		$ -	
	D3048	and Cooling Coils Fans	$ -		$ -		$ -	
	D3049	and Air Handling Units	$ 3,345,179.00		$ 1,200,000.00		$ -	
	D3050	Terminal and Package Units	$ 17,839,974.00		$ 500,000.00		$ 229,500.00	
	D3060	Controls and Instrumentation	$ 7,179,865.00		$ 937,500.00		$ 610,347.00	
	D3070	Testing and Balancing	$ 2,601,881.00		$ 568,000.00		$ 280,355.00	
	D3090	Other HVAC Systems and Equipment	$ -		$ -		$ 2,164,209.00	
	D4010	Fire Protection Sprinkler Systems	$ 2,256,216.00		$ -		$ 299,049.00	
	D4020	Stand-Pipe and Hose Systems	$ 233,895.00		$ -		$ -	
	D4090	Other Fire Protection Systems	$ -		$ -		$ 702,098.00	
	D5010	Electrical Service and Distribution	$ 9,545,913.00		$ 3,410,808.00		$ 2,529,960.00	
	D5015	Uninterruptible Power Supplies	$ 280,899.00		$ -		$ -	
	D5020	Lighting and Branch Wiring	$ 10,774,120.00		$ 255,811.00		$ 6,217,589.00	
	D5030	Comm and Security Systems Fire	$ 2,333,566.00		$ -		$ 543,613.00	
	D5031	Alarm Systems	$ 1,609,478.00		$ -		$ -	
	D5032	Security	$ 8,183,234.00		$ 672,370.00		$ -	
	D5090	Other Electrical Systems	$ 1,474,282.00		$ -		$ 702,098.00	
Services				**$ 44,590,084.54**		**$ 10,773,489.00**		**$ 102,133,652.71**
	E1010	Commercial equipment	$ -		$ -		$ 150,000.00	
	E1090	Other Equipment Fixed	$ -		$ -		$ 89,793.00	
	E2010	Furnishings	$ 6,820,268.00		$ -		$ 1,563,100.00	
Equipment				**$ 2,914,644.47**		**$ -**		**$ 5,410,970.23**
	F2010	Demolition	$ -		$ -		$ 9,261,349.00	
	F2020	Hazmat	$ -		$ -		$ 375,646.00	
Special Construction				**$ -**		**$ -**		**$ 28,923,232.32**
	G2020	Parking Lots	$ 5,212.00		$ -		$ -	
	G2030	Pedestrian Paving	$ 3,208.00		$ -		$ -	
	G3010	Water Supply	$ 14,303.00		$ -		$ -	
	G3020	Sanitary Sewer Storm	$ 21,753.00		$ -		$ -	
	G3030	Sewer Electrical	$ 44,351.00		$ -		$ -	
	G4010	Distribution	$ 120,096.00		$ -		$ -	
Sitework				**$ 89,283.33**		**$ -**		**$ -**
		Total Project Cost Opinion	**$ 155,854,306.00**	**$ 66,604,404.79**	**$ 14,262,489.00**	**$ 14,262,489.00**	**$ 89,042,498.00**	**$ 267,240,655.00**
Construction Cost			0.43	**$ 66,604,404.79**		**$ 14,262,489.00**	**$ 89,042,498.00**	**$ 89,042,498.00**
Contingency			0.13	**$ 19,981,322.84**		**$ 4,278,747.00**	**$ 23,353,461.00**	**$ 23,353,461.00**
Contractor Overhead			0.11	**$ 17,317,144.59**		**$ 3,708,247.00**	**$ 83,330,988.00**	**$ 83,330,988.00**
Project Soft Cost			0.33	**$ 51,951,433.78**		**$ 11,124,741.00**	**$ 71,513,708.00**	**$ 71,513,708.00**
Total Cost				**$ 155,854,306.00**		**$ 33,374,224.00**	**$ 267,240,655.00**	**$ 267,240,655.00**

9 Risk Assessment and Risk Mitigation

Risk and Mitigation strategies are divided into six categories. In section 8.1 the report describes risk that could affect users of the building: employees, tenants, building service workers, contractors and other who could potentially be impacted by existing conditions in the building. Section 8.2 then goes on to describe project specific risks associated with delivery of a revitalization project. In section 8.3 the report discusses best practices for risk associated with contracting and best practices for allocation risk in construction contracts. Risks associated with procurement are described in Section 8.4 including recommended mitigation strategies. Project risk mitigation strategies are explained in section 8.5 and in section 8.6 phasing recommendation are explained. Due to time constraints, all of these risk sections are based on a premise of revitalization; i.e. that the County would decide implement some or all of a proposed work scope for a revitalization project.

Risk of catastrophic system failure is used as a weighted criteria in the ranking of tasks in the project prioritization section. System importance has been ranked by the Building Services Section and is also used to develop priorities for the tasks.

9.1 Ranking of Hazards and Risk

Any discussion of risk in the King County Courthouse should focus on the current existing condition and immediate risks to workers health and safety and to building operation. There are several existing risk situations in the building that merit immediate action to correct. They are as follows:

9.1.1 Electrical Room Access East Riser shaft Floor 2

Access to the electrical room E213A on the east side of the building is severely restricted by ductwork, riser pipes, and narrow room size. Access to this electrical room is performed by crawling under ductwork, squeezing through heating and chilled water pipe risers in a space less than 8” wide, and then into an electrical room which is only 32” wide. If a worker were injured in this space, emergency extraction would be very difficult. Once inside the electrical room, high voltage equipment placed in a very narrow room, lack of Arc Flash warning labels, and inadequate safety clearances combine to create a significant hazard that requires correction immediately.

Confined space entry procedures should be implemented immediately until this is resolved.

Adjacent room E213 should be demolished and consolidated into a code compliant electrical room. A man door could then be installed from corridor C200E. This action would resolve this issue temporarily.

9.1.2 Fire Safing of floor and wall penetrations

Fire safing of penetrations in the existing floors and walls created by past installations should be accomplished immediately. This is a fire risk that could be easily mitigated at relatively low cost.

9.1.3 Potential for electrical explosion or fire

There are locations in the building where pipe leaks from several different piping systems could potentially combine with the potential for explosion or fire from water contacting the buss ducts. If the existing energized buss ducts were to get wet, there is a risk of explosion and/or fire. Modern buss duct installations have water dams at the floor edge of the openings that the ducts penetrate. The intent of the dam is that in a flood, the dam holds back water from wetting the buss duct itself. An example of this particular hazard was illustrated in the Yesler Building explosion several years ago. In this case the buss duct became wet and shorted across the phases. The resulting damage was substantial, and any employees in the area would have been seriously injured or worse.

9.1.4 Potential for water damage to Motor Control Centers

There are also locations in the building where large heating and cooling water piping is located overtop motor controls centers that control line voltage that operates pumps for the heating and cooling systems. If these pipes and fittings were to leak, operation and control of the heating and cooling pumps could be lost and the heating and cooling system would be inoperable. There should be water protection (shrouds) installed overtop these controllers or the motor controls should be relocated and converted to Variable Frequency Drive (VFD) control in a safer location.

9.1.5 Fire Suppression System Water Supply

In 2013 the County replaced the south water main to the building after discovering that the line was badly mineralized and flow was greatly reduced as a result of the mineralization. The line was replaced from the water meter in the alleyway into the pressure reducing station, which was also completely re-built.

The portion of the line from the water meter to the City main is original and should be investigated and confirmed as adequate for the fire protection water supply. The 3" main from the west side of the building on 3rd avenue should also be replaced to ensure adequate water supply for fire suppression.

9.2 Project Specific Risk:

The analysis of risk in this Proviso Response is limited to the risk analysis and mitigation strategy development for implementation of the projects contained in this proposed project.

In a project of this nature, risk evolves out of planning and zoning, permitting, procurement and contracting, design, and construction. A Risk Matrix has been developed for these criteria and is attached in Appendix 7 (pg94). The matrix addresses types of risks and proposes strategies for addressing these risks.

The Proviso response does not attempt to develop strategies for mitigating risks to ongoing County operations in the Courthouse due the current state of the building, or providing Continuity of Operations planning and development. Those activities are an Operation planning task separate from mitigating project risk, and are not authorized work scope under the appropriated project. In some cases there is very little than can be mitigated without a replacement action. An example would be the electrical buss ducts, whereby there is no redundant electrical system in the building to provide support should this system fail. A risk analysis and mitigation strategy development is Continuity of Operations issue, and beyond the scope of this response.

There is also a risk profile from the No Action alternative. The No Action alternative contains risks that in addition to those risks listed above, include:

- Explosion or fire risk from the buss ducts
- Risk of contamination in the Domestic water system due to stagnant water in pipe systems.
- Shock and/or arc flash hazard in the electrical rooms that are too small and lack warning labels.
- There is a risk of masonry falling from the exterior of the building in a major seismic event.
- Risk of non-structural hazards to occupants inside the building in a major seismic event.
- Force Protection risk. The Courthouse is vulnerable and needs to be better protected.
- Fire stopping and smoke barrier separation improvements

9.3 Risk Allocation

In 2004/5 the Courthouse Seismic Project construction bids were received and were 43% higher than the engineers' estimate and the then adopted MACC of $43M. As a result of the bids received, Rider Hunt Levett & Bailey were retained at that time to provide Independent Constructability and Estimate Reviews focusing on detailed cost comparisons, evaluation of estimates and bids, cost effectiveness of the design and options for future project delivery actions.

One of the lessons learned from the Rider Hunt Levett and Bailey evaluation regarding the initially over budget bid result was attributed to additional costs associated with placing un-quantifiable risk on the Contractor's through a hard bid public sector project delivery processes. During the CSP project, the County and the design and management team increased the Contractor's risk in the areas of hazardous material management, responsibility for as-built conditions, insurance requirements and liquidated damages.

A successful project methodology should allocate risk to the party best suited to manage the risk. This project recommends that as-built drawings should be prepared by the Owner, Hazardous materials should be removed prior to construction, and a project wrap up type of insurance be implemented to save significant money during implementation.

9.4 Project Complexity:

A another lesson learned from the cost overrun of the 2004 CSP project was a variety of factors including project history and the major renovation of an existing, occupied, historic structure combined to create an extremely complex construction project. During CSP, the design and management team's attempts to mitigate the inconvenience this project imposed on the building's tenants and neighboring properties resulted in a complex sequencing and phasing plan, restrictions on noise, work hours and building access. As additional scope was added to the original core seismic project, the contract documentation also increased in complexity with the final bid package consisting of six separate specification volumes and five different sets of drawings.

A more rational approach would be to limit work to one wing from basement to roof, so that the project can be isolated from other occupants, and allow the contractor better access. In addition, access to the work must be provided, during regular work hours, and without limiting noise restrictions. This should be accomplished through relocation of tenants, and operating agreements with noise sensitive tenants.

9.5 Risk Mitigation Strategies

In order to keep costs at a minimum, it is important to quantify risk to bidders and to mitigate or transfer risk from the Contractor to the party best suited (and able) to bear the risk.

1. Simplify the project; including scope, phasing and contract documentation. Reduce phasing to the number of phases to a minimum. This would mean giving one whole quadrant of the building, from basement to roof over to the contractor.
2. Consider various alternative project delivery methods that may be more appropriate for this particular project. Project delivery methods that focus on collaboration and teamwork, rather than confrontation should be used. Use

integrated project delivery and engage construction teams early in the project to ensure constructability is considered throughout design.

3. Give the contractor access to more of the building and ease requirements of Division 0 and 1.
4. Identify any ambiguities or conflicts within the Construction Documents themselves. Conduct constructability reviews often during design to ensure the bid documents are the most efficient way to build the project and accurately represent the conditions.
5. Identify any ambiguities or conflicts between Construction Documents and observed site conditions. This is a large risk and an essential component of the project. ***A thorough set of as-built drawings must be prepared by the County prior to bid and these as-built drawings must be accurate.***
6. Review specifications/conditions that add risk to the Contractor with the team and revise to reduce contractor risk.
7. Review specification/conditions that could be changed that would result in decrease cost/time (must account for overall costs to project – for example costs to relocate current building occupants).
8. Identify how the County could control issues (problems/impacts associated with stakeholders/building occupants) that add risk to Contractor and result in a decrease in costs.
9. Engage independent cost estimators to assess whether the project, as designed, can be constructed within the project budget.
10. Increase amount of area to be accessed by phase and reduce number of phases (endeavor to give Contractors access to as many floors at a time as possible during the contractor's constructability review)
11. Defer maximum amount of civil court caseload to new temporary courts and other county court facilities. Maintain minimal operating courts in the facility to handle criminal cases only that have security connections to the existing KCCF. Consider establishing Civil Court in the Yesler Building for the duration of the work.
12. Consider full height vertical phasing and access for work packages whose efficiency is severely impacted by horizontal phasing restrictions.
13. King County to provide as-built drawings as Owner furnished information.
14. King County to provide the hazardous materials abatement including project design and hazardous material removal.
15. Increase competition in sole source specification items such as fire alarm system and direct digital controls.
16. Consider King County providing a wrap-around insurance policy for the entire project.
17. Allow demolition waste to be removed from upper floors via an external chute.
18. Consider dedicating one half-floor for staging, materials storage and contractor space, i.e. fourth or fifth floor and stage up and down from there.
19. Reduce number of bid items, alternates and do not ask for unit rates. Unit rate requests are good for the Owner by locking into costs for potential additional work at bid time. Contractors typically would add cost to unit rates when

requested to cover the risk and uncertainty of the scope and amount of potential additional work to be authorized.

20. Maintain contractual responsibility for each trade to one company. Avoid multiple vendors for a single trade.

Due to the specialized nature of this project and its scheduling constraints, the traditional public works low bid project delivery method is not best suited for this procurement and should be avoided. The majority of the construction work in this contract would be performed by specialty subcontractors including masonry restoration, fire sprinkler, fire alarm, mechanical and electrical. The trades required on this project are not those that are typically self-performed by a General Contractor. This project lends itself to separate subcontractor packages that would be managed and coordinated by a General Contractor/Construction Manager.

9.6 Phasing Plan

The following method of phasing the project results from the nature of the work, i.e. is would be easier for the contractor, and consequently less expensive for the County to arrange the work in this sequence. These actions would reduce risk and cost.

- Perform back of the house projects first. These would include, piping replacements, fan floor equipment replacements in areas that ***do not*** require removal of the occupants.
- Phase the building into East and West zones (1/2 H-wings) for three or four floors at a time
- The central core would be a fifth zone which would need to be phased as necessary with one or a combination of the other four zones
- Access the wings via a centrally located tower crane, if necessary
- Work would proceed from the east quadrants to the west quadrants to take advantage of duplicate mechanical and electrical shafts. Performing the Northeast quadrant first followed by the Northwest quadrant would allow installation of new electrical rooms and buss duct, and addition of restroom fixtures required to meet code.
- Materials would be staged from the loading dock and city park staging areas and accessed through the windows at each floor
- This approach anticipates the loss of a maximum of 10 courtrooms at any one time, compared with 10 courtrooms under a half-floor approach.
- Gives the Contractor full-height access to significant portions of the building at one time. The project is vertical in nature and this approach allows full vertical access to the building.
- Reduction in complexity of the phasing and sequencing plan, and limits the number of mobilization and final clean activities.

- Simplification in number of moves required by the County to complete the project.
- Contractor access and construction impact restricted to one wing of the building at a time.

In 2013, consultants recommended an approach that allows larger, “back-of-house” projects which do not affect daily use of courthouse spaces be performed at one time. This list would include chilled water and heating water piping that is older than 50 Years, replacement of fan floor systems and work in the basement. After “back of house” projects are complete, begin pursuit of work on individual floors. Due to the nature of the work on the floors and the 24/7 nature of many of the County departments, it is not likely this can be accomplished in a cost or time effective manner without relocating departments to another location, and moving them back into the building after work is complete. Approximately 30,000 square feet of space suitable for courthouse functions and relatively close to the courthouse would be required. The Yesler building is the most logical candidate and has been used for this purpose on past projects. Any relocations would require detailed logistics and comprehensive phasing plan that would be developed upon authorization of a project to revitalize the Courthouse.

10 Prioritization of Projects

Prioritization of projects was requested by the Proviso and prepared for the revitalization major tasks listed in this report. The Analytical Hierarchy process was used to rank the tasks relative to one another. The requirement to rank the tasks against each other required use of a methodology that could compare the tasks relative to each other to produce a rank or score for each task.

Project Criteria Table							
	Criteria	**Most desired or likely**					**Least Desired or likely**
	Life Cycle Cost Analysis	100	80	60	40	20	0
1	Impact on ongoing O and M Costs	Major Impact					Minor Impact
2	Scheduled replacement year	now	5 years	10 years	15 years	20 years	25 years
3	Initial Cost NPV	1M$					10M$
4	Timeline for implementation	1-3 years	3 - 5 years	5 - 7 years	7 - 10 years	10 - 12 years	12 -15 Years
5	System Importance	Life Safety	Occupancy	Program	Functional	Finishes	Cosmetic
6	Operational Needs - Public	Major Impact					No Impact
7	Operational Needs - Secure (Courts)	Major Impact					No Impact
8	Operational Needs - Detention/DAJD	Major Impact					No Impact
9	Risk of Catastrophic Failure	High					Low
10	Funding Options	Voter Approved Levy	Existing Operating Rental Budget	Municipal Leasing Act financed thru 63-20	Developer financed	LTGO Bonds	MMRF Funded

Criteria Table 1

In order to rate the priority of each task relative to the next, a Multi Criteria Analyses methodology was utilized. This methodology produces a weight or priority for each criteria. The Multi Criteria analysis method uses the analytical hierarchy process where each criterion is compared to all other criteria one at a time and ranked relative to the other criteria using a scale of:

1 - equal importance
3 - moderate importance
5 – strong importance
7 – very strong importance
9 – Extreme importance.

The outcomes are then processed in a calculation that produces a priority or weight for each criterion (See Criteria Ranking Table below).

Category		Priority	Rank
1	Impact on ongoing O and M Costs	2.20%	10
2	Scheduled replacement year	4.40%	6
3	Initial Cost NPV	2.50%	7
4	Timeline for implementation	2.20%	9
5	System Importance	19.70%	2
6	Operational Needs – Public	9.50%	5
7	Operational Needs - Secure (Courts)	14.60%	3
8	Operational Needs - Detention/DAJD	30.20%	1
9	Risk of Catastrophic Failure	12.40%	4
10	Funding Options	2.30%	8

Criteria Ranking Table 1

Each proposed task was then scored relative to the developed criteria and a summary score for each project was calculated (See Alternative Ranking Table 1 below).

Alternative #1 **Replace Buss Duct**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	20	0.44
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	50	1.25
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	90	17.73
6	Operational Needs - Public	9.50%	100	9.5
7	Operational Needs - Secure (Courts)	14.60%	100	14.6
8	Operational Needs - Detention/DAJD	30.20%	100	30.2
9	Risk of Catastrophic Failure	12.40%	80	9.92
10	Funding Options	2.30%	100	2.3
				92.1

Pros	**Cons**
Long term solution	requires floor space footprint from tenants
permanent fix	Requires complex contingency planning
	requires new mechanical shafts
	disruptive to tenants

Alternative Ranking Table 1

After all projects were scored using this methodology, a Summary Ranking Table was prepared to list the rank or score of each project. Results are shown in Summary Ranking Table 1 below:

	Project	Score		Rank
1	Replace buss duct	92.10		1
2	Replace Domestic Water	65.21		3
3	Repair Toilet Exhaust	34.23		13
4	Replace HCW Pipe	36.98		12
5	Replace HW pipe	38.72		10
6	Fire Protection System	84.84		2
7	Induction Heating System	30.50		14
8	Fan Floor Equipment	60.20		5
9	DDVAV Conversion	58.61		6
10	Aluminum Windows	37.69		11
11	Brick Cladding Attachment	52.21		8
12	DDC Controls Replacement	63.34		4
13	Lighting Replacement	42.18		9
14	ADA Jury Bathrooms	58.42		7

Summary Ranking Table 1

The complete analysis of all projects is contained in Appendix 8.

11 Estimated Timelines

Full implementation of the Courthouse Revitalization project is expected to take 6 years from commencing design procurement to final close out. Construction implementation would commence in year 3 and take 3 years to complete. Since the start date is dependent on Council direction to proceed, the dates shown below are illustrative of duration only and were derived from detailed schedule prepared for the project to revitalize the building.

Planning	Start	Finish	Duration
Pre Design	1/1/2017	7/19/2017	199
Final Design	7/20/2017	1/3/2020	897
Implementation	2/3/2020	12/31/2022	1062
Close out	1/2/2023	2/19/2023	48
			2206

12 <u>Locating As Built Structural Information</u>

In the Proviso, Council requested the status of as built "***structural"*** information for the Courthouse. Current "***structural"*** information for the Courthouse is located in the drawing archive on floor 3 in the Administration building. Included in this record are the as-built ***structural*** records drawings from the Courthouse Seismic Project among others. Records are on file for the original construction of the building along with the several additions done to the building, and virtually every project performed in the building. The purpose for the original request for funding was to prepare **conformed as built drawings**, which is a different need altogether.

What the County lacks and needs for the Courthouse is a conformed set of as built drawings for all disciplines combined including, structural, architectural, mechanical and electrical systems. A large, high cost risk and serious concern for the County during any Revitalization project (or portion thereof) is the lack of and need for a <u>***conformed set of as-built mechanical, electrical and architectural drawings that incorporates information from all projects completed over the years in the building into one set of as-built documents.***</u> While the individual records of each project are on file, there is no conformed set of drawings that combines all these different project records and information together into one set of accurate, up to date and comprehensive set of as-built documents.

This could be a significant effort involving numerous engineers conducting field investigations on site documenting existing conditions and preparing conformed record drawings.

Cost $2,000,000

13 Historical Significance of the Building

The King County Courthouse in downtown Seattle dates back to 1916, and has been Landmarked by the King County Landmarks Commission (KCLC) as a historically significant building architecturally. If a revitalization project were initiated by the County, all facets of any project should be developed and designed in coordination with and reviewed by the KCLC through their Design Review Board, and if necessary through a full session of the KCLC. That being said, because the courthouse is located in Seattle and there does not exist an interlocal agreement between KCLC and Seattle, the KCLC's recommendations are potentially advisory only.

The building contains historic lobbies and corridors, and 19 historic courtrooms; any work in these areas needs to be carefully considered by the KCLC before proceeding. Unnecessary disruption of the historic fabric of these spaces is to be avoided.

Building improvements proposed in this study shall not impact the existing finishes in the historically significant areas of the interior or the exterior facades of the building without fully addressing historic restoration.

Architectural improvements at the interior are limited to design for interior of replacement window systems that support the historic restoration goal. Thermal improvement to exterior walls would need to follow historic guidelines as well. Any disruption to the historic courtrooms and corridors required for mechanical and electrical improvements would also require careful consideration for historic sensitivity. It is understood that modifications to these areas are to be avoided if at all possible in mechanical and electrical upgrade projects. The project will also need to protect existing historic finishes during construction to prevent any damage.

Proposed architectural improvements at the exterior are limited to the removal of the vertical aluminum windows and their replacement with historically accurate energy efficient windows and glazing systems with more state of the art solar gain rejection properties and thermal transmittance performance from interior to exterior.

Impacts to historical finishes for mechanical solutions would depend on the requirements of the Authority having Jurisdiction to meet compliance with the Seattle Energy Code. Impacts from this work would depend on these requirements and solutions. In some cases full compliance would not be economically possible to meet code, so alternative solutions would need to be developed.

13.1 Historical Designations

The Historic Designation Report dated September 10, 1987 listed the following features of the building:

Building Massing and Height, Third Ave Portico, Fourth Ave Portico, South Entry Courtyard, All windows, All Exterior Doors, Facing materials including brick, granite and terra cotta. Copper entablature, former Jefferson Street lobby, First through ninth floor lobbies.

A 1988 Memorandum of Understanding with Superior Court dated 27th January 1988 listed the following additional features as historically significant:

Judges benches and paneled wainscoting, stations of the clerk, court reporter and bailiff; witness stand; jury box; vestibule; public seating; flooring; and general arrangement of courtrooms.

In 1994 an Amendment to Designation report dated 11/17/94 listed to following features as historically significant:

Portions of the wing corridors on floors one through nine, including

Ninth: east include both the north arm which is open and marble lined, and the south arm which remains open; west; include entire open west corridor, which remains open Seventh/Eighth: include entire wing corridors, which remain intact.

Sixth: west- including the first bay past the cross-corridor door with marble walls, extend boundary back to desk to include transitional space. East: include first bay past cross corridor door with marble walls; extend boundary back to desk to include transitional space.

Fifth: west – no boundary extension proposed, boundary covers all areas with marble finishes east: extend boundary into wing corridors to include public hallway areas.

Fourth: West: extend boundary to south to encompass all marble lined hall areas. Extend boundary to the north down the corridor to point where walls have been removed. East: extend boundaries to end of main hallway to include marble lined bay and the transitional space.

Third: West – extend boundary the length of the wing corridor to include historic marble floors and wall covering.

Second: West – extend boundaries to include entire west wing and other spaces contiguous with corridor.

First: Boundaries clarified to include all spaces presently opening into the corridor

13.2 Historical Designation Impacts to Projects

13.2.1 General Condition impacts on historical designations.

Any discussion of the potential impacts to the historic fabric of the Courthouse includes staging and access for a general contractor construction manager. Access to the work must be provided to the contractor and maintained throughout the project while at the same time eliminating impacts to the historic features of the Courthouse. This includes (but is not limited to) moving workers, materials and equipment through the building efficiently while at the same time protecting the historic features of the Courthouse building.

At the same time any work will require adequate dust protection and work separation partitions to demarcate work areas from areas currently being occupied. Negative air machines can be installed to ensure that dust is evacuated out of the building.

If a tower crane was required to execute the project, it should be located in the south courtyard. This location allows use of alleyway access for deliveries. The south Courtyard also could serve as a material staging area. Demolition debris would be removed by crane or alternatively by service elevator in the building using carts. Debris chutes would be ruled out by specification. Tool and equipment staging would occur on the areas under construction. Most if not all equipment required for the project would be delivered thru the service elevator. Any major pieces of equipment delivered to the Fan Floor would be delivered by crane, or disassembled and delivered via service elevator and re-assembled onsite. Temporary facilities including waste handling would occur through the South courtyard.

Exterior work would be accomplished via scaffolding placed on the exterior of the building, more than likely full height of the building elevations. Scaffolding would probably be covered and would likely remain in place for several years.

13.2.2 Domestic Water System

There are approximately 60 restrooms or restroom pairs in judge's chambers or jury rooms with marble finishes. Of these restrooms/pairs, approximately half of these restrooms have had their domestic water piping run-outs to fixtures (galvanized piping) replaced with copper.

The remaining half of the restrooms has older galvanized domestic water piping still in use behind these marble walls. Because some of the remaining areas are registered as historic, specialists with experience in the removal and replacement of the marble wall finishes to access these last areas of galvanized piping would be required. FMD has successfully remodeled historic designated Jury restrooms; including removing marble finishes and replacing these same marble panels. Similar procedures would be specified to perform the pipe replacement project and ADA restroom upgrade in Jury Assembly restroom and Judges chambers restrooms.

In re-configuring the first ADA jury restrooms, the design required a door located in the historic designated courtroom paneling to be relocated. FMD was able to successfully re-locate a door in the historic courtroom paneling to match existing. This allowed FMD to re-orient the restroom layout so that the ADA restroom access was provided.

Other portions of the domestic water piping system are accessible in stairwells, the basement, in accessible ceilings, or in the east and west mechanical shafts. Work in these areas would not impact the historic features of the Courthouse. Public restrooms have ceramic tile wall finishes that are not historical and can be removed to facilitate replacement plumbing work.

13.2.3 Evaluation and replacement of the main heating and chilled water distribution piping as necessary

This portion of the project would replace main distribution piping that is more than 50 years old for the following systems:

- condenser water system
- Heating hot water system
- chilled water system

These large diameter pipes run through back of house areas including the basement ceilings, vertical distribution shafts, and throughout the fan floor. What remains to be determined at this time is the amount of horizontal distribution piping that would be replaced on each floor, and the amount of impact to existing ceilings this would require. Most of this piping is located in the acoustical tile ceilings. Acoustic tile ceiling are not historic and are accessible for work.

13.2.4 Repairs to the perimeter induction heating system;

This project would add drainage piping to the perimeter fan coil units drain pans (located in the in the ceilings around the perimeter of the building). The addition of this piping (and drain pans where required) would allow the chilled water system supply temperature set point to be lowered to its correct temperature. Most of these units reside in acoustic tile ceilings that are readily accessible and not designated as historic.

Adding drain piping to the perimeter induction system terminal air units would involve widespread impacts to the acoustic tile ceilings throughout the floors. Due to this impact, it is recommended that at the same time drainage piping is installed, that suspended acoustic tile ceilings be replaced with seismically braced acoustical ceilings generally throughout the building and new LED lighting be installed.

13.2.5 Replacement of the Fan Floor Equipment

Work required to replace the Fan Floor equipment is limited to the 12th floor and above. There is would be no impact to the historical features of the building resulting from this work. Mostly of this work occurs in “back of house” and does not impact any historic feature.

13.2.6 Aluminum Window Replacement

Proposed architectural improvements at the exterior include the replacement of existing Aluminum “strip” energy inefficient windows and glazing systems with more state of the art window systems that closely replicate or match the historic windows utilizing high performance glazing; and improvements to the thermal performance of exterior walls in the locations where windows are scheduled to be replaced where possible.

Exterior metal panels, which were installed over the deteriorating existing windows in the 1960’s, would be removed to return the exterior to a state closer to the original design. Provision of energy efficient window systems would approximate in appearance the design of the original windows for historical accuracy. Brick masonry affected would be cleaned, tuck pointed and restored to as close to original form as possible.

One existing window location was reviewed in Courtroom (W742) and in this location it appeared most of the brick exterior remains intact behind these aluminum panels. Brick restoration and window replacement work would occur on scaffolding erected across the exterior of the building.

13.2.7 Interior Improvements

Along with the window replacement, depending on Council direction, the interior of the exterior walls of the building may require placement of strongbacks for attachment of the brick masonry. This will involve removal of interior plaster wall finishes and any fixtures attached to the exterior wall. In historic Courtrooms this will mean removal of bookcases and plaster and replacement of those items.

Replacement of the buss duct will be accomplished by constructing new electrical rooms on each floor that will require a new entry door into a historic corridor. Doors have been successfully introduced into the historic marble corridor walls in the past. This process can be successfully replicated again while at the same time meeting historic restoration requirements.

14 Other Funding Sources

14.1 State of Washington Archaeology and Historic Preservation

The State of Washington Department of Archaeology & Historic Preservation operates the Historic Courthouse Preservation program. In spring of 2005, the Washington State Legislature established the Historic County Courthouse Rehabilitation Grant program. Based on findings from a statewide survey undertaken in 2003, 32 of the state's 39 counties were found to possess courthouses of historic and architectural merit.

Grant funding assists county governments in rehabilitating their historic county courthouses. Together with matching funds raised locally, this money would foster economic development in numerous communities while working to preserve public buildings vital to the architectural and cultural heritage of Washington.
To receive funding, all rehabilitation work must meet historic preservation standards known as the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties.

Application for this project could be made for the 2017-2019 Biennial budget. At this time the County has been awarded a grant of $132,000 to assist with construction of Jury Room accessible restrooms.

14.2 Energy Grants and Opportunities

The King County Courthouse is one of the County's least efficient facilities, and it is also one of the largest. This is an expensive combination. 2014 total resource costs, including electricity, natural gas, and water/sewer, were ~$856,223.00.
Although the cost of comprehensive renovation exceeds standard energy payback models, there exist opportunities to collaborate with other entities and greatly increase the efficiency of the facility. Here are the primary potential partners that have been identified so far:

- Federal Government (Department of Energy and others)
- Utility service providers who would provide substantial energy and possibly water efficiency grants
- Possible private sector partners

14.2.1 Goals/Objectives

There are several primary goals for collaboration, including:

- Technical assistance during project scoping and design phase

- Project financing assistance, including:
- Grants
- Low cost financing
- Performance contracting
- Proactive media engagement to highlight the community and environmental benefits of the renovation project

14.2.2 Resources

US DOE Office of Energy Efficiency and Renewable Energy

  - Submitted letter of request for technical assistance on 2/5/2015
  - Received response that support is available
  - Waiting for DOE to set-up meeting to identify existing tools, assess resources, and determine next steps

- Utility Conservation Incentives
  - Puget Sound Energy provides natural gas to the facility. Natural gas is the primary heating fuel. Natural gas expenditures at the facility totaled ~$204,000 in 2014
  - PSE would provide conservation incentives for natural gas efficiency opportunities
  - Seattle City Light provides electricity to the facility. Electricity is used for lighting, HVAC, and plug loads, and is also a lesser heating fuel. Electricity expenditures totaled ~$705,000 in 2014
  - Seattle City Light would provide conservation incentives for electric efficiency opportunities

14.2.3 Technical Analysis

Creating a resource efficiency budget for this project: An initial assessment of savings concludes the following:

- Using the EPA’s Portfolio Manager and Target Finder applications, in order to achieve and EnergyStar score of 90 for the facility type in our region, we would need to obtain 37% annual energy savings.
- For estimating purposes, FMD estimated that the County could also obtain 30% annual water and sewer savings
- Using these parameters and the County’s 2014 resource costs for KCCH, the savings would be worth ~$408,000 annually.
- Using a 5% utility inflation rate and 7.15% nominal discount rate, this annual savings would be worth ~$8,650,000 over a 30 year measure life

14.2.4 Conclusion:

The value of achieving an EnergyStar score of 90 through our Courthouse remodel, and a corresponding 37% reduction in energy use and 30% reduction in water use, is approximately ~$8,650,000

- Based on this savings opinion, Seattle City Light could provide a ~$675,000 conservation grant for electric savings, using 2015 incentive rates
- Based on this savings opinion, Puget Sound Energy could provide a ~$500,000 conservation grant for natural gas savings, using 2015 incentive rates
- Based on this savings opinion, Seattle Public Utilities could likely provide an incentive for water conservation, but their funding is much more limited and is not estimated at this time.

14.2.5 Alternate Analysis:

If the County is extremely aggressive about conservation and is able to achieve a 70% energy and water/sewer savings, our corresponding annual savings would be ~$840,000. The present value of this reduction using the above metrics would be ~$17,750,000

- This would place the EUI (annual energy intensity measured in kBtu/SF) of the redesigned facility at only 27 kBtu/SF, which would give the facility and energy star score of 100 and make the facility the County's most efficient
- Obtaining this level of efficiency may be cost prohibitive and exceed the present value of the savings

14.3 4Culture

4Culture's Landmarks Capital program supports "bricks and mortar" projects that help preserve designated local landmarks all around King County. The program funds design, materials, and labor for rehabilitation projects large and small. Eligible applicants include private owners, businesses, organizations and local governments. Fundable projects would range from $3,000 to $30,000.

Although a small contribution in relation to the scale of the problem, money from this grant program could help pay for window upgrades that are needed on the first level.

14.4 Private Investment Options

Any discussion of alternative funding should include a discussion of the use of private sector funding. It is frequently suggested by others that a Lease – Lease back transaction as authorized under the Municipal Leasing Act would be appropriate for a Courthouse Revitalization project. This type of project financing arrangement is referred to as 63-20 project named after the IRS rule which allows this type of project to be created. The County has completed numerous 63-20 projects including the 9th and Jefferson Building, the Maleng Building, the King Street Center, and the Chinook Building. Note that each of these projects was new, ground up design and construction projects.

Under a “63-20” IRS rule transaction, the Municipal Leasing Act serves as the legal basis for the project transaction whereby a private sector non-profit corporation serves as the “Landlord” of the project and in exchange for improvements to the property, leases the facility back to the County (the Tenant) until such time as the bonds are defeased, at which time the property returns to the County’s ownership. The project is created by a three party transaction whereby a nonprofit entity creates a shell corporation that then enters into the following agreements with the County:

1. The County signs a ground lease which leases the property to a project specific corporation created for project for the term of the bonds and;
2. The County signs a building lease with the project specific corporation to lease the facility from the corporation upon completion of the agreed upon improvements and;
3. The corporation signs a development agreement with a developer to construct the facility per the County’s requirements.

There are numerous challenges using this approach for a historic remodel of the Courthouse.

14.4.1 Meeting the Market Rate test in a Historic remodel

The Municipal Leasing Act requires the rental rate charged to the tenant upon completion of the project to be equal to or less than “market rate”. This means that the total cost of the project including capitalized interest and all project costs when fully financed and amortized over the term of the bonds and calculated as a rental rate must be within the local rental rate for equivalent rental space.

Recent experience has shown meeting the market rate requirement to be a challenge, particularly in historic remodels where there is large amounts of deferred maintenance and overdue system replacements. This is primarily due to the existing condition of the building, the scope of the work necessary to correct these conditions, and the cost of historic remodels required to bring the building up to a current standard that would last the term of the lease and be acceptable to the lessee.

Given the number of stakeholders in this project, the extent of non-compliant code issues existing in the building, and the potential number of concealed non-code compliant conditions within the facility, meeting the market rate criteria could be very difficult from a cost perspective. All this translates into a high cost risk for a Developer to assume under a 63-20, and therefore drives up the price and consequently the rental rate.

Since the Courthouse is so highly specialized in its use and occupancy, it would be difficult to determine equivalent "market rate" for the facility. Local commercial market rate forces outside of the County's control will also impact the market rate equivalent. The amount of AAA office space construction current underway in the area may in fact drive commercial office rents downward going forward from current levels and make the problem more acute.

14.4.2 Substantial Alteration and the scope of work

A remodel of this type would constitute a "Substantial Alteration[15]" of the building and trigger code compliance upgrades for systems within the facility as defined under the Seattle Existing Building Code (SEBC). Since this is an interpretive requirement that will ultimately be negotiated with the building official during the design and permitting process, it would be difficult to determine in advance the extent (and therefore cost) of any non-compliant code issues that are currently concealed and which would immediately trigger an upgrade when discovered. This unknown is a high cost risk, which would be difficult to transfer to an third party in a 63-20 scenario.

14.4.3 Controlling the scope of work

If a 63-20 project delivery model was selected for a revitalization project, it will be critically important to limit the scope of work to that which can be accomplished with the appropriated budget. This is not always easy to do, and given the tenant make-up of the building may be a significant challenge for a project in the Courthouse. Past experience has shown that work scope to "renew" the building quickly outstrips the economics of a 63-20 project creating a project where the rental rate exceeds market rate.

This type of project (i.e. Complex Historic Remodel) is not well suited to projects done under a 63-20 financing model. The long term operating risk of the facility is transferred to the Developer, who must rely on old, out dated, and in some cases failing equipment that may or may not function as intended for the duration of the lease. Given the cost to replace and/or upgrade the equipment and systems, it is unlikely that a reasonable solution could be found for the scope of work which would fit within a market rate scenario, and produce an agreeable outcome for the tenant.

[15] Seattle Building Code Requirements for Existing Buildings that undergo Substantial Alterations Tip 314

14.5 Voter Levy

A project specific Levy, similar to the Levy used to create the Children and Family Justice Center is probably the most viable way to accomplish this project, should the County determine that this project is the desired solution. This approach avoids the burden of additional debt service on the General Fund. A voter message of sustainability, environmental stewardship, reduced carbon footprint, and re-use of existing buildings is a sound strategy. A message explaining the very real and urgent need to repair building systems to keep the facility in operation is one that could be understood by and resonate with voters. That type of message also avoids the perception of creating expensive new facilities for civil servants.

Recent experience in Snohomish County has shown that public support for new Courthouses is weak at best. Recent article in the Seattle times caution against asking voters for new construction money for the Courthouse[16].

14.6 Long Term General Obligation (LTGO) debt

Another approach to funding this project could be for the County to issue LTGO debt. The problem with this approach is a lack of revenue to back or service the debt. Since the balance of the General fund is challenged, this approach would place more stress on the fund to service debt payments. Another challenge is the self-imposed debt limit of the County's borrowing capacity.

14.7 Existing County Property Sales

This report was not directed to nor did it proceed with property appraisal or sales evaluations as part of the Proviso response. Should property appraisals or transactions be selected or desired in one form or another, County processes should be followed in appraising property for sale.

Nonetheless, another source of funds for any project that may be contemplated could be sales of existing property. Modern class A office space is selling for $450 to $500 per square foot at this writing in the Downtown Business District. Demand for downtown commercial office space is strong in the Seattle marketplace and some publications are predicting the demand to continue for some time, due to expansion of Technology companies, and an influx of people to the region.

Current replacement values stated below are referenced in the MENG Analysis 2014 Facility Condition survey, and represent the cost to construct (in 2014) dollars a facility of similar size and construction type.

[16] Seattle Times Editorial September 15, 2015

14.7.1 Sale of the Courthouse property

One option could be sale of the Courthouse property. This option eliminates the Revitalization scenario, eliminates the need for an "empty chair" while new space is prepared, but results in the need for a new building, either leased or purchased, to house general office, Superior and District Court functions, inmate transfer and holding facilities, and other functions.

Building	Courthouse
GSF	$568,468
Zoning	DMC 340/240 - 400
Current Replacement Value	$266,213,557

Pros:
Modernize service delivery infrastructure
Improves building use and efficiency
Eliminates costly revitalization
Eliminate the "Sky bridge"

Cons:
Landmark status limits re-use potential
Significant deferred maintenance issues
Difficult change of use problems with lack of parking for re-use options (hotel/residential)
Expensive facility type to re-construct
Limited sale potential or revenue

14.7.2 Sale of King Street Center

Another option is the sale of the King Street Center. Brokers have quoted 150 - 200M$ sale price for this property and high demand for this type of facility in the market.

Building	King Street Center
GSF	450,000
Zoning	PSM 100/100-120
Current Replacement Value	$180,494,989

Pros:
Modern facility with high sales potential
Excellent Transit oriented location
Desirable business location

Cons:

Requires replacement facility or lease back from a new landlord
Well maintained

Cost to replace

14.7.3 Sale of Admin Building

Another option is the sale of the Admin Building. The existing building does not represent highest and best use for the property which would likely mean demolition and re-development. As this building abuts the DMZ 1 zone added height bonus is available on this site when a Planned Community Development (PCD) is utilized for a County Campus.

Building	Administration Building
GSF	234,243
Zoning	DMC 340/240 – 400
Current Replacement Value	$82,453,536

Pros:
Building is owned by the County
Excellent Transit oriented location
Desirable business location

Cons:
Substantial deferred maintenance
Substantial Hazmat presence
Requires “empty chair to replace
Requires replacement facility or lease back from a new landlord
Replacement cost

14.7.4 Sale of Goat Hill property

Another option would be to sell the Goat Hill property. This property is a key element in the County’s downtown property holdings. While the option to sell does exist, probably the best use for the site is for a new building to house County Justice functions, due to it’s proximity to the Jail.

Building	Goat Hill property
GSF	28,800
Zoning	DMC 340/240 - 400
Current Replacement Opinion	$14,400,000

Pros:
Prime development site

Adjacency to King County Correction Facility for Justice Development

Provides an “Empty Chair”	FAA glide slope height restriction
Cons:	
Does not abut DMZ – 1 zone (limits height)	

14 Recommendations

14.1 Next steps

Next steps for this project should include the development of the following action plans and scopes of work:

1. Action to correct the Immediate Life Safety concerns in the building. At the very least Schematic Design should commence for the replacement of the electrical buss duct, followed by a Capital Project Request for funding to commence final design and implementation phases of the buss duct project.

2. Development of an interim plan to make system wide repairs necessary to continue operations in the Courthouse for the next 10 years.

3. Prepare high level “re-stacking” plans for the building that allow full cost comparisons with a new building scenario.

4. Finalize High Level Courthouse Alternatives to:

    a. Perform immediate life safety repairs only or

    b. Replace with New or

    c. Revitalize only

5. Initiation of a new project to prepare a campus plan study including

    a. Development of a Mission statement for County Facilities and

    b. Development of a Strategic Facility Plan

14.1.1 Mission statement and Strategic Facility Plan

Before any further work is initiated, it will be necessary to understand the future use and needs of the County Agencies involved. Understanding the Agencies needs is a key driver of a Strategic Facility Plan for the Downtown Campus (or the Courthouse). This process begins with development of a vision statement for the future use of the County properties. This vision statement will drive the development of Agencies operational plans, which will then help to determine the facilities needed to support the vision and operational plans.

Unfortunately the Strategic Planning position in the Facilities Management Division has been eliminated through budget reductions, so any project to develop this Strategic Facility Plan will need to support planning staff, both from FMD and from the Agencies.

14.1.2 High Level Alternatives for the King County Courthouse

The Revitalization project originally contemplated for the Courthouse was developed in response to high backlog deferred and major maintenance costs. The scope was intended to repair mechanical and electrical system infrastructure that is aging and beyond its recommended service life and will be prone to failure in the short and longer term. The scope of work did not contemplate renovation of the interior layout to maximize efficiency, and to address modernization of County functions within the building.

Estimates of Revitalization and Replacement shown in this report from Clark Design Group are large dollar amounts, and until these estimate are combined with estimates to reprogram and restack the interior of the building, renovate Superior Court Arraignment Court, modernize prisoner transfer facilities and other modernizations badly needed, it will be difficult to compare to a Courthouse replacement option directly to a renovation scenario. Without interior space programming to support remodeling planning, it is difficult to determine the added cost to renovate the interior of the building to modernize its use.

In order to complete the comparison and evaluation of a replacement option for the Courthouse, space planning and programming to modernize the interior spaces should be developed, along with supporting cost estimates so that a comprehensive renovation option can be compared along to the Revitalization and Replacement scenarios.

14.1.3 Interim Plan

In the Clark Design Group report scenario for providing a new replacement Courthouse facility time estimates to deliver a finished project are 8 to 10 years (pgs. 16 -21). Given this timeframe it is recommended that certain essential system repairs be conducted to maintain the operations of the building, until such time as a decision can be made to either remain in the building or to leave.

It is recommended that the County implement the short term strategy in this report, with some amendments.

14.1.4 Understanding Property Values

Key to any decision making is recent and accurate property appraisals the represent the best available information as to highest and best use and potential revenue from a sale. Appraisals should be prepared for all properties under consideration for decision making.

15 Appendix 1 MENG Facility Condition Assessment (FCA) Report King County Courthouse

14798

Site	Facility	SubsystemCode	Subsystem	2011_RenewalPV	2011_ObsDefPV	2012_RenewalPV	2012_ObsDefPV	2013_RenewalPV	2013_ObsDefPV	2014_RenewalPV	2014_ObsDefPV	2015_RenewalPV	2015_ObsDefPV	2016_RenewalPV	2016_ObsDefPV	2017_RenewalPV	2017_ObsDefPV	2018_RenewalPV	2018_ObsDefPV	2019_RenewalPV	2019_ObsDefPV	2020_RenewalPV	2020_ObsDefPV	2021_RenewalPV	2021_ObsDefPV	2022_RenewalPV	2022_ObsDefPV	2023_RenewalPV
King Co. Courthouse Site	King Co. Courthouse	B2010	Exterior Walls	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	B2011	Exterior Wall Finishes	$ -	$ -	$ -	$ -	$ -	$ 4,278,242.00	$ -	$ -	$ 486,131.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	B2020	Exterior Windows	$ -	$ -	$ -	$ -	$ -	$ 2,004,018.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,083,829.00	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	B2030	Exterior Doors	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 265,242.00
King Co. Courthouse Site	King Co. Courthouse	B3010	Roof Coverings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 945,028.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C1010	Partitions	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,946,081.00
King Co. Courthouse Site	King Co. Courthouse	C1020	Interior Doors	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,060,261.00	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C1030	Fittings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 227,342.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C2010	Stair Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C2020	Stair Finishes	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,552.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C3010	Wall Finishes	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,402,098.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C3020	Floor Finishes	$ -	$ -	$ -	$ -	$ 6,506,281.00	$ -	$ -	$ 1,543,963.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	C3030	Ceiling Finishes	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,910,592.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D1010	Elevators and Lifts	$ -	$ -	$ -	$ -	$ -	$ 1,587,459.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,189,294.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D1011	Elevators Cab Interiors	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 129,585.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D2010	Plumbing Fixtures	$ -	$ -	$ -	$ -	$ -	$ 477,362.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,870,433.00	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D2019	Detention Plumbing Fixtures	$ -	$ -	$ 468,185.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D2020	Domestic Water Distribution	$ -	$ -	$ -	$ -	$ -	$ 1,918,454.00	$ 1,199,875.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D2030	Sanitary Waste	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 780,968.00	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D2040	Rain Water Drainage	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 354,398.00	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3010	Energy Supply	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3020	Heat Generating Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3021	Boilers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,685,606.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3030	Cooling Generating Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 85,019.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3031	Chillers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3033	Cooling Towers	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,010,318.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3041	Air Distribution	$ -	$ -	$ -	$ -	$ 2,296,334.00	$ 2,702,047.00	$ -	$ 3,136,519.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3043	Hydronic Distribution	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 682,026.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3044	Hydronic Pumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 609,036.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3048	Heating and Cooling Coils	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3049	Fans and Air Handling Units	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,345,179.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3050	Terminal and Package Units	$ -	$ -	$ -	$ -	$ -	$ 1,125,853.00	$ -	$ 138,051.00	$ -	$ -	$ 9,862,574.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

King Co. Courthouse Site	King Co. Courthouse	D3060	Controls and Instrumentation	$ -	$ -	$ -	$ -	$ -	$ 1,970,243.00	$ -	$ -	$ -	$ -	$ 3,099,666.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D3070	Testing and Balancing	$ -	$ -	$ -	$ -	$ -	$ 1,276,969.00	$ -	$ -	$ 756,205.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D4010	Fire Protection Sprinkler Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D4020	Stand-Pipe and Hose Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 233,895.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5010	Electrical Service and Distribution	$ -	$ -	$ -	$ -	$ 2,296,334.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,249,579.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5015	Uninterruptible Power Supplies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 160,568.00	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5020	Lighting and Branch Wiring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 543,719.00	$ -	$ -	$ -	$ -	$ 10,230,401.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5030	Low Voltage Communication and Security Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5031	Fire Alarm Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,609,478.00	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5032	Security	$ -	$ -	$ -	$ -	$ -	$ 1,513,980.00	$ 1,601,845.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,454,990.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	D5090	Other Electrical Systems	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,474,282.00	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse	E2010	Fixed Furnishings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,820,268.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G2020	Parking Lots	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,212.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G2030	Pedestrian Paving	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,208.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G3010	Water Supply	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,303.00	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G3020	Sanitary Sewer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,753.00
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G3030	Storm Sewer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44,351.00	$ -	$ -
King Co. Courthouse Site	King Co. Courthouse Infrastructure	G4010	Electrical Distribution	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,096.00	$ -	$ -	$ -	$ -
				$ -	$ -	$ 468,185.00	$ -	$ 11,098,949.00	$ 18,856,621.00	$ 2,795,720.00	$ 4,818,533.00	$ 1,266,888.00	$ -	############	$ 7,878,317.00	$ 8,035,940.00	$ -	$ -	$ -	$ 24,460,416.00	$ -	$ 10,608,289.00	$ -	$ 7,186,176.00	$ -	$ 9,226,243.00	$ -	$ 3,233,076.00

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16 Appendix 2 Historic Designations

KCCH Designation Report Amendment 11/17/94

Amendment to designation ~~12/1/94~~ 11/17/94

King County
Cultural Resources Division
Parks, Planning and Resources Department
Arts Commission
Landmarks Commission
Smith Tower Building
506 Second Avenue, Room 1115
Seattle, Washington 98104
(206) 296-7580 V/TDD 296-7580

KING COUNTY LANDMARKS AND HERITAGE COMMISSION

DESIGNATION REPORT
KING COUNTY COURTHOUSE

SUMMARY

The King County Landmarks and Heritage Commission expanded the interior features of significance in the King County Courthouse to include portions of the wing corridors on floors one through nine, and stipulated that if in the course of future restoration/rehabilitation projects corridors which are not presently public are reopened as public corridors and connect into the designated corridors, that these will be treated as features of significance.

Property Description: C.D. Boren's Addition, Block 33, Lots 1-8

Property Location: 516 Third Avenue, Seattle, WA.

Owner: King County, Department of Facilities Management

FINAL DESIGNATION DECISION

At its November 17, 1994 meeting the King County Landmarks and Heritage Commission expanded the interior features of significance to include the following (see Attachment A for specific delineation of bourndary extension):

Ninth: east--include both the north arm which is open and marble-lined, and the south arm which remains open

west: include entire open west wing corridor, which remains open

Seventh/Eighth: include entire wing corridors, which remain intact.

Sixth: west--including the first bay past the cross-corridor door with marble walls; extend boundary back to desk to include transitional space.

east--include first bay past cross-corridor door with marble walls; extend boundary back to desk to include transitional space.

Fifth: west--no boundary extension proposed. Boundary covers all areas with marble finishes.

east-extend boundary into wing corridors to include public hallway areas.

Designation Report
King County Courthouse
December 1, 1994

Fourth: west--extend boundary to south to encompass all marble-lined hall areas. Extend boundary to the north down the corridor to point where walls have been removed.

east--extend boundaries to end of main hallway to include marble lined bay and the transitional space.

Third: west--extend boundary the length of the wing corridor to include historic marble floors and wall covering.

east--extend boundary to include entire open wing corridor.

Second: west--extend boundaries to include entire west wing and other spaces contiguous with the corridor.

First: boundaries clarified to include all spaces presently opening onto the corridor.

Additionally, if in the course of future restoration/rehabilitation projects corridors which are not presently public are reopened and connect into the designated corridors, these will be treated as features of significance as well.

PROTECTION MEASURES

No significant feature (as noted above) may be altered, whether or not a building permit is required, without first obtaining a Certificate of Appropriateness from the Landmarks and Heritage Commission pursuant to the provisions of KCC 20.62.080. The following exclusion is allowed:

In-kind maintenance and repair.

Decision made November 17, 1994.

KING COUNTY LANDMARKS AND HERITAGE COMMISSION

Robert S. Gruhn, Chair — 12-1-94 Date

KING COUNTY AND CITY LANDMARKS LIST

Technical Paper No. 6

King County Historic Preservation Program, Department of Natural Resources and Parks
201 S. Jackson, Suite 700, Seattle, WA 98104 | 206-477-4528 | TTY Relay: 711

KING COUNTY LANDMARKS

Archaeological Site 45-KI-22
Location confidential
Designated: 1993

Burton Masonic Hall, 1894
23927 Vashon Highway SW, Vashon Island
Designated: 1995

Camp North Bend (Camp Waskowitz), 1935
45509 SE 150th Street, North Bend vicinity
Designated: 1992
(Number of buildings: 14)

James W. and Anna Herr Clise Residence/ Willowmoor Farm Historic District 1904-20
Marymoor Park, 6046 Lk. Sammamish Parkway
Redmond vicinity
Designated: 1982

Colvos Store, 1923
123rd Ave. SW and Cove Road, Vashon Island
Designated: 1987

Walter Cooper Dairy Farm, 1925
5703 208th Ave NE, Redmond vicinity
Designated: 2013

Dockton Store and Post Office, 1908
25908 99th Avenue SW, Vashon Island
Designated: 1992

Dougherty Farmstead, 1888
26526 NE Cherry Valley Road, Duvall vicinity
Designated: 1983

Elliott Farm, 1911 (*demolished 2008*)
14207 Maple Valley Highway, Renton vicinity
Designated: 1990

Fall City Hop Shed, 1888
Fall City River Front Park, Fall City
Designated: 1982

Fall City Masonic Hall, 1895
33700 SE 43rd Street, Fall City
Designated: 1994

Fuller Store, 1884
19603 Vashon Highway SW, Vashon Island
Designated: 2013

Harrington-Beall Greenhouse Historic District c. 1885-1902
18527-31 Beall Road, Vashon Island
Designated: 1994
(Number of buildings: 84)
(*The District also includes the* ***Beall Family House*** *and the* ***Harrington Log House.****)*

Hjertoos Farm, 1907-1910
31523 NE 40th, Carnation vicinity
Designated: 1986

Issaquah Sportsman's Club, 1937
23600 SE Evans Street
Designated: 1997

Jovita Land Company Model Home – Corbett House, 1908
4600 S 364th Street, Federal Way vicinity
Designated: 2003

King County Courthouse, 1916/1931
Third & James, Seattle
Designated: 1987

Krain Tavern, 1916
39929 264th Avenue SE, Enumclaw vicinity
Designated: 2011

Lagesson Homestead, 1880s
20201 SE 216th Street, Maple Valley vicinity
Designated: 1986

Lisabeula School, 1925
22029 Wax Orchard Road SE, Vashon Island
Designated: 2011

August Lovegren House, 1904
8612 310th Avenue SE, Preston
Designated: 1994

Maple Valley School, 1910
23015 SE 216th, Maple Valley vicinity
Designated: 1994

Marjesira Inn, 1906
25134 Vashon Highway SW, Vashon Island
Designated: 1994

Englebert Matt Dairy Farm, 1923
1818 Redmond-Fall City Road SE, Fall City
Designated: 2013

McKibben-Corliss House, 1927
33509 SE 43th Place, Fall City
Designated: 2003

Thomas McNair House, 1884
22915 107th Avenue SW, Vashon Island
Designated: 1993

Charles and Minnie Moore House, 1905
4338 – 338th Place SE, Fall City
Designated: 2003

Murray and Rosa Morgan House
4505 So. 376th Street, Pacific vicinity
Designated: 2010

Mukai Agricultural Complex, 1926
18005-18017 107th Avenue SW, Vashon Island
Designated: 1993

Aaron Neely House, 1894
12303 Auburn-Black Diamond Road
Auburn vicinity
Designated: 1982

Aaron Neely/Hori Furo (bathhouse), 1930
(Hori Bathhouse-Japanese)
12303 Auburn-Black Diamond Road
Auburn vicinity
Designated: 1996

Neighbor-Bennett House, 1904
4317 337th Place SE, Fall City
Designated: 1996

N.E. and Matilda Nelson Log House, 1896
17605 N 182nd Ave NE, Woodinville vicinity
Designated: 2010

Gunnar T. Olson House, 1912
20015 NE 50th, Redmond vicinity
Designated: 1985

Matilde and Olof Olson Farm, 1907-1909
24206 SE 216th Street, Maple Valley vicinity
Designated: 1991

Pacific Coast Coal Company Offices, c. 1927
18825 SE Maple Valley Hwy, Maple Valley vicinity
Designated: 1993

Captain Thomas W. Phillips House, 1925
11312 SW 232nd Street, Vashon Island
Designated: 1992

Platt Dairy Farm, 1906
25530 NE 138th Street, Snoqualmie Valley
Designated: 2007

Prescott-Harshman House, 1904
33429 Redmond-Fall City Road, Fall City
Designated: 1984

Quaale Log House, 1907
10101 W. Snoqualmie Valley Road NE
Snoqualmie Valley
Designated: 1990

Red Brick Road/James Mattson Road, 1901
196th Ave. NE between Union Hill Road and 55th Place NE, Redmond vicinity
Designated: 1983

Reinig Road/Sycamore Corridor, 1929
Between 396th Drive SE and SE 79th Street
Snoqualmie vicinity
Designated: 1982

Reynolds Farm and Indian Agency, c. 1870
16816 SE 384th, Auburn vicinity
Designated: 1985

Eric Gustav Sanders House, 1912
5516 S 277th Street, Auburn vicinity
Designated: 1985

Schwartz-Bell House, 1930
20233 81st Avenue SW, Vashon Island
Designated: 1996

Town of Selleck Historic District, 1908-39
E. of Maple Valley, North of Enumclaw
Designated: 1987
(Number of buildings: 18)

Snoqualmie Falls Lumber Company Power Plant, 1917-1929
38800 SE Mill Pond Road, Snoqualmie vicinity
Designated: 2005

Sutherland's Grocery and Filling Station, 1931/1934
34051 Military Road South, Auburn vicinity
Designated: 2002

Smith-Baldwin House (Fern Cove), 1912
Cedarhurst Road, Vashon Island
Designated: 1995

Hilmar and Selma Steen House, 1910
10924 SW Cove Road, Vashon Island
Designated: 1996

Tahoma High School, 1926/1938
24415 SE 216th Way, Maple Valley vicinity
Designated: 2001

Vashon Odd Fellows Hall, 1912
19704 Vashon Highway SW, Vashon Island
Designated: 1985

Vashon Hardware Store, 1890/1935
17601 Vashon Highway SW, Vashon Island
Designated: 1986

Vincent Schoolhouse, 1905
8001 W Snoqualmie Valley Road NE
Snoqualmie Valley
Designated: 1986

WPA Park Buildings, 1939-40
Designated: 1984

- **White Center Fieldhouse,** 1940
  1321 SW 102nd Street, White Center

- **Preston Activity Center,** 1939
  8625 310th Avenue SE, Preston

King County Bridges

Baring Bridge, 1930
NE Index Creek Road, Baring vicinity
Designated: 1999

Foss River Bridge, 1951
Foss River Road, Skykomish vicinity
Designated: 2004

Fourteenth Avenue South Bridge, 1930
Duwamish River, Tukwila vicinity
Designated: 1996

Green River Gorge Bridge, 1915
Franklin-Cumberland Road,
Black Diamond vicinity
Designated: 2004

Judd Creek Bridge, 1953
Vashon Highway SW, Vashon Island
Designated: 2004

Meadowbrook Bridge, 1921
Meadowbrook Avenue, Snoqualmie Valley
Designated: 1997

Miller River Bridge, 1922
Old Cascade Scenic Highway, Skykomish vicinity
Designated: 1999

Mt. Si Bridge, 1904/1955 (*demolished 2008*)
Mt. Si Road, North Bend
Designated: 1997

Norman Bridge, 1950 *(demolished 2004)*
Middle Fork of Snoqualmie River
428th Avenue SE, North Bend vicinity
Designated: 1984

Patton Bridge, 1950
SE Green Valley Road, Auburn vicinity
Designated: 2004

Raging River Bridge, 1915
SE 68th Street, Fall City
Designated: 1997

Stossel Bridge, 1951
NE Carnation Farm Road, Snoqualmie Valley
Designated: 1997

Tolt Bridge, 1922 (*demolished 2008*)
NE Tolt Hill Road, Snoqualmie Valley
Designated: 1997

KING COUNTY COMMUNITY LANDMARKS

Fall City Historic Residential District, 1887-1942
Designated: 2002
(Number of buildings: 75)

Ferncliff (Wise Mansion), 1923
10350 SW Cowan Road, Vashon Island
Designated: 1982

Hillgrove Cemetery, 1923
200th St. between 15th & 16th St., Burien
Designated: 1984

Norman Edson Studio, 1890s
23825 Vashon Hwy SW, Vashon Island
Designated: 1985

Stow-Kelley House, 1931
32905 SE 44th Street, Fall City
Designated: 2005

HERITAGE CORRIDORS

Cedarhurst Road-Westside Highway Heritage Corridor, 1891-1936
Vashon Island
Designated: 2009

Dockton Road Heritage Corridor, 1907-1964
Vashon Island and Maury Island
Designated: 2009

Green Valley Road Heritage Corridor, 1884-1936
Black Diamond vicinity
Designated: 2009

Issaquah-Fall City Road Heritage Corridor, 1883-1926
Sammamish Plateau and Snoqualmie Valley
Designated: 2009

Old Cascade Scenic Highway Heritage Corridor, 1893-1925
Skykomish vicinity
Designated: 2009

Osceola Loop Heritage Corridor, 1867-1936
Enumclaw Plateau
Designated: 2009

West Snoqualmie River Road Heritage Corridor, 1888-1913
Snoqualmie Valley
Designated: 2009

West Snoqualmie Valley-Carnation Farm Road Heritage Corridor, 1890-1936
Snoqualmie Valley
Designated: 2009

SUBURBAN CITY LANDMARKS

CITY OF AUBURN

Auburn Masonic Temple, 1924
302-310 E. Main Street, Auburn
Designated: 2002

Auburn Post Office, 1937
20 Auburn Avenue NE, Auburn
Designated: 2000

Auburn Public Library, 1914
306 Auburn Avenue NE, Auburn
Designated: 1995

Mary Olson Farm, 1879
28728 Green River Road S, Auburn
Designated: 2000

CITY OF BLACK DIAMOND

Black Diamond Cemetery, c.1880
Cemetery Hill Road, Black Diamond
Designated: 2000

Black Diamond Miners' Cabin, c.1882
24311 Morgan Street, Black Diamond
Designated: 1995

Luigi and Aurora Pagani House, c.1896
32901 Merino Street, Black Diamond
Designated: 2001

CITY OF CARNATION

Commercial Hotel, 1913
31933 W. Rutherford Street, Carnation
Designated: 1996

Entwistle House, 1912
32021 Entwistle Street, Carnation
Designated: 1994

Tolt IOOF/Eagles Hall, 1895
3940 Tolt Avenue, Carnation
Designated: 1994

CITY OF DES MOINES

Des Moines Beach Park Historic District, 1917-1931
Cliff Avenue and 220th Street
Designated: 2005

WPA Park Buildings, 1939-40
Des Moines Activity Center
1000 220th Street, Des Moines
Designated: 1984

CITY OF ISSAQUAH

Hailstone Feed Store and Gasoline Station, 1941
232 Front Street, Issaquah
Designated: 2003

Issaquah Depot (Gilman Station), 1889
50 Rainier Boulevard North, Issaquah
Designated: 2003

CITY OF KENMORE

Charles Thomsen House, 1927
7330 NE 170th, Kenmore
Designated: 1989

Kenmore Community Club, 1929-30
7304 NE 175th Street, Kenmore
Designated: 2014

CITY OF KENT

Emil W. Bereiter House, 1907
855 E. Smith Street
Designated: 2008

Mill Creek Canyon Earthworks, 1982
742 E. Titus Street
Designated: 2008

Saar Pioneer Cemetery, 1873
9100 S. 212th Street
Designated: 2010

Mill Creek Historic District, 1904-1962
Clark Avenue to Hazel Avenue;
Temperance St to Cedar Street
Designated: 2014

CITY OF KIRKLAND

First Church of Christ, Scientist, 1922
NW corner of Market St. and Lake Ave.W
Designated: 2000

Peter Kirk Building, c. 1892
620 Market Street
Designated: 2003

Kirkland Ferry Clock, 1935
NW corner of Kirkland Avenue and Lake Street
Designated: 2014

Kirkland Land & Improvement Company House (Loomis House), 1889
304 8th Avenue West
Designated: 2013

Kirkland Womans Club, 1925
407 First Street
Designated: 2011

Louis S. Marsh House, 1929
6604 Lake Washington Boulevard
Designated: 2014

CITY OF MAPLE VALLEY

Lake Wilderness Lodge, 1950
22500 SE 248h Street
Designated: 1997

CITY OF NEWCASTLE

Newcastle Cemetery, c.1870
SW of 69th Way off 129th Avenue SE
Designated: 1982

Pacific Coast Coal Co. House #75, 1870s
7210 138th Avenue S.E.
Designated: 1982

Thomas Rouse Road (Community Landmark), 1880
136th SE & 144th Place SE, Newcastle
Designated: 1984

CITY OF NORTH BEND

North Bend Historic Commercial District, 1889-1960
Bendigo Blvd. & North Bend Way
Designated: 2000
Number of buildings: 17
*The District includes the **North Bend Theater Masonic Hall, and McGrath Hotel.***

Tollgate Farmhouse, c.1890
SR 202 (near Boalch Avenue)
Designated: 2002

WPA Park Buildings
Si View Pool and Activity Center, 1939
Ballarat Street
Designated: 1984

CITY OF REDMOND

Brown's Garage, 1920
16389 Redmond Way
Designated: 2010

Bill Brown Saloon, 1913
7824 Leary Way
Designated: 2010

Haida House Replica No. 4, 1980
7447 159th Place N.E.
Designated: 2011

Hutcheson Homestead, 1936
19545 N.E. Redmond Road
Designated: 2010

Lodge Hall (Community Landmark), 1903
7875 Leary Way
Designated: 2010

Odd Fellows Hall, 1903
7979 Leary Way
Designated: 2010

Conrad Olson Farmstead, 1905
18834 N.E.95th Street
Designated: 2010

Perrigo House (Community Landmark) 1909
17325 N.E. 85th Pl., Redmond
Designated: 2010

Redmond Cemetery, c. 1890
7000 – 180th Ave. N.E.
Designated: 2010

Redmond City Park (Anderson Park), c. 1938
7802 168th Ave. N.E.
Designated: 2010

Redmond Methodist Church (Community Landmark), 1908
16540 N.E. 80th Street
Designated: 2010

Old Redmond School, 1922
16600 N.E. 80th Street
Designated: 2010

Redmond State Bank, 1911
7841 Leary Way
Designated: 2010

Justice White House, 1889
7729 Leary Way
Designated: 2010

Orson and Emma Wiley House c.1916
16244 Cleveland Street
Designated: 2007

CITY OF SAMMAMISH

Jacob and Emma Reard House, 1895
Vicinity of 1705 212th Ave SE
Designated: 2011

CITY OF SHORELINE

William E. Boeing House, 1914
The Highlands
Designated: 1994

Crawford Store (Godfrey Building), 1922
2411 N.W. 195th Place
Designated: 1985

Richmond Masonic Center, 1921-22
753 N 185th Street
Designated: 2010

Ronald Grade School, 1912/1926
749 N 175th Street
Designated: 2008

TOWN OF SKYKOMISH

Skykomish Historic Commercial District, 1893-1936
Railroad Avenue, and 3rd to 6th Streets
Designated: 1998
Number of buildings: 12
(The District includes ***Maloney's Store*** *(designated 1995),* ***Railroad Depot*** *(designated 1996),* ***Skykomish Hotel and Skykomish School*** *(designated 1995).*

Skykomish Masonic Hall, 1924
108 Old Cascade Highway
Designated: 1996

CITY OF SNOQUALMIE

Snoqualmie Historic Commercial District, 1889-1941
Railroad Avenue, Snoqualmie
Designated: 1997
Number of buildings: 20
(The District includes the Snoqualmie Railroad Depot and Independent Order of Odd Fellows Lodge – both designated 1995).

Northern Pacific Railway Steam Rotary Snowplow No. 10, 1907
NW Railway Museum
Designated: 1995

Messenger of Peace Chapel Car, 1898
NW Railway Museum
Designated: 2009

CITY OF TUKWILA

Delta Masonic Temple, 1927
13034 41st Avenue S, Tukwila
Designated: 2014

CITY OF WOODINVILLE

DeYoung House, 1932
14121 N.E. 171st Street
Designated: 2010

Hollywood Farm, 1910
14111 NE 145th Street
Designated: 1983

Hollywood Schoolhouse, 1912
14810 NE 145th Street
Designated: 1992

Woodinville School, 1936
17301 133rd Avenue NE
Designated: 2001

Revised 1/15

17 Appendix 3 MMRF appropriations 1999 to present and major capital investments from inception

Total Major Maintenance Investment King County Courthouse 2000 - 2016			
2106 CPI Inflation Calculator US Bureau of Labor Statistics calculator			
Year	**Project Number and Name**	**Appropriated**	**2016 CPI adjusted Amount**
2000	Stalactite Walls	$ 250,000.00	$ 348,774.68
2002	341001 CH Transformer Safety	$ 21,424.00	$ 28,609.32
	341003 Switchgear Safety	$ 50,867.00	$ 67,927.10
2003	341007 WER Heat Exchanger	$ 25,000.00	$ 32,640.76
2004	Electrical Service and Dist	$ 575,543.00	$ 731,954.20
2005	342448 electrical Service and Distr.	$ 433,243.00	$ 532,926.60
	342445 CH Doomestic Water Re-pipe	$ 165,591.00	$ 203,691.34
	342455 CH 12th Floor Heat Pump	$ 1,916,992.00	$ 2,358,067.03
2006	342440 CH Window Repairs PH 1	$ 1,705,000.00	$ 2,031,757.84
	342448 CH Electrical service and Distribution	$ 2,099,694.00	$ 2,502,093.69
2007	342440 CH Window Repairs PH 1 Construction	$ 1,993,805.00	$ 2,310,114.39
	342443 CH 4th and James Sidewalks	$ 632,000.00	$ 732,264.34
	342459 CH Testing and Balancing	$ 358,500.00	$ 415,374.63
2008	342438 CH Heat Generating Systems	$ 176,327.00	$ 196,746.41
	342445 CH Domestic Water Re-pipe	$ 100,000.00	$ 111,580.42
	342459 CH Testing and Balancing	$ 551,200.00	$ 615,031.30
	342460 CH Floor Finishes	$ 304,400.00	$ 339,650.81
2009	342440 CH Window Repairs PH 1 Construction	$ (63,795.00)	$ (71,436.89)
	342445 CH Domestic Water Re-pipe	$ 432,572.00	$ 484,389.02
	342449 CH Lighting and Branch Wiring	$ 309,149.00	$ 346,181.40
	342458 CH Controls and Instrumentation	$ 63,414.00	$ 71,010.25
	342459CH Testing and Balancing	$ 529,204.00	$ 592,596.39
	342460 CH Floor Finishes	$ 400,000.00	$ 447,915.28
2010	342440 CH Window Repairs PH 1, 2, 3	$ 59,646.00	$ 65,713.01
	342445 CH Domestic Water System	$ 147,470.00	$ 162,470.20
2010	342454 CH Exterior Walls	$ 122,483.00	$ 134,941.60
	CH Controls and Instrumentation	$ 755,967.00	$ 832,861.69
	CH Floor Finishes	$ 195,471.00	$ 215,353.72
2011	342440 CH Window Repairs PH 3	$ 179,434.00	$ 191,636.43
	342446 CH Plumbing Fixtures	$ 440,480.00	$ 470,434.89
	342454 CH Exterior Walls Finishes	$ 457,374.00	$ 488,477.77
	342459 CH Test and Balance	$ 720,653.00	$ 769,661.08
2012	342440 CH Window Repairs PH 3	$ 770,079.00	$ 805,773.23
	342446 CH Plumbing Fixtures	$ 382,909.00	$ 400,657.36
	342454 CH Exterior Walls	$ 630,113.00	$ 659,319.61
	342459 CH Test and Balance	$ 309,071.00	$ 323,396.87
2013	1039725 CH DOM Water Dist	$ 646,128.00	$ 666,316.99
	1116696 CH Floor Finishes	$ 346,641.00	$ 357,472.18
2014	1121223 CH Panel Replacement	$ 1,661,604.00	$ 1,686,169.82
	1121961 CH Fire Alarm System	$ 173,715.00	$ 176,283.27
	1121962 CH Roof Coverings	$ 102,301.00	$ 103,813.46
	1121968 CH Elevators and Lifts	$ 432,690.00	$ 439,087.06
	1121986 CH E-607 Carpet Replacement	$ 250,492.00	$ 254,195.37
	1121960 CH Cooling Towers	$ 100,871.00	$ 102,362.32
2015	1039665 CH Plumbing Fixtures	$ (697,708.00)	$ (708,023.19)
	1039691 CH Other HVAC Systems	$ 7,867.00	$ 7,973.84
	1039747 CH Window Repair	$ 2,049.00	$ 2,076.83
	1039835 CH Test and Balance	$ 2,013.00	$ 2,040.34
	1040333 CH Int Doors	$ 12,588.00	$ 12,758.96
	1114355 CH MEP Study	$ (27,842.00)	$ (27,855.24)
	1121961 CH Fire Alarm	$ (173,715.00)	$ (176,074.28)
	1121962 CH Roof Coverings	$ 903,973.00	$ 916,250.13
	11231968 CH Floor Coverings	$ 6,015.00	$ 6,096.69
	1124130 CH Exterior Doors	$ 190,045.00	$ 192,626.06
	1124131 CH Security	$ 68,487.00	$ 69,417.14
	1124166 CH Terminal and Package Units	$ 1,141,682.00	$ 1,157,187.53
	1124472 KCCH Revitalization	$ 1,226,751.00	$ 1,243,411.88
	Total	**$ 24,577,927.00**	**$ 27,434,144.93**

18 Appendix 4 Courthouse Window Upgrade

King County

Courthouse Window Upgrade

Environmental and Energy Efficiency Project

Executive Summary

Current Need

- Uninsulated aluminum panels and single pane windows allow heat transfer through the building envelope.
- Heat is lost to the environment in the winter, which increases the heating bill.
- Heat transfers inwards in the summer, which increases the cooling bill.
- Areas of the building without operable windows are not able to take advantage of free cooling and ventilation.
- Panels permanently block sunlight, which requires the interior lights to remain on when occupied, increasing costs.
- The heating, mechanical cooling, air distribution, and lighting systems use more energy due to existing panels.
- The interior and exterior aesthetics of the building are affected by the current panel systems.

Green Solution

- Replace current panel systems with new thermal-pane high-performance windows to reduce heating and cooling.
- Install operable windows to allow natural ventilation and cooling as originally intended.
- Install controls to interlock operable windows to the HVAC system to further reduce energy consumption.
- Increase availability of natural daylight into occupied spaces to reduce electric lighting requirements.

Overview of Window Upgrade

- Remove 4 single bans and 33 double bans of aluminum panels from floors 5-9.
- Remove single pane windows distributed within aluminum panel bans.
- Repair architectural window framing, interior finishes, and exterior facade.
- Install 344 new high-efficiency operable windows.
- Install window contact switches and controls to turn off zone fan coils when the windows are open.
- Reconfigure controls to allow natural ventilation of the included spaces.

Infrared photo shows heat loss (yellow) through panel section on right compared to high efficiency windows on left. Outdoor temperature 53 F.

Benefits

Financial Estimates

- $71,000 annual utility savings. Annual electrical savings of 1.3 million kWh; Annual gas savings 6,000 Therms
- Potential utility incentives and Federal efficiency grants.
- $8 Million budgetary construction cost for windows and controls, with a $4 Million budgetary construction estimate for additional architectural improvements.
- Significant life cycle cost benefit.

Additional Benefits

- Annual savings of 1,000 Metric Tons of CO2; Equivalent to the CO2 sequestered by 300 acres of pine forest or taking 190 homes off the grid.
- Approximately 200 local jobs created.
- Natural sunlight promotes a healthier environment and lowers energy costs by taking advantage of day lighting.
- The building is configured to take advantage of natural ventilation strategies. Operable windows will provide for improved space ventilation.
- The panels are not part of the original design. Removing the panels will restore the original look of the building.

Next Steps

- McKinstry proposes to initiate a Directed Engineering Study to develop the detailed scope of work and guaranteed project financials.

19 Appendix 5 Courthouse Utility Costs

Utility Use and Cost
King County
Selected Facilities -- 7/2015 to 6/2016

Month	Electricity Use (kWh)	Electricity Cost	Natural Gas Use (Therms)	Natural Gas Cost	Water Use (ccf)	Water Cost	Sewer Use (ccf)	Sewer Cost	Refuse Cost	Other Utilities Cost	Total Utility Cost
07/2015	754,916	$67,595	16,400	$12,333	1,583	$10,400	1,042	$12,340	$0	$0	$102,667
08/2015	694,520	$62,535	15,134	$11,525	1,485	$9,777	1,031	$12,211	$0	$0	$96,049
09/2015	622,202	$56,032	16,093	$12,101	1,204	$7,190	931	$11,047	$0	($0)	$86,370
10/2015	634,553	$56,863	19,798	$14,615	1,236	$6,529	1,000	$11,865	$0	$0	$89,872
11/2015	635,721	$56,353	29,754	$15,644	1,048	$5,578	885	$10,500	$0	($0)	$88,076
12/2015	632,129	$55,733	32,051	$16,566	946	$5,081	827	$9,827	$0	($0)	$87,208
YTD Total	**3,974,041**	**$355,112**	**129,231**	**$82,784**	**7,502**	**$44,555**	**5,715**	**$67,792**	**$0**	**$0**	**$550,242**
01/2016	624,200	$56,084	29,075	$15,307	992	$5,391	879	$10,818	$0	$0	$87,600
02/2016	595,926	$55,380	24,258	$13,102	818	$4,487	678	$8,341	$0	$0	$81,310
03/2016	655,965	$60,894	24,853	$13,393	837	$4,607	671	$8,258	$0	($0)	$87,151
04/2016	600,820	$56,080	363	$839	869	$4,757	627	$7,727	$0	($0)	$69,403
05/2016	609,914	$57,653	0	$0	88	$482	62	$768	$0	$0	$58,903
06/2016	305,993	$28,923	0	$0	0	$0	0	$0	$0	$0	$28,923
YTD Total	**3,392,817**	**$315,015**	**78,550**	**$42,640**	**3,604**	**$19,723**	**2,916**	**$35,912**	**$0**	**$0**	**$413,290**
Grand Total	**7,366,857**	**$670,126**	**207,780**	**$125,424**	**11,106**	**$64,278**	**8,632**	**$103,703**	**$0**	**$0**	**$963,532**

Utility Use and Cost report produced by David Brossard on 07/13/2016 at 9:35 AM

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20 Appendix 6 Tip 314 Seattle Building Code Requirements for Existing Buildings that undergo Substantial Alterations

Seattle Department of Construction and Inspections

sdci

Tip 314

Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

Seattle Building Code Requirements for Existing Buildings that Undergo Substantial Alterations

Updated March 23, 2015

Buildings in Seattle that undergo substantial alterations or repairs are subject to the Seattle Existing Building Code (SEBC), which defines and lists the special requirements that apply. This Tip is intended to clarify the definitions of substantial alteration and provide guidance in how Seattle DCI applies SEBC Section 303.

When designing an alteration of an existing building, the building owner and the designer should first determine whether the project will be considered substantial. In many cases, it will be difficult to determine whether or not a project is a substantial alteration. In that case, a presubmittal meeting is advised so Seattle DCI can gather the information it needs to make a determination. If the project is considered a substantial alteration, the next step is for the designer to evaluate the building's structural and life safety systems.

It is important to note that SEBC Section 303.1 does not require a substantially altered building to comply with all of the current code; it requires compliance only with specific sections. This Tip lists those sections and gives some guidance in determining how Seattle DCI will apply them.

For accessibility requirements, refer to SEBC Sections 605, 706, 806, and 906 which treat alterations differently.

Also, note that Section C101.4.7 of the 2012 Seattle Energy Code includes energy efficiency standards for substantial alterations or repairs, only for those projects that meet definitions 1, 2, or 4 (but not 3 or 5) as described below in this Tip. It allows less than full compliance with the prescriptive code when using the component performance method in Section C402.1.3 or the Total Building Performance method in Section C407. There is also an "operating energy alternative" in Section C101.4.7.3, item 4.

Definitions

The five definitions of substantial alterations as listed in SEBC Section 303.1.1 are:

1. Repair of a building with a damage ratio of 60 percent or more. (Note: this may not be the same as "repair of extensive damage" noted in Section 305.1.1.)
2. Remodeling or additions which substantially extend the useful physical and/or economic life of the building or significant portion of the building, other than typical tenant remodeling.
3. A change of a significant portion of a building to an occupancy that is more hazardous than the existing occupancy, based on the combined life and fire risk as determined by the building official. Table 303.1 may be used by the building official as a guideline. A change of tenant does not necessarily constitute a change of occupancy.
4. Reoccupancy of a building that has been substantially vacant for more than 24 months in occupancies other than Group R-3.
5. A significant increase in the occupant load of an unreinforced masonry building.

Typically Applicable Projects

Definition 1: Repair of a building with a damage ratio of 60 percent or more

This occurs when the structural system of a building undergoes significant repairs. When severe deterioration of significant portions of a building's structural system is repaired, the work will be considered a substantial alteration. Typical projects which in themselves would **not** be considered extensive or

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substantial include replacement of an exterior stair or repair or replacement of water-damaged beams in a roof structure. See SEBC Section 305 for requirements for damaged buildings.

Definition 2: Extending the useful physical and/or economic life of a building

Extending the useful physical and/or economic life of a building is the trigger most frequently used in determining that a project is a substantial alteration. It is also one of the most difficult to determine, and varies considerably depending on the nature of the work being done and the condition of the building.

Routine maintenance of a building, by itself, will not trigger this requirement. Routine maintenance typically includes items such as painting, reroofing, replacement of light fixtures, or replacement of plumbing fixtures. When routine maintenance has been delayed to the point where the building has suffered significant deterioration and requires expensive restoration, it may be considered a substantial alteration. Routine maintenance combined with some improvement work, such as that performed during condominium conversions, may also be considered a substantial alteration.

There are many ways to look at this definition of substantial alteration. Listed below are some of the criteria that are used most often.

Cost of project. Typical maintenance, repair, or tenant improvement work does not in itself generally constitute a Substantial Alteration. Similarly, typical minor mechanical or lighting system replacement does not in itself constitute a substantial alteration. However, tenant improvements encompassing a significant portion of a building, especially when combined with major mechanical and electrical upgrades, could very likely constitute a substantial alteration, because the sum total of the work "substantially extends the physical or economic life of the building." Similarly, where multiple smaller projects are undertaken on one building within a short time frame, Seattle DCI will consider them together when determining whether the sum total of the work constitutes a substantial alteration.

For the typical project, if the cost is high relative to the value of the building, it will be considered a substantial alteration. For example, if a project consists of new carpet, paint, upgrade of light fixtures, new toilets and sinks, a new roof and patching of plaster, and the cost is more than half the value of the building, it would probably be considered a substantial alteration. Even though most of these items alone would only be considered maintenance, the total amount of work would be great enough to justify a conclusion that the project is a substantial alteration. (The "more than half the value of the building" phrase used here is not intended to be a fixed percentage, but only an example.)

Existing conditions. A careful review of existing conditions is important in determining whether a given proposal will trigger substantial alteration requirements. A relatively new building may undergo a face lift with expensive new finish work and some minor alterations and yet not trigger special requirements, while a very old and poorly maintained building that undergoes a similar project may be viewed as a substantial alteration. There are two reasons for this. One reason is a desire to correct the more serious life-safety hazards and energy use deficiencies likely to be present in older buildings. The other reason is that the relative cost of the new work in relation to the value of the existing building is higher in the older building. In this case, the ratio of project cost to building value is viewed as being directly related to the extent to which the life of the building is being extended.

Size of project relative to building size and extent of use. Alteration projects vary considerably from total building renovation to renovation of just a portion of a floor; building use varies from fully occupied to completely vacant. It is the particular combination of these two items that becomes important in evaluating whether a project is a substantial alteration. A large new restaurant in a fully occupied high-rise building clearly is not a substantial alteration project. However, a similar project in an older, partially-occupied, three-story building is likely to be a substantial alteration. For example, many older downtown buildings have very limited, if any, use of their upper floors. Renovation of the tenant spaces on the lower floors of such a building, even though of a moderate size and scope relative to building size, may trigger the substantial alteration requirements.

When determining whether a project extends the useful life of a building, Seattle DCI will consider all these factors in combination.

Definition 3: A change to an occupancy that is more hazardous than the existing occupancy

A change to an occupancy that is more hazardous than the existing occupancy is determined by referring to SEBC Table 303.1. Occupancies have been assigned a hazard rating based on factors such as the number of people expected to be present in the building, whether the people are awake, the amount of combustible materials present and likelihood that a fire will occur.

Questions about interpreting this trigger occur when only a portion of a building changes to a higher hazard rating. In those cases the deciding factors are generally the percentage of the building that is changing to the higher-rated hazard, and how significantly the hazard is increased. A small Group B restaurant space (combined rating of 2) that is converted into a Group M retail space (combined rating of 6) in a large building such as a high-rise will generally not trigger the requirements for a substantial alteration because the change in hazard rating affects only a small portion of the building. However, converting a significant portion of a building from a low hazard to a high hazard rating usually will trigger the requirements for a substantial alteration. For example, the conversion of an entire floor of a three-story building from a Group S-1 warehouse (combined rating of 4) into a Group A-3 assembly space (combined rating of 12) would be considered a substantial alteration.

Definition 4: Reoccupancy of a building that has been substantially vacant for more than 24 months in occupancies other than Group R, Division 3

The intent of this provision is to ensure that buildings with low or minimal use are properly retrofitted when they become more fully occupied. A typical example is a multistory mixed-use building with a business on the first floor and vacant second and third floors. An owner who wishes to reoccupy these upper floors will be required to comply with the substantial alteration requirements of SEBC Section 303.

This definition by itself does not trigger energy code requirements for buildings that were constructed to the 2003 or more recent edition of the codes. It is assumed that such recently-constructed buildings are reasonably energy efficient. See Seattle Energy Code (SEC) Section C101.4.7, exception 3.

Definition 5: A significant increase in the occupant load of an unreinforced masonry building

Substantial alteration requirements are triggered when an unreinforced masonry building is changed to a use that will have a significantly higher occupant load, based on SBC Section 1004.

A project that is defined as a substantial alteration primarily due to the seismic retrofitting of a building's unreinforced masonry walls is exempt from the energy code requirements for substantial alterations. See SEC Section C101.4.7, exception 2.

Complying With Substantial Alterations Rules

The intent of SEBC Section 303 is to provide improved structural and fire life safety in addition to improved energy performance for a building that undergoes a substantial alteration. The extent of the improvements required is based on the size and scope of work and the relative hazard that exists. The ability of the design team to assess these items and present proposals that appropriately address them is critical to ensuring a successful resolution to this key SEBC requirement.

When a project has been defined as a substantial alteration, SEBC Section 303 requires that the project be made to conform to the requirements of the following Sections of the Seattle Building Code:

- Section 403 (high rise buildings, when applicable)
- Special requirements for the Fire District found in Section 401, when applicable
- Section 716 (protection of ducts and air-transfer openings)
- Chapter 8 (interior finishes)
- Section 903 (automatic sprinkler systems)
- Chapter 10 (means of egress)
- Chapter 17 (special inspection)

Fire alarms shall be provided as required by the International Fire Code. SEBC Section 303.2 requires evaluation and mitigation of seismic deficiencies. See Director's Rule 5-2004 for specific regulations for unreinforced masonry chimneys.

The 2012 SEBC also requires the entire building to comply with Section C101.4.7 of the 2012 Seattle Energy Code for those projects that meet 'substantial alterations" definitions 1, 2, or 4 (but not 3 or 5). There are important exceptions for landmark buildings, unreinforced masonry buildings, and recently-constructed buildings, as well as situations deemed by the code official to be "impractical." Several compliance paths are available, as detailed in Section C101.4.7.3 of the Seattle Energy Code:

- Full compliance with prescriptive requirements
- Envelope thermal performance within 20 percent of code
- Total building performance within 15 percent of code
- Operating energy consumption within 20 percent of code

LEGAL DISCLAIMER: *This Tip should not be used as a substitute for codes and regulations. The applicant is responsible for compliance with all code and rule requirements, whether or not described in this Tip.*

It is incumbent upon the design professionals to provide a critical evaluation of the adequacy of the life safety, seismic, and energy systems in the building. The project will be evaluated according to the sections of the SBC, SEBC,and SEC mentioned above. Director's Rule 7-2009 lists approved alternate seismic standards. The evaluation must include a detailed and prioritized list of all items found to be deficient.

Ideally, all items found to be deficient will be corrected. However, in many cases it is recognized that to remedy all deficiencies will impose severe hardships on the building owner. The building code provides Seattle DCI with significant flexibility to resolve specific hardship issues. There are certain methods by which the applicant may seek relief. SEBC Sections 101.11 and 101.12 allow Seattle DCI to modify or waive specific requirements of the code where the applicant demonstrates that those requirements are impractical, and allow the applicant to identify alternative design solutions which will provide equivalent protection.

The determination to modify or waive a code requirement is dependent on the ability of the design team to provide adequate justification for a proposal. Justification may include *cost benefit analysis, functional issues, total costs, testing, risk analysis, professional judgment, and redundancies.* The more comprehensive and well-justified the applicant's analysis of the issues involved in the project, the more likely the applicant will succeed in obtaining approval for the proposal.

Getting Concept Approval Via a Presubmittal Conference

For many applicants it is desirable to attend a presubmittal conference with the building official to get concept approval of significant code issues prior to applying for a building permit. Concept approval can greatly facilitate the plan review process and can be documented in the form of applicant-generated minutes which will be reviewed and approved by the building official.

The presubmittal conference is an opportunity to present your proposals and appropriate justifications, determine if your project is a substantial alteration, and resolve code issues. See Tip 318, *Building Code Presubmittal/Code Interpretation Conferences*, for more information about pre-submittal conferences. To schedule a presubmittal conference, call the Seattle DCI Applicant Services Center at (206) 684-8850.

Other Considerations

If tenants are displaced during a substantial alteration project, refer to Tip 123, *Seattle's Tenant Relocation Assistance Ordinance* for information about tenant relocation.

Access to Information

Links to electronic versions of Seattle DCI **Tips, Director's Rules**, and the **Seattle Municipal Code** are available on our website at **www.seattle.gov/dci**. Paper copies of these documents, as well as additional regulations, are available from our Public Resource Center, located on the 20th floor of Seattle Municipal Tower at 700 Fifth Ave. in downtown Seattle, (206) 684-8467.

21 Appendix 7 Risk Matrix

King County Courthouse Revitalization Project
Risk Register
Alternative 2 - Repairs/Upgrades/Alterations to the KCCH

Revision History

Initial June 23, 2016	

Risk Assessment Definitions				
		Cost	Probability	Potential Impact
High	3	> $1,000,000	> 70%	> 6 months
Medium	2	bet. $200,000 and $1,000,000	bet. 30% and 70%	3 - 6 months
Low	1	< $200,000	< 30%	0 - 3 months

Risk Prioritization Definitions		
High	H	3 high ratings
High-Mediu	H-M	2 high ratings and 1 medium rating
Medium	M	2 medium ratings and 1 high rating, or 3 medium ratings
Medium-Lo	M-L	2 medium ratings and 1 low rating
Low	L	1 medium rating and 2 low ratings, or 3 low ratings

Type of Mitigation Strategy	
P	Procurement
D	Design/Planning
R	Replacement
PI	Public Involvement
M	Monitoring
C	Construction

Risk Status	
RI	Risk Identified
PD	Plan being developed
PE	Plan enacted but effectiveness not yet known
EE	Plan enacted and effective
M	Issue mitigated and being monitored

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	1	Public Involvement	Project will be very interesting to a wide spectrum of the public. Critical that an effective public involvement plan is developed and implemented. King County Landmarks Commission Process	3	3	1	[illegible]	PI	Development and implementation of an effective public involvement plan. Strong coordination between project team and PI team. Conduct Public open house events. Develop a quarterly newsletter. Engage e a PI team to develop a risks mitigation plan. Engage PI team with stakeholders to develop a list of risks. Have PI plan approved by the Oversight Committee. PI plan includes a separate PI risk register.			RI				

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	2	King County Landmarks commission process takes longer than anticipated.	The Landmarks commission process is extended because of multiple updates and rejected designs.	2	1	2	M-L	D/PI	Early and continuous involvement during design process.			RI				
	3	Utilities, other infrastructure inadequate or in very poor condition to service revitalized facility.	Unknown if water (potable and fire), sewer, storm water, data, phone, etc. will need to be upgraded. Off site improvements have not yet been defined. Service entrances for water, fire water systems, electrical, and voice/data, and sewer outflow conditions all are unknown.	3	3	1	H	D	County has made preliminary investigations and repair of south potable water main entrance and fond the pipe almost completely blocked. Early investigation planning should include review of the services entrance conditions, and identify needed sizes of facilities, and any repairs or upgrades required.			RI				
	4	Building stakeholder labor groups working condition changes may delay design and construction.	Replacement of the building systems may cause working conditions to be temporarily outside of the stakeholder labor groups agreed upon level of comfort or service .	1	2	1	L	D	Working with each of the stakeholder labor groups during the planning phase to better understand their operational needs and ensure that these needs are disrupted for as short a time as possible during construction.			RI				
	5	Difficulty of finding adequate lease space for stakeholder group moved from building.	With the current real estate market in Seattle finding an adequate space near the existing courthouse could be difficult and more expensive than planned or budgeted.	2	2	2	M	D	Begin process for identifying needs and securing space during the design phase so that space is available when construction contract awarded.			RI				
	6	Dis-continuity of KC government functions during construction.	With the stakeholder groups being relocated for the phased construction work the chance of interrupted KC government functions increases.	1	2	1	L	D	Work with stakeholder groups and develop contingency plans for uninterrupted communications.			RI				
	7	Redundant/unused pipe/conduit/ducting	Cost to identify and remove unused and redundant piping, conduit, ducting in building as phased construction proceeds.	2	2	2	M	D	Use of accurate as-built information in the design phase to allow efficient removal of unused piping/conduit/duct during construction.			RI				
	8	Impact of upgrade on Historic elements of building	Upgrading courthouse to current codes degrades/destroys historical elements and conditions.	1	2	2	M-L	D	Through cataloging of historical elements so that these elements can factor into the design and phasing work.			RI				

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	9	Seismic upgrade of non-structural hollow clay infill walls	The invasiveness of work to perform the seismic work will require a significant amount of destructive rework to the existing drywall exterior walls.	1	3	1	L	D	Provide review of required work to all stakeholder groups to ensure that scope of work required to be performed is understood.			RI				
	10	Construction of new electrical room.	Inability to coordinate space requirements for construction of new bus ducts and electrical rooms with stakeholder groups.	2	2	3	M	D	Involvement of stakeholder groups in planning phase.			RI				
	11	Group relocation during phased work.	Difficulty of moving mixed groups out of and into renovated spaces during phased renovation work.	2	2	2	M	D	Involve Courthouse stakeholder groups during planning phase to insure continuity of internal and intergroup function.			RI				
	12	SEPA process	SEPA is predecessor to many critical permits for the project. SEPA process has public comment periods and is a typical risk on large projects.	3	3	1	H	D	Close coordination between the SEPA team and the rest of the project team. Hire expert consultants to assist with SEPA process. Coordinate SEPA risks from stakeholder engagement sessions with SEPA team.			RI				
	13	Permitting process expands scope of work due to requirements from the AHJ, or from non conforming existing conditions	Through interaction with the AHJ, scope is developed into procurement documents that does not fully meet the requirements for the AHJ, particularly with respect to existing concealed and unknown conditions, creating inconsistencies, and missing scope in the procurement documents	3	3	1	H	D	Thorough forensic examination of existing conditions documented by design team. Existing conditions to be compared to code requirements. Pre permit application meetings with all AHJ agencies to determine scope requirements and decisions required. Extensive design review by independent experts for constructability,			RI				
	14	Budget	Budget is inadequate to mitigate failing building components.	3	3	3	H	D	Modify scope according to priority			RI				

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	15	Earthquake greater than 6.5 (Nisqually Quake)	Risk to the building elements that were not upgraded at the time of the structural seismic upgrade. Exterior masonry, interior HVAC equipment, piping systems, lighting, ceilings were not seismically upgraded and will be damaged/destroyed in an earthquake of greater magnitude than the 2001 Nisqually earthquake event.	2	1	1	L	D	Develop and implement plan to upgrade non structural components.			RI				
	16	Domestic water system	Difficulty of updating existing system with courthouse being continuously occupied.	2	2	1	M-L	D	Use of accurate as-built information in the design phase and planned redundancy during phased construction.			RI				
	17	Inferior building systems, materials, and components.	Low quality materials and equipment installed resulting in higher maintenance costs. Delayed occupancy due to failure to meet commissioning requirements.	3	3	1	H	D/P	Develop standards for building materials and building systems to be included in the Owners project requirements . Use Integrated Design to produce Owner Project Requirements. Conduct collaborative design review meetings that engage Building Services and stakeholder occupants in development of all Owners Project Requirements and in Programming Documents for key areas related to Building Services. Gather feedback during design to confirm Building Services risks identified by the Stakeholders were addressed in their element of the procurement documents. Provided lists of Building Services risks to be mitigated by their element. Address Building Services concerns regarding quality in the procurement documents.			RI				
	18	Design procurement - Designer defaults during design and must be replaced during process.	The A/E either defaults during the design phase or is determined to be deficient in their ability to complete the design task.	1	1	2	L	P	Specific requirements detailed in RFP and through vetting of all submitted proposals.			RI				

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	19	Design selection process protest	After selection of A/E designer through RFP process one or more of the teams not selected files a protest and the resolution of the protest delays the start of design	1	2	1	L	P	Through vetting of RFP and strict adherence to review and interview guidelines.			RI				
	20	Need for as-built drawings	Difficulty of providing accurate as-built drawings for designer delays the design schedule and reduces the accuracy of the information provided potential bidders in the Contract Documents.	2	2	1	M-L	P	Prior to procurement of designer compile all existing as-built documents on Courthouse to identify missing information and secure/create documents that complete building as-built.			RI				
	21	Engaging an unqualified contractor for work.	If the procurement of the construction contract occurs during a period of high contractor demand and if the selection criteria for the contractor is solely based on the contractor's low bid then the potential for an unqualified contractor increases. This scenario could lead to both poor project management and sub standard quality of work.	2	1	2	M-L	P	Explore alternative delivery methods for construction procurement that give King County flexibility in setting selection criteria that rely on factors other than just pricing.			RI				
	22	Complexity of project makes construction procurement and management difficult and carries higher risk than new construction	The difficulty of planning and implementing the phased replacement of the various building systems while the majority of the building is still in use increases the risk of extended construction procurement due to questions and addendum and construction delay caused by unknown/unforeseen conditions.	1	2	2	M-L	P	Rigorous Division 1 requirements. Pre-Construction coordination.			RI				

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	23	County's risk mitigation strategies for the project at final design completion are not adequately captured in the procurement documents.	The County legal agreement with the Contracting team will be embodied in large part in the documents that will be developed in future as part of the design process. For the purpose of this risk assessment these documents are referred to as procurement documents. This risk is a breakdown in what was wanted and what was communicated as existing conditions in procurement documents.	3	3	1	H	P	Careful preparation of conformed as built drawings is essential and a first priority task. Coordination between project management team/procurement/legal is of upmost importance between now and when the contract is signed between Contractor and King County. Detailed risk matrix indicates areas where coordination is needed. Weekly coordination meetings with the project management team and the design team will occur between now and the time the Contractor is under contract.			RI				
	24	Inadequate funds are provided for the project to be fully implemented	The County attempts to perform the project over many years using 3421 funds or some other inadequate funding mechanism resulting in many phases over many years. Project delivery costs skyrocket as a result. Constant building operational disruptions occur due to services being interrupted during the course of work (cooling, heating, electrical service, voice and data etc.) Multiple contracting entities create confusing warranty responsibilities.	3	3	1	H	P	Develop a funding mechanism that allows a continuous method of project delivery using a single contract entity.		Work with PSB to develop strategies for funding the project	PD				
	25	County's needs during construction are not adequately captured in the procurement documents	These needs include but are not limited to determining how access to the work for the contractor would be provided, while maintaining integrity of remaining building operations, traffic control, hours of work, phasing of the job, noise control, outdoor security. Issue with Superior Court operations during construction and DAJD 24/7 operations, confidentiality issues with agencies, among many others.	3	3	1	H	P	These needs will primarily be described in Div 1 of the contract with input from occupant representatives. Detailed items need to be developed with stakeholders and listed in the detailed risk matrix and will be folded into the Div 1 requirements.		develop design to adequately capture all County requirements through design reviews & design submittals.	PD				

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	26	Concern that the specific detailed needs of the user groups will not get fully incorporated into the project.	Temporary swing space relocations do not meet requirements of the user groups.	3	3	1	H	P	User groups are represented in many of the decision making committees and focus will be given to user needs by the project management committee. User groups will participate in development of performance specifications, Contractor selection, programming, and collaborative design review meetings.		approve charter and PMP, set up user group committee	PD				
	27	Concern that the decision making process in the County may be too slow to keep pace with a project of this magnitude.	Policy level decisions are likely to be needed throughout the project. Larger concern is that currently prescribed methodology for use of contingency is cumbersome and slow and will not keep pace with the project as the project progresses and issues arise. Council budgeting process could cause delays, expenses, and unnecessary phasing of the project.	3	3	1	H	P	Policy level decisions need to be identified early and resolved quickly. Recommend revisit of contingency policy in PMP as project progresses towards construction. County to develop clear decision making process identified in the PMP, including stand in decision makers for any decision maker absences. Contract documents will state how long the Contractor can expect for a decision to be made.		Confirm PMP, decision making authority, and contingency use process	PD				
	28	Concealed conditions that are non conforming to current code, or are mandated for repair/replacement (out of scope) by the AHJ during field inspections after contract award.	This can be in the form of existing mechanical, electrical, architectural, or structural conditions, and other materials, and cultural items.	3	3	1	H	P	Forensic investigation along with destructive investigation to be conducted during the scoping phase by the County. Development of a conformed set of as constructed drawings.		complete RFP process, develop work scope for design team	PD				

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	29	There could be issues where the County included a requirement in the Specifications, or Performance Standards but the Contractor does not meet the Specification/Standard.	Once a County need is identified, and a specification or performance standard is developed, thought needs to be given to how compliance with each performance standard will be tested. Tolerances need to be developed and definition of defective work needs to be developed.	3	3	1	H	P	Key items for the successful outcome of the project are to be identified. specifications and/or Performance Standards developed and also referenced in contract. Methods to test or measure the product against the specification and/or performance standard will be developed as part of quality control implementation. Correction of defective work will be required in the contract. Use of commissioning by independent experts will be utilized. Detailed quality control plans will be required to address the Qualitative an Quantitative control methodology. Dispute resolution methodology to be identified in the contract. Review of elements during design.			RI				
	30	construction related permits can cause delays.	This includes but is not limited to the permits issued by City of Seattle including but not limited to general building permits, electrical permits, and plumbing permits issued by the State.	3	3	1	H	P	County should independently understand the permit sequence and durations so that the County can monitor progress during the project. County to transfer risk to obtain and comply with permits to contractor when possible.		engage investigation and evaluation team	RI				
	31	Inadequate design and project delivery to support security during construction. Inadequate design to support security during operation. Safety and security review inadequate.	It is very important to have adequate input from the groups that are responsible for safety. (KCSO, DAJD, FMD, Seattle Police Department)	3	3	1	H	P	Create a safety and security review team of combined user groups to achieve a cohesive review.			RI				
	32	Changes in decision makers and other critical team members	Could be at elected level, King County staff level, consultant level.	3	2	2	M	P	Decision tools to record decisions. For example approval of the programming documents.			RI				

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	33	Cost increase	Cost of materials, labor, permits, permit requirements and mitigation requirements, supply line issues, sub Contractor performance, owner changes, and owner decisions. Includes escalation of costs. Includes market increases, lack of competition.	3	3	3	H	P	Ongoing and multiple cost estimates during scoping and design phases. Develop contract language that ensures the Contract will require that the contractor be responsible for escalation. Develop highly detailed and comprehensive work scope. Develop comprehensive as built drawings and provide to contractor. Engage earned value practice during the project. Utilize cost loaded project schedules including during design phase. Contract management during the construction phase to ensure change orders are being reviewed and properly managed.			RI				
	34	Financial Management Structure	This includes controlling total project costs, meeting cash flow, having adequate contingency, and managing expectations for unspent contingency.	3	3	3	H	P	Financial management plan includes cost estimates at critical points on the project, contingency planning, a second look at decision process for using contingency. Development of priority list for unspent contingency. Prioritizing interest of stakeholders. Develop a comprehensive WBS structure for managing costs. Identify early on the methodology for measurement of earned value for all team members. Develop and issue monthly cost reports for the project.		As the project progresses it will become possible to know more about individual project risks. As more is known about the risks, and they can become better defined, potential planning level dollar amounts for specific key risk issues can be developed. This will support advance planning for possible use of contingency funds.	RI				
	35	Inadequate insurance provisions	Decisions need to be made about who will cover what liabilities with what level of insurance.	3	2	3	H	P	Coordination between Risk Management and Procurement.			RI				

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	36	Inadequate focus on team relationships	Includes weak relationships among user group and Contractor. This also includes relationships among the project team.	3	2	2	H	P	Partnering Session with Contracting team and County will be considered. Coordination with user groups will be required. Development of team culture and revisiting the PMP when necessary.			RI				
	37	Procurement process protested.	Procurement protest could delay project. Inadequate selection criteria could result in the selection of a second tier team.	3	2	1	H	P	Team development of procurement documents. Team includes: Procurement, FMD, Superior Court, DAJD, and legal. Strong coordination among all entities. Develop a selection process based on qualifications and experience with similar projects.			RI				
	38	Failure to meet King County green building ordinance and US Green Building Council requirements.	King County has requirements for green building which includes meeting Gold LEED certification. During design and construction.	3	3	1	H	P	Involvement of King County's green building team in development of program and performance standards. Risk identification by King County's Program Manager for Green Tools. Ongoing involvement of County Green Building team during the project.			RI				
	39	Labor disputes during construction	Labor disputes can cause delays on the project.	3	3	1	H	C	County to require contractor to implement a PLA. Engage a mediator, arbitrator or negotiator depending on the issues that may arise			RI				
	40	Metal window panels	Conditions behind the window panels are worse than anticipated.	2	2	2	M-L	C	Preconstruction investigation prior to removal of windows.			RI				
	41	Switchover of electrical systems	Failure of existing electrical system while phased installation of new system is on-going.	3	2	3	H-M	C	Construct new bus ducts prior to the phased construction work so that if a failure occurs the redundancy is in place and the down time is reduced.			RI				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	42	Switchover of HVAC system	Failure of existing HVAC system while phased installation of new system is on-going	3	2	3	H-M	C	Install new fan and cooling tower prior to the phased construction.			RI				
	43	Catastrophic failure of one of the building systems.	One of the existing systems that is beyond the its recommended life cycle fails and the building cannot be used.	3	3	3	H	M	On-going periodic inspection of critical building systems and reccomendations for action			RI				
	44	Catastrophic failure of bus duct in electrical system	Failure of one or both of the existing bus ducts would cause shutdown of life safety systems in courthouse and cause the building to be unusable until the bus duct was repaired. Additionally the current bus duct configuration is out of compliance with the building code and may not be able to be repaired back to its former layout.	3	3	3	H	M	On-going periodic inspection of buss duct system.			RI				
	45	Failure of heating or chilled water pipe main	Rupture of heating or chilled piping that would render the heating/cooling system inoperable and cause flooding and failure of other building s systems. Cost to repair is minimal but potential cost of loss of building functionality is high.	1	1	1	H	M	On-going periodic inspection of hot and chilled water piping.			RI				
	46	Repair or replacement of existing building elements/systems hampered by lack of as-built information.	Because of a lack of up to date and accurate information on the current building systems when replacement or repair is required, additional time and cost are needed.	1	3	1	M	M	On-going inspection and documentation of existing and repaired/replaced building systems.			RI				
	47	Steadily increasing cost of maintaining existing building.	Increased cost of maintenance and increased number of FTEs to maintain existing building and systems. The cost of money increases with time which then increases the cost of maintenance. The number of repairs increases as the age of the asset increases.	3	3	1	M-L	M	Repair all system in a comprehensive project			RI				
	48	Biological hazards caused by water leaks.	Due to the age of the piping and the existing structure any water leaks caused by a system failure could result in biological hazards (mold).	2	2	1	M	M/R	Continue to monitor and replace current domestic water system to ensure that any leaks are identified early enough that hazardous situations are avoided.			RI				

RISK ASSESSMENT								RISK TRACKING								
				Unmitigated Risk									Current Risk			
★ Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	49	Personal injury/death caused by lack of action to correct known hazards of existing electrical system	The current bus duct is non compliant and past its service life. It is difficult finding electrical contractors willing to work on the bus duct system as it currently exist.	3	3	3	H	M/R	Identify and procure replacement parts for existing bus duct system. Develop and implement replacement project.			RI				
	50	Building lifespan reduced with no action	With no action the lifecycle use of the building is significantly reduced.	2	3	1	M-L	M/R	Develop and implement plan to monitor and repair building systems as needed			RI				
	51	Accelerated depreciation of asset.	With no action the lifecycle use of the building is significantly reduced.				L	M/R	Develop and implement plan to monitor and repair building systems as needed			RI				
	52	Lack of forensic data for decision making. Lack of accurate conformed as-built information.	Decision and planning difficult without accurate information. Also lack of available resources to address issues that arise from lack of data.	1	3	1	L	M/R	On-going inspection and documentation of existing and repaired/replaced building systems.			RI				

22 Appendix 8 Project Prioritization

	Criteria		Alt. #1	Alt. # 2	Alt. # 3	Alt. #4	Alt. #5	Alt. #6	Alt. #7	Alt. #8	Alt. #9	Alt. #10	Alt. #11	Alt. #12	Alt. #13	Alt. #14
	Life Cycle Cost Analysis	**Priority**	**Replace buss duct**	**Replace Domestic Water**	**Repair Toilet Exhaust**	**Replace HCW Pipe**	**Replace HW pipe**	**Fire Protection System**	**Induction Heating System**	**Fan Floor Equipment**	**DDVAV Conversion**	**Aluminum Windows**	**Brick Cladding Attachment**	**DDC Controls Replacement**	**Lighting Replacement**	**ADA Jury Bathrooms**
1	Impact on ongoing O and M Costs	2.20%	0.44	2.20	1.65	1.76	1.76	0.22	0.22	1.98	1.98	0.44	0.44	0.66	0.66	0.22
2	Scheduled replacement year	4.40%	4.40	4.40	4.40	4.40	4.40	2.20	0.44	4.40	4.40	4.40	4.40	4.40	4.40	4.40
3	Initial Cost NPV	2.50%	1.25	1.50	2.25	0.75	0.75	2.50	1.75	2.00	0.38	0.50	0.25	1.25	1.00	1.75
4	Timeline for implementation	2.20%	1.76	1.76	2.20	2.20	2.20	2.20	2.20	2.20	1.76	1.76	1.54	1.76	1.76	1.76
5	System Importance	19.70%	17.73	9.85	5.91	11.82	13.79	19.70	13.79	13.79	13.79	11.82	9.85	14.78	13.79	9.85
6	Operational Needs - Public	9.50%	9.50	3.80	1.90	1.90	1.90	9.50	1.90	4.75	5.70	2.85	7.13	6.65	4.75	9.50
7	Operational Needs - Secure (Courts)	14.60%	14.60	5.84	4.38	2.92	2.92	14.60	2.92	7.30	8.76	4.38	7.30	10.22	7.30	14.60
8	Operational Needs - Detention/DAID	30.20%	30.20	27.18	9.06	6.04	6.04	30.20	6.04	15.10	18.12	9.06	15.10	21.14	6.04	15.10
9	Risk of Catastrophic Failure	12.40%	9.92	8.68	2.48	0.23	4.96	3.72	1.24	8.68	3.72	2.48	6.20	2.48	2.48	1.24
10	Funding Options	2.30%	2.30	2.30	0.46	0.23	0.23	0.46	0.23	0.58	0.58	1.15	1.15	0.46	0.46	1.15
	Score		**92.10**	**65.21**	**34.23**	**36.98**	**38.72**	**84.84**	**30.50**	**60.20**	**58.61**	**37.69**	**52.21**	**63.34**	**42.18**	**58.42**

	Project	Score	Rank
1	Replace buss duct	92.10	1
2	Replace Domestic Water	65.21	3
3	Repair Toilet Exhaust	34.23	13
4	Replace HCW Pipe	36.98	12
5	Replace HW pipe	38.72	10
6	Fire Protection System	84.84	2
7	Induction Heating System	30.50	14
8	Fan Floor Equipment	60.20	5
9	DDVAV Conversion	58.61	6
10	Aluminum Windows	37.69	11
11	Brick Cladding Attachment	52.21	8
12	DDC Controls Replacement	63.34	4
13	Lighting Replacement	42.18	9
14	ADA Jury Bathrooms	58.42	7

King County Courthouse Revitalization							
Project Criteria Table							
	Criteria	**Most desired or likely**					**Least Desired or likely**
	Life Cycle Cost Analysis	100	80	60	40	20	0
1	Impact on ongoing O and M Costs	Major Impact					Minor Impact
2	Scheduled replacement year	now	5 years	10 years	15 years	20 years	25 years
3	Initial Cost NPV	1M$					10M$
4	Timeline for implementation	1-3 years	3 - 5 years	5 - 7 years	7 - 10 years	10 - 12 years	12 -15 Years
5	System Importance	Life Safety	Occupancy	Program	Functional	Finishes	Cosmetic
6	Operational Needs - Public	Major Impact					No Impact
7	Operational Needs - Secure (Courts)	Major Impact					No Impact
8	Operational Needs - Detention/DAJD	Major Impact					No Impact
9	Risk of Catastrophic Failure	High					Low
10	Funding Options	Voter Approved Levy	Existing Operating Rental Budget	Municipal Leasing Act financed thru 63-20	Developer financed	LTGO Bonds	MMRF Funded

Category		**Priority**	**Rank**
1	Impact on ongoing O and M Costs	2.20%	10
2	Scheduled replacement year	4.40%	6
3	Initial Cost NPV	2.50%	7
4	Timeline for implementation	2.20%	9
5	System Importance	19.70%	2
6	Operational Needs - Public	9.50%	5
7	Operational Needs - Secure (Courts)	14.60%	3
8	Operational Needs - Detention/DAJD	30.20%	1
9	Risk of Catastrophic Failure	12.40%	4

Equally Important	1
Moderately more important	3
Strongly More Important	5
Very strongly more important	7
Overwhelmingly more important	9

Alternative #1 **Replace Buss Duct**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	20	0.44
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	50	1.25
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	90	17.73
6	Operational Needs - Public	9.50%	100	9.5
7	Operational Needs - Secure (Courts)	14.60%	100	14.6
8	Operational Needs - Detention/DAJD	30.20%	100	30.2
9	Risk of Catastrophic Failure	12.40%	80	9.92
10	Funding Options	2.30%	100	2.3
				92.1

Pros	Cons
Long term solution	requires floorspace footprint from tenants
permanent fix	Requires complex contingency planning
	requires new mechanical shafts
	disruptive to tenants

Alternative #2 Replace Domestic Water

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	100	2.2
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	60	1.5
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	50	9.85
6	Operational Needs - Public	9.50%	40	3.8
7	Operational Needs - Secure (Courts)	14.60%	40	5.84
8	Operational Needs - Detention/DAJD	30.20%	90	27.18
9	Risk of Catastrophic Failure	12.40%	70	8.68
10	Funding Options	2.30%	100	2.3
				65.21

Pros	Cons
Long term solution	
permanent fix	lack of funding strategy
	Disruptive to tenants

Alternative # 3 **Repair Toilet Exhaust**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	75	1.65
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	90	2.25
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	30	5.91
6	Operational Needs - Public	9.50%	20	1.9
7	Operational Needs - Secure (Courts)	14.60%	30	4.38
8	Operational Needs - Detention/DAJD	30.20%	30	9.06
9	Risk of Catastrophic Failure	12.40%	20	2.48
10	Funding Options	2.30%	20	0.46
				34.23

Pros	**Cons**
Solves code compliance issue	
Allows proper air balancing of building	
Long term solution	
permanent fix	

Alternative # 4 — Replace HCW Pipe

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	80	1.76
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	30	0.75
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	60	11.82
6	Operational Needs - Public	9.50%	20	1.9
7	Operational Needs - Secure (Courts)	14.60%	20	2.92
8	Operational Needs - Detention/DAJD	30.20%	20	6.04
9	Risk of Catastrophic Failure	12.40%	40	4.96
10	Funding Options	2.30%	10	0.23
				36.98

Pros	Cons
Long term solution	High initial cost
Long term solution	lack of funding strategy
permanent fix	Short term operational disprutions

Alternative # 5 **Replace HW pipe**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	80	1.76
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	30	0.75
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	70	13.79
6	Operational Needs - Public	9.50%	20	1.9
7	Operational Needs - Secure (Courts)	14.60%	20	2.92
8	Operational Needs - Detention/DAJD	30.20%	20	6.04
9	Risk of Catastrophic Failure	12.40%	40	4.96
10	Funding Options	2.30%	10	0.23
				38.72

Pros
Long term solution
permanent fix

Cons
High initial cost
lack of funding strategy
Short term operational disprutions

Alternative # 6

Fire Protection System

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	10	0.22
2	Scheduled replacement year	4.40%	50	2.2
3	Initial Cost NPV	2.50%	100	2.5
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	100	19.7
6	Operational Needs - Public	9.50%	100	9.5
7	Operational Needs - Secure (Courts)	14.60%	100	14.6
8	Operational Needs - Detention/DAJD	30.20%	100	30.2
9	Risk of Catastrophic Failure	12.40%	30	3.72
10	Funding Options	2.30%	20	0.46
				84.84

Pros	Cons
Improves life safety	
Long term solution	
permanent fix	

Alternative # 7 **Induction Heating System**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	10	0.22
2	Scheduled replacement year	4.40%	10	0.44
3	Initial Cost NPV	2.50%	70	1.75
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	70	13.79
6	Operational Needs - Public	9.50%	20	1.9
7	Operational Needs - Secure (Courts)	14.60%	20	2.92
8	Operational Needs - Detention/DAJD	30.20%	20	6.04
9	Risk of Catastrophic Failure	12.40%	10	1.24
10	Funding Options	2.30%	10	0.23
				30.5

Pros
Solves code compliance issue
Allows proper air balancing of building
Long term solution

Cons

Alternative # 8 **Fan Floor Equipment**

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	90	1.98
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	80	2
4	Timeline for implementation	2.20%	100	2.2
5	System Importance	19.70%	70	13.79
6	Operational Needs - Public	9.50%	50	4.75
7	Operational Needs - Secure (Courts)	14.60%	50	7.3
8	Operational Needs - Detention/DAJD	30.20%	50	15.1
9	Risk of Catastrophic Failure	12.40%	70	8.68
10	Funding Options	2.30%	25	0.575
				60.2

Pros	Cons
Solves code compliance issue	
Allows proper air balancing of building	
Allows long term use of building	

Alternative # 9 — DDVAV Conversion

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	90	1.98
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	15	0.375
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	70	13.79
6	Operational Needs - Public	9.50%	60	5.7
7	Operational Needs - Secure (Courts)	14.60%	60	8.76
8	Operational Needs - Detention/DAJD	30.20%	60	18.12
9	Risk of Catastrophic Failure	12.40%	30	3.72
10	Funding Options	2.30%	25	0.575
				58.605

Pros
- Solves code compliance issue
- Allows proper air balancing of building
- Allows long term use of building

Cons

Alternative #10 Aluminum Windows

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	20	0.44
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	20	0.5
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	60	11.82
6	Operational Needs - Public	9.50%	30	2.85
7	Operational Needs - Secure (Courts)	14.60%	30	4.38
8	Operational Needs - Detention/DAJD	30.20%	30	9.06
9	Risk of Catastrophic Failure	12.40%	20	2.48
10	Funding Options	2.30%	50	1.15
				37.69

Pros
- Solves code compliance issue
- Allows proper air balancing of building
- Allows long term use of building

Cons

Alternative #10 — Brick Cladding Attachment

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	20	0.44
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	10	0.25
4	Timeline for implementation	2.20%	70	1.54
5	System Importance	19.70%	50	9.85
6	Operational Needs - Public	9.50%	75	7.125
7	Operational Needs - Secure (Courts)	14.60%	50	7.3
8	Operational Needs - Detention/DAJD	30.20%	50	15.1
9	Risk of Catastrophic Failure	12.40%	50	6.2
10	Funding Options	2.30%	50	1.15
				52.205

Pros	Cons
Solves code compliance issue	
Solves Non Structural Earthquake risks to public	
Allows long term use of building	

Alternative #12 DDC Controls Replacement

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	30	0.66
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	50	1.25
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	75	14.775
6	Operational Needs - Public	9.50%	70	6.65
7	Operational Needs - Secure (Courts)	14.60%	70	10.22
8	Operational Needs - Detention/DAJD	30.20%	70	21.14
9	Risk of Catastrophic Failure	12.40%	20	2.48
10	Funding Options	2.30%	20	0.46
				63.335

Pros
- Allows proper air balancing of the building
- Potential for reduced O & M costs
- Long term solution

Cons

Alternative #13 — Lighting Replacement

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	30	0.66
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	40	1
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	70	13.79
6	Operational Needs - Public	9.50%	50	4.75
7	Operational Needs - Secure (Courts)	14.60%	50	7.3
8	Operational Needs - Detention/DAJD	30.20%	20	6.04
9	Risk of Catastrophic Failure	12.40%	20	2.48
10	Funding Options	2.30%	20	0.46
				42.18

Pros
- Allows proper air balancing of the building
- Potential for reduced O & M costs
- Long term solution

Cons

Alternative #13 — ADA Jury Bathrooms

	Criteria Life Cycle Cost Analysis	Weight	Score	Total
1	Impact on ongoing O and M Costs	2.20%	10	0.22
2	Scheduled replacement year	4.40%	100	4.4
3	Initial Cost NPV	2.50%	70	1.75
4	Timeline for implementation	2.20%	80	1.76
5	System Importance	19.70%	50	9.85
6	Operational Needs - Public	9.50%	100	9.5
7	Operational Needs - Secure (Courts)	14.60%	100	14.6
8	Operational Needs - Detention/DAJD	30.20%	50	15.1
9	Risk of Catastrophic Failure	12.40%	10	1.24
10	Funding Options	2.30%	50	1.15
				58.42

Pros
- Allows proper air balancing of the building
- Potential for reduced O & M costs
- Long term solution

Cons

BPMSG AHP priority calculator

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Category	Criteria	Priority	Rank
1	Ongoing O & M cost	2.20%	10
2	Scheduled replacement year	4.40%	6
3	Initial cost NPV	2.50%	7
4	Timeline for Implementation	2.20%	9
5	System Importance	19.70%	2
6	Operational Needs - Public	9.50%	5
7	Operational Needs - Secure (Court)	14.60%	3
8	Operational Needs - Detention/DAJD	30.20%	1
9	Probability of Emergency Repairs	12.40%	4
10	Funding Options	2.30%	8

Decision Matrix

The resulting weights are based on the principal eigenvector of the decision matrix

	1	2	3	4	5	6	7	8	9	10
1	1	0.2	1	0.33	0.2	0.2	0.2	0.2	0.25	1
2	5	1	5	5	0.33	0.33	0.33	0.33	0.33	1
3	1	0.2	1	5	0.14	0.14	0.14	0.14	0.33	1
4	1	0.2	0.2	1	0.14	0.2	0.2	0.2	0.14	0.5
5	5	7	7	7	1	2	4	4	4	8
6	5	7	7	5	0.5	1	0.2	0.25	0.5	6
7	5	7	7	5	0.5	5	1	0.2	1	8
8	5	3	3	8	0.8	7	8	1	5	8
9	4	3	7	7	0.5	7	3	0.12	1	7
10	1	1	1	2	0.17	0.17	0.12	0.14	0.14	1

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EXHIBIT A:

KING COUNTY COURTHOUSE REVITALIZATION PROJECT PROVISO REPORT

"CLARK REPORT"

KING COUNTY COURTHOUSE REVITALIZATION PROJECT

PROVISO REPORT TO THE KING COUNTY COUNCIL

Issue Dates:

01 July 2016 | Draft For King County Review

22 July 2016 | Proviso P5 Response

King County Courthouse under construction, circa 1930. Courtesy of King County Archives.

King County

CLARK DESIGN GROUP PLLC

Project:

King County Courthouse Revitalization Phase 1 Design Services
King County Project Number: 1124472
King County Contract Number: E003700E15

Client:

King County Capital Planning and Development Section
Facilities Management Division,
Department of Executive Services
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- Johnathon Cave, Designer
- Beth Miller; Writer and Editor
- Kim Simonoff, Bookkeeper

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- Henry J. Spieker, Principal
- Kenneth Sparks, PSP, Associate

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- Bryan Zagars, P.E., S.E., Structural Associate Principal

Elevator Consultant:

Architectural Elevator Consulting, LLC
- Bob Nicholson, President
- Eric Holman, Consultant

Fire Protection Consultant:

Viking Automatic Sprinkler Company
- Dwight Bickler, Project Manager
- Dan McLuen, P.E.

Acknowledgements:

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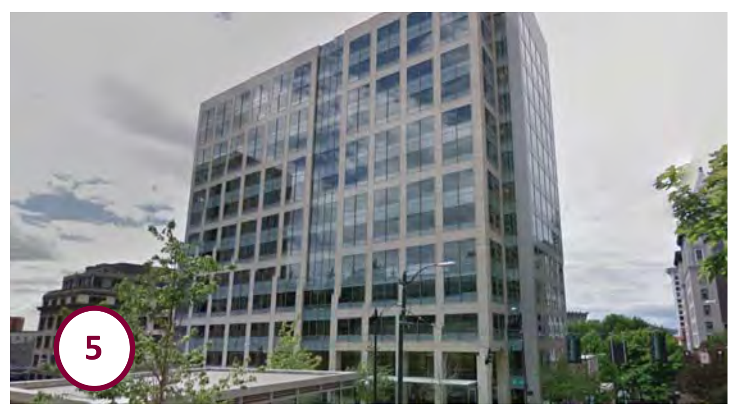
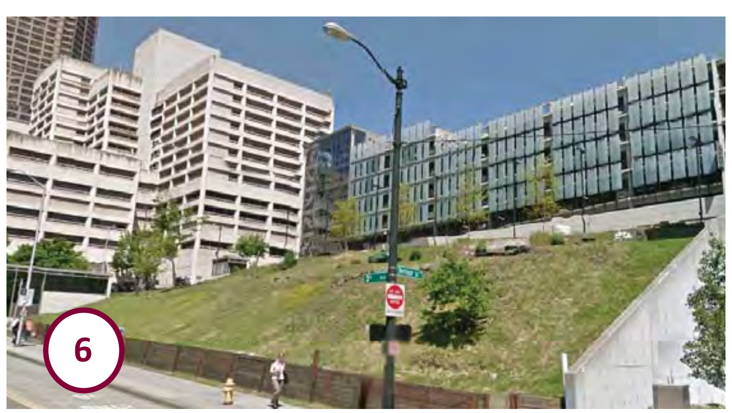
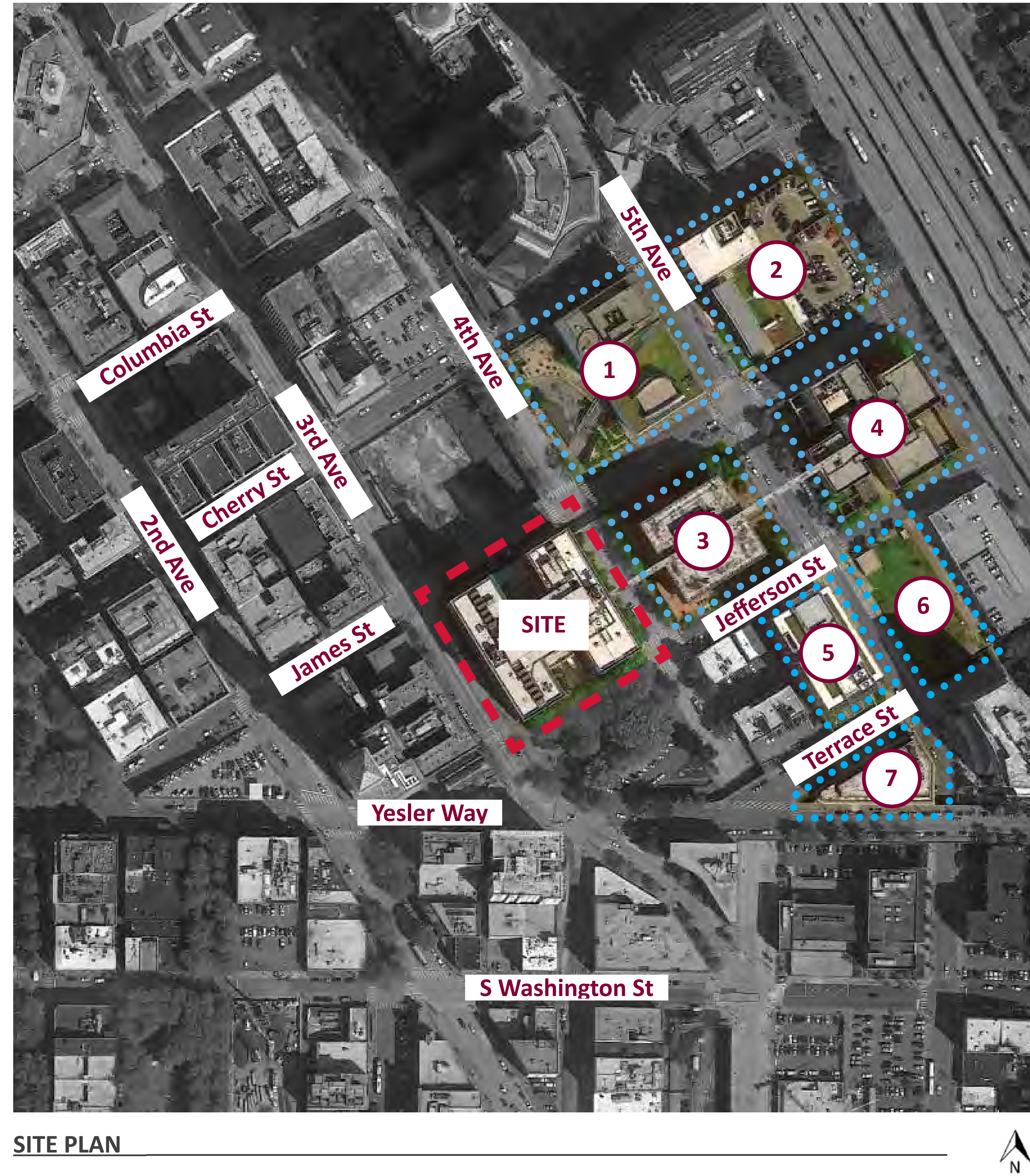
- Phillip Kinsley, Network Engineering
- Roger Kaiser, King County Department of Information Technology
- Dan Kenoyer, King County Security
- M. Kirby Pierce, Court Facilities Security Specialist
- Shon Hong, Unifier Administrator
- Scott Smith, King County Department of Information Technology

Area Map (Google Earth Image, 2015)

1) Seattle City Hall
2) Seattle Police Department Headquarters and Seattle Municipal Court
3) King County Administration Building
4) King County Correctional Facility - Seattle
5) King County Chinook Building
6) King County Goat Hill Site
7) King County Yesler Building







SITE PLAN

INTRODUCTION

In 2015, the King County Council directed the King County Facilities Management Division to report on the existing conditions of the building systems at the 100 year old historic King County Courthouse. In addition to the building systems analysis, the Council requested the report also identify alternatives to a major building repair project.

The information requested in King County Council Proviso P5 has been organized into numbered chapters with titles that correspond with the Council proviso. In particular, the study addresses the following tasks listed in the Proviso report:

- Chapter 1 contains an analysis of the building alternatives.
- Chapter 2 takes an in-depth look at the possible building systems and architectural projects that would be involved in a building revitalization.
- Chapter 3 presents the preliminary cost estimates for the building revitalization projects and new construction alternatives.
- Chapter 4 contains project risk assessment and mitigation.
- Chapter 5 lists the prioritization of projects.
- Chapter 6 presents project delivery timelines.
- Chapter 7 discusses the availability and importance of conformed as-built documentation of the building.
- Chapter 8 explores the historic significance and landmark designation of the Courthouse.
- Chapter 9 contains information on sources of project funding.

This study is a comprehensive assessment of the condition of the King County Courthouse, identification of what repairs are required, and provides building alternatives to a major building repair project. The design team was directed to study the condition of the existing building systems, identify building systems beyond their service life, and make recommendations for repairing, upgrading, or replacing the building systems. The goal of this effort was to examine the building systems in a comprehensive manner and to make recommendations of specific projects required to revitalize the Courthouse.

METHODOLOGY

This 5 month long study was performed by a design team including: architects; a historic preservation specialist; HVAC, electrical, low voltage, plumbing, fire protection, structural, and elevator engineers; a cost estimating consultant; a scheduling and risk assessment consultant; and a land use attorney. The full project team is listed on page 3 of this report.

The methodology of the Courthouse revitalization study included: a thorough review of all previous studies, documents, and reports from over the past 30 years; an in-depth review of hundreds of pages of existing drawings; preparation of schematic building plans and elevations based upon documents prepared for the seismic upgrade in 2003-2004; field observations and photographic documentation of the building and systems; building code review; and several tours of the building with facility personnel.

The deliverables for the assessment of the existing building includes:

- Analysis of the interior conditions of the building.
- Analysis of the mechanical, electrical, plumbing, and low voltage systems in the building.
- Building code analysis, including occupancy, exiting and egress, and plumbing fixture counts.
- Analysis of the passenger and freight elevators.
- Analysis of the fire protection system.
- Identification of hazardous materials that may be present in the building.
- A preliminary energy efficiency analysis.
- Building system upgrades, repairs, or replacements recommendations.
- Phasing concepts to complete the work.
- Cost estimates for identified projects.
- Risk assessment and risk register.
- Prioritization of projects, including identification of short-term and long-term repairs, and full building revitalization.
- Project delivery schedules.
- Review of available as-built documentation.
- Confirmation of the historic significance of the building.
- Identification of building historic preservation projects.
- Determination of the impact that repairs or revitalization would have on historic features.
- Identification of project funding and financing sources.

The methodology of the Courthouse alternative study included: review of the available King County properties and buildings that make up the downtown 'campus;' zoning review of the available properties with an assessment of allowable building area; review of zoning amendments that could allow more building area; preparation of drawing concepts and building descriptions for estimating and scheduling.

The deliverables for the building alternatives include:

- Zoning and building massing studies for new buildings.
- Specified building descriptions, including shoring, structural requirements, vertical transportation requirements, exterior cladding and building materials, and MEP systems.
- Legal commentary on redevelopment alternatives.
- Cost estimates of new building alternatives.
- Delivery schedules for implementation of new building alternatives.

BUILDING ALTERNATIVES ANALYSIS OVERVIEW

In general, if the Courthouse is to remain, there are three alternatives, as follows:

No Action
This alternative has the highest risk, continues the buildings operational inefficiencies well into the future, and potentially has the highest cost. The risks include the possibility of building system failure which could trigger the following: suspension of legally required operations; emergency security conditions; urgent and highest cost relocation of affected departments; highest cost emergency repair work; and the possibility of initiating an unplanned and higher cost version of the repair or revitalization alternatives.

These risks are well known and are documented in many of the previous studies. The electrical distribution system, in particular, poses a very high life safety risk to anyone performing maintenance operations and to building occupants. This alternative is postponing the inevitable, eventually the systems will fail, and one of the other building alternatives will be required.

Short-Term Repairs, Long-Term Repairs, or Revitalization
These alternatives have lower risk, reduce the Courthouse operational inefficiencies sooner, and are the lowest cost. The repair, revitalization, and personnel relocation costs can be phased with the construction activities so that the County can manage the investments incrementally over time.

Given the existing condition and historic designation it may be difficult to profitably sell the Courthouse or renovate it for another use. The building was specially designed for judicial and administrative uses. The elevator lobbies, corridors, and eighteen courtrooms are designated historic and must remain intact. Furthermore, the floor plan and designated historic spaces would make redevelopment of the building into market-rate office space, apartments, or a hotel very challenging. Finally, relocating the work release housing to another location in downtown Seattle may be very difficult, due to zoning restrictions. You would also lose the cost-effective bridge connection between the King County Correctional Facility (KCCF) and the Courthouse used for the transfer of prisoners.

Based on the professional judgement and extensive personal experience of both the project architect and historic preservation consultant, it would be difficult or impossible to demolish the building. If King County seeks to demolish the building, local and state historic preservation advocacy organizations would likely seek court injunctions to halt the destruction of the building.

Prioritization of Repair and Revitalization Projects
Short-term repairs, long-term repairs, and comprehensive revitalization projects are identified in Section 5.1 of the report as 'Priority 5' through 'Priority 1,' and consistent with the County's risk register, 'Priority 5' projects are the most urgent. These listed priorities can be used by the County to schedule and plan the work that is necessary to improve the safety of the building, while keeping the building occupied.

Short-Term Repair Projects

- **Mechanical/HVAC**
  - o Installation of elevator machine room cooling
  - o Provide adequate cooling in all telecommunications rooms
- **Electrical**
  - o Planning, design, and implementation for replacement of the vertical electrical distribution system, including replacement of the 2 electrical bus ducts
  - o Replacement of all 120/208 volt electrical distribution panels (only about 60% are funded for replacement at this time according to KCFMD).
  - o Provide labels for all unlabeled electrical equipment
  - o Arc flash analysis and electrical equipment labeling
- **Plumbing**
  - o Replacement of domestic water system, including replacement of main domestic water service
  - o Replacement of plumbing fixtures throughout building
  - o Installation of safe work platforms in plumbing chases
  - o Installation of work area lighting in plumbing chases
- **Elevators**
  - o Miscellaneous elevator repairs

Further information on the short-term repair projects, including a summary of preliminary cost estimates and delivery timelines is located in Section 1.1 of this report.

Long-Term Repair Projects

The long-term repair projects would include the short-term repair projects listed above, and would also include the upgrades to the heating, ventilation, and air conditioning (HVAC) system, cleaning and fire-rating the vertical HVAC riser shafts and chases, replacement of the motor control centers, and ADA upgrades to public and jury deliberation room restrooms.

Revitalization Projects

The revitalization of the Courthouse would include all the projects necessary to repair or replace building systems; improve indoor air quality, energy performance, and water conservation; and bring the building into code-compliance, while reducing maintenance costs.

The scope of work as defined in this report provides for upgrades to mechanical, electrical, plumbing, and other systems, and was derived from three sources: the 2011 MENG Facility Condition report, the Courthouse Systems analysis performed by the DLR Group in 2013, and the current Courthouse Revitalization Proviso Response report prepared by Clark Design Group in 2016. However, this scope of work does not address programmatic changes to the building. For the revitalization to be successful, the programmatic requirements of the building occupants would need to be thoroughly analyzed and documented as part of the project planning.

Relocation to New Facility

This alternative is high risk, perpetuates the existing building operational inefficiencies for at least another 6 to 7 years, and has the highest cost. Similar to the no-action alternative, time will work against this alternative. The time necessary to plan, design, permit, fund and secure the political commitment is a minimum of 6 1/2 years. This period of time includes 12-24 months to obtain land use approvals (or longer, depending on method used), procurement of the design team, permitting, construction contract award, and construction. During that time, construction costs will increase, personnel will change and with it project knowledge and skills. The political landscape will also change. Furthermore, during this period, all of the risks identified in the no-action alternative continue.

A long political process is needed to achieve the necessary commitments, and permitting may require Seattle City Council approval. Other challenges include limited, cost-effective options for the transfer of prisoners; zoning approval for the work release center; loss of investment in the Courthouse building and loss of appraised value; payment of the remaining debt on the building; and funding of the new building prior to construction starting.

This alternative creates the complication of what to do with the existing historic building. Either the County maintains ownership and finds another use for the building at high cost, or it is sold. If it were sold, it will be difficult to find a buyer for a historic building this size. The building is so large that the most likely approach would be a mixed-use development. This approach makes the development more difficult and higher risk, since the project would need a developer who specializes in multiple uses or can successfully enter into a partnership, or has the capital to master develop the project and find a suitable tenant.

Furthermore, the Courthouse doesn’t have any parking, is located in a challenged, transitional neighborhood, and the building floor plates are not ideally suited for residential or hospitality uses. Office use could work, however, any of these uses will be challenged by the building size, circulation inefficiencies, historic limitations, and market value. Redevelopment of the building for new uses would still require the same revitalization upgrades, if not more. The county may find its only option would be to give the building away. The building has the greatest value to the County.

The other sale possibility would be to demolish the building and sell the land. However, as discussed above, considering the historic significance of the building and the cultural loss, and the difficulty of proving that the building cannot be renovated for continued use, this may be politically challenging. Furthermore, after adding the cost of the provided demolition estimate to the underlying debt, the sale proceeds may not be significant.

The estimated cost of new construction alternatives on parcels owned by King County range from $492 to $619 per square foot, while the estimates to revitalize the existing building are just over $243 per square foot. Based on the construction estimates of the proposed projects to renovate the existing building and upgrade the building systems, the revitalization of the existing building would cost approximately half, at a minimum, the cost of constructing a new building.

CONCLUSION

The Courthouse represents a tremendous capital investment. Between 1903 and 1970, King County spent approximately $148,524,786 (in 2016 dollars) on purchasing the Courthouse site, constructing the original building, expanding the building, and substantially remodeling it. From 2000 until today, the County has spent approximately $165,195,576 on capital projects, including a major seismic upgrade after the 2001 Nisqually earthquake. To date, in 2016 dollars, the County has spent over $313,720,362 on the building. The county already owns the building and land, which is an incredible advantage given the scarcity and steep cost of real estate in Seattle's downtown core. If the county chooses to abandon or sell the building, this investment would be lost.

By revitalizing the building, the County would take advantage of this investment. However, it is important to note that one of the major obstacles for a successful revitalization are the programmatic needs of the many groups occupying the Courthouse and the lack of as-built building drawings. A program must be prepared as part of the planning for the revitalization of the building. This would ensure that the building is utilized as efficiently as possible. Furthermore, accurate and up-to-date as-built drawings of the building will provide the necessary background for any improvements to the building.

In conclusion, this report studies the various alternatives available to the County, including; repair or revitalization of the Courthouse, construction of a new replacement building on County property, or going to the market to lease or purchase needed space.

CHAPTER 1

Building Alternative Analysis

INTRODUCTION

Proviso P5 mandated that “a building alternatives analysis” be included in the Executive’s Proviso response to Council regarding the Courthouse Revitalization project. Since the “building alternatives” request for information was not defined in the proviso, the project team tried to interpret what the request for information was trying to accomplish, meeting with Council staff and the King County Auditor several times to discuss this issue.

The alternatives presented in this report are only suggested in the context of repair or replacement of the Courthouse. These alternatives are not intended to address wider campus planning issues, which are the subject of another separate study.

Any consideration of alternatives to this project must include consideration of the fundamental issues regarding the Courthouse location, occupants and uses, zoning and land use, and its proximity to other County buildings, particularly the King County Correctional Facility (KCCF) and its functions. A significant problem with building a replacement courthouse or moving its functions to a new location is the location itself. A few of the obstacles related to the re-location of the Courthouse function to a new site include:

CONSIDERATIONS FOR BUILDING ALTERNATIVES

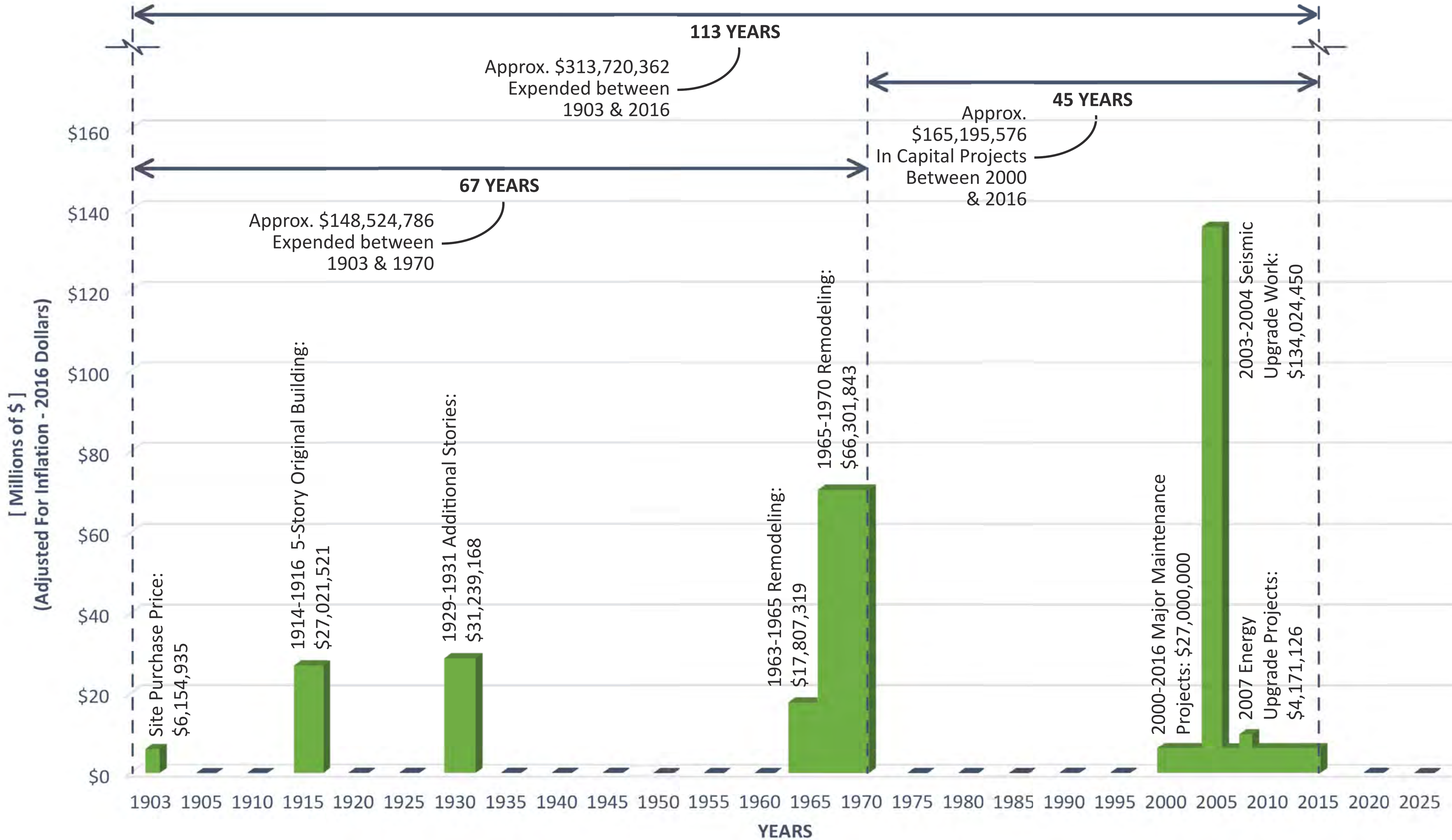
Connection to the KCCF: The cost of transporting prisoners to any new Courthouse site if the KCCF is not directly connected to the courthouse would be very expensive and create a potentially large, long-term operating expense impact. During planning of the King County Maleng Regional Justice Center (MRJC) in Kent, the project team demonstrated the added costs associated with detention not being directly connected to courts, courts not connected to King County Prosecuting Attorney’s Office, etc. That is the reason those services are collocated together regionally in the MRJC and at other sites. For comparison, some recent examples of collocation of detention and justice functions include the King County Children and Family Justice Center and the Vista Detention Facility in San Diego County, California.

Relocation of Work and Educational Release (WER): Work and Educational Release is currently located on the 10th and 11th floors of the Courthouse. City of Seattle zoning rules for work release centers are very prohibitive. The County has a very old agreement with the City for temporary use of the 10th and 11th floors for WER. Currently, City legislation allows only 50 beds in a single location and a certain number of miles between each location. The current Courthouse population is approximately 75 individuals. It continues to be extremely difficult to relocate work release anywhere in downtown Seattle or throughout King County.

Limited Resale Value: The King County Courthouse is historic, the exterior and interior of the building is landmarked, and the building needs extensive repair, particularly the mechanical, electrical, plumbing (MEP) systems and exterior envelope. The courthouse is extremely inefficient compared to its size and shape and with floor to floor heights that were specifically planned for use as courts and court related activities. These features do not translate well for other types of commercial office, hospitality or residential uses. The market would likely be quite limited. A detailed property appraisal should be conducted prior to any decision being made. The property may be more valuable as raw land.

Prior and Recent Investments (Sunk Costs): Since construction of the original Courthouse in 1914-1916, the County has invested approximately $313,720,362 (in 2016 inflation adjusted dollars) on the Courthouse and its various major capital projects. The Major Maintenance and Reserve Fund has spent over $27,000,000 (in 2016 inflation adjusted dollars) since 2000 on major maintenance projects on this building. In 2003-2004, the Courthouse Seismic Project spent approximately $134,024,450 (in 2016 inflation adjusted dollars) to upgrade the structure. In 2007 the ESCO projects spent $4,171,125 (in 2016 inflation adjusted dollars) for energy upgrades at the KCCH and KCCF. Comparing the Courthouse System Revitalization current Rough Order of Magnitude (ROM) cost at $170 million for maintaining operational use for the long term versus the cost of gaining the same amount of new replacement space at peak market conditions at an estimated total cost of $383 million, along with abandoning over $313 million in sunk costs, is a difficult economic argument. In addition, factoring in $49 million in existing Courthouse debt makes the economic case for a replacement building weak at best.

PAST BUILDING CAMPAIGNS & REMODELING PROJECTS



King County Courthouse Historic Construction Costs Analysis: 1903 - 2007

Adjusted for Inflation to 2016 U.S. Dollars

Construction costs from 1903 to 1970 were obtained from the King County Landmark Nomination document for the King County Courthouse.

Post-1970 construction prices, MMRF, and costs of outstanding debt were provided by the King County Facilities Management Division (KCFMD).

	Historic Cost	and Year	Cost in 2016 U.S. Dollars
Original Site Purchase	235,000	1903	$ 6,154,935.00
Original Building Construction 1914-1916	$ 1,160,563.00	1914	$ 27,880,901.29
	$ 1,160,563.00	1915	$ 27,604,852.76
	$ 1,160,563.00	1916	$ 25,578,808.52
		High	$ 27,880,901.29
		Low	$ 25,578,808.52
		Mean	$ 27,021,520.86
Additional Stories Added 1929-1931	$ 2,118,423.00	1929	$ 29,761,489.35
	$ 2,118,423.00	1930	$ 30,474,339.39
	$ 2,118,423.00	1931	$ 33,481,675.52
		High	$ 33,481,675.52
		Low	$ 29,761,489.35
		Mean	$ 31,239,168.09
Phase 1 Renovation/Remodeling 1963-1965	$ 2,300,000.00	1963	$ 18,056,954.25
	$ 2,300,000.00	1964	$ 17,823,961.29
	$ 2,300,000.00	1965	$ 17,541,041.27
		High	$ 18,056,954.25
		Low	$ 17,541,041.27
		Mean	$ 17,807,318.94
Phase 2 Renovation/Remodeling 1965-1970	$ 9,500,000.00	1965	$ 72,452,126.98
	$ 9,500,000.00	1966	$ 70,439,567.10
	$ 9,500,000.00	1967	$ 68,330,598.80
	$ 9,500,000.00	1968	$ 65,581,666.67
	$ 9,500,000.00	1969	$ 62,186,430.52
	$ 9,500,000.00	1970	$ 58,820,670.10
		High	$ 72,452,126.98
		Low	$ 58,820,670.10
		Mean	$ 66,301,843.36
Seismic Upgrade Project 2003-2004	$ 104,000,000.00	2003	$ 135,785,565.00
(Including approx. $49M in outstanding debt)	$ 104,000,000.00	2004	$ 132,263,335.00
		High	$ 135,785,565.00
		Low	$ 132,263,335.00
		Mean	$ 134,024,450.00
ESCO Energy Upgrade Projects	$ 3,600,000.00	2007	$ 4,171,125.97
			$ 4,171,125.97
Major Maintenance and Reserve Fund (MMRF) 2000-2016		2000-2016	$ 27,000,000.00
			$ 27,000,000.00
	ESTIMATED SUNK COSTS: 1903 - 1970	High	$ 158,026,593.04
	ESTIMATED SUNK COSTS: 1903 - 1970	Low	$ 137,856,944.24
	ESTIMATED SUNK COSTS: 1903 - 1970	Mean	$ 148,524,786.24
	ESTIMATED SUNK COSTS: 2000 - 2016	High	$ 166,956,690.97
	ESTIMATED SUNK COSTS: 2000 - 2016	Low	$ 163,434,460.97
	ESTIMATED SUNK COSTS: 2000 - 2016	Mean	$ 165,195,575.97
	ESTIMATED TOTAL SUNK COSTS: 1903 - 2016	**High**	**$ 324,983,284.01**
	ESTIMATED TOTAL SUNK COSTS: 1903 - 2016	**Low**	**$ 301,291,405.21**
	ESTIMATED TOTAL SUNK COSTS: 1903 - 2016	**Mean**	**$ 313,720,362.21**

Using Bureau of Labor Statistics Consumer Price Index Inflation Calculator:
http://www.bls.gov/data/inflation_calculator.htm
Accessed July 13, 2016

Cost of a new Structure: A Rough Order of Magnitude (ROM) cost estimate prepared by Rider Levett Bucknall for a new building of approximately the same square footage as currently exists in the courthouse is described later in this chapter as $619.83 per square foot. Based on recent similar new construction projects including the now-cancelled Snohomish County Courthouse replacement project, this figure would not provide for purchase of a site, the cost of the required underground parking structure that would be required, demolition and/or mothballing of the existing Courthouse building, and other allied costs that would be very significant. In 1998 the Courthouse Seismic Project (CSP) project team estimated a replacement courthouse located on Goat Hill at $219 million which in 2016 dollars amounts to over $323 million. This would not include tunnel or connection costs to the KCCF, or an anticipated underground parking garage. Another recent example is the U.S. General Services Administration (GSA) managed Federal Courthouse on Stewart Street which is a 600,000 square foot high rise building. The Maximum Allowable Construction Cost (MACC) for this project in 2004 was $200 million, inflated to 2016 would be over $255 million. Again, this cost does not include site costs, parking mitigation costs, design fees, or other allied costs.

Site Selection, Major Institution Master Planning, Zoning & Environmental Impact Statement: The City of Seattle has a process in place for major institutions to craft unique zoning regulations for their campuses by creating a Major Institution Master Plan (MIMP). Any new building construction in this area would trigger site selection zoning, MIMP, and State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) determination processes. This makes the delivery schedule for any new building action substantially longer than a repair/upgrade project, such as the work currently identified in the King County Courthouse Revitalization Project.

Other siting and zoning risks associated with this type of approach include trying to relocate the Work and Educational Release (WER) program and finding a location for the Facilities Management Division (FMD) shops. This could be a significant zoning and permit risk similar to the King County Community Corrections Division (CCD) situation with the Yesler Redevelopment. Another limiting regulatory factor is the glide slope ceiling created by Northwest Air Ambulance Service onto the Harborview Parking Structure. This limits heights of buildings on the Goat Hill site, and adjacent sites whose height could potentially impact the aircraft glide slope to the Helipad at Harborview Hospital. These potential impacts on building height are shown later in this chapter.

Availability of Adjacent Land: There is little available land to locate a new Courthouse where a cost effective connection to the existing King County Correctional Facility (KCCF) could be made. The only reasonable candidate is the property immediately south of the KCCF (called Goat Hill). Development of that property makes no sense unless King County addresses current and future needs of the KCCF.

Cultural Importance: Within a five block radius of the Courthouse there are several projects underway or completed that are restoring and upgrading systems in buildings of the same vintage and cultural importance as the courthouse. These projects include:

- Arctic Building (1913-1917): nine-story, 83,964 square foot office building designed by architect A. Warren Gould, the same architect as the original 1914-1916 County-City Building, rehabilitated and converted into a hotel in 2008. City of Seattle Landmark and listed in the National Register of Historic Places.
- Dexter Horton Building (1921-1924): fifteen-story, 336,355 square foot office building designed by architect John Graham, Sr., rehabilitated in 2001 and still in use as an office building. City of Seattle Landmark.
- Alaska Building (1903-1904): fifteen-story, 163,984 square foot office building, designed by St. Louis architects Eames and Young, rehabilitated and converted into a 262-room hotel in 2010. Listed in the National Register of Historic Places.
- Exchange Building (1929-1931): twenty-two story, 295,515 square foot office building designed by architect John Graham, Sr., currently being rehabilitated, including voluntary seismic upgrades. City of Seattle Landmark.

The County could have a difficult time proving that it is too burdensome for the County to save this building. Especially given all of the other issues above.

Furthermore, there are other cultural aspects to the King County Courthouse that should also be considered. King County residents get married there, civil disputes are settled there. The public serves on juries in this building, and people sometimes lose their liberty in this building.

Logistics: If the County were to build a new building, ideally when the project was complete, staff would relocate from the existing Courthouse into the new building. When relocation was complete, repurposing of the old building could occur. This would avoid temporary relocation altogether. These issues were presented in August 1998 to the Seismic Upgrade Project oversight committee. At that time, the committee felt that it was not productive to carry this line of thought beyond comparing the cost of the proposed Seismic Standalone project to a replacement on Goat Hill. They also thought it was not very logical to rebuild on the same spot. Costs would be further compounded by relocating the occupants, tripping an EIS, paying 4-5 years of rent, demolishing the courthouse, rebuilding it on the same spot, and then moving the occupants back onto the same site.

ALTERNATIVES ANALYSIS

Working with the King County Facilities Management Division (KCFMD) personnel, the project team has identified nine potential alternatives for either repairing, revitalizing, or replacing the existing King County Courthouse (KCCH) which are as follows:

Alternative 1: No Action
Alternative 2: Short-Term Repair Strategy
Alternative 3: Long-Term Repair Strategy
Alternative 4: Repairs/Upgrades/Alterations to the Existing KCCH
Alternative 5: Vacate and Mothball KCCH and Lease Space Elsewhere
Alternative 6: Vacate and Mothball KCCH and Purchase New or Existing Building
Alternative 7: Vacate and Mothball KCCH and Replace with New Building (Build-to-Suit)
Alternative 8: Demolish the KCCH and Replace with New Building on Existing Site
Alternative 9: Sell the KCCH and Construct New KCCH on New Site

Alternative 1: No Action
The 'No Action' alternative would cause deferred and backlog maintenance levels to increase above already high levels. Costs are already beyond the Major Maintenance and Repair Fund (MMRF) ability to pay. Some systems in the building are reaching a point where emergency repairs would probably be required at some point in the near future, disrupting County operations. With some systems now far beyond industry standard replacement cycles, a failure of any of these systems would require total replacement on an emergency replacement basis. This will be expensive, as the County will lose its market leverage under this scenario, with the result that the facility may be out of service for an extended period. Under this alternative, risks continue to increase.

Estimated Budget: Current rate of Major Maintenance and Reserve Fund (MMRF) expenditures, approximately $1,687,500 or more per year over the past sixteen years, though this amount could fluctuate.

Estimated Timeline for Implementation: From present until indefinitely

Alternative 2: Short-Term Repair Strategy
A short term strategy would involve repairs to the facility on a smaller scale. The highest priority repairs would be undertaken first. King County Facilities Management Division (KCFMD) personnel has indicated to the project team that some projects are already partially funded by Council through the Major Maintenance and Repair Fund (MMRF). However, KCFMD advised the project team that most projects are only partially funded and are incomplete due to lack of funding. A short term strategy would continue these projects under the current scenario and could include other potential projects as well.

In the immediate short term it is recommended that several important projects be completed including:

- **Mechanical/HVAC**
  - Installation of elevator machine room cooling (Priority 4: reference Section 5.1 of this report)
  - Provide adequate cooling in all telecommunications rooms (Priority 4: reference Section 5.1 of this report)
- **Electrical**
  - Planning, design, and implementation for replacement of the vertical electrical distribution system, including replacement of the 2 electrical bus duct (Priority 5: reference Section 5.1 of this report)
  - Replacement of the all 120/208 volt electrical distribution panels (only about 60% are funded for replacement at this time according to KCFMD). (Priority 5: reference Section 5.1 of this report)
  - Provide labels for all unlabeled electrical equipment (Priority 5: reference Section 5.1 of this report)
  - Arc flash analysis and electrical equipment labeling (Priority 5: reference Section 5.1 of this report)
- **Plumbing**
  - Replacement of domestic water system, including replacement of water main domestic water service and fire suppression (Priority 4: reference Section 5.1 of this report)
  - Replacement of plumbing fixtures throughout building (Priority 2: reference Section 5.1 of this report)
  - Installation of safe work platforms in plumbing chases (Priority 4: reference Section 5.1 of this report)
  - Installation of work area lighting in plumbing chases (Priority 4: reference Section 5.1 of this report)
- **Elevators**
  - Miscellaneous elevator repairs (Priority 4: reference Section 5.1 of this report)

Estimated Budget: Approximately $14,781,790.00 [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.1 of this report]

Estimated Timeline for Implementation: Some repair projects are currently in design phase, and the following is an estimate for design, procurement, and construction of the projects described above. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Design Procurement: 180 days
- Design: 200 days
- Const. Procurement: 180 days
- Construction: 250-365 days

Alternative 3: Long-Term Repair Strategy
A longer term repair strategy would require Council to accept more risk of catastrophic failure of a critical system; the consequence of disruption of County operations; a significant increase in the cost of repairs; and the potential for long term disruption of the use of the building. Taking a long term view of the problem would also require a steadily increasing and ongoing maintenance investment to keep the physical plant operational as systems are only replaced when failed, rather than as they become due for replacement.

Of greatest concern are the systems dating back to the 1960s renovation that are already more than 50 years old. These include the main electrical distribution system, heating and cooling systems, and the domestic water system and fixtures. For these systems, the risk of catastrophic failure is increasing with age. Some of these systems, such as the electrical bus duct (there are two such vertical distribution systems in the building) and major piping systems, are beyond their normal useful life by 2 times. Section 2.2 of this report contains an analysis and recommendations for the heating, ventilation, and air conditioning (HVAC) system in the building, and Section 2.3 of this report goes into greater detail about the electrical bus ducts and electrical distribution system.

Courthouse major building systems were evaluated in 2011 and an updated evaluation conducted again in 2014. Remaining system useful life was updated into a King County Facilities Management Division (KCFMD) database. In addition to the Observed Deficiencies and Cyclical Renewals noted in the MENG Facilities Condition Assessment (FCA), there are numerous code compliance issues both with building code and Americans with Disabilities Act (ADA) that need correction, as well as significant energy inefficiencies. A long term repair strategy should include projects to correct Observed Deficiencies and implement Cyclical Renewals of major building systems. This strategy should also repair remaining Observed Deficiencies noted the MENG survey.

In addition to the priority repair projects identified under Alternative 2 above, the potential long-term repairs could also include the upgrades to the heating, ventilation, and air conditioning (HVAC) system, cleaning and fire-rating the vertical HVAC riser shafts and chases, replacement of the motor control centers, and Americans with Disabilities Act (ADA) upgrades to public restrooms and the jury deliberation room restrooms.

According to the King County Facilities Management Division (KCFMD), at present levels of funding, the Major Maintenance and Repair Fund (MMRF) is not adequate to accomplish the required system replacements and renewals unless another source of funding is located, or a revitalization project is undertaken.

Estimated Budget: Approximately $58,459,267.00 [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.1 of this report]

Estimated Timeline for Implementation: The following is an estimate for design, procurement, and construction of the project described above. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Design Procurement: 180 days
- Design: 180 days
- Const. Procurement: 180 days
- Construction: 600-820 days

Alternative 4: Repairs/Upgrades/Alterations to the Existing KCCH
This option contemplates revitalization of the Courthouse. The intent of this option is to identify for repair or replacement aged building systems, improve energy performance and water conservation, upgrade code compliance triggered by a “Substantial Alteration” improvement project, and address indoor air quality issues, all while reducing ongoing long term high cost maintenance inputs. This proposed work scope does not and would not address programmatic changes to the building. The scope of work as defined in this report provides for upgrades to mechanical, electrical, plumbing, and other systems, and was derived from three sources: the 2011 MENG Facility Condition report, the Courthouse Systems analysis performed by the DLR Group in 2013, and the Courthouse Revitalization Proviso Response report prepared by Clark Design Group in 2016.

The 2016 Clark Design Group report identifies in greater detail, proposed work scope for this project, schedules for execution, and opinions regarding probable cost. The intent of the work scope identified in this option is to identify repairs necessary to provide for the long term viability of the Courthouse.

It should be noted that the building is a robust facility and has the potential to last many years, with an investment by Council. All three consultants noted that the facility, with investment, can continue to serve the Public interest for many years.

Impact to the County’s operations, duration of the work, and probable cost would be minimized if the revitalization project is completed as a single project. The impact, duration, and cost would be maximized if done as discreet individual projects over many years. A series of partially funded projects would substantially increase probable project cost and is difficult to predict with certainty.

A revitalization project would also examine the non-structural seismic risk to building occupants from materials and equipment falling from the building both inside and outside of the building. This hazard represents significant risk to occupants and the public and needs to be addressed. More information on non-structural seismic risk is located in a later chapter of this report.

In order to execute a project of this work scope, relocations would need to occur similar to those experienced in the Courthouse Seismic Project. Relocation of a large block of occupants could occur into the Yesler Building, which would serve as the “empty chair” for the revitalization project. With 66,000 square feet of space available in Yesler, a significant portion of the Courthouse could be made available for upgrades at any one time. By making more of the building available to contractors, this approach would decrease project risk and schedule.

A project of this type would be considered by the City of Seattle (the Authority Having Jurisdiction, or AHJ) as a “Substantial Alteration” and trigger code upgrades for the building. The 2016 Clark Design Group report studied the Courthouse for compliance with current Building Codes including life safety, mechanical, electrical, fire protection systems and identified those systems that would require updating to meet current code. The 2016 Clark Design Group report listed specific improvements to those systems to meet code. These preliminary recommendations are located in Chapter 2 of this report.

Estimated Budget: Approximately $170,623,839.00 [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.1 of this report]

Estimated Timeline for Implementation: The following is an estimate for design, procurement, and construction of the project described above. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Design Procurement: 200 days
- Design: 365 days
- Permitting: 440 days
- Const. Procurement: 320 days
- Construction: 900-1085 days

Alternative 5: Vacate and Mothball KCCH and Lease Space Elsewhere
Any option that contemplates relocation of the Courthouse should be carefully examined for zoning risk. Recent experience with King County Community Corrections Division (CCD) illustrates the difficulty of siting Work and Educational Release (WER) and similar functions in locations other than in the Courthouse where they currently are located.

With this option, a facility would be leased elsewhere. This approach requires active participation of the private sector to develop suitable facilities. Without new construction (beyond currently planned projects in the area) to support a lease, there are few, if any, contiguous 450,000 to 550,000 square foot office complexes available; no institutional options; none that offer the amenities and cultural significance of the Courthouse; and none that are proximal to the King County Correctional Facility (KCCF). A Request for Proposals (RFP) may identify opportunities in the marketplace for this option, although results for this type of approach for the King County Children and Family Justice Center were not successful. An RFP for market interest in leasing a facility of this type is beyond the scope of the currently authorized project.

The Courthouse is a facility with unique occupancy and use. Several current Courthouse tenants, such as Work and Educational Release (WER) and the Facilities Management Division (FMD) shops, would not fit well into typical triple-A office lease space currently available in the immediate area. Both these current Courthouse tenants would have to be relocated elsewhere. Work and Educational Release would be very difficult to relocate, and siting issues with King County Community Corrections Division (CCD) were a major obstacle for the Yesler Redevelopment Project. In addition, transfer of in-custody prisoners into and out of a leased, shared public building would be unacceptable from many points of view.

Leasing would also run contrary to the King County Real Asset Management Plan (RAMP) which promotes use of County-owned buildings. Another issue is the movement of large amounts of County revenue out of the County, such as rents paid to landlords versus rents paid back to the County, which would further strain cash flow and already badly underfunded General Fund resources.

Estimated Budget: The scope of work and cost estimate to mothball the existing King County Courthouse needs further study. The cost of renting space in another building is dependent on many factors and would need further study.

Estimated Timeline for Implementation: The following is an estimate for procurement and vacation/mothballing of the existing KCCH as described above. The construction duration is given as a range, dependent upon the final phasing plan.

- Lease space/tenant improvements: 200 days
- Mothball Process of Existing KCCH: 365 days

Alternative 6: Vacate and Mothball KCCH and Purchase New or Existing Building
In this option the building would be prepared for mothballing, and a new building either existing or built purchased to replace the Courthouse. Purchase of an existing facility presents many problems, some of which are mentioned above. There are no Courthouse buildings readily available nearby the current King County Correctional Facility (KCCF) for purchase. According to CBRE, a national real estate firm, recent purchase prices for triple-A office space in Seattle are exceeding $560 per square foot. Locating and closing a real estate transaction for an appropriate site for such a specialized function is unlikely, especially given the siting restraints required by proximity to the King County Correctional Facility (KCCF).

A major issue with this option is the inability of the County to benefit from the economic value of the Courthouse property if it was mothballed.

The economic value on the property could be used to defease the existing bond debt carried from the Courthouse seismic project. The ongoing cost of a mothballed Courthouse would add expense to the operating budget of the County for ongoing security. Compared to the cost of revitalizing the Courthouse, this option is not economically viable.

Estimated Budget: The scope of work and cost estimate to mothball the existing King County Courthouse needs further study. The cost of purchasing a new or existing building is dependent on many factors and would need further study.

Estimated Timeline for Implementation: The following is an estimate for procurement and vacation/mothballing of the existing KCCH as described above. The construction duration is given as a range, dependent upon the final phasing plan.

- Building procurement/tenant improvements: 280 days
- Mothball Process of Existing KCCH: 365 days

Alternative 7: Vacate and Mothball KCCH and Replace with New Building (Build-to-Suit)
Replacing the Courthouse on another site would have to address high replacement cost, parking requirements, satisfy severely restricted collocation criteria; be sited on currently available property in the local market; and preferably be located on existing County property. There would be several ways to deliver this type of project: a developer-delivered 63-20 lease-leaseback transaction such as the Chinook Building, a build to suit project using design-build delivery, a GCCM delivery done under RCW 39.10 Alternative Public Works, or a design-bid-build project.

The Goat Hill site immediately adjacent to the King County Correctional Facility (KCCF) could potentially house this type of facility.

Regardless of the delivery method selected by Council, any replacement project contemplated would have to go through Major Institutional Master Planning (MIMP) process or a Planned Community Development (PCD) planning process, Master Use Permitting (MUP), Environmental Impact Statement (EIS) reporting, and other lengthy administrative processes to address demolition and relocation of the Courthouse. The project team engaged the law firm of McCullough Hill Leary to outline the permitting time line for this option. Permitting this option is up to a 5 year process from the start of planning. The preliminary legal advice from McCullough Hill Leary is located in Section 1.3 of this chapter.

There would be two possible locations that could potentially best address the siting issues regarding proximity to the King County Correctional Facility (KCCF): the Goat Hill property and/or the vacant parcel east of the Martin Selig Building on 5th Avenue, or a combination of both.

The zoning analysis and building massing studies for the potential new construction scenarios are included in Section 1.2 of this report for reference. Legal advice on the potential redevelopment scenarios is included in Section 1.3 of this report for reference.

Estimated Budget: Approximately $383,313,505.00-702,324,707.00, depending on site and size of building [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.3 and 3.4 of this report]. The scope of work and cost estimate to mothball the existing King County Courthouse needs further study.

Estimated Timeline for Implementation: The following is an estimate for design and construction of new courthouse building and the vacation/mothballing of the existing King County Courthouse. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Site Rezone: 540-730 days
- Land Use Amendment: 365-540 days
- PCD Process: Unknown
- Design Procurement: 200 days
- Design: 365 days
- Const. Procurement: 365 days
- Construction: 840 – 1000 days
- Mothball Process: 120 days

Alternative 8: Demolish the KCCH and Replace with New Building on Existing Site
The Courthouse is the seat of King County Government and a designated historical building with both exterior and interior building features designated as historically significant. Demolition of this facility would be highly controversial and likely legally contested. Lawsuits or injunctions could delay this option by several years.

Replacement of the building on its current site does not make sense economically. Rental/lease cost for temporary location would make this option too expensive, and it would make no sense to move everyone out to a new location, only to move them all back into the same site. This option was studied during the Courthouse Seismic Project (CSP) and rejected as unworkable by the executive project oversight committee at that time.

The zoning analysis and building massing studies for the potential new construction scenarios are included in Section 1.2 of this report for reference. Legal advice on the potential redevelopment scenarios is included in Section 1.3 of this report for reference.

Estimated Budget: Approximately $689,060,135.00 [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.2 of this report]

Estimated Timeline for Implementation: The following is an estimate for design and construction of new courthouse building and the vacation/demolition of the existing King County Courthouse. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Design Procurement: 200 days
- Design: 365 days
- Const. Procurement: 365 days
- Lease Space/TIs: 200 days
- Existing KCCH Demo: 180 days
- Construction: 840 – 1000 days

Alternative 9: Sell the KCCH and Construct New KCCH on New Site
Selling the existing Courthouse would be expensive for the County. The marketability and re-use of the Courthouse building is extremely limited due to historic landmarked status of the building; hazardous material issues; lack of any parking; odd floor to floor heights which makes the building very inefficient; access problems on the upper floors; actual construction of the upper floors, particularly the old King County Jail portion; major code compliance issues; and an uphill battle to obtain a re-zone or change in use, especially given the lack of parking. There is also the impact of the current use of City Hall park, which would affect commercial marketability of a private sector re-use of the Courthouse.

Before any decision is made a full property appraisal should be performed. An appraisal may indicate that the raw land would be worth more than the land with the building.

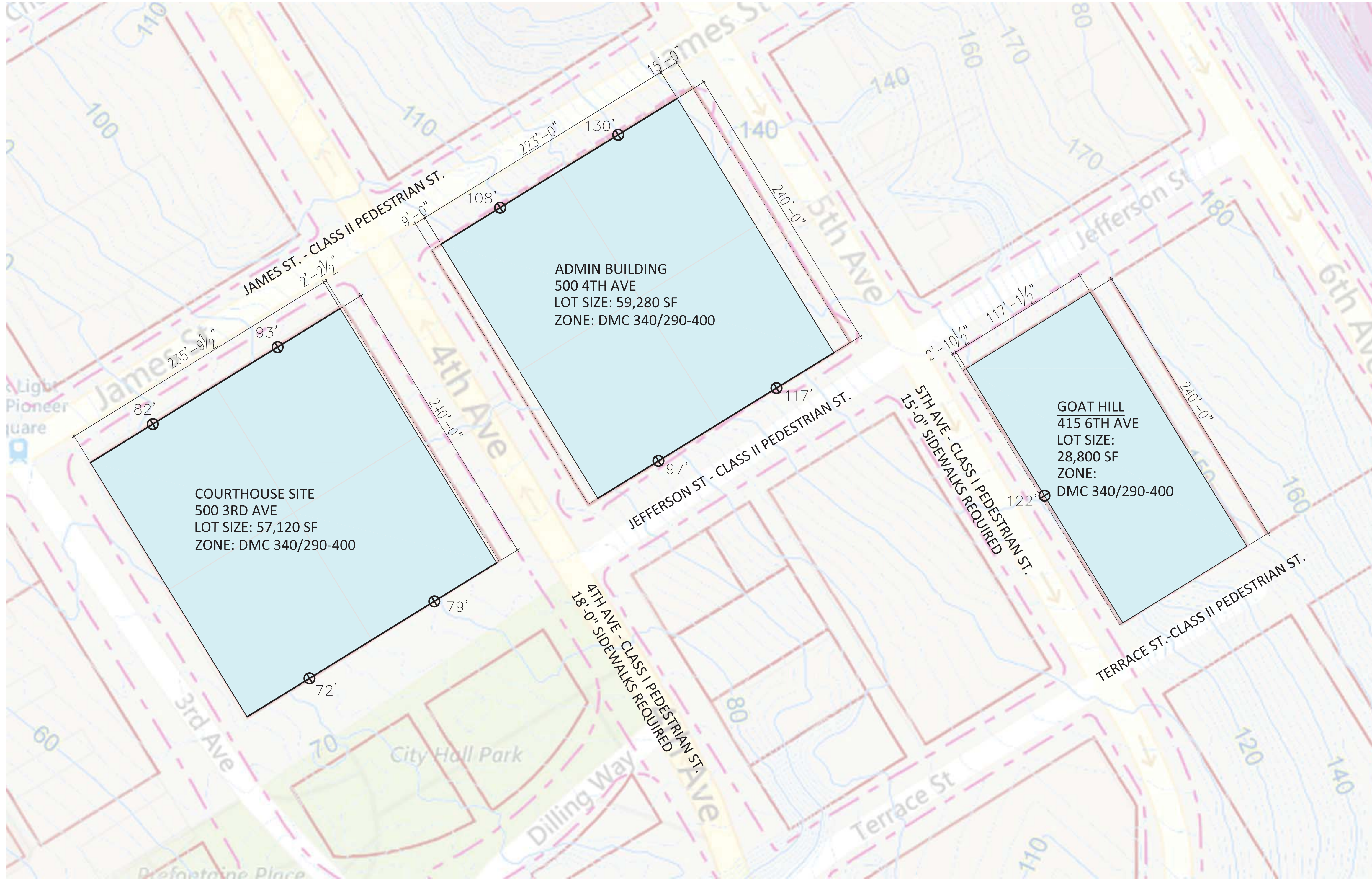
The zoning analysis and building massing studies for the potential new construction scenarios are included in Section 1.2 of this report for reference. Legal advice on the potential redevelopment scenarios is included in Section 1.3 of this report for reference.

Estimated Budget: Approximately $383,313,505.00-702,324,707.00, depending on site and size of building [per Rider Levett Bucknall Rough Order of Magnitude (ROM) cost estimate of June 2016, reference Section 3.3 and 3.4 of this report]. The scope of work and cost estimate to mothball the existing King County Courthouse needs further study.

Estimated Timeline for Implementation: The following is an estimate for design and construction of new courthouse building and vacation of the existing King County Courthouse. The construction duration is given as a range, dependent upon the final phasing plan. [Reference McMillen Jacobs Associates schedules in Section 6.1 of this report]

- Site Rezone: 540-730 days
- Land Use Amendment: 365-540 days
- PCD Process: Unknown
- Design Procurement: 200 days
- Design: 365 days
- Const. Procurement: 365 days
- Construction: 840 – 1000 days
- Mothball Process: 120 days

- All sites located within DMC 340/290-400 zone. 340' is the limit for non-residential uses.
- Buildable area has been revised to accomodate required sidewalk widths.
- Base FAR-5 & Max FAR-10 (Max FAR available through bonuses)
- Average grade plane shown per 23.86.006.E.3.b



SITE PLAN

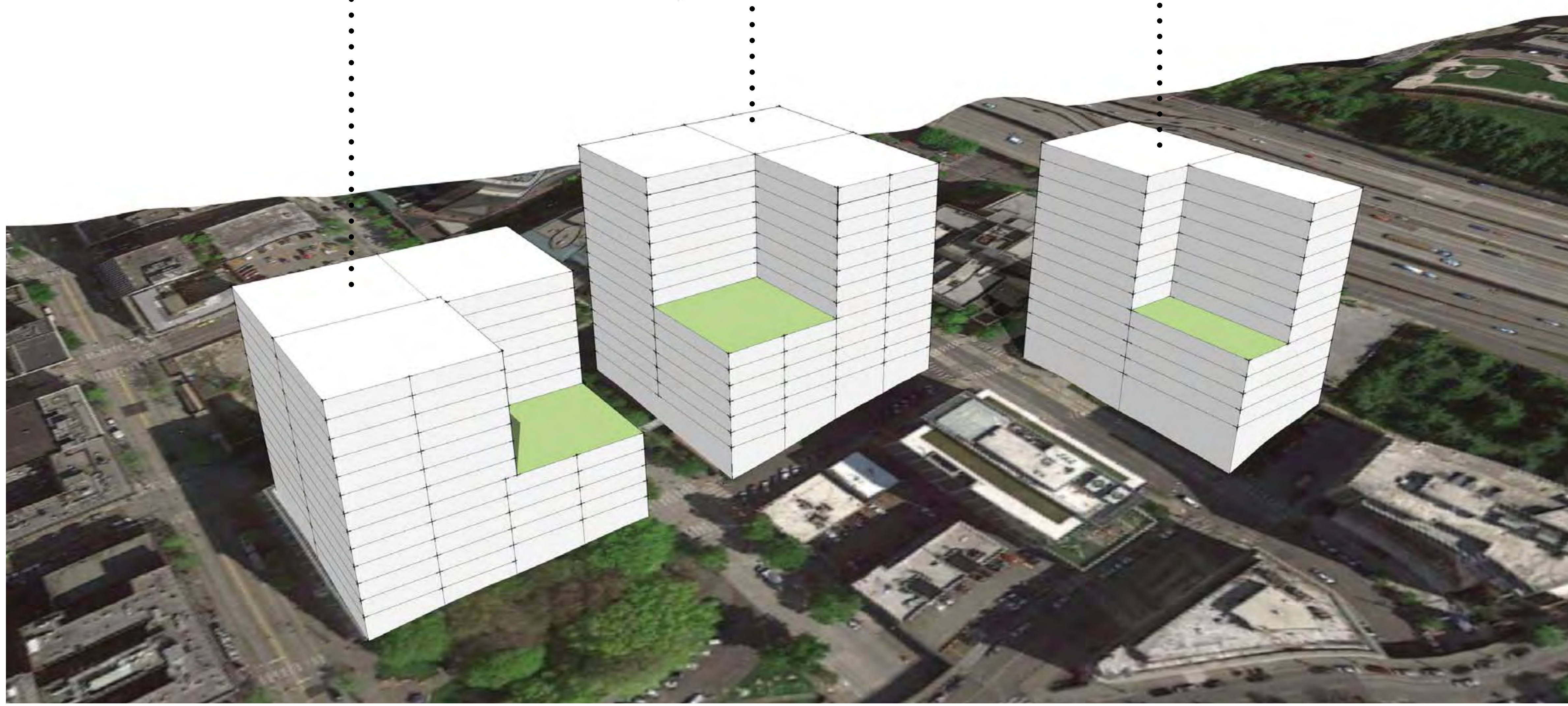
OPTION 1: MAX FAR

- Utilizes max FAR of 10
- Ground floor commercial not included in FAR
- 20 sf of open space required for 1,000 sf of gross office floor area if 85,000 or more. The open space is shown as reference and location may change
- All structures unaffected by helipath

FAR - 10
SITE AREA - 57,120
OFFICE AREA (FAR)- 571,200
COMMERCIAL AT GRADE- 56,640
OPEN SPACE REQUIRED- 11,424

FAR - 10
SITE AREA - 59,280
OFFICE AREA (FAR)- 592,800
COMMERCIAL AT GRADE- 53,520
OPEN SPACE REQUIRED- 11,856

FAR - 10
SITE AREA - 28,800
OFFICE AREA (FAR)- 288,000
COMMERCIAL AT GRADE- 28,080
OPEN SPACE REQUIRED- 5,760



OPTION 2: MAX BUILDING HEIGHTS

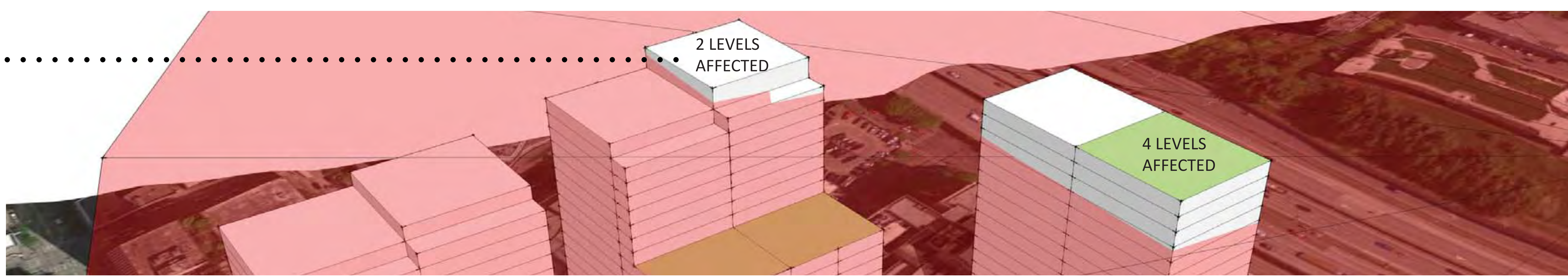
FAR - 18.6
SITE AREA - 57,120
OFFICE AREA (FAR)- 1,066,835
COMMERCIAL AT GRADE- 56,640
OPEN SPACE REQUIRED- 21,336

FAR - 16.5
SITE AREA - 59,280
OFFICE AREA (FAR)- 977,121
COMMERCIAL AT GRADE- 53,520
OPEN SPACE REQUIRED- 19,542

FAR - 19.7
SITE AREA - 28,800
OFFICE AREA (FAR)- 569,227
COMMERCIAL AT GRADE- 53,520
OPEN SPACE REQUIRED- 11,384

- Buildings shown at max building heights of 340’-0” above average grade plane.
- Exceeds maximum FAR. Utilizes Planned Community Development (PCD) to achieve greater FAR.
- Ground floor commercial not included in FAR
- Width & depth exceeding 200’ require max facade above 240’ to be 145’ along North/South axis
- 20 sf of open space required for 1,000sf of gross office floor area if 85,000 or more.

HELIPATH (RED) AFFECTS UPPER LEVELS



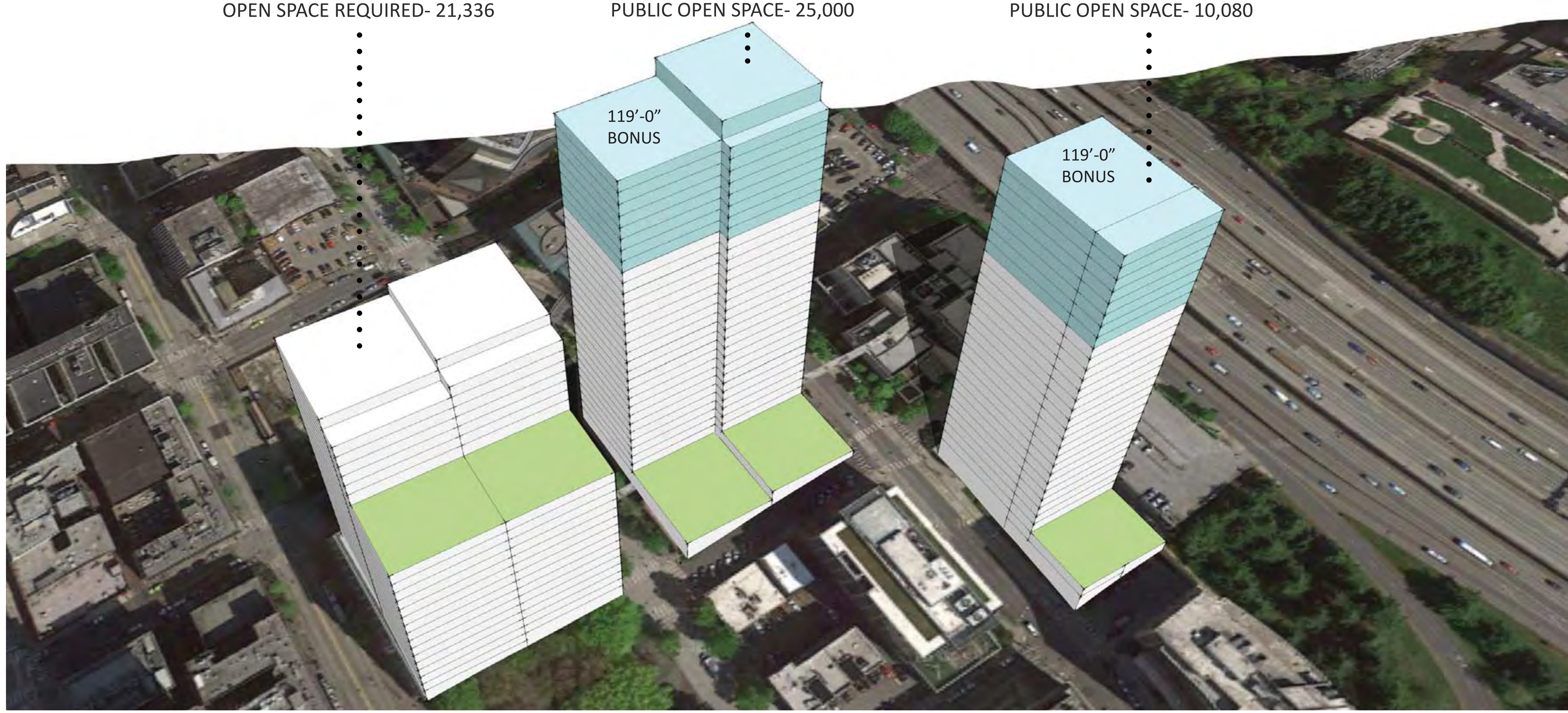
OPTION 3: OPEN SPACE HEIGHT BONUS

- Structure in DMC 340/290-400 that abuts a DOC1 zone can gain an additional 35% above 340’ height if comply with bonus-35% of lot area or 25,00 sf is public open space
- Exceeds maximum FAR. Utilizes Planned Community Development (PCD) to achieve greater FAR.
- Ground floor commercial not included in FAR
- Width & depth exceeding 200’ require max facade above 240’ to be 145’ along North/South axis
- 20 sf of open space required for 1,000sf of gross office floor area if 85,000 or more.

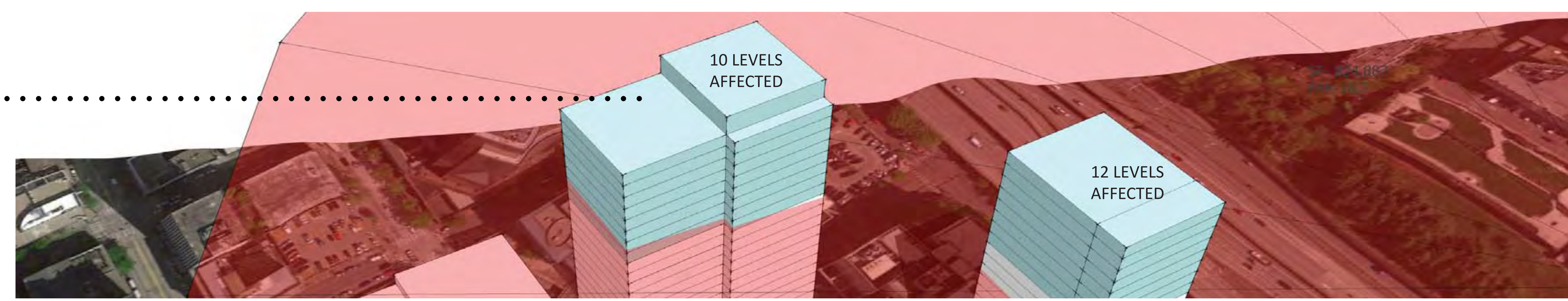
FAR - 18.6
SITE AREA - 57,120
OFFICE AREA (FAR)- 1,066,835
COMMERCIAL AT GRADE- 56,640
OPEN SPACE REQUIRED- 21,336

FAR - 14.4
SITE AREA - 59,280
OFFICE AREA (FAR)- 853,106
COMMERCIAL AT GRADE- 53,520
OPEN SPACE REQUIRED- 17,062
PUBLIC OPEN SPACE- 25,000

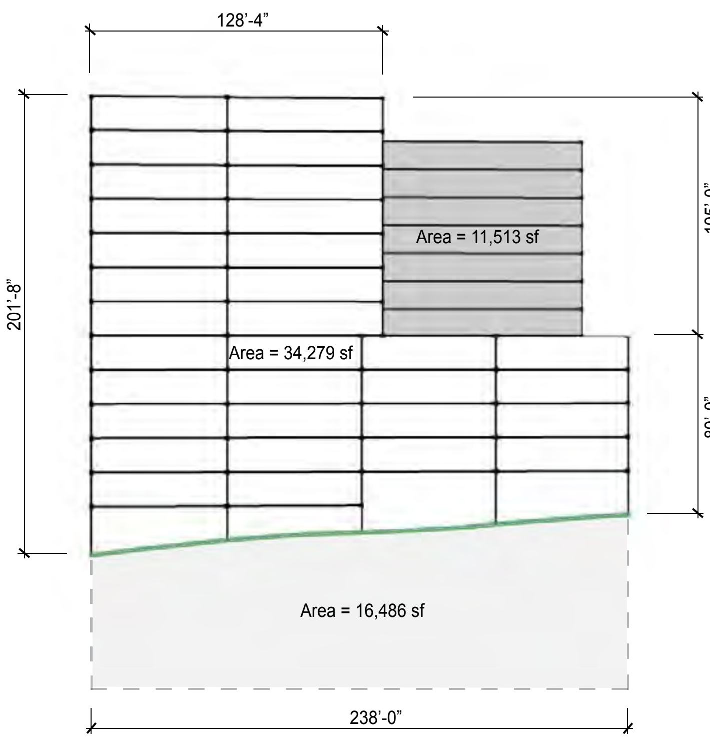
FAR - 18.0
SITE AREA - 28,800
OFFICE AREA (FAR)- 518,335
COMMERCIAL AT GRADE- 53,520
OPEN SPACE REQUIRED- 10,367
PUBLIC OPEN SPACE- 10,080



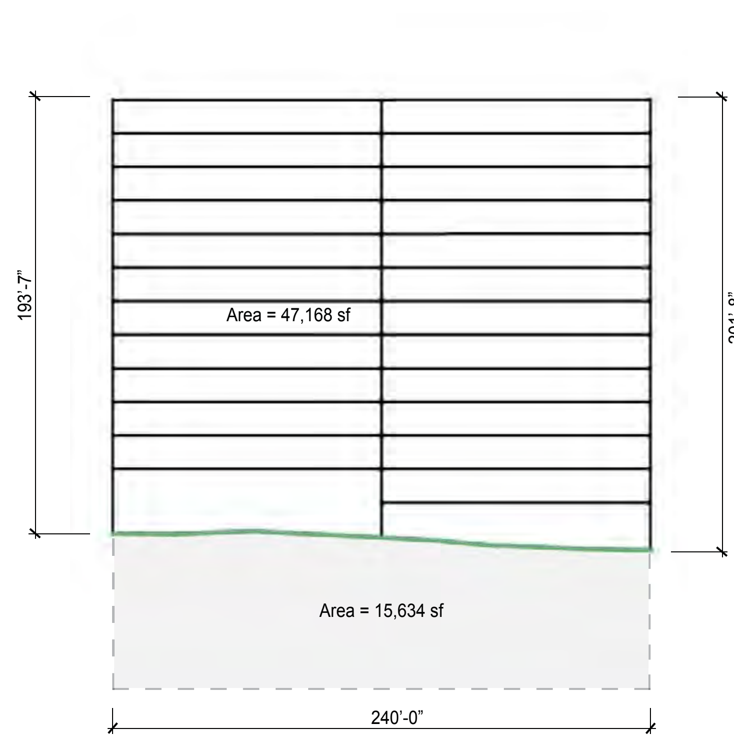
HELIPATH (RED) AFFECTS UPPER LEVELS



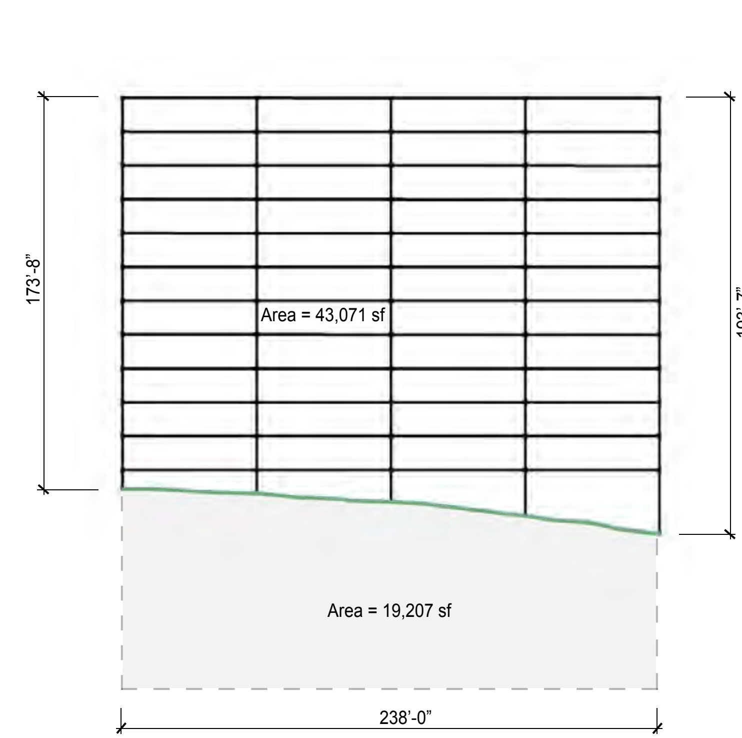
OPTION 1: MAX FAR - KING COUNTY COURTHOUSE (KCCH)



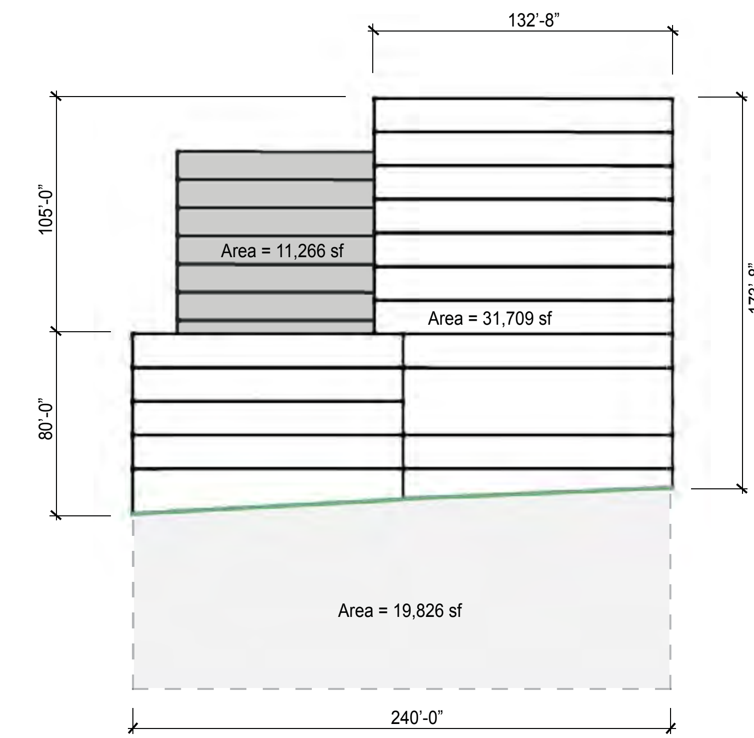
KCCH - South Elevation



KCCH - West Elevation



KCCH - North Elevation



KCCH - East Elevation

Building Level Summary:

Level P1-P4 (garage below grade):	228,480 sf
Level 1 (commercial at grade):	56,640 sf
Level 2-3 (garage above grade):	114,240 sf
Level 4-6:	171,360 sf
Level 7-13:	317,487 sf
Open Space:	11,765 sf
Roof Area:	45,356 sf
Total =	945,328 sf

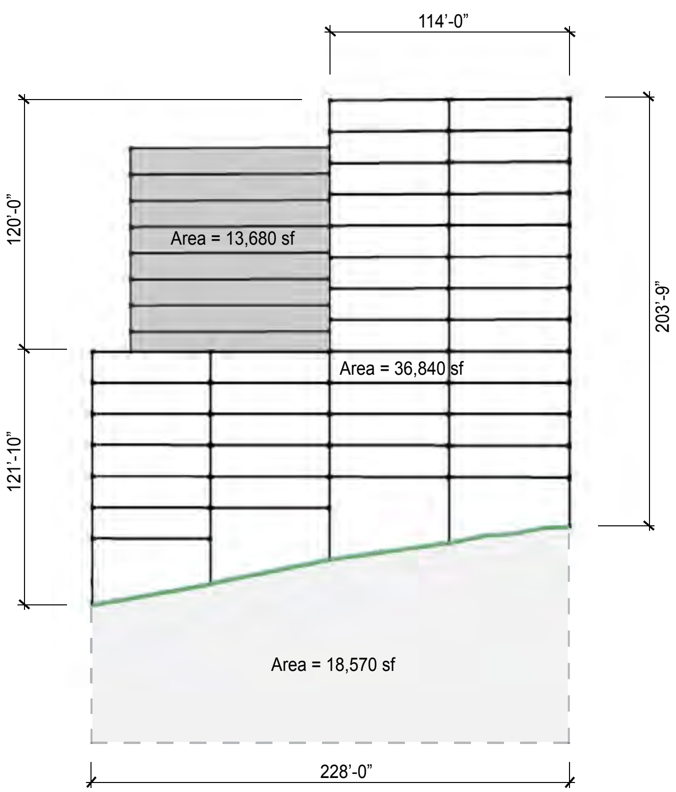
Building Facade Summary:

South Facade:	45,792 sf
West Facade:	47,168 sf
North Facade:	43,071 sf
East Facade:	42,975 sf
Total =	179,006 sf

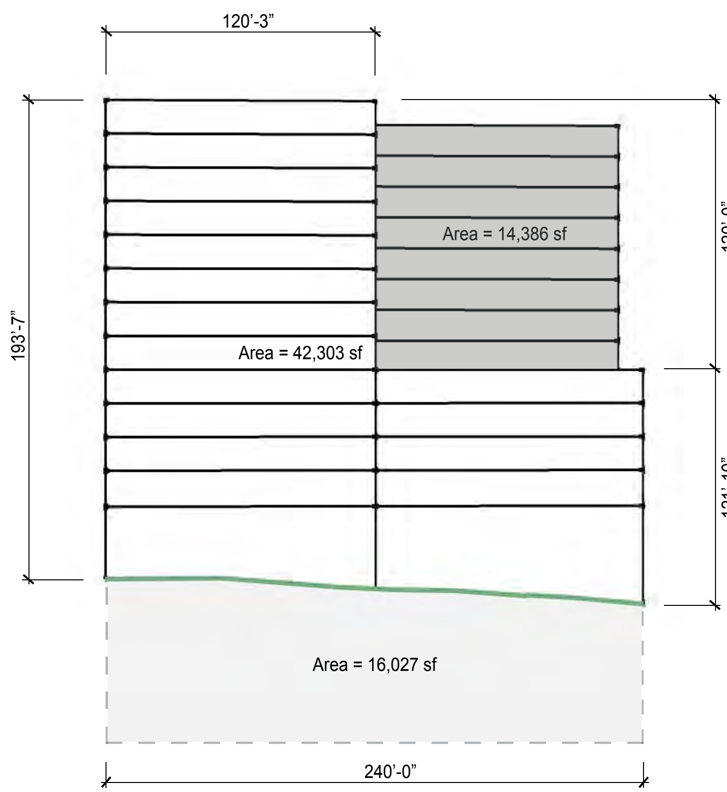
Building Shoring Summary:

South Facade:	16,486 sf
West Facade:	15,634 sf
North Facade:	19,207 sf
East Facade:	19,826 sf
Total =	71,153 sf

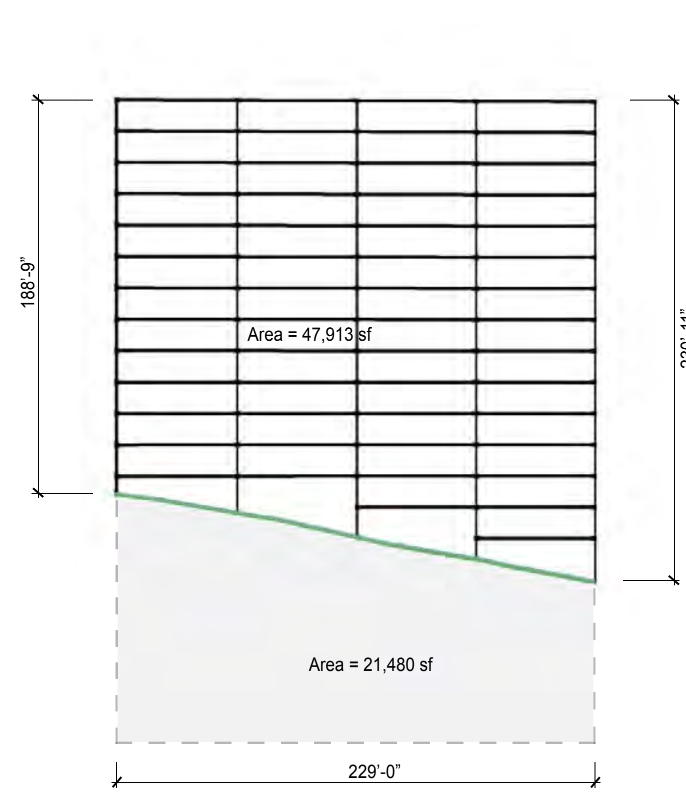
OPTION 1: MAX FAR - KING COUNTY ADMINISTRATION BUILDING (KCAB)



KCAB - South Elevation



KCAB - West Elevation



KCAB - North Elevation

KCAB - East Elevation

Building Level Summary:

Level P1-P4 (garage below grade):	219,322 sf
Level 1 (commercial at grade):	53,520 sf
Level 2-3 (garage above grade):	109,661 sf
Level 4-6:	219,322 sf
Level 7-13:	438,644 sf
Open Space:	13,653 sf
Roof Area:	41,178 sf
Total =	1,095,300 sf

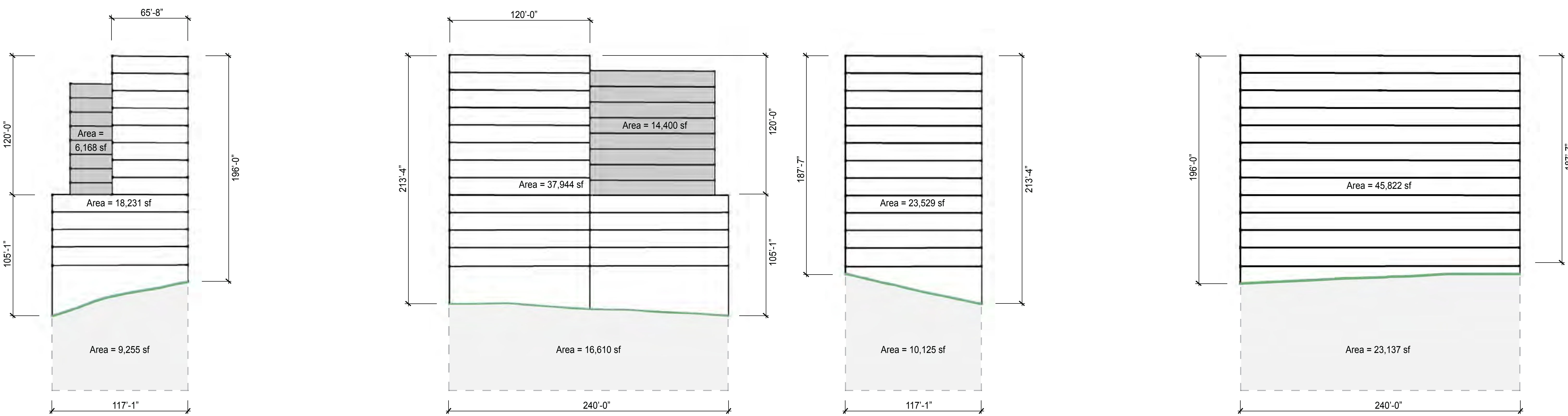
Building Facade Summary:

South Facade:	50,520 sf
West Facade:	56,689 sf
North Facade:	47,913 sf
East Facade:	46,777 sf
Total =	201,899 sf

Building Shoring Summary:

South Facade:	18,570 sf
West Facade:	16,027 sf
North Facade:	21,480 sf
East Facade:	25,949 sf
Total =	82,026 sf

OPTION 1: MAX FAR - GOAT HILL BUILDING (GHB)



KCAB - South Elevation

KCAB - West Elevation

KCAB - North Elevation

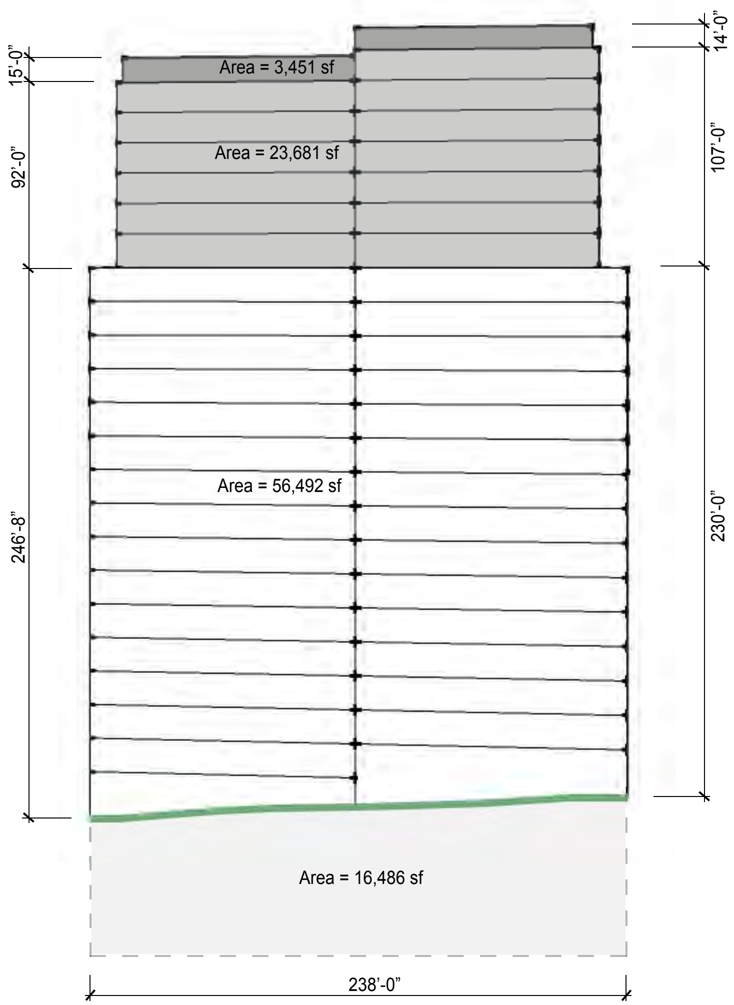
KCAB - East Elevation

Building Level Summary:	
Level P1-P4 (garage below grade):	112,440 sf
Level 1 (commercial at grade):	28,080 sf
Level 2-3 (garage above grade):	56,220 sf
Level 4-6:	84,330 sf
Level 7-14:	175,540 sf
Open Space:	6,168 sf
Roof Area:	21,943 sf
Total =	484,721 sf

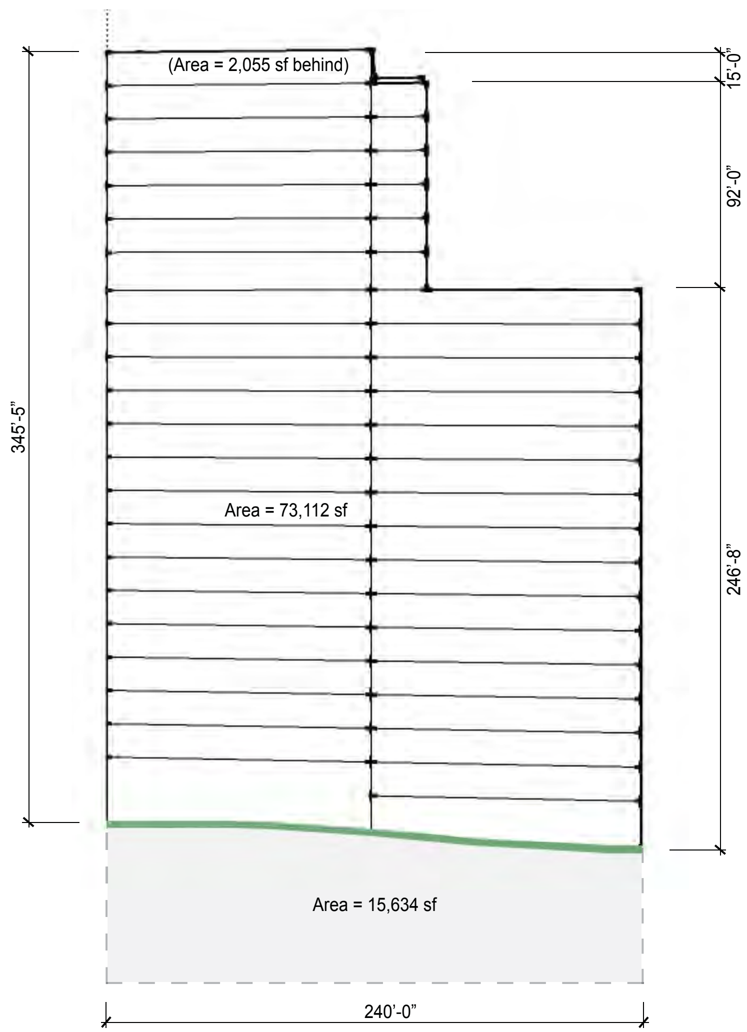
Building Facade Summary:	
South Facade:	24,399 sf
West Facade:	52,344 sf
North Facade:	23,529 sf
East Facade:	45,822 sf
Total =	146,094 sf

Building Shoring Summary:	
South Facade:	9,255 sf
West Facade:	16,610 sf
North Facade:	10,125 sf
East Facade:	23,137 sf
Total =	59,127 sf

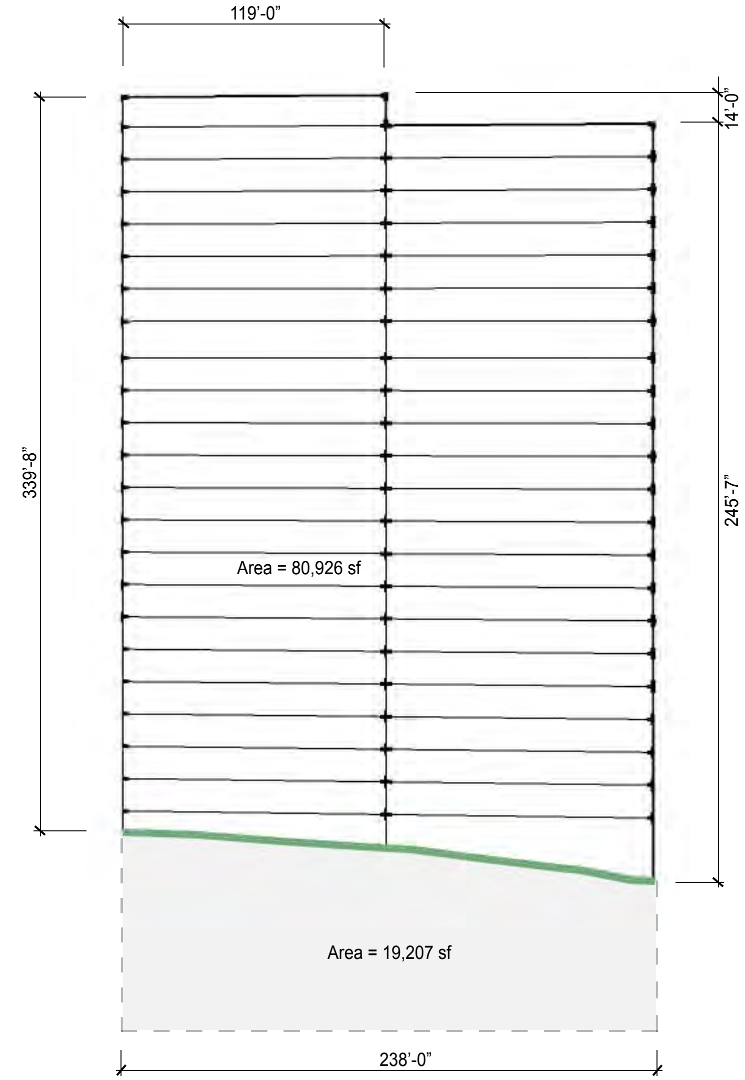
OPTION 2: MAX BUILDING HEIGHTS - KING COUNTY COURTHOUSE (KCCH)



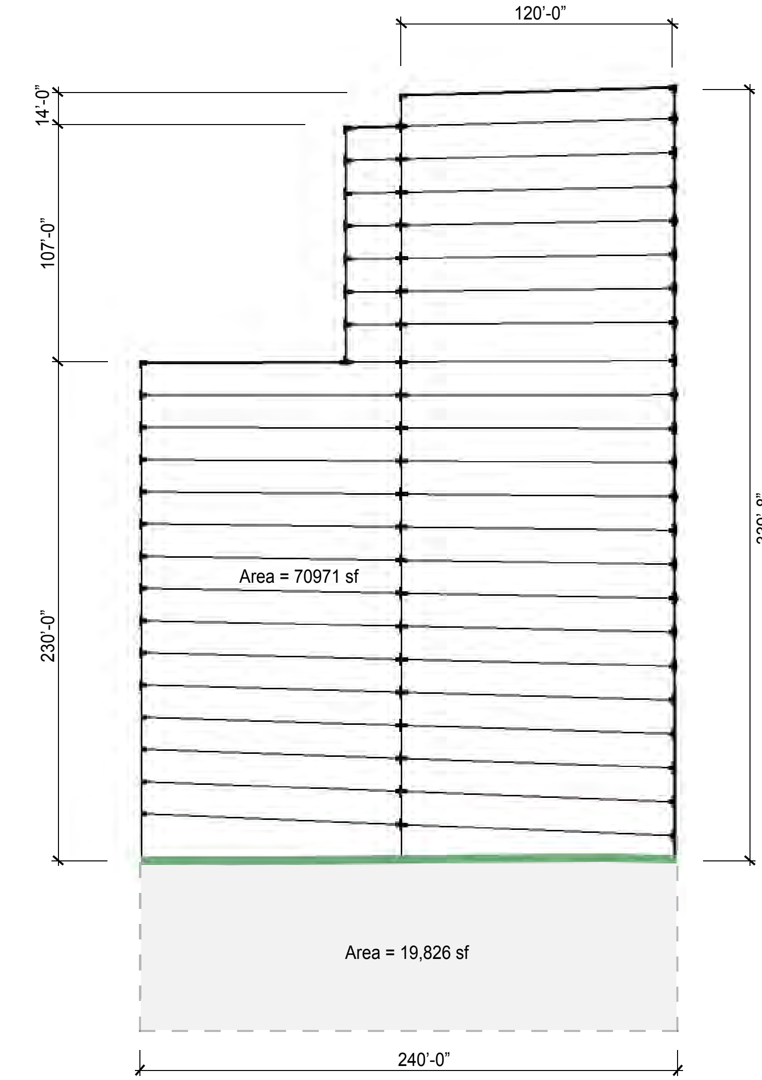
KCCH - South Elevation



KCCH - West Elevation



KCCH - North Elevation



KCCH - East Elevation

Building Level Summary:

Level P1-P4 (garage below grade):	226,560 sf
Level 1 (commercial at grade):	56,640 sf
Level 2-3 (garage above grade):	113,280 sf
Level 4-16:	736,320 sf
Level 17-22:	204,180 sf
Level 23:	31,055 sf
Level 24:	14,280 sf
Open Space:	22,610 sf
Roof Area:	34,030 sf
Total =	1,438,955 sf

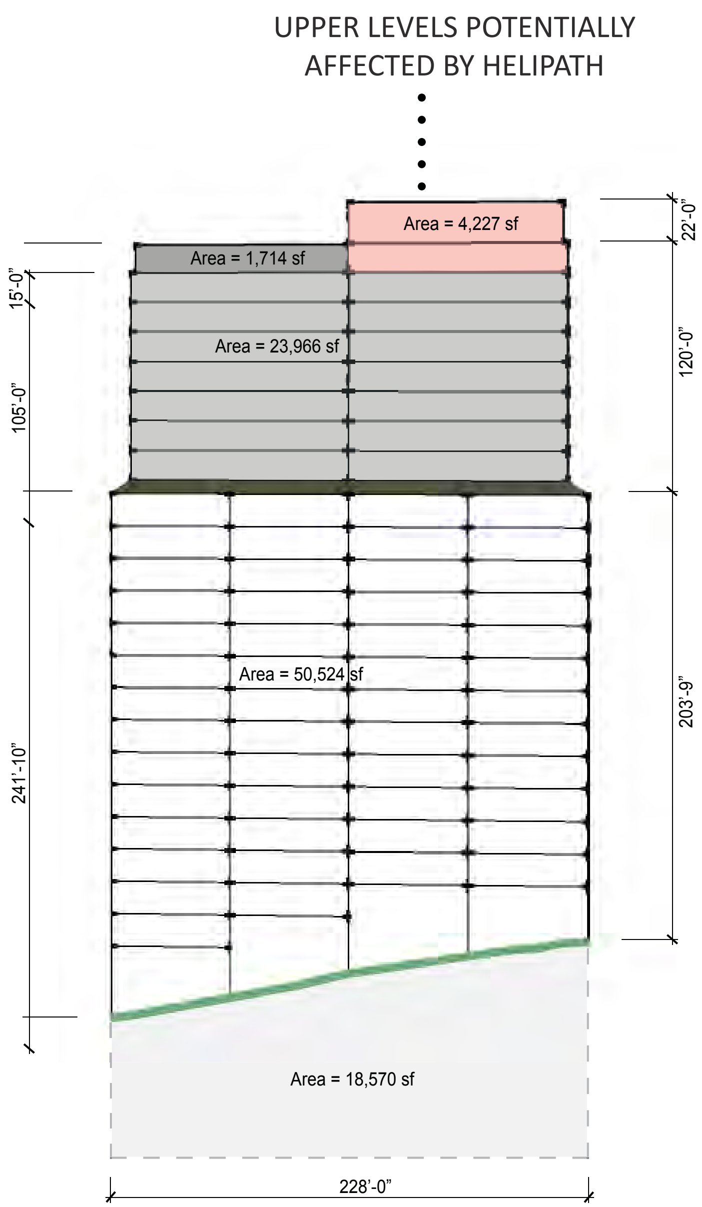
Building Facade Summary:

South Facade:	83,624 sf
West Facade:	75,167 sf
North Facade:	80,926 sf
East Facade:	70,971 sf
Total =	310,688 sf

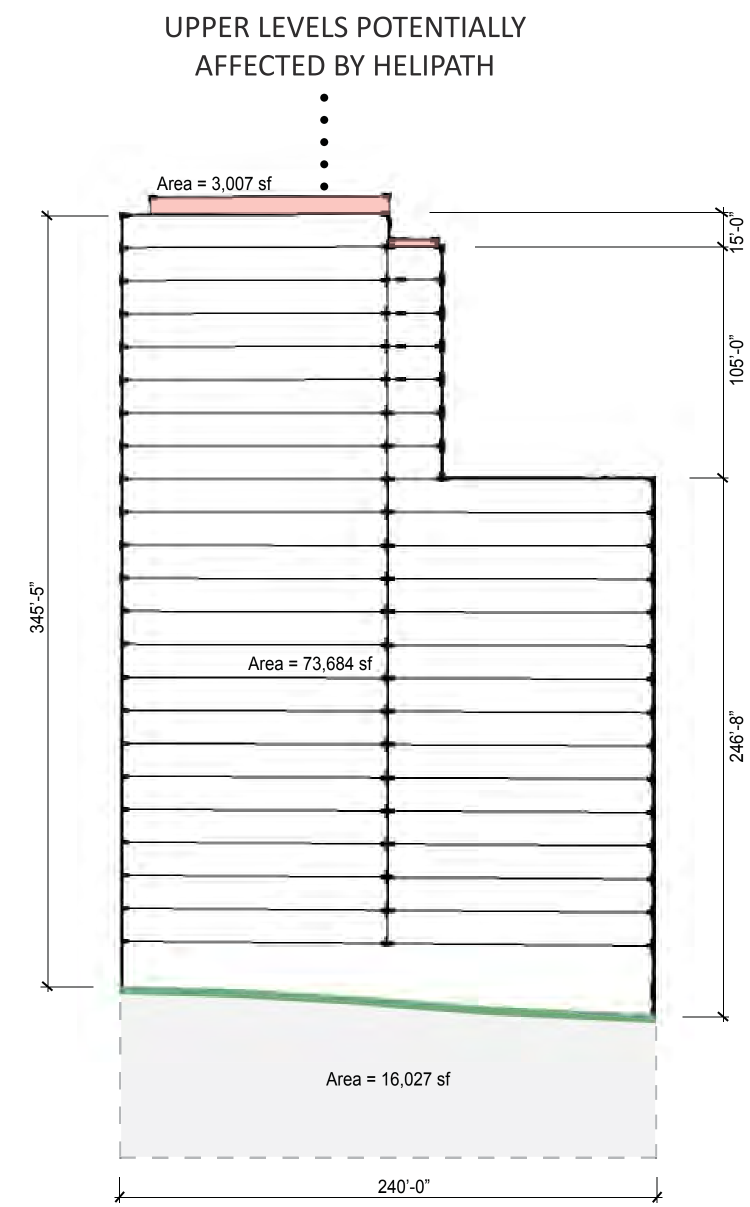
Building Shoring Summary:

South Facade:	16,486 sf
West Facade:	15,634 sf
North Facade:	19,207 sf
East Facade:	19,826 sf
Total =	71,153 sf

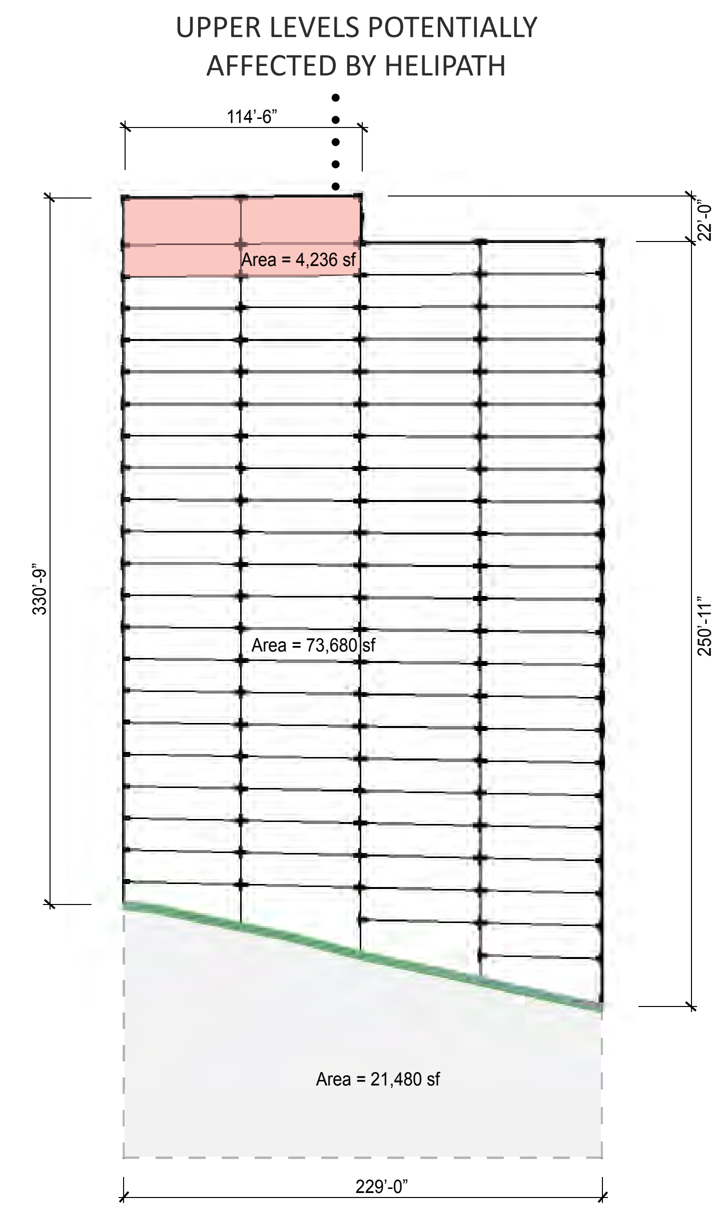
OPTION 2: MAX BUILDING HEIGHTS - KING COUNTY ADMINISTRATION BUILDING (KCAB)



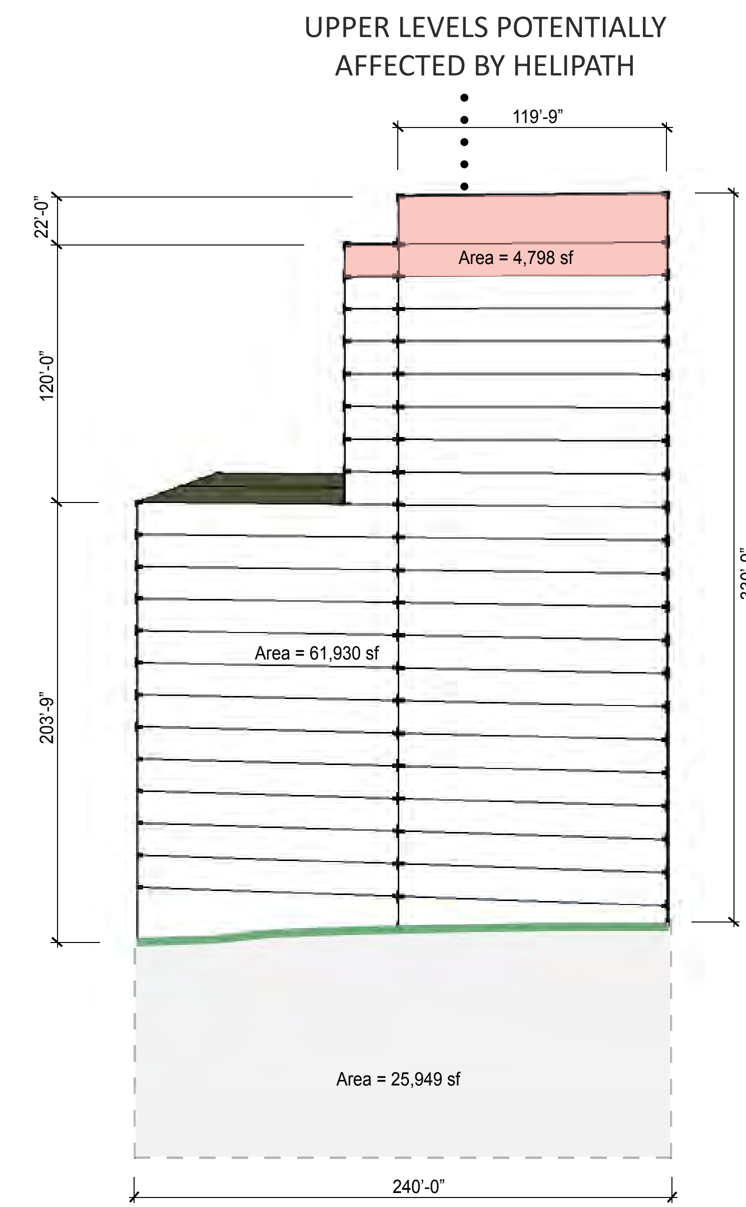
KCAB - South Elevation



KCAB - West Elevation



KCAB - North Elevation



KCAB - East Elevation

Building Level Summary:

Level P1-P4 (garage below grade):	214,080 sf
Level 1 (commercial at grade):	53,520 sf
Level 2-3 (garage above grade):	107,040 sf
Level 4-15:	642,240 sf
Level 16-22:	222,257 sf
Level 23:	12,444 sf
Open Space:	21,769 sf
Roof Area:	31,751 sf
Total =	1,305,101 sf

Building Facade Summary:

South Facade:	76,204 sf
West Facade:	73,684 sf
North Facade:	73,680 sf
East Facade:	61,930 sf
Total =	285,498 sf

Building Shoring Summary:

South Facade:	18,570 sf
West Facade:	16,027 sf
North Facade:	21,480 sf
East Facade:	25,949 sf
Total =	82,026 sf

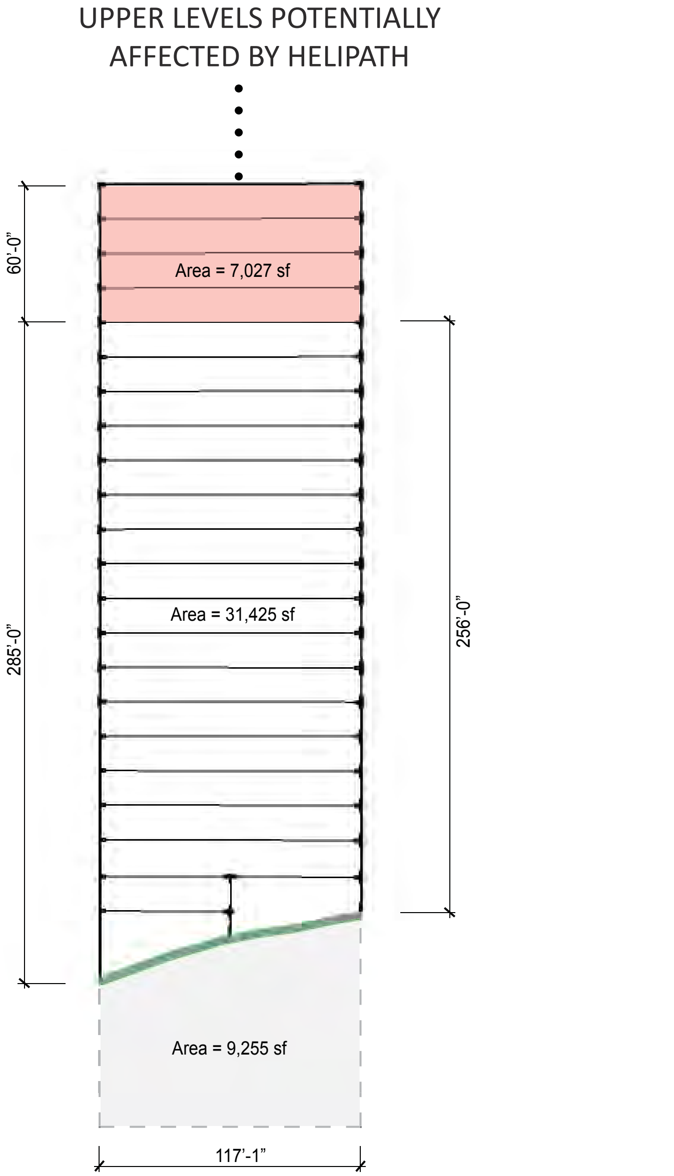
Building Level Summary with added potential floors:

Level 23:	15,200 sf
Level 24:	12,404 sf
Total =	27,604 sf

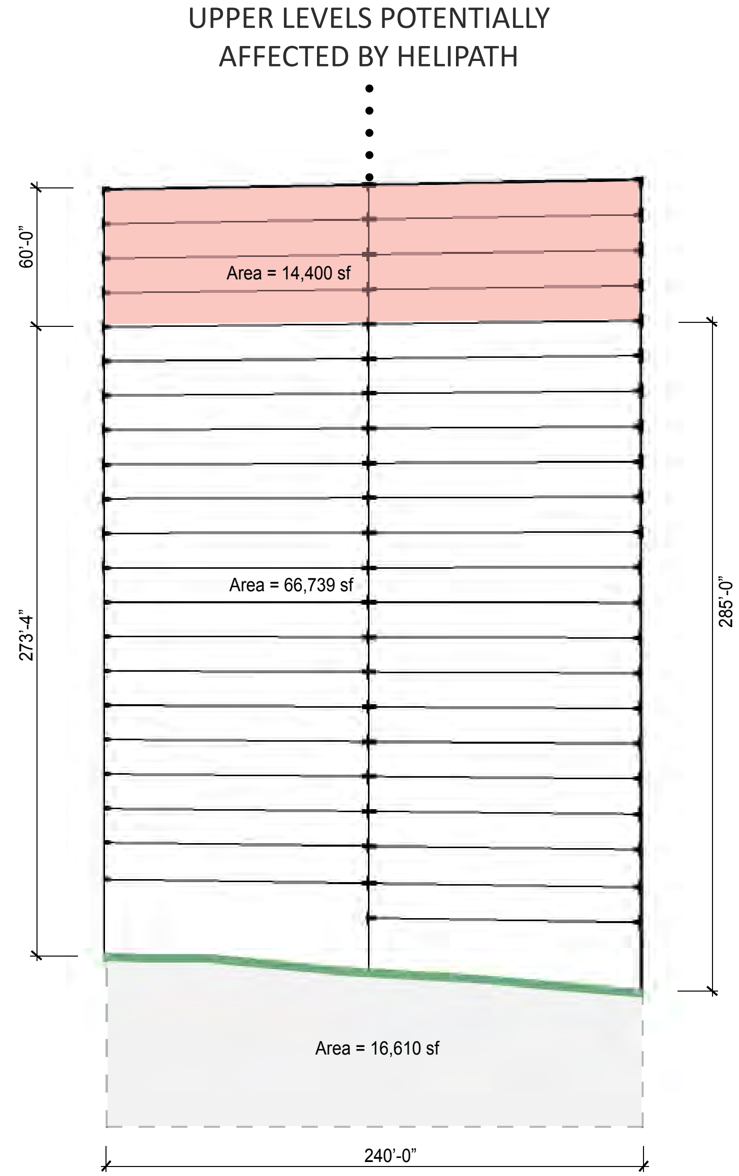
Building Facade Summary with added potential floors:

South Facade:	4,227 sf
West Facade:	3,007 sf
North Facade:	4,236 sf
East Facade:	4,798 sf
Total =	310,688 sf

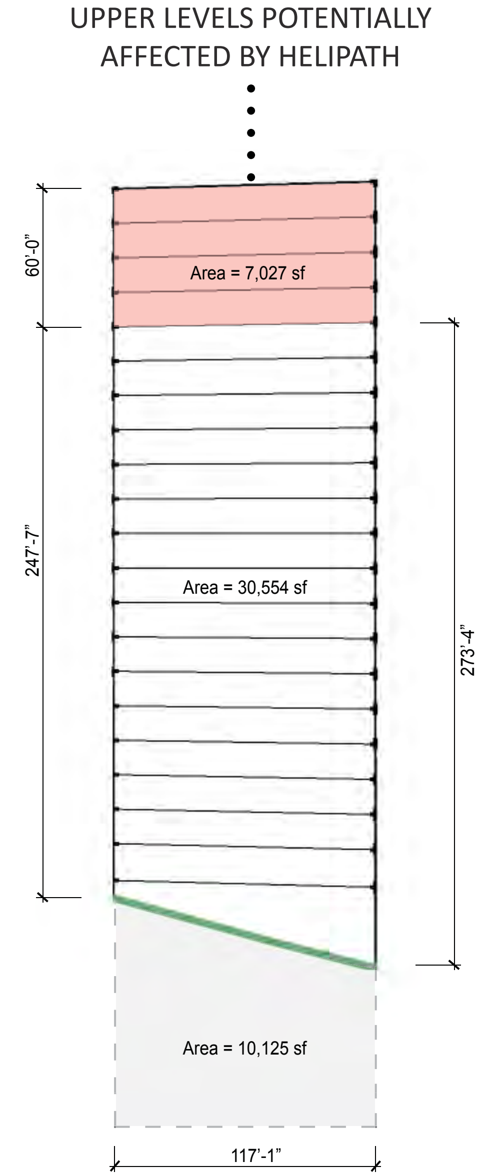
OPTION 2: MAX BUILDING HEIGHTS - GOAT HILL BUILDING (GHB)



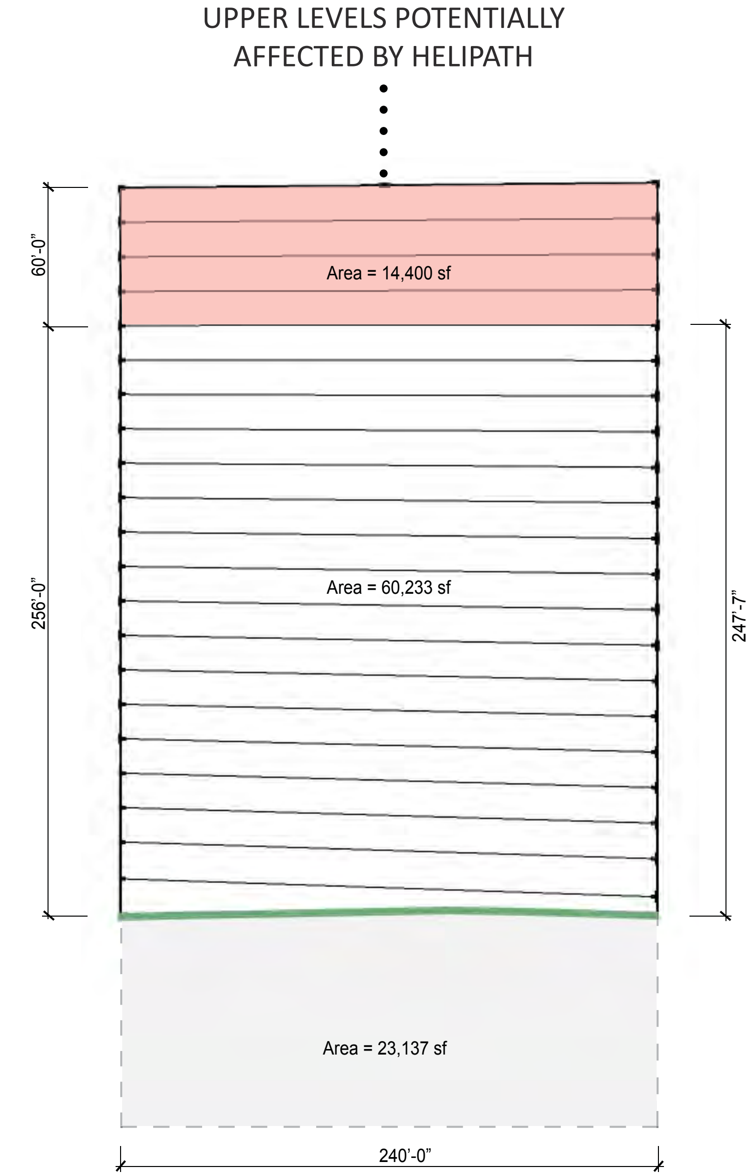
KCAB - South Elevation



KCAB - West Elevation



KCAB - North Elevation



KCAB - East Elevation

Building Level Summary:

Level P1-P4 (garage below grade):	112,440 sf
Level 1 (commercial at grade):	28,110 sf
Level 2-3 (garage above grade):	56,220 sf
Level 4-18:	421,650 sf
Open Space:	14,055 sf
Roof Area:	14,055 sf
Total =	646,530 sf

Building Facade Summary:

South Facade:	31,425sf
West Facade:	66,739 sf
North Facade:	30,554 sf
East Facade:	60,233 sf
Total =	188,951 sf

Building Shoring Summary:

South Facade:	9,255 sf
West Facade:	16,610 sf
North Facade:	10,125 sf
East Facade:	23,137 sf
Total =	59,127 sf

Building Level Summary with added potential floors:

Level 19-22:	112,440 sf
Total =	112,440 sf

Building Facade Summary with added potential floors:

South Facade:	7,027 sf
West Facade:	14,400 sf
North Facade:	7,027 sf
East Facade:	14,400 sf
Total =	42,854 sf

McCullough Hill Leary, PS

MEMORANDUM

TO: Scott Clark

FROM: Jessie Clawson

DATE: June 28, 2016

RE: King County Courthouse redevelopment
Zoning and Entitlement Review

Clark Design Group has been asked to review potential options associated with replacement ore rebuild of the King County Courthouse. Clark has been aked to look at potential redevelopment on one of three County-owned sites:1) the Administration Building (500 4th Avenue), 2) the Courthouse Building (516 3rd Avenue), and 3) the Goat Hill building (425 5th Avenue) (together, the "Properties"). The memorandum is based on a general review of the Properties and the City of Seattle land use code. It is also based on a review of the massing options and zoning analysis prepared by Clark Design Group.

The Properties.

- **Zoning and Allowed Uses Analysis.**The Properties are zoned DMC 340/290-400. The maximum height for commercial uses, which would include the courthouse use, is 340 feet. The base FAR is 5, the maximum FAR is 10. In order to obtain the maximum FAR of 10, the FAR between 5 and 10 must be "purchased" through the payment of a combination of affordable housing incentive zoning fees, Transferable Development Rights, and Regional Development Credits. SMC 23.49.011.A. Automobile parking is not required for any use downtown. SMC 23.49.019. Street level uses (retail, restaurant, etc) will be required on some of the street frontages, depending on the applicable street.

Obtaining Additional FAR. It is our understanding that in order to obtain the amount of floor area necessary to accommodate courthouse functions, the FAR for the Project would need to exceed the 10 maximum FAR permitted under the Land Use Code in the DMC 390/290-400 zone. Clark has asked us to provide information related to options as to how the FAR limits could be expanded to accommpdate the needed courthouse FAR. The following options may allow additional FAR on the site:

- **Site Specific Rezone.** Two zones allow more height and FAR than the currently applicable zone on the Properties. The DOC1 zone allows unlimited height and a base FAR of 6, maximum FAR of 20. The DOC2 zone allows a height limit of 600 feet and a base FAR of 5, maximum FAR of 14. SMC 23.49.011 Table A. The rezone process would likely be associated with a Contract Rezone, which would review the specific project through the Master Use Permit process, and the City Council would act at the end of the process to

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approve the zoning and the project. Timing for a contract rezone can vary, but generally takes 18-24 months. Contract rezones involve a high degree of risk due to a) much money is spent on design and Master Use Permit review and no certainty regarding the rezone may be had until the end; b) a contract rezone is a quasi-judicial proceeding and therefore the City Council cannot be lobbied; c) although the Council may not be lobbied related to their decision, this will certainly be a very politicized project.

- **A Land Use Code Amendment.** A Land Use Code amendment could be obtained to amend the existing zoning to allow for a courthouse use to be exempt from FAR limitations (thereby allowing the courthouse to fit within the 340' height limit with no FAR limit). The Land Use Code amendment is a legislative decision made by the City Council. As a legislative decision, the City Council may be lobbied. A Land Use Code amendment can occur fairly quickly when consensus has been reached between the Mayor and the Council, although a public hearing will need to be held. SEPA review of the amendment would also need to be completed. Once the code amendment was passed, the Project would undergo typical Master Use Permit/Design Review which can last approximately 12-18 months.

- **Planned Community Development (PCD)**: PCD's are authorized under the downtown code. The PCD process is intended to provide longer-term entitlement for larger projects designed to be developed on a phased basis. Portions of a project may exceed the floor area ratio permitted in the zone or zones in which the PCD is located, but the maximum chargeable floor area allowed for the PCD as a whole shall meet the requirements of the zone or zones in which it is located—thus, the three sites could be combined into one to allow for one site to maximize its FAR potential. PCD approval is purely administrative, and does not require any special public review or City Council action. No PCD has been approved in the last 20 years (since design review commenced or the new code was adopted). However, a PCD is currently under review by SDCI for Urban Visions' "S" Development in the Staidum East area of South Downtown. The practical components of PCD review and approval are:
    - *Design Review*: The Design Review Board (DRB) would review the PCD. The result of this review would be preparation of a "design handbook" for the PCD (rather than approval of individual buildings). Future master use permits (MUPs) for individual buildings would be reviewed by SDCI staff against the criteria of the design handbook. As long as the individual project was consistent with the design handbook, no additional DRB review of that project would be required. If the individual building did not conform to the design handbook in some fashion, then DRB review of that individual project would be required. DPD staff would make the determination regarding the need for additional DRB review.
    - *SEPA Review*: An environmental impact statement (EIS) would be prepared for the PCD. Following PCD approval, as long as individual building proposals were consistent with the project EIS, no further SEPA review would be required. In some cases, an EIS addendum – which is an expedited review process – may be prepared for individual buildings.

June 30, 2016
Page 3 of 3

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- *Project Mitigation*: The PCD approval process would also identify, by phase, the necessary mitigation for the overall project. Absent changed conditions in the future, this mitigation assessment should provide predictability for the life of the PCD.

- *Exceptions to Development Standards*. A PCD approval allows the applicant to vary certain development standards in the Code, thus allowing greater flexibility in design. Most important, allowable FAR may be determined based upon the entire PCD area (ignoring intervening streets and alleys), rather than on a site-by-site basis. This mechanism effectively allows the transfer of density from block to block within a PCD, without the need to satisfy other Code requirements for transfer of development rights.

- *Extended Vesting*: MUP approvals are only valid for a maximum of 5 years. PCD approval provides the opportunity to establish a longer vesting period, up to 15 or 20 years or more.

- *Construction Permitting*: Under the PCD process, individual building projects – assuming they are consistent with the design handbook and the EIS – would not require additional design review or SEPA review. As such, they are eligible for a "Type I" MUP approval, which: (i) requires no public notice; (ii) does not require posting of the "large white sign"; (iii) has no comment period; and (iv) is not appealable to the Hearing Examiner. Type I MUP approval can occur as part of construction permit approval, meaning that – once PCD approval is obtained – individual buildings can go directly to construction permitting (assuming they are consistent with the design handbook and the EIS). This provides a several-month time advantage over competing projects that are required to undergo the normal "Type II" MUP review (i.e., large white sign, public notice, comment period, appeal period).

- *Public Benefits*. A PCD must adequately provide three or more "public benefits" from a list provided in the Code, as determined by DPD. A public meeting is held at the outset of the PCD review process, for the purpose of taking input on the prioritization of public benefits for the PCD. The list of "public benefits" is set forth in SMC 23.49.016.F.1:

  a. low-income housing,
  b. townhouse development,
  c. historic preservation,
  d. public open space,
  e. implementation of adopted neighborhood plans,
  f. improvements in pedestrian circulation,
  g. improvements in urban form,
  h. improvements in transit facilities, and/or
  i. other elements that further an adopted City policy and provide a demonstrable public benefit.

CHAPTER 2

List of Possible Projects

View of ducts and piping inside vertical mechanical, electrical, and plumbing shaft. CDG photo, March 31, 2016.

View of space inside vertical mechanical, electrical, and plumbing shaft. CDG photo, May 31, 2016.

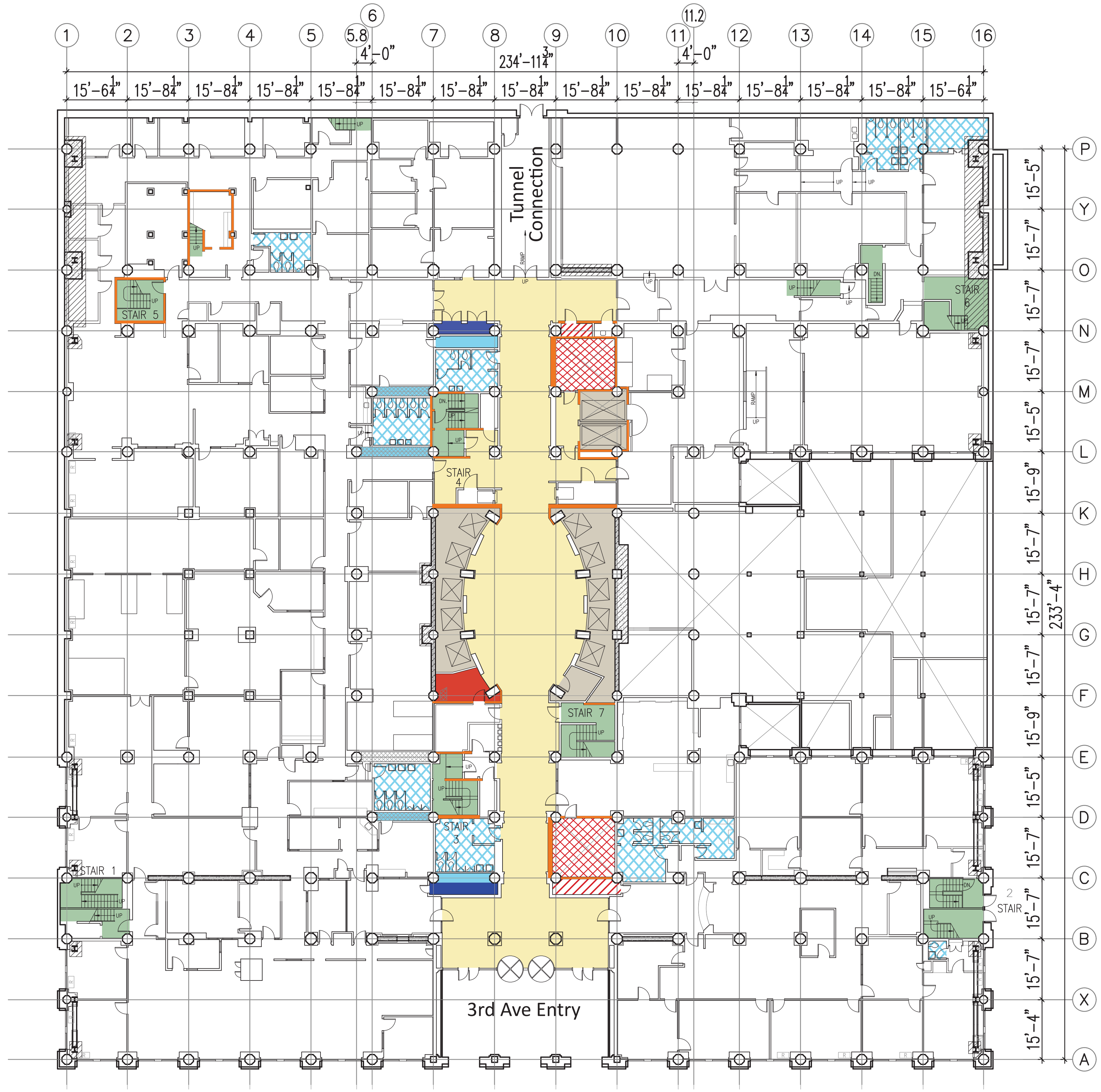
PLAN DIAGRAMS OF EXISTING INTERIOR CONDITIONS:

The plan diagrams on the following pages illustrate the locations of existing mechanical, electrical, plumbing, and low voltage telecommunications equipment, including ducting, piping, vertical risers, and plumbing chases.

These plan diagrams are intended to help familiarize the reader with the locations of existing mechanical, electrical, plumbing, and telecommunications services within the King County Courthouse.

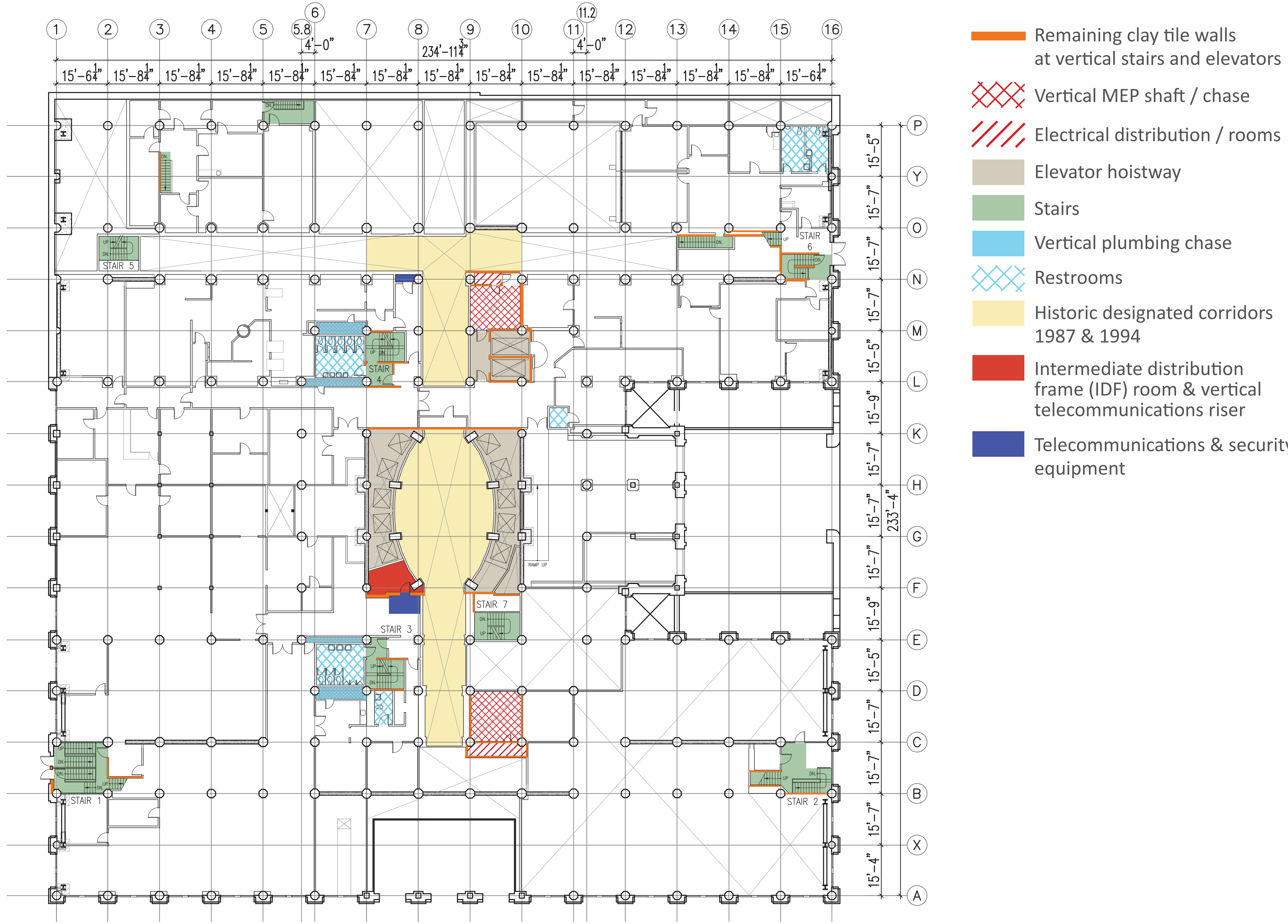
Remaining clay tile walls at vertical stairs and elevators
Vertical MEP shaft / chase
Electrical distribution / rooms
Elevator hoistway
Stairs
Restrooms
Intermediate distribution frame (IDF) room & vertical telecommunications riser
Telecommunications & security equipment
Basement telecommunications room and telecommunications connection to King County Administration Building

BASEMENT

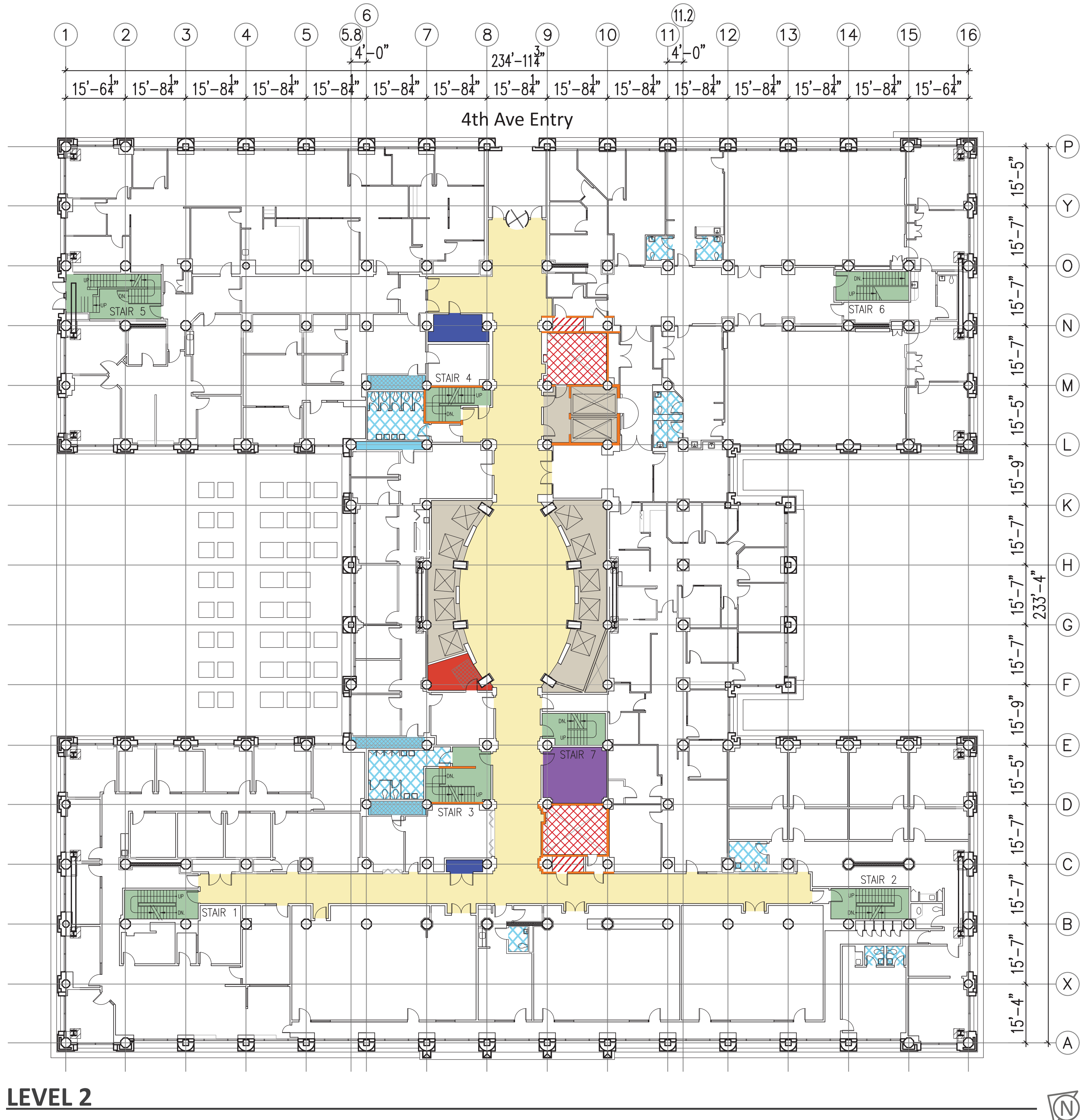


- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment

LEVEL 1


Remaining clay tile walls at vertical stairs and elevators
Vertical MEP shaft / chase
Electrical distribution / rooms
Elevator hoistway
Stairs
Vertical plumbing chase
Restrooms
Historic designated corridors 1987 & 1994
Intermediate distribution frame (IDF) room & vertical telecommunications riser
Telecommunications & security equipment
234'-11¾"
233'-4"
STAIR 1
STAIR 2
STAIR 3
STAIR 4
STAIR 5
STAIR 6
STAIR 7

LEVEL 1A



Remaining clay tile walls at vertical stairs and elevators

Vertical MEP shaft / chase

Electrical distribution / rooms

Elevator hoistway

Stairs

Vertical plumbing chase

Restrooms

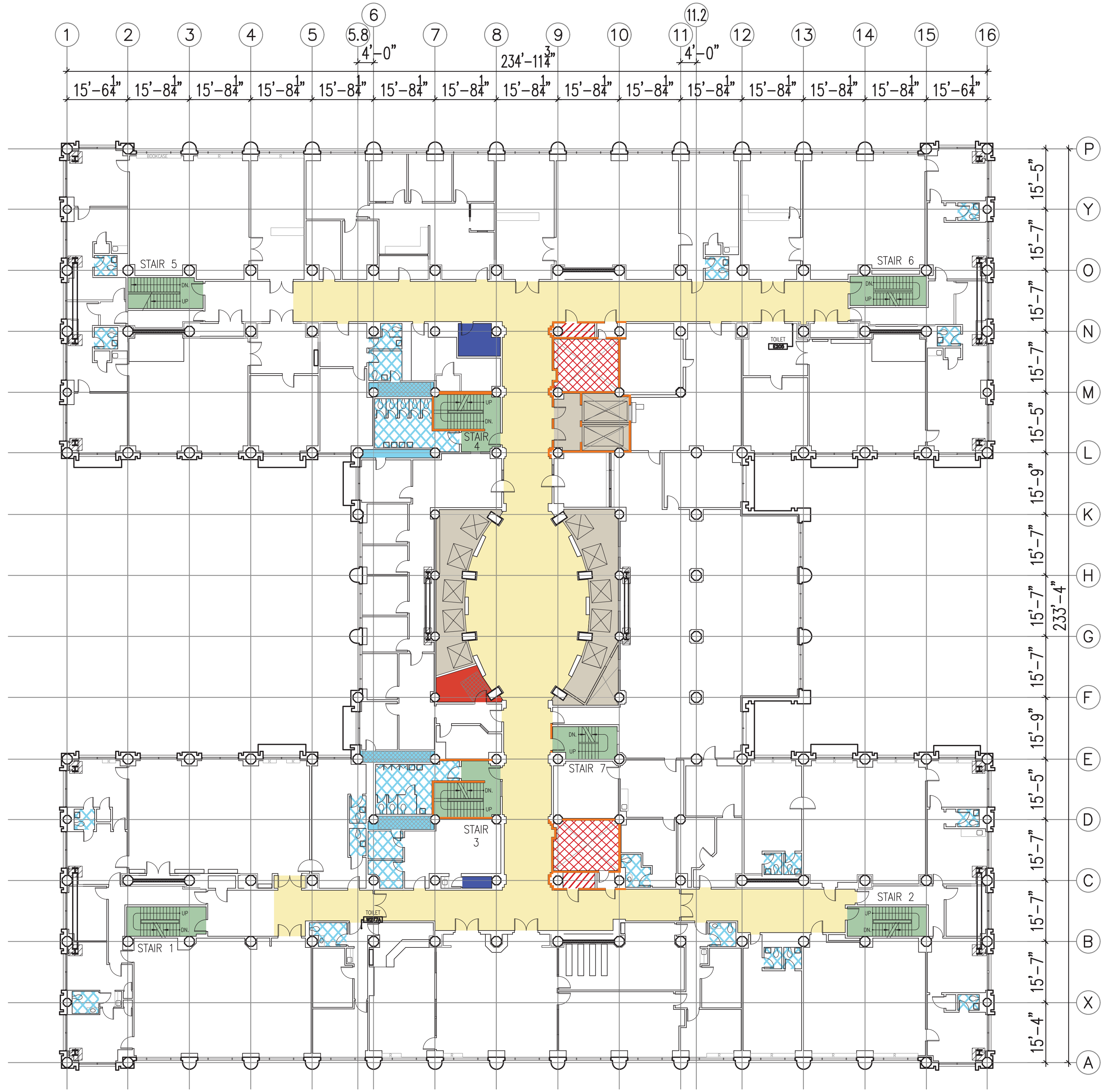
Historic designated corridors 1987 & 1994

Intermediate distribution frame (IDF) room & vertical telecommunications riser

Telecommunications & security equipment

Telecommunications main data point of entry

LEVEL 2



Remaining clay tile walls at vertical stairs and elevators

Vertical MEP shaft / chase

Electrical distribution / rooms

Elevator hoistway

Stairs

Vertical plumbing chase

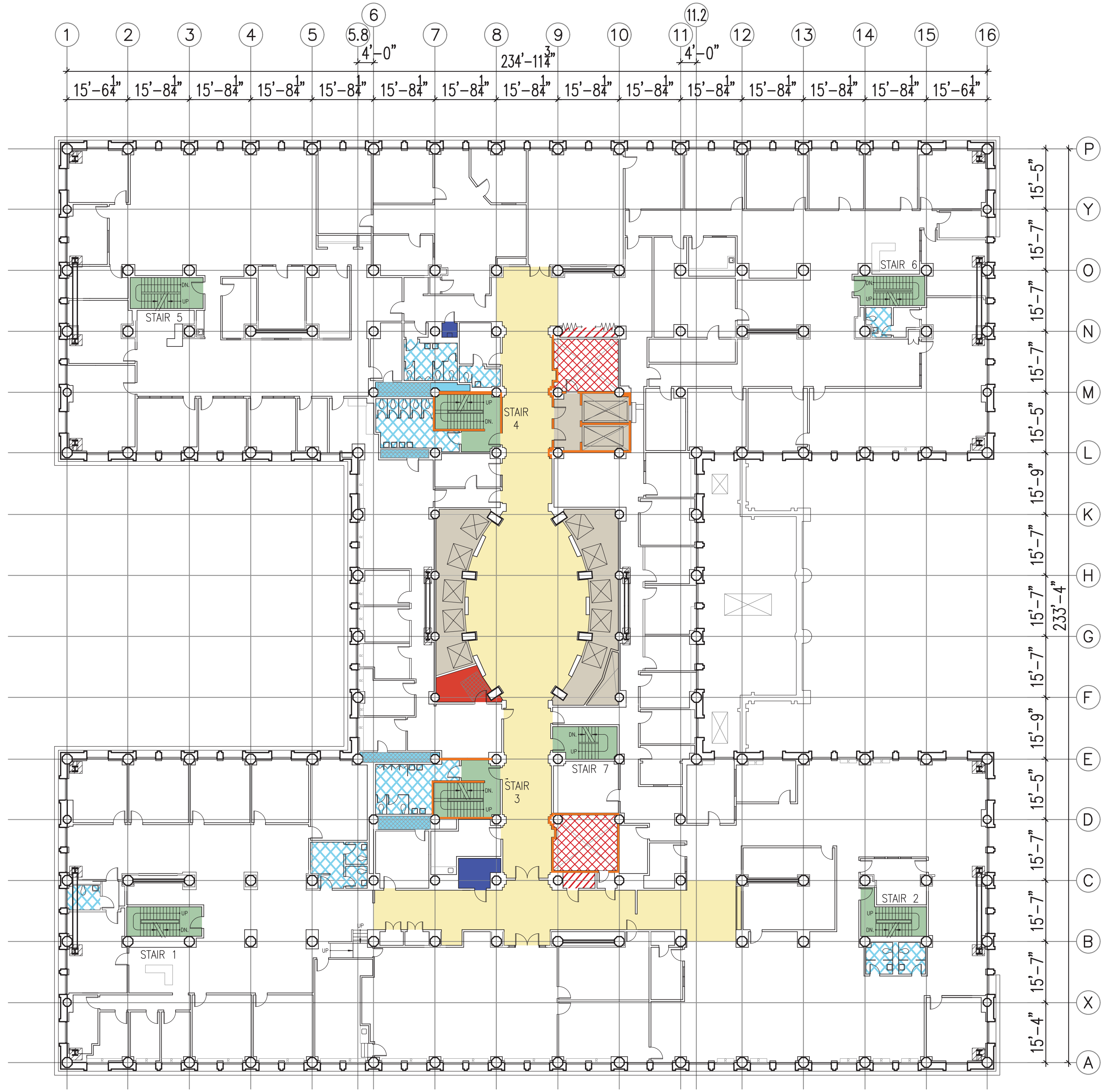
Restrooms

Historic designated corridors 1987 & 1994

Intermediate distribution frame (IDF) room & vertical telecommunications riser

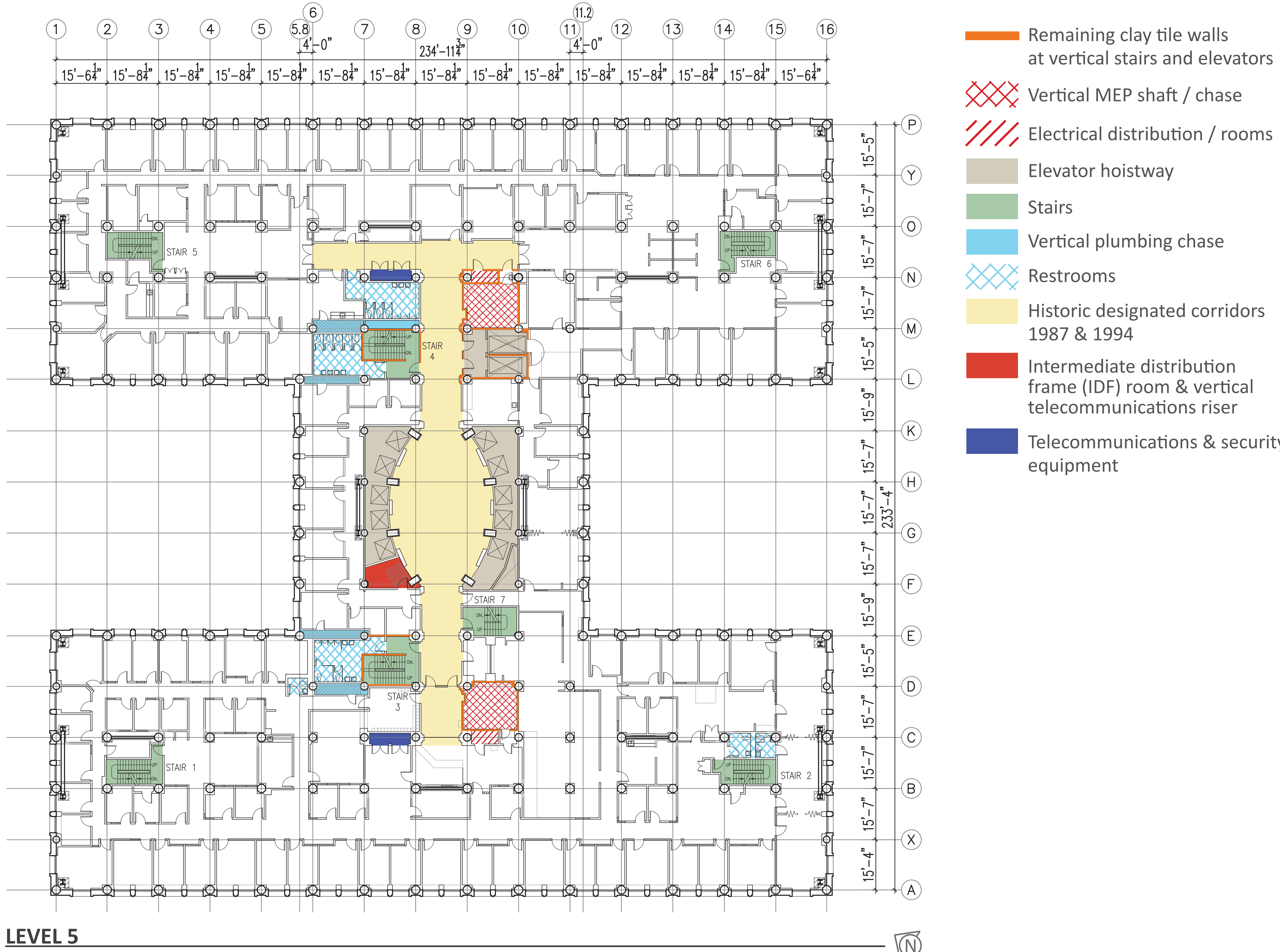
Telecommunications & security equipment

LEVEL 3



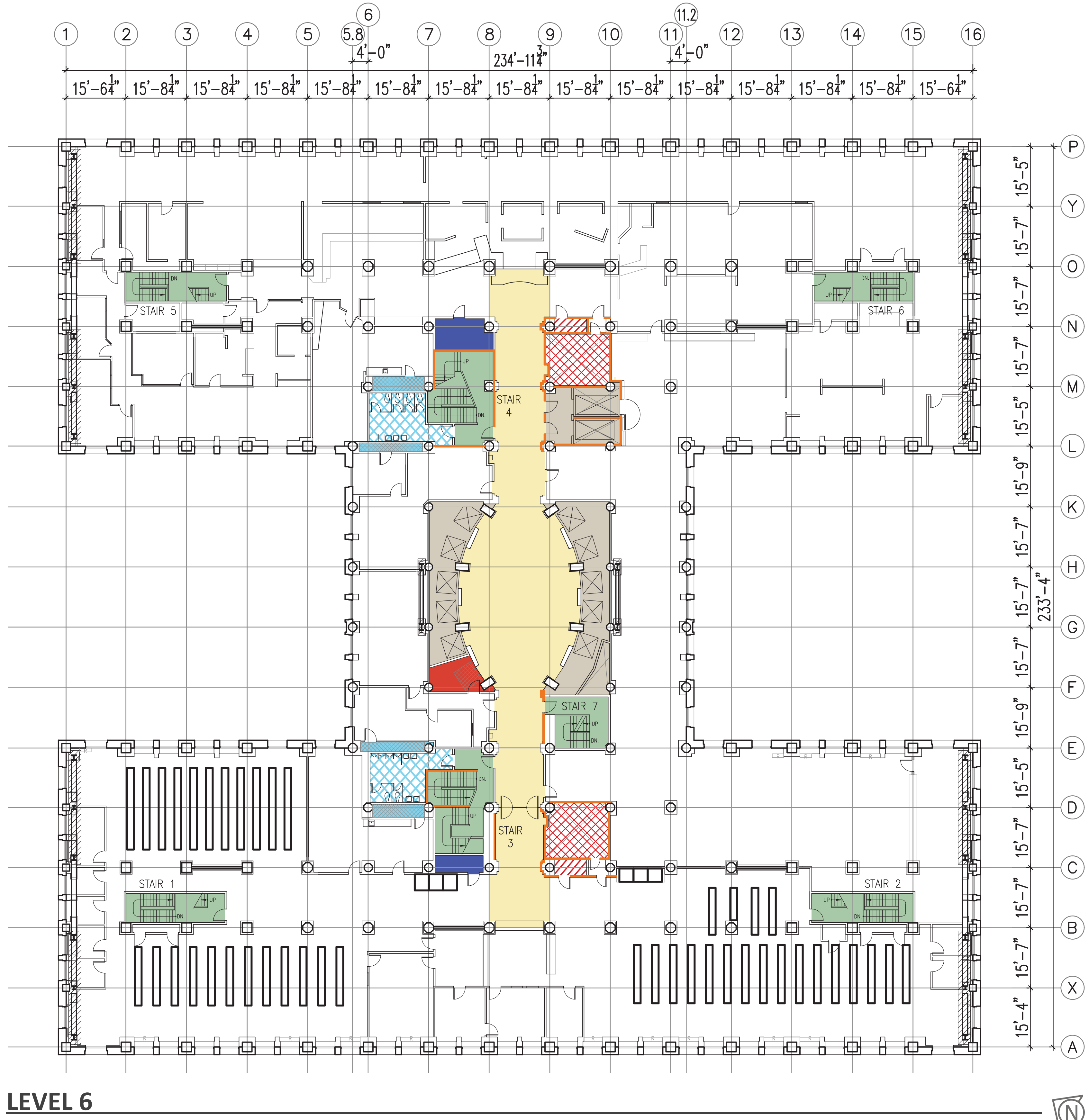
LEVEL 4

- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment



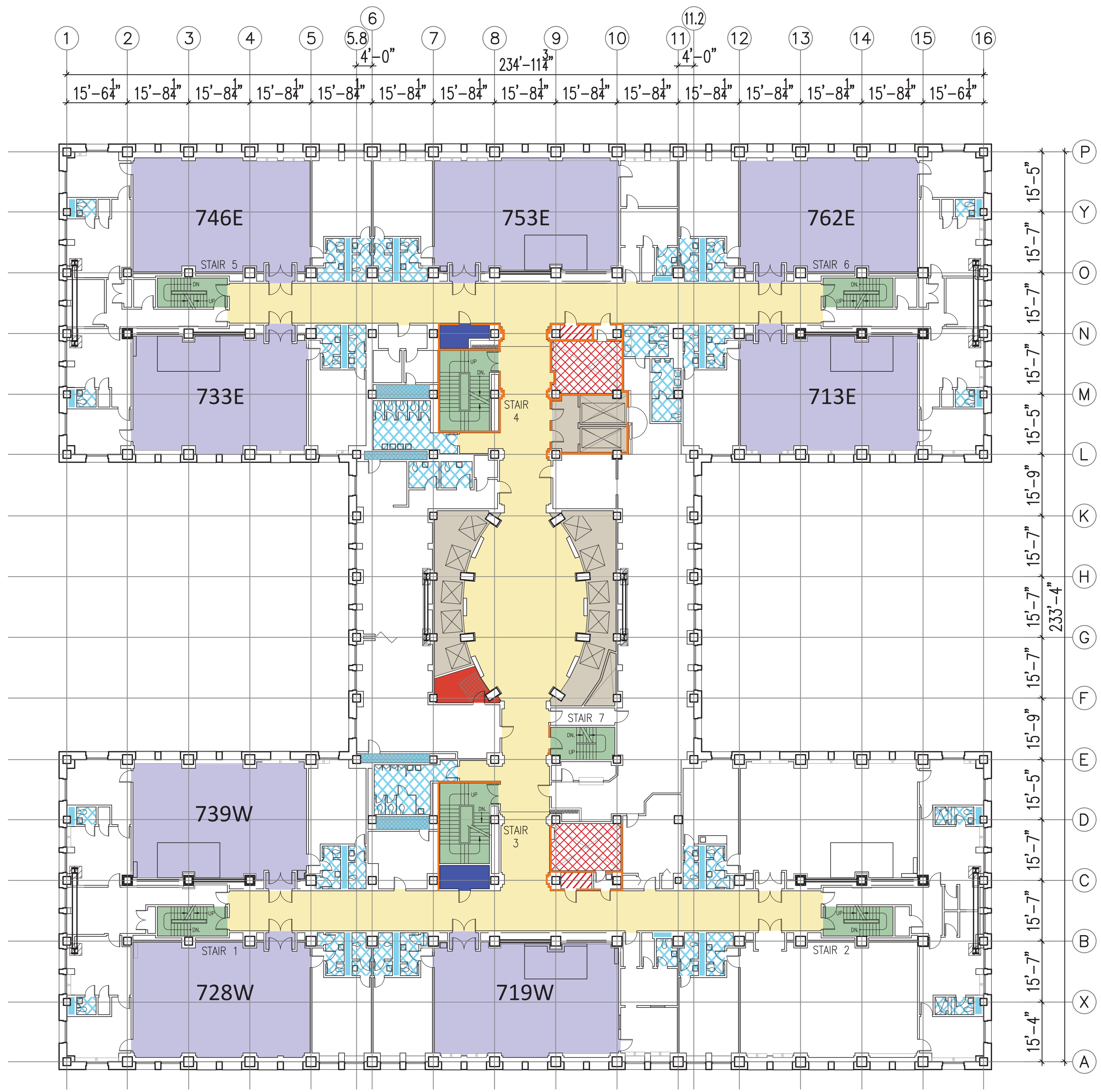
LEVEL 5

22 July 2016



- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment

LEVEL 6



LEVEL 7

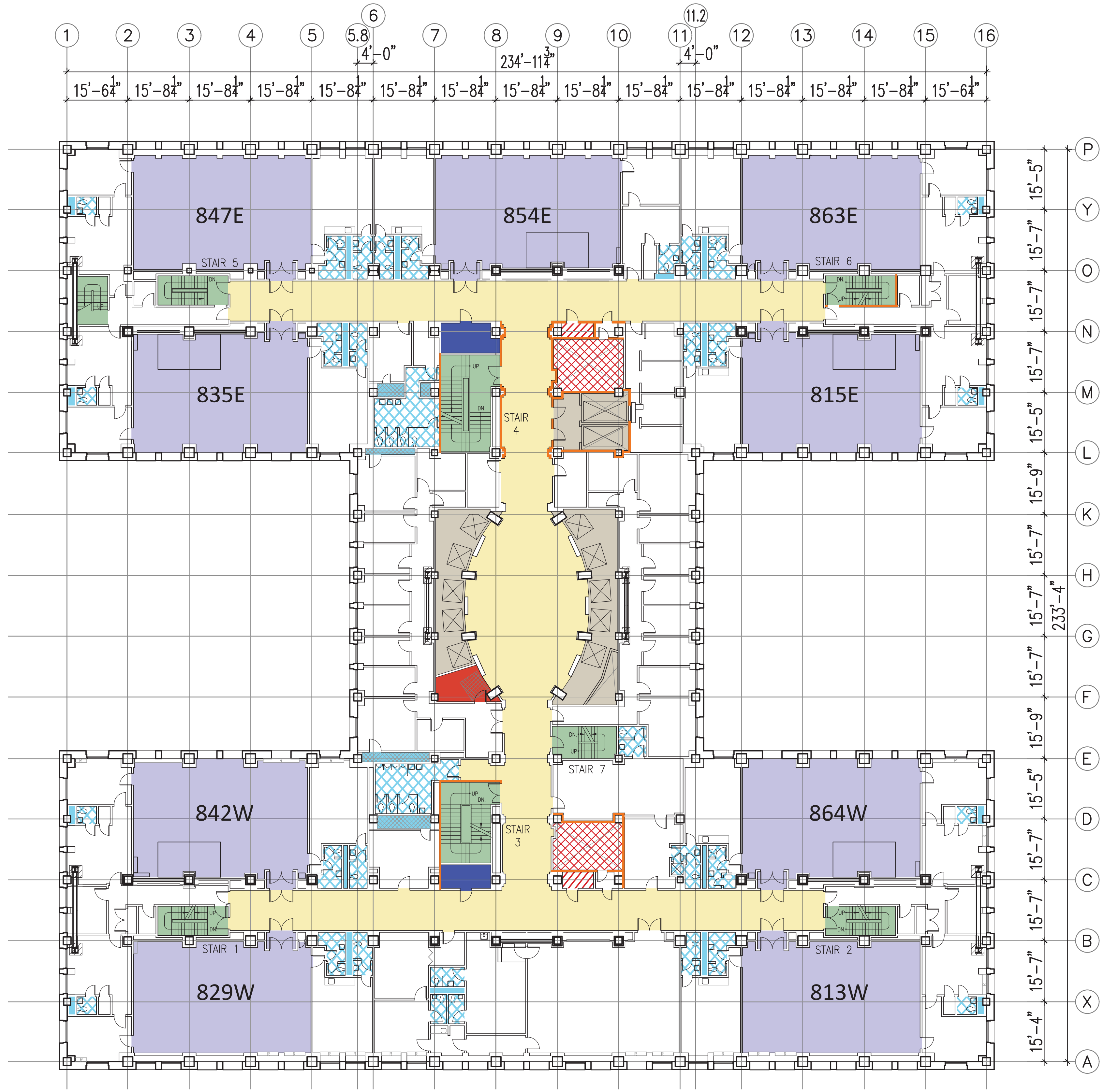
- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Historic court rooms

Courtrooms:

713E:	"Traditional Dark"
719W:	"Traditional Light"
720W:	"Traditional Light"
733E:	"Traditional Dark"
739W:	"Traditional Light"
746E:	"Traditional Dark"
753E:	"Traditional Dark"
762E:	"Traditional Dark"

Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment



LEVEL 8

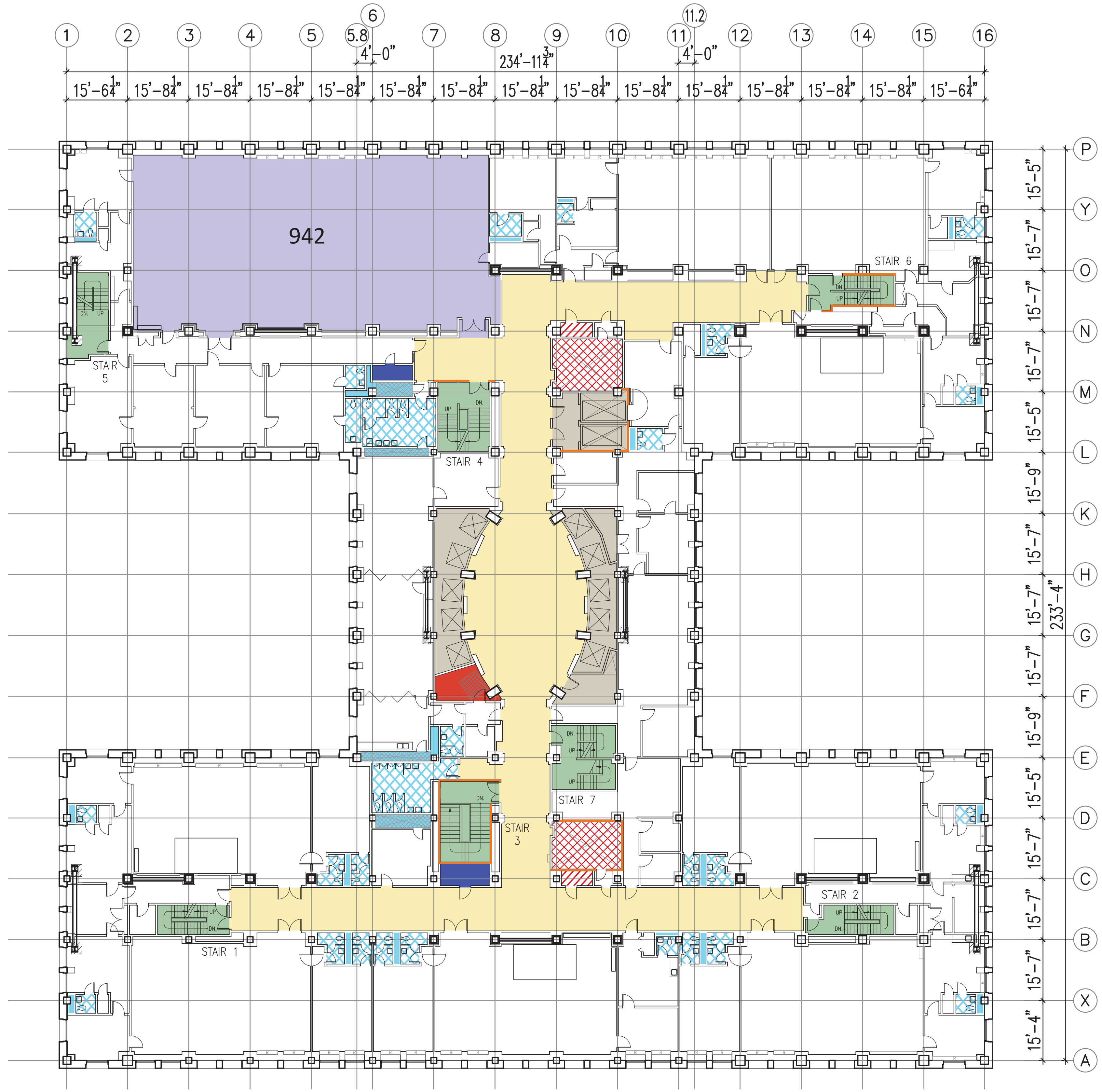
- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Historic court rooms

Courtrooms:

813W:	"Traditional Dark"
815E:	"Traditional Dark"
829W:	"Traditional Dark"
835E:	"Traditional Dark"
842W:	"Traditional Dark"
847E:	"Traditional Dark"
854E:	"Traditional Dark"
863E:	"Traditional Dark"
864W:	"Traditional Dark"

Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment



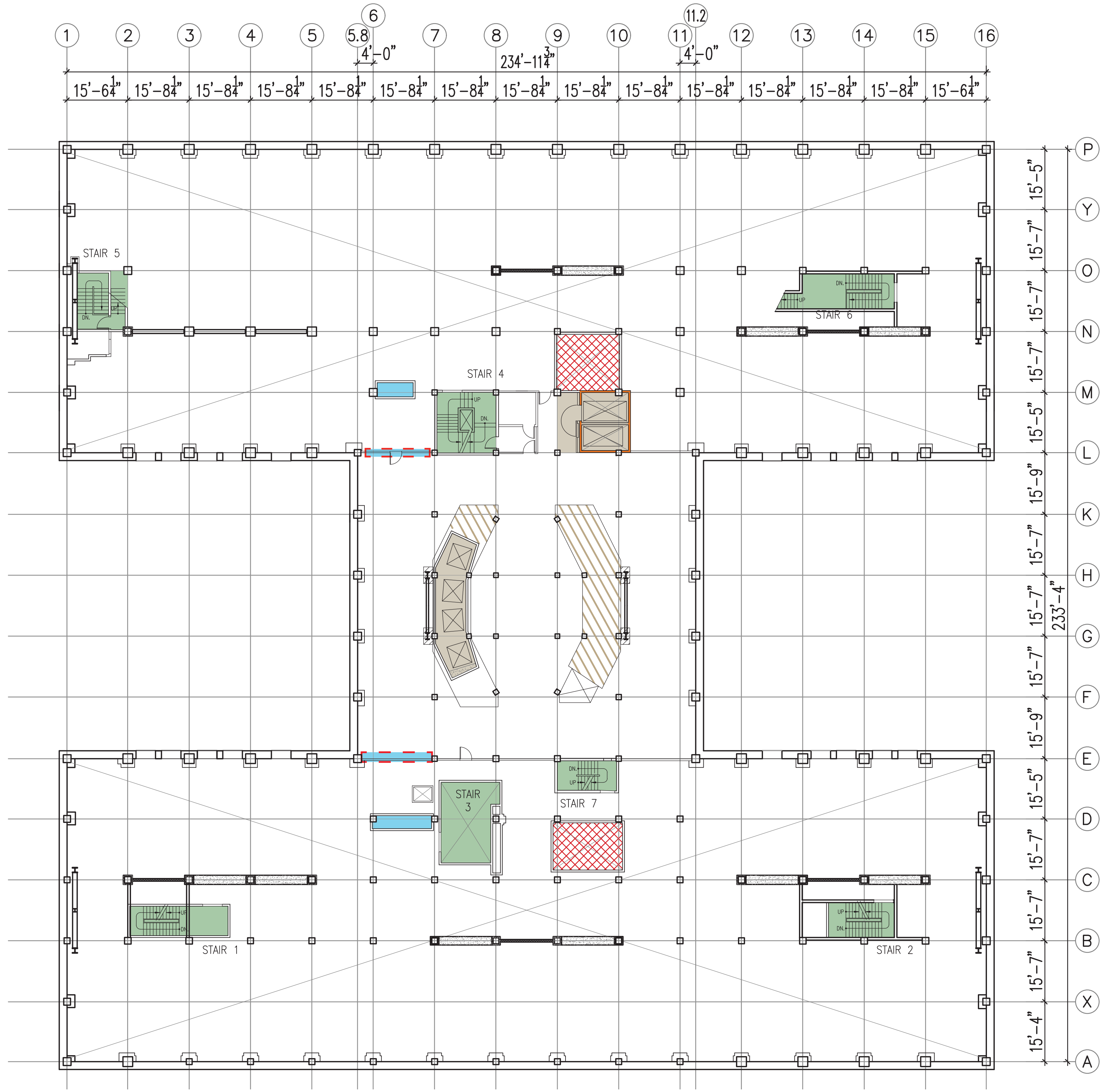
LEVEL 9

- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Historic designated corridors 1987 & 1994
- Historic court rooms

Courtroom:
942: "Traditional Dark"

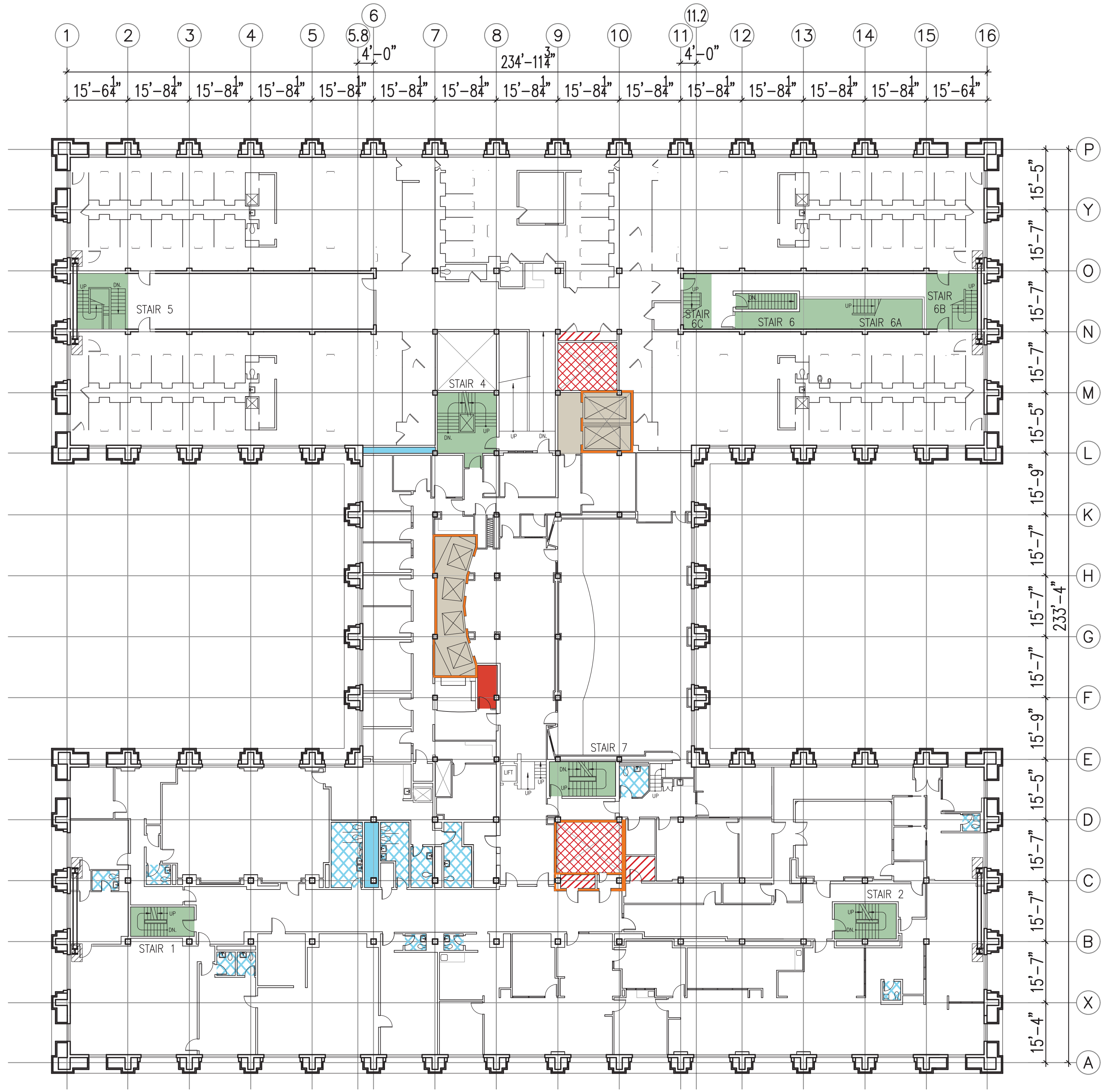
Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

- Intermediate distribution frame (IDF) room & vertical telecommunications riser
- Telecommunications & security equipment



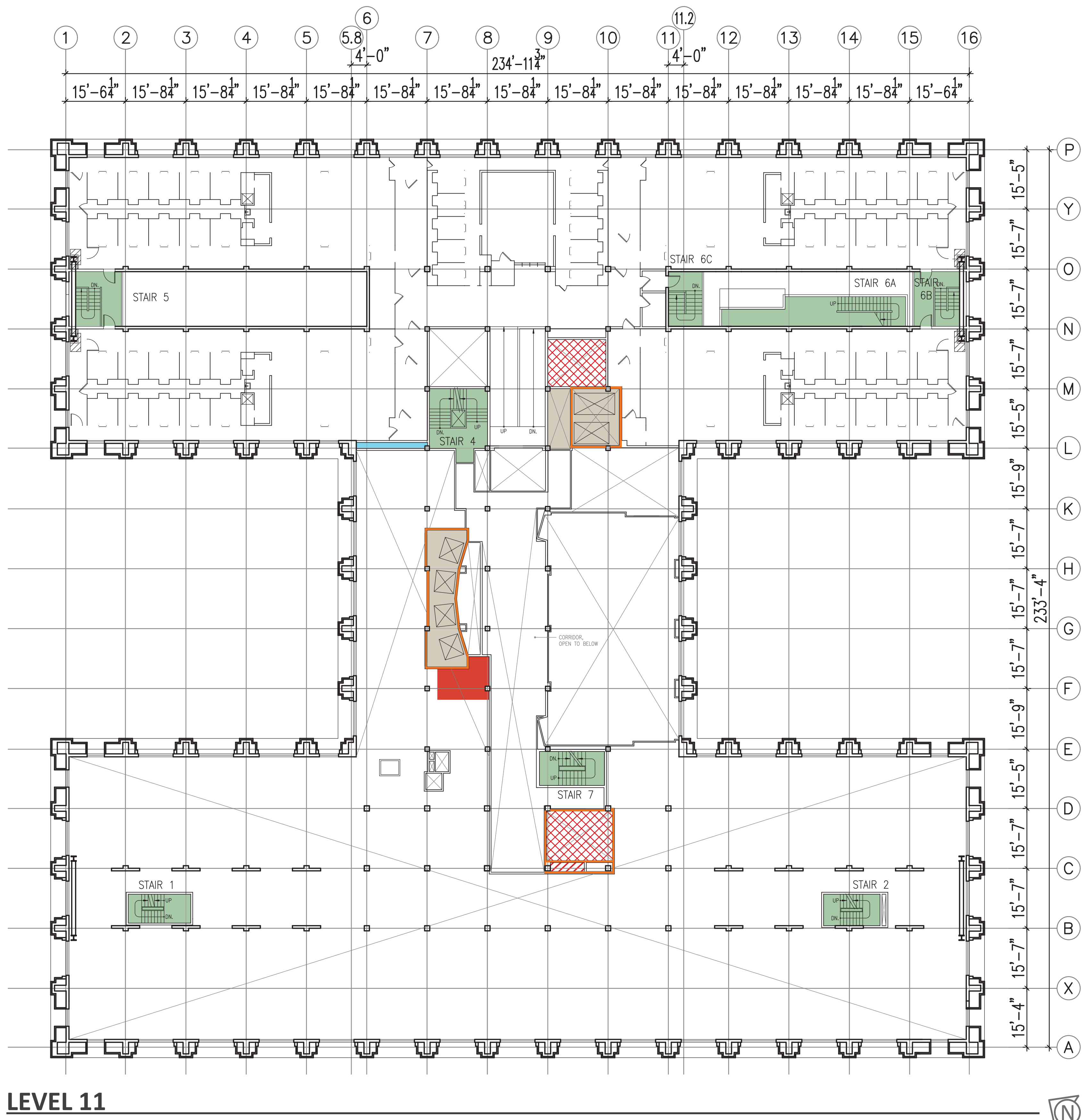
Remaining clay tile walls at vertical stairs and elevators
Vertical MEP shaft / chase
Elevator equipment room
Elevator hoistway
Stairs
Vertical plumbing chase

LEVEL 9 (ELEVATOR LOFT)



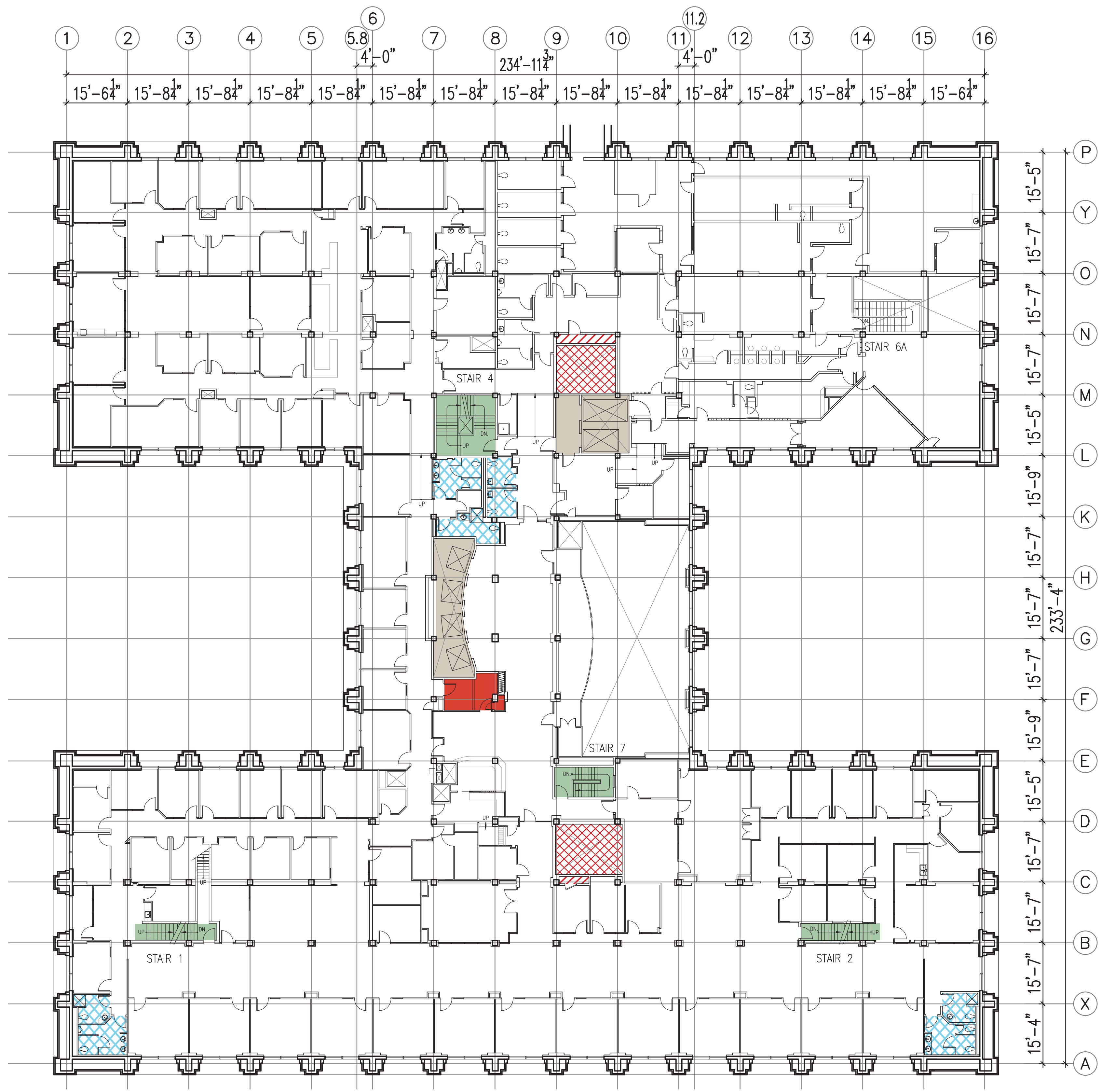
LEVEL 10

- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Intermediate distribution frame (IDF) room & vertical telecommunications riser



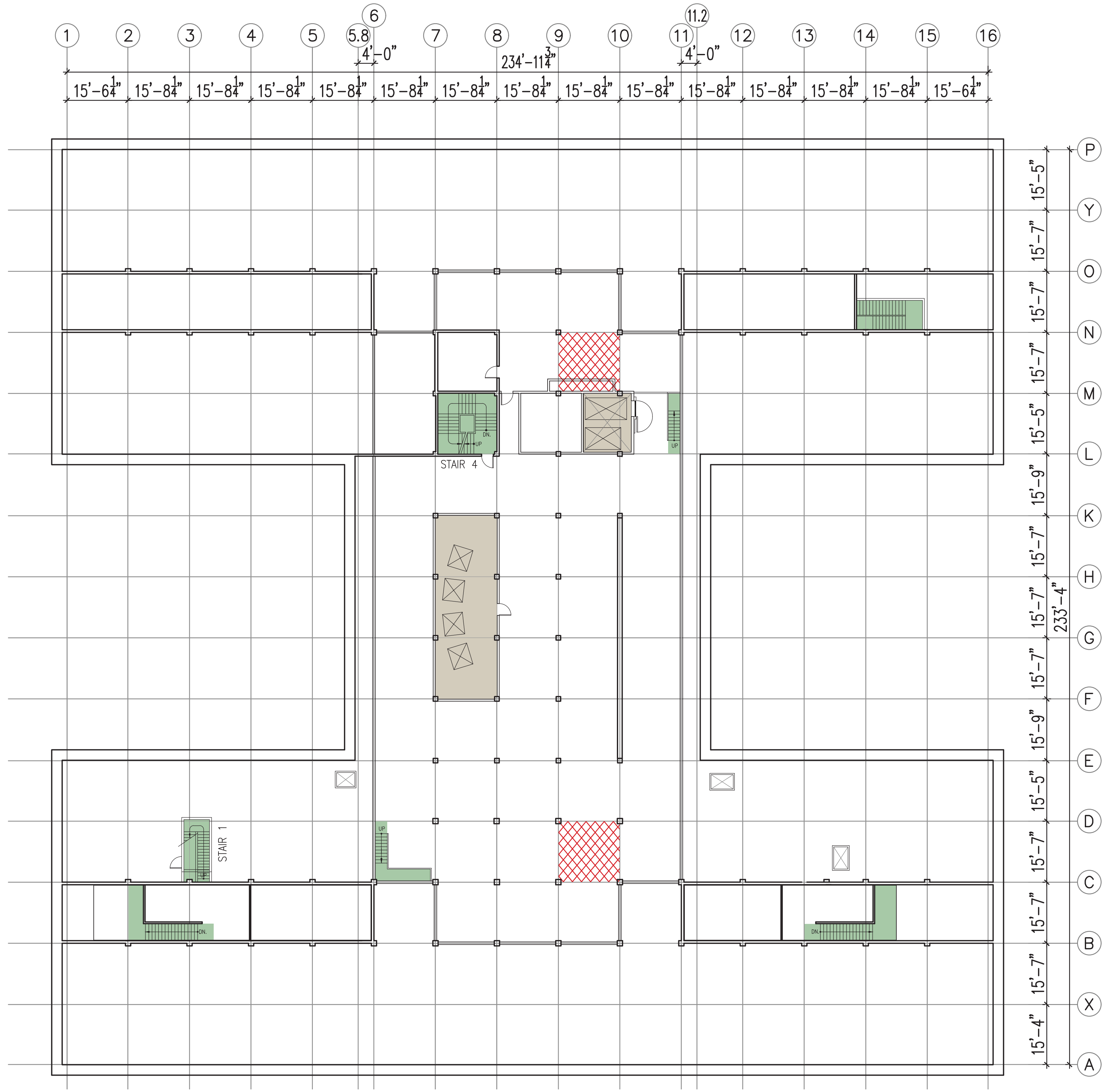
LEVEL 11

- Remaining clay tile walls at vertical stairs and elevators
- Vertical MEP shaft / chase
- Electrical distribution / rooms
- Elevator hoistway
- Stairs
- Vertical plumbing chase
- Restrooms
- Intermediate distribution frame (IDF) room & vertical telecommunications riser



Remaining clay tile walls at vertical stairs and elevators
Vertical MEP shaft / chase
Electrical distribution / rooms
Elevator hoistway
Stairs
Vertical plumbing chase
Restrooms
Intermediate distribution frame (IDF) room & vertical telecommunications riser

LEVEL 12



Vertical MEP shaft / chase

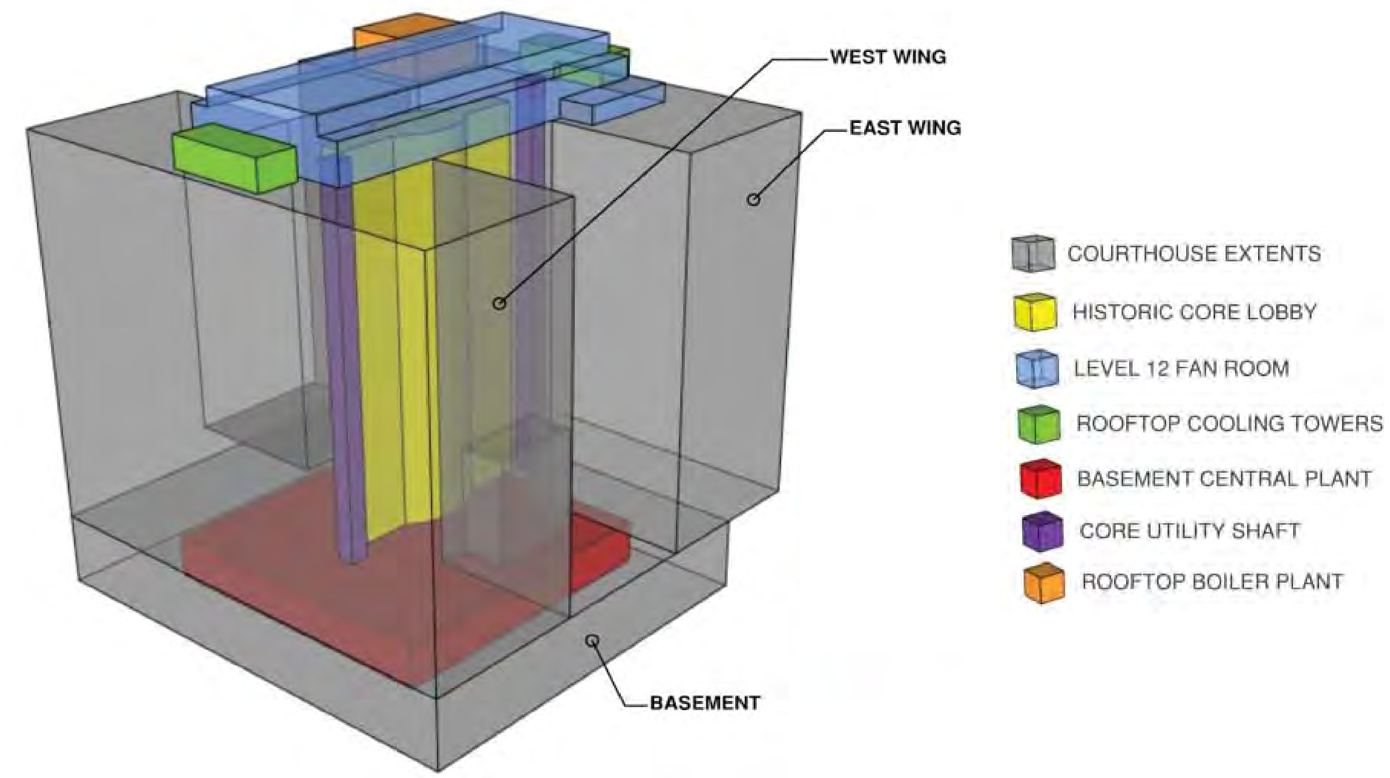
Elevator hoistway

Stairs

MECHANICAL PENTHOUSE

Section Contents

1.1 CURRENT SYSTEMS



There are two major components to the existing HVAC system in the King County Courthouse: air-side and wet-side. A brief description of these systems is provided within this section, and each system component is addressed in detail in the following sections of this chapter.

The building isometric to the right illustrates the approximate locations of major system components within the courthouse building. There is a central utility plant located in the basement that houses chillers, chilled water pumps, condenser water pumps, variable frequency drive (VFD) controls, and an air handling unit (AHU) that serves the basement zone.

Two (2) core utility shafts are utilized to route air-side and wet-side distribution vertically through the building and to the rooftop.

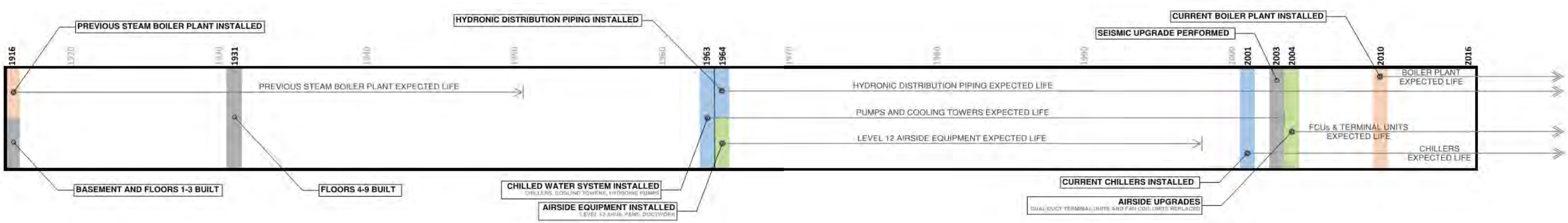
There is a Fan Floor above Level 12 that houses air handling units and fans serving all spaces within the building, including interior and perimeter zones

The rooftop of the building houses the hot water boiler plant as well as cooling towers that are connected to the chilled water plant with condenser water piping routed through the core utility shafts.

The wet-side system consists of three (3) chillers, five (5) chilled water pumps, and two (2) condenser water pumps located in the basement central plant as well as two (2) cooling towers located on the roof. 58°F chilled water is created in each of the chillers by exchanging heat with the condenser water loop. This chilled water is run through the chilled water pumps in the basement central plant and supplied to the airside components through chilled water distribution piping. The warm condenser water is run through the condenser water pumps in the basement and taken to the cooling towers on the roof, where heat is rejected to the atmosphere.

The air-side system consists of four (4) air handling units located on the Fan Floor. Two (2) of these units are dual-duct air handling units that deliver separate streams of hot and cold air to terminal units serving the interior zones of the building. The other two (2) air handling units are standard variable air volume (VAV) units that deliver conditioned outside air to fan coil units serving the perimeter zones of the building. In addition, there is a standard variable air volume air handling unit in the basement central plant that serves the basement zone.

The timeline below illustrates when each phase of the building was constructed, when the current and previous heating, ventilation, and air conditioning systems were installed, and an indication of estimated service life for equipment installed before the year 2000.



1.2 SYSTEM DEFICIENCIES

The following sections of this chapter describe in depth the current operation and potential deficiencies of each existing system that are summarized below.

Air Handling Units: All air handling units (AHUs) are past serviceable life, leaky, and energy inefficient. In addition, the dual-duct units that serve the interior zones utilize simultaneous heating and cooling, which is extremely energy inefficient and not allowed by current state and city energy codes.

Hydronic Pumps: All chilled water and condenser water pumps are past serviceable life and are wearing out.

Cooling Towers: Cooling towers are past serviceable life and energy inefficient.

Fan Coil Units: Proper drainage of condensate off of chilled water cooling coils has not been addressed; neither drip pans nor condensate drain piping has been installed for these units.

Chilled Water System: Due to condensate drainage not being addressed for the fan coil units, the chilled water system cannot operate at optimal temperature. The supply chilled water temperature was raised to 58°F to avoid condensation on those coils, and subsequently the chillers are operating very inefficiently and the chilled water pumps have to supply a greater volume of higher temperature chilled water, which is a waste of pumping energy.

Ductwork: Much of the distribution ductwork is leaky and/or uninsulated, though the sheet metal itself is in good condition.

Hydronic Piping: Portions of the distribution piping is uninsulated or wearing thin, though the distribution system as a whole is in acceptable condition.

Controls: Though much of the controls hardware is in good condition, the control system's current sequence of operations does not allow the systems to operate at full potential or efficiency. This greatly affects the day-to-day operation of the building, including energy use, maintenance cost, equipment life, and occupant comfort.

1.3 RECOMMENDED UPGRADES

The following sections of this chapter describe in depth the recommended upgrades for each system that are summarized below.

Air Handling Units: It is recommended that all AHUs be replaced with new units. For all four (4) AHUs on the Fan Floor, these new units should be selected for identical heating, cooling, and ventilation airflow capacity as the AHU that is being replaced. The AHU in the Basement Central Plant that serves the basement zone will need to be upsized, as the internal heating, cooling, and ventilation load in this zone has increased since the original unit was installed.

Hydronic Pumps: It is recommended that all chilled water and condenser water pumps be replaced with new pumps that are selected for identical flow volume and available head pressure as the pump that is being replaced.

Cooling Towers: It is recommended that both cooling towers be replaced with new towers that are selected for identical heat rejection capacity with identical configuration as the cooling tower that is being replaced.

Fan Coil Units: It is recommended that drip pans and sloped condensate drainage be installed for all fan coil units throughout the building. This will allow the chilled water system to operate at proper and efficient temperatures without the threat of cooling coil condensation causing property damage.

Chilled Water System: It is recommended that, following the recommended upgrades to the fan coil units, the chilled water system begin operating at a 44°F supply chilled water temperature. The existing chillers are to be maintained at this operating set-point.

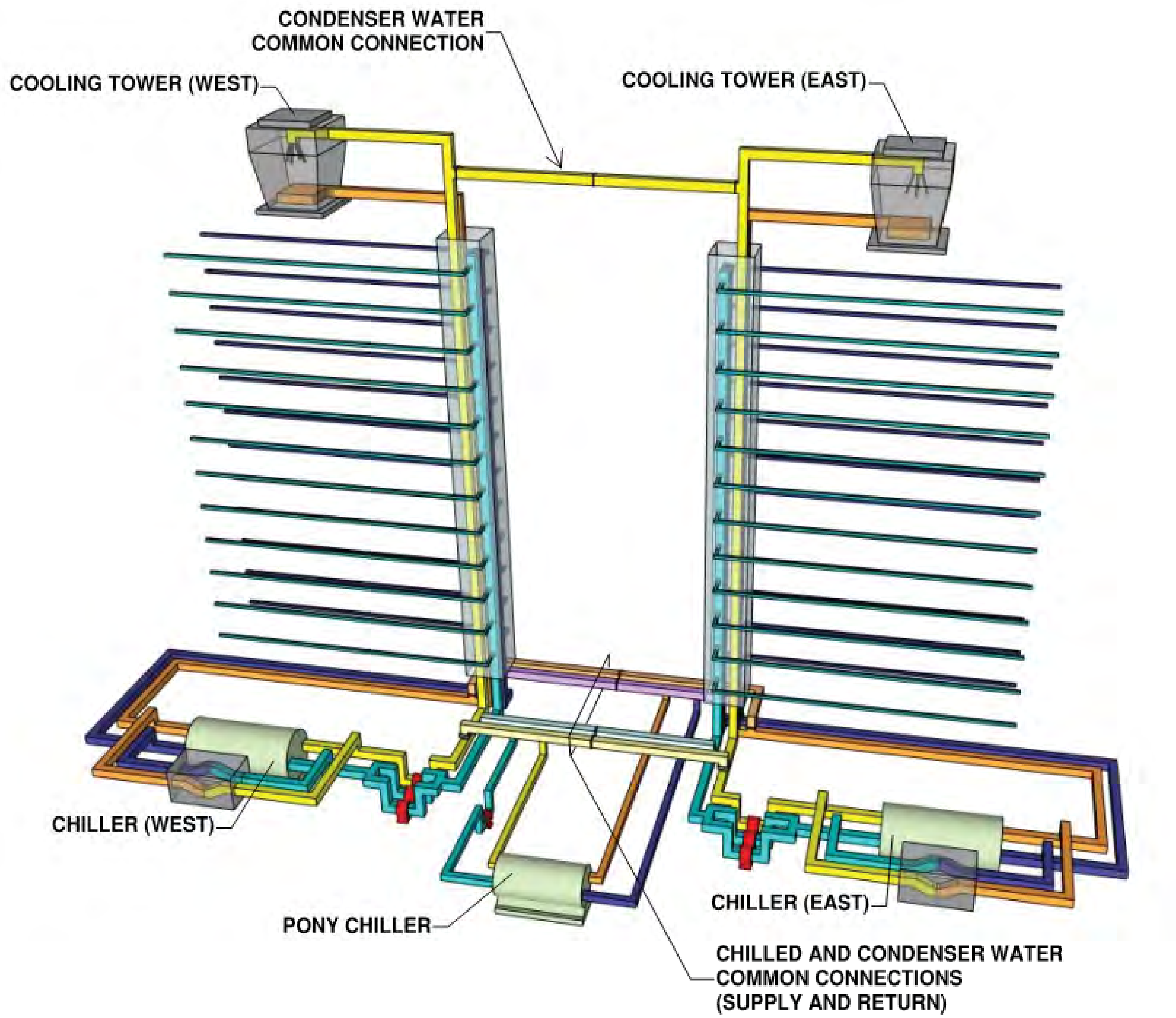
Ductwork: It is recommended that all ductwork sheet metal be cleaned, the seams resealed, and all required sections insulated. Following these upgrades, all ductwork shall be pressure and leak tested to ensure proper operation.

Hydronic Piping: It is required that all uninsulated chilled water, heating hot water, and condenser water piping be insulated throughout the building.

Controls: It is recommended that the controls sequence of operations be re-written to ensure proper working condition of all mechanical and plumbing equipment as system upgrades are performed. The extent of this upgrade to the sequence of operations will be dependent on the upgrades made to the systems and equipment within the Courthouse.

1.4 CHILLED WATER SYSTEM

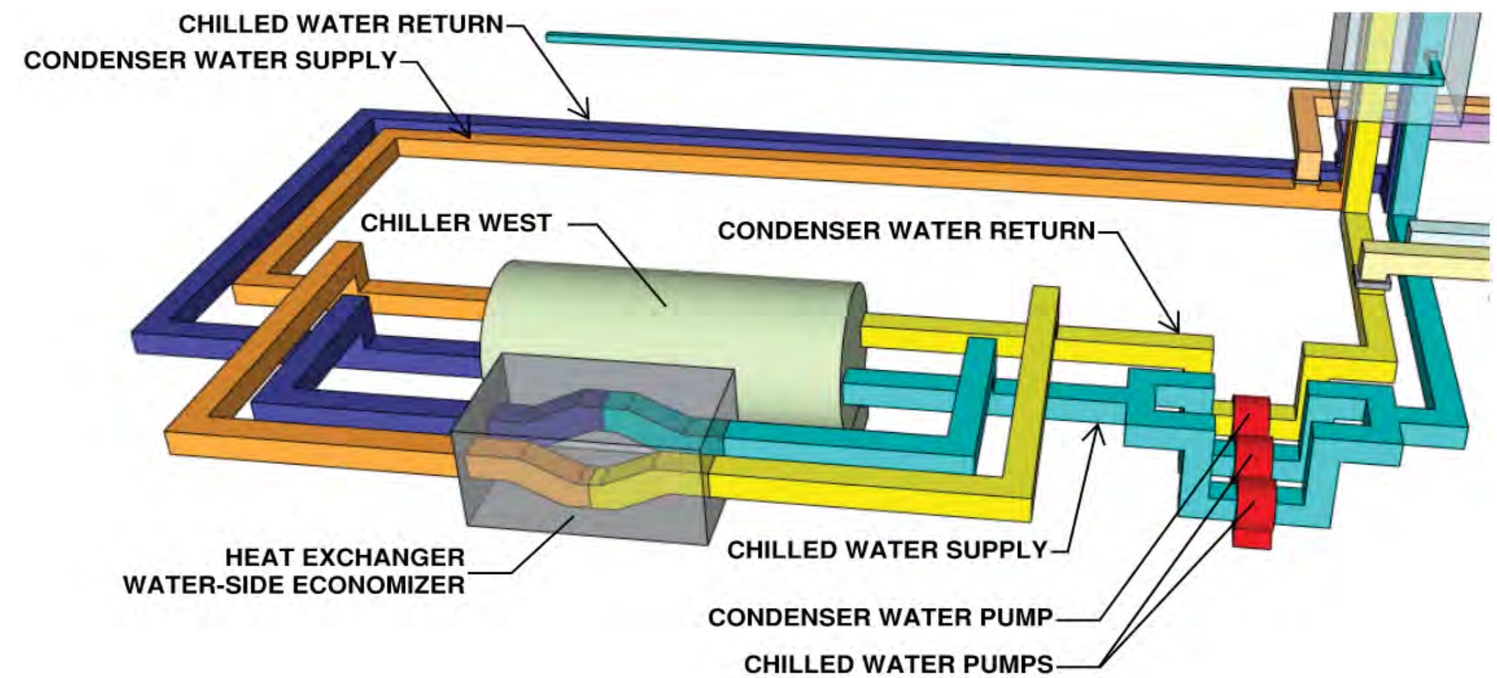
An overall schematic of the chilled water system is shown on the following page. The current condition, remaining equipment life, upgrade recommendations, benefits, and cost impact for each component of this system is described in detail in the following report sections.



Chilled Water System Summary

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Chillers	Good	20-25 Years	Minimal	$316,058
Cooling Towers	Poor	0 Years	Substantial	$1,831,218
CHW/CW Pumps	Poor	0 Years	Substantial	$1,282,044
CHW/CW Piping	Fair	25-50 Years	Minimal	$183,888
CHW Controls	Fair	0-5 Years	Moderate	$402,765

1.4.1 CHILLERS



Description of Existing Systems
There are three (3) York chillers in the basement central plant: (2) 750-ton chillers that each serve a wing of the facility and (1) 350 ton pony chiller to be used in periods of reduced cooling requirements. The capacity of these chillers is sufficient to handle current cooling loads for the property as well as any anticipated future loads.

Due to the current operation of airside components, chilled water is currently being delivered at a higher temperature than typical chilled water design throughout the facility. Because of this, the chillers are not operating at optimal efficiency.

Condition
All chillers are in good operating condition and are working properly during all times of the year. However, many of the variable frequency drive (VFD) controls for the compressor motors within the chillers are not functioning properly, which has a negative impact on the chiller efficiencies.

Chiller

Equipment Life
Each chiller has approximately 25 years of remaining usable equipment life.

Recommendation
It is recommended that the current chillers not be replaced and remain to service the building. Since the current equipment is operating properly and has substantial equipment life remaining, the cost of implementing new chillers, as well as required operational downtime, cannot be justified.

It is recommended that the variable frequency drive controls for the compressor motors be replaced, as this is a comparatively low-cost and simple solution that will yield significant energy efficiency benefits.

If airside systems are modified such that higher chilled water temperatures (58°F) are no longer required, these chillers are anticipated to be able to handle this new operating condition. There may need to be updates to control logic in this scenario.

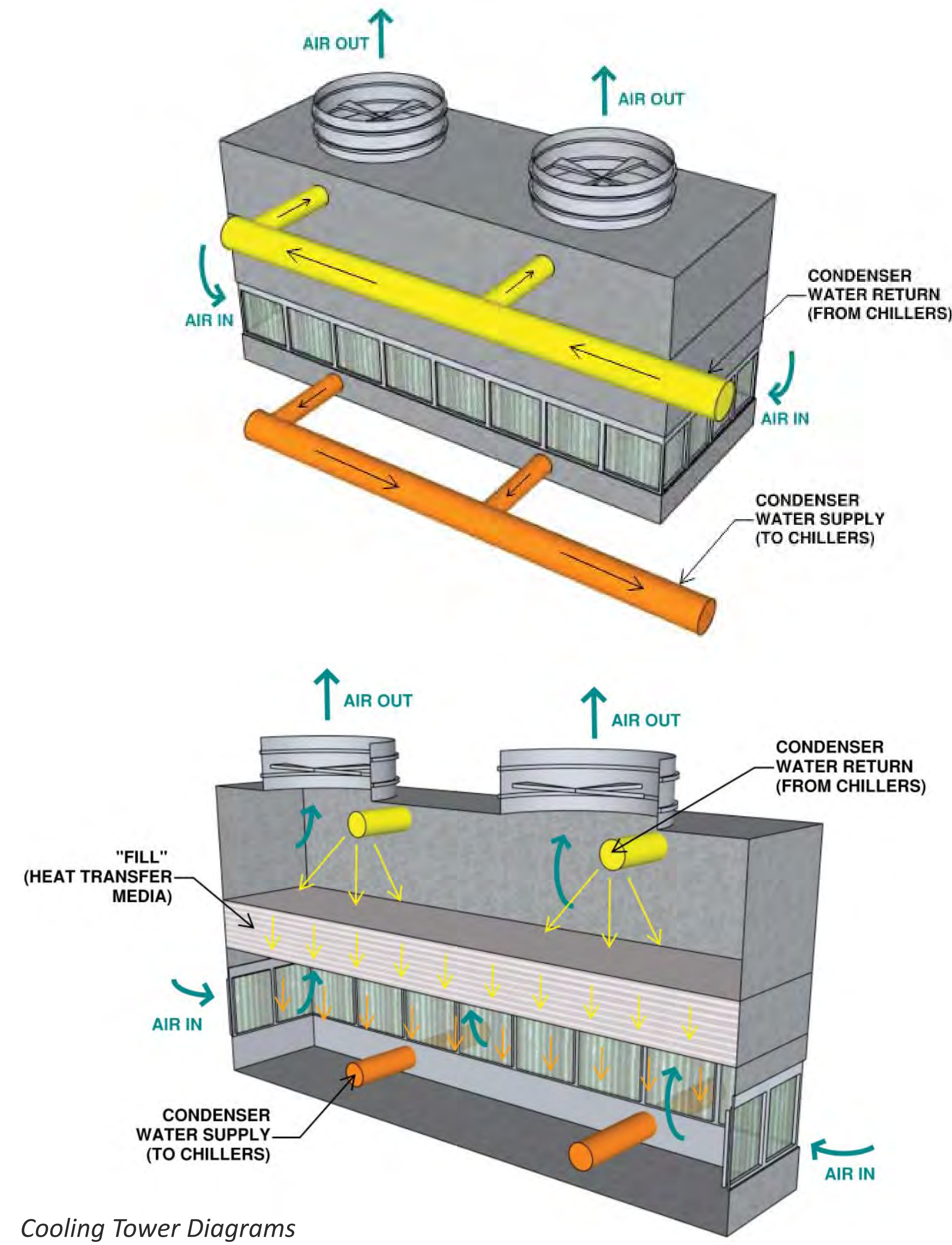
Benefits
The existing chillers are in proper operating condition, have substantial equipment life remaining, and have ample capacity to handle the cooling loads for the entire facility in peak cooling conditions. Chillers tend to be one of the more expensive components of the chilled water system, and the cost savings associated with not replacing these components is substantial.

Code
There are no code implications to continuing to operate the existing chillers or to the recommended controls upgrade of the existing chillers.

Cost
Rough Order of Magnitude (ROM) project cost of $316,058 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

<u>**1.4.2 COOLING TOWERS**</u>

Description of Existing Systems
There are two (2) Evapco induced draft, counter-flow cooling towers located on the roof. These cooling towers are used to provide a means of heat rejection from the condenser water loop to the atmosphere. Once the condenser water is run through the cooling tower, it returns to the chillers to absorb the excess heat in the chilled water system, thereby creating the proper temperature of chilled water to distribute throughout the building.



Cooling Tower Diagrams

Condition
Both cooling towers are past serviceable equipment life and are in poor operating condition. Each tower shows significant signs of the typical wear and tear for cooling towers over 40 years old. There is significant corrosion of pipes and cooling tower components, which could cause complete system failure if left untreated. There is also substantial scaling, or calcium and magnesium deposits, on the heat transfer media. Scaling dramatically reduces the efficacy of the heat transfer and results in higher energy and operating costs.

Cooling Tower

Cooling Tower close-up

Equipment Life
Both cooling towers are past the recommended equipment life, are operating inefficiently, and are subject to partial or complete failure at any time.

Recommendation
It is recommended that both cooling towers be replaced with new towers that are selected for identical heat rejection capacity with identical configuration (induced draft, counter-flow) as the current cooling towers. The current cooling towers are past the recommended equipment life, inefficient, and suffering from corrosion, scaling, and microbial growth. Replacing these towers will increase the energy efficiency of the chilled water system as well as lower the operating cost for this system. In addition, replacement of these towers will significantly reduce the risk of a complete shut-down of the building cooling system due to cooling tower failure.

Benefits
Though the existing cooling towers are past the expected equipment life and could be subject to failure, the risk of complete failure is mitigated by having two cooling towers that are piped together. If there is a failure in one tower, the remaining tower can be relied upon in most operating conditions to serve the condenser water load while the failed cooling tower is replaced. However, it is still strongly recommended that both cooling towers be replaced before a potential failure.

Code
There are no code implications to continuing to operate the existing cooling towers or to the recommended cooling tower replacement and controls upgrade.

Cost
Rough Order of Magnitude (ROM) project cost of $1,831,218 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.4.3 CHILLED AND CONDENSER WATER PUMPS

Description of Existing Systems
There are a total of seven (7) chilled water and condenser water pumps located in the basement central plant. Each pump is arranged in a base-mounted, in-line configuration with variable frequency drive (VFD) controls for energy optimization.

Condition
Each of the pumps appear to have been serviced most recently in 2013. There are indications on various pumps that motor bearings were sealed in October of 2013 and some motors appear to have been completely rebuilt in February of 2013. However, through conversations with the operating engineers, it is apparent that many of the pumps are wearing out and all will need to be replaced. The motor bearings have been sealed, meaning that these bearing cannot be frequently lubricated. In addition, variable frequency drive and pump controls in general are not operating properly.

Water Pumps

Equipment Life
Each of the pumps are past the recommended equipment life, are operating inefficiently, and are subject to failure at any time.

Recommendation
It is recommended that all chilled water and condenser water pumps be replaced with new pumps that are selected for identical flow volume and available head pressure as the pump that is being replaced. Replacing these pumps will increase the energy efficiency of the chilled water system as well as lower the operating cost for this system. In addition, replacement of these pumps will significantly reduce the risk of a complete shut-down of the building cooling system due to chilled water pump or condenser water pump failure.

Code
There are no code implications to continuing to operate the existing chilled and condenser water pumps or to the recommended replacement and upgrade of the pumps. The electric motor efficiency of the new pumps will need to meet the minimum values as dictated by the current code.

Cost
Rough Order of Magnitude (ROM) project cost of $1,282,044 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.4.4 CHILLED AND CONDENSER WATER PIPING

Description of Existing Systems
Chilled and condenser water is distributed vertically through the building within the two (2) core utility shafts. Chilled water supply and return piping is stubbed out to each floor of the building and distributed horizontally as required by the fan coil unit locations. Chilled water is also supplied to the air handling units on the Fan Floor. Condenser water is expressed directly to the roof, where it is run through the cooling towers and returned to the chillers in the basement.

Water Piping Example

Condition
Much of the chilled water distribution piping is in fair condition and at a low risk for pipe bursts or leaks. There are portions of the chilled water piping that is uninsulated, which is both energy inefficient and a code violation.

Equipment Life
The chilled and condenser water distribution system likely has at least 25 years of remaining service life.

Recommendation
It is recommended that all chilled water and condenser water piping be tested for signs of severe corrosion or thin walls. If there are sections of piping that appear to be at significant risk for failure, these sections should be replaced. All piping (existing and new) will need to be properly insulated.

Benefits
The existing chilled and condenser water piping appears to be in fair condition and should not require extensive upgrades in the near future.

Code
Any uninsulated chilled or condenser water piping is a code violation and will need to be insulated to bring these systems up to current energy code.

Cost
Rough Order of Magnitude (ROM) project cost of $183,888 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.4.5 CHILLED WATER CONTROLS

Description of Existing Systems
Chilled water system operation is controlled by a building-wide direct digital control (DDC) system. This control structure dictates the operation of chilled water system components such as chillers, pumps, cooling tower fans, and coil control valves. This type of control structure is intended to allow the chilled water system to operate automatically, though the system can be overridden and controlled manually by operations when required for maintenance or parts replacement.

The chillers are currently sequenced such that the smallest (pony) chiller is energized first, and the other larger chillers are brought on when additional demand for cooling occurs. When the larger chillers are energized, the pony chiller is de-energized. In the past few years, maintenance personnel have adjusted the chiller sequencing so that this change-over occurs smoothly and cooling operation is not suspended at any point during change-over.

Condition
The control systems are not functioning to full potential, and the current sequence of operations is disjointed and flawed. This greatly affects the day-to-day operation of the building, including energy use, maintenance cost, chilled water equipment life, and occupant comfort.

Recommendation
The control programming for all systems needs to be cleaned up, and a new sequence of operations written. Specific to the chilled water system, the sequencing must address a smoother operational transition of chillers, chiller optimization to improve cooling energy efficiency, refrigerant monitoring in the chiller room, cooling tower bypass control, re-calibration of cooling coil control valves for all air handling and fan coil units, and any other operational concerns of maintenance personnel.

Benefits
The hardware and control infrastructure has been recently replaced and upgraded and is in good condition. The only upgrades required for the controls are re-programming and re-sequencing.

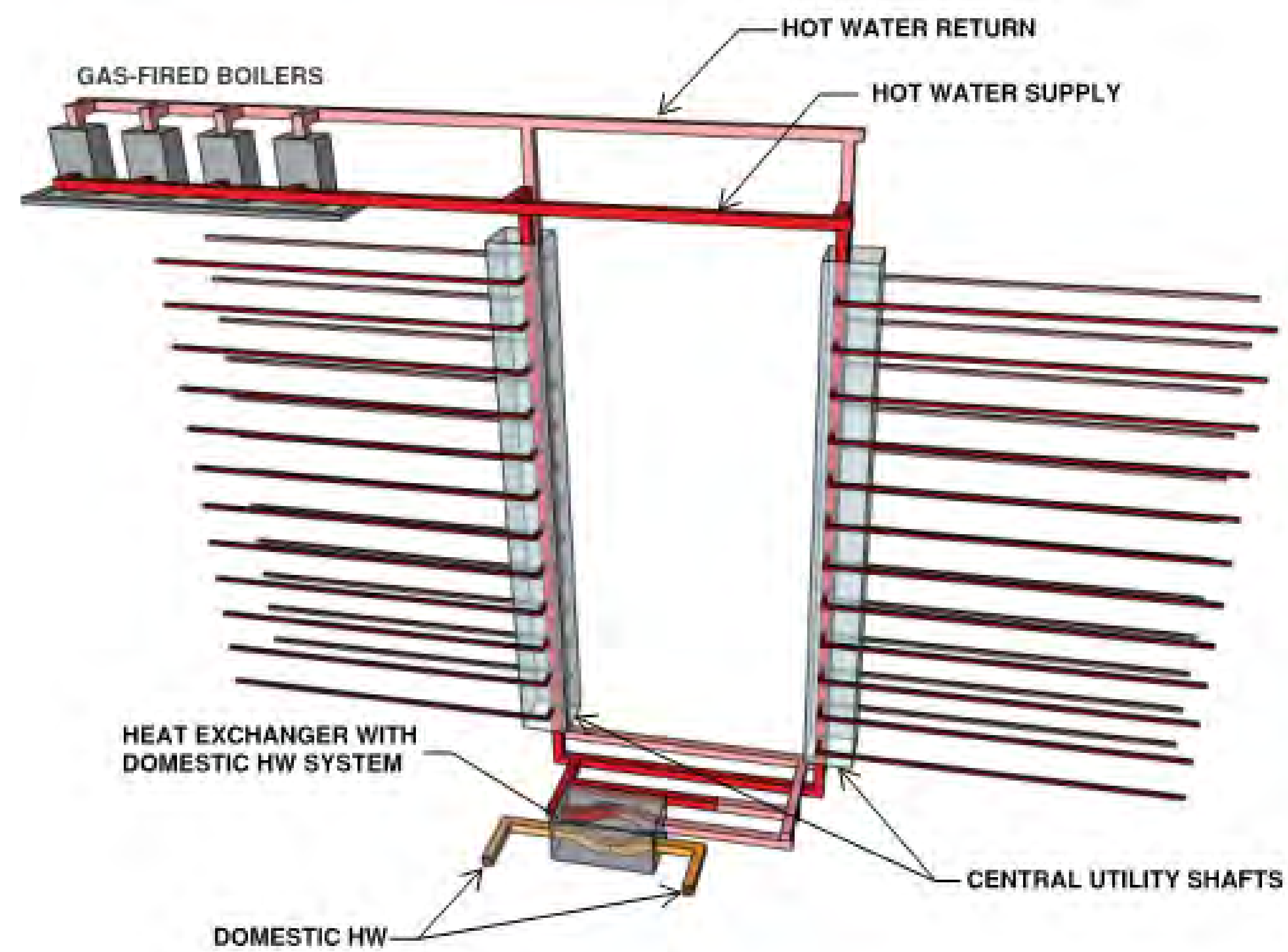
Cost
Rough Order of Magnitude (ROM) project cost of $402,765 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.5 HEATING HOT WATER SYSTEM

An overall schematic of the heating hot water system is shown on the right. The current condition, remaining equipment life, upgrade recommendations, benefits, and cost impact for each component of this system is described in detail in the following report sections.

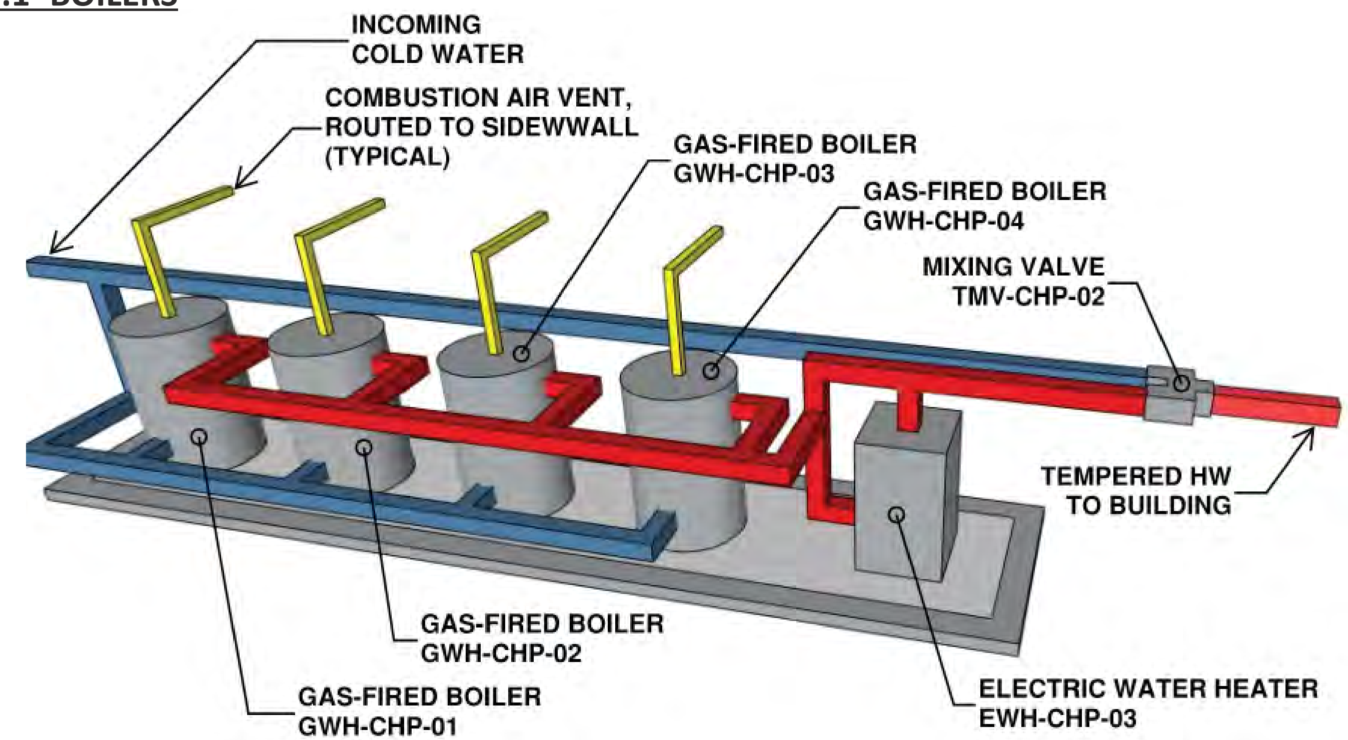
Heating Hot Water System Summary

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Boilers	Good	20-25 Years	Minimal	$20,772
Heat Exchangers	Good	25-30 Years	None	$0
HHW Piping	Fair	25-50 Years	Minimal	$183,888
Controls	Fair	0 Years	Moderate	$402,765



Heating Hot Water System Diagram

1.5.1 BOILERS



Description of Existing Systems
The boiler plant located on the roof houses three (3) A.O. Smith gas-fired boilers for primary hot water heating and one (1) A.O. Smith electric water heater used for supplemental water heating and storage.

Boilers

Condition
The boilers and associated piping, controls, and pumps were installed in 2010 and are in very good operating condition.

Equipment Life
There is approximately 20-25 years of service life left for each of the boilers located in the rooftop boiler plant room.

Recommendation
No upgrades or component replacements are recommended for the rooftop boiler plant, as this scope of upgrade was recently performed in 2010.

Benefits
The current heating hot water system is efficient, practical, appropriately-sized, and in very good operating condition. This system will continue to operate effectively and efficiently, which will have a great cost-saving impact when compared to boiler systems in similar buildings.

Code
To meet the current Energy Code, isolation valves must be installed on the existing piping into and out of the boilers. Other than that, there are no code implications to continuing to operate the existing boilers, pumps, or associated valves and fittings.

Cost
Rough Order of Magnitude (ROM) project cost of $20,772 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.5.2 HEAT EXCHANGERS

Hydronic heat exchangers are used in conjunction with the two electric water heaters in the basement in order to heat the domestic hot water system. The heat exchangers are the primary heating source of the domestic hot water system. These heat exchangers were upgraded from the previous steam heat exchangers in 2009.

Heat Exchangers

Condition
The current heat exchangers are in good operating condition, and there have been no indication of issues, complaints, or deficiencies with this system.

Equipment Life
The heat exchangers are under a decade old and have significant remaining useful equipment life.

Recommendation
It is recommended that the current heat exchanger configuration continue to be used.

Cost
$0

1.5.3 HEATING HOT WATER PIPING

Description of Existing Systems
Heating hot water is distributed vertically down through the building within the two (2) core utility shafts. Hot water supply and return piping is stubbed out to each floor of the building and distributed horizontally as required by the fan coil unit locations. Hot water is also supplied to the air handling units on the Fan Floor, the basement zone air handling unit, as well as the domestic hot water heat exchangers in the basement central plant.

Condition
Much of the hot water distribution piping is in fair condition and at a low risk for pipe bursts or leaks. There are portions of the hot water piping that is uninsulated, which is both energy inefficient and a code violation.

Equipment Life
The hot water distribution system likely has at least 25 years of remaining service life.

Recommendation
It is recommended that all hot water piping be tested for signs of severe corrosion or thin walls. If there are sections of piping that appear to be at significant risk for failure, these sections should be replaced. All piping (existing and new) will need to be properly insulated.

Benefits
The existing heating hot water piping appears to be in fair condition and should not require extensive upgrades in the near future.

Code
Any uninsulated heating hot water piping is a code violation and will need to be insulated to bring these systems up to current energy code.

Cost
Rough Order of Magnitude (ROM) project cost of $183,888 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.5.4 HEATING HOT WATER CONTROLS

Description of Existing Systems
Heating hot water system operation is controlled by a building-wide direct digital control (DDC) system. This control structure dictates the operation of hot water system components such as boilers, pumps, heat exchangers, and coil control valves. This type of control structure is intended to allow the hot water system to operate automatically, though the system can be overridden and controlled manually by operations when required for maintenance or parts replacement.

Condition
The control systems are not functioning to full potential, and the current sequence of operations is disjointed and flawed. This greatly affects the day-to-day operation of the building, including energy use, maintenance cost, hot water equipment life, and occupant comfort.

Recommendation
The control programming for all systems needs to be cleaned up, and a new sequence of operations written. Specific to the hot water system, the sequencing must address boiler optimization to improve heating energy efficiency, re-calibration of heating coil control valves for all air handling and fan coil units, and any other operational concerns of maintenance personnel.

Benefits
The hardware and control infrastructure has been recently replaced and upgraded and is in good condition. The only upgrades required for the controls are re-programming and re-sequencing.

Cost
Rough Order of Magnitude (ROM) project cost of $183,888 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6 AIR DISTRIBUTION SYSTEMS

Air Distribution Systems Summary

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Outside Air Intakes	Poor	0 Years	Major	$89,278
Perimeter Zone Air Handling Units	Poor	0 Years	Total Replacement	$503,393
Fan Coil Units	Good	25 Years	Drain Pans Only	$3,401,736
Interior Zone Air Handling Units	Poor	0 Years	Total Replacement	$7,586,060
Dual Duct Terminal Units	Good	25+ Years	Controls Only	$4,060,753
Basement Zone Air Handling Unit	Poor	0 Years	Total Replacement	$766,200
Work Release Air Handling Units	Good	0-5 Years	Total Replacement	$1,436,625
Work Release Exhaust System	Good	0-5	Total Replacement	$241,353
IT Room Cooling	Fair	10+ Years	Increased Cooling	$262,604
Toilet Exhaust System (Fans)	Good	20+ Years	None	-
Toilet Exhaust System (Ductwork)	Poor	0 Years	Total Replacement	$277,748
Elevator Machine Rooms Cooling	-	-	Addition of Cooling	$439,607
Vertical Ductwork Risers	Fair	25 Years	Substantial	$7,987,304
Airside Controls	Poor	-	Reprogramming	$335,638

1.6.1 OUTSIDE AIR INTAKES

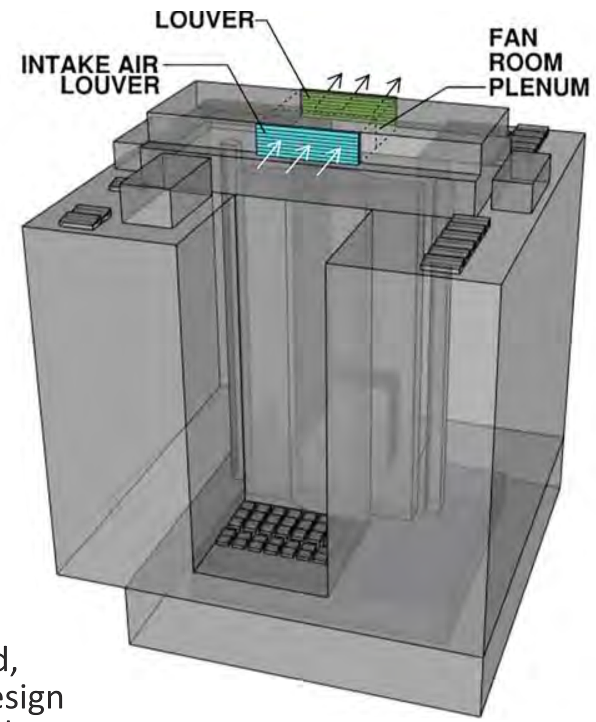
Description of Existing Systems

Outside air for ventilation is brought into the building through louvers on the side of a plenum room located at the Fan Floor. The fresh, outside air is then ducted to the Fan Floor air handling units, mixed with return air where applicable, and delivered to the fan coil units or dual duct terminal units as required.

In all operation modes, at least the code-required minimum outside air levels are being supplied to each interior and perimeter space. However, the outside air dampers for the interior zone air handling units are barely open, meaning that ventilation to these units, and thus to the dual duct terminal units, cannot be appropriately increased. This increase of outside air delivery in periods where the outside air temperature is appropriate to provide free cooling is called airside economizer mode and is required by the Washington State and Seattle Energy Codes. This is not being met by the current outside air damper design for the interior zones.

Outside Air Intakes

Condition
The louvers on the façade of the plenum room are in fair condition, but likely need to be cleaned. The dampers that control the amount of outside air to each unit are in fair condition, but are in fixed position and are not able to be adjusted properly. In general, the outside air intake is sized appropriately and located in an acceptable position on the roof.



Equipment Life
As the outside air intake consists of mainly louvers, ductwork, and dampers, there is sufficient equipment life remaining in these elements to continue operating as they currently are. However, in order to function properly, these elements will need to be cleaned, pressure tested, and in some cases replaced.

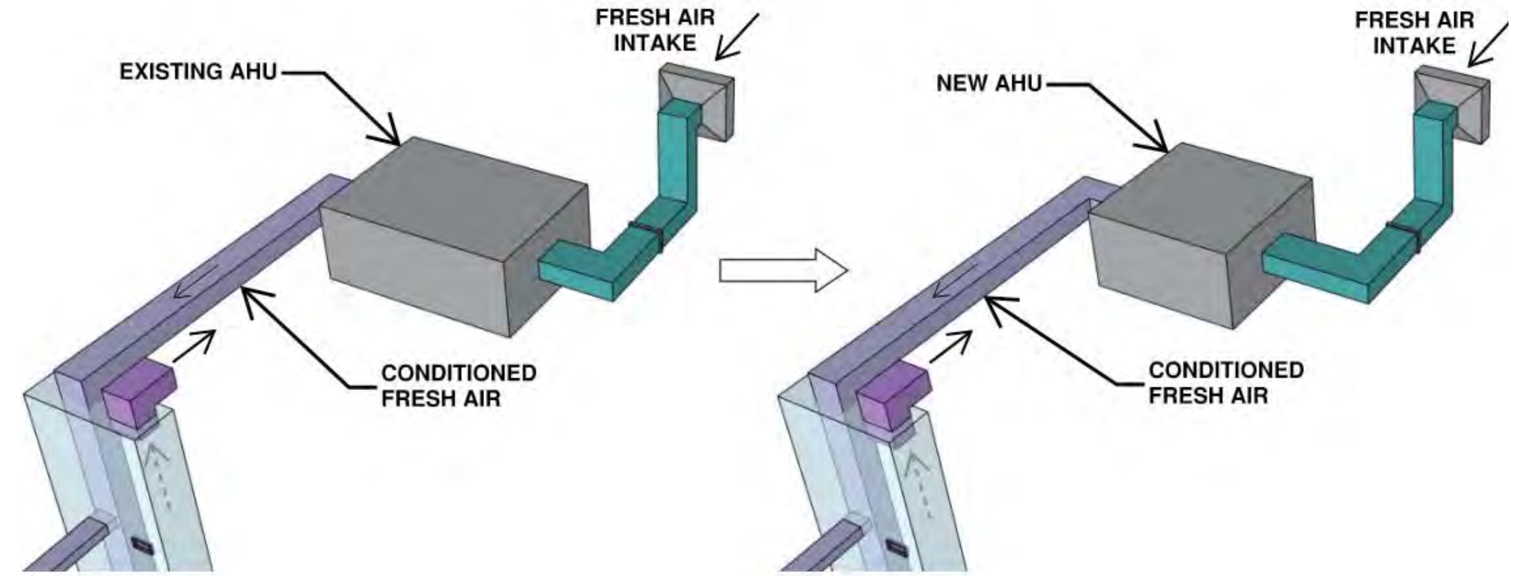
Recommendation
It is recommended that the outside air louvers be cleaned, pressure-tested, and re-balanced to ensure the proper design outside air flow. The dampers that control the flow to each ductwork path are to be replaced and balanced to the appropriate airflow for the corresponding system. These upgrades will allow the systems to operate in airside economizer mode, which is both code compliant and energy efficient.

Benefits
The size, location, and configuration of the outside air intake system is sufficient for this building, and a major redesign of this system is not required. Performing only the small upgrades as recommended is a cost-effective and practical solution to solving any ventilation issues within the building. The recommended upgrades listed above will allow the systems to operate in airside economizer mode, which is both code-compliant and energy efficient. In addition, this will ensure to a greater accuracy that proper ventilation is being supplied to each space, which is imperative for occupant health and wellness.

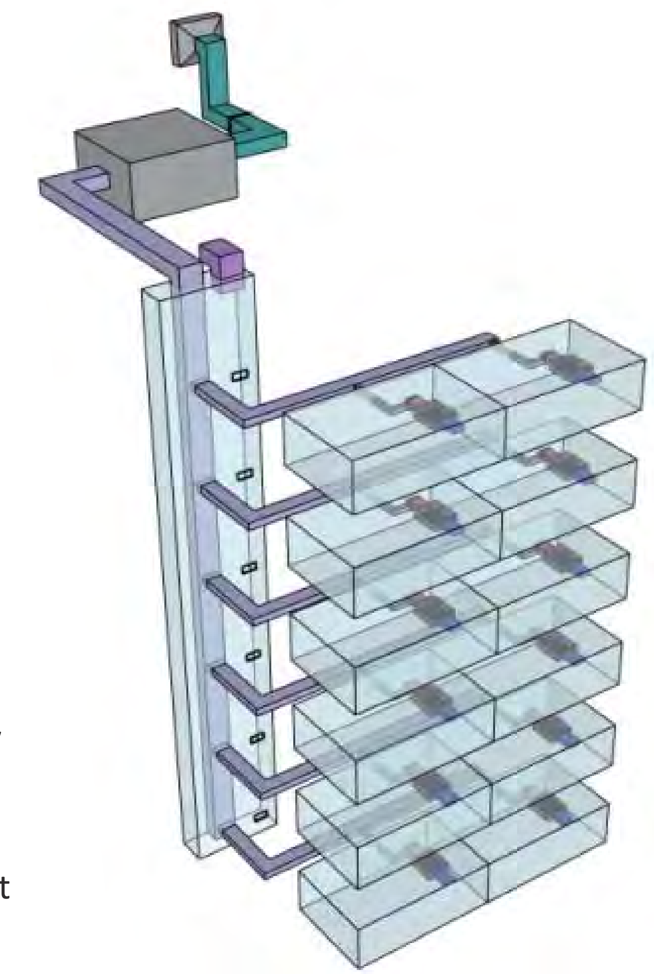
Code
The current configuration of the interior zone outside air dampers does not allow for airside economizer mode, which is required by Washington State and Seattle Energy Codes. The recommended upgrades will need to allow for all zones to have the ability to operate in full airside economizer mode.

Cost
Rough Order of Magnitude (ROM) project cost of $89,278 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.2 PERIMETER ZONE AIR HANDLING UNIT



Description of Existing Systems
There are two existing air handling units (AHUs) located on the Fan Floor that serve the perimeter zones of the building. One of these air handling units serves the perimeter east wing of the building and the other serves the perimeter west wing. The units are 100% dedicated outside air units and have a traditional configuration with a supply fan, heating and cooling coils, and filters. When the air leaves each unit, it is ducted into the central utility shaft and delivered to the interior zone fan coil units on each floor.



The exhaust fan on the Fan Floor draws un-ducted return air from the shaft risers. This return air enters the shaft at the plenum above the ceiling on each floor. Return airflow into the central shaft is not measured or controlled on a floor-by-floor basis. Unlike the interior zones, this return air does not return to the unit to mix with the outside air, rather it is exhausted straight to the exterior of the building.

Air Handling Unit

Condition
These units are in poor condition due to age. The supply fan drives are worn and the fan, and the fan casings have cracked and been welded back into place. The motor bearings have likely never been replaced and are at risk of failure. Failure of these components could result in significant portions of the building not being conditioned or ventilated.

The sheet metal casing for the air handling units is no longer sealed properly and is extremely leaky. This accounts for a significant increase in the energy and cost required to supply the required airflow to each floor and zone.

Equipment Life
These units are past the recommended equipment life and could be subject to complete failure at any time. There is no service life left in these air handling units.

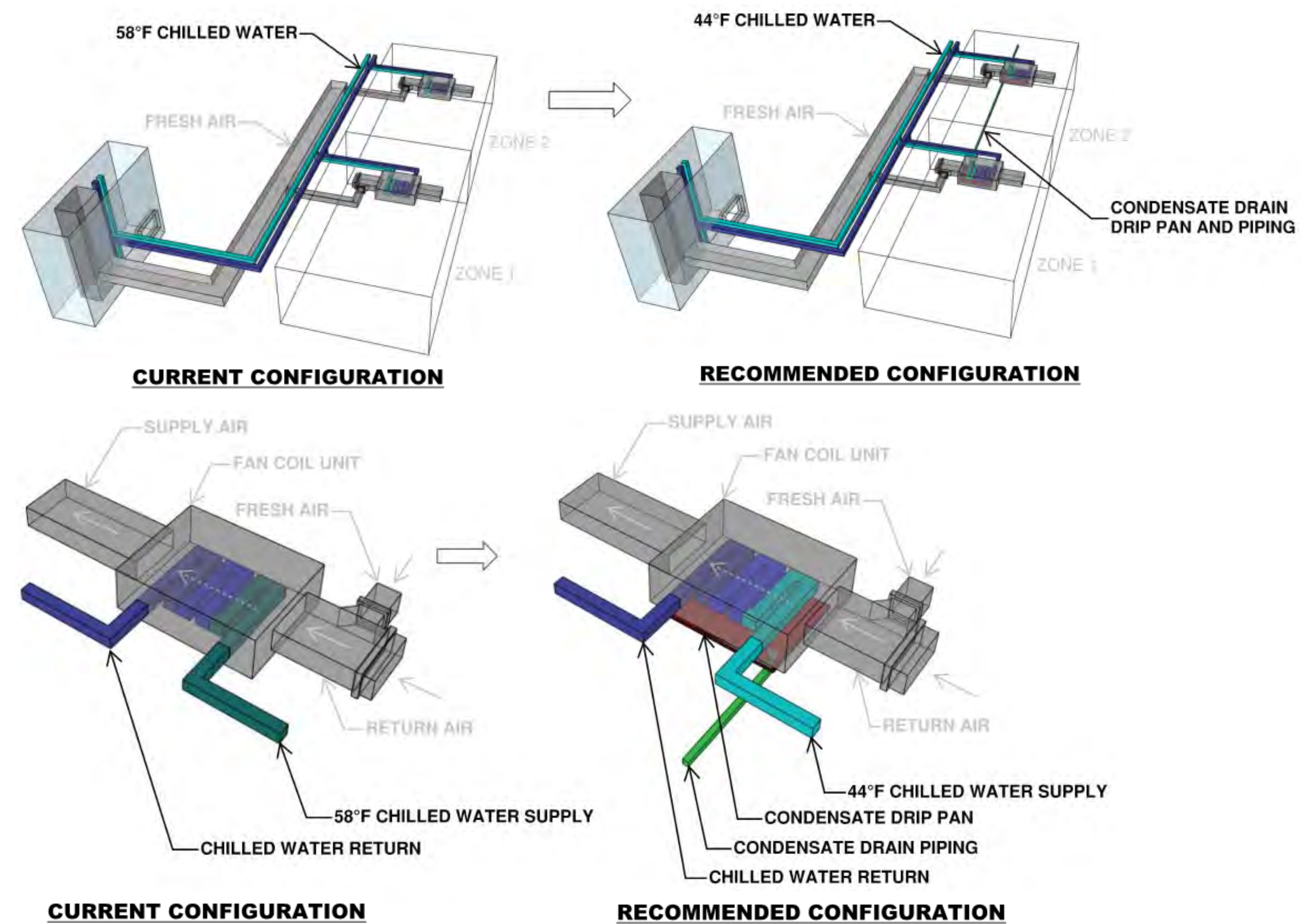
Recommendation
It is recommended that these air handling units be completely replaced with new units selected for the same heating capacity, cooling capacity, and airflow volume. Similar to the current units, each new air handling unit will be a 100% dedicated outside air unit with a supply fan, heating and cooling coils, and filters. The existing ductwork and fittings shall be reused as described in the following sections of this report.

Benefits
There is ample space on the Fan Floor for the replacement of these air handling units, and the distribution ductwork is in acceptable condition. Replacing just the air handling unit and not the entire ductwork system is a cost-effective and energy efficient solution to upgrading this system.

Code
Newly installed equipment will need to conform to the fan power, motor efficiency, filtration, and ventilation requirements set forth by Washington State and Seattle Energy Codes.

Cost
Rough Order of Magnitude (ROM) project cost of $503,393 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.3 FAN COIL UNITS



Description of Existing Systems
Fan coil terminal units (FCUs) are used to cool and heat the perimeter spaces in the building. Each fan coil unit is supplied with ventilation air via the perimeter zone air handling unit described above, and utilizes chilled and hot water to cool and heat each space. Condensate drip pans and associated condensate drain piping have not been installed on many of the fan coil units.

Because there is no condensate drainage for many of the fan coil units, chilled water is supplied to the fan coil units at 58°F, thereby eliminating condensation on the cooling coils and preventing excess moisture from damaging the ceiling and nearby property. However, the cooling coils cannot properly dehumidify the space in this configuration, which can cause significant occupant discomfort as well as potential property damage in historic or otherwise sensitive spaces. These types of units are designed to utilize chilled water around 44°F and operate most efficiently with entering chilled water in that temperature range.

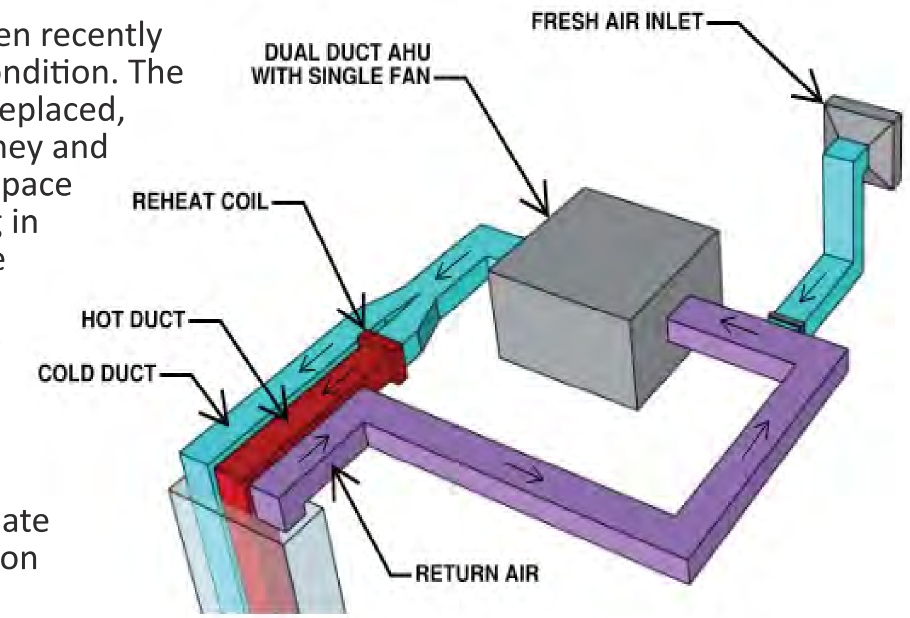
Fan Coil Terminal Units

Condition
Fan coil units throughout the property were replaced within the past decade, and are currently in excellent operating condition. However, they are not able to be operated properly due to the condensate drainage issue outlined above. In the spaces surveyed, there is ample plenum space above the ceiling to run condensate drainage.

Equipment Life
Fan coil units replaced or installed in 2004 have approximately 20-25 years of usable equipment life remaining. However, these units are no longer supported by the manufacturer, so any upgrades that occur to these units will involve rebuilding each box in-house as opposed to using replacing parts ordered from the manufacturer.

Recommendation
In order for the fan coil units to function properly and for occupant comfort to be satisfied, low temperature chilled water (44°F) should be supplied to the coils, and condensate drainage from these coils needs to be addressed. The fan coil units will operate much more efficiently, occupant discomfort will be minimized in these spaces, and historical elements in these spaces will not be subject to excess moisture.

Benefits
The fan coil units themselves have been recently replaced and are in good operating condition. The units themselves will not need to be replaced, which results in saving significant money and time. Additionally, there is adequate space to run sloped condensate drain piping in the ceiling plenums, which will reduce the amount of coordination required with other equipment and disciplines.

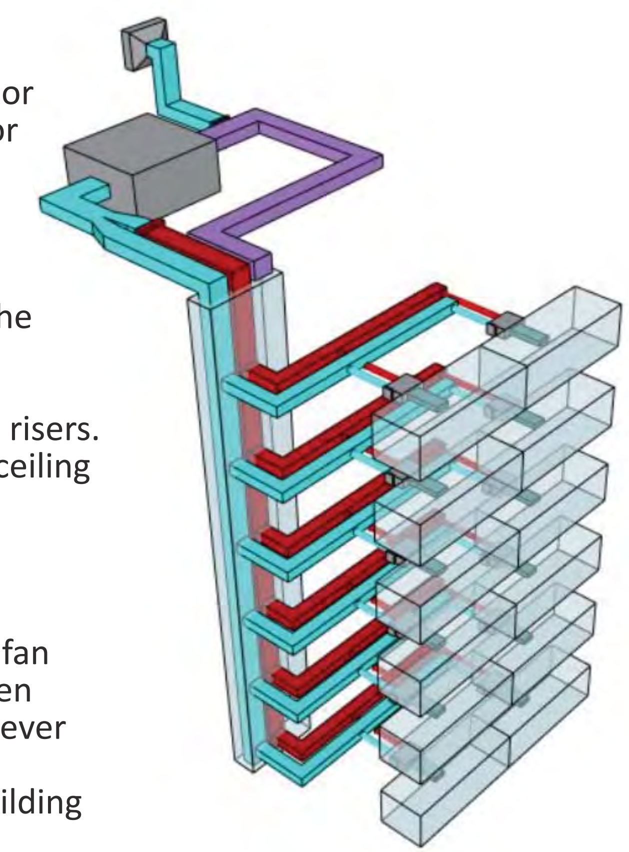


Cost
Rough Order of Magnitude (ROM) project cost of $3,401,736 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.4 INTERIOR ZONE AIR HANDLING UNITS

Description of Existing Systems
There are two existing air handling units (AHUs) located on the Fan Floor that serve the interior of the building. One of these air handling units serves the interior east wing of the building and the other serves the interior west wing. The units are variable air volume (VAV) units and have a traditional configuration with a supply fan, return fan with airside economizer, heating and cooling coils, and filters. When the air leaves each unit, it is split into two (2) paths: a cold duct and a hot duct. The Whot duct has a reheat coil.

The return fan draws un-ducted return air from the shaft risers. This return air enters the shaft at the plenum above the ceiling on each floor. Return airflow into the central shaft is not measured or controlled on a floor-by-floor basis.

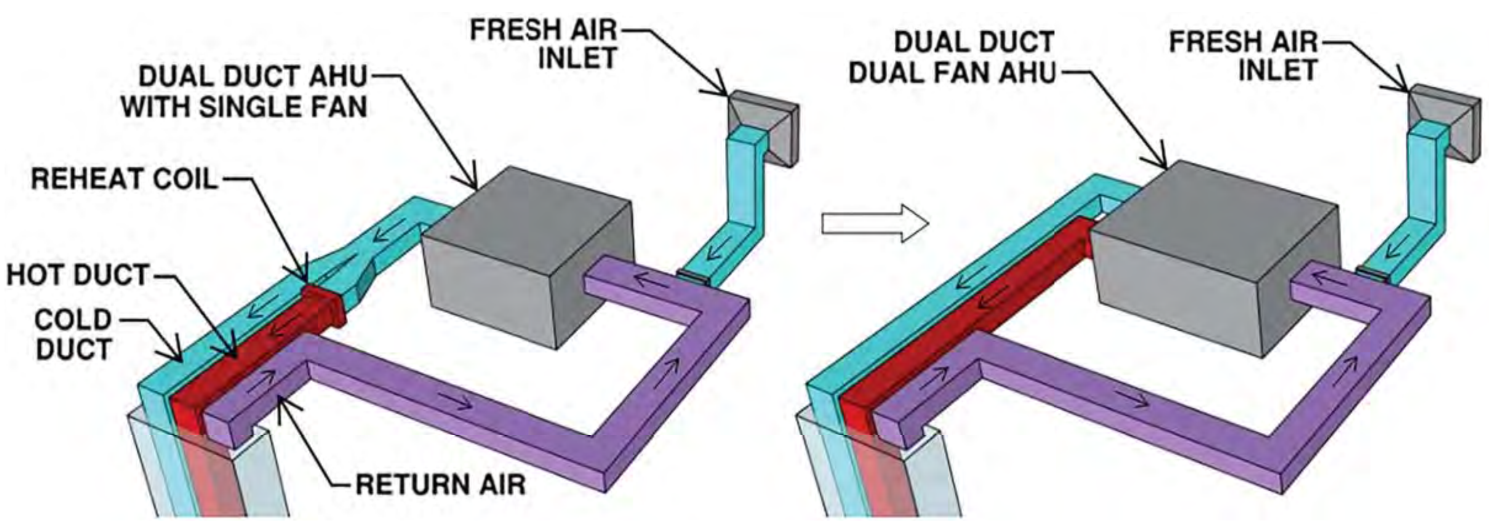


Condition
These units are in poor condition due to age. The supply fan drives are worn and the fan casings have cracked and been welded back into place. The motor bearings have likely never been replaced and are at risk of failure. Failure of these components could result in significant portions of the building not being conditioned or ventilated.

The sheet metal casing for the air handling units is no longer sealed properly and is extremely leaky. This accounts for a significant increase in energy and cost required to supply the required airflow to each floor and zone.

Equipment Life
These units are past the recommended equipment life and could be subject to complete failure at any time. There is no service life left in these air handling units.

Recommendation
It is recommended that the systems serving the interior zones be converted to dual-duct/dual-fan systems. In this configuration, these units are to be replaced with new variable air volume air handling units of the same available capacity. Each unit will have two supply fans: one (1) fan serving the hot duct and one (1) fan serving the cold duct. This will eliminate the simultaneous heating and cooling associated with the existing system.



The existing ductwork will be utilized to deliver hot and cold air to the dual duct terminal units on each floor. This ductwork and sheet metal will need to be cleaned, re-sealed, re-insulated, and pressure-tested prior to connection to the new air handling units.

Benefits
Conversion to the dual-duct/dual-fan system will eliminate simultaneous heating and cooling, thus bringing the system up to energy code standards, improving energy efficiency, and lowering energy costs. In addition, installing new air handling units will vastly increase the available equipment life and reduce concerns of equipment failure.

By converting to a dual-duct/dual fan system rather than a typical variable air volume system, the King County Courthouse will be able to reuse the existing ductwork infrastructure and dual duct terminal units, thus minimizing the cost to upgrade this system.

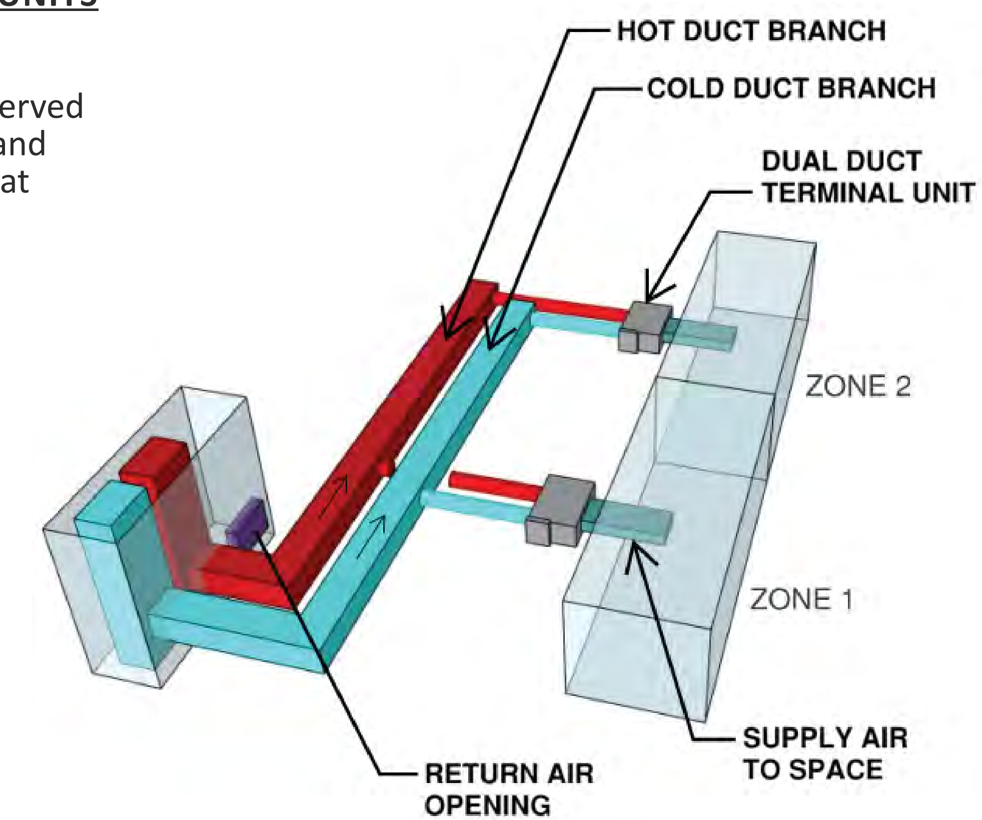
Code
The recommended system will eliminate simultaneous heating and cooling, thus bringing this system up to the Seattle Energy Code.

Cost
Rough Order of Magnitude (ROM) project cost of $7,586,060 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.5 DUAL DUCT TERMINAL UNITS

Description of Existing Systems
Each dual duct terminal unit is served by two (2) ducts: a hot air duct and a cold air duct, each originating at a Fan Floor interior zone air handling unit.

The two ducts are distributed through the plenum above the ceiling on each floor, and connected to the mixing box within each terminal unit, where the airstreams are mixed to create air at the temperature to properly condition the zone. This is a form of simultaneous heating and cooling, which is energy inefficient and a violation of the energy code.



Condition
The individual terminal units were recently replaced in 2010 during a seismic upgrade and are in good operating condition. The existing branch ductwork appears to be in acceptable operating condition, but this should be field-verified while performing work in all areas.

Equipment Life
There is significant service life (25+ years) remaining in the individual terminal units and ductwork. There is no immediate requirement to replace this equipment.

Recommendation
It is recommended that the existing infrastructure (ductwork and terminal units) be re-used in the dual-duct/dual-fan configuration described in the previous section of this report. This will require re-programming of the controls on each individual terminal unit and a new sequence of operation to be written to appropriately control space comfort.

Benefits
Conversion to the dual-duct/dual-fan system will eliminate simultaneous heating and cooling, thus bringing the system up to energy code standards, improving energy efficiency, and lowering energy costs. In addition, reusing the existing ductwork infrastructure and dual duct terminal units, will minimize the cost to upgrade this system.

Code
The recommended system will eliminate simultaneous heating and cooling, thus bringing this system up to the Seattle Energy Code.

Cost
Rough Order of Magnitude (ROM) project cost of $4,060,753 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.6 BASEMENT ZONE AIR HANDLING UNIT

Description of Existing System
The air handling unit located in the basement central plant serves the basement of the courthouse building. The air handling unit has a multi-zone configuration, which requires the mixing of hot and cold air to the proportions required for proper zone temperatures. This configuration is typically very energy inefficient, as a lot of heating and cooling energy is wasted in the process of mixing the airstreams.

This unit previously utilized steam heating coils, but heating and chilled water coils were installed in a retrofit when the steam system was removed from the building.

The basement zone air handling unit is currently undersized and cannot handle the peak cooling loads that are seen in the basement. This is due to the increased cooling load associated with many of the shops with high cooling requirements moving into the basement where there was previously storage with low cooling requirements.

Condition
The current air handling is in fair condition and operating properly, though the unit does not have the available cooling or heating capacity required to serve the basement zone.

Recommendation
It is recommended that the current basement multi-zone air handling unit be replaced with a variable air volume (VAV) air handling unit that is appropriately sized to serve the basement zone. This unit shall utilize chilled and heating hot water coils as well as MERV 13 filters (Minimum Efficiency Reporting Value of 13) for outside air and return air. The new unit shall be capable of operating with 100% airside economizer as dictated by the current Washington State and Seattle Energy Codes.

Benefits
Upgrading to a properly-sized variable air volume air handling unit will ensure that the basement zone is provided with the appropriate amount of cooling, heating, and ventilation. This system configuration also allows this system to be brought up to Washington State and Seattle Energy Codes.

Code
The new unit shall be selected and designed to comply with all applicable codes. This includes fan power requirements, motor horsepower requirements, and airside economizer operation.

Cost
Rough Order of Magnitude (ROM) project cost of $766,200 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.7 WORK RELEASE AIR HANDLING UNITS

Description of Existing Systems
There are two (2) air handling units (AHUs) located on the rooftop that serve the work release portion of the facility. Each of these units is a 100% outside air unit, where all of the heating or cooling air supplied to the space is fresh ventilation air. Air from the space is exhausted to the atmosphere; no air is returned to the unit to mix with the outside air like a traditional air handling unit system, and no energy recovery is utilized in these units.

Within the spaces, there are fan-powered terminal boxes that control the amount of air being delivered at a given time. These boxes also have hot water coils for reheat capability. These terminal units have been recently refurbished and are in proper operating condition.

Condition
Although the current units are not very energy efficient, the existing air handling units are in good operating condition and are functioning as intended. The terminal boxes at space level are operating properly.

Equipment Life
These air handling units were installed after the units on the Fan Floor, so the current units have equipment life remaining, but it is unclear how many years are remaining on the recommended installed life of this equipment.

Recommendation
Glumac recommends that these air handling units be completely replaced with new units. The new units shall also be 100% outside air units sized and selected for the identical heating, cooling, and airflow capacities as the current air handling units. However, it is recommended that the new systems utilize some sort of air-to-air energy recovery. In this configuration, the incoming fresh air would pass through a heat exchanger and be either preheated in the winter or pre-cooled in the summer, thus reducing energy costs.

Cost
Rough Order of Magnitude (ROM) project cost of $1,436,625 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.8 WORK RELEASE EXHAUST SYSTEM

Description of Existing System
There is a separate exhaust system in use for the Work Release portion of the building. The system is comprised of multiple roof-mounted upblast exhaust fans and connected exhaust ductwork risers. Horizontal taps come off each riser at each floor level and are used to exhaust air from each space.

Condition
The existing exhaust fans and ductwork are in good operating condition and are functioning as intended.

Equipment Life
The current fans have equipment life remaining, but it is unclear how many years are remaining on the recommended installed life of this equipment.

Recommendation
Glumac recommends that these up-blast fans be replaced with centrifugal, in-line fans that deliver exhaust air back to the Work Release Air Handling Unit for use in air-to-air energy recovery as described above.

The new fans should be selected to be able to adequately handle the required amount of exhaust air from the Work Release spaces and fan motors sized to handle the required fan static pressure to exhaust air from the space and send this air through the air-to-air heat exchanger. The fans can be separate from or integral to the Work Release Air Handling Unit.

Cost
Rough Order of Magnitude (ROM) project cost of $241,353 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.9 IT ROOM COOLING

Description of Existing Systems
Many of the IDF (Intermediate Distribution Frame) and MDF (Main Distribution Frame) rooms throughout the facility are operating at temperatures that are much higher than recommended for these types of spaces. In the rooms where this occurs, there is significant risk of equipment overheating and failure as well as property damage.

Room W259 is utilizing spot cooling, or a strategy in which only certain areas have been provided with adequate cooling.

Recommendation
Glumac recommends that two-pipe, cooling only fan coil units (FCUs) be installed to cool all Intermediate Distribution Frame, Main Distribution Frame, and Telecom rooms throughout the facility where they are not already installed. These fan coil units should be sized and selected to handle the peak cooling load based on the heat output of all equipment within the room. These units should operate with 44°F incoming chilled water as recommended by the manufacturer to ensure proper cooling of these spaces. In order to achieve this, the chilled water system must be switched over to operate at this fluid temperature supply set-point, which will require the upgrades outlined in the Fan Coil section of this report.

Any chilled water piping routed to the fan coil unit should not interfere with existing equipment or be routed in any way that could cause damage to the equipment in the event of excess condensation on the pipe or a potential pipe burst.

Code
All electrical and telecom rooms must be provided with some sort of permanent cooling method by the mechanical code. Code issues will be eliminated if the recommendation above is implemented.

Cost
Rough Order of Magnitude (ROM) project cost of $262,604 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.10 TOILET EXHAUST SYSTEM

Description of Existing Systems
There are two separate toilet exhaust systems in use at the King County Courthouse building. One system serves the toilet rooms in the west wing, and the other system serves the toilet rooms in the east wing. Each system is comprised of a roof-mounted upblast exhaust fan and a connected exhaust ductwork riser. Horizontal taps come off each riser at each floor level and are used to exhaust air from each toilet room location.

Condition
There are portions of both systems that have been severely damaged by previous construction renovations or upgrades. It appears that this damage has been repaired in the east system but not in the west system. In the west toilet room exhaust system, there are gaps spanning several vertical feet in the ductwork shaft. These gaps have been repaired in the east toilet room exhaust system.

These gaps in the west exhaust shaft eliminate the ability to exhaust odorous air from any toilet room below the gap, which is both a code violation and an occupant health concern.

Equipment Life
The rooftop exhaust fans and the ductwork that exists in the vertical shafts are in good condition and can be used moving forward.

Recommendation
Glumac recommends that the west exhaust ductwork be repaired and the branches balanced to the correct airflows. This upgrade has already been done to the east exhaust system.

Benefits
The existing exhaust fans are in good operating condition, and the toilet exhaust on the east side of the building is functioning properly. Installing ductwork where gaps exist and re-balancing branch ductwork is a relatively inexpensive upgrade to bring this system up to code compliance and proper operation.

Code
The existing configuration of the west toilet room exhaust system is a violation of current codes; each toilet room must have an adequate amount of exhaust air. Completing the recommendation described above will bring this system up to code and improve occupant health and comfort for a relatively small cost.

Cost
Rough Order of Magnitude (ROM) project cost of $277,748 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.11 LEVEL 9 AND FAN ROOM ELEVATOR MACHINE ROOMS COOLING

Description of Existing Systems
Two of the current elevator machine rooms (EMRs) do not have a cooling system in place, only supply and exhaust air. These elevator machine rooms are located on Level 9.5 and in the Fan Room. Space temperatures in these rooms are higher than the recommended temperature set point range for this type of room. The elevator machine room that serves the Service Elevator has proper cooling in place.

Recommendation
Glumac recommends that a two-pipe, cooling only fan coil unit be installed to cool the Level 9.5 and Fan Room elevator machine rooms. These fan coil units should be sized and selected to handle the peak cooling load based on the heat output of all equipment within the elevator machine rooms. Any chilled water piping routed to the fan coil unit should not interfere with existing equipment or be routed in any way that could cause damage to the equipment in the event of excess condensation on the pipe or a potential pipe burst.

Cost
Rough Order of Magnitude (ROM) project cost of $439,607 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.12 VERTICAL DUCTWORK RISERS

Description of Existing System
Ductwork is distributed vertically through the building via two (2) main utility shafts on either side of the elevator core. Each shaft consists of supply ductwork from the air handling units located on the Fan Floor. This shaft also has openings to the plenum on each floor that allows return air to enter the shaft and travel back up to the Fan Floor.

The existing shafts do not meet fire rating requirements. In addition, there appears to be a significant amount of abandoned ductwork and/or piping in these shafts that are not currently being used.

Condition
Much of the vertical ductwork is uninsulated, and the inside of the shafts are extremely cluttered and dirty. Overall, the ductwork is in moderately good condition and the shafts are in poor operating condition.

Equipment Life
The vertical ductwork has significant equipment life remaining. Estimates indicate that there is at least 25-30 years of usable life remaining in this ductwork.

Recommendation
It is recommended that all abandoned in place ductwork and piping be removed from these shafts, and the interior of the two (2) vertical shafts be completely cleaned and any excess materials removed. The ductwork within these shafts should also be cleaned, insulated where applicable, and pressure-tested.

It is required that the shafts then be upgraded to meet the 2-hour fire rating requirement.

Benefits
The shafts are fairly large, and there is sufficient space for all services, insulation, and clearances that are required to serve the building. This should make upgrading these shafts fairly easy from a constructibility standpoint.

Code
Where they are not, the ductwork risers will need to be insulated to meet current code. In addition, the shafts that these ducts run in will need to be fire-rated as described above.

Cost
Rough Order of Magnitude (ROM) project cost of $7,987,304 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.13 AIRSIDE CONTROLS

Description of Existing Systems
Airside system operation is controlled by a building-wide digital data control (DDC) system. This control structure dictates the operation of airside system components such as air handling units, fan coil units, dual duct terminal units, fans, dampers, and temperature set-points that dictate the operation of wet-side control systems. While this type of control structure is intended to allow the various airside systems to operate automatically, the system is often overridden and controlled manually by operations.

Condition
The control systems are not functioning to full potential, and the current sequence of operations is disjointed and flawed. This greatly affects the day-to-day operation of the building, including energy use, maintenance cost, airside equipment life, and occupant comfort.

Recommendation
The control programming for all systems needs to be cleaned up, and a new sequence of operations written. Specific to the airside systems, the sequencing must address operation of the dual-duct, dual-fan system, economizer operation for all applicable systems, temperature and humidity set-points in all spaces, and any other operational concerns of maintenance personnel.

Benefits
The hardware and control infrastructure has been recently replaced and upgraded and is in good condition. The only upgrades required for the controls are re-programming and re-sequencing.

Cost
Rough Order of Magnitude (ROM) project cost of $335,638 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.7 LIFE SAFETY

Life Safety System Summary

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Rooftop Smoke Hatches	Poor	0 Years	Total Replacement	$1,081,874
Fire Smoke Dampers	Poor / Absent	0 Years	Total Replacement / Addition	$2,267,339

1.7.1 ROOFTOP SMOKE HATCHES

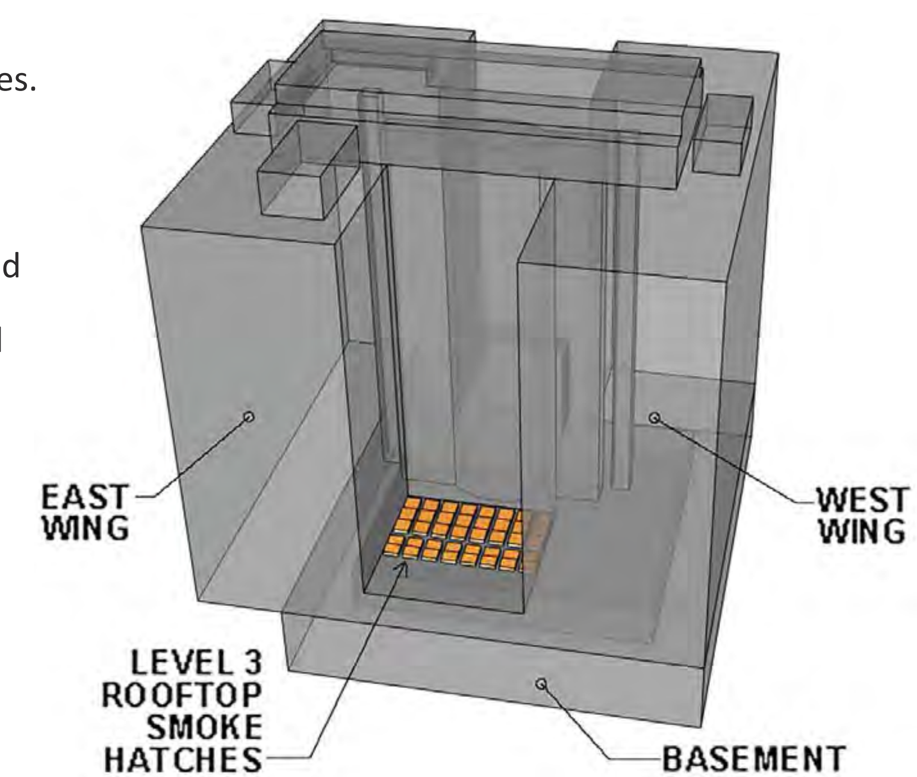
Description of Existing System
Rooftop smoke hatches are provided on Levels 1A and Level 3 rooftops for use in post-fire smoke removal from the building. These hatches are the means by which smoke is able to exit the building in the event of a fire and are required by the life safety code.

Condition
The existing roof hatch openings are very old and not operating properly. These hatches will fail open in the case of an event, as required, but cannot latch back into place.

Equipment Life
There is no remaining equipment life available for the rooftop smoke hatches.

Recommendation
These hatches should be completely replaced with new systems. The new smoke hatches should be designed and specified to the airflow and control strategy required for a fully-functional life safety system.

Cost
Rough Order of Magnitude (ROM) project cost of $1,081,874 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.



1.7.2 FIRE-SMOKE DAMPERS

Description of Existing System
Fire-smoke dampers are required where ductwork crosses a fire-smoke rated partition within the facility. It is unclear if this occurs everywhere an intersection with a rated partition occurs.

Recommendation
Where an intersection between ductwork and a rated partition occurs, the appropriate damper will need to be installed within that ductwork. There will need to be additional rated partitions added to the building, particularly surrounding the central utility shafts, and any ductwork that crosses newly installed rated partitions will also need to have a fire-smoke damper installed.

Cost
Rough Order of Magnitude (ROM) project cost of $2,267,339 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.8 LEED SUMMARY

With all recommended upgrades, the King County Courthouse will need to comply with standards set forth by Leadership in Energy and Environmental Design (LEED) 2009 guidelines. There are several paths to LEED certification, so the impacts on system upgrades will vary depending on which credits are attempted by the project. At a minimum, the following actions must be taken to gain LEED certification:

- The control structure within the Courthouse will need to be upgraded to be more robust and will need to be used in conjunction with energy meters to monitor whole-building energy and water usage data.
- Energy-saving measures will need to be taken to ensure a minimum energy performance when compared to baseline systems for the same building. This could include fan power limitation in air handling units, energy recovery within air-side and wet-side systems, and sizing pumps appropriately to minimize pumping energy.
- Ensure that minimum fresh air requirements are met for all inhabited spaces.

The LEED design, documentation, and certification process is multi-faceted and will rely on coordination between all disciplines, including architecture, electrical, lighting, mechanical, plumbing, controls, and construction.

Section Contents

1.1 CURRENT SYSTEMS

1.1.1 HIGH LEVEL OVERVIEW

The existing electrical distribution system is typical, in that 480V power is provided from a local utility vault into the Main Electrical Room in the basement, where a Main Switchboard is located. The Main Switchboard distributes 480V power to the rest of the building. Where necessary on the individual floors, dry-type transformers are provided to step the 480V power down to 208V power. See *Figure 1* for a high level conceptual sketch illustrating this.

Main switchboard photo

Similar to *Figure 1*, the Courthouse has 480V and 208V panels on each level, and normal power is provided to upper levels of the building through a large power trunk called a **bus duct**. Each side of the Courthouse (the west and the east) has its own dedicated bus duct and associated panels that tap off of it.

Bus duct photo

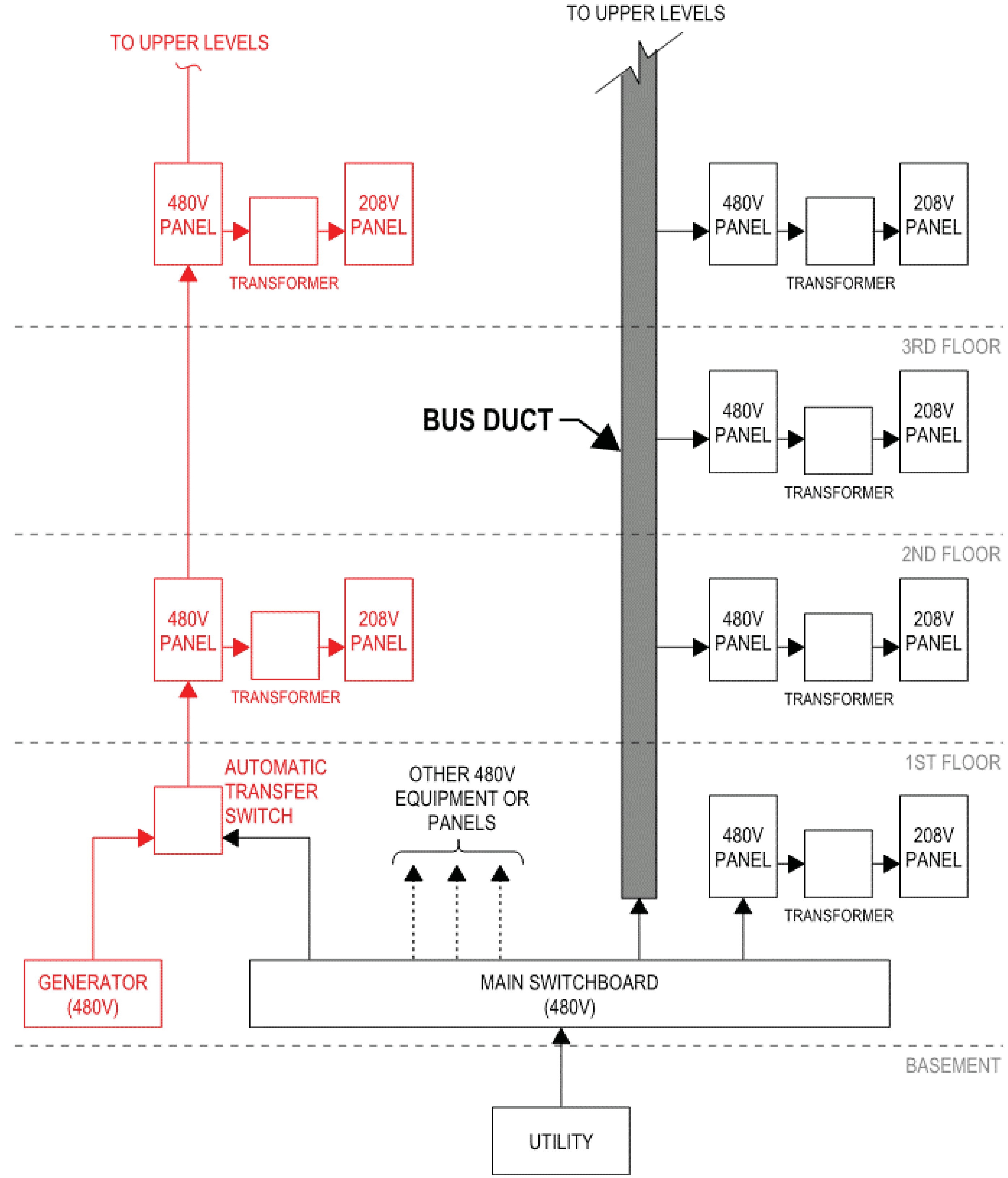


***FIGURE 1**: Typical Electrical Distribution Concept Sketch*

1.1.2 480V POWER

480V power is one of two typical types of power that a building uses, as illustrated in *Figure 1*. It typically serves lighting, and other systems that require a large amount of power (for example, elevators).

480V power panels are located on each level of the Courthouse, and appear to be fed directly from the Main Switchboard, or indirectly through one of the two bus ducts described in *Section 1.1.1.*

The Main Switchboard and 480V power panels appear to be in good condition, having been replaced in 2006. In contrast, the 480V bus ducts are dangerously old, with the potential of creating explosions and/or fires. **Injury** and **death** are possible results.

Supplemental Notes

1. *As electrical equipment ages, the insulation inside of it becomes brittle. Any motion or contact with the equipment can cause brittle insulation to break, which allows for electrical arcing (sparking) to occur, which ultimately can lead to explosions and/or fires.*

   While life expectancy of insulation ranges based on the ambient temperature, 30-40 years is a typical life expectancy (Siemens is a major electrical equipment manufacturer, and they design products with a 30 year expectancy under normal conditions).

   While no one can say exactly when catastrophic failure will (if ever) occur, no known authority can indicate that the bus duct is reasonably safe, as the bus duct is older than the expected 30-40 year life expectancy.

2. *In conversation with facilities personnel, it is Glumac's understanding that the local electrician Electro Mechanical and the local electrical testing firm Sigma Six has refused to conduct work with the existing 480V bus duct due to the safety concerns listed above.*

1.1.3 208V POWER

208V power is the second of the two typical types of power that the building uses, as illustrated in *Figure 1*. It generally serves smaller systems and devices (for example, power outlets and control panels).

Similar to the bus duct discussed in Section 1.1.2, the 208V panels and associated transformers are dangerously old, with the potential of creating explosions and/or fires. **Injury** and **death** are possible results.

208V circuit breakers

Supplemental Notes

1. *Transformers have the potential to explode and generate fires for the same reasons as the existing 480V bus duct (old insulation), as described in Section 1.1.2 Supplemental Notes. Existing transformers appear to be older than the 30-40 year life expectancy of equipment (the previous report from DLR Group concurs).*

2. *Panels are at risk of generating fires because old circuit breakers tend to get fused in an "on" position and are no longer capable of breaking into an "off" position when a problem occurs. Without this fail-safe, electrical issues (such as overheating) won't be addressed automatically as intended. This can potentially cause fires. Similar to the transformers noted above, the previous DLR group report concurs.*

1.1.4 MOTOR CONTROL CENTERS

Motor control centers are a subcategory of power panels. They are panels specifically designed to provide power and control to various mechanical systems.

Existing 208V motor control centers are located in the basement and provide power and controls to equipment in the chiller room. They are older, and portions of them are marked as no longer functional.

One of the existing motor control centers is located beneath an existing waterline as well. A water leak could potentially occur and cause the motor control center to malfunction.

One of the existing motor control centers

Due to age, there is a danger of explosions and fires for the same reasons as 208V power panels (described in *Section 1.1.3 Supplemental Notes*). **Injury** and **death** are possible results.

Furthermore, a simple failure could bring down a mechanical device that may be necessary for the courthouse to function properly, and due to the age of the control centers, replacement parts are no longer available for repairs.

1.1.5 ELECTRICAL EQUIPMENT CLEARANCES

The National Electric Code (NEC) requires a certain amount of working space around electrical equipment (described in National Electrical Code Section 110.26) for both the practicality of working on the equipment, and for the safety of the electricians who do the work. Clearance requirements range from 36" to 48" in the front of equipment, and 72" above equipment.

Many of the electrical closets on the upper levels do not provide the appropriate working clearances for electrical equipment. Electricians who have to work on them may be forced to stretch and contort their bodies in abnormal and unsafe ways to accomplish a task, which can cause pulled muscles, and joint and/or back injuries, and potentially be the cause of falls. A worse-case scenario could be that improper work space causes an electrician to drop a tool into a piece of equipment, which could create a fault and ultimately cause the equipment to burn up and/or explode, causing **injury** or **death**.

Electrical closet on upper level

1.1.6 ELECTRICAL EQUIPMENT ANALYSIS AND LABELS

The existing electrical equipment often lacks name labels and arc flash labels.

The lack of name labels increases maintenance difficulty, as an electrician would be required to trace conduits/wires from point-to-point to confirm he/she is working on the correct piece of electrical equipment.

The lack of arc flash labels is a safety hazard for electricians. These labels inform an electrician of the proper safety equipment to wear when working on a piece of equipment. It is possible that an uninformed electrician may not wear the appropriate level of protection, and if an incident occurred, he may be seriously **injured** or **killed**.

Supplemental Notes

1. *Arc Flash ratings inform electricians of specific types of required safety equipment to wear in the event a fault occurs in a piece of equipment while the electrician is present. Faults can directly electrocute a person, or cause explosions, or generate fires. It is possible for an electrician to be shocked, burned, or receive damage from an explosion by a fault if he/she is not wearing the correct level of safety equipment.*

Arc flash label

1.1.7 LIGHTING

Existing lighting is primarily fluorescent. Automated controls are provided for corridor spaces (via Square D power panels with controlled breakers), where the Building Management System is programmed to turn them on and off based on a schedule. Controls in other spaces appear to be manual, with on/off switches only, and no occupancy sensors or daylight sensors to help automatically turn off or lower lighting levels when they are not needed.

Fluorescent lighting in typical corridor

T8 type fluorescent lamps are common, but there are locations that have T12 type lamps. It is understood that the County has been trying to phase T12 type light fixtures out as renovation projects allow, as T12 type lamps are significantly less energy efficient than T8 type lamps.

It has been noted by Joseph Lagonoy (with the King County Court House facilities group) that T12 lamps are still being utilized at all elevators, and that only authorized Elevator Contractors are allowed to replace these lamps when replacement is necessary. There is a desire to minimize the quantity of service calls for lamp replacement.

1.2 RECOMMENDED UPGRADES

1.2.1 480V POWER

Glumac recommends the existing 480V bus ducts are replaced due to the dangers noted in *Section 1.1.2 Supplemental Notes*. It is likely that the wires and conduit that connect the bottom of the bus ducts to the Main Switch Board are as old as the bus ducts, as if so, it is also recommended that these be replaced as well.

To elaborate, it is possible that someone working one of the bus ducts could get injured, or die by absorbing explosive forces, burning, or from being penetrated with shrapnel. While human safety is the primary concern, should an injury or death occur, it is likely that a large amount of money would have to be spent on legal expenses as well.

Furthermore, should a bus duct have a catastrophic failure, significant portions of the building would experience electrical down time. For example, if the west bus duct stopped working, the west side of most upper levels would lose most and/or all of its normal power. This may cause critical areas and functions to stop until a construction effort to provide new power has been completed.

Glumac recommends that new bus ducts be constructed while the existing bus ducts remain in use. If and when the new bus ducts are fully constructed, all the downstream panels can be disconnected from the old bus ducts and reconnected to the new bus ducts in one construction effort, minimizing electrical down time for areas that are served by the bus ducts.

Supplemental Notes

1. *When a device is disconnected from a bus duct, the bus duct should be de-energized (turned off) for safety. If there was a desire to shift only a few devices from the existing bus ducts over to the new bus ducts at a time, each effort would require the bus ducts to be turned off and cause loss of power.*
Areas requiring 24/7 power will have to temporarily be relocated during each of these efforts. If it is possible to install the entirety of the new bus ducts, and shift all devices connected to the existing bus ducts over to the new bus ducts in one effort, there will only be one instance of downtime that needs to be considered.

It should be noted that it is possible to avoid the use of bus duct, but not recommended. Individual feeders could be routed from the Main Switchboard to each 480V panel that currently is fed from one of the bus ducts, in the same way basement panels are connected to the Main Switchboard. However, due to the quantity of individual feeders required, this option is typically less cost effective than bus duct on buildings with more than several levels. Additional square footage of floor space would also be required, as multiple feeders would take more area to route up the building than the bus ducts.

A foreseen challenge in replacing the bus ducts is that the new bus ducts will require a significant amount of new space throughout upper floors. Similar to the existing bus ducts, the new ones will require an accessible electrical closet on each floor they run through, and current code clearances (2014 National Electrical Code 110.26) will be required in these new spaces, which the existing closets do not provide. Glumac estimates each of these closets may need to be approximately 6'x10' in size, as conceptually illustrated in *Figure 2*. Mechanical cooling will also be required in these closets. While the space requirement is significant, providing a larger space for electrical equipment will help to resolve the safety issues identified in *Section 1.1.5*.

It is recommended that new electrical closets are stacked vertically, being located at the same place on each level of the building, which minimizes construction effort and is more cost effective than having bus ducts that make many turns.

1.2.2 208V POWER

Glumac recommends that the existing 208V panels and associated transformers be replaced due to the dangers noted in *Section 1.1.3 Supplemental Notes*. It appears that a replacement project may be occurring that addresses these concerns.

It should be noted that if a panel or its associated transformer goes down, it will require immediate replacement in order to restore functionality to the areas they serve.

208V power panels and transformers may be replaced one at a time, and during off hours where applicable. If certain spaces have a 24/7 up-time requirement, the functions of these spaces may need to be relocated during the duration of the construction areas related to those spaces.

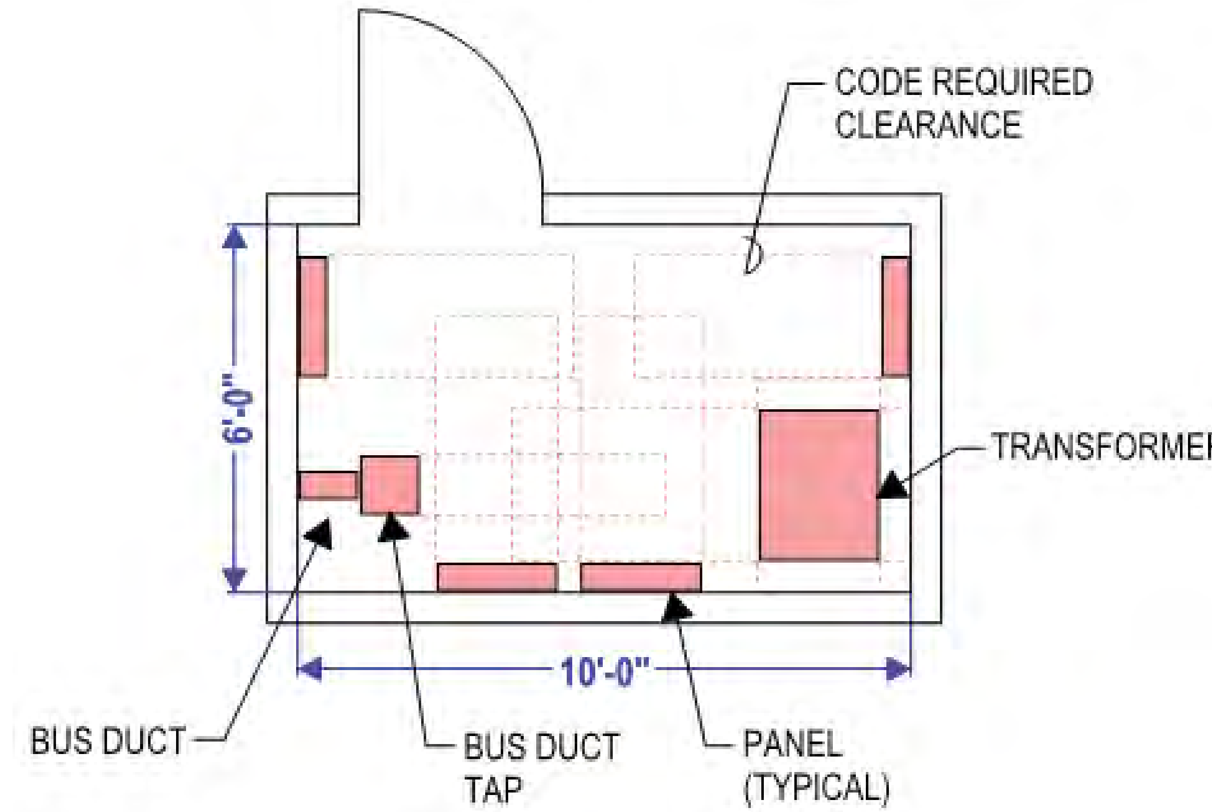


***FIGURE 2**: Code clearance requirement concept sketch*

For levels above the basement, the recommended 480V bus duct replacement effort should be conducted first (refer to *Section 1.2.1*). The adjustment of the 208V systems could potentially wear down the 480V bus duct to the point of catastrophic failure.

1.2.3 MOTOR CONTROL CENTERS

Glumac recommends that the existing 208V motor control center sections that are still in use be replaced due to the dangers noted in *Section 1.1.4*, and also because replacement parts for the existing motor control centers are no longer available, which prevents basic maintenance. For sections no longer in use, it is recommended that they be removed entirely. It is also recommended that the motor control center located under a water line should either be relocated, or precautions should be made to prevent a water leak from causing the control center to get wet (for example, a drip pan could be installed above the motor control center).

As the motor control centers control working mechanical systems, these mechanical systems may need to be provided with temporary power and controls (discrete circuit breakers and discrete control devices) while the existing motor control centers are removed and replaced.

It is also recommended that any related efforts be made during the winter months, when cooling requirements for the building are at a minimum. In this way, any resulting electrical disruptions would have minimal effect.

1.2.4 LABELS

Glumac recommends that all electrical equipment missing name labels are provided with name labels. This will result in more efficient maintenance of the electrical system, as less time will be required to properly identify equipment. The effort will require electricians to explore the building and trace circuits and conduits to confirm equipment names.

Glumac also recommends that arc flash labels are provided to help protect electricians per *Section 1.1.5 Supplemental Notes*. To provide this, a full electrical system survey is required in order to develop an up-to-date electrical single-line diagram. Equipment data is required to be collected as well, on all elements in the electrical system. There may be a research effort required if the required data is not shown on the existing equipment. This effort is expected to be significant, requiring electricians walk, climb ladders, gain access to ceiling spaces and shafts, turn circuit breakers on and off to confirm electrical connectivity, etcetera…

Arc flash calculations should also be conducted after any replacement efforts have been determined, as such efforts will change the calculations.

Cost
Rough Order of Magnitude (ROM) project cost of $134,255 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.2.5 LIGHTING

Glumac recommends that existing lighting is replaced with Light-Emitting Diode (LED) lighting. There are not currently any issues with the existing system, but it is less energy efficient than modern day lighting systems are. By switching to light-emitting diode lighting, lighting energy usage may be reduced by up to 30%.

Glumac also recommends that areas without automatic control be provided with automated controls where these controls would not negatively affect the functionality of individual spaces. There are not currently any issues with the existing system, but it does not meet current code requirements, and does not provide the energy savings that modern systems do. The typical recommended case would be to provide rooms with a light switch, an occupancy sensor, and a daylight sensor. A user would then be required to manually turn on lights, but when he or she leaves, the occupancy sensor will automatically turn off the lights. The daylight sensor will also automatically dim the lights (if they are on) if enough daylight is being provided through a window or skylight. These automatic controls save energy by turning lights off when they are no longer needed, or dimming them when day light is sufficient.

Supplemental Notes

1. *Glumac has compared a standard two T8 lamp light fixture (~62 Watts) with typical equivalent light-emitting diode replacements (~42 Watts) when estimating an energy savings percentage. The 30% savings listed above may not apply in all instances.*

2. *The recommended lighting controls are typically code required controls per modern day standards. These requirements will likely be enforced by the local authorities having jurisdiction in applicable renovated spaces.*

1.3 ELECTRICAL SYSTEM

1.3.1 ELECTRICAL SYSTEM SUMMARY

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
480V Power Panels	Good	20-30 Years	None	NA
480V Bus Duct	Poor	NA	Substantial	$3,061,670
208V Power	Poor	NA	Substantial	$706,694
208V Motor Control Centers	Poor	NA	Substantial	$222,198
Lighting	Fair	10-20 Years	Substantial	$5,847,111

1.3.2 480V POWER PANELS

Description
Power panels serving lighting and larger loads (for example, elevators). Refer to *Section1.1.2* and *Section 1.2.1* for more information.

Condition
480V power panels are in good condition, appearing to have been replaced in 2006.

Equipment Life
20-30 Years

Recommendation
NA

1.3.3 480V BUS DUCT

Description
Large trunks of power that rise from the basement and into the upper floors. Electrical panels on upper levels obtain their power by tapping off of these bus ducts.

Condition
Poor. No reasonable guarantee can be provided that catastrophic failure will not occur. Property damage and life safety are both concerns.

Equipment Life
End of life. The bus ducts have exceeded the typical 30-40 year life expectancy of bus duct.

Recommendation
Replace. It is recommended that new bus ducts be constructed while the existing ones remain in use. When the new bus ducts are ready to take over, downstream equipment can be disconnected from the old bus ducts and reconnected to the new. There are significant spatial challenges though, as discussed in *Section 1.2.1*.

Benefits
Replaces the dangerously old bus duct with new and safe bus duct. Will reduce the likelihood of catastrophic failure, which can result in electrical down time, building damage by fire and explosion, and injury or death.

Code
Existing electrical closets housing the bus ducts are not compliant with current code (2014 National Electrical Code 110.26). New bus duct and associated equipment will require new space, with proper code clearances as discussed in *Section 1.2.1*.

Cost
Rough Order of Magnitude (ROM) project cost of $3,061,670 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.3.4 208V POWER

Description
Power panels serving receptacles and smaller loads (for example, control panels). Refer to *Section 1.1.3* and *Section 1.2.2* for more information.

Condition
Poor. No reasonable guarantee can be provided that catastrophic failure will not occur. Property damage and life safety are both concerns.

Equipment Life
End of life. The panels have exceeded the typical 30-40 year life expectancy of electrical equipment.

Recommendation
Replace. Panels and associated transformers may be replaced one at a time, during off hours. Refer to *Section 1.2.2* for more information. It's recommended this should occur after the 480V Bus Duct replacement.

Benefits
Replaces dangerously old panel-boards and transformers with new and safe equipment. Will reduce the likelihood of catastrophic failure, which can result in electrical down time, building damage by fire and explosion, and injury or death. This would also allow for code-required clearances to be provided at the equipment, better protecting worker safety.

Code
Existing electrical closets housing the 208V panels and transformers are not compliant with current code (2014 National Electrical Code 110.26). In creating a new room for a new 480V bus duct, we can create a code-compliant space for the installation of eventual new 208V panels and step-down transformers, resulting in a safer work environment for workers.

Cost
Rough Order of Magnitude (ROM) project cost of $706,694 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.3.5 208V MOTOR CONTROL CENTERS

Description
Sub-category of panels that are specific to providing power and controls to mechanical systems. Refer to *Section 1.1.4* and *Section 1.2.3* for more information.

Condition
Poor, and in some cases not functioning. No reasonable guarantee can be provided that catastrophic failure will not occur. Property damage and life safety are both concerns.

Equipment Life
End of life. The 208V motor control centers have exceeded the typical 30-40 year life expectancy of electrical equipment.

Recommendation
Replace.

Benefits
Same as 208V Power (refer to *Section 1.3.4*).

Code
Not Applicable

Cost
Rough Order of Magnitude (ROM) project cost of $222,198 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.3.6 LIGHTING

Description
General lighting system for the Courthouse. Primarily fluorescent T8 lamp fixtures throughout building, with some legacy T12 lamp light fixtures.

Lighting controls are automatic and schedule based in the corridors. Elsewhere they appear to be manual.

Condition
Fair. There is no critical need to update the existing lighting or lighting control systems, though it is recommended for energy efficiency.

Equipment Life
10-20 years. The lighting is older, but will likely last for some years.

Recommendation
Replace existing fluorescent lighting with light-emitting diode light fixtures. Estimated energy savings of 30%.

Provide modern automatic controls in areas where practical. Lighting in these areas would then automatically turn off when they are not needed, and automatically dim when less electrical light is needed, saving energy.

Benefits
Energy expenses would be reduced, and the building's lighting controls system would comply with current day codes.

Code
The existing lighting and lighting controls do not meet current codes, but are allowed to remain as long as no design adjustments/renovations affect the existing lights and their existing controls. However, as any area is significantly renovated, at a minimum, those areas will require any existing T12 lamped fixtures to be replaced, and code-compliant automated lighting controls will need to be provided.

Cost
Rough Order of Magnitude (ROM) project cost of $5,847,111 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

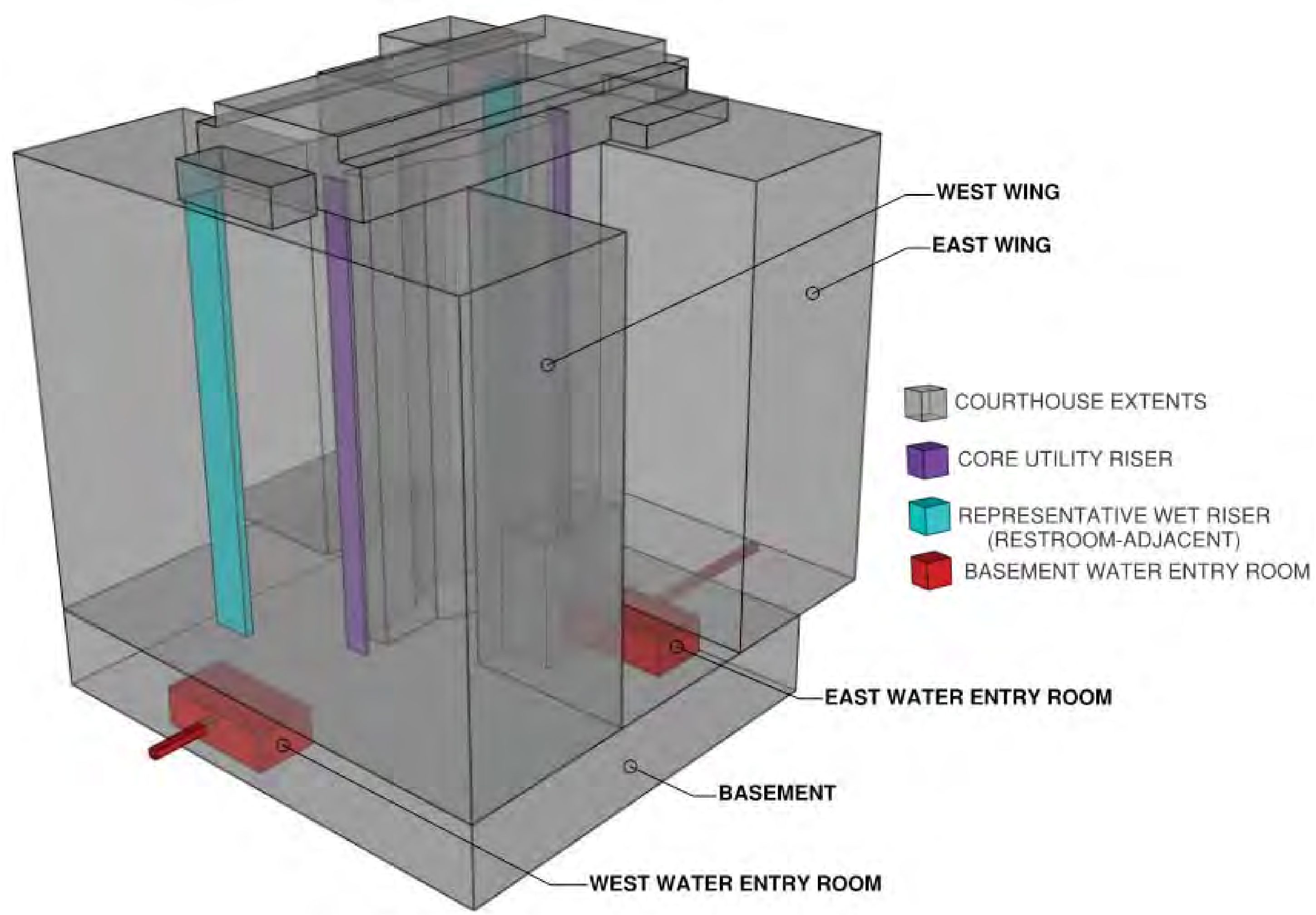
Section Contents

1.1 CURRENT PLUMBING SYSTEMS

The two major components to the existing plumbing system in the King County Courthouse are the domestic water system and the waste and vent system. The domestic water system consists of domestic cold water as well as domestic hot water. A brief description of these systems is provided within this section, and each system component is addressed in detail in the following sections of this chapter.

The building isometric below illustrates the approximate locations of major plumbing system components within the courthouse building. There are two water entry rooms located in the basement where city water is delivered into the building and that house the domestic water pumps. In addition, there are heat exchangers located within the basement central plant that also houses a majority of the mechanical equipment.

Two (2) core utility shafts, in addition to various wet risers adjacent to restrooms, are utilized to route domestic water piping and waste piping vertically through the building. Piping is then distributed horizontally at each floor.



1.2 SYSTEM DEFICIENCIES

The following sections of this chapter describe in depth the current operation and potential deficiencies of each existing system that are summarized below.

Domestic Hot and Cold Water Piping: Much of the domestic water piping is past recommended serviceable life. Certain areas of piping have substantial mineral deposits (also known as scaling) on the inside of the pipes, which restricts flow and requires increased pumping energy. There are spots within the piping distribution system where the pipe wall is thinning, creating concern for pipe bursts and ensuing property damage.

Fixtures: Though many fixtures were replaced as recently as 2002, the current fixtures are inefficient and waste a significant portion of water. The current toilets use substantially more water per flush than toilets commonly used in new construction. In addition, the current lavatory sinks have a significantly higher water flow rate than lavatory faucets commonly used in new construction.

1.3 RECOMMENDED UPGRADES

The following sections of this chapter describe in depth the recommended upgrades for each system that are summarized below.

Domestic Hot and Cold Water Piping: It is recommended that all domestic hot and cold water distribution piping be replaced completely.

Fixtures: It is recommended that all toilets, sinks, and lavatories be replaced with low-flow, efficient fixtures and fittings.

1.4 DOMESTIC COLD WATER SYSTEM

The building's two (2) domestic water mains come in at basement level. A 4" water main entering on the west side of the building was installed in 1920, and a 6" water main entering on the east side of the building was replaced in 2014.

Chilled Water System Summary

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Booster Pumps	Fair Condition, Sizing Issues	20+ Years	Total Replacement	$99,400
Piping	Varies	0 Years	Total Replacement	$2,215,209
Fixtures	Fair	Varies	Partial Replacement	$2,013,915

1.4.1 DOMESTIC COLD WATER BOOSTER PUMPS

Description of Existing System
Booster pumps, reduced pressure backflow preventers, and pressure reducing valve (PRV) assemblies are located in the basement. This system was replaced in 2006, so it has significant equipment life remaining. However, it appears as though the pumps are not sized appropriately, so they should not be used in this application.

Condition
The booster pumps and associated fixtures and fittings appear to be in fair operating condition but are not delivering water appropriately throughout the building.

Domestic Cold Water Booster Pumps

Recommendation
It is recommended that the booster pumps and associated fixtures and fittings be completely replaced. Pumps should be sized for the appropriate flow rate and available head pressure to deliver domestic water to all fixtures at all levels of the building.

Cost
Rough Order of Magnitude (ROM) project cost of $99,400 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.4.2 DOMESTIC COLD WATER PIPING

Description of Existing System
Copper and galvanized cold water piping is distributed throughout the entire facility. In particular, the private judge's chambers and jury rooms utilize the bulk of the galvanize piping. Multiple cold water mains travel up through utility shafts, and branch piping is distributed horizontally to fixtures on each floor. Grooved couplings are utilized.

Condition
Much of the galvanized piping has substantial mineral deposits (scaling) on the inside of the pipes, which restricts flow and requires increased pumping energy. There are spots within the piping distribution system where the pipe wall is thinning, creating concern for pipe bursts and resulting property damage. More detailed information can be found in the Ultrasound Pipe Testing and Analysis Report prepared in 2001 by East Coast Industries, Inc.

Equipment Life
All domestic water piping is past recommended serviceable life and subject to partial or total failure.

Recommendation
It is recommended that all domestic cold water piping, fixtures, and fittings be replaced with new piping that is plumbing code-compliant.

Code
New piping must conform to the 2015 Seattle Plumbing Code. Common materials that are accepted by this code include copper, CPVC (chlorinated polyvinyl chloride), and PEX (cross-linked polymer material).

Cost
Rough Order of Magnitude (ROM) project cost of $2,215,209 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

Piping Example

1.4.3 FIXTURES

Description of Existing Systems
Fixtures installed throughout the facility have varying ages and are in varying degrees of disrepair.

Many restroom areas do not comply with guidelines set forth by the Americans with Disabilities Act (ADA), and there are some areas of the building where the number of existing plumbing fixtures is less than the number of fixtures required by current building code. The architect has performed a preliminary analysis of the existing plumbing fixtures at public restrooms as part of the current predesign planning effort. This information is contained in another section of the proviso report to the King County Council.

Condition
The current fixtures themselves are in fairly good operating condition. There is concern with hot water delivery times that falls on the domestic water piping configuration and not the fixtures themselves.

Typical Plumbing Fixture Examples

Recommendation
It is required that fixtures be added to bring the facility up to the appropriate fixture counts and availability of fixtures compliant with the Americans with Disabilities Act (ADA). It is recommended that the following water closets be replaced with new, water efficient fixtures:

- Judge's chamber restrooms, located throughout the courthouse
- Jury deliberation room restrooms, located throughout the courthouse adjacent to courtrooms
- Public restrooms on Levels 1-9

Additionally, it is recommended that the lavatories and sinks be replaced in these areas as well. Issues with hot water delivery and sufficient flow to faucets will likely be remedied within the re-pipe project, but replacing these fixtures will better ensure proper operation in the future. This will also help significantly reduce the water use and cost of the system as well as reduce the energy cost associated with domestic hot water heating. The proviso report to King County Council also contains additional detailed information on the ADA upgrades to the jury deliberation room restroom facilities.

Code
As mentioned above, fixtures will need to be added to bring the facility up to the proper fixture count. The exact number and location of fixtures will be determined through a code analysis and will be included in the final draft of this report.

Areas that require facilities compliant with the Americans with Disabilities Act will need to be upgraded to meet the requirements set forth by that guideline.

Cost
Rough Order of Magnitude (ROM) project cost of $2,013,915 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.5 DOMESTIC HOT WATER SYSTEM

The domestic hot water for the building is created through heat exchangers and electric water heaters located in the basement. In addition, the basement houses hot water storage tanks. This system is decoupled from the heating hot water system discussed in the Mechanical Chapter of this report.

1.5.1 DOMESTIC HOT WATER SYSTEM SUMMARY

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Booster Pumps	Poor	0 Years	Total Replacement	$99,400
Heat Exchangers	Good	25+ Years	None	$330,998
Piping	Poor	0 Years	Total Replacement	$2,215,209

1.5.2 DOMESTIC HOT WATER BOOSTER PUMPS

Description of Existing System
Booster pumps, reduced pressure backflow preventers, and pressure reducing valve (PRV) assemblies are located in the basement.

Condition
The booster pumps and associated fixtures and fittings appear to be in poor operating condition and are not delivering hot water appropriately throughout the building.

Equipment Life
The basement domestic hot water booster pumps have little or no usable equipment life remaining, as they appear to be in poor operating condition and are not performing as required for proper hot water delivery to fixtures.

Recommendation
It is recommended that the booster pumps and associated fittings be completely replaced. Pumps should be sized for the appropriate flow rate and available head pressure to deliver domestic water to all fixtures at all levels of the building. It is recommended that all new booster pumps be located in the same basement water entry room as the current pumps. It is not recommended to relocate booster pumps to any other level or location.

Code
Adequate domestic hot water delivery for hand-washing is required in private and public fixtures per the 2012 Seattle Plumbing Code. There have been occupant complaints that certain fixtures are not delivering adequate hot water, so this system is not compliant with the plumbing code, and complete replacement of the domestic hot water booster pumps is required to bring this system up to code requirements.

Cost
Rough Order of Magnitude (ROM) project cost of $99,400 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.5.3 DOMESTIC HOT WATER HEAT EXCHANGERS

Description of Existing System
Hydronic heat exchangers are used in conjunction with the two electric water heaters in the basement. The heat exchangers are the primary heating source of the hydronic system, and the electric water heaters are used for backup only. These heat exchangers were upgraded from the previous indirect steam heat exchangers in 2009.

Condition
The current heat exchangers are in good operating condition, and there have been no indication of issues, complaints, or deficiencies with this system.

Equipment Life
The heat exchangers are under a decade old and have significant remaining useful equipment life.

Recommendation
It is recommended that the current heat exchanger configuration continue to be used.

Cost
Rough Order of Magnitude (ROM) project cost of $330,998 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

Heat Exchanger

1.5.4 DOMESTIC HOT WATER PIPING

Description of Existing System
Copper and galvanized hot water piping is distributed throughout the entire facility. Multiple hot water mains travel up through utility shafts, and branch piping is distributed horizontally to fixtures on each floor. Grooved couplings are utilized.

Condition
Much of the piping has substantial mineral deposits (scaling) on the inside of the pipes, which restricts flow and requires increased pumping energy. There are spots within the piping distribution system where the pipe wall is thinning, creating concern for pipe bursts and resulting property damage. More detailed information can be found in the Ultrasound Pipe Testing and Analysis Report prepared in 2001 by East Coast Industries, Inc.

Equipment Life
All domestic water piping is past recommended serviceable life and subject to partial or total failure.

Recommendation
It is recommended that all domestic hot water piping, fixtures, and fittings be replaced with new piping that is plumbing code-compliant.

Code
New piping must conform to the 2015 Seattle Plumbing Code. Common materials that are accepted by this code include copper, CPVC (chlorinated polyvinyl chloride), and PEX (cross-linked polymer material).

Cost
Rough Order of Magnitude (ROM) project cost of $2,215,209 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6 WASTE AND VENT SYSTEM

The waste and vent system for the building consists of traditional separate waste pipe and ventilation pipe systems. The main vertical risers are located in the core utility shafts as well as the plumbing chases located adjacent to the stacked restrooms. Horizontal waste and vent piping is then routed in the ceiling plenum of the level below to each fixture.

1.6.1 WASTE AND VENT SYSTEM SUMMARY

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Sanitary Waste Piping	Good	25+ Years	Minor	$379,480
Vent Piping	Good	25+ Years	Minor	$201,383

1.6.2 SANITARY WASTE PIPING

Description of Existing System
Cast-iron sanitary waste piping is distributed throughout the entire facility. Multiple drainage mains travel up through utility shafts, and branch piping is distributed horizontally to fixtures on each floor. Grooved couplings are utilized.

Cast-iron sanitary waste piping. CPL photo, February 13, 2001.

Condition
The sanitary waste piping appears to be in proper working condition, and no complaints or deficiencies have been identified.

Recommendation
It is recommended that all sanitary waste piping be tested for wall thickness and the joints sealed. The sanitary waste piping itself will not need to be replaced at this time.

Code
Any new piping must conform to the 2015 Seattle Plumbing Code. Cast-iron sanitary waste piping should be used to match the rest of the facility.

Cost
Rough Order of Magnitude (ROM) project cost of $379,480 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.6.3 VENT PIPING

Description of Existing System
Vent piping is distributed throughout the entire facility. Multiple vent mains travel up through utility shafts, and branch piping is distributed horizontally to vent locations in the sanitary system on each floor. Grooved couplings are utilized.

Condition
The vent piping appears to be in proper working condition, and no complaints or deficiencies have been identified.

Recommendation
It is recommended that all vent piping be tested for wall thickness and the joints sealed. The vent piping itself will not need to be replaced at this time.

Code
Any new piping must conform to the 2015 Seattle Plumbing Code. Cast-iron vent piping should be used to match the rest of the facility

Cost
Rough Order of Magnitude (ROM) project cost of $201,383 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

Section Contents

1.1 CURRENT SYSTEMS

1.1.1 Overview

Data and voice systems underwent a major renovation with the 2004 building seismic upgrades and now follow, with some variation, a modern design scheme. Copper cabling for voice and optical fiber for data enter the building at their respective Main Points of Entry (MPOE) and are distributed from there to Intermediate Distribution Frames (IDF) off the central core lobby at each level (save for level 11). Individual devices (phone jacks and data outlets) on each level are served by the IDF on each respective level, save for level 11, which is served by the IDF on level 10. Reference FIGURE 1.

Video surveillance and access control systems were upgraded under the same 2004 building seismic upgrades project. The basic topology of the system mirrors that of the voice and data systems: headend equipment serving the entire building is located in a room in the basement, a control room is located on the first floor, and devices on all floors are connected to the headend via the old telephone closets in the east and west wings.

Though the cable plant and systems currently in place are relatively modern, multiple legacy systems and their associated cabling and equipment have been abandoned in place, including a Private Branch Exchange (PBX), voice-mail system, wallfields, (T1) equipment, Uninterruptable Power Supplies (UPS), etc.

1.1.2 Data

The data Main Point of Entry (MPOE) is located in room W259 on level 2. Optical fiber from the service provider and King County Wide Area Network (KCWAN) enters the building through the tunnel to the old Seattle Administrative building on the north side. From there it routes through corridor CB25 to Telephone Room CB41 in the basement, west down the central corridor and up through the core IDF stack to room W259. Data is distributed from there to fiber shelves in each IDF where it is converted to category cable and distributed to individual devices.

Room W259 also serves fiber to the adjacent King County Administration Building (KCAB). It is routed via the same path down the Intermediate Distribution Frame (IDF) stack to room CB41 and from there underneath 4th Ave to King County Administration Building (KCAB). Reference FIGURE 2.

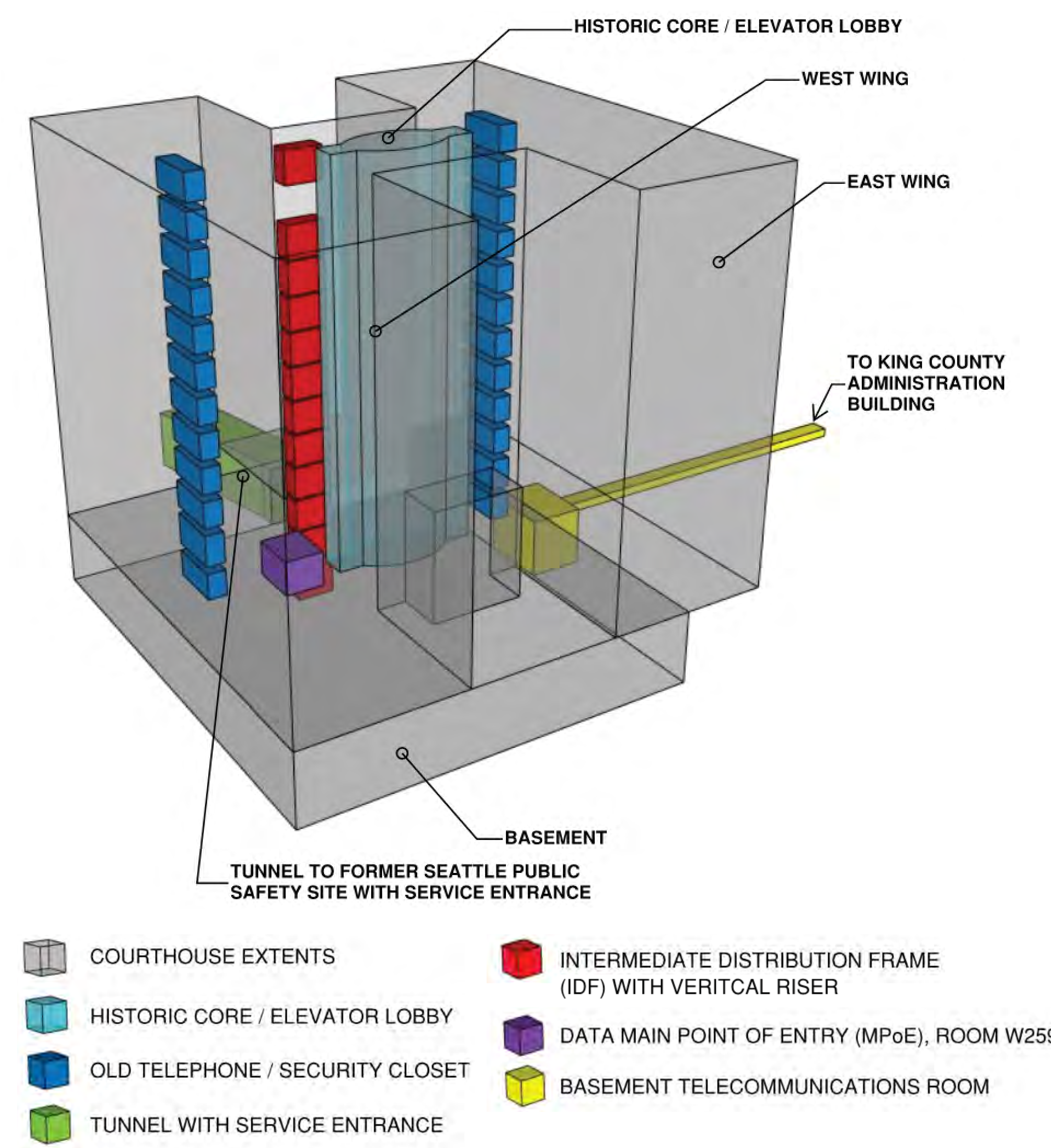


FIGURE 1 *Major Locations For Low Voltage Systems*

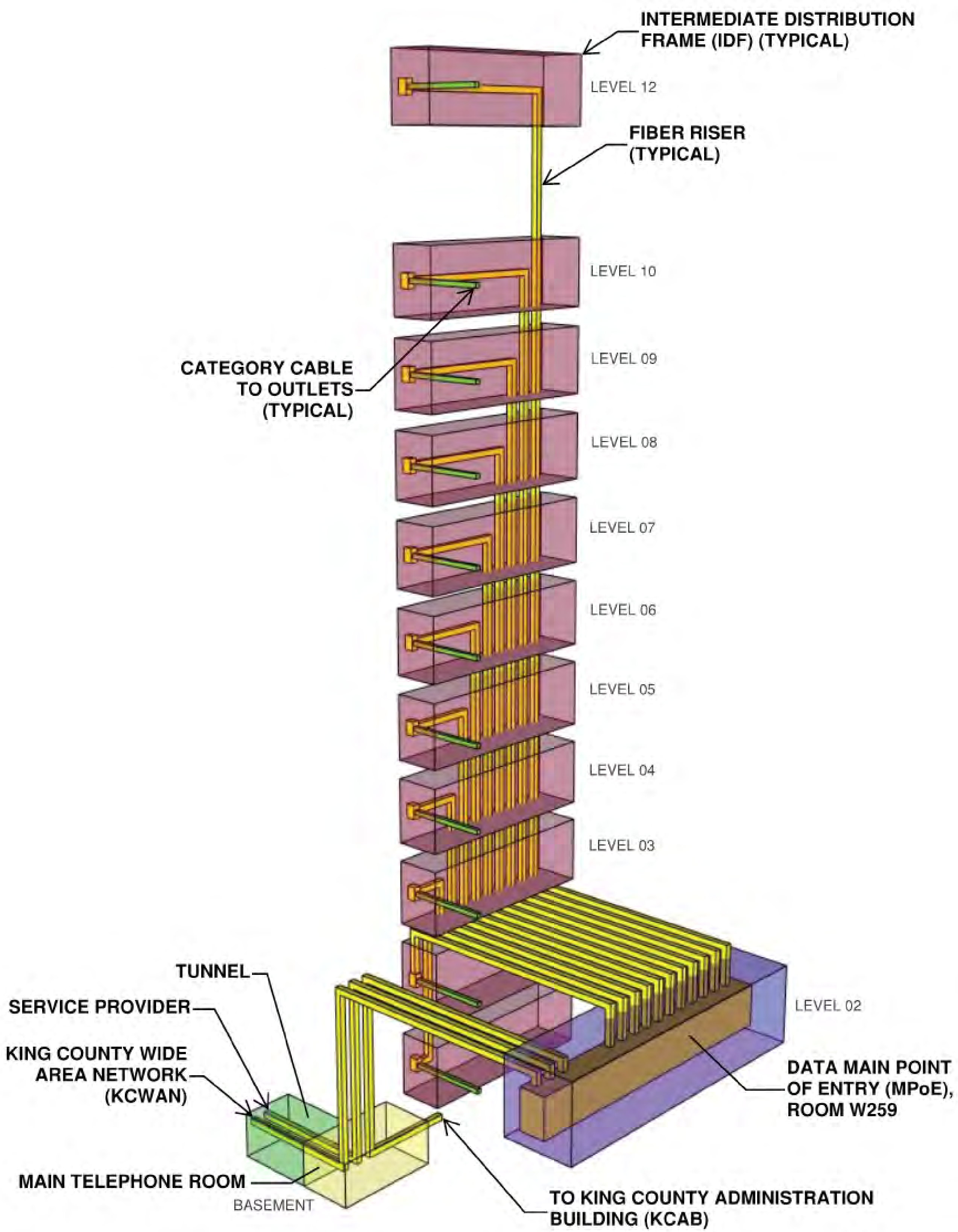


FIGURE 2 *Data Riser*

1.1.3 VOICE

The voice Main Point of Entry (MPOE) is located in basement room CB41. Large multi-pair copper cabling from the service provider enters the building through the tunnel to the former Seattle Public Safety site on the north side. From there it routes through corridor CB25 to Telephone Room CB41. In room CB41, the large multi-pair cables from the service providers are spliced to smaller multi-pair cables, routed to lightning protection blocks and spliced over to punchdown blocks for vertical distribution. Much of this infrastructure supports old Publicly Switched Telephone Network (PSTN) lines that are no longer in use. Reference FIGURE 3.

A portion of the incoming copper lines are used for an analog telephone Private Branch Exchange (PBX) in the adjacent room CB41A. Current phone lines are supported by a Voice over Internet Protocol (VoIP) Private Branch Exchange (PBX).

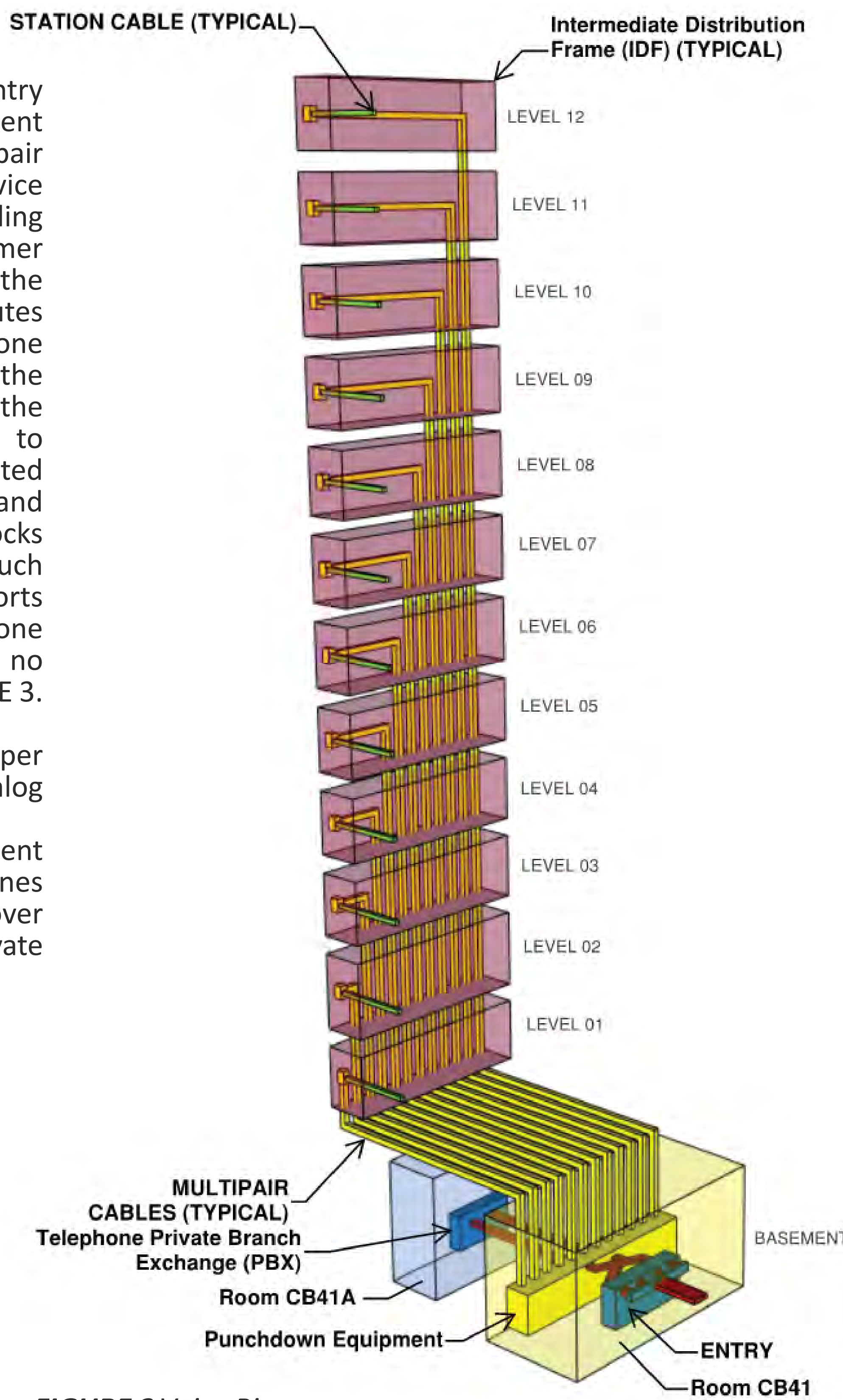


FIGURE 3 *Voice Riser*

1.1.4 SECURITY

Security systems in the courthouse include access control, video surveillance, and duress systems. Headend equipment for all three systems is located in equipment racks in basement room CB40. This room serves stacked closets on the east and west sides of the building - individual devices on each floor are wired to the nearest security closet and back to the basement. Control, video, and audio signals are then routed from the basement to Security Office E195 for monitoring and control.

FIGURE 4 Room CB40 - Feeds from security cameras are routed through Security Room CB40 in the basement before being fed up to Security Office E195

1.2 RECOMMENDED UPGRADES

1.2.1 REPAIR FIRESTOPPING IN RATED FLOOR/WALL PENETRATIONS FOR LOW VOLTAGE CABLING

Description of Existing Systems

The chief firestopping strategy currently in use for rated floor/wall communication penetrations is intumescent putty in and around the conduit/sleeves. The majority of the sleeves in question were installed in the Intermediate Distribution Frame (IDF) stack and security closet riser as a part of the seismic upgrades in 2004.

Condition

The penetrations in question are in varying conditions. Where intumescent firestopping putty is present and properly installed, it appears to be in good condition. However, there are multiple locations on site where no firestopping is present at all, due either to omission or past removal. There are other locations where the putty has been pulled back to adjust the cable installation and never re-filled. In order to maintain the Underwriter's Laboratory (UL) listing, firestopping material must be properly installed, which limits the amount of cabling that can go through a sleeve. Additionally, King County Information Technology (KCIT) standards limit conduit fill to 75%. Several sleeves are filled beyond rated capacity. Reference FIGURE 5.

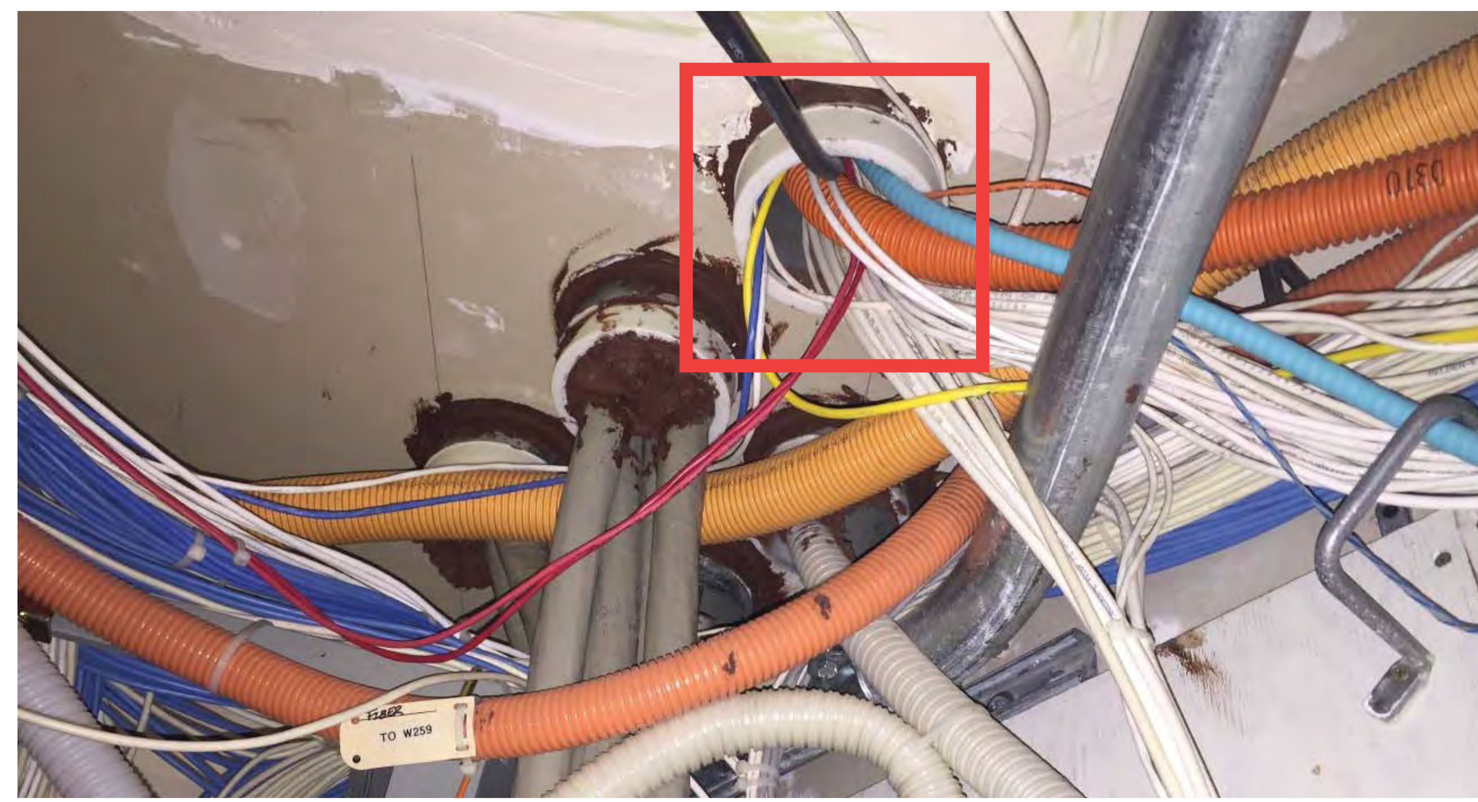


FIGURE 5 Level 1 Intermediate Distribution Frame (IDF) - An example of typical floor penetrations. The two sleeves on the left have intumescent putty installed for firestopping. The sleeve on the right is missing firestopping on this level

Equipment Life
Different manufacturers of firestopping material use different chemical compounds in the manufacture of their products. Some of these products use synthetic rubber compounds with an infinite service life, while others are clay-based and prone to dry out and break down over time (generally 20-25 years), particularly as cables are moved and rearranged. Without documentation or labeling, it is difficult to know what products are in use and therefore what the remaining service life is.

Recommendation
It is recommended that firestopping be brought into compliance with local and international building codes. Where required, cabling and innerducts running through overfilled pathways should be re-distributed through spare pathways. If no spare pathways are present to accommodate the additional cable load, it is recommended that more be added in order to come into compliance. Where firestopping is absent or improperly installed, it is recommended that additional firestopping be applied to maintain rated walls. This task should be completed in coordination with the removal of abandoned cabling, recommended below. Removing abandoned cabling may forestall the need to provide additional pathways.

Benefits
When properly applied, firestopping can impede the propagation of a fire, as well as the circulation of smoke through a facility. In the event of a fire this can result in more time for occupant egress, as well as containing the potential damage from a fire event.

Code
National Electrical Code (2014), Article 800.26: "Installation of communications cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of communications cables and communications raceways through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating."

International Building Code (2012), Section 714.3.2: "Through-penetrations firestop systems. Through penetrations shall be protected by an approved penetration firestop systems installed as tested in accordance with American Society for Testing and Materials (ASTM) E814 or Underwriter's Laboratory (UL) 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F Rating of not less than the required fire-resistance rating of the wall penetrated."

Cost
Rough Order of Magnitude (ROM) project cost of $67,579 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

1.2.2 REMOVE ABANDONED COMMUNICATION EQUIPMENT

Description of Existing Systems
There are many obsolete and/or abandoned systems and equipment in place around the facility, including Digital Subscriber Line (DSL) modems, (T1) entry equipment, analog telephone equipment, Uninterruptable Power Supplies (UPS), service provider entrance equipment, and enclosures.

Condition
In spite of their obsolescence, abandoned systems and equipment appear to be in operating condition. One exception are battery banks for outdated Uninterruptable Power Supplies which require regular testing and maintenance for reliable operation. Reference FIGURES 6 and 7.

Equipment Life
The nature of communications technology is such that equipment will often perform to its specifications long beyond the point when it is useful to do so. When that happens, as it has for many systems in this building, the equipment life is effectively over.

Recommendation
It is recommended that all equipment supporting abandoned communications systems be removed and recycled. With the exception of power equipment (Uninterruptable Power Supplies, power distribution equipment) and mounting equipment/enclosures (cabinets, racks, etc.), there is no conceivable future use for any of the equipment supporting obsolete Internet Service Provider (ISP) entry equipment, analog Private Branch Exchange (PBX) equipment and associated voice-mail servers. It may be possible to salvage power and mounting equipment for future use if the county has the capacity and desire to refurbish and store the equipment.

FIGURE 6 *Obsolete voice-mail server terminal, consuming power and generating heat*

FIGURE 7 *Out of use Uninterruptable Power Supply (UPS) system and associated battery stack*

Benefits
Removing unused and obsolete equipment will reclaim valuable floor and wall space for current and future upgrades and expansion. Additionally, much of the equipment in the space remains connected to power and energized - these unnecessary power loads waste energy and generate heat, requiring further energy to cool the spaces they occupy.

Code
There are no code implications related to storing and powering outdated equipment.

Cost
Rough Order of Magnitude (ROM) project cost of $201,382 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report. Refurbishment and storage of power distribution equipment that still has useful life will incur additional cost, as will disposal of hazardous material that may be present, particularly in batteries. Some of this cost may be reclaimed by recycling of material where possible.

1.2.3 REMOVE ABANDONED COMMUNICATION CABLING

Description of Existing Systems
Communication systems in this facility have evolved with the state of the art over the last 100 years. At various times, new cabling infrastructure has been installed to support new systems. Over time this has resulted in a buildup of abandoned cabling and appurtenances throughout the building.

Condition
There are thousands of feet of abandoned cabling in place in varying conditions, from fully functional to degrading, to fully severed. Reference FIGURES 8 and 9.

Equipment Life
Much like communications equipment, if a communications cable remains protected from weather or physical abuse, it will typically perform to its specification well beyond the point where such performance is still useful. Communications cabling that is protected from physical abuse can be expected to last as long as it is needed.

Recommendation
Due to the multiplicity of legacy systems, the volume of cabling and equipment left in place, and the tendency of newer systems to require lower cable counts than legacy systems, the actual amount of "abandoned" cabling is unclear.

In order for communication systems to remain operational while other building systems are under construction, it will be crucial to be able to identify which cables to protect and retain, and which can be removed.

Additionally, in order to demonstrate compliance to the National Electrical Code (NEC), abandoned cabling must be identified and tagged for future use or removed.

It is therefore recommended that a detailed survey be undertaken of the communication cabling through the building. There is much value to be captured with a survey of this nature: determining which cabling is still in use, removing that which is unused (while retaining/tagging a certain percentage for future growth), labeling existing cabling with the system, source, and destination, and producing an accurate, conformed set of as-built drawings. It is expected that a sizable percentage of existing cabling would be removed under this task.

Benefits
Abandoned cabling provides an unnecessary propagation path for fires and can, if routed through plenum spaces, unnecessarily restrict airflow. Additionally, pathways for communication cabling are a finite resource. Removing obsolete and unused cabling will reclaim pathway space for future expansion.

FIGURE 8 *Communication cables have been severed and abandoned in place*

FIGURE 9 *Vertical cable run in mechanical chase. Abandoned and severed cables are run alongside operational functioning cables, along with construction debris. The National Electrical Code (NEC) requires removal of abandoned communications cabling*

Code
National Electrical Code (NEC) article 800.25: "The accessible portion of abandoned communications cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved."

Abandoned and Accessible both have specific meanings in the code, noted below. In order for unused cabling to remain in place, it must be identified for future use and labeled thus, or terminated at equipment or a wallfield/jack at both ends. The detailed survey recommended above will be required in order to demonstrate compliance with this code.

From the National Electrical Code:

National Electrical Code (NEC) (2014) article 800.2, ABANDONED COMMUNICATIONS CABLE: "Installed communications cable that is not terminated at both ends at a connector or other equipment and not identified for future use with a tag"

National Electrical Code (NEC) (2014) article 100.1, ACCESSIBLE: "Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in by the structure or finish of the building."

Cost
Rough Order of Magnitude (ROM) project cost of $3,020,740 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report.

<u>1.2.4 PROVIDE PROPER SUPPORT AND CABLE MANAGEMENT FOR LOW VOLTAGE CABLING</u>

Description of Existing Systems
As systems have been upgraded, expanded and re-worked, low-voltage cabling has ended up in unsuitable locations, using inappropriate support methods, including equipment and piping from other trades. These conditions are pervasive throughout the facility, but are especially apparent on the basement level, where the highest concentration of cables is found. Reference FIGURES 10 and 11. Additionally, communication rooms throughout the facility use a proprietary patching and cable management system in lieu of standard Registered Jack 45 (RJ-45) patchbays. Reference FIGURE 12.

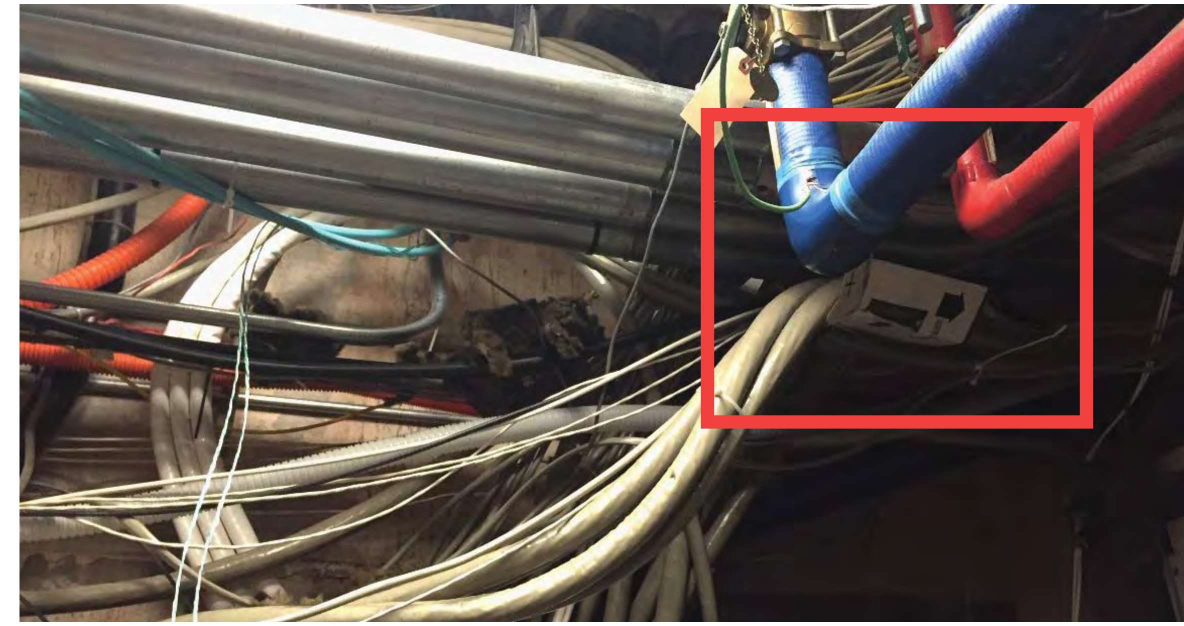


FIGURE 10 *Communication cables are supported by electrical conduit*

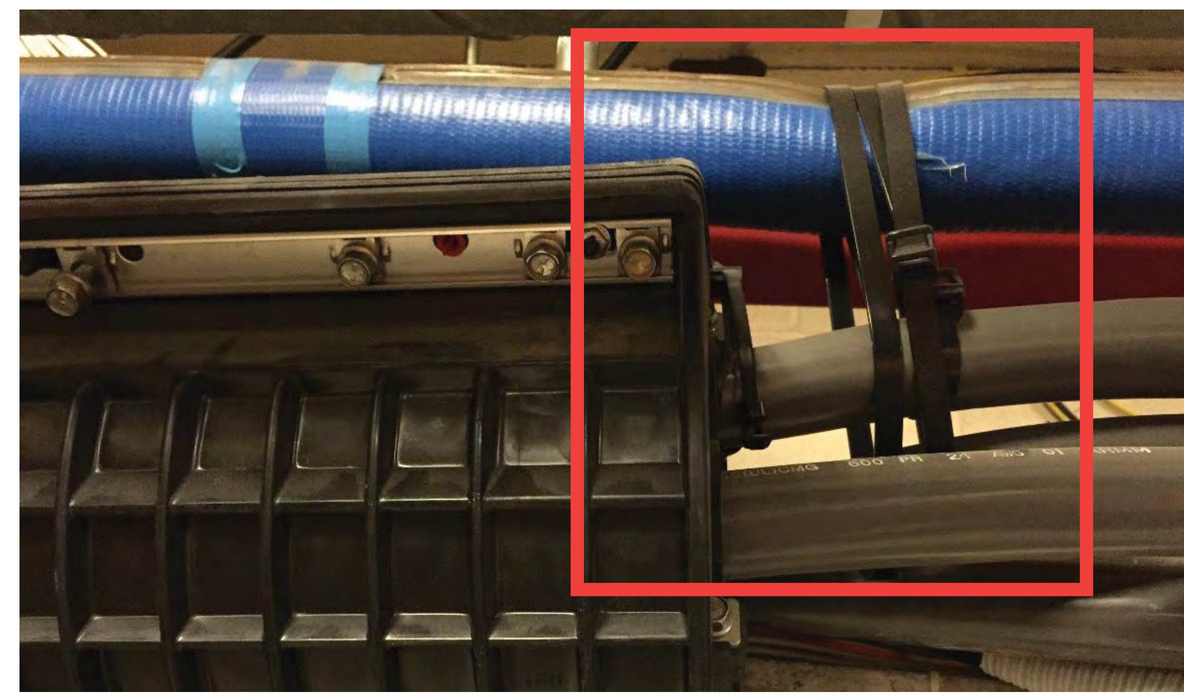


FIGURE 11 *A telephone cable splice is supported by cold water piping*

In communication rooms the same process has led to un-workman-like installations, including excess unmanaged slack, insufficient clearances, insufficient cable management, and accumulations of debris piled up in corners. Reference FIGURES 12,13 and 14.

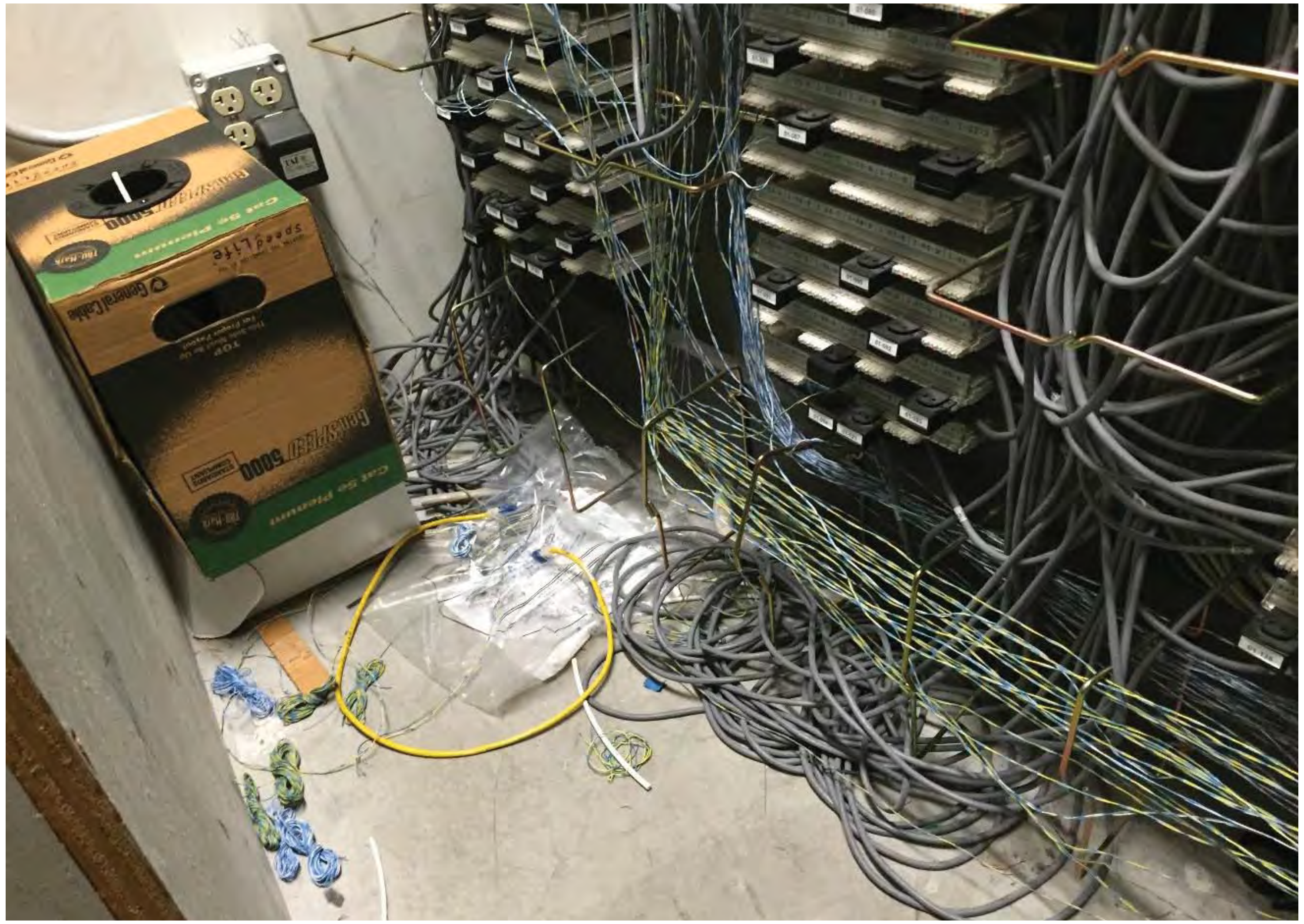


FIGURE 12 *Proprietary low-density cable patching system. Debris from construction and maintenance has been allowed to accumulate in communication spaces*

Condition

The equipment and cabling in question is currently functioning properly; detrimental effects from poor cable management are long-term and are often related to the operation of a facility. Though the systems are currently, functioning, FIGURES 12 and 13 illustrate the difficulty both in poor cable management and the proprietary patching system. The patching system currently in use takes up a greater amount of wall-space per outlet than standard Registered Jack 45 (RJ45) connections. Non-standard cable management equipment has created an unorganized installation. Negative outcomes from poor cable management include damage to cables from excess bending, movement or sharp edges, excess tangles of cable blocking access to spaces and equipment and restricting airflow, an increase in maintenance time as cables have to be traced and identified repeatedly, and increased difficulty tracing and identifying cables. Improper support and placement of cables can reduce the effective life of the cables for all the reasons listed above. Reference FIGURES 13 & 14.

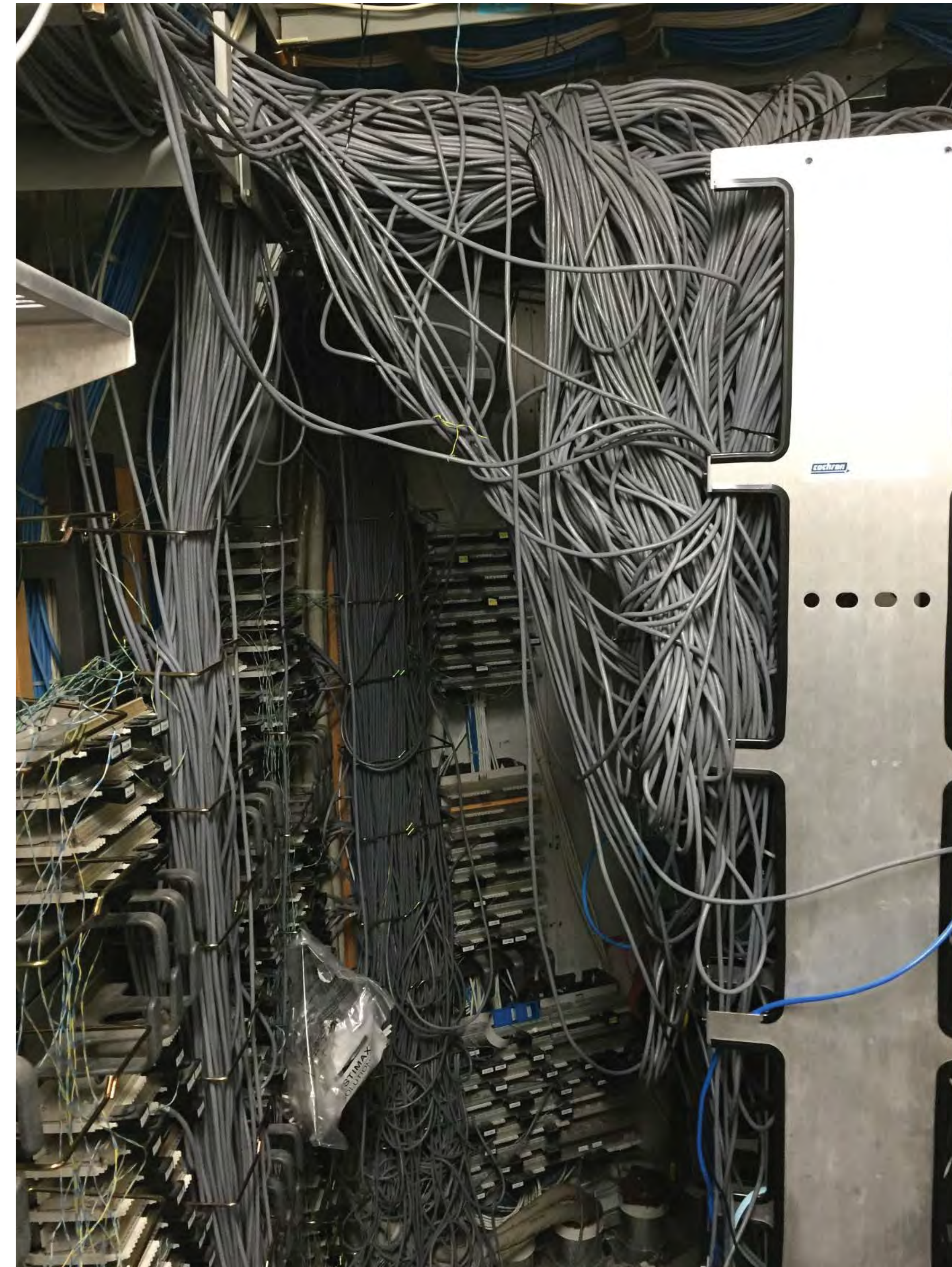


FIGURE 13 *Unmanaged cabling has been allowed to accumulate into a tangled mess, blocking access to equipment and increasing maintenance times*

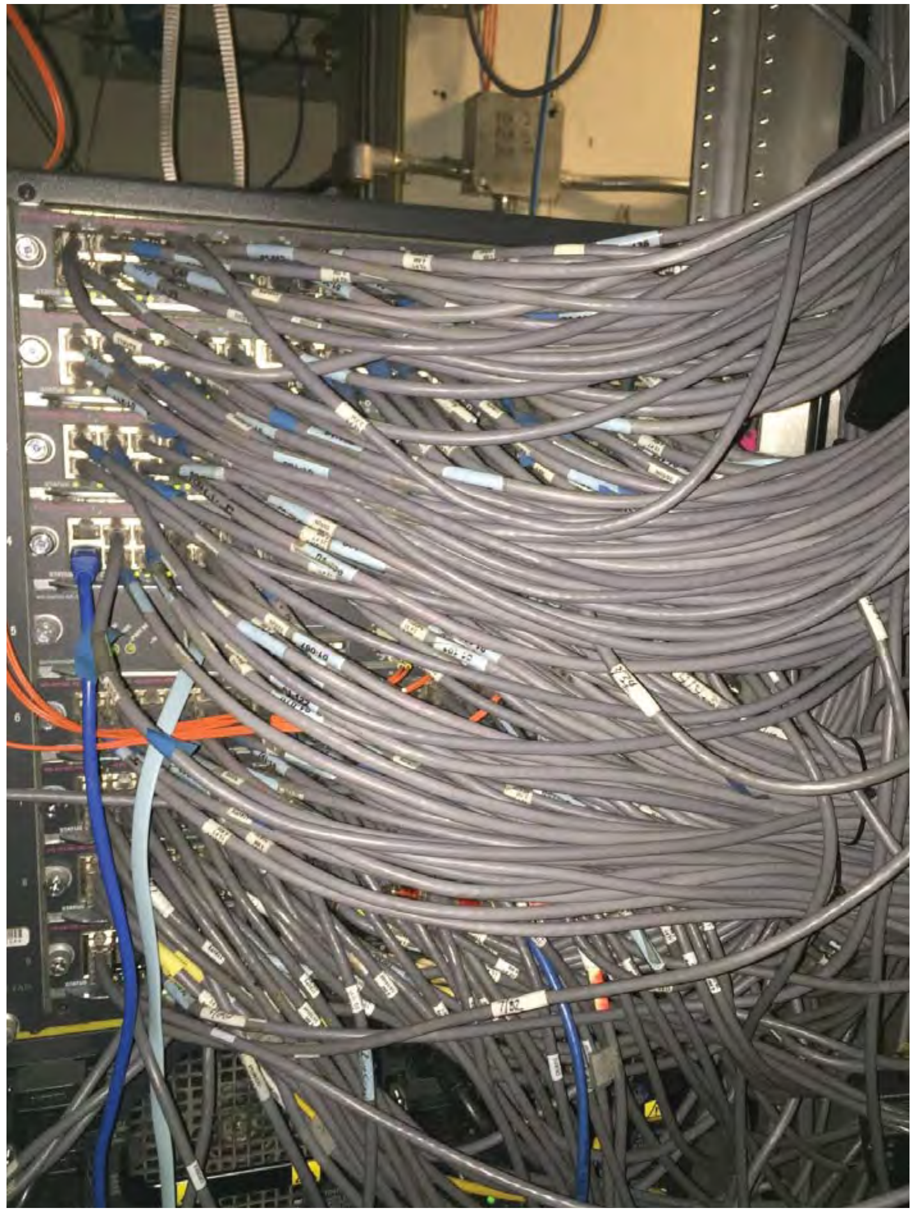


FIGURE 14 *Unmanaged cabling has been allowed to accumulate into a tangled mess, blocking access to equipment and increasing maintenance times.*

Equipment Life

Recommendation

It will become necessary to remove and reinstall cabling as electrical and mechanical upgrades are made, due to the fact that communication cabling is often found supported by electrical conduit and busways and mechanical piping through the facility. It is recommended that as cabling is reinstalled, it be done using proper support and cable management methods.

It is further recommended that communication rooms be restored to suitable conditions, including provision of standard Registered Jack (RJ45) patching solutions and new cable management equipment where required, re-routing of tangled cabling, proper storage of excess slack, and removal of debris and non-communication equipment stored in the spaces.

Benefits

There are many benefits to cable installation best practices, including properly securing cabling to avoid damage, better control over Electromagnetic Interference (EMI) and thermal interference, better access to equipment and systems, more clear organization of cable runs, leading to shorter downtimes and less staff time wasted tracing cables, and better management of abandoned cabling. Additionally, when cables are supported properly by dedicated support apparatus, they need not be disrupted by work on other adjacent systems.

Code

National Electrical Code (NEC) (2014) article 800.21: "Access to electrical equipment shall not be denied by an accumulation of communications wires and cables that prevents removal of panels, including suspended ceiling panels."

National Electrical Code (NEC) (2014) article 800.24: "Communications circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps, staples, cable ties, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform to 300.4(D) and 300.11."

Cost

Rough Order of Magnitude (ROM) project cost of $772,330 per Rider Levett Bucknall preliminary cost estimate of June 2016, which is located in Section 3.1 of this report. Much of this effort can be undertaken at the same time as that for the removal of abandoned communications cabling. Additionally, some of this work will be necessary in order to perform electrical or mechanical upgrades listed elsewhere in this report – it is difficult to separate the cost of this effort from the cost of those efforts.

1.2.5 LOW VOLTAGE SYSTEMS SUMMARY

System Component	Condition	Remaining Equipment Life	Extent of Recommended Upgrades	Upgrade Cost Estimate Range
Firestopping	Varies	N/A	Replace missing, repair improper installations	$67,579
Abandoned equipment	Varies	N/A	Remove and recycle	$201,382
Vertical cable plant	Acceptable	N/A	Remove unused, label existing, provide proper support methods	$1,510,370
Horizontal cable plant	Acceptable	N/A	Remove unused, label existing, provide proper support methods	$1,510,370
Cable management and support in communication rooms	Varies	N/A	Provide proper hardware and installation to manage excess slack, secure cabling, and remove debris	$772,330

Photo of Stair 4 at level 10. A handrail would need to be added to the stair if the building is substantially altered. CDG photo, May 7, 2016.

Photo of Stair 4 at level 5. The existing handrail is non-code compliant and may need to be upgraded if the building is substantially altered. CDG photo, May 7, 2016.

BUILDING CODE CONSIDERATIONS:

The King County Courthouse was originally constructed in 1914-1916, expanded in 1929-1931, and extensively remodeled in the 1960s. Numerous building improvement projects have taken place over the past several decades since the last major alteration of the Courthouse in the 1960s. The most recent major capital project at the Courthouse was the seismic upgrade project in 2003-2004.

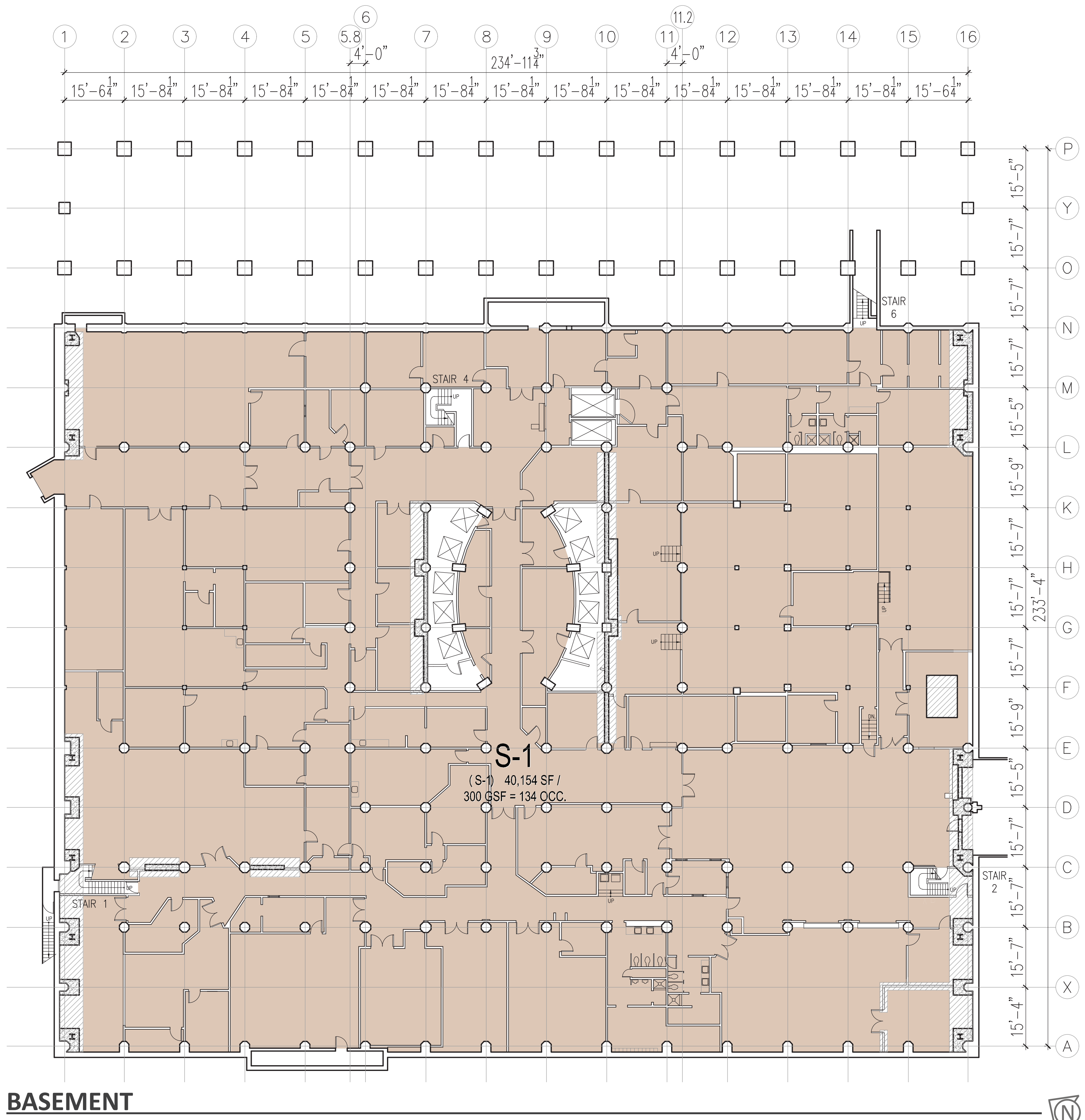
The existing life-safety systems in the Courthouse have been constructed under the various building codes in effect when they were constructed. For example, the vertical expansion of the Courthouse in 1929-1931 featured two metal fire escapes mounted on the exterior of the building inside the north-facing U-shaped courtyard space. External metal fire escapes are generally not allowed as egress devices under modern building codes. However, these fire escapes were removed during the 1960s, when internal fire-rated exit stairs were altered and expanded to their current configuration.

A major revitalization of the Courthouse may require upgrades to meet current building codes if the City of Seattle determines the project (or combination of projects) qualifies as a substantial alteration. As part of this pre-design report, the design team studied the existing current building occupancies, occupant loads of the existing spaces on each level of the building, egress paths of travel from all occupiable spaces to the exit stairs, and the exit stair discharge capacity. The design team also studied the total number of plumbing fixtures that would be required based on the current occupant loads of the building. For the purposes of these preliminary studies, the design team used the 2015 Seattle Existing Buildings Code and the 2015 Seattle Plumbing Code.

In general, the building is fully sprinklered, emergency evacuation routes are posted, exits are well-marked with lighted signs, and fire extinguishers are distributed throughout the building. Fire standpipes are located at five of the seven stairwells, and there are emergency telephones and firefighter telephone jacks throughout the stairwells. Additionally, the stairwells are pressurized, which is required by building code for high-rise buildings.

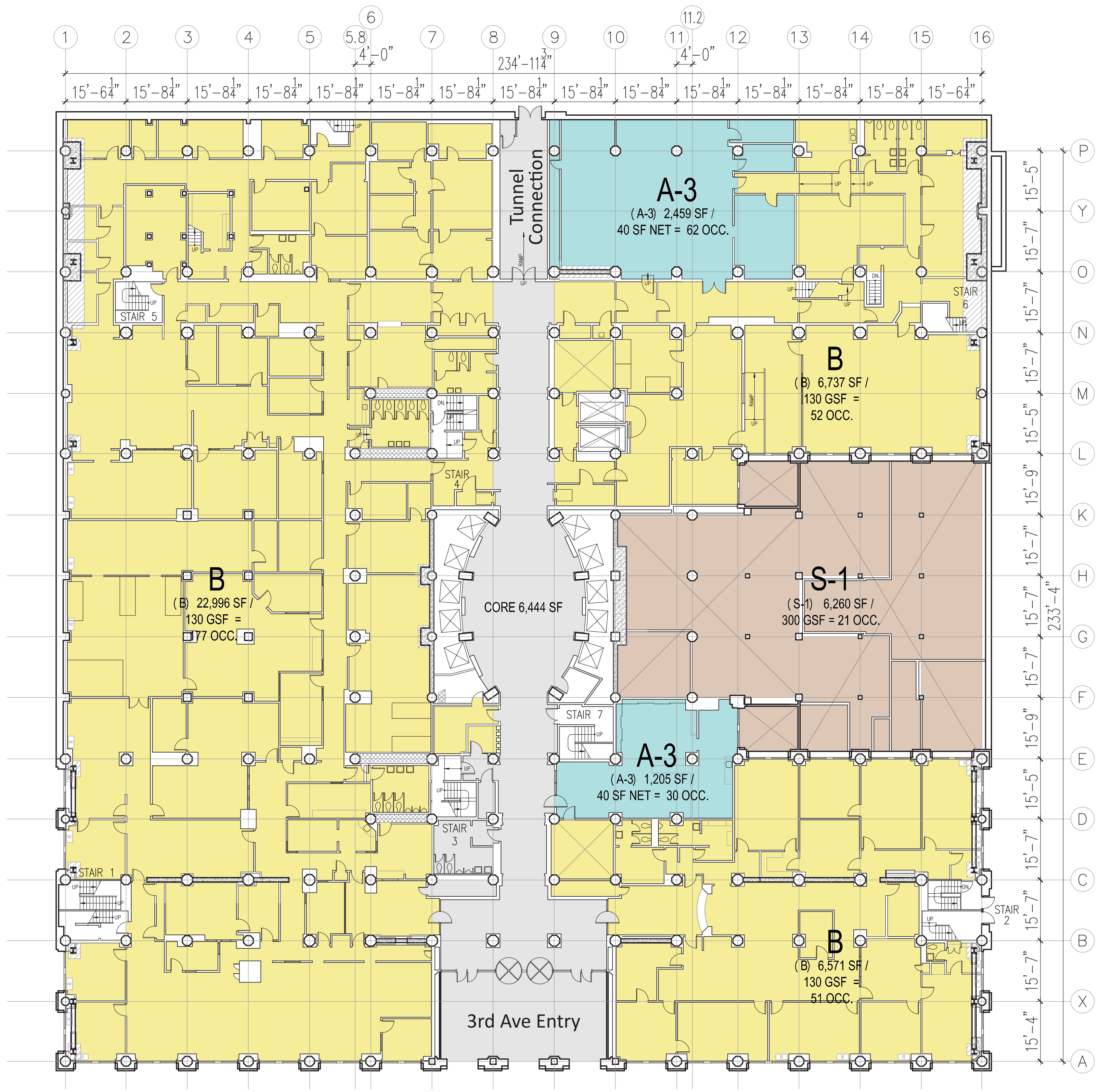
Occupancy Diagrams and Exit Path Diagrams:

The diagrams used to assess the occupancy loads and exit capacities are presented on the following pages. A few of the spaces in the building have existing exit paths of travel that are too long, which would need to be corrected if the building is substantially altered. Also, some of the exit door widths would need to be increased to meet the exit widths required under the current code. These potential issues are noted on the diagram page where these issues occur.



BASEMENT

(S-1) Storage Load Factor - 300 GSF = 134 Occupants	
Total Floor Occupants: 134	
(S-1) Storage =	40,154 sf
Non Rentable Area =	2,790 sf
Total Floor Area =	42,944 sf
Interior Net Area =	40,154 sf
Interior Gross Area =	42,944 sf



LEVEL 1

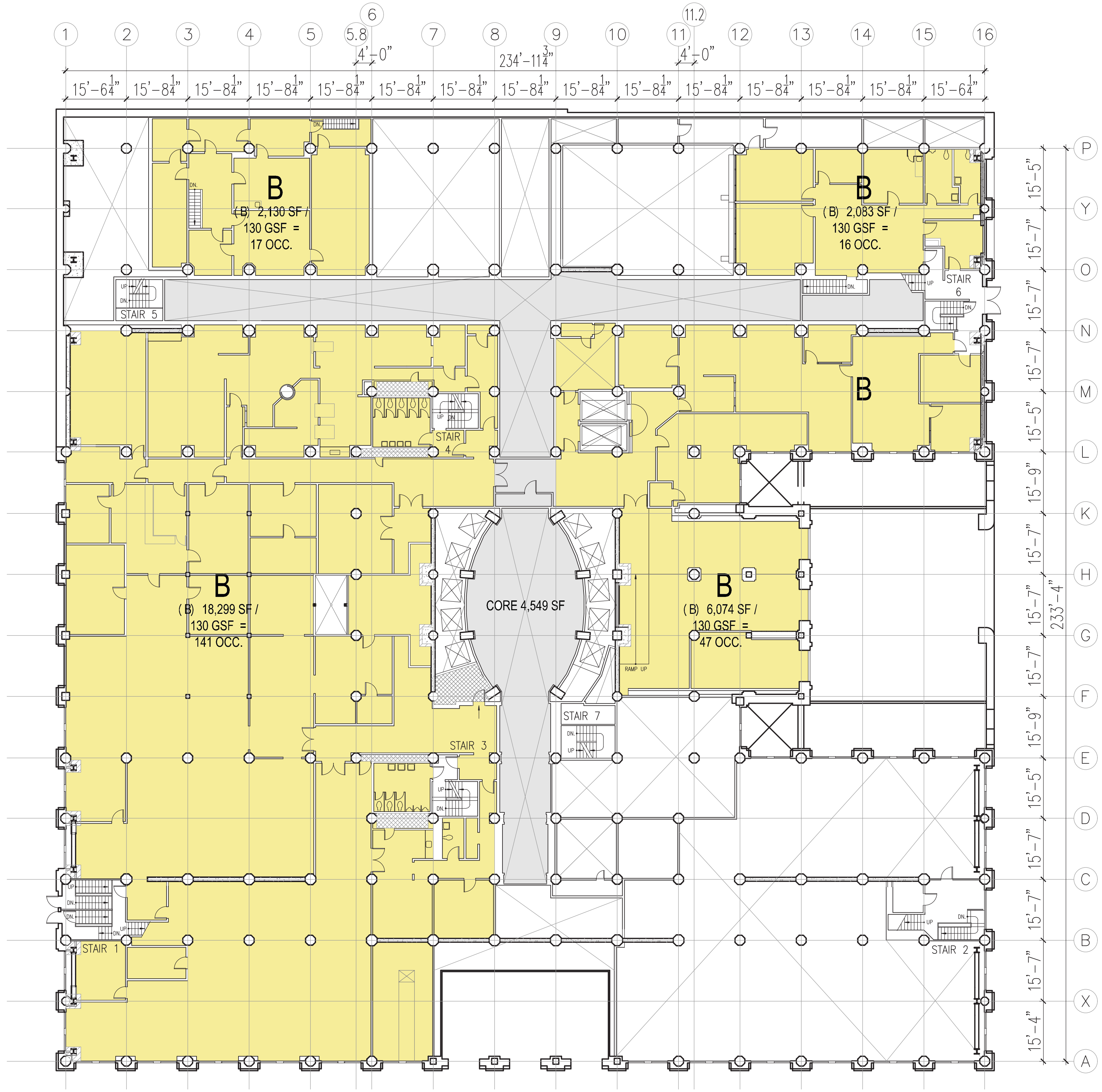
(S-1) Storage
Load Factor - 300 GSF =
21 Occupants

(B) Business
Load Factor - 130 GSF =
280 Occupants

(A-3) Assembly
Load Factor - 40 NET =
92 Occupants

<u>Total Floor Occupants:</u>
169

(S-1) Storage =	6,260 sf
(B) Business =	36,304 sf
(A-3) Assembly =	3,664 sf
Core =	6,444 sf
Non Rentable Area =	3,939 sf
Total Floor Area =	56,611 sf
Interior Net Area =	52,672 sf
Interior Gross Area =	56,611 sf

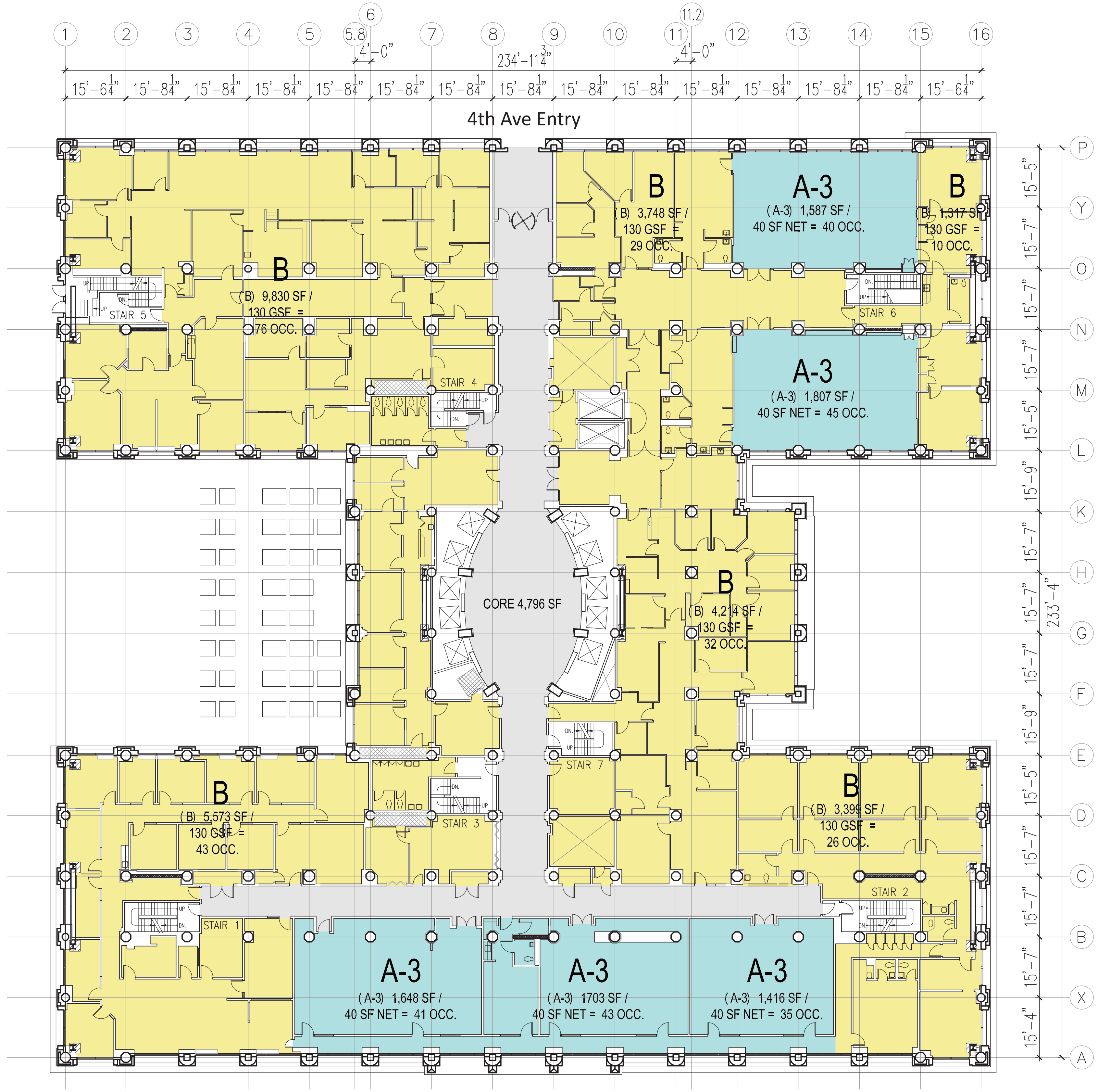


LEVEL 1A

(B) Business
Load Factor - 130 GSF =
238 Occupants

Total Floor Occupants:
238

(B) Business =	28,586 sf
Core =	4,549 sf
Non Rentable Area =	3,306 sf
Total Floor Area =	36,441 sf
Interior Net Area =	33,135 sf
Interior Gross Area =	36,441 sf



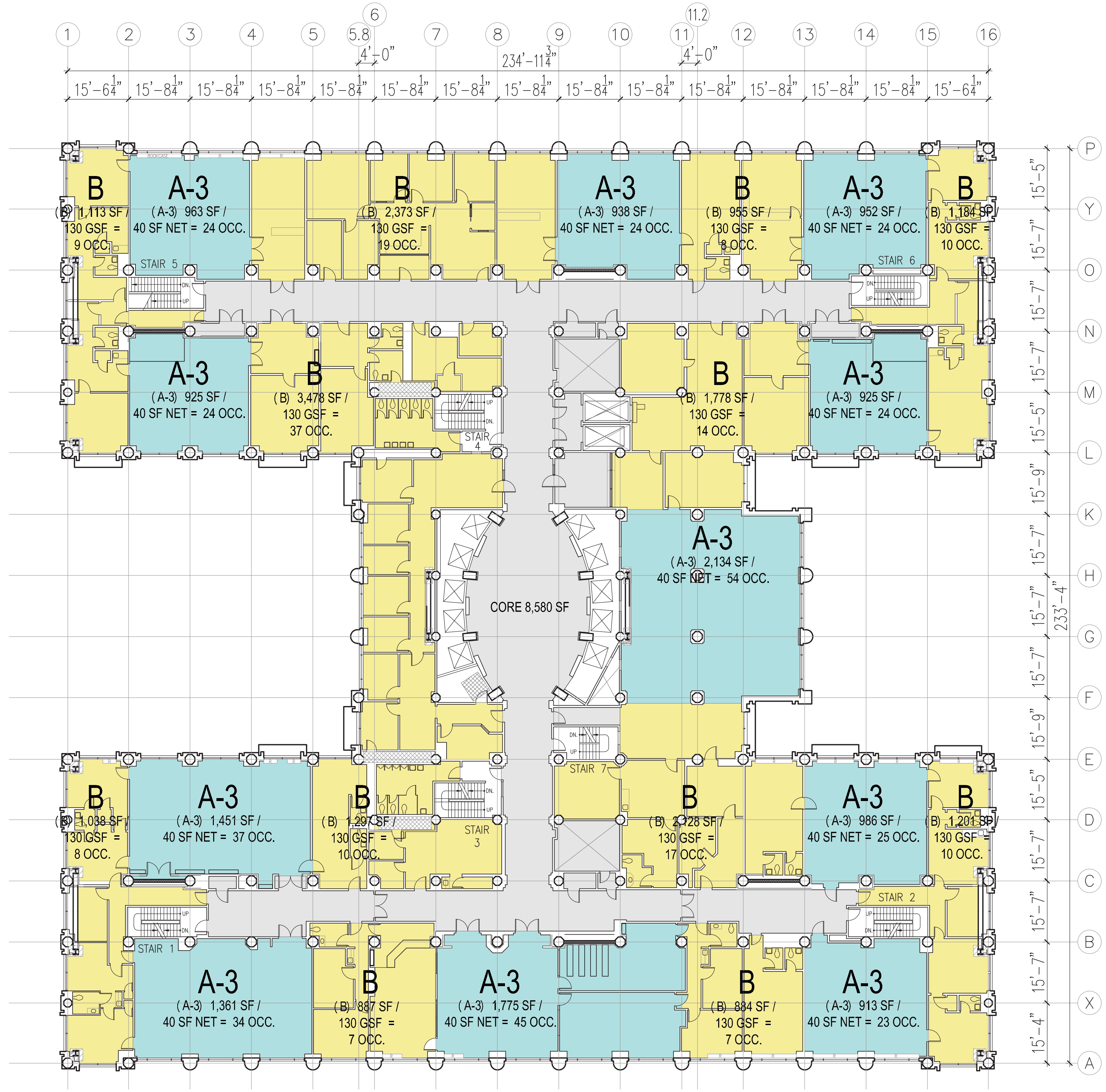
LEVEL 2

(B) Business
Load Factor - 130 GSF =
216 Occupants

(A-3) Assembly
Load Factor - 40 NET =
204 Occupants

Total Floor Occupants:
420

(B) Business =	28,081 sf
(A-3) Assembly =	8,161 sf
Core =	4,796 sf
Non Rentable Area =	3,647 sf
Total Floor Area =	44,685 sf
Interior Net Area =	41,038 sf
Interior Gross Area =	44,685 sf



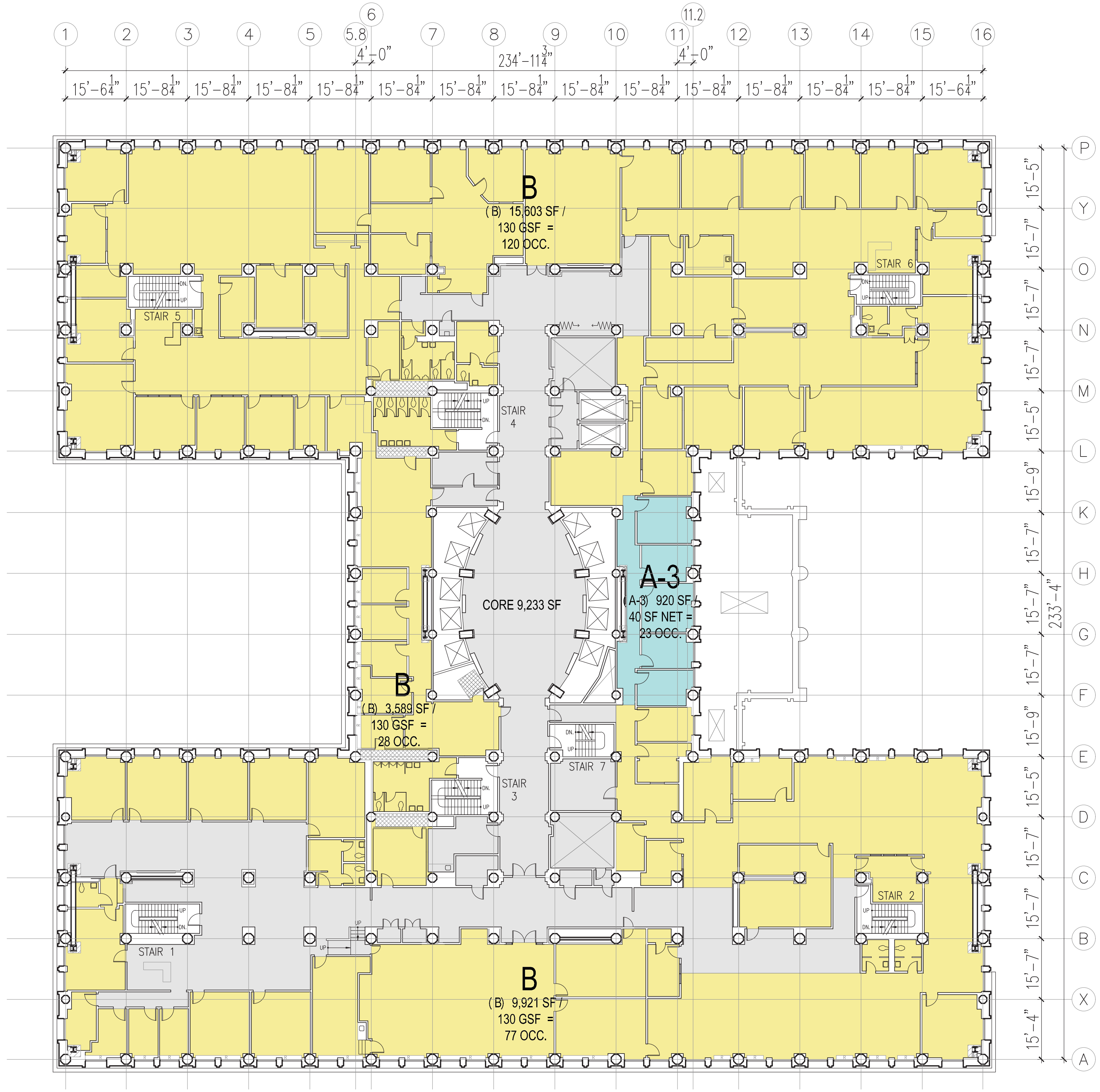
LEVEL 3

(B) Business
Load Factor - 130 GSF =
156 Occupants

(A-3) Assembly
Load Factor - 40 NET =
338 Occupants

Total Floor Occupants:
494

(B) Business =	18,316 sf
(A-3) Assembly =	13,323 sf
Core =	8,580 sf
Non Rentable Area =	3,543 sf
Total Floor Area =	43,762 sf
Interior Net Area =	40,219 sf
Interior Gross Area =	43,762 sf



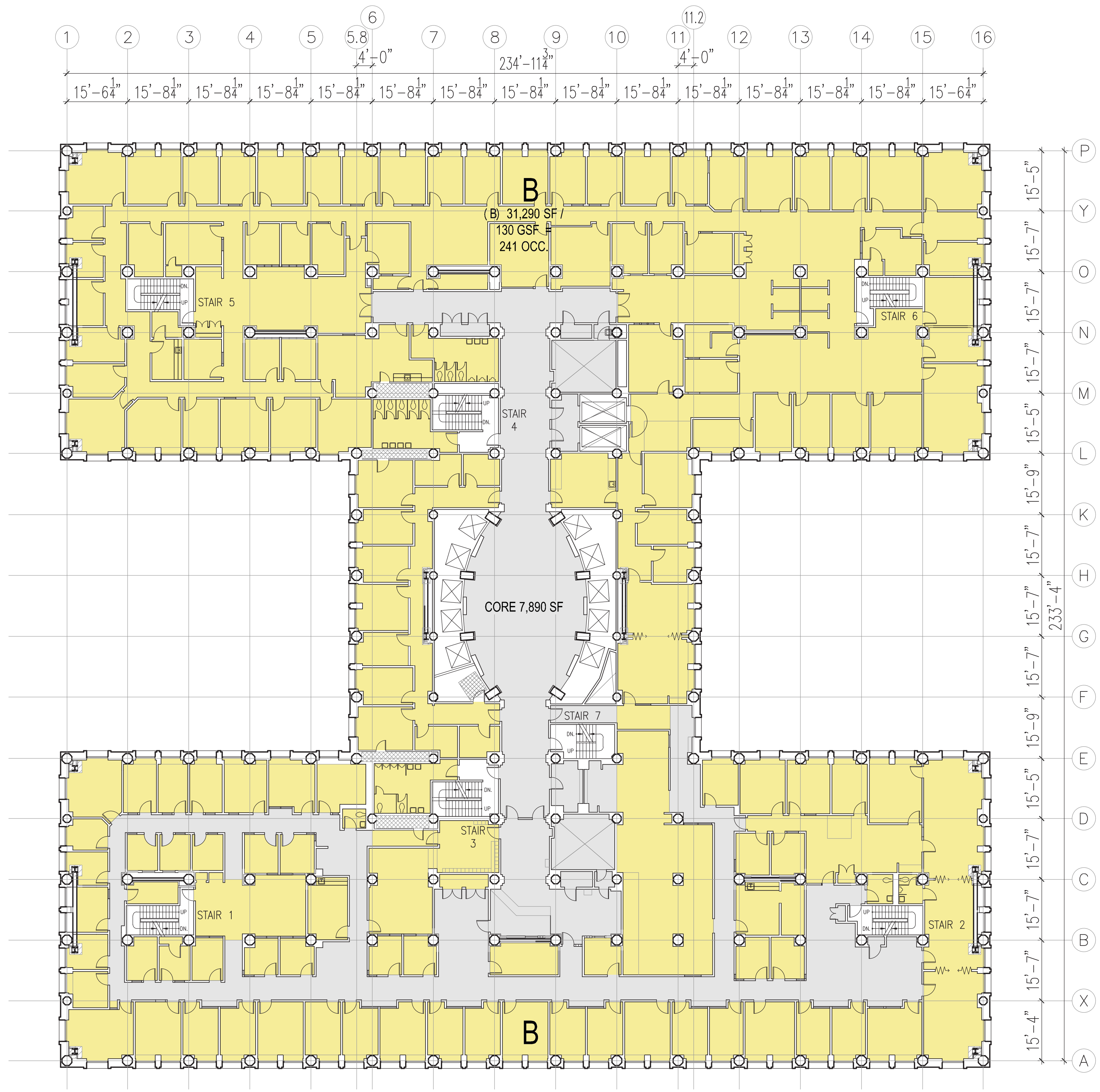
LEVEL 4

(B) Business
Load Factor - 130 GSF =
225 Occupants

(A-3) Assembly
Load Factor - 40 NET =
23 Occupants

Total Floor Occupants:
248

(B) Business =	29,113 sf
(A-3) Assembly =	920 sf
Core =	9,233 sf
Non Rentable Area =	3,412 sf
Total Floor Area =	42,678 sf
Interior Net Area =	39,266 sf
Interior Gross Area =	42,678 sf

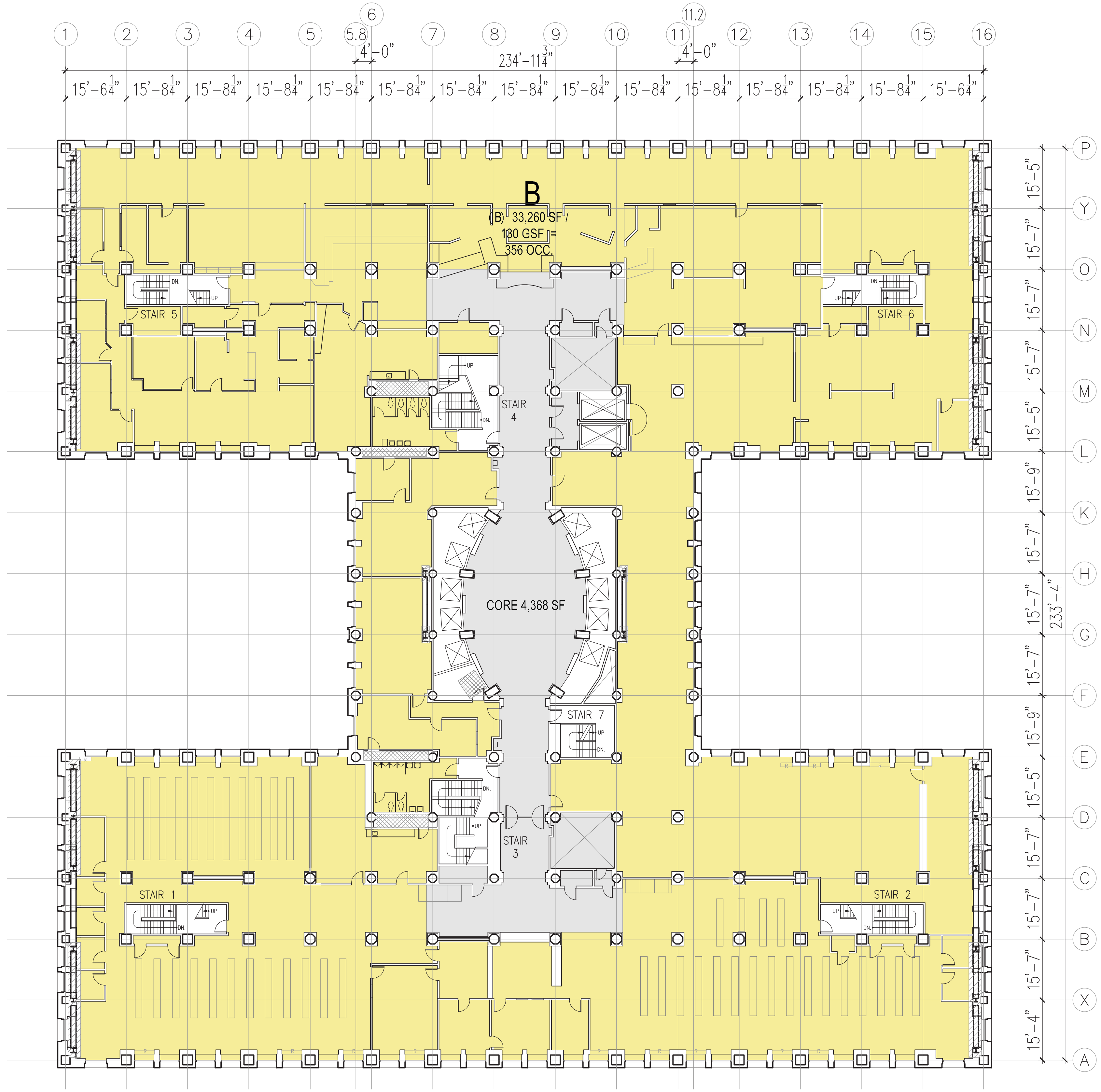


LEVEL 5

(B) Business
Load Factor - 130 GSF =
241 Occupants

Total Floor Occupants:
241

(B) Business =	31,290 sf
Core =	7,890 sf
Non Rentable Area =	3,407 sf
Total Floor Area =	42,587 sf
Interior Net Area =	39,180 sf
Interior Gross Area =	42,587 sf



LEVEL 6

(B) Business
Load Factor - 130 GSF = 356 Occupants

Total Floor Occupants:
356

(B) Business =	33,260 sf
Core =	4,369 sf
Non Rentable Area =	3,995 sf
Total Floor Area =	41,624 sf
Interior Net Area =	37,627 sf
Interior Gross Area =	41,624 sf

King County

22 July 2016

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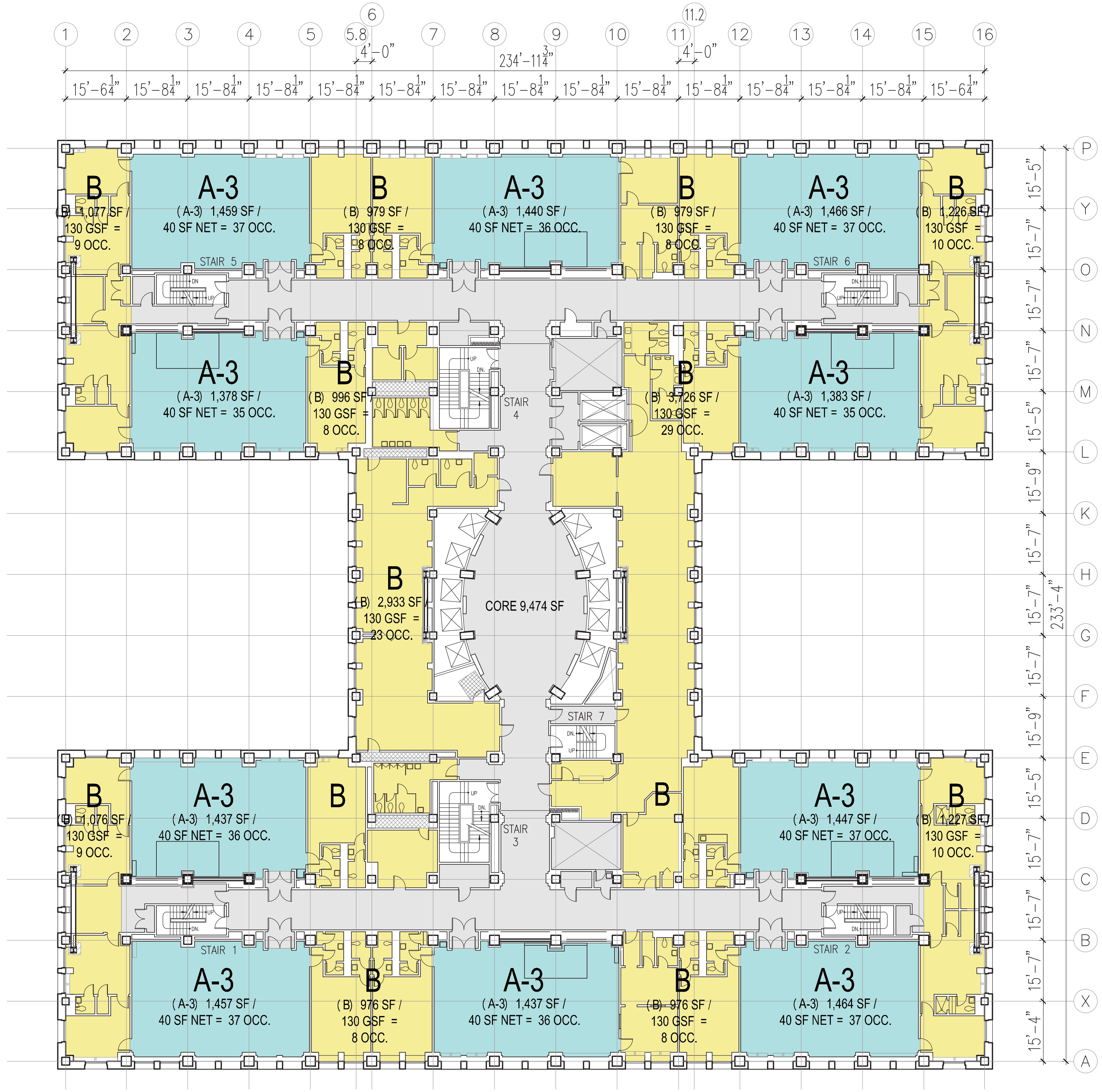


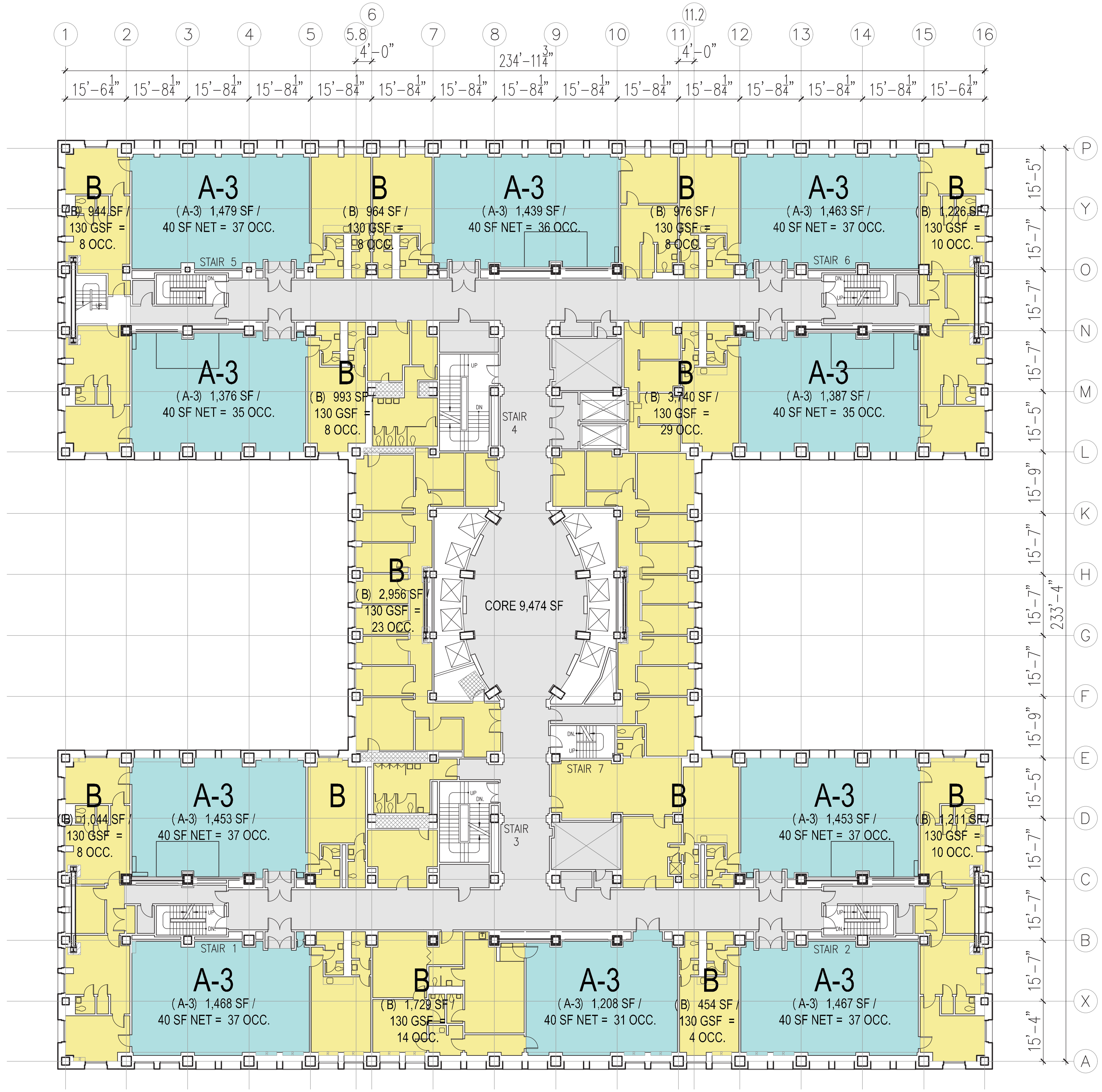
LEVEL 7

(B) Business
Load Factor - 130 GSF =
130 Occupants

(A-3) Assembly
Load Factor - 40 NET =
363 Occupants

Total Floor Occupants:
493

(B) Business =	16,171 sf
(A-3) Assembly =	14,368 sf
Core =	9,807 sf
Non Rentable Area =	3,254 sf
Total Floor Area =	42,578 sf
Interior Net Area =	38,991 sf
Interior Gross Area =	42,578 sf



LEVEL 8

(B) Business
Load Factor - 130 GSF =
130 Occupants

(A-3) Assembly
Load Factor - 40 NET =
359 Occupants

Total Floor Occupants:
489

(B) Business =	16,237 sf
(A-3) Assembly =	14,193 sf
Core =	8,357 sf
Non Rentable Area =	3,772 sf
Total Floor Area =	42,559 sf
Interior Net Area =	38,787 sf
Interior Gross Area =	42,559 sf

King County

22 July 2016

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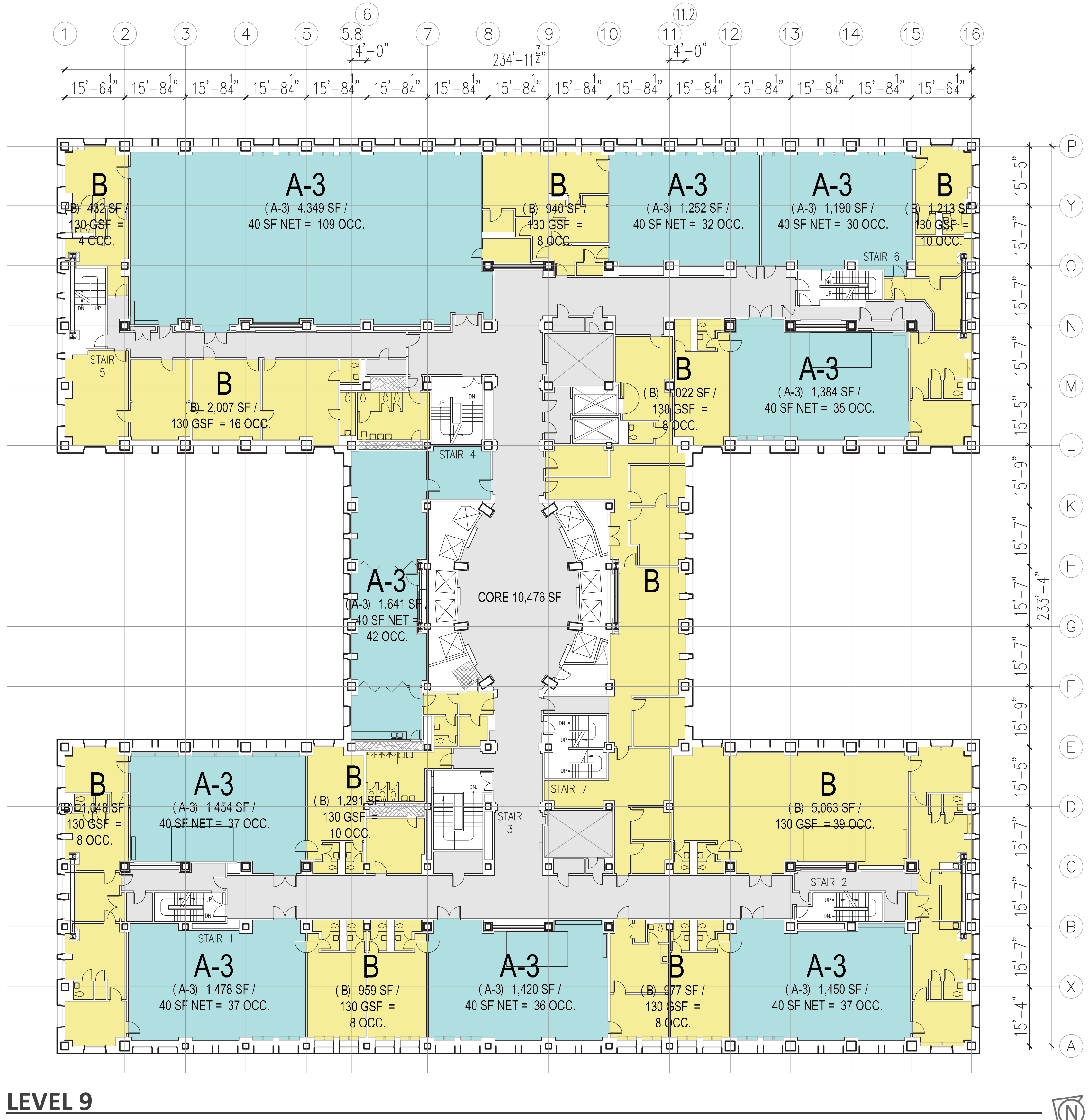


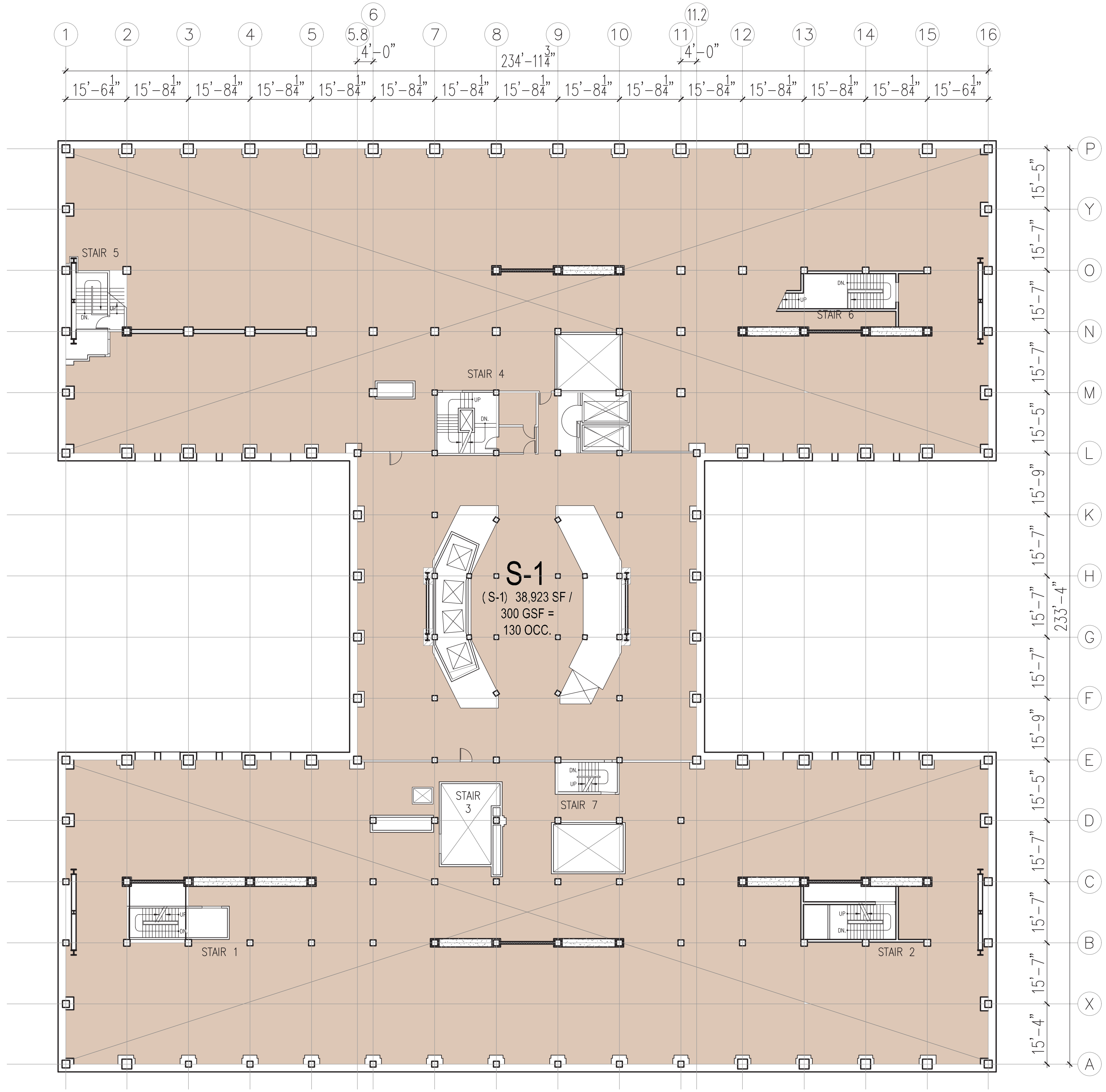
LEVEL 9

(B) Business
Load Factor - 130 GSF = 119 Occupants

(A-3) Assembly
Load Factor - 40 NET = 395 Occupants

Total Floor Occupants: 514

(B) Business =	14,952 sf
(A-3) Assembly =	15,618 sf
Core =	8,483 sf
Non Rentable Area =	3,679 sf
Total Floor Area =	42,575 sf
Interior Net Area =	38,896 sf
Interior Gross Area =	42,575 sf

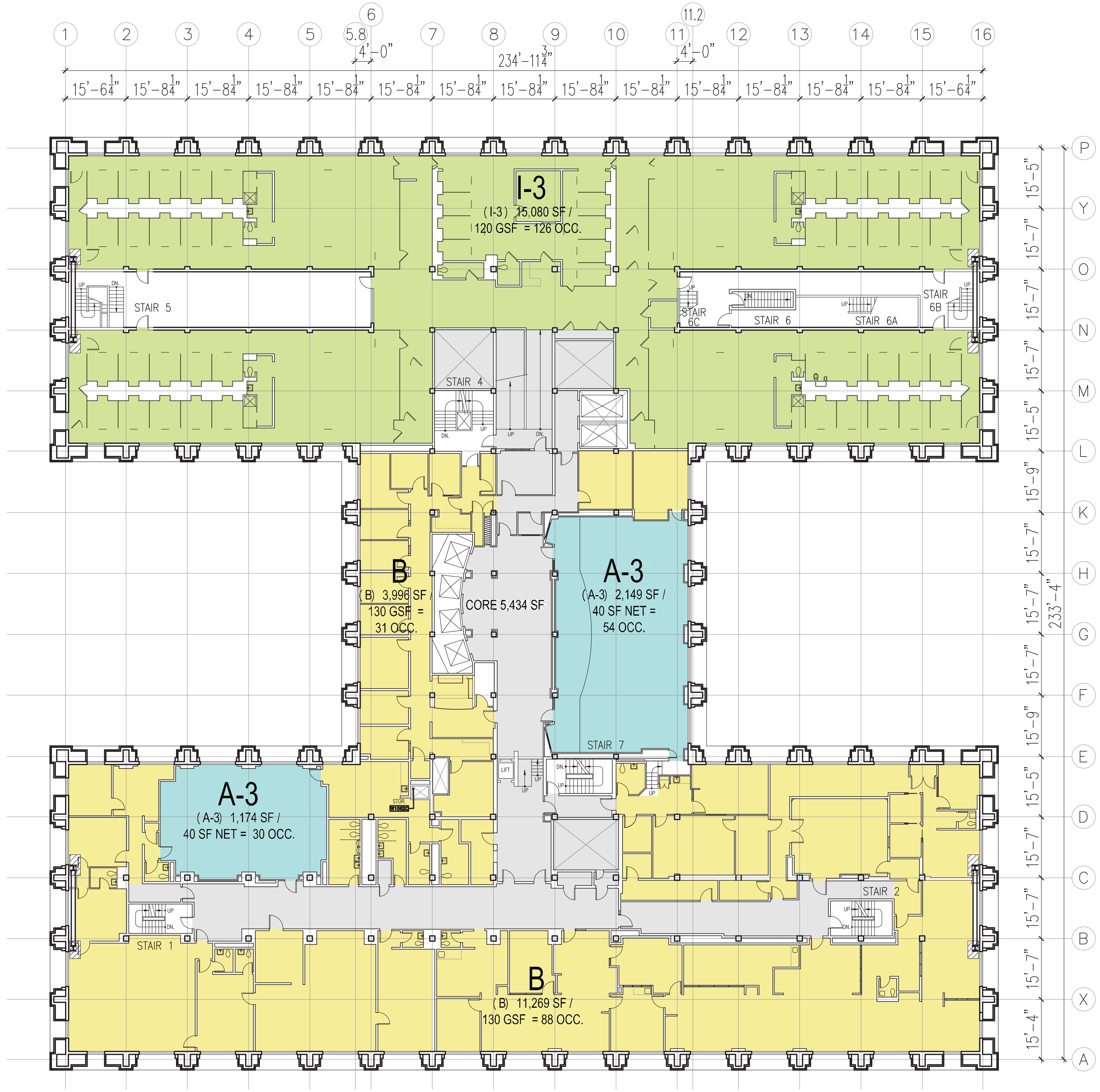


(S-1) Storage
Load Factor - 300 GSF = 130 Occupants

Total Floor Occupants:
130

(S-1) Storage =	38,923 sf
Non Rentable Area =	3,726 sf
Total Floor Area =	42,649 sf
Interior Net Area =	38,923 sf
Interior Gross Area =	42,649 sf

LEVEL 9 (ELEVATOR LOFT)



LEVEL 10

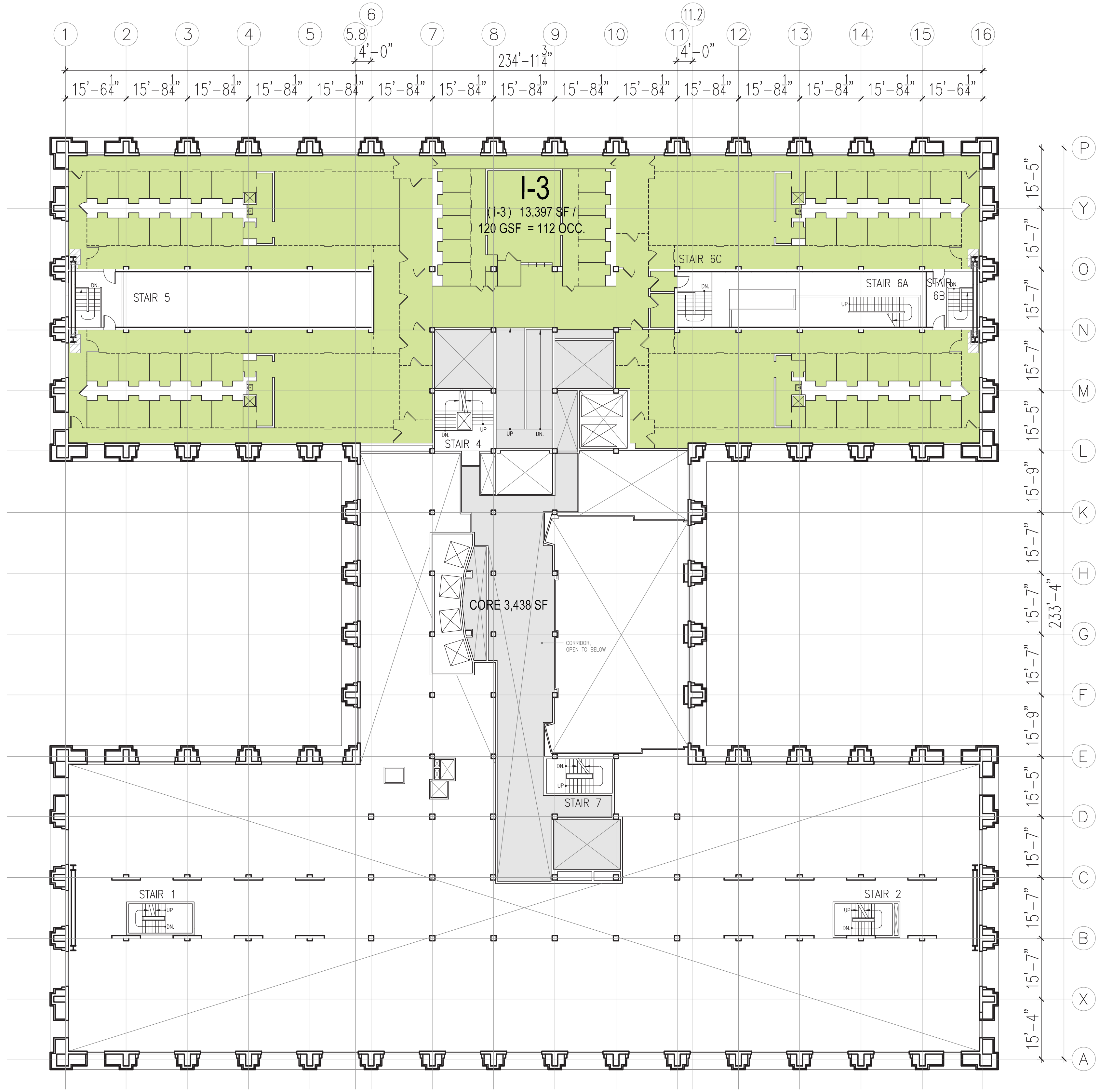
(B) Business
Load Factor - 130 GSF =
119 Occupants

(A-3) Assembly
Load Factor - 40 NET =
84 Occupants

(I) Institutional
Load Factor - 40 NET =
126 Occupants

Total Floor Occupants:
329

(B) Business =	15,265 sf
(A-3) Assembly =	3,323 sf
(I) Institutional =	15,080 sf
Core =	5,434 sf
Non Rentable Area =	2,182 sf
Total Floor Area =	41,284 sf
Interior Net Area =	39,102 sf
Interior Gross Area =	41,284 sf

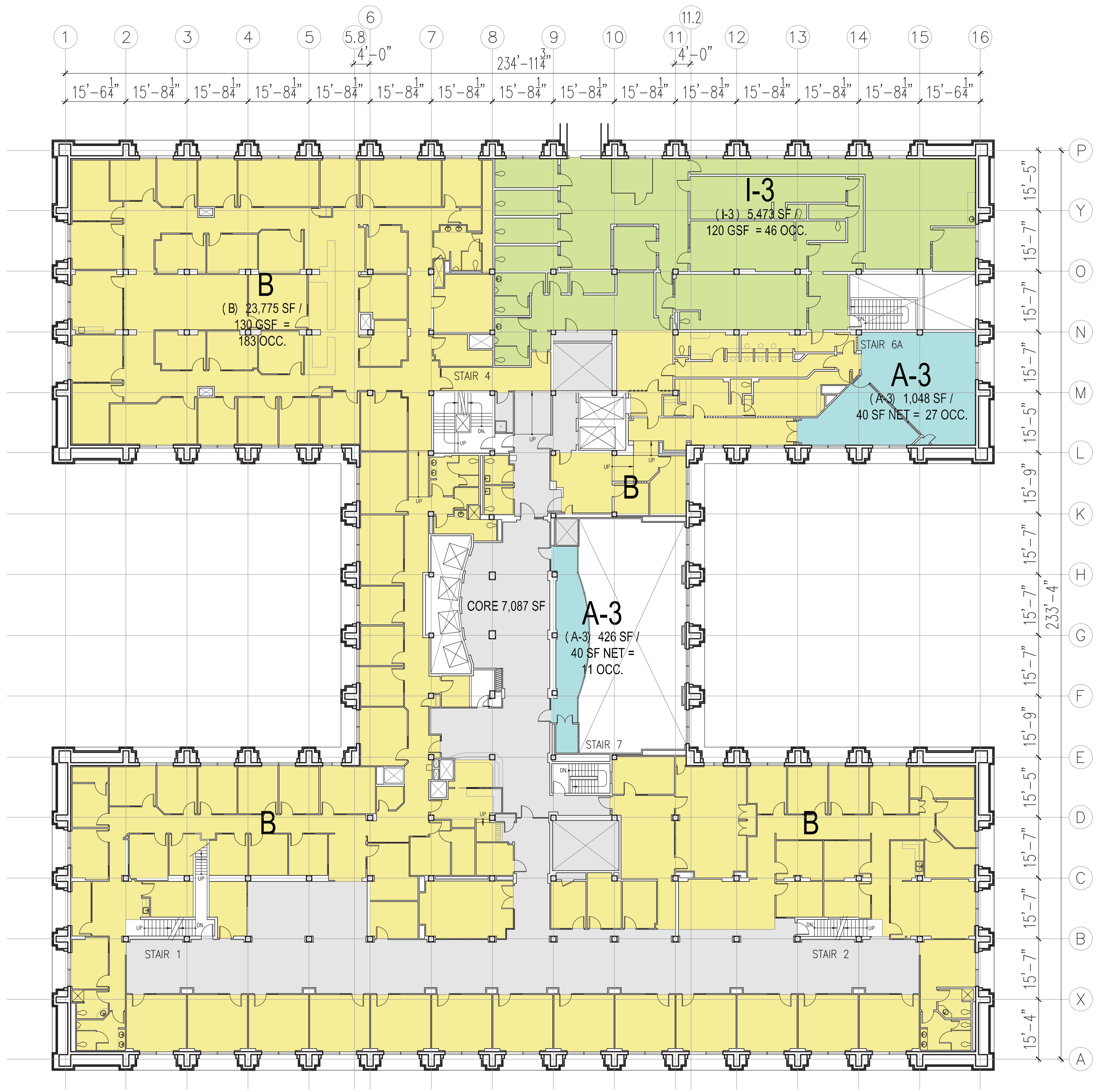


(I) Institutional
Load Factor - 40 NET =
112 Occupants

Total Floor Occupants:
112

(I) Institutional =	13,397 sf
Core =	3,438 sf
Non Rentable Area =	3,460 sf
Total Floor Area =	20,295sf
Interior Net Area =	16,835 sf
Interior Gross Area =	20,295 sf

LEVEL 11



LEVEL 12

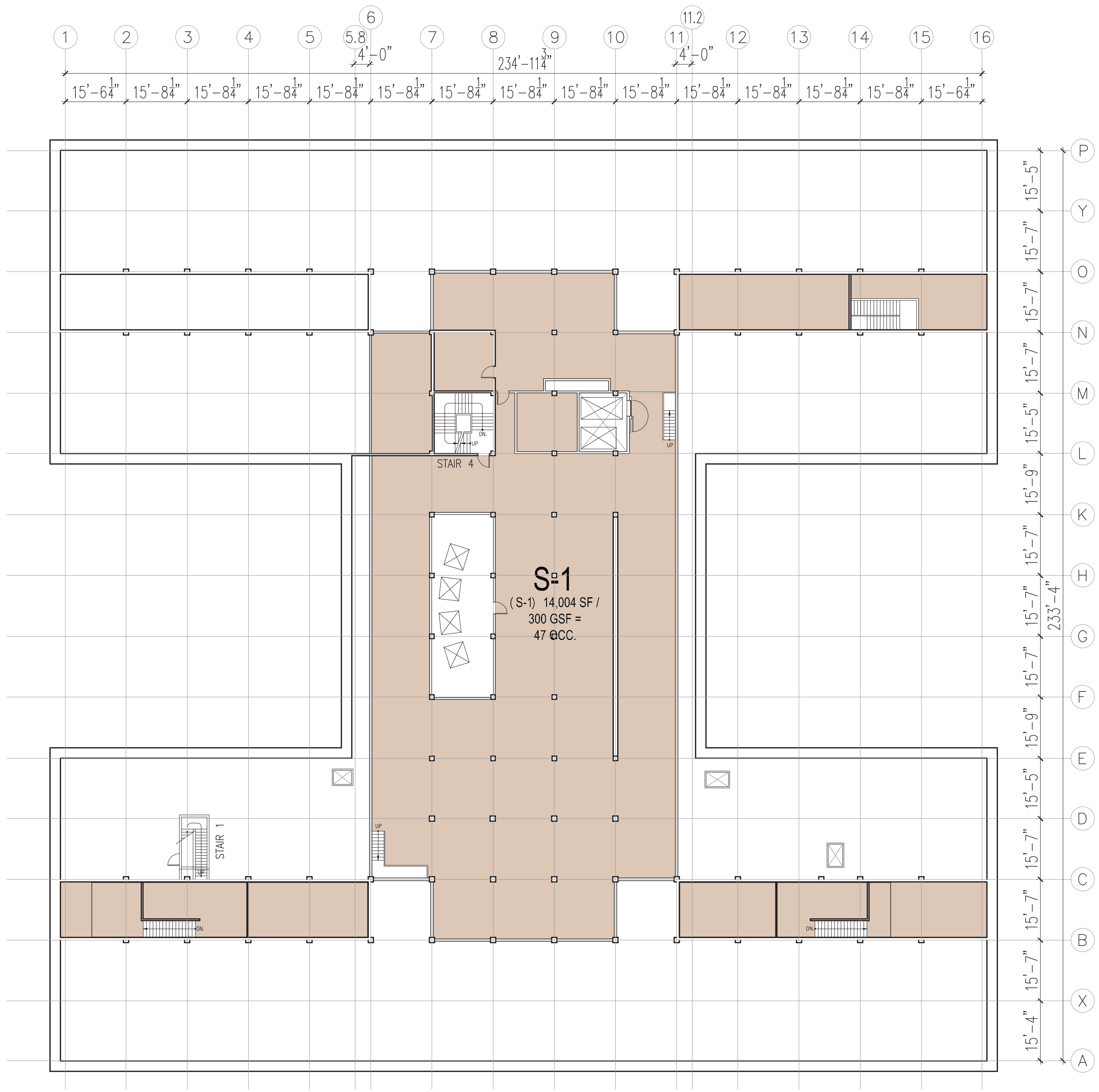
(B) Business
Load Factor - 130 GSF =
183 Occupants

(A-3) Assembly
Load Factor - 40 NET =
38 Occupants

(I) Institutional
Load Factor - 40 NET =
46 Occupants

Total Floor Occupants:
267

(B) Business =	23,775 sf
(A-3) Assembly =	1,474 sf
(I) Institutional =	5,473 sf
Core =	7,087 sf
Non Rentable Area =	1,679 sf
Total Floor Area =	39,488 sf
Interior Net Area =	37,809 sf
Interior Gross Area =	39,488 sf



MECHANICAL PENTHOUSE

(S-1) Storage
Load Factor - 300 GSF =
47 Occupants

Total Floor Occupants:
47

(S-1) Storage =	14,004 sf
Non Rentable Area =	1,782 sf
Total Floor Area =	15,786 sf
Interior Net Area =	14,004 sf
Interior Gross Area =	15,786 sf

BASEMENT

XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

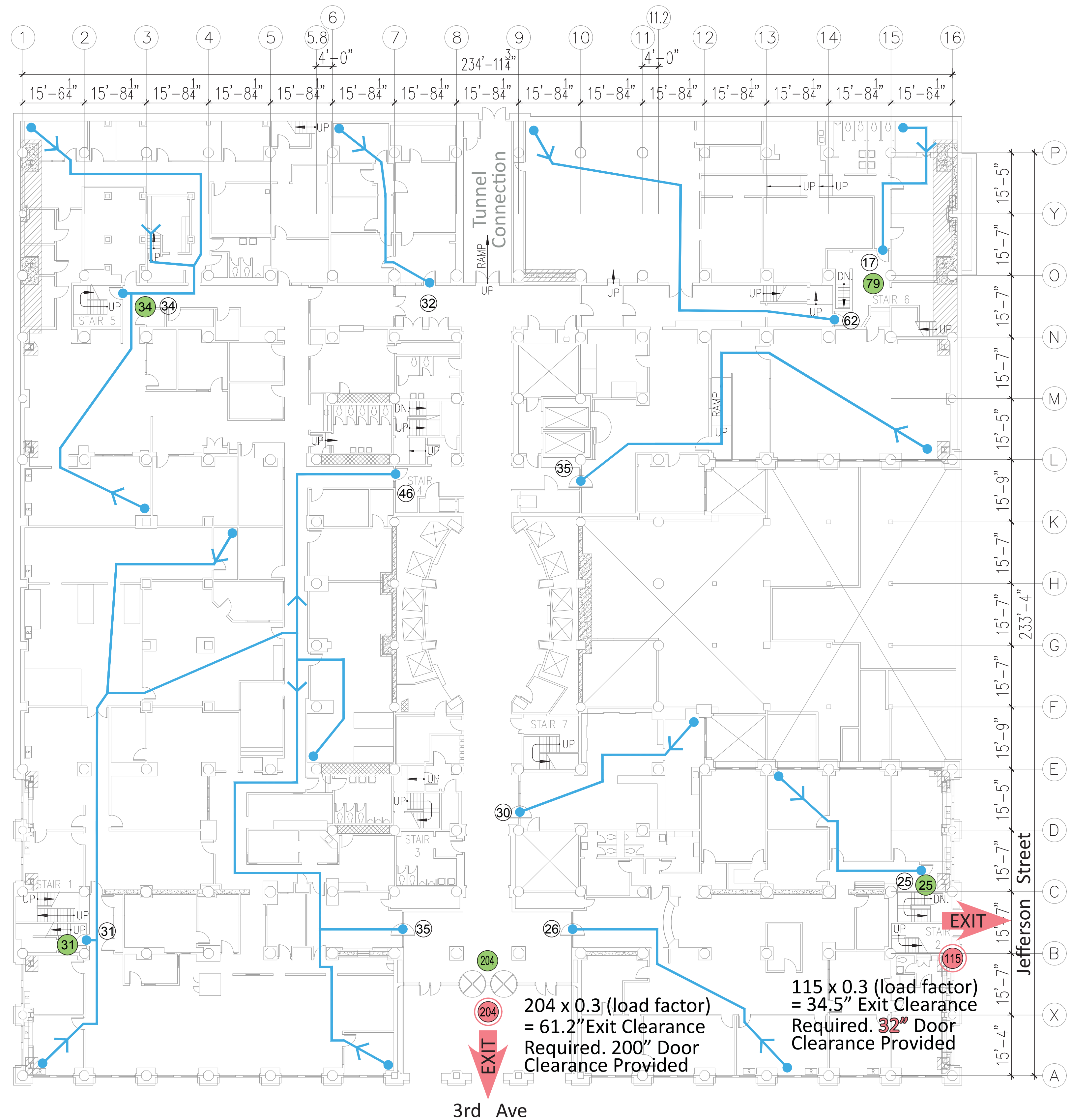
Non Compliant Exit Access Travel Distance

Note:
Maximum Common Path of Travel Distance Required For a Single Exit = 100'-0". Travel Distance Provided = 156'-0". Two Exits Are Required. Maximum Exit Access Travel Distance For Both Exits = 300'-0". Second Nearest Exit Travel Distance = 416'-0". Second Exit Does Not Comply. Further Review Required. (SBC: table 1014.3 & 1016.2)

Occupant Load By Stair
Basement:

Stair 1 - 41
Stair 2 - 44
Stair 3 - 0
Stair 4 - 36
Stair 5 - 0
Stair 6 - 13
Stair 7 - 0

Total Occupancy = 134



LEVEL 1

XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

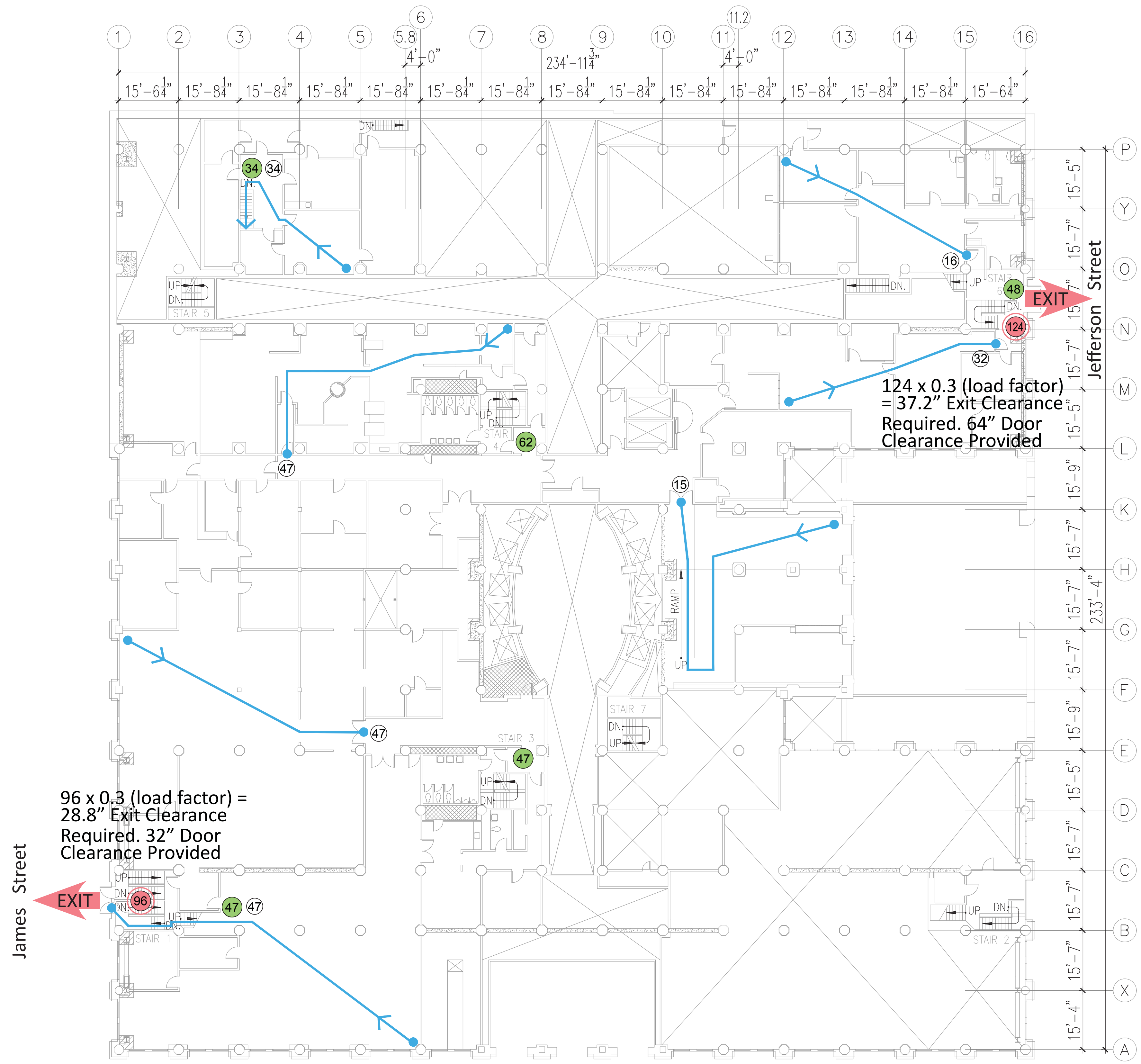
XX Exit Discharge Location and Max Occupant Load

Common Path of Travel and Exit Access Travel Distances

Note:
Jefferson Street Exit Clearance Required = 34.5". Exit Door Clearance Provided = 32". New 3'-6" Wide Door Recommended. Further Review Required. (SBC: 1005.3.1)

Occupant Load By Stair
Level 1:

Stair 1 - 31	
Stair 2 - 25	
Stair 3 - 0	
Stair 4 - 0	
Stair 5 - 34	
Stair 6 - 79	
Stair 7 - 0	
Total Occupancy =	169



LEVEL 1A

XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

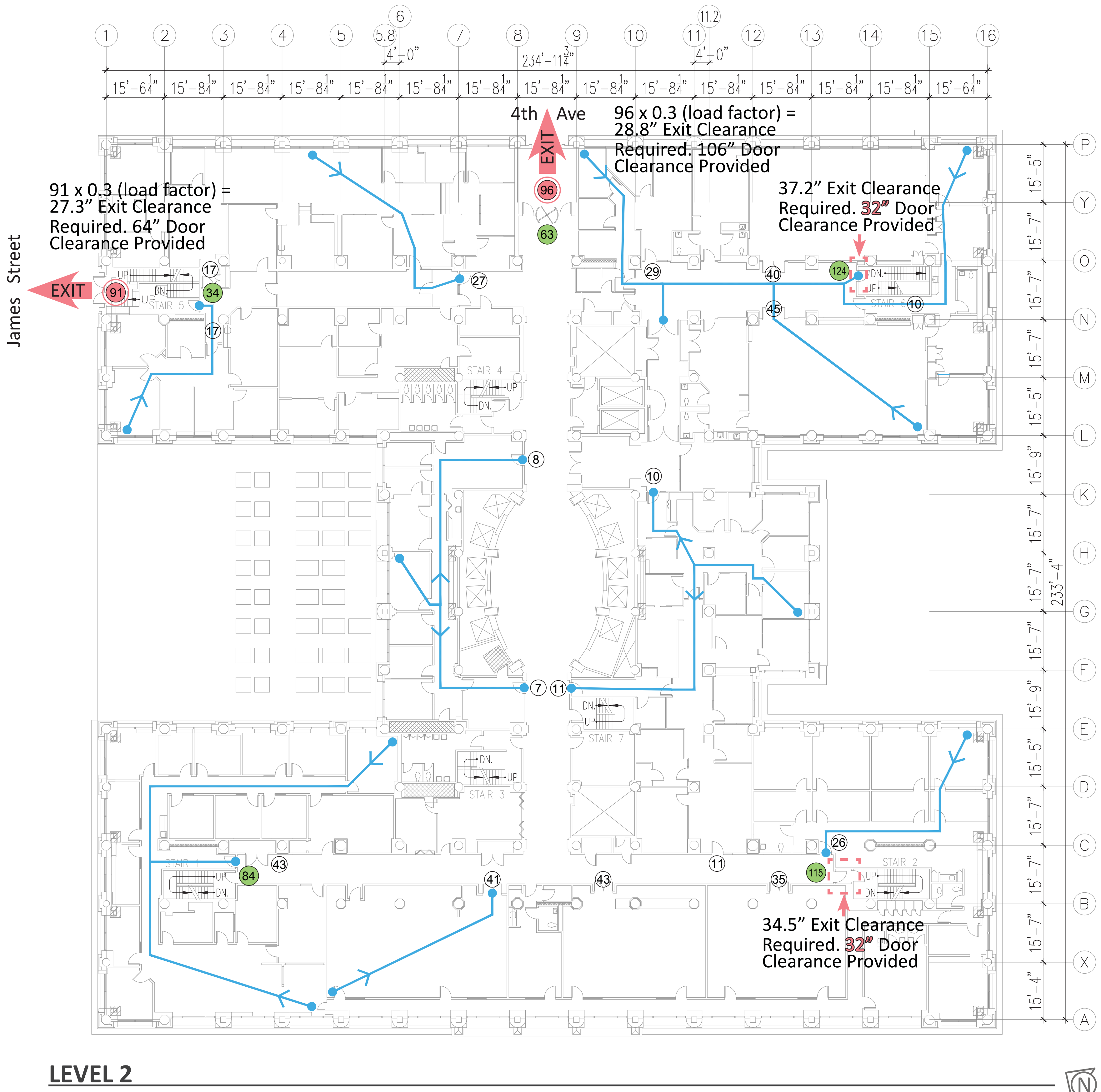
XX Exit Discharge Location and Max Occupant Load

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair Level 1A:

- Stair 1 - 47
- Stair 2 - 0
- Stair 3 - 47
- Stair 4 - 62
- Stair 5 - 34
- Stair 6 - 48
- Stair 7 - 0

Total Occupancy = 238



LEVEL 2

XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

XX Exit Discharge Location and Max Occupant Load

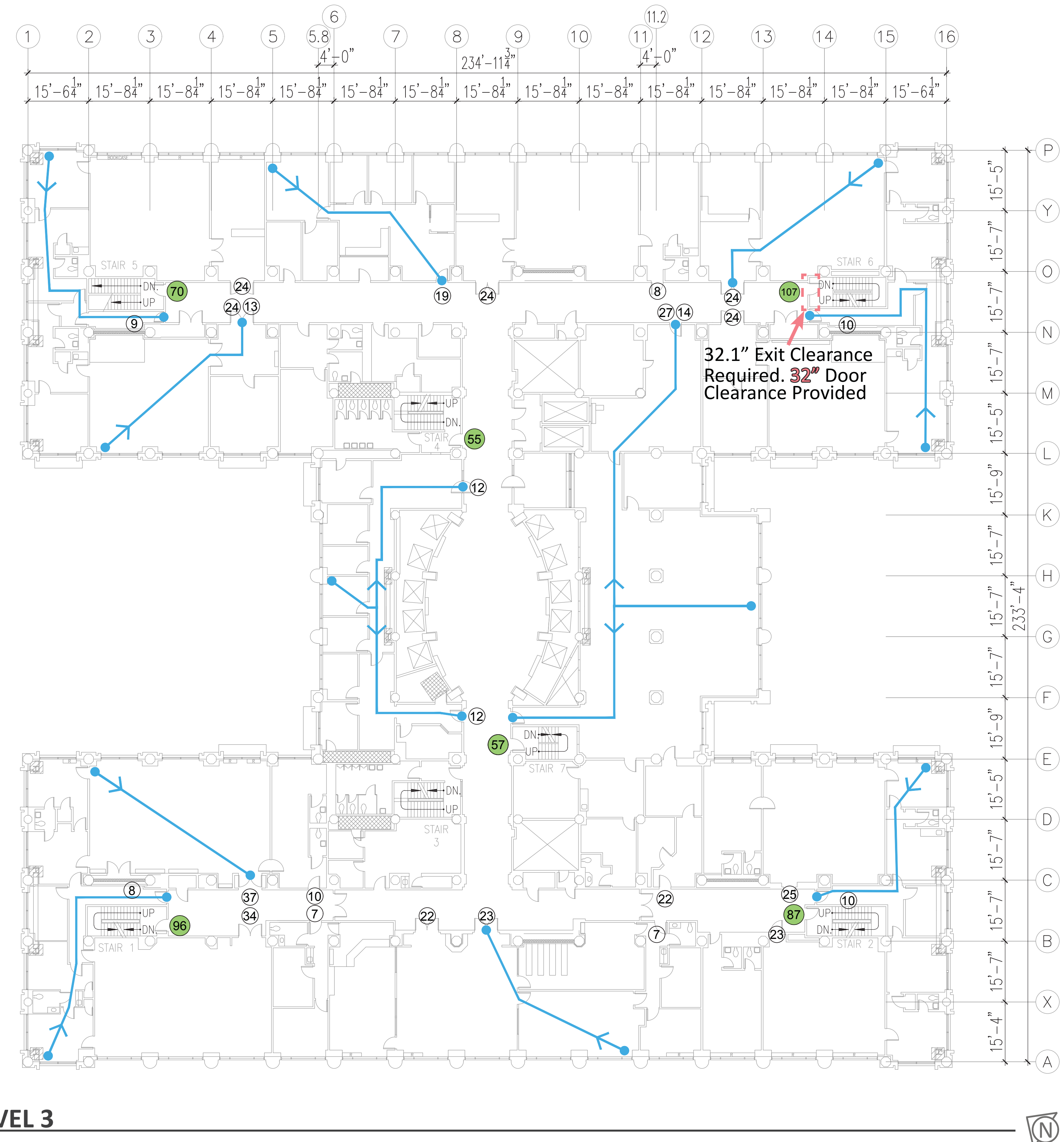
Common Path of Travel and Exit Access Travel Distances

Note:
Exit Clearance Required For Stair 2 = 34.5". Exit Door Clearance Provided = 32". Exit Clearance Required For Stair 6 = 37.2". Exit Door Clearance Provided = 32". New 3'-6" Wide Doors Recommended. Further Review Required. (SBC: 1005.3.1)

Occupant Load By Stair
Level 2:

Stair 1 - 84
Stair 2 - 115
Stair 3 - 0
Stair 4 - 0
Stair 5 - 34
Stair 6 - 124
Stair 7 - 0

Total Occupancy = 357



LEVEL 3

XX Cumulative Occupant Load By Zone

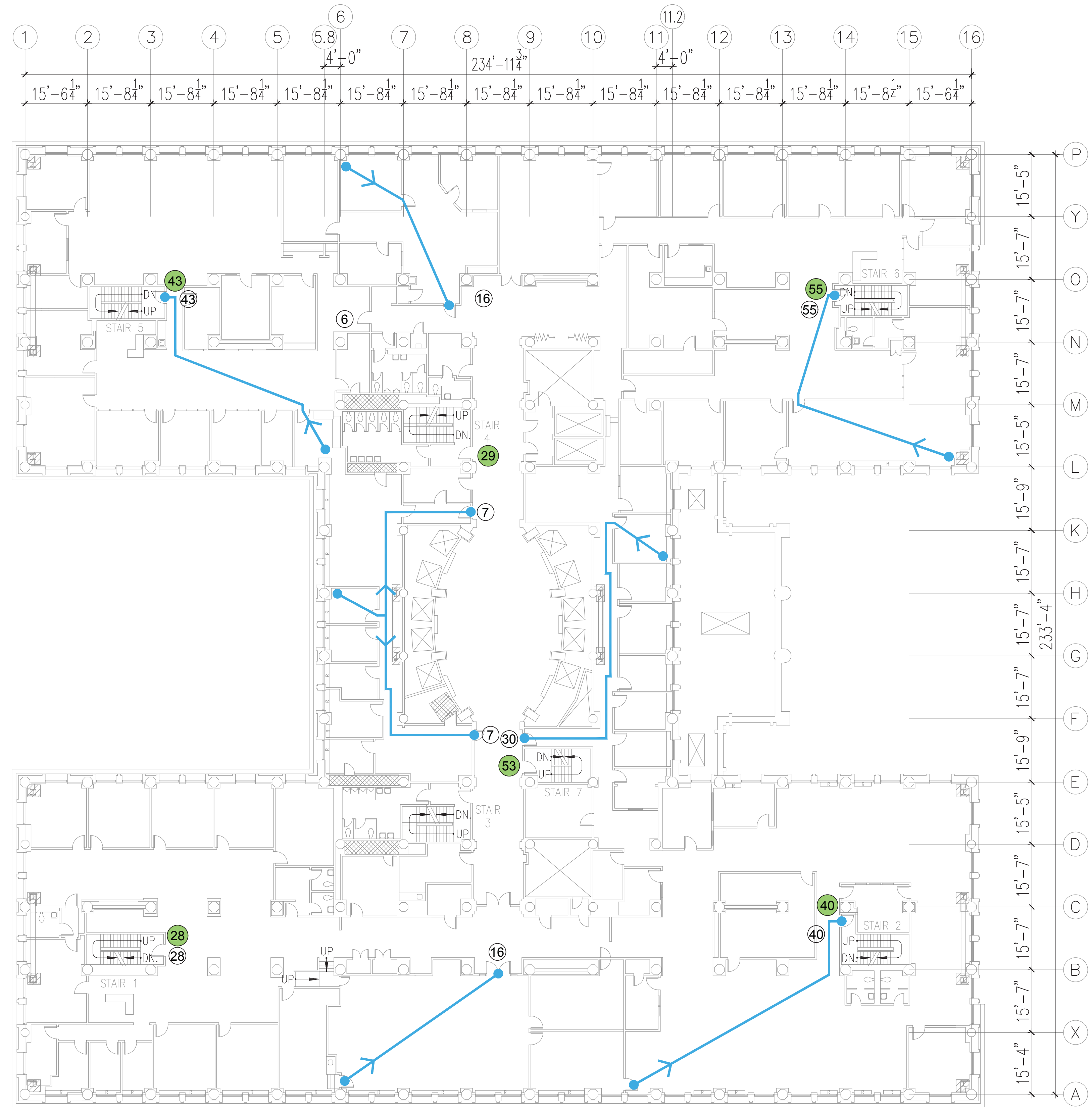
XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Note:
Exit Clearance Required For Stair 6 = 32.1”. Exit Door Clearance Provided = 32”. New 3’-6” Wide Door Recommended. Further Review Required. (SBC: 1005.3.1)

Occupant Load By Stair Level 3:

Stair 1 - 96	
Stair 2 - 87	
Stair 3 - 0	
Stair 4 - 55	
Stair 5 - 70	
Stair 6 - 107	
Stair 7 - 57	
Total Occupancy =	472



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair Level 4:

Stair 1 - 28
Stair 2 - 40
Stair 3 - 0
Stair 4 - 29
Stair 5 - 43
Stair 6 - 55
Stair 7 - 53

Total Occupancy = 248

LEVEL 4

LEVEL 5

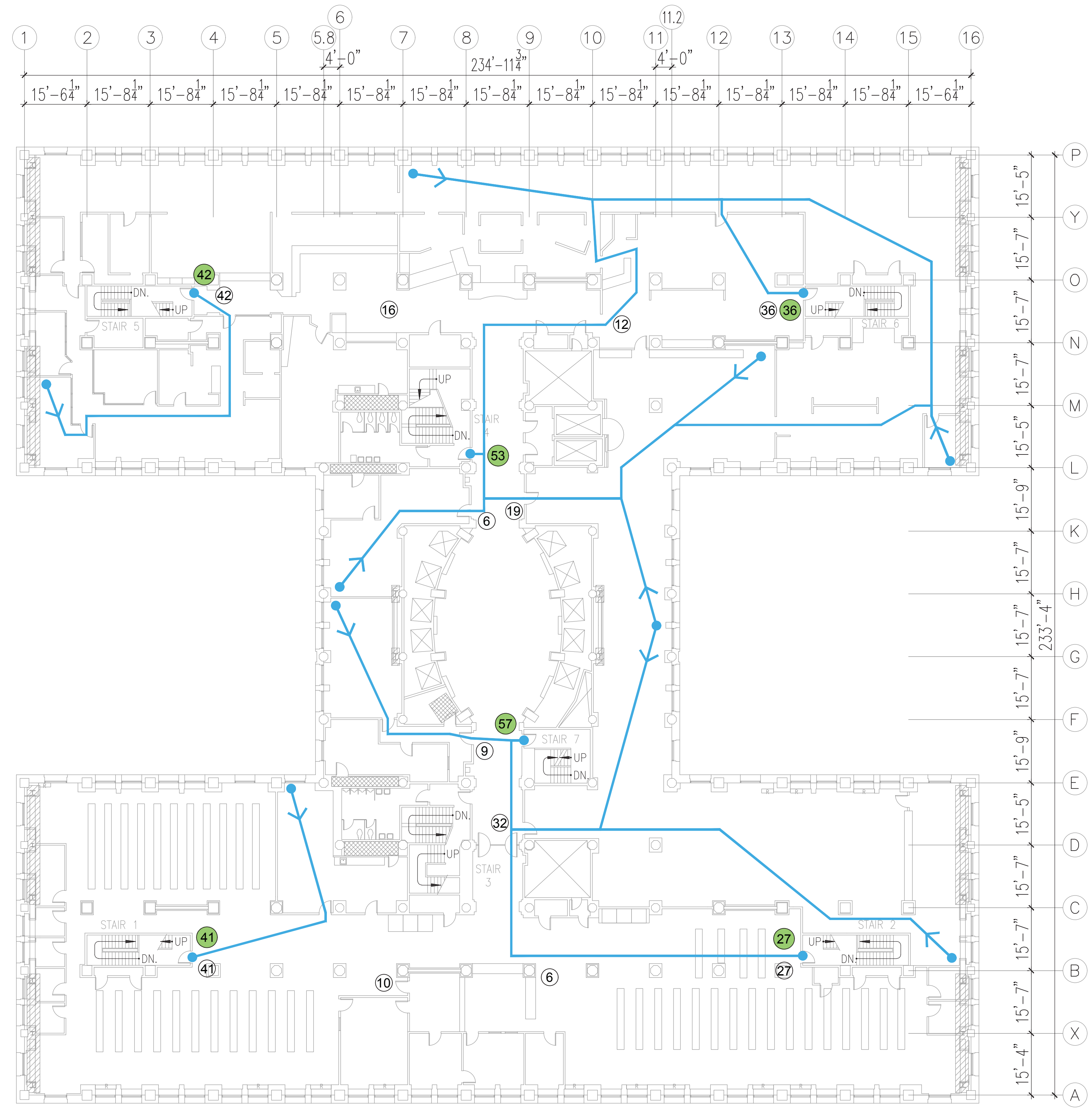
XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 5:

Stair 1 - 42	
Stair 2 - 33	
Stair 3 - 0	
Stair 4 - 32	
Stair 5 - 47	
Stair 6 - 53	
Stair 7 - 34	
Total Occupancy =	241



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

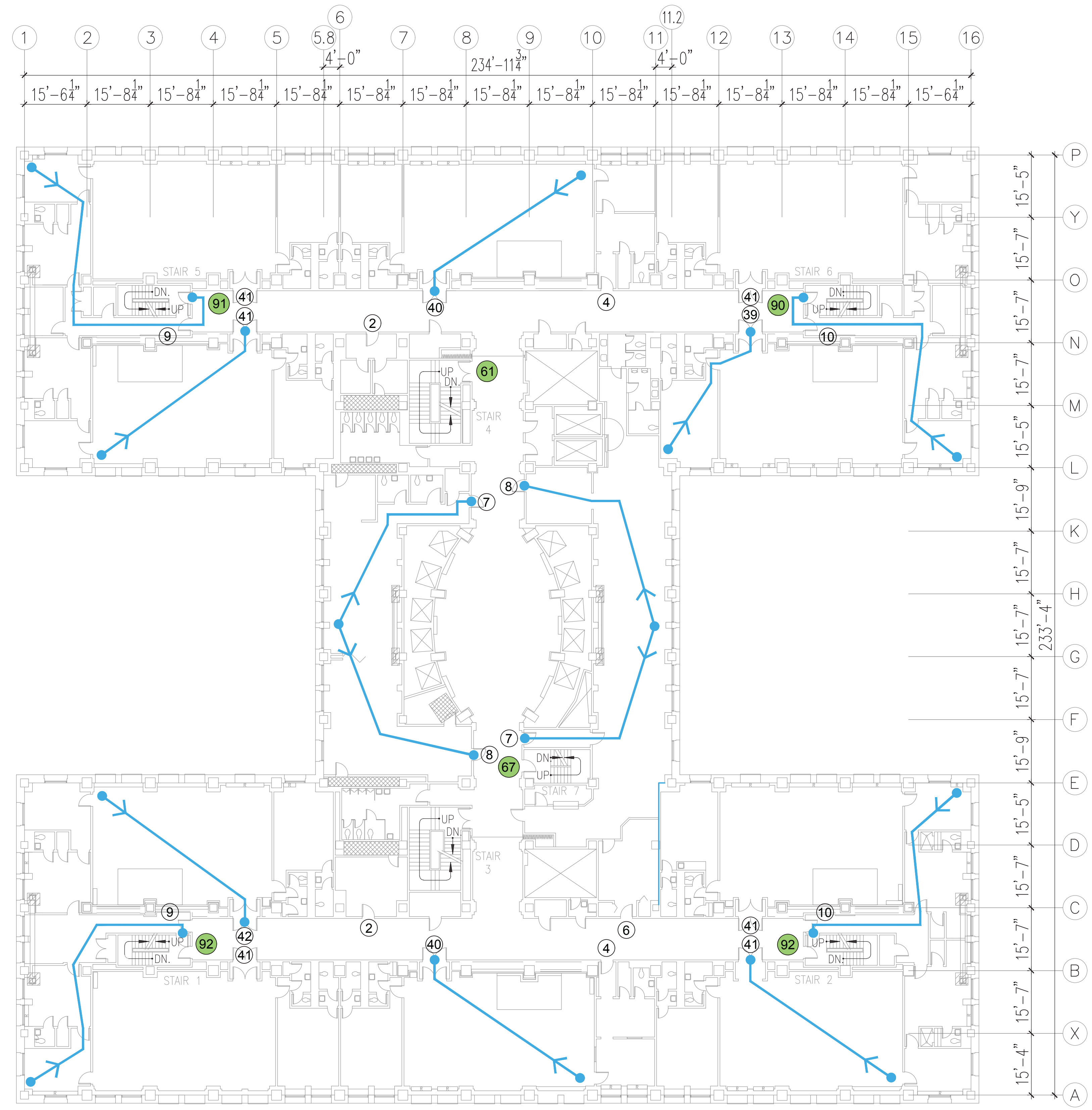
Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 6:

- Stair 1 - 41
- Stair 2 - 27
- Stair 3 - 0
- Stair 4 - 53
- Stair 5 - 42
- Stair 6 - 36
- Stair 7 - 57

Total Occupancy = 256

LEVEL 6



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

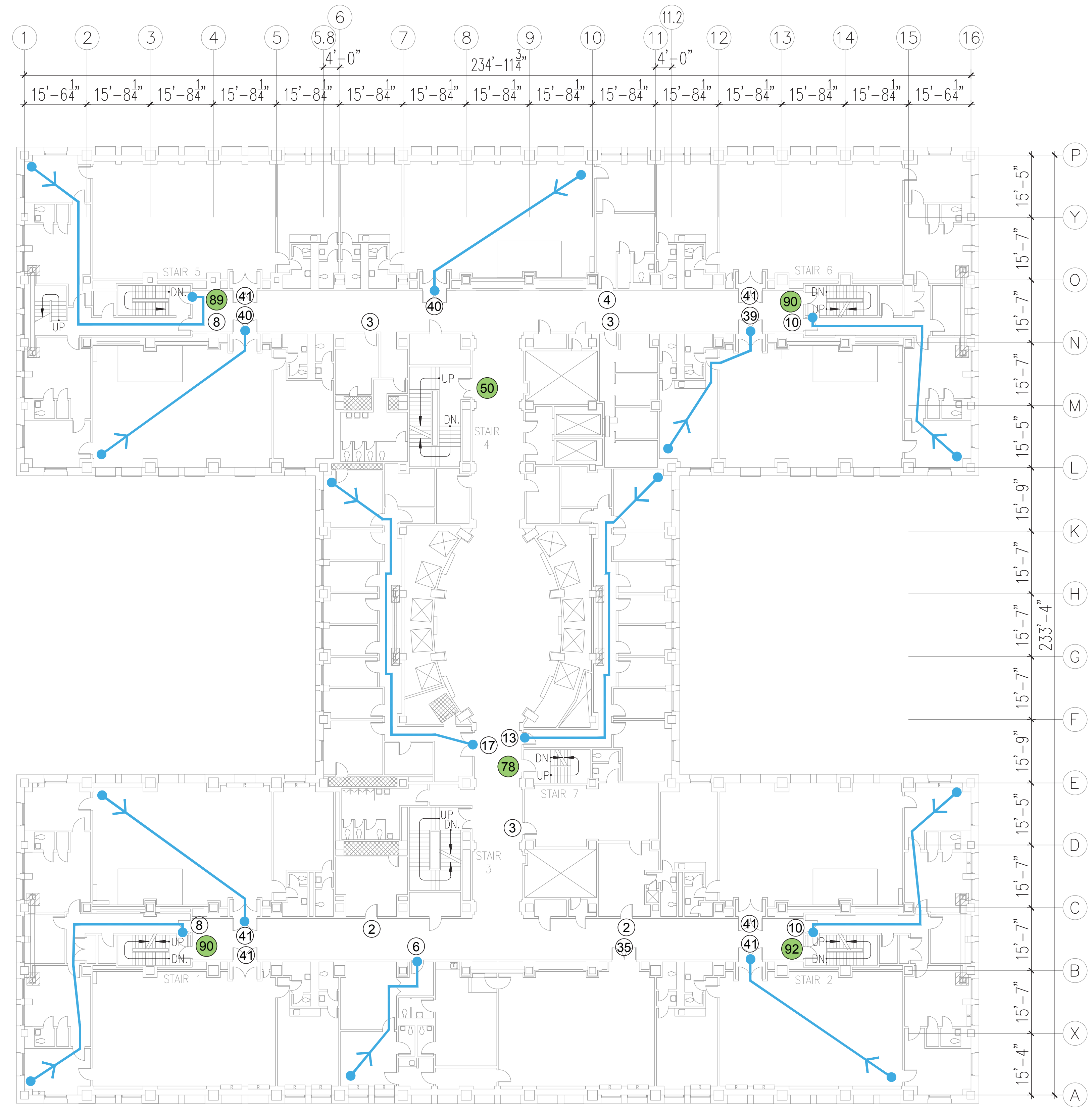
Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 7:

Stair 1 - 92
Stair 2 - 92
Stair 3 - 0
Stair 4 - 61
Stair 5 - 91
Stair 6 - 90
Stair 7 - 67

Total Occupancy = 493

LEVEL 7



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

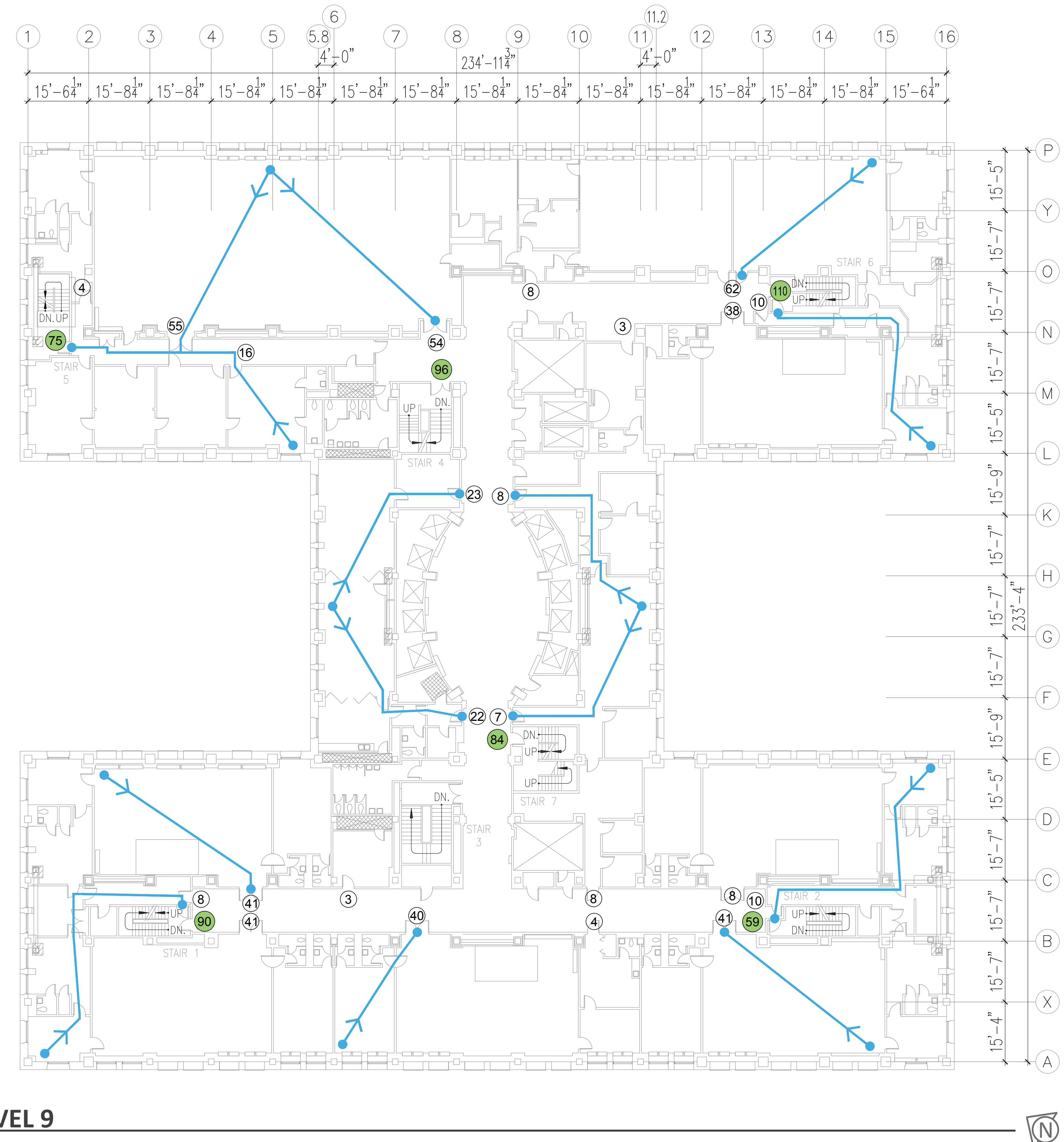
Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair Level 8:

Stair 1 - 90
Stair 2 - 92
Stair 3 - 0
Stair 4 - 50
Stair 5 - 89
Stair 6 - 90
Stair 7 - 78

Total Occupancy = 489

LEVEL 8



LEVEL 9

XX Cumulative Occupant Load By Zone

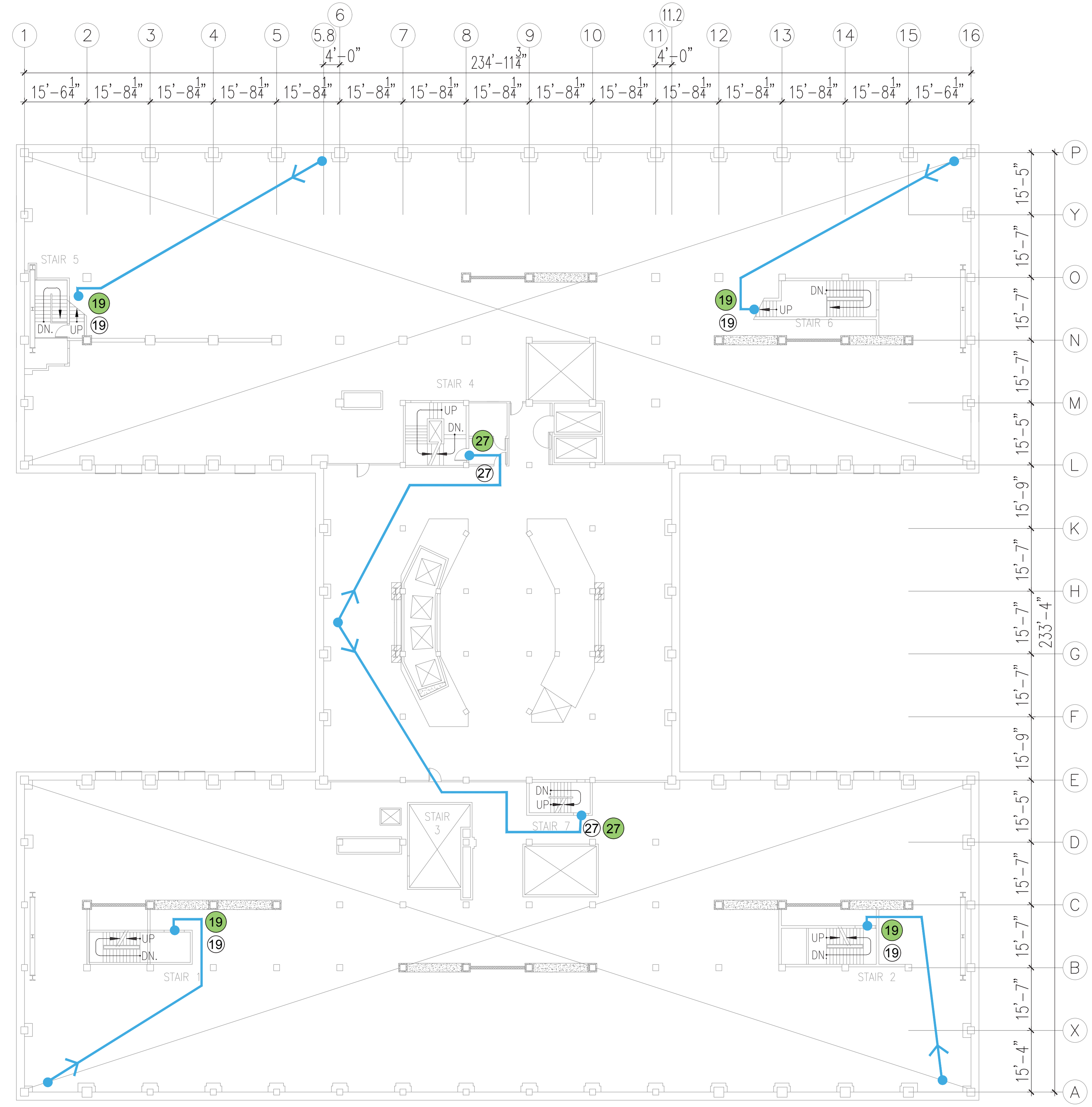
XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair Level 9:

- Stair 1 - 90
- Stair 2 - 59
- Stair 3 - 0
- Stair 4 - 96
- Stair 5 - 75
- Stair 6 - 110
- Stair 7 - 84

Total Occupancy = 514



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

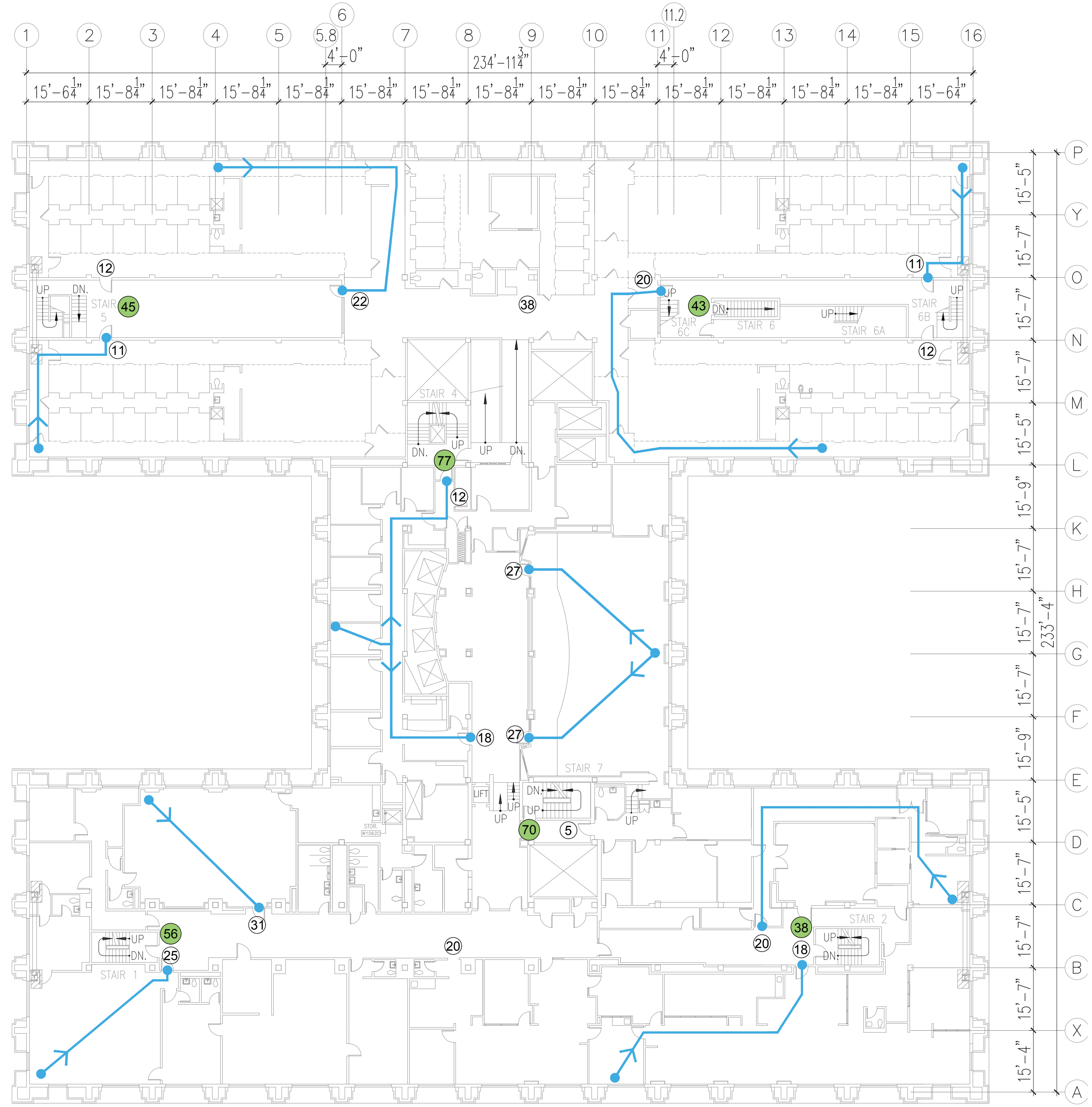
Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 9 Elevator Loft:

Stair 1 - 19
Stair 2 - 19
Stair 3 - 0
Stair 4 - 27
Stair 5 - 19
Stair 6 - 19
Stair 7 - 27

Total Occupancy = 130

LEVEL 9 (ELEVATOR LOFT)



LEVEL 10

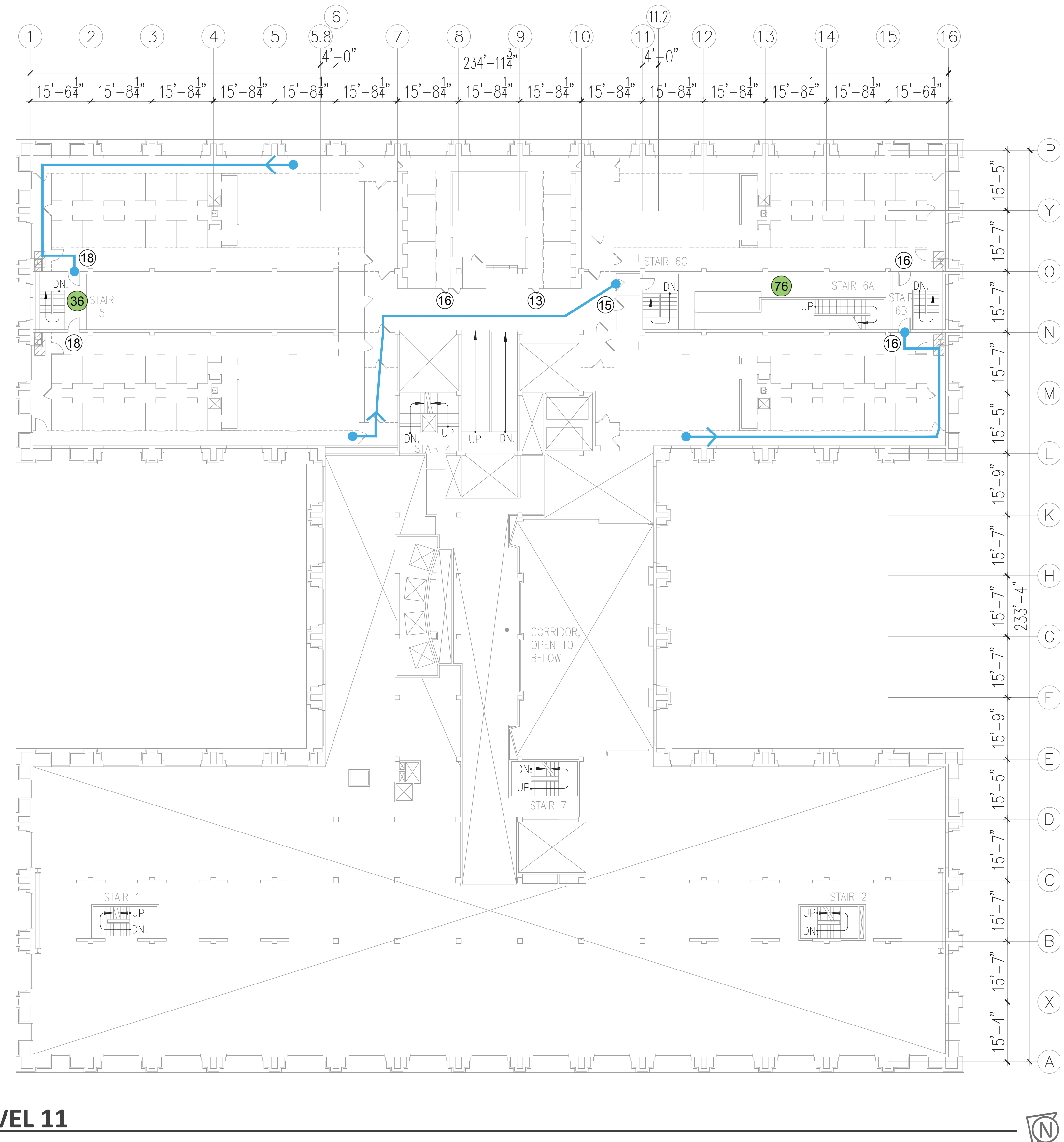
XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 10:

Stair 1 - 56	
Stair 2 - 38	
Stair 3 - 0	
Stair 4 - 77	
Stair 5 - 45	
Stair 6 - 43	
Stair 7 - 70	
Total Occupancy =	329



XX Cumulative Occupant Load By Zone

XX Total Occupant Load For Exit/ Stairs By Level

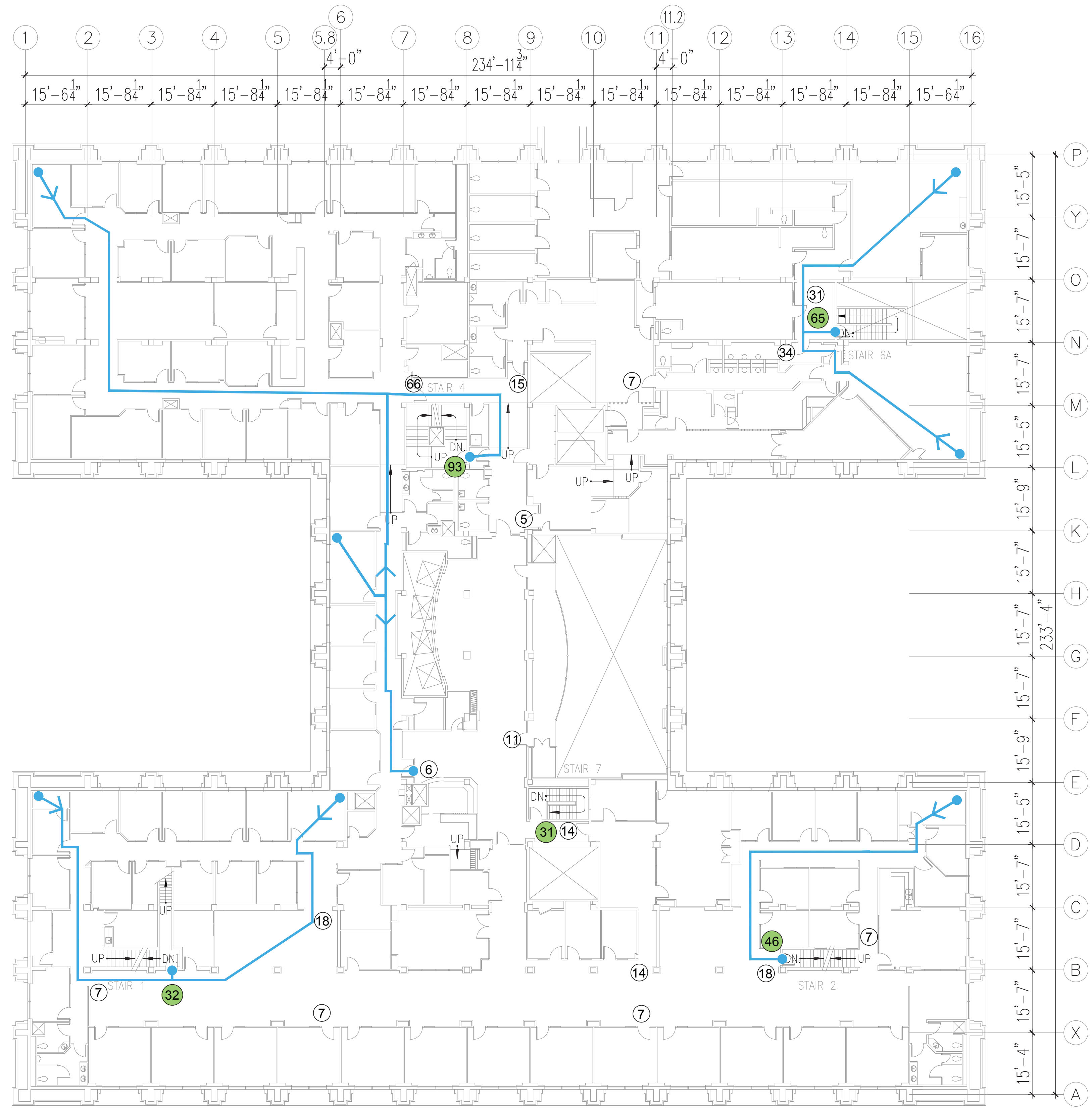
Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair Level 11:

Stair 1 - 0
Stair 2 - 0
Stair 3 - 0
Stair 4 - 0
Stair 5 - 36
Stair 6 - 76
Stair 7 - 0

Total Occupancy = 112

LEVEL 11



LEVEL 12

XX Cumulative Occupant Load By Zone

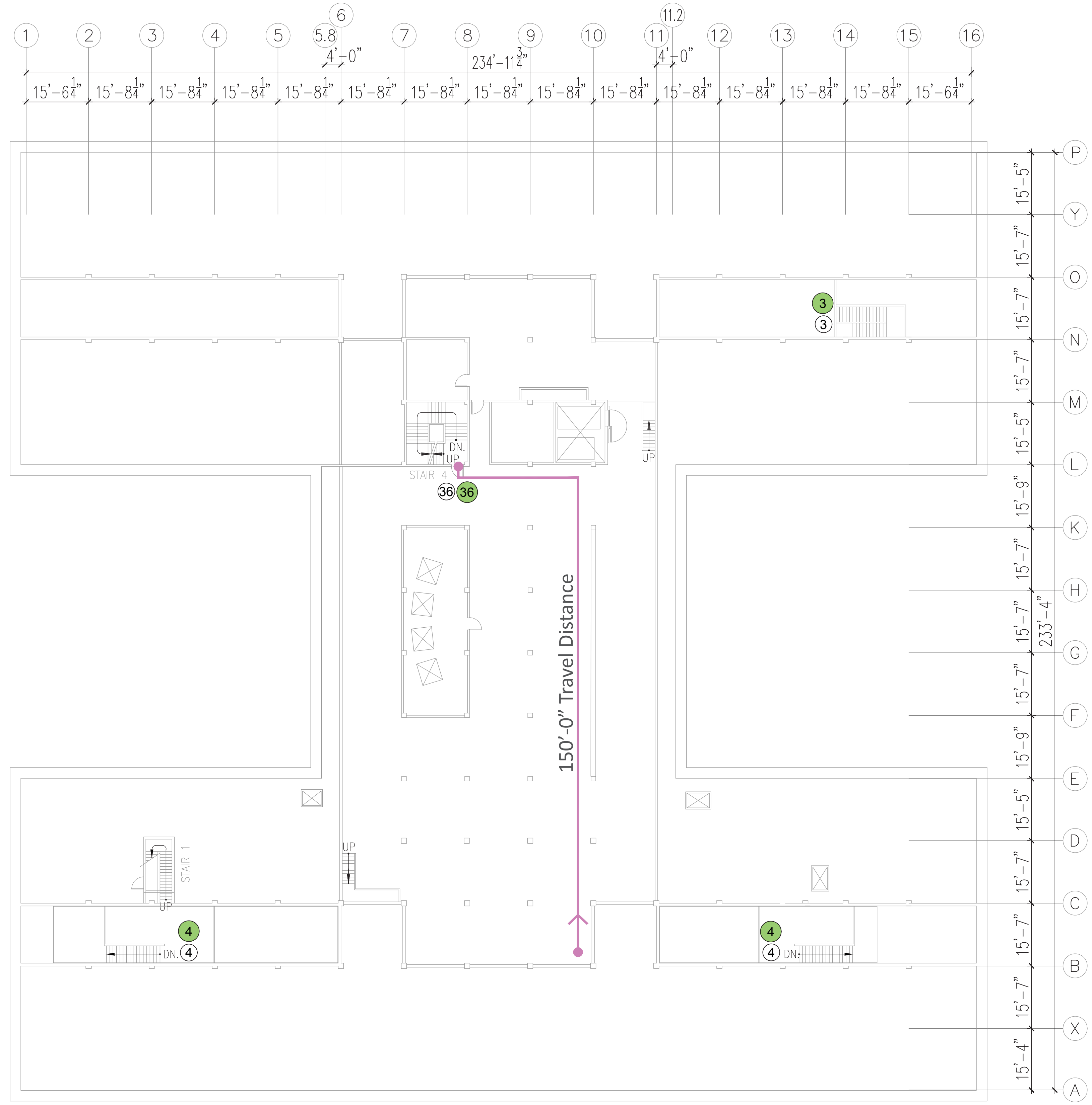
XX Total Occupant Load For Exit/ Stairs By Level

Common Path of Travel and Exit Access Travel Distances

Occupant Load By Stair
Level 12:

Stair 1 - 32
Stair 2 - 46
Stair 3 - 0
Stair 4 - 93
Stair 5 - 0
Stair 6 - 65
Stair 7 - 31

Total Occupancy = 267



Cumulative Occupant Load By Zone

Total Occupant Load For Exit/ Stairs By Level

Non Compliant Common Path Of Travel

Note:
Maximum Common Path of Travel Distance Required For A single Exit = 100'-0". Exit Distance Provided = 150'-0". Two Exits Are Required. Further Review Required. (SBC: table 1014.3 & 1016.2)

Occupant Load By Stair
Basement:

Stair 1 - 4
Stair 2 - 4
Stair 3 - 0
Stair 4 - 36
Stair 5 - 0
Stair 6 - 3
Stair 7 - 0

Total Occupancy = 47

MECHANICAL PENTHOUSE

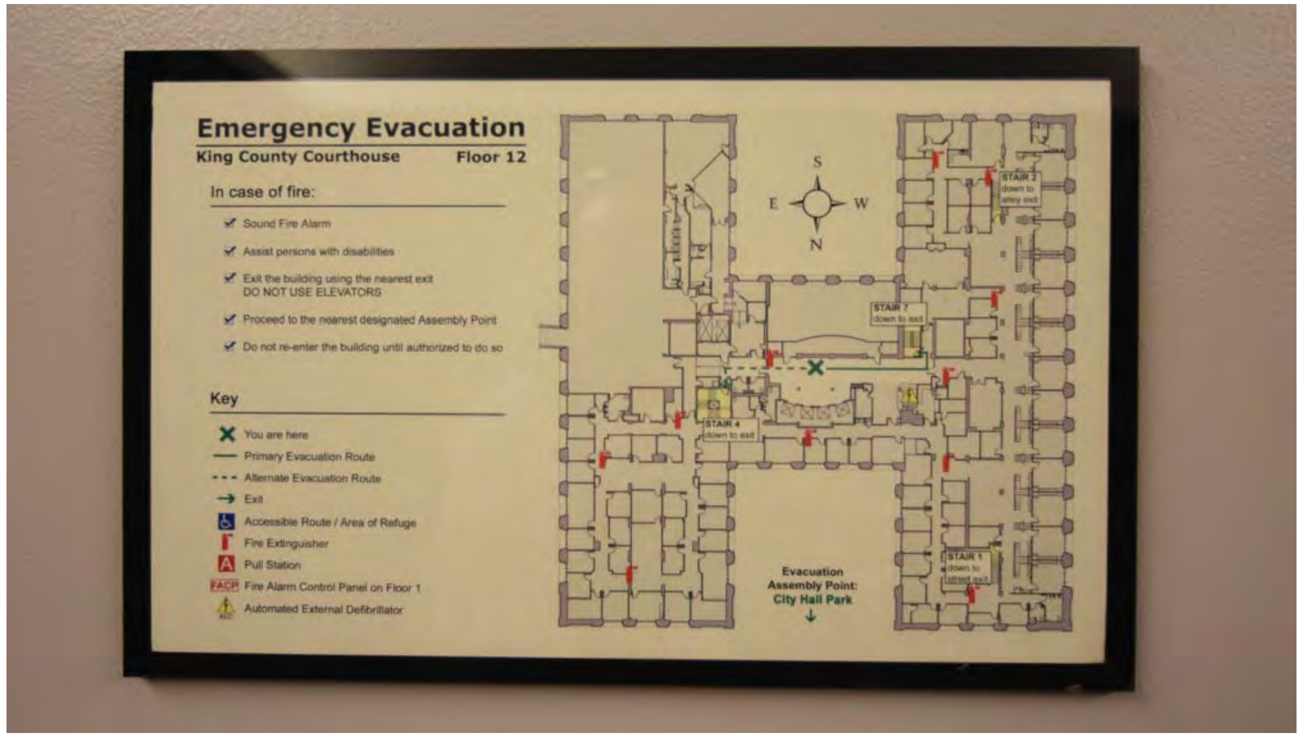


Photo of emergency evacuation sign. CDG photo, May 7, 2016.

Photo of emergency evacuation sign. CDG photo, May 7, 2016.

Photo of emergency evacuation sign. CDG photo, March 18, 2016.

WAYFINDING AND SIGNAGE:

A wide variety of signage exists in the building, including emergency evacuation signs, room number signs, and other directional signage. There are also legal notices and interactive informational signage located throughout the building. Clear and consistent wayfinding signage is very important since many of the visitors to this building have not been to this building before. Due to the nature of the business conducted in the King County Courthouse, visitors to the building are very likely stressed or distracted, and the lack of clear directional signage can result in even more stress for users of the building.

Furthermore, there are also Americans with Disabilities Act (ADA) requirements for signage. Both the overall consistency of the signage and ADA requirements could be addressed with a comprehensive architectural graphics and wayfinding project for the King County Courthouse. A specialized consultant with extensive experience in developing architectural graphics and wayfinding could be retained as part of the design team for an extensive revitalization project.

View of west corridor at level 9, looking south. Existing drinking fountain. CDG photo, May 7, 2016.

West corridor at level 9, looking north. Former location of drinking fountain. CDG photo, April 16, 2016.

PLUMBING FIXTURE COUNTS:

The number of plumbing fixtures available for public use would need to be addressed as part of a major revitalization project. As part of this pre-design report, the design team studied the total number of plumbing fixtures that would be required on each floor based on the current occupant loads of the building. For these preliminary studies, the design team used the 2015 Seattle Existing Buildings Code and the 2015 Seattle Plumbing Code, which are the codes that will be in effect when any future work on the building will be permitted.

This preliminary study focuses only on the public restrooms. The private restroom facilities in the judge's chambers, the jury deliberation room restrooms, and restrooms located in private office spaces not open to the public are not included in these total plumbing fixture counts. The total number of existing plumbing fixtures was tallied using the 2015 FSi Consulting Engineers schematic design drawings for the proposed domestic water supply replacement project.

Additional information on the Americans with Disabilities Act (ADA) accessibility upgrades at the jury deliberation room restrooms is discussed in greater detail in Chapter 7 of this report. The July 2007 Endelman & Associates ADA survey of the Courthouse goes into exhaustive detail of accessibility issues at the public restrooms. The King County Facilities Management Division has addressed many of these accessibility issues since the report was issued, and any alterations to existing public restrooms or new restroom construction would need to be fully ADA compliant and meet all current City of Seattle plumbing codes.

The additional plumbing fixtures identified in this preliminary study could potentially be added during the upgrades of the domestic water supply system in the building. It would make sense to make these improvements in fixture counts during the water supply system upgrade projects to minimize service disruption and construction time at each public restroom.

BASEMENT (NOT ACCESSIBLE TO THE PUBLIC)

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(S-1) Storage	40154	300	134	1 Per 100	0.67	1 per 100	0.67	1 Per 100	0.67	0.67	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	40154	300	134		0.67		0.67		0.67	0.67	134	1
Required Totals					1		1		1	1	1	1

	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Provided Totals	2	3	2	2	2	0	1
Deficiencies	0	0	0	0	0	1	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 1

Space				Water Closets				Lavatories			Drinking	
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Service Sink
(B) Business	36304	130	279	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.79	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.79	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.75	2.75	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	3664	40	92	1 Per 125	0.37	1 per 65	0.70	1 Per 200	0.23	0.23		
(S-1) Storage	6260	300	21	1 Per 100	0.10	1 per 100	0.10	1 Per 100	0.10	0.10		
Subtotals	46228	470	392		4.26		4.60		3.08	3.08	392	1
Required Totals					5		5		4	4	2	1

	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	2.00	3.00	5.00	4.00	4.00	2.00	1.00
Provided Totals	5	5	7	5	5	4	1
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 1a													
Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	28586	130	220	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.20	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.20	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.37	2.37	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	28586	130	220		3.20		3.20		2.37	2.37	220	1
Required Totals					4		4		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	4.00	3.00	3.00	2.00	1.00

Provided Totals	2	2	3	2	2	0	0
Deficiencies	0	0	1	1	1	2	1

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 2													
Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	28081	130	216	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.16	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.16	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.35	2.35	1 for the first 150 occ. and then 1 for each additional 500 occ.	1 per floor
(A-3) Assembly	8161	40	204	1 Per 125	0.82	1 per 65	1.57	1 Per 200	0.51	0.51		
Subtotals	36242	170	420		3.98		4.73		2.86	2.86		1
Required Totals					4		5		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	5.00	3.00	3.00	2.00	1.00

Provided Totals	4	3	4	4	4	2	2
Deficiencies	0	0	1	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 3

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	18316	130	141	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.41	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.41	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	1.76	1.76	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	13323	40	333	1 Per 125	1.33	1 per 65	2.56	1 Per 200	0.83	0.83		
Subtotals	31639	170	474		3.74		4.97		2.59	2.59	474	1
Required Totals					4		5		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	5.00	3.00	3.00	2.00	1.00

Provided Totals	3	3	4	0	4	1	2
Deficiencies	0	0	1	0	0	1	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 4

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	29113	130	224	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.24	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.24	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.40	2.40	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	920	40	23	1 Per 125	0.09	1 per 65	0.18	1 Per 200	0.06	0.06		
Subtotals	30033	170	247		3.33		3.42		2.46	2.46	247	1
Required Totals					4		4		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	4.00	3.00	3.00	2.00	1.00

Provided Totals	4	2	5	4	4	2	2
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 5												
Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	31290	130	241	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.41	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.41	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.50	2.50	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	31290	130	241		3.41		3.41		2.50	2.50	241	1
Required Totals					4		4		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	4.00	3.00	3.00	2.00	1.00

Provided Totals	7	6	4	6	4	2	2
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 6												
Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	33260	130	256	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.56	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	3.56	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.60	2.60	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	33260	130	256		3.56		3.56		2.60	2.60	256	1
Required Totals					4		4		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	4.00	3.00	3.00	2.00	1.00

Provided Totals	4	2	4	4	4	1	2
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 7

Space				Water Closets				Lavatories			Drinking Fountain	Service Sink
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female		
(B) Business	16171	130	124	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.24	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.24	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	1.55	1.55	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	14368	40	359	1 Per 125	1.44	1 per 65	2.76	1 Per 200	0.90	0.90		
Subtotals	30539	170	484		3.68		5.00		2.45	2.45	484	1
Required Totals					4		5		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	5.00	3.00	3.00	2.00	1.00

Provided Totals	4	3	4	3	4	2	2
Deficiencies	0	0	1	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 8

Space				Water Closets				Lavatories			Drinking Fountain	Service Sink
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female		
(B) Business	16237	130	125	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.25	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.25	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	1.56	1.56	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	14193	40	355	1 Per 125	1.42	1 per 65	2.73	1 Per 200	0.89	0.89		
Subtotals	30430	170	480		3.67		4.98		2.45	2.45	480	1
Required Totals					4		5		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	5.00	3.00	3.00	2.00	1.00

Provided Totals	4	3	4	3	3	1	1
Deficiencies	0	0	1	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 9

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	14952	130	115	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.15	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.15	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	1.44	1.44	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	15618	40	390	1 Per 125	1.56	1 per 65	3.00	1 Per 200	0.98	0.98		
Subtotals	30570	170	505		3.71		5.15		2.42	2.42	505	1
Required Totals					4		6		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	2.00	6.00	3.00	3.00	2.00	1.00

Provided Totals	4	2	3	4	3	2	2
Deficiencies	0	0	3	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 9.5 ELEVATOR LOFT (NOT ACCESSIBLE TO THE PUBLIC)

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(S-1) Storage	38923	300	130	1 Per 100	2.30	1 per 100	2.30	1 Per 100	1.62	1.62	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	38923	300	130		2.30		2.30		1.62	1.62	130	1
Required Totals					3		3		2	2	1	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	2.00	1.00	3.00	2.00	2.00	1.00	1.00

Provided Totals	0	0	0	0	0	0	0
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 10

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	15265	130	117	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.17	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.17	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	1.47	1.47	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	3323	40	83	1 Per 125	0.33	1 per 65	0.64	1 Per 200	0.21	0.21		
(I-3) Insitutional	15080	126	Refer to (I-3) Institutional Section									
Subtotals	33668	296	200		2.50		2.81		1.68	1.68	200	1
Required Totals					3		3		2	2	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	1.00	2.00	3.00	2.00	2.00	2.00	1.00
Provided Totals	2	1	1	2	2	1	1
Deficiencies	0	1	2	0	0	1	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

LEVEL 12

Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(B) Business	23775	130	183	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.83	1 Per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	2.83	1 Per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	2.14	2.14	1 for the first 150 and then 1 for each additional 500	1 per floor
(A-3) Assembly	1474	40	37	1 Per 125	0.15	1 per 65	0.28	1 Per 200	0.09	0.09		
(I-3) Insitutional	5473	46	Refer to (I-3) Institutional Section									
Subtotals	30722	216	220		2.98		3.11		2.23	2.23	220	1
Required Totals					3		4		3	3	2	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	1.00	2.00	4.00	3.00	3.00	2.00	1.00
Provided Totals	0	2	3	2	3	1	1
Deficiencies	1	0	1	1	0	1	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

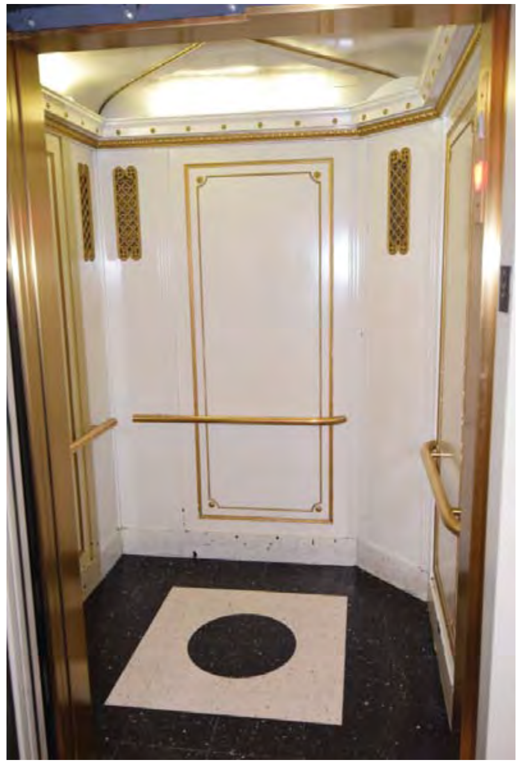
MECHANICAL PENTHOUSE (NOT ACCESSIBLE TO THE PUBLIC)												
Space				Water Closets				Lavatories			Drinking	Service
Use	Area	Occupancy	Load	Ratio	Male	Ratio	Female	Ratio	Male	Female	Fountain	Sink
(S-1) Storage	15126	300	50	1 Per 100	1.01	1 per 100	1.01	1 Per 100	0.63	0.63	1 for the first 150 and then 1 for each additional 500	1 per floor
Subtotals	15126	300	50		1.01		1.01		0.63	0.63	50	1
Required Totals					2		2		1	1	1	1

Required totals with urinal substitution: Water closets may be substituted for urinals, so long as minimum specified water closets are not reduced to less than one quarter (25%)	Urinals	Male W/C	Female W/C	Male Lav	Female Lav	Fountains	S Sink
	1.00	1.00	2.00	1.00	1.00	1.00	1.00

Provided Totals	0	0	0	0	0	0	0
Deficiencies	0	0	0	0	0	0	0

Note: This plumbing fixture count is based on schematic design drawings prepared by FSi Consulting Engineers dated March 18, 201!

Section Contents



View of historic elevator cab. Originally installed in 1914-1916, this cab has been modernized. CDG photo, April 16, 2016.

View of elevators on fire service recalled to level 1 during inspection. CDG photo, April 16, 2016.

ELEVATORS INTRODUCTION:

In addition to the preliminary building code-compliance studies, the design team engaged an elevator consultant to assess the condition of the existing elevators and elevator equipment. There are 10 passenger elevators, 1 service elevator, and 1 prisoner transfer elevator at the King County Courthouse.

The consultant's technical report on the elevators is presented on the following pages. The consultant identified a few current safety and code issues and has already notified the King County Facilities Management Division of the issues that need immediate correction. The consultant also identified some additional code-compliance issues and Americans with Disabilities Act (ADA) accessibility issues that would need to be addressed during a building revitalization project.

SECTION I: EXECUTIVE SUMMARY

A. Introduction

On April 14th and 15th 2016 Bob Nicholson and Eric Holman of Architectural Elevator Consulting, LLC surveyed the vertical transportation systems at the King County Courthouse, 516 3rd Avenue, Seattle, WA 98104. There are twelve (12) elevators that provide the vertical transportation. The purpose of the survey was to review the major components, to identify upgrades needed over the next 10 to 20 years and provide an assessment of the current maintenance condition.

Ten of the elevators are passenger shaped and located in the central core of the building. The remaining two are service/prison elevators and located just off the main core. All the elevators are traction type. Elevators 1-10 are high-speed gearless type and appear to have been installed in the early 1900's and then modernized in the 1930's. In the 1960's the building underwent a major renovation including the addition of floors 10 and 12. There is not a floor 11. Elevators 11 and 14 are geared traction type and appear to have been installed in the late 1960s.

B. Elevator Layout

All the main gearless traction elevators are rated for 500 Feet per Minute (FPM) and are located in one big lobby with all ten elevators working together as a ten car group. The number, speed and size of elevators appear to be adequate to provide satisfactory service to the building. However, the distance between one side of the lobby to the other side is significant and necessitates longer door dwell times to give persons ample time to approach the elevator. The systems are summarized as follows:

Elevator Summary					
Elevator Bank	**Elevator Number**	**Speed**	**Floors Served**	**Capacity**	**Door Type**
North Bank	Cars 1 and 4	500 FPM	1-10, 12	2,500 lbs	2SSO
	Car 2 and 3	500 FPM	B, 1-10, 12	2,500 lbs.	2SSO
	Car 5	500 FPM	1-9	2,500 lbs.	2SSO
South Bank	Cars 6-10	500 FPM	1-9	2,500 lbs.	2SSO
Service Elevator	Car 11	350 FPM	B, 1-10, 12	5,000 lbs.	2SSO
Prisoner Transfer	Car 14	350 FPM	B, 1-10, 12	5,000 lbs.	2SSO

C. Condition

Most of the major components of the elevators were found to be in good to very good condition. All of the elevators underwent a major modernization approximately ten years ago. Elevators 11 and 14 were modernized first in 2003. The main passenger elevators were modernized in 2004/2005. The modernization included new solid state controllers with energy efficient SCR drives for all elevators. The elevators had new signal fixtures installed, extensive seismic upgrades and new closed loop door operators. The original geared and gearless machines for all elevators were retained. In general the gearless machines were found to be in good condition, however a few of them need commutator work and some may need the field coils rewound and re-insulated. In 2013 the County retained a Performance Evaluation, Inc., a high quality motor shop company from the East Coast to do an extensive evaluation of the motors. We reviewed this report and agree with their findings that the gearless machines are generally in good condition, but could use some remedial work. Some of this work may have been completed by Kone but many motor items have not been addressed.

In ***Section III*** of this report we provide photographs of the major components.

D. Maintenance/Performance

The level of maintenance was noted to be good on all the elevators and above average, but there were a few concerns with room for improvement. Elevator 10 is only operating at 150 FPM in both directions and is designed like the others to operate at 500 FPM. The five year full load tests on Cars 1-10 are all overdue. The pits were dirty, but the car tops and hoistway door equipment was in good condition. Most of the door open/close and floor-to-floor times were a few seconds slower than design. We recommend these times be improved. In Appendix C of this report we provide a summary of the performance times for each elevator. We recommend this section of the report be provided to the maintenance service provider so they can make the corrections.

E. Code Review: During our survey we reviewed the elevators for compliance to the following codes; Americans with Disabilities Act (ADA), WAC 296-96, the City of Seattle Chapter 30, The National Elevator Code for Existing Elevators, A17.3, and compliance to Part 8.4 of ASME A17.1 Seismic. In the following paragraphs we provide a summary of our findings.

1) **Americans with Disability Act (ADA):** In 1990 the federal government enacted ADA to make public spaces more accessible to disabled persons. The sizes of all the elevators meet ADA for existing elevators, but do not comply with current size requirements for new elevators being installed today. All the car and hall push buttons for Cars 1-10 meet ADA, are at the proper height and have required braille. Most of the passenger elevators have dual car operating panels with one on the front return and one at the rear wall. The rear panel was most likely necessary so that the top row of buttons was at or below 48". Only a few elevators were missing some chimes/gongs. In Appendix A we provide a complete listing of the ADA requirements for the elevators. The following is a summary of the items that do not meet ADA:

   a. **Jamb Braille:** None exists on Cars 11 and 14.
   b. **Phone Door:** Car 1 is missing a handle on the cover.

2) **Retro-Active Code Requirements:** A17.3/WAC 296: ASME A17.3 is the national retro-active safety code for existing elevators. This code book is published by the American Society of Mechanical Engineers and is enforced in most states but only a few portions of it are adopted in Washington State and the City of Seattle. A17.3 requires all elevators, no matter age or installation date, to meet a minimum level of safety. In ***Appendix B*** there is a complete listing of A17.3/WAC/City of Seattle retro-active items.

While these are not required retro-actively by the State, when the elevators were modernized it triggered that they be updated, and they were. Below is a summary of the items that do not comply:

a. **Door Restrictors:** All the elevators have door restrictors and they all worked properly except Car 11, front and rear. These should be repaired ASAP and are included in Appendix C.

b. **Car Apron:** Cars 5, 6, 11 and 14 are the only elevators that have car aprons that meet code. We recommend new car aprons be installed as soon as possible. Most of the Cars 1-4, 6-10 either did not have a car apron at all or only had the original car aprons that are only 13" long. We recommend new 48" car aprons on all elevators similar to the ones installed on Cars 5 and 6. In some cases the total length may need to be slightly less than 48" in order to allow proper access or clearance.

c. **Car top Handrails:** None of the cars have car top handrails. They were not required when the elevators were modernized but are now required retroactively by WAC 296-96. These should be added before they become a state violation.

d. **In-Car Stop Switch:** Convert to keyed type. This should have been performed during the modernization and is surprising that it was not.

3) Seismic Upgrades:

All of the elevators underwent a major seismic upgrade when modernized in 2003/2005. Ring and string derailment was added along with a seismic switch in the machine rooms. In addition car and counterweight retainers along with seismic fish plates were added. Many of the seismic upgrades performed during the modernization were voluntary, thus the elevators are in compliance with current code. No seismic work is anticipated.

F. Energy Savings:

When the elevators were modernized, Cars 1-10 had energy efficient 12 pulse SCR drives installed. Cars 11 and 14 had standard 6 pulse SCR drives installed. Since the elevators have been modernized additional energy savings is possible. The following energy savings items are optional and should be considered when the elevators are next modernized:

1) **Regenerative Drives:** The existing machines could be retained and new controllers with regenerative drives added with the new controllers.

2) **New MRL Gearless Machines:** The existing gearless machines for Cars 1-10 have large gearless DC motors. These could be removed and new smaller MRL gearless machines could be installed with re-generative drives similar. Likewise the geared machines for Car 11 and 14 could be replaced with smaller MRL gearless machines.

G. Recommendation:

The modernization work performed in 2003/2005 was very extensive and the components used are of high quality and non-proprietary. If properly maintained these components can and should last another 8 to 10 years, thus we do not recommend any major upgrades at this time. The machines however should be repaired as recommended by the motor shop in 2013. It appears that some of this work may have been completed, but not all of it. We recommend a meeting with Kone to discuss what repair work they have performed on the machines. This work should all be covered by the existing service contract.

While there is no immediate need to modernize the elevators at this time, when they are modernized we recommend that a destination entry system be considered or the elevator banks be split into a high and low rise with Cars 1-5 serving the high-rise floors 6 and above and Cars 6-10 serving the low rise floors 1-5. If there is a lot of inter-floor traffic between the high and low rise floors a destination system will provide the best solution.

The following items should be addressed in the near term:

1. New car aprons that are 48" long for Cars 1-10. A few of the elevators had these installed but most did not. Cars 11 and 14 have shallow pits and the aprons on those cars are acceptable.: **$24,000**
2. Provide mechanical cooling for the machine room on the roof. **$45,000**
3. Add jamb braille to elevators 11 and 14. None exists. **$3,000**
4. Repair screening in the hoistway. **$5,000**
5. Fire-proof some of the hoistway walls. **$40,000**
6. Convert the in-car stop switches to keyed type. **$4,000**
7. Add car top handrails. These were not required at the time of the modernization but are now retroactively required in the State. **$36,000**
8. Increase machine room lighting for Cars 5 to 10. **$6,000**
9. The following items should be covered in the current maintenance contract at no additional cost:

   a. Turn on nudging buzzer. Most did not have it.
   b. Adjust the hall call dwell times. No cost as this should be covered in the agreement.
   c. Adjust the door and floor-to-floor times so they are closer to design. No cost.
   d. Perform remedial repair work on the gearless machines as identified in the motor shop report from 2013.
   e. All of the maintenance items listed in Appendix C.

SECTION II:

Equipment Detail: The following table is a detailed description of the elevator equipment.

	King County Courthouse				
Elevators	**Elevator 1, 4**	**Elevators 2-3**	**Elevator 5-10**	**Elevator 11**	**Elevator 14**
Capacity	2,500 lbs	2,500 lbs	2,500 lbs	5,000 lbs	5,000 lbs
Speed	500 FPM	500 FPM	500 FPM	350 FPM	350 FPM
Number of Stops/Openings	11	12	9	12	13
Dispatch	10 Car Group	10 Car Group	10 Car Group	Simplex	Simplex
Installation Type	Gearless Traction	Gearless Traction	Gearless Traction	Geared Traction	Geared Traction
Machine Manufacture	Westing.	Westing.	Westing.	Dover	Dover
Controller Manufacture	MCE	MCE	MCE	MCE	MCE
Controller Model	IMC – 12 Pulse	IMC – 12 Pulse	IMC – 12 Pulse	IMC SCR	IMC SCR
Controller Installed	2004/05	2004/05	2004/05	2003	2003
Seismic Switch	Yes	Yes	Yes	Yes	Yes
Door Operator Model	GAL MOVFR	GAL MOVFR	GAL MOVFR	GAL MOVFR	GAL MOVFR
Entrance Width/Height	45"x80"	45"x80"	45"x80"	54" x 84'	54" x 84"
Car/Hoistway Door Type	2 Speed side	2 Speed side	2 Speed side	2 Speed side	2 Speed side
Date of Installation	1925	1925	1925	1960's	1960's
Date of Modernization	1960/05	1960/05	1960/05	2003	2003

SECTION III:

Photographs

Figure 1 - Motion Control Engineering (MCE) IMC controllers with energy efficient 12 pulse SCR drives installed on Cars 1-10.

Figure 2 – Original Westinghouse Gearless machines for Cars 1-10 appear to have been installed during the 1960 modernization of the Court.

Figure 3 – Seismic switch installed during the modernization in 2004/05.

Figure 4 – Hole in the wall of the elevator machine room.

Figure 5 – Geared elevator machine for Cars 11 and 14 is leaking oil.

Figure 6 – Bronze fixtures installed in 2004/5 during modernization Meet code except for push/pull stop switch.

Figure 7 – Typical lobby floor with five elevators facing five.

Figure 8 – GAL MOVFR closed loop door operators installed during modernization in 2004/5.

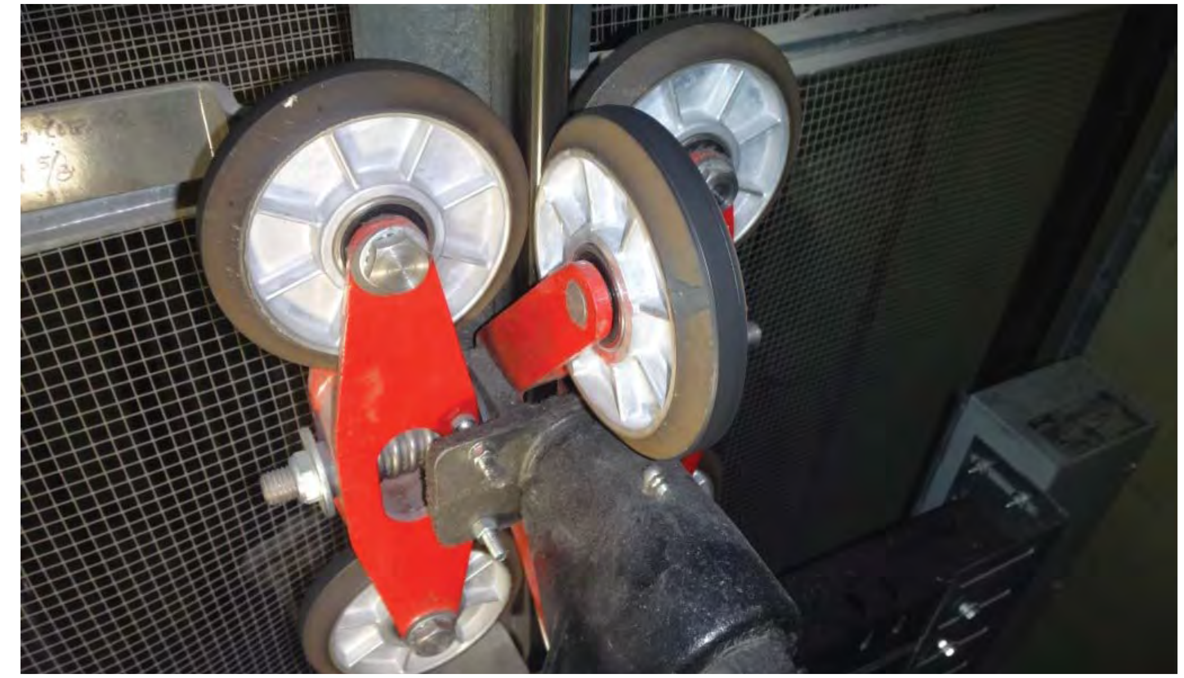


Figure 9 – High quality ELSCO roller guides installed during the 2004/5 modernization.

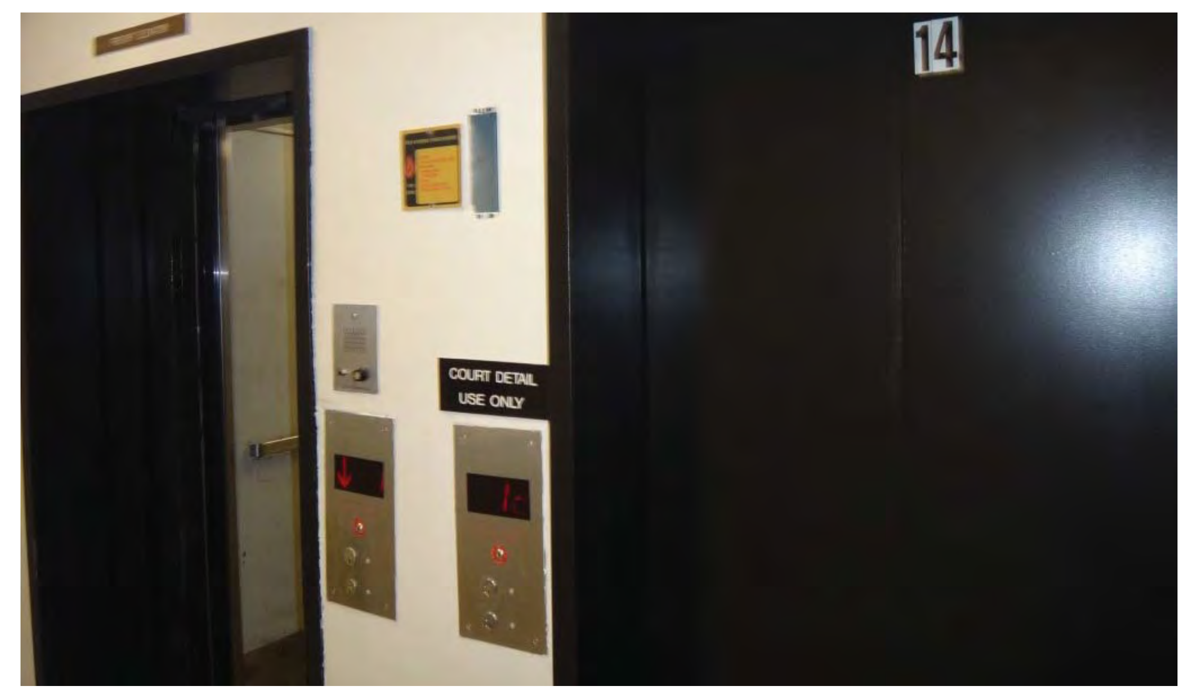


Figure 10 – Entrances to service Car 11 and Inmate Car 14. No jamb braille

Figure 11 – Part of hoistway screening between Cars 9 and 10 is coming down and should be re-anchored.

Figure 12 – Car aprons are missing from most of Cars 1 to 10.

Figure 13 – Geared hoist machine for Car 11. Manufactured by Dover.

Figure 14 – Typical pit with rags and dirty floor.

Appendix "A"
Americans with Disabilities Act (ADA)

		Complies (Yes/No)	
ADA	**Item**	**Cars 1-10**	**Cars 11&14**
	GENERAL		
4.10.1	Elevator must comply with ASME A17.1-1990. Freight elevators are not acceptable unless only elevator provided, and is permitted to carry passengers, both public and employees.	Yes	Yes
	AUTOMATIC OPERATION		
4.10.2	Elevators must be Automatic.	Yes	Yes
4.10.2	Self-leveling to within 1/2 in.	Yes	Yes
	HALL CALL BUTTONS		
4.10.3	Buttons centered at 42 in. above the floor.	Yes	Yes
4.10.3	Buttons to illuminate when call is entered and extinguish when answered.	Yes	Yes
4.10.3	Buttons to be at least 3/4 in. in the smallest dimension.	Yes	Yes
4.10.3	Up button located above down button.	Yes	Yes
4.10.3	Buttons raised or flushed.	Yes	Yes
4.10.3	Objects mounted beneath hall buttons not to project into the lobby more than 4 in.	Yes	Yes
	HALL or CAR LANTERNS		
4.10.4	Visible and audible signals at each hoistway entrance to indicate which car is responding to the call.	Yes	Yes
4.10.4	Audible signals to sound once for up and twice for "down" or may verbal announcement stating "up" "down."	Yes	Yes
4.10.4	Hall directional lantern centered 72 in. above floor.	Yes	Yes
4.10.4	Directional lantern visible elements minimum of 2-½ in. in the smallest dimension.	Yes	Yes
4.10.4	Directional lanterns must be visible from the vicinity of the hall call button.	Yes	Yes
4.10.4	In car lanterns, meeting the requirements above are acceptable in lieu of hall directional lanterns.	Yes	Yes
	HOISTWAY ENTRANCES		
4.10.5	Raised and Braille floor designations are required on both door jambs. Permanently applied plates are acceptable.	Yes	No - None
4.10.5	Centerline of floor designation characters 60 in. above floor.	Yes	No
4.30.4	Characters must be 2 in. high, raised 1/32 in. upper sans serif (block letters) or simple serif type.	Yes	No
4.30.4	Grade II Braille to accompany raised characters.	Yes	No
	DOOR PROTECTIVE & REOPENING DEVICES		
4.10.6	Doors must open and close automatically.	Yes	Yes
4.10.6	Non-contact door reopening device at 5 in. and 29 in. above the floor.	Yes	Yes

Appendix "A"
Americans with Disabilities Act (ADA)

		Complies (Yes/No)	
ADA	**Item**	**Cars 1-10**	**Cars 11&14**
4.1.6(3)(c)	If safety edges are provided on existing elevators, the non-contact door reopening devices may be omitted.	Yes	Yes
4.10.6	Reopening device to remain operational for at least 20 seconds.	Yes	Yes
	DOOR AND SIGNAL TIMING		
4.10.7	Minimum acceptable door open time from notification car is answering a hall call until the car doors begin to close: *T=D/(1.5ft/s*, where *T* is the total time in and *D* is the distance from a point in the lobby or corridor 60 in. directly in front of the farthest button controlling that car to centerline of its hoistway door.	Yes	Yes
4.10.7	Minimum acceptable notification time 5.0 seconds.	Yes	Yes
	DOOR DELAY FOR CAR CALLS		
4.10.8	Doors to remain open for a minimum of 3.0 seconds in response to car calls.	Yes	Yes
	FLOOR PLAN NEW ELEVATOR		
4.10.9	At least 36" wide door. Side Open Door: Cab must be 5'-8" wide x 4'-3" deep Center Open Door: Cab must be 6'-8" wide by 4'-3" deep	No	Yes
	FLOOR PLAN EXISTING ELEVATOR		
4.1.6	Minimum of 48" x 48"	Yes	Yes
4.10.9	Clearance between car platform sill and edge of hoistway landing sill no greater than 1-¼ in.	Yes	Yes
	Handrails Circular Square Dia.√ Top of Handrail √ Height Side Back √	Yes	Yes
	FLOOR SURFACES		
4.10.10	Surfaces to be stable, firm and slip resistant.	Yes	Yes
4.5.3	Carpeting if installed must have firm cushion, pad or backing, or no cushion or pad. Carpeting must have level loop, textured loop, level pile texture. Carpeting pile thickness not to exceed 1/2 in. Carpeting must have exposed edges fastened to the floor surface. Exposed edges of carpets must be trimmed.	Yes	Yes
	ILLUMINATION LEVELS		
4.10.11	Five foot-candles of illumination to be provided at car controls, platform and at sill.	Yes	Yes
	CAR CONTROLS		
4.10.12	Buttons to be at least 3/4 in. in their smallest dimension.	Yes	Yes
4.10.12	Buttons must be flush or raised.	Yes	Yes
4.10.12	Buttons must be designated by raised characters and Braille or symbols complying with ASME A17.1 Rule 210.13.	Yes	Yes
4.10.12	Characters must be a minimum of 5/8 in. high, upper case sans (block letters) or simple serif type.	Yes	Yes

Appendix “A”
Americans with Disabilities Act (ADA)

		Complies (Yes/No)	
ADA	**Item**	**Cars 1-10**	**Cars 11&14**
4.10.12	Grade II Braille to accompany raised character of symbol.	Yes	Yes
4.10.12	Raised designations must be to the immediate left of the button to which they apply.	Yes	Yes
4.10.12	Call button illuminates when call is entered and extinguish when answered.	Yes	Yes
4.10.12	Floor buttons must be no higher than 48 in. when located in front return. Buttons must be no higher than 54 in. when a side approach provided.	Yes	Yes
4.10.12	Emergency controls, including emergency alarm and emergency stop (if provided) must be grouped at the bottom of the panel and have centerlines no less than 35 in. above the finished floor.	Yes	Yes
4.10.12	Controls must be on the front return wall with center-opening doors. They may be on the front return or strike jamb sidewall with side doors.	Yes	Yes
	CAR POSITION INDICATORS		
4.10.13	Visual car position indicator must be provided above control panel or over door.	Yes	Yes
4.10.13	Car position indicator numerals must be a minimum of 1/2 in. high.	Yes	Yes
4.10.13	Audible signal to sound as the car passes or stops at a floor and a corresponding floor designation must illuminate. Audible signal must be at least 20 dB with a frequency no higher than 1,500 Hz.	Yes	Yes
4.10.13	A button to activate audible signal only for desired trip may be provided.	Yes	Yes
4.10.13	An automatic verbal announcement the floor at which a car stops may be substituted for the audible signal.	Yes	Yes
	EMERGENCY COMMUNICATIONS		
4.10.14	If provided, emergency two-way communication systems between the elevator and a point outside the hoistway must comply with ASME A17.1-1990, Rule 211.1.	Yes	Yes
4.10.14	The highest operable part must be a maximum of 48 in. from the car floor.	Yes	Yes
4.10.14	Emergency communication identification must be provided and located adjacent to the device. Characters must be a minimum of 5/8 in. high raised 1/32 in., upper case serif (block letters) or simple serif type, and accompanied by Grade II Braille.	Yes	Yes
4.10.13	If a handset is provided the cord must be at least 29 in. long.	Yes	Yes
4.27.4	If located in a closed compartment, the door must be operable with one hand. It must not require tight grasping, pinching or twisting of the wrist. The force required to open the door must not exceed 5 lb/f.	Yes	Yes
4.10.13	The system must not require voice communication.	Yes	Yes

Appendix “B”
A17.3 and WAC 296-96 | Code for Existing Traction Elevators

A17.3	WAC 296-96		Complies Yes/No
			Cars 1-11, 14
N/a	**23100**	**Key Box:** Must have machine room keys and all other keys in a lock box labeled “elevator”.	Yes
2.1		**HOISTWAYS**	
2.1.1	23110	Hoistway Construction (Enclosed & Fire rated per local code or ANSI/NFPA No. 101)	Yes
2.1.2	23111	Windows in Hoistway Enclosures: (If provided are they guarded properly.)	Yes
2.1.3	N/A	Projections in Hoistway (Must be flush and level; Leveling zone +3”./ 60 to 75 deg bevel.)	Yes
2.1.4	23113	Pipes Conveying Gases, Vapors, or Liquids. (If provided must be properly covered & securely fastened.)	Yes
n/a	23115	Safety requirements for inspecting overhead sheaves (proper decks and guard rails are required)	Yes
n/a	23116	Car Numbers: (If more than one elevator must have numbers in lobby, top of car, disconnect, etc.)	Yes
n/a	23117	Top of Car Railings: Required if over 12” space	Yes
n/a	23119	Signs required for Low Overhead Clearance: Must provide sign if low overhead.	Yes
n/a	23158	Hoistway Floor Numbers: (Inside shaft each hoistway door must have floor numbers 4” tall and within 4” of door opening.)	Yes
2.2		**MACHINE ROOMS AND MACHINERY SPACES**	
2.2.1	n/a	Enclosures – Designated Machine Room (No-non elevator equipment- existing can stay)	Yes
2.2.2	23121	Access to Machine Rooms and Machinery Spaces (A permanent means to the machine room- locked door)	Yes
2.2.3	23122	Lighting (Permanent lighting in all machine rooms) (WAC requires at least 10 FTC if installed before 2004)	Yes
	23123	Service Outlets: Must be grounded	Yes
2.2.4	n/a	Ventilation (Natural or mechanical to avoid overheating)	Yes
2.2.5	23124	Pipes Conveying Gases, Vapors, or liquids (Existing pipes allowed if guarded to prevent discharge)	Yes
2.2.6	23125	Protection From Weather	Yes
	23126	Protective measures: Guarding sheaves and holes into top of hoistway.	Yes
2.3		**PITS**	
2.3.1	23130	Access to Pits (Means of access to all pits. If access door provide closer & keys onsite. Ladders required if over 3’ pit)	Yes
2.3.2	23131	Drains (Drains connected directly to the sewer are not permitted.)	Yes
	23132	Pit Lighting (Installations prior to 2004 require at least 5FTC). Also permanent grounded outlet.	Yes
2.3.3		Stop Switch (A stop switch shall be provided for every pit. Locate near access, color, etc.)	Yes
2.1.5	23133	Counterweight Guards (Start at 12” go to 84” above pit floor; not needed with comp rope/chain)	Yes
2.4		**CLEARANCES AND RUNBYS**	
2.4.1		Horizontal Car Clearances (Not more then 5” for horizontal doors; 7.5” for vertical doors)	Yes
2.4.2		Bottom Car Clearances (Car shall not strike any equipment when resting on fully compressed buffer.)	Yes
2.4.3		Bottom Car and Counterweight Runby (Shall not exceed 24” for cars; or 36” for cwt.)	Yes
2.4.4		Top Car Clearance (Car does not strike any overhead structure)	Yes
2.4.5	23156	Landing Sill Clearance (At least ½” for side guides; at least ¾” for corner guides. Max cannot exceed 1 ½”.)	Yes
		PROTECTION OF SPACES BELOW HOISTWAYS	
2.5	23140	Counterweight safeties required	N/A
2.6		**HOISTWAY ENTRANCES**	
2.6.1	23150	Doors or Gates Required (Passenger Elevators – full width/height – no hand latches.) (Freight Elevators – at least 6-0” gate)	Yes

Appendix "B"
A17.3 and WAC 296-96 | Code for Existing Traction Elevators

A17.3	WAC 296-96		Complies Yes/No
			Cars 1-11, 14
2.6.2	23151	Closing of Hoistway Doors (Door closers required on cars except swinging portion of horizontal door)	Yes
2.6.3	23152	Hoistway Door Vision Panels (Required on manually operated or self-closing doors, location, Size, and type of glass)	Yes
2.6.4	23153	Door Hangers (Prevent jumping, and stops, 4 times load)	Yes
2.6.5	23154	Non-Shearing Astragals (For vertical bi-parting doors only)	N/A
2.6.6	23155	Pull Straps (Must not be more than 6'-6" from floor when open)	N/A
2.7		**HOISTWAY DOOR LOCKING DEVICES, PARKING, DEVICES, AND ACCESS**	
2.7.1	23160	Hoistway Door or Gate Locking Devices (Mechanical and electrical interlocks required)	Yes
2.7.2	23161	Elevator Parking Device (For cars operated from within car only)	Yes
2.7.3	23162	Access to Hoistway (Hoistway door unlocking devices and access switches)(WAC says must be cylinder key)	Yes
2.7.4		Restricted Opening of Hoistway Doors and/or Car Doors on Passenger Elevators (Cannot open more then 4" outside unlocking zone +-18" max.)	Yes, Car 11 did not work.
2.7.5		Hoistway Emergency Door Contacts (Positively opened)	Yes
2.8		**POWER OPERATION OF DOORS AND GATES**	
2.8.1		Kinetic Energy and Force Limitations for Power-operated Horizontal Sliding Doors. (Shall not exceed 7ft/lbs. with re-opening device, without 2.5ft/lbs.; cannot exceed 30 ft/lbs)	Yes
2.8.2	23165	Reopening Device for Power-Operated Car Doors or Gates (Can be rendered inoperative if less then 2.5ft/lb)	Yes
	23166	Photo Eyes/Electric Edges: (Must time out after 20 seconds and close the door.)	Yes
		Part III	
3.1	23203	Buffers And Bumpers (Car and counterweight buffers are required)	Yes
3.2	23205	Counterweights (The weights shall be protected so that they cannot be dislodged. The rod nuts shall be protected)	Yes
3.3		**CAR FRAMES AND PLATFORMS**	
3.3.1	23206	Car Platforms (Cover entire area)	Yes
3.3.2	23207	Platform Guards (Aprons) (Vertical face at least 21" A17.3, 60-75deg, withstand 150#)	**No Cars 1-4, 6 -10.**
3.3.3	23208	Hinged Platform Sills (Must have contacts & prevent operation unless within 2")	N/A
3.3.4	23209	Floating (Movable) Platforms (Prohibited if car can move when door is not closed)	N/A
3.3.5	n/a	Protection of Platforms Against Fire (Must be covered with sheet metal or fire resistant material)	Yes
3.4		**CAR ENCLOSURES**	
3.4.1	23215	Car Enclosures (Passenger – total enclosed; Frt maybe perforated, but not by the cwt.; Car top must withstand 300lbs on any 2sqft.)	Yes
	23216	Cab Lining Materials (Must have class 1 rating, flame spread of 25 or less.	Yes
3.4.2	23220	Car Doors and Gates (Must have gate or door and electric contract)	Yes
3.4.3	23221	Location of Car Doors and Gates (Hor, distance not more then 5 ½"., Swing door 4" max., space and site guard requirements.)	Yes
3.4.4	23225	Emergency Exits (Cover hinged, single car blind shaft-every 36', side allowed)	Yes
3.4.5	23226	Car Illumination (At least two lights, 5ftc; frt=2.5ftc; emerg. .2ftc for 4 hrs.)	Yes
3.4.6		Protection of Light Bulbs and Tubes (Guarded or coated to prevent breaks)	Yes
3.5		**SAFTIES**	
3.5.1	23227	Car Safeties (Every car must have a safety)	Yes
3.5.2		Counterweight Safeties (If occupied space below)	N/A
3.5.3		Safeties to Stop Ascending Cars or Counterweights Prohibited (Cannot be provided)	Yes
3.5.4		Application and Release of Safeties	Yes

Appendix "B"
A17.3 and WAC 296-96 | Code for Existing Traction Elevators

A17.3	WAC 296-96		Complies Yes/No
			Cars 1-11, 14
		(Must be mechanical can only release if car goes up)	
3.5.5	23228	Max. Permissible Movement of Gov. Rope to Oper. Safety (For type "B" Safties-200ft or less 42in.; 201 to 375fpm – 36in.; Over 375 FPM 30in. Cwt. = 42in all speeds.)	Yes
3.5.6	23229	Rail Lubricants and Lubrication Plate (Plate on cross head stating type of lubricant or none at all.)	Yes
3.5.7		Overall Length of Guide Rails (Extended to prevent disengaging)	Yes
3.6		**SPEED GOVERNORS**	
3.6.1	23235 / 23236	Speed Governor Overspeed and Car Safety Mechanism Switches. (A switch shall be provided when speed is over 150FPM. For static control switch shall be for all speeds & both direct.)	Yes
3.6.2		Governor Ropes (Shall be of iron, steel, monel metal, phosphor bronze, or ss. At least 3/8" in diameter Tiller rope not allowed.)	Yes
3.7		**CAPACITY AND LOADING**	
3.7.1	23240	Minimum Rated Load for Passenger Elevators (per table 3.7.1)	Yes
3.7.2	23241	Use of Partitions for Reducing Inside Net Platform Area (Partitions must be permanent and symmetrical)	Yes
3.7.3	23243	Min. Rated Load for Freight Elevators (Class A = Not more then ¼ of total cap.; Class B = Motor Veh.; Class C = loading with industrial truck, etc.)	N/A
3.7.4	23244	Capacity Plates (Every car must have one with rated load; Frt : one piece loads, loading and unloading; ¼" high for pass, 1" for frt.)	Yes
3.7.5	23245	Signs on Freight Elevators (NOT A PASS ELEV…etc. ½" high letters)	N/A
3.8		**DRIVING MACHINES AND SHEAVES**	
3.8.1	23250	General Requirements (Must be cast iron or steel, fin. Grooves no set screws)	Yes
3.8.2	23255	Winding Drum Machines (Must have slack rope switch; Chain, belt, or rope-driven mechanisms shall not be used.)	N/A
3.8.3	23256	Indirect-Drive Machines(Must be at least 3 belts, safety factor of 10)	Yes
3.8.4	23260	Brakes (Must be released electrically and have spring or gravity and friction)	Yes
3.9		**TERMINAL STOPPING DEVICES**	
3.9.1	23262	Normal and Terminal Stopping Devices (Locate at upper and lower terminals. If in machine room provide broken rope, tape or chain switch)	Yes
3.9.2	23264	Final Terminal Stopping Devices (Winding drum machines- on machines and in hoistway; Traction – in the hoistway operated by the car.)	Yes
3.10		**OPERATING DEVICES AND CONTROL EQUIP.**	
3.10.1	23266	Types of Operating Devices (Rope or rod devices shall not be used.)	Yes
3.10.2	23268	Car-Switch Operation Elevators (If provided must return to stop position if released by hand)	Yes
3.10.3	23270	Top-of-Car Operating Devices (Continuous pressure <150FPM; bet. Crosshead/door.	Yes
3.10.4	23272	Electrical Provisions	Yes
		(a) Slack Rope Switch	N/A
		(b) Motor-Generator Running Switch	N/A
		(c) Compensating Rope Sheave Switch	N/A
		(d) Broken rope, tape or chain	Yes
		(e) Stop Switch – Top of Car- marked "stop" & "run"	Yes
		(f) Car-Safety Mechanism Switch	Yes
		(g) Speed Gov. Overspeed Switch	Yes
		(h) Final Terminal Stopping Devices	Yes
		(i) Emergency Terminal Stopping Devices (reduced stroke)	Yes
		(j) Motor Generator Overspeed Protection	N/A
		(k) Motor Field Sensing Means (not required w/ static drive)	Yes
		(m) Buffer Switches for Oil Buffers (type c safety)	Yes

Appendix "B"

A17.3 and WAC 296-96 | Code for Existing Traction Elevators

A17.3	WAC 296-96		Complies Yes/No
			Cars 1-11, 14
		(n) Hoistway Door Interlocks or Hoistway Door Contacts	Yes
		(p) Car Door or Gate Electric Contacts	Yes
		(q) Normal Terminal Stopping Devices	Yes
		(r) Car Side Emergency Exit Electric Contact	N/A
		(s) Electric Contacts for Hinged Car Platform Sills	N/A
	23269	(t) In-Car Stop Switch (Must be keyed, if provided)(WAC does not require)	**No**
		(u) Emergency Stop Switch (Must be provided for freight cars)	Yes
		(v) Stop Switch in Pit	Yes
		(w) Buffer Switches for Gas Spring Return Oil Buffers	Yes
3.10.5	23274	Power Supply Line Disconnecting Means (Provided w/ overcurrent protection, within site, and numbered)	Yes
3.10.6	23276	Phase Reversal and Failure Protection (Means to prevent starting if out of phase)	Yes
3.10.7		Devices for Making Hoistway Door Interlocks or Electric Contacts, or Car Door or Gate Electric Contacts Inoperative (These devices are prohibited)	Yes
3.10.8		Release and Application of Driving Machine Brakes (If ungrounded or if stop switch is pulled shall release brake)	Yes
3.10.9	23222	Control and Operating Circuit Requirements (The failure of any single magnetically operated switch)	Yes
	23277	Grounding and Overcurrent: Must comply with 620-61	Yes
3.10.10	23278	Absorption of Regenerated Power (Provide means to absorb energy during overhauling)	Yes
3.11		**EMERGENCY OPERATION AND SIGNALING DEVICES**	
3.11.1	23280	Car Emergency Signaling Devices (Audible signal, two-way communication, on emerg. power)	Yes
3.11.2		Operations of Elevators Under Standby (Emergency) Power (If provided must be able to absorb regenerative power)	Yes
3.11.3		Firefighters' Service(A17.1-1987 Rules 211.3 through 211.8- appendix C; phase I and II switches shall be the same in each bldg)	Yes
3.12		**SUSPENSION MEANS/CONNECTIONS**	
3.12.1	23282	Suspension Means (Must be wire rope made of iron or steel- Elevator ropes only)	Yes
3.12.2	23283	Rope Data Tag (diameter, rated breaking strength, the grade of material, the month/year, preformed or non, construction classification, name of person or firm, name of rope manufacture, no. of ropes, the date resocketed, height of letters shall be 1/16".	Yes
3.12.3	23284	Factor of Safety(f = SxN/W or table 3.12.3)	Yes
3.12.4	23285	Minimum Number and Diameter of Suspension Ropes (3 for traction; 2 for drum; minimum diameter = 3/8")	Yes
3.12.5	23287	Suspension Rope Equalizers (When provided shall be of the individual-compression spring type)	Yes
3.12.6	23288	Securing of Suspension Wire Ropes to Winding Drums (rope must be secured by clamps or tapered babbitted sockets.)	N/A
3.12.7	23289	Spare Turns on Winding Drums(Not less then one turn of the rope when car is on buffer)	N/A
3.12.8	23290	Suspension Rope Fastenings(Spliced eyes by return loop)	Yes
3.12.9	23291	Auxiliary Rope Fastening Devices	N/A

Appendix "C"

Performance Review and Maintenance Deficiency List

	PERFORMANCE TIMES	***Design 1-10***	**Car 1**	**Car 2**	**Car 3**	**Car 4**	**Car 5**	**Car 6**	**Car 7**
7.1	Door Open Time	**2.3**	2.9	***3.5***	2.9	***3.2***	2.7	***3.4***	2.8
7.2	Door Close Time	**4.1**	***5.8***	***7.5***	***6.2***	***6.1***	***7.0***	4.0	***6.2***
7.3	Floor to Floor Up (5 to 6)	**10.4**	***14.2***	***14.8***	***13.4***	***13.0***	***13.6***	11.9	***14.0***
7.4	Floor to Floor Down (6 to 5)	**10.4**	***14.5***	***14.7***	***14.8***	***12.4***	***13.4***	11.6	***14.0***
7.5	Full Speed Up (FPM)	**500**	496	495	492	502	496	496	***483***
7.6	Full Speed Down (FPM)	**500**	496	495	496	503	495	495	***483***
7.7	Jerk Rate Up	**<7.0**	5.0	5.6	5.7	6.3	4.9	5.3	5.0
7.8	Jerk Rate Down	**<7.0**	6.9	6.4	14.1	8.4	9.9	8.6	7.4
7.9	Power Closing of Door (Pressure Gauge)	**<30 lbs.**	19lbs.	17lbs.	19lbs.	27 lbs.	18lbs.	17 lbs.	14 lbs.
7.10	Interrupted Ray	**1.0**	.5	.3	.4	.5	.3	.4	.4
7.11	Car Dwell Time	**3.0**	4.2	3.5	4.0	2.2	4.0	3.3	3.6
7.12	Hall Call Dwell Time	**5.0**	18.5	9.8	16.8	16.6	17.0	16.5	12.9
7.13	Car/Hall Lantern Time	**10.0**	16.5	12.5	12.8	9.9	14.2	6.9	12.1
7.14	Nudging	**20.0**	39.5	40.1	39.3	40.5	37.5	41.4	39.5
7.15	Test Phone (Works)	**Y/N**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7.16	Test Emergency Light (Works)	**Y/N**	DNC	Yes	DNC	DNC	DNC	DNC	

Items in **Bold** and ***Italic*** are outside of the design range and should be adjusted.

Car #	**GENERAL MAINTENANCE DEFICIENCIES**	**COMPLETED**	**DATE CHECKED**
Car 1			
1.1	Five year test is overdue.		
1.2	MCP only has 3 visits in 2015 and one in 2016.		
1.3	Commutator on machine needs minor stoning.		
1.4	Clean machine of light rope shavings.		
1.5	Brake needs to be cleaned.		
1.6	Adjust door sill closer at level 12, doors stay open.		
1.7	Pit comp sheave is getting low. Shorten ropes.		
1.8	Pit has small oil accumulation on floor.		
1.9	Pit light is outside of pit door. Should be inside so nobody turns light out on mechanic.		
Car 2			
2.1	Control cabinet is dusty.		

Appendix "C"
Performance Review and Maintenance Deficiency List

Car #	GENERAL MAINTENANCE DEFICIENCIES	COMPLETED	DATE CHECKED
2.2	Machine has heavy rope debris. Clean machine and ropes to check for proper size.		
2.3	Brake needs cleaned.		
2.4	One half of commutator needs stoned to remove high carbon build up.		
2.5	Replace worn pick up roller on 12th floor.		
2.6	Several holes in shaft near door should be filled in.		
2.7	Hatch door equipment at 9th floor is rough. Replace rollers and clean track.		
2.8	Clean up oil in pit from buffers.		
2.9	No car apron.		
2.10	Five year test is overdue.		
2.11	MCP only has 3 visits in 2015 and one in 2016.		
Car 3			
3.1	Commutator is in bad condition and should be turned and undercut.		
3.2	Door operator chain is rusty.		
3.3	Car door linkage is dirty.		
3.4	Pick up roller at 10th floor is chipped.		
3.5	Hoist ropes are worn and go-no-go gauge fits part way in, but no rouge, so did not fail. Monitor closely for near term replacement.		
3.6	Five year test is overdue.		
3.7	MCP only has 3 visits in 2015 and one in 2016.		
Car 4			
4.1	All relays in the controller are missing the manufactures clips to hold them in place.		
4.2	Remove paper from brake.		
4.3	Clean up rope debris under machine.		
4.4	Emergency light does not work.		
4.5	Car top is dirty.		
4.6	Install cover on open electrical j box in pit.		
4.7	Five year test is overdue.		

Appendix "C"
Performance Review and Maintenance Deficiency List

Car #	GENERAL MAINTENANCE DEFICIENCIES	COMPLETED	DATE CHECKED
4.8	MCP only has 3 visits in 2015 and one in 2016.		
Car 5			
5.1	Compensation switch in pit is about to set causing shut down and possible entrapment.		
5.2	Counterweigh runby is only 5 ¾" . Shorten ropes and/or remove stinger so it is more than 6".		
5.3	Compensation ropes are rusted and should be replaced.		
5.4	Five year test is overdue.		
5.5	MCP only has 3 visits in 2015 and one in 2016.		
Car 6			
6.1	Hoist ropes show rouge. Properly clean so a more thorough inspection can be made.		
6.2	Commutator needs stoned.		
6.3	Five year test is overdue.		
6.4	MCP only has 3 visits in 2015 and one in 2016.		
Car 7			
7.1	Car doors are squeaky.		
7.2	Car apron is less than 21" long. Should be replaced with 48" apron.		
7.3	Five year test is overdue.		
7.4	MCP only has 3 visits in 2015 and one in 2016.		

Appendix "C"
Performance Review and Maintenance Deficiency List

	PERFORMANCE TIMES	*Design 8-10*	Car 8	Car 9	Car 10	*Design 11-14*	Car 11	Car 14
7.1	Door Open Time	**2.3**	***4.0***	2.5	***3.0***	**2.7**	***5.1***	***4.6***
7.2	Door Close Time	**4.1**	***5.5***	4.7	***5.2***	**5.0**	***6.5***	***4.7***
7.3	Floor to Floor Up (5 to 6)	**10.4**	***13.2***	***13.0***	***14.2***	**12.7**	***17.5***	***15.8***
7.4	Floor to Floor Down (6 to 5)	**10.4**	***13.2***	***13.5***	***14.0***	**12.7**	***17.7***	***16.4***
7.5	Full Speed Up (FPM)	**500**	***480***	490	***147***	**350**	***329***	***325***
7.6	Full Speed Down (FPM)	**500**	***480***	494	***150***	**350**	***326***	***325***
7.7	Jerk Rate Up	**<7.0**	4.7	3.5	5.8	**<7.0**	***12.5***	***13.5***
7.8	Jerk Rate Down	**<7.0**	***8.7***	***8.8***	***11.3***	**<7.0**	***13.1***	***15.7***
7.9	Power Closing of Door (Pressure Gauge)	**<30 lbs.**	16lbs.	15lbs.	16lbs.	**<30 lbs.**	22lbs.	20lbs.
7.10	Interrupted Ray	**1.0**	.3	.4	.4	**1.0**	.7	.5
7.11	Car Dwell Time	**3.0**	16.5	3.8	4.9	**3.0**	***2.1***	***2.2***
7.12	Hall Call Dwell Time	**5.0**	13.4	17.9	15.7	**5.0**	***4.5***	***4.0***
7.13	Car/Hall Lantern Time	**10.0**	11.2	11.2	7.9	**10.0**	11.8	11.2
7.14	Nudging	**20.0**	40.3	39.2	41.0	**20.0**	41.3	41.4
7.15	Test Phone (Works)	**Y/N**	Yes	Yes	Yes	**Y/N**	Yes	Yes
7.16	Test Emergency Light (Works	**Y/N**	DNC	Yes	DNC	**Y/N**	DNC	DNC

Items in ***Bold*** and ***Italic*** are outside of the design range and should be adjusted.

Car #	GENERAL MAINTENANCE DEFICIENCIES	COMPLETED	DATE CHECKED
Car 8			
8.1	Turn and undercut commutator.		
8.2	Five year test is overdue.		
8.3	MCP only has 3 visits in 2015 and one in 2016.		
Car 9			
9.1	Five year test is overdue.		
9.2	MCP only has 3 visits in 2015 and one in 2016.		
9.3	Phase II light did not come on when testing fire recall.		
Car 10			
10.1	Five year test is overdue.		
10.2	MCP only has 3 visits in 2015 and one in 2016.		

Appendix "C"
Performance Review and Maintenance Deficiency List

Car #	GENERAL MAINTENANCE DEFICIENCIES	COMPLETED	DATE CHECKED
10.3	Door operator chain is rusty.		
10.4	Wire mesh between hoistways is loose and should be re-anchored.		
10.5	Elevator is operating extremely slow in both directions.		
Car 11			
11.1	Five year test is overdue.		
11.2	MCP only has 3 visits in 2015 and one in 2016.		
11.3	Leveling time takes too long.		
11.4	Machine is leaking a lot of oil.		
11.5	Motor brushes are making noise.		
11.6	Fire extinguisher is expired.		
11.7	Car top is dirty.		
11.8	Both the front and rear door restrictors do not work.		
11.9	There is an open electrical box in the hoistway.		
Car 14			
14.1	Five year test is overdue.		
14.2	MCP only has 3 visits in 2015 and one in 2016.		
14.3	Leveling time is too long.		
14.4	Commutator needs turned and undercut.		
14.5	Relays on the controller are missing clips.		
14.6	Machine leaks oil.		
14.7	Hatch door equipment is dirty.		
14.8	Emergency escape hatch is not locked.		

Photo of fire sprinkler pumps, fire sprinkler control panel, and fire protection water piping at basement Room WB9B. CDG photo, May 24, 2016.

View of seismic bracing for fire protection water piping at ceiling of basement Room EB9. CDG photo, May 24, 2016.

FIRE PROTECTION:

In addition to the preliminary building code-compliance studies, the design team engaged a fire protection consultant to assess the condition of the existing fire protection system.

The consultant's technical report on the fire protection system is presented on the following pages. The consultant identified fire protection code compliance issues that would need to be addressed during a building revitalization project that is deemed a substantial alteration by the City of Seattle.

CODE ANALYSIS OF EXISTING FIRE PROTECTION SPRINKLER SYSTEMS

History
The existing fire protection sprinkler systems, standpipe system and fire pump system were installed in 2002 and 2003. The designer and installing contractor was Cosco Fire Protection located, at the time, at 10910 117th Place NE, Kirkland, WA 98033. The governing code at the time of install would have been the 1997 Seattle Building Code. The NFPA standards referenced would probably have been the current editions of;

NFPA 13, 1999 edition, Installation of Sprinkler Systems.
NFPA 14, 2013 edition, Standard for the Installation of Standpipe and Hose Systems.
NFPA 20, 1999 edition, Standard for the Installation of Stationary Pumps for Fire Protection
(Note: Seattle Fire Dept. has traditionally allowed the use of current NFPA standards in lieu of those referenced in the code.)

Current
The current governing code is the 2012 Seattle Building Code. The current NFPA standards referenced would be the latest editions of;

NFPA13, 2013 edition, Installation of Sprinkler Systems.
NFPA14, 2013 edition, Standard for the Installation of Standpipe and Hose Systems.
NFPA20, 2013 edition, Standard for the Installation of Stationary Pumps for Fire Protection
NFPA22, 2013 edition, Standard for Water Tanks for Private Fire Protection
(Note: Seattle Fire Dept. has traditionally allowed the use of current NFPA standards in lieu of those referenced in the code.)

Revisions
There have been many minor and several substantial changes to the standards governed by the Seattle Building Code from 1997 to the current 2012 edition. However, in general, the systems installed, selection of occupancies, sprinklers selected, sprinkler spacing, materials used, etc. are in compliance with current code. Those substantial revisions which apply to the entire building shall be itemized and discussed initially. Subsequently, those revisions which are specific to an area shall be listed and considered.

Water Supply / Fire Pump System
The current fire pump system consists of two independent fire pumps, one primary and one secondary. They are arranged in parallel. Each is monitored and controlled by a dedicated controller/transfer switch. The primary pump, rated 750gpm at 135psi, is supplied by a 6” service from 3rd Ave. The primary pump is designed to supply the standpipe system. The secondary pump, rated 750 gpm at 110 psi, is supplied by a 6” service from Jefferson Street. The secondary pump is designed to supply the sprinkler systems. The standpipe/sprinkler systems are augmented by two, 4 way, fire department connections, one located on Jefferson Street, the other on 3rd Avenue.

Current code requires a single city service and an on-site secondary water supply. Reference the attached excerpt from the 2012 Seattle Building Code, 903.3.5.2. The water supply shall be the lesser of either 33,000 gallons, or, the largest sprinkler system flow demand + hose demand for the duration specified in NFPA 13 as determined by the occupancy hazard classification. In this case, given the ordinary hazard occupancies in portions of the building, which require a duration of 60 minutes, the minimum water storage capacity would be 33,000 gallons.

Note that there are two arrangement options for the secondary water supply. Reference the attached Seattle Requirements for High Rise Secondary Water Supply. Option 1 comprises a single pump and a somewhat complex automatic tank refill system. The automatic tank fill system must be able to maintain the water supply at the normal fill level during a maximum design demand of 150% of rated pump capacity. Option 2 includes two pumps, a primary and a secondary. The primary pump is supplied by a dedicated service and the secondary pump is supplied by the storage tank. The automatic tank refill arrangement is not required with option 2. Generally, Option 1 represents the economical choice. The automatic refill system is expensive, however, an additional pump, controller/transfer switch, associated piping and power usually costs substantially more.

The existing pumps will not support option 1. This is due to the reduced suction pressure, (city pressure vs tank pressure), and the increased minimum hose valve pressure required, (150 psi vs 125 psi). Accordingly, a new pump, controller/transfer switch and appurtenances would be required.

Considering option 2, the existing primary pump and controller/transfer switch may serve as the new primary pump contingent on whether the 150 psi minimum hose valve pressure can be achieved. If not, a new primary pump would be required, and, probably a new controller/transfer switch. A new secondary pump, controller/transfer switch and appurtenances would be required.

Emergency Generator
The existing emergency generator should be analyzed to ascertain whether it can support a larger pump motor(s).

Standpipe System
Reference the attached excerpt from the 2012 Seattle Building Code, 903.3.1.1.2. The existing standpipe system piping configuration is acceptable. The following revisions/additions are required to comply with current code:

1. The system must provide a minimum flow of 300 gpm at a minimum pressure of 150 psi at each standpipe connection. In 1997 the Seattle Fire Department required a minimum pressure of 12 5psi, so, the existing primary pump, if it was to remain, may not be capable of satisfying the current requirement.
2. Increasing the minimum standpipe connection pressure to 150 psi will require the following:
    - The addition of PRV type (pressure reducing valve) control valves to the sprinkler system standpipe connections above the 8th floor, for several floors, to maintain a maximum sprinkler system pressure of 175 psi.
    - Flow testing of the existing PRV type hose valves and sprinkler control valves to ascertain if each can satisfy current design parameters.
    - Adjustment, if possible, or, replacement, of any existing PRV which does not satisfy current design parameters.
3. Two 2½” standpipe hose connections are required at each intermediate, or, floor landing, contingent on the standpipe location. Currently, one hose connection is provided. So, an additional hose connection is required adjacent to each existing, type to match. If the existing hose connection is of the PRV type, the added connection must be likewise.
4. Standpipes should be added in stairs 3 & 5. Per the 2012 SBC, 905.4, class 1 standpipe hose connections shall be provided in every required stairway.

Pre-Action Sprinkler Systems
Pre-action sprinkler systems are utilized at multiple locations throughout the building. The pre-action systems are noted as double interlock type. The following system revisions and/or additions are required to comply with current code:

1. Design Area – The existing pre-action systems were designed using a 1500 ft² design area. Current code requires increasing the design area 30% to 1950 ft². Reference NFPA 13, 2013 ed, 11.2.3.2.5. Accordingly, the pre-action systems should be redesigned to provide a 1950 ft² design area. This would probably entail increasing some pipe sizes.
2. Galvanized Pipe – The existing pre-action systems utilized hot dipped galvanized steel piping with a Hazen Williams friction loss coefficient of 120. Current code specifies a Hazen Williams friction loss coefficient of 100 for galvanized steel pipe. Reference NFPA 13, 2013 ed, Table 23.4.4.7.1. Accordingly, the pre-action systems should be hydraulically calculated using a ”C” factor of 100. This would probably entail increasing some pipe sizes.
3. Pitching – The existing pre-action systems were installed level. Current code requires double-interlock type pre-action systems be pitched to drain. Reference NFPA 13, 2013 ed, 8.16.2.3. Accordingly, the pre-action systems should be re-supported to provide the required pitching.
4. Return Bends – The existing pre-action systems supply pendent ceiling sprinklers directly via drops to the sprinkler. Current code requires pendent ceiling sprinklers be installed with return bends when supplied by a double-interlock type pre-action system. Reference NFPA 13, 2013 ed, 7.3.2.5 (3). Accordingly, all pendent ceiling sprinklers supplied by pre-action systems should be installed with return bends.

Sprinklers in ACT (T-Bar) Ceilings
The existing pendent ceiling sprinklers in suspended T-bar type ceilings are installed with minimal annular clearance between the sprinkler escutcheon and the affected ceiling tile. Current code requires either 1” annular clearance, or, the sprinkler be installed with a listed flexible connection. Reference ASCE 7-05, 13.5.6.2.2. Accordingly, all the pendent ceiling sprinklers should be installed with either 1” annular clearance and a retrofit escutcheon or a flexible connection.

Quick Response Sprinklers in Light Hazard Occupancies
The existing upright sprinklers, utilized in various locations throughout the building, are standard response spray sprinklers. In those portions of the building designated light hazard occupancy, all the sprinklers should be quick response type. Reference NFPA 13, 2013 ed, 8.3.3. Accordingly, all upright sprinklers in designated light hazard occupancies should be changed to quick response type.

Seismic Protection
Bracing – The bracing requirements in NFPA 13, 2013 edition, have been significantly revised subsequent to the 1999 edition. Particularly the load factors used, allowable spacing, and orientation based fastener strength. Accordingly, a separate evaluation of the bracing should be conducted.

Nonetheless, some items are straightaway evident:

- The structure is poured in place concrete. Therefore, the bracing fasteners should be pre-qualified for seismic applications in accordance with ACI 355.2. Basically, tested and rated for cracked concrete applications. The fasteners used during installation were not.
- The bracing components used are acceptable for current applications, however, the load ratings have changed. They should be assessed during the evaluation.

Restraint – The existing branch lines are not restrained. Current code requires branch line restraint whenever the dimension from the point of hanger attachment to the top of pipe exceeds 6", which is prevalent throughout the building. Reference NFPA 13, 2013 ed, 9.3.6. Accordingly, branch line restraint should be installed throughout the building.

Elevator Sprinklers
The 2012 SBC has been revised significantly as regards sprinklers in elevator pits and machine rooms. In many cases, contingent on elevator type, suspension means and enclosure rating, sprinklers may be eliminated. Accordingly, a separate evaluation of the elevator systems should be performed. In any case, the existing key switch operated solenoid valves are no longer acceptable and should be replaced with normally closed supervised control valves. Reference the attached SFD Admin Rule 9.06.14.

Elevator Lobby
The main elevator lobbies on floors 1A, 2, 3, 4, 5, 6, 7, 8 and 9 are un-sprinklered. This situation was probably negotiated at the time of permitting, however, neither the previous or current code would allow same. Accordingly, recommend adding sprinklers to the above mentioned elevator lobbies.

Entries from 3rd and 4th Avenue
The exterior portion of the existing entries from 3rd and 4th Avenues are not sprinklered. As these entries constitute recesses that are inset more than 4 ft. into the building sprinklers are required. Accordingly, recommend adding sprinklers to the exterior entries.

END

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[F] 903.3.5.2 Secondary water supply. An automatic secondary on-site water supply providing the lesser of a net volume of 33,000 gallons (124 918 L) or having a ((~~capacity~~)) volume not less than the hydraulically calculated sprinkler demand, including the hose stream requirement in NFPA 13, shall be provided for all high-rise buildings ((~~assigned to Seismic Design Category C, D, E or F as determined by the *International Building Code*~~)). An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the *automatic sprinkler system*. The secondary water supply shall have a duration of not less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13.

Seattle Requirements for High-Rise Secondary Water Supply

Water Tank: An automatic secondary on-site water supply storage tank shall be provided for high-rise buildings in accordance with SFC Sec. 903.3.5.2, and meet the requirements of NFPA 22 and the following:

OPTION 1 Single Fire Pump with Storage Tank Having Automatic Refill Features

Tank Refill Lines:
Dual automatic refill lines, each capable of refilling the tank at a minimum rate of 150 percent of the fire pump(s) capacity, shall be installed. Ref: NFPA 20 - 4.31.3.1.1

A manual tank fill bypass designed for and capable of refilling the tank at a minimum rate of 150 percent of the fire pump(s) capacity shall be provided. Ref: NFPA 20 - 4.31.3.1.3

Tank Fill Valves and Control Systems: The two automatic refill lines shall have separate automatic tank fill valves that are listed for fire service and arranged for automatic operation. Each automatic tank fill valve shall be provided with a separate approved means of actuation such as float assemblies, pressure sensors, etc. that are supervised by the fire alarm system. The status of the valves (i.e., 'open', 'closed') shall be indicated at the valves and in the Fire Command Center (FCC).

The tank shall be kept filled, and the water level shall never be more than 4 inches below the designated fire service level. Ref: NFPA 22 - 14.4.3

* Seattle amendment to IBC

Project Name: [Seattle MRI Terry & Howell]
Permit number: [6412152]

Tank Level Indicators: Two tank level indicators are required, one located in the FCC and another in the immediate vicinity of the tank fill valves. The tank level indicator monitoring shall be-provided through the fire alarm system in accordance with NFPA 72.

Two separate and distinct signals shall be initiated: one indicating that the required water level has been lowered or raised (off-normal), and the other indicating restoration. Ref: NFPA 72 - 17.16.3.1

The off-normal signal shall be initiated when the water level falls three inches or rises three inches. Ref: NFPA 72 - 17.16.3.2.1

Tank Low Level Alarm: Separate and distinct tank low level audible and visible alarms shall be provided in the FCC and in the vicinity of the tank fill valves, and activate when the tank water level drops below 50% capacity. The tank low level monitoring shall be-provided through the fire alarm system in accordance with NFPA 72. The signaling devices shall be clearly labeled "Water Tank Low Level Alarm" or equivalent. An independent silence switch shall be provided for the tank low level alarms in the immediate vicinity of the alarm devices.

Tank Overflow Protection: An approved means to prevent the tank from overflowing into the building shall be provided. Where an automatic shutoff valve is provided, it shall be listed for fire service and have dual (redundant) means of actuation such as two float assemblies, pressure sensors, etc. that are supervised by the fire alarm system. The valve shall be supervised by the fire alarm system and status (i.e., 'open', 'closed') indicated at the valve and in the FCC.

Pump By-pass: A full size by-pass shall be installed around the storage tank and the fire pump in accordance with NFPA 20. The by-pass shall be installed on the supply side of the tank fill valves and connected to the system on the downstream side of the fire pump and any sprinkler system pressure regulating valves installed on feed mains.

OPTION 2: Two Fire Pumps and Storage Tank Without Automatic Refill Features
The primary fire pump shall be supplied by a dedicated fire service main and the secondary fire pump supplied from the storage tank. The pumps shall operate at the same rated flow capacity and at similar discharge pressures. When using Option 2, automatic refill of the tank is not required.

The means to fill the tank shall be sized to fill the tank in a maximum time of 8 hours. Ref: NFPA 22 – 14.4.2

The tank shall be kept filled, and the water level shall never be more than 4 inches below the designated fire service level. Ref: NFPA 22 - 14.4.3

* Seattle amendment to IBC

Tank Level Indicator: A tank level indicator is required in the immediate vicinity of the tank fill valve.

Pump By-pass: A full size by-pass shall be installed around the primary fire pump in accordance with NFPA 20. The by-pass shall be connected to the system on the downstream side of any sprinkler system pressure regulating valves installed on feed mains.

Seattle Requirements for High-Rise Generator Fuel Tanks

Ensure that the as a minimum the following information is provided on the on the architectural plan submittals:

1. Provide detail on plans indicating type of tank (i.e., UL-142, UL-2085, or other type of tank), type of fuel, and how much will be stored on-site.
2. Provide detail on plan (plan and elevation views) showing the location of the diesel fill connection, located on the exterior of the building, at least 5 feet from building openings and property lines in accordance with SFC Section 5704.2.7.5.2.
3. Provide details on plans indicating location (plan and elevation views) and routing of normal vent for diesel tank (manifolding of normal vents is not allowed) in accordance with SFC Section 5704.2.7.3.3.
4. Provide details on plans indicating location and routing of emergency vents diesel tanks (manifolding of emergency vents is not allowed) in accordance with SFC Section 5704.2.7.4.

Seattle Requirements for Protection of Wiring Required by Section 909.11

1. Power and control wiring that serves the pressurization and other smoke control equipment, regardless of voltage, shall have fire-resistance-rated protection (rated cable, installation in shafts, embedment, etc.) of at least two hours. **Exception:** Fire-resistance rating is not required for wiring serving a generator in an unprotected area in a garage that is separated from the rest of the building by 2 hour-rated construction.
2. Where wiring protection is provided by installing in a rated shaft, protection of wiring is required between the fire command center and the shaft.
3. Protection of wiring is not required for rooftop or penthouse wiring where installed outside the building envelope or in a penthouse that is not required to be protected.

* Seattle amendment to IBC

903.3.1.1.2 High-rise building sprinkler system design. *High-rise building* sprinkler systems shall be combination standpipe/sprinkler systems incorporating the following features:

1. Each floor sprinkler system shall be connected between standpipe risers.
2. Shut-off valves, water-flow devices and check valves (or pressure reducing valves) shall be provided on each floor at the sprinkler system connection to each standpipe.
3. Two four-way fire department connections serving the combination system shall be provided on separate streets well separated from each other.
4. At least one of the fire department connections shall be connected to the riser above a riser isolation valve.
5. When a mid-level fire pump is required to meet pressure requirements, two pumps with the same rating shall be installed.
6. Dry-pipe sprinkler systems serving parking garages may use a separate two-way fire department connection. The dry-pipe sprinkler system shall be supplied by the on-site water tank.
7. The standpipe risers in each required stair shall be a minimum pipe size of 6 inches (152 mm).
8. Two $2^1/_2$-inch (64 mm) hose connections shall be provided on every floor level landing in every required stairway. If pressure reducing valves (PRV) are required, each hose connection shall be provided with its own PRV.
9. The system shall be designed to provide a minimum flow of 300 gpm (19 L/s) at a minimum pressure of 150 psi (1034 kPa) and maximum pressure of 205 psi (1379 kPa) at each standpipe connection in addition to the flow and pressure requirements contained in NFPA 14.
10. When a mid-level pump is required to meet pressure requirements, two mid-level pumps with the same rating shall be provided.

DPD SFD	Joint Ruling DPD Director's Rule 7-2014 SFD Administrative Rule 9.06.14	
Applicant: CITY OF SEATTLE Department of Planning and Development Seattle Fire Department	Page 1 of 5	Supersedes: DPD DR 17-2005 SFD Adm Rule 9.08.05
	Publication: 7/3/14	Effective: 8/12/14
Subject: Sprinkler Systems and Fire Alarms for Elevator Machinery Rooms, Control Rooms, Hoistways and Pits	Code and Section Reference: Seattle Building Code Seattle Fire Code	
	Type of Rule: Technical requirements	
	Ordinance Authority: SMC 3.06.040	
	Approved Date John H. Nelsen, Fire Marshal, SFD	
Index: Building Code Elevators	Approved Date Diane M. Sugimura, Director, DPD	
City of Seattle Department of Planning and Development 700 Fifth Avenue, Suite 2000, PO Box 34019, Seattle, WA 98124-4019	Diane M. Sugimura, Director	

DPD Director's Rule X-2014
SFD Administrative Rule (Continued)

BACKGROUND AND PURPOSE

The purpose of this rule is to clarify the requirements for automatic sprinkler systems in elevator machine rooms, control rooms, hoistways and pits. Seattle codes only require elevator machine rooms to be protected by sprinklers when required by the building official. The ASME elevator rules, adopted in Chapter 30 of the Seattle Building Code, prohibit automatic sprinklers in elevator machine rooms unless they are provided with automatic power disconnect devices also known as shunt trips. However, automatic power disconnect devices may cause serious problems for firefighters.

This Rule identifies the requirements of the Department of Planning and Development (DPD) and Seattle Fire Department relating to sprinklers, fire alarms, and controls for these spaces.

NOTE: Seattle's rule is different than Washington State's rules.

RULE

This rule applies to buildings protected throughout with an automatic sprinkler system.

1. ALL BUILDINGS. All sprinklered buildings are required to comply with Section 1.

1.1. Smoke detectors, (not heat detectors), shall be installed at each elevator lobby or floor level served by the elevator, and in each elevator machine room and control room in accordance with NFPA 72. Upon activation, these detectors shall initiate Phase I recall and activate a fire alarm.

1.2. If the elevator driving machine is located at the top of the hoistway or located in the elevator pit area, 135 degree fixed temperature heat detector(s) shall be located within 18 inches of the motor and sprinkler head(s). The heat detector(s) shall initiate Phase I recall and activate a fire alarm.

1.3. In buildings having a fire alarm system, the detectors shall report to the fire alarm panel as a separate zone (or initiating device identifier for addressable fire alarm systems) for each machine room, control room and secondary sheave area provided with a detector.

1.4. In buildings without a fire alarm system, the detectors shall initiate a audible and visual alarm located at the recall floor near the entrance to the elevators. The alarm shall have a sign with 1-inch letters in high contrast with the background stating, "ELEVATOR FIRE ALARM".

2. BUILDINGS WITH ELEVATORS USING COMBUSTIBLE SUSPENSION MEANS. Sprinklered buildings with combustible suspension means shall comply with Section 2.

2.1 Sprinklers shall be installed at the top and bottom of elevator hoistways where the suspension means are of combustible material such as non-circular elastomeric-coated or polyurethane-coated steel belts. Sprinklers at the top of elevator hoistways shall be of an intermediate temperature classification.

2.2 The sprinklers in the elevator hoistway are not required if the suspension means provide at least an FT-1 rating when tested to the vertical burn test requirements of UL 62, Flexible Cords and Cables, and UL 1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords.

DPD Director's Rule X-2014
SFD Administrative Rule (Continued)

3. REQUIREMENTS FOR SPRINKLERED MACHINE ROOMS AND CONTROL ROOMS. Buildings with sprinklered machine rooms or control rooms are required to comply with Section 3.

3.1 A sprinkler supply line to each elevator machine room and control room shall be provided. An approved, manually-operated valve with an integral switch shall be installed on the sprinkler supply line for each elevator machine room. The switch shall be connected to the elevator power disconnect device. The valve shall be easily accessible and located outside of and next to the machine room door not higher than 6 feet above the floor. The valve shall be normally closed. Opening the valve shall shut off power to the elevators and charge the sprinkler lines with water. The power disconnect control device shall remove power from the elevator before water begins to flow in the sprinkler system.

3.2 The sprinkler valve shall be permanently labeled in letters at least 1 inch in size in high contrast with the background, "ELEVATOR POWER DISCONNECT AND SPRINKLER ACTIVATION". The label shall specify which elevators are controlled by the switch.

3.3 When the elevator machine room, control room or the associated sprinkler control valve and associated piping may be exposed to freezing conditions, the sprinkler control valve shall be installed in an approved location that is readily visible and accessible, not higher than 6 feet above the floor, and on the path of travel to the machine room or control room door.

3.4 Elevator power disconnect devices shall comply with items 3.4.1 through 3.4.4.

3.4.1 A shunt trip-type circuit breaker or other approved control device that will remove power to the elevator controller, shall be installed in each elevator machine room and control room. In machine rooms and control rooms containing controllers for more than one elevator, the disconnect device shall disconnect power to all elevators controlled from that room, either by a master disconnect or by a disconnect for each elevator.
Note: Ground-fault circuit breakers have not been tested and approved for this purpose and are not acceptable.

3.4.2 Electrical power for the shunt trip control shall be a dedicated circuit(s) installed in compliance with the Seattle Electrical Code, article 620.51(E). When the elevator(s) is powered from a standby power source, the electrical power for the shunt trip control shall be powered from the same source.

3.4.3 Operation of elevator power disconnect circuits shall not interrupt power to the elevator emergency lighting, machine room, control room, or machinery space lighting, fire alarm system, or communications.

DPD Director's Rule X-2014
SFD Administrative Rule (Continued)

3.4.4 An illuminated visual device must be installed in the machine room adjacent to each elevator's disconnect to indicate that power is available to the shunt trip activation mechanism. In addition, control circuits to shut down elevator power shall be monitored for the presence of operating voltage. Loss of voltage to the control circuit for the disconnecting means shall cause a supervisory signal to be indicated at the fire alarm system control unit in accordance with NFPA 72.

NOTE: Manually opening the elevator disconnects shall not interrupt or cause a loss of voltage to the shunt trip control circuits.

3.5. The sprinkler system shall comply with Sections 3.5.1 through 3.5.8.

3.5.1. An accessible valve or other approved drain system shall be provided outside of the machine room or control room to drain the sprinkler system when the control valve has been returned to the closed position. The drain shall be located at the lowest point between the valve and the sprinkler head. A separate drain system shall be required for sprinklers located at the top of the hoistway and in elevator pits.

3.5.2. All sprinkler risers and returns shall be located outside of the machine room, control room and hoistway.

3.5.3. Sprinklers are not required at the top of noncombustible or fire-resistance-rated hoistways of elevators whose car enclosure materials meet the requirements of ASME A17.1, Safety Code for Elevators and Escalators.

3.5.4. Branch lines in machine rooms or control rooms shall supply sprinklers in these spaces only.

3.5.5 Sidewall spray sprinklers shall be installed at the bottom of each elevator hoistway that contains combustible hydraulic fluids. The sprinkler shall be located not more than 2 feet (0.61 m) above the floor of the pit.

3.5.6 Automatic sprinklers shall not be located on the car entrance side of pits or interfere with pit access.

3.5.7 A drain valve and plug shall be provided at the lowest point of the automatic sprinkler piping in the pit and shall be installed to avoid mechanical damage.

3.5.8 Sprinkler piping shall:
- enter the shaft at the floor level of the bottom landing,
- be wall mounted,
- fit tight against the wall, and
- have proper clearance to the car and counterweights.

In walk-in pits, sprinkler piping may enter the pit in an approved manner other than the floor level of the car's lowest landing.

DPD Director's Rule X-2014
SFD Administrative Rule (Continued)

4. REQUIREMENTS FOR UN-SPRINKLERED MACHINE ROOMS AND CONTROL ROOMS. Sprinklered buildings with un-sprinklered machine rooms or control rooms are required to comply with Section 4.

Automatic fire sprinklers are not required in elevator machine rooms, control rooms, or hoistways of traction elevators where all of the following conditions are met:

4.1 The machine room, control room, or hoistway is dedicated to elevator equipment only.
4.2 The machine room, control room, or hoistway is protected by smoke detectors, or other automatic fire detection installed in accordance with NFPA 72.
4.3 The machine room, control room, or hoistway is separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire resistance rating of not less than that specified by the Seattle Building Code.
4.4 No materials unrelated to elevator equipment are permitted to be stored in the machine room, control room, or hoistway.
4.5 The elevator machinery is not of the hydraulic type that uses combustible hydraulic fluids.

View of label identifying asbestos pipe insulation. CDG photo, May 24, 2016.

View of labels identifying asbestos pipe insulation. CDG photo, March 18, 2016.

HAZARDOUS MATERIALS ABATEMENT:

The first widespread use of asbestos in construction materials started in 1858, when the H.W. Johns Manufacturing Company in New York began using asbestos in a new, fireproof composite roofing material. The founder of the company, Henry Ward Johns, died forty years later from a lung disease believed to be asbestosis. The H.W. Johns Company merged with the Manville Covering Company in 1901, creating the largest manufacturing company in the United States to use asbestos. Considered a miracle material, the naturally-occurring mineral was used extensively in virtually every type of construction material, including exterior sheathing materials, roofing products, insulation for boilers, pipes, wiring, and walls, and fire-retardant coatings. Asbestos was also used in asphalts, plaster, caulking, glazing putty, and mastic adhesives.

Even though the dangers of asbestos exposure were known to medicine as early as the late-1890s, construction materials containing asbestos were not banned completely in the United States until the late-1970s. The King County Courthouse was originally constructed in 1914-1916, expanded in 1929-1931, and extensively remodeled in the 1960s. Therefore, even though a substantial amount of asbestos-containing hazardous materials have already been removed from the building, asbestos-containing materials are likely still present in the building. Asbestos is typically found in pipe insulation and vinyl tile mastics, though there may be other locations in the building where asbestos-containing materials are still extant.

In 1977, lead paint was banned in the United States for use in residential and public buildings. Due to the age of the King County Courthouse, lead-based paints are present in the building.

Existing hazardous materials must be abated before construction takes place on the exterior or interior of the building. The hazardous material abatement procedures and disposal methods shall be in accordance with all applicable local, state, and Federal regulations. The King County Facilities Management Division conducts hazardous material abatement as needed on a project to project basis, and maintains a dedicated team of employees trained and properly equipped to abate hazardous materials.

The cost estimates prepared for this pre-design report include estimates for the comprehensive abatement of hazardous materials that would take place prior to the start of demolition and construction activities.

ENERGY REVIEW

The King County Facilities Management Division (KCFMD) Operations Unit prepared a report on the energy efficiency of the King County Courthouse on March 30, 2015. This report was used as the basis for the information presented in this chapter. Their report has been supplemented with recent utility consumption and cost data provided by KCFMD. Additional information on potential system upgrade projects to reduce water usage has also been included from the domestic water supply replacement project schematic design report (FSi Consulting Engineers, March 18, 2015).

Needs/Problems

The King County Courthouse is one of the County's largest and least energy-efficient facilities. This combination of factors makes the building expensive to operate. 2014 total resource costs, including electricity, natural gas, water, and sewer, were approximately $1,200,000. As of June 2016, the total utility costs for the past year were $963,532.

Although the total cost of the proposed comprehensive effort to upgrade the building systems is too great to be considered cost effective in terms of potential resource savings, there are potential opportunities to collaborate with other entities and greatly increase the efficiency of the facility through this larger revitalization effort. Here are the primary potential partners that have been identified by KCFMD so far:

- Federal Government, such as the U.S. Department of Energy and potentially other agencies.
- Utility service providers, such as Seattle City Light (SCL), Puget Sound Energy (PSE), and Seattle Public Utilities (SPU) can provide substantial incentives for energy efficiency upgrades as well as potential incentives for projects to increase water efficiency.
- Possible private sector partners.

Goals/Objectives

There are several primary goals for collaboration, including:

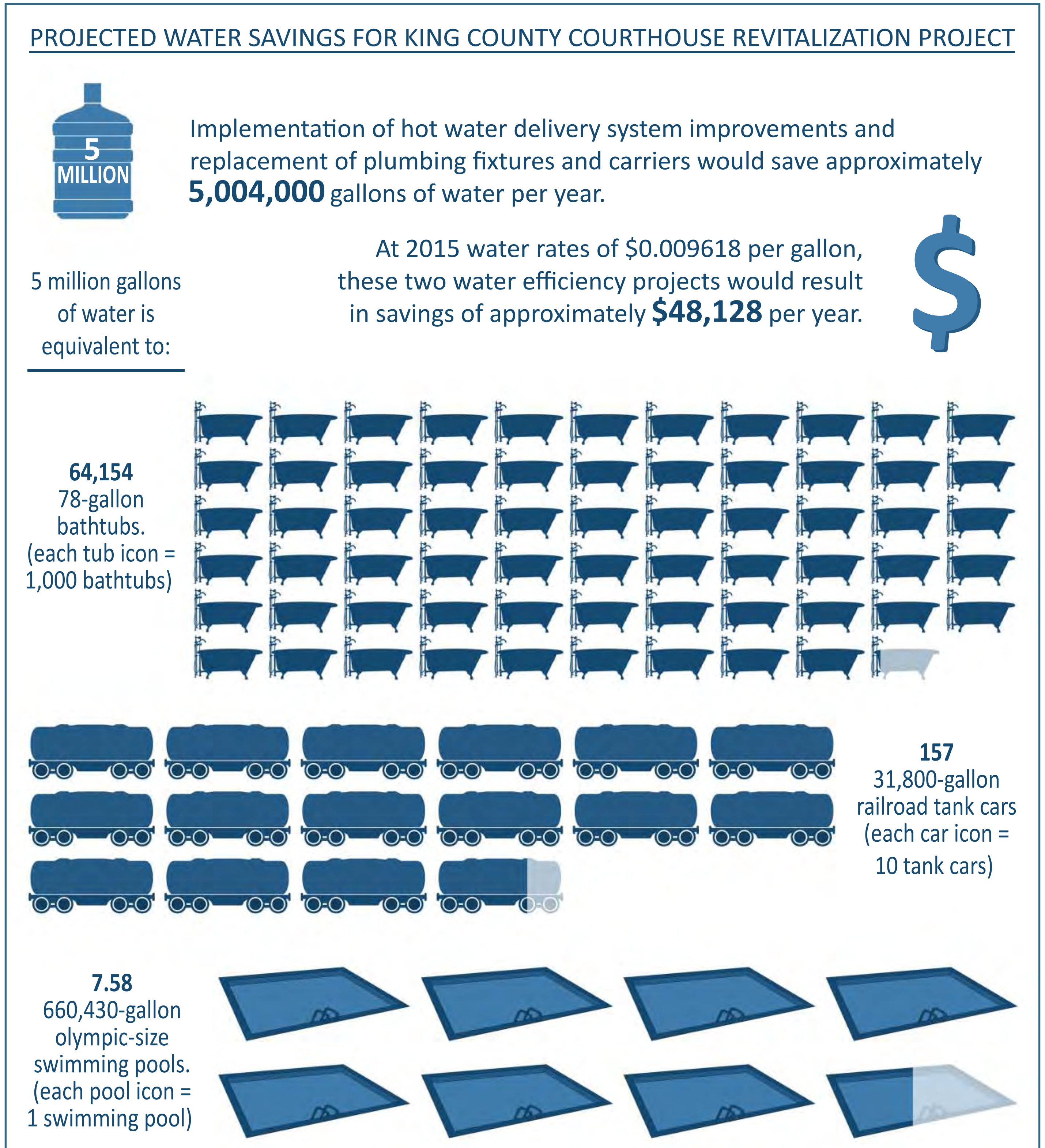
- Technical assistance during project scoping and design phase
- Project financing assistance, including:
  - Grants and incentives
  - Low cost financing
  - Performance contracting
- Proactive media engagement to highlight the community and environmental benefits of the renovation project.

Resources

- U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy
  - King County submitted a letter of request to the DOE for technical assistance on February 5, 2015 and received a response that support is available.
  - KCFMD is waiting for DOE to set-up meeting to identify existing tools, assess resources, and determine next steps. As of the date of this report, this meeting has not yet occurred.

- Local utility service provider conservation incentives:
  - Seattle City Light (SCL) provides electricity to the facility. Electricity is used for lighting, HVAC, and plug loads, and is also a lesser heating fuel. Electricity expenditures totaled approximately $705,000 in 2014. As of June 2016, the electricity cost for the past year was $670,126.
    - Seattle City Light will provide conservation incentives for electric efficiency opportunities. Additional information on SCL incentives is provided later in this chapter.
  - Puget Sound Energy (PSE) provides natural gas to the King County Courthouse. Natural gas is the primary heating fuel at the facility. Natural gas expenditures at the facility totaled approximately $204,000 in 2014. As of June 2016, the natural gas cost for the past year was $125,424.
    - PSE will provide conservation incentives for natural gas efficiency opportunities. Additional information on PSE incentives is provided later in this chapter.
  - Seattle Public Utilities (SPU) provides water and sewer service to the King County Courthouse. As of June 2016, the water cost for the past year was $64,278, and the sewer cost for the past year was $103,703. The domestic water supply replacement project schematic design report (FSi Consulting Engineers, March 18, 2015) included recommended improvements to the hot water delivery system that would save an estimated 104,000 gallons of water that is currently wasted by users waiting for hot water. Their project report also included the estimated water savings that could be achieved by replacing the old plumbing fixtures throughout the building with new low-flow fixtures and replacing the fixture carriers. Replacing the plumbing fixtures and carriers would result in approximately 4.9 million gallons of yearly water savings. At 2015 water rates of $0.009618 per gallon, these two water efficiency projects would result in an annual savings of approximately $48,128 per year. Additional information on SPU incentives for water use efficiency upgrades is provided later in this chapter.

Water Savings Diagram



Technical Analysis

Creating a resource efficiency budget for the King County Courthouse revitalization project:
An initial assessment of savings concludes the following:

- Using the U.S. Environmental Protection Agency's (EPA) Portfolio Manager and Target Finder applications, in order to achieve an EnergyStar score of 90 for the facility type in our region, King County would need to obtain 37% annual energy savings.
    - For estimating purposes, KCFMD estimated attaining 30% savings on annual water and sewer costs.
    - Using these parameters and the 2014 resource costs for the King County Courthouse, the savings would be worth approximately $408,000 annually.
    - Using a 5% utility inflation rate and 7.15% nominal discount rate, KCFMD estimated the annual savings would be worth approximately $8,650,000 over a 30 year measure life.

Conclusion

- The value of achieving an EnergyStar score of 90 through our Courthouse remodel, and a corresponding 37% reduction in energy use and 30% reduction in water use, is approximately $8,650,000.
    - Based on this savings estimate, Seattle City Light could provide an estimated $675,000 conservation grant incentive for electric savings, using 2015 incentive rates.
    - Based on this savings estimate, Puget Sound Energy could provide an estimated $500,000 conservation grant incentive for natural gas savings, using 2015 incentive rates.
    - Based on this savings estimate, Seattle Public Utilities could likely provide an incentive for water conservation, but their funding is much more limited. KCFMD Operations Unit did not include estimates for these incentives in their March 30, 2015 report.

- Alternate Analysis: If the County is extremely aggressive about conservation and is able to achieve a 70% energy and water/sewer savings, the corresponding annual savings would be approximately $840,000. The present value of this reduction using the above metrics would be approximately $17,750,000.
    - This would place the EUI (annual energy intensity measured in kBtu/SF) of the redesigned facility at only 27 kBtu/SF, which would give the facility and energy star score of 100 and make the facility the County's most efficient. The 2013 EUI of the King County Courthouse and other governmental buildings in Seattle is given in the table below for comparison purposes.
    - Obtaining this level of efficiency may be cost prohibitive and exceed the present value of the savings.

KCCH Energy Use and Cost Data - 2013

King County Courthouse (KCCH) Floor Area	537,150 SF	
2013 Energy Use Intensity (EUI)		
Site	EUI (kBTU/SF)	Note
King County Courthouse (KCCH)	115	Some 24/7 operation and significant maintenance and equipment problems
EPA/CBECS Benchmark	93	Based on 2003 commercial building stock and not adjusted for climate zone. National median usage data, so this is a high benchmark.
Jackson Federal Building	47	1970s construction with recent retrofits.
Seattle Courthouse	49	New construction. Some stack effect issues. Ongoing commissioning efforts
U.S. Court of Appeals - Nakamura Building	37	Partially unoccupied so not a good comparison. FYI only

KCCH Cost Data and Savings Estimates	
2013 Total Energy Cost	$ 987,175
2013 Total Cost per Square Foot	$ 1.84
% Deviation from benchmark	19%
% Deviation from similar Seattle facility	57%
Estimated $ Savings - Reduce to Benchmark	$ 188,851
Estimated $ Savings - Reduce to Similar Regional Facility	$ 566,553

LOCAL UTILITY ECONOMIC INCENTIVES SUMMARY

Using the Environmental Protection Agency's Portfolio Manager and Target Finder applications could help the County achieve an Energy Star score of 90 for this facility. Achieving this score would help in obtaining utility grants from the utility providers below.

Seattle City Light
Conservation Services/Incentives for Medium to Large Commercial and Industrial Customers
Seattle City Light (SCL) offers a variety of energy efficiency financial incentives and technical assistance that could potentially be utilized for the King County Courthouse revitalization project. SCL has project funding calculator tools for lighting and HVAC projects on their website. The SCL website also has sample standard lighting specifications. Based on 2015 incentive rates, and an Energy Star score of 90, SCL could provide a $675,000 conservation grant for electric savings. Additional information is online: http://www.seattle.gov/light/Conserve/business/cv4_ess.asp.

Puget Sound Energy
Natural gas-efficiency incentives for municipalities and government buildings
Puget Sound Energy (PSE) offers several financial incentive programs for energy efficiency upgrades to local government buildings. These incentives include building tune-up programs, resource conservation management, custom retrofit grants, and incentives for energy-efficient new construction projects. Using 2015 incentive rates, and an Energy Star score of 90, PSE could provide a $500,000 conservation grant for natural gas savings. More information on PSE energy-efficiency programs can be found at: https://pse.com/savingsandenergycenter/ForCommunities/Pages/Energy-Efficiency-for-Communities.aspx.

Seattle Public Utilities
Water Conservation Incentives
Funding is more limited than the programs offered by Seattle City Light and Puget Sound Energy, but it is possible that Seattle Public Utilities could provide an incentive for upgrades that conserve water. For more information on Seattle Public Utility rebate programs for commercial, industrial, and institutional customers can be found at: http://savingwater.org/Rebates/index.htm.

Seattle City Light
Conserving Energy for a Sustainable Future

Seattle City Light **PAYS UP TO 70%** for virtually any energy-saving project.

INCENTIVES FOR MEDIUM AND LARGE COMMERCIAL CUSTOMERS

Rebates Available (206) 684-3800 Call Today

If it saves electricity, it's likely we can help pay for it.

Seattle City Light offers rebates to help customers save energy. Conserving electricity is the most cost-effective way to meet our future energy needs.

Rebates for business customers

Seattle City Light can help pay for virtually any retrofit or new equipment purchase that will consistently save electricity. We offer two types of rebates to medium and large commercial customers:

- Custom rebates: Pay up to 70% of project cost based on projected kilowatt-hour (kWh) savings in the first year following installation.
- Simple rebates: Offered for the purchase of qualified energy-saving equipment.

Free facility energy surveys and technical advice

Business customers are eligible for free site assessments to help identify electricity-saving measures and cut operating costs. We've helped hundreds of companies increase efficiency and save money. We'd like to improve your bottom line, too!

seattle.gov/saveenergy ENERGY SAVINGS FOR BUSINESS CUSTOMERS

Call (206) 684-3800 today to learn how much money you can save.

Cut your electric bills and reduce operating costs with help from Seattle City Light.

Simple Rebates are available to business customers for common measures — and we can work with you on custom rebates that provide kWh savings.

Even after energy savings have paid back the cost of the upgrade, you'll continue to enjoy a reduction in energy and maintenance costs over the life of the technology. Adopting multiple conservation approaches has helped many customers significantly cut their electric bills.

CUSTOM REBATES

Custom rebates are based on your specific projected energy savings, paying up to 70% of project costs. **To qualify for rebates, you must obtain project approval from Seattle City Light prior to purchase or installation of equipment or materials.**

How to apply for Seattle City Light rebates

1. Call (206) 684-3800.
2. Work with a Seattle City Light energy analyst to evaluate your project and estimate your rebate and energy savings.
3. Sign a contract with Seattle City Light.
4. Proceed with installation and contact Seattle City Light for final verification when work is complete.

Lighting upgrades

Indoor and outdoor commercial lighting

- Replace T12 linear fluorescent lighting with T8, T5 or light-emitting diode (LED) lighting.
- Replace incandescent lighting with LEDs or other efficient lighting.
- Replace metal halide or sodium lamps and fixtures with efficient fluorescent, induction or LED options.
- Replace incandescent or fluorescent exit signs with LED exit signs.
- Upgrade to energy-efficient exterior and advertising signage lighting.

Lighting controls

- Add wall- or ceiling-mounted occupancy sensors to turn off lights when spaces are unoccupied.
- Add occupancy sensors for bi-level lighting in infrequently occupied areas, such as stairways, garages, warehouses and restrooms.
- Add daylighting controls that adjust interior lighting according to need.
- Install a central lighting control system.

Building envelope improvements

- Add insulation to reduce heat loss; add weather stripping to reduce air leaks.
- Install high-efficiency windows.
- Upgrade existing windows with reflective films to reduce air conditioning loads.
- Add exterior shading to windows.

Data center and IT efficiency improvements

- Optimize airflow to reduce cooling energy use in your data center.

- Upgrade to high efficiency Uninterruptible Power Supply (UPS) systems.
- Add power management software to networked computers.
- Switch from single-user to multi-user central processing units (CPUs).

Heating, ventilation and air conditioning (HVAC) improvements

- Update HVAC systems with occupancy sensors to reduce ventilation and adjust room temperatures when rooms are not occupied.
- Install a central HVAC control system.
- Replace single-zone rooftop air conditioners and strip heat with rooftop heat pumps.
- Replace electric baseboard or wall heaters with ductless heat pumps.
- Add variable-speed drives and controls to fans and pumps.
- Upgrade to energy-efficient chillers.

Grocery and refrigeration upgrades

- Replace air-cooled condensers with evaporative-cooled models.
- Add night covers and strip curtains to walk-in refrigeration units.
- Add a heat-recovery system to capture and use waste heat from refrigeration.
- Adopt anti-sweat heater controls.
- Replace fluorescent lighting in refrigerated and freezer cases with LED case lighting.

Air compressors

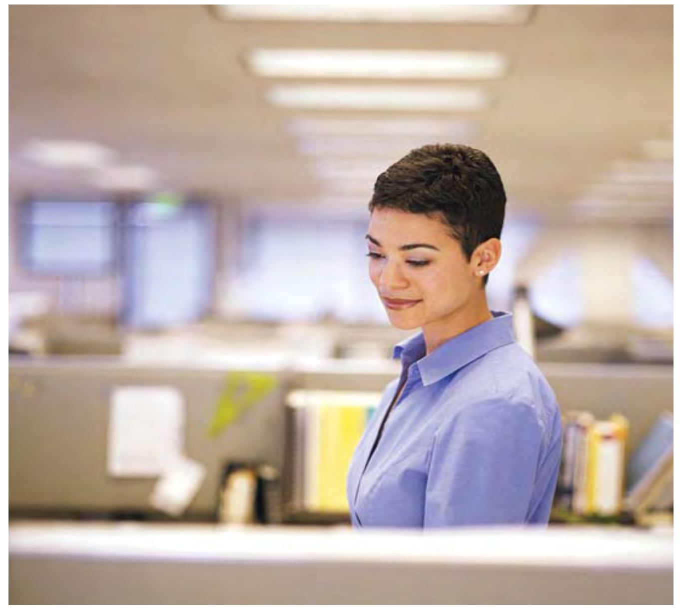
- Replace standard rotary-screw air compressors with variable-speed drive (VSD) compressors.
- Convert compressor loads to direct drive.
- Adopt on-demand baghouse controls.
- Adopt high-efficiency dryers.

Fans, pumps and motors

- Add variable-speed drives to fans and pumps.
- Adopt NEMA premium-efficiency motors.

Industrial heat control technologies

- Adopt cooling tower controls.
- Adopt heat control systems.
- Develop waste-heat recovery systems.



Call us at (206) 684-3800 to consult with an energy analyst about rebates for your business.

SIMPLE REBATES

Simple rebates offer flat per-unit funding to offset the purchase cost of qualified energy-saving equipment.

Commercial kitchen equipment

Rebates are available from participating vendors at point-of-purchase for the following equipment:

- Convection ovens and combi-ovens.
- Ice makers.

New construction

For new commercial construction, simple rebates are available for installing:

- Bi-level stairway lighting.
- Lighting controlled by occupancy sensors where not required by code.

Call us at (206) 684-3800 to consult with an energy analyst about rebates for your business.

Seattle City Light: your energy conservation partner

Help from experienced energy analysts

Seattle City Light energy analysts are available to conduct free energy surveys and offer technical advice. Your analyst will conduct a thorough inspection of your facility to point out areas where energy inefficiencies exist, calculate your potential savings and identify projects that qualify for rebates.

Rebates available for all business sizes

Medium and large businesses

Seattle City Light business, institutional and industrial customers on the Medium General, Large General or High-Demand Rate Schedules are eligible for rebates for virtually any project that can be demonstrated to consistently save energy.

Small businesses

Small business customers — those on Rate Schedules starting with "ES" (for example, ESMC or ESMS) that are not part of a chain, campus or institution — are eligible for rebates for selected upgrade projects.

To confirm your rate schedule and learn about rebates available to your business, call (206) 684-3800.

Why we pay rebates for energy conservation

Seattle City Light offers rebates to help customers save energy because it is the most cost-effective way to meet our future electricity needs. When customers reduce their electricity use, it helps us conserve our hydro resources and avoid the expense of building new power plants or buying electricity on the open market.

Are you looking to go carbon neutral or be LEED certified?

Seattle City Light offers Renewable Energy Credits (RECs) through our Green Up programming that allows businesses to offset their carbon emissions. Green Up RECs can also be used to meet sustainability and green building (LEED™) goals. www.seattle.gov/greenup

Our mission

Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost, and reliable power.

Reduce your carbon footprint

Seattle City Light is a national leader in protecting the environment and has been carbon neutral since 2005. Seattle residents and businesses are joining in efforts to help reduce the negative impacts of climate change and Seattle City Light can help.

You must obtain project approval from Seattle City Light prior to purchase or installation of equipment or materials in order to qualify for rebates. This program may change without notice and is subject to the availability of funds.

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SLD CIO 061814

ENERGY STAR PARTNER

Seattle City Light 700 5th Avenue, Suite 3200 MS901-480 P.O. Box 34023 Seattle, WA 98124-4023 (206) 684-3800

Seattle City Light

SEATTLE CITY LIGHT 2015 ENERGY CONSERVATION INCENTIVES

MEDIUM AND LARGE COMMERCIAL AND MULTIFAMILY BUILDINGS

CONSERVATION ACTION	INCENTIVE (¢/kWh)	MEASURE NOTES
LIGHTING		
Card Key Hotel Room Control	23¢*	
Central Lighting Controls	23¢	
Daylighting Controls	23¢	
Occupancy Sensors (Wall/Ceiling Mount)	$30/$90	
Fixture-mounted Occupancy Sensor Retrofits	23¢	
Fixture Removals	11¢	
Fluorescent Lighting, Hard Wired	23¢	
High Intensity Discharge (HID), Hard Wired	23¢	
Ceramic Metal Halide (CMH) Lamp-Only	7¢	
LED Hard-Wired Upgrades	23¢*	Exception: Hardwired exit signs receive 17¢/kWh
LED Lamp-Only Upgrades	17¢	
T8 or T5 Lamp Removals	2¢	
T8 or T5 Lo-watt Lamps	7¢	
Definitions: A "Lamp-Only" upgrade can be reversed by replacing the lamps. A "Hard-Wired" upgrade, whether a new fixture or a kit or a ballast change, cannot be reversed by simply replacing the lamps. **Asterisked measures receive 10% more funding under a Demonstration Technology Bonus. That bonus expires 12/31/2015 for the LED Hardwired upgrades.* *Lighting projects that replace all inefficient lighting in a building are eligible for 15% more funding under The Works! program, or 30% more funding if they also beat the 2012 Seattle Commercial Energy Code by 10% on the interior LPA. The Works! is not available for MF Common Area Lighting.*		
HVAC (HEATING, VENTILATION AND AIR CONDITIONING)		
HVAC Controls	23¢	
Chillers—Water Cooled	27¢/34¢	27¢ for ALL except 34¢ for centrifugal (not exposed)
Chillers—Air Cooled	27¢	
Cooling Towers	27¢	
Air-to-air heat pumps	23¢	
Hydronic heat pumps	27¢	
Packaged Terminal Air Conditioners (PTAC)	23¢	
Packaged Terminal Heat Pumps (PTHP)	23¢	
Variable Refrigerant Flow Heat Pumps	24¢	
Economizers	23¢	Includes water-side or air-side economizers
Air Conditioners	23¢	
DATA CENTER AND IT EQUIPMENT		
Efficient Uninterruptible Power Supply (UPS) Systems	12¢/23¢	23¢ for new UPS. 12¢ for firmware upgrade offering a high efficiency mode.
Network PC Power Management	$3/$8	$3/Mobile Workstation; $8/PC
Server Virtualization	$150	$150 for each server removed; Max. 100
Thin Client Conversion	$25	Per PC converted to thin client
Custom IT Equipment/Software—Plug loads	7¢	Energy savings from custom projects where software or hardware deployments save energy in IT equipment
Air Flow Management	6¢-20¢	Dependent on technology used. Includes separation of hot and cold aisles using strip curtains, blanking panels, chimneys, and/or cabinets
CRAC unit fan variable speed drives and controls	20¢-23¢	
Economizers and direct evaporative cooling	23¢	
Incentive amount = cents-per-kWh times estimated annual kWh savings, or 70% of cost, whichever is less. Payback no less than ½ year. Contact the Seattle City Light Energy Advisors at 206 684-3800 for more information.		

CONSERVATION ACTION	INCENTIVE*	MEASURE NOTES
GROCERY STORES		
There is a wide range of measures covered under this program. The following is a sample.		
Case Lighting	$5–$34	Per linear foot for delamping, or T8 to LED
Case Lighting Motion Sensors	$2	Per linear foot
Ductless Heat Pumps	$250	Per project
Efficient Unitary Conditioning Equipment	$250-$1,500	Per unit
Electronically Commutated Motor (ECM)	$55–$140	Per motor, replacing shaded pole
Gaskets	$30–$70	Per linear foot, low to medium temp reach-in and walk-in
Refrigerated Case Upgrades	$30–$450	
Refrigeration Controls	varies	Anti-sweat, evaporator fan, floating head
Strip Curtains for Walk-in Boxes	$9	Per sq ft of doorway
VFD for Condensers	$225	Per hp
This program is administered by CLEAResult under The BPA Energy Smart Grocer Program, with Seattle City Light Funding. Call 1-800-230-9420 to participate. See the EnergySmart Grocer website for details energysmartonline.org/rebates. "BPA Forms" are used in the SCL service territory.		
COMMERCIAL KITCHEN REBATES		
Dealer Handling Rebate	$30	If rebate amount is subtracted by dealer from price, dealer receives rebate plus $30
Electric Convention Ovens	$300	
Electric Combination Ovens	$1,000	
Ice Machines—100-500 lbs of ice per day	$100	
Ice Machines—over 500 lbs of ice per day	$300	
See the Seattle City Light Commercial Kitchen Rebate website for instructions.		
MISCELLANEOUS		
Air Compressors	27¢	
Efficient Transformers	27¢	
Process Loads—For Industrial Customers	27¢	Assumes 15+ year equipment life
Variable Frequency Drives (VFD/VSD)	27¢	
MULTIFAMILY WEATHERIZATION		
Replace single pane window with double pane window	$5 per square foot	
Replace aluminum frame, double pane window with double pane window	$3 per square foot	
Upgrade existing wall, attic, or floor insulation.	->	Funding = 50% of the cost, up to $1 per square foot.
To receive funding for the above weatherization measures, the spaces must be electrically heated and the customer must replace all windows serving the living units unless some windows already have U-values of 0.30 or less. The facility must have at least five living units to be eligible. *For multi-family New Construction, please contact an Energy Advisor at 206-684-3800.*		

Incentives cover up to 100% of the incremental costs on new construction projects. For existing buildings, combined rebates from all utilities may not exceed 70% of project costs. Incentives do not apply to projects with a pay-back period of six months or less. Incentives are subject to availability of funds. Funding levels are finalized only when a contract is signed between SCL and the customer, or (Multifamily Weatherization) a coupon is offered to the customer by SCL. Contact the Seattle City Light Energy Advisors, (206) 684-3800 for more information.

CHAPTER 3

Estimated Costs for Possible Projects

Renovate Existing

Renovation Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Location		GFAA SF	Cost/SF	Total Cost
A KING COUNTY COURTHOUSE		**700,888.0**	**127.09**	**89,074,338**
ESTIMATED NET COST		**700,888**	**$127.09**	**$89,074,338**
MARGINS & ADJUSTMENTS				
Phased construction premium	15.0 %			$13,361,150
Bonding	1.0 %			$1,024,355
Estimating Contingency	25.0 %			$25,864,961
MACC Contingency	5.0 %			$6,466,241
Specified General Conditions	15.0 %			$20,368,657
GCCM Fee	3.0 %			$4,684,791
Negotiated Support Services	4.0 %			$6,433,780
Preconstruction Services	2.0 %			$3,345,566
ESTIMATED TOTAL COST		**700,888**	**$243.44**	**$170,623,839**

Renovate Existing

Renovation Items

A KING COUNTY COURTHOUSE

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
B1010	**Floor Construction**				
99	Install galvanized steel work platforms in plumbing chases	SF	3,584.0	150.00	537,600
105	Structural steel upgrade at perimeter edge & columns for new MEP shaft openings	LF	2,592.0	105.00	272,160
117	Infill existing MEP chase/shaft opening	SF	2,592.0	55.00	142,560
118	Firestopping, Xray and coring for new MEP	SF	700,888.0	2.75	1,927,442
	Floor Construction			***$4.11/SF***	***$2,879,762***
B2010	**Exterior Walls**				
53	Retain and protect uncovered historic windows	EA	602.0	50.00	30,100
55	Fiber mesh strongbacking to existing hollow clay tile component of existing exterior walls	SF	157,160.0	65.00	10,215,400
61	Seismically secure existing masonry veneer to existing concrete superstructure	SF	127,321.0	12.00	1,527,852
62	Repair damaged terracotta sills	LF	2,232.0	150.00	334,800
63	Repair damaged terracotta lintels & cornice	LF	6,270.0	150.00	940,500
64	Repair damaged terracotta belt courses	SF	27,407.0	75.00	2,055,525
68	Repoint masonry mortar joints	SF	127,321.0	5.00	636,605
69	Clean existing masonry, granite and terra cotta	SF	131,359.0	2.50	328,398
100	Install new spray foam insulation at exterior walls	SF	161,343.0	7.50	1,210,073
101	Air Barrier Testing - envelope	SF	261,664.0	2.31	604,444
107	New drywall to interior face of exterior wall	SF	161,344.0	4.85	782,518
110	Metal Stud Furring at exterior walls due to fiber mesh strong backing	SF	161,343.0	4.00	645,372
	Exterior Walls			***$27.55/SF***	***$19,311,587***
B2020	**Exterior Windows**				
65	Replacement of existing historical wood windows	SF	13,219.0	350.00	4,626,650
67	Repair existing historical metal windows	SF	4,480.0	750.00	3,360,000
	Exterior Windows			***$11.40/SF***	***$7,986,650***
B3020	**Roof Openings**				
116	Roof repair for new MEP penetrations	SF	54,755.0	1.00	54,755
	Roof Openings			***$0.08/SF***	***$54,755***
C1010	**Partitions**				
75	Fiber mesh reinforcing to existing hollow clay tile partitions	SF	51,233.0	65.00	3,330,145
83	Framing & drywall at new electrical distribution rooms	SF	3,603.0	45.00	162,135
97	Install 2hr fire rated shaft liner at east and west MEP vertical chases	SF	24,480.0	12.50	306,000
114	GWB framing surround structural steel at new MEP chase openings	SF	10,368.0	20.00	207,360
	Partitions			***$5.72/SF***	***$4,005,640***

Renovate Existing

Renovation Items

A KING COUNTY COURTHOUSE (continued)

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
C1020	**Interior Doors**				
84	New electrical room rated access doors, w/ louver & hardware	EA	24.0	1,600.00	38,400
98	Remove and Install new 1-1/2 hr rated access doors at east and west MEP vertical chases	EA	32.0	325.00	10,400
	Interior Doors			***$0.07/SF***	***$48,800***
C1030	**Fittings**				
58	Replace millwork, fittings and fixtures removed to facilitate strongbacking installation	LF	21,443.0	50.00	1,072,150
74	New signage and wayfinding	SF	700,888.0	0.35	245,311
	Fittings			***$1.88/SF***	***$1,317,461***
C2010	**Stair Construction**				
119	New stair handrailing	LF	6,880.0	105.00	722,400
	Stair Construction			***$1.03/SF***	***$722,400***
C3010	**Wall Finishes**				
78	Install new drywall at wall face after strongbacking installation	SF	212,575.0	10.55	2,242,666
86	Retrofit existing historic marble wainscoting for new electrical door access	SF	248.0	250.00	62,000
88	Interior painting new electrical rooms	SF	3,603.0	9.50	34,229
115	Interior Painting - ceiling and walls	SF	700,888.0	5.00	3,504,440
	Wall Finishes			***$8.34/SF***	***$5,843,335***
C3020	**Floor Finishes**				
87	Prep and seal Concrete floor in new electrical rooms	SF	3,603.0	2.50	9,008
123	Install new wall flooring after strongbacking installation	SF	68,264.0	4.00	273,056
	Floor Finishes			***$0.40/SF***	***$282,064***
C3030	**Ceiling Finishes**				
109	Install ceiling finishes for new MEP chases/shafts	SF	11,589.0	9.00	104,301
111	Install drywall ceiling finishes due to exterior wall fiber mesh strong backing	SF	56,200.0	12.00	674,400
122	Install new ceiling after strongbacking installation	SF	68,264.0	5.00	341,320
	Ceiling Finishes			***$1.60/SF***	***$1,120,021***
D2010	**Plumbing Fixtures**				
27	Allowance to remove and replace all plumbing fixtures and trim--Add fixtures to meet code	SF	700,888.0	2.25	1,576,998
103	Remodel existing restrooms - bring to up to code and ADA requirements	SF	13,840.0	45.00	622,800
	Plumbing Fixtures			***$3.14/SF***	***$2,199,798***
D2020	**Domestic Water Distribution**				
22	Allowance to remove and replace Domestic Hot and Cold Water distribution pipework and insulation	SF	700,888.0	3.25	2,277,886

Renovate Existing

Renovation Items

A KING COUNTY COURTHOUSE (continued)

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
32	Remove and replace domestic water booster pumps and associated piping	EA	4.0	6,500.00	26,000
42	Allowance to replace all of the buildings soil waste and vent (SWV) system with [N]	SF	700,888.0	5.02	3,518,458
45	Replace domestic water booster package with [N]	EA	2.0	36,700.00	73,400
46	Install [N] Domestic water hot water heater--assumes 50 Gallon	EA	24.0	7,200.00	172,800
	Domestic Water Distribution			***$8.66/SF***	***$6,068,544***
D2030	**Sanitary Waste**				
44	Replace [E] sewage ejectors	EA	2.0	35,975.00	71,950
	Sanitary Waste			***$0.10/SF***	***$71,950***
D2090	**Other Plumbing Systems**				
33	Allowance to hydrostatic pressure test SWV pipework and RWL for integrity	SF	700,888.0	0.18	126,160
	Other Plumbing Systems			***$0.18/SF***	***$126,160***
D3020	**Heat Generating Systems**				
18	Add hydronic system isolation valves at each boiler supply and return	EA	4.0	2,711.00	10,844
	Heat Generating Systems			***$0.02/SF***	***$10,844***
D3030	**Cooling Generating Systems**				
2	Demo, remove and replace [E] Chilled Water Pumps in Basement Central Plants	EA	6.0	60,050.00	360,300
3	Demo, remove and replace [E] Condenser Water and Pony chiller pumps in Basement Central Plants	EA	2.0	64,500.00	129,000
4	Demo, remove and replace [E] Cooling Towers at rooftop zones East and West	EA	2.0	451,000.00	902,000
5	Install drip pan and condensate drain piping at each existing fan coil unit--route to risers from Basement--Cost is per each unit including pipework component	EA	860.0	1,535.00	1,320,100
7	Allowance to remove and replace [E] 750 Ton chiller condenser variable speed drive	EA	2.0	65,000.00	130,000
8	Allowance to remove and replace [E] 350 Ton pony chiller condenser variable speed drive	EA	1.0	35,000.00	35,000
9	Allowance to remove and replace [E] insulation where damaged or missing	LF	3,000.0	32.00	96,000
	Cooling Generating Systems			***$4.24/SF***	***$2,972,400***
D3040	**Distribution Systems**				
1	Demo, remove and replace [E] Air Handler in Level 12 fan room	EA	4.0	920,000.00	3,680,000
6	Clean, replace sealants and retest all (E) ductwork--Quantity is allowance--some ductwork may be inaccessible	Lb	420,533.0	2.25	946,199
10	Demo, remove and replace [E] Air Handler in Basement	cfm	50,000.0	6.85	342,500
11	Install airflow measuring station at each floor (One per wing)	EA	24.0	2,500.00	60,000

Renovate Existing

Renovation Items

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

	Description	Unit	Qty	Rate	Total
12	Install control damper for pressurization control station at each floor (One per wing)	EA	24.0	21,500.00	516,000
13	Install [N] fire smoke damper in main distribution and return at each floor (One per wing)	EA	48.0	7,860.00	377,280
15	Allowance to provide temporary HVAC service to enable phasing of the project	LS	1.0	262,800.00	262,800
19	Clean, test and rebalance outside air louvers	EA	2.0	1,800.00	3,600
20	Allowance for dual duct/dual fan modifications at AHU's	EA	4.0	44,165.50	176,662
24	Allowance to remove unused [E] ductwork and insulate {E} ductwork in shafts	LS	1.0	194,520.00	194,520
31	Replace OA duct at FCU with new dampered duct and blank off induction unit	EA	860.0	2,065.00	1,775,900
	Distribution Systems			***$11.89/SF***	***$8,335,461***
D3050	**Terminal & Package Units**				
16	Split system air conditioning units for MDF, IDF and elevator machine rooms	EA	27.0	8,500.00	229,500
	Terminal & Package Units			***$0.33/SF***	***$229,500***
D3060	**Controls & Instrumentations**				
17	Update building controls programming and components to full DDC utilization--Implement reprogramming and re sequencing to achieve an integrated building wide sequence of operations--Includes replacement of a limited quantity of {E} devices with DDC BACnet compatible components	SF	700,888.0	0.85	595,755
89	Update building controls programming and components to full DDC utilization--Implement reprogramming and re sequencing to achieve an integrated building wide sequence of operations--Includes replacement of a limited quantity of {E} devices with DDC BACnet compatible components	SF	3,603.0	4.05	14,592
	Controls & Instrumentations			***$0.87/SF***	***$610,347***
D3070	**Systems Testing & Balancing**				
14	Test and balance HVAC main ducts to accommodate new work and improved air pressurization	SF	700,888.0	0.40	280,355
	Systems Testing & Balancing			***$0.40/SF***	***$280,355***
D3090	**Other HVAC Systems & Equipment**				
21	Perform commissioning of new equipment	Item			54,000
23	Allowance to repair west wing exhaust ductwork	Item			145,000
25	Allowance to replace (E) 12th floor rooftop smoke hatches	EA	15.0	25,120.00	376,800
26	Allowance to replace (E) 4th floor rooftop smoke hatches	EA	40.0	4,700.00	188,000
28	Perform retro-commissioning of all [E] equipment and provide an integrated report	Hr	800.0	225.00	180,000
29	Replace actuators on OA and relief louvers--Quantity is allowance	EA	64.0	672.00	43,008

Renovate Existing

Renovation Items

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

	Description	Unit	Qty	Rate	Total
91	New electrical room Fire Alarm	SF	3,603.0	15.00	54,045
129	Install HVAC diffusers/return grills wall/ceiling for strong backing installation	SF	280,839.0	4.00	1,123,356
	Other HVAC Systems & Equipment			***$3.09/SF***	***$2,164,209***
D4010	**Sprinklers**				
92	New electrical room HVAC exhaust and MUA	SF	3,603.0	83.00	299,049
	Sprinklers			***$0.43/SF***	***$299,049***
D4090	**Other Fire Protection Systems**				
130	Install fire sprinkles pendants wall/ceiling for strong backing installation	SF	280,839.0	2.50	702,098
	Other Fire Protection Systems			***$1.00/SF***	***$702,098***
D5010	**Electrical Service & Distribution**				
35	Allowance to replace [E] 208v panels and associated transformers--includes intervening feeders	EA	24.0	8,947.58	214,742
36	Allowance to replace [E] Bus ducts with new	LF	340.0	1,876.10	637,874
37	Allowance to relocate feeders and electrical equipment to [N] alternate electrical room	LS	24.0	27,500.00	660,000
38	Provide temporary electrical workarounds and service to enable the new electrical work	EA	24.0	25,000.00	600,000
39	Replace motor control center-assume between 100 and 200 HP	EA	8.0	14,500.00	116,000
40	Allowance to perform survey and relabel all electrical equipment	SF	700,888.0	0.05	35,044
41	Add electrical metering capability to each electrical room	EA	24.0	2,800.00	67,200
43	Provide [N] 500 KW and ATS	LS	1.0	199,100.00	199,100
	Electrical Service & Distribution			***$3.61/SF***	***$2,529,960***
D5020	**Lighting and Branch Wiring**				
34	Allowance to remove and replace fluorescent lighting with new LED lighting and provide occupancy control--Average cost by program	SF	700,888.0	8.65	6,062,681
90	New electrical room LED lighting and occupancy control	SF	3,603.0	36.00	129,708
102	New electrical LED lighting and occupancy control in MEP chases	EA	56.0	450.00	25,200
	Lighting and Branch Wiring			***$8.87/SF***	***$6,217,589***
D5030	**Communications & Security**				
47	Repair or replace firestopping to conform with ratings of materials at floor and wall penetrations in telecom closet	EA	56.0	630.00	35,280
48	Remove abandoned and unused telecom and security cabling--general allowance	SF	700,888.0	0.15	105,133
49	Reconfigure [E] telecom and security cabling to better manage space and efficiency--Per location	EA	56.0	7,200.00	403,200
	Communications & Security			***$0.78/SF***	***$543,613***

Renovate Existing

Renovation Items

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
D5090	**Other Electrical Systems**				
128	Install electrical receptacles and light fixtures wall/ceiling for strong backing installation	SF	280,839.0	2.50	702,098
	Other Electrical Systems			***$1.00/SF***	***$702,098***
E1010	**Commercial Equipment**				
120	Allowance Kitchen equipment	LS	1.0	150,000.00	150,000
	Commercial Equipment			***$0.21/SF***	***$150,000***
E1090	**Other Equipment**				
73	New bird control devices	LF	5,416.0	16.21	87,793
	Other Equipment			***$0.13/SF***	***$87,793***
E2010	**Fixed Furnishings**				
66	New automated shades to existing windows	SF	47,320.0	15.00	709,800
76	Install millwork, fittings and fixtures removed to facilitate strong backing installation	LF	17,066.0	50.00	853,300
	Fixed Furnishings			***$2.23/SF***	***$1,563,100***
F2010	**Building Elements Demolition**				
50	Remove existing aluminum windows	SF	34,105.0	25.00	852,625
51	Remove existing exterior louvers	EA	38.0	345.00	13,110
52	Remove existing curtain wall	SF	34,105.0	25.00	852,625
54	Remove damaged historic wood windows and infill watertight coverings and insulation	SF	372.0	225.00	83,700
56	Remove interior finishes to facilitate installation of strongbacking	SF	107,215.0	7.50	804,113
60	Remove millwork, fittings and fixtures to facilitate strongbacking installation	LF	21,443.0	25.00	536,075
77	Remove interior finishes to facilitate installation of strongbacking	SF	212,575.0	2.50	531,438
79	Remove millwork, fittings and fixtures to facilitate strongbacking installation	LF	17,066.0	15.00	255,990
95	Demolition of existing abandoned electrical and low voltage systems in plenums, shafts and chases	SF	700,888.0	2.25	1,576,998
96	Demolition of existing abandoned piping and ducts in plenums, shafts and chases	SF	700,888.0	3.50	2,453,108
104	Demo new MEP chase/shaft opening	SF	2,592.0	60.00	155,520
106	Remove exterior wall finish and insulation	SF	161,343.0	1.50	242,015
108	Remove finishes for new MEP chases/shafts	SF	11,589.0	2.50	28,973
112	Remove Ceiling and flooring to access fiber mesh strong backing operation	SF	112,400.0	2.25	252,900
124	Remove electrical receptacles and light fixtures at all wall/ceiling for strong backing installation	SF	280,839.0	1.00	280,839
126	Remove HVAC diffusers/return grills for strong backing installation	SF	68,264.0	3.00	204,792

Renovate Existing

Renovation Items

GFAA: 700,888.0 SF Cost/SF: $127.09
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
127	Remove fire sprinkler heads for strong backing installation	SF	68,264.0	2.00	136,528
	Building Elements Demolition			***$13.21/SF***	***$9,261,349***
F2020	**Hazardous Components Abatement**				
93	Abatement hazardous materials MEP shafts	SF	18,360.0	12.00	220,320
94	Clean MEP shafts	SF	18,360.0	8.46	155,326
	Hazardous Components Abatement			***$0.54/SF***	***$375,646***
	KING COUNTY COURTHOUSE			***$127.09/SF***	***$89,074,338***

Renovate Existing

Alternate 1 Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Location		GFAA SF	Cost/SF	Total Cost
D ALTERNATE 1 - REPLACE ALL WINDOWS				**3,143,250**
ESTIMATED NET COST				**$3,143,250**
MARGINS & ADJUSTMENTS				
Phased construction premium	15.0 %			$471,488
Bonding	1.0 %			$36,147
Estimating Contingency	25.0 %			$912,721
MACC Contingency	5.0 %			$228,180
Specified General Conditions	15.0 %			$718,768
GCCM Fee	3.0 %			$165,317
Negotiated Support Services	4.0 %			$227,035
Preconstruction Services	2.0 %			$118,058
ESTIMATED TOTAL COST				**$6,020,964**

Renovate Existing

Alternate 1 Items

D ALTERNATE 1 - REPLACE ALL WINDOWS Rates Current At June 2016

Description	Unit	Qty	Rate	Total
B2020 Exterior Windows				
71 Replacement existing historical metal windows	SF	4,191.0	750.00	3,143,250
Exterior Windows				***$3,143,250***
ALTERNATE 1 - REPLACE ALL WINDOWS				***$3,143,250***

Conceptual Cost Plan

Courthouse Building Site Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Location		GFAA SF	Cost/SF	Total Cost
A KING COUNTY COURTHOUSE		1,382,315.0	338.37	467,732,929
ESTIMATED NET COST		1,382,315	$338.37	$467,732,929
MARGINS & ADJUSTMENTS				
Sub Bonding	1.0 %			$4,677,329
Design Contingency	15.0 %			$70,861,539
MACC Contingency	5.0 %			$27,163,590
Specified General Conditions	10.0 %			$57,043,539
GCCM Fee	3.0 %			$18,824,368
Bond & GLI	1.5 %			$9,694,549
Negotiated Support Services	4.0 %			$26,239,914
Preconstruction Services	1.0 %			$6,822,378
ESTIMATED TOTAL COST		1,382,315	$498.48	$689,060,135

Conceptual Cost Plan

Courthouse Building Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Description		Cost/SF	King County Courthouse
A1010	Standard Foundations	$1.98/SF	$2,739,030
A1030	Slab on Grade	$0.37/SF	$509,760
A2010	Basement Excavation	$6.00/SF	$8,295,953
A2020	Basement Walls	$2.99/SF	$4,126,236
B1010	Floor Construction	$71.46/SF	$98,779,629
B1020	Roof Construction	$33.13/SF	$45,795,525
B2010	Exterior Walls	$4.33/SF	$5,988,670
B2020	Exterior Windows	$15.60/SF	$21,559,164
B2030	Exterior Doors	$0.11/SF	$154,500
B3010	Roof Coverings	$0.82/SF	$1,132,800
C1010	Partitions	$34.94/SF	$48,292,612
C2010	Stair Construction	$2.13/SF	$2,950,000
C3010	Wall Finishes	$15.75/SF	$21,773,944
D1010	Elevators & Lifts	$11.72/SF	$16,200,000
D1020	Escalators & Moving Walks	$3.26/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$2,764,630
D2020	Domestic Water Distribution	$3.40/SF	$4,699,871
D2030	Sanitary Waste	$2.65/SF	$3,663,135
D2040	Rain Water Drainage	$1.53/SF	$2,114,942
D2090	Other Plumbing Systems	$3.32/SF	$4,589,285
D3010	Energy Supply	$0.80/SF	$1,105,852
D3020	Heat Generating Systems	$6.35/SF	$8,777,700
D3030	Cooling Generating Systems	$4.30/SF	$5,943,954
D3040	Distribution Systems	$18.50/SF	$25,572,827
D3050	Terminal & Package Units	$0.16/SF	$221,170
D3060	Controls & Instrumentations	$5.00/SF	$6,911,575
D3070	Systems Testing & Balancing	$0.65/SF	$898,505
D3090	Other HVAC Systems & Equipment	$8.72/SF	$12,053,787
D4010	Sprinklers	$4.84/SF	$6,690,404
D5010	Electrical Service & Distribution	$37.80/SF	$52,251,505
D5030	Communications & Security	$10.75/SF	$14,859,886
E1020	Institutional Equipment	$2.45/SF	$3,380,093
E1030	Vehicular Equipment	$0.07/SF	$90,000
E1090	Other Equipment	$0.17/SF	$237,900
E2010	Fixed Furnishings	$12.92/SF	$17,854,502
F2010	Building Elements Demolition	$4.11/SF	$5,684,680
G2050	Landscaping	$1.52/SF	$2,100,000

Conceptual Cost Plan

Courthouse Building Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Description		Cost/SF	King County Courthouse
G3010	Water Supply	$0.09/SF	$130,000
G3020	Sanitary Water	$0.06/SF	$87,000
G3030	Storm Sewer	$0.84/SF	$1,167,550
G4010	Electrical Distribution	$0.09/SF	$120,000
G4030	Site Communications & Security	$0.54/SF	$740,353
G4090	Other Site Electrical Utilities	$0.16/SF	$224,000
	ESTIMATED NET COST	$338.37/SF	$467,732,929

Conceptual Cost Plan

Courthouse Building Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Description		Cost/SF	Total
A1010	Standard Foundations	$1.98/SF	$2,739,030
A1030	Slab on Grade	$0.37/SF	$509,760
A2010	Basement Excavation	$6.00/SF	$8,295,953
A2020	Basement Walls	$2.99/SF	$4,126,236
B1010	Floor Construction	$71.46/SF	$98,779,629
B1020	Roof Construction	$33.13/SF	$45,795,525
B2010	Exterior Walls	$4.33/SF	$5,988,670
B2020	Exterior Windows	$15.60/SF	$21,559,164
B2030	Exterior Doors	$0.11/SF	$154,500
B3010	Roof Coverings	$0.82/SF	$1,132,800
C1010	Partitions	$34.94/SF	$48,292,612
C2010	Stair Construction	$2.13/SF	$2,950,000
C3010	Wall Finishes	$15.75/SF	$21,773,944
D1010	Elevators & Lifts	$11.72/SF	$16,200,000
D1020	Escalators & Moving Walks	$3.26/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$2,764,630
D2020	Domestic Water Distribution	$3.40/SF	$4,699,871
D2030	Sanitary Waste	$2.65/SF	$3,663,135
D2040	Rain Water Drainage	$1.53/SF	$2,114,942
D2090	Other Plumbing Systems	$3.32/SF	$4,589,285
D3010	Energy Supply	$0.80/SF	$1,105,852
D3020	Heat Generating Systems	$6.35/SF	$8,777,700
D3030	Cooling Generating Systems	$4.30/SF	$5,943,954
D3040	Distribution Systems	$18.50/SF	$25,572,827
D3050	Terminal & Package Units	$0.16/SF	$221,170
D3060	Controls & Instrumentations	$5.00/SF	$6,911,575
D3070	Systems Testing & Balancing	$0.65/SF	$898,505
D3090	Other HVAC Systems & Equipment	$8.72/SF	$12,053,787
D4010	Sprinklers	$4.84/SF	$6,690,404
D5010	Electrical Service & Distribution	$37.80/SF	$52,251,505
D5030	Communications & Security	$10.75/SF	$14,859,886
E1020	Institutional Equipment	$2.45/SF	$3,380,093
E1030	Vehicular Equipment	$0.07/SF	$90,000
E1090	Other Equipment	$0.17/SF	$237,900
E2010	Fixed Furnishings	$12.92/SF	$17,854,502
F2010	Building Elements Demolition	$4.11/SF	$5,684,680
G2050	Landscaping	$1.52/SF	$2,100,000

Conceptual Cost Plan

Courthouse Building Summary

GFAA: Courthouse GFA
Rates Current At June 2016

Description		Cost/SF	Total
G3010	Water Supply	$0.09/SF	$130,000
G3020	Sanitary Water	$0.06/SF	$87,000
G3030	Storm Sewer	$0.84/SF	$1,167,550
G4010	Electrical Distribution	$0.09/SF	$120,000
G4030	Site Communications & Security	$0.54/SF	$740,353
G4090	Other Site Electrical Utilities	$0.16/SF	$224,000
	ESTIMATED NET COST	$338.37/SF	$467,732,929

Conceptual Cost Plan

Courthouse Building Site Item

A KING COUNTY COURTHOUSE

GFAA: 1,382,315.0 SF Cost/SF: $338.37
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
A1010	**Standard Foundations**				
7	Standard strip and pad foundations	SF	56,640.0	20.00	1,132,800
8	Perimeter foundation drainage	LF	951.6	22.00	20,935
9	Sub slab drainage allowance	SF	56,640.0	5.00	283,200
10	Elevator pits	EA	10.0	25,000.00	250,000
11	Mat foundations at elevator & stair cores	CY	855.6	550.00	470,580
12	Mat foundations at perimeter bracing elements	CY	1,057.3	550.00	581,515
	Standard Foundations			*$1.98/SF*	*$2,739,030*
A1030	**Slab on Grade**				
13	Slab on grade	SF	56,640.0	9.00	509,760
	Slab on Grade			*$0.37/SF*	*$509,760*
A2010	**Basement Excavation**				
14	Excavate for basement	CY	135,395.8	35.00	4,738,853
15	Shoring to basement excavations	SF	71,142.0	50.00	3,557,100
	Basement Excavation			*$6.00/SF*	*$8,295,953*
A2020	**Basement Walls**				
16	Basement walls formed 1 side, 24" thick	SF	71,142.0	48.00	3,414,816
17	Waterproofing to basement walls	SF	71,142.0	10.00	711,420
	Basement Walls			*$2.99/SF*	*$4,126,236*
B1010	**Floor Construction**				
18	Stick pinned insulation to underside of parking level lid	SF	113,280.0	4.00	453,120
19	Steel framed upper floors; unit rate includes decking, topping and columns	SF	1,325,675.0	70.00	92,797,250
20	Allow for curbs, steps, pads, etc.	SF	1,382,315.0	1.50	2,073,472
21	Allow for miscellaneous metals	SF	1,382,315.0	2.50	3,455,787
	Floor Construction			*$71.46/SF*	*$98,779,629*
B1020	**Roof Construction**				
22	Steel framed roofs; unit rate includes decking, topping and columns	SF	56,640.0	60.00	3,398,400
24	Stair and elevator core shear walls	SF	372,600.0	75.00	27,945,000
25	Perimeter shear walls	SF	192,695.0	75.00	14,452,125
	Roof Construction			*$33.13/SF*	*$45,795,525*
B2010	**Exterior Walls**				
26	Exterior opaque walls - exterior skin to interior drywall	SF	59,886.7	100.00	5,988,670
	Exterior Walls			*$4.33/SF*	*$5,988,670*
B2020	**Exterior Windows**				
27	Exterior curtain wall	SF	179,659.7	120.00	21,559,164
	Exterior Windows			*$15.60/SF*	*$21,559,164*

Conceptual Cost Plan
Courthouse Building Site Item

GFAA: 1,382,315.0 SF Cost/SF: $338.37
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
B2030	**Exterior Doors**				
28	Exterior doors - HM per leaf	EA	10.0	2,000.00	20,000
29	Exterior doors - glazed per leaf	EA	20.0	3,000.00	60,000
30	Door operators - per leaf	EA	10.0	2,500.00	25,000
31	Insulated overhead coiling garage door	SF	360.0	75.00	27,000
32	Insulated overhead coiling loading door	SF	300.0	75.00	22,500
	Exterior Doors			*$0.11/SF*	*$154,500*
B3010	**Roof Coverings**				
33	Insulated flat roofing	SF	56,640.0	20.00	1,132,800
	Roof Coverings			*$0.82/SF*	*$1,132,800*
C1010	**Partitions**				
105	Interior construction - courthouse program	SF	499,444.6	52.50	26,220,842
106	Interior construction - office program	SF	882,870.8	25.00	22,071,770
	Partitions			*$34.94/SF*	*$48,292,612*
C2010	**Stair Construction**				
34	BOH circulation & exit stairs - per flight	EA	108.0	25,000.00	2,700,000
35	Grand stairs allowance	EA	1.0	250,000.00	250,000
	Stair Construction			*$2.13/SF*	*$2,950,000*
C3010	**Wall Finishes**				
107	Interior finishes - courthouse program	SF	499,444.6	21.50	10,738,059
108	Interior finishes - office program	SF	882,870.8	12.50	11,035,885
	Wall Finishes			*$15.75/SF*	*$21,773,944*
D1010	**Elevators & Lifts**				
36	Service elevator per stop	EA	27.0	100,000.00	2,700,000
37	Passenger elevator per stop	EA	270.0	50,000.00	13,500,000
	Elevators & Lifts			*$11.72/SF*	*$16,200,000*
D1020	**Escalators & Moving Walks**				
38	Escalators per VLF	LF	300.0	15,000.00	4,500,000
	Escalators & Moving Walks			*$3.26/SF*	*$4,500,000*
D2010	**Plumbing Fixtures**				
47	Plumbing Fixtures-- Allowance	SF	1,382,315.0	2.00	2,764,630
	Plumbing Fixtures			*$2.00/SF*	*$2,764,630*
D2020	**Domestic Water Distribution**				
46	Plumbing Equipment-- Allowance	SF	1,382,315.0	0.75	1,036,736

Conceptual Cost Plan
Courthouse Building Site Item

GFAA: 1,382,315.0 SF Cost/SF: $338.37
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
48	Allowance for Domestic Water Pipework, includes hangers, insulation, valves and accessories	SF	1,382,315.0	2.16	2,985,800
49	Domestic Water--Insulation	SF	1,382,315.0	0.45	622,042
50	Domestic Water Chlorination, includes 5% Subcontractor MU	SF	1,382,315.0	0.04	55,293
	Domestic Water Distribution			*$3.40/SF*	*$4,699,871*
D2030	**Sanitary Waste**				
51	Allowance for SWV Pipe work--(CINH) with standard flexible band couplings); Includes fittings, hangers	SF	1,382,315.0	2.65	3,663,135
	Sanitary Waste			*$2.65/SF*	*$3,663,135*
D2040	**Rain Water Drainage**				
52	Rainwater leaders/Storm Pipework	SF	1,382,315.0	1.53	2,114,942
	Rain Water Drainage			*$1.53/SF*	*$2,114,942*
D2090	**Other Plumbing Systems**				
54	Plumbing permit, documentation, commissioning, supervision and indirects	SF	1,382,315.0	1.50	2,073,472
55	Plumbing contractor fee and subcontractor MU	SF	1,382,315.0	1.45	2,004,357
56	Testing	SF	1,382,315.0	0.10	138,231
57	Permits/Manuals/Bonding	SF	1,382,315.0	0.15	207,347
58	UG Fuel Oil Storage and supply	SF	1,382,315.0	0.12	165,878
	Other Plumbing Systems			*$3.32/SF*	*$4,589,285*
D3010	**Energy Supply**				
53	Energy Supply--fuel gas supply allowance	SF	1,382,315.0	0.80	1,105,852
	Energy Supply			*$0.80/SF*	*$1,105,852*
D3020	**Heat Generating Systems**				
64	Allowance for Heat Generating Equipment	SF	1,382,315.0	2.05	2,833,746
65	HVAC HHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves, Insulation and Specialties	SF	1,382,315.0	0.10	138,231

Conceptual Cost Plan
Courthouse Building Site Item
GFAA: 1,382,315.0 SF Cost/SF: $338.37
A KING COUNTY COURTHOUSE (continued)
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
66	HVAC HHW Pipework, includes hangers, fittings and insulation--Allowance	SF	1,382,315.0	4.20	5,805,723
	Heat Generating Systems			***$6.35/SF***	***$8,777,700***
D3030	**Cooling Generating Systems**				
67	HVAC CHW Pipework, includes hangers, fittings and insulation--Allowance	SF	1,382,315.0	4.20	5,805,723
68	HVAC CHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves and Specialties	SF	1,382,315.0	0.10	138,231
	Cooling Generating Systems			***$4.30/SF***	***$5,943,954***
D3040	**Distribution Systems**				
69	Allowance for HVAC Equipment	SF	1,382,315.0	9.00	12,440,835
71	Allowance for HVAC Distribution	SF	1,382,315.0	9.50	13,131,992
	Distribution Systems			***$18.50/SF***	***$25,572,827***
D3050	**Terminal & Package Units**				
70	HVAC Equipment--Split system air conditioners in IDF and elevator machine rooms--with remote condenser and refrigerant line set	SF	1,382,315.0	0.16	221,170
	Terminal & Package Units			***$0.16/SF***	***$221,170***
D3060	**Controls & Instrumentations**				
73	DDC Controls - General	SF	1,382,315.0	5.00	6,911,575
	Controls & Instrumentations			***$5.00/SF***	***$6,911,575***
D3070	**Systems Testing & Balancing**				
75	Balancing Testing and Commissioning-- Includes coordination with the subcontractor	SF	1,382,315.0	0.65	898,505
	Systems Testing & Balancing			***$0.65/SF***	***$898,505***
D3090	**Other HVAC Systems & Equipment**				
59	HVAC Site Supervision	SF	1,382,315.0	0.65	898,505
60	HVAC Permit, As Builts and O&Ms--Allowance	SF	1,382,315.0	0.15	207,347
61	HVAC BIM/Autocad/Revit	SF	1,382,315.0	0.35	483,810
62	HVAC Contractor equipment and indirects	SF	1,382,315.0	1.05	1,451,431

Conceptual Cost Plan
Courthouse Building Site Item
GFAA: 1,382,315.0 SF Cost/SF: $338.37
A KING COUNTY COURTHOUSE (continued)
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
63	HVAC contractor fee and subcontractor MU	SF	1,382,315.0	4.92	6,800,990
72	Exhaust fans/ductwork/grilles/flues--allowance	SF	1,382,315.0	0.80	1,105,852
74	Allowance for vibration isolation of piping and equipment	SF	1,382,315.0	0.50	691,157
76	Louvers	SF	1,382,315.0	0.25	345,579
77	HVAC Equipment Rigging and Hoisting (Per day of pick)	SF	1,382,315.0	0.05	69,116
	Other HVAC Systems & Equipment			***$8.72/SF***	***$12,053,787***
D4010	**Sprinklers**				
44	Allowance for Fire Suppression Systems including heads, pipework and specialties	SF	1,382,315.0	3.95	5,460,144
45	Sprinklers--Supervision, drawings and permit - Allowance	SF	1,382,315.0	0.89	1,230,260
	Sprinklers			***$4.84/SF***	***$6,690,404***
D5010	**Electrical Service & Distribution**				
78	Electrical documentation, commissioning, supervision	SF	1,382,315.0	1.50	2,073,472
79	Electrical contractor fee and subcontractor MU	SF	1,382,315.0	4.50	6,220,417
80	Testing	SF	1,382,315.0	0.25	345,579
81	Permits/Manuals/Bonding	SF	1,382,315.0	0.15	207,347
82	Electrical Panels, Switchboards, ATS, Transformers, etc--Allowance	SF	1,382,315.0	3.45	4,768,987
83	Feeders, cable trays, conduit, etc--Allowance	SF	1,382,315.0	5.50	7,602,732
84	Emergency power generation and distribution--Includes URS	SF	1,382,315.0	1.00	1,382,315
85	Conduit and wire to light fixtures and controls--Allowance	SF	1,382,315.0	1.80	2,488,167
86	Outlets and other low voltage devices--Allowance	SF	1,382,315.0	2.00	2,764,630
87	Conduit and wire to outlets and low voltage devices--Allowance	SF	1,382,315.0	1.50	2,073,472
88	LED Light fixtures--Allowance--average cost per program	SF	1,382,315.0	10.80	14,929,002

Conceptual Cost Plan

Courthouse Building Site Item

GFAA: 1,382,315.0 SF Cost/SF: $338.37
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
89	Lighting controls--Allowance for all areas	SF	1,382,315.0	1.80	2,488,167
90	Grounding--Allowance	SF	1,382,315.0	0.15	207,347
91	Electrical contractor equipment and indirects	SF	1,382,315.0	2.00	2,764,630
92	Temporary Lighting	SF	1,382,315.0	1.40	1,935,241
	Electrical Service & Distribution			***$37.80/SF***	***$52,251,505***
D5030	**Communications & Security**				
93	Public Address, Intercom and clock systems--Allowance	SF	1,382,315.0	1.25	1,727,894
94	Audio visual systems--Allowance	SF	1,382,315.0	1.50	2,073,472
95	Telecommunications	SF	1,382,315.0	2.35	3,248,440
96	Security system--Includes CCTV and Access Control	SF	1,382,315.0	2.25	3,110,209
97	Distributed antenna system - allowance	SF	1,382,315.0	1.40	1,935,241
98	Fire alarm system	SF	1,382,315.0	2.00	2,764,630
	Communications & Security			***$10.75/SF***	***$14,859,886***
E1020	**Institutional Equipment**				
109	Equipment - courthouse program	SF	499,444.6	5.00	2,497,223
110	Equipment - office program	SF	882,870.8	1.00	882,870
	Institutional Equipment			***$2.45/SF***	***$3,380,093***
E1030	**Vehicular Equipment**				
39	Dock equipment	LS	1.0	15,000.00	15,000
40	Parking control equipment	LS	1.0	75,000.00	75,000
	Vehicular Equipment			***$0.07/SF***	***$90,000***
E1090	**Other Equipment**				
41	Window washing equipment allowance - per building perimeter	LF	951.6	250.00	237,900
	Other Equipment			***$0.17/SF***	***$237,900***
E2010	**Fixed Furnishings**				
42	Window blinds	SF	179,659.7	8.00	1,437,278
43	Fixed floor grilles	SF	360.0	45.00	16,200
111	Furnishings - courthouse program	SF	499,444.6	24.00	11,986,670
112	Furnishings - office program	SF	882,870.8	5.00	4,414,354
	Fixed Furnishings			***$12.92/SF***	***$17,854,502***

Conceptual Cost Plan

Courthouse Building Site Item

GFAA: 1,382,315.0 SF Cost/SF: $338.37
Rates Current At June 2016

A KING COUNTY COURTHOUSE (continued)

Description		Unit	Qty	Rate	Total
F2010	**Building Elements Demolition**				
119	Demolish existing facility	SF	568,468.0	10.00	5,684,680
	Building Elements Demolition			***$4.11/SF***	***$5,684,680***
G2050	**Landscaping**				
113	Site development - building perimeter - street	LF	480.0	1,000.00	480,000
114	Site development - building perimeter - avenue	LF	480.0	1,500.00	720,000
115	Site development per intersection	EA	4.0	225,000.00	900,000
	Landscaping			***$1.52/SF***	***$2,100,000***
G3010	**Water Supply**				
99	Allowance for site fire and domestic water service	LS	1.0	130,000.00	130,000
	Water Supply			***$0.09/SF***	***$130,000***
G3020	**Sanitary Water**				
100	Allowance for sanitary water service	LS	1.0	87,000.00	87,000
	Sanitary Water			***$0.06/SF***	***$87,000***
G3030	**Storm Sewer**				
101	Allowance for site storm sewers and site sedimentation, dewatering and erosion control	LS	1.0	1,167,550.00	1,167,550
	Storm Sewer			***$0.84/SF***	***$1,167,550***
G4010	**Electrical Distribution**				
102	Allowance for site electrical service	LS	1.0	120,000.00	120,000
	Electrical Distribution			***$0.09/SF***	***$120,000***
G4030	**Site Communications & Security**				
103	Allowance for site lighting, temporary site power and lighting, and anticipated relocations	LS	1.0	740,353.00	740,353
	Site Communications & Security			***$0.54/SF***	***$740,353***
G4090	**Other Site Electrical Utilities**				
104	Allowance for site telecom service	LS	1.0	224,000.00	224,000
	Other Site Electrical Utilities			***$0.16/SF***	***$224,000***
	KING COUNTY COURTHOUSE			***$338.37/SF***	***$467,732,929***

Conceptual Cost Plan

Administration Building Site Summary

GFAB: Admin GFA
Rates Current At June 2016

Location		GFAB SF	Cost/SF	Total Cost
B KING COUNTY ADMIN BUILDING		**1,279,185.0**	**372.69**	**476,736,901**
ESTIMATED NET COST		**1,279,185**	**$372.69**	**$476,736,901**
MARGINS & ADJUSTMENTS				
Sub Bonding	1.0 %			$4,767,369
Design Contingency	15.0 %			$72,225,640
MACC Contingency	5.0 %			$27,686,495
Specified General Conditions	10.0 %			$58,141,641
GCCM Fee	3.0 %			$19,186,742
Bond & GLI	1.5 %			$9,881,172
Negotiated Support Services	4.0 %			$26,745,037
Preconstruction Services	1.0 %			$6,953,710
ESTIMATED TOTAL COST		**1,279,185**	**$549.04**	**$702,324,707**

Conceptual Cost Plan

Administration Building Summary

GFAB: Admin GFA
Rates Current At June 2016

Description		Cost/SF	King County Admin Buildi
A1010	Standard Foundations	$2.07/SF	$2,644,959
A1030	Slab on Grade	$0.38/SF	$481,680
A2010	Basement Excavation	$6.75/SF	$8,639,745
A2020	Basement Walls	$3.72/SF	$4,756,000
B1010	Floor Construction	$71.41/SF	$91,341,451
B1020	Roof Construction	$36.57/SF	$46,775,707
B2010	Exterior Walls	$10.05/SF	$12,854,670
B2020	Exterior Windows	$36.18/SF	$46,276,764
B2030	Exterior Doors	$0.12/SF	$154,500
B3010	Roof Coverings	$0.84/SF	$1,070,400
C1010	Partitions	$35.74/SF	$45,714,363
C2010	Stair Construction	$2.38/SF	$3,050,000
C3010	Wall Finishes	$16.01/SF	$20,484,820
D1010	Elevators & Lifts	$13.13/SF	$16,800,000
D1020	Escalators & Moving Walks	$3.52/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$2,558,370
D2020	Domestic Water Distribution	$3.40/SF	$4,349,229
D2030	Sanitary Waste	$2.65/SF	$3,389,840
D2040	Rain Water Drainage	$1.53/SF	$1,957,153
D2090	Other Plumbing Systems	$3.32/SF	$4,246,895
D3010	Energy Supply	$0.80/SF	$1,023,348
D3020	Heat Generating Systems	$6.35/SF	$8,122,825
D3030	Cooling Generating Systems	$4.30/SF	$5,500,496
D3040	Distribution Systems	$18.50/SF	$23,664,923
D3050	Terminal & Package Units	$0.16/SF	$204,670
D3060	Controls & Instrumentations	$5.00/SF	$6,395,925
D3070	Systems Testing & Balancing	$0.65/SF	$831,470
D3090	Other HVAC Systems & Equipment	$8.72/SF	$11,154,493
D4010	Sprinklers	$4.84/SF	$6,191,256
D5010	Electrical Service & Distribution	$37.80/SF	$48,353,195
D5030	Communications & Security	$10.75/SF	$13,751,239
E1020	Institutional Equipment	$2.56/SF	$3,276,964
E1030	Vehicular Equipment	$0.07/SF	$90,000
E1090	Other Equipment	$0.18/SF	$231,525
E2010	Fixed Furnishings	$14.84/SF	$18,986,693
F2010	Building Elements Demolition	$1.83/SF	$2,342,430
G2050	Landscaping	$1.64/SF	$2,100,000

Conceptual Cost Plan

Administration Building Summary

GFAB: Admin GFA
Rates Current At June 2016

Description		Cost/SF	King County Admin Buildi
G3010	Water Supply	$0.10/SF	$130,000
G3020	Sanitary Water	$0.07/SF	$87,000
G3030	Storm Sewer	$0.91/SF	$1,167,550
G4010	Electrical Distribution	$0.09/SF	$120,000
G4030	Site Communications & Security	$0.58/SF	$740,353
G4090	Other Site Electrical Utilities	$0.18/SF	$224,000
	ESTIMATED NET COST	$372.69/SF	$476,736,901

Conceptual Cost Plan

Administration Building Summary

GFAB: Admin GFA
Rates Current At June 2016

Description		Cost/SF	Total
A1010	Standard Foundations	$2.07/SF	$2,644,959
A1030	Slab on Grade	$0.38/SF	$481,680
A2010	Basement Excavation	$6.75/SF	$8,639,745
A2020	Basement Walls	$3.72/SF	$4,756,000
B1010	Floor Construction	$71.41/SF	$91,341,451
B1020	Roof Construction	$36.57/SF	$46,775,707
B2010	Exterior Walls	$10.05/SF	$12,854,670
B2020	Exterior Windows	$36.18/SF	$46,276,764
B2030	Exterior Doors	$0.12/SF	$154,500
B3010	Roof Coverings	$0.84/SF	$1,070,400
C1010	Partitions	$35.74/SF	$45,714,363
C2010	Stair Construction	$2.38/SF	$3,050,000
C3010	Wall Finishes	$16.01/SF	$20,484,820
D1010	Elevators & Lifts	$13.13/SF	$16,800,000
D1020	Escalators & Moving Walks	$3.52/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$2,558,370
D2020	Domestic Water Distribution	$3.40/SF	$4,349,229
D2030	Sanitary Waste	$2.65/SF	$3,389,840
D2040	Rain Water Drainage	$1.53/SF	$1,957,153
D2090	Other Plumbing Systems	$3.32/SF	$4,246,895
D3010	Energy Supply	$0.80/SF	$1,023,348
D3020	Heat Generating Systems	$6.35/SF	$8,122,825
D3030	Cooling Generating Systems	$4.30/SF	$5,500,496
D3040	Distribution Systems	$18.50/SF	$23,664,923
D3050	Terminal & Package Units	$0.16/SF	$204,670
D3060	Controls & Instrumentations	$5.00/SF	$6,395,925
D3070	Systems Testing & Balancing	$0.65/SF	$831,470
D3090	Other HVAC Systems & Equipment	$8.72/SF	$11,154,493
D4010	Sprinklers	$4.84/SF	$6,191,256
D5010	Electrical Service & Distribution	$37.80/SF	$48,353,195
D5030	Communications & Security	$10.75/SF	$13,751,239
E1020	Institutional Equipment	$2.56/SF	$3,276,964
E1030	Vehicular Equipment	$0.07/SF	$90,000
E1090	Other Equipment	$0.18/SF	$231,525
E2010	Fixed Furnishings	$14.84/SF	$18,986,693
F2010	Building Elements Demolition	$1.83/SF	$2,342,430
G2050	Landscaping	$1.64/SF	$2,100,000

Conceptual Cost Plan

Administration Building Summary

GFAB: Admin GFA
Rates Current At June 2016

Description		Cost/SF	Total
G3010	**Water Supply**	$0.10/SF	$130,000
G3020	**Sanitary Water**	$0.07/SF	$87,000
G3030	**Storm Sewer**	$0.91/SF	$1,167,550
G4010	**Electrical Distribution**	$0.09/SF	$120,000
G4030	**Site Communications & Security**	$0.58/SF	$740,353
G4090	**Other Site Electrical Utilities**	$0.18/SF	$224,000
	ESTIMATED NET COST	$372.69/SF	$476,736,901

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
A1010	**Standard Foundations**				
7	Standard strip and pad foundations	SF	53,520.0	20.00	1,070,400
8	Perimeter foundation drainage	LF	926.1	22.00	20,374
9	Sub slab drainage allowance	SF	53,520.0	5.00	267,600
10	Elevator pits	EA	10.0	25,000.00	250,000
11	Mat foundations at elevator & stair cores	CY	855.7	550.00	470,635
12	Mat foundations at perimeter bracing elements	CY	1,029.0	550.00	565,950
	Standard Foundations			*$2.07/SF*	*$2,644,959*
A1030	**Slab on Grade**				
13	Slab on grade	SF	53,520.0	9.00	481,680
	Slab on Grade			*$0.38/SF*	*$481,680*
A2010	**Basement Excavation**				
14	Excavate for basement	CY	129,707.0	35.00	4,539,745
15	Shoring to basement excavations	SF	82,000.0	50.00	4,100,000
	Basement Excavation			*$6.75/SF*	*$8,639,745*
A2020	**Basement Walls**				
16	Basement walls formed 1 side, 24" thick	SF	82,000.0	48.00	3,936,000
17	Waterproofing to basement walls	SF	82,000.0	10.00	820,000
	Basement Walls			*$3.72/SF*	*$4,756,000*
B1010	**Floor Construction**				
18	Stick pinned insulation to underside of parking level lid	SF	107,040.0	4.00	428,160
19	Steel framed upper floors; unit rate includes decking, topping and columns	SF	1,225,665.0	70.00	85,796,550
20	Allow for curbs, steps, pads, etc.	SF	1,279,185.0	1.50	1,918,778
21	Allow for miscellaneous metals	SF	1,279,185.0	2.50	3,197,963
	Floor Construction			*$71.41/SF*	*$91,341,451*
B1020	**Roof Construction**				
22	Steel framed roofs; unit rate includes decking, topping and columns	SF	53,520.0	60.00	3,211,200
24	Stair and elevator core shear walls	SF	386,400.0	75.00	28,980,000
25	Perimeter shear walls	SF	194,460.1	75.00	14,584,507
	Roof Construction			*$36.57/SF*	*$46,775,707*
B2010	**Exterior Walls**				
26	Exterior opaque walls - exterior skin to interior drywall	SF	128,546.7	100.00	12,854,670
	Exterior Walls			*$10.05/SF*	*$12,854,670*
B2020	**Exterior Windows**				
27	Exterior curtain wall	SF	385,639.7	120.00	46,276,764
	Exterior Windows			*$36.18/SF*	*$46,276,764*

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
B2030	**Exterior Doors**				
28	Exterior doors - HM per leaf	EA	10.0	2,000.00	20,000
29	Exterior doors - glazed per leaf	EA	20.0	3,000.00	60,000
30	Door operators - per leaf	EA	10.0	2,500.00	25,000
31	Insulated overhead coiling garage door	SF	360.0	75.00	27,000
32	Insulated overhead coiling loading door	SF	300.0	75.00	22,500
	Exterior Doors			*$0.12/SF*	*$154,500*
B3010	**Roof Coverings**				
33	Insulated flat roofing	SF	53,520.0	20.00	1,070,400
	Roof Coverings			*$0.84/SF*	*$1,070,400*
C1010	**Partitions**				
105	Interior construction - courthouse program	SF	499,444.7	52.50	26,220,846
106	Interior construction - office program	SF	779,740.7	25.00	19,493,517
	Partitions			*$35.74/SF*	*$45,714,363*
C2010	**Stair Construction**				
34	BOH circulation & exit stairs - per flight	EA	112.0	25,000.00	2,800,000
35	Grand stairs allowance	EA	1.0	250,000.00	250,000
	Stair Construction			*$2.38/SF*	*$3,050,000*
C3010	**Wall Finishes**				
107	Interior finishes - courthouse program	SF	499,444.7	21.50	10,738,061
108	Interior finishes - office program	SF	779,740.7	12.50	9,746,759
	Wall Finishes			*$16.01/SF*	*$20,484,820*
D1010	**Elevators & Lifts**				
36	Service elevator per stop	EA	28.0	100,000.00	2,800,000
37	Passenger elevator per stop	EA	280.0	50,000.00	14,000,000
	Elevators & Lifts			*$13.13/SF*	*$16,800,000*
D1020	**Escalators & Moving Walks**				
38	Escalators per VLF	LF	300.0	15,000.00	4,500,000
	Escalators & Moving Walks			*$3.52/SF*	*$4,500,000*
D2010	**Plumbing Fixtures**				
47	Plumbing Fixtures-- Allowance	SF	1,279,185.0	2.00	2,558,370
	Plumbing Fixtures			*$2.00/SF*	*$2,558,370*
D2020	**Domestic Water Distribution**				
46	Plumbing Equipment-- Allowance	SF	1,279,185.0	0.75	959,389

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
48	Allowance for Domestic Water Pipework, includes hangers, insulation, valves and accessories	SF	1,279,185.0	2.16	2,763,040
49	Domestic Water--Insulation	SF	1,279,185.0	0.45	575,633
50	Domestic Water Chlorination, includes 5% Subcontractor MU	SF	1,279,185.0	0.04	51,167
	Domestic Water Distribution			*$3.40/SF*	*$4,349,229*
D2030	**Sanitary Waste**				
51	Allowance for SWV Pipe work--(CINH) with standard flexible band couplings); Includes fittings, hangers	SF	1,279,185.0	2.65	3,389,840
	Sanitary Waste			*$2.65/SF*	*$3,389,840*
D2040	**Rain Water Drainage**				
52	Rainwater leaders/Storm Pipework	SF	1,279,185.0	1.53	1,957,153
	Rain Water Drainage			*$1.53/SF*	*$1,957,153*
D2090	**Other Plumbing Systems**				
54	Plumbing permit, documentation, commissioning, supervision and indirects	SF	1,279,185.0	1.50	1,918,778
55	Plumbing contractor fee and subcontractor MU	SF	1,279,185.0	1.45	1,854,818
56	Testing	SF	1,279,185.0	0.10	127,919
57	Permits/Manuals/Bonding	SF	1,279,185.0	0.15	191,878
58	UG Fuel Oil Storage and supply	SF	1,279,185.0	0.12	153,502
	Other Plumbing Systems			*$3.32/SF*	*$4,246,895*
D3010	**Energy Supply**				
53	Energy Supply--fuel gas supply allowance	SF	1,279,185.0	0.80	1,023,348
	Energy Supply			*$0.80/SF*	*$1,023,348*
D3020	**Heat Generating Systems**				
64	Allowance for Heat Generating Equipment	SF	1,279,185.0	2.05	2,622,329
65	HVAC HHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves, Insulation and Specialties	SF	1,279,185.0	0.10	127,919

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
66	HVAC HHW Pipework, includes hangers, fittings and insulation--Allowance	SF	1,279,185.0	4.20	5,372,577
	Heat Generating Systems			***$6.35/SF***	***$8,122,825***
D3030	**Cooling Generating Systems**				
67	HVAC CHW Pipework, includes hangers, fittings and insulation--Allowance	SF	1,279,185.0	4.20	5,372,577
68	HVAC CHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves and Specialties	SF	1,279,185.0	0.10	127,919
	Cooling Generating Systems			***$4.30/SF***	***$5,500,496***
D3040	**Distribution Systems**				
69	Allowance for HVAC Equipment	SF	1,279,185.0	9.00	11,512,665
71	Allowance for HVAC Distribution	SF	1,279,185.0	9.50	12,152,258
	Distribution Systems			***$18.50/SF***	***$23,664,923***
D3050	**Terminal & Package Units**				
70	HVAC Equipment--Split system air conditioners in IDF and elevator machine rooms--with remote condenser and refrigerant line set	SF	1,279,185.0	0.16	204,670
	Terminal & Package Units			***$0.16/SF***	***$204,670***
D3060	**Controls & Instrumentations**				
73	DDC Controls - General	SF	1,279,185.0	5.00	6,395,925
	Controls & Instrumentations			***$5.00/SF***	***$6,395,925***
D3070	**Systems Testing & Balancing**				
75	Balancing Testing and Commissioning-- Includes coordination with the subcontractor	SF	1,279,185.0	0.65	831,470
	Systems Testing & Balancing			***$0.65/SF***	***$831,470***
D3090	**Other HVAC Systems & Equipment**				
59	HVAC Site Supervision	SF	1,279,185.0	0.65	831,470
60	HVAC Permit, As Builts and O&Ms--Allowance	SF	1,279,185.0	0.15	191,878
61	HVAC BIM/Autocad/Revit	SF	1,279,185.0	0.35	447,715
62	HVAC Contractor equipment and indirects	SF	1,279,185.0	1.05	1,343,144

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
63	HVAC contractor fee and subcontractor MU	SF	1,279,185.0	4.92	6,293,590
72	Exhaust fans/ductwork/grilles/flues--allowance	SF	1,279,185.0	0.80	1,023,348
74	Allowance for vibration isolation of piping and equipment	SF	1,279,185.0	0.50	639,593
76	Louvers	SF	1,279,185.0	0.25	319,796
77	HVAC Equipment Rigging and Hoisting (Per day of pick)	SF	1,279,185.0	0.05	63,959
	Other HVAC Systems & Equipment			***$8.72/SF***	***$11,154,493***
D4010	**Sprinklers**				
44	Allowance for Fire Suppression Systems including heads, pipework and specialties	SF	1,279,185.0	3.95	5,052,781
45	Sprinklers--Supervision, drawings and permit - Allowance	SF	1,279,185.0	0.89	1,138,475
	Sprinklers			***$4.84/SF***	***$6,191,256***
D5010	**Electrical Service & Distribution**				
78	Electrical documentation, commissioning, supervision	SF	1,279,185.0	1.50	1,918,778
79	Electrical contractor fee and subcontractor MU	SF	1,279,185.0	4.50	5,756,333
80	Testing	SF	1,279,185.0	0.25	319,796
81	Permits/Manuals/Bonding	SF	1,279,185.0	0.15	191,878
82	Electrical Panels, Switchboards, ATS, Transformers, etc--Allowance	SF	1,279,185.0	3.45	4,413,188
83	Feeders, cable trays, conduit, etc--Allowance	SF	1,279,185.0	5.50	7,035,518
84	Emergency power generation and distribution--Includes URS	SF	1,279,185.0	1.00	1,279,185
85	Conduit and wire to light fixtures and controls--Allowance	SF	1,279,185.0	1.80	2,302,533
86	Outlets and other low voltage devices--Allowance	SF	1,279,185.0	2.00	2,558,370
87	Conduit and wire to outlets and low voltage devices--Allowance	SF	1,279,185.0	1.50	1,918,778
88	LED Light fixtures--Allowance--average cost per program	SF	1,279,185.0	10.80	13,815,198

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
89	Lighting controls--Allowance for all areas	SF	1,279,185.0	1.80	2,302,533
90	Grounding--Allowance	SF	1,279,185.0	0.15	191,878
91	Electrical contractor equipment and indirects	SF	1,279,185.0	2.00	2,558,370
92	Temporary Lighting	SF	1,279,185.0	1.40	1,790,859
	Electrical Service & Distribution			***$37.80/SF***	***$48,353,195***
D5030	**Communications & Security**				
93	Public Address, Intercom and clock systems--Allowance	SF	1,279,185.0	1.25	1,598,981
94	Audio visual systems--Allowance	SF	1,279,185.0	1.50	1,918,778
95	Telecommunications	SF	1,279,185.0	2.35	3,006,085
96	Security system--Includes CCTV and Access Control	SF	1,279,185.0	2.25	2,878,166
97	Distributed antenna system - allowance	SF	1,279,185.0	1.40	1,790,859
98	Fire alarm system	SF	1,279,185.0	2.00	2,558,370
	Communications & Security			***$10.75/SF***	***$13,751,239***
E1020	**Institutional Equipment**				
109	Equipment - courthouse program	SF	499,444.7	5.00	2,497,223
110	Equipment - office program	SF	779,740.7	1.00	779,741
	Institutional Equipment			***$2.56/SF***	***$3,276,964***
E1030	**Vehicular Equipment**				
39	Dock equipment	LS	1.0	15,000.00	15,000
40	Parking control equipment	LS	1.0	75,000.00	75,000
	Vehicular Equipment			***$0.07/SF***	***$90,000***
E1090	**Other Equipment**				
41	Window washing equipment allowance - per building perimeter	LF	926.1	250.00	231,525
	Other Equipment			***$0.18/SF***	***$231,525***
E2010	**Fixed Furnishings**				
42	Window blinds	SF	385,639.7	8.00	3,085,117
43	Fixed floor grilles	SF	360.0	45.00	16,200
111	Furnishings - courthouse program	SF	499,444.7	24.00	11,986,673
112	Furnishings - office program	SF	779,740.7	5.00	3,898,703
	Fixed Furnishings			***$14.84/SF***	***$18,986,693***

Conceptual Cost Plan

Administration Building Site Item

B KING COUNTY ADMIN BUILDING (continued)

GFAB: 1,279,185.0 SF Cost/SF: $372.69
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
F2010	**Building Elements Demolition**				
119	Demolish existing facility	SF	234,243.0	10.00	2,342,430
	Building Elements Demolition			***$1.83/SF***	***$2,342,430***
G2050	**Landscaping**				
113	Site development - building perimeter - street	LF	480.0	1,000.00	480,000
114	Site development - building perimeter - avenue	LF	480.0	1,500.00	720,000
115	Site development per intersection	EA	4.0	225,000.00	900,000
	Landscaping			***$1.64/SF***	***$2,100,000***
G3010	**Water Supply**				
99	Allowance for site fire and domestic water service	LS	1.0	130,000.00	130,000
	Water Supply			***$0.10/SF***	***$130,000***
G3020	**Sanitary Water**				
100	Allowance for sanitary water service	LS	1.0	87,000.00	87,000
	Sanitary Water			***$0.07/SF***	***$87,000***
G3030	**Storm Sewer**				
101	Allowance for site storm sewers and site sedimentation, dewatering and erosion control	LS	1.0	1,167,550.00	1,167,550
	Storm Sewer			***$0.91/SF***	***$1,167,550***
G4010	**Electrical Distribution**				
102	Allowance for site electrical service	LS	1.0	120,000.00	120,000
	Electrical Distribution			***$0.09/SF***	***$120,000***
G4030	**Site Communications & Security**				
103	Allowance for site lighting, temporary site power and lighting, and anticipated relocations	LS	1.0	740,353.00	740,353
	Site Communications & Security			***$0.58/SF***	***$740,353***
G4090	**Other Site Electrical Utilities**				
104	Allowance for site telecom service	LS	1.0	224,000.00	224,000
	Other Site Electrical Utilities			***$0.18/SF***	***$224,000***
	KING COUNTY ADMIN BUILDING			***$372.69/SF***	***$476,736,901***

Conceptual Cost Plan

Goat Hill Building Site Summary

GFAC: Goat Hill GFA
Rates Current At June 2016

Location		GFAC SF	Cost/SF	Total Cost
C GOAT HILL BUILDING		618,420.0	420.74	260,192,601
ESTIMATED NET COST		618,420	$420.74	$260,192,601
MARGINS & ADJUSTMENTS				
Sub Bonding	1.0 %			$2,601,926
Design Contingency	15.0 %			$39,419,179
MACC Contingency	5.0 %			$15,110,685
Specified General Conditions	10.0 %			$31,732,439
GCCM Fee	3.0 %			$10,471,705
Bond & GLI	1.5 %			$5,392,928
Negotiated Support Services	4.0 %			$14,596,859
Preconstruction Services	1.0 %			$3,795,183
ESTIMATED TOTAL COST		618,420	$619.83	$383,313,505

Conceptual Cost Plan

Goat Hill Building Summary

GFAC: Goat Hill GFA
Rates Current At June 2016

Description		Cost/SF	Goat Hill Building
A1010	Standard Foundations	$2.69/SF	$1,665,635
A1030	Slab on Grade	$0.41/SF	$252,990
A2010	Basement Excavation	$8.55/SF	$5,285,757
A2020	Basement Walls	$5.54/SF	$3,429,134
B1010	Floor Construction	$71.18/SF	$44,020,260
B1020	Roof Construction	$51.78/SF	$32,022,518
B2010	Exterior Walls	$6.98/SF	$4,317,060
B2020	Exterior Windows	$25.13/SF	$15,541,392
B2030	Exterior Doors	$0.22/SF	$138,500
B3010	Roof Coverings	$0.91/SF	$562,200
C1010	Partitions	$47.21/SF	$29,195,235
C2010	Stair Construction	$4.61/SF	$2,850,000
C3010	Wall Finishes	$19.77/SF	$12,225,255
D1010	Elevators & Lifts	$16.82/SF	$10,400,000
D1020	Escalators & Moving Walks	$7.28/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$1,236,840
D2020	Domestic Water Distribution	$3.40/SF	$2,102,628
D2030	Sanitary Waste	$2.65/SF	$1,638,813
D2040	Rain Water Drainage	$1.53/SF	$946,183
D2090	Other Plumbing Systems	$3.32/SF	$2,053,154
D3010	Energy Supply	$0.80/SF	$494,736
D3020	Heat Generating Systems	$6.35/SF	$3,926,967
D3030	Cooling Generating Systems	$4.30/SF	$2,659,206
D3040	Distribution Systems	$18.50/SF	$11,440,770
D3050	Terminal & Package Units	$0.16/SF	$98,947
D3060	Controls & Instrumentations	$5.00/SF	$3,092,100
D3070	Systems Testing & Balancing	$0.65/SF	$401,973
D3090	Other HVAC Systems & Equipment	$8.72/SF	$5,392,622
D4010	Sprinklers	$4.84/SF	$2,993,153
D5010	Electrical Service & Distribution	$37.80/SF	$23,376,276
D5030	Communications & Security	$10.75/SF	$6,648,015
E1020	Institutional Equipment	$4.23/SF	$2,616,200
E1030	Vehicular Equipment	$0.15/SF	$90,000
E1090	Other Equipment	$0.29/SF	$178,575
E2010	Fixed Furnishings	$22.04/SF	$13,630,604
F1010	Special Structures	$8.49/SF	$5,250,000
G2050	Landscaping	$1.70/SF	$1,050,000

Conceptual Cost Plan

Goat Hill Building Summary

GFAC: Goat Hill GFA
Rates Current At June 2016

Description		Cost/SF	Goat Hill Building
G3010	Water Supply	$0.21/SF	$130,000
G3020	Sanitary Water	$0.14/SF	$87,000
G3030	Storm Sewer	$1.89/SF	$1,167,550
G4010	Electrical Distribution	$0.19/SF	$120,000
G4030	Site Communications & Security	$1.20/SF	$740,353
G4090	Other Site Electrical Utilities	$0.36/SF	$224,000
	ESTIMATED NET COST	$420.74/SF	$260,192,601

Conceptual Cost Plan

Goat Hill Building Summary

GFAC: Goat Hill GFA
Rates Current At June 2016

Description		Cost/SF	Total
A1010	Standard Foundations	$2.69/SF	$1,665,635
A1030	Slab on Grade	$0.41/SF	$252,990
A2010	Basement Excavation	$8.55/SF	$5,285,757
A2020	Basement Walls	$5.54/SF	$3,429,134
B1010	Floor Construction	$71.18/SF	$44,020,260
B1020	Roof Construction	$51.78/SF	$32,022,518
B2010	Exterior Walls	$6.98/SF	$4,317,060
B2020	Exterior Windows	$25.13/SF	$15,541,392
B2030	Exterior Doors	$0.22/SF	$138,500
B3010	Roof Coverings	$0.91/SF	$562,200
C1010	Partitions	$47.21/SF	$29,195,235
C2010	Stair Construction	$4.61/SF	$2,850,000
C3010	Wall Finishes	$19.77/SF	$12,225,255
D1010	Elevators & Lifts	$16.82/SF	$10,400,000
D1020	Escalators & Moving Walks	$7.28/SF	$4,500,000
D2010	Plumbing Fixtures	$2.00/SF	$1,236,840
D2020	Domestic Water Distribution	$3.40/SF	$2,102,628
D2030	Sanitary Waste	$2.65/SF	$1,638,813
D2040	Rain Water Drainage	$1.53/SF	$946,183
D2090	Other Plumbing Systems	$3.32/SF	$2,053,154
D3010	Energy Supply	$0.80/SF	$494,736
D3020	Heat Generating Systems	$6.35/SF	$3,926,967
D3030	Cooling Generating Systems	$4.30/SF	$2,659,206
D3040	Distribution Systems	$18.50/SF	$11,440,770
D3050	Terminal & Package Units	$0.16/SF	$98,947
D3060	Controls & Instrumentations	$5.00/SF	$3,092,100
D3070	Systems Testing & Balancing	$0.65/SF	$401,973
D3090	Other HVAC Systems & Equipment	$8.72/SF	$5,392,622
D4010	Sprinklers	$4.84/SF	$2,993,153
D5010	Electrical Service & Distribution	$37.80/SF	$23,376,276
D5030	Communications & Security	$10.75/SF	$6,648,015
E1020	Institutional Equipment	$4.23/SF	$2,616,200
E1030	Vehicular Equipment	$0.15/SF	$90,000
E1090	Other Equipment	$0.29/SF	$178,575
E2010	Fixed Furnishings	$22.04/SF	$13,630,604
F1010	Special Structures	$8.49/SF	$5,250,000
G2050	Landscaping	$1.70/SF	$1,050,000

Conceptual Cost Plan

Goat Hill Building Summary

GFAC: Goat Hill GFA
Rates Current At June 2016

Description		Cost/SF	Total
G3010	**Water Supply**	**$0.21/SF**	**$130,000**
G3020	**Sanitary Water**	**$0.14/SF**	**$87,000**
G3030	**Storm Sewer**	**$1.89/SF**	**$1,167,550**
G4010	**Electrical Distribution**	**$0.19/SF**	**$120,000**
G4030	**Site Communications & Security**	**$1.20/SF**	**$740,353**
G4090	**Other Site Electrical Utilities**	**$0.36/SF**	**$224,000**
	ESTIMATED NET COST	**$420.74/SF**	**$260,192,601**

Conceptual Cost Plan

Goat Hill Site Item

C GOAT HILL BUILDING

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

Description		Unit	Qty	Rate	Total
A1010	**Standard Foundations**				
7	Standard strip and pad foundations	SF	28,110.0	20.00	562,200
8	Perimeter foundation drainage	LF	714.3	22.00	15,715
9	Sub slab drainage allowance	SF	28,110.0	5.00	140,550
10	Elevator pits	EA	6.0	25,000.00	150,000
11	Mat foundations at elevator & stair cores	CY	655.7	550.00	360,635
12	Mat foundations at perimeter bracing elements	CY	793.7	550.00	436,535
	Standard Foundations			***$2.69/SF***	***$1,665,635***
A1030	**Slab on Grade**				
13	Slab on grade	SF	28,110.0	9.00	252,990
	Slab on Grade			***$0.41/SF***	***$252,990***
A2010	**Basement Excavation**				
14	Excavate for basement	CY	66,560.2	35.00	2,329,607
15	Shoring to basement excavations	SF	59,123.0	50.00	2,956,150
	Basement Excavation			***$8.55/SF***	***$5,285,757***
A2020	**Basement Walls**				
16	Basement walls formed 1 side, 24" thick	SF	59,123.0	48.00	2,837,904
17	Waterproofing to basement walls	SF	59,123.0	10.00	591,230
	Basement Walls			***$5.54/SF***	***$3,429,134***
B1010	**Floor Construction**				
18	Stick pinned insulation to underside of parking level lid	SF	56,220.0	4.00	224,880
19	Steel framed upper floors; unit rate includes decking, topping and columns	SF	590,310.0	70.00	41,321,700
20	Allow for curbs, steps, pads, etc.	SF	618,420.0	1.50	927,630
21	Allow for miscellaneous metals	SF	618,420.0	2.50	1,546,050
	Floor Construction			***$71.18/SF***	***$44,020,260***
B1020	**Roof Construction**				
22	Steel framed roofs; unit rate includes decking, topping and columns	SF	28,110.0	60.00	1,686,600
24	Stair and elevator core shear walls	SF	265,200.0	75.00	19,890,000
25	Perimeter shear walls	SF	139,278.9	75.00	10,445,918
	Roof Construction			***$51.78/SF***	***$32,022,518***
B2010	**Exterior Walls**				
26	Exterior opaque walls - exterior skin to interior drywall	SF	43,170.6	100.00	4,317,060
	Exterior Walls			***$6.98/SF***	***$4,317,060***
B2020	**Exterior Windows**				
27	Exterior curtain wall	SF	129,511.6	120.00	15,541,392
	Exterior Windows			***$25.13/SF***	***$15,541,392***

Conceptual Cost Plan

Goat Hill Site Item

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

C GOAT HILL BUILDING (continued)

Description	Unit	Qty	Rate	Total
B2030 Exterior Doors				
28 Exterior doors - HM per leaf	EA	8.0	2,000.00	16,000
29 Exterior doors - glazed per leaf	EA	16.0	3,000.00	48,000
30 Door operators - per leaf	EA	10.0	2,500.00	25,000
31 Insulated overhead coiling garage door	SF	360.0	75.00	27,000
32 Insulated overhead coiling loading door	SF	300.0	75.00	22,500
Exterior Doors			*$0.22/SF*	*$138,500*
B3010 Roof Coverings				
33 Insulated flat roofing	SF	28,110.0	20.00	562,200
Roof Coverings			*$0.91/SF*	*$562,200*
C1010 Partitions				
105 Interior construction - courthouse program	SF	499,444.7	52.50	26,220,847
106 Interior construction - office program	SF	118,975.5	25.00	2,974,388
Partitions			*$47.21/SF*	*$29,195,235*
C2010 Stair Construction				
34 BOH circulation & exit stairs - per flight	EA	104.0	25,000.00	2,600,000
35 Grand stairs allowance	EA	1.0	250,000.00	250,000
Stair Construction			*$4.61/SF*	*$2,850,000*
C3010 Wall Finishes				
107 Interior finishes - courthouse program	SF	499,444.7	21.50	10,738,061
108 Interior finishes - office program	SF	118,975.5	12.50	1,487,194
Wall Finishes			*$19.77/SF*	*$12,225,255*
D1010 Elevators & Lifts				
36 Service elevator per stop	EA	26.0	100,000.00	2,600,000
37 Passenger elevator per stop	EA	156.0	50,000.00	7,800,000
Elevators & Lifts			*$16.82/SF*	*$10,400,000*
D1020 Escalators & Moving Walks				
38 Escalators per VLF	LF	300.0	15,000.00	4,500,000
Escalators & Moving Walks			*$7.28/SF*	*$4,500,000*
D2010 Plumbing Fixtures				
47 Plumbing Fixtures-- Allowance	SF	618,420.0	2.00	1,236,840
Plumbing Fixtures			*$2.00/SF*	*$1,236,840*
D2020 Domestic Water Distribution				
46 Plumbing Equipment-- Allowance	SF	618,420.0	0.75	463,815

Conceptual Cost Plan

Goat Hill Site Item

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

C GOAT HILL BUILDING (continued)

Description	Unit	Qty	Rate	Total
48 Allowance for Domestic Water Pipework, includes hangers, insulation, valves and accessories	SF	618,420.0	2.16	1,335,787
49 Domestic Water--Insulation	SF	618,420.0	0.45	278,289
50 Domestic Water Chlorination, includes 5% Subcontractor MU	SF	618,420.0	0.04	24,737
Domestic Water Distribution			*$3.40/SF*	*$2,102,628*
D2030 Sanitary Waste				
51 Allowance for SWV Pipe work--(CINH) with standard flexible band couplings); Includes fittings, hangers	SF	618,420.0	2.65	1,638,813
Sanitary Waste			*$2.65/SF*	*$1,638,813*
D2040 Rain Water Drainage				
52 Rainwater leaders/Storm Pipework	SF	618,420.0	1.53	946,183
Rain Water Drainage			*$1.53/SF*	*$946,183*
D2090 Other Plumbing Systems				
54 Plumbing permit, documentation, commissioning, supervision and indirects	SF	618,420.0	1.50	927,630
55 Plumbing contractor fee and subcontractor MU	SF	618,420.0	1.45	896,709
56 Testing	SF	618,420.0	0.10	61,842
57 Permits/Manuals/Bonding	SF	618,420.0	0.15	92,763
58 UG Fuel Oil Storage and supply	SF	618,420.0	0.12	74,210
Other Plumbing Systems			*$3.32/SF*	*$2,053,154*
D3010 Energy Supply				
53 Energy Supply--fuel gas supply allowance	SF	618,420.0	0.80	494,736
Energy Supply			*$0.80/SF*	*$494,736*
D3020 Heat Generating Systems				
64 Allowance for Heat Generating Equipment	SF	618,420.0	2.05	1,267,761
65 HVAC HHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves, Insulation and Specialties	SF	618,420.0	0.10	61,842

Conceptual Cost Plan

Goat Hill Site Item

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

C GOAT HILL BUILDING (continued)

Description		Unit	Qty	Rate	Total
66	HVAC HHW Pipework, includes hangers, fittings and insulation--Allowance	SF	618,420.0	4.20	2,597,364
	Heat Generating Systems			*$6.35/SF*	*$3,926,967*
D3030	**Cooling Generating Systems**				
67	HVAC CHW Pipework, includes hangers, fittings and insulation--Allowance	SF	618,420.0	4.20	2,597,364
68	HVAC CHW Piping Distribution, Central Plant Valves, Distribution Isolation Valves and Specialties	SF	618,420.0	0.10	61,842
	Cooling Generating Systems			*$4.30/SF*	*$2,659,206*
D3040	**Distribution Systems**				
69	Allowance for HVAC Equipment	SF	618,420.0	9.00	5,565,780
71	Allowance for HVAC Distribution	SF	618,420.0	9.50	5,874,990
	Distribution Systems			*$18.50/SF*	*$11,440,770*
D3050	**Terminal & Package Units**				
70	HVAC Equipment--Split system air conditioners in IDF and elevator machine rooms--with remote condenser and refrigerant line set	SF	618,420.0	0.16	98,947
	Terminal & Package Units			*$0.16/SF*	*$98,947*
D3060	**Controls & Instrumentations**				
73	DDC Controls - General	SF	618,420.0	5.00	3,092,100
	Controls & Instrumentations			*$5.00/SF*	*$3,092,100*
D3070	**Systems Testing & Balancing**				
75	Balancing Testing and Commissioning-- Includes coordination with the subcontractor	SF	618,420.0	0.65	401,973
	Systems Testing & Balancing			*$0.65/SF*	*$401,973*
D3090	**Other HVAC Systems & Equipment**				
59	HVAC Site Supervision	SF	618,420.0	0.65	401,973
60	HVAC Permit, As Builts and O&Ms--Allowance	SF	618,420.0	0.15	92,763
61	HVAC BIM/Autocad/Revit	SF	618,420.0	0.35	216,447
62	HVAC Contractor equipment and indirects	SF	618,420.0	1.05	649,341

Conceptual Cost Plan

Goat Hill Site Item

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

C GOAT HILL BUILDING (continued)

Description		Unit	Qty	Rate	Total
63	HVAC contractor fee and subcontractor MU	SF	618,420.0	4.92	3,042,626
72	Exhaust fans/ductwork/grilles/flues--allowance	SF	618,420.0	0.80	494,736
74	Allowance for vibration isolation of piping and equipment	SF	618,420.0	0.50	309,210
76	Louvers	SF	618,420.0	0.25	154,605
77	HVAC Equipment Rigging and Hoisting (Per day of pick)	SF	618,420.0	0.05	30,921
	Other HVAC Systems & Equipment			*$8.72/SF*	*$5,392,622*
D4010	**Sprinklers**				
44	Allowance for Fire Suppression Systems including heads, pipework and specialties	SF	618,420.0	3.95	2,442,759
45	Sprinklers--Supervision, drawings and permit - Allowance	SF	618,420.0	0.89	550,394
	Sprinklers			*$4.84/SF*	*$2,993,153*
D5010	**Electrical Service & Distribution**				
78	Electrical documentation, commissioning, supervision	SF	618,420.0	1.50	927,630
79	Electrical contractor fee and subcontractor MU	SF	618,420.0	4.50	2,782,890
80	Testing	SF	618,420.0	0.25	154,605
81	Permits/Manuals/Bonding	SF	618,420.0	0.15	92,763
82	Electrical Panels, Switchboards, ATS, Transformers, etc--Allowance	SF	618,420.0	3.45	2,133,549
83	Feeders, cable trays, conduit, etc--Allowance	SF	618,420.0	5.50	3,401,310
84	Emergency power generation and distribution--Includes URS	SF	618,420.0	1.00	618,420
85	Conduit and wire to light fixtures and controls--Allowance	SF	618,420.0	1.80	1,113,156
86	Outlets and other low voltage devices--Allowance	SF	618,420.0	2.00	1,236,840
87	Conduit and wire to outlets and low voltage devices--Allowance	SF	618,420.0	1.50	927,630
88	LED Light fixtures--Allowance--average cost per program	SF	618,420.0	10.80	6,678,936

Conceptual Cost Plan

Goat Hill Site Item

C GOAT HILL BUILDING (continued)

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

Description	Unit	Qty	Rate	Total
89 Lighting controls--Allowance for all areas	SF	618,420.0	1.80	1,113,156
90 Grounding--Allowance	SF	618,420.0	0.15	92,763
91 Electrical contractor equipment and indirects	SF	618,420.0	2.00	1,236,840
92 Temporary Lighting	SF	618,420.0	1.40	865,788
Electrical Service & Distribution			*$37.80/SF*	*$23,376,276*
D5030 Communications & Security				
93 Public Address, Intercom and clock systems--Allowance	SF	618,420.0	1.25	773,025
94 Audio visual systems--Allowance	SF	618,420.0	1.50	927,630
95 Telecommunications	SF	618,420.0	2.35	1,453,287
96 Security system--Includes CCTV and Access Control	SF	618,420.0	2.25	1,391,445
97 Distributed antenna system - allowance	SF	618,420.0	1.40	865,788
98 Fire alarm system	SF	618,420.0	2.00	1,236,840
Communications & Security			*$10.75/SF*	*$6,648,015*
E1020 Institutional Equipment				
109 Equipment - courthouse program	SF	499,444.7	5.00	2,497,224
110 Equipment - office program	SF	118,975.5	1.00	118,976
Institutional Equipment			*$4.23/SF*	*$2,616,200*
E1030 Vehicular Equipment				
39 Dock equipment	LS	1.0	15,000.00	15,000
40 Parking control equipment	LS	1.0	75,000.00	75,000
Vehicular Equipment			*$0.15/SF*	*$90,000*
E1090 Other Equipment				
41 Window washing equipment allowance - per building perimeter	LF	714.3	250.00	178,575
Other Equipment			*$0.29/SF*	*$178,575*
E2010 Fixed Furnishings				
42 Window blinds	SF	129,511.6	8.00	1,036,093
43 Fixed floor grilles	SF	288.0	45.00	12,960
111 Furnishings - courthouse program	SF	499,444.7	24.00	11,986,673
112 Furnishings - office program	SF	118,975.5	5.00	594,878
Fixed Furnishings			*$22.04/SF*	*$13,630,604*

Conceptual Cost Plan

Goat Hill Site Item

C GOAT HILL BUILDING (continued)

GFAC: 618,420.0 SF Cost/SF: $420.74
Rates Current At June 2016

Description	Unit	Qty	Rate	Total
F1010 Special Structures				
117 Tunnel connection to Jail	LF	250.0	20,000.00	5,000,000
118 MEP and finishes to tunnel	SF	2,500.0	100.00	250,000
Special Structures			*$8.49/SF*	*$5,250,000*
G2050 Landscaping				
113 Site development - building perimeter - street	LF	240.0	1,000.00	240,000
114 Site development - building perimeter - avenue	LF	240.0	1,500.00	360,000
115 Site development per intersection	EA	2.0	225,000.00	450,000
Landscaping			*$1.70/SF*	*$1,050,000*
G3010 Water Supply				
99 Allowance for site fire and domestic water service	LS	1.0	130,000.00	130,000
Water Supply			*$0.21/SF*	*$130,000*
G3020 Sanitary Water				
100 Allowance for sanitary water service	LS	1.0	87,000.00	87,000
Sanitary Water			*$0.14/SF*	*$87,000*
G3030 Storm Sewer				
101 Allowance for site storm sewers and site sedimentation, dewatering and erosion control	LS	1.0	1,167,550.00	1,167,550
Storm Sewer			*$1.89/SF*	*$1,167,550*
G4010 Electrical Distribution				
102 Allowance for site electrical service	LS	1.0	120,000.00	120,000
Electrical Distribution			*$0.19/SF*	*$120,000*
G4030 Site Communications & Security				
103 Allowance for site lighting, temporary site power and lighting, and anticipated relocations	LS	1.0	740,353.00	740,353
Site Communications & Security			*$1.20/SF*	*$740,353*
G4090 Other Site Electrical Utilities				
104 Allowance for site telecom service	LS	1.0	224,000.00	224,000
Other Site Electrical Utilities			*$0.36/SF*	*$224,000*
GOAT HILL BUILDING			*$420.74/SF*	*$260,192,601*

CHAPTER 4

Risk Assessment and Risk Mitigation for Possible Projects

QUALITATIVE RISK ANALYSIS

Qualitative Risk Analysis is a measure of risk or asset value based on a ranking or separation into descriptive categories such as low, medium, high; not important, important, very important etc. on a scale from 1 to 3.

Qualitative Risk Analysis includes methods for prioritizing the identified risks for further action, such as Quantitative Risk Analysis or Risk Response Planning. Organizations can improve the project's performance effectively by focusing on high-priority risks. Qualitative Risk Analysis assesses the priority of identified risks using their probability of occurring, the corresponding impact on project objectives if the risks do occur, as well as other factors such as the time frame and risk tolerance of the project constraints of cost, schedule, scope, and quality.

Qualitative Risk Analysis is usually a rapid and cost-effective means of establishing priorities for Risk Response Planning, and lays the foundation for Quantitative Risk Analysis, if this is required. Qualitative Risk Analysis should be revisited during the project's life cycle to stay current with changes in the project risks. Qualitative Risk Analysis requires outputs of the Risk Management Planning and Risk Identification processes. This process can lead into Quantitative Risk Analysis or directly into Risk Response Planning.

King County Courthouse Revitalization Project
Risk Register
Alternative 1 - No Action
Revision History

Initial June 9, 2016	

Risk Assessment Definitions				
		Cost	Probability	Potential Impact
High	H	> $1,000,000	> 70%	> 6 months
Medium	M	bet. $200,000 and $1,000,000	bet. 30% and 70%	3 - 6 months
Low	L	< $200,000	< 30%	0 - 3 months

Risk Prioritization Definitions		
High	H	3 high ratings
High-Medium	H-M	2 high ratings and 1 medium rating
Medium	M	2 medium ratings and 1 high rating, or 3 medium ratings
Medium-Low	M-L	2 medium ratings and 1 low rating
Low	L	1 medium rating and 2 low ratings, or 3 low ratings

Type of Mitigation Strategy	
P	Procurement
D	Design/Planning
M	Monitoring
R	Replacement

Risk Status	
RI	Risk Identified
PD	Plan being developed
PE	Plan enacted but effectiveness not yet known
EE	Plan enacted and effective
M	Issue mitigated and being monitored

	RISK ASSESSMENT							RISK TRACKING											
				Unmitigated Risk									Current Risk						
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Time Impact	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization	Previous Rating	Changed Rating from Previous	Estimated Exposure
	1	Catastrophic failure of one of the building systems.	One of the existing systems that is beyond the its recommended life cycle fails and the building cannot be used.	3	3	3	H	M	On-going inspection of hot and chilled water piping.			RI							
	2	Catastrophic failure of bus duct in electrical system	Failure of one or both of the existing bus ducts would cause shutdown of life safety systems in courthouse and cause the building to be unusable until the bus duct was repaired. Additionally the current bus duct configuration is out of compliance with the building code and may not be able to be repaired back to its former layout.	3	3	3	H	M	On-going inspection of hot and chilled water piping.			RI							

	RISK ASSESSMENT							RISK TRACKING											
				Unmitigated Risk									Current Risk						
★ Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Time Impact	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization	Previous Rating	Changed Rating from Previous	Estimated Exposure
	3	Failure of heating or chilled water main	Rupture of heating or chilled piping that would render the heating/cooling system inoperable and cause flooding and failure of other building s systems. Cost to repair is minimal but potential cost of loss of building functionality is high.	1	1	1	H	M	On-going inspection of hot and chilled water piping.			RI							
	4	Repair or replacement of existing building elements/systems hampered by lack of as-built information.	Because of a lack of up to date and accurate information on the current building systems when replacement or repair is required, additonal time and cost are needed.	1	3	1	M	M	On-going inspection and documentation of existing and repaired/replaced building systems.			RI							
	5	Steadily increasing cost of maintaining existing building.	Increased cost of maintenance and increased number of FTEs to maintain existing building and systems. The cost of money increases with time which then increases the cost of maintenance. The number of repairs increases as the age of the asset increases.	3	3	1	M-L	M	On-going inspection of hot and chilled water piping.			RI							
	6	Personal injury/death caused by lack of action to correct known hazards of existing electrical system	The current bus duct is non compliant and past its service life. It is difficult finding electrical contractors willing to work on the bus duct system as it currently exist.	3	3	3	H	M	Identify and procure replacement parts for existing bus duct system. Develop and implement replacement project.			RI							
	7	Earthquake greater than 6.5 (Nisqually Quake)	Risk to the building elements that were not upgraded at the time of the structural seismic upgrade. Exterior masonry, interior HVAC equipment, piping systems, lighting, ceilings were not seismically upgraded and will be damaged/destroyed in an earthquake of greater magnitude than the 2001 Nisqually earthquake event.	2	1	1	L	M	Develop and implement plan to upgrade non structural components.			RI							
	8	Building lifespan reduced with no action	With no action the lifecycle use of the building is significantly reduced.	2	3	1	M-L	M	Develop and implement plan to monitor and repair building systems as needed			RI							
	9	Accelerated depreciation of asset.	With no action the lifecycle use of the building is significantly reduced.				L	M	Develop and implement plan to monitor and repair building systems as needed			RI							
	10	Lack of forensic data for decision making. Lack of accurate conformed as-built information.	Decision and planning difficult without accurate information. Also lack of available resources to address issues that arise from lack of data.	1	3	1	L	M	On-going inspection and documentation of existing and repaired/replaced building systems.			RI							

King County Courthouse Revitalization Project
Risk Register
Alternative 2 - Repairs/Upgrades/Alterations to the KCCH
Revision History

Initial June 23, 2016	

Risk Assessment Definitions				
		Cost	Probability	Potential Impact
High	3	> $1,000,000	> 70%	> 6 months
Medium	2	bet. $200,000 and $1,000,000	bet. 30% and 70%	3 - 6 months
Low	1	< $200,000	< 30%	0 - 3 months

Risk Prioritization Definitions		
High	H	3 high ratings
High-Medium	H-M	2 high ratings and 1 medium rating
Medium	M	2 medium ratings and 1 high rating, or 3 medium ratings
Medium-Low	M-L	2 medium ratings and 1 low rating
Low	L	1 medium rating and 2 low ratings, or 3 low ratings

Type of Mitigation Strategy	
P	Procurement
D	Design/Planning
R	Replacement
PI	Public Involvement
M	Monitoring
C	Construction

Risk Status	
RI	Risk identified
PD	Plan being developed
PE	Plan enacted but effectiveness not yet known
EE	Plan enacted and effective
M	Issue mitigated and being monitored

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
☆ Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	1	Public involvement	Project will be very interesting to a wide spectrum of the public. Critical that an effective public involvement plan is developed and implemented. King County Landmarks Commission Process	3	3	1	H	PI	Development and implementation of an effective public involvement plan. Strong coordination between project team and PI team. Conduct Public open house events. Develop a quarterly newsletter. Engage e a PI team to develop a risks mitigation plan. Engage PI team with stakeholders to develop a list of risks. Have PI plan approved by the Oversight Committee. PI plan includes a separate PI risk register.			RI				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	2	King County Landmarks commission process takes longer than anticipated.	The Landmarks commission process is extended because of multiple updates and rejected designs.	2	1	2	M-L	D/PI	Early and continuous involvement during design process.			RI				
	58	Design does not include enough information for contractors to understand the scope.	Designer does not have adequate background with type or scope of work included in project and bid documents are incomplete and cause confusion among bidders and incomplete bids.	2	2	2	M	D	Conduct constructability reviews often during the design phase to ensure the bid documents reflect the full scope of work and reflect the most efficient way to complete project.			RI				
	3	Utilities, other infrastructure inadequate or in very poor condition to service revitalized facility.	Unknown if water (potable and fire), sewer, storm water, data, phone, etc. will need to be upgraded. Off site improvements have not yet been defined. Service entrances for water, fire water systems, electrical, and voice/data, and sewer outflow conditions all are unknown.	3	3	1	H	D	County has made preliminary investigations and repair of south potable water main entrance and fond the pipe almost completely blocked. Early investigation planning should include review of the services entrance conditions, and identify needed sizes of facilities, and any repairs or upgrades required.			RI				
	4	Building stakeholder labor groups working condition changes may delay design and construction.	Replacement of the building systems may cause working conditions to be temporarily outside of the stakeholder labor groups agreed upon level of comfort or service .	1	2	1	L	D	Working with each of the stakeholder labor groups during the planning phase to better understand their operational needs and ensure that these needs are disrupted for as short a time as possible during construction.			RI				
	5	Difficulty of finding adequate lease space for stakeholder group moved from building.	With the current real estate market in Seattle finding an adequate space near the existing courthouse could be difficult and more expensive than planned or budgeted.	2	2	2	M	D	Begin process for identifying needs and securing space during the design phase so that space is available when construction contract awarded.			RI				
	6	Dis-continuity of KC government functions during construction.	With the stakeholder groups being relocated for the phased construction work the chance of interrupted KC government functions increases.	1	2	1	L	D	Work with stakeholder groups and develop contingency plans for uninterrupted communications.			RI				
	7	Redundant/unused pipe/conduit/ducting	Cost to identify and remove unused and redundant piping, conduit, ducting in building as phased construction proceeds.	2	2	2	M	D	Use of accurate as-built information in the design phase to allow efficient removal of unused piping/conduit/duct during construction.			RI				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	8	Impact of upgrade on Historic elements of building	Upgrading courthouse to current codes degrades/destroys historical elements and conditions.	1	2	2	M-L	D	Through cataloging of historical elements so that these elements can factor into the design and phasing work.			RI				
	9	Seismic upgrade of non-structural hollow clay infill walls	The invasiveness of work to perform the seismic work will require a significant amount of destructive rework to the existing drywall exterior walls.	1	3	1	L	D	Provide review of required work to all stakeholder groups to ensure that scope of work required to be performed is understood.			RI				
	10	Construction of new electrical room.	Inability to coordinate space requirements for construction of new bus ducts and electrical rooms with stakeholder groups.	2	2	3	M	D	Involvement of stakeholder groups in planning phase.			RI				
	11	Group relocation during phased work.	Difficulty of moving mixed groups out of and into renovated spaces during phased renovation work.	2	2	2	M	D	Involve Courthouse stakeholder groups during planning phase to insure continuity of internal and intergroup function.			RI				
	12	SEPA process	SEPA is predecessor to many critical permits for the project. SEPA process has public comment periods and is a typical risk on large projects.	3	3	1	H	D	Close coordination between the SEPA team and the rest of the project team. Hire expert consultants to assist with SEPA process. Coordinate SEPA risks from stakeholder engagement sessions with SEPA team.			RI				
	13	Permitting process expands scope of work due to requirements from the AHJ, or from non conforming existing conditions	Through interaction with the AHJ, scope is developed into procurement documents that does not fully meet the requirements for the AHJ, particularly with respect to existing concealed and unknown conditions, creating inconsistencies, and missing scope in the procurement documents	3	3	1	H	D	Thorough forensic examination of existing conditions documented by design team. Existing conditions to be compared to code requirements. Pre permit application meetings with all AHJ agencies to determine scope requirements and decisions required. Extensive design review by independent experts for constructability,			RI				
	14	Budget	Budget is inadequate to mitigate failing building components.	3	3	3	H	D	Modify scope according to priority			RI				

	RISK ASSESSMENT							RISK TRACKING									
				Unmitigated Risk									Current Risk				
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	15	Earthquake greater than 6.5 (Nisqually Quake)	Risk to the building elements that were not upgraded at the time of the structural seismic upgrade. Exterior masonry, interior HVAC equipment, piping systems, lighting, ceilings were not seismically upgraded and will be damaged/destroyed in an earthquake of greater magnitude than the 2001 Nisqually earthquake event.	2	1	1	L	D	Develop and implement plan to upgrade non structural components.			RI				
	16	Domestic water system	Difficulty of updating existing system with courthouse being continuously occupied.	2	2	1	M-L	D	Use of accurate as-built information in the design phase and planned redundancy during phased construction. Also defer maximum amount of civil court caseload to new temporary courts and other county court facilities. Maintain minimal operating courts in the existing facility to handle criminal cases only that have security connections to the existing jail.			RI				
	17	Inferior building systems, materials, and components.	Low quality materials and equipment installed resulting in higher maintenance costs. Delayed occupancy due to failure to meet commissioning requirements.	3	3	1	H	D/P	Develop standards for building materials and building systems to be included in the Owners project requirements . Use Integrated Design to produce Owner Project Requirements. Conduct collaborative design review meetings that engage Building Services and stakeholder occupants in development of all Owners Project Requirements and in Programming Documents for key areas related to Building Services. Gather feedback during design to confirm Building Services risks identified by the Stakeholders were addressed in their element of the procurement documents. Provided lists of Building Services risks to be mitigated by their element. Address Building Services concerns regarding quality in the procurement documents.			RI				
	18	Design procurement - Designer defaults during design and must be replaced during process.	The A/E either defaults during the design phase or is determined to be deficient in their ability to complete the design task.	1	1	2	L	P	Specific requirements detailed in RFP and through vetting of all submitted proposals.			RI				

RISK ASSESSMENT								RISK TRACKING								
				Unmitigated Risk									Current Risk			
Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	19	Design selection process protest	After selection of A/E designer through RFP process one or more of the teams not selected files a protest and the resolution of the protest delays the start of design	1	2	1	L	P	Through vetting of RFP and strict adherence to review and interview guidelines.			RI				
	20	Need for as-built drawings	Difficulty of providing accurate as-built drawings for designer delays the design schedule and reduces the accuracy of the information provided potential bidders in the Contract Documents.	2	2	1	M-L	P	Prior to procurement of designer, working with the county, compile all existing as-built documents on Courthouse to identify missing information and secure/create documents that complete building as-built.			RI				
	21	Engaging an unqualified contractor for work.	If the procurement of the construction contract occurs during a period of high contractor demand and if the selection criteria for the contractor is solely based on the contractor's low bid then the potential for an unqualified contractor increases. This scenario could lead to both poor project management and sub standard quality of work.	2	1	2	M-L	P	Explore alternative delivery methods for construction procurement that give King County flexibility in setting selection criteria that rely on factors other than just pricing. Project delivery methods that focus on collaboration and teamwork, rather than confrontation. Choose an integrated project delivery and engage construction teams early in the project to ensure constructability is considered throughout the design. Ensure that mechanical and electrical contractors maintain contractual responsibility to one company, avoiding multiple vendors for a single trade.			RI				
	22	Complexity of project makes construction procurement and management difficult and carries higher risk than new construction	The difficulty of planning and implementing the phased replacement of the various building systems while the majority of the building is still in use increases the risk of extended construction procurement due to questions and addendum and construction delay caused by unknown/unforeseen conditions.	1	2	2	M-L	P	Rigorous Division 1 requirements. Pre-Construction coordination. Reduction of bid items/alternates/unit pricing.			RI				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
★ Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	23	County's risk mitigation strategies for the project at final design completion are not adequately captured in the procurement documents.	The County legal agreement with the Contracting team will be embodied in large part in the documents that will be developed in future as part of the design process. For the purpose of this risk assessment these documents are referred to as procurement documents. This risk is a breakdown in what was wanted and what was communicated as existing conditions in procurement documents.	3	3	1	H	P	Careful preparation of conformed as built drawings is essential and a first priority task. Coordination between project management team/procurement/legal is of upmost importance between now and when the contract is signed between Contractor and King County. Detailed risk matrix indicates areas where coordination is needed. Weekly coordination meetings with the project management team and the design team will occur between now and the time the Contractor is under contract.			RI				
	24	Inadequate funds are provided for the project to be fully implemented	The County attempts to perform the project over many years using 3421 funds or some other inadequate funding mechanism resulting in many phases over many years. Project delivery costs skyrocket as a result. Constant building operational disruptions occur due to services being interrupted during the course of work (cooling, heating, electrical service, voice and data etc.) Multiple contracting entities create confusing warranty responsibilities.	3	3	1	H	P	Develop a funding mechanism that allows a continuous method of project delivery using a single contract entity.		Work with PSB to develop strategies for funding the project	PD				
	25	County's needs during construction are not adequately captured in the procurement documents	These needs include but are not limited to determining how access to the work for the contractor would be provided, while maintaining integrity of remaining building operations, traffic control, hours of work, phasing of the job, noise control, outdoor security. Issue with Superior Court operations during construction and DAJD 24/7 operations, confidentiality issues with agencies, among many others.	3	3	1	H	P	These needs will primarily be described in Div 1 of the contract with input from occupant representatives. Detailed items need to be developed with stakeholders and listed in the detailed risk matrix and will be folded into the Div 1 requirements. Work with stakeholder groups to maximize portion of the building available to be renovated during each phase and reduce number of phases.		develop design to adequately capture all County requirements through design reviews & design submittals.	PD				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
★ Star = Important Watch Level	Risk Number	Initial Unmitigated Risk Identification	Risk Description	Cost	Probability	Delay	Unmitigated Risk Prioritization	Type of Mitigation Strategy	Individual Risk Mitigation Plan	Completed Actions	Next Steps	Risk Status	Cost	Probability	Urgency	Current Risk Prioritization
	26	Concern that the specific detailed needs of the user groups will not get fully incorporated into the project.	Temporary swing space relocations do not meet requirements of the user groups.	3	3	1	H	P	User groups are represented in many of the decision making committees and focus will be given to user needs by the project management committee. User groups will participate in development of performance specifications, Contractor selection, programming, and collaborative design review meetings.		approve charter and PMP, set up user group committee	PD				
	27	Concern that the decision making process in the County may be too slow to keep pace with a project of this magnitude.	Policy level decisions are likely to be needed throughout the project. Larger concern is that currently prescribed methodology for use of contingency is cumbersome and slow and will not keep pace with the project as the project progresses and issues arise. Council budgeting process could cause delays, expenses, and unnecessary phasing of the project.	3	3	1	H	P	Policy level decisions need to be identified early and resolved quickly. Recommend revisit of contingency policy in PMP as project progresses towards construction. County to develop clear decision making process identified in the PMP, including stand in decision makers for any decision maker absences. Contract documents will state how long the Contractor can expect for a decision to be made.		Confirm PMP, decision making authority, and contingency use process	PD				
	28	Concealed conditions that are non conforming to current code, or are mandated for repair/replacement (out of scope) by the AHJ during field inspections after contract award.	This can be in the form of existing mechanical, electrical, architectural, or structural conditions, and other materials, and cultural items.	3	3	1	H	P	Forensic investigation along with destructive investigation to be conducted during the scoping phase by the County. Development of a conformed set of as constructed drawings.		complete RFP process, develop work scope for design team	PD				

	RISK ASSESSMENT							RISK TRACKING								
				Unmitigated Risk									Current Risk			
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	29	There could be issues where the County included a requirement in the Specifications, or Performance Standards but the Contractor does not meet the Specification/Standard.	Once a County need is identified, and a specification or performance standard is developed, thought needs to be given to how compliance with each performance standard will be tested. Tolerances need to be developed and definition of defective work needs to be developed.	3	3	1	H	P	Key items for the successful outcome of the project are to be identified. specifications and/or Performance Standards developed and also referenced in contract. Methods to test or measure the product against the specification and/or performance standard will be developed as part of quality control implementation. Correction of defective work will be required in the contract. Use of commissioning by independent experts will be utilized. Detailed quality control plans will be required to address the Qualitative an Quantitative control methodology. Dispute resolution methodology to be identified in the contract. Review of elements during design.			RI				
	30	construction related permits can cause delays.	This includes but is not limited to the permits issued by City of Seattle including but not limited to general building permits, electrical permits, and plumbing permits issued by the State.	3	3	1	H	P	County should independently understand the permit sequence and durations so that the County can monitor progress during the project. County to transfer risk to obtain and comply with permits to contractor when possible.		engage investigation and evaluation team	RI				
	31	Inadequate design and project delivery to support security during construction. Inadequate design to support security during operation. Safety and security review inadequate.	It is very important to have adequate input from the groups that are responsible for safety. (KCSO, DAJD, FMD, Seattle Police Department)	3	3	1	H	P	Create a safety and security review team of combined user groups to achieve a cohesive review.			RI				
	32	Changes in decision makers and other critical team members	Could be at elected level, King County staff level, consultant level.	3	2	2	M	P	Decision tools to record decisions. For example approval of the programming documents.			RI				

RISK ASSESSMENT								RISK TRACKING								
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	33	Cost increase	Cost of materials, labor, permits, permit requirements and mitigation requirements, supply line issues, sub Contractor performance, owner changes, and owner decisions. Includes escalation of costs. Includes market increases, lack of competition.	3	3	3	H	P	Ongoing and multiple cost estimates during scoping and design phases (internal and external). Develop contract language that ensures the Contract will require that the contractor be responsible for escalation. Develop highly detailed and comprehensive work scope. Develop comprehensive as built drawings and provide to contractor. Engage earned value practice during the project. Utilize cost loaded project schedules including during design phase. Contract management during the construction phase to ensure change orders are being reviewed and properly managed. Identify early in the design process how the County could control issues (problems/impacts associated with stakeholders) that add risk to the contractor and result in a decrease in costs.			RI				
	34	Financial Management Structure	This includes controlling total project costs, meeting cash flow, having adequate contingency, and managing expectations for unspent contingency.	3	3	3	H	P	Financial management plan includes cost estimates at critical points on the project, contingency planning, a second look at decision process for using contingency. Development of priority list for unspent contingency. Prioritizing interest of stakeholders. Develop a comprehensive WBS structure for managing costs. Identify early on the methodology for measurement of earned value for all team members. Develop and issue monthly cost reports for the project.		As the project progresses it will become possible to know more about individual project risks. As more is known about the risks, and they can become better defined, potential planning level dollar amounts for specific key risk issues can be developed. This will support advance planning for possible use of contingency funds.	RI				
	35	Inadequate insurance provisions	Decisions need to be made about who will cover what liabilities with what level of insurance.	3	2	3	H	P	Coordination between Risk Management and Procurement. Consider King County providing a wrap-around insurance policy for the entire project.			RI				

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	36	Inadequate focus on team relationships	Includes weak relationships among user group and Contractor. This also includes relationships among the project team.	3	2	2	H	P	Partnering Session with Contracting team and County will be considered. Coordination with user groups will be required. Development of team culture and revisiting the PMP when necessary.			RI				
	37	Procurement process protested.	Procurement protest could delay project. Inadequate selection criteria could result in the selection of a second tier team.	3	2	1	H	P	Team development of procurement documents. Team includes: Procurement, FMD, Superior Court, DAJD, and legal. Strong coordination among all entities. Develop a selection process based on qualifications and experience with similar projects.			RI				
	38	Failure to meet King County green building ordinance and US Green Building Council requirements.	King County has requirements for green building which includes meeting Gold LEED certification. During design and construction.	3	3	1	H	P	Involvement of King County's green building team in development of program and performance standards. Risk identification by King County's Program Manager for Green Tools. Ongoing involvement of County Green Building team during the project.			RI				
	39	Labor disputes during construction	Labor disputes can cause delays on the project.	3	3	1	H	C	County to require contractor to implement a PLA. Engage a mediator, arbitrator or negotiator depending on the issues that may arise			RI				
	40	Metal window panels	Conditions behind the window panels are worse than anticipated.	2	2	2	M-L	C	Preconstruction investigation prior to removal of windows.			RI				
	41	Switchover of electrical systems	Failure of existing electrical system while phased installation of new system is on-going.	3	2	3	H-M	C	Construct new bus ducts prior to the phased construction work so that if a failure occurs the redundancy is in place and the down time is reduced.			RI				
	42	Switchover of HVAC system	Failure of existing HVAC system while phased installation of new system is on-going	3	2	3	H-M	C	Install new fan and cooling tower prior to the phased construction.			RI				

	RISK ASSESSMENT							RISK TRACKING								
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	43	Catastrophic failure of one of the building systems.	One of the existing systems that is beyond the its recommended life cycle fails and the building cannot be used.	3	3	3	H	M	On-going periodic inspection of critical building systems and recommendations for action			RI				
	44	Catastrophic failure of bus duct in electrical system	Failure of one or both of the existing bus ducts would cause shutdown of life safety systems in courthouse and cause the building to be unusable until the bus duct was repaired. Additionally the current bus duct configuration is out of compliance with the building code and may not be able to be repaired back to its former layout.	3	3	3	H	M	On-going periodic inspection of buss duct system.			RI				
	45	Failure of heating or chilled water pipe main	Rupture of heating or chilled piping that would render the heating/cooling system inoperable and cause flooding and failure of other building s systems. Cost to repair is minimal but potential cost of loss of building functionality is high.	1	1	1	H	M	On-going periodic inspection of hot and chilled water piping.			RI				
	46	Repair or replacement of existing building elements/systems hampered by lack of as-built information.	Because of a lack of up to date and accurate information on the current building systems when replacement or repair is required, additional time and cost are needed.	1	3	1	M	M	On-going inspection and documentation of existing and repaired/replaced building systems.			RI				
	47	Steadily increasing cost of maintaining existing building.	Increased cost of maintenance and increased number of FTEs to maintain existing building and systems. The cost of money increases with time which then increases the cost of maintenance. The number of repairs increases as the age of the asset increases.	3	3	1	M-L	M	Repair all system in a comprehensive project			RI				
	48	Biological hazards caused by water leaks.	Due to the age of the piping and the existing structure any water leaks caused by a system failure could result in biological hazards (mold).	2	2	1	M	M/R	Continue to monitor and replace current domestic water system to ensure that any leaks are identified early enough that hazardous situations are avoided.			RI				
	49	Personal injury/death caused by lack of action to correct known hazards of existing electrical system	The current bus duct is non compliant and past its service life. It is difficult finding electrical contractors willing to work on the bus duct system as it currently exist.	3	3	3	H	M/R	Identify and procure replacement parts for existing bus duct system. Develop and implement replacement project.			RI				

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	50	Building lifespan reduced with no action	With no action the lifecycle use of the building is significantly reduced.	2	3	1	M-L	M/R	Develop and implement plan to monitor and repair building systems as needed			RI				
	51	Accelerated depreciation of asset.	With no action the lifecycle use of the building is significantly reduced.	1	1	1	L	M/R	Develop and implement plan to monitor and repair building systems as needed			RI				
	52	Lack of forensic data for decision making. Lack of accurate conformed as-built information.	Decision and planning difficult without accurate information. Also lack of available resources to address issues that arise from lack of data.	1	3	1	L	M/R	On-going inspection and documentation of existing and repaired/replaced building systems.			RI				

CHAPTER 5

Prioritization for Possible Projects

INTRODUCTION:

A recommended prioritization of projects is located on the following pages. The ‘Priority 5’ designation identifies the most critical and important projects that should be completed in the first phases of a revitalization project. Less critical projects are assigned lower priorities and are designated ‘Priority 4’ down to the least critical projects in the ‘Priority 1’ section. The priority numbers 5 through 1 represent the project priority designations in the risk assessment register located in Chapter 4 of this report.

Please note that many of the most critical projects are interrelated and would likely occur at the beginning of a major phased revitalization of the building.

Priority 5

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Mechanical			
Building Code Compliance			
Fire/Life Safety Requirements			
• Fire rate existing shafts.	Done on a floor-by-floor basis, concurrently with other upgrades on those floors.	Code compliance and mitigation of life safety issues.	Code Compliance.
• Install Fire-Smoke Dampers where applicable/necessary.	Done on a case-by-case basis.	Code compliance and mitigation of life safety issues.	Code Compliance.
• Replace opening element on all rooftop smoke hatches.	Done on a case-by-case basis.	Code compliance.	Life Safety System Issue.
Air Distribution Systems			
Restrooms			
• Toilet Room Exhaust System Upgrades.	All vertical ductwork to be completely replaced. Large gaps of ductwork are missing from these systems.	Code compliance.	System cannot operate appropriately without substantial replacement. There are code and occupant health concerns with the current system.
Electrical			
480V Power			
• Replace 480V East and West Bus Risers.	Required new risers to be constructed in a new location while existing risers keep the building in service. Cut over to new risers can occur only after new risers have been fully installed. Temporary shut down of equipment being served by a riser will occur during cut over to new riser.	Existing switchboard was replaced in 2006, is fully rated, and in excellent condition and does not need to be replaced. Long term building occupancy.	Electricians will not risk working on any equipment connected to the bus ducts. Prevents maintenance and any work done between risers and downstream equipment on upper levels.

Priority 5

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
	An alternative is to allow either the east or west upper levels to be shut down while its associated existing riser is removed and replaced in approximately the same location. Previous option will likely have less down time.		Electrical insulation becomes brittle over time. When worked on, it has a significant chance of fracturing, which increases the chance of the bus sparking and exploding when it is next energized.
208V Power			
• Replace 208V Power Transformers and Panels.	208V transformers and panels can be replaced one at a time during off hours. If a certain space has a 24/7 up-time requirement, the functions of that space may need to be relocated for the duration of the construction effort. For levels above the basement, replacement of Bus Risers and cut-over to the new bus risers must occur before transformer and panel replacement can be done.	Long term building occupancy.	Fire hazard - Transformer's internal insulation may have aged to the point that it's no longer sufficient. Fire hazard - Panel board circuit breakers may be fused closed due to age, thus not providing over-current protection. For transformers, their electrical insulation becomes brittle over time. If an when it will completely break down to the point of failure is an unknown, but when it does, the transformers will spark and explode. For panels, their circuit breakers stop "breaking" when they get old enough. The result is that someone can ask for too much power, and rather than the circuit breaker flipping and

Priority 5

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
			cutting power, the wiring and the end device will heat up and possibly cause a fire.
Electrical Equipment Analyses and Labels			
• Provide labels for all unlabeled equipment.	A survey to determine names (as shown on the most recent electrical drawings) should be conducted before any significant electrical work is done.		No life safety/property damage concerns, but work on existing systems will be difficult if equipment are unknowns. Without proper labeling, it would be very difficult to link the design (paper) to what's real. A typical problem could be trying to replace Panel A. Without labels, the contractor will not be able to identify which Panel he is supposed to replace in the field.
• Provide Arc Flash Analysis and label equipment accordingly.	This study should occur after all equipment has been identified, and also before any significant electrical work is done.		Maintenance Safety - electricians need to know what level of personal protective equipment (PPE) is required if and when doing work. When working on electrical equipment, safety gear is required. The labels indicate the gear requirements. If someone were to work on equipment without the proper safety gear, if an event were to occur, the worker could be seriously injured or killed.

Priority 5

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Plumbing			
Building Code Compliance			
• Fire rate existing shafts.	Done on a floor-by-floor basis, concurrently with other upgrades on those floors.	Code compliance and mitigation of life safety issues.	Code Compliance.
Telecommunications/Low Voltage			
Low Voltage Vertical Cabling			
• Remove abandoned cabling.	Done on a floor by floor / space by space basis, subsequent to new VOIP system installation.	Code compliance.	Abandoned cabling in accessible areas and not labelled for future use must be removed.
Low Voltage Horizontal Cabling			
• Remove abandoned cabling.	Done on a floor by floor / space by space basis, subsequent to new VOIP system installation.	Code compliance.	Abandoned cabling in accessible areas and not labelled for future use must be removed.
Communication Rooms			
• Provide appropriate firestopping at all floor/wall penetrations.	Done on a floor by floor / space by space basis.	Code compliance.	Code compliance.

Priority 5

Architectural

Exterior/Building Envelope

Life Safety

- Remove the 1960s-era aluminum windows, louvers, and curtain wall panels from the exterior of the building. The curtain wall components and steel structural supports should be carefully detached and removed from the brick masonry veneer to avoid causing further damage to the masonry.
- Retain and protect any remaining historic double-hung wood windows revealed by the removal of the metal panels. At locations where the historic windows are missing or too deteriorated to rehabilitate, install temporary weathertight coverings and insulation at the historic window openings during the brick masonry seismic stabilization project phase.
- Seismic upgrade of unreinforced hollow clay tile (HCT) infill walls: Install strongbacking at the HCT infill walls located on all facades at the perimeter of the building and anchor the HCT walls to the existing reinforced concrete structure. This work would likely require the partial removal of existing plaster finishes, millwork, and casework to allow for the installation of the strongbacking. A structural engineer will specify if the strongbacking would be made of steel, carbon-fiber reinforcement, or a combination of both materials. (Refer to memorandum from DCI Engineers to Rolluda Architects dated November 16, 2011 and memorandum from Rolluda Architects to King County dated December 12, 2011).
- Seismic upgrade of brick masonry veneer: Anchor the brick masonry veneer on all facades at the perimeter of the building to the existing concrete frame and additional steel strongbacking using helical fasteners through mortar joints to meet basic requirements of ASCE Standard 31 –*Seismic Evaluation of Existing Buildings* . (Refer to memorandum from DCI Engineers to Rolluda Architects dated November 16, 2011 and memorandum from Rolluda Architects to King County dated December 12, 2011).

Priority 5

Interior
Life Safety

- Construct new electrical rooms to house the new vertical electrical bus ducts, distribution panels, transformers, and other electrical system components. Two rooms will be required for each level of the building above the basement: one to serve the east wing and one to serve the west wing. Building code requires these spaces to have 2-hour fire rated enclosures and a 1 ½-hour fire rated access door. The rooms must be large enough to have sufficient space both for the electrical equipment and code-mandated clear spaces required to safely service the equipment. If the new electrical rooms are located adjacent to historic corridors, new access doors should ideally be located within existing door openings in order to minimize potential impacts to the historic marble wainscoting and other historic finishes. If locating doors in existing door openings is not possible or practical, new access door openings should be installed in a manner that minimizes the impact to historic finishes as much as possible.
- Clean vertical MEP shafts and plumbing risers. Abate hazardous materials. Demolish and remove all abandoned wiring, low voltage systems, piping, and ducting where occurring in vertical chases and horizontal plenum spaces.
- Install strongbacking at the hollow clay tile (HCT) infill walls that may occur at vertical MEP shafts or egress stairs and anchor the HCT walls to the existing reinforced concrete structure. This work may require the partial or complete removal of existing plaster finishes, millwork, and casework to allow for the installation of the strongbacking. A structural engineer will specify if the strongbacking would be made of steel, carbon-fiber reinforcement, or a combination of both materials.
- Install 2-hour fire rated shaft liner material at the east and west MEP riser vertical chases. Replace access doors with 1 ½-hour fire rated doors.
- Remove existing suspended acoustical ceiling tile (ACT) system to allow open access for HVAC upgrades, fire protection work, plumbing upgrades, etc. This work will likely be phased. Once HVAC upgrades and other work are complete, install new, seismically-braced, code-compliant ACT system.
- Once HVAC duct repairs, low voltage wiring upgrades, plumbing work, and fire protection work is complete, ensure that all penetrations throughout the building are fire-stopped per code.

Priority 4

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Mechanical			
Air Distribution Systems			
Fan Coil (Perimeter Zone) AHU System			
• Replace AHU supplying ventilation air to FCU zones with heat recovery AHU's. Heat recovery shall be run-around coils. Heat wheels are not allowed.	Temporary AHU will be provided and connected to riser while existing unit is replaced. Each unit will have to be replaced sequentially if only one temporary AHU is purchased.	The new system will be compliant with the 2015 Energy Code DOAS (dedicated outside air system) requirement. The system will operate in a similar fashion to now, but with heat recovery.	Current systems are past service life, leaking, and energy inefficient.
Fan Coils			
• Install condensate drains, piping, and pans for FCUs throughout the building.	Work to be performed when each wing is shut down and employees are relocated.	By providing flow control of outside air to each heat pump, the system will be brought up to the 2015 code. This system will be more efficient than systems being installed under the 2012 code and equally efficient to new systems being required under the 2015 code.	No life safety/property damage concerns, but replacement will significantly improve efficiency.
• Change-over to 44F chilled water distribution building-wide.	Change-over can only occur after condensate drains/drip pans, and associated piping has been installed.	The chilled water system is currently be drastically under-utilized. The chilled water running at higher temperatures does not allow the building to be dehumidfied, which creates a stuffy warm feeling in all spaces. All spaces shall benefit from this change.	No life safety/property damage concerns, but replacement will significantly improve efficiency.

Priority 4

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Dual Duct (Interior Zone) AHU System			
• Replace existing (2) AHUs with dual duct, dual fan system.	Temporary AHU will be provided and connected to riser while existing unit is replaced. Each unit will have to be replaced sequentially if only one temporary AHU is purchased.	A dual-duct dual-fan system is a very energy efficient system that is only used in existing dual-duct single-fan retrofits due to the high up front costs of building a new one. A new system would require two ducts and more shaft space, which is too valuable in new construction.	Current systems are past service life, leaking, and energy inefficient.
• Controls for each dual duct box.	Existing controllers to remain but sequence of operations will need to be redone to comply with the dual fan system.	The boxes have been recently replaced and each have independent control of the hot and cold duct. Only programming is required.	Current systems are past service life, leaking, and energy inefficient.
• Decommission AHU's serving upper floors and place back on the dual duct system.	The upper floors will need to be on temporary air until the custom dual fan units are completed. Change over will happen at the same time as the main building.	The separate units were incorporate to address building comfort complaints. With the new systems being put in, the two units can be removed, providing additional space on the fan floor and requiring less maintenance due to less equipment.	Current systems are past service life, leaking, and energy inefficient.
IT Rooms			
• Cooling Upgrades - Fan Coil upgrades / additions / replacements.	Done on a space-by-space basis.	All IDF and MDF rooms have cooling provided, but many of the rooms are still at higher than recommended temperature ranges.	Upgrades recommended to prevent potential electrical / telecom equipment overheating and failure.

Priority 4

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Elevator Machine Room			
• Provide dedicated AHU to serve machine rooms on fan floor and 9th floor.	Units on the fan floor can be connected to outside air intakes for the fan floor. A chilled water AHU can be used for cooling with 100% OA economizer. On the 9th floor, there are louvers available for a floor mounted AHU to provide cooling with 100% OA economizer and relief from the 9th floor.	Proper conditioning of elevator machine room.	Required for proper conditioning of Elevator Machine Room.
Ductwork			
• Cleaning, sealing, and reinsulating of all supply ductwork.	Work to be performed when each wing is shut down and employees are relocated.	Existing infrastructure is reused by bringing up to current construction standards.	Current systems are past service life, leaking, and energy inefficient.
• Repairing and sealing of all general exhaust ductwork. Install airflow measuring stations at each floor.	Work to be performed when each wing is shut down and employees are relocated.	Existing infrastructure is reused by bringing up to current construction standards.	Current systems are past service life, leaking, and energy inefficient.
• Installation of control dampers at each floor for building pressurization control.	Work to be performed when each wing is shut down and employees are relocated.	Existing infrastructure is reused by bringing up to current construction standards.	Current systems are past service life, leaking, and energy inefficient.
• Insallation of new fire-smoke dampers.	Work to be performed when each wing is shut down and employees are relocated.	Existing infrastructure is reused by bringing up to current construction standards.	Current systems are past service life, leaking, and energy inefficient.
• Air leakage testing.	Ductwork is leaking substantially and 100% of all duct systems shall be tested upon completion of work.	Proper mechanical system operation.	Required for proper mechanical system operation.

Priority 4

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
• Balancing of all diffusers and equipment.	Standard TABC work upon completion of work.	Proper mechanical system operation.	Required for proper mechanical system operation.
Piping			
• Balancing of all coils.	Standard TABC work upon completion of work.	Proper mechanical system operation.	Required for proper mechanical system operation.
Commissioning			
• Provide full commissioning of all new systems and retro commissioning of existing equipment to remain.	Standard commissioning work upon completion of work.	Proper mechanical system operation.	Required for proper mechanical system operation.
Controls			
• Controls/BMS upgrade.	BACNet: The building is currently not on BACnet. Floor by floor panels will need to be flashed and some controllers upgrade. Very little hardware needs to be replaced on existing equipment. The sequence of operation for all equipment will need to be rewritten for all systems, existing and proposed.	A complete new controls system is not required. Replacing the entire system would be extremely costly.	Reprogramming of controls / updating sequence of operations will ensure that new and replaced systems operate properly.

Electrical

Motor Control Centers			
• Replace Motor Control Centers in Basement.	Coordination with mechancial systems required, as mechanical systems will need to shut down for MCCs to be replaced.		Fire hazard - circuit breakers may not provide proper overcurrent protection.

Priority 4

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
	May be possible to replace during times of the year when basement mechanical systems are least in use (e.g. the winter months, when cooling requirements are less). Otherwise temporary discrete power and controls may need to be provided for critical mechanical systems while MCCs are replaced.		Similar to panels, the circuit breakers may no longer be functional. This could lead to a fire in the same way.

Plumbing

Domestic Cold Water

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
• Replace water entry piping and equipment that was not recently upgraded.	Change-over will need to temporarily suspend water service to half of building.	Current piping is in poor shape; replacement will ensure that the system is operating with the required capacity.	High potential for Pipe Bursts (and significant property damage).
• Replace vertical pipe risers.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and risk mitigation.	High potential for Pipe Bursts (and significant property damage).

Priority 4

Architectural

Exterior/Building Envelope

- Repair any damaged historic terra cotta masonry window sills and lintels at areas of the façade where the aluminum curtain wall panels were removed.
- Repair damaged terra cotta masonry at horizontal belt courses identified in previous masonry inspection reports between the third and fourth levels of the building. (Refer to memoranda from Wiss, Janney, Elstner Associates dated July 31, 2012 and August 3, 2012).
- Rehabilitate remaining historic double-hung wood windows or prepare the window openings for the installation of new appropriate replacement windows.
- Repoint mortar joints in brick masonry, terra cotta masonry, and stone masonry. A sealant appropriate for masonry restoration applications can be applied to the sky-facing mortar joints in order to minimize water intrusion into the masonry veneer.
- Install 344 replacement wood windows at areas where metal window wall is removed. Windows must be identified and enumerated by type in order to determine the scope of work for this alternative. (This was suggested in the 2013 DLR Group report).
- Install additional insulation at exterior perimeter walls after the strongbacking is completed. (This was suggested in the 2013 DLR Group report).

Interior

- Install work platforms to provide safe work areas in plumbing chases. (Refer to the FSi domestic water supply report and schematic design package).
- Install new lighting at vertical MEP riser shafts, plumbing risers, and new electrical rooms. (Adding work lighting at plumbing shafts noted in FSi domestic water supply report).

Priority 3

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Mechanical			
Chilled Water			
• Replace chilled and condenser water pumps and controls (VFDs).	Pumps may be replaced in sequencial order along with the VFDs to allow the system to continue to run on the remaining pumps.	Properly working new equipment	Operations has indicated that these pumps are wearing out and VFDs not working properly.
Air Distribution Systems			
Outside Air Intakes			
• Replace all dampers and actuators on outside air and relief louvers.	To be replaced before connecting air intakes to replaced AHUs.	Proper operation of airside systems.	Replacement will ensure proper operation of airside systems.
Fan Coils			
• Replace all outside air ducts serving FCU's. Disconnect any existing induction units.	Work to be performed when each wing is shut down and employees are relocated.	By providing flow control of outside air to each heat pump, the system will be brought up to the 2015 code. This system will be more efficient than systems being installed under the 2012 code and equally efficient to new systems being required under the 2015 code.	Current system is past service life and energy inefficient.
• Provide outside flow control to each fan coil.	Work to be performed when each wing is shut down and employees are relocated.	By providing flow control of outside air to each heat pump, the system will be brought up to the 2015 code. This system will be more efficient than systems being installed under the 2012 code and equally efficient to new systems being required under the 2015 code.	Current system is past service life and energy inefficient.

Priority 3

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Basement Zone AHU			
• Replace multi-zone AHU that serves the basement.	One for one replacement. AHU may need to be upsized for new basement loads.	New unit will appropriately serve current basement use.	Unit is under-sized for the current function of the basement zone that it serves.
Work Release Levels 10-12			
• Rooftop AHU Replacement (2).	Temporary AHU will be provided and connected to riser while existing unit is replaced. Each unit will have to be replaced sequentially if only one temporary AHU is purchased.	Units have been refurbished in the past few years, but overall are past recommended equipment life.	Current system is past service life and energy inefficient.

Plumbing

Domestic Hot Water			
• Replace booster pumps.	Change-over will need to temporarily suspend water service to half of building.	Current pumps are in poor shape; replacement will ensure proper domestic hot water distribution.	Replacement will ensure proper distribution to fixtures.
• Replace horizontal domestic hot water distribution throughout the building.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and risk mitigation.	Potential for Pipe Bursts (and moderate property damage).
Domestic Cold Water			
• Replace horizontal domestic cold water distribution throughout the building.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and risk mitigation.	Potential for Pipe Bursts (and moderate property damage).
• Replace booster pumps.	Change-over will need to temporarily suspend water service to half of building.	Current pumps are in poor shape; replacement will ensure proper domestic water distribution.	Replacement will ensure proper distribution to fixtures.

Priority 3

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Sanitary and Storm			
• Replace horizontal waste, vent and storm piping throughout the building.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and risk mitigation.	Potential for Pipe Bursts (and moderate property damage).
• Replace all sewage ejectors and water booster pumps.	Replacement will need to temporarily suspend operation.	Proper system operation and risk mitigation.	Current system is past service life and potentially ineffective.

Telecommunications/Low Voltage

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Low Voltage Vertical Cabling			
• Survey, trace, and label all LV cabling on premises. Provide complete as-built drawings with outlet schedule, showing pathways, routing and installation.			Tracing and identification of cables will be needed to support many of the other recommendations, including removing abandoned cabling. Documenting that effort should be a priority so as to capture as much value out of the process as possible.
Low Voltage Horizontal Cabling			
• Survey, trace, and label all LV cabling on premises. Provide complete as-built drawings with outlet schedule, showing pathways, routing and installation.			Tracing and identification of cables will be needed to support many of the other recommendations, including removing abandoned cabling. Documenting that effort should be a priority so as to capture as much value out of the process as possible.
Communication Rooms			
• Provide adequate cooling in all telecom rooms.	This should be coordinated with mechanical work on the same floor/section.		Inadequate cooling will result in reduced equipment life.
• Provide permanent cooling solution in room W259.	This should be coordinated with mechanical work on the same floor/section.		Current portable equipment is functioning but is occupying much of the room and ductwork is makeshift.

Priority 3

Architectural

Exterior/Building Envelope

- Install light control devices at replacement windows at courtrooms and other interior spaces formerly blocked over with metal curtain wall panels. Solar control could use blinds, shades, solar film, etc. Alternately, if users want no natural light at the interior spaces, insulated walls could be constructed inboard of the new windows. The layer of gypsum board facing outward can be painted a dark paint color to maintain the outward appearance of the restored windows.
- Repair the historic circa 1914-1916 metal windows at the lower floors of the building.

Interior

- Remodel existing restrooms or add additional restrooms to provide increased plumbing fixture counts mandated by code. ADA-compliant facilities must be provided either in the remodeled restrooms or by adding single-fixture, accessible toilet rooms on each floor.
- Remodel existing restrooms at jury rooms to provide accessible toilet facilities for sequestered jurors.

Priority 2

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Mechanical			
Chilled Water			
• Cooling Tower Replacement.	Cooling towers are operating sufficiently, but are past recommended equipment life and have potential for decreased efficiency and failure.	Cooling towers are currently operating sufficiently, but replacement will minimize risk of failure and improve operating efficiency.	System is operating appropriately, immediate replacement is not required, but is recommended.
• Replace hydronic piping (plant only).	Piping appears to be in good shape from existing piping report. Piping to remain but planned for replacement at later date.	The piping having substantial life remaining allows for money to be spent on more critical items. Replacement should be budgeted for future.	Piping has significant service life left, though it is not clear exactly how much.
Air Distribution Systems Piping			
• Replace all heating and chilled water risers and distribution.	Piping appears to be in good shape from existing piping report. It is not recommended to replace at this time. Piping to remain but planned for replacement at later date. Thought should be put into piping riser access during design and construction of other systems.	The piping having substantial life remaining allows for money to be spent on more critical items. Replacement should be budgeted for future.	System is operating appropriately, immediate replacement not required.
• Replace all heating water distribution piping outside of existing boiler room.	Done on a floor-by-floor, space-by-space basis.	Distribution piping from the main branches has been known to leak. All piping should be checked for leaks and replaced on a case by case basis. and replaced on a case by case basis.	Piping has significant service life left, though it is not clear exactly how much.

Priority 2

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
• Remove all abandoned steam piping, HVAC piping, ducts and other items no longer in use.	Done on a floor-by-floor, space-by-space basis.	By removing existing equipment and materials, it provides more room for other equipment as well as eliminating confusion for future facilities staff on what items do upon visual inspection.	Recommended for ease of maintenance and operation.
Plumbing			
Domestic Cold Water			
• Upgrade fixtures - toilets, lavatories.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and water efficiency.	Replacement of fixtures will increase water efficiency and reduce operating cost.
Sanitary and Storm			
• Replace toilet fixtures throughout the building.	Done on a floor-by-floor, space-by-space basis.	Proper system operation and risk mitigation.	No life safety/property damage concerns, but replacement is required.
Demolition			
• Remove all abandoned piping and equipment no longer in use.	Done on a floor-by-floor, space-by-space basis.	Maintenance and operation issues minimized.	Recommended for ease of maintenance and operation.
Telecommunications/Low Voltage			
Low Voltage Pathways			
• Provide appropriate cable supports throughout all levels.	Install new cable tray where rquired. Relocate.		Existing cable installation does not follow best practices and could result in shortened cable lifespans. Additionally, because low voltage cabling is currently supported by electrical and mechanical equipment, it will need to be moved/reinstalled by this project as electrical, mechanical, piping updates are made.

Priority 2

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Communication Rooms			
• Remove abandoned equipment.	Done on a floor by floor / space by space basis.		Removal of abandoned equipment is not a code issue but could result in reclaimed floorspace. Cost could be offset by recycling of equipment.
Low Voltage Systems			
• Replace analog phone system with VOIP. Remove analog phone cabling and equipment.	Install before removal of legacy equipment and cabling.		Upgrading of this system would allow the removal of large amounts of building cabling and legacy equipment and could result in reduced operating expenses.

Priority 2

Architectural

Exterior/Building Envelope

- Clean the brick masonry, terra cotta masonry, and stone masonry. Historic masonry cleaning techniques should follow National Park Service guidelines and recommended best practices.

- Repair existing bird control devices or install new systems on select areas of the building facades to reduce fouling of the masonry recesses, ledges, and overhangs caused by bird droppings.

Interior

- Retrofit existing fluorescent T-12 lamp light fixtures with T-8 or smaller lamps. Add alternate: replace fluorescent fixtures with LED light fixtures.
- Signage and wayfinding upgrades.

Priority 1

List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Mechanical			
Chilled Water			
• Chiller Optimization.	Chiller sequencing has been previously addressed. When all other upgrades have been performed, it is recommended that chiller optimization take place.	Chilled water system is currently operating sufficiently, but there may be room for additional cost/energy savings through optimization.	System is operating appropriately, immediate optimization not required.
Heating Hot Water			
• The heating water plant is less than 10 years old and is not recommended to be changed at this time.	No work recommended at this time.	Existing infrastructure is current and requires little to no modifications.	System is operating appropriately, immediate replacement not required.
• Any heating water piping to be replaced in the building should be sized for 140/110 plant temperatures, allowing for a condensing boiler system to be installed when the current plant is due for replacement.	Replacements shall occur at same time as equipment replacements. Provide building standard that any replacement equipment shall also size coils (for example, fan coils when they are replaced).	By making the change now, it allows for a future energy efficient boiler plant. If the coils are not changed over now, when the current boiler plant is up for replacement, all coils may need to be replaced.	System is operating appropriately, immediate replacement not required.
Air Distribution Systems			
Fan Coils			
• Replace all FCU's not recently replaced.	Work to be performed when each wing is shut down and employees are relocated.	By providing flow control of outside air to each heat pump, the system will be brought up to the 2015 code. This system will be more efficient than systems being installed under the 2012 code and equally efficient to new systems being required under the 2015 code.	If applicable; most FCUs are in good shape.

Priority 1

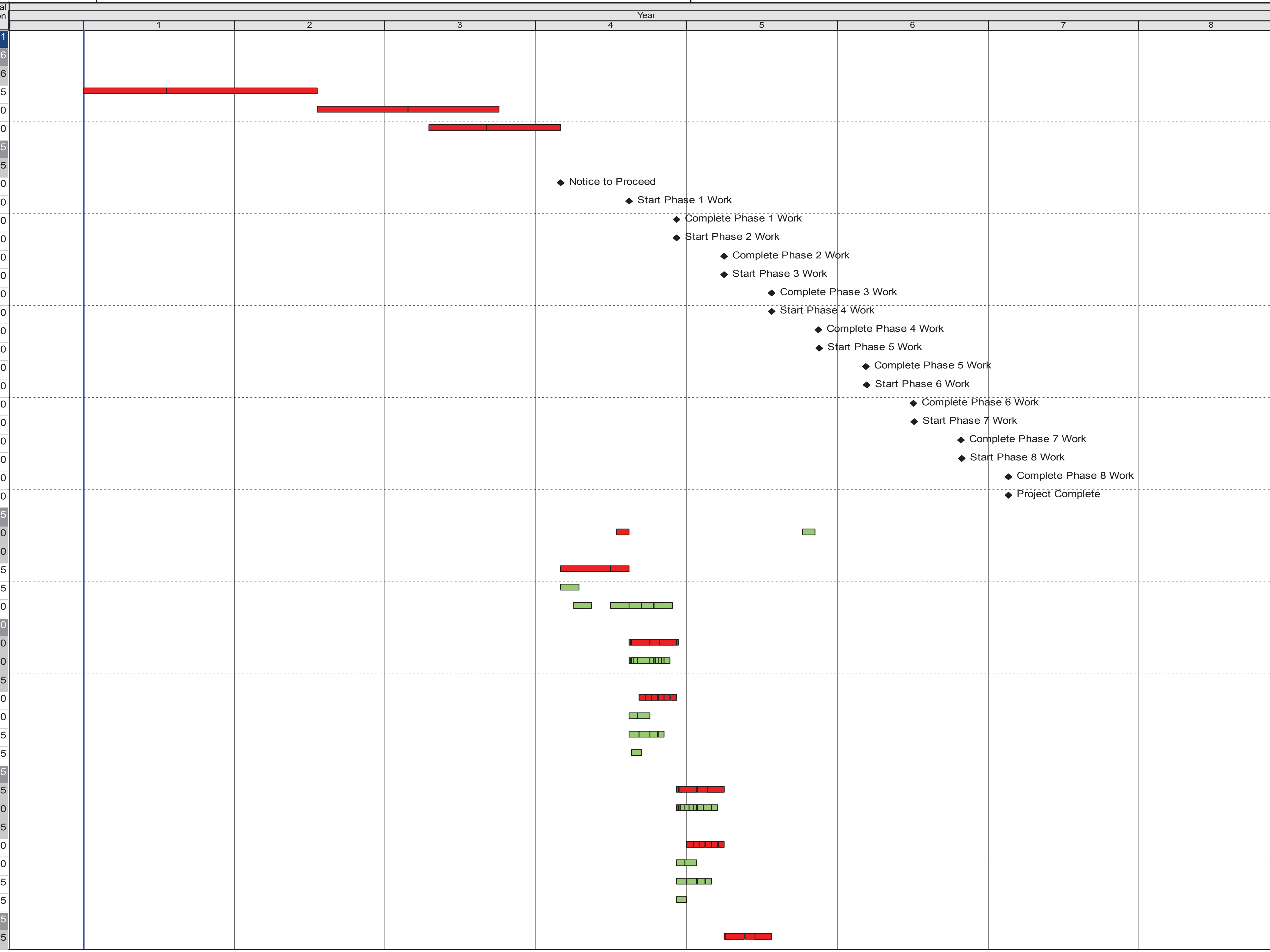
List of Possible Projects	Phasing and Constructability	Potential Benefits	Priority Description
Electrical			
Lighting			
• Replace Existing Lighting with LED Luminaires.	Can be conducted at any time. Requires the local area of work to be shut down during light fixture replacement.		No life safety/property damage concerns, but this would increase energy efficiency. Increases efficiency and reduces energy costs. LEDs simply consume significantly less power for the same performance.
• Add Occupancy Sensing Lighting Control.	Can be conducted at any time. Requires the local area of work to be shut down during construction.		No life safety/property damage concerns, but this would increase energy efficiency. Increases efficiency and reduces energy costs. Lights automatically turn off when they aren't needed.
Metering			
• Provide end use metering per Seattle Energy Code.	When panels and transformers are being replaced on a floor by floor level, provide circuting organization to allow for easy metering of end uses. Required by the new 2015 Seattle Energy Code.		Modifications to the electrical system will force the system to match modern day metering requirements. If this is undesired, a code variance will have to be submitted, reviewed, and accepted by the local authorities.
Plumbing			
Domestic Hot Water			
• Provide dedicated domestic hot water heaters to remove from building boiler heating system.	Replacement shall occur at same time as equipment replacements.	Modifications not crucial.	Current system operating properly, immediate replacement not required.

CHAPTER 6

Estimated Timelines for Possible Projects

King County Courthouse - Alt. 2	KCCH - Alternative 2 Summary	29-Jun-16 08:50

Activity ID	Activity Name	Original Duration
Alternative 2 - Repairs/Upgrades/Altercations to the KCCH		2241
Pre-Construction		1156
Pre-Construction		1156
Design		565
Permitting		440
Construction Procurement		320
Milestones		1085
Summary		1085
A200550	Notice to Proceed	0
A200460	Start Phase 1 Work	0
A200500	Complete Phase 1 Work	0
A200920	Start Phase 2 Work	0
A200930	Complete Phase 2 Work	0
A200940	Start Phase 3 Work	0
A200950	Complete Phase 3 Work	0
A200960	Start Phase 4 Work	0
A200970	Complete Phase 4 Work	0
A200980	Start Phase 5 Work	0
A200990	Complete Phase 5 Work	0
A201000	Start Phase 6 Work	0
A201010	Complete Phase 6 Work	0
A201020	Start Phase 7 Work	0
A201030	Complete Phase 7 Work	0
A201040	Start Phase 8 Work	0
A201050	Complete Phase 8 Work	0
A201060	Project Complete	0
Building Wide		615
Building Exterior		480
MEP Repairs/Upgrades - Building Wide		270
Electrical / Lighting		165
Low Voltage		45
HVAC		240
Phase 1		120
Building Exterior		120
Building Int - Arch.		100
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
Low Voltage		50
HVAC		85
Plumbing		25
Phase 2		115
Building Exterior		115
Building Int - Arch.		100
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
Low Voltage		50
HVAC		85
Plumbing		25
Phase 3		115
Building Exterior		115



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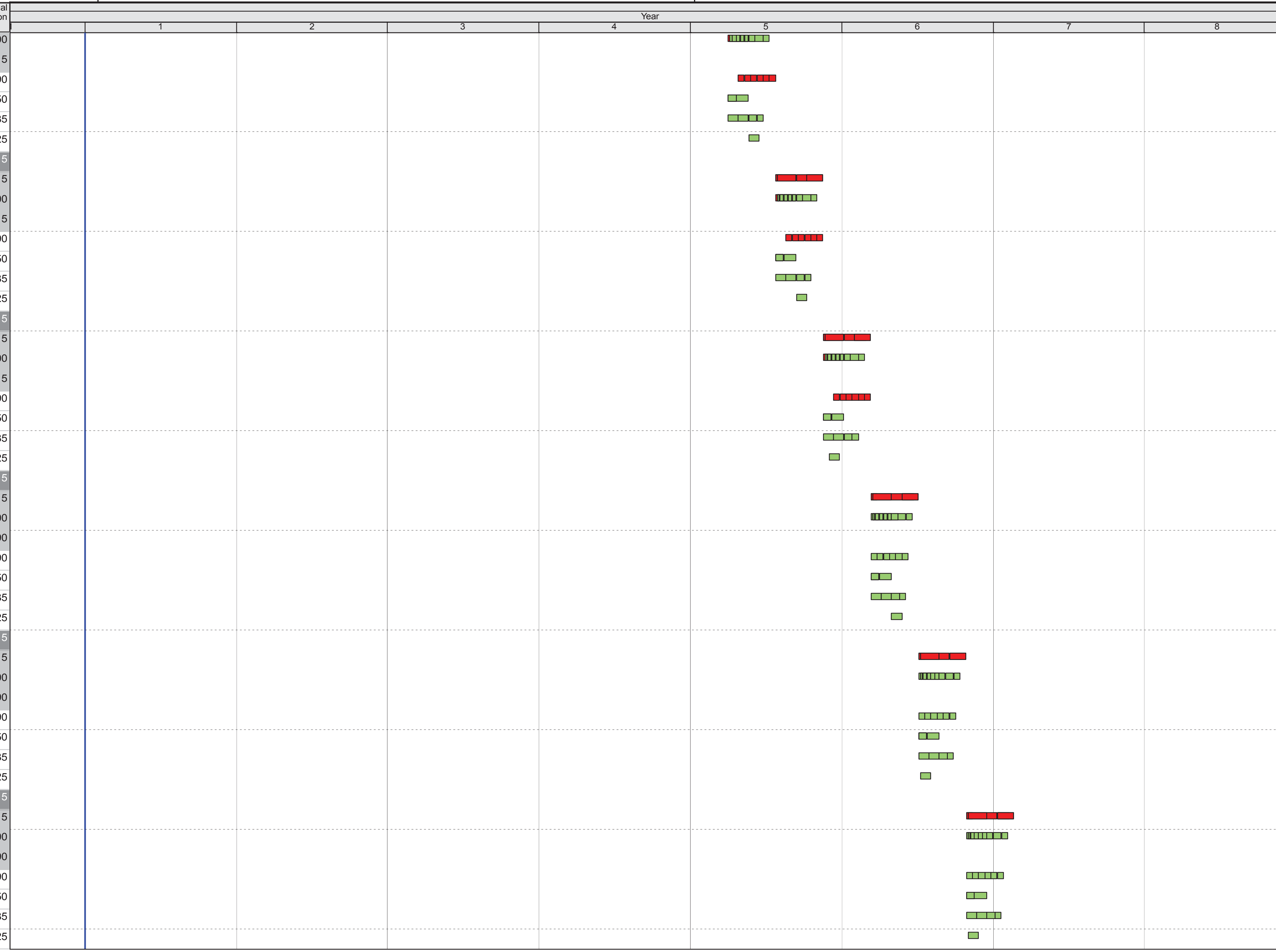
Activity ID	Activity Name	Original Duration
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	115
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25
	Phase 4	115
	Building Exterior	115
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	115
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25
	Phase 5	115
	Building Exterior	115
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	115
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25
	Phase 6	115
	Building Exterior	115
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	90
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25
	Phase 7	115
	Building Exterior	115
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	90
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25
	Phase 8	115
	Building Exterior	115
	Building Int - Arch.	100
	MEP Repairs/Upgrades - Phased	90
	Electrical / Lighting	90
	Low Voltage	50
	HVAC	85
	Plumbing	25



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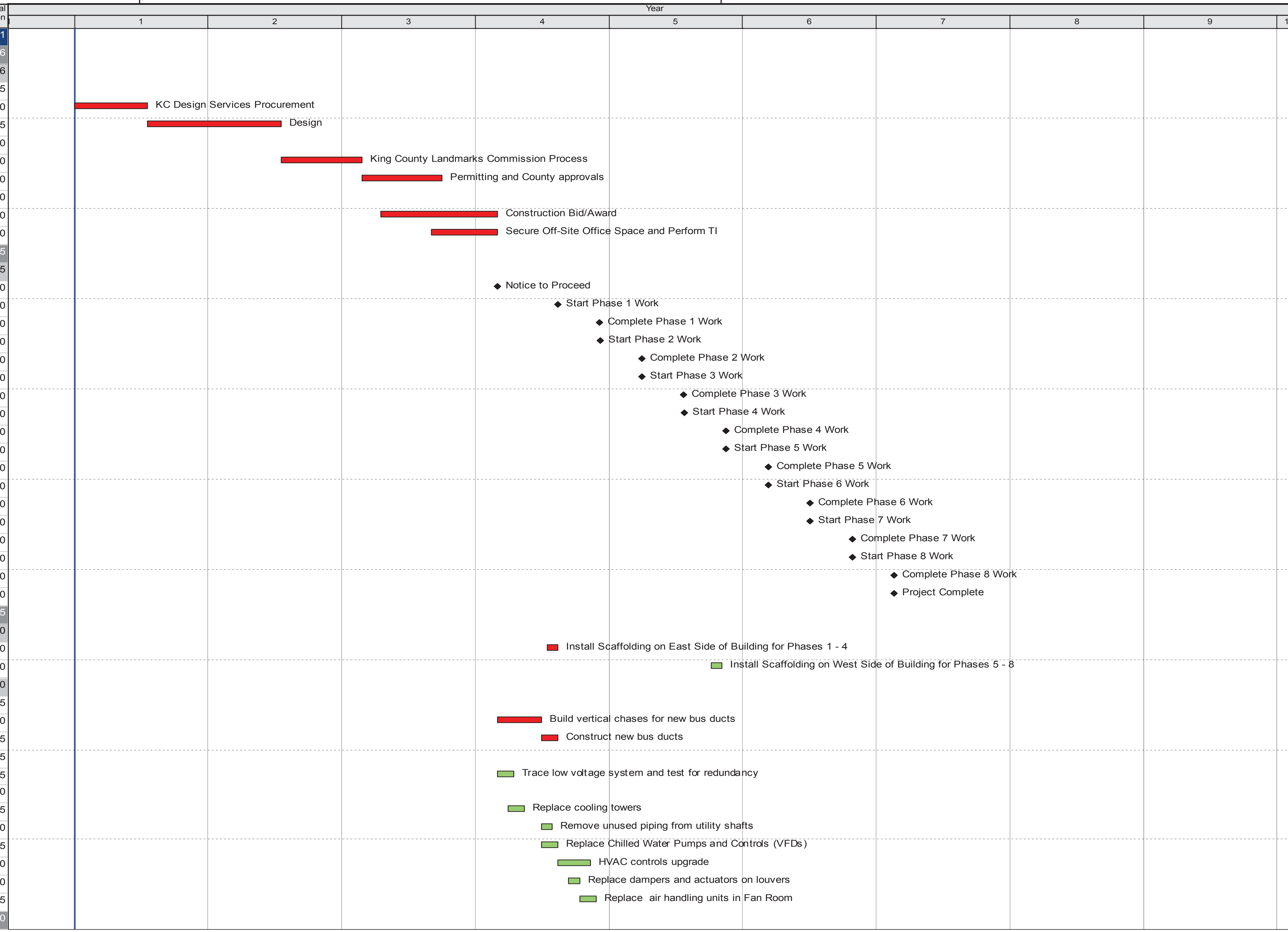
Activity ID	Activity Name	Original Duration
Alternative 2 - Repairs/Upgrades/Altercations to the KCCH		2241
Pre-Construction		1156
Pre-Construction		1156
Design		565
A200010	KC Design Services Procurement	200
A200020	Design	365
Permitting		440
A200030	King County Landmarks Commission Process	220
A200040	Permitting and County approvals	220
Construction Procurement		320
A200480	Construction Bid/Award	320
A200050	Secure Off-Site Office Space and Perform TI	180
Milestones		1085
Summary		1085
A200550	Notice to Proceed	0
A200460	Start Phase 1 Work	0
A200500	Complete Phase 1 Work	0
A200920	Start Phase 2 Work	0
A200930	Complete Phase 2 Work	0
A200940	Start Phase 3 Work	0
A200950	Complete Phase 3 Work	0
A200960	Start Phase 4 Work	0
A200970	Complete Phase 4 Work	0
A200980	Start Phase 5 Work	0
A200990	Complete Phase 5 Work	0
A201000	Start Phase 6 Work	0
A201010	Complete Phase 6 Work	0
A201020	Start Phase 7 Work	0
A201030	Complete Phase 7 Work	0
A201040	Start Phase 8 Work	0
A201050	Complete Phase 8 Work	0
A201060	Project Complete	0
Building Wide		615
Building Exterior		480
A200470	Install Scaffolding on East Side of Building for Phases 1 - 4	30
A200560	Install Scaffolding on West Side of Building for Phases 5 - 8	30
MEP Repairs/Upgrades - Building Wide		270
Electrical / Lighting		165
A200310	Build vertical chases for new bus ducts	120
A200320	Construct new bus ducts	45
Low Voltage		45
A200260	Trace low voltage system and test for redundancy	45
HVAC		240
A200390	Replace cooling towers	45
A200400	Remove unused piping from utility shafts	30
A200510	Replace Chilled Water Pumps and Controls (VFDs)	45
A200530	HVAC controls upgrade	90
A200520	Replace dampers and actuators on louvers	30
A200410	Replace air handling units in Fan Room	45
Phase 1		120



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Activity ID	Activity Name	Original Duration
Building Exterior		120
A200060	Remove Alum. Windows/Louvers/Curtain Walls	15
A200070	Temp Weathertight coverings where required	5
A200080	Seismic upgrade of HCT infill walls	45
A200090	Seismic upgrade of brick masonry veneer	45
A200100	Repair damaged sills and lintels	25
A200110	Rehabilitate in place historic windows	45
A200130	Repair historic metal windows/lower floors	30
A200140	Repoint and clean brick masonry	40
Building Int - Arch.		100
A200540	Move stakeholder groups to Leased Space	5
A200150	Construct new Electrical Rooms	45
A200200	Remodel/add restrooms	45
A200210	Remove Existing Ceiling	5
A200220	Retrofit Existing Fluorescent Fixtures	10
A200160	Clean Vertical MEP Shafts and Risers	15
A200170	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A200230	New Seismically-Braced Ceiling	10
A200240	New Firestopping	10
A200180	Install Fire Rated Shaft Liner in MEP Chases	20
A200250	New Signage and Wayfinding	10
A200190	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
A200330	Rewire construction sections to new bus ducts	15
A200340	Replace 208V panels and transformers during phased construc	15
A200350	Replace 208V motor control centers during phased construction	15
A200360	Trace wires/conduit and label all equipment	15
A200370	Replace existing lighting with LED fixtures during phased const	15
A200380	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A200270	Remove abandoned equipment and cabling	20
A200280	Remove abandoned communication equipment	20
A200290	Remove abandoned communication cabling	20
A200300	Install support and reorganize low voltage system cabling	30
HVAC		85
A200420	Replace hydroponic pumps and piping	25
A200430	Install drip pans and piping for fan coil units	25
A200440	Reseal/insulate existing ductwork	20
A200450	Test/repair heating hot water piping	15
Plumbing		25
A200490	Upgrade existing plumbing and fixtures	25
Phase 2		115
Building Exterior		115
A200570	Remove Alum. Windows/Louvers/Curtain Walls	15
A200580	Temp Weathertight coverings where required	5
A200590	Seismic upgrade of HCT infill walls	45
A200600	Seismic upgrade of brick masonry veneer	45
A200610	Repair damaged sills and lintels	25
A200620	Rehabilitate in place historic windows	40

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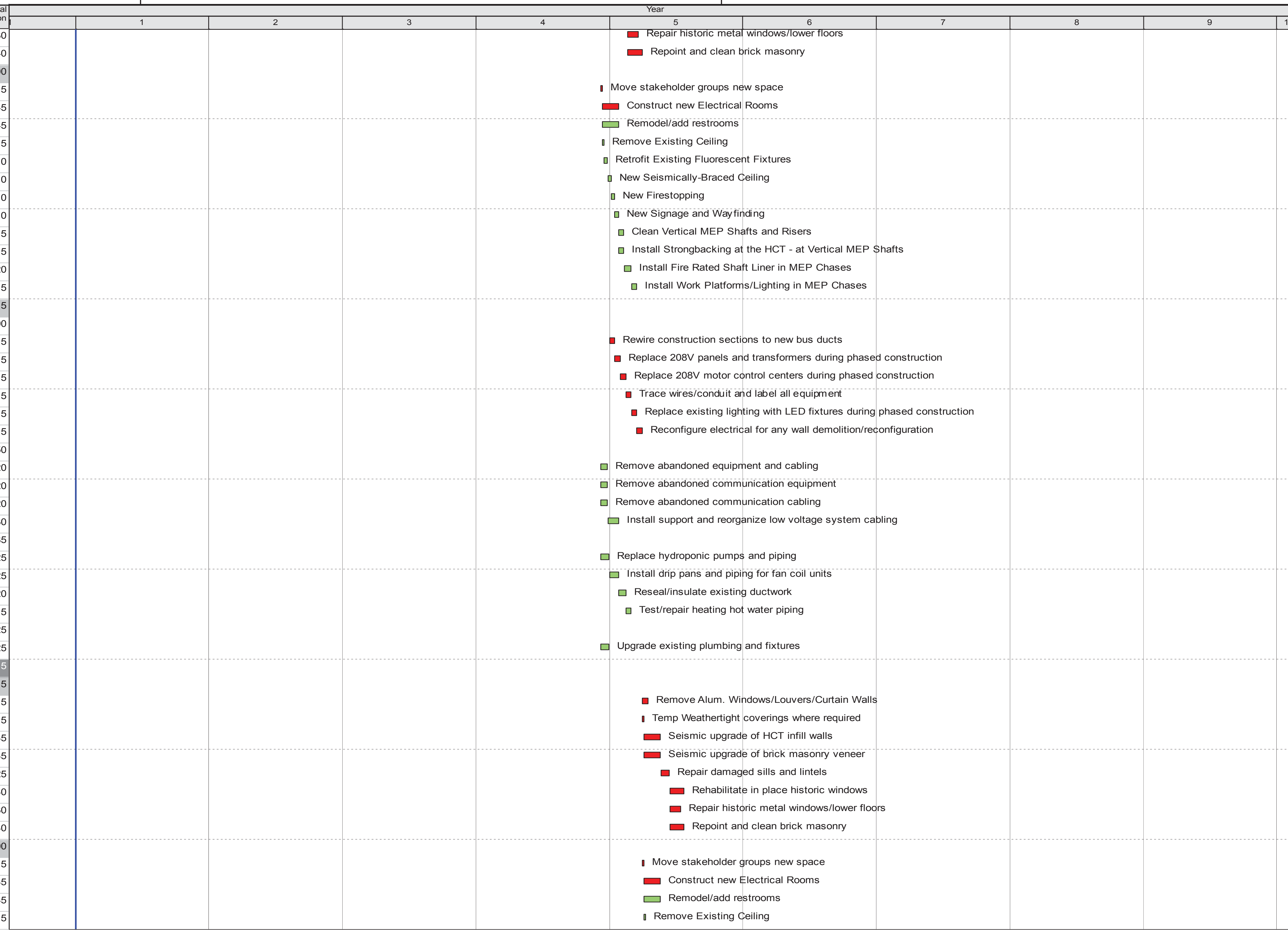
Activity ID	Activity Name	Original Duration
A200630	Repair historic metal windows/lower floors	30
A200640	Repoint and clean brick masonry	40
Building Int - Arch.		**100**
A200650	Move stakeholder groups new space	5
A200660	Construct new Electrical Rooms	45
A200710	Remodel/add restrooms	45
A200720	Remove Existing Ceiling	5
A200730	Retrofit Existing Fluorescent Fixtures	10
A200740	New Seismically-Braced Ceiling	10
A200750	New Firestopping	10
A200760	New Signage and Wayfinding	10
A200670	Clean Vertical MEP Shafts and Risers	15
A200680	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A200690	Install Fire Rated Shaft Liner in MEP Chases	20
A200700	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		**115**
Electrical / Lighting		**90**
A200770	Rewire construction sections to new bus ducts	15
A200780	Replace 208V panels and transformers during phased construc	15
A200790	Replace 208V motor control centers during phased construction	15
A200800	Trace wires/conduit and label all equipment	15
A200810	Replace existing lighting with LED fixtures during phased const	15
A200820	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		**50**
A200830	Remove abandoned equipment and cabling	20
A200840	Remove abandoned communication equipment	20
A200850	Remove abandoned communication cabling	20
A200860	Install support and reorganize low voltage system cabling	30
HVAC		**85**
A200870	Replace hydroponic pumps and piping	25
A200880	Install drip pans and piping for fan coil units	25
A200890	Reseal/insulate existing ductwork	20
A200900	Test/repair heating hot water piping	15
Plumbing		**25**
A200910	Upgrade existing plumbing and fixtures	25
Phase 3		**115**
Building Exterior		**115**
A201070	Remove Alum. Windows/Louvers/Curtain Walls	15
A201080	Temp Weathertight coverings where required	5
A201090	Seismic upgrade of HCT infill walls	45
A201100	Seismic upgrade of brick masonry veneer	45
A201110	Repair damaged sills and lintels	25
A201120	Rehabilitate in place historic windows	40
A201130	Repair historic metal windows/lower floors	30
A201140	Repoint and clean brick masonry	40
Building Int - Arch.		**100**
A201150	Move stakeholder groups new space	5
A201160	Construct new Electrical Rooms	45
A201210	Remodel/add restrooms	45
A201220	Remove Existing Ceiling	5



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Activity ID	Activity Name	Original Duration
A201230	Retrofit Existing Fluorescent Fixtures	10
A201240	New Seismically-Braced Ceiling	10
A201250	New Firestopping	10
A201260	New Signage and Wayfinding	10
A201170	Clean Vertical MEP Shafts and Risers	15
A201180	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A201190	Install Fire Rated Shaft Liner in MEP Chases	20
A201200	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
A201270	Rewire construction sections to new bus ducts	15
A201280	Replace 208V panels and transformers during phased construc	15
A201290	Replace 208V motor control centers during phased construction	15
A201300	Trace wires/conduit and label all equipment	15
A201310	Replace existing lighting with LED fixtures during phased const	15
A201320	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A201330	Remove abandoned equipment and cabling	20
A201340	Remove abandoned communication equipment	20
A201350	Remove abandoned communication cabling	20
A201360	Install support and reorganize low voltage system cabling	30
HVAC		85
A201370	Replace hydroponic pumps and piping	25
A201380	Install drip pans and piping for fan coil units	25
A201390	Reseal/insulate existing ductwork	20
A201400	Test/repair heating hot water piping	15
Plumbing		25
A201410	Upgrade existing plumbing and fixtures	25
Phase 4		115
Building Exterior		115
A201420	Remove Alum. Windows/Louvers/Curtain Walls	15
A201430	Temp Weathertight coverings where required	5
A201440	Seismic upgrade of HCT infill walls	45
A201450	Seismic upgrade of brick masonry veneer	45
A201460	Repair damaged sills and lintels	25
A201470	Rehabilitate in place historic windows	40
A201480	Repair historic metal windows/lower floors	30
A201490	Repoint and clean brick masonry	40
Building Int - Arch.		100
A201500	Move stakeholder groups new space	5
A201510	Construct new Electrical Rooms	45
A201520	Remodel/add restrooms	45
A201550	Remove Existing Ceiling	5
A201560	Retrofit Existing Fluorescent Fixtures	10
A201580	New Seismically-Braced Ceiling	10
A201590	New Firestopping	10
A201610	New Signage and Wayfinding	10
A201530	Clean Vertical MEP Shafts and Risers	15
A201540	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A201570	Install Fire Rated Shaft Liner in MEP Chases	20

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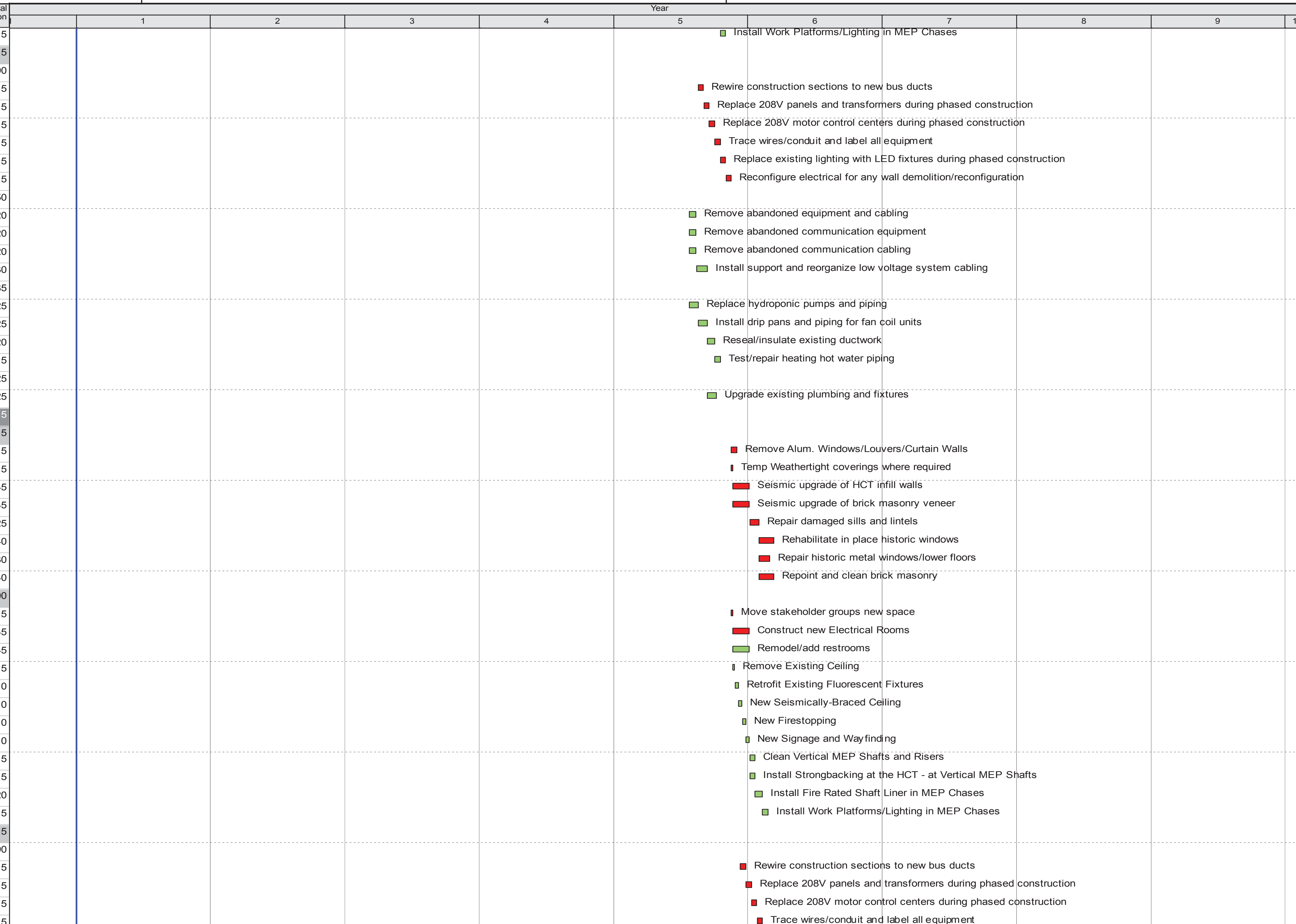
Activity ID	Activity Name	Original Duration
A201600	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
A201620	Rewire construction sections to new bus ducts	15
A201630	Replace 208V panels and transformers during phased construc	15
A201640	Replace 208V motor control centers during phased construction	15
A201650	Trace wires/conduit and label all equipment	15
A201660	Replace existing lighting with LED fixtures during phased consl	15
A201670	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A201680	Remove abandoned equipment and cabling	20
A201690	Remove abandoned communication equipment	20
A201700	Remove abandoned communication cabling	20
A201710	Install support and reorganize low voltage system cabling	30
HVAC		85
A201720	Replace hydroponic pumps and piping	25
A201730	Install drip pans and piping for fan coil units	25
A201740	Reseal/insulate existing ductwork	20
A201750	Test/repair heating hot water piping	15
Plumbing		25
A201760	Upgrade existing plumbing and fixtures	25
Phase 5		115
Building Exterior		115
A201770	Remove Alum. Windows/Louvers/Curtain Walls	15
A201780	Temp Weathertight coverings where required	5
A201790	Seismic upgrade of HCT infill walls	45
A201800	Seismic upgrade of brick masonry veneer	45
A201810	Repair damaged sills and lintels	25
A201820	Rehabilitate in place historic windows	40
A201830	Repair historic metal windows/lower floors	30
A201840	Repoint and clean brick masonry	40
Building Int - Arch.		100
A201850	Move stakeholder groups new space	5
A201860	Construct new Electrical Rooms	45
A201870	Remodel/add restrooms	45
A201900	Remove Existing Ceiling	5
A201910	Retrofit Existing Fluorescent Fixtures	10
A201930	New Seismically-Braced Ceiling	10
A201940	New Firestopping	10
A201960	New Signage and Wayfinding	10
A201880	Clean Vertical MEP Shafts and Risers	15
A201890	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A201920	Install Fire Rated Shaft Liner in MEP Chases	20
A201950	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		115
Electrical / Lighting		90
A201970	Rewire construction sections to new bus ducts	15
A201980	Replace 208V panels and transformers during phased construc	15
A201990	Replace 208V motor control centers during phased construction	15
A202000	Trace wires/conduit and label all equipment	15



King County Courthouse - Alt. 2 | KCCH - Alternative 2 | 29-Jun-16 08:47

Activity ID	Activity Name	Original Duration
A202010	Replace existing lighting with LED fixtures during phased const	15
A202020	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A202030	Remove abandoned equipment and cabling	20
A202040	Remove abandoned communication equipment	20
A202050	Remove abandoned communication cabling	20
A202060	Install support and reorganize low voltage system cabling	30
HVAC		85
A202070	Replace hydroponic pumps and piping	25
A202080	Install drip pans and piping for fan coil units	25
A202090	Reseal/insulate existing ductwork	20
A202100	Test/repair heating hot water piping	15
Plumbing		25
A202110	Upgrade existing plumbing and fixtures	25
Phase 6		115
Building Exterior		115
A202120	Remove Alum. Windows/Louvers/Curtain Walls	15
A202130	Temp Weathertight coverings where required	5
A202140	Seismic upgrade of HCT infill walls	45
A202150	Seismic upgrade of brick masonry veneer	45
A202160	Repair damaged sills and lintels	25
A202170	Rehabilitate in place historic windows	40
A202180	Repair historic metal windows/lower floors	30
A202190	Repoint and clean brick masonry	40
Building Int - Arch.		100
A202200	Move stakeholder groups new space	5
A202210	Construct new Electrical Rooms	45
A202220	Remodel/add restrooms	45
A202250	Remove Existing Ceiling	5
A202260	Retrofit Existing Fluorescent Fixtures	10
A202280	New Seismically-Braced Ceiling	10
A202290	New Firestopping	10
A202310	New Signage and Wayfinding	10
A202230	Clean Vertical MEP Shafts and Risers	15
A202240	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A202270	Install Fire Rated Shaft Liner in MEP Chases	20
A202300	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		90
Electrical / Lighting		90
A202320	Rewire construction sections to new bus ducts	15
A202330	Replace 208V panels and transformers during phased construc	15
A202340	Replace 208V motor control centers during phased construction	15
A202350	Trace wires/conduit and label all equipment	15
A202360	Replace existing lighting with LED fixtures during phased const	15
A202370	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A202380	Remove abandoned equipment and cabling	20
A202390	Remove abandoned communication equipment	20
A202400	Remove abandoned communication cabling	20
A202410	Install support and reorganize low voltage system cabling	30

King County Courthouse - Alt. 2 | KCCH - Alternative 2 | 29-Jun-16 08:47

Activity ID	Activity Name	Original Duration
HVAC		85
A202420	Replace hydroponic pumps and piping	25
A202430	Install drip pans and piping for fan coil units	25
A202440	Reseal/insulate existing ductwork	20
A202450	Test/repair heating hot water piping	15
Plumbing		25
A202460	Upgrade existing plumbing and fixtures	25
Phase 7		115
Building Exterior		115
A202470	Remove Alum. Windows/Louvers/Curtain Walls	15
A202480	Temp Weathertight coverings where required	5
A202490	Seismic upgrade of HCT infill walls	45
A202500	Seismic upgrade of brick masonry veneer	45
A202510	Repair damaged sills and lintels	25
A202520	Rehabilitate in place historic windows	40
A202530	Repair historic metal windows/lower floors	30
A202540	Repoint and clean brick masonry	40
Building Int - Arch.		100
A202550	Move stakeholder groups new space	5
A202560	Construct new Electrical Rooms	45
A202570	Remodel/add restrooms	45
A202600	Remove Existing Ceiling	5
A202610	Retrofit Existing Fluorescent Fixtures	10
A202630	New Seismically-Braced Ceiling	10
A202640	New Firestopping	10
A202660	New Signage and Wayfinding	10
A202580	Clean Vertical MEP Shafts and Risers	15
A202590	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A202620	Install Fire Rated Shaft Liner in MEP Chases	20
A202650	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		90
Electrical / Lighting		90
A202670	Rewire construction sections to new bus ducts	15
A202680	Replace 208V panels and transformers during phased construc	15
A202690	Replace 208V motor control centers during phased construction	15
A202700	Trace wires/conduit and label all equipment	15
A202710	Replace existing lighting with LED fixtures during phased const	15
A202720	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A202730	Remove abandoned equipment and cabling	20
A202740	Remove abandoned communication equipment	20
A202750	Remove abandoned communication cabling	20
A202760	Install support and reorganize low voltage system cabling	30
HVAC		85
A202770	Replace hydroponic pumps and piping	25
A202780	Install drip pans and piping for fan coil units	25
A202790	Reseal/insulate existing ductwork	20
A202800	Test/repair heating hot water piping	15
Plumbing		25
A202810	Upgrade existing plumbing and fixtures	25

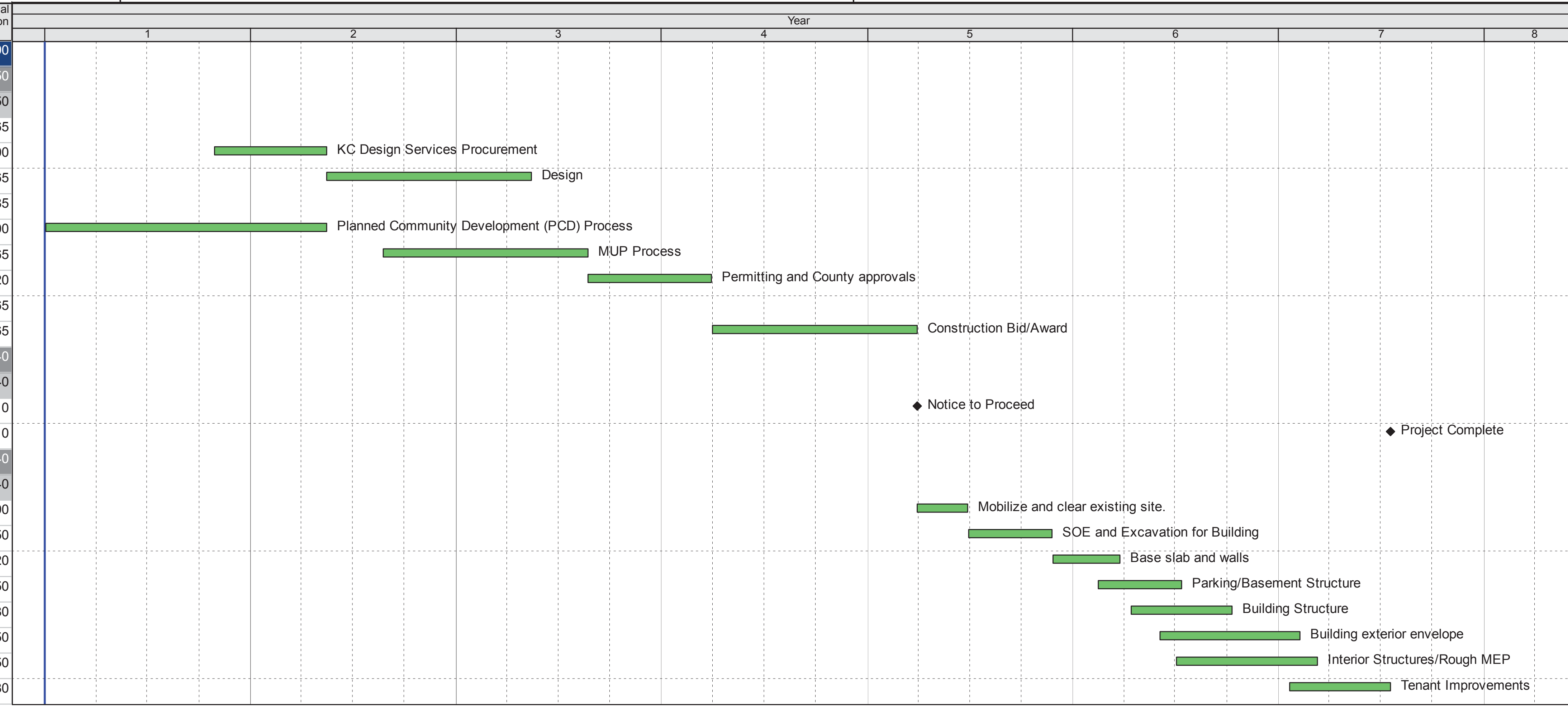
King County Courthouse - Alt. 2 | KCCH - Alternative 2 | 29-Jun-16 08:47

Activity ID	Activity Name	Original Duration
Phase 8		115
Building Exterior		115
A202820	Remove Alum. Windows/Louvers/Curtain Walls	15
A202830	Temp Weathertight coverings where required	5
A202840	Seismic upgrade of HCT infill walls	45
A202850	Seismic upgrade of brick masonry veneer	45
A202860	Repair damaged sills and lintels	25
A202870	Rehabilitate in place historic windows	40
A202880	Repair historic metal windows/lower floors	30
A202890	Repoint and clean brick masonry	40
Building Int - Arch.		100
A202900	Move stakeholder groups new space	5
A202910	Construct new Electrical Rooms	45
A202920	Remodel/add restrooms	45
A202930	Remove Existing Ceiling	5
A202940	Retrofit Existing Fluorescent Fixtures	10
A202950	New Seismically-Braced Ceiling	10
A202960	New Firestopping	10
A202970	New Signage and Wayfinding	10
A202980	Clean Vertical MEP Shafts and Risers	15
A202990	Install Strongbacking at the HCT - at Vertical MEP Shafts	15
A203000	Install Fire Rated Shaft Liner in MEP Chases	20
A203010	Install Work Platforms/Lighting in MEP Chases	15
MEP Repairs/Upgrades - Phased		90
Electrical / Lighting		90
A203020	Rewire construction sections to new bus ducts	15
A203030	Replace 208V panels and transformers during phased construc	15
A203040	Replace 208V motor control centers during phased construction	15
A203050	Trace wires/conduit and label all equipment	15
A203060	Replace existing lighting with LED fixtures during phased const	15
A203070	Reconfigure electrical for any wall demolition/reconfiguration	15
Low Voltage		50
A203080	Remove abandoned equipment and cabling	20
A203090	Remove abandoned communication equipment	20
A203100	Remove abandoned communication cabling	20
A203110	Install support and reorganize low voltage system cabling	30
HVAC		85
A203120	Replace hydroponic pumps and piping	25
A203130	Install drip pans and piping for fan coil units	25
A203140	Reseal/insulate existing ductwork	20
A203150	Test/repair heating hot water piping	15
Plumbing		25
A203160	Upgrade existing plumbing and fixtures	25

Year: 1 2 3 4 5 6 7 8 9 10

King County Courthouse - New Construction | KCCH - New Construction | 29-Jun-16 08:44

Activity ID	Activity Name	Original Duration
Consruct New KCCH on New Site		2390
Pre-Construction		1550
Pre-Construction		1550
Design		565
A200010	KC Design Services Procurement	200
A200020	Design	365
Permitting		1185
A200050	Planned Community Development (PCD) Process	500
A200030	MUP Process	365
A200040	Permitting and County approvals	220
Construction Procurement		365
A200480	Construction Bid/Award	365
Milestones		840
Summary		840
A200550	Notice to Proceed	0
A201060	Project Complete	0
New Courthouse Construction		840
Site Preperation		840
A201070	Mobilize and clear existing site.	90
A201080	SOE and Excavation for Building	150
A201090	Base slab and walls	120
A201100	Parking/Basement Structure	150
A201110	Building Structure	180
A201120	Building exterior envelope	250
A201130	Interior Structures/Rough MEP	250
A201140	Tenant Improvements	180



CHAPTER 7

Status of As-Built Documentation

DEVELOPMENT OF CONFORMED AS-BUILT DRAWINGS:

Developing a conformed set of as-built drawings of the King County Courthouse is crucial to the successful and timely execution of any proposed revitalization project. Conformed as-built drawings are a comprehensive record of the existing conditions of the building and also serve as base drawings for the architects, engineers, and consultants when developing construction documents. The goal of as-built drawings is to eliminate as many unknown conditions as possible before the planning and design phases of a project.

The development of conformed as-built drawings for the King County Courthouse could proceed as follows:

- The architect would thoroughly investigate the existing construction drawings and specifications for the building, going back to the original construction of the building and through all construction projects up until the present day.
- The architect and King County Facilities Management Division would work together to create a comprehensive scope of work and itemized task list for creating the as-built drawings.
- The architect would hire a consultant to laser scan the entire building and produce drafts of the base drawings in a two-dimensional format in AutoCAD.
- The architect would field-verify and confirm the existing conditions of the building using the draft base drawings prepared by the consultant.
- After field verification by the architect, the AutoCAD drawings would serve as base drawing templates for the structural, mechanical, electrical, plumbing, and telecommunications/low voltage engineering consultants. The engineering consultants would be responsible for field verifying and confirming the drawings of the existing building systems.
- The conformed as-built architectural drawings would be used as base drawings for all new architectural drawings, such as demolition plans and new wall plans.
- The conformed as-built engineering drawings would be used as base drawings for all new engineering drawings, such as mechanical, electrical, and plumbing plans.

PRIME CONSULTANT'S PRELIMINARY OPINION OF COST:

- As-built specialist consultant services, including laser scanning, photography, and draft of two-dimensional AutoCAD as-built base drawings: $615,000.00. A copy of a proposal from LNE Surveys is provided on the next page for reference.
- Prime consultant architectural services, including site visits, field verification, measurements, and confirmation of two-dimensional base drawings and documentation: $485,000.00
- Structural engineering services, including site visits, field verification, measurements, and confirmation of two-dimensional base drawings and documentation: $80,000.00
- Mechanical, electrical, plumbing, and telecommunications/low voltage engineering services, including site visits, field verification, measurements, and confirmation of two-dimensional base drawings and documentation: $320,000.00
- Preliminary opinion of cost, contingent on scope of work: $1,500,000.00, plus a 25% budget contingency of $375,000.00.
- Total preliminary opinion of cost: $1,875,000.00

LNE SURVEYS

AS-BUILT PLANS
3D SCANNING/BIM
AERIAL PHOTOGRAPHY

1063 4 Mile Rd. NW
Grand Rapids, Mi 49544
www.lnesurveys.com
616-540-3006

DATE	PROPOSAL #	Approx. Square Footage
6/30/2016	1190	540,360

ITEM	SCOPE OF WORK	Floors	RATE	TOTAL
Project: Confident	Clark Design Group Seattle, WA			
2-D Drawing	Interior & Exterior - See attachment	15		$600,000.00
3-D Revit/Bim Model	Exterior Only - See Attachment	15		$1,350,000.00
Photography	Interior and Exterior	15		$15,000.00

Payments will be broke up into "4" Phases with retainer..

FINAL PAYMENT IS DUE WITHIN 30 DAYS OF COMPLETE PROJECT DELIVERY

By signing this proposal, you are accepting the payment terms above. If you would like to discuss different terms, this must be arranged with LNE prior to starting the project.

By signing this proposal, I agree to pay the price listed above for the services outlined in this proposal.

LNE SURVEYS

AS-BUILT PLANS
3D SCANNING/BIM
AERIAL PHOTOGRAPHY

CheckList

	Client: Clark Design Group		Project Manager: Tracey Evers - 616-540-3006
	Site Address: Seattle, WA		Approx. Sq/Ft: 540,360
	2-D Floor Plans		**"Photo of Type and Specs" MEP Data Info**
x	Exterior Walls	x	Transformer
x	Interior Walls	x	Electric Panels
x	Partial Hgt Walls	x	Electrical Meters
x	Windows	x	HVAC Units
x	Doors	x	Tele/Data
x	Floor Types	x	Thermostats
x	Columns	x	Compressors
x	Stairwells/Elevators		**Plumbing:**
x	Built-In Millwork	x	Urinals/Toilets
x	Dimensions	x	Sinks
	Fire Protection	x	Drinking Fountains
x	Fire Extinguishers	x	Showers
x	Fire Spklr Valve	x	Janitor/Slop Sink
x	Fire Sprinkler (Wall)	x	Water Meter Main Loc.
x	Pull Station	x	Water Heater
x	Fire Alarms		**Electrical Plan:**
x	Fire Strobe Lights	x	Main Elec Panels
x	Main Fire Connect	x	Main Source Loc.
x	Smoke Alarms	x	Elec. Outlets/Switchs
	Security Systems	x	Switches
x	Motion Detectors	x	Tele/Data
x	Emergency Light	x	AV(Audio) Outlets
x	Card Reader (Security)	x	TV Monitors
x	Key Pad Lock Pads	x	Electric Time Clock
x	Emergency Exits	x	Electrical Conduit
		x	Electrical Generators
	Checklist:		
	Roof Plan:		**Above Ceiling Plan**
x	Framing	x	Pipes Size/Height and Locatation
x	Drainage	x	Beams
x	Parapet Walls	x	Joists
x	HVAC Equipment	x	MEP
x	Satellite/Antennas	x	Plumbing
x	Mechanical Equip	x	Other
	RCP Plan		**Photographs**
x	Smoke Alarms	x	360 Videos
x	Lighting	x	Still Photos
x	Soffits/Clg Heights	x	Matterport
x	Ceiling Grids		**Elevations**
x	Exposed Beams	x	Interior Elevations - All
x	Fans	x	Exterior Elevations - All
x	Fire Sprinklers	x	Sections - "2"
x	Emergency Lights		
x	HVAC Supply		**3-D Scanning**
x	HVAC Return	x	Exterior Building - Only
x	Motion/Sensors	x	Roof
x	Skylights	x	Surrounding Area
	Outdoor Amenities:		**Schedules:**
x	Site Curbs	x	Door
x	Parking Spaces	x	Window
x	Outdoor Structures	x	Wall Finishes
x	Handicap Areas		**Additional Notes:**
x	Sidewalks	x	Boma Calculations
x	Street Names		
x	Signage		
x	Outdoor Signage		
x	Exterior Lighting		Additional items added will be subject to change..
x	Patio/Rail		Scope $ subject to change near the start date..

LNE Architectural Surveying Checklist / 6/30/2016

CHAPTER 8

Historical Significance and Historic Designations

Property Name: King County Courthouse

Historic Name: County-City Building

Year Built: 1914-1916 (A. Warren Gould, Architect; Puget Sound Bridge and Dredging Company, Builder; C.R. Aldrich, Superintendent of Construction)
Year Altered: 1929-1931 (Henry Bittman, Architect; J.L. McCauley, Supervisor of Construction; Hans Pederson, General Contractor)
Year Altered: 1961-1969 (Paul W. DeLaney and Associates, Architects)

South Elevation of the County-City Building, Circa 1921. Courtesy of King County Facilities Management Division. Photograph in the collection of The Museum of History and Industry, Seattle.

The County-City Building: 1903-1916
In April 1903, the Board of County Commissioners decided to replace the second King County Courthouse, constructed in 1891 on a site bounded by Seventh Avenue, Eighth Avenue, Terrace Street, and Alder Street. Located almost 400 feet higher than the central business district, the inconvenient location annoyed the public, judges, attorneys, and county officials so much that the colorful name "Profanity Hill" was applied to the courthouse location. The Board of County Commissioners directed King County to purchase the vacant Yesler Estate site bounded by Third Avenue, Fourth Avenue, James Street, and Jefferson Street for $235,000 (approximately $6,154,935 in 2016 dollars) as the site for a new courthouse. No immediate plans were made to build on the site, and for several years the county rented half the block to a variety of private businesses. The County Commissioners called a special election in September 1911 to vote on a $1,500,000 (approximately $36,476,220 in 2016 dollars) bond issue for a new courthouse. This measure was soundly rejected, possibly due in large part to the fact that no building plans were prepared and presented to the voters.

Another bond issue was proposed a year later in 1912, with the amount of bonds reduced to $950,000 (approximately $22,665,727 in 2016 dollars). Architect A. Warren Gould was hired to prepare preliminary plans for this bond issue. Gould was tasked with designing a building that would not only serve the needs of both the King County and City of Seattle government, but could also be expanded by adding additional stories. Even though only three to five stories of the building would be constructed initially, by October 1912 Gould had produced designs for a 23-story skyscraper, including a 13-story tall base with an 'H'-shaped plan, capped with a 10-story tall central tower with pyramidal roof. However, the proposed design of the new courthouse was overshadowed by the controversy sparked by the 1910 Seattle civic center plan drafted by the engineer Virgil Bogue. The Bogue Plan was rejected by voters in March 1912, but supporters of the plan placed a second bond issue on the November 1912 ballot for a new building and site for the courthouse. Voters approved the construction bonds for the new courthouse on the Yesler Estate site by a 2-to-1 margin, but voters soundly rejected the new civic center plan.

After a legal effort by the civic center plan supporters to stop the bond issue was quashed by the Supreme Court, the courthouse construction bonds were sold to Dexter Horton National Bank in May 1914. King County solicited bids for a three-story building based on the Gould plans, with additional bids requested for two additional stories that could be used by the City of Seattle.

1891 Second King County Courthouse constructed on Profanity Hill

1900 Population 110,053

1903 Board of County Commissioners purchased Yesler Estate site for new County Courthouse

1909 Earthquake

1910 Population 284,638

1912 Voters approved construction bonds for new 3-story Courthouse

1914 Ground broken for new Court-house & two additional stories

World War I : 1914-1918

1916 Construction of five-story Courthouse completed

1920 Population 389,273

1927 Seattle Fire Marshal condemns 1891 Courthouse

Nine contractors submitted bids, and the County awarded the $810,563 (approximately $18,890,090 in 2016 dollars) contract to the low bidder, the Puget Sound Bridge and Dredging Company. Ground was broken for the new courthouse on June 10, 1914. After the City of Seattle expressed interest in leasing 50,000 square feet in the building, King County called another special election in November 1914 for an additional $350,000 (approximately $8,156,715 in 2016 dollars) in bonds to construct two additional stories. Construction on the five-story courthouse was completed in February 1916.

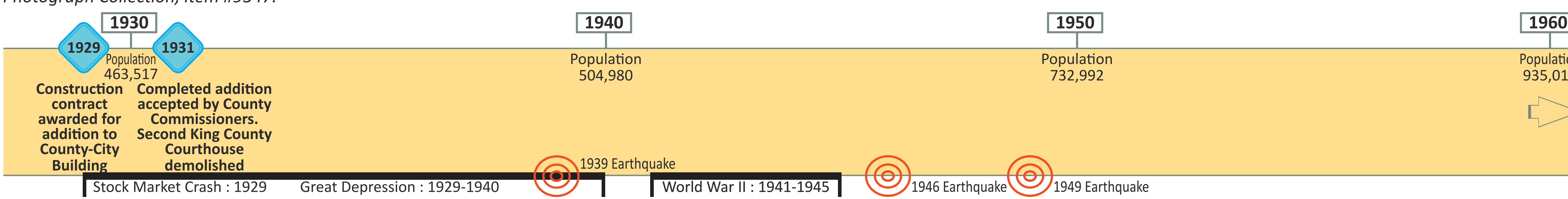
County-City Building (King County Courthouse): April 29, 1949. Seattle Municipal Archives Photograph Collection, item #9347.

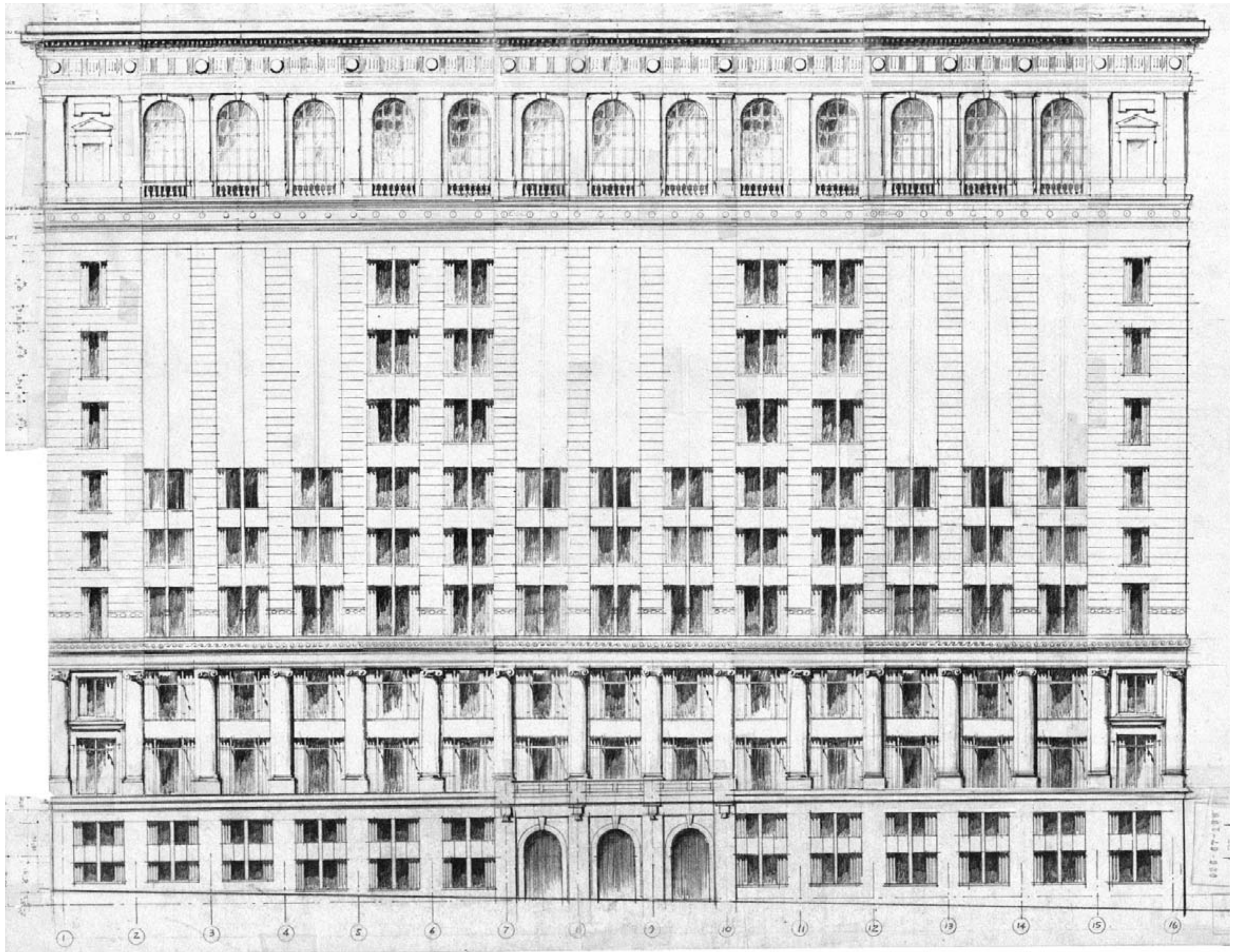
Expansion of the County-City Building: 1929-1931

Between 1910 and 1920, the population of King County increased from 284,638 to 389,273. By 1930, the population of King County had increased to 463,517, with the City of Seattle accounting for almost 79% of the entire population of the county. This population increase, coupled with the prosperity in the Puget Sound region during World War One and the 1920s, led to an increased demand for both city and county governmental services. The 1914 County-City Building quickly became inadequate to house the growing numbers of city and county employees and increased governmental functions. Additionally, in May 1927 the City of Seattle Fire Marshal condemned the old 1891 courthouse on Profanity Hill, which had served as the King County jail for the previous decade. In June 1927, the Seattle chapter of the American Institute of Architects (AIA) offered to study potential locations for a new jail. Less than three weeks later they issued a report to the County Commissioners recommending the addition of five stories to the existing County-City Building, with the new jail located on the two top floors. The expanded building would also house additional courtrooms and allow some relocation of city services from the Seattle Public Safety Building on Yesler.

County officials grasped the logic of this potential solution. In May 1928, the King County Prosecuting Attorney's Office determined that the condition of the old county jail constituted an emergency situation, and the County Commissioners called for a $500,000 (approximately $6,774,680 in 2016 dollars) bond issue in September 1930 to pay for the addition to the County-City Building. King County hired architects Henry Bittman and J.L. McCauley to design and supervise the construction of the addition to the building. The construction contract was awarded to general contractor Hans Pederson on June 13, 1929 for $2,118,423 (approximately $28,871,132 in 2016 dollars), and the County Commissioners accepted the completed work in January 1931.

Besides the dramatic change in the height and massing of the building, the remodel by Bittman and McCauley also changed the configuration of the entry lobby on the south side of the building facing Jefferson Street. The monumental staircase between the formal lobby at the second floor and the first floor elevator lobby was removed, and two additional elevators were installed in the former location of the staircase. The stairs between the two levels were also reconfigured. This work greatly reduced the formal connection of the lobby and courtyard space with City Hall Park.





King County Courthouse, architect's rendering of proposed exterior alterations to the Third Avenue facade, circa 1967. Courtesy of King County Facilities Management Division.

Renovation and Remodeling of the Courthouse: 1960s

By the early 1960s, the existing mechanical systems in the building were obsolete. The heating, electrical, plumbing, and ventilation systems were all slated for replacement. After the City of Seattle vacated their space in the building in 1962, the first phase of the remodeling project occurred between 1963 and 1965, and $2,300,000 in bond funds (approximately $17,894,984 in 2016 dollars) was invested in new mechanical systems and air conditioning. This remodeling campaign was overseen by the Seattle architecture firm of Delaney & Associates.

In addition to the mechanical system upgrades, Delaney & Associates' proposals for alterations to the Courthouse included lowered acoustical tile ceilings, new courtrooms, and remodeled offices and jury facilities. A low bid of $11,147,000 for the second phase of the remodeling was received in July 1965, which sparked local controversy over the apparent extravagance of the Delaney & Associates plans for the building remodel. The bids were rejected by the King County Commissioners, and the firm of Harmon, Pray, & Dietrich was engaged to evaluate the plans and specifications. After an investigation by the King County Prosecuting Attorney and the Grand Jury in 1966, the county contract with Delaney & Associates was continued, but Harmon, Pray, & Dietrich was hired to supervise the plans, specifications, and execution of the remaining work. A cap of $9,500,000 (approximately $70,659,984 in 2016 dollars) was placed on the work, which continued through the late 1960s.

In addition to interior alterations such as new partitions, acoustical tile ceilings, fluorescent lighting, vinyl floors, and the extensive removal of original marble floors, stairs, and wainscoting, the 1960s remodel completely obliterated the remainder of the formal south entry lobby, which was converted into a loading dock and prisoner transfer area for access to the jail on the upper floors of the building. Bronze-colored metal screens were added to the exterior of the building, covering the courtroom windows on the fifth through ninth floors. The Third Avenue entry at the first floor became the new formal entry to the courthouse.

Adjusted for inflation, the cost of the site acquisition, original 1914-1916 building construction, 1929-1931 addition, and 1960s remodel of the King County Courthouse represents a total investment to-date of approximately $150,627,840 in 2016 dollars. The most recent major capital investment in the building was in 2003-2004, when the building was seismically stabilized and the fire sprinkler system was installed.

Architectural drawing of expanded County-City Building 1929-1931. Courtesy of King County Facilities Management Division. The red line indicates the original 1914-1916 five-story building.

HISTORIC DESIGNATIONS:

Local/Municipal:

- The King County Courthouse is not designated as a City of Seattle landmark and is not located within the boundaries of the City of Seattle Pioneer Square Historic District.

County:

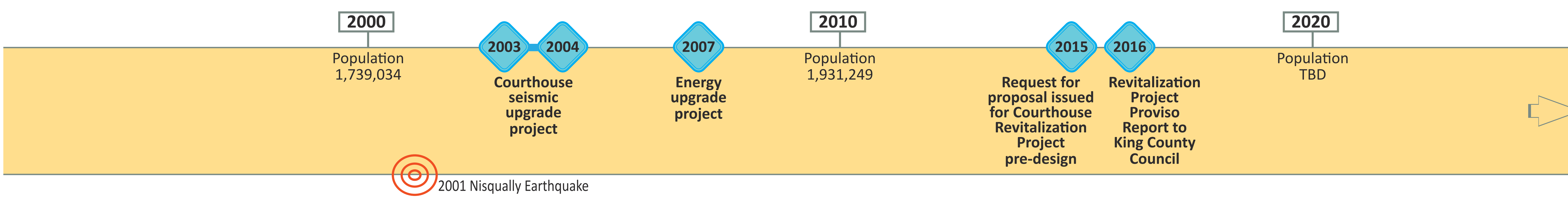
- The King County Courthouse was designated as a King County landmark in 1987.
- The King County landmark designation was amended in 1988 to include eighteen (18) historic courtrooms located on the seventh, eighth, and ninth floors of the building as additional features of significance.
- The King County landmark designation was amended again in 1994 to include corridors located on the first, second, third, fourth, fifth, sixth, seventh, eighth, and ninth floors of the building as additional features of significance.

State:

- The King County Courthouse was identified as historic in the Department of Archaeology and History (DAHP) 2003 Washington State Historic County Courthouse Assessment. Washington State does not have a statewide historic designation program.

National:

- The King County Courthouse is listed in the National Register of Historic Places (NRHP) as contributing to the significance of the Pioneer Square-Skid Road National Historic District. This district was listed in the NRHP in 1970 and has subsequently been amended, most recently in 2007.




King County Courthouse, ninth floor elevator lobby. CDG photo, April 16, 2016.


Detail of plaster molding at ninth floor elevator lobby. CDG photo, April 16, 2016.

King County Courthouse Historic Designations:

The King County Courthouse was designated as a King County Landmark in 1987. The King County Landmark nomination for the building lists the following exterior and interior features as significant:

- Massing and height
- Third Avenue portico
- Fourth Avenue portico
- South entry courtyard
- All windows
- All exterior doors
- Facing materials: granite, brick, terra-cotta
- Copper entablature
- Former Jefferson Street lobby
- First thorough ninth floor elevator lobbies (the corridors and elevator lobbies on the first through ninth floors of the building were designated in 1987, and the boundaries of these designated corridors and lobbies were expanded in 1994)

None of the significant features listed above may be altered without first obtaining a Certificate of Appropriateness from the King County Landmarks Commission.

Elevator Lobbies and Corridors

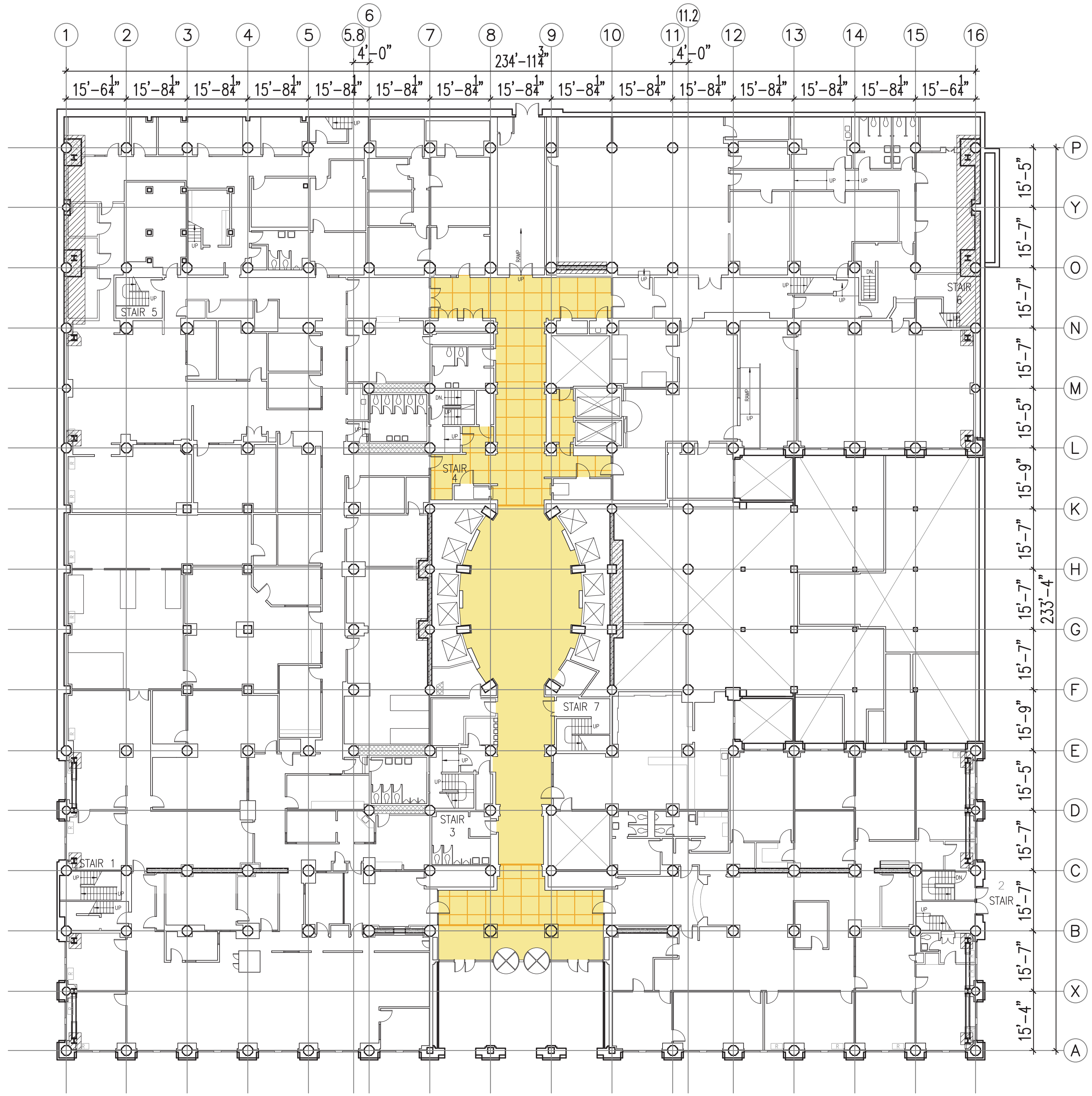
The elevator lobbies and corridors designated as historic are located at the first though ninth levels of the King County Courthouse. Some examples of historic character defining features at the designated elevator lobbies and corridors include painted wood doors, door hardware, transom windows above doors, marble wainscoting, marble floors, bronze elevator door surrounds, plaster molding, bronze mail chutes, fire hose cabinets, and drinking fountain alcoves.

Historic Courtrooms

The historic designated courtrooms are located on the seventh, eighth, and ninth levels of the King County Courthouse. Character defining features at the designated courtrooms include the judge's benches, paneled wainscoting, clerk stations, court reporter stations, bailiff stations, witness stands, jury boxes, entry vestibules, public seating, flooring, and the general arrangement of the courtrooms.

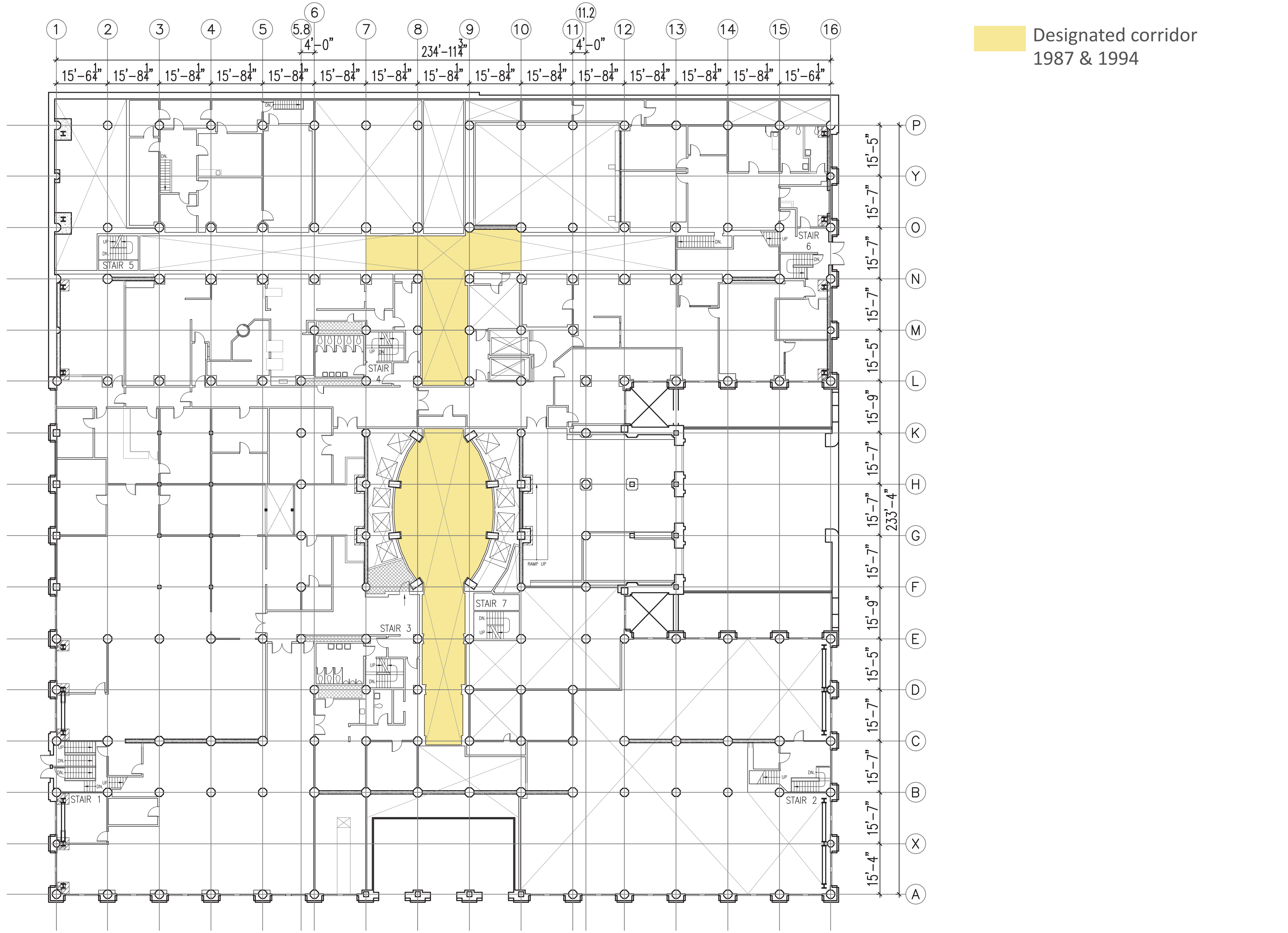
Plan Diagrams of Historic Elevator Lobbies, Corridors, and Courtrooms

The plan diagrams on the following pages illustrate the designated historic interior spaces in the King County Courthouse. These plan diagrams also show where areas of suspended acoustical tile ceiling materials are located in historic designated corridors and courtrooms.



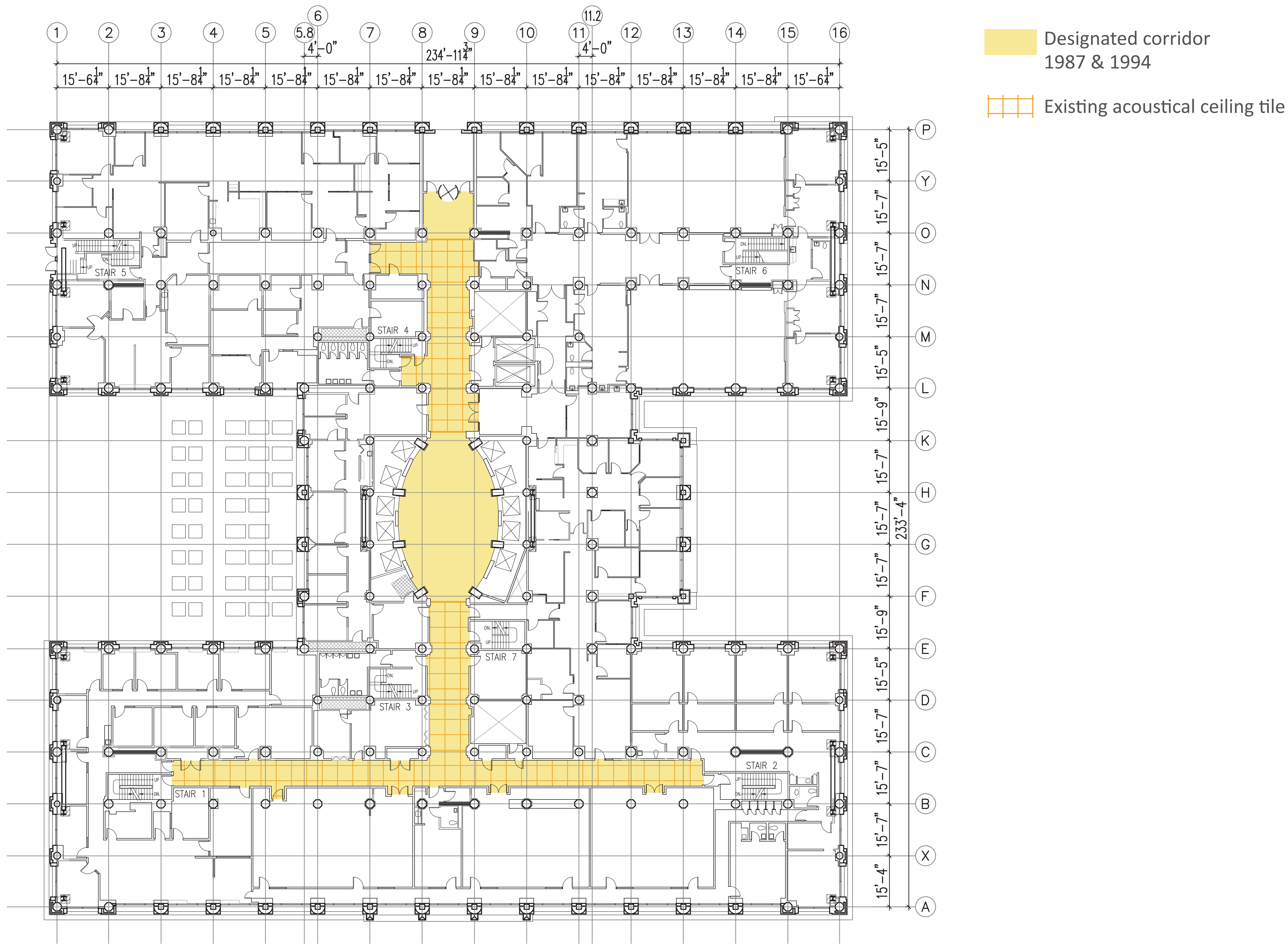
HISTORIC DESIGNATED CORRIDOR - LEVEL 1

22 July 2016



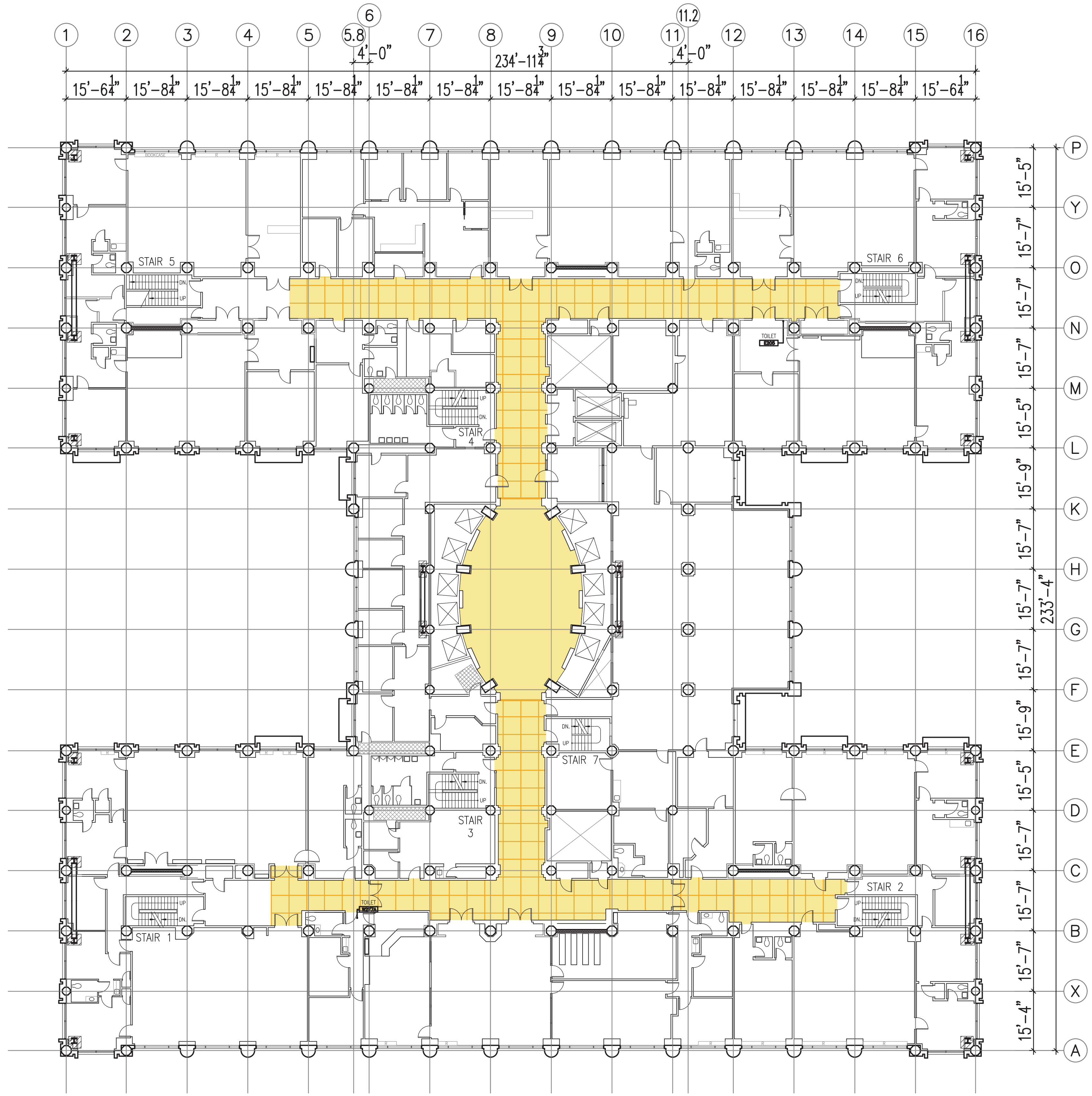
HISTORIC DESIGNATED CORRIDOR - LEVEL 1A

22 July 2016



HISTORIC DESIGNATED CORRIDOR - LEVEL 2

22 July 2016



Designated corridor 1987 & 1994

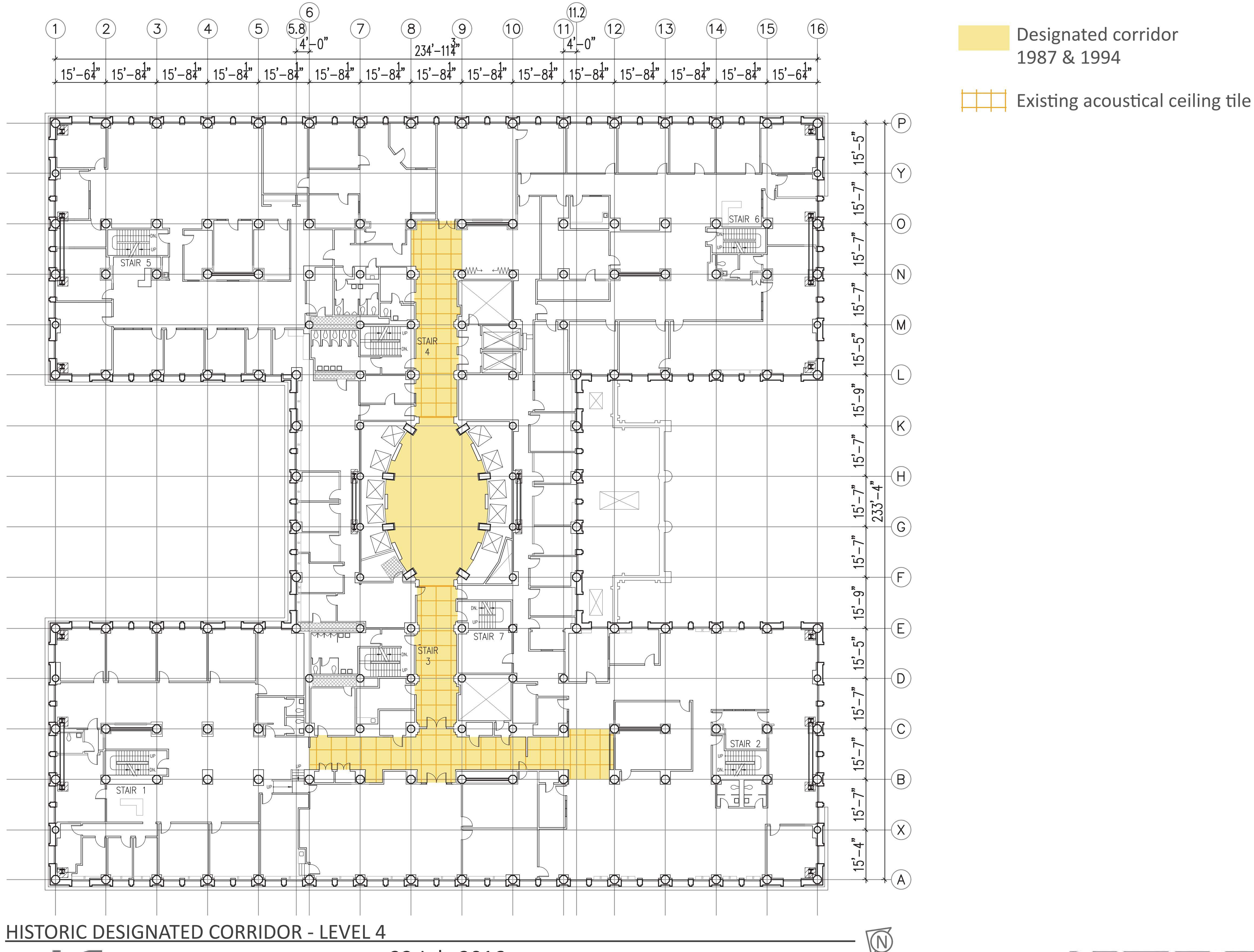
Existing acoustical ceiling tile

HISTORIC DESIGNATED CORRIDOR - LEVEL 3

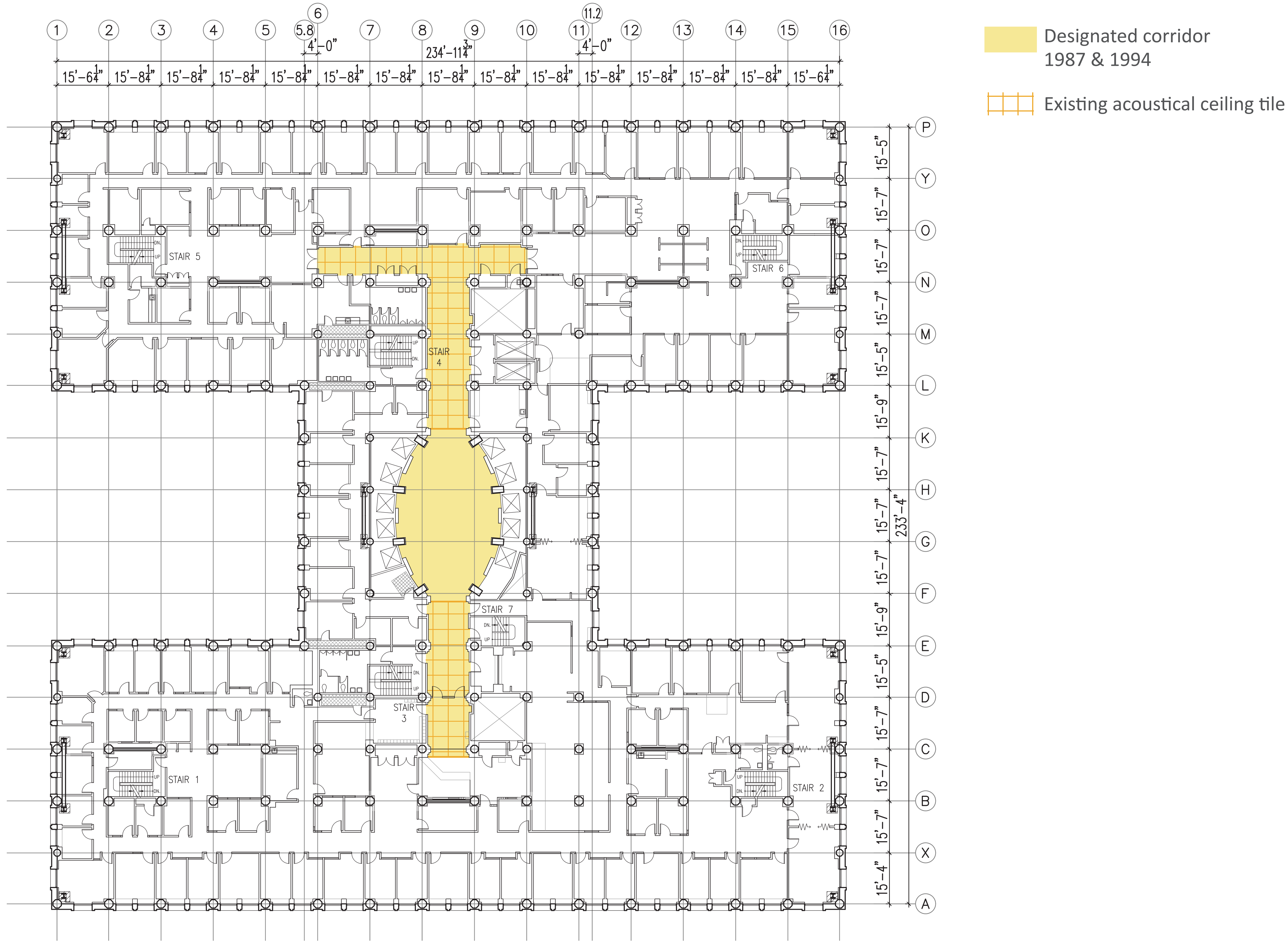
22 July 2016

King County

CLARK DESIGN GROUP PLLC

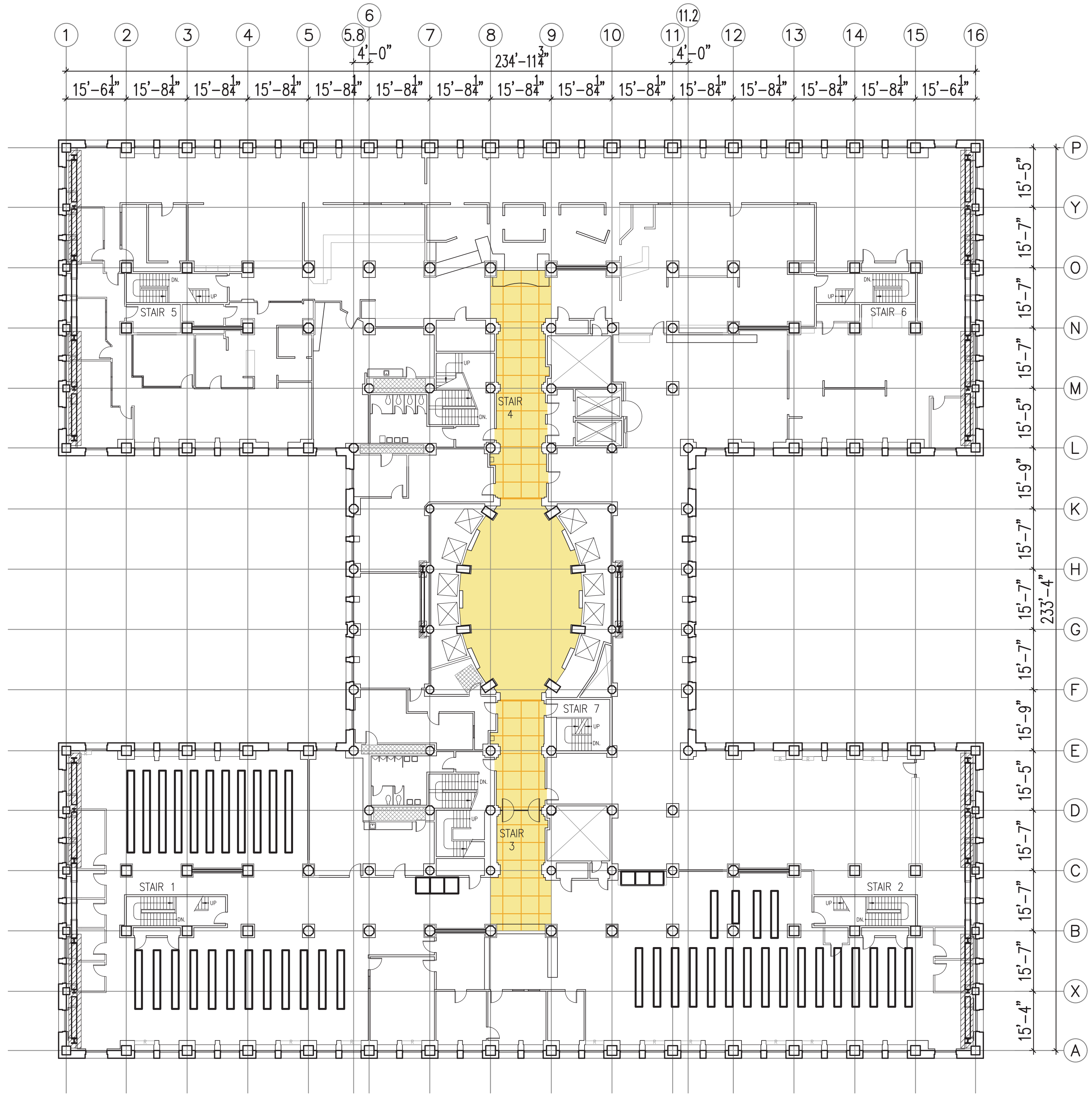


HISTORIC DESIGNATED CORRIDOR - LEVEL 4



HISTORIC DESIGNATED CORRIDOR - LEVEL 5

22 July 2016

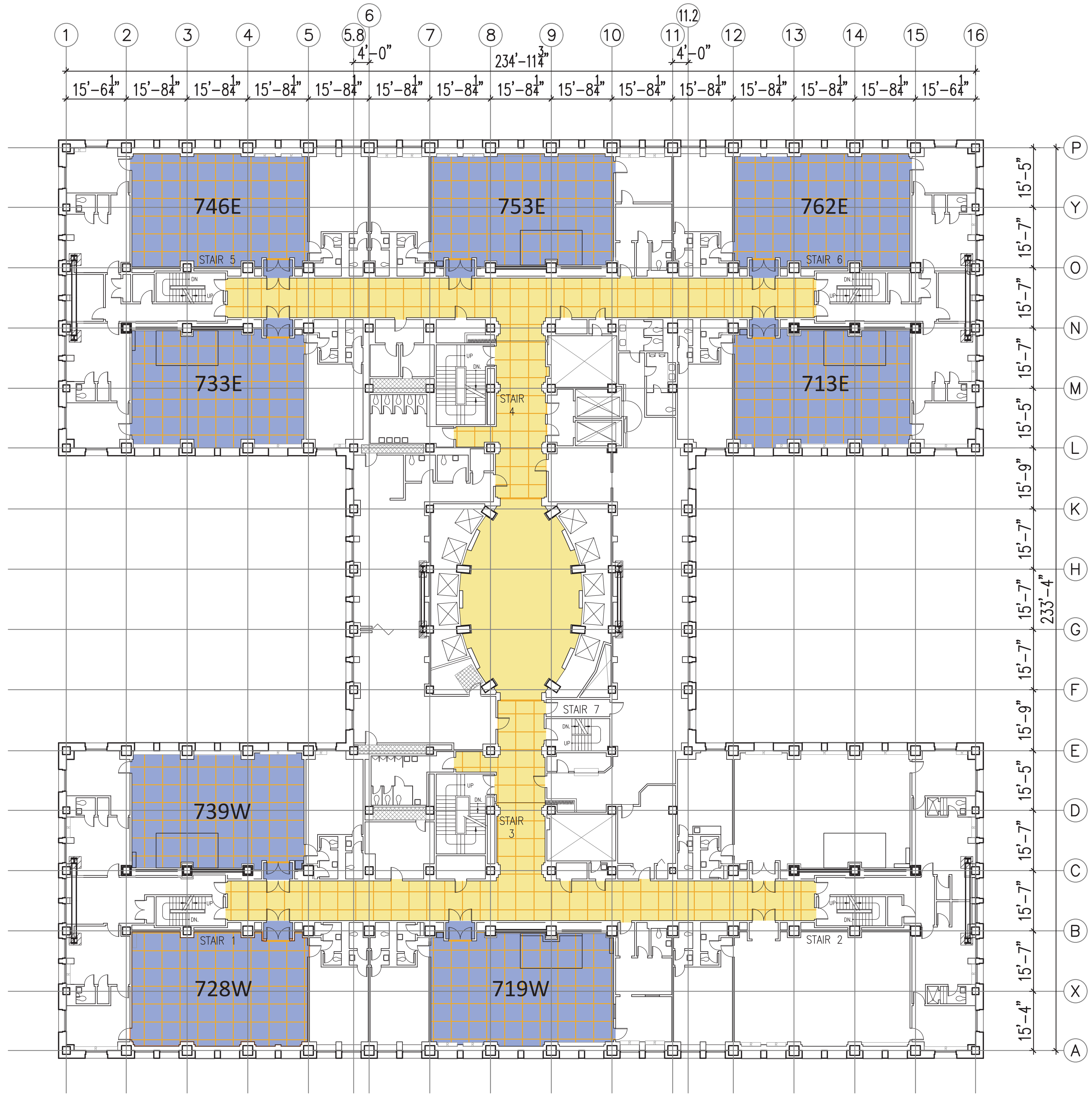


Designated corridor 1987 & 1994

Existing acoustical ceiling tile

HISTORIC DESIGNATED CORRIDOR - LEVEL 6

22 July 2016



Designated corridor 1987 & 1994

Designated court rooms 1987 & 1994

Courtrooms:

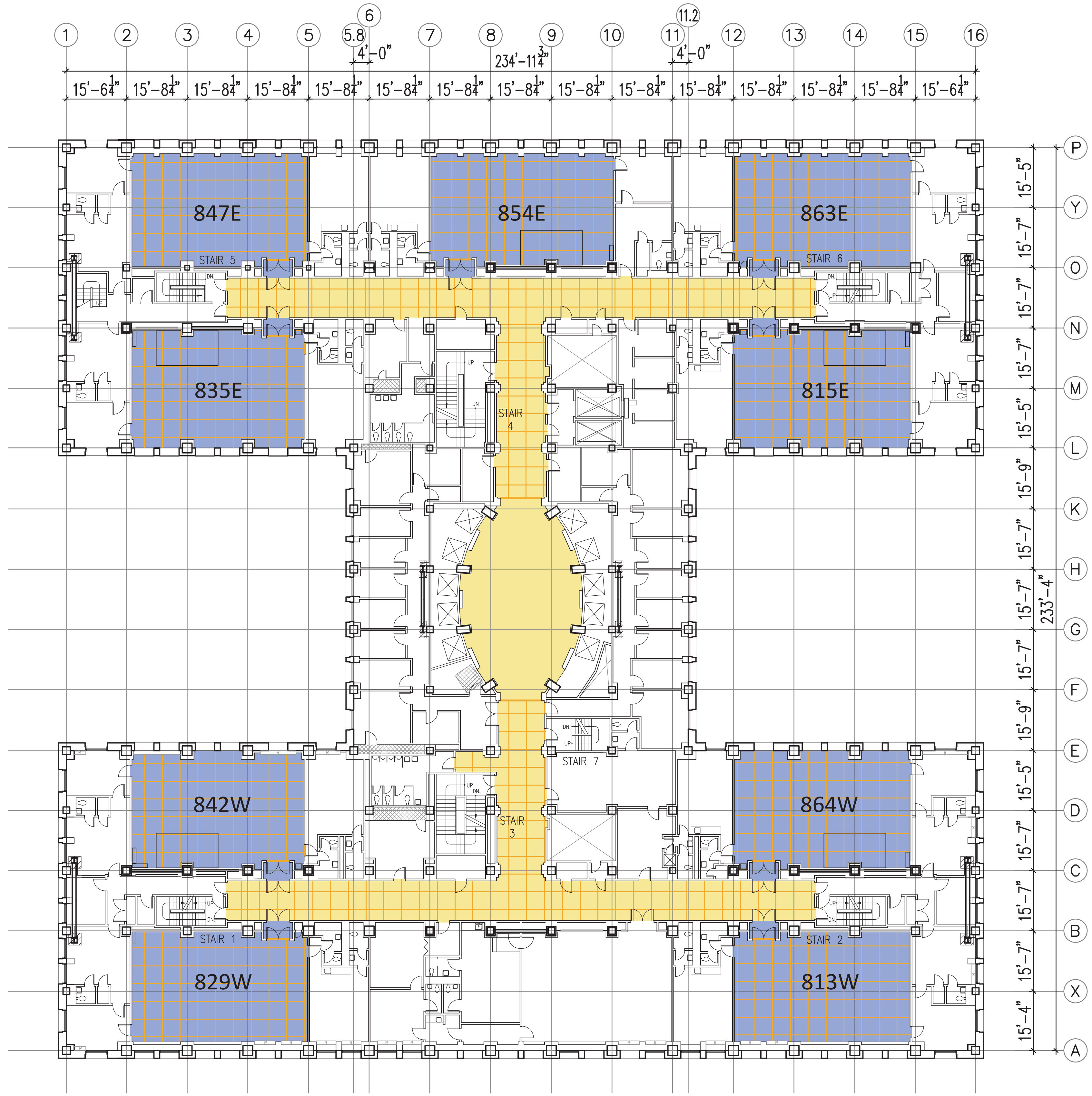
713E: "Traditional Dark"
719W: "Traditional Light"
720W: "Traditional Light"
733E: "Traditional Dark"
739W: "Traditional Light"
746E: "Traditional Dark"
753E: "Traditional Dark"
762E: "Traditional Dark"

Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

Existing acoustical ceiling tile

HISTORIC DESIGNATED CORRIDOR & COURTROOMS - LEVEL 7

22 July 2016



Designated corridor 1987 & 1994

Designated court rooms 1987 & 1994

Courtrooms:

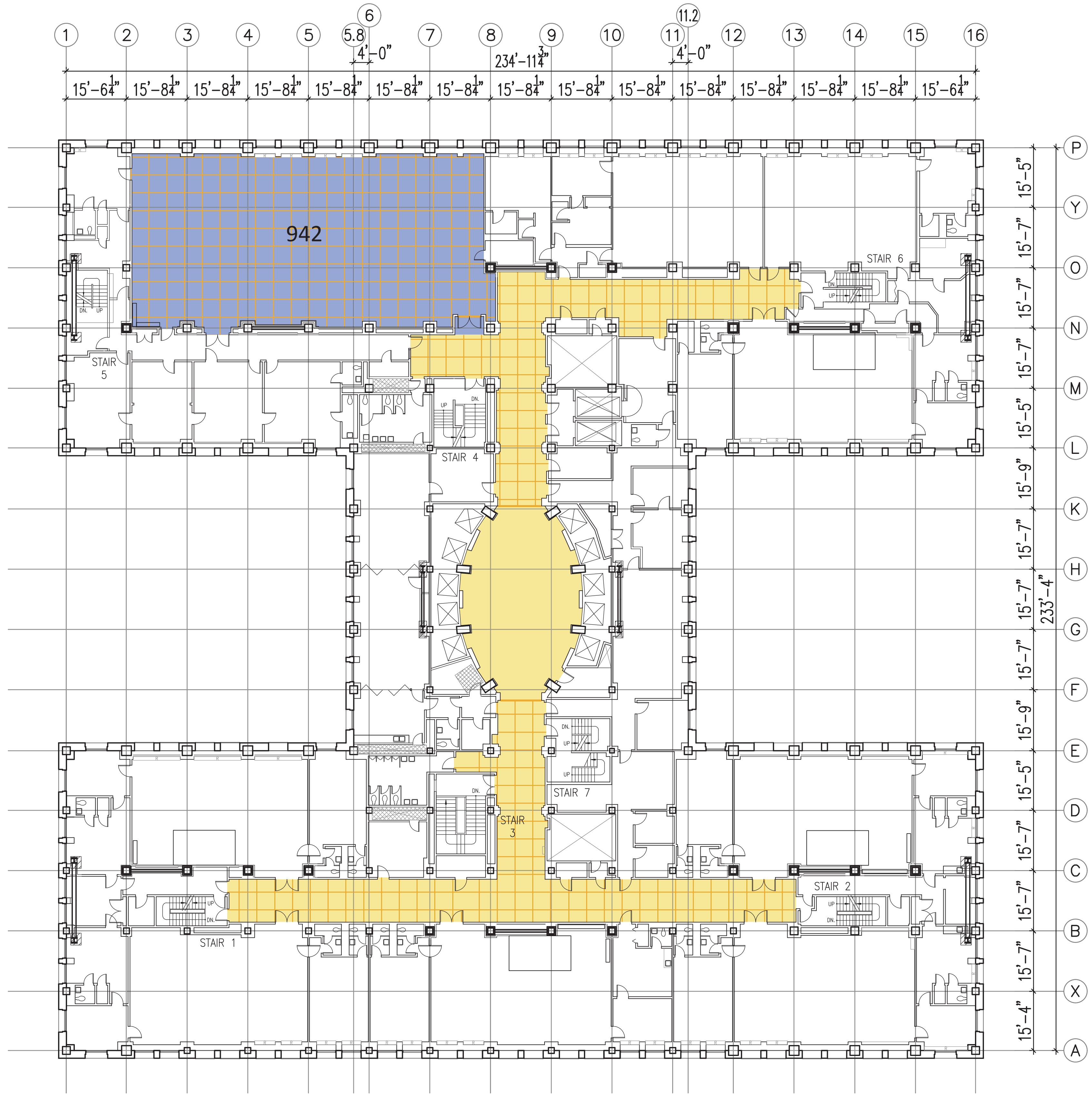
813W:	"Traditional Dark"
815E:	"Traditional Dark"
829W:	"Traditional Dark"
835E:	"Traditional Dark"
842W:	"Traditional Dark"
847E:	"Traditional Dark"
854E:	"Traditional Dark"
863E:	"Traditional Dark"
864W:	"Traditional Dark"

Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

Existing acoustical ceiling tile

HISTORIC DESIGNATED CORRIDOR & COURTROOMS - LEVEL 8

22 July 2016



Designated corridor 1987 & 1994

Designated court room 1987 & 1994

Courtroom:
942: "Traditional Dark"

Note:
This refers to the color of the wood stain in the courtroom, as described in the historic designation memorandum of understanding.

Existing acoustical ceiling tile

HISTORIC DESIGNATED CORRIDOR & COURTROOM - LEVEL 9

22 July 2016

King County

CLARK DESIGN GROUP PLLC

King County Courthouse exterior, view of the aluminum window wall systems at the Fourth Avenue facade. CDG photo, March 18, 2016.

King County Courthouse exterior, view of the aluminum window wall systems at the Third Avenue facade. CDG photo, March 18, 2016.

DESIGNATED HISTORIC FEATURES AT THE EXTERIOR:

Massing and height: there are no anticipated changes to the massing and height of the building.

Third Avenue portico: there are no anticipated changes to this feature of the building.

Fourth Avenue portico: there are no anticipated changes to this feature of the building.

South entry courtyard: there are no anticipated changes to this feature of the building.

Exterior Window Restoration Work (listed by elevation):
- North Elevation: Remove eight (8) 1960s-era aluminum window wall systems at the first floor and install historically-appropriate replacement window units.
- East Elevation: Remove thirteen (13) 1960s-era aluminum window wall systems at the fifth through ninth floors and install one-hundred, twenty-four (124) historically-appropriate replacement window units.
- South Elevation: Remove six (6) 1960s-era aluminum window wall systems at the first floor and install historically-appropriate replacement window units.
- West Elevation: Remove twelve (12) 1960s-era aluminum window wall systems at the first floor and install historically-appropriate replacement window units. Remove twelve (12) 1960s-era aluminum window wall systems at the fifth through ninth floors and install one-hundred, twenty (120) historically-appropriate replacement window units.
- East Elevation at North Courtyard: Remove three (3) 1960s-era aluminum window wall systems at the fifth through ninth floors and install fifteen (15) historically-appropriate replacement window units.
- East Elevation at South Courtyard: Remove three (3) 1960s-era aluminum window wall systems at the first floor and install historically-appropriate replacement window units. Remove three (3) 1960s-era aluminum window wall systems at the fifth through ninth floors and install fifteen (15) historically-appropriate replacement window units.
- West Elevation at North Courtyard: Remove three (3) 1960s-era aluminum window wall systems at the fifth through ninth floors and install fifteen (15) historically-appropriate replacement window units.
- West Elevation at South Courtyard: Remove three (3) 1960s-era aluminum window wall systems at the first floor and install historically-appropriate replacement window units. Remove three (3) 1960s-era aluminum curtain wall window systems at the fifth through ninth floors and install fifteen (15) historically-appropriate replacement window units.

King County Courthouse exterior, view of the aluminum window wall systems at the southwest corner of the first floor. CDG photo, March 18, 2016.

King County Courthouse exterior, detail view of the aluminum window wall systems at the Fourth Avenue facade. CDG photo, March 18, 2016.

Exterior doors: there are no anticipated changes to these features of the building.

Facing materials: granite, brick, terra-cotta

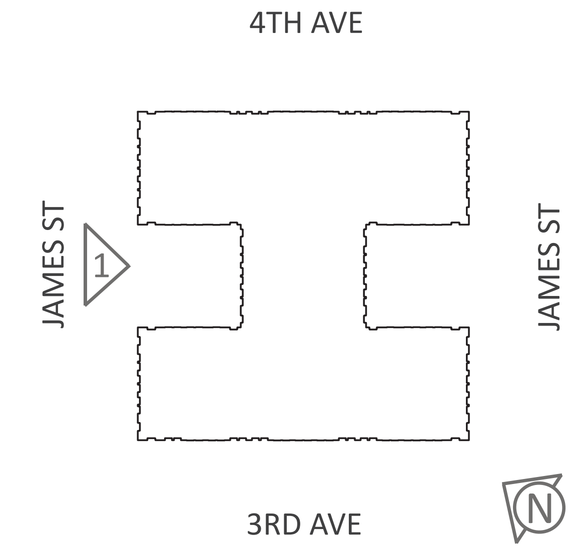
- Granite masonry: the removal of the 1960s aluminum window wall systems at the first floor could reveal hidden damage to the granite masonry base of the building. The extent of any damage to the granite masonry is currently unknown and would not be revealed until the window wall panels are removed. Any damaged granite would need to be repaired. Minor damage such as holes, chips, or cracks in the granite panels can be repaired using restoration mortar injections or patches to help prevent moisture intrusion into the wall assembly. Major damage such as cracked or missing granite will require more extensive and costly repair measures such as replacement granite Dutchmen. Damage to mortar joints in the granite will require repointing the mortar. Finally, exterior and interior installation details of new historically-appropriate replacement window units would be required to minimize additional damage to the granite masonry.
- Brick masonry: the removal of the 1960s aluminum window wall systems at the fifth through ninth floors could reveal hidden damage to the brick masonry facades. The extent of any damage to the brick masonry is currently unknown and would not be revealed until the window wall panels are removed. Any damaged brick masonry would need to be repaired. Minor damage such as holes, chips, or cracks in brick masonry units can be repaired using restoration mortar injections or patches to help prevent moisture intrusion into the wall assembly. Major damage such as cracked or missing brick masonry units will require more extensive and costly repair measures such as replica replacement brick units. Damage to mortar joints in the brick masonry will require repointing the mortar. Finally, exterior and interior installation details of new historically-appropriate replacement window units would be required to minimize additional damage to the brick masonry.
- Terra-cotta masonry: the removal of the 1960s aluminum window wall systems at the fifth through ninth floors could reveal hidden damage to terra-cotta window sills. The extent of any damage to the terra-cotta masonry is currently unknown and would not be revealed until the window wall panels are removed. Any damaged terra-cotta masonry would need to be repaired. Minor damage such as holes, chips, or cracks in terra-cotta units can be repaired using restoration mortar injections or patches to help prevent moisture intrusion into the wall assembly. Major damage such as cracked or missing terra-cotta units will require more extensive and costly repair measures such as replica replacement terra-cotta units. Damage to mortar joints in the terra-cotta masonry will require repointing the mortar. Finally, exterior and interior installation details of new historically-appropriate replacement window units would be required to minimize additional damage to the terra-cotta masonry.

Copper entablature: there are no anticipated changes to this feature of the building.

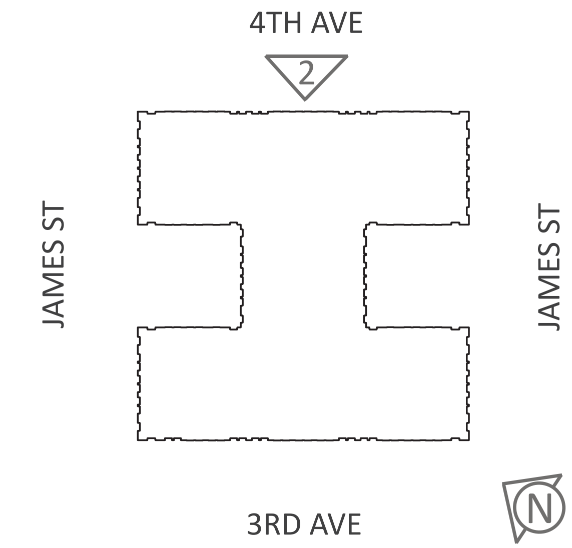
Building Elevation and Section Diagrams of Existing Exterior Conditions:

The elevation and section diagrams on the following pages illustrate the existing exterior conditions of the King County Courthouse. The diagrams show the locations of the aluminum window wall systems and also the location of historic designated courtrooms.

1 NORTH ELEVATION
SCALE: 1/32" = 1'-0"



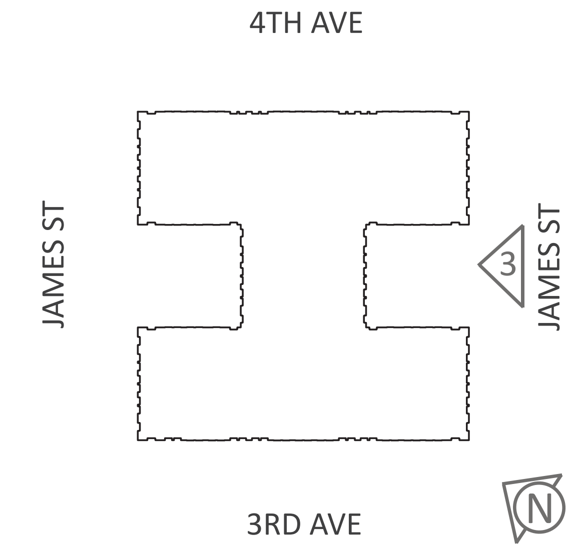
1960s-era aluminum windows, louvers, and wall panels
(Area = approximately 610 SF)



1960s-era aluminum windows, louvers, and wall panels (Area = approximately 10,695 SF)

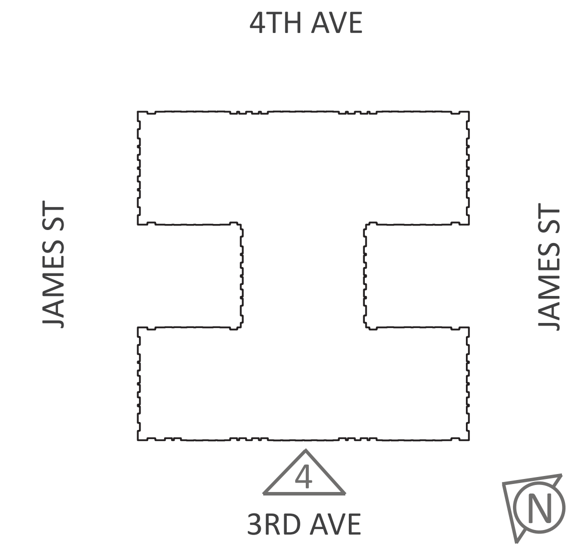
Historic courtroom beyond

2 EAST ELEVATION
SCALE: 1/32" = 1'-0"



1960s-era aluminum windows, louvers, and wall panels (Area = approximately 704 SF)

3 SOUTH ELEVATION
SCALE: 1/32" = 1'-0"

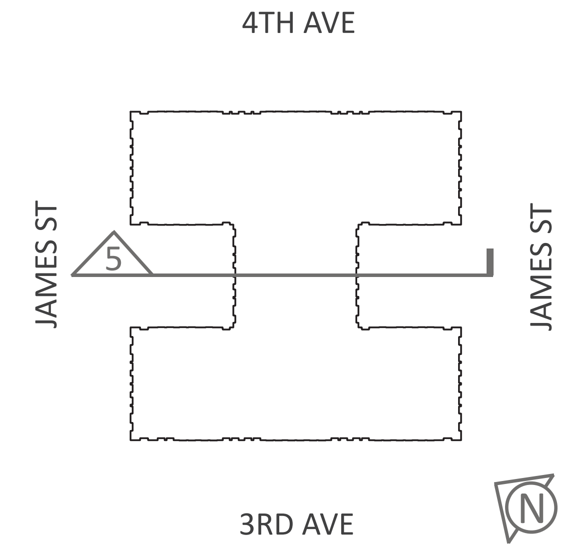


1960s-era aluminum windows, louvers, and wall panels (Area = approximately 12,312 SF)

Historic courtroom beyond

4 WEST ELEVATION
SCALE: 1/32" = 1'-0"

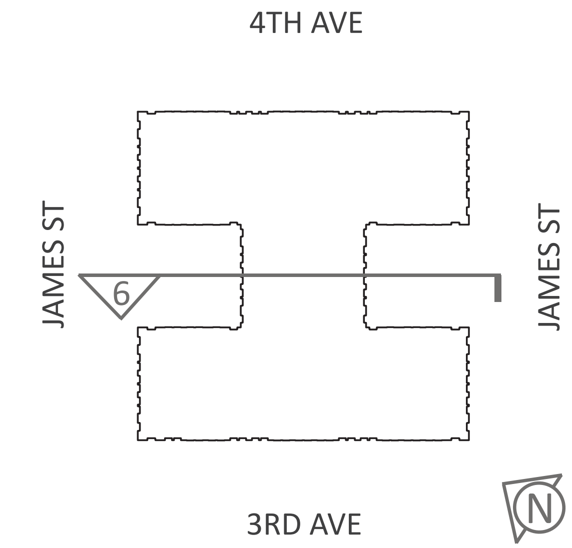
5 EAST SECTION
SCALE: 1/32" = 1'-0"



1960s-era aluminum windows, louvers, and wall panels (Area = approximately 4,892 SF)

Historic courtroom beyond

6 WEST SECTION
SCALE: 1/32" = 1'-0"



1960s-era aluminum windows, louvers, and wall panels (Area = approximately 4,892 SF)

Historic courtroom beyond

King County Courthouse, view of hollow clay tile infill between reinforced concrete columns at exterior walls. CPL photo, February, 1, 2001.

King County Courthouse, detail view of voids inside hollow clay tile infill at exterior walls. CPL photo, February 1, 2001.

IMPACTS OF SEISMIC UPGRADE WORK TO EXTERIOR AND INTERIOR HISTORIC FEATURES:

Seismic stabilization of existing hollow-clay tile (HCT) walls and masonry veneers:
The exterior walls of the King County Courthouse consist of hollow-clay tile masonry infill in the area between the reinforced concrete structural columns, beams, floors, and ceilings. The outside face of the exterior walls consists of granite veneer and brick masonry veneer with terra-cotta window sills, trim, and belt courses. The historic interior partitions inside the King County Courthouse are also hollow-clay tile masonry, and in some cases are older gypsum tile block. While some of the interior partitions have been removed over the years and in some cases replaced with concrete masonry units (CMU), many of the hollow-clay tile partitions remain in place inside the building.

Hollow-clay tile masonry walls and brick masonry veneers are examples of unreinforced masonry walls (URM). The connections between the masonry infill and the reinforced concrete structure are typically very weak gravity connections and lack the strength to resist tension loads imposed on the wall during a seismic event. Strong earthquakes can cause the partial or complete collapse of unreinforced masonry walls, endangering both the building occupants and pedestrians nearby who could be exposed to falling masonry debris.

The exterior walls of the King County Courthouse will need extensive seismic reinforcement in order to mitigate the life-safety risks associated with unreinforced masonry materials. This type of work typically involves strengthening the existing walls by adding structural supports to the walls. This type of strengthening work is also referred to as 'strongbacking.' The potential methods of strongbacking include adding concrete or steel reinforcement or a layer of carbon-fiberglass composite to the inside face of the exterior wall.

The exact method or methods of strongbacking used for the Courthouse will be developed by a structural engineer working closely with the architectural team and historic preservation specialist.

The potential sequence of this work is as follows:
- Vacate the space.
- Partial or complete removal of existing interior wall finishes, ceiling finishes, millwork, and casework at the inside of all exterior walls. Partial or complete removal of floor finishes may also be required.
- Installation of the strongbacking material, which could consist of steel bars, straps, or studs; carbon-fiberglass composite, concrete, or pneumatically applied concrete (a.k.a. shotcrete or gunnite).
- Install stainless steel helical fasteners through the mortar joints in the exterior masonry veneers to secure the masonry veneer to the strongbacked walls.
- Install the replacement window units and rough framing for interior walls.
- Install mechanical, electrical, and plumbing as required.
- Install new floor, wall, and ceiling finishes; millwork, and casework after the seismic work is completed.
- Install new light controls such as venetian blinds or shades at the window openings.
- Final clean and move back into the space.

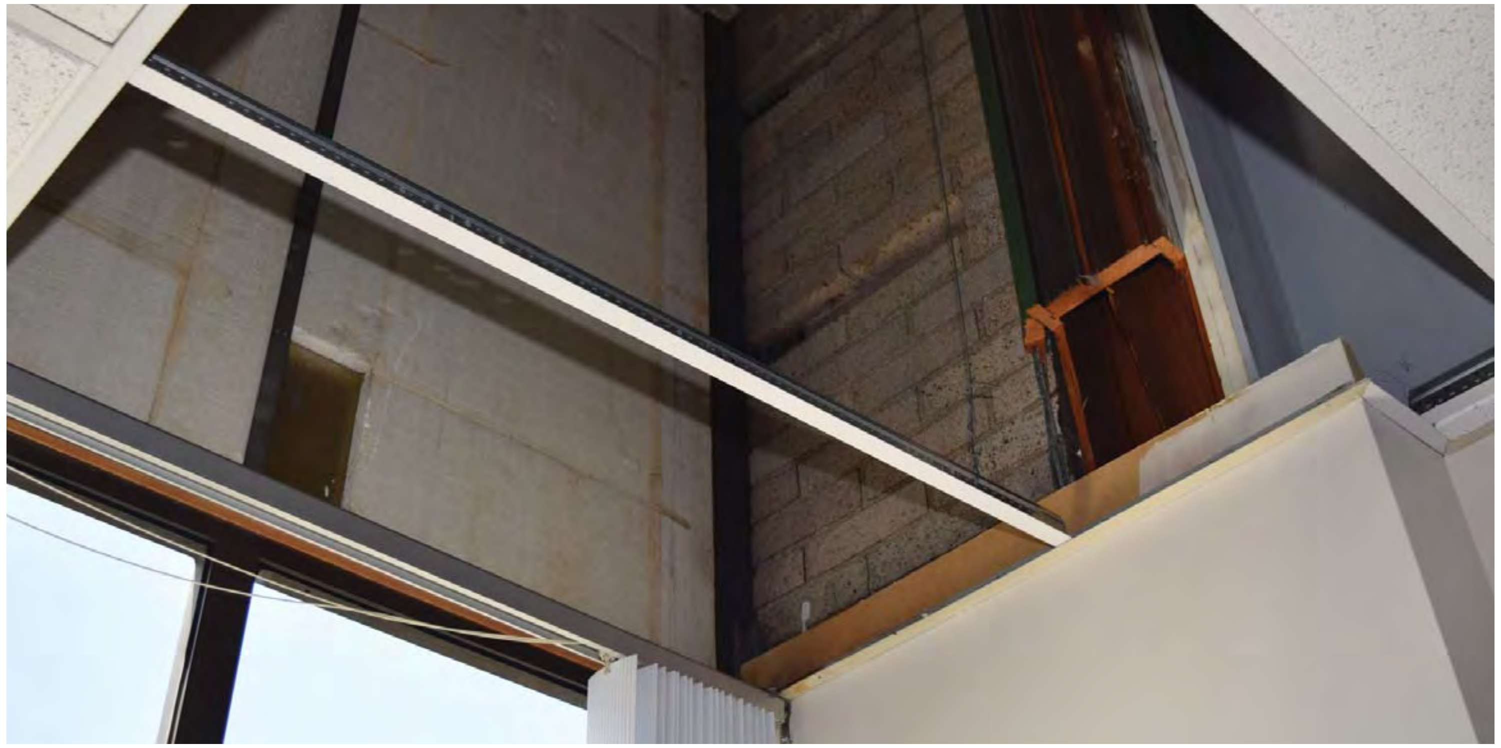
Example of fiberglass mesh strongbacking reinforcement for masonry walls. Photo from National Park Service Preservation Brief #41. Courtesy Wiss, Janney, Elstner and Associates.

Example of steel strap strongbacking for hollow-clay tile masonry interior wall. CDG photo, April 22, 2015.

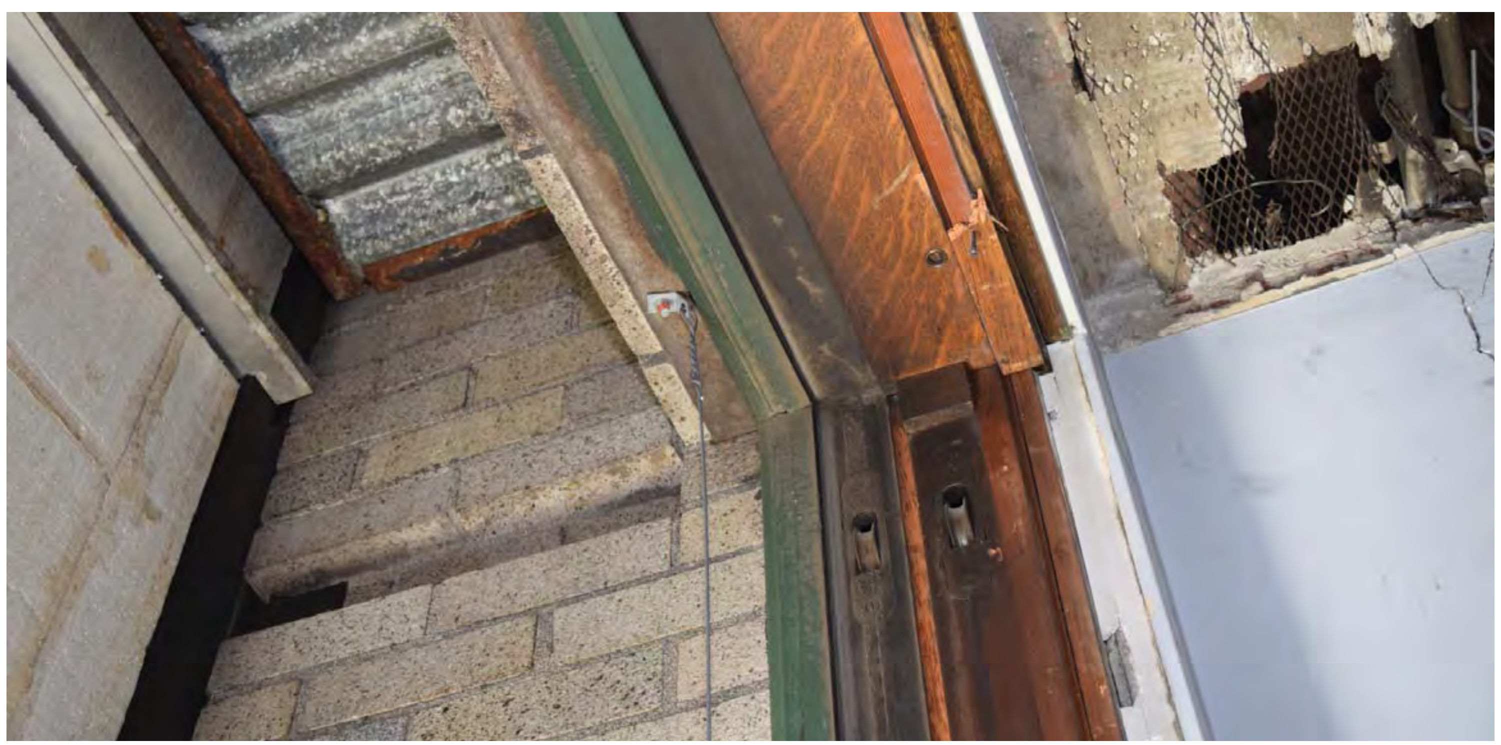
IMPACTS OF SEISMIC UPGRADE WORK TO EXTERIOR AND INTERIOR HISTORIC FEATURES:

Seismic stabilization of existing hollow-clay tile (HCT) walls and masonry veneers, continued:

- For additional information on the seismic stabilization work proposed for the masonry veneers on the King County Courthouse, please refer to the November 16, 2011 memorandum from DCI Engineers to Rolluda Architects and the December 12, 2011 memorandum from Rolluda Architects to King County.
- For additional recommendations on the preservation treatment of terra-cotta masonry on the King County Courthouse lease refer to the July 31, 2012 and August 3, 2012 memoranda from Wiss, Janney, Elstner and Associates to King County.
- For additional technical guidance on the potential impacts of seismic stabilization work on historic buildings, please refer to the National Park Service Preservation Brief #41: *The Seismic Rehabilitation of Historic Buildings*.



King County Courthouse interior, view of the aluminum window wall and remains of historic wood double hung window at the Third Avenue facade. CDG photo, May 20, 2016.



King County Courthouse interior, view of the aluminum window wall and remains of historic wood double hung window at the Third Avenue facade. CDG photo, May 20, 2016.

EXTERIOR WINDOW RESTORATION WORK AND EFFECTS ON INTERIOR:

Removal of the 1960s-era aluminum window wall systems and installation of historically-appropriate replacement window units is proposed at the following locations:

- North Elevation: first floor
- East Elevation: fifth through ninth floors
- South elevation: first floor and fifth through ninth floors
- West elevation: first floor and fifth through ninth floors
- East Elevation at North Courtyard: fifth through ninth floors
- East Elevation at South Courtyard: first floor and fifth through ninth floors
- West Elevation at North Courtyard: fifth through ninth floors
- West Elevation at South Courtyard: first floor and fifth through ninth floors

The proposed removal of the non-historic window wall panels and restoration of missing windows on the exterior of the building will have a significant impact on the existing interior finishes on several levels of the King County Courthouse. Once the window wall panels are removed and the window openings and interior wall surfaces restored to their historic condition, spaces within the building that have been sealed off from natural light for the past 50 years will once again have natural lighting.

The reintroduction of natural light is an issue that will need to be addressed, in particular at the courtrooms and jury deliberation rooms. Even though the replacement window units will have thermally-broken frames and feature energy-efficient double-pane glazing, window coverings such as venetian blinds or roller shades will need to be installed at these restored window openings. Light control is required to help reduce solar heat gain and glare into interior spaces and to allow for room darkening for audiovisual presentations during court proceedings. Significant advances have been made in roller shade technology in recent years, and modern roller shades are offered in a wide range of attractive materials. Materials range from partially translucent to totally opaque.

Motorized operators for raising and lowering shades are available and can be controlled within the space to meet the needs of the user in that particular space. Shades can also be centrally controlled by a computer program to raise or lower the shades depending on time of day, weather conditions, and location within the building. However, these automated operations can allow users to control the shades in their individual spaces depending on their need for more or less light.

Window coverings such as drapes or curtains are generally not recommended for this application, due to the very high initial cost of fabrication and installation and the high costs of ongoing maintenance and cleaning fabric window coverings.

The restoration of the window openings will also have an impact on any existing casework at the exterior walls, such as bookcases or cabinets in the courtrooms. It is very likely that existing bookcases and cabinetry at the courtrooms would need to be moved or reconfigured as a part of the window restoration project.

King County Courthouse interior view of typical historic features and materials at the second floor elevator lobby. CDG photo, March 18, 2016.

King County Courthouse interior view of historic marble wainscoting, doors, and transom windows at the ninth floor elevator lobby and west corridor. CDG photo, April 16, 2016.

DESIGNATED HISTORIC FEATURES AT THE INTERIOR:

First through ninth floor elevator lobbies and corridors:

- Alterations within the two existing vertical mechanical riser shafts are anticipated to occur within the shafts and are not foreseen to affect the existing historic features of the lobbies and corridors at the first through ninth floors. However, if new access doors into the two existing mechanical shafts are required, the additions of these doors would require careful planning to locate the doors either in existing openings in the marble wainscoting or create new openings in the marble wainscoting. The creation of new doors would require the removal of existing marble and wall framing materials, the construction of historically-appropriate door frames and doors, and the installation of marble trim around the door opening.
- The two new vertical electrical bus duct shafts and electrical distribution panel room spaces would also require careful planning to avoid unnecessary impacts to historic features in the lobbies and corridors. Ideally, access doors to the new electrical rooms would be located at existing door openings in the corridors. However, due to the varied conditions and configurations of the corridors, it is unlikely that all the new access doors for the bus duct and panel rooms could be accommodated within existing door openings. The creation of new door openings into the existing vertical mechanical riser shafts and into the new electrical bus duct shafts and panel rooms has the potential to significantly impact remaining historic fabric at the elevator lobbies and corridors. The creation of new doors would require the removal of existing marble and wall framing materials, the construction of historically-appropriate door frames and doors, and the installation of marble trim around the door opening.

Existing ceilings at first through ninth floor elevator lobbies and corridors:

- Mechanical, electrical, and plumbing horizontal distribution work in addition to the new vertical risers would need to be coordinated to occur in the areas with existing acoustical tile ceilings in order to avoid further potential impacts to historic plaster ceilings concealed by the existing lowered ceiling. Alternately, additional mechanical, electrical, and plumbing horizontal distribution lines could also potentially be located in areas of the interior adjacent to the elevator lobbies and corridors that are not designated as historic.
- Seismic upgrades to the acoustical tile ceilings will need to be planned to reduce potential impacts to the existing historic materials at the elevator lobbies and corridors and to minimize the impact to historic plaster ceiling finishes that remain concealed above the acoustical tile ceilings.
- Potentially restoring the historic ceiling height and plaster ceiling in the corridors may present a challenge due to the large amount of mechanical, electrical, plumbing and fire protection equipment that is currently concealed by the acoustical tile ceilings. This equipment would need to be relocated elsewhere in the building or concealed above the historic plaster ceiling. However, in order to conceal the equipment above the plaster ceiling, large sections of the ceiling would have to be removed to allow for the installation of mechanical, electrical, and plumbing equipment. Once the equipment is installed, the ceiling would then need to be replaced.

King County Courthouse interior view of marble wainscoting at jury deliberation room restroom E761A. CDG photo, June 2, 2016.

King County Courthouse interior view of plaster wall finish at jury deliberation room restroom W727B. CDG photo, May 20, 2016.

DOMESTIC WATER SYSTEM UPGRADES AND POTENTIAL IMPACTS TO HISTORIC FEATURES:

The proposed work to upgrade the domestic water supply system includes the recommendation to replace all existing plumbing fixtures. Issues with hot water delivery and water flow at faucets is a concern at lavatories and sinks. Allowing the faucets to run while waiting for hot water to arrive wastes an estimated 104,000 gallons of water per year.

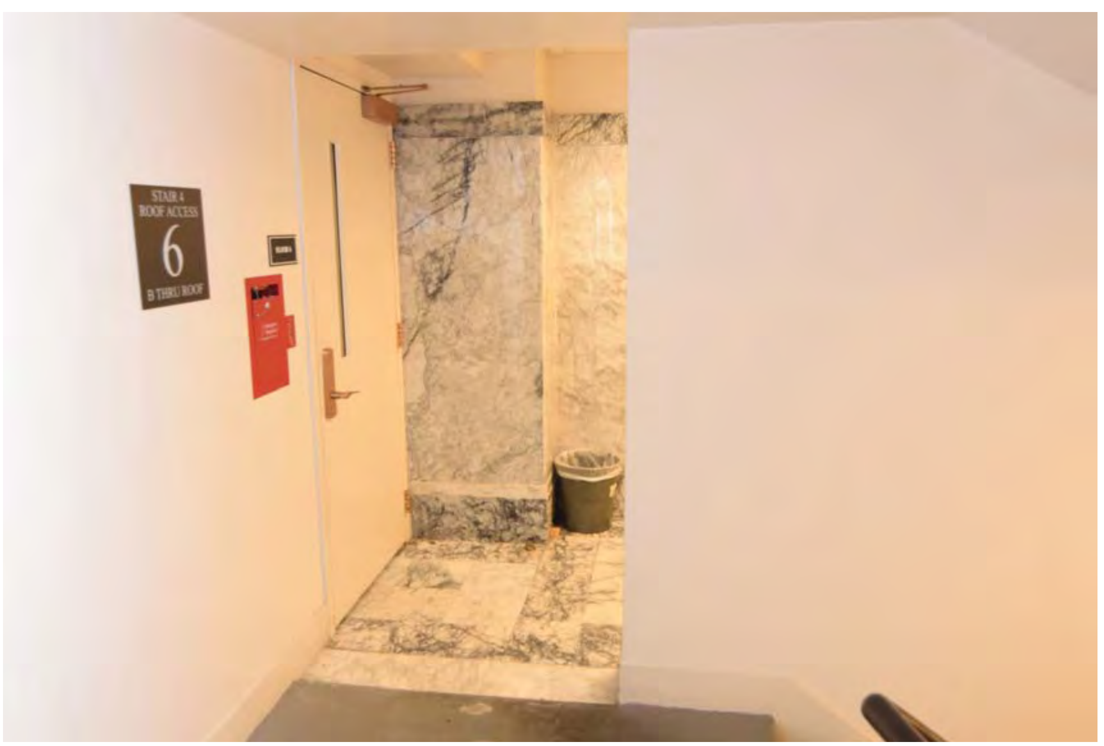
The age of the existing plumbing fixtures varies throughout the King County Courthouse, with some water closets appearing to date from the 1929-1931 construction campaign. This work will also include the addition of plumbing fixtures on some levels of the building to meet current plumbing code fixture count requirements.

The existing water closets, lavatories, and sinks at the follow locations are slated for complete replacement:
- Judge’s chamber restrooms, located throughout the Courthouse
- Jury deliberation room restrooms, located throughout the Courthouse at jury deliberation rooms adjacent to courtrooms
- Public restrooms on Levels 1-9

Replacing the older water closets in the building with modern water-saving fixtures will dramatically reduce water use. Furthermore, some first-generation low-flow water closets installed over the past few decades have been difficult to maintain. Additionally, the newer toilets were incompatible with the existing carriers mounted in the restroom walls, which has resulted in frequent clogging and poor clearing of the bowl when the water closet is flushed.

In order to replace plumbing fixtures such as water closets, it will be necessary to open up the restroom walls in order to replace piping, change out the carriers for the water closets, upgrade flush valves. This work has the potential to affect existing historic materials at the restrooms. There are a variety of existing materials at the water closet locations, ranging from historic marble wainscoting and plaster walls in some of the judge’s chamber and jury deliberation room restrooms to 1960s-era tile in the public restrooms. Additionally, some of this work may also affect historic flooring materials such as tile or terrazzo.

King County Courthouse interior view of fire exit doors and public restroom door at historic corridor. CDG photo, May 7, 2016.



King County Courthouse interior view of fire exit door. This door also serves as access to hallway leading to public restroom. CDG photo, May 7, 2016.

PUBLIC RESTROOM ADA UPGRADES AND POTENTIAL IMPACTS TO HISTORIC FEATURES:

Endelman & Associates, PLLC performed an Americans with Disabilities Act (ADA) survey of the King County Courthouse in July 2007. Their detailed and exhaustive report noted instances of public restroom entry doors from the corridors needing alterations to meet accessibility requirements. Some of these accessibility barriers noted in their report are easily corrected, such as by reversing the swing of one of the paired doors leading into the restrooms.

However, some of the public restroom entry doors noted in their report lacked the necessary maneuvering space on the push-side or pull-side of door. Correcting these clearance issues requires more invasive changes, such as relocating and reconfiguring the restroom entry door locations. Since these doors are located in the historic designated corridors, this work will need to be carefully planned and coordinated with the King County Landmark Board during the early design phases and Certificate of Approval review process. The relocation or enlargement of existing restroom doors would require the removal of existing marble and wall framing materials, the reconstruction of door frames and doors, and the re-installation of marble trim around the relocated or enlarged door opening.

In addition to upgrading the public restroom entry doors, there are also upgrades that will likely need to occur inside the public restrooms to comply with the ADA requirements. Some of these issues include providing maneuvering clearances inside the restrooms, increasing the width of doors to accessible toilet cubicles, providing accessible urinals and lavatories, providing piping boots, and providing necessary grab bar hardware.

Please note that the report by Endelman & Associates, PLLC was performed in 2007. Changes and updates have been made to the ADA accessibility requirements over the past several years. Also, the King County Facilities Management Division has performed many of the required accessibility upgrades over the past several years, which means that some of the issues noted by Endelman & Associates have already been addressed.

Due to the limited scope of this pre-design report, there may be additional ADA accessibility issues that will need to be identified and corrected during a project to revitalize the King County Courthouse. Since the King County Courthouse is such a large and complex building, the architectural design team for a revitalization of the Courthouse would most likely engage the services of a specialized accessibility consultant during the design and construction phases of such a project.

King County Courthouse typical non-ADA compliant jury deliberation room restroom and door. CDG photos, May 20, 2016.

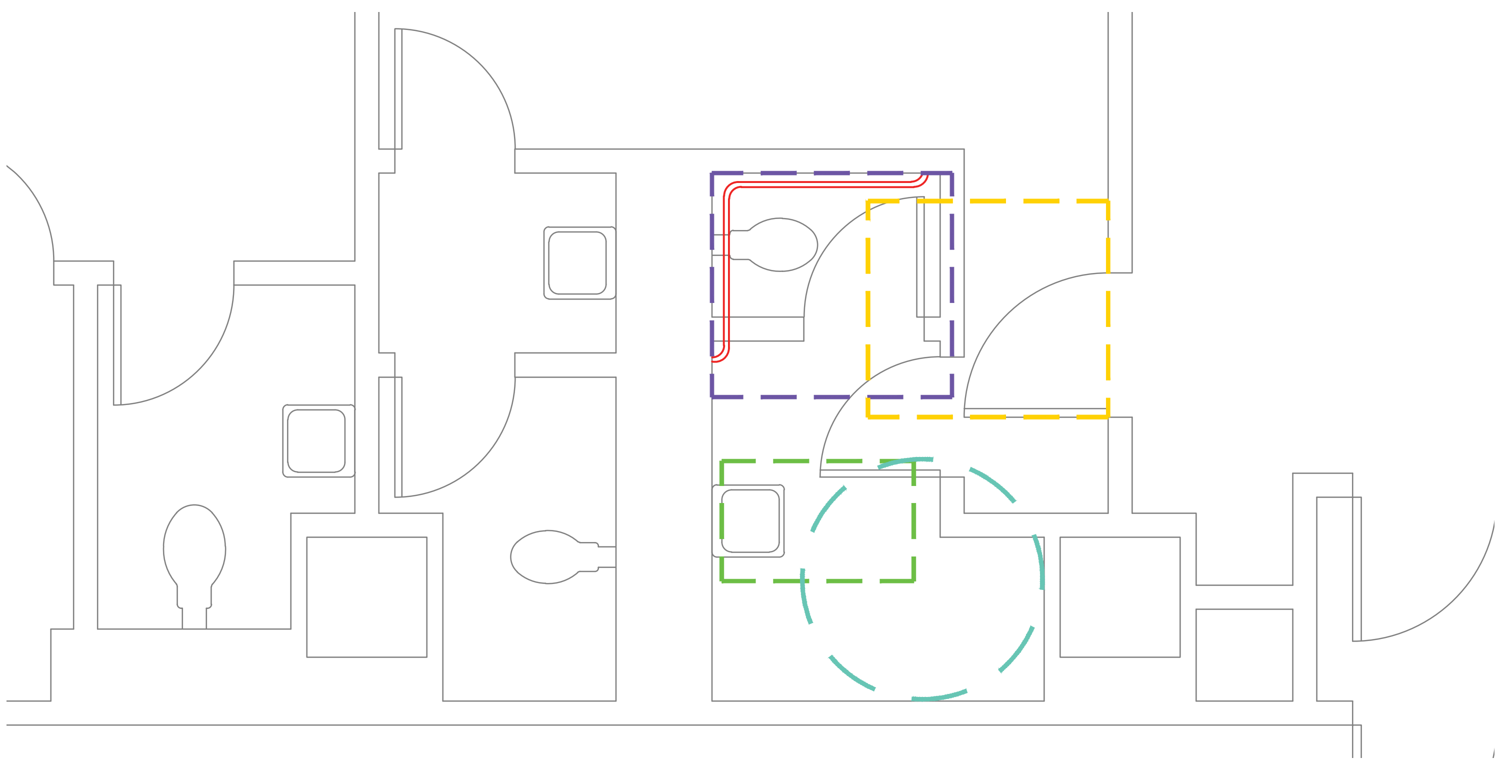


Diagram showing the required ADA clearances for toilets and lavatories superimposed over a drawing of the existing toilet room configuration at the jury deliberation rooms.

<u>JURY DELIBERATION ROOM RESTROOM ADA UPGRADES AND POTENTIAL IMPACTS TO HISTORIC FEATURES:</u>

Endelman & Associates, PLLC performed an Americans with Disabilities Act (ADA) survey of the King County Courthouse in July 2007. Their report identified the following jury deliberation rooms on the 3rd, 7th, 8th, and 9th floors as lacking accessible toilet rooms:

3rd Floor:
- Superior Court Courtroom W312
- Room W314 (Currently identified as 'Housing Justice Project')
- Jury Room W356 at Superior Court Courtroom W355 (toilet rooms are W356A and W356B)

7th Floor:
- Jury Room E716 at Superior Court Courtroom E713 (toilet rooms are E716A and E716B)
- Jury Room E732 at Superior Court Courtroom E733 (toilet rooms are E732A and E732B)
- Jury Room E747 at Superior Court Courtroom E746 (toilet rooms are E747A and E747B)
- Jury Room E752 at Superior Court Courtroom E753 (toilet rooms are E752A and E752B)
- Jury Room E761 at Superior Court Courtroom E762 (toilet rooms are E761A and E761B)*
- Jury Room W712 at Superior Court Courtroom W711 (toilet rooms are W712A and W712B)
- Jury Room W721 at Superior Court Courtroom W719 (toilet rooms are W721A and W721B)
- Jury Room W727 at Superior Court Courtroom W728 (toilet rooms are W727A and W727B) *(Note: Clark Design Group observed this jury room and two toilet rooms on May 20, 2016 and confirmed that these toilet rooms are not ADA-compliant)*
- Jury Room W740 at Superior Court Courtroom W739 (toilet rooms are W740A and W740B)
- Jury Room W763 at Superior Court Courtroom W764 (toilet rooms are W763A and W763B)

8th Floor:
- Jury Room E816 at Superior Court Courtroom E815 (toilet rooms are E816A and E816B)
- Jury Room E834 at Superior Court Courtroom E835 (toilet rooms are E834A and E834B)
- Jury Room E848 at Superior Court Courtroom E847 (toilet rooms are E848A and E848B)
- Jury Room E853 at Superior Court Courtroom E854 (toilet rooms are E853A and E853B)*
- Jury Room E862 at Superior Court Courtroom E863 (toilet rooms are E862A and E862B)
- Jury Room W814 at Superior Court Courtroom W813 (toilet rooms are W814A and W814B)
- Jury Room W819 at Superior Court Courtroom W817 (toilet rooms are W819A and W819B)
- Jury Room W824 at Superior Court Courtroom W829 (toilet rooms are W824A and W824B)
- Jury Room W843 at Superior Court Courtroom W842 (toilet rooms are W843A and W843B)*
- Jury Room W860 at Superior Court Courtroom W864 (toilet rooms are W860A and W860B)

9th Floor:
- Jury Room W922 at Superior Court Courtroom W921 (toilet rooms located adjacent to room currently identified as 'DJA Drug Court Staff')
- Jury Room W927 at Superior Court Courtroom W928
- Jury Room W942 at Superior Court Courtroom W941
- Jury Room W962 at Superior Court Courtroom W965

Note: The asterisk (*) identifies the jury deliberation room restrooms where one restroom has been upgraded by the King County Facilities Management Division to be ADA-compliant.

King County Courthouse jury deliberation room restroom E761B showing the ADA upgrade performed by King County Facilities Management Division. CDG photo, June 2, 2016.

King County Courthouse jury deliberation room restroom E761B showing the ADA upgrade performed by King County Facilities Management Division. CDG photo, June 2, 2016.

In addition to the jury deliberation rooms identified by Endelman & Associates as lacking accessible toilet rooms, Clark Design Group has identified the following jury deliberation rooms that may also lack accessible toilet rooms:

2nd Floor:
- Jury Room E221 at Superior Court Courtroom E201 (toilet rooms at E221A and E221B)
- Jury Room (Overflow) W273

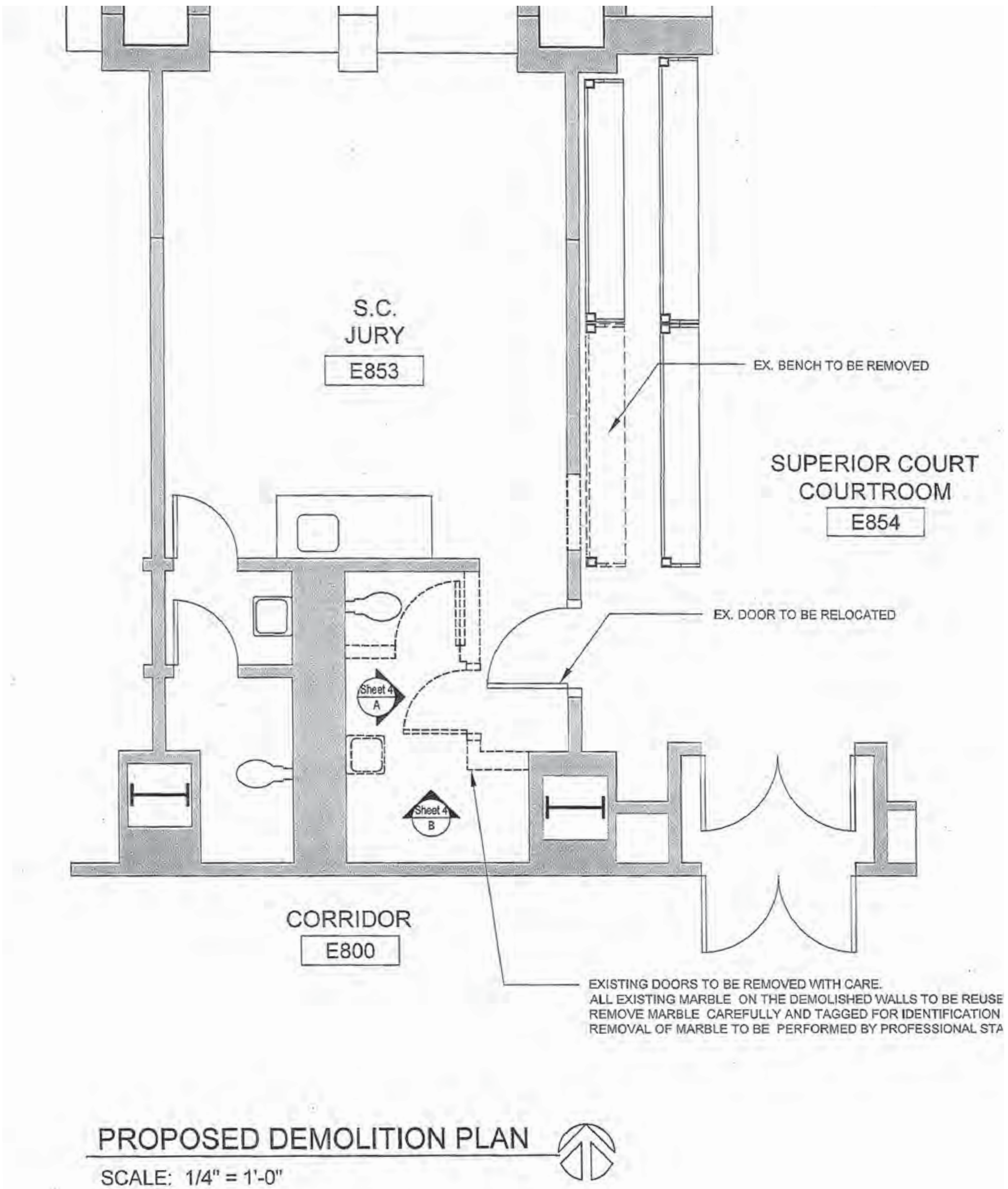
3rd Floor:
- Jury Room W380 at Superior Court Courtroom W382
- Jury Room W358 (toilet rooms are W357 and W359)

9th Floor:
- Jury Room W914 at Superior Court Courtroom W905

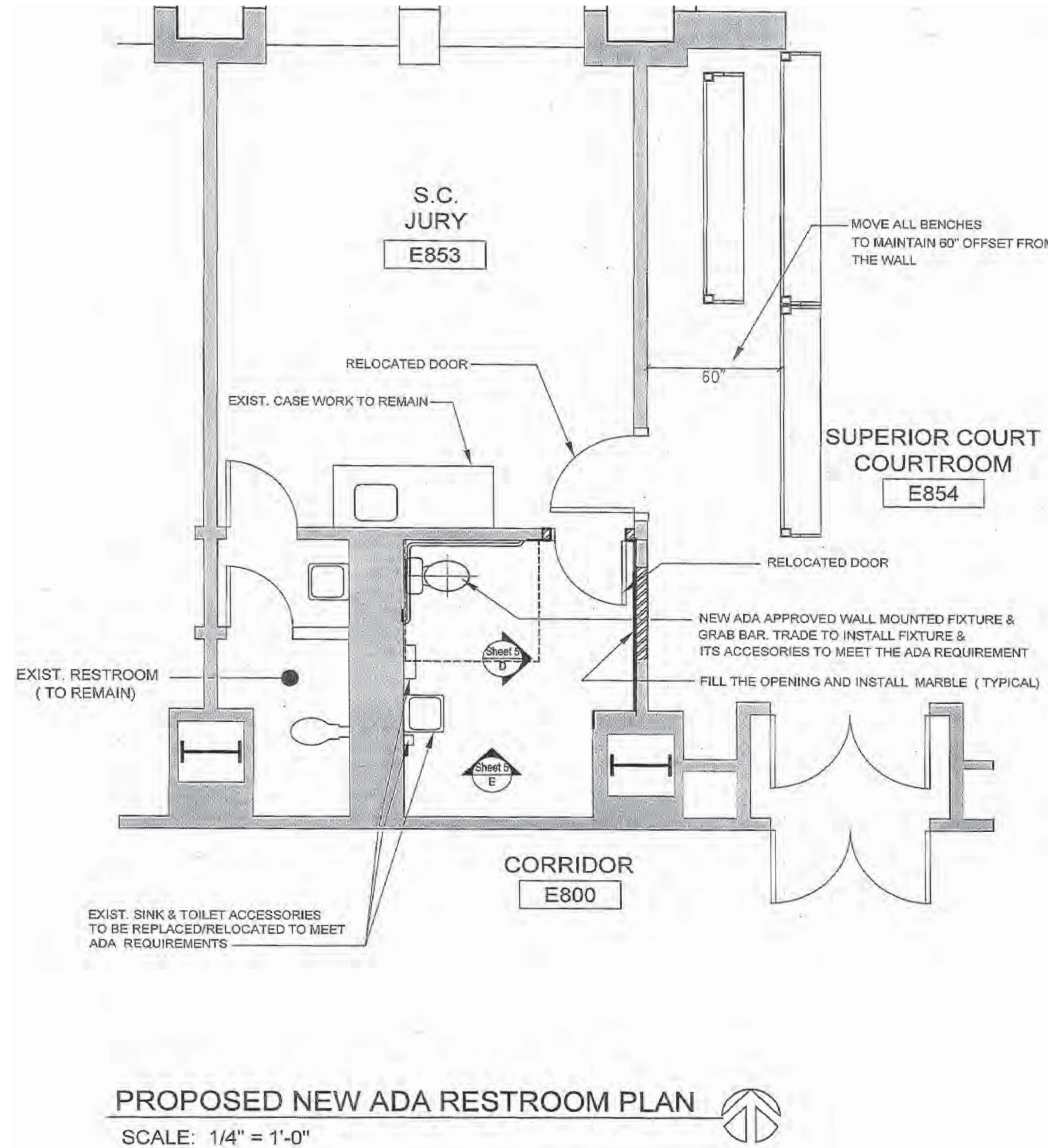
To date, the King County Facilities Management Division has reconfigured three jury deliberation room toilet rooms at Jury Room E761, E853, and W843 to be accessible. These completed restroom accessibility projects involve the following scope of work:
- Relocate the door in the wood paneled wall between the Courtroom and Jury Room to allow for the expansion of the toilet room.
- Patch the opening in the wood paneled wall left by the relocated door to the Jury Room.
- Demolish the walls surrounding the toilet room located closest to the entry into the Jury Room and salvage the toilet room door and marble threshold for reuse.
- Remove the marble wainscoting as required to allow for access to plumbing and retain for reuse.
- Frame out the new wall and install the salvaged toilet room door and salvaged marble threshold.
- Patch the existing terrazzo flooring and install new terrazzo flooring to match existing.
- Reinstall the marble wainscoting and patch gaps with salvaged marble as necessary.
- Install new ADA-compliant water closet, grab bars, and toilet accessories.
- Install new ADA-compliant lavatory and accessories, including boots on exposed plumbing.

The King County Facilities Management Division staff has done a very thorough and professional job in performing these accessibility upgrades at these jury deliberation room restrooms.

The drawings on the following page illustrate the existing conditions of the jury deliberation room toilet rooms and the reconfigured ADA-compliant conditions of the toilet rooms.



Demolition plan of restroom at Jury Room E853. Courtesy of King County Facilities Management Division.



Plan of reconfigured accessible restroom at Jury Room E853. Courtesy of King County Facilities Management Division.

KING COUNTY LANDMARK REVIEW PROCESS:

Any building or development project that alters an element identified and designated as a feature of significance in a King County landmark must be approved through a formal design review process. The King County Landmarks Ordinance established the Certificate of Appropriateness (COA) review process and defines the types of projects requiring review.

Generally, alterations other than general in-kind maintenance and minor repairs require a COA. Additionally, one is not needed for routine changes to utility systems such as plumbing and wiring, as long as they do not disturb any significant historic features of the building.

The Certificate of Appropriateness process is separate from the building permit process. COAs must be obtained before building permits can be issued. However, historic projects that do not require a building permit must still have a COA in order to proceed.

The process begins with the Certificate of Appropriateness application, which includes a written project description. Photographs and/or drawings illustrating the present condition of the building and the proposed alterations or additions to any element of a landmark property are also required. Information about the location and current condition of the feature(s) and the original design and materials must be provided. The proposed changes should be included, along with the reason for the proposed intervention and the criteria for selecting the proposed alternative. Details about the materials proposed for use in the restoration/rehabilitation project should also be included, along with samples or specifications.

Depending of the type of project proposed, applications are reviewed by either the Historic Preservation Officer or the Design Review Committee of the Landmarks Commission.

Certificates of Appropriateness:
The Landmarks Ordinance established three types of Certificates of Appropriateness as follows:

Type I
This category includes the restoration of historic features and major repairs using the same type of materials originally found on the building. An example would be replacing a deteriorated roof with one of a similar type. Type I COAs are reviewed by the Historic Preservation Officer. Applications are either approved or denied and forwarded to the Landmarks commission within ten days.

Type II
When alterations will change the appearance of the property, a Type II COA is required. For example, if an addition were to be added to a historic building, this is the review that would be required. Type II COA applications are reviewed by the Design Review Committee at their monthly meetings. The committee has two choices at that time. They may create a written agreement with the applicant that specifies the work that has been approved. This is then ratified by the Landmark Commission at a public meeting. The second option is to make a recommendation to the Commission, who then holds a public hearing to act on the application. Either way, action must be taken within a forty-five day time period.

Type III
This category is for projects that propose the demolition or relocation of landmark properties or the excavation of archaeological sites. Because of their irreversible nature, these types of projects require the most stringent review, beginning with the Design Review Board. The final decision rests upon the Landmark Commission.

Any person dissatisfied by the denial of a Certificate of Appropriateness by the Commission may appeal the ruling. Decisions on Type I COAs by the Historic Preservation Officer can be appealed to the Landmarks Commission within fifteen days after being issued.

Decisions of the Landmarks Commission can be appealed to the Metro-King County Council within thirty days of the decision. The Commission, when requested by the property owner, may consider evidence of the economic impact on the owner by the denial or partial denial of a certificate. This requires a lengthy preliminary determination report. The actions of the Council, sustaining, reversing, modifying or remanding a Commission decision will be final unless the aggrieved person obtains a writ of certiorari from the superior court of King County within twenty calendar days from the date of the action.

Additional information on the Certificate of Appropriateness application process, historic preservation guidelines, and submission forms are available online at: http://www.kingcounty.gov/property/historic-preservation/resources-links.aspx.

Inquiries in regard to the Certificate of Approval procedures may be addressed to Todd Scott, Historic Architect and Design Review Coordinator, King County Historic Preservation Program, telephone: (206) 477-4538, or email: Todd.Scott@kingcounty.gov.

Alterations to King County Landmarks are evaluated using *The Secretary of the Interior's Standards for Rehabilitation*. These ten standards are used as guidelines throughout the United States to plan and carry out appropriate rehabilitations of historic properties. The ten Standards for Rehabilitation are listed here for reference, and are also available online at: https://www.nps.gov/tps/standards/rehabilitation.htm.

Standards for Rehabilitation:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Rehabilitation as a treatment:
When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment.

The Guidelines for the Treatment of Historic Properties illustrate the practical application of these treatment standards to historic properties. These Guidelines are available online at: https://www.nps.gov/tps/standards/four-treatments/treatment-guidelines.pdf.

CHAPTER 9

Potential Sources of Project Funding

PRIVATE INVESTMENT OPTIONS: 63-20 FINANCING ARRANGEMENT

When looking at alternative funding sources for the Courthouse Revitalization project, the use of private sector funding could be considered. A Lease – Lease back transaction as authorized under the Municipal Leasing Act could be appropriate. This type of project financing arrangement is referred to as 63-20 named after the IRS rule which allows this type of project to be created. The County has completed a number of these funding arrangements for new, ground up design and construction projects including the 9th and Jefferson Building, the Maleng Building, the King Street Center, and the Chinook Building. It has also used 63-20 financing for the Broadway Building and Goat Hill.

Nonprofit corporations have long been used as a vehicle to finance the construction of public buildings, including hospitals, court houses and schools. By using the 63-20 financing mechanism, public entities are able to avoid statutory debt limitations, as well as other restrictions, and issue tax exempt bonds. As a financing tool, 63-20s allow a state or political subdivision to transfer its holdings in a building and/or property to a non-profit corporation, provided that the corporation engages in activities which are essentially "public in nature." Also, this entity must not be organized for profit and its income must not inure to any private person.

After entering into a fixed and certain, long-term contract for the use of the facility or property, the non-profit corporation then issues tax-exempt bonds to fund project development, with the approval of the governmental unit. While this indebtedness remains outstanding, the government entity must have a "beneficial interest" in the corporation. This is determined to exist if the governmental unit has exclusive beneficial possession and use of at least 95% of the fair market value of the facilities, or if it appoints 80% of the members of the board of the corporation and has the power to remove and replace members of the board; or if it has the right at any time to obtain unencumbered title and exclusive possession of the financed facility by paying off the bonds.

Many feel that as a financing tool, 63-20s are more expensive than traditional debt tools used by governments because of higher interest rates, the cost of bond issuance, and ongoing management fees. 63-20 financing has both pros and cons.

Potential Benefits of 63-20 Financing Arrangement:
- 63-20s are not included in the state debt limit amount, as established by law.
- Perhaps the biggest advantage is that 63-20 financing permits government agencies to construct projects free from the constraints of public work laws, providing greater flexibility in the project delivery method. This type of funding allows a design-build finance project delivery method. (Also known as lease-developer.) Here there is no requirement for a competitive bid, basically giving a public agency access to powers commonly available to the private sector. In this instance, the nonprofit negotiates with a single development firm to design and deliver the project, as well as finance it. That developer then negotiates a construction contract with a single firm, which may then subcontract for portions of the work.
- Because the property is in the hands of a nonprofit, the project may receive and utilize federal, state and local government and private foundation grants.
- Interest on the loan is tax exempt.
- Lease payments paid by the government entity can be structured to include funds for ongoing maintenance expenses.
- 63-20 financing avoids the need for a lengthy legislative financial approval process.
- In Washington state, so long as the property is leased to a state or local government under a financing lease, including during the construction period, the property is regarded as tax exempt.
- Risk is shifted to the private sector, including construction risk, operating risk, building maintenance and default risk. Bondholders, rather than the government entity, bear the risk that there might be insufficient funds to repay the debt.
- 63-20 financing provides access to new sources of private capital through public/private partnerships.

Potential Disadvantages of 63-20 Financing:
- Interest rates on bonds are higher because they carry greater risk than traditional debt tools used by governments. 63-20 bonds do not pledge the full faith and credit of the government and are not payable from general revenues. These bonds can be structured such that they are non-recourse to the issuer, meaning that repayment depends solely on project revenue. This creates additional risk to repayment, which can be reflected in lower credit ratings and higher interest costs.
- With 63-20 financing, much transparency is lost. Non-profit corporations have broad powers and are not subject to open public meetings, public disclosure or competitive bidding.
- By turning the project over to the nonprofit, there is loss of oversight by central administration of the government unit.
- The approval process for 63-20 financing is greater. First, the nonprofit must be selected and approved, and then the bonds themselves must be approved.

- With COPs (certificates of participation), the winning bidder to issue the bonds is the underwriting firm with the lowest bid. For 63-20 bonds, the underwriter is chosen early in the finance process and the bond cost is determined on the sale date through negotiation with the underwriter. This means bond costs are more uncertain and can rise during the issuance period.
- It is more expensive to bring 63-20 bonds to the market due to attorney fees, financial advisors, rating agency fees and the preparation and publishing of official statements. With this financing scenario, standardized documents cannot be utilized, leading to more legal fees.
- There is additional time and money required to establish a nonprofit and to appoint a board of directors.
- Putting the nonprofit in charge requires the hiring of a property manager. An asset manager is also needed to oversee budgets, accounting, and oversee the property manager. Fees for the latter are typically 1% of the rent. With traditional funding, general administration personnel could provide these management services.
- With 63-20 financing, the public entity pays an upfront developer fee, which is typically a percentage of the total par amount of the bonds issued.

63-20 financings are being used in Washington State on a limited basis. Though bonds from this method are tax exempt, most agree that 63-20s are more expensive than a government's traditional debt tools. They are used primarily to gain exemption from public works laws, which allows a choice of delivery methods; to have flexibility in timing project transactions; and to provide a structure to contract for ongoing maintenance.

While 63-20 leasing may work well for some projects, the historic remodel of the Courthouse presents a number of challenges that may make this approach inappropriate.

Difficulty in Meeting the Market Rate Test
The Municipal Leasing Act requires the rental rate charged to the tenant upon completion of the project to be equal to or less than "market rate". This means that the total cost of the project, including capitalized interest and all project costs when fully financed and amortized over the term of the bonds and calculated as a rental rate, must be within the local rental rate for equivalent rental space.

1. Meeting the market rate requirement is a challenge in a historic remodel where there are large amounts of deferred maintenance and system replacements are overdue. This is primarily due to the existing condition of the building, the scope of the work necessary to correct these conditions, and the cost bring a historic building up to a current standard that would last the term of the lease and be acceptable to the lessee.
2. Given the number of stakeholders in this project, the extent of non-compliant code issues in the building, and the potential number of concealed non-code compliant conditions within the facility, meeting the market rate criteria could be very difficult from a cost perspective. All this translates into a high cost risk for a Developer to assume under a 63-20, driving up the price and consequently the rental rate. Many developers would not be willing to take this risk.
3. Additionally, since the Courthouse has such a highly specialized use and occupancy, it would be difficult to determine equivalent "market rate" for the facility.
4. Local commercial market rate forces also impact the market rate equivalent and they are out of the County's control. In the future, the large amount of AAA office space currently being developed in downtown Seattle could likely drive commercial office rents down from current levels, making it even harder to meet the market rate requirement.

Substantial Alteration Triggers
A remodel of this type would be considered a "Substantial Alteration" as defined under the Seattle Existing Building Code (SEBC), triggering code compliance upgrades for all systems within the facility. Since this is an interpretive requirement that is negotiated during the design and permitting process, it would be difficult to determine in advance the extent and cost of any non-compliant code issues that are currently concealed. This unknown is a high cost risk, which would be difficult to transfer to a third party in a 63-20 scenario.

All considered, a complex historic remodel is not well suited to projects done under a 63-20 financing model. The long-term operating risk of the facility is transferred to the Developer, who must rely on old, out dated, and in some cases failing equipment that may or may not function as needed for the duration of the lease. Given the cost to replace and/or upgrade the equipment and systems, it is unlikely that a reasonable solution could be found that would meet the market rate test and provide an agreeable outcome for the tenant.

U.S. GOVERNMENT

Federal agencies offer grant programs that could potentially be utilized to cover portions of the costs associated with the revitalization of the King County Courthouse. Many Federal grants are specifically designed to be used by local governments to improve community facilities and vary in availability and levels of funding from year to year. Once specific revitalization projects are identified, the King County Council may choose to seek Federal grant funding by contacting the offices of elected officials such as U.S. Representatives or U.S. Senators to identify the current grants available from the Federal government. The following are some examples of Federal grant funding sources.

Department of Homeland Security – Federal Emergency Management Agency

- **Pre-Disaster Mitigation Grant Program (currently available)**

The Pre-Disaster Mitigation (PDM) Grant Program is designed to assist States, territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal of the program is to reduce overall risk to the population and structures from future hazard events and to reduce reliance on Federal funding after future disasters. Federal Emergency Management Agency (FEMA) PDM grants are funded annually by Congressional appropriations and are awarded on a nationally competitive basis. In FY 2015, the maximum Federal share awarded for mitigation projects was $3 million. More information about this grant program can be located online at: http://www.fema.gov/pre-disaster-mitigation-grant-program.

- **Grants Program Directorate (GPD)**

The Grant Programs Directorate (GPD) administers and manages grants offered by the Federal Emergency Management Agency (FEMA). More information about this organization within FEMA can be located online at: http://www.fema.gov/grant-programs-directorate.

National Park Service

The National Park Service (NPS) administers several Historic Preservation Fund (HPF) grant programs to assist with historic preservation and community projects focused on heritage preservation. More information about all the HPF grant programs can be found online at: https://www.nps.gov/preservation-grants/.

- **Preserve America (currently not available)**

The Preserve America grant program provided matching funds to designated Preserve America communities to support historic preservation projects and planning. Grants were awarded to designated Preserve America Communities and Neighborhoods, State Historic Preservation Offices, Tribal Historic Preservation Offices, and Certified Local Governments. This grant program is authorized in Federal legislation, but is currently not funded. The program awarded $21,242,661 to a total of 280 projects during the time it was funded by Congress.

- **Save America's Treasures (currently not available)**

The Save America's Treasures program funded bricks-and-mortar preservation and conservation work on nationally significant historic structures and sites. The grant program was administered by the NPS in partnership with the National Endowment for the Arts, the National Endowment for the Humanities, and the nonprofit National Trust for Historic Preservation. This grant program is authorized in Federal legislation, but is currently not funded. The program awarded $315,152,000 to a total of 1,287 projects during the time it was funded by Congress.

Additional U.S. Government Grant Resources

- U.S. Government Official Web Portal – www.usa.gov
- Grants.gov – www.grants.gov
- The Catalog for Federal Domestic Assistance – www.cfda.gov
- The Federal Register – www.federalregister.gov

WASHINGTON STATE

State agencies also offer grant programs that could possibly be utilized to cover costs associated with the revitalization of the King County Courthouse. Like Federal grants, they vary in availability and levels of funding from year to year. Once specific revitalization projects are identified, the King County Council may choose to seek this type of funding by contacting the offices of elected officials in the state legislature to identify those grants currently available from the State of Washington. The following grant programs are examples of potential state funding sources.

Department of Archaeology and Historic Preservation

- **Washington State Heritage Capital Fund**

The Washington State Heritage Capital Fund offers up to $750,000 for projects that involve the interpretation and/or preservation of Washington's heritage. This grant program is administered through the Washington State Historical Society and is open to nonprofit organizations, tribes, and local government agencies. The next application deadline is May 19, 2016 for funding in the 2017-2019 biennium. This grant has a fairly long and complex application process, but represents one of the largest sources of grant funding available in the state for historic preservation. The next opportunity to apply for these funds will be spring 2018, for the 2019-2021 biennium. More information about this program can be found at: http://www.washingtonhistory.org/support/heritage/capitalprojectsfund/.

- **Historic County Courthouse Rehabilitation Grants**

The Washington State Historic County Courthouse Rehabilitation Grant program is jointly administered by the state Department of Archaeology and Historic Preservation (DAHP) and the Washington Trust for Historic Preservation. A 2003 study of historic courthouses in Washington State discovered that thirty-three of the thirty-nine courthouses in the state possessed historic and architectural significance. At that time, over $90 million in needed capital improvements were identified in those thirty-three buildings. Since the beginning of the program, fifty-six grants have been awarded to twenty-six counties statewide, totaling almost $17 million. The program is geared towards the rehabilitation of historic features, as well as accessibility and seismic upgrades. Dollar amounts awarded vary. The application deadline for funding in the 2017-2019 biennium is July 11, 2016. In 2007, the King County Courthouse received a grant through this program. More information, program details, and application requirements can be found online at: http://www.dahp.wa.gov/courthouse-preservation and http://preservewa.org/Historic-Courthouse-Program.aspx.

Department of Commerce

- **Energy Efficiency and Solar Grants**

The Washington State Department of Commerce offers this grant program to higher education institutions, local governments, state agencies, and public school districts. Its goals include the creation of jobs; reducing energy and water costs for public agencies and institutions; and promoting the use of solar energy products manufactured in Washington State. The current round of applications is closed, but the second round will likely be due in March 2017. More information, program details, FAQs, and application requirements can be found online at: http://www.commerce.wa.gov/Programs/services/CapitalFacilities/Pages/EnergyEfficiencyGrants.aspx.

Public Works Board

- **Construction Loan Program**

The Washington State Public Works Board offers low-interest loans to cities, counties, special purpose districts, and quasi-municipal organizations to finance public infrastructure construction and rehabilitation. Eligible projects must improve public health and safety, respond to environmental issues, promote economic development, or upgrade system performance. Examples of eligible projects include domestic water, sanitary sewer, and storm water infrastructure projects. The funding levels for the next cycle of the program will be determined in 2016-2017. More information about this low-interest loan program can be found online at: http://www.pwb.wa.gov/financial-assistance/Pages/default.aspx.

- **Pre-Construction Loan Program (currently not available)**

The Washington State Public Works Board offered low-interest loans to cities, counties, special purpose districts, and quasi-municipal organizations to finance pre-construction activities to prepare a project for construction. This program is currently not funded. More information about this low-interest loan program can be found online at: http://www.pwb.wa.gov/financial-assistance/Pre-Construction/Pages/default.aspx.

- **Energy and Water Efficiency Loan Program (currently not available)**

The Washington State Public Works Board offered low-interest loans to cities, counties, special purpose districts, and quasi-municipal organizations to encourage energy and/or water efficiency upgrades to public facilities such as courthouses, community centers, town halls, and airports. The goal of this program was to reduce long-term infrastructure costs while lowering carbon output. This program is currently not funded. More information about this low-interest loan program can be found online at: http://www.pwb.wa.gov/financial-assistance/Energy-Water/Pages/default.aspx.

NATIONAL HISTORIC PRESERVATION ORGANIZATIONS

National Trust for Historic Preservation

- **The Cynthia Woods Mitchell Fund for Historic Interiors**

The purpose of this grant program is to assist in the preservation, restoration, and interpretation of historic interiors. The grant generally helps pay for design assistance, not construction projects. Grant amounts range from $2,500 to $10,000 and funds must be cash matched. Grant applications are accepted on a yearly cycle. Public agencies and nonprofit organizations are eligible to apply, but applicants must be Organization Level members of the NTHP Forum or members of the National Main Street Network. Additional information and full application requirements can be found online at:http://www.preservationnation.org/resources/find-funding/special-funds/cynthia-woods-mitchell.html#.VxldiHrDxiY.

- **Johanna Favrot Fund for Historic Preservation**

The purpose of this grant program is to assist in planning activities and education efforts focused on preservation. The grant generally helps pay for design assistance, not construction projects. Grant amounts range from $2,500 to $10,000 and funds must be cash matched. Grant applications are accepted on a yearly application cycle. Public agencies and nonprofit organizations are eligible to apply, but applicants must be Organization Level members of the NTHP Forum or members of the National Main Street Network. Additional information and full application requirements can be found online at: http://www.preservationnation.org/resources/find-funding/special-funds/johanna-favrot-fund.html#.Vxli1XrDxiY.

STATE HISTORIC PRESERVATION ORGANIZATIONS

Washington Trust for Historic Preservation

- **Valerie Sivinski Washington Preserves Fund**

This grant fund is geared towards bricks-and-mortar historic preservation projects or the production of documents that will contribute to the preservation of a specific property. The maximum grant award is $2,000. There is a yearly application cycle for this program. Full application requirements can be found online at: http://preservewa.org/Washington-Preserves-Fund.aspx.

LOCAL HISTORIC PRESERVATION ORGANIZATIONS

4Culture

- **Landmarks Capital Grants**

4Culture is a local cultural organization that supports the arts, heritage, preservation, and public art. 4Culture offers bricks-and-mortar funding on an annual basis through their Landmarks Capital program. Owners of designated landmarks in King County can apply for up to $30,000 for capital projects. Typically, the most competitive projects focus on addressing urgent stabilization needs and/or the preservation of historic building fabric. An application to this program could focus on a small portion of a larger capital project. The annual deadline is in May, with decisions and notification of awards by July 1. For more information please see: http://www.4culture.org/apply/landmarks/index.htm.

Corporate Grant Funding Organizations

Companies that are either headquartered in King County or are large-scale employers in the county could also potentially be grant funding sources for the King County Courthouse revitalization project. Corporate foundations typically have very specific requirements for funding projects. For example, some corporations do not fund capital improvement or building projects and some corporations only grant funds to nonprofit organizations. One possible approach to funding some aspects of the King County Courthouse revitalization project would be to form a 'Friends of the King County Courthouse' nonprofit organization that could serve as the grant recipient for portions of the overall revitalization effort. This could include restoring historic elements of the interior, such as courtrooms or the south entry lobby, or exterior elements, such as window restoration. A dedicated nonprofit organization could also research potential sources of corporate project funding and tailor a campaign to appeal directly to selected corporations and foundations. Those listed below are a small sample of corporations that are either headquartered in King County or are large-scale employers in the county, and who have a history of contributing funds to local causes across the country.

The Boeing Company

Boeing is the largest employer in King County and has a long track record of contributing to a variety of causes both locally and worldwide. More information on their giving programs can be found online at: http://www.boeing.com/principles/community-engagement.page.

BNSF Railway Foundation

The BNSF Railway Foundation offers grant funds on a competitive basis to nonprofit organizations, divisions of local government, federally recognized tribal governments, or school or university organizations. Their focus is on communities served by or located in close proximity to the BNSF Railway main line. Strong preference is given to projects that involve health and human services, education, youth, civic causes, or cultural and historic preservation projects. For more information please see: http://www.bnsffoundation.org/how-to-apply/.

Weyerhaeuser Giving Fund

This funding organization targets community giving. Grants are considered for projects that involve affordable housing and shelter, education and youth development, environmental stewardship, human services, and civic and cultural growth. If the grant recipient is located in Seattle or Tacoma, applications to the Weyerhaeuser Giving Fund are by invitation only. For more information visit: http://www.weyerhaeuser.com/sustainability/communities/community-investment/giving-fund/.

Voter Levy

A project specific Levy, similar to the Levy used to create the Children and Family Justice Center, is really the only viable way to accomplish the Courthouse Revitalization project, should the County determine that this is the desired solution. Promoting the Levy with a message of sustainability, environmental stewardship, reduced carbon footprint, and re-use of an existing building could be a sound voter strategy. It also helps avoid the perception that the County is creating new facilities for civil servants. Explaining the very real and urgent need to repair building systems to keep the Courthouse in operation could be understood by and resonate with voters.

APPENDIX

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