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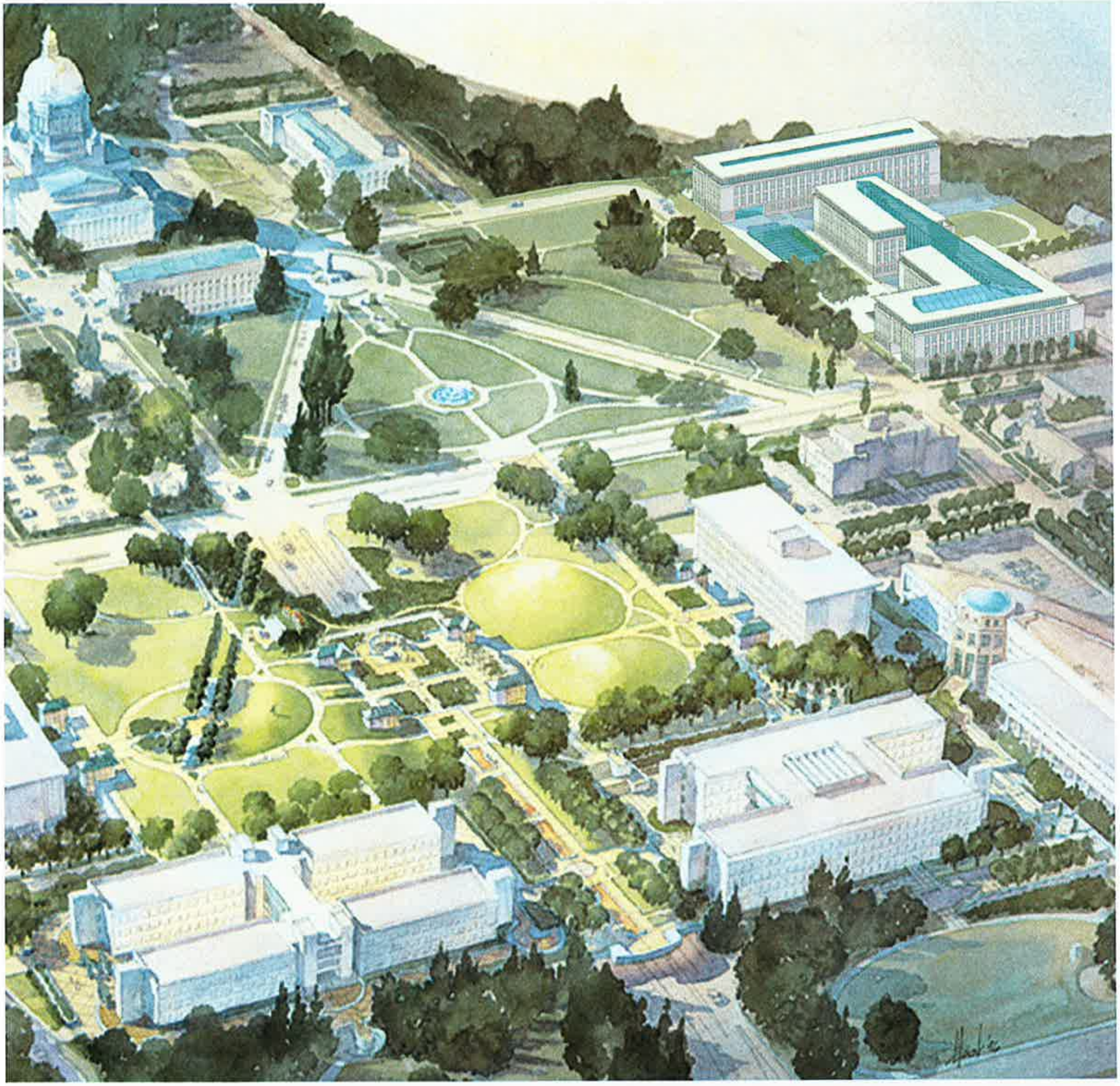
General Administration Building Drawing List

As of 2/2009

Building	Date	Year	Number of Sheets	Other	Architectural	Structural	Fire Protection	Mechanical	Electrical	Landscape	Civil	Job #	Comments	Job Title
				Systems										
General Administration	6/1/1952	1952	1								X		Site Plan	
General Administration	11/6/1953	1953	121+		X	X		X	X			53-000		State Office Building
General Administration	1/2/1954	1954	1		X							54-000		State Office Building
General Administration	4/27/1954	1954	1				X					54-000		Basement Automatic Spkr. Plan The State Office Building
General Administration	7/6/1954	1954	23			X						53-000		State Office Building
General Administration	7/22/1954	1954	1		X							54-000	as built	State Office Building Change Order #3
General Administration	9/1/1954	1954	1		X							54-000		State Office Building Change Order #5
General Administration	3/21/1955	1955	1					X				55-000		State Office Building
General Administration	4/28/1955	1955	1								X	55-000	Change order	State Office Building
General Administration	6/24/1955	1955	1		X									
General Administration	8/5/1955	1955	1		X							55-000		Preliminary Layout No. 1 State Office Building
General Administration	8/17/1955	1955	1		X								Signage	State Office Building
General Administration	1/30/1956	1956	4		X							53-000		State Office Building
General Administration	1/2/1957	1957	1		X			X	X			57-000		Washington State Patrol
General Administration	8/5/1957	1957	1		X							57-000		Proposed Office Layout L & I 3rd Floor
General Administration	9/19/1957	1957	1		X							57-000		Metal Office Partations Room 112 Licenses
General Administration	9/26/1957	1957	5		X			X	X			57-000		Alterations to the State Printing Plant
General Administration	1/2/1958	1958	2		X							58-000		Office Layout for First Floor
General Administration	2/3/1958	1958	3		X							58-000		Interior Completion
General Administration	3/25/1958	1958	1						X			58-000		Revisions to 3rd Floor Paln - A
General Administration	11/5/1958	1958	21		X	X		X	X				Not Const.	General Administration Building Annex
General Administration	11/10/1958	1958	1					X				59-000		IBM Tape System Installation
General Administration	2/17/1959	1959	2		X							59-000		IBM Tape System Installation
General Administration	3/2/1959	1959	1						X			59-000		IBM Tape System Installation
General Administration	10/31/1960	1960	12						X				Redline	
General Administration	2/20/1962	1962	1		X							61-000		Remodel of Office Space
General Administration	8/9/1962	1962	13					X	X			61-000		Revisions to Ventilation
General Administration	4/13/1962	1962	2 of 7		X							61-000		Remodel of Office Space
General Administration	5/28/1962	1962	1 of 2						X			61-000		Remodel of Office Space
General Administration	8/30/1962	1962	1		X							62-000		Remodel of Office Space
General Administration	9/19/1962	1962	2					X	X			62-000		Remodel of Office Space
General Administration	9/28/1962	1962	1		X							62-000		Remodel of Office Space
General Administration	12/14/1962	1962	1		X							63-000		Basement Storage Space
General Administration	1/2/1963	1963	1			X						63-000		Alterations in Room G19 - A
General Administration	1/7/1963	1963	1		X				X			63-000		Office Revisions 2nd Floor
General Administration	1/21/1963	1963	1		X							63-000		Office Revisions 3rd Floor
General Administration	2/5/1963	1963	1		X							63-000		Partition Revisions 2nd Floor
General Administration	2/13/1963	1963	1		X							63-000		Partition Revisions 3rd Floor
General Administration	2/26/1963	1963	1			X						63-000		Remodel of Block Walls in Receiving Room NE corner Gound Flr.
General Administration	3/18/1963	1963	1		X							63-000		Office Revisions 3rd Floor
General Administration	3/20/1963	1963	1						X			63-000		Office Revisions Electrical
General Administration	5/2/1963	1963	1		X							63-000		Department of Commerce & Economic Development
General Administration	5/3/1963	1963	1					X				63-000		Ventilation Revisions Ground Floor & Fourth Floor
General Administration	5/3/1963	1963	1		X							63-000		New Offices for the Department of Personnel 1st Floor
General Administration	6/12/1963	1963	1					X				63-000		Ventilation Revisions 3rd Floor
General Administration	7/23/1963	1963	1		X							63-000		Remodel Storeroom Department of Agriculture
General Administration	8/1/1963	1963	1		X							63-000		Remodel of Storage Space Basement Floor
General Administration	8/28/1963	1963	1		X							63-000		State Patrol Area Floor Plan
General Administration	9/9/1963	1963	1 of 2		X							63-000		Office Revisions 3rd Floor
General Administration	9/11/1963	1963	1					X				63-000		Office Revisions 3rd Floor
General Administration	9/30/1963	1963	1					X				63-000	Not Const.	Air Conditioning & Electric Heat Installation Wash. State Patrol
General Administration	10/16/1963	1963	1		X							63-000		Office Revisions Department of Printing Grd. Floor
General Administration	10/24/1963	1963	1						X			63-000		Electival Revisions 2nd floor
General Administration	10/25/1963	1963	1						X			63-000		Electival Revisions 3rd floor
General Administration	12/20/1963	1963	2					X	X			63-000		Remodeling Laboratory Room 108
General Administration	1/23/1964	1964	1		X							64-130		Partition Revision 3rd Floor
General Administration	3/4/1964	1964	1					X				64-115		Office Revisions 4th Floor Tax Commission Room 414J
General Administration	3/31/1964	1964	1						X			64-119		#357 - IBM Cable System Installation Dept. Of Labor & Industries 3rd Flr.
General Administration	7/7/1964	1964	1		X							64-247		Office Alterations Second Floor
General Administration	7/10/1964	1964	1					X	X			64-247		Office Alterations Second Floor
General Administration	7/15/1964	1964	1			X						64-319		Data Processing Expansion Liquor Control Board Second Floor
General Administration	7/20/1964	1964	1						X			64-217		Data Processing Expansion Liquor Control Board Second Floor
General Administration	7/22/1964	1964	1					X				64-217		Data Processing Expansion Liquor Control Board Second Floor
General Administration	7/22/1964	1964	1		X							64-318		Partition Revision for Liquor Control Board
General Administration	7/23/1964	1964	1		X							64-298		Partition Revisions
General Administration	2/9/1965	1965	1		X							64-505		Additional Partitions for the Dept. of Personnel
General Administration	1/2/1966	1966	1		X							66-456		Office Alterations - Department of Labor & Industries Third Floor
General Administration	2/7/1966	1966	1		X							65-362		Office Alterations - Tax Commission Fourth Floor
General Administration	6/15/1966	1966	1		X							66-034		Office Alterations - Department of Labor & Industries 3rd Floor
General Administration	7/26/1966	1966	1					X				66-252		Extend Ventilation System
General Administration	10/4/1966	1966	2		X			X				66-106		Platemaking Alterations - Department of Printing
General Administration	1/10/1967	1967	1		X							66-277		Office Alterations - Washington State Patrol 1st Floor
General Administration	1/12/1967	1967	1						X			66-277		Office Alterations - Washington State Patrol 1st Floor
General Administration	4/17/1967	1967	1					X	X			66-456		Office Alterations - Department of Labor & Industries 3rd Floor
General Administration	12/17/1967	1967	1					X	X			67-161		Office Alterations - Liquor Contorl Board
General Administration	2/2/1968	1968	1		X				X			67-476		Office Alterations
General Administration	2/7/1968	1968	3					X				68-071		First Floor Office Remodel
General Administration	3/4/1968	1968	4		X				X			68-071		Office Alterations
General Administration	3/16/1968	1968	2		X									

Building	Date	Year	Number of Sheets	Other	Architectural	Structural	Fire Protection	Mechanical	Electrical	Landscape	Civil	Job #	Comments	Job Title
General Administration	3/28/1968	1968	5					X						
General Administration	5/23/1968	1968	2					X	X					
General Administration	5/28/1968	1968	8		X			X	X					
General Administration	9/24/1968	1968	1					X	X				Change Order	
General Administration	1/3/1969	1969	1		X									
General Administration	1/7/1969	1969	4					X						
General Administration	1/24/1969	1969	1					X						
General Administration	4/30/1969	1969	1		X									
General Administration	5/5/1969	1969	1						X					
General Administration	5/8/1969	1969	1		X									
General Administration	5/12/1969	1969	1		X									
General Administration	9/8/1969	1969	1						X					
General Administration	10/23/1969	1969	1		X						D	69-000		New Movable Partitions - Division of Banking
General Administration	2/1/1970	1970	1		X							69-750		New Movable Partitions - Division of Banking
General Administration	4/1/1971	1971	1					X				70-338		Install Ceiling Deffuser - Department of Agriculture
General Administration	4/7/1971	1971	2					X				71-141		Office Alterations - Washington State Liquor Control Board
General Administration	9/7/1971	1971	2					X				71-374		Office Area Remodel 3rd Floor Area - Dept. of Lab. & Ind.
General Administration	6/25/1973	1973	2						X			71-374		Office Alterations for Dept of Labor and Industries
General Administration	11/4/1971	1971	1		X				X			71-583		Office Alterations for Washington State Patrol
General Administration	8/1/1972	1972	1						X			72-453		IBM 370/145 Computer Data Processing Center
General Administration	10/30/1972	1972	2					X				72-445	Bid	Repiping Regulating Valves ~ Main Steam Supply
General Administration	1/2/1973	1973	1						X			73-173		Alterations - Fourth Floor
General Administration	1/2/1973	1973	1						X			73-591		Isolated Ground - Data Processing Service Center
General Administration	4/10/1973	1973	1		X			X	X			73-106		Alter and Ventilate Computer Area
General Administration	4/26/1973	1973	1					X	X			73-242		Air Condition Installation 1st Fl'r Area SW Corner DCED
General Administration	5/28/1973	1973	2						X			73-246		
General Administration	5/30/1973	1973	1		X				X			73-171		Remodel of Concession Area First Floor
General Administration	8/6/1973	1973	1					X				73-399		Alteration to Second Floor
General Administration	8/8/1973	1973	1						X			73-399		Alteration to Second Floor
General Administration	10/1/1973	1973	1		X							73-581		Alterations on Second Floor
General Administration	10/30/1973	1973	1		X							73-630		Remove Masonry Walls form 2nd Fl
General Administration	11/6/1973	1973	2					X	X			73-581		Alterations on Third Floor
General Administration	5/6/1974	1974	1		X			X				73-749		Alterations on Second Floor
General Administration	7/1/1974	1974	2		X			X	X			74-333		Alterations to Southeast Portion of Second Floor
General Administration	10/21/1974	1974	1		X							74-624		New Door Openings on Ground Floor
General Administration	7/3/1975	1975	2		X							75-236		Alterations in Three Locations on Capitol Campus Dept. of Printing
General Administration	7/30/1975	1975	3		X				X			75-385		Improvements for Handicapped
General Administration	10/17/1975	1975	1					X	X			75-482		Air Conditioning Installation 4th Fl'r Area NE Corner
General Administration	10/23/1975	1975	15		X							75-000		
General Administration	6/1/1976	1976	1 of 2		X							76-344		Shelving for Stock Room
General Administration	7/1/1976	1976	7		X				X			76-340		ARM Room and Stock Room Revision
General Administration	3/24/1977	1977	1					X				77-044		Expansion Tank Replacement
General Administration	1/2/1979	1979	2		X			X				79-087		Front Desk - Cubicle Details
General Administration	1/2/1979	1979	1					X				78-047		Supply & Return Air Ducts
General Administration	3/12/1979	1979	1		X							79-087		Partitions & Work Stations
General Administration	4/3/1979	1979	1					X				78-047		Supply & Return Air Ducts
General Administration	5/1/1979	1979	1					X				79-087		S.E. Area 2nd Floor Air Duct Revision
General Administration	8/13/1979	1979	15					X				78-047	as built	Air Conditioning
General Administration	11/12/1979	1979	1					X				79-280		Increase of Air Condition Computer Area Dept. of Revenue 4th Fl.
General Administration	3/24/1980	1980	1					X				79-316		Steam, Hot Water Heaters - Piping & Re-Circ. Campus Buildings
General Administration	5/15/1980	1980	2						X			79-628		
General Administration	6/30/1980	1980	3					X	X			80-067 B		Remodel Access - WACIC Space WSP Area
General Administration	3/16/1982	1982	7 of 9				X					81-304		Capitol Campus Fire Alarm System
General Administration	6/1/1982	1982	5		X			X	X			82-045		Olympia Action Roadrunner Telephone Facilities Space - Basement
General Administration	7/7/1982	1982	1		X							82-003		Remodeling
General Administration	12/23/1982	1982	6			X			X			81-072	as built	Revision to Emergency Power Generation System
General Administration	1/2/1983	1983	1					X				82-303		Department of Labor & Industries Third Floor Office Area Revisions
General Administration	1/28/1983	1983	1		X							82-310		Computer Room in the G.A. Building Central Stores
General Administration	4/14/1983	1983	8				X							Capitol Campus Fire Alarm System
General Administration	6/27/1983	1983	1				X					82-089	as built	Halon 1301 Fire Suppression Sys. Computer Facility
General Administration	6/30/1983	1983	1					X				82-089		
General Administration	12/16/1983	1983	3	X								82-112 B	Furniture Plan	Partial Renovation Phase II
General Administration	2/2/1984	1984	48		X			X	X			82-112 B		Partial Renovation Phase 1
General Administration	2/10/1984	1984	2 of 7					X				79-000		
General Administration	2/10/1984	1984	5					X	X					
General Administration	5/1/1984	1984	1						X			82-112 B		
General Administration	7/1/1984	1984	13 of 16		X					X		82-112 B		Partial Renovation Phase 3
General Administration	8/15/1984	1984	3				X					82-112 B	as built	Renovation Phase I
General Administration	9/7/1984	1984	5 of 10	X								82-112 B	Furnishings	Partial Renovations of GA Building Phase 3
General Administration	9/10/1984	1984	3						X			82-112 B	as built	
General Administration	11/16/1984	1984	5					X	X			82-112 B	as built	
General Administration	11/27/1984	1984	2						X			82-112 B		
General Administration	11/30/1984	1984	22		X			X	X			82-112 K		Alterations to Ground, 1st & 2nd Floor Phase III
General Administration	3/13/1985	1985	18		X				X					
General Administration	4/16/1985	1985	5		X							84-261		Hardware Code Compliance
General Administration	5/24/1985	1985	3					X				85-038		Alterations to 4th Floor HVAC System
General Administration	6/1/1985	1985	4		X							85-114		Alterations to Reception Area Division of Labor & Industries
General Administration	11/1/1985	1985	47		X				X			80-058		
General Administration	2/10/1986	1986	1					X				86-000		Vent Installation in E&A Plan Room
General Administration	4/21/1986	1986	7		X			X	X			85-240 A		Alterations to Department of Trade & Economic Development
General Administration	7/2/1986	1986	1					X				86-090		Spot Cooling HVAC System First Floor - Labor & Industries
General Administration	7/8/1986	1986	1						X			86-090		Spot Cooling HVAC System First Floor - Labor & Industries

Building	Date	Year	Number of Sheets	Other	Architectural	Structural	Fire Protection	Mechanical	Electrical	Landscape	Civil	Job #	Comments	Job Title
General Administration	5/14/1987	1987	2		X							87-087		Second Floor Alterations Department of Purchasing
General Administration	5/28/1987	1987	2						X			87-087		Second Floor Alterations Department of Purchasing
General Administration	7/30/1987	1987	2		X									
General Administration	3/1/1988	1988	2		X							87-196 A		Administrative Services Interior Repairs 2nd Floor
General Administration	9/1/1988	1988	1		X									
General Administration	10/20/1988	1988	10		X									
General Administration	11/1/1988	1988	1							X		82-112 B		Partial Renovation Phase 1
General Administration	1/1/1989	1989	1		X							89-000		2nd Floor
General Administration	3/16/1989	1989	12		X			X	X			87-143	as built	Back Up Generators
General Administration	11/1/1989	1989	2		X									
General Administration	3/26/1990	1990	14		X			X	X			87-144	Bid Package	HVAC Renovations - Capitol Campus
General Administration	12/1/1990	1990	11		X				X			90-098	Furnishings	Second Floor Remodel for the Division of Capitol Management
General Administration	6/12/1991	1991	1						X			91-067		New Office Lighting E&A Services Office
General Administration	7/23/1992	1992	1	X								92-000		Governor's Transition Team 1992
General Administration	8/12/1992	1992	6					X				92-195		Ventilation Improvements
General Administration	9/25/1992	1992	11 of 14						X			89-123	as built	Relocation of Department of Licensing to GA Building
General Administration	9/25/1992	1992	14						X			89-123		Relocation of Department of Licensing to GA Building
General Administration	9/29/1992	1992	9		X							89-123		Relocation of Department of Licensing to GA Building
General Administration	10/7/1992	1992	4						X			92-150	Bid Package	Capitol Electrical Loop, Phase 2
General Administration	11/1/1992	1992	6 of 8	X	X							81-123	Furnishings	Relocation of Department of Licensing to GA Building
General Administration	12/2/1993	1993	2 of 16						X			92-150	as built	Capitol High Voltage Loop Improvements, Phase 2
General Administration	11/1/1994	1994	1						X			93-334-1		Tenant Improvements for the Office of State Treasurer
General Administration	12/1/1994	1994	4 of 5		X				X			94-334-1		First Floor Tenant Improvements for the Office of the Treasurer
General Administration	1/25/1995	1995	20		X			X	X			94-304		Indoor Air Quality Improvements
General Administration	1/29/1995	1995	2		X									Tenant Improvements for the Office of State Treasurer
General Administration	4/1/1995	1995	8		X				X			95-068	Furnishings	First Floor Tenant Improvements for the Washington State Patrol
General Administration	7/10/1996	1996	2		X							96-086H		Re-Roof Project
General Administration	7/10/1996	1996	5 of 117		X							96-088	Bid Set	Electrical Improvements
General Administration	7/1/1998	1998	117		X	X		X	X			96-088	as built	Electrical Improvements
General Administration	1/1/1997	1997	4		X							96-235 H		Exterior Door Replacement GA & Newhouse
General Administration	6/17/1998	1998	17 of 19					X				98-011 A	Bid set	HVAC Improvements
General Administration	6/29/2001	2001	15					X	X			99-128	as built	Building Preservation, HVAC Improvements Phase 1
General Administration	6/1/2002	2002	12		X	X						02-150	as built	Earthquake Repair, at Buildings on a Disk 3/5/08
General Administration	3/26/2003	2003	2		X	X						02-150		Mosaic Repair
General Administration	5/26/2003	2003	1		X							03-194		Copy Room Revisions
General Administration	2/24/2004	2004	9		X								Change Order	Commissior on Judicial Conduct
General Administration	7/14/2004	2004	23 of 24		X			X	X			04-213	as built	Improvements to 3rd Floor for Office of Financial Management
General Administration	9/20/2004	2004	18		X									3rd Floor Casework
General Administration	2/16/2005	2005	5					X					Field Copy	Equipment Layout Plan
General Administration	2/22/2005	2005	2					X						Equipment Layout Plan
General Administration	2/22/2005	2005	4					X				04-151	Redline	Improvements to 4th Floor
General Administration	2/22/2005	2005	4					X				04-151	as built	Improvements to 4th Floor
General Administration	3/1/2005	2005	6						X			04-151		Improvements to 4th Floor
General Administration	3/8/2005	2005	17		X			X	X			04-151		Improvements to the 4th Floor for DFPM
General Administration	3/8/2005	2005	7		X							04-151		Improvements to the 4th Floor for DFPM
General Administration	3/9/2005	2005	1		X									DFPM Paint Plan
General Administration	4/11/2005	2005	5					X						Equipment Layout Plan
General Administration	4/20/2005	2005	5										Furnishings	
General Administration	5/20/2005	2005	11		X			X				00-224		Wireless Communications Base Station
General Administration	6/9/2005	2005	2 sets of 25		X			X	X			03-804		Remodle 4th Floor for Washington State Patrol
General Administration	6/28/2005	2005	3		X									Minority Commissions Room 301
General Administration	12/1/2005	2005	19		X			X	X			05-122		Ground Floor Tenant Improvements for Washington State Patrol
General Administration	12/1/2005	2005	2 sets of 20		X			X	X			05-122		Ground Floor Tenant Improvements for Washington State Patrol
General Administration	6/7/2006	2006	3		X									Consolidation of Space Options



Predesign

Executive Office Plaza/Heritage Center

Project #2006-117

September 2006

General Administration
STATE OF WASHINGTON

SRG PARTNERSHIP INC

3. PROGRAM ANALYSIS

A. Program Assumptions

This predesign and programming information is for the replacement or renovation of the General Administration Building combined with the development of a building on the block adjoining Capitol Way and 11th Avenue. The combined development is intended to provide:

1. Executive office space for statewide elected officials
2. Public access space for the State Library collection and State Archives and exhibit space for historically significant documents from the state archives and collections from the Washington State Capitol Museum
3. High-density general office space that can adapt to changing state needs

The intent of this predesign is to develop a grouping of buildings that fits the intent of the authorizing legislation and that meets the principles of the Master Plan for the Capitol of the State of Washington.

The Executive Office Facility

Programming assumes that this Executive Office Building would house the State Insurance Commissioner and State Treasurer staff in response to Project Request Report Project No. 03-088 (June 2003).

The Heritage Center

The following spaces, combined with shared conference spaces, are referred in this program as The Heritage Center:

- Space for the Washington State Library (currently in rented facilities)
- Space for the Washington State Archives (currently housed in a shared facility on the east campus)
- The Washington State Capitol Museum.

General Office Space

This program replaces space for agencies currently housed in the General Administration Building. Alternative program strategies to collocate Education Agencies have also been explored. Use of the General Office Building or a fully renovated General Administration Building can programmatically house the state's Education Agencies. The intent of the General Office Building space is to be adaptable to changing state needs. Although in this program we show a group of potential tenants, the flexibility of the proposed facility will enable alternate tenancy strategies.

This project and program outlines ways to maximize interagency sharing of support services such as information technology; printing; mailing; management and storage of supplies; reception areas; and other common functions. The project and program supplies a significant net increase in parking beyond what is required for the new office space and includes leasable ground floor retail space on Capitol Way

B. Existing Facilities

1. General Description

General Administration Building
This office building was completed in 1956 and has housed a variety of state agencies over the years. In addition to office functions, it includes a flat-floor auditorium, cafeteria and campus communications and security systems

General Administration Garage
This three-level concrete parking garage with at-grade entries on three sides was completed in 1960. It provides visitor parking on top and two lower levels of staff parking with a total of 238 stalls.

1063 Capitol Way Building (also known as the Dawley building)
This two-story building was completed in 1940. It has parking in the basement and houses state agencies, non-profit entities, retail and private office space.

2. State Facility Inventory System

These three structures are included in the State Facility Inventory System as follows:

	Gross SF[1]	Usable SF[2]	Condition
General Administration Building	279,700	263,200	3
General Administration Garage (238 stalls)	67,100	67,100	2
1063 Capitol Way Building (non-profit, retail, private office)	36,180	33,488	3

3. General Administration Building Assessment

Architectural Assessment
Currently, the GA Building provides a poor work environment. Its large floor plate size puts most occupants away from light, view and air. It has had air conditioning and other systems added over the years. The building envelope, lighting and mechanical systems are far below current energy efficiency standards. The elevators utilize original controls and motors. Interior partitions are heavy masonry, increasing the likelihood of seismic damage. Interior finishes are worn. The building structure requires a seismic upgrade. The remaining building systems are in need of replacement due to their age and functional and operational obsolescence. The exterior skin is not energy efficient.

Left in its current state, the GA Building will require significant capitol repair and upgrade. While fully replacing all interior systems and rebuilding the exterior envelope would

[1] The area take-offs of the existing building on the as-built drawings vary from these amounts.

[2] The area take-offs of the existing building on the as-built drawings vary from these amounts.

alleviate many of these deficiencies, the building would still block most occupants from daylighting.

Structural Assessment

The following summarizes the findings of the analysis of the existing GA Building structural systems. A detailed description of the evaluation methodology used and itemized seismic checklist is included in Appendix 9.7.

Existing Building Structure Description

The GA Building is a six-story, 282,000-square-foot, concrete-framed structure. The gravity load resisting system consists of concrete slab and joists and beams supported on concrete walls and columns.

The lateral (seismic and wind) resisting system consists of concrete floor and roof diaphragms and concrete shear walls. The concrete shear walls are primarily concentrated around the stair and elevator cores at the south and west portion of the building.

Findings

The existing gravity load supporting systems appear to have sufficient capacity for the original loads for which the building was intended.

The following deficiencies were identified with respect to the lateral load resisting system:

- The calculated shear stress in the existing shear walls exceeds recommended code limits by as much as 88% to 150% at the lower floor levels.
- The perimeter concrete columns at the north and east façades lack sufficient reinforcement to accommodate horizontal seismic drift/displacement.

Mechanical & Plumbing Assessment

Air Conditioning Systems

Main Air Handling:

The majority of the building is served by two major fan systems, S-1/E-1 and S-4/E-4.

- System S-1/E-1 is located in the south penthouse on the building roof and serves the south half of the building on the ground floor, 1st floor, 2nd floor, 3rd floor and the southeast area of the 4th floor.
- System S-4/E-4 is located in the north penthouse on the building roof and serves the north half of the building on floors 1 through 4. These fan systems were intended to provide heating season tempered air (steam coils) and ventilation only (no cooling) when they were installed as part of the original construction in 1956.

It should be noted that the outside air intake louvers are undersized, resulting in too-high intake velocity, rainwater entrainment and seasonal problems with soggy filters.

Both systems were constant volume type systems until 1989, when the systems were retrofitted to provide some variable air volume (VAV) control and to improve zone circulation. Modulating dampers and static pressure control were added to the main supply and return fans, and zone series fans with zone modulating dampers were installed on each floor to provide from two to four VAV terminal zones per floor. Zone supply air temperature is controlled by modulating the amount of primary air, and zone supply air temperature is reset based upon zone return air temperature. In order to enhance air circulation, formerly deactivated system S-6/E-6, located in the north mechanical penthouse, was reactivated in series with system S-4/E-4, and with a new zone fan to serve the first floor northeast.

Air Distribution/Delivery:
The majority of the building is still served by the original rectangular duct distribution system which is neither insulated nor lined. Air delivery is still predominantly through the original combination supply/return diffusers so the return is ducted. A number of areas have been updated with separate supply and return diffusers. Access above the concealed spline ceiling is difficult, so volume damper axles are extended through the ceiling throughout the building. The first-floor lobby is neither ventilated nor cooled.

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

System S-3/E-3 is a single zone, heating only system and provides 100% outside air with no return air, which serves the fourth-floor southwest area including the agriculture lab.

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

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

The southwest area of the basement is served by a constant volume multizone air handling unit provided with a central chilled water coil and zone steam heating coils. The "road runner" computer and the Labor and Industries computer are located in this area. In this case, chilled water for the supply fan coil is provided by two Trane chillers located in the south penthouse. Steam for the heating coils is provided from the central campus system. Outside air is taken in one floor above, at the southwest corner of the ground level. Air is distributed below the raised floor of the computer area. In adjacent areas air is distributed at the ceiling. The space above the ceiling acts as a return air plenum.

Additional Ambient Cooling:
A number of packaged, self-contained and city water-cooled spot coolers have been added over the years to enhance local comfort in various areas. Due to insufficient documentation, capacities of all the units have not been verified.

Transformer Rooms (Ventilation and Cooling):
There are two transformer rooms located in the basement. Transformer Room No. 1 is centrally located and Transformer Room No. 2 is located at the north perimeter of the building. It appears that there is currently no cooling available for either of the transformer rooms. They are, however, ventilated. Ventilation is achieved with a 4000 CFM fan which pulls outside air through Transformer Room No. 1 and discharges it to Transformer Room No. 2. Both rooms should be provided with cooling.

Conclusions

1. Systems are beyond their normal service life. In today's terms they are inefficient. The ventilation rates provided do not comply with current state requirements.
2. Existing dual mode supply/return diffusers are inadequate and outdated.
3. Majority of ductwork not insulated.
4. Operable sash adversely affects cooling capacity.
5. Size of louvered outside air openings allows rain water to enter, soaking filters.
6. Location of outside air intake near loading dock allows pollutants from truck exhaust and cargo to infiltrate the air system, resulting in poor and potentially dangerous indoor air quality.
7. Poor ventilation/balancing allows cafeteria smells migrating to all areas of building.
8. Very limited operator control due to lack of central coordinated control system.
9. Need Additional ambient cooling.
10. Too many once-through, city water-cooled spot coolers and chillers.
11. No separation of spot-cooling air circulation from main system cooling air.
12. No dedicated computer server room and special-use cooling system.
13. Lack of central cooling for transformer rooms.

<u>Heating System</u>

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

Conclusions

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

<u>Existing Cooling System at GA</u>

In 1979 10" Campus chilled water service was extended into the GA Building. Campus chilled water hydronic controls were added in 2001.

<u>Existing Plumbing Systems at GA</u>

The existing galvanized steel domestic water distribution system has been in place for 36 years. Experience with similar systems has been that problematic water discoloration and line restriction due to corrosion takes place after as little as 15 to 20 years. State maintenance personnel confirm that this is a problem at the GA Building. A particular annoyance that was voiced during the survey was the leakage problem that persists at the lower terminus of the north plumbing chase on the second floor. Occupied space on the first floor bears the inconvenience of any leakage there.

The waste and vent systems are reported to be in good shape. The extent of reuse of these systems would depend on the scale and scope of any renovation.

Domestic hot water is generated by an aging steam-fired hot water tank located in the ground floor south mechanical room. The hot water tank has outlived its economically useful life.

Conclusions

1. Galvanized domestic water distribution system corrosion and scaling result in flow reduction, leaks and discoloration.
2. Discontinuous pipe chase at the second floor results in leaks that affect occupied space below.

Existing Fire Sprinkler Systems at GA

Essentially the entire basement is sprinklered as are the public areas of the ground floor. None of the rest of the building is sprinklered.

Conclusion:

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

Electrical Assessment

Power Service

The GA Building is electrical served with 12.47KV from circuits #17 and circuits #18. These circuits are fed from the Capitol Campus12KV loop. Circuits #17 and #18 terminate in a 600A, 5 section 13.8KV medium voltage switchgear located in the basement. The gear then feeds two 2500amp 120/208V, 3phase, 4 wire switchboards via integral 1000KVA step down transformer. The medium voltage switchgear and the two 2500amp switchboard are of 1990s vintage and appear in very good condition. The switchboards will not be reused since they cannot serve the new capacity of the project. The switchboard should be salvaged and returned to the owner for future applications. The 600A, 5 section 13.8KV medium voltage switchgear should be salvage for the new project.

Emergency Power

The building has two existing diesel generators located in the penthouse. One is sized at 80KW, 208Y/120V and the other is sized at 100KW, 208Y/120V. The 80KW generator is manufactured by Cummins and is in good condition. The 100KW generator is manufactured by Marathon and appears to be near the end of its useful life. The generators are connected together with paralleling gear and serves emergency electrical power to the code required exit/egress lighting, fire alarm panel, stairway pressurization fans. The generators will not be reused because they will be unable to serve the new load of the building at the correct voltage. The generators should be salvaged and returned to the owner for future applications.

Power Distribution

Existing branch panelboards are located throughout the building and are fed from both main switchboards. The panelboards serve branch loads consisting primarily of lighting and receptacles. The panelboards are typically located in dedicated electrical rooms or closets.

The panel boards vary in terms of age and manufacturer but most are 10-plus years old and manufacturer by SQD. Most of the panel boards have limited available spaces for additional breakers. Most existing panel boards cannot be reused because of their age and unsuitable sizes.

Lighting

There are multiple fixture types throughout the building and multiple lamps including 4’ T8, 4’ T12, and compact fluorescent. The lighting is near the end of its useful life.

Control systems for the lighting are not compliant with current energy code.

There are no light fixtures of a historical nature.

Communications Assessment

The building’s fiber optic cable service is currently fed from the basement. The GA Building currently houses the main communication and security head end systems for the Capitol Campus. These head end system must be permanently or temporarily relocated to allow for the new project. The MDF is located in the basement and is in good condition. The distribution of communication system consists of station cables though-out the building ran above the ceiling. The existing station cables appear to be of different ages and cannot be reused.

Access Control Assessment

The building does have an access control system to control after-hours business access. Pelco model cameras are located in specific outside areas. The system should be reviewed in more detail to determine what should be salvaged. The Campus Security head end system is located within the building and should be temporarily or permanently relocated.

Intercom/TV Systems Assessment

The building has a limited TV system capacity that is not suitable for the new project requirements and will thus be removed.

Lightning Protection Assessment

The building has one 25’ lightning rod on the roof. The rod is not suitable for the new project requirements and should be removed.

Fire Alarm System Assessment

The existing building’s fire alarm system consists of a Johnson Control panel of 1980s vintage and related annunciation devices. There is an exterior outdoor 1980 vintage graphic annuciator located on the exterior wall. The existing system does not meet current code and should be replaced.

Analysis of Cultural Resource Impacts

Cultural resources include both historic structures and archaeological resources (above and below ground). Governor’s Executive Order 05-05 requires an examination of State capital projects for potential impact on cultural resources. Additionally, RCW 79.24.720 directs that certain buildings and the grounds of the West Capitol Campus be treated according to the U.S. Secretary of the Interior’s Standards for Treatment of Historic Properties. Both of these measures seek to protect historic and cultural resources, and mitigate negative impacts to them.

Resources above Ground

The Executive Office Plaza preferred pre-design alternative would require demolition of four structures that each have varying degrees of historic value: the Dawley or Capital Park Building at 1063 Capital Way, the General Administration Parking Garage, the General Administration Building, and the Capitol Conservatory. The West Capitol Campus would also be impacted by the re-routing of the 11th Street-Cherry Lane connector, and the extension west of the existing lawn over the former location of that connector (Water Street).

When a historic resource is going to be lost or otherwise adversely impacted, the development of mitigation strategies is a typical and reasonable response. Specific mitigation measures can be determined through discussion and negotiation between the property owner (GA) and the Department of Archaeology and Historic Preservation (DAHP), other affected/impacted groups such as neighborhood associations, city government, Native American tribes with interest in the geographic area (primarily Squaxin, Chehalis and Nisqually in this case), and the general public.

Documentation of the compromised structures is a standard element of mitigation. It can take the form of a Historic American Building Survey (HABS), a historic structure report, or other architectural and photographic recordation such as the filing of inventory forms with local and state preservation agencies. Three levels of HABS documentation provide opportunity to tailor that approach to the value of the asset. The level of documentation applied to 1063 Capital Way, the GA Parking Garage and the Capital Conservatory would likely be the simplest. The GA Building has had some documentation completed for it already and is currently the subject of a possible nomination for the National Register of Historic Places. Taken together, these sources of documentation may be sufficient or the state may wish to augment them with limited HABS documentation.

Other possible mitigation measures might include financial support for interpretation or preservation of other historic elements of the Capitol Campus. For example:

- Preservation of nearby campus art, landscape, or building features, or
- Development of interpretive materials describing the history of the GA Building and its construction

Mitigation can also include identification, salvage and possibly the re-use of character-defining features of the buildings in question. In the case of the GA Building this would include the Beall mosaic mural in the lobby, and may include the exterior sandstone, the State of Washington seal on the front of the building, and notable building features to be identified through a careful survey. Documentation must be completed prior to the beginning of demolition. Salvage of historic features as a mitigation measure would obviously be an early part of the construction process.

It is difficult to associate costs for mitigating the impacts to cultural resources until mitigation measures have been determined. For this reason it is recommended that mitigation negotiation be included in the design phase/appropriation and that $250,000 be included in the current budget estimates for mitigation costs ($100,000 added to Heritage Center; $100,000 added to Office Building A; $50,000 added to Office Building B).

Resources Below Ground

The preferred alternative includes substantial excavation for a parking garage and the Heritage Center, and additional excavation is possible. Cultural resource surveys will be necessary for all project excavation sites. Cultural resource surveys have three levels of complexity. An initial survey helps to determine the level that is appropriate for a given project through sample field surface investigation (which could be included as part of the soil sampling phase of design work), and literature and file search of previous survey work for the site. If initial surveys reveal that cultural resources are present, it would not be unusual for costs to exceed $50,000, especially if monitoring during construction is required.

Viewscapes

The original campus design by architects Wilder and White proportioned and placed the classical buildings of the Capitol Group to be perceived from the north as a single massed structure. While this view has been obscured over the years by vegetation and the construction of the Capitol Center building on Fifth Avenue downtown, the design intent is still present and achievable. The Heritage Center and Executive Office buildings, located further north and further west of today's GA Building, will need to be designed in accord with the Wilder and White design vision.

Mitigation measures regarding this impact would be discussed and negotiated with those "above ground", above.

D. CODES / REGULATIONS – GA Building

- Washington State adopted the 2003 International Building Code in July 2004 with amendments.
- The existing building meets the requirements of IBC Type II-B and Type I construction and meets the allowable area and height criteria.
- There may be floors with more than 500 occupants, requiring 3 exits.
- An "average" floor will require a minimum of 10 toilets or urinals and 6 lavatories split evenly between men and women.
- Openings through two or more floors are permissible.

Chapter 3: Use and Occupancy Classification

Occupancy Groups :

- Group B
- This is the main occupancy group; see incidental and accessory uses below.
- Group A-3 (Assembly spaces of 50-300 persons) includes auditorium & cafeteria

Incidental Use Areas (Table 302.1.1)

- Storage Rooms greater than 100SF require 1-hour separation or fire extinguishing system.
- *Note that with fire extinguishing system smoke separation is still required (302.1.1.1)*

Accessory use areas (section 302.2)

- Accessory use areas not in table 302.1.1 and not Group H are not required to be separated if the accessory use area is less than 10% of the area of the floor on which it is located and does not exceed Table 503 values for such use group.
- Accessory assembly areas less than 750SF are not considered separate occupancies.

Occupancy Separations (see section 302.3and table 302.3.2)

- In general there is a 2-hour occupancy separation between type B and type A-3 occupancies with reduction to one hour permitted when sprinklers are provided. See note b. in table 302.3.2 for when occupancy separations are not required for storage areas within Group B

*Summary:

- Primary Occupancy is Group B with some accessory A-3 use groups.
- Based on construction Type II-B (see chapter 6 summary below), we anticipate that the building will be classified as group B Occupancy with A-3 accessory use areas as the A-3 spaces fill less than 10% of the area of any floor. Any groups incidental use areas to the main occupancy group do not need to be considered different occupancy and only need to be separated with a fire barrier if required as defined in incidental use areas.

Chapter 4: Special Requirements Based On Use and Occupancy

None

Chapter 5: General Building Heights and Areas

Building area shall include exterior areas below projections of roofs or floors above (section 502.1)

- Allowable Height and Building Area (see Table 503)
- Assuming Construction Type II-B (refer to Chapters 3 and 6):
  Maximum area: no single story shall exceed allowable area/floor
    23000 SF/floor for group A (x3 stories per 506.4)
    9500 SF/floor for group A-3 (x3 stories per 506.4)

  Maximum # stories:
    4 stories for group B
    2 stories for group A-3
  Maximum height: measured to average height of highest roof surface
    55 feet above "grade plane" for type IIB construction
    Grade Plane: Plane representing the average of finished ground level adjoining the building at exterior walls. With building set into hillside, the approximate average grade plane can be averaged from the southeast corner to the northeast corner of the building as those are the highest and lowest points of grade.

- Height and Area Modifications (Section 504 and Section 506):
  May increase maximum height by 20' and 1 additional story if protected with sprinkler system.
  May increase maximum areas per calculations as part of the general area modifications (Section 506.1) if protected with sprinkler system. This includes additions due to a frontage increase (Section 506.2).

Summary:

<u>For construction Type II-B:</u>

Maximum Allowable Building area (Group B):
86,250 SF/floor
Maximum Allowable Building area (Group A-3):
35,625 SF/floor

Maximum Number of Stories: 4+1story sprinkler modification = 5 stories max.
Max building Height: 55 feet +20 feet sprinkler modification = 75feet.
*The Building is within maximum allowable area, maximum number of stories and maximum allowable height for construction type II-B.

Chapter 6: Types of Construction
Anticipated Construction Type: **Type II-B.**

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

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

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

Chapter 7: Fire Resistance-Rated Construction

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

Stairway Enclosures	2 hr. when greater than 4 stories (see 1019.1)
Area Separation	2 hr. (none anticipated)
Shaft Enclosures (section 707)	1 hr. if less than 4 stories, 2 hr. if greater than 4 stories
Protected Elevator Lobby	Not required if building is sprinkler protected (707.14.1)
Corridors	See section 10.16 (not required if sprinkled)
Occupancy Separation	See chap 3 summary above
Building Elements	See chap 6 summary above

Table 715.3 – Fire door and fire shutter protective ratings:

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

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

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

Chapter 8: Interior Finishes
Wall and Ceiling Finishes: see section 803.1 for Class A, B, and C requirements for flame spread and smoke developed.
Flame Spread of finish materials per Table 803.5 for sprinklered buildings by occupancy group:

	Group A-3	Group B
Stairways:	Class B	Class B
Exit ways:	Class B	Class C
Rooms:	Class C	Class C

Interior floor finishes per section 804

Chapter 9: Fire Protection Systems
Complying automatic sprinkler systems are defined in this chapter, and sprinklers are used as reason for a number of height and area modifications and other exceptions throughout the code.

Sprinklers are not required for occupancy group B (See Section 903.2)
Sprinklers are only required for occupancy group A-3 (See Section 903.2.1.3) if the A-3 fire area exceeds 12,000 SF or has an occupant load of 300 or is located on a floor other than level of exit discharge.

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

Chapter 10: Means of Egress
Minimum height of egress path: 7’-0” throughout, 6’-8” minimum at stairs

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

Occupant Load Factors (Table 1004.1.2)

Assembly Areas/Lobbies:	7net (15 net at tables and chairs)
Office& Business Areas:	100 gross
Kitchens, commercial:	200 gross
Parking Garage:	200 gross
Storage Rooms:	300 gross
Mechanical Rooms:	300 gross

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

<u>Egress width per person served (Table 1005.1)</u>

Stairways	0.2” per person w/ sprinkler system, not less than 48” (1007.3)
Other egress components	0.15” per person w/ sprinkler system, not less than 44” at corridors

Door encroachment: no more than 7” when fully open (1005.2)

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

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

Areas of Refuge (1007.6): Sized to accommodate one wheelchair space of 30”x48” for each 200 occupants. When located within enlarged stair enclosure landings, the area of refuge shall not reduce the required exit width. A two-way communication device is required at the area of refuge (1007.6.3) Area of refuge is not required as noted in 1007.3 above.

Roof Stair: One stairway up to the roof is required in buildings 4 or more stories in height (1009.12) Roof stairway access is required through a penthouse (walls, floor and roof) complying with section 1509.2 (1009.12.1)

Egress through intervening spaces (1013.2): Only permitted when intervening space is accessory to the area served.

Common path of egress travel (1013.3): Maximum 75’ travel before two means of egress are available.

Exit Access Doorways Required (Table 1014.1): Greater than 50 occupants requires two exit access doorways.

Exit Access and Travel Distance (Table 1015.1): With a sprinkler system, the maximum travel distance is 250 feet for A occupancy and 300 feet for B occupancy.

Corridors in group B and group A occupancies shall be 1-hour rated without a sprinkler system or 0-hour rated with a sprinkler system (table 1016.1)

Maximum dead end corridors: 20 feet. 50 feet with a sprinkler system in group B occupancy

Minimum Number of Exits (1018):

Room or spaces with occupant load of 1-500 requires access to 2 exits (Table 1018.1)
Occupied Roof shall have access to exits as required for stories (1018.1)

Vertical Exit Enclosures (1019):

2-hour rated when connecting greater than 4 stories
1-hour rated when connecting less than 4 stories

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

Chapter 11: Accessibility
In addition to 2003 IBC and any Washington State amendments, it is also anticipated that the design team will discuss accessibility goals with the state that meet universal design standards that may be more stringent than required by any codes or regulations.

Chapter 12: Interior Environment
Applicable ventilation, temperature, lighting and sound transmission provisions.

Chapter 13: Energy Efficiency
Refer also to mechanical and electrical systems narratives.
Applicable codes & guidelines to be reviewed with authorities having jurisdiction:

International Energy Conservation Code
Washington State Energy Code.
Energy Life Cycle Cost Analysis (ELCCA)
Leadership in Energy and Environmental Design (LEED) per RCW 39.35 D

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

Item	Minimum Thermal Performance
Roofs	R-21 or U=0.050
Opaque Walls	R-19 or U=0.14
Opaque Doors	U=0.60
Floors over unconditioned space	R-19 or U=0.056
Slab on Grade	R-10 or F=0.54
Glazing (30% to 45% of wall area)	Max U=0.60 and Max SHCG=0.4

Chapter 14: Exterior Walls
Applicable definitions: Stone (natural), concrete

Chapter 15: Roof Assemblies and Rooftop Structures
The enclosed mechanical area is considered a penthouse (Section 1509.2)

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

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

Chapter 27: Electrical requirements and standards. Refer to electrical narrative.

Chapter 28: Mechanical requirements and standards. Refer to mechanical narrative.

Chapter 29: Plumbing Systems
Refer also to plumbing systems narrative.

Minimum number of Required Plumbing Facilities (Table 2902.1)

Table 2902.1 has been amended by the State.

"Average" floor +/- 50,000 sf	at 1 person/200 sf = 250 people
Assume 125 men – requires	5 toilets (or 3 urinals + 2 toilets)
	3 lavatories
Assume 125 women – requires	5 toilets
	3 lavatories

Chapter 30: Elevators and Conveying Systems
Hoist way Enclosure protection: see 3002.1
Elevator Car to accommodate ambulance stretcher required in buildings of 4 stories or more (3002.4)
Emergency Operations per section 3003
Hoist way venting required per section 3004
Elevator Machine Rooms per section 3006

GA Gross Areas

Level B: 28,000
Level G: 49,600
Level 1: 49,600
Level 2: 49,600
Level 3: 49,600
Level 4: 49,600
Mechanical Penthouses: 9,000

Total: 285,000

PROJECT REQUEST REPORT

Submitted by

DEPARTMENT OF GENERAL ADMINISTRATION

For

GA BUILDING REHABILITATION

September 1, 2004

Prepared by:
Tom Evans, Architect
Division of Facilities Planning & Management, 902-0972

Section 1.0 Summary

The GA Building was constructed in 1956 on the edge of the West Capitol Campus and contains 283,921 gross square feet (266,476 rentable square feet) on six floors. It has housed a large number and variety of tenants over the years with the Department of General Administration as the principal occupant. The building has typically housed 8 to 12 different state agencies at any given time.

A predesign for the rehabilitation of this building was completed by Zimmer Gunsul Frasca Partnership in 1992. This document lists the deficiencies of the building at that time as:

- Earthquake resistance is half the capacity required by code.
- The facility is only partially protected by a fire sprinkler system.
- The quality of air supplied throughout the facility is poor.
- The electrical main distribution panels are overloaded and do not have any spare capacity.
- The building's original mechanical and electrical systems are still in place and have surpassed their useful lives.
- Technologies developed since the building was constructed have overtaxed the existing in-floor wiring system.
- The existing uninsulated concrete exterior walls and large glass areas cause the facility to use excessive energy.

With the exception of the electrical system, which was upgraded in 1997-99 and partial improvements to the HVAC system in 1999-01, all of these deficiencies **still remain** 14 years later. (The time table proposed by this project will add another 7 years – 2011 – before the building is finally renovated.)

The consequence of inaction has begun to take its toll with the exodus of major tenants over the past two years.

- The Department of Community, Trade & Economic Development which had occupied 14,838 rentable square feet left in December 2003.
- The Department of Revenue which had occupied 53,649 rentable square feet left in July 2003.
- The Department of Financial Institutions which had occupied 31,155 rentable square feet left in March 2003.

Each of these agencies cited the building's deficiencies as the prime reason for their departure. These agencies are now tenants in new or nearly new privately owned buildings at higher rental rates.

The Washington State Patrol (35,271 rentable square feet) had also made plans to move out in 2005 upon completion of the new privately owned Tumwater Office Building now under construction. WSP has since had to withdraw from that commitment due to budget issues but, they too, had strong desires to get out of GA Building because of its long-standing deficiencies.

The Department of General Administration, as landlord for the building, has had (and is still having) difficulty finding willing tenants to backfill these large vacancies for the same reasons given by those who left. Lack of adequate parking has also been given as a reason for not wanting to move to the GA Building.

It is time to rehabilitate the GA Building!

Section 2.0 Scope and Project Description

This project would be a whole-building renovation. The work will include architectural and fire protection modifications to meet modern life safety codes, HVAC modifications to meet modern habitability standards, structural upgrades for modern seismic stability, and complete replacement of its aging plumbing and mechanical systems.

The extensive nature of the work will require that the building be totally vacated during construction. This will require a significant quantity of temporary housing for approximately 900 employees for up to two years.

This is a phased project starting with an update to the 1992 predesign in 2005-07, design in 2007-09, and construction in 2009-11.

The 1992 predesign identified five alternative schemes for the renovation of the GA Building:

A. "Baseline – No Work". This concept was considered only to provide a baseline for purposes of the cost/benefit analysis for options B through E.
B. "Existing – Renovated". This concept would strip the entire building of all mechanical, electrical, plumbing, and interior systems leaving only the structural frame, stairways and elevator shafts intact.
C. "Existing – Renovated with Added Fifth Floor". This concept would be similar to Scheme B but with an added fifth above-grade floor.
    - A sub-option to Scheme C, called "C + West" would add a two-story addition on the west side of the building for a new auditorium, conference/press rooms and cafeteria (all overlooking Heritage Park).
D. "Existing – New Core with Fifth Floor and West Addition". This concept would utilize only the existing structural frame. It would reconstruct the stair towers and elevator shafts in new locations.
E. "Total New Building". This concept would completely demolish the existing structure and construct a new building of comparable size on the same site but with modern technology and improved capabilities.

With the exception of Scheme A, all of the concepts included a new architectural expression to "enhance the GA Building's compatibility with the Capitol Building and other buildings within the historic campus." Renderings of the proposed new exterior appearance are hanging on the wall in Room 206 of the GA Building.

The passage of time has introduced additional issues for the updated predesign to consider:

- A **sixth alternative** needs to be evaluated. This concept would be similar to Scheme E but would construct the new building on a different site. The primary site being suggested is the block of land occupied by the 1063 Building and the GA Garage. This block is bounded on the north by Union Avenue, on the south by 11th Avenue, on the east by Capitol Way, and on the west by Columbia Street. The primary attractions for this option are that it would not require such extensive temporary housing and it would redevelop an existing GA property (the 1063 Building) that is also in sub-standard condition.
- The most **appropriate occupants** of the building may not be its current occupants. The predesign needs to include an analysis of highest and best use that employs the master plan's principles of adjacency and proximity to the Capitol Building.
- The various possibilities of **alternative financing** for this major rehabilitation need to be examined and compared including the full breadth and scope of private involvement.
- The impact of the proposed concepts on **parking** needs to be fully examined. The 1992 predesign did not consider this aspect.
- An **Historic Structures Report** will be required that will examine the extent and value of the defining architectural features of the existing building. The findings and recommendations of this report, together with the advice, counsel and desires of various advocates for architectural history may or may not influence the final choice of which scheme to adopt.
- Thorough development of **temporary housing** solutions as they relate to each alternative is needed, including projected costs.
- The 1992 predesign envisioned the state's **visitor center** being relocated to the renovated GA Building thus allowing that section of the west campus now occupied by the visitor center to be made ready for redevelopment in accordance with the state's current master plan. This may or may not still be a viable proposal.

Section 3.0 Justification

The GA Building is considered an **undesirable** place for state agencies to locate despite its relative proximity to the legislative buildings on the West Campus.

The extensive nature of its deficiencies has given the building a **bad reputation** (perceived or real) as unsafe and unhealthy.

On February 28, 2001, the building sustained considerable **earthquake damage** that, although not life-threatening, caused many occupants to refuse to work in the building any longer.

The building's heating, ventilating and air conditioning system, while not causing any known health hazards, has been a constant source of **air quality complaints** from workers in the building for decades.

Of all the major buildings on both east and west campuses, the GA Building is, by far, the most **energy-wasteful** with its uninsulated walls and windows and out-dated mechanical systems.

The GA Building (the largest building on the West Campus) is an important state asset that has deteriorated to an unacceptable (and nearly un-rentable) level. The state cannot afford to allow this building to eventually become **completely uninhabitable**.

Section 4.0 Budget Development

The original predesign cost estimates for this project's various schemes are now outdated and need to be adjusted to reflect current technologies and financing options. The following estimates have been developed for planning purposes:

• Predesign Update	$400,000
• Design	$3,900,000
• Construction	$61,600,000
• Total	$65,900,000

The final cost of construction will depend on the choices made for renovation, expansion, or total replacement along with choices made for temporary housing, historic preservation, parking, and recommended occupants.

Rent Stream: For planning purposes, it is assumed that the rentable square footage of the building will remain close to the existing 266,476 RSF. Operating costs for 03-05 are approximately $6.84 per square foot per year, or $1,822,696 annually. The rental rate is currently $11.39 per square foot per year, producing $3,035,162 of annual revenue (when fully occupied).

Financing: It is presumed that this project will require alternative financing such as a Certificate of Participation through the Treasurer's office. RCW 43.01.091 requires that the agencies occupying all newly constructed or substantially renovated facilities proportionally share this type of debt service.

To recover the total estimated construction budget of $61,600,000 over 25 years at 5.5% will require annual payments of approximately $4,539,335.

Moving Costs: The cost of moving the current occupants out of (and back to) the GA Building is understood to be the responsibility of the tenant agencies through their respective operating budgets. It is currently estimated to cost $350 per person for a two-way move.

Temporary Housing: Depending on the alternative chosen, temporary housing may be required for approximately 900 employees for up to 20 months. At worst case, all would be housed in privately-owned facilities in Thurston County at a current rate of about $20.00 per square foot per year. However, because this would be short-term occupancy (private landlords prefer 5 to 10-year leases) the rate can be expected to be higher.

Section 5.0 Schedule

The predesign will be completed in 2005-07, design in 2007-09, and construction in 2009-11. Construction would begin in July of 2009 (or as soon thereafter as possible) and be ready for occupancy by June 2011.

Section 6.0 Implementation Approach

The Department of General Administration will manage this project from predesign through construction. The predesign update will be prepared by consultants with in-house GA staff preparing certain sections as required by OFM's Predesign Manual.

Design and preparation of plans and specifications will be completed by private consultants.

Construction could be competitively bid or, depending on the financing scheme adopted, could be coupled with design as a turnkey project based on selection through a Request-For-Proposals process. It is not anticipated that this management plan will require any change to current GA staffing.

GA's project lead through the predesign update and schematic design phases will be Tom Evans, Facilities Planning Manager, Division of Facilities Planning & Management, 902-0972.

The list of stakeholders will include, but not be limited to:

1. The current tenants of the GA Building:
    - Several divisions of the Department of General Administration
    - Washington State Patrol
    - State Treasurer
    - Department of Services for the Blind (cafeteria)
    - Department of Licensing
    - Office of Financial Management
    - Puget Sound Action Team
    - Commission on Judicial Conduct
    - Others as marketing efforts for vacant space continues

2. Other potential tenants as determined by the Highest and Best Use Study

3. Other outside agencies and groups such as:
   - State Historic Preservation Officer
   - Campus Conservator
   - Private historic preservation groups

Section 7.0 Appendix

The following documents are listed as reference material:

a) GA Building Predesign Study by Zimmer Gunsul Frasca Partnership dated August 1992
b) Glazing/Lighting Life Cycle Cost Report by Tres West Engineers dated November 24, 1999.
c) The Master Plan for the Capitol of the State of Washington dated 1991.
d) Forms C2 and C100 for GA Building Rehabilitation dated August 2004.

General Administration Building

Renovation Predesign Study

Prepared by Zimmer Gunsul Frasca Partnership
August 1992

Washington State Department of
General Administration
Division of Engineering and Architectural Services
PO Box 41012
Olympia WA 98504-1012

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B. Technical Support Diagrams
C. Cost Analyses - Alternative Concepts
D. Detail Space Program Data and Summary

I. Executive Summary

The purpose of this study was to identify the most appropriate and cost-effective facility development strategy for the General Administration Building. A number of determinants are necessarily required in order to achieve the stated purpose, and include:

- Conditions of the existing facility.
- General Administration's, and other General Administration building tenants' role and mission.
- A reliable forecast of time-phased functional space and adjacency needs of all tenants.
- The General Administration building as a component of The Master Plan for the Capitol of the State of Washington.
- Code issues relative to Authorities Having Jurisdiction.
- Life-cycle cost-benefit analysis of alternatives.

A series of group workshops and one-on-one meetings were held to address each of these issues. The process allowed the gathering of information, written distribution of the data received, and review, response and feedback by each participant, prior to using the data in any follow-on work. This provided the opportunity to share information as work progressed with team members, the state, and other agencies interested in the project.

Conditions of the existing facility

Consequences of not funding renovation and additions at this time would leave the existing 37 year old facility with the following deficiencies:

- Earthquake resistance is half the capacity required by the building code. A major earthquake could cause partial failure of the structure. An evacuation plan will save lives. However, disruption to services, setting-up of replacement facilities, and repairs/replacement of the existing facility would have major cost implications.
- The facility is only partially protected by a fire sprinkler system, corridor walls are not of fire resistive construction, hazardous materials exist (asbestos insulating material, and PCB's in light fixture ballasts), and access to the site, building, restrooms, and other public areas does not comply with accommodation requirements of the Americans with Disabilities Act.
- The quality of air being supplied throughout the facility is poor. The air supply has contributed to black particles being released from ceiling diffusers in certain areas and false fire alarms. This has caused lost employee work time, reduced effectiveness, and may impact employee health.
- The electrical main distribution panels are overloaded and do not have any spare capacity for growth in electrical needs. Main service transformers are loaded beyond maximum service capacity and are over-heating; added sub-panels, increases in service supply from 4,000 volts to 12,000 volts, and undersized emergency power generators to meet code requirements, all add risk to a major shutdown of government business by loss of service or fire.

- The building's original mechanical and electrical systems are still in place and have surpassed their useful lives. Numerous modifications over the years have been made to accommodate changes as much as possible, making the systems inefficient and expensive to maintain and operate.

- Technologies developed since the building was constructed have overtaxed the existing in-floor wiring systems, which are filled to capacity, limiting flexibility to changing program needs. Future accommodation of new technology will not be possible.

- The existing uninsulated concrete exterior walls and large glass areas cause the facility to use excessive energy to maintain heating and cooling needs.

- General Administration and other tenants would remain in dispersed locations, making communication, team-building, and development of a service-oriented philosophy difficult to achieve.

- Available space for employee work stations, appropriate lighting, source of electrical power, computer usage, and thermostatically controlled environments would remain substandard in many instances.

- The current visitor center on 14th and Capitol Way could not be relocated to the General Administration Building as contemplated by the master plan for the capitol. This would impact the proposed Executive Office Building for that site and systematic progress toward completion of other planned facilities and relocation of tenants.

- The existing facility would remain out of character with respect to the classical architecture of other West Campus buildings.

The consequences of not proceeding with the project are significant. The existing General Administration Building falls far short of meeting current code requirements and providing a proper and safe environment for employees and the public.

Agencies enforcing code regulations have the authority to mandate upgrading of an unsafe facility, for life and safety reasons, as set forth under the Dangerous Building Codes. A partnering atmosphere has been established with local authorities, accommodating deficiencies on an interim basis, as long as progress is made in a timely manner to comply with code requirements.

General Administration and tenants' role and mission

A quantitative and qualitative survey determined the agency's responsibilities and services it provides to other agencies and the public; needs/desires for consolidation to better perform those responsibilities; information on tenant agencies' current facility problems; and the importance of work efficiency in a facility that is designed to be technologically and environmentally adaptive.

Space needs

Tenants were asked to determine their needs over five year intervals; from 1995 to the year 2010. In addition, space needs for personnel and ancillary services followed the General Administration's Space Standard Manual. In many instances, tenants are housed in space below these standards.

A full renovation of the General Administration Building will allow efficient application of modern, open office planning principles due to the large amounts of floor area at each level. Plan area at the building perimeter will be reserved for open office work stations to maximize staff access to natural light and views.

The Master Plan for the Capitol of the State of Washington

The study has built upon the master plan ideas by developing an information-gathering, review, and evaluation process which provides a logical continuation and refinement of the plan's philosophies.

- The master plan recommends retaining space on the West Campus which contributes to and is critical for the executive and legislative functions of the state government. The General Administration Building renovation will expand and improve critically needed office area which will allow agencies to maintain continued face-to-face contact with other components of state government.

- The master plan identifies the potential need for an additional 3.7 million square feet of space by the year 2010, primarily for general office work. Existing staff levels have well exceeded the projections of the 1982 Master Plan Projection, and there is an existing deficit of office area on the West Campus. The General Administration Building renovation will help to ease this deficit by providing approximately 38,000 additional square feet of assignable office area than is currently available, as well as help to consolidate critical functions and improve agency adjacencies.

- The General Administration Building occupies a most prominent position on the West Campus, adjoining a future Capitol Lake park to the west and helping to frame the Capitol Lawn to the south. It stands on an important east-west axis defined by Eleventh Avenue, and forms a gateway to the West Campus for visitors. This unique location, adjacent to the core capitol grouping of historic buildings, is distinctly visible from a number of important angles and is prominent along with the capitol dome from across Capitol Lake.

  The master plan requires that historical and cultural resources of the West Campus are to be enhanced. The General Administration Building renovation, along with replacing critical interior and building systems that have outlived their effective economic life span, will allow redesign of the building facade and public spaces to be more compatible with the architectural style of the other West Campus buildings and incorporate a visitor center into the building.

- Renovations and additions to the General Administration Building will provide a step forward in meeting goals of The Master Plan for the Capitol of the State of Washington. This project is part of a continuing, systematic effort and approach to comprehensive upgrading of aging facilities.

Regulatory issues

Research and meetings with the code authorities having jurisdiction have defined a series of building components which do not meet code requirements, and the remedies to bring the facility into compliance. These are outlined under **Proposed Project Benefits**, Building Renovation.

Services

The Department of General Administration was created in 1955 to provide an order to the diverse responsibilities of the state's government. Since that time, General Administration has grown from the initial six chartered divisions to fourteen. Today, State government relies on the Department of General Administration to provide a variety of business services, including:

- Purchase of equipment, supplies and services.
- Planning and acquisition of office space.
- Building construction and renovation.
- Preservation and maintenance of capitol buildings and grounds.
- Transportation and motor vehicle services.
- Insurance, loss control and risk management services.
- Distribution of used supplies and equipment.
- Recycling.
- State mail pickup and distribution.
- State travel management.
- Regulation of state-chartered financial institutions.

Life-cycle cost-benefit analysis

To determine which of eight alternatives was most appropriate, conceptual building plans and elevations were developed, a comparative evaluation matrix was generated and cost estimates with life-cycle analysis applied. Six building concepts were titled Scheme A through Scheme E, as indicated below. Two scheduling alternatives, phased construction or vacating, were then evaluated for the six concepts.

- Existing facility - no work. (Scheme A)
- Existing Facility - complete renovation. (Scheme B)
- Complete renovation and addition of a fifth floor. (Scheme C)
- Complete renovation, add a fifth floor and an addition to west side of existing facility. (Scheme C+ West)
- Complete renovation, add a fifth floor and west addition and reorganize core support areas. (Scheme D)
- New facility. (Scheme E)
- Phased construction.
- Vacate and construct.

Proposed Project

A project with the following attributes (Scheme C+ West) was determined as the most appropriate to resolve the varied problems expressed in this report:

- Complete renovation of the existing facility.
- Include the west addition alternative.
- Include the fifth floor addition alternative.
- Site modifications conforming to capitol campus master plan.
- Include vacating of the facility during the renovation period.
- Include a new visitor center.

The new visitor center would replace the existing center scheduled to be removed and replaced by an executive office building in the 1997-1999 biennium. This visitor center would also complement another visitor center facility proposed in the capitol master plan for the eastern edge of the Capitol Campus. Location of the visitor center in the General Administration Building reinforces the concept of a transitional zone and interaction with the community, visitors, and surrounding amenities, as envisioned in the capitol master plan.

After the selection of Scheme C+ West, it was then further refined for architectural, structural, mechanical and electrical requirements, costs and life-cycle analysis. The final solution is defined later in the report as Scheme C-Plus to differentiate it from the preliminary decision-making process.

It is also important to note that the alternative of doing no work to the existing facility must be studied as part of the predesign study requirements. However, it must be recognized that evaluation of the existing mechanical and electrical systems indicates they are antiquated, and that probable capital costs of approximately $12 million should be spent to upgrade those systems to a serviceable level. Capital expenditures of that amount are approximately one-third of the proposed construction budget of $36.3 million. Even with this expenditure of funds, all of the other code, safety and flexible work environment issues, which would be accomplished under the **Proposed Project**, would not have been considered. To fund these issues separately, or in smaller groups, would add significant cost above the proposed project because of the need for separate contracts and phased construction. Separate, or smaller group projects, would also have an intangible increased cost effect by decreased work efficiency in occupied environments.

Through the increased efficiency of renovated space, addition of the fifth floor, and transitional tenants relocating from the General Administration Building to permanent government-owned facilities, approximately 110,000 square feet of leased space can be vacated.

Proposed Project Benefits

Building Renovation

- All building, fire, electrical, plumbing and mechanical code requirements would be met.
- Building would be seismically upgraded to current earthquake resistance requirements.
- All Americans with Disabilities Act requirements for public accommodation would be met.
- Compliance with all Department of Information Services Telecommunication Architectural Standards requirements, including raised accessible floor throughout.
- Provide minimum State Space Standards for all employees.
- Maximize employee access to views and natural light through effective open office planning.
- Increased assignable square footage and improved building space efficiency.
- Meet or exceed all energy code requirements through exterior wall and roof insulation, thermal break insulated glazing, energy efficient light fixture ballasts and tubes, and energy managed mechanical system.
- Change exterior building appearance to sensitively acknowledge and complement the classical architecture of the West Capitol Campus.
- Extend the useful life of the building 50 years.

West Addition

- Placing fixed uses (such as auditorium/conference and cafeteria) in the addition which could also be isolated from the main facility for other public use in the evenings.
- Brings public focus to new Visitor Center, located at southwest corner of building adjacent to other public functions.
- Main facility becomes more flexible.
- Functions within the addition complement and provide an extension to the master plan park on Capital Lake.

Fifth Floor Addition

- Reduces shortage of space on the Capitol Campus.
- Assignable space efficiency with maximum spacing of structural supports.
- "Top" to facility. Together with the penthouse, provides the classical bottom/middle/top architectural design philosophy of other West Capitol Campus facilities.

- The General Administration building is outside of established view corridors. Adding the fifth floor and penthouse would minimally affect views in a broader view corridor created by the "shadow" of dome.

Site

- Improves delivery/staging/warehousing areas.
- Reduces pedestrian/traffic conflicts.
- Develops transit drop-off points in front of and north of the building.
- Develops compatible landscaping plan with original Olmsted Brothers concepts.

Vacate During Renovation

- The cost of vacating the facility is approximately $2.8 million lower than occupying the building if it were to be renovated in phases.
- Vacating would lower the construction period to 24 months, while phasing would require 32 months.
- Vacating would provide a better total work environment.

Summary Overview

The Renovations and additions to the facility will provide General Administration and other proposed tenants the opportunity to fulfill their mission and goals in a manner consistent with the capitol campus master plan.

Following are charts and schematic drawings which provide a summary overview of this proposed project, including:

- A Space Assignment chart which summarizes current space usage by General Administration building tenant agencies, and identifies future space allocations relative to area made available by the renovation and additions.

  General Administration does not require the use of all space that will be available within the facility, and therefore, will provide the opportunity for other tenants whose relationship is appropriate to the capitol campus to likewise consolidate their functions.

- A Master Plan Diagram which identifies project site location and capitol campus context.
- Architectural Renderings, which depict the proposed renovation design from the south and northwest.

Detailed information on the proposed project budget can be found in Section V. Project diagrams and drawings are found in Section VIII.

Renovated GA Building - Space Assignment

Agency	Current Occupancy in GA Bldg.	Other Occupied Office Space	1995 Needs (Predesign)	Assign-ment After Renovation	Year 2000	Year 2005	Year 2010	
General Admin.	44,691	17,022	81,582	81,582	84,468	85,455	87,383	
Auditor	6,912	14,746	15,138	15,138	0	0	0	(1)
Treasurer	8,202	9,634	16,344	16,344	0	0	0	(1)
Trade & Econ. Dev.	8,474	5,406	16,889	16,889	17,883	18,638	18,988	
Revenue	41,111	86,739	143,728	110,398	141,880	141,880	141,880	(1)
WSP	14,110	46,100	98,086	0	0	0	0	(2)
State Printer	2,870	—	2,338	2,338	2,338	2,338	2,338	
DIS	1,256	—	0	0	0	0	0	(3)
Comm. Dev.	0	—	88,246	5,376	5,376	5,376	5,376	(4)
Assignable Transition Space	—	—	—	7,900	4,020	2,278	0	
TOTAL	127,626	179,647	462,351	255,965(5)	255,965	255,965	255,965	

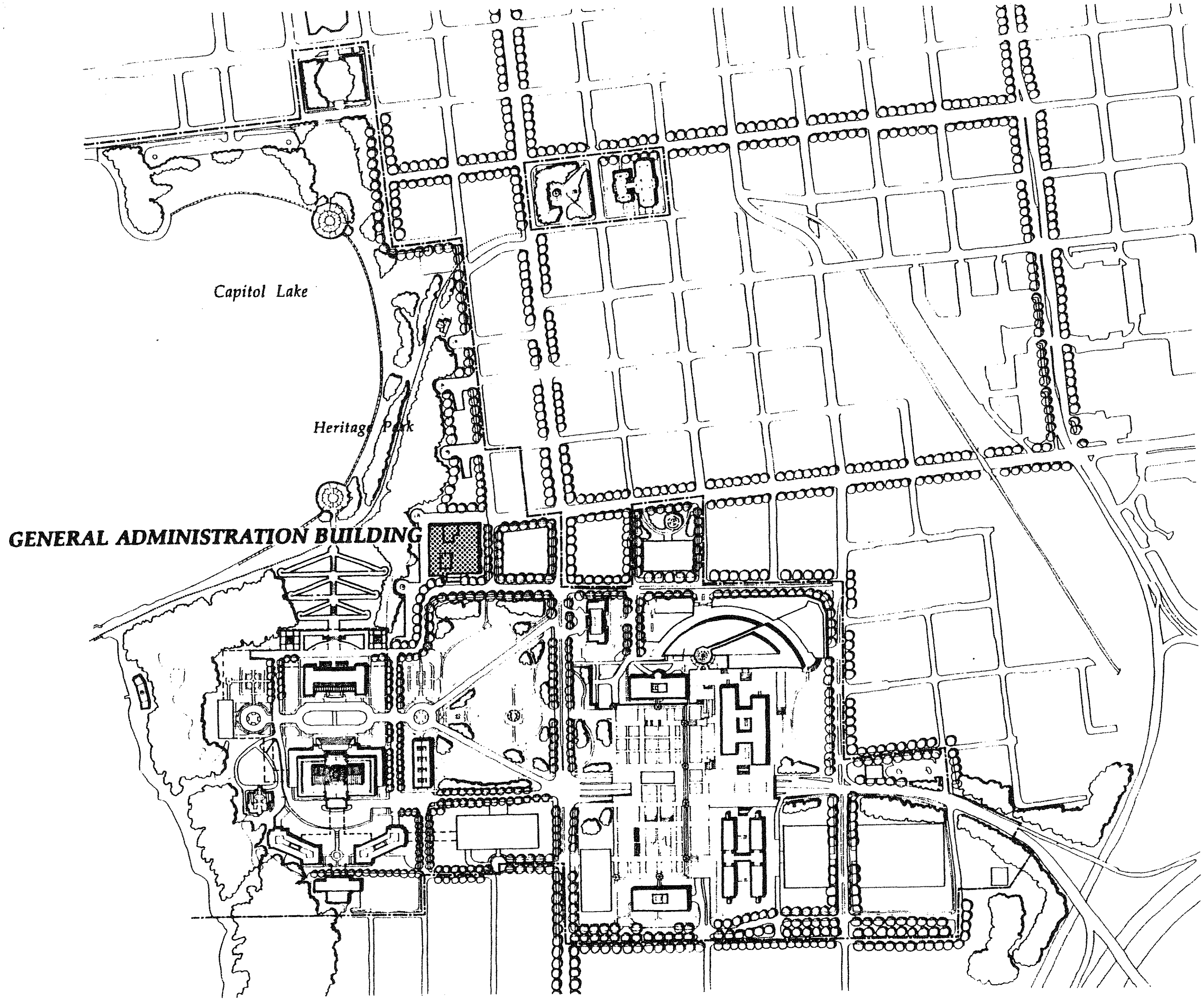
(1) Vacating of the General Administration Building by the Auditor and Treasurer in the year 2000 is based upon the new Executive Office Building being completed on the Capitol's West Campus in 1999. This allows further consolidation within the General Administration Building by the Department of Revenue.

(2) The Washington State Patrol is a current occupant in the General Administration Building. The space programming indicated that its needs would require a major portion of the General Administration Building if it were to return after the renovation. Consolidation of WSP operations is a primary goal. Because of the nature of WSP services, moving out of the General Administration Building, moving back in, and then moving out again in a consolidation effort, would be a costly endeavor. The Washington State Patrol is pursuing the development of new headquarters space as part of a transportation complex at one of the master plan satellite campuses.

(3) DIS has a "road runner" room that they determined would be too expensive to move back into the General Administration Building after renovation.

(4) Department of Community Development is not currently housed in the General Administration Building. DCD had expressed interest in the possibility of occupying space in the facility, and participated in the space programming portion of the study. However, after their space requirements were developed, it was apparent that their needs would also require a significant portion of the General Administration Building. The department is pursuing lease development financing through the Treasurer's Office to purchase the facility they currently occupy on 9th and Columbia. Space is shown for including an Emergency Operations Center in the General Administration Building.

(5) Assignable tenant area available in renovated General Administration Building. Total usable area available after renovation is 289,957 SF.



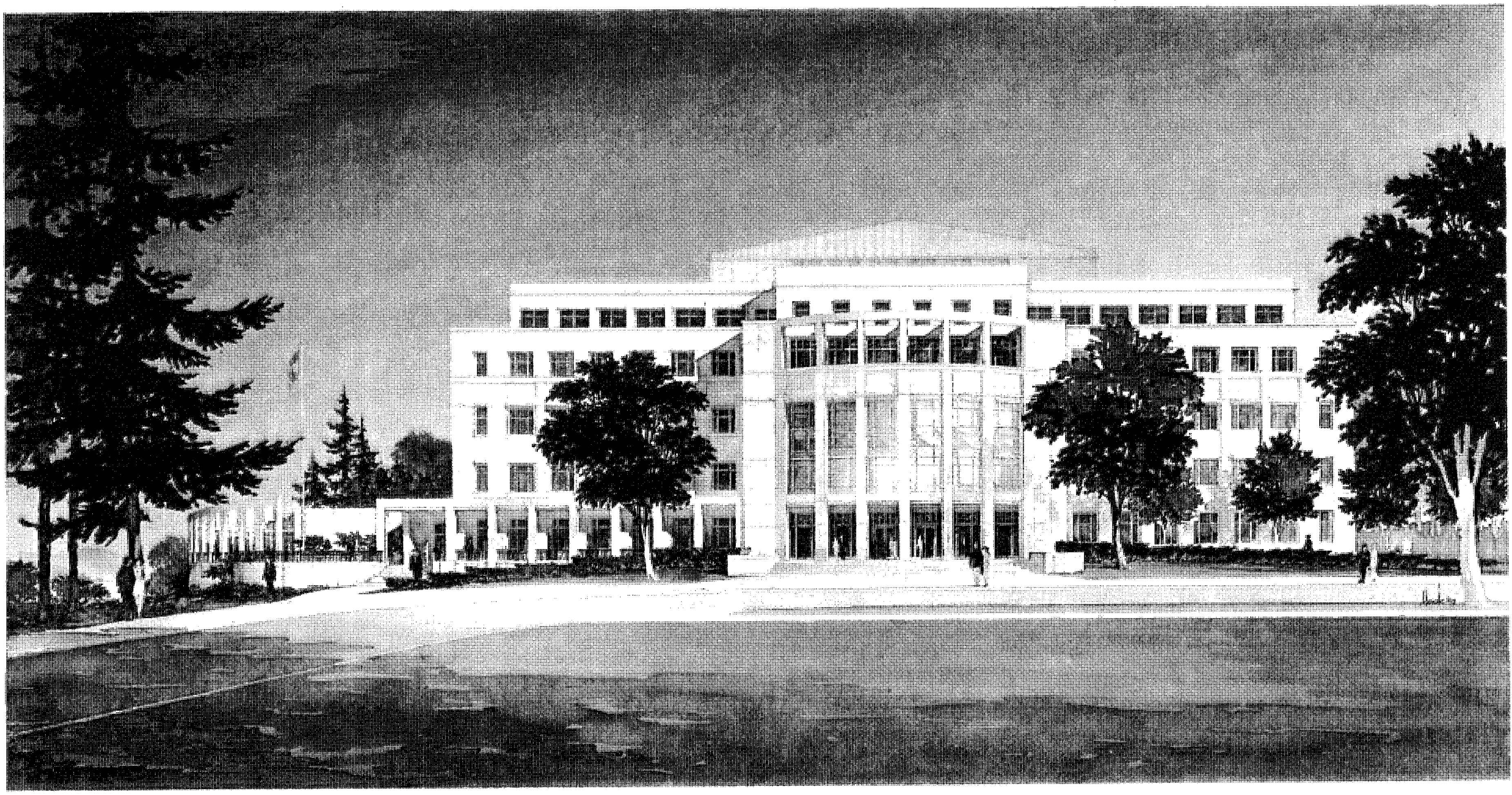
MASTER PLAN / SITE LOCATION

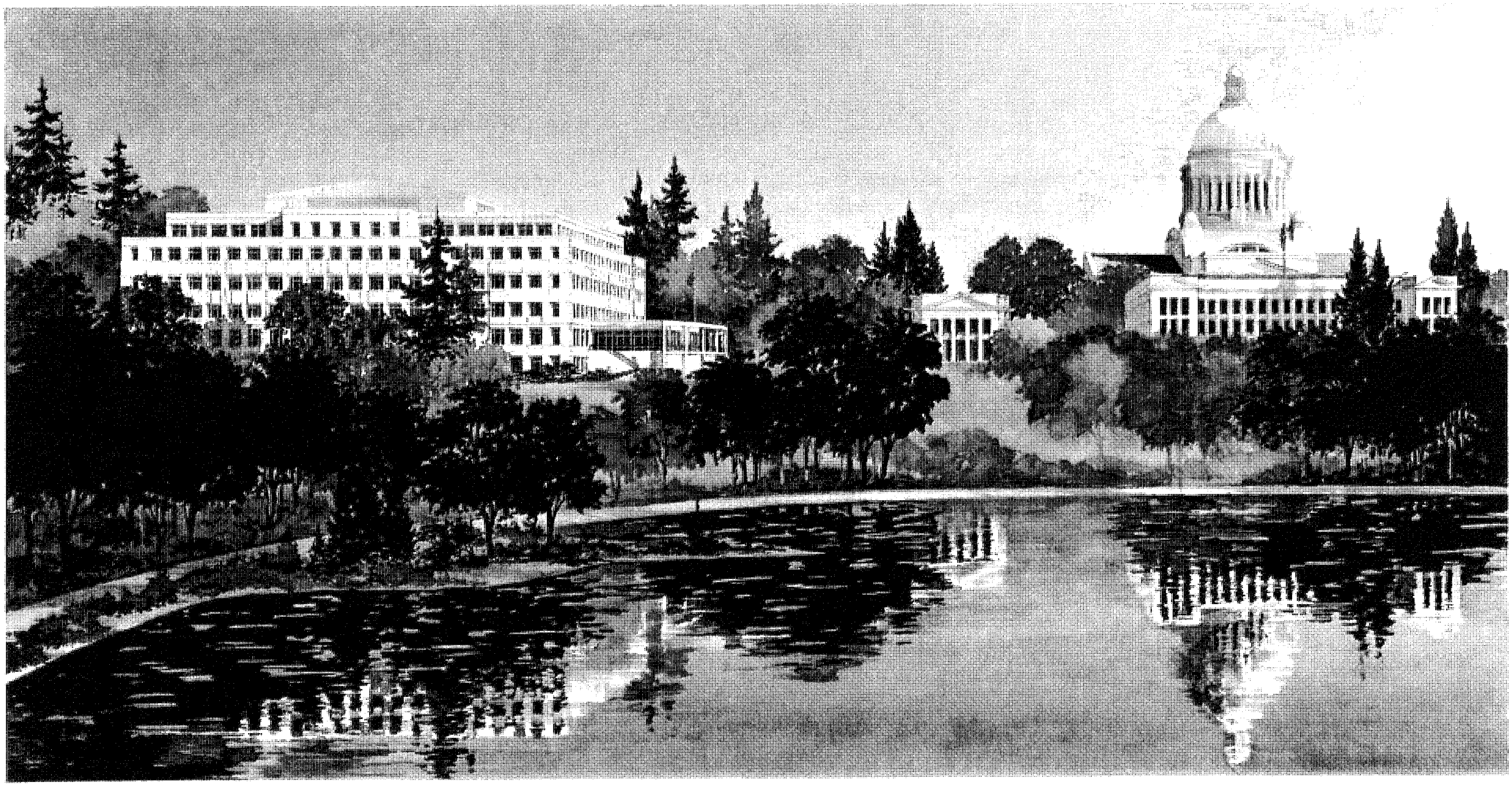
GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

JULY 1992





GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

JULY 1992

A. Project Description

Agency Name: General Administration

Agency Code: 150

Project Identifier: 94-3-005

Project Title: General Administration Building Renovation

B. Project Description and Scope

Mission

To provide quality, cost-effective support services for our customers in an environment that allows us to serve the public interest in the most efficient manner possible.

Goals

This renovation project would provide improved customer service by consolidating all management forces of General Administration in one facility. The consolidation would foster closer teamwork among the various departments and divisions by their proximity in a "state of the art" environment. The renovation would also provide space beyond General Administration requirements for state agencies with similar functions which need to be on the capitol campus, as designated in The Master Plan for the Capitol of the State of Washington.

Specific operational segments, such as General Administration's Office of Parking Services in the Division of Transportation Services, would remain at a remote facility to provide closer contact for its customer service base.

Renovation of the General Administration building will provide a facility that is technologically and environmentally adaptive, as well as consciously responsive to its exterior surroundings.

The scope of renovation work addressed in this study would bring the facility up to the latest requirements relative to:

- Building code issues.
- Fire code issues.
- Mechanical and plumbing code issues.
- Electrical code issues.
- Seismic corrections.
- Americans with Disabilities Act compliance.
- Hazardous material abatement.

- Indoor air quality.
- Energy efficiency.
- Telecommunications standards.

Transformation of the exterior facade will sensitively acknowledge the West Capitol Campus classical architecture by Wilder and White. The site development will be responsive to the landscape design by the Olmsted Brothers, and relate to the proposed adjacent developments in the master plan.

C. Background

Existing Facilities

The General Administration building is a stand-alone facility that will have no construction impact on other existing facilities.

Existing leased facilities will be vacated through consolidation of General Administration functions and make space available for those agencies that may not return to the General Administration building.

Previous Action Taken

Requests were made by General Administration in the Capital Budget Request and Six Year Facility Plan 1991-1997 for funding of the General Administration building renovation.

The request proposed funding in 91-93 for a predesign study, 93-95 for Phase I construction, and 95-97 for Phase II construction.

Legislative or Executive Intent

The information put forth in this predesign study is the result of funding approval granted in the 91-93 biennium request.

D. Analysis

Purpose of Project

The purpose of this project is two-fold:

- Provide a central, single-point access for our clients to all General Administration functions by consolidating the functions in one location.
- Renovate a 37-year-old facility to replace outdated and overloaded mechanical systems, electrical systems, and limited communications distribution paths; modify the facility to meet and/or exceed all resource conservation requirements; produce a facility that is environmentally safe; and improve inefficient/crowded work spaces and support facilities to a level consistent with modern office space design.
- Provide space for other tenants who need to have a close relationship to the Capitol Campus to consolidate their functions.

- Modify transportation routing, road alignments, landscaping and service areas in support of philosophies of The Master Plan for the Capitol of the State of Washington.

Project Solution

The project solution is made up of three components. They are:

- Complete renovation of the existing facility.
- Addition of specialized spaces on the west side of the existing facility.
- Addition of a fifth floor.

The project would be accomplished by vacating the facility for a period of 24 months.

The proposed project as a whole would have an expected useful life of 50 years. However, components within the facility, such as mechanical systems, would require attention after approximately 20 years.

The Predesign process required looking at the project through four costing procedures. Each procedure includes different components of costs, different initial year cost depending on when that cost will be occurring, and varying adjustment factors for escalating costs.

The four procedures, and components of its cost, are:

1. Estimated construction cost (building and site improvements).
2. 20-year life-cycle cost (includes estimated construction, operation and maintenance, and energy costs).
3. Capital budget cost (includes estimated construction cost, consultant services, equipment, project management, and other related costs).
4. Supplemental operating cost (includes moving, tenant improvements, temporary facilities and utilities).

Because of the variables in components of costs, initial year cost, and adjustment factor, different "total" dollars are presented in the study for each of the costing procedures. This is not a conflict in information.

The costs for each of the four costing procedures is presented here, with the appropriate adjustment factors.

Procedure	Initial Cost	Adjusted Cost
Estimated construction cost	$36,227,442	$39,901,269
20-year life-cycle cost	N.A.	$91,132,204
Capital budget cost	$54,587,061	$59,706,939
Supplemental operating cost	$4,478,658	$7,092,574

The costs associated with this project are based on the following timetable milestones:

- Legislative funding approval - July 1993.
- Design - July 1993 to April 1994.
- Start construction - June 1994.
- Complete construction - June 1996.

Alternatives Considered

There were eight alternatives considered, six with respect to the construction and two relative to tenant location.

For construction, they were:

- **Existing facility - no work. (Scheme A)**

  This alternative looked at the existing facility and any impacts if a major renovation did not occur. Two significant issues would cause major capital expenses. The mechanical and electrical systems are well beyond their useful lives, and would necessitate a capital expenditure of approximately $12 million, or more than 30 percent of the requested project construction funds. This level of funding would not begin to address the many code issues listed under **Goals** of this section.

- **Existing Facility - complete renovation. (Scheme B)**

  Complete renovation aptly describes this alternative. No portion of the facility would be left untouched. The renovation would provide as near to a new facility as is possible, without relocating major core elements.

- **Addition of a fifth floor. (Scheme C)**

  Space on Capitol Campus is at a premium. This addition would help to reduce the shortage of space while not using up valuable open space. With the desire to modify the exterior appearance to blend with the West Campus architecture, the addition would incorporate the current mechanical penthouses on a mezzanine platform and provide a "completed top" in the context of classical bottom/middle/top architectural design of other West Capitol Campus facilities. The General Administration Building is outside the established view corridors. Adding a fifth floor and penthouse would minimally affect views in corridors established by the "shadow" of the capitol dome.

- **Addition to west side of existing facility. (Scheme C+ West)**

  The addition would provide the benefit of placing fixed uses (such as auditorium/conference and cafeteria) in a space that can be isolated from the main facility for night time government and public use. At the same time, it allows the existing building to become more adaptable to flexible office space. The addition is desirable on the west side in relating to the master plan park on Capitol Lake.

- **Reorganize core support areas. (Scheme D)**

  This alternative looked at consolidating stairways, elevators, restrooms, corridors and other ancillary spaces in a centralized location. The alternative would provide a slight increase in space use efficiency.

- **New facility. (Scheme E)**

  A new facility would replace the existing building on the same site. The new facility would maximize space utilization as an office building, provide for greater structural spacing and open space flexibility, and a centralized core organization.

- **Site.**

  Modify transportation routing, road alignments, landscaping, and service areas in support of the Master Plan philosophies.

For tenant location, they were:

- **Phased construction - Schemes B, C, C+ West**

  Tenant occupancy of spaces not being renovated. When each phase of renovation is completed, tenants housed in the next phase would be relocated to the completed area. Phasing to occur over a 32 month period.

- **Vacate and construct - All Schemes**

  Tenant completely vacates facility for a period of 24 months.

Participating Organizations

The following agencies have been involved to varying degrees in this predesign study:

- General Administration
- State Auditor
- Community Development
- Department of Information Services
- Department of Printing
- Department of Revenue
- Trade and Economic Development
- State Treasurer
- Washington State Patrol
- City of Olympia Planning and Traffic Departments

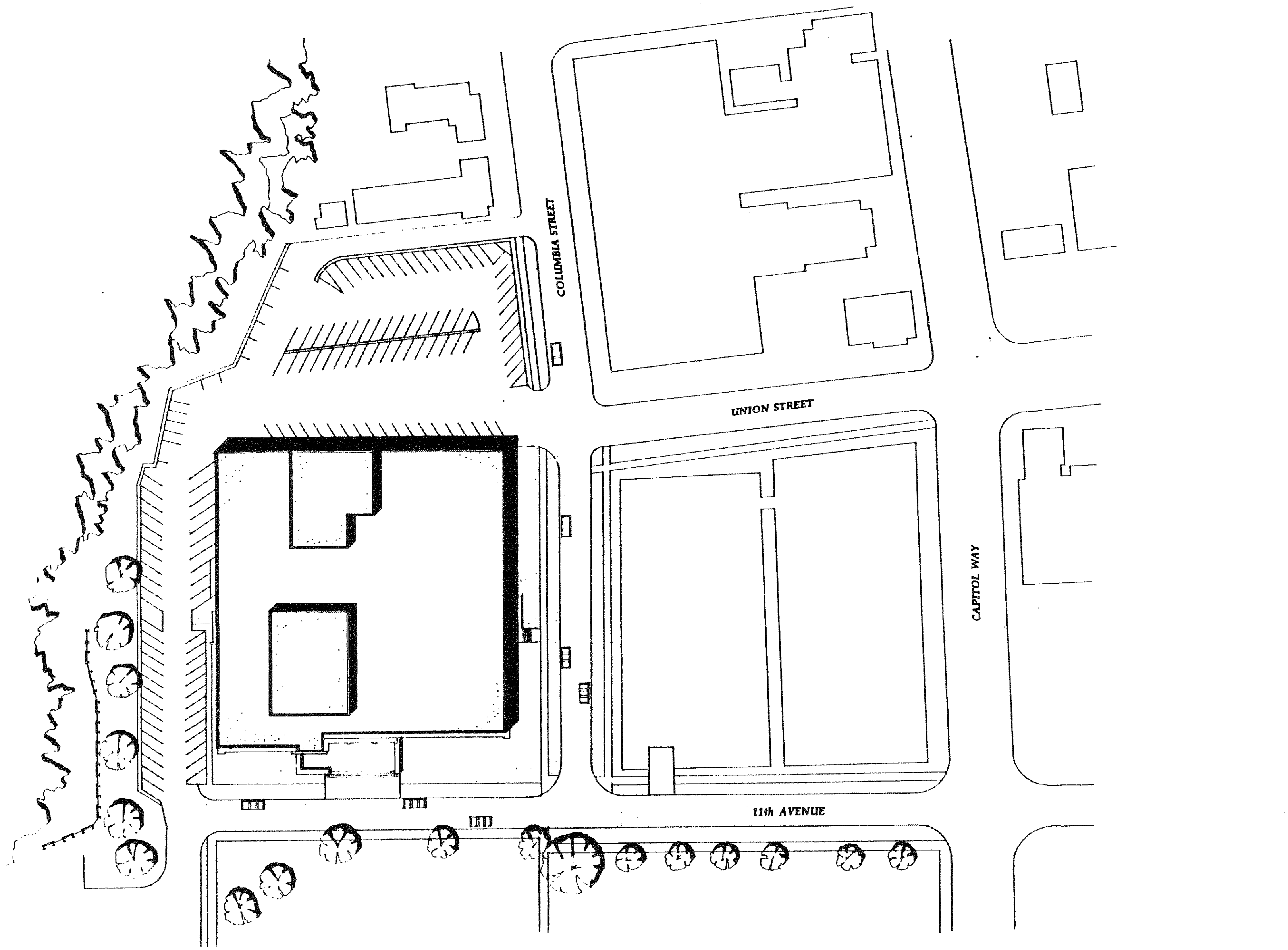
E. Schedule

Preplanning	April 1992
Start Design	July 1993
Design Mid-Point	November 1993
Start Construction	June 1994
End Construction	June 1996
Construction Mid-Point	June 1995
Project Mid-Point	January 1995

A. Assumptions

The existing GA Building houses portions of the Department of General Administration as well as portions of eight other state agencies. Data was collected through interviews with representatives of each of these agencies for entire agency space needs, including those currently not located in the GA Building, with the interest of consolidating those agencies in one location (when possible). While this has generated space needs far greater than the capacity of the GA Building, it will help to prioritize the allocation of space for agencies that require location in the GA Building.

Similarly, the special (computer room, conference area, exhaust) needs of each agency, use of common areas (cafeteria, auditorium, conference rooms, loading dock, wellness facilities), and public uses (visitor center, conference rooms, auditorium) were evaluated for suitability in the existing building type and infrastructure. It was assumed that each of these functions would be retained, although locations within the existing structure and any additional expansion structures could change.



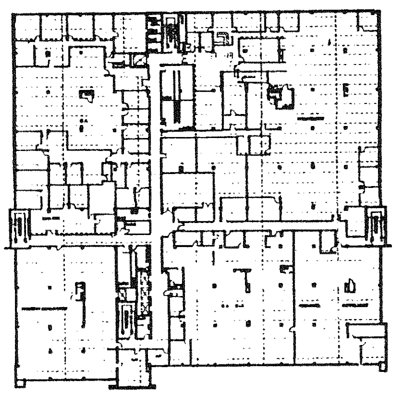
SITE PLAN • EXISTING

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

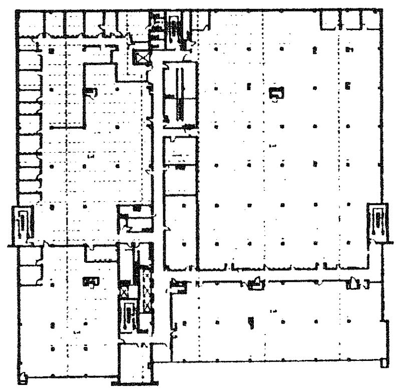
ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

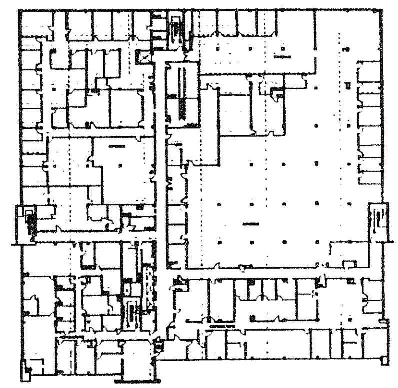
JULY 1992



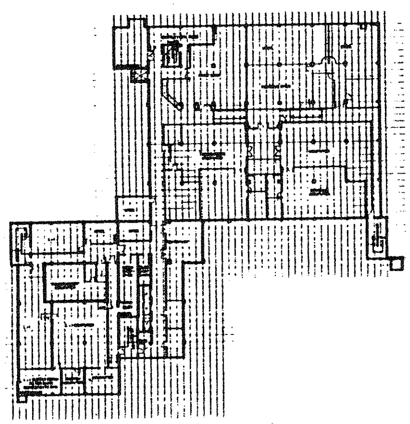
SECOND FLOOR PLAN



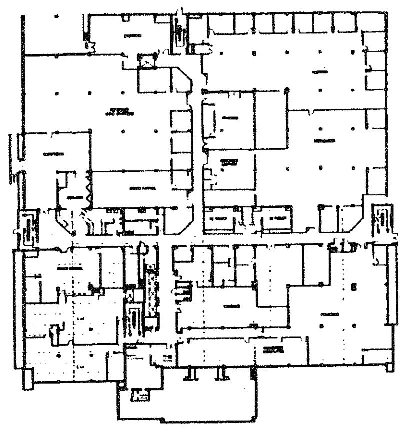
THIRD FLOOR PLAN



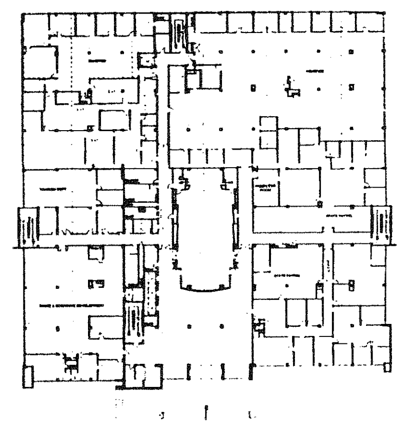
FOURTH FLOOR PLAN



BASEMENT PLAN



GROUND FLOOR PLAN



FIRST FLOOR PLAN

FLOOR PLANS • EXISTING

B. Existing Facilities

Utilities

- A 10-inch water main serves the intersection of Water Street and 11th Avenue. The flow data at Capitol Way and Cherry as tested in 1988 was 52 psi static, 1140 gpm at 27 psi residual and 1302 gpm at 20 psi residual. The water system has been upgraded since these tests were taken and the fire flows would now be greater than reported.
- The available water flows should be adequate to support a sprinklered building. The building expansion would require a sprinkler fire system. If the existing building is not sprinklered, a dedicate water line and vault with double check valves would have to be installed.
- An 8-inch sanitary sewer line is available along Water Street north to Union where it then flows easterly on Union. This line should provide adequate sewer capacity.
- Storm drainage appears to flow towards the northwest. On-site detention may be required to minimize/mitigate downstream runoff impacts.
- The water and sanitary sewer appear to be in good condition. Mr. Maher of the Public Works staff reports that the condition of all utilities is in good condition as far as he knows.
- Future plans. The City of Olympia Public Works Department has no plans at the present time to upgrade or change the utilities serving the GA Building.

Structural

The purpose of this study is to evaluate the existing structure for conformance to current building codes with respect to seismic performance and to investigate the vertical load capacity to accommodate a proposed 5th floor addition.

- **Structure Description:**

  The existing building is a six-story, 282,000-square foot office building originally constructed in 1954. The structure is composed of cast-in-place concrete with joist and beam floor framing, and concrete walls around the stair and elevator shafts. The exterior skin is composed of cast-in-place concrete spandrel beams with drop-in window frames. The foundation consists of spread footings.

- **Assumptions:**

  Our information for this building is based on the original construction drawings, dated 1954, which were supplied by the Department of General Administration, Division of Engineering and Architectural Services. We also performed a walk-through visual inspection of the building. Working with the information shown on the construction drawings, we have made many assumptions regarding materials and construction techniques based on knowledge we have gained through experience on other evaluation and renovation projects similar to the General Administration Building. We have not performed a complete structural review which would include testing and verification of the existing building materials, structural connections, foundations and soils conditions. The complete structural review items including, but not limited to, those listed here will be included in the scope of basic services for the design phase of the project.

- **Vertical Load-Carrying System:**

  The vertical load-carrying system consists of joist and beam floor framing spanning between columns with bearing walls located around the stair and elevator shafts and at the four exterior corners of the building. The columns and walls are supported on spread footings. The system as a whole has some reserve capacity to accommodate additional vertical loads resulting from the proposed renovations.

- **Lateral Force-Resisting System:**

  The lateral force-resisting system consists of the concrete walls functioning as shear walls. These walls were considered to provide the complete lateral force-resisting system with no additional contribution from the beams and columns.

  The building was first evaluated according to ATC-14, "Evaluating the Seismic Resistance of Existing Buildings". This document establishes criteria for the assessment of the life safety of existing buildings. The existing lateral force-resisting capacity is approximately one-half of that required to maintain an acceptable level of life safety according to ATC-14.

  The building was then evaluated for conformance with the provisions contained in the 1991 Uniform Building Code (UBC). The UBC provisions would be used for seismic upgrades of existing buildings and for new building design. The design level loading from the UBC provisions are higher than those prescribed in the ATC-14 assessment provisions. Also, the UBC provisions include requirements for special detailing of the structural elements which were not required in 1954 and do not exist in this building. Therefore, we conclude that the building does not conform to the current building code with respect to seismic performance.

Mechanical

- **Main Air Handling:**

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

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

Both systems were constant volume type systems until 1989, when the systems were retrofitted to provide some variable air volume (VAV) control and to improve zone circulation. Modulating dampers and static pressure control were added to the main supply and return fans, and zone series fans with zone modulating dampers were installed on each floor to provide from two to four VAV terminal zones per floor. Zone supply air temperature is controlled by modulating the amount of primary air, and zone supply air temperature is reset based upon zone return air temperature. In order to enhance air circulation, formerly deactivated system S-6/E-6, located in the north mechanical penthouse, was reactivated in series with system S-4/E-4, and with a new zone fan to serve the 1st floor NE.

- **Air Distribution/Delivery:**

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

System S-2/E-2 is a single zone, heating only system wh[illegible]st floor auditorium. It is located in the south penthouse.

System S-3/E-3 is a single zone, heating only system [illegible]0% outside air with no return air, which serves the 4th floor southw[illegible]griculture lab.

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

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

The southwest area of the basement is served by a constant volume multizone air handling unit provided with a central chilled water coil and zone steam heating coils. The "road runner" computer and the L & I computer are located in this area. In this case, chilled water for the supply fan coil is provided by two Trane chillers located in the south penthouse. Heat rejection from the is to once-through city water. Steam for the heating coils is provided from the central campus system. Outside air is taken in one floor above, at the southwest corner of the ground level. Air is distributed below the raised floor of the computer area but at the ceiling of adjacent areas. The space above the ceiling acts as a return air plenum.

- **Additional Ambient Cooling:**

A number of packaged, self-contained and city water-cooled spot coolers have been added over the years to enhance local comfort in various areas. Due to insufficient documentation, capacities of all the units have not been verified. The following is a list of these units:

Location	*Serve*	*Nominal Capacity*	*Type*
Basement North	Treasure Computer	10 ton	Liebert glycol cooled, installed 1984
Basement North	Revenue Computer	10 tons	Liebert glycol cooled, installed 1984
4th Floor Northwest	Revenue	?	Hideaway, glycol cooled
4th Floor Northwest	Revenue	?	Hideaway, glycol cooled
2nd Floor Northeast	Procurement	?	Westinghouse, city water cooled
3rd West Floor	L & I	?	Westinghouse, city water cooled
1st Floor West	Small Office Trade & Econ	?	?
1st Floor Southwest	Bigger Room Trade & Econ	??	
1st Floor Northeast	State Patrol Computer(s)	??	
1st Floor Northwest	L & I	?	Westinghouse unit, Trane Unit
1st Floor	Snackbar	?	?
Ground Floor South	Fisheries	??	
Ground Floor Southwest	L & I	??	

- **Transformer Rooms (Ventilation and Cooling):**

  There are two transformer rooms located in the basement. Transformer Room No. 1 is centrally located and Transformer Room No. 2 is located at the north perimeter of the building. It appears that there is currently no cooling available for either of the transformer rooms. They are, however, ventilated. Ventilation is achieved with a 4000 CFM fan which pulls outside air through Transformer Room No. 1 and discharges it to Transformer Room No. 2. Both rooms should be provided with cooling.

- **Heating:**

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

- **Plumbing:**

  The existing galvanized steel domestic water distribution system has been in place for 36 years. Our experience with similar systems has been that problematic water discoloration and line restriction due to corrosion takes place after as little as 15 to 20 years. State maintenance personnel confirm that this is a problem at the GA Building. A particular annoyance that was voiced during the survey was the leakage problem that persists at the lower terminus of the north plumbing chase on the 2nd floor. Occupied space on the 1st floor bears the inconvenience of any leakage there.

  The waste and vent systems are reported to be in good shape. The extent of reuse of these systems would depend on the scale and scope of any renovation.

  Domestic hot water is generated by an aging steam-fired hot water tank located in the ground floor south mechanical room, which has outlived its economically useful life.

- **Fire Protection:**

  Essentially the entire basement is sprinklered as are the public areas of the ground floor. None of the rest of the building is sprinklered.

The following deficiencies exist in the GA Building:

- **Air Handling/Distribution/Delivery:**

  Energy-wasteful system which does not meet comfort needs and air circulation rates required for occupants.

  Building uses approximately twice the energy per unit area that a similar, modern office building would use.

VAV zone resolution inadequate, noisy zone fans, no delineation between perimeter and interior zones.

Existing dual mode supply/return diffusers are inadequate and outdated.

Majority of ductwork is uninsulated.

Operable sash adversely affects cooling capacity.

Size of louvered outside air openings allows rain water entrainment, soaking filters.

Location of outside air intake near loading dock results in poor air quality.

Poor ventilation/balancing results in cafeteria smells migrating to all areas of building.

Very limited operator control due to lack of central coordinated control system.

Additional ambient cooling.

Too many once-through, city water-cooled spot coolers and chillers.

No separation of spot-cooling air circulation from main system cooling air.

No dedicated computer room and special-use cooling system.

Transformer rooms.

No cooling for rooms which require cooling.

- **Heating:**

Zone resolution inadequate, does not meet variable comfort needs.

Lack of control integration with air side allows simultaneous heating and cooling.

- **Plumbing:**

Galvanized domestic water distribution system corrosion and scaling result in flow reduction, leaks and discoloration.

Discontinuous pipe chase at 2nd floor results in leaks which affect occupied space below.

- **Fire Protection:**

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

Electrical

This report is prepared to describe the conditions of the existing primary and secondary electrical systems at the GA Building, based on a survey of the existing building's primary and secondary electrical distribution systems and discussions with maintenance and facilities personnel familiar with the electrical system of the building.

- **Power Systems**

  Electrical power is provided to the building via two underground feeders from Manhole PR outside the building to the south switchgear vault. The south switchgear vault contains the main 15kV fused disconnect switches that feed the two service transformers in this vault and one service transformer in the north vault. The north service transformer is a 750kVA, 12,470kVA, 12,470-208/120V, 3-phase dry type unit. The south vault service transformers are two 500 kVA, 12,470-208/120V, 3-phase dry type units. The transformers are loaded beyond maximum service capacity and are over-heating. The building electrical service is not in compliance with the current state electrical code.

  Both primary 5kV-400A-3 phase and secondary 208 volt 3 phase-2000A bussing switchboards in both service vaults are in poor condition and have reached the end of their useful service life and do not meet today's design and construction standards for equipment service.

  All 120/208V-3 phase lighting and power distribution panels are in poor condition and overloaded. This is due to load increases within the building from changes in usage and additions not anticipated in the original design. The panels are not in compliance with the current state electrical code.

  Most of the lighting and power distribution panels have no spare circuits to meet future load requirements.

  Emergency/stand-by diesel power generators, one (1) 80kW and one (1) 100kW-120/208V-3 phase are in fair condition, but are not large enough to handle any expansion and current code requirements. Also, the generators will have to be changed out to match the new 277/480V-3 phase power distribution service requirements.

  Uninterruptable Power Systems (UPS) supplying the twelve existing computer rooms and equipment are loaded to maximum capacity with no spare capacity for expansion of future load requirements. Existing equipment consists of various types and manufacturers which do not offer overall system compatibility and single source responsibility. Power system load priorities need to be established to segregate loads into essential and non-essential requirements, for sizing UPS system and stand-by generator power capacities.

- **Lighting:**

  All existing fluorescent lighting in the building is operating on the 208/120 volt power system. Conversion to 480/277 volt service will provide a more efficient lighting distribution system, but will require the replacement of all fixtures. Most of the fixtures do not have energy savings lamps and ballasts to meet state energy code requirements.

- **Data/Communications:**

  Existing computer cabling system is in poor condition and could not be used in connection of the proposed new data communications system requirements.

  Existing telecommunications distribution system is in poor condition and could not be retrofitted to meet additional and future systems requirements.

  The existing underfloor duct system used for routing and interconnection of the power, telephone and data communications cabling has reached its full capacity with no room for expansion for future requirements.

- **Fire Alarm:**

  Existing Fire Detection and Alarm system is in good operating condition, but it will not meet current code and future expansion requirements.

- **Other Systems:**

  A limited security/access control system exists which is insufficient for future needs.

Architectural

- **Exiting:**

  The existing GA Building is currently served by four exit stairs representing approximately 285 inches of stairwell width and 144 inches of doorway exit width per floor. While this aids in floor-to-floor access by stairwell travel, the required exit widths for this building are substantially less. A space premium is currently being paid due to the surplus stairs and associated circulation. Similarly, due to the location of three of the rour stairs on the building perimeter facade, valuable natural light is being deprived from interior spaces.

- **Elevators:**

  A study has been prepared by the Otis Elevator Company which evaluates the service level of the existing four building elevators (three passenger and one service). This study indicates that, with new elevator controls and replacement door operating mechanisms at each floor, the existing three passenger elevators cannot properly serve the demand of the renovated building. With an added fifth floor the service level would decrease further.

The addition of one elevator of a similar capacity to those existing would raise the uphandling capacity of the elevator system to 12.6 percent per five minutes (12 percent is considered minimum).

The existing freight elevator service is currently being compromised by passenger traffic. Due to the capacity and requirements of the GA Building, the existing freight elevator should be dedicated to freight use only.

- **Loading:**

  The existing loading area serves a maximum of two vehicles, with insufficient area dedicated to recycling and trash receptacles. Four additional spaces are desirable including two with dock levelers.

- **Handicapped Accessibility:**

  The existing building does not meet the current barrier-free code or provisions of the Americans with Disabilities Act (ADA). Unobstructed accessibility is currently restricted to the ground level at the east stairwell. The ADA requires that a minimum of 50 percent of building entries be accessible. It is desirable to make the south main entry barrier-free, as well as an entry adjacent to handicapped parking areas. Existing handicapped toilet rooms must be improved and increased in number on each floor as well as drinking fountain facilities. Public telephone capacity, with provisions for TDD's, must be increased and existing elevators must be made accessible.

- **Restrooms:**

  Existing restrooms for men and women on all floors are inadequate both from a fixture count and accessibility standpoint. While existing chase locations may be maintained, all walls, fixtures and piping will be replaced and reconfigured to meet code requirements. (See Code Analysis.)

- **Exterior Window:**

  Existing fenestration is comprised of aluminum operable-sash windows with no thermal break and with clear single glazing. This system is thermally very inefficient, offers no resistance to solar gain, and requires full replacement with the implementation of new exterior cladding.

- **Exterior Design:**

  Existing painted exposed concrete walls, corrugated form spandrels and columns require ongoing maintenance (painting) and lend an outdated appearance to the overall building that is not in context with the historical appearance of nearby capitol buildings. The existing concrete superstructure will support a number of insulated exterior cladding systems, including stone or architectural precast concrete.

- **Interior Systems:**

  - **Ceilings:**

    Conditions vary throughout the GA Building. While some areas have been recently renovated (partial ground floor, partial second floor), including suspended acoustic tile ceilings and indirect lighting, the majority of the building has exposed ceilings with dated, pendant mounted fluorescent fixtures and surface applied acoustic tiles in poor condition.

  - **Walls:**

    Fixed corridor walls and full height partitions are comprised of CMU and lath and plaster. Rated partitions have been compromised in numerous areas by through-wall penetrations. All non-loadbearing walls should be demolished in renovating the building; new walls for exit corridors and area separation can then be constructed to the proper rating. An older, demountable partition system is evident throughout the GA Building and is not targeted for reuse.

  - **Floors:**

    Existing floor surfaces consist of carpeting, VCT and terrazzo in varying degrees of condition. Most floor areas will be covered by a new raised floor system.

- **Existing Asbestos Abatement:**

  It has been determined that asbestos-containing materials exist in the GA Building and will require special abatement measures during demolition. An environmental services consultant has reviewed existing asbestos survey documents provided by the Department of General Administration and visited the site to verify these survey results and to inspect the physical characteristics of various locations throughout the General Administration Building. A report was prepared in which asbestos-containing materials were identified and categorized by area, type, quantity and recommended abatement methods.

  Asbestos-containing materials (ACM) were encountered on all floors and in the mechanical penthouse and included the following:

  - Thermal system insulation
  - Vibration dampener cloth (beneath ductwork)
  - Acoustical insulation
  - Fire door fireproofing
  - Floor tiles and mastic
  - Other miscellaneous ACM debris

Methods of recommended abatement include:

- Glove bag removal
- Mini-enclosure
- HEPA vacuuming
- Manual removal
- Full containment removal

Further study of abatement options for the vibration dampener cloth beneath ductworks is recommended. A small scale test of abatement methods for this material is recommended to determine safe and efficient abatement procedures.

While all areas of the GA Building were not accessible for inspection, and a more detailed survey will be required at the time of building vacation, a preliminary cost of $400,000 has been estimated for the removal of ACM present in the GA Building.

C. Code Analysis (Following Pages)

Code Analysis

Requirements	Existing	Proposed
Project Description The GA Building is located on the northern edge of the State Capitol West Campus facing the Capitol Building and Capitol Lawn to the south and west and Heritage Park and Capitol Lake to the west and north. It is bounded by Columbia Street to the east and Eleventh Avenue to the south. The existing concrete frame structure is 5 stories including the ground floor which is partially below grade, plus one partial floor basement level. Approximate gross areas of the building are: Level B 28,000 Level G 49.600 Level 1 49,600 Level 2 49,600 Level 3 49,600 Level 4 49,600 Mechanical Penthouses <u>9,000</u> Total 285,000		
Zoning Height Limit 120'	Building situated within special height district, City of Olympia Ordinance #31385.	
State Capitol Historic District	GA Building site is part of Capitol Campus and, as such, does not fall within City of Olympia zoning jurisdiction.	

Requirements	Existing	Proposed
Applicable Codes: 1991 Edition Uniform Building Code (UBC) 1991 Edition Uniform Plumbing Code (UPC) 1991 Edition Uniform Mechanical Code (UMC) 1991 Edition Uniform Fire Code (UFC) Latest Edition National Fire Codes (NFC NFPA) 1991 Washington State Energy Code (WAC 51-12) 1991 National Electrical Code (NFPA 70) WAC 296-46 Safety Standards NFPA 101 Life Safety Code 1991 Washington State Regulations for Barrier-Free Facilities (WAC 51-20) Americans With Disabilities Act (ADA) Latest Edition Washington Industrial Safety and Health Act Chap 296-24WAC, Chap 296-155WAC, Chap 296-62WAC	Note: 1995 Edition of Uniform Codes may be adopted prior to time permit application is made, and if so will be applicable code.	
Occupancy — UBC Table 5-A A-3 Building or portion of building having and assembly room with occupant load less than 300 without a stage...and not classed as a B-2 occupancy.	Existing Auditorium conference room on first floor is A-3.	Auditorium is A.3. Smaller conference rooms and Cafeteria, when occupancy exceeds 50, will be designated A.3.
B-2 ...office buildings...	Majority of building is B-2. Includes small laboratories (UBC 905 and 908 apply) and workshops.	All office space, including storage rooms, printing facilities with occupancy less than 50, and computer rooms will be designated B.2.
Occupancy Separations — UBC Table 5-B A-3 to B-2 None required. B-2 (Office) to B-2 (Labs) None required. B-2 to H-7 1 Hour	H-7 not desirable occupancy for GA Building.	

Requirements	Existing	Proposed
Requirements for Occupancies • A-3 (Chapter 6) — If located in basement or above the first level shall be 1 hour construction. — Panic hardware required on exit doors (See exception Sec 3318(a)). — Two exits required where occupant load greater than 50. Exits to be separated by 1/2 diagonal dimension of room. • B-2 — Laboratories require 1 hour separation.	Agriculture and State Patrol Crime Labs	No labs are programmed for the renovated building. No special provisions will be made.
— If quantities of hazardous materials exceed those in Table 9A or 9B occupancy is an H occupancy. If less, requirements of 905 and 908 apply. — Laboratories greater than 200 s.f. must have two exits and all portions of room must be within 75 ft. of exit. • Occupancy Loads (Table 33A) Assembly areas — 15 s.f./person Offices — 100 s.f./person Mech equipment rooms and storage rooms — 300 s.f./person		
Construction Type • 6 story building — Type I or II F.R.	II F.R. per allowable area; if mechanical penthouses project higher than 12′ except for elevators, Type I applies. Bldg. must be fully sprinklered. Existing structure is concrete (non-combustible).	

Requirements				Existing	Proposed
<u>Height Limits</u>	75' per UBC Section 1807 to be exempt from high-rise requirements.			Existing top floor 55' above lowest level of fire dept. access.	Level of added top floor 73' above lowest level of fire dept. access.
<u>Allowable Area</u>	Type II F.R. = 319,200 s.f. max Type I = Unlimited				Building qualifies for triple bonus due to setbacks, sprinklers, and multi-story status when considered Type II F.R.
<u>Requirements for Construction Type</u>	(Table 17-A)				
		<u>Type I</u>	<u>Type II F.R.</u>		
Exterior Bearing Walls		4 hour	4 hour		If fronting on public way or yard with width of 40 ft. or more may be unprotected if of non-combustible construction. Building complies ∴ non-combustible construction allowed.
Interior Bearing Walls		3 hour	2 hour		
Exterior Non-bearing Walls		4 hour	4 hour		See remark for exterior bearing wall.
Structural Frame		3 hour	2 hour		
Partition (Permanent)		1 hour	1 hour		May be of non-combustible construction. One or two hour non-bearing partitions may have fire treated wood within the assembly.
Shaft Enclosures		2 hour	2 hours		
Floors-Ceiling/Floors		2 hour	2 hour		
Roofs-Ceiling/Roofs		2 hour	1 hour		
Exterior Doors & Windows		No protection required if separated from adjacent building by 40 ft. or more.			
Roof Covering (Table 32A)		Class B			

Requirements	Existing	Proposed
Exits (Chapter 33)		
• Each floor requires minimum of 2 exits. If occupant level exceeds 500, 3 exits are required.	Each floor has 4 exits, only 2 required. Building exits are at ground level and Level 1.	Occupancy is less than 500; two exits are required per typical upper floor.
• Typical floor occupant load calculation at exit is:		
Level B = 200		
Level G = 406	Exits directly to grade via one exit.	
Level 1 = 750	Exits directly to grade via one exit.	
Level 2 = 406		
Level 3 = 406		
Level 4 = 406		
Level 5 (proposed) = 200		
• Minimum stairwell width in inches equals occupant load x .3.	Worst case upper floor occupancy 406. Existing stair width 228".	406 occupancy x .3 = 122" required for typical upper floors.
• Minimum exit width in inches equals occupant load x .2.	Existing exit width 128".	406 occupancy x .2 = 82" required for typical upper floors.
• Separate exits by 1/2 diagonal distance of building.	Complies	For multiple tenant layout, measure path of travel. For single tenant, measure direct distance.

Requirements	Existing	Proposed
<u>Exits (Chapter 33)</u> (Continued)		
• Maximum distance to exit in sprinklered building = 200′ or 300′ when last 150′ is within a corridor.	Complies	
• Exits may occur through one adjoining room except if cumulative occupant load less than 10, exit may be through more than one room.		Exit vestibules will be required in multiple tenant configuration.
• All exits must discharge directly to the building exterior (the rated stairway enclosure must extend to the exterior).		Note: For B-2 occupancy, 50% of exits may discharge through lobby.
• One stair must continue to roof.	Complies	
<u>Corridor Construction</u>		
• One hour construction with 20 minute self closing doors required.	Existing does not comply.	
• Glazing a maximum of 25% of wall area.		
<u>Elevators</u>		
• In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one exit...		
<u>Handicapped</u>		
• Comply with Washington State and Federal ADA requirements.		

Requirements			Existing	Proposed
Toilet Room Requirements				
Assumptions:				
• Occupancy per typical floor = 420				
first floor = 390 + 350 (Assembly) = 740				
• Male to female ratio 50/50 (UPC Appendix C factor for differential is already built in).				
• 1991 Uniform Plumbing Code. Appendix C governs.				
	Occupancy Typ floor (50%) 210	Occupancy 1st floor (50%) 195 + 175		
Men WC	7 (5 optional w ur.)	7 + 2 = 9 (2 x h.c.) (6 optional w/urinal)		
Men Urinal	4 (6 optional w/wc)	4 + 2 = 6 (9 optional w/wc)		
Men Lavs	6	5 + 1 = 6		
Women WC	8	8 + 8 = 16 (3 x h.c.)		
Women Lavs	6	5 + 1 = 6		
Drinking Fountains				
1 per 75, plus 150	4	6		

D. Space Requirements

GA Building Program: Methodology

The goals of this programming study, as related to the overall General Administration Building predesign study, were to:

- Identify each GA division and GA Building tenant agency's projected total staffing and total area for years 1992, 1995, 2000, 2005, and 2010.
- Distinguish between quantity and area of private office space and open office space.
- Distinguish between area of personal workspaces and support (i.e. auxiliary) areas.
- Generally identify areas having special or unique architectural character or system requirements relative to "office" space.

The intent of the study did not include development of detailed analyses of support areas, specialized rooms, or furnishings.

A standardized questionnaire was used to obtain programming information from each of the nine agencies. Input on the questionnaire was clarified through initial interviews with key personnel. The initial interview lasted one-half hour for each division of General Administration. For agencies participating as tenants, or prospective tenants, in the GA Building, the initial interview with key agency personnel averaged two hours. From those interviews, staffing projections and area requirements were tabulated in order to summarize the staffing and space requirements for respective agencies. The state standard allotments for office and workspace types and areas were utilized in these tabulations. A draft of the tabulations was presented to each of the key personnel, followed by a one-half hour meeting for each division/agency to confirm staffing and area requirements, general adjacency issues and building systems issues. Comments from this meeting were incorporated into the final program. In early May, a draft of this report was prepared and presented to the General Administration for review and comment.

This document reflects the final input of GA and the final tabulation of the staffing and area projections.

The Space Programming Summary Report follows this section. It contains staffing and area projections, extended through year 2010, by agency. It also summarizes current areas occupied by agencies, their adjacency requirements and issues relative to their space needs.

Immediately following the Summary Report are summary descriptions and projections for each General Administration division and each Tenant.
Part I - Common Area
Part II - General Administration
Part III - Tenants

Staffing, staff area, auxiliary area and circulation details are provided in the Appendix, Part D.

Summary

The existing GA Building houses portions of the Department of General Administration as well as portions of eight other state agencies. All of the agencies expressed a goal to consolidate their organizations into one location. The program has generated space needs far greater than the capacity of the GA Building. This data will help prioritize which agencies will be located within the GA Building.

A chart indicating the possible future assignment of space within the renovated GA building has been included at the end of Part I - Executive Summary.

Space Programming Summary Report

Unit Number	Company	Personnel 1992	1995	2000	2005	2010	Sq Ft Extg	1992	1995	2000	2005	2010	
1.0.0.0.0.0	General Admin	350	392	405	414	429	111067	107133	117565	120887	122021	124238	*
2.0.0.0.0.0	State Auditor	60	60	71	71	79	21658	17409	17409	19074	19074	20018	
3.0.0.0.0.0	Community Develop	333	399	534	534	534	73194	91905	101483	120757	120757	120757	
4.0.0.0.0.0	Dept Info Services	0	0	0	0	0	1256	0	0	0	0	0	**
5.0.0.0.0.0	Printing Services	5	5	5	5	5	2688	2688	2688	2688	2688	2688	
6.0.0.0.0.0	Dept of Revenue	618	731	803	864	864	127850	148794	165287	175768	184860	184860	
7.0.0.0.0.0	Trade & Econ Dev	58	64	69	73	76	13880	18669	19422	20565	21434	21836	
8.0.0.0.0.0	State Treasurer	52	67	74	78	83	17836	16744	18796	19675	20153	20765	
9.0.0.0.0.0	State Patrol	413	467	494	563	639	60210	106549	112799	115767	124684	134452	***
Report Total		1889	2185	2455	2602	2709	429639	509891	555449	595181	615671	629614	

* Includes 23,748 sf of common area. Does not include 8,009 sf in 1995, 8,312 sf in 2000, 2005 and 2010 for General Administration's Division of Transportation Services. A portion of the Division of Transportation Services needs to be adjacent to their vehicles for maximum efficiency and to prevent duplication, while the administrative segment will be located in the GA Building.

** Department of Information Services (DIS) will be relocated from the GA Building. DIS has determined it to be too costly to move back into the building after renovation.

*** Includes the following portion of State Patrol that could remain in the GA Building:

1992 - 24,203 sf
1995 - 26,708 sf
2000 - 27,305 sf
2005 - 27,877 sf
2010 - 28,126 sf.

NOTE:

Total square footages shown include 15 percent primary circulation space. Assignable space would be derived by reducing the space allocation figures by the 15 percent. In addition, General Administration assignable space would be reduced an additional 23,748 sf for common areas.

Assignable square foot requirements are shown in the Executive Summary Space Assignment chart.

Part 1. Common Areas

		SF
1.	Cafeteria • seating for 100 persons • full service cafeteria with grille, deep fryer • breakfast and lunch service	3000 SF
2.	Auditorium • seating for 350 persons • adjacent 50 person conference room, divisible into 2 smaller conference rooms • stage • flexible seating on flat floor; sloped floor too limiting • rear projection and complete audio visual	3550 SF
3.	Conference Center	2400 SF
4.	Press Room/Conference Room • seating for 30-40 persons • complete audio visual capabilities • located on first floor	600 SF
5.	Showers • 6 showers each for men and women • lockers • located with wellness area	350 SF
6.	Wellness Area - space allocated for: • 6 exercise bikes • 4 rowing machines • 4 stair masters • aerobics area for 16	1500 SF
7.	Public Telephones • 10-12 telephones	120 SF
8.	Visitor/Information Center	2000 SF
9.	Lobby • for Circulation and Display	3000 SF

Part 2. General Administration

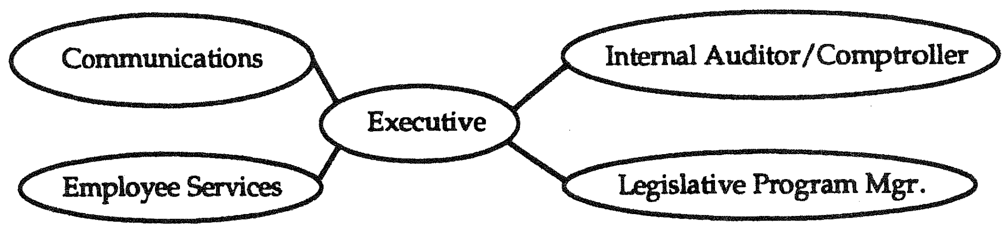
1. Executive Management
2. Communications
3. Risk Management
4. Transportation Services
5. State Procurement
6. Engineering and Architectural Services
7. Information Systems
8. Savings & Loan Associations
9. Property Development
10. Support Services
11. Comptroller's Office
12. Employee Services
13. Banking
14. Capitol Facilities

1. EXECUTIVE MANAGEMENT

a. Provides the Executive direction to the Department of General Administration. There are 14 divisions or offices within the Department of General Administration.

b. The Executive offices are currently housed on the second floor of the GA Building. The physical space functions fairly well, although the Deputy Director's offices are not large enough to accommodate the various functions and duties required. The reception area has too much cross traffic due to existing door placement.

c. *Internal Adjacencies (within Building)*



External Adjacencies

A goal of General Administration is to consolidate all the appropriate divisions within 1 building. The Executive offices should be located on the top floor in the same corner of the building they currently occupy.

All Executive Staff uses computers. One conference room to accommodate 5-10 is located within the Executive Area. This is shared with Communications, since the Communications Director is a member of the Executive Staff. The Press Room/Conference Room will be located on the first floor with complete audio visual and media services. The Press Room/Conference Room is listed in Part 1 Common Areas since it will be shared by the entire building. The Executive Staff will have priority use of the room for press conferences and official announcements.

1. EXECUTIVE MANAGEMENT continued

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	2006	2174	2174	2174	2174
Open Office	732	854	854	854	854
subtotal	2738	3028	3028	3028	3028
circulation (35%)	958	1059	1059	1059	1059
Workplace total	3696	4087	4087	4087	4087
Auxiliary Areas	809	809	809	809	809
circulation (25%)	202	202	202	202	202
Auxiliary total	1011	1011	1011	1011	1011
Workplace and Auxiliary total	4708	5098	5098	5098	5098
circulation (15%)	706	764	764	764	764
Grand Total	5414	5862	5862	5862	5862

d. Growth is expected to be minimal with an increase of two staff through the year 2010.

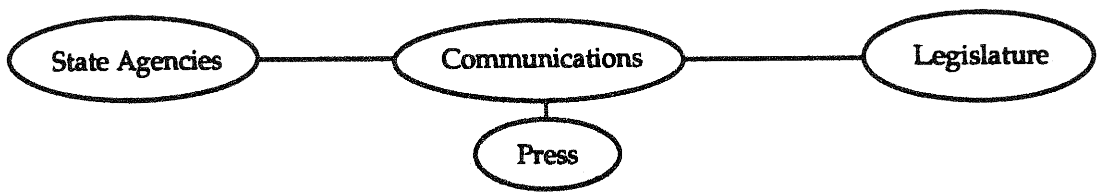
2. COMMUNICATIONS

a. The Communications Division is responsible for the media relations and communications of the entire agency.

b. Presently located on the second floor of the GA Building, adjacent to the executive offices. This relationship needs to be maintained because the Communications Director is a member of Executive Management. Lighting and auxiliary support spaces are inadequate.

c. ***Internal Adjacencies (within Building)***

External Adjacencies



All Communications Staff are computer users. The Communications conference room is located within the Executive Division. The workroom will contain a sink and light table.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	224	224	224	224	224
Open Office	528	528	528	528	528
subtotal	752	752	752	752	752
circulation (35%)	263	263	263	263	263
Workplace total	1015	1015	1015	1015	1015
Auxiliary Areas	360	360	360	360	360
circulation (25%)	90	90	90	90	90
Auxiliary total	450	450	450	450	450
Workplace and Auxiliary totals	1465	1465	1465	1465	1465
circulation (15%)	220	220	220	220	220
Grand Total	1685	1685	1685	1685	1685

d. Staff levels are anticipated to remain constant through the year 2010.

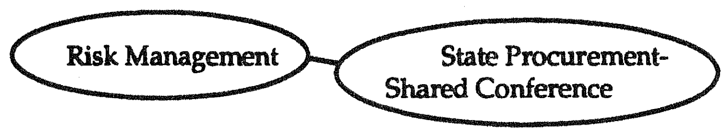
3. RISK MANAGEMENT

a. Risk Management accepts all liability claims against the state of Washington. It manages all claims and investigates claims under $25,000. Risk Management purchases commercial insurance for all agencies and administers the State self insurance pool. It also provides loss control for all state agencies.

b. Currently Risk Management is housed on Bristol Court. They are the only tenant on the second floor and after hours secure the elevator. They occupy space as a tenant with offices and partitions securing their space.

Their area must be secured 24 hours a day, located on an upper floor away from the public. The entrance must be controlled. The line of security begins at the reception area where all visitors are screened. One conference room has been dedicated to Risk Management for small meetings. The need for a large conference room to seat 20-22 persons has been achieved by sharing this room with State Procurement. The large conference room is indicated in the space requirements for State Procurement. Ideally, they would be located on the same floor, although this is not mandatory. Everyone within the division interacts with each other. All staff uses computers daily. The storage area must be secured due to the confidential nature of the claims files.

c. *Internal Adjacencies (within Building)*



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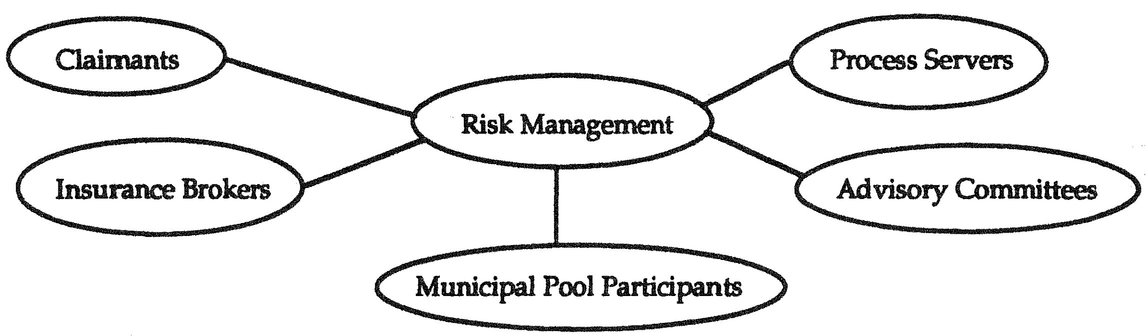


3. RISK MANAGEMENT continued

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	1592	1792	2092	2092	2092
Open Office	801	898	1117	1117	1214
subtotal	2393	2690	3209	3209	3306
circulation (35%)	838	941	1123	1123	1157
Workplace total	3231	3631	4332	4332	4463
Auxiliary Areas	1368	1468	1368	1368	1368
circulation (25%)	342	342	342	342	342
Auxiliary total	1710	1710	1710	1710	1710
Workplace and Auxiliary total	4941	5341	6042	6042	6173
circulation (15%)	741	801	906	906	925
Grand Total	5682	6142	6948	6948	7098

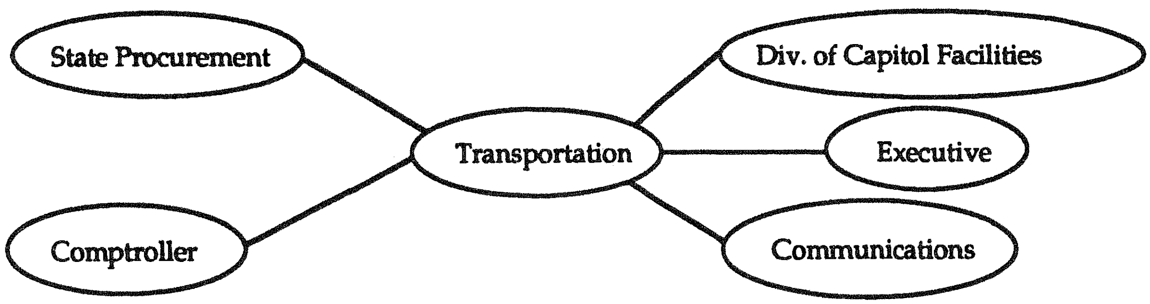
d. Staff levels are anticipated to increase by 12 through the year 2010.

4. TRANSPORTATION SERVICES

a. The Division Of Transportation Services provides transportation services to state government agencies. These services include parking management, motor pool service, mail service, information analysis, commute trip reduction planning and transportation demand management.

b. Currently, the Office of Parking Services is located in the Plaza Garage which is immediately accessible to more than 50 percent of its campus customers and accessible to an additional 1,000 parkers when the Natural Resources Building opens. Four vehicles are secured in the old Motor Pool Services bay which provides electricity for two electric vehicles. By relocating to the GA Building, four employee spaces will be given up to Division of Transportation Services (DTS). The remainder of the Division of Transportation Services is located off the Capitol Campus in a 13,000 square foot facility at Fones Road, in Lacey, Washington.

c. ***Internal Adjacencies (within Building)***



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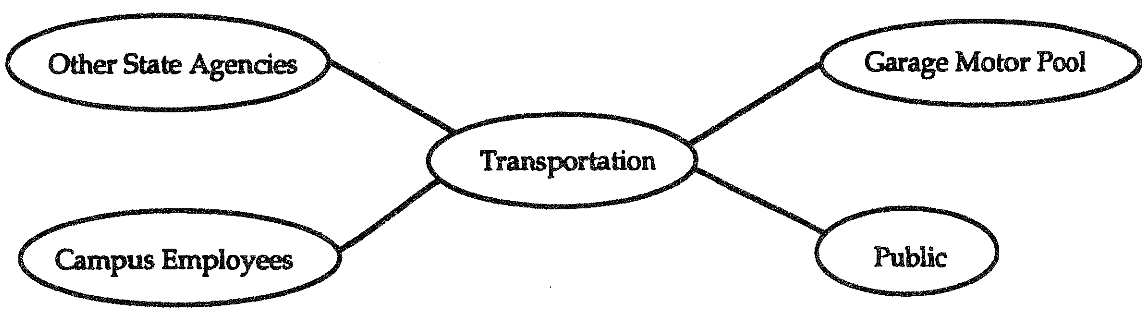


It is a goal of the division to keep all functions together, though it is possible, but not desirable, to locate the Office of Parking Services in the GA Building. If the program is relocated, the ground floor with easy access to vehicles is the desired location. Easy access for the public is also necessary for the dispersing of passes, permits and registration forms. A secure area for radios and money is required. The consolidated Mail Services Program dictates a separate facility in close proximity to the U.S. Postal Service.

4. TRANSPORTATION SERVICES continued

Two conference rooms are required. All office personnel use computers daily. A dispatch office is necessary. Offsite storage is required for materials currently stored in the vault and computer data base backup.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	864	864	864	864	864
Open Office	1770	2365	2560	2560	2560
subtotal	2638	3229	3424	3424	3424
circulation (35%)	923	1130	1198	1198	1198
Workplace total	3561	4359	4622	4622	4622
Auxiliary Areas	1771	2084	2084	2084	2084
circulation (25%)	443	521	521	521	521
Auxiliary total	2214	2605	2605	2605	2605
Workplace and Auxiliary Total	5775	6964	7227	7227	7227
circulation (15%)	866	1045	1084	1084	1084
Grand Total	6641	8009	8312	8312	8312

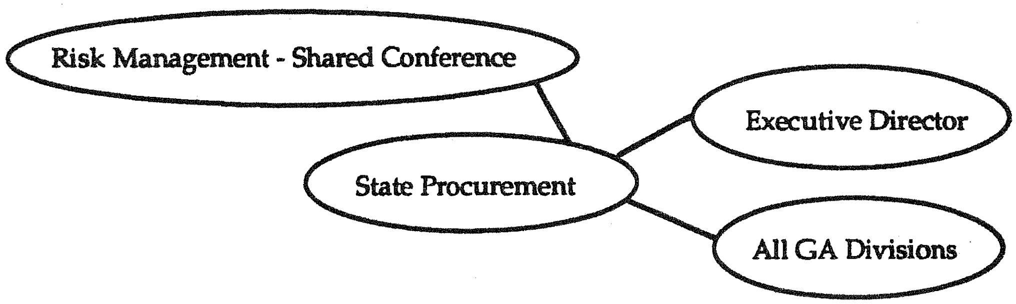
d. Staff levels are anticipated to remain constant through the year 2010.

5. STATE PROCUREMENT

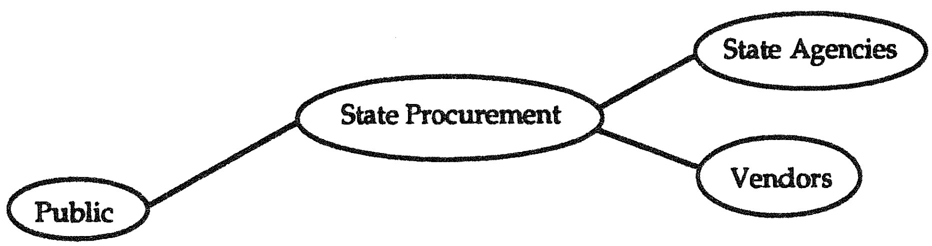
a. The Office of State Procurement is responsible for the development and administration of contracts and purchase orders for all state agencies.

b. Presently the Office of State Procurement is located on the second floor of the GA Building. The modular furniture workstations function well for the type of work being performed. The space is tight and lighting inadequate. State Procurement handles a large quantity of bid openings with large numbers of participants. The conference room space presently available for this is tremendously inadequate.

c. *Internal Adjacencies (within Building)*



External Adjacencies



The greatest deficiency of this division is the need for available conference rooms. To accommodate this, five dedicated conference rooms have been provided and one large bid room which will be shared with Risk Management. Several large bid openings are held every week, often with several in one day. Hard copies of records must be maintained within the division. Many contracts are ongoing for up to five years, increasing the size of filing. The entire staff uses computers.

5. STATE PROCUREMENT continued

	1992	1995	2000	2005	2010
Private Office	168	168	168	168	168
Open Office	5290	5484	5962	6610	7056
subtotal	5458	5652	6130	6778	7224
circulation (35%)	1910	1978	2146	2372	2528
Workplace total	7368	7630	8276	9150	9752
Auxiliary Areas	2950	2950	2950	2950	2950
circulation (25%)	738	738	738	738	738
Auxiliary total	3688	3688	3688	3688	3688
Workplace and Auxiliary Total	11056	11318	11963	12838	13440
circulation (15%)	1658	1698	1794	1926	2016
Grand Total	12714	13015	13757	14763	15456

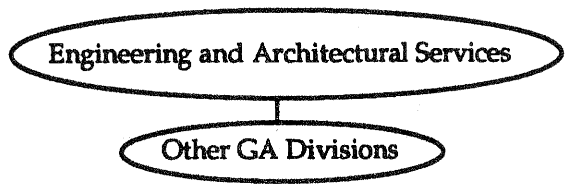
d. Staff levels are anticipated to increase by 19 through the year 2010.

6. ENGINEERING AND ARCHITECTURAL SERVICES

a. The Division of Engineering and Architectural Services is responsible for capital project management and capital budget planning.

b. Engineering and Architectural Services are located on the second floor of the GA Building. The existing space is well organized and workstations are contained with low partitions, not a furniture system. E & A Services have a high level of outside traffic which require easy access and conferencing spaces. Bid openings and oral interviews, and consultant/contractor meetings occur daily. Parking for visitors has been identified as a problem.

c. *Internal Adjacencies (within Building)*



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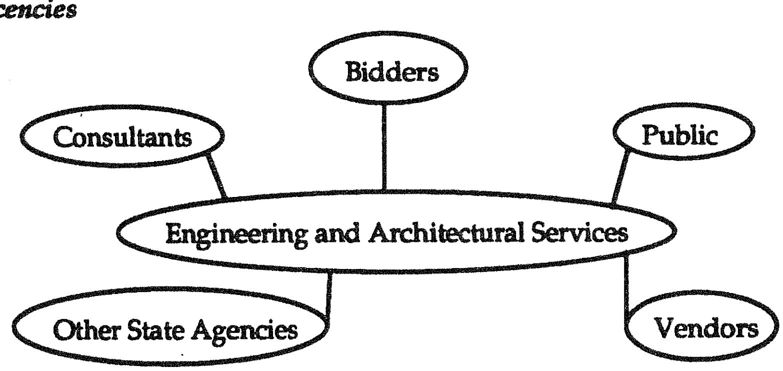


To satisfy the large number of conference requirements a bid room, and six conference rooms have been included. The conference rooms must provide audio visual and presentation capabilities. File area does not need to be enclosed but allow for locking files.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	728	728	728	728	728
Open Office	5934	6638	6638	6638	6638
subtotal	6662	7366	7366	7366	7366
circulation (35%)	2332	2578	2578	2578	2578
Workplace total	8994	9944	9944	9944	9944
Auxiliary Areas	5208	5588	5673	5693	5693
circulation (25%)	1302	1397	1418	1423	1423
Auxiliary total	6510	6985	7091	7116	7116
Workplace and Auxiliary total	15504	16929	17035	17060	17060
circulation (15%)	2326	2539	2555	2559	2559
Grand Total	17829	19468	19591	19619	19619

6. ENGINEERING AND ARCHITECTURAL SERVICES continued

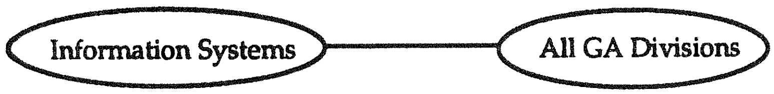
d. Staff levels are anticipated to increase by seven through the year 2010.

7. INFORMATION SYSTEMS

a. The role of Information Systems is to set up, maintain and support computer information systems within General Administration.

b. Information Systems is located on the second floor of the GA Building. The space is tight, workstation size and condition is inconsistent. Most of the staff is working in undersized work spaces and have become more crowded as staff has been added. Training and storage areas are very inadequate. Lighting is poor for high computer usage.

c. ***Internal Adjacencies (within Building)***



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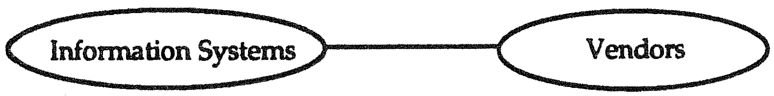


Information System's staff work in project teams. Management of these teams is hands-on requiring close proximity. Space planning needs to allow for reassignment of personnel within teams. Daily interaction is necessary with all GA Divisions to support the computer network and provide technical and hardware assistance. Applications support tends to be project based.

Information Systems should be located centrally to all Divisions to centralize the platform and limit distances of cable run. The workroom requires dedicated and isolated power. The computer room requires access floor, environmental controls, 220 dedicated and isolated power and security. A PC network land file server will be located in a phone closet in each division.

Reception and storage needs could be collocated with other divisions. A dedicated training room has been programmed which would allow for computers to remain set up.

	1992	***1995***	***2000***	***2005***	***2010***
Private Office	344	344	344	344	344
Open Office	1507	2057	2122	2122	2122
subtotal	1851	2401	2466	2466	2466
circulation (35%)	648	840	863	863	863
Workplace total	2499	3241	3329	3329	3329
Auxiliary Areas	1800	3653	4703	4703	4703
circulation (25%)	450	913	1176	1176	1176
Auxiliary total	2250	4566	5879	5879	5879
Workplace and Auxiliary total	4749	7808	9208	9208	9208
circulation (15%)	712	1171	1381	1381	1381
Grand Total	5461	8979	10589	10589	10589

7. INFORMATION SYSTEMS continued

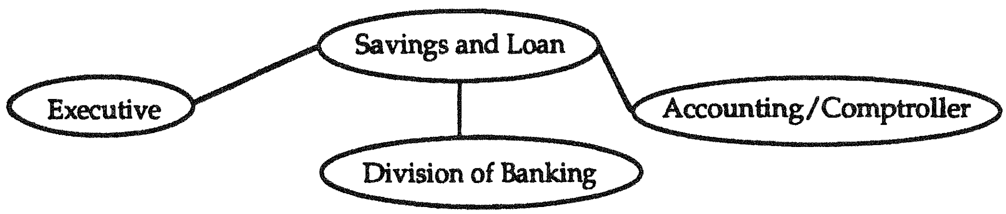
d. The size and growth of Information Systems is directly dependent on the growth and requirements of the agency. The largest increase has come from applications demand. Four years ago, the agency had 35 PC's and today has 450 PC's. Staff levels are anticipated to increase by seven through the year 2010.

8. SAVINGS AND LOAN ASSOCIATIONS

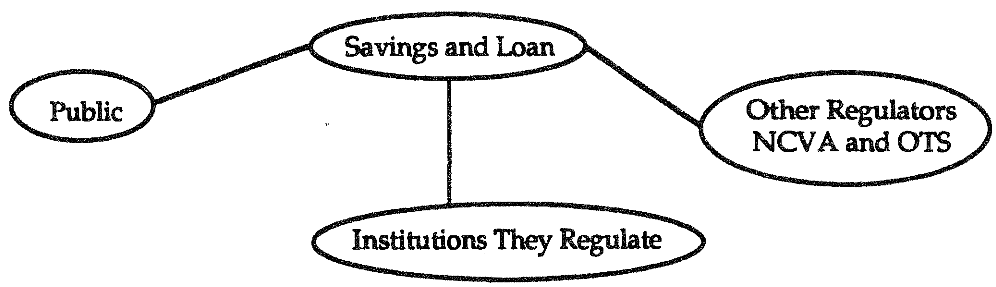
a. The Division of Savings and Loan Associations is the regulator of credit unions and savings and loans.

b. The division is currently located on South Evergreen Park Drive. Their computer is tied into the banking computer main frame.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



Eight of the 13 staff members work out of their private residences and require one shared work space for their use when in the office. The file room requires security for confidential reports. The conference room could be shared with others on the same floor.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	344	344	344	344	344
Open Office	374	374	374	374	374
subtotal	718	718	718	718	718
circulation (35%)	251	251	251	251	251
Workplace total	969	969	969	969	969
Auxiliary Areas	378	378	378	378	378
circulation (25%)	95	95	95	95	95
Auxiliary total	473	473	473	473	473
Workplace and Auxiliary total	1442	1442	1442	1442	1442
circulation (15%)	216	216	216	216	216
Grand Total	1658	1658	1658	1658	1658

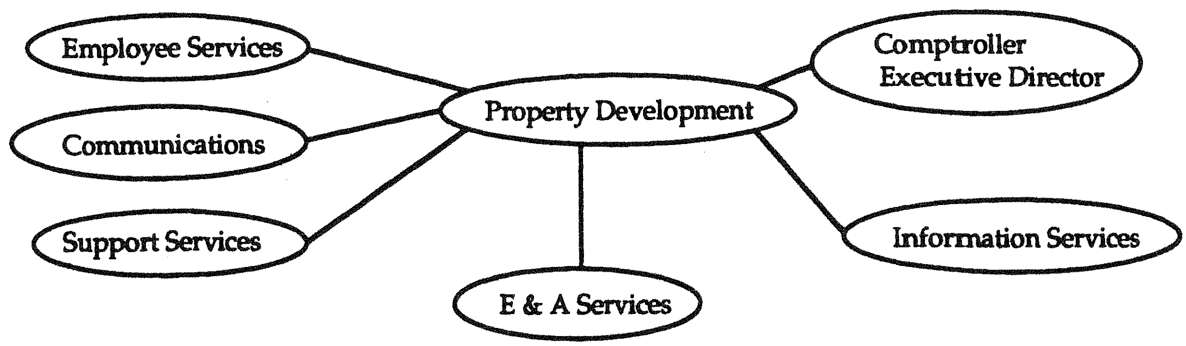
d. Staff levels are anticipated to remain constant through the year 2010.

9. PROPERTY DEVELOPMENT

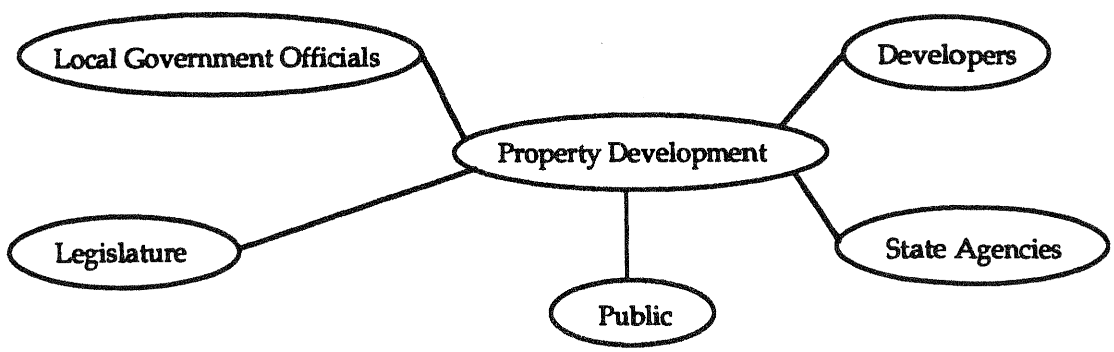
a. The Division of Property Development is responsible for acquiring and disposing of real property for state agencies, leasing space for state agencies and designing and ensuring minimum state space standards are met. The division also manages state-owned property located away from the Capitol Campus.

b. Presently located on the second floor of the GA Building. The space is well organized but needs to be flexible to accommodate growth.

c. *Internal Adjacencies (within Building)*



External Adjacencies



Locked separate file room is required for legal documents. Majority of staff uses computers. Blueprint machine does not require any special mechanical requirements. Two conference rooms are required and used heavily for negotiations. Both rooms require a speaker phone, computer outlet and audio visual capabilities. A large conference room to seat 45 is needed monthly. One available in the common area of the building would satisfy this need.

9. PROPERTY DEVELOPMENT continued

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	392	392	392	392	392
Open Office	4416	6539	6343	6343	6931
subtotal	4808	6931	6735	6735	7323
circulation (35%)	1683	2426	2357	2357	2563
Workplace total	6491	9357	9092	9092	9886
Auxiliary Areas	1688	1688	1688	1688	1688
circulation (25%)	422	422	422	422	422
Auxiliary total	2110	2110	2110	2110	2110
Workplace and Auxiliary total	8601	11467	11202	11202	11996
circulation (15%)	1290	1720	1680	1680	1799
Grand Total	9891	13187	12883	12883	13795

d. Growth for the Efficiency Commission is projected at 14 additional staff in 1994 with seven positions being required only for an 18-month period. Two additional positions are required in 1994 for Collocation Implementation and one position for the Land Bank. Staff levels are anticipated to increase by 25 through the year 2010.

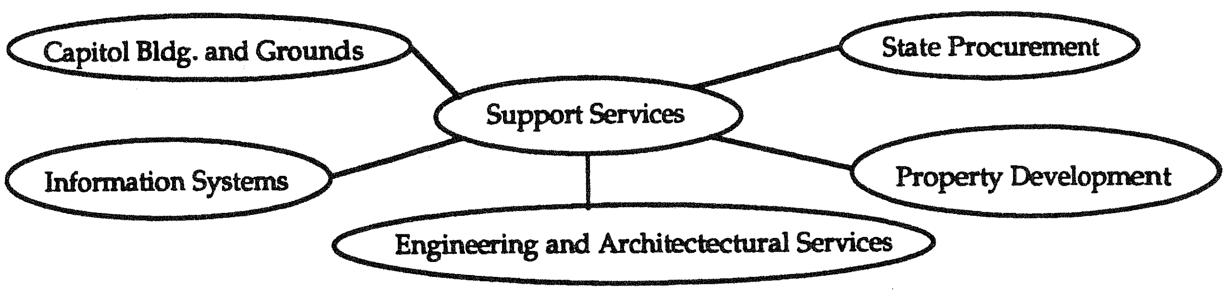
10. SUPPORT SERVICES

a. Support Services provides facilities management, contracts, property management, centralized office supplies and equipment, records management and agency mail delivery service.

b. Support Services is currently located on the ground floor of the GA Building. The space is windowless, has poor ventilation and workstations are a combination of panel systems and old freestanding desks.

The first floor is a preferable location because of the need for windows, and vertically located in close proximity to the loading dock and freight elevator. A ground floor location would be acceptable only if windows can be provided.

c. ***Internal Adjacencies (within Building)***



External Adjacencies

All staff use computers. Support Services will contain the central storage and supply for all GA divisions located within the Building. This will free up valuable space on office floors, reduce duplication of both space and materials. This space needs to be located adjacent to the freight elevator in a locked area.

Centralized mail for all GA Divisions would be delivered to Support Services and then distributed.

The loading dock needs to have three loading areas, two of which are hydraulic. A recycling bin and trash receptacles are also located in the dock.

10. SUPPORT SERVICES continued

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	464	464	464	464	464
Open Office	716	716	716	716	716
subtotal	1180	1180	1180	1180	1180
circulation (35%)	413	413	413	413	413
Workplace total	1593	1593	1593	1593	1593
Auxiliary Areas	1434	1434	1434	1434	1434
circulation (25%)	359	359	359	359	359
Auxiliary total	1793	1793	1793	1793	1793
Workplace and Auxiliary total	3386	3386	3386	3386	3386
circulation (15%)	508	508	508	508	508
Grand Total	3893	3893	3893	3893	3893

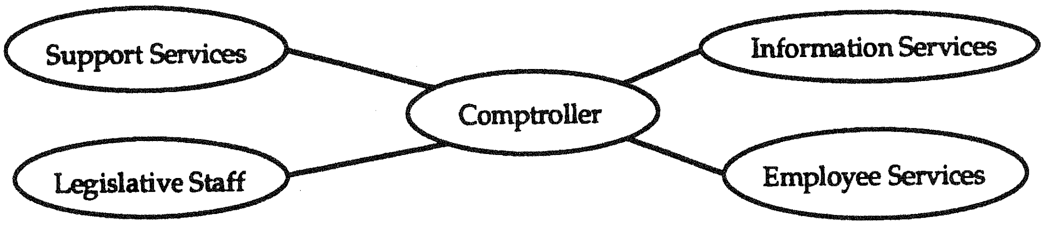
d. Staff levels are anticipated to remain constant through the year 2010.

11. COMPTROLLER'S OFFICE

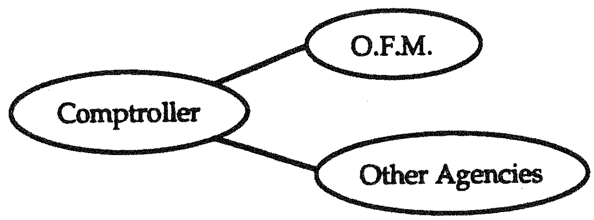
a. The Comptroller's Office is responsible for accounting and budgeting for the General Administration.

b. The Comptroller's Office is currently located on the second floor of the GA Building. The existing area works well. The systems furniture are adequately sized and well organized.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



Adjacency to executive offices is highly desirable. Storage for records could be held in a shared facility. There is a need to improve the secure, limited access to the cashier. Either a vault or safe need to be located within the Comptroller's office. The file room can be collocated or located in support services. Conference rooms are shared. One conference room is shared with Employee Services and indicated under Employee Services. The large conference room needs will be met by using building common conference rooms. The staff are heavy computer users and have a local area network.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	884	884	884	884	884
Open Office	1997	2030	2030	2030	2030
subtotal	2861	2914	2914	2914	2914
circulation (35%)	1001	1020	1020	1020	1020
Workplace total	3862	3934	3934	3934	3934
Auxiliary Areas	576	576	576	576	576
circulation (25%)	144	144	144	144	144
Auxiliary total	720	720	720	720	720
Workplace and Auxiliary total	4582	4654	4654	4654	4654
circulation (15%)	687	698	698	698	698
Grand Total	5270	5352	5352	5352	5352

11. COMPTROLLER'S OFFICE continued

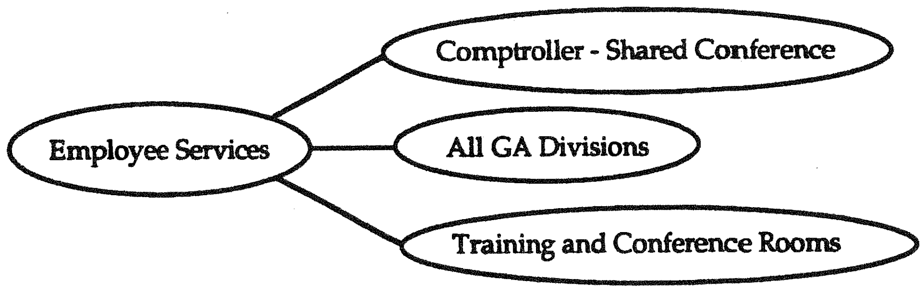
d. Staff levels are anticipated to increase by one person through the year 2010.

12. EMPLOYEE SERVICES

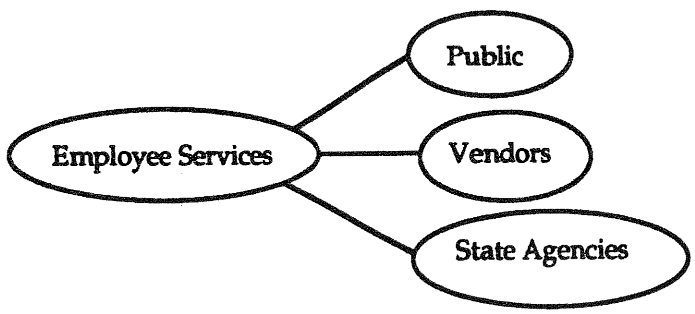
a. Provides human resource activities to General Administration employees which includes: recruiting, hiring, counseling, training, safety and wellness, classification and salary, cultural diversity and affirmative action, labor relations, file maintenance, promotions and terminations.

b. Employee Services are currently located on the second floor of the GA Building. The space is very cramped and inadequate. Many workstations are inaccessible to the handicapped, which require meetings to be held outside the building. With the confidential nature of work performed, more acoustic privacy is required. Presently, systems furniture workstations adjoin the reception area, providing no acoustic privacy. Lighting needs to be improved for the computer usage.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



Reception area needs to double as waiting area and application and testing area. This is the control point before seeing personnel officers. Personnel officers must be adjacent to small conference room. Employee Services should be located central to GA personnel. Security is required of personnel files. A training room with audio-visual capabilities is shared with the Comptroller and is listed under Employee Services. The workroom will contain a shredder copier and fax machine. Large photocopy orders could be done centrally. All staff uses computers.

12. EMPLOYEE SERVICES continued

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	920	920	1040	1040	1040
Open Office	704	923	1117	1117	1117
subtotal	1624	1843	2157	2157	2157
circulation (35%)	568	645	755	755	755
Workplace total	2192	2488	2912	2912	2912
Auxiliary Areas	920	1160	1160	1160	1160
circulation (25%)	230	1450	1450	1450	1450
Auxiliary total	1150	1450	1450	1450	1450
Workplace and Auxiliary Total	3342	3938	4362	4362	4362
circulation (15%)	501	591	654	654	654
Grand Total	3844	4529	5016	5016	5016

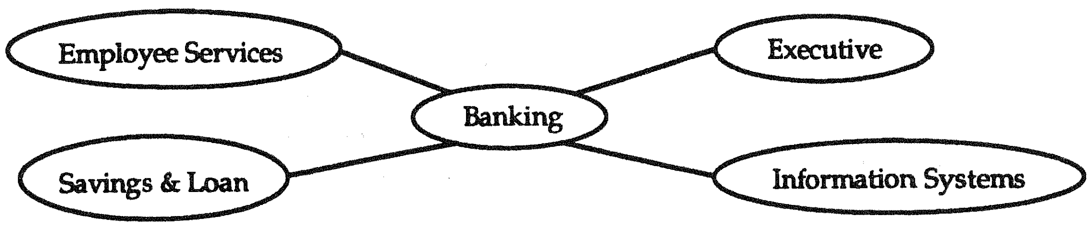
d. Staff levels are anticipated to increase by five through the year 2010.

13. BANKING

a. The Division of Banking regulates state chartered banks.

b. Currently located on Evergreen Park Drive. Access to parking for clients is important.

c. *Internal Adjacencies (within Building)*



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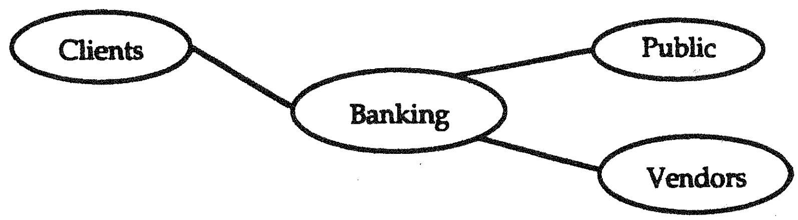


On-site and accessible parking is a main objective for Banking. Most of their clientele are senior management of banks. The Savings & Loan computer is tied into Banking's computer main frame.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	464	464	464	464	464
Open Office	1331	1331	1240	1305	1305
subtotal	1795	1795	1704	1769	1769
circulation (35%)	628	628	596	619	619
Workplace total	2423	2423	2300	2388	2388
Auxiliary Areas	1390	1390	1390	1390	1390
circulation (25%)	348	348	348	348	348
Auxiliary total	1738	1738	1738	1738	1738
Workplace and Auxiliary total	4161	4161	4038	4126	4126
circulation (15%)	624	624	606	619	619
Grand Total	4785	4785	4644	4744	4744

d. Staff levels are anticipated to increase by one through the year 2010.

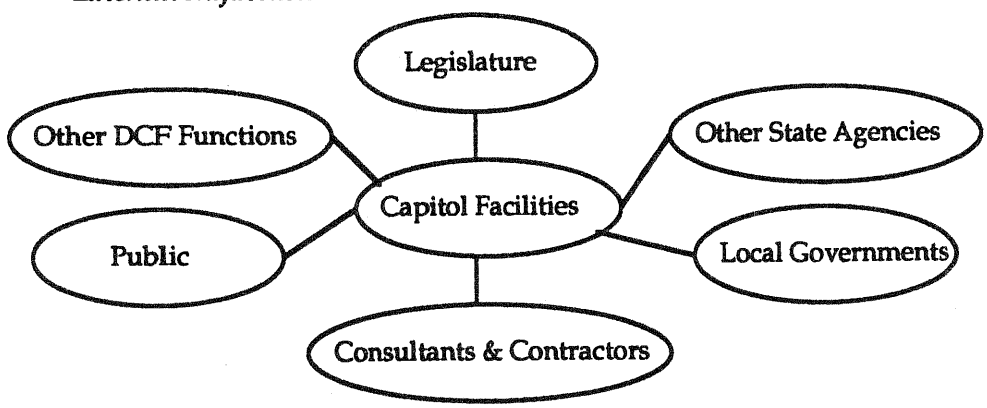
14. CAPITOL FACILITIES

a. Provides maintenance, facilities services, capitol project planning and management for the capitol campus, and visitors services for the capitol campus. Services include, but are not limited to, construction project management and planning, custodial, grounds maintenance, HVAC and painting. The administrative offices oversee these functions.

b. Currently these offices are located on the service level of Office Building 2.

c. *Internal Adjacencies (within Building)*

External Adjacencies



	1992	*1995*	*2000*	*2005*	*2010*
Private Office	1232	1232	1232	1232	1232
Open Office	317	317	317	317	317
subtotal	1549	1549	1549	1549	1549
circulation (35%)	542	542	542	542	542
Workplace total	2091	2091	2091	2091	2091
Auxiliary Areas	530	530	530	530	530
circulation (25%)	133	133	133	133	133
Auxiliary total	663	663	663	663	663
Workplace and Auxiliary total	2754	2754	2754	2754	2754
circulation (15%)	413	413	413	413	413
Grand Total	3167	3167	3167	3167	3167

d. Staff levels are anticipated to remain constant through the year 2010.

Part 3. Tenants

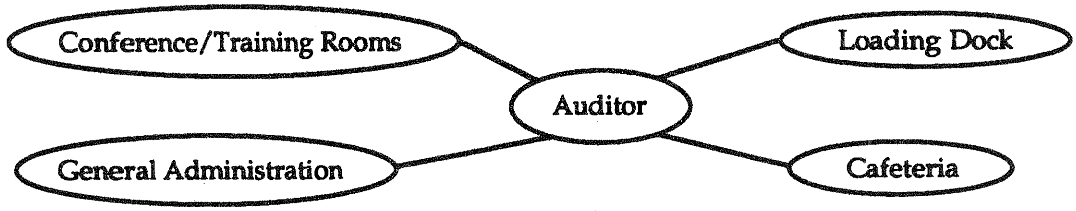
1. State Auditor's Office
2. Department of Community Development
3. Department of Information Services
4. Department of Printing Services
5. Department of Revenue
6. Department of Trade and Economic Development
7. State Treasurer's Office
8. State Patrol

1. STATE AUDITOR'S OFFICE

a. The State Auditor's Office provides audit support to groups within state government. The program for the agency includes its four divisions: Division of Departmental Audits; Division of Legislative and Technical Services; Division of Management Services; and Division of Municipal Corporations.

b. Currently, the agency is housed in several locations: General Administration, Legislative, and East Eighth buildings. Consolidation of divisions is a goal of the agency. In the GA Building, workspaces included private offices and workspaces in panel systems. Workspaces in panel systems appear to be undersized for the supportive furnishings and equipment contained within them. Auxiliary areas, where clearly visible, accommodate more than one function. The use of workspace aisles in the placement of additional equipment is prevalent. Office furnishings appear to have a moderate amount of usable life remaining; auxiliary area furnishings appear to have less usable life remaining.

c. ***Internal Adjacencies (within Building)***



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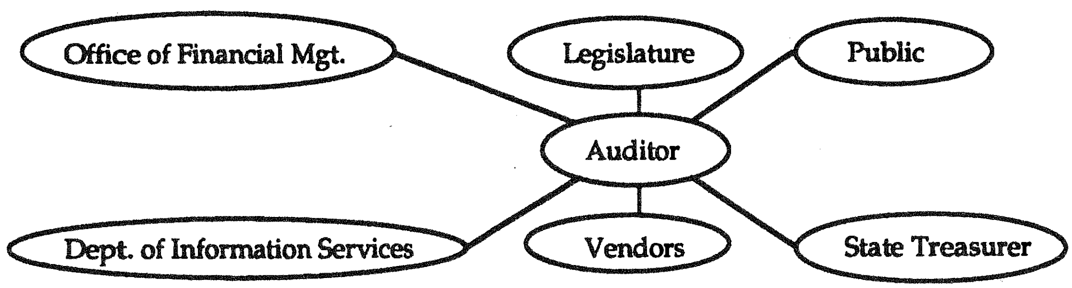


The agency relies heavily on computers in the conduct of its work. There is at least one PC or terminal for each employee, and perhaps a 3:1 ratio of computers to printers. Support locations for LAN servers, printers, and equipment staging are necessary: servers and free equipment need secure storage spaces.

A large number of conference rooms should be available. The agency would make use of well-designed training room and teleconferencing facilities, if they were available.

1. STATE AUDITOR'S OFFICE continued

The Agency has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	2220	2220	2708	2708	2708
Open Office	3304	3304	3888	3888	4496
subtotal	5524	5524	6596	6596	7204
circulation (35%)	1933	1933	2308	2308	2521
Workspace total	7457	7457	8904	8904	9725
Auxiliary Areas	6145	6145	6145	6145	6145
circulation (25%)	1536	1536	1536	1536	1536
Auxiliary total	7681	7681	7681	7681	7681
Workspace and Auxiliary totals	15138	15138	16585	16585	17406
circulation (15%)	2271	2271	2489	2489	2612
Grand Total	17409	17409	19074	19074	20018

d. Growth from present to year 2000 is anticipated to be five staff; this is subject to increase pending a decision on consolidation of an additional number of staff. General agency growth is dependent upon current and prospective projects.

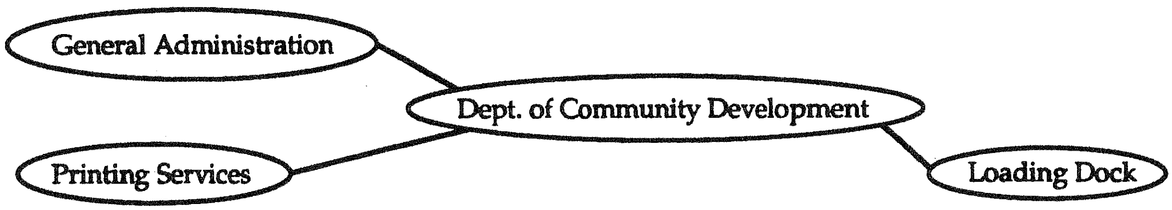
2. DEPARTMENT OF COMMUNITY DEVELOPMENT

a. The Department of Community Development provides a variety of services to individuals and community organizations.

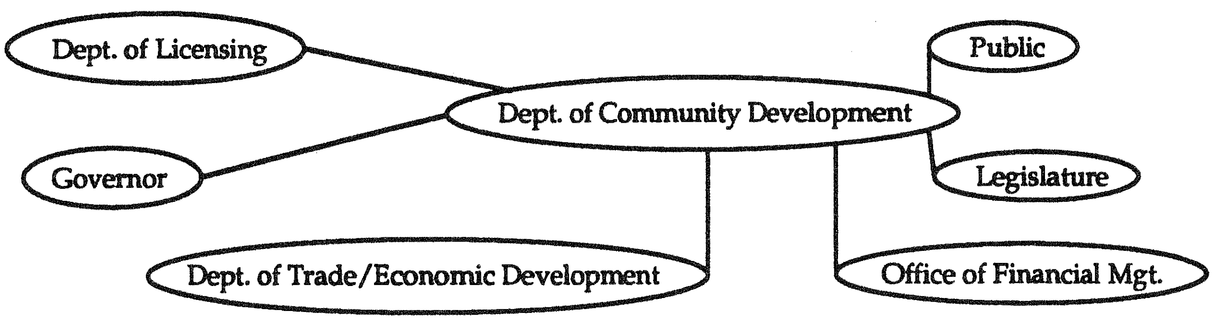
b. Currently, the Department is housed in several locations. It is a goal of the department to consolidate sections within a single building.

Work spaces included private offices and work spaces in panel systems. Work spaces in panel systems appear to be undersized for the supportive furnishings and equipment contained within them. Auxiliary areas, where clearly visible, accommodate more than one function. Office furnishings appear to have a moderate amount of usable life remaining.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



There is substantial department contact with the public. Visibility of department's entry is appropriate.

The department relies upon computers in the conduct of its work. Support locations for equipment and staging are necessary.

2. DEPARTMENT OF COMMUNITY DEVELOPMENT continued

The department currently serves as large volume sender of promotional materials. The mail room should be located near the loading dock.

The availability of multi-size conference rooms common to the building is desirable to the department.

The department has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of short and long term parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	11768	14288	19136	19136	19136
Open Office	18768	22416	29984	29983	29984
subtotal	30536	36704	49120	49120	49120
circulation (35%)	10687	12847	17194	17194	17194
Workspace total	41223	49551	66314	66314	66314
Auxiliary Areas	30956	30956	30956	30956	30956
circulation (25%)	7739	7739	7739	7739	7739
Auxiliary total	38695	38695	38695	38695	38695
Workspace and Auxiliary totals	79918	88246	105009	105009	105009
circulation (15%)	11987	13238	15750	15750	15750
Grand Total	91905	101484	120759	120759	120759

d. Programming for growth has not yet extended to years 2005 and 2010; these should be revisited during design.

3. DEPARTMENT OF INFORMATION SERVICES

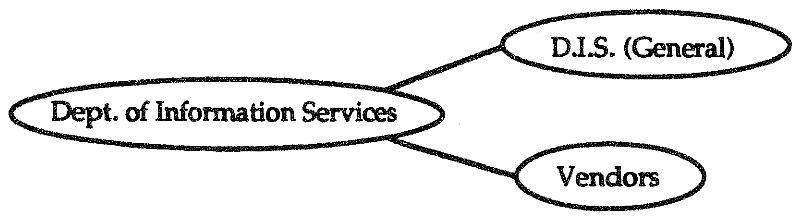
a. The Department of Information Services facility in the General Administration Building is a computer room housing the state's long distance (SCAN) telephone service.

b. Currently, the department is housed in several locations. Consolidation of this facility with other computer rooms is not a desire of the department.

In the GA building, staff workspaces are freestanding furniture occupying spare area within the facility. Separation of staff from equipment is not essential, although staff proximity to battery storage should be reviewed during facility design. Office furnishings appear to have a moderate amount of usable life remaining.

c. ***Internal Adjacencies (within Building)***

External Adjacencies



The facility is required to be secure. Co-location within a common computer area is possible, so long as the facility continues to be demised and power, HVAC, etc. are not compromised.

While the facility serves all portions of state government, public traffic is negligible, primarily confined to vendors working on equipment. 24-hour access to the facility is required.

The facility is a computer room currently existing in the General Administration Building. The facility houses equipment and staff in an open environment. The room has a raised floor, 24-hour air conditioning, special power (including UPS and battery backup), fire suppression and security requirements. The department feels the present room location in the GA Building carries the risk of flooding which would subject equipment, media and data to damage.

The department has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of parking, is an issue.

Because of the service provided to all areas of government, downtime is considered undesirable; it can be managed for an extremely brief period. Downtime during legislative session is viewed as unacceptable.

3. DEPARTMENT OF INFORMATION SERVICES continued

	1992	*1995*	*2000*	*2005*	*2010*
Auxiliary Areas	-0-	-0-	-0-	-0-	-0-
circulation (25%)	-0-	-0-	-0-	-0-	-0-
Auxiliary total	-0-	-0-	-0-	-0-	-0-
circulation (0%)	-0-	-0-	-0-	-0-	-0-
Grand Total	-0-	-0-	-0-	-0-	-0-

d. No growth of staff or facility area are projected. The GA and the tenant view a single move to a new location, in order to minimize disruption of the tenant's services, the most cost effective approach. Therefore, the summary above demonstrates no area requirement.

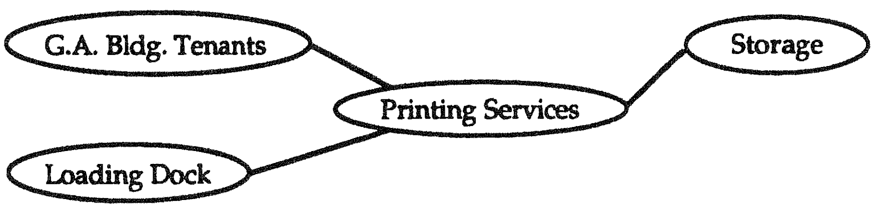
4. DEPARTMENT OF PRINTING

a. The Department of Printing copy center facility in the General Administration Building is a room housing localized duplicating equipment and staff. The department provides large-volume document printing for other state agencies, utilizing both offset and photostatic equipment.

b. Currently, the department is housed in several locations. Consolidation of this facility with other similar facilities is not a desire of the department.

In the GA Building, staff workspaces are freestanding furniture occupying spare area within the facility. Separation of staff from equipment is not essential, although staff proximity to noise-producing equipment should be reviewed during facility design. Office furnishings appear to have a moderate amount of usable life remaining.

c. ***Internal Adjacencies (within Building)***



External Adjacencies

The facility is required to be secure after hours. Absence of demising partitions is unlikely, due to the acoustical impact of the facility.

The facility serves all portions of state government, and public traffic is high. A window for receipt and delivery of orders, visible from primary circulation on the floor, is a key part of the facility. Proximity to the loading dock for bulk shipping and receiving is essential.

The facility currently exists the General Administration Building. The facility houses equipment and staff in an open environment. Supplies (paper) are delivered in bulk on pallets, so access into the space should consider the width necessary.

The department has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Handling of return air filtration and management of liquid wastes are key concerns. Availability of parking, particularly delivery trucks, is an issue. Photocopying equipment currently in place may, in the future, be accessed by customers via telephone lines, pending availability of software: identifying any special cabling requirements should occur during design.

4. DEPARTMENT OF PRINTING continued

Bulk collating equipment takes a substantial amount of floor area, and produces a lot of noise.

A sink with coffee maker would be a desirable element in the room. Availability of an eyewash fountain, or use of an add-on eyewash, is critical.

	1992	*1995*	*2000*	*2005*	*2010*
Auxiliary Areas	1870	1870	1870	180	1870
circulation (25%)	468	468	468	468	468
Auxiliary total	2338	2338	2338	2338	2338
circulation (0%)	350	350	350	350	350
Grand Total	2688	2688	2688	2688	2688

d. No growth of staff or facility area are projected.

5. DEPARTMENT OF REVENUE

a. The Department of Revenue provides tax intake, accounting, tax matter assistance, legal review and administrative support to the State Revenue network.

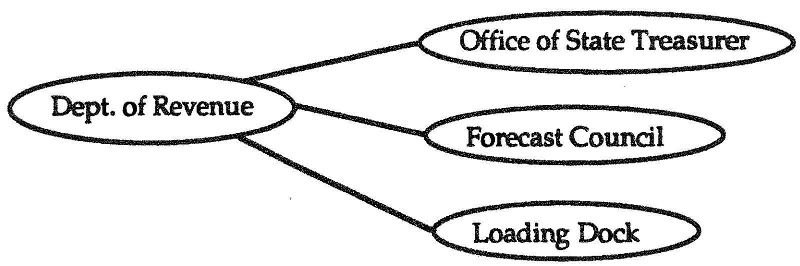
Programming data in this document was taken from a program study provided by the department.

b. Currently, the department is housed in several locations. It is the goal of the department to consolidate non-field sections within a single building.

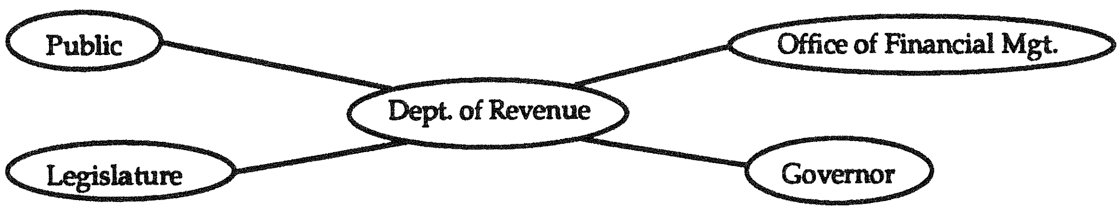
Forecast Council, a non-revenue agency, is required to be in the same location as Interpretation and Appeals, Research, and Legislation and Policy.

In the GA Building, work spaces included private offices, work spaces in panel systems and freestanding furniture. Work spaces in panel systems generally appear to be undersized for the supportive furnishings and equipment contained within them; freestanding furniture appear generally inadequate for comfortable support of the intended work function. Auxiliary areas, where clearly visible, accommodated more than one function. Office furnishings appear to have a moderate amount of usable life remaining; auxiliary area furnishings appear to have less usable life remaining.

c. *Internal Agencies (within Building)*



External Agencies



Parts of the department have security requirements. The department feels it could generally be co-located with another tenant on a single floor with minimal demising walls, depending upon the other tenant. However, as the nature of tax information is confidential on a case-by-case basis, this issue should be carefully reviewed during design.

5. DEPARTMENT OF REVENUE continued

There is substantial department contact with the public. Taxpayer Assistance and Forest Tax generate a high volume of traffic. Visibility of department's entry is appropriate.

Generally, the storage of case files dictates the provision of numerous filing locations. Tax libraries and filing tend to be decentralized, located adjacent to the appropriate divisions. Special storage is required for the unclaimed property area.

The Department relies heavily upon computers in the conduct of its work. There is at least one PC or terminal for each employee, and perhaps 3:1 ratio of computers to printers. Support locations for LAN servers, printers, and equipment staging are necessary: servers and free equipment needs secure storage spaces.

The department's mail room currently serves as staging for archiving. It also functions as a presort for the department's cashiering room. The mail room should be located with access to the loading dock.

The Department currently has a computer room existing in the General Administration Building. This room is a necessary part of the department. The room has a raised floor, 24-hour air conditioning, special power (including UPS and backup power), fire suppression and security requirements.

The department requires the use of numerous small, private, meeting spaces (approximately 144 square feet); it also requires a large divisible conference room and a small general conference room.

The availability of multi-size conference rooms common to the building is desirable to the department; in particular, a large conference room supporting 50 occupants would be useful once a month. If available, the department would make use of teleconferencing facilities.

The department has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of short and long term parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	16804	18772	19492	20760	20760
Open Office	39974	47978	53917	58507	58507
subtotal	56778	66750	73409	79267	79267
circulation (35%)	19873	23362	25693	27742	27742
Workspace total	76651	90112	99102	107009	107009
Auxiliary Areas	42188	42891	42991	42991	42991
circulation (25%)	10549	10724	10749	10749	10749
Auxiliary total	52737	53615	53740	53740	53740
Workspace and Auxiliary totals	129388	143725	152842	160749	160749
circulation (15%)	19406	21559	22926	24112	24112
Grand Total	148794	165287	175768	184860	184860

d. Growth depicted in the staffing report is based upon historical trends.

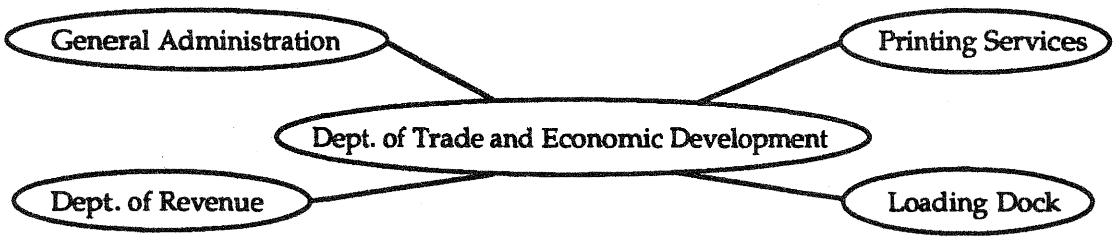
6. DEPARTMENT OF TRADE & ECONOMIC DEVELOPMENT

a. The Department of Trade and Economic Development provides policy development and marketing support for the state's trade and economic goals.

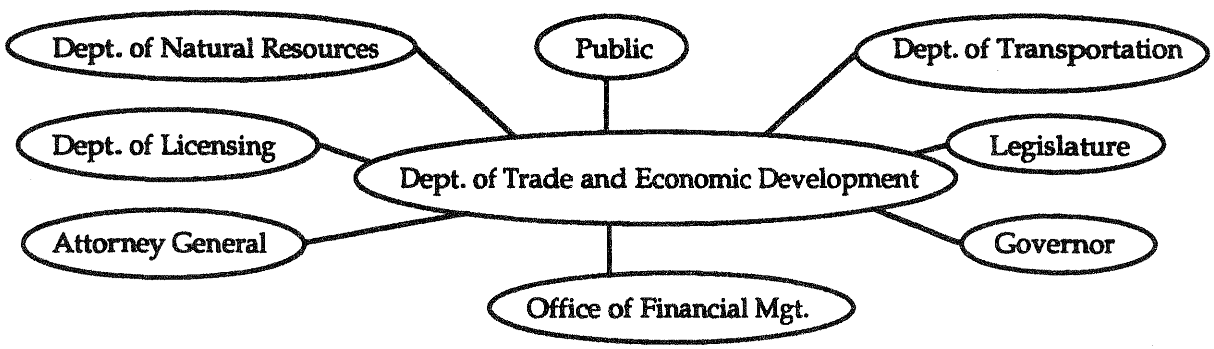
b. Currently, the department is housed in two locations. It is the goal of the department to consolidate non-Seattle sections within a single building.

In the GA Building, work spaces included private offices and work spaces in panel systems. Work spaces in panel systems appear to be sized for the supportive furnishings and equipment contained within them. Auxiliary areas, where clearly visible, accommodated more than one function. Office furnishings appear to have a moderate amount of usable life remaining.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



There is substantial department contact with the public. Visibility of department's entry is appropriate, although the department would like to avoid acting as a receptionist for the GA Building.

Because of its state marketing mission, the department feels that offices should support smaller conferencing and sufficient comfortably sized conference rooms should be available.

The department relies heavily upon computers in the conduct of its work. Support locations for equipment and staging are necessary.

6. DEPARTMENT OF TRADE & ECONOMIC DEVELOPMENT continued

The department's mail room currently serves as large-volume sender of promotional materials. The mail room should be located near the loading dock.

The availability of multi-size conference rooms common to the building is desirable to the bepartment. If available, the department would make use of teleconferencing facilities.

The department has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of short and long term parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	1800	1800	1920	1920	1920
Open Office	6118	6604	7220	7779	8038
subtotal	7918	8404	9140	9699	9958
circulation (35%)	2771	2941	3199	3395	3486
Workspace total	10689	11345	12339	13094	13444
Auxiliary Areas	4435	4435	4435	4435	4435
circulation (25%)	1109	1109	1109	1109	1109
Auxiliary total	5544	5544	5544	5544	5544
Workspace and Auxiliary totals	16233	16889	17883	18638	18988
circulation (15%)	2435	2533	2682	2796	2848
Grand Total	18668	19422	20565	21434	21836

d. Agency growth is typically difficult to predict. It is dependent upon the policies of current administration and funding by Legislature.

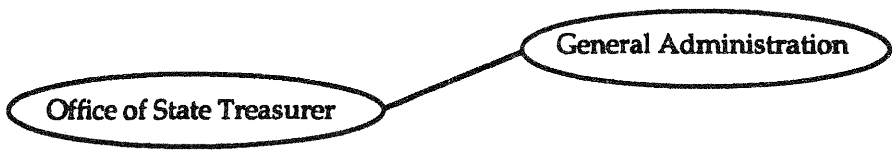
7. STATE TREASURER'S OFFICE

a. The State Treasurer's Office provides accounting support and large-volume check disbursement. The program for the Agency includes six sections: Administration; Accounting; Computer Operations; Information Systems; Public Deposit Protection Commission; and Warrant Accounting.

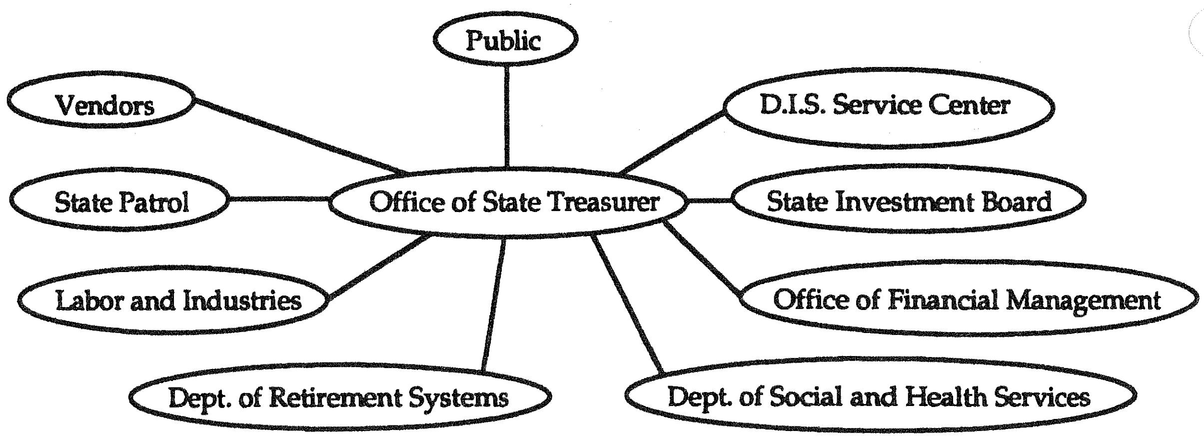
b. Currently, the agency is housed in several locations: General Administration, Legislative, and Credit Union buildings. It is the goal of the agency to consolidate the six sections on a single floor.

In the GA Building, workspaces include private offices and workspaces in panel systems. Workspaces in panel systems appear to be undersized for the supportive furnishings and equipment contained within them. Auxiliary areas, where clearly visible, accommodated more than one function. The use of workspace aisles and huddle spaces in the placement of additional equipment is prevalent. Office furnishings appear to have a moderate amount of usable life remaining; auxiliary area furnishings appear to have less usable life remaining.

c. ***Internal Adjacencies (within Building)***



External Adjacencies



Parts of the agency have security requirements. The agency could generally be co-located with another tenant on a single floor with minimal demising walls, depending upon the other tenant.

While there is some agency contact with the public, most traffic involves agency headquarters, vendors and other state agencies. A single reception area would be suitable. Locating the warrant-accounting disbursement window adjacent to that reception area would be desirable: the window, and the disbursement area, have security requirements.

7. STATE TREASURER'S OFFICE continued

Intensive storage is currently targeted for the warrant storage and vault areas. Due to the extreme volume of warrants issued per year, earlier archiving from warrant storage is not currently viable. A new facility should include sufficient independent storage for these two functions, plus centralized filing.

The agency relies heavily upon computers in the conduct of its work. There is at least one PC or terminal for each employee, and perhaps a 5:1 ratio of computers to printers. Support locations for LAN servers, printers, and equipment staging are necessary: servers and free equipment need secure storage spaces.

The agency has a computer room existing in the General Administration Building, currently. This room is a necessary part of the agency. The room has a raised floor, 24-hour air conditioning, special power (including UPS and backup power), fire-suppression and security requirements. The agency feels the present room location in the basement of the GA Building carries the risk of flooding which would subject equipment, media and data to damage.

The availability of multi-size conference rooms common to the building is desirable to the agency; in particular, a large conference room would be useful 5-6 times per month. If available, the agency would make use of teleconferencing facilities and showers.

The agency has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of short- and long-term parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	784	952	952	952	952
Open Office	3940	5094	5660	5968	6362
subtotal	4724	6046	6612	6920	7314
circulation (35%)	1653	2116	2314	2421	2560
Workspace total	6377	8162	8926	9341	9874
Auxiliary Areas	6546	6546	6546	6546	6546
circulation (25%)	1637	1637	1637	1637	1637
Auxiliary total	8183	8183	8183	8183	8183
Workspace and Auxiliary totals	14560	16345	17109	17524	18057
circulation (15%)	2184	2452	2566	2628	2708
Grand Total	16744	18797	19675	20152	20765

d. Historically, growth has been constant at one to two staff per year. The program includes a new Fiscal Agent group comprised of 15 staff; approval for this group is pending.

8. STATE PATROL

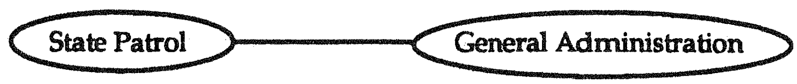
a. The State Patrol provides traffic law enforcement, investigatory support, and administrative support to the State Patrol network.

Programming data in this document was taken from a program study provided by the agency.

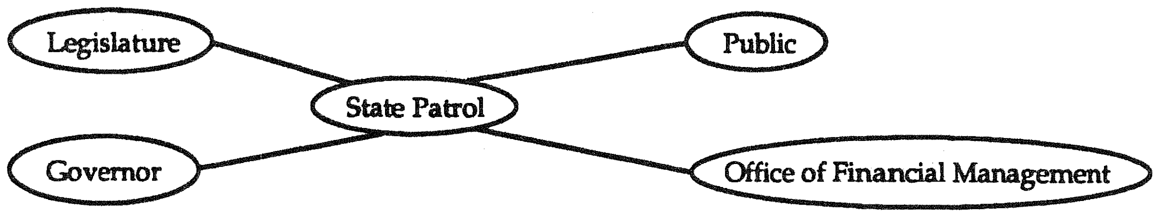
b. Currently, the agency is housed in several locations. It is the goal of the department to consolidate non-field sections within a single building.

In the GA Building, workspaces included private offices, workspaces in panel systems and freestanding furniture. Auxiliary areas, where clearly visible, accommodated more than one function. Office furnishings appear to have a moderate amount of usable life remaining.

c. *Internal Adjacencies (within Building)*



External Adjacencies



The agency has strict premises security requirements due to the case information collected and stored.

Generally, the storage of files dictates the provision of satellite filing locations. High density filing is currently used in several locations.

The agency relies upon computers in the conduct of its work. Support locations for LAN servers, printers, and equipment staging are necessary.

The agency has facilities for dispatch communications. Raised flooring, security, and proximity to antenna cabling hubs are important.

The agency has a computer room in the General Administration Building. This room is a necessary part of the department. The room has a raised floor, 24-hour air conditioning, special power (including UPS and backup power), fire suppression and security requirements.

The agency has a photo lab, with associated plumbing and ventilation requirements.

8. STATE PATROL continued

The availability of conference rooms common to the building is desirable to the agency. If available, the agency would make use of teleconferencing facilities.

The agency has cited concerns about clean power, adequate HVAC, air quality, and lighting quality. Availability of short- and long-term parking is also an issue.

	1992	*1995*	*2000*	*2005*	*2010*
Private Office	5476	5596	5596	6580	7616
Open Office	28288	31944	33856	38616	43872
subtotal	33764	37540	39452	45192	51488
circulation (35%)	11816	13139	13808	15818	18020
Workspace total	45580	50679	53260	61014	69508
Auxiliary Areas	37655	37925	37925	37925	37925
circulation (25%)	9415	9482	9482	9482	9482
Auxiliary total	47070	47407	47407	47407	47407
Workspace and Auxiliary totals	92650	98086	100667	108421	116915
circulation (15%)	13893	14713	15100	16263	17537
Grand Total	106543	112799	115767	124684	134452

d. Growth depicted in the staffing report is based upon historical trends and is projected at approximately 2.5% per year.

A. Site Description

The existing GA Building site slopes gently to the north, which makes possible at-grade access to the first level on the south side and ground level on the north side; which is a level change of approximately 13 feet. General site features include asphalt paved parking and access lanes for approximately 125 cars and flat lawn areas with minimal landscaping , including trees along the west perimeter. The west perimeter is largely bounded by a tall shoring wall with a steep drop in grade, overlooking the proposed Heritage Park and Capitol Lake. This wall is comprised of steel piles and wood lagging, reinforced by auger-cast steel cable tie-backs which extend deep into the ground beneath the western portion of the site.

The recommended Renovation Scheme C-Plus includes a two-story addition above the west portion of the site. Geotechnical and structural studies must be performed to ensure bearing potential and shoring wall stability in this area. Other environmentally sensitive conditions are not known to exist on-site.

Existing renewable energy sources pertinent to the GA Building are not known to exist on or off-site.

Hazardous materials, other than asbestos-containing materials within the GA Building, are not known to exist on-site.

All primary utilities which currently serve the existing GA Building are accessible from the street.

While the existing GA Building is part of the Capitol Campus, and as such does not fall within the City of Olympia zoning jurisdiction, the building is situated within an area designated as a special height district per city of Olympia Ordinance #31385. This limits the height of the GA Building to 120 feet, which is well above its current 80 foot (average).

Scheme C-Plus converts and expands the existing rooftop mechanical penthouses to a Fifth Floor office area, while raising mechanical equipment to a mezzanine level. The new mechanical penthouse will be six to 14 feet taller than the existing, with a sloped roof. This will remain well within the zoning height restriction; works well with the building massing to reinforce proportional relationships; does not significantly alter the building roof line in respecting existing view corridors to and from the State Capitol Building; and adds significant added floor area to the building on the fifth floor.

The following site conditions exist adjacent to the GA Building:

North

The existing GA Building site includes an existing surface parking lot to the north which accommodates approximately 75 cars plus provides access to the building's 2-berth loading dock. This area is approximately 34,000 square feet with a 160foot setback from north property line to the building.

- While Scheme C-Plus will allow for the continued use of this area for limited surface parking and landscape area, as well as access to the expanded and relocated loading area, it is assumed that car parking will occur substantially off-site.

West

To the west of the GA Building is an access road with perpendicular surface parking for 50 cars, which links Eleventh Avenue with the north parking lot and loading area. This area is approximately 21,000 sf with an 85 foot building setback to the edge of a steep bank and shoring/retaining wall overlooking Capitol Lake. Surface parking abuts a 4 foot walk immediately adjacent to the west face of the building.

South: Eleventh Avenue

To the south of the GA Building is a one-way street leading west, which curves south to the Temple of Justice and the Capitol lawn perimeter road.

This street accesses the main entry to the GA Building and serves as an automobile/carpool/shuttle bus vehicle dropoff area. The master plan identifies this street to be widened to allow for two-way traffic, a safer pedestrian drop-off zone at the GA Building and easy access and exit to the future West Campus Garage.

Special consideration must be given to widening this street to relieve vehicle congestion during peak hours of building and campus access.

The GA Building is set back from the existing property line 22' feet and from the existing curb 40 feet. The transition zone from the street to the building must be made handicapped accessible (five steps currently exist), and protected waiting areas developed. The role of this grand entry must be reinforced through development of the entry stair, sitework and landscaping.

East: Columbia Street

To the east of the GA Building is a two way street which terminates at Eleventh Avenue.

This 24 foot wide street currently serves as a vehicle/pedestrian dropoff point for the east ground level entry to the building. It is the only handicapped accessible entry.

The building is set back 25 feet from the property line and 49feet from the existing curb. The entire length of the east elevation is bordered by a concrete walk and area wall accessing the ground level, surrounded by lawn area.

The master plan identifies this street for bus and large vehicle parking and for transit/HOV/shuttle dropoff and pickup. This may be accommodated by widening the street at a pulloff zone with provisions for short-term parking.

A possible future tunnel connection at the basement level has been identified for pedestrian linkage between the GA Building and a parking structure across the street. This tunnel could pass beneath Columbia Street and connect to the GA Building at this existing east stair tower.

B. Site Analysis

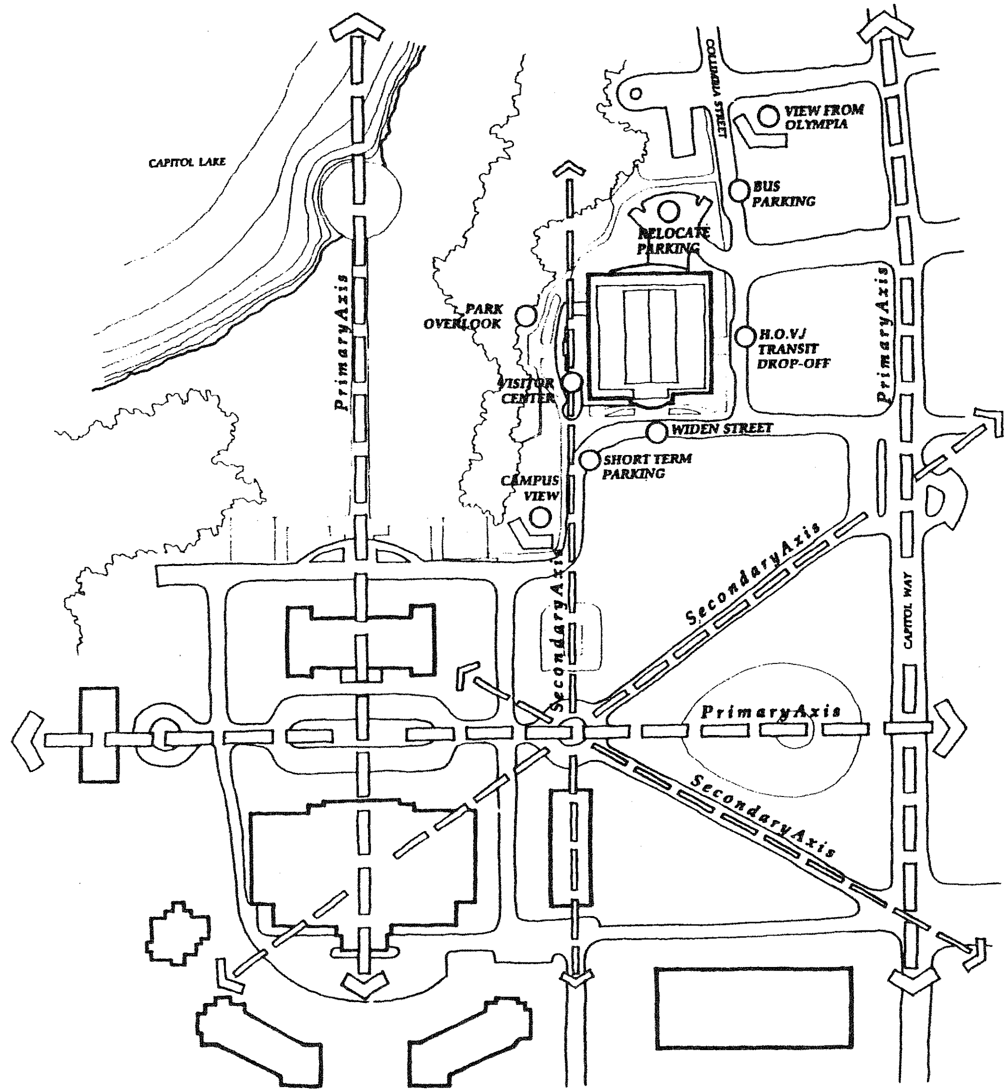
Renovation of the GA Building, with expanded loading access and a two-story addition to the west, will have a substantial impact on the existing site plan. Because on-site parking will be substantially reduced, expanded on-street short term parking will be provided along the newly widened Eleventh Avenue. Limited on-site parking and loading access will now be accessible only from Columbia Street. Primary parking needs for the building will be served off-site, in keeping with master plan concepts and underground parking being developed with the park on Capitol Lake.

A possible future tunnel connection beneath Columbia Street to a parking structure across the street to the east has also been identified to facilitate parking access to the GA Building.

Eleventh Avenue will be revised to curve more softly to the south, in keeping with the other vehicular access roads around the Capitol Campus Lawn. Street widening will mitigate increasing traffic and allow for dedicated curbside pedestrian drop-off zones at the south main building entrance for transit and HOV use. A similar drop-off curb lane will be added on Columbia Street serving the building's east ground level entrance.

The new Visitor Center is prominently located adjacent to the main building entry at the southwest corner of the first floor, visible from the Capitol Campus Lawn and Eleventh Avenue. It is accessible from the main building lobby, or directly from the outside from the new southwest arcade and Overlook Terrace. Limited short-term parking will be provided along Eleventh Avenue.

Landscaping will be designed to establish an attractive foreground for the building, and to be compatible with original Olmsted Brothers concepts for the Capitol Campus.



SITE DIAGRAM

A. Introduction

Scope:

The following outline specification, cost estimate and life cycle cost analysis for the selected scheme is based on the original Scheme C+ West (with an added fifth floor and two-story west addition), herein referred to as Concept C-Plus, with the following modifications.

Scheme C-Plus has been refined to include a more detailed development of the interior building system's infrastructure, including layout of mechanical shafts and equipment, toilet rooms, electrical, data and telecommunications closets. Corner shear walls have been developed along with the exterior precast concrete cladding profile which slightly increased the gross square footage of each floor plate. A further refinement included the placement of primary mechanical equipment on a mezzanine above the Fifth Floor level, which increased usable square footage on the Fifth Floor. This was possible due to the upper volume of the sloping roof, required to accommodate elevator overrun when adding Fifth Floor stops for each of the five elevators. The refinements have increased the size of the building to 363,200 GSF. This increase would be reflected in any of the renovation schemes considered for this study, and as such would not have affected the evaluation or scheme selection results.

Cost Estimate

The final scheme estimated is based upon 1992 pricing of construction elements defined in the outline specification which follows. The final selected scheme is anticipated to be constructed in a 24-month period without phasing. Costs presented in the following estimate do not include any escalation to mid-point of construction, or Washington State sales tax. The numbers presented here represent the Washington State OFM C-100 MACC line in the base month of July 1992. Project costs inclusive of escalation and Washington State sales tax are included in the C-100 form.

Life Cycle Cost Analysis

The Life Cycle Cost Analysis presents the total cost of operations, maintenance, energy, relocation and construction costs for the selected scheme over an anticipated life of 20 years. Escalation and discount factors used are in accordance with OFM and WSEO directions. It should be noted that escalated costs as represented in OFM Form C-100 will not compare directly with escalated costs in the Life Cycle Cost Analysis. The Life Cycle Cost Analysis utilizes an actual escalation factor for each year of the 20-year cycle, while the OFM Form C-100 utilizes mid-point escalation factors.

All costs are derived from January 1992 baseline costs. The analysis period is 20 years.

Based upon review of recent projects of relevant scope, construction duration was assumed to be 24 months. The building will be completely vacated for construction, requiring relocation of all tenants for this period. Options for phased construction and occupied renovation are discussed in Part A of the Appendix of this document.

First and replacement costs represent MACC figure from the OFM Form C-100.

Operations and Maintenance costs include, but are not limited to, janitorial service; garbage removal; water and sewer; landscape maintenance; mechanical and electrical system maintenance; elevator maintenance; roof maintenance; regular periodic window washing and scaffolding maintenance; and regular periodic interior maintenance including new paint, new carpet, etc. As no historical cost data exists for the GA Building, $3.75 SF per year was utilized for O&M costs based on an analysis of other projects of similar size and scope.

Energy costs include electrical usage and gas usage for steam generation. The Washington State Energy Office utilizes $.85 SF per year for new construction energy costs. Based on this, on other projects of similar size and scope, and on the fact that the GA Building will be effectively renewed, this figure was utilized in the Life Cycle Cost Analysis.

OFM Form C-100

All project costs not part of the construction cost estimate were developed in conjunction with Zimmer Gunsul Frasca, General Administration and State of Washington Guidelines.

Predesign Consultant Services include costs to comply with completing the OFM Predesign Manual and were appropriated in the 1991-1993 Capital Budget.

A/E Basic Design Services are a percentage of the MACC.

A/E Extra Services/Reimbursables and Other Services are anticipated costs for consultants/disciplines to be utilized during the design phases. These costs were developed in conjunction with Zimmer Gunsul Frasca and the Department of General Administration.

Construction Costs were developed in the detailed cost estimate. The building permit is assumed to be one percent of the cost of construction, and is based upon conversations with building officials in the Olympia region. Although no actual drawings were submitted to these officials, a general sense of total cost was achieved that includes the basic general contractor's building permit and plan review, plus numerous subcontractor permits and reviews including mechanical, electrical, structural and civil disciplines. Performance and payment bond is assumed to be one percent of the cost of construction (inclusive of building permit).

Equipment costs were provided by the Department of General Administration.

Project Artwork is calculated to be .5 percent of A/E Basic Design Fees, MACC and Total Equipment Costs.

In-Plant Services costs and Project Management costs were provided by the Department of General Administration.

B. Outline Specification

(Italics indicate existing conditions to remain.)

1.0 Foundations: *Existing concrete foundations and footings to remain intact.*

Options D & E:

- Footings and Foundations: Cast in place reinforced concrete. Provide new concrete grade beam on piles beneath shear walls added to perimeter corners of existing structure.
- Excavation: Remove excavation spoils from site. Stockpile any topsoil for reuse.
- Backfill: Drainage fill below slab on grade and at perimeter footing drains. Compacted fill against foundation, retaining walls.
- Foundation Drainage: 4" perforated PVC around periphery of addition. Provide filter fabric and drainage fill around pipe.

  Test excavations will be made to determine integrity of existing perimeter drainage system.

2.0 Substructure:

- Slab-on-grade: *Existing basement level slab to remain.*

  Options D & E: Standard 4" slab on grade with vapor barrier.

3.0 Superstructure:

- Walls: *Existing cast in place concrete with corrugated form liner at exposed exterior structural spandrels; smooth finish at monolithic exterior shear walls.*

  Construct new concrete shear walls at each corner of the building for seismic reinforcement.

  Added fifth floor: Light steel construction, columns and beams, with insulated steel deck at roof.

  West Addition: Construction columns and beams with composite steel and concrete floor decking at second floor.
- Upper level framing: *Existing cast in place square concrete columns, pan joist and beam floor framing. Existing transfer beam at second Floor for Auditorium clear span. Roof level elevation varies, sloped to drain.*
- Exit stairs: *Existing cast in place concrete.*

3.1 2-Story Addition:

• Construction Type:	Structural steel beams and columns.
• Roof:	Metal deck over open web steel joists.
• First Floor:	Composite-type concrete floor deck over steel beams
• Ground Floor:	Slab-on-grade.
• Foundation:	Spread footing.
• Seismic Joint:	2 inch separation joint between existing building and new addition.

3.2 Fifth Floor Addition:

• Construction Type:	Structural steel beams and columns.
• Roof:	Metal deck over open web steel joists.

3.3 Seismic Upgrade:

• Construction Type:	Cast-in-place concrete. Concrete shear walls in both directions at all four building corners. Foundation includes 9'-4" high grade beam over auger cast piles.

3.4 Materials:

• Structural Steel:	A36 AISC standard folled shapes.
• Concrete Strengths:	Shear walls and grade beams - f'c = 8000 psi Augercast piles - f'c = 6000 psi Composite floor deck and SOG - f'c = 3000 psi
• Concrete Reinforcement:	Shear walls, grade beams, augercast piles and spread footings: rebar, fy = 60,000 psi Concrete fill on metal deck: welded wire mesh, fy = 65,000 psi
• Auger Piles:	18" diameter x 60' long. Assumed design capacity: 120 ton/pile, compression; 45 ton/pile, uplift tension

3.5 Demolition:

Virtually all elements of the building, except for the concrete superstructure, existing shear walls, existing stairs, and existing elevator shafts (including cabs) are to be systematically demolished and replaced. Demolition will occur at one time for entire building due to extensive nature of renovation. Provide appropriate abatement measures to remove all Asbestos Containing Materials from the building.

4.0 Exterior Closure

• Proposed wall cladding:	Layered 4" precast concrete face panels and returns with multiple color, architectural finish, secured to existing spandrels or steel substructure with s.s. clips, with a 1" air space. Recessed sealant joints with backer rod.

• Window system:	Extruded aluminum with Kynar 500-type coating. 2" x 6" fixed sash with custom profile snap-covers. Insulated glazing with low-E coating; single pane spandrel glass with ceramic frit.
• Entry Doors:	3'-0" x 8'-6" Extruded aluminum and glass heavy duty with alum threshold, concealed floor closers & s.s. panic devices.
• Service doors:	Painted galvanized hollow metal doors and frames.

5.0 Roofing

• Flat roof:	EPDM single-ply membrane, 45 mil. typical. Pavers for ballast with 5th floor addition. 60 mil. EPDM flashing with s.s. counter flashing.
• Sloped roof:	Standing seam zinc coated metal roofing.

6.0 Interior Construction:

• Rated partitions:	2 hour fire resistive construction at all multiple floor shafts. 1 hour fire resistive construction for occupancy separation and exit corridors.
• Typical partitions:	5/8" Type X gypsum wallboard each side on 2x4 metal studs, 16" o.c. to ceiling typical. Provide 2 1/2 sound batts typical at office and corridor partitions where required for sound.
• Perimeter wall furring:	5/8" Type X gypsum wallboard over 4" studs with R-13 batt insulation, warm side vapor barrier.
• Raised floor system:	24" x 24" non-combustible floor tiles on adjustable pedestals; 8" total height with 6" clear void. Draft stops every 9,000 sf within tenant spaces; every 100 lineal feet in enclosed corridors and continuous below corridor walls. Recessed floor receptacles for distribution of electrical and data/telecomm. Provide 18" high system with ramps where required at dedicated computer rooms. Raised floor tiles are square and are covered by square tiles or carpet tiles, not with rolled carpet. Raised floor system has seismic bracing. All metal parts of the access floor are bonded to ground. The resistance between the bare top surface panels and pedestals should be one ohm or less. The raised floor areas include the hallways. Any walls or dividers under the raised floor will have conduit sleeves for cable penetrations. The number and size of conduit sleeves required depends on the location of the wall or divider.

- Interior Doors: $1\ ^3/_4$" thick solid core, premium grade, 5 ply maple veneer doors in painted hollow metal frames with closers at all rated doors. Size 3'-0" x 8'-0" typical.

- Lighting: Linear recessed cove fluorescent at fixture walls.

- Primary Lobby finishes: Wood paneling.

- Elevator finishes: Wood paneling.

- Wall finishes:

  Typical walls: Latex paint, smooth finish over GWB.

  CMU walls, toilet rooms, service areas: Alkyd enamel, semi-gloss.

  Kitchen areas: Epoxy, semi-gloss.

  Toilet rooms: Ceramic tile with pattern at fixture walls, thin-set over greenboard. Cove base at walls.

- Floor finishes:

  Main Lobby: Stone, honed finish.

  Toilet rooms: Ceramic tile with pattern.

  Kitchen and serving: Quarry tile in kitchen, sheet vinyl in servery.

  Typical lease area: Carpet tiles, 18" x 18", tuft-loop 32 oz nylon over raised floor system. Mastic applied, staggered from floor tiles.

- Ceiling finishes:

  Lobby: Multiple layer profiled GWB with veneer plaster skim coat.

  Typical elevator lobbies: Painted GWB.

  Typical tenant spaces: 2' x 2' suspended tegular acoustical tile ceiling, regular, $^5/_8$" thick with fine fissured texture. Typical suspension tee 1" inch.

7.0 Conveying

- Passenger elevators: *Existing 3 passenger elevator and service elevator: Recondition existing cabs; replace doors, frames and operating mechanisms, reinstall with threshold 8" above existing to match raised floor; add fifth floor stations; total 7 stops per elevator. Provide new equipment platform in penthouse with new state-of-the-art controls.*

Demolish existing auxiliary elevator that backs up to existing passenger elevators.

Additional elevator: Install new fourth hoistway adjacent to existing 3 passenger elevators with cab and controls to match.

Provide 4 new 3500# elevators plus one freight elevator to service all floors.

8.0 Mechanical

- Toilet Fixtures: Fixture Count (total required for building (1991 UPC): Mens - 35 WC's, incl. 8 HC, plus 30 urinals and 36 lavs. Women's - 58 WC's, incl. 13 HC, plus 36 lavs.

  Lavatories: Am. Std. vit. china self rimming oval in stone countertop with steel supports.

  Urinals: Am. Std. wall hung vit. china watersaver with flush valves

  Water closets: Am. Std. wall hung, vit. china with flush valves

- Water coolers: 4 per floor - Elkay Barrier-Free - single1 per floor - Elkay Barrier-Free - double

- Plumbing and Service Piping:

Domestic CW, HW and HWC distribution system — copper typical.

Steam fired domestic HW generators:
1 - 1 MBH for domestic HW
1 - 250 KBH for servery
1 - 250 KBH w/ 100 gal storage for recreation

Sanitary waste and vent system, trap primers for floor drains

Roof drains and areas drains, rain water leader and overflow rain water leader system

- HVAC

Air Handling:

4 central system, VAV AHUs at 75000 cfm each for general office areas, with filters, cooling coils, heat recovery preheat coils
160 fan powered terminal units (FTUs) with hot water heating
200 FTUs, no heating

Packaged VAV AHUs for:
Emergency command 3000 cfm
10 FTUs

Print shop 3000 cfm
10 FTUs

Single zone, variable temperature AHUs for:
Auditorium 4000 cfm
Cafeteria 4000 cfm
Servery 2000 cfm

Single zone, variable temperature, 100% outside air AHUs with heat recovery for:
Recreation/lockers 5000 cfm

Heating and ventilating systems for:
Mechanical rooms 2 cfm/ft2
Shipping/receiving 12000 cfm

2 heat pumps for electrical transformer rooms, 1000 cfm each

Miscellaneous exhaust fans for:
Toilet rooms 14000 cfm
Loading dock 6000 cfm
Print Shop 1000 cfm
Mechanical rooms 2 cfm/ft2

Cooling:

Connection to existing campus chilled water distribution system

8" chilled water supply and return risers from ground floor mechanical room to penthouse mechanical rooms, 3" lines to centralized location for special system AHUs

2 chilled water primary pumps
11 cooling coil circulation pumps
11 AHU cooling coils

Computer room/special cooling (condenser water loop)
150 ton cooling tower
6" condenser water supply and return building loop
2 condenser water circulation pumps
15 - 10 ton water cooled computer room cooling units includes cooling for Telcom/LAN rooms, UPS room, transformer room heat pumps and computer rooms

Heat recovery loop, heat exchanger, pumps to central system air preheat coils
1 expansion tank, 1 air separator

Heating:

Connection to campus steam distribution system
2 steam pressure reducing stations

6" heating hot water primary supply/return loop in ground floor mechanical room

2 - 5 MBH steam to heating HW converters

2 primary heating HW pumps

5 secondary zone heating hot water pumps

1 expansion tank, 1 air separator

2 condensate pumps and condensate receiver

1 60 KBH gas fired make-up air unit for servery, 1000 cfm

Emergency Power:

1 - 10,000 gallon underground fuel oil tank, duplex transfer pumps, day tank

2 - emergency generators mufflers and exhaust ducts, air cooled or water cooled radiators

Controls:

Complete new direct digital control system connected to existing central campus JCI Metasys system, pneumatic actuators on automatic dampers and valves, control air compressor

Fire Protection:

Type II building, B2 occupancy

Class I dry standpipe system, riser in each stairwell, all risers interconnected at bottom

Complete, ordinary hazard, automatic sprinkler systems with alarm valves, zone valves, supervisory switches, water motor alarm for:
Dry system in loading dock/receiving area
Preaction system in raised floor computer rooms
CO2 system under computer room raised floor
Special foam system for server hood
Wet system in other areas

9.0 Electrical

- **Service and Distribution:** Main disconnect switches will be 15 kV 600 amp fusible, three pole duplex load break interrupter switches of the quick make-quick break type.

  Switchboard will have transformer section with 1000 kVA 12470 volt 480 volt, 3 phase, dry type and a 1600 amp, 3 phase, metal clad dead front low voltage distribution section with secondary branch breakers or switches.

- **Branch Panel Feeders:** Power busway systems will be 1600 amp, 3 phase, 4 wire full neutral, 600 volt rated with copper bussing, totally enclosed non-ventilated indoor type with plug-in disconnect circuit breakers, mechanically interlocked.

- **Panelboards:** Branch panels service shall be 3 phase, 4 wire, 480/277 volt or 3 phase, 4 wire, 120/208 volt with 100 - 400 amp copper bussing, 65,000 A.I.C. with main and branch breakers of sizes as required.

- **Lighting:** Fluorescent lighting fixtures recessed or surface mounted type with acrylic lens and steel cans, with 277 volt operation and energy savings lamps and ballasts, two or four lamp type.

- **Under Floor Distribution System:** Install power/tele/communications cable routing under the proposed raised floors to electrical room panels, telephone and communication terminal closets.

- **Raised Floor Receptacles:** Recessed type, consolidated receptacles for power, data and telecomm installed asymmetrically in raised floor tiles for flexible placement. Includes hinged floor cover with carpet insert and wire aperture.

- **Cabling & Conduit:** Backbone cable distribution between telecommunications closets uses 4" diameter sleeves:

  Conduit sleeves extend a minimum of 1 inch above floor level.

  Conduit sleeves are reamed and bushed at both ends.

  Conduit sleeves are threaded at the top for fire stopping caps.

The count of 4" conduit sleeves on the floor of each telecommunications closet shall be at minimum:

Basement	None
Ground Floor	8
1st Floor	7
2nd Floor	6
3rd Floor	5
4th Floor	4
5th Floor	3

Additional 4" conduits for cabling:

Install two 4" conduits from one of 5th Floor closets to serve penthouse. The penthouse should have at least two 2" conduits to the roof for antennas.

Install eight 4" conduits from the main distribution frame/entrance cable room to each of the other two basement closets.

Install six 4" conduits from the main distribution fram/entrance cable room to the 2nd Floor closet that has no 1st Floor closet below it.

Install at least eight 4" conduits for telephone company and fiber optic entrance cables. Preferably, the eight conduits should be diversely routed into two groups of four conduits to separate street locations. Two of the 4" conduits, one on each route shall have one 1" innerduct and two 1.25" innerducts for fiber optic cables. All entrance conduits shall go to the main distribution frame/entrance cable room.

- Telecommunications Rooms:

Environmental requirements:

The temperature must be in the range of 65 to 75 degrees Fahrenheit. Humidity must be in the range of 40 to 55%.

Telecommunications closets have continuous (24 hours/day, 365 days/year) climate control. A stand-alone unit with independent controls shall be installed if the building system cannot assure continuous operation within these ranges. The stand-alone unit shall be on a separate circuit from the telecommunications equipment in the closet and should preferably be located at the end of the closet closest to the electrical room to maximize usable space. Normally keep a 39" clearance from cabling system components to the electrical room, transformers, elevators, copiers, and any fans or motors (such as would be present in a climate control system).

Electrical and grounding requirements:

Each telecommunications closet shall have a 50 amp, 20 position subpanel dedicated to telecommunications equipment in the closet only. The subpanel shall be fed by a separate supply circuit. Lighting for the closet and any stand-alone climate control system shall not be installed on this circuit or subpanel. All outlets must be on non-switched circuits. All wall outlets and equipment rack power strips shall be 115 VAC, 15 amp, 3-wire grounded. The duplex wall outlets shall have orange receptacles, be 6" off the finished floor, and located at 6' intervals around the perimeter of the closet. Additionally, each equipment rack in the telecommunications closet (of which there will be at least two) will require two power strips with at least 6 outlets each.

There shall also be one 15A duplex wall outlet in each telecommunications closet for electrical tools and cleaning equipment. This wall outlet shall have brown receptacles. It shall not be on the same circuit or subpanel as the other electrical outlets in the room. It should be 6" off the finished floor and on the wall adjacent to the door.

Lighting in the telecommunications closets shall be a minimum of 50 footcandles measured 3' above the finished floor. Lights shall be a minimum of 8'-6" above the finished floor. The lighting shall be direct instead of indirect. The lights shall be controlled by one switch near the door. However, they shall not be on dimmers, as they generate electromagnetic interference (EMI). If fluorescent lights are used, they shall have low radio frequence emission.

No electrical components, except that specifically for the telecommunications systems, shall be located in the telecommunications closet.

Install a dedicated ground bar in each telecommunications closet dedicated to communications equipment. The ground bar shall have rounded edges and be mounted on insulators. The copper grounding bar for each telecommunications closet shall be bonded to the same grounding system used by power service for the office space that the closet serves. All bonds at the ground bars shall use silver epoxy and bolts. All equipment racks shall be individually bonded to this ground bar using a 6 AWG conductor. The resistance from each equipment rack to the master ground bar for the building shall be no greater than 1 ohm.

Construction requirements:

There shall be no false ceiling in the telecommunications closets. The minimum ceiling height of the telecommunications closets without obstructions, like lighting fixtures or sprinklers, shall be 8[-6". There shall be no false ceiling.

Raised floor shall extend from the office areas to the telecommunications closets without obstructions like walls, water pipes, or electrical conduits.

No carpet shall be installed in the telecommunications closet. Tiles are acceptable. Treat floors, walls and ceiling of the telecommunications closets to eliminate dust, including sealing of concrete. The floor material must have anti-static properties.

A plywood communications backboard in all telecommunications closets. They shall be at least 8 feet high and cover all walls. The plywood for the communications backboards in the telecommunications closets must be 3/4" trade size fire-retardant plywood, preferably void free. The plywood must be rigidly fastened to wall framing members. The bottom of the plywood must be flush with the finished floor. The plywood can be painted the same color as the room walls, however, the paint shall be non-conductive, fire-retardant, and be free from turpentime.

The interior finish of the telecommunicationns closets shall be of a light color to enhance room lighting. The interior walls shall be painted with two coast of fire-retardant paint. The paint shall also be non-conductive and be free from turpentime.

Doors for the telecommunications closets must be a minimum of 3' wide and 6'-8" high with no door sill or center post. Doors should open outward from the room. If this is not possible, the doors should open away from the center of the room. If the telecommunications closet is adjacent to an electrical room or mechanical room, the door should be located adjacent to the wall nearest that room and swing toward the electrical or mechanical room.

The doors must have locks, preferably unique for each closet, but with one master key for all telecommunications closets in the building.

The minimum floor loading for the closets shall be 2.4 kPa (50 lbf/sq. ft.).

Sprinkler heads, if required in the telecommunications closets, shall be provided with wire cages to prevent accidental operations. They shall also have drip pans and the highest thermal link permitted by code.

- Sound System: Auditorium, Conference Rooms.

10.0 Project Mark-ups: See Cost Estimate.

11.0 Equipment:

- Loading dock levelers: 2 required.
- Window treatment: Horizontal venetian blinds typical.
- FEC's: Larson/Potter Roemer type recessed cabinet with white metal door and graphics.
- Auditorium/Conference Room equipment: Projection screen and equipment, acoustic panels, sound system, operable partitions.
- Toilet room accessories: Mirrors at lavs, ceiling hung toilet partitions, standard accessories.
- Other special construction: Lockers in shower rooms with benches.
- Food service equipment:

12.0 Site Work

Site Preparation:

- All Options: Clear site, grade as required. Reserve and stockpile any existing topsoil for redistribution and finish grading.
- Site improvements: Asphalt paved hard-surface parking/loading area with concrete apron at loading dock.

  Landscaping as indicated.
- Site utilities: All utilities currently serve existing building. Evaluate and upgrade existing strut utilities, extend as required to renovated building and addition.
- Street improvements: New curb and paving at turnout on Columbia. Widen 11th Avenue with drop-off lane in front of GA Building.
- Main entrance: New entrance plaza on 11th Avenue with monumental stairs, handicapped ramp and walk, using concrete and stone.

C. Estimate

File ID. 2G12
Project No. 20415
363,200 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
CAPITAL CAMPUS; OLYMPIA, WA

08/04/92

ESTIMATE TOTALS
SCHEME C-PLUS GENERAL ADMINISTRATION BUILDING

COST SUMMARY:

Primary Facility		19,946,864
Secondary Facility		5,217,040
Sitework		759,246
TOTAL DIRECT COSTS		25,923,150
Design Contingency	20.00%	5,184,630
SUBTOTAL		31,107,780
General Conditions	5.00%	1,555,389
SUBTOTAL		32,663,169
Home Office Overhead	4.00%	1,306,527
SUBTOTAL		33,969,696
Profit	3.00%	1,019,091
SUBTOTAL		34,988,787
M/WBE Requirements	1.50%	524,832
SUBTOTAL		35,513,618
Permit	1.00%	355,136
SUBTOTAL		35,868,755
Bond	1.00%	358,688
ANTICIPATED 1992 MACC ====>		36,227,442

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
FOUNDATIONS				$29,820
SUBSTRUCTURE				$28,124
SUPERSTRUCTURE				$858,176
EXTERIOR CLOSURE				$4,429,788
ROOFING				$49,332
INTERIOR CONSTRUCTION				$4,974,919
CONVEYING SYSTEM				$420,000
MECHANICAL				$5,470,242
ELECTRICAL				$3,357,665
EQUIPMENT				$328,798
** SUBDIVISION TOTAL				$19,946,864

File ID. 2G12 C3 MANAGEMENT GROUP, INC.
Project No. 20415 25 CENTRAL WAY, SUITE 310 08/04/92
308,470 SQFT KIRKLAND, WASHINGTON 98033

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
FOUNDATIONS				
STANDARD FOUNDATIONS				
WALL FOUNDATIONS				
MACH EXCAV CONTINUOUS FTG	1,281	CUYD	4.18	5,366
FINE GRADE CONTINUOUS FTG	422	SQFT	.16	70
MACH BACKFILL CONTINUOUS FTG	1,212	CUYD	4.93	5,984
RUB CONC WALLS	984	SQFT	.81	801
POINT & PATCH	984	SQFT	.11	110
ER CONTINUOUS FTG EDGE FORM	504	SQFT	1.53	775
WRK CONTINUOUS FTG EDGE FORM	584	SQFT	.43	252
ER WALL FORM W/2.6 BM/SF	1,968	SQFT	2.43	4,784
WRK WALL FORM W/2.6 BM/SF	1,968	SQFT	.41	821
WALL FORM HARDWARE	984	SQFT	.08	79
FORM RELEASING AGENT	1,968	SQFT	.13	264
RE-STEEL @ WALLS	40	CWT	43.62	1,745
RE-STEEL @ CONTINUOUS FTG	6	CWT	46.00	276
CONC IN CONTINUOUS FOOTING		****		
4000 PSI W/PUMP	16	CUYD	64.37	1,030
CONCRETE IN WALLS		****		
4000 PSI W/PUMP	25	CUYD	66.40	1,660
* TOTAL WALL FOUNDATIONS				24,017
COLUMN FOUNDATION				
MACH EXCAV COLUMN FTG	53	CUYD	3.50	186
HAND EXCAV COLUMN FTG	33	CUYD	22.75	751
FINE GRADE @ COLUMN FTG	50	SQFT	.16	8
MACH BACKFILL @ COLUMN FTG	51	CUYD	4.92	251
HAND BACKFILL @ COLUMN FTG	24	CUYD	7.91	190
ER COLUMN FTG EDGE FORM	235	SQFT	1.53	361
WRK COLUMN FTG EDGE FORM	235	SQFT	.43	101
RE-STEEL @ COLUMN FOOTING	7	CWT	46.00	322
CONC IN COLUMN FOOTING		****		
4000 PSI W/PUMP	12	CUYD	64.08	769
* TOTAL COLUMN FOUNDATION				2,939
FOUNDATION DRAIN				
PERIMETER DRAINAGE SYSTEM	168	LNFT	17.04	2,864
* TOTAL FOUNDATION DRAIN				2,864
** TOTAL STANDARD FOUNDATIONS				29,820
*** TOTAL FOUNDATIONS				29,820
SUBSTRUCTURE				
SLAB ON GRADE				
STANDARD SLAB ON GRADE				

File ID. 2G12
Project No. 20415
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C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
SUBSTRUCTURE				
SLAB ON GRADE				
STANDARD SLAB ON GRADE				
UNDERSLAB FILL	18	CUYD	24.44	440
FINE GRADE SLAB ON GRADE	960	SQFT	.16	159
TROWEL CEMENT FINISH	960	SQFT	.32	312
PROTECT & CURE	960	SQFT	.06	58
RE-STEEL @ SLAB ON GRADE	20	CWT	48.80	976
CONCRETE @ SLAB ON GRADE	18	CUYD	56.83	1,023
VAPOR BARRIER @ SLAB, VISQUEEN	960	SQFT	.09	87
* TOTAL STANDARD SLAB ON GRADE				3,055
STRUCTURAL SLAB ON GRADE				
UNDERSLAB FILL	37	CUYD	24.40	903
FINE GRADE SLAB ON GRADE	1,998	SQFT	.16	332
TROWEL CEMENT FINISH	1,998	SQFT	.32	649
PROTECT & CURE	1,998	SQFT	.06	122
RE-STEEL @ SLAB ON GRADE	30	CWT	48.80	1,464
CONCRETE @ SLAB ON GRADE	37	CUYD	56.83	2,103
VAPOR BARRIER @ SLAB, VISQUEEN	1,998	SQFT	.09	182
* TOTAL STRUCTURAL SLAB ON GRADE				5,755
TRENCHES, PITS & BASES				
ELEV PIT	1	EACH	3,500.00	3,500
* TOTAL TRENCHES, PITS & BASES				3,500
** TOTAL SLAB ON GRADE				12,310
SUBSTRUCTURE WALLS				
SUBSTRUCTURE WALL CONSTRUCTION				
POINT & PATCH	2,640	SQFT	.11	295
ER WALL FORM W/3.0 BM/SF	2,640	SQFT	2.95	7,801
WRK WALL FORM W/3.0 BM/SF	2,640	SQFT	.62	1,655
WALL FORM HARDWARE	1,320	SQFT	.08	106
FORM RELEASING AGENT	2,640	SQFT	.13	354
RE-STEEL @ WALLS	66	CWT	43.63	2,880
CONCRETE IN WALLS		****		
4000 PSI W/PUMP	41	CUYD	66.41	2,723
* TOTAL SUBSTRUCTURE WALL CONSTRUC				15,814
** TOTAL SUBSTRUCTURE WALLS				15,814
*** TOTAL SUBSTRUCTURE				28,124
SUPERSTRUCTURE				
FLOOR CONSTRUCTION				
UPPER FLOORS CONSTRUCTION				
TROWEL CEMENT FINISH	7,414	SQFT	.32	2,410

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
SUPERSTRUCTURE				
FLOOR CONSTRUCTION				
UPPER FLOORS CONSTRUCTION				
FLOAT FINISH	1,638	SQFT	.27	444
PROTECT & CURE	9,052	SQFT	.06	552
SCREEDS FOR SLAB	1,086	LNFT	1.18	1,290
ER SLAB EDGE FORM @ MTL DECK	2,908	LNFT	1.80	5,243
WRK SLAB EDGE FORM @ MTL DECK	2,908	LNFT	.63	1,847
6X6-6/6 MESH	18	SQS	32.33	582
6X6-4/4 MESH	82	SQS	37.50	3,075
CONC IN SLAB OVER MTL DECK		****		
3000 PSI W/PUMP	104	CUYD	62.38	6,488
PRECAST @ LOADING DOCK	1,560	SQFT	35.00	54,600
STRUCTURAL I BEAMS	900	CWT	74.52	67,072
STRUCTURAL ANGLES	451	CWT	116.05	52,339
STRUCTURAL PLATES	8	CWT	103.00	824
SHOP PAINT STEEL 1-COAT	301	SQS	22.53	6,782
STRUCT FRAME @ SLAB CUTS	15	BAY	10,000.00	150,000
STRUCT FRAME @ SLAB INFL	25	BAY	10,000.00	250,000
DRILL/SET EXP BOLTS	2,740	EACH	35.00	95,900
DRILL GROUT BOLTS @ COL	560	EACH	50.00	28,000
2" METAL DECK	7,414	SQFT	1.15	8,578
3" METAL DECK	1,638	SQFT	1.58	2,594
CONC/MTL DECK INFILL	3,924	SQFT	6.00	23,544
FIREPROOFING	12,976	SQFT	2.00	25,952
FIELD TOUCH-UP S STEEL	301	SQS	12.04	3,624
* TOTAL UPPER FLOORS CONSTRUCTION				791,740
EXTERIOR BALCONY CONSTRUCTION				
FLOAT FINISH	1,638	SQFT	.27	444
PROTECT & CURE	1,638	SQFT	.06	100
SCREEDS FOR SLAB	197	LNFT	1.18	234
6X6-6/6 MESH	18	SQS	32.33	582
CONC IN SLAB OVER MTL DECK		****		
3000 PSI W/PUMP	22	CUYD	62.40	1,373
STRUCTURAL I BEAMS	197	CWT	74.52	14,681
SHOP PAINT STEEL 1-COAT	74	SQS	22.54	1,668
3" METAL DECK	1,638	SQFT	1.58	2,594
FIREPROOFING	1,638	SQFT	2.00	3,276
FIELD TOUCH-UP S STEEL	74	SQS	12.05	892
* TOTAL EXTERIOR BALCONY CONSTRUCT				25,844
** TOTAL FLOOR CONSTRUCTION				817,584
ROOF CONSTRUCTION				
FLAT ROOF CONSTRUCTION				
RUBBED CONCRETE FINISH	1,424	SQFT	.76	1,088

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
SUPERSTRUCTURE				
ROOF CONSTRUCTION				
FLAT ROOF CONSTRUCTION				
ISOLATED BEAM SOFFIT	328	SQFT	9.55	3,134
ISOLATED BEAM SIDE FORM	328	SQFT	3.09	1,014
COLUMN FORMS	768	SQFT	3.79	2,918
RE-STEEL @ COLUMNS	24	CWT	48.95	1,175
RE-STEEL @ ISOLATED BEAM	31	CWT	48.77	1,512
CONCRETE @ ISOLATED BEAM	13	CUYD	73.69	958
CONCRETE @ COLUMN	10	CUYD	66.80	668
STRUCTURAL I BEAMS	240	CWT	74.52	17,886
SHOP PAINT STEEL 1-COAT	89	SQS	22.53	2,006
3" METAL DECK	1,998	SQFT	1.58	3,165
FIREPROOFING	1,998	SQFT	2.00	3,996
FIELD TOUCH-UP S STEEL	89	SQS	12.04	1,072
* TOTAL FLAT ROOF CONSTRUCTION				40,592
** TOTAL ROOF CONSTRUCTION				40,592
*** TOTAL SUPERSTRUCTURE				858,176
EXTERIOR CLOSURE				
EXTERIOR WALLS				
EXTERIOR WALL CONSTRUCTION				
PRECAST TYPICAL EXTERIOR	52,460	SQFT	40.00	2,098,400
STONE PANEL ACCENT	338	SQFT	50.00	16,900
METAL PANEL ACCENT	338	SQFT	30.00	10,140
MTL STD/INS/GWB	44,105	SQFT	3.00	132,315
* TOTAL EXTERIOR WALL CONSTRUCTION				2,257,755
CORNER SHEAR UPGRADES				
SHORE SLABS @ SHEAR WALL	10,080	SQFT	2.00	20,160
EXCAV/HAUL @ GRADE BEAM	4,700	CUYD	6.00	28,200
BACKFILL @ GRADE BEAM	3,274	CUYD	15.00	49,110
AUGER PILES 18" DIA	4,800	LNFT	25.00	120,000
SHEET PILE FOR EXC @ GB	400	SQFT	25.00	10,000
RUB CONC WALLS	24,963	SQFT	.81	20,320
TROWEL CEMENT FINISH	24,192	SQFT	.32	7,863
POINT & PATCH	4,777	SQFT	.11	535
PROTECT & CURE	24,192	SQFT	.06	1,476
ER WALL FORM W/2.7 BM/SF	4,777	SQFT	2.67	12,774
WRK WALL FORM W/2.7 BM/SF	4,777	SQFT	.60	2,871
ER WALL FORM W/2.9 BM/SF	4,557	SQFT	2.94	13,420
WRK WALL FORM W/2.9 BM/SF	4,557	SQFT	.62	2,857
ER WALL FORM W/3.5 BM/SF	20,406	SQFT	3.52	71,829
WRK WALL FORM W/3.5 BM/SF	20,406	SQFT	.70	14,387
WALL FORM HARDWARE	29,740	SQFT	.08	2,379
FORM RELEASING AGENT	29,740	SQFT	.13	3,985

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
EXTERIOR CLOSURE				
EXTERIOR WALLS				
CORNER SHEAR UPGRADES				
6X6-6/6 MESH	267	SQS	32.34	8,635
RE-STEEL @ WALLS	13,558	CWT	43.63	591,576
CONCRETE IN WALLS		****		
8000 PSI W/PUMP	1,830	CUYD	73.89	135,219
CONCRETE TOPPING	180	CUYD	61.43	11,058
DRILL/GROUT ANCHORS	4,120	EACH	50.00	206,000
BACKUP BEAM	40	CUYD	750.00	30,000
* TOTAL CORNER SHEAR UPGRADES				1,364,654
** TOTAL EXTERIOR WALLS				3,622,409
EXTERIOR DOORS & WINDOWS				
WINDOWS				
WINDOWS	16,266	SQFT	35.00	569,310
* TOTAL WINDOWS				569,310
STOREFRONTS				
STOREFRONT/ENTRY DOORS	648	SQFT	30.00	19,440
* TOTAL STOREFRONTS				19,440
** TOTAL EXTERIOR DOORS & WINDOWS				588,750
EXTERIOR DEMOLITION				
EXTERIOR DEMOLITION				
SAW CUT SPANDREL BEAMS	40,336	INFT	2.25	90,756
DEMO SPANDREL BEAM PCS	405	CUYD	75.00	30,375
DEMO PIP SHEAR WALLS	670	CUYD	100.00	67,000
DEMO WINDOWS	20,332	SQFT	1.50	30,498
* TOTAL EXTERIOR DEMOLITION				218,629
** TOTAL EXTERIOR DEMOLITION				218,629
*** TOTAL EXTERIOR CLOSURE				4,429,788
ROOFING				
ROOF DEMOLITION				
ROOF DEMOLITION				
DEMO ROOFING/INSUL	49,332	SQFT	1.00	49,332
* TOTAL ROOF DEMOLITION				49,332
** TOTAL ROOF DEMOLITION				49,332
*** TOTAL ROOFING				49,332

File ID. 2G12
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308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
INTERIOR CONSTRUCTION				
PARTITIONS				
FIXED PARTITIONS				
5/8" GWB, X, T&F ON WALL	85,178	SQFT	.89	75,808
3-5/8" MTL STUD, 20GA, 16"OC	42,589	SQFT	1.15	49,276
SHAFT WALL ASSY, SOLID, 2"	9,704	SQFT	4.99	48,472
PAINT WALLS	85,178	SQFT	.40	34,071
* TOTAL FIXED PARTITIONS				207,627
INTERIOR DOORS & FRAMES				
INTERIOR DOOR/FRAME/HDWR	146	LVS	850.00	124,100
* TOTAL INTERIOR DOORS & FRAMES				124,100
** TOTAL PARTITIONS				331,727
INTERIOR FINISHES				
FLOOR FINISHES				
CARPET/FLOOR COVERING	308,470	SQFT	2.00	616,940
ACCESS FLOORING	308,470	SQFT	6.00	1,850,820
* TOTAL FLOOR FINISHES				2,467,760
CEILING FINISHES				
CEILINGS	308,470	SQFT	2.00	616,940
* TOTAL CEILING FINISHES				616,940
** TOTAL INTERIOR FINISHES				3,084,700
SPECIALTIES				
SPECIALTIES/CASEWORK	308,470	SQFT	1.50	462,705
** TOTAL SPECIALTIES				462,705
INTERIOR DEMOLITION				
INTERIOR DEMOLITION				
DEMO INTERIORS B-4	285,000	SQFT	3.75	1,068,750
SAW CUT SLABS	9,072	INFT	.60	5,443
SAW CUT FDN WALL @ DOCK	920	INFT	2.25	2,070
DEMO SLABS	127	CUYD	100.00	12,700
DEMO FDN WALL @ LOADDOCK	10	CUYD	100.00	1,000
SHORE CUT SLAB EDGES	1,412	LNFT	2.00	2,824
DEMO STAIR	4	FLTS	750.00	3,000
* TOTAL INTERIOR DEMOLITION				1,095,787
** TOTAL INTERIOR DEMOLITION				1,095,787
*** TOTAL INTERIOR CONSTRUCTION				4,974,919
CONVEYING SYSTEM				
ELEVATORS				

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
CONVEYING SYSTEM				
ELEVATORS				
ELEVATORS REFURBISH	24	STOP	13,000.00	312,000
ELEVATORS - NEW	6	STOP	18,000.00	108,000
* TOTAL ELEVATORS				420,000
*** TOTAL CONVEYING SYSTEM				420,000
MECHANICAL				
PLUMBING				
PLUMBING	195	FIX	1,725.00	336,375
** TOTAL PLUMBING				336,375
H.V.A.C.				
HVAC AIR SYSTEM	308,470	SQFT	7.50	2,313,525
CONTROLS & INSTRUMENTATION				
HVAC CONTROLS	308,470	SQFT	2.50	771,175
* TOTAL CONTROLS & INSTRUMENTATION				771,175
** TOTAL H.V.A.C.				3,084,700
FIRE PROTECTION				
FIRE SPRINKLERS	308,470	SQFT	1.60	493,552
** TOTAL FIRE PROTECTION				493,552
HEAT/COOLING SYSTEMS				
STEAM CONDENSATE DISTRUBUTION				
STEAM SOURCE EQUIP/DIST	308,470	SQFT	1.00	308,470
* TOTAL STEAM CONDENSATE DISTRUBUT				308,470
HOT WATER SUPPLY/RETURN DISTRIBUTION				
HYDRONIC HEAT	308,470	SQFT	2.00	616,940
* TOTAL HOT WATER SUPPLY/RETURN DI				616,940
CHILLED WATER DISTRIBUTION				
CHILLED WATER	308,470	SQFT	1.50	462,705
SPECIAL COOLING-COMPUTER	150	TNS	950.00	142,500
COOLING TWR 150TN CMPTR	1	EACH	25,000.00	25,000
* TOTAL CHILLED WATER DISTRIBUTION				630,205
** TOTAL HEAT/COOLING SYSTEMS				1,555,615
*** TOTAL MECHANICAL				5,470,242
ELECTRICAL				
ELECTRICAL				
BASIC ELECTRICAL SYSTEM	308,470	SQFT	7.50	2,313,525
* TOTAL ELECTRICAL				2,313,525

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
ELECTRICAL				
COMMUNICATION SYSTEMS				
COMPUTER/DATA SYSTEM				
COMPUTER/DATA/TELEPHONE	308,470	SQFT	2.00	616,940
* TOTAL COMPUTER/DATA SYSTEM				616,940
CLOCK & PROGRAM SYSTEM				
CLOCK SYSTEM	308,470	SQFT	.10	30,847
* TOTAL CLOCK & PROGRAM SYSTEM				30,847
** TOTAL COMMUNICATION SYSTEMS				647,787
ALARM SYSTEMS				
FIRE ALARM SYSTEM				
FIRE ALARM	308,470	SQFT	.50	154,235
* TOTAL FIRE ALARM SYSTEM				154,235
SECURITY SYSTEMS				
SECURITY SYSTEM	308,470	SQFT	.25	77,118
* TOTAL SECURITY SYSTEMS				77,118
** TOTAL ALARM SYSTEMS				231,353
EMERGENCY ELECTRICAL SYSTEMS				
EMERGENCY GENERATOR				
EMERGENCY GENERATOR 250KW	1	EACH	50,000.00	50,000
* TOTAL EMERGENCY GENERATOR				50,000
BATTERY SYSTEMS				
UPS - ALLOWANCE	1	LPSM	107,000.00	107,000
* TOTAL BATTERY SYSTEMS				107,000
ATS/DISTRIBUTIONS				
ATS 400 AMP	1	EACH	8,000.00	8,000
* TOTAL ATS/DISTRIBUTIONS				8,000
** TOTAL EMERGENCY ELECTRICAL SYSTE				165,000
*** TOTAL ELECTRICAL				3,357,665
EQUIPMENT				
FIXED & MOVABLE EQUIPMENT				
FOOD SERVICE EQUIPMENT				
FOOD SERVICE EQUIPMENT	1	LPSM	250,000.00	250,000
* TOTAL FOOD SERVICE EQUIPMENT				250,000
LOADING DOCK EQUIPMENT				
DOCK LEVELERS	3	EACH	10,000.00	30,000
* TOTAL LOADING DOCK EQUIPMENT				30,000
** TOTAL FIXED & MOVABLE EQUIPMENT				280,000

File ID. 2G12
Project No. 20415
308,470 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
PRIMARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
EQUIPMENT				
FURNISHINGS				
WINDOW TREATMENT				
BLINDS	16,266	SQFT	3.00	48,798
* TOTAL WINDOW TREATMENT				48,798
** TOTAL FURNISHINGS				48,798
*** TOTAL EQUIPMENT				328,798
**** TOTAL PRIMARY FACILITY				19,946,864

File ID. 2G12
Project No. 20415
54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
FOUNDATIONS				$24,460
SUBSTRUCTURE				$27,646
SUPERSTRUCTURE				$1,078,562
EXTERIOR CLOSURE				$1,227,574
ROOFING				$471,465
INTERIOR CONSTRUCTION				$699,805
CONVEYING SYSTEM				$88,000
MECHANICAL				$969,128
ELECTRICAL				$616,456
EQUIPMENT				$13,944
** SUBDIVISION TOTAL				$5,217,040

File ID. 2G12
Project No. 20415
54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
FOUNDATIONS				
STANDARD FOUNDATIONS				
WALL FOUNDATIONS				
MACH EXCAV CONTINUOUS FTG	1,135	CUYD	4.18	4,755
FINE GRADE CONTINUOUS FTG	690	SQFT	.16	115
MACH BACKFILL CONTINUOUS FTG	1,041	CUYD	4.93	5,140
ER CONTINUOUS FTG EDGE FORM	920	SQFT	1.53	1,414
WRK CONTINUOUS FTG EDGE FORM	920	SQFT	.43	397
RE-STEEL @ CONTINUOUS FTG	10	CWT	46.00	460
CONC IN CONTINUOUS FOOTING		****		
4000 PSI W/PUMP	26	CUYD	64.34	1,673
* TOTAL WALL FOUNDATIONS				13,954
COLUMN FOUNDATION				
MACH EXCAV COLUMN FTG	160	CUYD	3.51	562
FINE GRADE @ COLUMN FTG	394	SQFT	.16	65
MACH BACKFILL @ COLUMN FTG	138	CUYD	4.94	682
ER COLUMN FTG EDGE FORM	315	SQFT	1.54	485
WRK COLUMN FTG EDGE FORM	315	SQFT	.42	135
RE-STEEL @ COLUMN FOOTING	15	CWT	46.00	690
CONC IN COLUMN FOOTING		****		
4000 PSI W/PUMP	22	CUYD	64.04	1,409
* TOTAL COLUMN FOUNDATION				4,028
FOUNDATION DRAIN				
PERIMETER DRAINAGE SYSTEM	380	LNFT	17.04	6,478
* TOTAL FOUNDATION DRAIN				6,478
** TOTAL STANDARD FOUNDATIONS				24,460
*** TOTAL FOUNDATIONS				24,460
SUBSTRUCTURE				
SLAB ON GRADE				
STANDARD SLAB ON GRADE				
UNDERSLAB FILL	207	CUYD	24.39	5,050
FINE GRADE SLAB ON GRADE	11,163	SQFT	.16	1,853
TROWEL CEMENT FINISH	11,163	SQFT	.32	3,628
PROTECT & CURE	11,163	SQFT	.06	680
RE-STEEL @ SLAB ON GRADE	151	CWT	48.78	7,366
CONCRETE @ SLAB ON GRADE	137	CUYD	56.82	7,785
VAPOR BARRIER @ SLAB, VISQUEEN	11,163	SQFT	.09	1,015
1" FOUNDATION INSULATION	480	SQFT	.56	269
* TOTAL STANDARD SLAB ON GRADE				27,646
** TOTAL SLAB ON GRADE				27,646
*** TOTAL SUBSTRUCTURE				27,646

File ID. 2G12
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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
SUPERSTRUCTURE				
FLOOR CONSTRUCTION				
UPPER FLOORS CONSTRUCTION				
TROWEL CEMENT FINISH	5,404	SQFT	.32	1,757
PROTECT & CURE	5,404	SQFT	.06	330
SCREEDS FOR SLAB	649	LNFT	1.19	772
ER SLAB EDGE FORM @ MTL DECK	444	LNFT	1.80	800
WRK SLAB EDGE FORM @ MTL DECK	444	LNFT	.63	282
6X6-6/6 MESH	60	SQS	32.33	1,940
CONC IN SLAB OVER MTL DECK		****		
3000 PSI W/PUMP	75	CUYD	62.38	4,679
STRUCTURAL I BEAMS	965	CWT	74.52	71,915
SHOP PAINT STEEL 1-COAT	362	SQS	22.53	8,156
3" METAL DECK	5,404	SQFT	1.58	8,559
FIREPROOFING	5,404	SQFT	2.00	10,808
FIELD TOUCH-UP S STEEL	362	SQS	12.04	4,359
* TOTAL UPPER FLOORS CONSTRUCTION				114,357
EXTERIOR BALCONY CONSTRUCTION				
TROWEL CEMENT FINISH	2,632	SQFT	.32	855
PROTECT & CURE	2,632	SQFT	.06	160
SCREEDS FOR SLAB	316	LNFT	1.19	376
ER SLAB EDGE FORM @ MTL DECK	196	LNFT	1.80	353
WRK SLAB EDGE FORM @ MTL DECK	196	LNFT	.63	125
6X6-6/6 MESH	29	SQS	32.34	938
CONC IN SLAB OVER MTL DECK		****		
3000 PSI W/PUMP	37	CUYD	62.37	2,308
3" METAL DECK	2,632	SQFT	1.58	4,169
FIREPROOFING	2,632	SQFT	2.00	5,264
* TOTAL EXTERIOR BALCONY CONSTRUCT				14,548
PLATFORM CONSTRUCTION				
TROWEL CEMENT FINISH	13,704	SQFT	.32	4,453
PROTECT & CURE	13,704	SQFT	.06	836
SCREEDS FOR SLAB	1,645	LNFT	1.18	1,955
ER SLAB EDGE FORM @ MTL DECK	864	LNFT	1.80	1,558
WRK SLAB EDGE FORM @ MTL DECK	864	LNFT	.63	549
6X6-4/4 MESH	151	SQS	37.50	5,663
CONC IN SLAB OVER MTL DECK		****		
3000 PSI W/PUMP	188	CUYD	62.39	11,730
STRUCTURAL I BEAMS	2,188	CWT	74.52	163,059
SHOP PAINT STEEL 1-COAT	821	SQS	22.53	18,500
3" METAL DECK	13,704	SQFT	1.58	21,707
FIREPROOFING	13,704	SQFT	2.00	27,408
FIELD TOUCH-UP S STEEL	821	SQS	12.04	9,886
* TOTAL PLATFORM CONSTRUCTION				267,304
** TOTAL FLOOR CONSTRUCTION				396,209

File ID. 2G12
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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
SUPERSTRUCTURE				
ROOF CONSTRUCTION				
FLAT ROOF CONSTRUCTION				
STRUCTURAL I BEAMS	3,534	CWT	74.52	263,368
SHOP PAINT STEEL 1-COAT	1,326	SQS	22.53	29,879
3" METAL DECK	29,397	SQFT	1.58	46,565
FIREPROOFING	29,397	SQFT	2.00	58,794
FIELD TOUCH-UP S STEEL	1,326	SQS	12.04	15,966
* TOTAL FLAT ROOF CONSTRUCTION				414,572
PITCHED ROOF CONSTRUCTION				
STRUCTURAL I BEAMS	2,188	CWT	74.52	163,059
SHOP PAINT STEEL 1-COAT	821	SQS	22.53	18,500
3" METAL DECK	18,230	SQFT	1.58	28,876
FIREPROOFING	18,230	SQFT	2.00	36,460
FIELD TOUCH-UP S STEEL	821	SQS	12.04	9,886
* TOTAL PITCHED ROOF CONSTRUCTION				256,781
** TOTAL ROOF CONSTRUCTION				671,353
STAIR CONSTRUCTION				
STAIR STRUCTURE				
STAIRS - EXTERIOR	1	FLTS	6,000.00	6,000
STAIRS - INTERIOR	1	FLTS	5,000.00	5,000
* TOTAL STAIR STRUCTURE				11,000
** TOTAL STAIR CONSTRUCTION				11,000
*** TOTAL SUPERSTRUCTURE				1,078,562
EXTERIOR CLOSURE				
EXTERIOR WALLS				
EXTERIOR WALL CONSTRUCTION				
ER WALL FORM W/3.1 BM/SF	15,768	SQFT	3.23	50,963
WRK WALL FORM W/3.1 BM/SF	15,768	SQFT	.65	10,296
WALL FORM HARDWARE	7,884	SQFT	.08	631
FORM RELEASING AGENT	15,768	SQFT	.13	2,113
RE-STEEL @ WALLS	316	CWT	43.63	13,788
CONCRETE IN WALLS		****		
4000 PSI W/PUMP	196	CUYD	66.38	13,012
PRECAST @ PENTHOUSE	4,935	SQFT	25.00	123,375
PRECAST TYPICAL EXTERIOR	10,508	SQFT	40.00	420,320
PRECAST CURVED @ BASE	3,212	SQFT	32.00	102,784
PRECAST PLAIN @ BASE	1,066	SQFT	22.00	23,452
MTL STD/INS/GWB	18,295	SQFT	3.00	54,885
LOUVERS	1,392	SQFT	35.00	48,720
* TOTAL EXTERIOR WALL CONSTRUCTION				864,339

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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
EXTERIOR CLOSURE				
EXTERIOR WALLS				
BALCONY WALLS & HANDRAILS				
BALCONY HANDRAILS	372	LNFT	50.00	18,600
* TOTAL BALCONY WALLS & HANDRAILS				18,600
EXTERIOR ACCENTS				
ISOLATED BEAM SOFFIT	640	SQFT	9.55	6,116
ISOLATED BEAM SIDE FORM	640	SQFT	3.08	1,977
COLUMN FORMS	935	SQFT	3.80	3,553
ER WALL FORM W/2.5 BM/SF	144	SQFT	2.42	349
WRK WALL FORM W/2.5 BM/SF	144	SQFT	.41	60
ER WALL FORM W/3.2 BM/SF	680	SQFT	3.49	2,376
WRK WALL FORM W/3.2 BM/SF	680	SQFT	.70	479
ER PILASTER EDGE @ WALL	249	SQFT	7.92	1,973
WRK PILASTER EDGE @ WALL	249	SQFT	1.09	273
WALL FORM HARDWARE	412	SQFT	.08	33
FORM RELEASING AGENT	1,073	SQFT	.13	144
RE-STEEL @ COLUMNS	55	CWT	48.94	2,692
RE-STEEL @ WALLS	39	CWT	43.64	1,702
RE-STEEL @ ISOLATED BEAM	60	CWT	48.78	2,927
CONCRETE IN WALLS		****		
3000 PSI W/PUMP	3	CUYD	64.00	192
4000 PSI W/PUMP	13	CUYD	66.46	864
CONCRETE @ ISOLATED BEAM	24	CUYD	73.66	1,768
CONCRETE @ COLUMN	22	CUYD	66.81	1,470
PRECAST CLADDING	4,592	SQFT	30.00	137,760
STRUCTURAL TUBING	88	CWT	78.19	6,881
SHOP PAINT STEEL 1-COAT	14	SQS	22.57	316
FIELD PAINT S STEEL 2 COATS	14	SQS	35.00	490
* TOTAL EXTERIOR ACCENTS				174,395
** TOTAL EXTERIOR WALLS				1,057,334
EXTERIOR DOORS & WINDOWS				
WINDOWS				
WINDOWS	4,648	SQFT	35.00	162,680
* TOTAL WINDOWS				162,680
STOREFRONTS				
STOREFRONT/ENTRY DOORS	252	SQFT	30.00	7,560
* TOTAL STOREFRONTS				7,560
** TOTAL EXTERIOR DOORS & WINDOWS				170,240
*** TOTAL EXTERIOR CLOSURE				1,227,574

File ID. 2G12
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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
ROOFING				
ROOF COVERINGS				
SINGLE PLY ROOFING	42,552	SQFT	2.50	106,380
STANDING SEAM COPPER	18,230	SQFT	12.00	218,760
* TOTAL ROOF COVERINGS				325,140
TRAFFIC TOPPING & PAVING MEMBRANE				
WALK SURFACE @ TERRACES	6,744	SQFT	8.00	53,952
* TOTAL TRAFFIC TOPPING & PAVING M				53,952
ROOF INSULATION & FILL				
RIGID INSULATION	61,582	SQFT	1.50	92,373
* TOTAL ROOF INSULATION & FILL				92,373
*** TOTAL ROOFING				471,465
INTERIOR CONSTRUCTION				
PARTITIONS				
FIXED PARTITIONS				
5/8" GWB, X, T&F ON WALL	16,690	SQFT	.89	14,854
3-5/8" MTL STUD, 20GA, 16"OC	8,345	SQFT	1.15	9,656
SHAFT WALL ASSY, SOLID, 2"	2,067	SQFT	4.99	10,324
PAINT WALLS	16,690	SQFT	.40	6,676
* TOTAL FIXED PARTITIONS				41,510
INTERIOR DOORS & FRAMES				
INTERIOR DOOR/FRAME/HDWR	34	LVS	850.00	28,900
* TOTAL INTERIOR DOORS & FRAMES				28,900
** TOTAL PARTITIONS				70,410
INTERIOR FINISHES				
FLOOR FINISHES				
CARPET/FLOOR COVERING	54,730	SQFT	2.00	109,460
ACCESS FLOORING	54,730	SQFT	6.00	328,380
* TOTAL FLOOR FINISHES				437,840
CEILING FINISHES				
CEILINGS	54,730	SQFT	2.00	109,460
* TOTAL CEILING FINISHES				109,460
** TOTAL INTERIOR FINISHES				547,300
SPECIALTIES				
SPECIALTIES/CASEWORK	54,730	SQFT	1.50	82,095
** TOTAL SPECIALTIES				82,095
*** TOTAL INTERIOR CONSTRUCTION				699,805

File ID. 2G12
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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

08/04/92

Description	Qty	Unit	Unit Price	Total Price
CONVEYING SYSTEM				
ELEVATORS				
ELEVATORS REFURBISH	4	STOP	13,000.00	52,000
ELEVATORS - NEW	2	STOP	18,000.00	36,000
* TOTAL ELEVATORS				88,000
*** TOTAL CONVEYING SYSTEM				88,000
MECHANICAL				
PLUMBING				
PLUMBING	51	FIX	1,725.00	87,975
** TOTAL PLUMBING				87,975
H.V.A.C.				
HVAC AIR SYSTEM	54,730	SQFT	7.50	410,475
CONTROLS & INSTRUMENTATION				
HVAC CONTROLS	54,730	SQFT	2.50	136,825
* TOTAL CONTROLS & INSTRUMENTATION				136,825
** TOTAL H.V.A.C.				547,300
FIRE PROTECTION				
FIRE SPRINKLERS	54,730	SQFT	1.60	87,568
** TOTAL FIRE PROTECTION				87,568
HEAT/COOLING SYSTEMS				
STEAM CONDENSATE DISTRUBUTION				
STEAM SOURCE EQUIP/DIST	54,730	SQFT	1.00	54,730
* TOTAL STEAM CONDENSATE DISTRUBUT				54,730
HOT WATER SUPPLY/RETURN DISTRIBUTION				
HYDRONIC HEAT	54,730	SQFT	2.00	109,460
* TOTAL HOT WATER SUPPLY/RETURN DI				109,460
CHILLED WATER DISTRIBUTION				
CHILLED WATER	54,730	SQFT	1.50	82,095
* TOTAL CHILLED WATER DISTRIBUTION				82,095
** TOTAL HEAT/COOLING SYSTEMS				246,285
*** TOTAL MECHANICAL				969,128
ELECTRICAL				
ELECTRICAL				
BASIC ELECTRICAL SYSTEM	54,730	SQFT	7.50	410,475
* TOTAL ELECTRICAL				410,475

File ID. 2G12
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54,730 SQFT

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SECONDARY FACILITY

Description	Qty	Unit	Unit Price	Total Price
ELECTRICAL				
COMMUNICATION SYSTEMS				
COMPUTER/DATA SYSTEM				
COMPUTER/DATA/TELEPHONE	54,730	SQFT	2.00	109,460
* TOTAL COMPUTER/DATA SYSTEM				109,460
CLOCK & PROGRAM SYSTEM				
CLOCK SYSTEM	54,730	SQFT	.10	5,473
* TOTAL CLOCK & PROGRAM SYSTEM				5,473
SOUND SYSTEM				
SOUND SYSTEM @ AUDITORIUM	1	LPSM	50,000.00	50,000
* TOTAL SOUND SYSTEM				50,000
** TOTAL COMMUNICATION SYSTEMS				164,933
ALARM SYSTEMS				
FIRE ALARM SYSTEM				
FIRE ALARM	54,730	SQFT	.50	27,365
* TOTAL FIRE ALARM SYSTEM				27,365
SECURITY SYSTEMS				
SECURITY SYSTEM	54,730	SQFT	.25	13,683
* TOTAL SECURITY SYSTEMS				13,683
** TOTAL ALARM SYSTEMS				41,048
*** TOTAL ELECTRICAL				616,456
EQUIPMENT				
FURNISHINGS				
WINDOW TREATMENT				
BLINDS	4,648	SQFT	3.00	13,944
* TOTAL WINDOW TREATMENT				13,944
** TOTAL FURNISHINGS				13,944
*** TOTAL EQUIPMENT				13,944
**** TOTAL SECONDARY FACILITY				5,217,040

File ID. 2G12
Project No. 20415

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033

08/04/92

GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SITEWORK

Description	Qty	Unit	Unit Price	Total Price
SITE WORK				$759,246
SITE PREPARATION				$476,785
DEMOLITION (SITE OR TOTAL BUILDING)				463,690
SITE EARTHWORK				13,095
SITE IMPROVEMENTS				$232,461
ROADS & PARKING LOTS				60,790
WALKS, TERRACES, HARD SURFACES				70,601
LANDSCAPING & IRRIGATION				57,870
RETAINING WALLS				43,200
SITE UTILITIES				$50,000
** SUBDIVISION TOTAL				$759,246

File ID. 2G12
Project No. 20415

C3 MANAGEMENT GROUP, INC.
25 CENTRAL WAY, SUITE 310
KIRKLAND, WASHINGTON 98033
GENERAL ADMINISTRATION BUILDING * SCHEME C-PLUS
SITEWORK

08/04/92

Description	Qty	Unit	Unit Price	Total Price
SITE WORK				
SITE PREPARATION				
DEMOLITION (SITE OR TOTAL BUILDING)				
DEMO ASPHALT	60,600	SQFT	.75	45,450
ASBESTOS ABATEMENT ALLOWANCE	1	LPSM	400,000.00	400,000
DEMO SIDEWALKS	9,175	SQFT	1.00	9,175
DEMO CURBS	840	LNFT	3.50	2,940
DEMO RET WALLS	175	LNFT	35.00	6,125
* TOTAL DEMOLITION (SITE OR TOTAL				463,690
SITE EARTHWORK				
GRADE SITE	87,300	SQFT	.15	13,095
* TOTAL SITE EARTHWORK				13,095
** TOTAL SITE PREPARATION				476,785
SITE IMPROVEMENTS				
ROADS & PARKING LOTS				
ASPHALT PARKING 3"/8"	12,500	SQFT	1.50	18,750
ASPHALT PVMT 3"/8" ROAD	9,320	SQFT	2.00	18,640
ASPHALT OVERLAY 2"	12,000	SQFT	.50	6,000
CURB & GUTTER	800	LNFT	12.00	9,600
CONC LOADING RAMP 8"	2,600	SQFT	3.00	7,800
* TOTAL ROADS & PARKING LOTS				60,790
WALKS, TERRACES, HARD SURFACES				
SIDEWALKS/PATHS	22,950	SQFT	2.25	51,638
RAMPS	1,350	SQFT	2.75	3,713
STAIRS	610	TRFT	25.00	15,250
* TOTAL WALKS, TERRACES, HARD SURF				70,601
LANDSCAPING & IRRIGATION				
LANDSCAPE ALLOWANCE	38,580	SQFT	1.50	57,870
* TOTAL LANDSCAPING & IRRIGATION				57,870
RETAINING WALLS				
RETAINING WALLS	360	LNFT	120.00	43,200
* TOTAL RETAINING WALLS				43,200
** TOTAL SITE IMPROVEMENTS				232,461
SITE UTILITIES				
SITE UTILITIES ALLOWANCE	1	LPSM	50,000.00	50,000
** TOTAL SITE UTILITIES				50,000
*** TOTAL SITE WORK				759,246
**** TOTAL SITEWORK				759,246

D. Cost Benefit Analysis/Life Cycle Cost Analysis

LIFE CYCLE COST ANALYSIS
PROJECT: GENERAL ADMINISTRATION BUILDING
FINAL CONCEPT PREDESIGN

Discount Rate (i)	1992	2022	7.00%	Escalation Data As Per WSEO January 1990 & OFM January 1992
Energy Esclation Rate (Nominal)	1992	2000	4.94%	
	2001	2022	5.94%	
Escalation Rate for Operations (Nominal)	1992	2022	3.37%	
Maintenance Escalation Rate	1992	2022	3.37%	
Replacement Escalation Rate	1992	2022	3.37%	
Miscellaneous Escalation Rate	1992	2022	3.37%	
S.F. Base			363,200	

ANNUAL REAL CASH FLOWS

YEAR	FIRST & REPLACE. COSTS	NPV FIRST & REPLACE. COSTS	ANNUAL O & M COSTS $3.75	NPV O & M COSTS	ANNUAL ENERGY COSTS $0.85	NPV ENERGY COSTS	TOTAL ANNUAL COSTS	PRESENT WORTH FACTOR	NPV ANNUAL COSTS	NPV CUM. COSTS
1992	$36,227,442		$1,362,000		$308,720			1.00		
1994	38,710,315	33,811,088	1,455,346	1,271,155	339,975	296,947	40,505,635	0.87	35,379,191	35,379,191
1995			1,504,391	1,228,031	356,770	291,230	1,861,160	0.82	1,519,261	36,898,452
1996			1,555,089	1,186,370	374,394	285,623	1,929,483	0.76	1,471,993	38,370,445
1997			1,607,495	1,146,122	392,889	280,125	2,000,384	0.71	1,426,246	39,796,692
1998			1,661,668	1,107,239	412,298	274,732	2,073,966	0.67	1,381,971	41,178,662
1999			1,717,666	1,069,676	432,665	269,442	2,150,331	0.62	1,339,118	42,517,781
2000			1,775,551	1,033,387	454,039	264,255	2,229,590	0.58	1,297,642	43,815,423
2001			1,835,387	998,329	481,009	261,637	2,316,396	0.54	1,259,966	45,075,389
2002			1,897,240	964,461	509,581	259,045	2,406,821	0.51	1,223,506	46,298,895
2003			1,961,177	931,741	539,850	256,479	2,501,027	0.48	1,188,220	47,487,115
2004			2,027,269	900,132	571,917	253,938	2,599,186	0.44	1,154,070	48,641,184
2005			2,095,588	869,594	605,889	251,422	2,701,477	0.41	1,121,017	49,762,201
2006			2,166,209	840,093	641,879	248,932	2,808,088	0.39	1,089,025	50,851,226
2007			2,239,210	811,593	680,006	246,466	2,919,217	0.36	1,058,058	51,909,284
2008			2,314,672	784,059	720,399	244,024	3,035,070	0.34	1,028,083	52,937,367
2009			2,392,676	757,460	763,191	241,607	3,155,866	0.32	999,067	53,936,434
2010			2,473,309	731,763	808,524	239,213	3,281,833	0.30	970,976	54,907,410
2011			2,556,660	706,938	856,550	236,843	3,413,210	0.28	943,781	55,851,191
2012			2,642,819	682,955	907,429	234,497	3,550,249	0.26	917,452	56,768,643
2013			2,731,882	659,785	961,331	232,174	3,693,213	0.24	891,959	57,660,602
Totals for 20-Year LCC	38,710,315 1st + Repl.	33,811,088	40,611,303 O&M	18,680,883	11,810,586 Energy	5,168,631	91,132,203		57,660,602 20-Year Life Cycle Cost	

18-Aug-92

Prepared by C3 MANAGEMENT GROUP, INC.

LIFE CYCLE COST ANALYSIS
PROJECT: GENERAL ADMINISTRATION BUILDING
SCHEME A: DO NOTHING

Discount Rate (I)	1992	2022	7.00%	Escalation Data As Per WSEO January 1990 & OFM January 1992
Energy Esclation Rate (Nominal)	1992	2000	4.94%	
	2001	2022	5.94%	
Escalation Rate for Operations (Nominal)	1992	2022	3.37%	
Maintenance Escalation Rate	1992	2022	3.37%	
Replacement Escalation Rate	1992	2022	3.37%	
Miscellaneous Escalation Rate	1992	2022	3.37%	
S.F. Base			285,000	

ANNUAL REAL CASH FLOWS

YEAR	FIRST & REPLACE. COSTS	NPV FIRST & REPLACE. COSTS	ANNUAL O & M COSTS $4.15	NPV O & M COSTS	ANNUAL ENERGY COSTS $1.10	NPV ENERGY COSTS	TOTAL ANNUAL COSTS	PRESENT WORTH FACTOR	NPV ANNUAL COSTS	NPV CUM. COSTS
1992	$0		$1,182,750		$313,500			1.00		
1994	0	0	1,263,811	1,103,861	345,239	301,545	1,609,049	0.87	1,405,406	1,405,406
1995			1,306,401	1,066,412	362,294	295,740	1,668,695	0.82	1,362,152	2,767,558
1996			1,350,427	1,030,234	380,191	290,046	1,730,618	0.76	1,320,280	4,087,838
1997			1,395,936	995,283	398,972	284,462	1,794,908	0.71	1,279,745	5,367,583
1998			1,442,979	961,518	418,682	278,985	1,861,661	0.67	1,240,503	6,608,086
1999			1,491,608	928,898	439,365	273,614	1,930,972	0.62	1,202,512	7,810,598
2000			1,541,875	897,385	461,069	268,346	2,002,944	0.58	1,165,732	8,976,330
2001			1,593,836	866,941	488,457	265,688	2,082,293	0.54	1,132,629	10,108,959
2002			1,647,548	837,530	517,471	263,056	2,165,019	0.51	1,100,586	11,209,545
2003			1,703,071	809,117	548,209	260,450	2,251,279	0.48	1,069,567	12,279,112
2004			1,760,464	781,667	580,772	257,870	2,341,236	0.44	1,039,537	13,318,649
2005			1,819,792	755,149	615,270	255,315	2,435,062	0.41	1,010,464	14,329,113
2006			1,881,119	729,530	651,817	252,786	2,532,936	0.39	982,316	15,311,429
2007			1,944,512	704,781	690,535	250,282	2,635,048	0.36	955,062	16,266,491
2008			2,010,042	680,871	731,553	247,802	2,741,595	0.34	928,673	17,195,164
2009			2,077,781	657,772	775,007	245,347	2,852,788	0.32	903,120	18,098,284
2010			2,147,802	635,457	821,043	242,917	2,968,845	0.30	878,374	18,976,658
2011			2,220,183	613,899	869,813	240,510	3,089,996	0.28	854,410	19,831,068
2012			2,295,003	593,072	921,479	238,128	3,216,483	0.26	831,200	20,662,268
2013			2,372,345	572,952	976,215	235,769	3,348,560	0.24	808,721	21,470,989
Totals for 20-Year LCC	0 1st + Repl.	0	35,266,533 O&M	16,222,331	11,993,452 Energy	5,248,658	47,259,985		21,470,989 20-Year Life Cycle Cost	

E. Form C-100

STATE OF WASHINGTON

CAPITAL PROJECT COST ESTIMATE

FORM C-100 (REV. 7/92)

AGENCY:	General Administration	ANALYSIS TYPE:	Request
PROJECT TITLE:	General Administration Building	ANALYSIS DATE:	15-Aug-92
LOCATION:	Olympia	ANALYSIS BY:	
		FILE NAME: (QPro 4.0)	GABLDREN

STATISTICS:	Primary	Secondary
G.S.F.:	308,470	54,730
N.S.F.:	246,264	43,693
EFFICIENCY:	79.83%	79.83%
EST. COST/S.F.:	$94.26	$130.59
MACC:	$29,077,360	$7,147,124
A/E FEE (%):	7.00%	6.68%
TAX RATE:	7.90%	
TOTAL PROJECT BUDGET:		
BASE MONTH PROJ. TOTAL:		$54,587,081
ESCALATED PROJ. TOTAL:		$59,706,939

	SCHEDULE & ESCALATION FACTORS:		
1.	START PREDESIGN:	Jul-92	1.0000
2.	START DESIGN:	Jul-93	1.0337
3.	DESIGN MIDPOINT:	Dec-93	1.0481
4.	START CONST:	Jun-94	1.0656
5.	DURATION:	24	Months
6.	END CONST:	Jun-96	1.1386
7.	CONST. MIDPOINT:	Jun-95	1.1015
8.	PROJECT MIDPOINT:	Jun-94	1.0656
	ESTIMATED INFLATION RATE:		3.37%
	CONTINGENCY RATE:		10.00%
	BASE MONTH:		Jul-92

General Administration Building ITEM	(%)	BASE MO COST	SUBTOTAL	TOTAL TO C-2 FORM	ADJ. FACTOR	ESCALATED COST
A. ACQUISITION						
1. Purchase/Lease Cost		0				0
2. Appraisal and Closing Costs		0				0
3. Right-of-Way Costs		0				0
4. Demolition		0				0
Total Acquisition Costs				0	1.0337	0
B. CONSULTANT SERVICES						
1. Predesign Consultant Services						
a. Programming/Site Analysis		310,000	(1)			310,000
b. Environmental Analysis (EIS)		1,000	(1)			1,000
Subtotal Predesign Services			311,000		1.0000	311,000
2. A/E Basic Design Services						
a. Primary Facility	7.00%	2,035,415				2,133,319
b. Secondary Facility	6.68%	477,428				500,392
Subtotal Basic Design Services			2,512,843		1.0481	2,633,711
3. A/E Extra Services/Reimbursables						
a. As-Built Drawings		20,000				20,962
b. Energy Life Cycle Cost Analysis		40,000				41,924
c. Commissioning/O&M Manuals/Training		100,000				104,810
d. On-Site Representative (Full Time)		65,000				68,127
e. Thermal Scans		0				0
f. Value Engineering Implemenation		50,000				52,405
g. Travel and Per Diem		10,000				10,481
h. Renderings & Presentations		10,000				10,481
i. Document Reproduction		50,000				52,405
j. Advertising		1,500				1,572
k.		0				0
Subtotal Extra Svcs./Reimbursables			346,500		1.0481	363,167

General Administration Building ITEM	(%)	BASE MO COST	SUBTOTAL	TOTAL TO C-2 FORM	ADJ. FACTOR	ESCALATED COST
4. Other Services						
a. Consultant Selection Cost		0				0
b. Acoustical Consultant		40,000				41,924
c. Hazardous Material Consultant		20,000				20,962
d. Communications Consultant		40,000				41,924
e. Cost/Scheduling Consultant		85,000				89,089
f. Electronic Consultant		0				0
g. Geotechnical Investigation		15,000				15,722
h. Hospital/Laboratory Consultant		0				0
i. Commissioning/HVAC Balancing		70,000				73,367
j. Interior Design Consultant		100,000				104,810
k. Kitchen Consultant		50,000				52,405
l. Landscape Consultant		30,000				31,443
m. Civil Design Consultant		30,000				31,443
n. Quality Control Consultant		0				0
o. Site Survey		7,500				7,861
p. Testing		50,000				52,405
q. Energy LCCA Review		15,000				15,722
r. Value Engineering		50,000				52,405
s. Constructability Review		50,000				52,405
t. Claims Review Board		0				0
u. Traffic Study		20,000				
w.		0				
Subtotal Other Services			672,500			704,847
x. Design Service Contingency	10.00%		353,184			370,172
Total Consultant Services				4,196,027	1.0481	4,382,89[illegible]
C. CONSTRUCTION CONTRACTS						
1. Site Work						
a. Site Preparation		475,000				523,212
b. Site Improvements		230,000				253,345
c. Site Utilities		50,000				55,075
d. Off-Site Work		0				0
e.		281,000				309,522
Subtotal Site Work			1,036,000		1.1015	1,141,154
2. COMPLETE FACILITY						
a. Primary Facility		0				0
b. Secondary Project		0				0

General Administration Building ITEM	(%)	BASE MO COST	SUBTOTAL	TOTAL TO C-2 FORM	ADJ. FACTOR	ESCALATED COST
2a. PRIMARY FACILITY By Building System						
a. Foundations		29,820				32,847
b. Substructure		28,124				30,979
c. Superstructure		858,176				945,281
d. Exterior Closure		4,429,788				4,879,411
e. Roofing		49,332				54,339
f. Interior Construction		4,974,919				5,479,873
g. Conveying Systems		420,000				462,630
h. Mechanical		5,470,242				6,025,472
i. Electrical		3,357,665				3,698,468
i. Equipment		328,798				362,171
j. General Conditions		7,379,496				8,128,515
Subtotal Primary Building Systems			27,326,360		1.1015	30,099,986
2b. SECONDARY FACILITY By Building System						
a. Foundations		24,460				26,943
b. Substructure		27,646				30,452
c. Superstructure		1,078,562				1,188,036
d. Exterior Closure		1,227,574				1,352,173
e. Roofing		471,465				519,319
f. Interior Construction		699,805				770,835
g. Conveying Systems		88,000				96,932
h. Mechanical		969,128				1,067,494
i. Electrical		616,456				679,026
j. Equipment		13,944				15,359
j. General Conditions		1,930,084				2,125,988
Subtotal Secondary Building Systems			7,147,124		1.1015	7,872,557
3. Other Contracts						
a.		0				0
b.		0				0
Subtotal Other Contracts			0		1.1015	0
4. Permits, Fees & Bonding						
a. Building Permit (Contractor)		355,000				391,033
b. Performance & Payment		360,000				396,540
c.		0				0
Subtotal Permits, Fees & Bonds			715,000		1.1015	787,573
MACC Subtotal Maximum Allowable Construction Cost			36,224,484			39,901,269
5. Construction Contingency						
a. Management Reserve	10.00%	3,622,448				3,990,127
b. Allowance for Change Orders	5.00%	1,811,224				1,995,063
Subtotal			5,433,673			0
6. Sales Tax	7.90%		3,290,994			0
Total Construction Cost				44,949,151	1.1015	49,511,490

General Administration Building ITEM	(%)	BASE MO COST	SUBTOTAL	TOTAL TO C-2 FORM	ADJ. FACTOR	ESCALATED COST
D. EQUIPMENT						
1. Fixed		40,000				42,624
2. Furnishings		4,400,000				4,688,640
3. Special Construction		0				0
4.		0				0
Subtotal Equipment			4,440,000			4,731,264
5. Sales Tax	7.90%		350,760			373,770
Total Equipment Cost				4,790,760	1.0656	5,105,034
E. ARTWORK						
1. Project Artwork		181,122				
Total Artwork Cost				181,122	1.1015	199,506
F. OTHER COSTS						
1. Financing Costs		0				0
2. Utilities/Temporary Facilities		0	(2)			0
3. Security Services		0				0
4. Master Use Permits (Owner)		0				0
5. In-Plant Services		200,000				220,300
6.		0				0
Total Other Costs				200,000	1.1015	220,300
G. PROJECT MANAGEMENT						
1. Agency		0				0
2. Construction Manager		0				0
3. Owner		270,000				287,712
Total Management				270,000	1.0656	287,712
H. RELATED PROJECTS						
1. Mitigation		0				
2.						
3.						
4.						
Total Related Projects				0	1.1386	0
GRAND TOTAL				$54,587,061		$59,706,939

Date & Time Worksheet Printed: 18-Aug-92 09:26:29 AM

	Base Month	Escalated	%
Subtotal Soft Costs	4,847,150	5,090,416	8.88%
Subtotal Hard Costs	49,739,911	54,616,524	91.12%

NOTES: Current Inflation Rate = 3.37%

(1) Appropriated for Predesign Study in 1991-1993 Capital Budget

VI. MASTER PLAN AND POLICY COORDINATION

The General Administration building is a significant component in The Master Plan for the Capitol of the State of Washington. As the northern terminus to the campus, it has been designated a transitional zone between the Capitol Campus and Olympia, the Capital City.

The project proposed for the General Administration building, as submitted in this predesign study, is totally consistent with material presented in the master plan and all state policies.

The proposed project, as described in Section II. PROJECT ANALYSIS, clearly indicates that this project is not intended to be a partial renovation that provides temporary relief. It is to be a complete renovation to provide an opportunity to address the quality of the workplace and governments impact on its environment. It also proposes to include a two-story addition on the west side of the existing facility, as well as a fifth floor. These additions isolate fixed use spaces in the west addition to allow greater flexibility in the exisiting building, and contribute to reducing the shortage of office space on the Capitol Campus.

The study has built upon the master plan ideas by developing an information-gathering, review, and evaluation process which provides a logical continuation of design and refinement to the initial philosophies.

VII. Facility Operational Requirements

The project proposal consists of the existing facility, with an addition on the west and a fifth floor addition.

Based on July 1992 estimated costs, the project proposal would have the following impact on the operating costs of General Administration and other tenants:

Maintenance and operating costs over a 20 year life-cycle cost would increase approximately $5,350,000. Energy costs, on a 20 year life-cycle, would decrease approximately $180,000.

The "414" costs, which cover such things as seat of government, custodial services, and internal rents, are currently $9.17 per square foot. The proposed additions increase the assignable area by 37,926 square feet, requiring approximately $348,000 additional operating budget costs.

Through the increased efficiency of renovated space, addition of the fifth floor, and transitional tenants relocating from the General Administration Building to permanent government owned facilities, it is anticipated that leased space, at $14.50/SF, will be reduced by 109,476 square feet. This would provide a savings (baseline 1992) of approximately $1,587,000.

The net reduction in first-year operating costs would be $1,239,000. Over a 20-year life-cycle, adjusted for its time-escalation factor, the savings would be $33,678,737. These savings more than offset the increase in maintenance, operating, and energy costs. Excess savings could be considered in the overall project cost financed with 30-year bonds.

The project proposal considers consolidation of leased space functions for General Administration, as well as other potential General Administration building tenants. This would not require increases in staffing. Increases in staffing are anticipated through a natural growth, as shown on the space planning charts through the year 2010.

A. Concept Description

Introduction:

As the first new construction to occur on the West Campus, the renovation of the General Administration Building has a significant responsibility to begin the implementation of the newly adopted Master Plan for the Capitol of the State of Washington. This renewal project will establish a design standard for future development while respecting the heritage of the original Wilder and White and Olmstead Brothers' planning and design principles. At the same time, the building must be responsible from a cost standpoint and provide a functional, flexible and efficient office environment for its occupants.

Proposed Scheme C-Plus represents a hybrid of design options studied, and was selected from five alternative concept options developed during the Predesign Study. This concept renovates the existing General Administration Building in its entirety, leaving intact only the existing concrete building frame, three of four stair towers, existing passenger and service elevator hoistways, and in some areas existing concrete shear walls.

Existing rooftop mechanical penthouse will be fully demolished, and a new fifth floor will be added at the existing rooftop level. This level will be set back on all four sides from the existing roof parapet line, providing roof terraces. All elevator hoistways will be extended to this level.

New primary mechanical equipment will occupy a centrally located mezzanine level above the fifth floor, along with elevator controls and cab override provisions. This configuration expands the amount of usable area on the fifth floor substantially, and makes efficient use of available penthouse volume required due to elevator overrun. While the penthouse enclosure will incorporate a pitched metal roof design that is six to 14 feet higher than the existing penthouses, it has been designed proportionally to complement the overall building massing and to respect the composition of other nearby classical campus buildings.

A 13,000 SF two-story structure has been added to the west side of the building, expanding available floor area on the ground and first floor levels, and making provisions for a larger auditorium, conference center, and cafeteria. A covered arcade connects the primary south building entry to a trellis covered walk and terrace accessing the new Visitors Center, a conference/ press room and the first floor cafeteria. The terrace extends across the west side of the building and overlooks Capitol Lake and Heritage Park vistas.

On the northwest side of the building, the existing loading facility will be demolished and reconstructed with expanded capacity and a canopy along the same facade to the northeast , providing for six loading berths (two with dock levelers) and refuse containers.

All mechanical, electrical, plumbing and fire protection systems will be totally replaced; a raised floor will be provided throughout the building, including corridors, to allow for adequate and flexible distribution of power, telephone and data cabling to all parts of the building. Toilet rooms will be expanded and made handicapped accessible.

Full building renovation will asllow efficient application of modern open office planning principles due to the large amounts of floor area at each level.

Space requirements for open office areas are to be planned, where possible, oriented to the exterior to afford maximum access to views and daylighting. As open office workers are located at their work stations for a much greater percentage of the day than private office personnel, closed offices will be developed toward the interior where possible, along with conference rooms and other support spaces.

This extensive renovation will allow the building to comply to every extent possible with the 1991 State of Washington Handicap Code (WAC 51-20) and the Americans with Disabilities Act (ADA).

Construction related to renovation efforts will have significant impact on occupants of the GA Building. Two options, phasing and relocation, were considered during the cost evaluations of the various renovation concepts for the GA Building.

Vacating the building for construction was determined to have a significant cost advantage over phasing for an occupied renovation, both in initial construction costs and in relocation costs. Final cost estimates and Life Cycle Cost Analyses in this document reflect the decision to fully vacate the GA Building for 24 months to allow for construction.

Detailed phasing options and their associated costs are described in Part A of the Appendix in this document.

Renovated GA Building - Area Summary

	Core	Circ	Usable	Assign. Tenant Area	Gross
Basement	4,570	2,719	22,411	19,577	29,700
Ground	8,640	5,271	48,889	35,322	62,800
First	6,042	6,367	44,391	32,594	56,800
Second	4,730	1,803	46,267	44,831	52,800
Third	4,730	1,803	46,267	44,831	52,800
Fourth	4,730	1,803	46,267	44,831	52,800
Fifth	4,332	1,803	35,465	33,979	41,600
Penthouse					13,900
Total	37,774	21,569	289,957	255,965	363,200

Notes:

1. Core Area includes elevator shafts, mechanical duct shafts, exit stairs, toilet rooms, electrical, telecommunications and data closets, and any isolated utility rooms.

2. Circulation Area includes tenant access and exit corridors, elevator lobbies, and primary building entrance lobbies.

3. Usable Area includes common areas, including Cafeteria and Servery, Conference, Wellness, Visitor Center, Auditorium, Shipping and Receiving areas.

4. Assignable Tenant Area includes area measured to the inside of perimeter walls of plan areas marked "Open Office", and does not include primary exit corridors, stairs and core elements.

5. Gross Area is measured to the outside face of the renovated building and addition.

Structural Renovation/Addition Issues:

The following existing building renovation issues are included:

- Removal of the existing west stair near Grids 2F. Remove concrete stairs and most of the surrounding wall leaving vertical column elements intact for support. In-fill the remaining slab opening with concrete fill over metal deck and added steel framing as necessary.
- Provision for new openings in the existing floors for mechanical shafts. Existing slabs and joists will be cut, as required, with possible added steel framing around the opening for reinforcement. Existing beams to remain unaltered.
- Removal of existing penthouse structures above the roof line. The machine rooms will be relocated in the new structure built above the Fifth Floor.

The following building addition issues are included:

- Addition of perimeter shear walls at four corners of the existing building. The added walls and their foundations will be placed adjacent to the exterior face of the existing building. Excavation will occur down to the elevation of the existing footings. Placement of new auger cast piles to support the added walls will require some demolition of existing footings. The added walls will extend from the foundation up to the Fifth Floor with window openings as shown on the architectural drawings.
- Addition of a new machine room and roof structure above the Fifth Floor. Walking surface at Fifth Floor to be accomplished by removal of the existing roofing material and the addition of a lightweight built-up floor system to level the existing sloping roof. The new structure above shall be composed of steel framing with a limited amount of concrete fill within the new machine room floor area.
- Addition of a two-story structure on the west side of the existing building. Excavation will be required to expose the existing foundation at this location with possible rework, as necessary, to accommodate the new steel columns adjacent to the existing wall. Shallow footings will be placed further away from the existing building to support the outer line of columns. A slab-on-grade will be placed at the ground floor level with two levels of steel framing above that. A seismic separation joint shall be provided at the Second Floor level.
- Other additions located at the north and south main entries will include shallow footings, slab-on-grade and steel framing at levels above the existing surface.
- Extended slab edge at the sides of the building between the corners. The slab edge will be built-out at various locatons with concrete fill over metal deck supported by steel framing connected to the existing building by brackets at each floor level.

Recommended Mechanical Systems

Utilities:

The proposed building will continue to use central campus chilled water and steam for primary energy. Connection to the central systems will occur at the same location as is currently used, the ground floor mechanical room.

Plumbing and Service Piping:

New domestic CW, HW and HWC distribution systems will be provided. New steam fired hot water generators for domestic HW, the kitchen/servery area and the recreation/wellness area will also be provided. The building will benefit from a new waste and vent system with a trap primer system for floor drains. New roof drains and a new rain leader/overflow rain leader system will be provided. New plumbing fixtures will be provided.

HVAC:

Four new central station, variable air volume (VAV) air handling systems, furnished with cooling coils and preheat coils, will serve the majority of the building. Occupied spaces will be served by series fan powered VAV terminal units which will be provided with terminal HW heating at perimeter areas. Independent, packaged air handling units, VAV or single zone as appropriate, will serve special use areas such as the auditorium, cafeteria, servery and conference areas. A new air distribution duct system, completely insulated and lined, with new diffusers will be provided. New exhaust fans and exhaust duct systems will serve toilet rooms and other areas requiring exhaust.

A new chilled water pumping and distribution system will boost central campus chilled water to the various cooling coils.

A new heating hot water primary/secondary pumping and distribution system will serve the various preheat and heating coils. A steam-to-HW heat exchanger will convert central campus steam to heating hot water.

A new condenser water loop will provide for specialty and year-round cooling for computer rooms, transformer rooms and other special use areas. The system will consist of a closed loop fluid cooler and circulation pump and computer room cooling units and heat pumps as appropriate for space conditioning. The opportunity to preheat outside air with this system may be available.

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

Fire Protection:

A new dry standpipe system will be provided in the stairwells. Fire protection systems consisting of wet sprinkler, dry sprinkler, preaction, CO_2, or foam, as appropriate, will be provided.

Miscellaneous:

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

Recommended Electrical System:

Power Systems

Reuse two existing 3#2/0, 15 kV primary single conductor cables for feeders #1 and #2 to primary distribution switchboards in electrical vaults "A" and "B", for reconnection to new 12,470-480/277 Volt, 3 phase service transformers.

Replace existing two (2) 500 kVA and one (1) 750 kVA, 12470-208/120 volt, 3 phase primary distribution transformers with two (2) 2000kVA, 12470-480/277 volt, 3 phase transformers to meet current and future building needs. Upgrade secondary voltage distribution system from 208 to 480 volt, providing a reduction in size and more energy efficient distribution system.

Provide two 15kV secondary unit substations deadfront with primary duplex selector switch, dry type 2000 kVA transformer and 480 volt 3000 A secondary metal clad distribution switchgear with air type electronic circuit breakers.

Provide 480 V distribution switchboards on each floor with molded case feeder circuit breakers to feed distribution panels and transformers. Provide 277/480 V, 3 phase, 4 wire distribution panels with full 42 circuit capacity for 277 volt lighting requirements with step-down 480 V 3 phase transformers for 120/208 V 3 phase branch panels to supply secondary power for convenience outlets, task lighting and equipment loads.

Provide new engine generator set. Engine generator set will be an in-line, 6 cylinder, direct injection diesel fueled, 4 cycle water cooled, turbocharged engine and generator rated for 250kW/313 kVA, and accept 100% of kW rating in one step, in compliance with N.F.P.A. #100, paragraph 5-13.2.6 and operate on 277/480V, 3 phase, 60 Hz @ 1800 rpm for stand-by power operation. Unit will be skid mounted with water cooled radiator system and residential type muffler exhaust. Generator will be equipped with a control panel and all operating accessories to comply with code. Unit to include 480V 3 phase 4 wire automatic transfer switch(s) and connection hardware in NEMA 1 enclosure(s).

Provide UPS systems of appropriate size and characteristics to satisfy the needs of each computer system installation.

Lighting:

Office area lighting fixtures will be recessed parabolic louvered troffer, 2'x4' fluorescent with energy saving lamps and ballasts. Some isolated units may have self-contained emergency lighting battery pack units, for egress lighting to meet electrical code and Life Safety Code requirements.

Corridor or hallway lighting fixtures will be recessed parabolic louvered troffer, 2'x2' fluorescent with energy saving lamps and ballasts. Some isolated units may have self-contained emergency lighting battery pack units for egress lighting to meet electrical code and Life Safety Code requirements.

Unattended area such as mechanical, electrical and storage room lighting fixtures, will be surface mounted strip type 4' with energy saving lamps and ballasts.

Toilet and restrooms area lighting fixtures will be fluorescent 2' or 4', ceiling or wall bracket type, 2 lamp with energy saving lamps and ballasts. Some may have self-contained emergency lighting battery packs for egress lighting to meet electrical code and Life Safety Code requirements.

Lobby, auditorium and conference room lighting fixtures should be recessed compact fluorescent with full specular Alzak reflectors for down lighting control and energy saving lamps and ballasts. Some will have prewired power pack battery units for emergency lighting to meet electrical code and Life Safety Code requirements.

The lighting control should be a multi-microprocessor based system designed to digitally control electrically operated devices with capability to control lighting loads from a remote control cabinet. Such a system should operate relays or control ballasts directly.

Data/Communications:

Abandon existing underfloor power/tele/communications floor duct system. Install the systems cabling under the proposed raised floor system throughout the entire building to electrical room panels, telephone and communication terminal closets.

A Main Distribution Frame/Entrance Cable Room for Data and Telecommunications will be provided at the basement level, and configured to accommodate a possible future PBX. This room will require a separate grounding bar for grounding entrance cables and their protectors. The entrance cable ground bar and the communications ground bar in this room must use separate ground bars and grounding cables.

The Data and Telecommunications Closets (one double size) will be provided on each typical floor, stacked vertically from basement through the upper floors.

Install vertical cable trays connecting telecommunication closets between floors for total cable distribution system throughout the building.

Telephone/communications equipment will be provided in accordance with local state guidelines.

Fire Alarm System:

Provide new fire alarm system. The fire alarm system will consist of main control unit and annunciator panel, ionization smoke and heat detectors, pull stations, alarm horns, water flow/tamper switches, visual alarm devices, door closers/holders, fan shut-down devices, and elevator capture device, a remote fireman's command center with voice communication phone system. The main control unit will be electrically operated double supervised closed circuit fire alarm system of modular design, dead front steel construction using solid state components to operate the system and contain internal stand-by battery and charger to operate system for 24 hours after power failure. Control will be capable of operating a minimum of 32 zones and be expandable to 64 zones, and meet all the requirements of N.F.P.A. standards 72A and 72B.

Security/Access Control System:

Provide new security/access control system. Command center unit will be a 4000 card capacity, distributed micro processing network access control system (IBM-PS/2 based) unit which can communicate with up to 9 terminal and/or alarm controllers. Terminal controllers will be able to support either keypad technology, proximity, wiegand or magnetic strip readers with anti-passback feature with up to 144 supervised inputs and outputs on 64 access/operator levels on 32 time zones/8 intervals each. System to have terminal controller, off-line decision making with integrity of all time functions. Each monitor point to have grade-A type supervision, providing a high degree of security, for interfacing of local control for card reader, monitoring. Command center to operate on 90 to 137 V.A.C., 50/60 Hz with memory size of 1 Mb of ram with modem capability operation. Controller unit to have onboard 48 hour battery back-up for clock and memory functions.

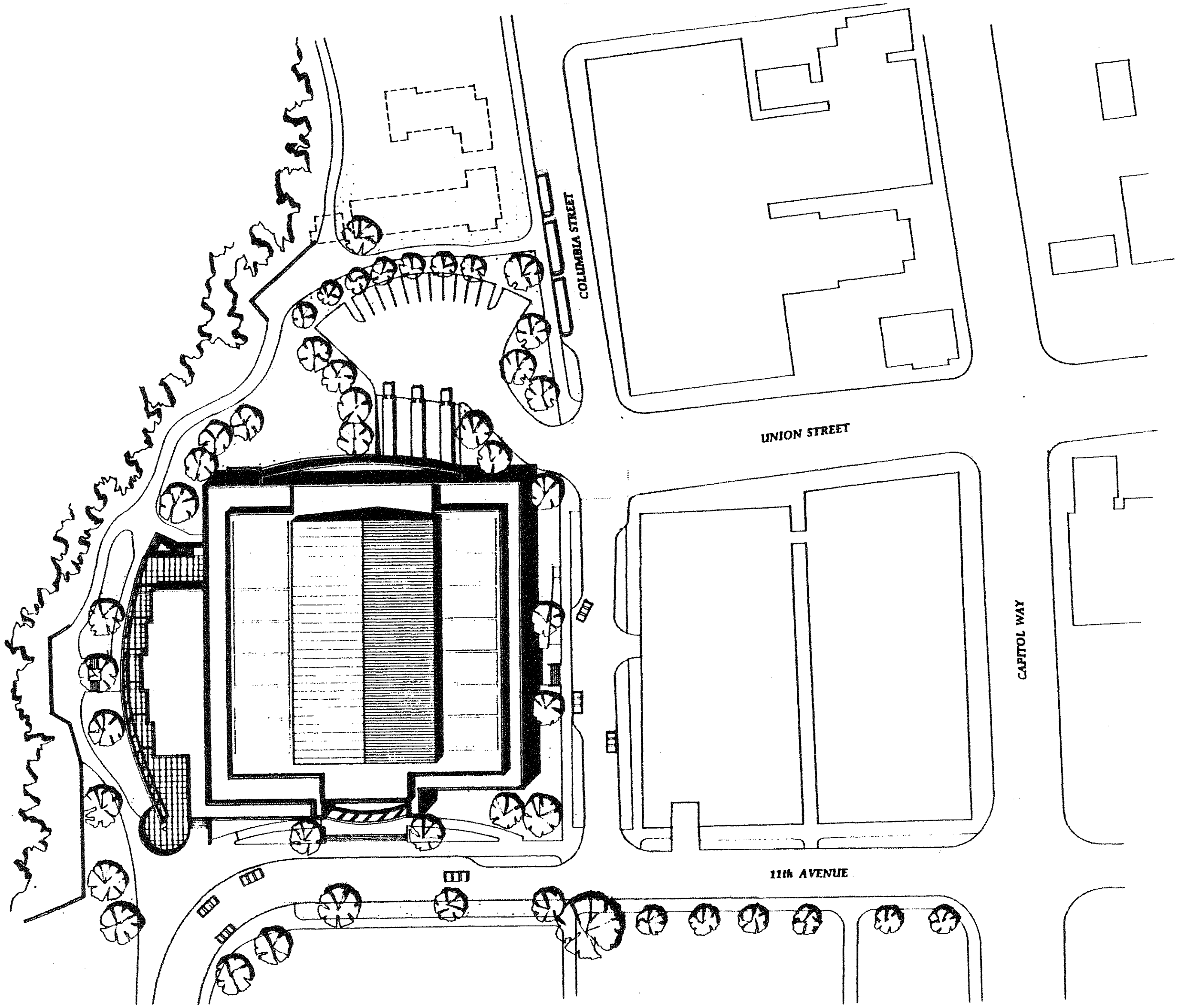
Master Clock System:

Provide new Clock System. The time control center will be a microprocessor-based system designed to provide on-off and start-stop programs, 2 or 4 circuit modes with 4 program schedules, 7 day programming (minute resolution) with interactive programming with automatic daylight-savings time correction feature and 7 day battery stand-by power supply. A.C. Line synchronous or dc quartz time base with on, off, and pulse automatic and manual time based events. Control unit will comply with U.L. Standard #917 and operate on 120 volt A.C. power. Secondary clocks will be 12" round case, with high-impact, shatterproof acrylic lens, surface or semi-flush mounting with symmetry dial and hands, with automatic supervision functions and comply with U.L. Standard #863, and operate on 24 volt D.C. pulse system from master control center.

Sound Systems:

The sound system for the auditorium will consist of control console unit, microphones and speakers. The control console will have a solid site amplifier that operates on 105-125 volts, 60 Hz and deliver 25 watts output to sound system speakers and have individual volume controls for amplifier gain and built-in speaker microphone. Amplifier will have protective circuits with automatic resetting for short circuit conditions and have sound masking capability for input and output channels. The output line will be a 25 volt balanced system.

B. Concept Drawings



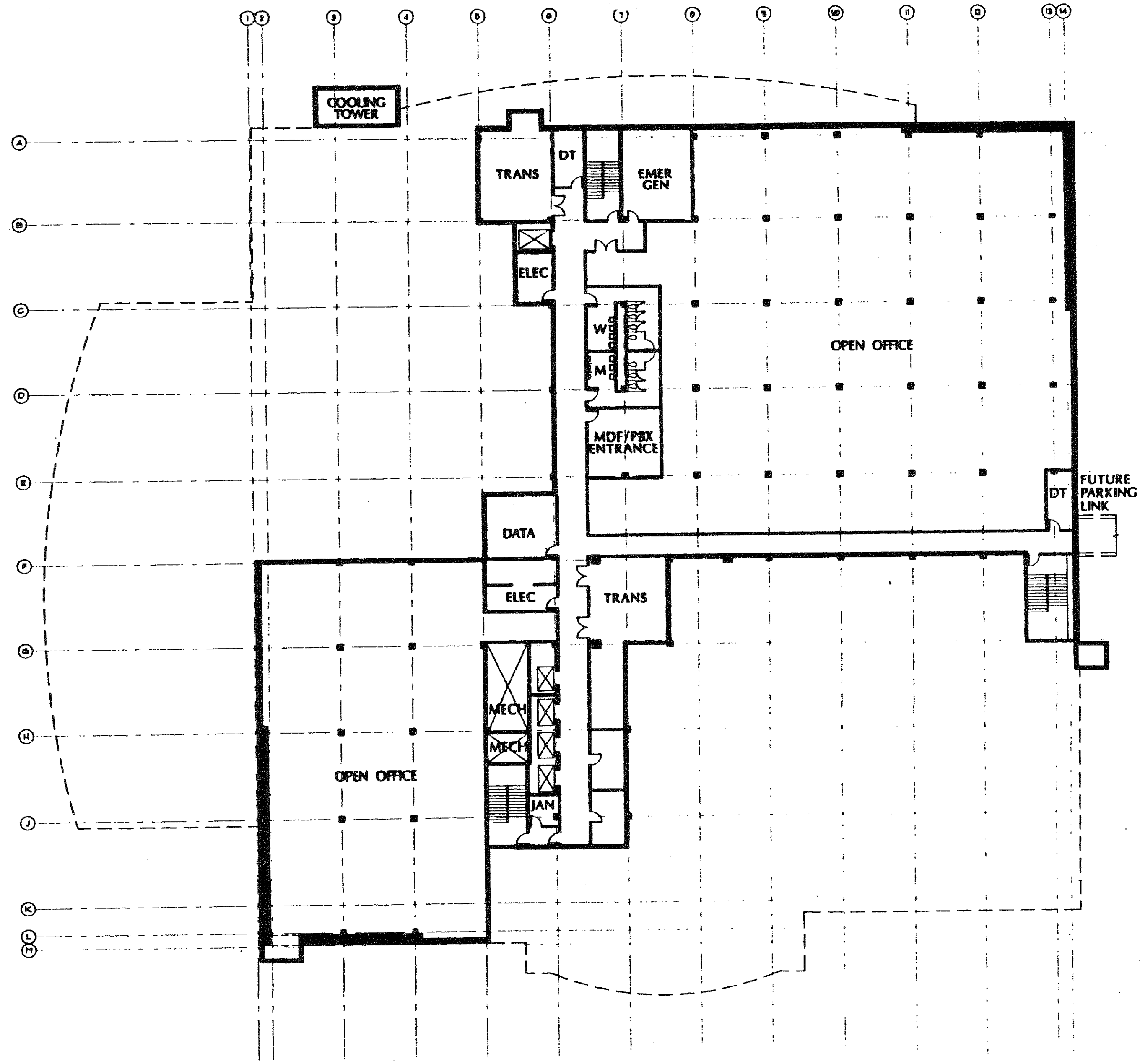
SITE PLAN • PROPOSED

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

JULY 1992



BASEMENT FLOOR PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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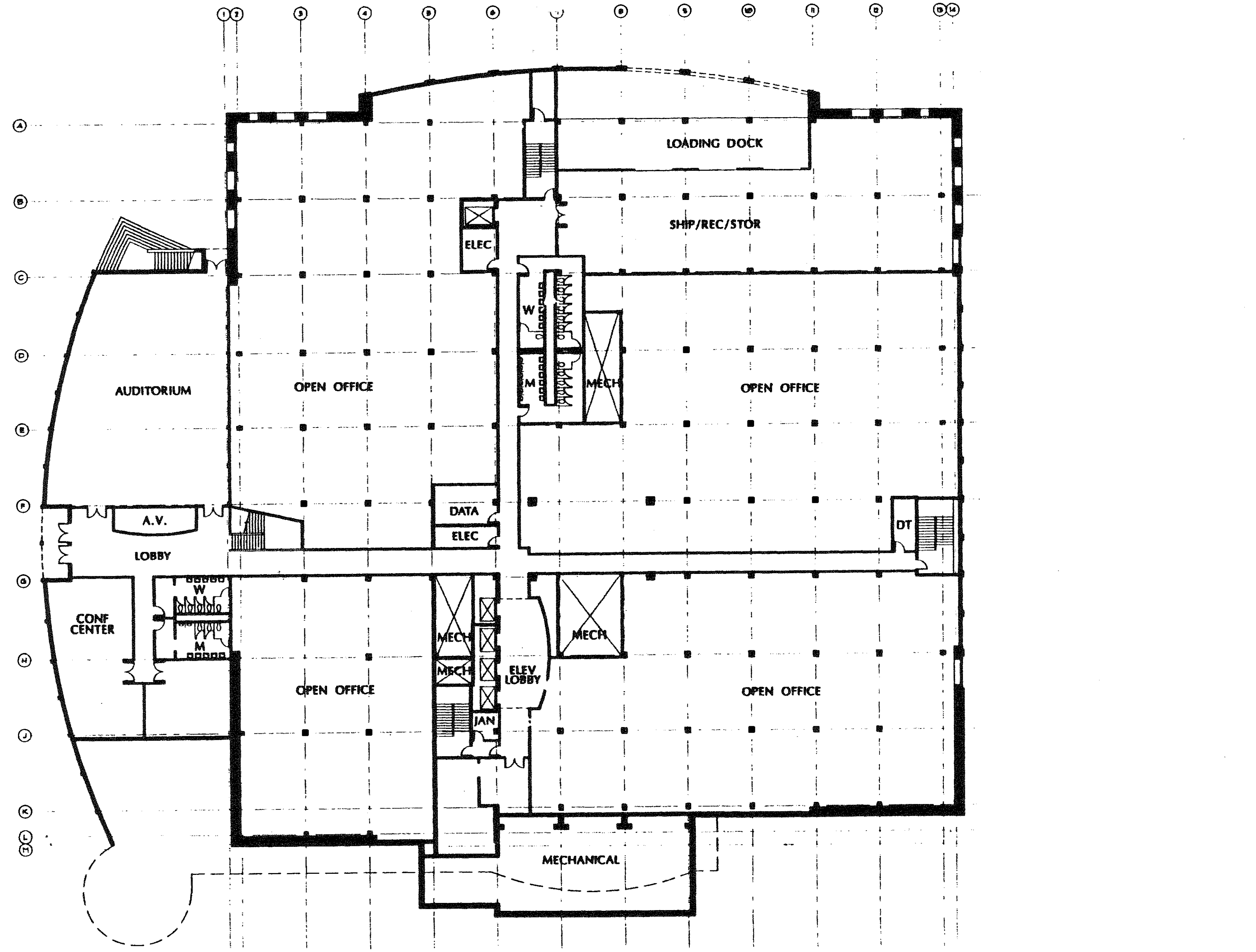

GROUND FLOOR PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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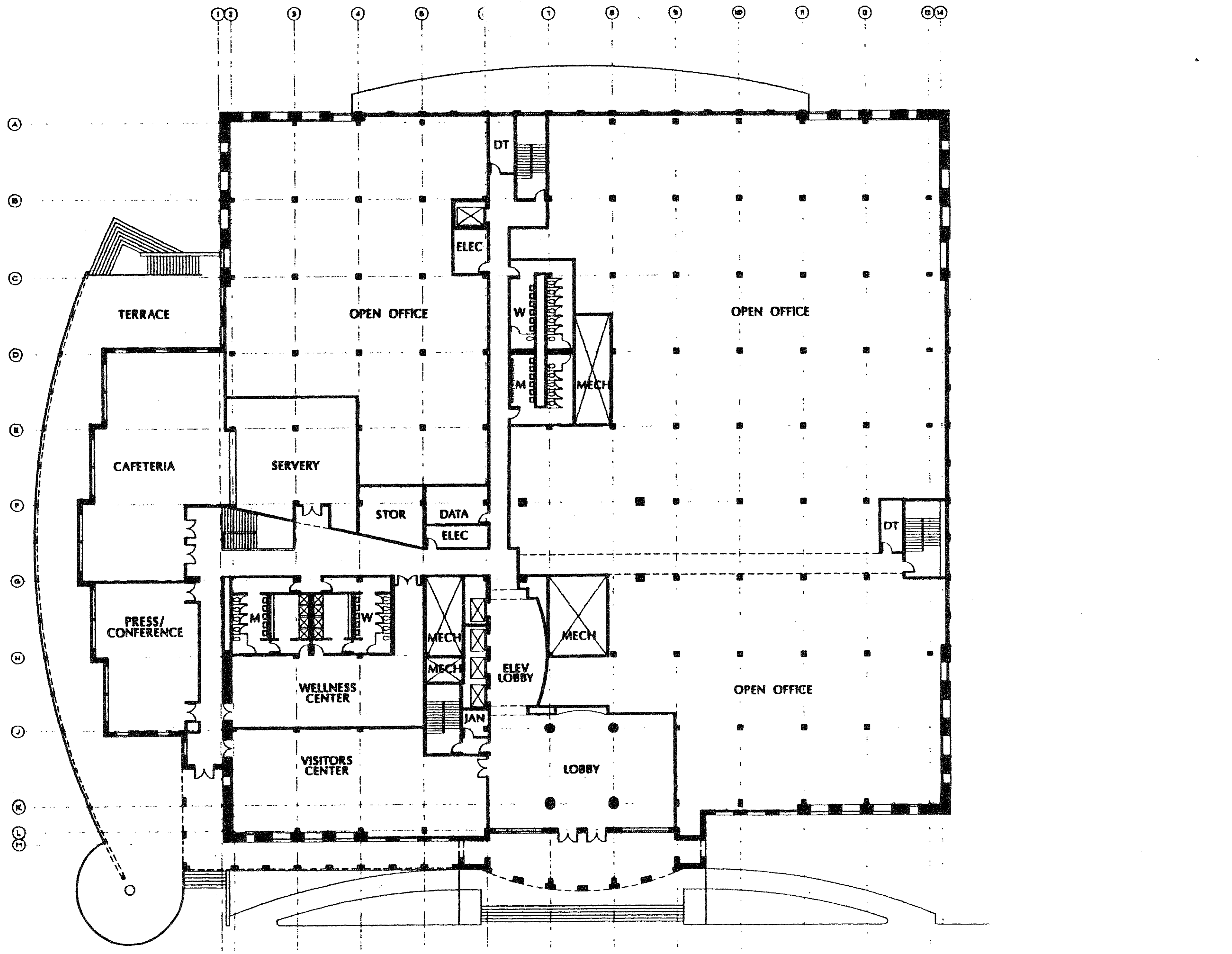

FIRST FLOOR PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

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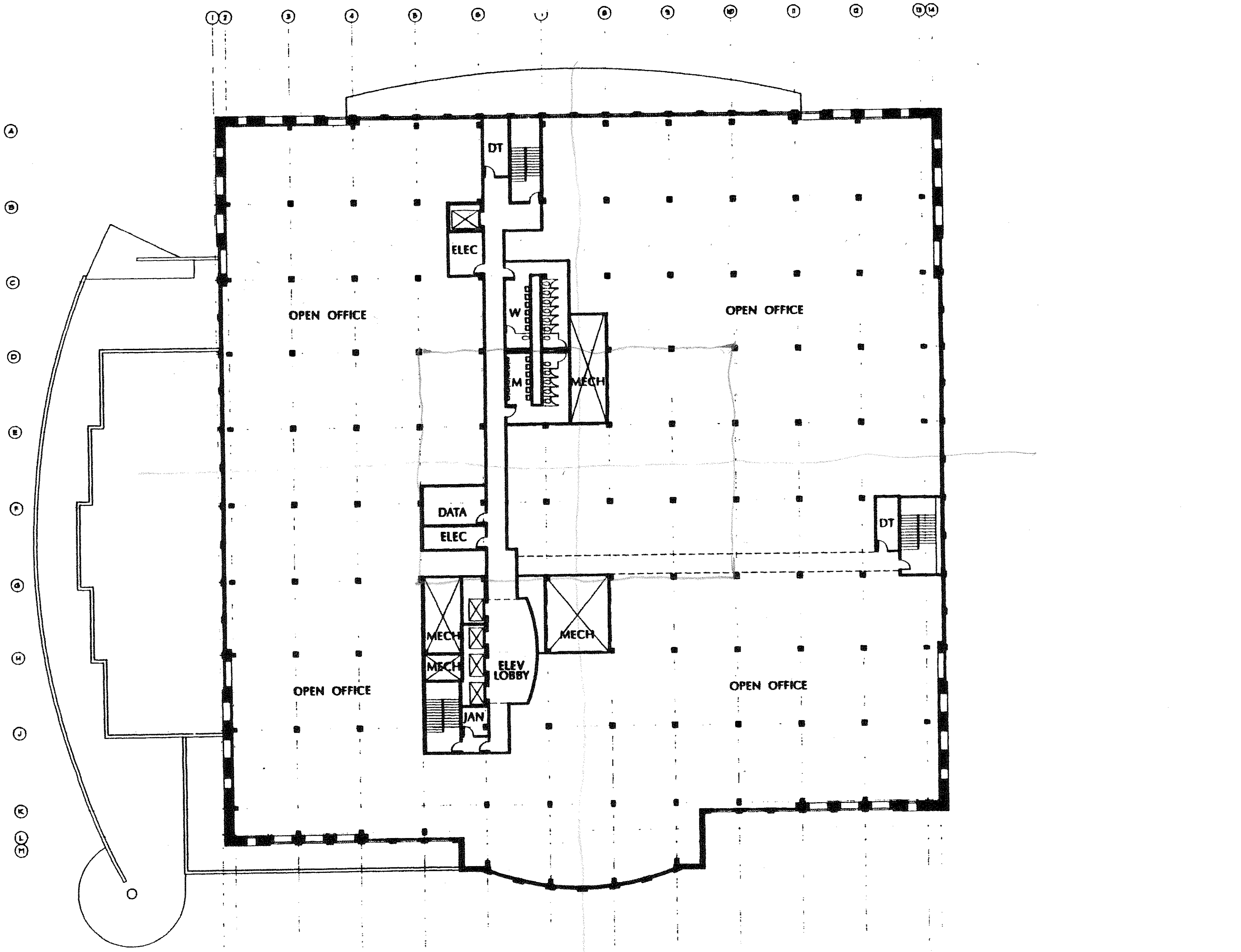

TYPICAL FLOOR PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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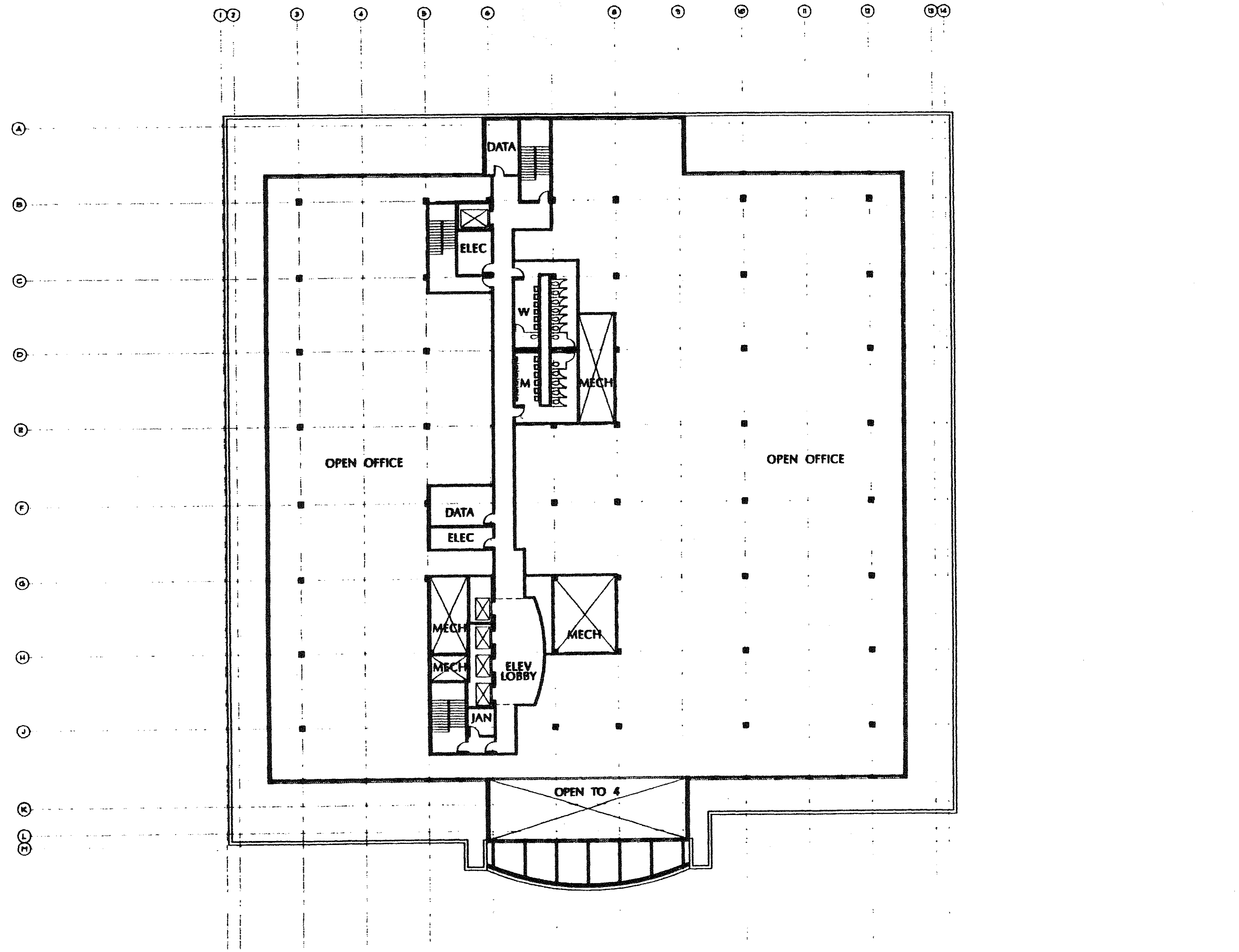

FIFTH FLOOR PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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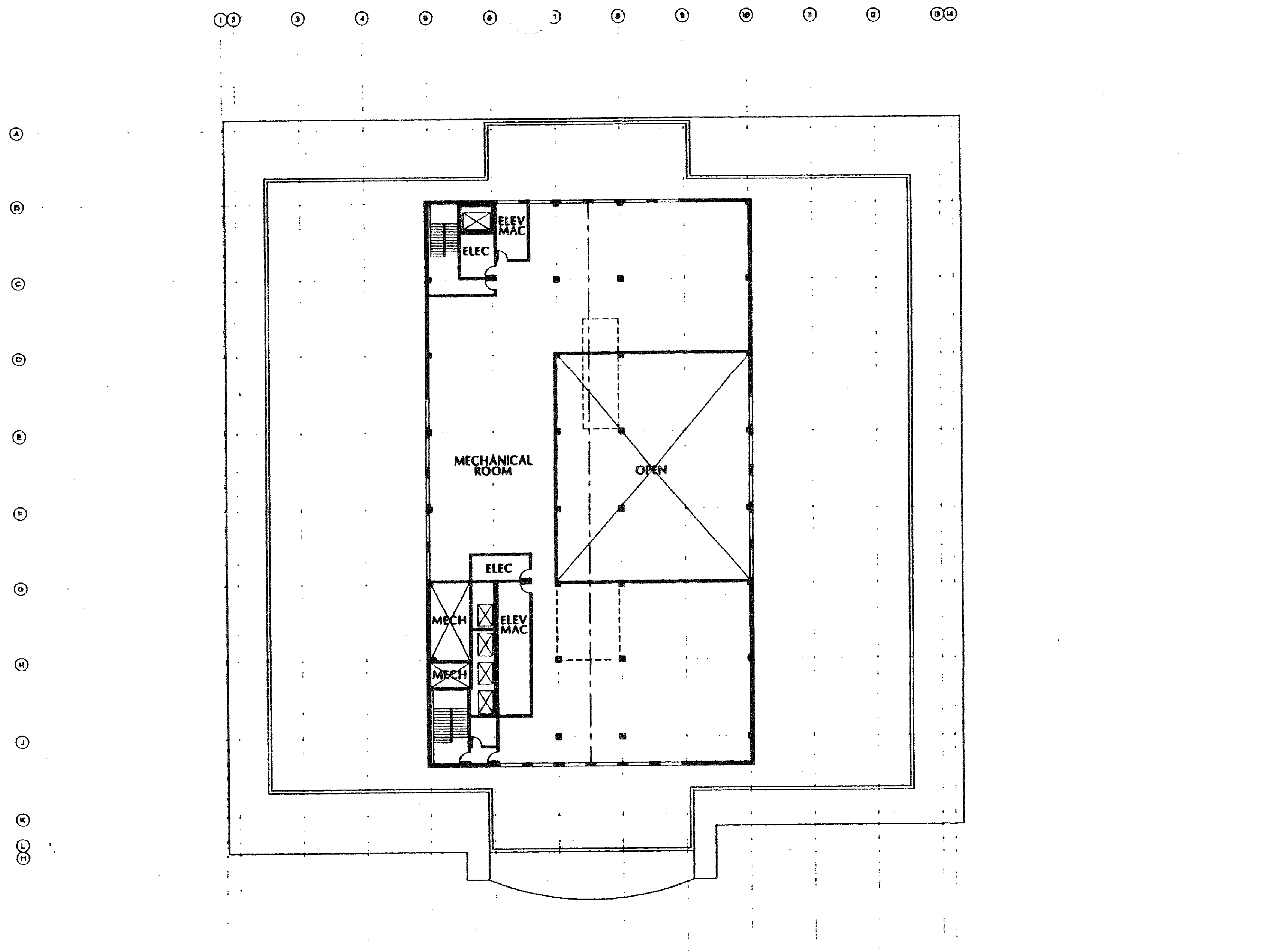

PENTHOUSE PLAN

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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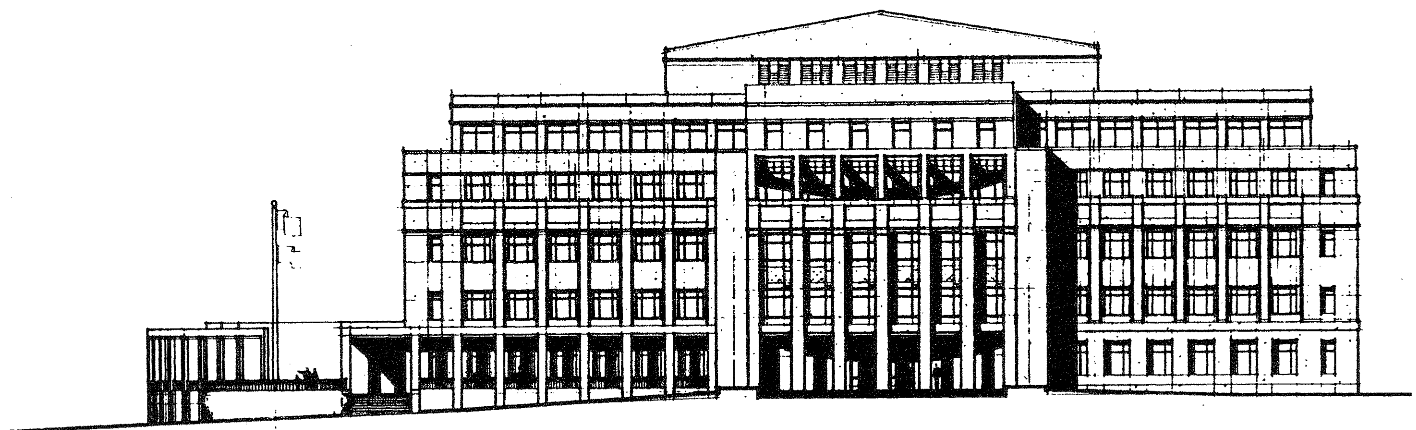

West Addition

Main Entry

SOUTH ELEVATION

64 32 16 8 0

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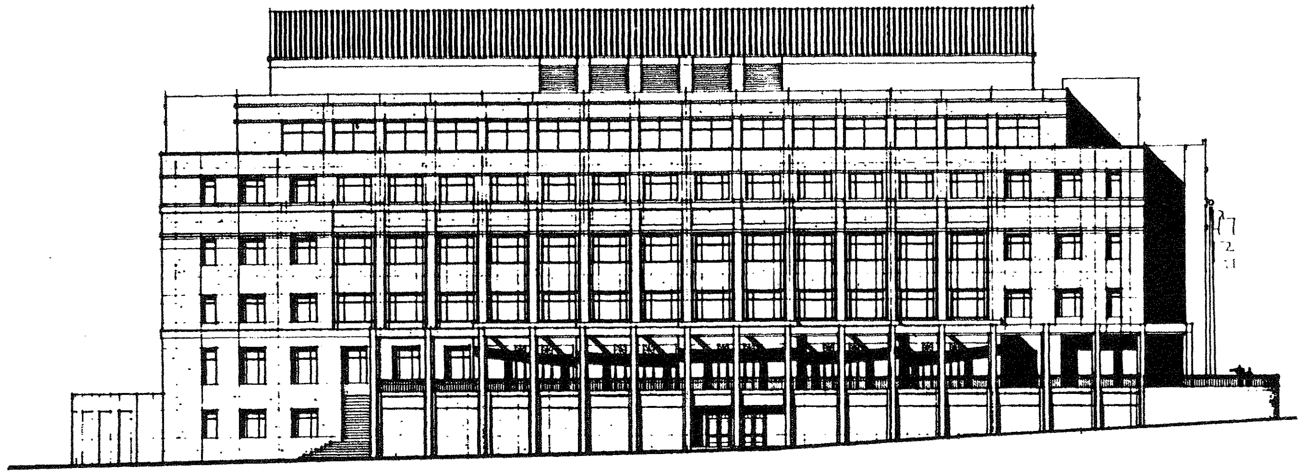

Service Dock Auditorium Conference Center

WEST ELEVATION

64 32 16 8 0

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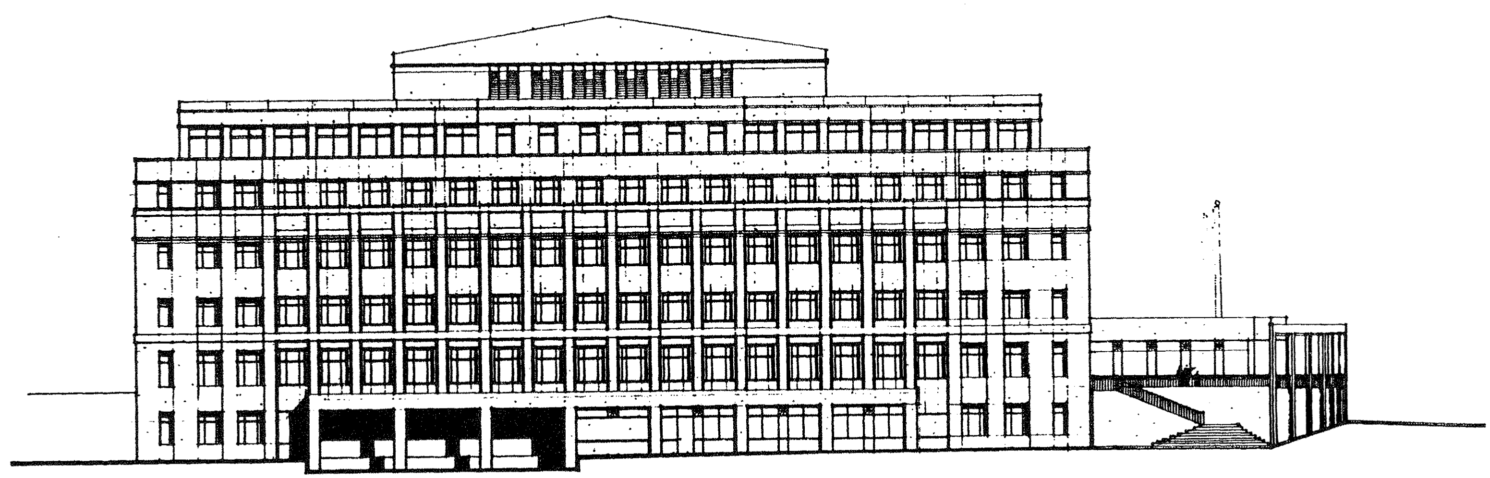

NORTH ELEVATION

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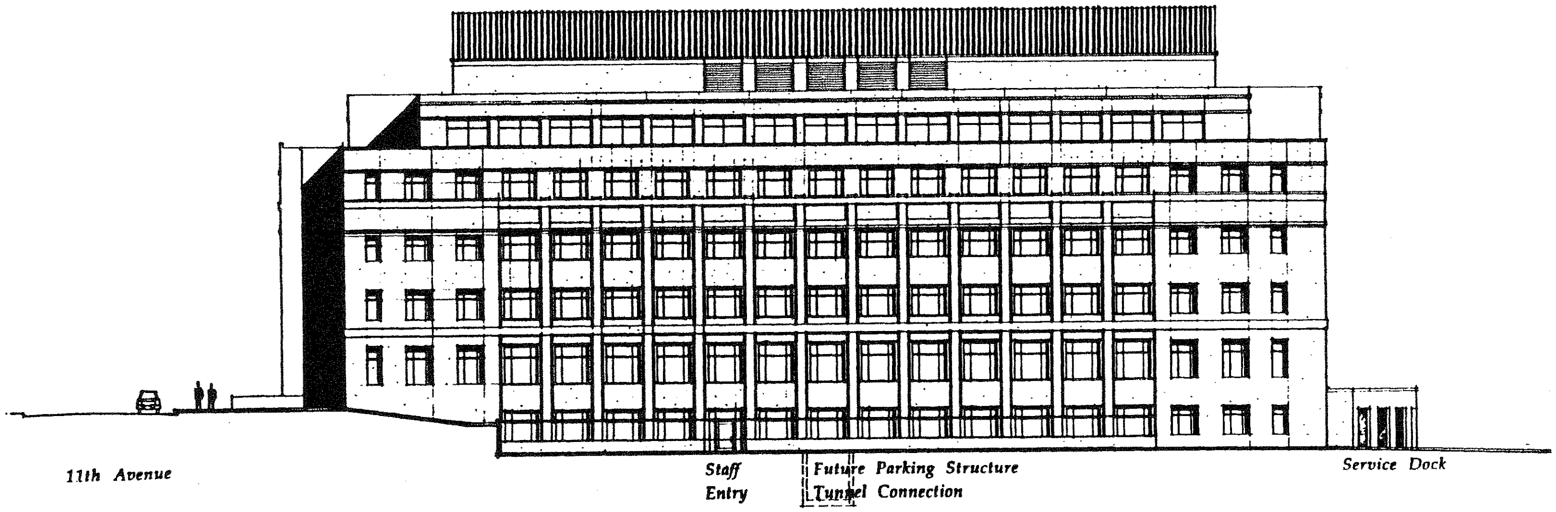
JULY 1992



EAST ELEVATION

GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

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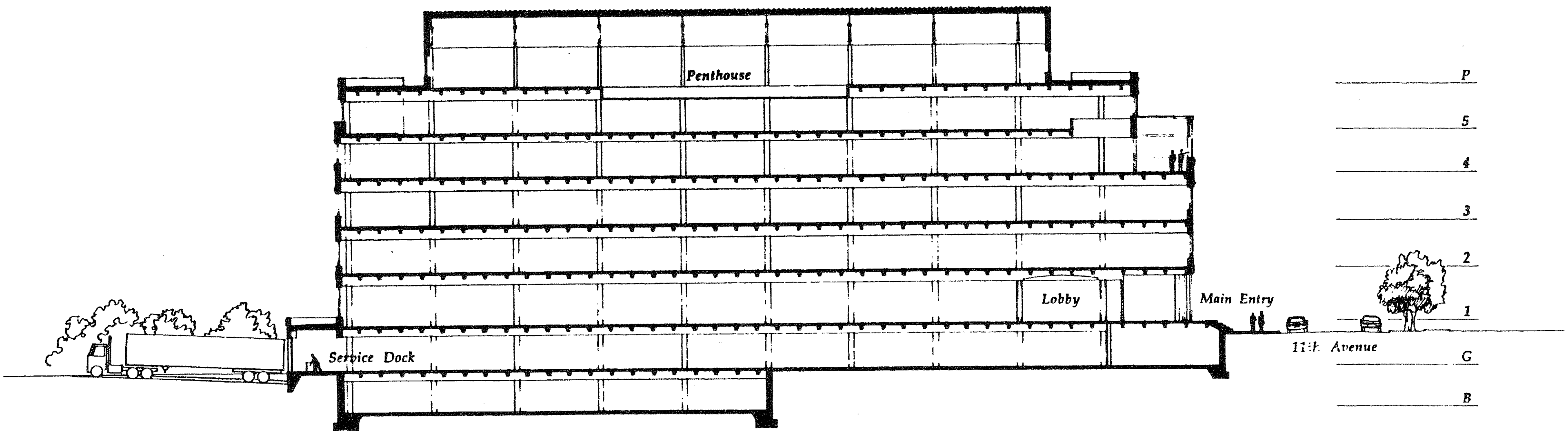
JULY 1992



NORTH/SOUTH SECTION

64 32 16 8 0

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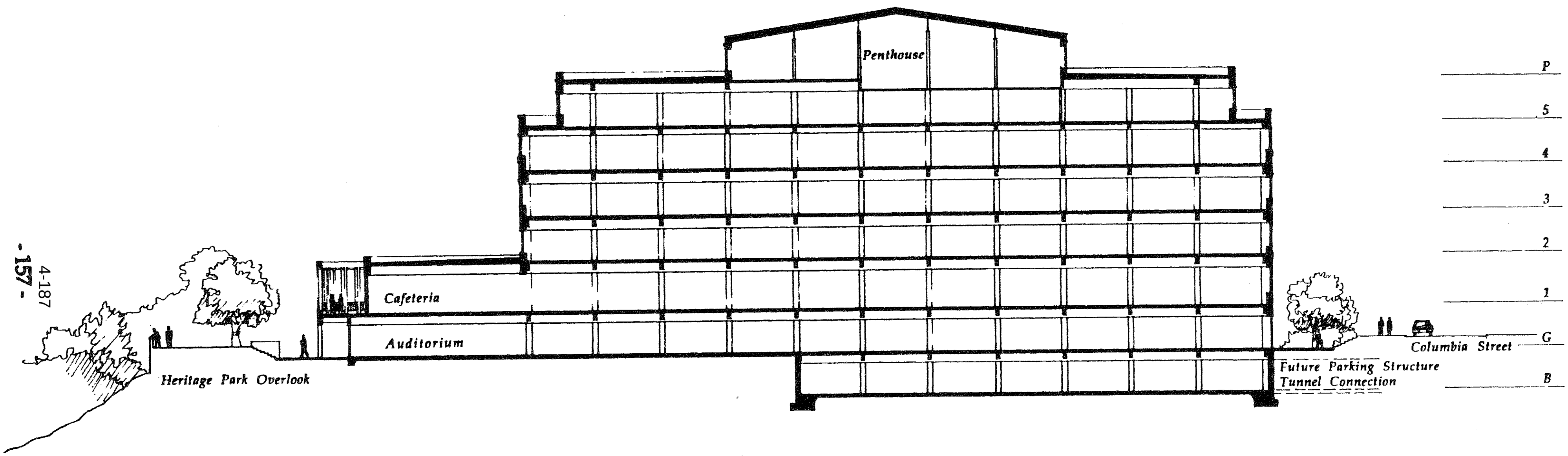
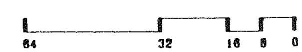


EAST/WEST SECTION



GENERAL ADMINISTRATION BUILDING • PRE-DESIGN STUDY

ZIMMER GUNSUL FRASCA PARTNERSHIP

OLYMPIA, WASHINGTON

JULY 1992

Rider Hunt
Levett & Bailey®

Pre-Design Estimate

WA State Capitol Campus
Executive Office Plaza Heritage Center

Olympia, WA

August 4, 2006

Rider Hunt Levett & Bailey • Fox Tower • 805 SW Broadway • Suite 2750 • Portland, OR 97205
Telephone: (503) 226-2730 • Fax: (503) 226-1267 • Email: pdx@riderhunt.com • www.riderhunt.com

Pre-Design Estimate

WA State Capitol Campus
Executive Office Plaza Heritage Center

Olympia, WA

For:

SRG Partnership INC
101 Yesler Way, Suite 200, Seattle, WA 98104

EXECUTIVE SUMMARY

Rider Hunt
Levett & Bailey®

8/4/2006

Executive Office Plaza Heritage Center - Executive Summary

	GA			Preferred Option					
	GA Renovation Predesign $	GA New Predesign $		Parking Garage Predesign $	Heritage Center Predesign $	Executive Office Building Predesign $	General Office Building Predesign $	Plazas Predesign $	Preferred Option Total Predesign $
C. CONSTRUCTION CONTRACTS									
1 Site Work									
a. G10 - Site Preparation	65,000	150,000		50,000	400,000	25,000	25,000	300,000	800,000
b. G20 - Site Improvements	1,778,050	2,328,050		372,900	200,000	150,000	200,000	8,071,086	8,993,986
c. G30 - Site Mechanical Utilities				60,000	60,000	60,000	125,000	47,500	352,500
d. G40 - Site Electrical Utilities				70,000	70,000	70,000	105,000	55,000	370,000
e. G60 - Other Site Construction									-
SubTotal: Site Work	1,843,050	2,478,050		552,900	730,000	305,000	455,000	8,473,586	10,516,486
2 Related Project Costs									
a. Off site improvements									
b. City Utilities Relocation									
c. Parking Mitigation									
d. Stormwater Retention/Detention									
e. Wetland Mitigation									
SubTotal: Related Project Costs	-	-		-	-	-	-	-	-
3A Facility Construction - Primary									
a. A10 - Foundations		788,501		1,887,500	3,799,941		1,596,686	-	7,284,127
b. A20 - Basement Construction		827,505		2,797,097	4,573,893	319,500	1,600,885	-	9,291,375
c. B10 - Superstructure		9,949,323		7,309,664	11,020,620	7,419,750	14,218,490	-	39,968,524
d. B20 - Exterior Closure	2,919,972	5,962,035		10,000	4,264,660	8,281,200	15,170,900	-	27,726,760
e. B30 - Roofing	455,643	555,643			126,125	357,305	732,600	-	1,216,030
f. C10 - Interior Construction	22,240,272	15,510,000		309,600	5,233,764	2,694,425	5,456,001	-	13,693,790
g. C20 - Stairs	100,000	200,000		45,000	385,000	165,000	425,000	-	1,020,000
h. C30 - Interior Finishes				274,206	3,801,290	2,043,280	4,294,134	-	10,412,910
i. D10 - Conveying	480,000	480,000		250,000	520,000	285,000	450,000	-	1,505,000
j. D20 - Plumbing Systems	1,852,500	1,425,000		472,140	1,468,487	783,608	1,582,744	-	4,306,979
k. D30 - HVAC Systems	12,825,000	10,545,000		283,284	9,036,840	4,822,200	9,009,463	-	23,151,787
l. D40 - Fire Protection Systems	1,140,000	997,500		566,568	790,724	421,943	852,247	-	2,631,482
m. D50 - Electrical Systems	6,939,750	6,270,000		1,794,132	5,196,183	2,772,765	5,356,978	-	15,120,058
n.. F10 - Special Construction								900,000	900,000
o.. F20 - Selective Demolition	4,942,308	3,488,688					2,330,500	75,000	2,405,500
p. General Conditions	33,083,506	30,486,723		8,484,235	26,114,578	15,721,264	32,564,909	4,843,137	87,728,123
SubTotal: Facility Construction	86,978,951	87,485,918		24,483,426	76,332,105	46,087,240	95,641,537	5,818,137	248,362,445
Maximum Allowable Construction Cost (MACC) - Primary	**88,822,001**	**89,963,968**		**25,036,326**	**77,062,105**	**46,392,240**	**96,096,537**	**14,291,723**	**258,878,931**
F. OTHER COSTS									
1 Mitigation Costs									
2 Hazardous Material Remediation\Removal	1,140,000								
3									
Total: Other Costs	1,140,000	-		-	-	-	-	-	-
G R A N D T O T A L	**89,962,001**	**89,963,968**		**25,036,326**	**77,062,105**	**46,392,240**	**96,096,537**	**14,291,723**	**258,878,931**

ESTIMATE SUMMARIES & DETAIL
Undistributed Margins & Adjustments

GA BUILDING – RENOVATION

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Total Cost Summary

GFA: Gross floor area
Rates current at June 2006

Level	Zone		GFA SF	Cost/SF	Total Cost
A	**SITEWORK**				**$1,843,050**
B	**RENOVATION**				
B1	Abatement				1,140,000
B2	Interior demolition				4,942,308
B3	Structural upgrade				8,140,272
B4	Architectural		282,000	64	18,055,615
B5	Mechanical				15,817,500
B6	Electrical				6,939,750
			282,000	**$195**	**$55,035,445**
		Net Cost	**282,000**	**$202**	**$56,878,495**
Margin & Adjustments					
General Conditions		11.0%			6,256,634
Leed Silver		2.0%			1,262,703
Bonds & Insurances		2.5%			1,609,946
Overhead and Profit		5.0%			3,300,389
Design Contingency		18.0%			12,475,470
State Sales Tax					Excl.
Escalation 3Q2007		10.0%			8,178,364
		Total Cost	**282,000**	**$319**	**$89,962,001**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element	Cost $
	A10 Foundations	
FD	STANDARD FOUNDATIONS	$ -
SP	SPECIAL FOUNDATIONS	$ -
SG	SLAB ON GRADE	$ -
		$ -
	A20 Basement Construction	
BE	BASEMENT EXCAVATION	$ -
BW	BASEMENT WALLS	$ -
		$ -
	B10 Superstructure	
FL	FLOOR CONSTRUCTION	$ -
RF	ROOF CONSTRUCTION	$ -
		$ -
	B20 Exterior Closure	
EW	EXTERIOR WALLS	$ 1,215,372
WW	EXTERIOR WINDOWS	$ 1,634,100
ED	EXTERIOR DOORS	$ 70,500
		$ 2,919,972
	B30 Roofing	
RC	ROOF COVERINGS	$ 455,643
RO	ROOF OPENINGS	$ -
		$ 455,643
	C10 Interior Construction	
PT	PARTITIONS	$ -
ID	INTERIOR DOORS	$ -
FT	SPECIALTIES	$ -
		$ -
	C20 Stairways	
SC	STAIR CONSTRUCTION	$ 100,000
SF	STAIR FINISHES	$ -
		$ 100,000
	C30 Interior Finishes	
WF	WALL FINISHES	$ -
FF	FLOOR FINISHES	$ -
CF	CEILING FINISHES	$ -
		$ -
	D10 Conveying Systems	
EV	ELEVATORS	**$ 480,000**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element	Cost $
	D20 Plumbing Systems	
PF	PLUMBING FIXTURES	$ 1,425,000
DW	DOMESTIC WATER DISTRIBUTION	$ -
SW	SANITARY WASTE	$ -
RW	RAIN WATER DRAINAGE	$ 427,500
		$ 1,852,500
	D30 HVAC Systems	
HV	SPECIAL HVAC SYSTEMS & EQUIPMENT	$ 12,825,000
HG	HEAT GENERATING SYSTEMS	$ -
HR	HEAT REJECTION SYSTEMS	$ -
DS	HEAT DISTRIBUTION SYSTEMS	$ -
CI	HVAC CONTROLS & INSTRUMENTATION	$ -
		$ 12,825,000
	D40 Fire Protection Systems	
FP	FIRE PROTECTION & SPRINKLER SYSTEMS	**$ 1,140,000**
	D50 Electrical Systems	
SD	ELECTRICAL SERVICE & DISTRIBUTION	$ 2,379,750
LP	LIGHTING & BRANCH WIRING	$ 3,420,000
CM	COMMUNICATIONS & SECURITY SYSTEMS	$ 1,140,000
		$ 6,939,750
	E10 Equipment	
CE	COMMERCIAL EQUIPMENT	$ -
IE	INSTITUTIONAL EQUIPMENT	$ -
		$ -
	E20 Furnishings	
FX	FIXED FURNISHINGS	**$ -**
FN	**F10 Special Construction**	**$ 22,240,272**
	F20 Demolition	
DE	BUILDING ELEMENTS DEMOLITION	$ 4,942,308
HZ	HAZARDOUS COMPONENTS ABATEMENT	$ 1,140,000
		$ 6,082,308

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element	Cost $
	G10 Site Preparation	
SI	SITE DEMOLITION & RELOCATION	$ 50,000
EA	SITE EARTHWORK	$ 15,000
		$ 65,000
	G20 Site Improvements	
RD	ROADWAYS	$ -
PV	PEDESTRIAN PAVING	$ -
DV	SITE DEVELOPMENT	$ 1,678,050
LA	LANDSCAPING	$ -
TU	SERVICE TUNNELS	$ 100,000
		$ 1,778,050
	G30 Site Plumbing Utilities	
WS	SITE WATER SUPPLY & DISTRIBUTION	$ -
SS	SITE SANITARY SEWER SYSTEMS	$ -
ST	SITE STORM SEWER SYSTEMS	$ -
		$ -
	G40 Site HVAC Utilities	**NA**
	G50 Site Electrical	
XE	SITE ELECTRICAL DISTRIBUTION	$ -
XL	SITE LIGHTING	$ -
		$ -
	Sub Total	**$ 56,878,495**
	Z10 General Requirements	
	General Conditions (11.0%)	$ 6,256,634
	LEED Silver (2.0%)	$ 1,262,703
	Bonds & Insurances (2.5%)	$ 1,609,946
	Overhead & Profit (5.0%)	$ 3,300,389
	Design Contingency (18.0%)	$ 12,475,470
	State Sales Tax	Excl
	Escalation (3Q2007) (10.0%)	$ 8,178,364
	Total Cost	**$ 89,962,001**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
A	**SITEWORK**				
SI	**SITE DEMOLITION & RELOCATION**	**Item**			**50,000**
	Element SI total				**50,000**
EA	**SITE EARTHWORK**	**Item**			**15,000**
	Element EA total				**15,000**
DV	**SITE DEVELOPMENT**				
1	Sitework	SF	37290.00	45.00	1,678,050
	Element DV total				**1,678,050**
TU	**SERVICE TUNNELS**				
1	Upgrades to existing utilities	Item			100,000
	Element TU total				**100,000**
	A SITEWORK Total				**1,843,050**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**RENOVATION**				
B1	**Abatement**				
HZ	**HAZARDOUS COMPONENTS ABATEMENT**	**SF**	**285000.00**	**4.00**	**1,140,000**
	Element HZ total				**1,140,000**
	B1 Abatement Total				**1,140,000**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**RENOVATION**				
B2	**Interior demolition**				
	DE BUILDING ELEMENTS DEMOLITION	**SF**	**290724.00**	**17.00**	**4,942,308**
	Element DE total				**4,942,308**
	B2 Interior demolition Total				**4,942,308**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**RENOVATION**				
B3	**Structural upgrade**				
FN	**INTEGRATED CONSTRUCTION**				
1	Allowance for life safety level seismic upgrade	SF	290724.00	28.00	8,140,272
	Element FN total				**8,140,272**
	B3 Structural upgrade Total				**8,140,272**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**RENOVATION**				
B4	**Architectural GFA 282,000 SF Cost/SF $64.03**				
EW	**EXTERIOR WALLS**				
1	Upgrades to inside face of exterior walls	SF	70068.00	8.00	560,544
2	Clean and repoint existing exterior wall	SF	48683.00	5.00	243,415
3	Scaffolding for the above	SF	70471.00	3.00	211,413
4	Architectural enhancements	Item			200,000
	Element EW total			**4.31/SF**	**1,215,372**
WW	**EXTERIOR WINDOWS**				
1	New operable windows	SF	21788.00	75.00	1,634,100
	Element WW total			**5.79/SF**	**1,634,100**
ED	**EXTERIOR DOORS**	**SF**	**282000.00**	**0.25**	**70,500**
	Element ED total			**0.25/SF**	**70,500**
RC	**ROOF COVERINGS**				
1	New roof and insulation	SF	50627.00	9.00	455,643
	Element RC total			**1.62/SF**	**455,643**
FN	**INTEGRATED CONSTRUCTION**				
1	Interior fit-out	SF	282000.00	50.00	14,100,000
	Element FN total			**50.00/SF**	**14,100,000**
SC	**STAIR CONSTRUCTION**				
1	Upgrades	Item			100,000
	Element SC total			**0.35/SF**	**100,000**
EV	**ELEVATORS**				
1	New elevators	EA	4.00	120000.00	480,000
	Element EV total			**1.70/SF**	**480,000**
	B4 Architectural Total				**18,055,615**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

	Item	Description	Unit	Qty	Rate	$
B		**RENOVATION**				
B5		**Mechanical**				
	RW	**RAIN WATER DRAINAGE**	**SF**	**285000.00**	**1.50**	**427,500**
		Element RW total				**427,500**
	PF	**PLUMBING FIXTURES**	**SF**	**285000.00**	**5.00**	**1,425,000**
		Element PF total				**1,425,000**
	FP	**FIRE PROTECTION & SPRINKLER SYSTEMS**	**SF**	**285000.00**	**4.00**	**1,140,000**
		Element FP total				**1,140,000**
	HV	**SPECIAL HVAC SYSTEMS & EQUIPMENT**	**SF**	**285000.00**	**45.00**	**12,825,000**
		Element HV total				**12,825,000**
		B5 Mechanical Total				**15,817,500**

WA STATE CAPITOL CAMPUS - GA BUILDING - RENOVATION

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**RENOVATION**				
B6	**Electrical**				
SD	**ELECTRICAL SERVICE & DISTRIBUTION**	**SF**	**285000.00**	**8.35**	**2,379,750**
	Element SD total				**2,379,750**
LP	**LIGHTING & BRANCH WIRING**	**SF**	**285000.00**	**12.00**	**3,420,000**
	Element LP total				**3,420,000**
CM	**COMMUNICATIONS & SECURITY SYSTEMS**	**SF**	**285000.00**	**4.00**	**1,140,000**
	Element CM total				**1,140,000**
	B6 Electrical Total				**6,939,750**

GA BUILDING – NEW

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Total Cost Summary

GFA: Gross floor area
Rates current at June 2006

Level	Zone		GFA SF	Cost/SF	Total Cost
A	**SITEWORK**				**$2,478,050**
B	**NEW BUILDING**				
B1	Deconstruction and abatement				3,488,688
B2	Structural and Architectural		282,000	122	34,273,007
B3	Mechanical				12,967,500
B4	Electrical				6,270,000
			282,000	**$202**	**$56,999,195**
	Net Cost		**282,000**	**$211**	**$59,477,245**
Margin & Adjustments					
General Conditions		10.0%			5,947,725
Leed Silver		1.0%			654,250
Bonds & Insurances		2.5%			1,651,981
Overhead and Profit		5.0%			3,386,560
Design Contingency		15.0%			10,667,664
State Sales Tax					Excl.
Escalation 3Q2007		10.0%			8,178,543
	Total Cost		**282,000**	**$319**	**$89,963,968**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element	Cost $
	A10 Foundations	
FD	STANDARD FOUNDATIONS	$ 508,710
SP	SPECIAL FOUNDATIONS	$ -
SG	SLAB ON GRADE	$ 279,791
		$ 788,501
	A20 Basement Construction	
BE	BASEMENT EXCAVATION	$ 250,005
BW	BASEMENT WALLS	$ 577,500
		$ 827,505
	B10 Superstructure	
FL	FLOOR CONSTRUCTION	$ 9,109,935
RF	ROOF CONSTRUCTION	$ 839,388
		$ 9,949,323
	B20 Exterior Closure	
EW	EXTERIOR WALLS	$ 4,027,785
WW	EXTERIOR WINDOWS	$ 1,863,750
ED	EXTERIOR DOORS	$ 70,500
		$ 5,962,035
	B30 Roofing	
RC	ROOF COVERINGS	$ 455,643
RO	ROOF OPENINGS	$ 100,000
		$ 555,643
	C10 Interior Construction	
PT	PARTITIONS	$ -
ID	INTERIOR DOORS	$ -
FT	SPECIALTIES	$ -
		$ -
	C20 Stairways	
SC	STAIR CONSTRUCTION	$ 200,000
SF	STAIR FINISHES	$ -
		$ 200,000
	C30 Interior Finishes	
WF	WALL FINISHES	$ -
FF	FLOOR FINISHES	$ -
CF	CEILING FINISHES	$ -
		$ -
	D10 Conveying Systems	
EV	ELEVATORS	**$ 480,000**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element	Cost $
	D20 Plumbing Systems	
PF	PLUMBING FIXTURES	$ 1,425,000
DW	DOMESTIC WATER DISTRIBUTION	$ -
SW	SANITARY WASTE	$ -
RW	RAIN WATER DRAINAGE	$ -
		$ 1,425,000
	D30 HVAC Systems	
HV	SPECIAL HVAC SYSTEMS & EQUIPMENT	$ 10,545,000
HG	HEAT GENERATING SYSTEMS	$ -
HR	HEAT REJECTION SYSTEMS	$ -
DS	HEAT DISTRIBUTION SYSTEMS	$ -
CI	HVAC CONTROLS & INSTRUMENTATION	$ -
		$ 10,545,000
	D40 Fire Protection Systems	
FP	FIRE PROTECTION & SPRINKLER SYSTEMS	**$ 997,500**
	D50 Electrical Systems	
SD	ELECTRICAL SERVICE & DISTRIBUTION	$ 2,280,000
LP	LIGHTING & BRANCH WIRING	$ 2,850,000
CM	COMMUNICATIONS & SECURITY SYSTEMS	$ 1,140,000
		$ 6,270,000
	E10 Equipment	
CE	COMMERCIAL EQUIPMENT	$ -
IE	INSTITUTIONAL EQUIPMENT	$ -
		$ -
	E20 Furnishings	
FX	FIXED FURNISHINGS	**$ -**
FN	**F10 Special Construction**	**$ 15,510,000**
	F20 Demolition	
DE	BUILDING ELEMENTS DEMOLITION	$ 3,488,688
HZ	HAZARDOUS COMPONENTS ABATEMENT	$ -
		$ 3,488,688

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

ELEMENTAL SUMMARY

Estimated rates
gfa 282,000 SF

	Element		Cost $
	G10 Site Preparation		
SI	SITE DEMOLITION & RELOCATION		$ 100,000
EA	SITE EARTHWORK		$ 50,000
			$ 150,000
	G20 Site Improvements		
RD	ROADWAYS		$ -
PV	PEDESTRIAN PAVING		$ -
DV	SITE DEVELOPMENT		$ 1,678,050
LA	LANDSCAPING		$ -
TU	SERVICE TUNNELS		$ 650,000
			$ 2,328,050
	G30 Site Plumbing Utilities		
WS	SITE WATER SUPPLY & DISTRIBUTION		$ -
SS	SITE SANITARY SEWER SYSTEMS		$ -
ST	SITE STORM SEWER SYSTEMS		$ -
			$ -
	G40 Site HVAC Utilities		**NA**
	G50 Site Electrical		
XE	SITE ELECTRICAL DISTRIBUTION		$ -
XL	SITE LIGHTING		$ -
			$ -
		Sub Total	**$ 59,477,245**
	Z10 General Requirements		
	General Conditions (10.0%)		$ 5,947,725
	LEED Silver (1.0%)		$ 654,250
	Bonds & Insurances (2.5%)		$ 1,651,981
	Overhead & Profit (5.0%)		$ 3,386,560
	Design Contingency (15.0%)		$ 10,667,664
	State Sales Tax		Excl
	Escalation (3Q2007) (10.0%)		$ 8,178,543
		Total Cost	**$ 89,963,968**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
A	**SITEWORK**				
SI	**SITE DEMOLITION & RELOCATION**	**Item**			**100,000**
	Element SI total				**100,000**
EA	**SITE EARTHWORK**	**Item**			**50,000**
	Element EA total				**50,000**
DV	**SITE DEVELOPMENT**				
1	Site development	SF	37290.00	45.00	1,678,050
	Element DV total				**1,678,050**
TU	**SERVICE TUNNELS**				
1	Upgrades to existing utilities	Item			150,000
2	New utilities	Item			500,000
	Element TU total				**650,000**
	A SITEWORK Total				**2,478,050**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**NEW BUILDING**				
B1	**Deconstruction and abatement**				
	DE BUILDING ELEMENTS DEMOLITION	**SF**	**290724.00**	**12.00**	**3,488,688**
	Element DE total				**3,488,688**
	B1 Deconstruction and abatement Total				**3,488,688**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

	Item	Description	Unit	Qty	Rate	$
B		**NEW BUILDING**				
B2		**Structural and Architectural GFA 282,000 SF Cost/SF $121.54**				
	FD	**STANDARD FOUNDATIONS**	**SF**	**50871.00**	**10.00**	**508,710**
		Element FD total			**1.80/SF**	**508,710**
	SG	**SLAB ON GRADE**	**SF**	**50871.00**	**5.50**	**279,791**
		Element SG total			**0.99/SF**	**279,791**
	BE	**BASEMENT EXCAVATION**				
	1	Assumed basement similar to original	CY	16667.00	15.00	250,005
		Element BE total			**0.89/SF**	**250,005**
	BW	**BASEMENT WALLS**	**SF**	**16500.00**	**35.00**	**577,500**
		Element BW total			**2.05/SF**	**577,500**
	FL	**FLOOR CONSTRUCTION**				
	1	Structural frame (assumed 12lbs/sf)	T	1710.00	3300.00	5,643,000
	2	Decking and slab	SF	231129.00	15.00	3,466,935
		Element FL total			**32.30/SF**	**9,109,935**
	RF	**ROOF CONSTRUCTION**				
	1	Structural steel frame (10lbs/sf or roof area)	T	254.36	3300.00	839,388
		Element RF total			**2.98/SF**	**839,388**
	EW	**EXTERIOR WALLS**				
	1	New stone / cladding envelope	SF	45621.00	77.00	3,512,817
	2	Lining to interior of exterior wall	SF	45621.00	8.00	364,968
	3	Architectural enhancements	Item			150,000
		Element EW total			**14.28/SF**	**4,027,785**
	WW	**EXTERIOR WINDOWS**				
	1	New windows (assumed 35% of envelope)	SF	24850.00	75.00	1,863,750
		Element WW total			**6.61/SF**	**1,863,750**
	ED	**EXTERIOR DOORS**	**SF**	**282000.00**	**0.25**	**70,500**
		Element ED total			**0.25/SF**	**70,500**
	RC	**ROOF COVERINGS**				
	1	New roof and insulation	SF	50627.00	9.00	455,643
		Element RC total			**1.62/SF**	**455,643**
	RO	**ROOF OPENINGS**	**Item**			**100,000**
		Page total				**18,083,007**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**NEW BUILDING** Cont'd				
B2	**Structural and Architectural GFA 282,000 SF Cost/SF $121.54** Cont'd				
	Element RO total			**0.35/SF**	**100,000**
FN	**INTEGRATED CONSTRUCTION**				
1	Interior fit-out	SF	282000.00	55.00	15,510,000
	Element FN total			**55.00/SF**	**15,510,000**
SC	**STAIR CONSTRUCTION**				
1	New stairs	EA	4.00	50000.00	200,000
	Element SC total			**0.71/SF**	**200,000**
EV	**ELEVATORS**				
1	New elevators	EA	4.00	120000.00	480,000
	Element EV total			**1.70/SF**	**480,000**
	B2 Structural and Architectural Total				**34,273,007**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

	Item	Description	Unit	Qty	Rate	$
B		**NEW BUILDING**				
B3		**Mechanical**				
	PF	**PLUMBING FIXTURES**	**SF**	**285000.00**	**5.00**	**1,425,000**
		Element PF total				**1,425,000**
	FP	**FIRE PROTECTION & SPRINKLER SYSTEMS**	**SF**	**285000.00**	**3.50**	**997,500**
		Element FP total				**997,500**
	HV	**SPECIAL HVAC SYSTEMS & EQUIPMENT**	**SF**	**285000.00**	**37.00**	**10,545,000**
		Element HV total				**10,545,000**
		B3 Mechanical Total				**12,967,500**

WA STATE CAPITOL CAMPUS - GA BUILDING - NEW

Item Details

Rates current at June 2006

Item	Description	Unit	Qty	Rate	$
B	**NEW BUILDING**				
B4	**Electrical**				
SD	**ELECTRICAL SERVICE & DISTRIBUTION**	**SF**	**285000.00**	**8.00**	**2,280,000**
	Element SD total				**2,280,000**
LP	**LIGHTING & BRANCH WIRING**	**SF**	**285000.00**	**10.00**	**2,850,000**
	Element LP total				**2,850,000**
CM	**COMMUNICATIONS & SECURITY SYSTEMS**	**SF**	**285000.00**	**4.00**	**1,140,000**
	Element CM total				**1,140,000**
	B4 Electrical Total				**6,270,000**

NPS Form 10-900
(Oct. 1990)

OMB No. 1024-0018

RECEIVED
AUG 25 2007
COMMUNITY PLANNING & DEVELOPMENT DEPT.

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

Historic name General Administration Building

Other names/site number ______

2. Location

street & number 210 11th Avenue SW ____ not for publication

city or town Olympia ____ vicinity

State Washington code WA county Thurston code 067 zip code 98504

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination __ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property __ meets __ does not meet the National Register criteria. I recommend that this property be considered significant __ nationally __ statewide __ locally. (__ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

In my opinion, the property __ meets __ does not meet the National Register criteria. (__ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is: Signature of the Keeper Date of Action

__ entered in the National Register.
  __ See continuation sheet

__ determined eligible for the National Register.
  __ See continuation sheet

__ determined not eligible for the National Register.

__ removed from the National Register.

__ other (explain:) ______

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ___ private
- ___ public-local
- x public-State
- ___ public-Federal

Category of Property
(Check only one box

- X building(s)
- ___ district
- ___ site
- ___ structure
- ___ object

Number of Resources within Property
(Do not incl. previously listed resources in the count.)

Contributing	Non-Contributing	
1		buildings
		sites
		structures
		objects
1		Total

Name of related multiple property listing:
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

none

6. Functions or Use

Historic Functions
(Enter categories from instructions)

GOVERNMENT: Government Office

Current Functions
(Enter categories from instructions)

GOVERNMENT: Government Office

7. Description

Architectural Classification
(Enter categories from instructions)

MODERN: International

Materials
(Enter categories from instructions)

foundation CONCRETE

walls CONCRETE, STONE: Sandstone

roof OTHER: Build Up

other

Narrative Description
(Describe the historic and current condition of the property.) SEE CONTINUATION SHEET

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property
for National Register listing.)

X **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ **B** Property is associated with the lives of persons significant in our past.

X **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

___ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

___ **A** owed by a religious institution or used for religious purposes.

___ **B** removed from its original location.

___ **C** a birthplace or grave.

___ **D** a cemetery.

___ **E** a reconstructed building, object, or structure.

___ **F** a commemorative property.

___ **G** less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Architecture

Politics/Government

Period of Significance

1956

Significant Dates

1956

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation

N/A

Architect/Builder

Lumm, Allan Gordon (architect)

McDonald Building Company (builder)

Narrative Statement of Significance
(Explain the significance of the property.) SEE CONTINUATION SHEET

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form.) SEE CONTINUATION SHEET

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
#___________________
___ recorded by Historic American Engineering Record#___________________

Primary location of additional data:

X State Historic Preservation Office
X Other State agency
___ Federal agency
___ Local government
___ University
___ Other

Name of repository:

10. Geographical Data

Acreage of Property 11 + Acres

UTM References
(Place additional UTM References on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	10	5 073 98	52 09 429	3			
2				4			

Verbal Boundary Description
(Describe the boundaries of the property.) See continuation sheet.

Boundary Justification
(Explain why the boundaries were selected.) See continuation sheet.

11. Form Prepared By

name/title Annamary Fitzgerald

organization ______ date July 1, 2006

street & number 1923 Thurston Avenue NE telephone (360) 357-6099

city or town Olympia state WA zip code 98506

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items.)

Property Owner (Complete this item at the request of the SHPO or FPO.)

name Washington State Department of General Administration
Pat Buker, Senior Assistant Director for State Facilities

street & number 210 11th Avenue telephone (360) 902-0979

city or town Olympia state WA zip code 98504

DESCRIPTION:

Setting

The General Administration Building is located in Olympia, WA, on an entire city block bounded by 11th Avenue to the north, Columbia Street to the east, Union Avenue to the south, and Water Street to the west. It is adjacent to the main Capitol Campus on the north, and perched on the bluff above Capitol Lake to the northeast. The building is sited on the northeast corner of the block. There is a narrow parking area to the west that connects with a large parking lot on the south end of the block. The site itself is slightly graded. The main entrance is a full story higher than the rear of the building.

Exterior

The multi-story office building is constructed of poured concrete, steel framed windows and boxed ledge canopies, and a wall of Wilkeson sandstone. The structure is rectangular shaped and consists of four floors above the main entrance, and one and a half floors below. The roof is flat with two penthouses centered over the front half and back half housing mechanical equipment. The building enters on the south façade into the first floor. Side entrances on the west and east, and the loading dock on the south enter into the ground floor. The building's overall design emphasizes horizontal lines and a layered appearance. The southwestern, southeastern and northeastern corners of the building are large cement slabs etched with a grid pattern resembling large vertical blocks that anchor the horizontal bands.

The south-facing front is approached by five shallow granite stair risers the width of the entry onto a raised broad plaza. Convex bubble lights are embedded on the retaining walls surrounding the plaza. A ramp rises from the building's western edge between the plaza and building, and is bordered on both sides with a three-rung steel tube guardrail. The front of the building is dominated by a protruding four-story pylon offset to the west of the main entrance. It is made from Wilkeson sandstone and displays a brass relief of the state's seal centered on the fourth floor level. The sandstone is a subtle decorative element, as it changes to a darker shade than the rest of the building when wet.

Each of the four floors of the south wall is defined by a recessed band of windows headed with a protruding horizontal metal awning spanning the entire width of windows. The main entrance is divided into three bays by square cement columns. The left and right bays have large, horizontal paned glass panels in steel framing two panes wide and three panes high. The middle panes are wider than the top and bottom. The center bay has two manual swing doors on either side and an electric sliding double door in the center. All are steel framed. On the first floor, the windows are in steel-framed panels five panes wide by six panes high. Each pane is twice as wide as its height. The panels are divided by narrow, flat cement columns that do not interrupt the horizontal flow of the window bands. On the second, third and fourth floors, the window panels are five panes wide by four panes highs. The protruding pylon has windows on the east and west sides that are two panes wide and four panes high, and on the same horizontal line as the windows along the south. Between window bands, horizontally corrugated cement spandrel panels define the building's stories.

The west and east walls repeat the window banding elements of the south wall without the canopy ledge. The ground level window bands match the upper stories, except along the southwestern edge where the panes are only three high. The ground floor is also edged with the same three tiered, round steel tube guardrail of the entry ramp. Both elevations have a protruding stair tower that utilizes the same etched concrete slabs as the building's corners. On the south edge of the towers, the wall extends out an extra six feet perpendicularly. Immediately next to the protrusion is an entry door into the ground floor covered by a horizontal metal ledge awning. Windows panels matching the first through fourth floor bands are set next to the north side of the protrusion. The spandrel panels between the windows are vertical corrugated cement panels on a larger scale than the horizontal panels on the rest of the building.

The north wall has a two-bay loading dock at the western corner. The window bands and spandrel panels continue from the east and west elevations. The center of the north wall contains a stair tower, but it is flush. Rather than windows, it is concrete etched with blocks that match the window banding. There is a center column marked with narrow vertical bands. Stairwell windows are offset from the window bands, instead centered on the spandrel courses. The door at the bottom has a small metal ledge awning covering it.

The basement level houses mechanical equipment and storage. There are no windows at this level and it only spans the northern half of the structure.

Interior

The lobby of the General Administration Building is entered through a vestibule. The floor is a medium green terrazzo tile and the walls are covered in a lighter green terra cotta tile. There are two columns covered in vertical corrugated aluminum. To the left and right of the entry vestibule are recessed bays currently used for seating areas. On the west wall of the lobby is an information desk. It is skirted with vertical corrugated aluminum that matches the columns. The counter can be closed off with a flexible vertically corrugated aluminum curtain. Behind it are three steel elevator bays. Dominating the north wall is a 10½ feet high by 29½ feet wide glass and stone mosaic mural.

Signage throughout the lobby is steel panels with words cut into relief. The State Patrol office on the east side of the lobby retains its original sign - individual letters mounted to the terra cotta wall tiles. The elevators have white plexiglass illuminated letters and numbers with horizontal bands above and below. The suspended ceiling is supports corrugated plexiglass panels on steel framing. These cover fluorescent tube lighting and make the ceiling appear to glow when fully illuminated.

Behind the mural is a large conference room. The north end of the room is filled with a dramatic "flexwood" birch veneer wall and proscenium and a maple-floored raised stage. The east and west walls are staggered back in three slightly angled wall panels. The south end of the room originally divided into two additional meeting rooms with siding wall panels. The wall units have been removed, but the ceiling tracks remain.

Throughout the rest of the building, original movable steel wall panels still divide offices. Many have been removed and are in storage. Most of the windows that once opened out at a horizontal angle have been welded shut, although a few are still operational. Original light green glazed ceramic water fountains are still mounted on all floors of the building, but are no longer used. Rubbish bins are still visible on corridor walls, but the handles have been removed and the doors themselves welded shut. There is a central postal chute that collects mail in the lobby still in use. Original steel doors on all levels of the building still retain their distinctive bullet shaped hinges.

STATEMENT OF SIGNIFICANCE:

The General Administration Building in Olympia, Washington, is eligible for the National Register of Historic Places under criterion "A" as the first major building to be constructed on the capitol campus after the Great Depression. The building represents the significant growth of state government in Olympia, Washington following World War II, and specifically the re-centralization of government to Olympia mandated by a Supreme Court order in 1954.

The building is also historically significant under criterion "C" as an intact example of Modern architecture in Olympia, Washington. The building was designed by prominent Tacoma architect, Allen Gordon Lumm, in the International style which is distinctive for its horizontal cubical form and spare ornamentation. Its exterior minimalist appearance and interior architectural flexibility, including movable steel wall panels, demonstrate a growing aesthetic for modular space able to easily accommodate changing space and technology requirements. In this case, a building which was needed to serve a diversity of state agencies that would be housed in one structure. The period of significance begins and ends in 1956, the date the building was completed and occupied by a variety of state offices.

Criterion "A" – History of Significance

The area where the General Administration Building now stands was originally a residential neighborhood that bordered the capitol campus to the north, and encompassed an entire city block bounded by 11th and Union Avenues, and Columbia and Water Streets.[1] Several sites to the north and east of the capitol campus were considered for expansion, marking the state's first foray outside the original campus plan designed by Wilder and White. The current location was ultimately selected because of its convenient location to the capitol campus, ease of traffic flow, and cost savings for its proximity to the state power plant and telephone lines.[2]

Construction of the General Administration Building also heralded the first major construction since before WWII at the Capitol. By 1950, the need for additional government office space in Olympia was apparent. A bill introduced into the House of Representatives in January 1951 proposed a $4 million bond issue to pay for the construction of a new state office building on or adjacent to the Capitol Grounds.[3]

[1] Sanborne Map, Olympia, November 1924.

[2] "New State Office Location Chosen; Plans Authorized." The Olympia News 22 November 1951.

[3] "Capitol Office Plans Pushed," Daily Olympian 12 January 1951.

Tacoma architect A. Gordon Lumm was contracted in October 1951 to conduct a Space Feasibility and Needs Study, and was then authorized to draw up plans for the building.[4]

When the Capitol Campus Committee finally decided on the lot on the northwest corner of 11th Avenue and Columbia Street in 1952, it also narrowed the site selection process for the First United Methodist Church. The site was also their preferred location for a new sanctuary. The First United Methodist Church was one of the earliest congregations in the city, and they had long outgrown their downtown building on the corner of Fifth and Adams. Newspaper articles indicate that the members and officers of the church had "shown themselves to be public-spirited citizens in delaying and delaying their plans until the Capitol Campus (sic) committee came to a decision."[5] When the Capitol Committee announced its choice, Reverend William E. Callahan and T.S. Hedges, minister and lay leader of the Methodist Church respectively, prepared a statement that read in part, "The decision of the Capitol Committee is keenly disappointing... We have done everything in our power to exercise patience over the many months awaiting this verdict. It is our hope that what has been done is in the best interests of the state, of which we are all citizens... we begin over again the difficult and laborious search for an adequate and desirable site..."[6] The church would eventually build on the corner of Legion Way and Boundary Street.

In 1927, when the capitol campus was constructed, it was assumed that all elected officials would remain in Olympia. The same assumption was not applied to state agencies, and many located their main offices in Seattle as early as the 1890s for the convenience of their directors. By 1950, the main offices of 13 agencies were located there. When the Capitol Committee authorized building of the General Administration building, it also considered a proposal by a state agency to construct an office building in Seattle. After hearing the news that a major new office building would be built in Seattle, Olympia property developers and businessmen Gerry Lemon, James Frederick "Fritz" Mottman, George Ekland and George Draham were concerned over the loss of business for the city. They met with Governor Arthur Langlie to discuss their concerns and were dissatisfied with the exchange. The governor indicated that moving agencies to Olympia would cost a lot and that it would not improve government efficiency. Attorney General Don Eastvold declined to pursue the matter because there was no legal or constitutional ground in his opinion.[7]

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[4] "Site Close By Capitol Grounds Is Chosen for State's New Olympia Office Building." Daily Olympian 17 February 1952.
[5] Ibid.
[6] Ibid.
[7] "State Offices Won Back to Capital City by Olympia Businessmen and Smith Troy." The Seattle Times 22 August 1954.

In 1952, the four businessmen and the Casco Company (owned by the Lemon family) filed a lawsuit in Thurston County Superior Court against Governor Langlie with the help of former Attorney General Smith Troy. An Olympia native, Troy most likely became involved in the case for personal reasons. Troy had recently been unseated by Eastvold in a bitter battle for the office and was Gerry Lemon's brother-in-law. The central argument of *Lemon et al. v. Langlie et al.* was twofold: that Olympia was the recognized seat of government, and that various governmental agencies and institutions were constitutionally required to be located at the seat of government.[8] Outside of court, many Olympians argued that local merchants would benefit from more business with the return of state headquarter offices. It was estimated that a favorable outcome would impact at least 400 employees, although some doubted that Olympia would be the destination for all of them. Superior Court Judge Charles T. Wright heard lengthy arguments on both sides and agreed with the businessmen. He ordered the department heads to move to Olympia. The case was immediately appealed.[9]

By 1954, the case had made its way into Washington's Supreme Court as *State ex rel. Lemon et al. v. Langlie et al.* Also named in the lawsuit were the Aeronautics Commission, Athletic Commission, Board of Accountacy, Board Against Discrimination in Employment, Board of Pharmacy, Board of Prison Terms and Parole, Department of Fisheries, Game Commission, Department of Health, Horse Racing Commission, Personnel Board, Parks Commission and Power Commission. The petitioners claimed that the respondents were not complying with the state constitution, the Organic Act or the Enabling Act and asked the court to compel the respondents to return their headquarters to Olympia. The State countered that the constitution only requires those offices of executive departments that existed at the time of the adoption of the constitution, and that the businessmen had no standing to maintain their suit.

The businessmen won in a 5-4 ruling. In the decision authored by Justice Charles Donworth, the court dismissed the state's case. It said the petitioners were taxpayers and that the constitutional framers and the citizens who adopted the constitution intended that government agencies be located in the seat of government. The dissenting opinion was authored by Justice Matthew Hill. All agencies were required to file a certificate of compliance with the Thurston County superior court upon relocation.[10]

Most agencies complied quickly by arranging for space in Olympia, including in the soon-to-be constructed General Administration Building. The flood of returning agencies required the original plan

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[8] Off ice of the State's Attorney General, AGO 1987 No. 24. 23 November 1987. 11 August 2006 <http://www.atg.wa.gov/opinions/1987/ opinion_1987_024.html>

[9] "State Offices Won Back to Capital City by Olympia Businessmen and Smith Troy." The Seattle Times. 22 August 1954.

[10] Alexander, Gerry L. "Olympia's Legal Battles to Retain the Capital." Columbia. Winter 2000-01, Vol. 14, no. 4, pp. 3-5.

for the building to be altered extensively. Such changes resulted in several discussions with the architect and the Capitol Committee over compensation for the additional work that was involved with altering the building plans to conform to a revised building program. The biggest casualty among the affected agencies was the State Library. Housed in the basement of the Temple of Justice since 1922, the library was original slated to get a new and modern home in the General Administration building, but it was removed from the building program entirely to make room for the Department of Labor and Industries.[11] The library would later get its own building on the south capitol campus.

The Game Commission and Fisheries Department required another lawsuit for contempt before relocating four years later.[12] The State House Directory (1958-59) and the State Capitol Telephone Directory (1958) indicate that of the state agencies named in the lawsuit, the State Personnel Board, Department of Game, Department of Fisheries, Department of Health, and the Board of Accountancy were all located in the recently completed General Administration Building. They represented 40% of previously Seattle-based agencies, and almost 70% of its representative employees. Other agencies housed in the new building included the Department of Agriculture, Commerce and Economic Development Board (formed in 1957), the Department of Conservation, Employee Retirement Systems, the Board of Industrial Insurance Appeals, the Department of Labor and Industries, the Department of Licensing, Public Printers, the Safety Council, State Patrol, Tax Advisory Council[13], Tax Commission, and the Department of General Administration. These agencies relocated from a variety of state-owned and leased properties in the Olympia area.

Criterion "C" – History of Significance

The General Administration Building is an outstanding example of Modern architecture in Olympia. It is built in the International Style, distinctive for its horizontal cubical form and spare ornamentation. There are few examples in Olympia, and this is the only one associated with the Capitol Campus.

The International Style has its roots in the Bauhaus movement in Germany, but came to refer generally to modern European architecture of the 1920s and 1930s and the architecture it subsequently influenced elsewhere. The term itself was coined at the 1932 Museum of Modern Art exhibition of

[11] Eastvold, Attorny General Don. Correspondence to the State Capitol Committee. 8 May 1953.

[12] Cunningham, Associate Editor Ross. "Move-to-Olympia of State Offices Promises Cost Rise." The Times, Seattle, 22 September 1957.

[13] This only existed in 1957-58, before being absorbed by the Tax Commission.

architectural photographs and models in New York City. American architectural historian Henry-Russell Hitchcock and American architect Philip Johnson wrote the accompanying catalog *International Style: Architecture Since 1922*, which became the defining work to which other architectural innovations were measured.[14] By the end of WWII, the International Style evolved into Modernism which dominated commercial architecture through the 1970s.

Common characteristics of the International Style include a radical simplification of ornamentation, concrete, steel and glass as the preferred building materials, designs logically supporting the function of the building, and the construction itself embraces industrialized mass-production techniques. All of these promote an aesthetic of "progress" and efficiency.[15] Specific details typical of the style include a square or rectangular footprint, windows running in long horizontal ribbons with corner windows as a hallmark, poured and formed concrete slabs that accentuate horizontals planes, and occasional vertical elements that highlight the layered appearance of multi-storied buildings.

As the architectural detailing simplified, the relationship between architect and artist became more synergistic. Architects relied less on building materials to express the personality of the building. Instead, they turned to artists and artisans to infuse detail in the structure through commissioned art work, custom designed furniture, and crafted fixtures. As the architect for the General Administration Building, Gordon Lumm incorporated all these features into his design which included plans for a cast bronze state seal, a large mural in the entrance lobby, and sleek fixtures including drinking fountains, pillars, elevator dials, clocks and cabinetry.

Allen Gordon Lumm was born December 6, 1900 in Traer, Iowa. He attended schools in Colorado and California before completing his B.S. in Architecture at the University of Minnesota in 1925. He worked briefly in Colorado before establishing himself in Washington by 1926. He applied for his state architecture license in April 1930, began practicing architecture as a principal in 1945, and received his National Council Certificate for the Architectural Registration Board in 1959. Lumm was active in a variety of professional organizations including memberships with the Washington State Chapter, A.I.A., 1942-1965; Tacoma Architect's Association, formed in 1942; Board of Architectural Examiners, 1947-49;

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[14] "Modern Architecture," Microsoft® Encarta® Online Encyclopedia 2006. 25 July 2006. <http://encarta.msn.com/encyclopedia_761595616_4/Modern_Architecture.html>

[15] Paradis, Dr. Thomas W. "Architectural Styles of America: International (1950-1970)." Dept. of Geography, Planning, and Recreation, Northern Arizona University, June 2006. 25 July 25 2006 <http://jan.ucc.nau.edu/~twp/architecture/international>

and the Pierce County Planning Commission, 1952-57.[16] Lumm left Tacoma for Arizona in 1961 and remained there until 1996. He then returned to Washington where he died November 30, 2002, just shy of his 102[nd] birthday.[17]

Lumm was involved in the design and alteration of many public buildings in Washington during the 1940s and 50s. His largest projects included the Male Ward Building (1948) and Cadet Nurse Home (1947) at Western State Hospital near Steilacoom; the County-City Building (1958) in Tacoma; and alterations and additions to the Salishan Housing Project (1958) in Tacoma. He also designed the Buckley Fire Station (1952); Steilacoom Fire Station (1953); Tacoma & Pierce County Health Department (alterations, 1950); Mountain View Sanatorium (Tacoma, 1951); Provident Building (Tacoma, alterations, 1952); Riverside Infirmary (Sumner, alterations, 1952); Mark E. Reed Memorial Hospital (McCleary, addition and alterations, 1956); and Columbia Basin Hospital (Ephrata, erected 1957). Many of these structures have been demolished or significantly altered since their construction.

Having won the prestigious contract to design the first major commission on the Capitol campus since WWII was a big accomplishment for Lumm. His office was quite small in comparison to some of the other competing firms such as John Grahm & Co. and Decker & Christainson of Seattle. The local architectural firm of Wohleb & Wohleb of Olympia, which had previously designed several buildings on the Capitol Campus, also completed for the design.

Lumm had a staff of four draftsmen, but utilized a team approach to design by employing several outside consulting firms for structural, sanitary, civic, illumination, mechanical and plumbing specifications. Lumm was awarded the initial contract for design of the General Administration Building on October 19, 1951. His fee for the design was based on 25% of 6% of the overall building cost. The final design was approved in 1953, and a call for bids was published in November and December of 1953. Construction was to be funded by the sale of state-owned timber which would repay a legislatively approved bond. At last, ground was broken for the building in January 1954 and construction was completed in May 1956. The useable floor area of the building measures approximately 218,133 square feet, and was slated to house 12, then 18, state departmental headquarters. Ultimately, the project costs exceeded $4.3 million.

The Tacoma firm of Walter S. Gordon Inc., served as consulting structural engineers for the General Administration project. The general contractor was the Macdonald Building Company from

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[16] Lumm, A. Gordon. Application File. Washington State Department of License records.

[17] Webster, Dorothy [daughter of A. Gordon Lumm]. Personal interview. Tacoma, WA, 4 August 2006.

Tacoma. The Kewaunee Manufacturing Company from Michigan supplied the laboratory fixtures, the Howard Chapman Plumbing & Heating Company, from Tacoma, installed all mechanical and utility systems, and the Electric Construction Company also from Tacoma completed the main electrical work.

Constructed from poured concrete, the state boasted that "the entire structural system is of reinforced concrete columns, beams, joists and slabs, which provide an earthquake-resistant fireproof building."[18] This was a legitimate concern. Olympia had been rocked by an earthquake measuring 7.1 on the Richter scale in 1948 that damaged much of the downtown core and the state capitol.

Lumm elegantly balanced the massive cement structure with bright reflective ribbons of windows and playful corrugated relief on the spandrel panels between stories. He brought this crenulation inside the lobby with vertically corrugated aluminum columns, matching corrugated skirting below the information counter and a flexible corrugated aluminum service window screen above, and corrugated plexiglass panels in the suspended ceiling that covered fluorescent bulbs. The clock, elevator dials and signage made from machined steel have a vague Moderne sleekness. The light green terra cotta wall tiles compliment the darker green terrazzo floor and reflect the "Keep Washington Green" motto. Even the water fountains are a pale translucent green in a softly rounded Moderne style.

Lumm didn't put all his design appeal in the lobby. In the auditorium, he created a sleek curved proscenium covered with "Flexwood" birch veneer, and metal curtain wall partitions to divide the space into smaller conference rooms (these dividing walls are no longer in place). He also incorporated steel paneled walls throughout the building. His idea was to grant the greatest flexibility of space for a building that would accommodate many state agencies with divergent needs. Many of these walls are still intact all over the building.

Included as part of his original design, Lumm called for a large mural to be installed in the entrance lobby. However, the building would have to wait until 1959 when Bellevue artist Jean Cory Beall was selected to create a glass-stone mosaic mural.

Beall received her training at the California College of Arts and Crafts, and continued to hone her craft at Parsons Paris School of Design, France; Institute Politecnico in Mexico City; and the Art Students' League in New York City. She also studied with Ambrose Patterson and Mark Tobey. Many of her watercolors and mosaics were created for private clients. Some of her public commissions included mosaic

[18] "General Administration Building," The Washington State Capitol Group, prepared and distributed by the Washington State Advertising Commission, Olympia, WA, 1956.

murals in Seattle's Olympic Hotel and City Light Building, and the University of Washington's Penthouse Theatre.[19] The Seattle City Light Building mural (1958) was added to the Museum of History and Industry's collection when the building itself was demolished in 1996.[20] She received numerous awards during her career, including an Honorable Mention for the Seattle Art Museum Northwest Annual, a Washington State Chapter of the American Institute of Architects Award (1955), and a Southwest Chapter of the American Institute of Architects Award (1960).

Her commission for the General Administration Building was selected from among eight designs and cost $12,880. The convex mosaic dominates the lobby, measuring 10½ feet high and 29½ feet long, and includes iconographic imagery representative of Washington's industrial and natural resources. The design references the state's atomic research center, aeronautics industry, hydroelectric power production, timber, fisheries, game, minerals, other natural resources, and recreational facilities. The pictures are linked together by a great river of rough cut stones flowing across the mural.

The design was originally created in watercolor by Beall. She took her painting to Venice where she and a Prof. Gaspari supervised the cutting and assembly of over 150,000 pieces of tesserae, or small pieces of glass, a Byzantine-era technique from the 4th- 6th centuries originally applied in European cathedrals, and some stone pieces. The work was then transported by ship to Olympia, where Beall and mural assembly supervisor, Martin Carlson, installed the piece with a work crew of six.

Many consider the mosaic to be the most distinctive feature of the building. Its geometric regularity contrasts with its thematic complexity, and the riot of color draws the eye to it in the relatively monochromatic lobby setting. The mural sustained significant damage in the 2001 earthquake, but was successfully repaired.

Overall, the General Administration Building is an important landmark in the development and growth of state government. The Building is a direct reflection of activities that resulted from a court case which required state agencies to be located in Olympia. Furthermore the building is an intact example of the International style. The well executed building boasts all the common characteristic of the style and has a high level of architectural integrity both inside and out.

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[19] "Jean Cory Beall," Architectural Craftsmen of the Northwest: Illustrated Directory, 1961.

[20] Seattle City Light Building Mural – Knight Gallery, Museum of History and Industry, 2004. 31 July 2006 <http://www.seattlehistory.org/ news_current.cfm>

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VERBAL BOUNDARY DESCRIPTION

The nominated are is located in the Section 23, Township 18N, Range 2 West of the Willamette Meridian, in Thurston County, Washington and is legally described as the SYLVESTERS BLK 67 LOT 5-8 & BLKS 80, 84 -87 & ALL VAC ST ON. It is otherwise known as Tax Lot 78506700500 at the said location.

BOUNDARY JUSTIFICATION

The nominated property encompasses the entire urban tax parcel that is currently occupied by the General Administration Building. This includes the front landscaping area and the rear parking area.

REPORT

HILLSIDE EVALUATION AND PRELIMINARY DESIGN OLYMPIA CAPITOL CAMPUS, OLYMPIA, WASHINGTON (08-076)

Submitted To: Washington State Department of General Administration
210 West 11th Street SE
2nd Floor, Room 206
Olympia, Washington 98504-1012

Submitted By: Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, Washington 98052

March 17, 2010 083-93287.400

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E-3 Schematic Design Alternatives (12/18/2009)

Appendix F Annotated Bibliography and CAD Database
F-1 Annotated Bibliography
F-2 Project Database

1.0 INTRODUCTION

The purpose of the Hillside Evaluation Project (Project) was to evaluate slopes on the Capitol Campus in Olympia for stability, risk of failure, and consequences of slope failure with respect to managing the campus assets such as buildings and infrastructure. The project was planned with three phases that included research, stability assessment, and reporting.

The Project was originally defined to include slopes from the south boundary of the campus to the north legislative parking area slopes extending to (but not including) Heritage Park. During a meeting with General Administration (GA) personnel on August 6, 2009, an expansion of the study area was discussed to encompass slopes near the Greenhouse and the GA Building. The slopes of the Heritage Park Trail have been extensively evaluated by others and are not included within the Project evaluation area. However, information related to the Heritage Park Trail is discussed when applicable to other project areas.

1.1 Scope of Services

The scope of services for this project consisted of three primary phases: Research, Stability Assessment, and Reporting. A brief description of the activities performed for each phase is discussed in the following sections.

1.1.1 Research

Visits to the General Administration (GA) archives were completed on several occasions (September 10 and December 4, 2008 and January 8, February 20, and September 16, 2009) to gather information related to geotechnical studies and construction of campus buildings. Information collected included historic borings, site plans, records of slope failures, and construction plans. Approximate boring locations from the reviewed reports were added to a project database in CAD format. The working project spatial database was developed in CAD using a CAD base file provided by Blair Prigge of Parametrix in December 2008.

A qualitative evaluation of the campus slope stability was also performed. The evaluation was performed during site visits by Golder geologists. Slope conditions and key slope features were documented during these visits.

1.1.2 Stability Assessment

Services performed under the Stability Assessment phase of the campus slopes included drilling two geotechnical borings, installing inclinometers to monitor slope movements, installing vibrating wire piezometers to monitor ground water conditions, and performing slope stability analyses. One boring was advanced behind the Pritchard Building; the other boring was advanced behind the Governor's Mansion.

The slope stability analyses were performed to identify areas with the greatest likelihood of slope failure. The slope stability analyses consisted of a relative ranking of the slopes by factor of safety for the static condition. Subsurface conditions were modeled using information from borings completed by others on the campus and information from the borings advanced by Golder for this project. The slope locations analyzed for stability included:

- Slopes west of the Pritchard Building
- Slopes west of the O'Brien Building
- Slopes west of the Governor's Mansion
- Slopes east of the Powerhouse (both south and north of the steam lines)
- Slopes north of legislative parking area (North Parking Lot)
- Slopes west the Greenhouse
- Slopes west of the GA Building

Based on the results of the slope stability analyses, potential slope stabilization projects were identified.

1.1.3 Reporting

The Final Reporting task was to provide a summary report document that incorporates project findings, evaluations, and completed technical memorandums. The final project bibliography and spatial database(s) were completed under this task. The reporting task also included preparation of a campus monitoring report.

1.2 Report Outline

This report documents the methods, results, conclusions, and recommendations of our geotechnical site investigation and slope stability analyses of the slopes on the Capitol Campus. The report is organized as follows:

- **Section 1 (Introduction)** this section.
- **Section 2 (Site Conditions)** outlines the physical setting of the project and provides a summary of our understanding of the history of the Capitol Campus slopes and nearby buildings and infrastructure.
- **Section 3 (Subsurface Explorations and Conditions)** describes the methods used to complete the field investigation, discusses the general geologic setting of the project, and summarizes the subsurface soil and groundwater conditions encountered during the field investigation; this section also describes laboratory testing and installation and monitoring.
- **Section 4 (Slope Stability and Risk Evaluation)** describes the results of our slope stability analyses and presents an overview of the risk evaluation and the results.
- **Section 5 (Conclusions and Recommendations)** summarizes conclusions about the causes of campus slope failures and presents recommendations to address stability issues.
- **Section 6 (Schematic and Final Designs)** presents an overview of the schematic designs and associated cost estimates.
- **Section 7 (Closing)** presents our closing statements.
- **Section 8 (References)** documents the outside resources referred to in performing the investigation and analyses.

The following appendices are also included with this report:

- **Appendix A (Field Explorations Procedures, Data, and Logs)** presents a summary of the various explorations completed for this project and other projects in the vicinity.
- **Appendix B (Laboratory Testing and Analysis)** presents the detailed results of the laboratory testing.
- **Appendix C (Inclinometers and Piezometers)** presents monitoring results of the inclinometers and piezometers.
- **Appendix D (Instrumentation Monitoring Program)** presents the recommended monitoring program and manuals for the instruments.
- **Appendix E (Technical Memorandums)** presents copies of memorandums submitted during previous phases of the project.
- **Appendix F (Annotated Bibliography).**

2.0 SITE CONDITIONS

The project limits include slopes extending north and northeast from state owned property near the south edge of the Pritchard Building to the slopes west of the GA Building. Down slope project limits extend to the water's edge or the railroad tracks and up slope limits extend to approximately 100 feet beyond the top edge of campus slopes. Structures of interest include the Pritchard Building, the O'Brien Building, the Governor's Mansion, the Powerhouse, the Greenhouse, the soldier pile wall, and the GA Building. This report section provides a discussion of data sources, research findings, and observations related to site conditions.

2.1 Site Basemap and LiDAR

Basic project information used for evaluations included a site basemap provided by Parametrix and topographic information from LiDAR (Light Detection and Ranging).

2.1.1 Site Basemap and Datum

An electronic site basemap showing key exploration locations and other site features was created by Parametrix based on a site utility survey and provided by Parametrix in December 2008. Golder updated the basemap to include the approximate location of selected geotechnical explorations (borings) identified during review of reports from the GA archives.

The approximate locations of the explorations are shown on the AutoCAD basemap provided as Figure 2 and Figure 3; an oversize version of Figure 2 is also provided as a foldout drawing in Appendix F at the end of this document. In the electronic basemap file, an image of the boring log is hyperlinked to the boring location; right clicking (assuming a right-hand mouse) on the boring location will open an image of the boring log. Copies of the boring logs linked in the AutoCAD file are presented in Appendix A. The basemap can serve as a resource for campus personnel to identify previous explorations on the site. The basemap can be updated to include future explorations.

Important Note: the project basemap horizontal datum is NAD1983 and the vertical datum is NAVD88. Most of the historic drawings appear to have been completed using City of Olympia Vertical Datum (COVD). The correlations between these two datums is variable – estimated to be between about 13.4 and 13.8 feet (e.g., 100 foot City Olympia Vertical Datum = approximately 113.4 to 113.8 feet NAVD88 datum). The elevations presented in this report will indicate the datum that is referenced.

2.1.2 LiDAR

LiDAR data were used in the project for multiple purposes. The LiDAR was flown in early winter 2002, and the bare earth data was downloaded from a publically accessible site in June 2008 (Puget Sound LiDAR Consortium 2008). These data were processed in GIS to produce a shaded topographic version of the data (Figure 4) as well as topographic information that was imported to the CAD basemap. The shaded topographic image was used to support geomorphic interpretations, and the topographic information imported to CAD was used for stability evaluations and design. The LiDAR data is provided on Washington State Plane North Zone, NAD 1983 horizontal datum and NAVD88 vertical datum. It is generally not possible to determine the accuracy of public LiDAR data without a topographic survey. However, the accuracy of the data can be estimated from the return signal density and an understanding of the ground condition effect on LiDAR returns. Typically, horizontally accuracy is much greater than vertical accuracy. Based on experience with similar data, the relative accuracy of vertical data for the project should be considered no better than +/- 5 feet.

Geomorphic features identified from LiDAR interpretation, ground surface observations, and literature reviews are shown on the LiDAR image, Figure 4. The LiDAR image shows an upland area that is heavily modified, surrounded by natural and modified slopes on the west and north edges of the campus. All slopes around campus have geomorphic evidence of smaller, surficial slope failures that are usually visible on LiDAR. These smaller features are typically about 30 to 80 feet wide and about 50 to 100 feet long. Multiple west-facing scallops at the southwest edge of the campus reflect a series of very large, ancient, natural landslides that were likely initiated several thousand years ago, after the Vashon-age glaciers retreated and the Deschutes River down cut its channel. These large slides show a steeper edge or “scarp” at the top of the slope and a flatter accumulation zone near the middle to lower parts of the slope. The ancient landslide features are about 500 to 900 feet wide (north to south) and about 300 to 400 feet long (east to west, direction of movement).

Slopes west of the O’Brien and Pritchard Buildings are moderate to steeply inclined and show evidence of large-scale ancient landslides as well as artificial modification such as an apparent fill slope in the area adjacent to O’Brien and Pritchard Buildings. Very small, shallow slope failures are also visible on these slopes.

Slopes west of the Governor’s Mansion, above the Powerhouse, and on the north side of campus are steep and irregularly sloped. On these slopes there are no current geomorphic features indicating large-scale post-glacial landsliding like the features that are visible west of the Pritchard and O’Brien Buildings. The steep slopes below the Governor’s Mansion, Powerhouse, and north campus areas do show evidence of smaller-scale landsliding as shown on Figure 4. The slopes north and east of the Law Enforcement Memorial show a series of overlapping features possibly a combination of recent human-induced and older natural landslides. The slopes from the Powerhouse to the north part of the campus have been much more heavily modified by human activities such as historical grading, the Powerhouse construction, parking areas, the railroad embankment, Heritage Park Trail, and park construction along Capitol Lake.

2.2 Site Visits and Observations

Several site visits were performed to document campus slope conditions, observe geotechnical borings, and monitor instrumentation. The dates and purpose of site visits are summarized below:

Site Visit

Date of Visit	Purpose
7/31/08	Completed field reconnaissance to observe surface and slope conditions, document key slope features. Slopes observed included near Prichard and O'Brien Buildings, Governor's Mansion, north side of Powerhouse, and north parking area.
9/23/08	Completed field reconnaissance to observe surface and slope conditions, document key slope features; completed additional observations near north parking area and Heritage Park.
1/8/09	Observed slope conditions following a large storm event and high lake levels; focus on slopes north of parking area.
2/20/09	Met to discuss proposed activities and observe liner around the diesel tank. Also completed reconnaissance of slope above south side of the Powerhouse.
5/29/09	Drilled and installed inclinometers and piezometers, GB-1 and GB-2.
7/1/09	Completed baseline inclinometer and piezometer reading for GB-1 and GB-2.
8/27/09	Completed first reading of inclinometer and piezometer at GB-1 and GB-2. Baseline inclinometer reading for DH-1 and DH-2. Trained GA staff on inclinometer monitoring procedures.
12/2/09	Completed second reading of inclinometer and piezometer at GB-1 and GB-2. Completed first reading of inclinometer at DH-1 and DH-2. Completed initial reading of piezometers DH-7P, HC-2, HC-3, HC-5, HC-6, and HC-7. Trained GA staff on inclinometer and piezometer monitoring procedures. Observed condition of soldier pile wall.

2.2.1 Site Development

Observations of developed conditions were made during campus site visits as described in this section.

Pritchard Building

The Pritchard Building is approximately 11 feet from the slope edge at the southeast part of the building. The building is a multi-story structure, clad in sandstone panels, with a basement; no notable foundation cracking was observed. The southeast edge of the building is surrounded by concrete sidewalks and landscape areas. There is a shallow (4- to 6-inch-deep) trough visible on the outer side of the sidewalk near the southeast part of the building, extending about 40 feet. According to campus maintenance personnel, this trough could be related to installation of a storm drain system aligned with the edge of the sidewalk and trending toward the O'Brien Building. There is also some minor tilting and separation of nearby sidewalk slabs.

O'Brien Building

At the time of our initial site visits in 2008, the west side of the O'Brien Building was approximately 25 feet from the slope edge. Subsequent to those visits, a new basement addition was constructed that is located as close as approximately 6 feet from the slope edge. A lawn area is present between the

O'Brien Building and the slope edge. We understand that a below-grade soldier pile shoring wall was constructed between the new addition and the slope as part of the basement structure.

Governor's Mansion

The Governor's Mansion is an older brick structure that is located on a small hill above other campus buildings. The mansion is surrounded by landscaped areas and naturally vegetated areas. The southwest corner of the mansion is approximately 25 feet from the slope edge. No evidence of ground cracking or movement was observed near the mansion.

Powerhouse

The campus Powerhouse lies at the base of a slope on the west side of campus and provides steam heat to the campus. The Powerhouse is accessed by a stairway from the North Parking Lot and a maintenance road along Capitol Lake. The Powerhouse also includes a large (approximately 350,000 gallons) diesel oil tank south of the Powerhouse that is used for backup steam generation. The diesel oil tank is in a containment enclosure lined with a synthetic membrane. The tank may be drained in the future and used to store reclaimed water for reuse. Several utilities are present near the Powerhouse including: a sanitary sewer pump station north of the Powerhouse; a primary natural gas line feed near the top of the stairway; and multiple other utilities including several storm drain lines from the campus to the base of the slope, a steam line, a condensate line, chilled water supply and return lines, a communications line, and a potable water line.

North Parking Area

A large paved parking area is present east of the Powerhouse; this parking area extends north to near the top of the slope. Several utilities lie beneath the parking area including multiple storm drain lines, a natural gas line near the north edge of the lot; sanitary sewer; and power and communications lines. Also present are utilities associated with the Powerhouse, including the utilidor tunnel and steam, condensate, chilled water supply and return, communications, and potable water lines. The lot pavement is in generally good to fair condition; no cracks or settlement related to slope instability were observed during our visits.

Greenhouse

The Greenhouse is an "L" shaped two story structure east of the Heritage Park Trail. A second smaller shed-like structure is also present in the Greenhouse area. The Greenhouse structure is about 15 feet from the slope edge and the shed is less than 10 feet from the slope edge. The structures appear to be lightly loaded and are likely supported by shallow spread footings. Some cracking of foundations has been reported by others. The Greenhouse area includes a paved drive, parking, and storage area. No signs of ground or pavement cracking suggesting slope instability were observed during our visits.

Soldier Pile Wall

An approximately 230-foot-long soldier pile wall is located along the slope near and north of the Greenhouse. The wall supports a parking area on the north side of the Greenhouse and a lawn and parking area west of the GA building. The wall is approximately 30 feet from the paved parking area.

The soldier pile wall condition was observed during the site visit on December 2, 2009. Due to the vegetation cover (e.g., ivy extending up the wall and thick blackberry bushes on the slope below the wall), our access was limited to observations from the top of the wall and from approximately 30 feet west of the toe of the wall.

Our observations did not show any visible deterioration of the soldier pile wall. The soil loss at the toe of the wall appears to be less than 1 to 2 feet, although this observation was limited by heavy vegetation. The original wall design by GeoEngineers (1988) neglected the upper 9 feet of soil at the toe of the wall, permitting up to 9 feet of ground loss or small slope failures to occur at the toe of the wall without impacting the overall wall performance.

The condition of the wood lagging boards appears to be satisfactory. Specifically, the wood lagging boards do not exhibit signs of rotting or breaking. Portions of the wall are heavily covered with vegetation, and the condition of the boards covered by the vegetation could not be observed. Gaps between lagging boards were observed at approximately three locations (the gaps appeared to be approximately 3 to 6 inches in width). There was no evidence of soil sloughing out of the gaps between lagging boards. However, because of shadows, the presence or absence of voids could not be confirmed. No signs of ground subsidence were observed at the top of the soldier pile wall.

GA Building

The GA Building is a five-story building on the northwest edge of the Capitol Campus. A road and parking area are present west of the building. The building is approximately 40 feet from the slope edge on the northwest corner and 90 to 100 feet from the soldier pile wall on the west side of the building. Pavement on the nearby road and parking area is cracked and potholed, but there is no cracking that appears to be related to slope or wall movement.

2.2.2 Topography and Vegetation

Topography on and near the campus varies between relatively flat developed areas to steep slopes on the edge of campus above Capitol Lake. The west campus area slopes slightly downward to the north. Elevations vary from about 140 feet at the Governor's Mansion to about 20 feet at the base of slopes (NAVD88).

Pritchard and O'Brien Building Slopes

The slopes adjacent to Pritchard and O'Brien Buildings are about 110 feet high and are inclined from about 1.7H:1V in the upper part of the slope to flatter than 6H:1V at the lower part of the slope. The upper part of the slope is very evenly inclined reflecting a zone of fill that was placed in this area as part of site development; the lower part of the slope appears to reflect the deposition zone from ancient landslide features.

Governor's Mansion Slopes

The slopes west of the mansion are about 120 feet high and generally sloped at about 1.2 to 1.3H:1V. Flatter slopes inclined at about 2.5H:1V are present near Capitol Lake reflecting a landslide run out zone potentially associated with 1996 and older landslides.

Slopes Powerhouse and Vicinity

The slopes east of the Powerhouse are about 90 feet high and vary from about 2.5 H:1V in regraded areas at the top of the slope to about 1.3H:1V in natural parts of the slope, with slopes steeper than about 1H:1V near the lower part of the slopes north and south of the Powerhouse structure. Parts of the slope north of the Powerhouse have been reconstructed as a reinforced slope inclined at about 1H:1V.

Slopes North Parking Lot (and Heritage Park)

The slopes adjacent to the North Parking Lot are about 90 feet high and inclined at about 1.25H:1V, with some steeper slopes at landslide scarps inclined at about 0.5H:1V. Slopes in the Heritage Park Trail area are inclined at about 2.5H:1V.

Slopes Greenhouse, Soldier Pile Wall, GA Building

Slopes west of the Greenhouse and GA Building are up to about 80 feet high and are inclined at about 1.25H:1V to 2.5 H:1V.

2.2.3 Surface Water

Other than Capitol Lake, there are no major surface water features on or near the campus. During site visits in late summer 2008, minor seepage (< ½ gpm) was observed near the base of the slope adjacent to the Pritchard and O'Brien Buildings. During these visits, low seepage (between about ½ and 1 gpm) was also observed at the base of slopes north of the North Parking Lot and at several slope locations near Heritage Park.

Palmer and Gerstel (1996a) noted small seeps and springs on landslide scarps near the south end of the Governor's Mansion during their field visits. Golder personnel did not observe these seeps during field visits to this area in summer 2009.

2.3 Site Data and Document Review

The project included research of the Capitol Campus development records and previous studies that could relate to campus slopes. Visits to the GA archives were completed on several occasions (September 10 and December 4, 2008 and January 8, February 20, and September 16, 2009) to gather information related to geotechnical studies for historical campus projects. Information collected included historic borings, site plans, records of slope failures, and construction plans. Our studies and information review focused on structures, infrastructure, and other features close to the campus slopes that could be impacted by slope failure. An annotated bibliography of reviewed information is provided in Appendix F.

Over 60 geotechnical and geologic related reports and documents were reviewed for the Project. The reports were generally related to building improvements, slope failures, or other campus studies.

2.3.1 Plan Review - Campus Structures and Infrastructure

Historic design and construction plans were reviewed in the State archives to gather information about campus development that could be pertinent to the project. These plans are provided in the bibliography in Appendix F; key reviewed plans included:

- Site and foundation plans for the Pritchard Building
- Historic grading and foundation plans for the O'Brien Building
- Foundation and shoring wall plans for a 2009 addition to the O'Brien Building
- Limited plans for the Governor's Mansion
- A series of design plans for the Powerhouse including original construction, tank and containment area construction, and seismic upgrades
- Design plans for a soldier pile wall near the GA Building
- Design plans for the GA Building
- Other plans for the west campus that showed infrastructure or other features

2.3.1.1 Site Development History

Original site grades on the west campus are not fully known. Grading in parts of campus reportedly began in the late 1800s and early 1900s with construction of the Governor's Mansion and the Legislative Building. Grading occurred after approximately 1911 to fill in an old ravine west of the current location of Water Street (Palmer and Gerstel 1995; Author Unknown 1911). Additional grading appears to have occurred with construction of the Governor's Mansion in 1908 and the Powerhouse and the Temple of Justice in the early 1920s. Grading near O'Brien, Pritchard, and the Governor's Mansion occurred in 1937 – 1938, associated with O'Brien Building construction. This grading included placing fill on the slope west of O'Brien and Pritchard Buildings to create an access road and lawn area. Minor additional grading occurred in the early 1950s associated with the GA Building construction and in the late 1950s associated with Pritchard Building construction.

2.3.1.2 Buildings

Design drawings were found for the Pritchard building, O'Brien building, the Governor's Mansion, the Powerhouse, and the GA Building. Design plans were not found for the Greenhouse.

Pritchard Building

Based on a design drawing (Plot Plan by Paul Thiry Architect 1957a) showing existing site grades prior to building construction, there appears to have been relatively little grading of the slope near the Pritchard Building. This drawing shows the slope edge approximately 10 ft from building at the closest point; the current distance from the building to the slope edge is similar to that shown on the 1957 plan. Design and construction plans (Paul Thiry Architect 1957b) also showed foundations bearing at about 108 feet COVD and the basement floor at 110.8 feet (COVD). Original ground surface elevations appeared to range from about 115 feet COVD at the SW corner of Pritchard Building to about 130 feet COVD at the east side of the building (Jos H. Wohleb 1938a). Based on this information, it appears that the Pritchard foundations are likely bearing 7 to 12 feet below original site grades on the west side of the building closest to the slope.

O'Brien Building

Site plans for grading associated with O'Brien (Jos H. Wohleb 1938a) indicate that up to about 25 feet (measured vertically) of fill may have been placed on the edge of the slope to widen the area around the building. Plans show foundations extended to native soils with basement foundations at 99 to 105 feet COVD feet when the ground surface was at about 115 to 117 feet COVD (Jos H. Wohleb 1938b). The design drawings (Jos H. Wohleb 1938a) showed a distance from the original building to the slope edge varying from about 70 feet at the southern end to about 45 feet at the northern end. The current distance to the slope edge from the corner nearest the slope is approximately 25 feet, indicating that potentially 20 feet (horizontal) of the edge of the slope may have failed sometime in the past. However, no records of this failure were found during our research. The current slope configuration is very evenly inclined, potentially indicating repair or regrading of any failure that may have occurred.

In 2009, a new addition was added to the west side of O'Brien Building resulting in a building edge approximately 6 feet from the slope edge. This building addition included a basement similar to the existing structure with footings at approximately 98 to 100 feet COVD. The addition was constructed using soldier pile shoring that was left in place, and the new basement walls were cast against the shoring. The soldier piles along the northwest side of the addition (closest to the slope) extend to approximately 38 feet below the adjacent ground surface, to an elevation of approximately 90 feet NAVD88.

Governor's Mansion

Limited plans were available for the Governor's Mansion. The 1908 plans show that the south and southwest side of the mansion were originally excavated approximately 7 to 10 feet below existing grades to construct footings and a basement. A concrete retaining wall with a maximum height of approximately 13 feet was constructed around the south side of the Governor's Mansion in 1937-1938 in association with O'Brien Building construction. A new addition was added to the south and west part of the mansion in about 1974; the elevation of the footings for this addition is currently not known

(Ibsen Nelsen & Associates 1974). The garage was relocated to its current location during this renovation. There are also other smaller outbuildings, including a guard station and a soil shed, on the grounds of the Governor's Mansion.

Powerhouse

Site drawings dated 1920 (Wilder & White Architects 1920) show that the Powerhouse is founded on a combination of spread footings and piles. The spread footings were used on the east part of the building, which was excavated about 3 to 10 feet below existing grades on the adjacent slope to construct footings. The west part of the building is supported on a pile mat (number of piles, pile type, depth, and spacing unknown). Other major improvements to the Powerhouse facility included:

- The addition of an oil storage tank and containment area in about 1976 (Noel Adams PE & Associates 1976)
- Installation of a sewer pump station in 1980 (Howard Godat & Associates, 1980 a, b), placement of a synthetic liner in about 1993 (Anderson & Boone Architects 1993 a, b)
- A seismic upgrade in 1993 (ABAM Consulting Engineers 1993 a, b, c, d, e)
- Limited site repairs associated with the Nisqually Quake in 2003 and later (JWM&A 2003 a, b)

The drawings indicate that the oil storage tank and the outer containment wall are supported on piles of unknown depth (ABAM Consulting Engineers 1993). The containment wall on the east side of the tank consists of unreinforced concrete (sack grout) that has been placed against the soil slope (this part of the wall is not an engineered structure). The seismic upgrade activities included extensive soil anchors that were installed into the slope east of the building as well as a sheet pile wall driven along the west edge of the building to address liquefaction (GeoEngineers 1992 and ABAM Consulting Engineers 1993).

Greenhouse

No drawings were found in the archives for the Greenhouse. Based on the type of structure, it is likely that this building is supported on shallow footings. Review of historical drawings and exploration logs by others (Gerstel 1996) indicate that the Greenhouse is likely underlain by uncontrolled fill that was historically placed in a ravine that trended southward to the "Winged Victory" area. Settlement of the Greenhouse reportedly occurred starting in the 1960s.

Soldier Pile Wall

A soldier pile wall was constructed in about 1988 to address a slope failure that occurred west of the GA Building in 1986. The soldier pile wall extends southward to the edge of the parking area on the north side of the Greenhouse. These design drawings (Sverdrup Corporation 1988 a, b, c, d) show a soldier pile wall with piles approximately 50 feet long with up to 2 rows of tiebacks and an exposed wall face height of greater than 25 feet in some areas.

GA Building

The GA Building was constructed in the 1950s with a basement level that extends approximately one story below adjacent site grades. Based on site observations and plans review, the GA Building appears to be founded on spread footings supported by native soils.

2.3.1.3 Infrastructure

Campus infrastructure includes utilities, parking lots, sidewalks, and drive areas. Our evaluations focused on infrastructure that serves a larger part of the campus and that was located in areas that could be impacted by landsliding. Our understanding of site infrastructure is based on site maps completed by Parametrix (2008) and discussions with campus personnel. In some cases, we supplemented information provided by Parametrix with information from the archive files. Identified infrastructure includes:

- A large storm drain on the slope west of O'Brien Building that is tightlined to a discharge point downslope (near elevation 60 feet NAVD88)
- Steam lines and a gas line on the slope above the Powerhouse
- A sewer line from the pump station near the Powerhouse to the north parking area
- A gas line on the north edge of the north parking area that is within a few feet of the slope edge in some areas
- Several other storm drains with associated collection systems, including a large storm drain south of the Powerhouse

2.3.2 Report Reviews

Golder reviewed several reports and other documents directly related to campus slope stability. Key reports and documents included:

- Capitol Campus Bluff Slope Stability Analysis (Gerstel 1996a)
- Slope Stability Analysis of the Bluffs along the Washington State Capitol Campus (Gerstel 1996b)
- Capitol Campus Greenhouse Soil Stability Investigation Status Report. (Palmer and Gerstel 1995)
- Capital Campus Conservatory Soil and Slope Stability Investigation Final Report. (Palmer and Gerstel 1997)
- Design Memorandum, Geotechnical Consultation, Slide Correction, General Administrative Building (GeoEngineers 1988)

These documents provided a description of campus history and geologic and geomorphic conditions. One of the reports (Gerstel 1996b) was completed after a series of landslides in early February 1996. These reports described a history that included slope failures on most slopes around the Capitol Campus. A summary of these documented slope failures is provided below; other undocumented slides have probably occurred.

History of Slope Failures on Campus

Date	Location	Comments
1958	Slope in front of Temple of Justice	Near current Heritage Park Trail; winter 58-59
1965 – 1972	Campus-wide	Period of higher slope failure activity
1981	Campus-wide	Period of higher slope failure activity
1986/87	Slope west of GA building	Remediated by soldier pile wall in 1988
1990	Campus-wide	Period of higher slide activity
1990	Slope north of Powerhouse	Failure covered access road and RR; damaged NE corner of plant; remediated by reinforced slope
1996	Slope west of Pritchard Building	Slope failure estimated < 20 years old in 1997
1996	Slope west of Governor's Mansion	Slope failure estimated active last 30 years (as reported in 1996)
1996	Slope north of Powerhouse	Flow into lake related to heavy February rains
1996	Slope west of Governor's Mansion	Slopes west / southwest of mansion; failures extended to top of slope related to heavy February rains
1996	North slopes	Series of smaller failures related to heavy February rains
2002	Heritage Park Trail	Slope failure during construction (December)
2003	Heritage Park Trail	Slope failure during construction (October)
2009	Slope North of Parking Area	Small slope failure after heavy rain in early January

The reviewed documents provided information about subsurface explorations, slope stability analyses, and causes of slope failures. The subsurface information and data from currently existing monitoring instrument installations have been incorporated into this Capitol Campus study. Geologic conditions were similar to those observed in Golder explorations, and very little groundwater was observed. General causes of recent slope failures were identified as being related to saturation of loose/soft surface soils that mantle most campus slopes and small rotational failures initiating in the upper parts of slopes. The weak surface soils have formed through natural and human-caused processes, including remobilized soils from slope failures, soil creep, and sidecast fill or landscaping debris. The previous studies showed that stability of the surface soil mantle is very low when the layer is saturated – a condition that often occurs during and following heavy rainfall. The authors noted that the small rotational slope failures appeared to be related to small springs and seeps at the landslide headwalls.

3.0 SUBSURFACE EXPLORATIONS AND CONDITIONS

Golder personnel completed field explorations and reviewed explorations by others in order to assess the subsurface conditions that impact the campus slopes.

3.1 Field Exploration

The Golder field investigation was completed on May 26 through May 29, 2009 and consisted of advancing two geotechnical borings (GB-1 and GB-2). The approximate boring locations are shown on the Site and Exploration Plan, Figures 2 and 3. Locations are based on field measurements from existing buildings and a site survey by Parametrix (Parametrix 2008). Boring locations were selected based on existing site conditions, existing utilities, and accessibility by the drill rig. Boring logs and a summary of the field exploration procedures are provided in Appendix A.

3.1.1 Drilling

The borings were advanced using mud rotary drilling methods with a B-61, truck-mounted drill rig equipped with an autohammer. The drill rig was operated by Holocene Drilling Inc. under the full-time observation of a Golder geologist, Alison Dennison. The borings GB-1 and GB-2 were advanced to depths of approximately 103 and 104 feet below the existing ground surface (bgs), respectively. Logging and sampling of soils were performed in general accordance with Golder Associates procedures for field identification of soils, based on the Unified Soil Classification System (USCS). A summary of the soil classification terminology is presented on the Soil Classification Legend in Appendix A. The collected soil samples were returned to our Redmond, Washington laboratory for further classification; laboratory testing was performed by Soil Technology, of Bainbridge Island, Washington.

The stratigraphic contacts indicated on the boring logs represent the approximate depths to boundaries between soil units; actual transitions between soil units may be more gradual. The subsurface descriptions are based on the conditions encountered at the time of exploration. Subsurface conditions between exploration locations may vary from those encountered, and groundwater may be present during certain times of the year.

3.1.2 Installations

After completing each exploration, an inclinometer casing and vibrating wire piezometer (a type of electronic device to measure groundwater pressure) were installed in each boring. The inclinometers extend approximately 98 feet bgs in boring GB-1 and 102 feet bgs in boring GB-2. The vibrating wire piezometer was installed at 80 feet bgs in GB-1 and 50 feet bgs in GB-2. The inclinometer and vibrating wire piezometer installation details are presented in Appendix A.

3.2 Laboratory Testing

Geotechnical laboratory testing was conducted by Soil Technology on representative samples from the borings for the purpose of classification and evaluation of pertinent engineering properties. Laboratory tests included natural moisture content determination, sieve analyses, percent fines content, and Atterberg limits. The field soil classifications were revised where applicable based on laboratory testing results. Laboratory test methods and results are provided in Appendix B.

3.3 Explorations by Others

Exploration logs were gathered from reviewed reports in the GA archives and from other sources. A summary table of explorations and copies of these explorations completed by other consultants are provided in Appendix A-2. Approximate locations of these explorations are shown on Figures 2 and 3. Please note that these explorations vary greatly in age, ranging from 1937 through 2008, and the classification system used on logs is different between consultants and over time. The approximate locations of these explorations were often determined from reproduced site plans within reports, sometimes without scales or defined site features. No exploration locations are based on surveying.

3.4 Campus Geology

The recent geologic history of the Puget Sound region has been dominated by several glacial episodes. The most recent episode, the Vashon Stade of the Fraser Glaciation (about 12,000 to 20,000 years ago), is responsible for most of the visible geologic and topographic conditions in the region. The regional Puget Sound landscape is characterized by elongated north-south oriented uplands and intervening valleys associated with this glacial advance and retreat. Older (Pre-Vashon) deposits are seen in some areas at the base of coastal bluffs; these deposits include glacial and nonglacial sediments deposited during repeated glacial and interglacial periods during the past two million years.

The Puget lobe of the Vashon Stade advanced south from British Columbia into the Puget Sound lowland reaching maximum extent south of Olympia about 17,000 years ago (Haugerud and Greenberg 2003). Sediments deposited with this glacial event typically include proglacial lacustrine silt and clay, advance outwash, and lodgment till. These sediments were overridden by thick glacial ice and are typically overconsolidated and strong. As the Puget Lobe of the Vashon Stade glacier retreated northward, it deposited a discontinuous veneer of recessional outwash and other local deposits that are normally consolidated and weaker than older glacial deposits (e.g., ice did not override these deposits). Post-glacial deposits include alluvium deposited within active stream channels, modern lacustrine (i.e., lake) deposits, marine and deltaic deposits, localized organic silt and peat deposits, landslide deposits, and volcanic deposits such as pyroclastic flows and lahars associated with post-glacial activity.

The *Geologic Map of the Tumwater 7.5-minute Quadrangle, Thurston County, Washington* (Walsh, Logan, Schasse, and Polenz 2003) covers the Capitol Campus. The geologic map shows all of the Capitol Campus mapped as Latest Vashon recessional sand and minor silt (Qgos). This unit is described as moderately well sorted, moderately- to well-rounded, fine- to medium-grained sand with minor silt. Based on boring observations, Latest Vashon fine-grained sediments (Qgof) may also be present. Qgof is less than 10 feet thick and is associated with small lakes that formed during the glacial recession. Interpreted pre-Vashon deposits (Qps and Qpg) were observed in exposures near the base of west facing slopes and in both Golder borings; however, these units are not distinctly shown on the geologic maps. Geologic mapping describes Qps as thin- to thick-bedded to cross-bedded sand interbedded with laminated silt and minor peat and gravel. Qpg is described as gravel and sand from non-local sources, commonly tinted orange with iron oxide staining, moderately to poorly sorted, and commonly cross-bedded. The Vashon and pre-Vashon age deposits are interpreted to be underlain by bedrock at depth.

The geologic map also contains a cross-section view of units near the project. The cross-section shows a thick sequence (potentially up to 400 feet thick) of Qgos underlying the project area and most of downtown Olympia. This deposit is the result of a large outwash channel in the Olympia area that occurred as the glacier retreated. The deposits associated with this channel are laterally discontinuous and have wide-ranging grain size and characteristics.

3.5 Subsurface Conditions

Subsurface conditions were observed by Golder in limited exposures during site visits and from soil samples during drilling. Interpreted subsurface soil conditions were generally consistent with reports and exploration logs by other consultants. Soils observed in Golder explorations included late Vashon recessional deposits overlying Pre-Vashon deposits. The recessional strata were deposited in a very active fluvial environment resulting in interbedded soil units that are discontinuous between borings.

3.5.1 Observed Soil

A layer of topsoil and undocumented fill was encountered at the ground surface in both borings, GB-1 and GB-2, extending 7.5 to 4.5 feet bgs, respectively. Below the topsoil and fill, both borings encountered soil consistent with the geologic map descriptions of the Latest Vashon recessional sand and minor silt (Qgos), Pre-Vashon sandy deposits (Qps), pre-Vashon lacustrine deposits (Qpf), and Pre-Vashon gravel (Qpg). Summary information about soil units is presented in the table below; additional information is shown on the boring logs provided in Appendix A.

Topsoil/Fill (Qf)

Topsoil is a soil unit that contains a relatively high percentage of organics. The observed topsoil was relatively thin and consisted of loose, dark brown, silty fine to medium sand with little fine to coarse gravel and some organics. Fill is a soil unit placed by man; the observed fill is considered undocumented because there are no specific records that document the amount of compaction effort that was used to place the fill. The observed undocumented fill was variable in character, consisting of moist, loose to compact, yellow brown to brown gray, fine to medium sand with silt to stiff sandy silt. Fill was observed in Golder borings to depths of between 4.5 and 7.5 feet.

Latest Vashon recessional sand and minor silt (Qgos) and Latest Vashon fine-grained sediments (Qgof)

These deposits were encountered beneath fill at borings GB-1 and GB-2. The deposits included alternating layers of stratified silt, sandy silt, silty fine to medium sand, and fine to medium sand with little silt. Consistency and density of the layers ranged from very soft / loose to hard / dense. The deposits were in moist condition.

Pre-Vashon sandy deposits (Qps) and lacustrine deposits (Qpf), and gravel (Qpg)

These units were deposited in fluvial and lacustrine environments before the advance of the Vashon glacier and were subsequently over-ridden by the glacier. These soil units were over-consolidated by the weight of glacial ice; the soil units are relatively strong in comparison to the younger, overlying normally consolidated Qgos and Qgof. Both borings terminated in these Pre-Vashon deposits. At boring GB-1, an interbedded sequence of silt and sand interpreted to be Qpf and Qps was encountered at 86 feet below the ground surface (bgs). At boring GB-2, Qps was observed at 91 feet bgs. The Qpf observed in Golder borings was typically a hard, yellow brown to gray silt; the observed Qps was a very dense dark gray brown stratified fine to coarse sand with little to trace silt and some fine gravel. Pre-Vashon gravel (Qpg) was encountered in GB-1 at 91 feet bgs and was observed in an exposure near the base of the slope near the Powerhouse. At the exposure, the unit consisted of stratified, iron oxide-stained sandy fine to coarse gravel.

3.5.2 Groundwater

No free groundwater was observed by the driller during the advancement of either GB-1 or GB-2. However, based on observed soil types that are likely to hold free groundwater, vibrating wire piezometers (VWPs) were installed in both borings. The installation depths of the VWPs were based on the soil types, relative moistures, and general stratigraphy that would tend to accumulate groundwater, if present. Groundwater measurements from the VWPs in borings GB-1 and GB-2 are provided in Appendix C.

Most of the observed soil natural moisture content is close to or above optimum moisture.

4.0 SLOPE STABILITY ANALYSES AND RISK EVALUATION

The slope stability analyses performed for this study included both qualitative and quantitative evaluations of the campus slopes. The goal of the stability evaluations was to identify where specific stabilization projects should be considered and to aid in the selection of potential stabilization alternatives.

Qualitative evaluation of project area slope stability included evaluation of the landforms and underlying geology of project slopes. Quantitative slope stability evaluations included stability analyses of the existing slope configuration at nine locations with potential risk to campus infrastructure. These locations included slopes near the Pritchard and O'Brien Buildings, the Governor's Mansion, the Powerhouse (south and north slopes), the north parking lot, the Greenhouse, the soldier pile wall near GA Building, and the GA Building. At each of these locations, shallow and deep failures were evaluated.

4.1 Qualitative Slope Stability

The stability evaluations included two site visits (July 31 and September 23, 2008) by Golder geologists, Deb Ladd and Dave Findley, for field reconnaissance to observe surface conditions on the campus and nearby slopes. The project lies along former coastal bluff slopes that show geomorphic landforms evidencing ancient landslides and recent slope failures (Figure 4). These landforms are visible on LiDAR images and were observed during site visits; many smaller failures have been documented by previous campus studies and reports. Golder borings and borings by others did not show evidence of colluvium or failed soils, because the borings were located in stable areas away from the slope edge.

Indications of ancient deep-seated landslides are visible on the LiDAR image west and south of the Pritchard and O'Brien Building slopes and possibly on slopes west and north of the GA building (Figure 4). Campus slopes in these areas typically show a scarp at the top of the slope and a flatter accumulation zone near the middle to lower parts of the slope. These ancient landslide features are about 500 to 900 feet wide and about 300 to 400 feet long. These deep-seated landslides near the campus may have occurred after the retreat of the Vashon-age glacier in the south Sound and were caused by downcutting and erosion of the toe of the slope by the Deschutes River. The vegetation and geomorphology of the ancient landslide near the Pritchard and O'Brien Buildings does not show evidence of recent movement, and we did not find records of reported landsliding in this area. It is possible that these large ancient landslides are currently stable. However, changing groundwater conditions, human activities, and seismic loading have the potential to initiate movement of these types of slides. In addition, these areas may be subject to shallow surface slides even if the deep-seated landslide feature is stable. Deep-seated failures usually move at a slower rate than shallow slides.

There have been many historic smaller slope failures on the campus slopes, and these smaller slope failures will likely continue to occur. The existing small slope failures are typically about 30 to 80 feet wide and about 50 to 100 feet long. These slides are considered shallow slope failures that involve the upper 5 to 15 feet of soil and originate in natural colluvium or in fill soil and debris such as landscape cuttings that are placed on the edge of slopes. The shallow slope failures have a factor of safety (FOS) against sliding very close to 1.0 during times when soils are saturated. An explanation of the relative likelihood of failure represented by a factor of safety is presented in Section 4.3.1.

Slopes west of the Governor's Mansion, above the Powerhouse, and on the north side of campus are steep and irregularly sloped and show evidence of many small, shallow slope failures (Figure 4). The slopes north and east of the Law Enforcement Memorial show a series of overlapping features possibly reflecting a combination of recent human-induced slope failures and older natural landslides. The slopes north and east of the Powerhouse have been heavily modified by human activities such as historical grading, including grading for the Powerhouse construction, parking areas, the railroad embankment, and the Heritage Park Trail. These modifications may have contributed to some of the shallow slope failures.

4.2 Quantitative Slope Evaluations

This section of the report summarizes the methodology and evaluation criteria for stability analyses conducted for this project. The results of the slope stability analyses are summarized in the *Stability and Risk Evaluation Update Memorandum* presented in Appendix E-2.

4.2.1 Methodology

An analysis of the stability of the existing slope conditions was carried out using the commercially available computer slope stability program, Slide version 5.043, a two-dimensional proprietary software code produced by RocScience, Inc. of Toronto, Ontario, Canada. The General Limit Equilibrium (GLE)/Morgenstern-Price method of analysis was used to compute the factors of safety for potential circular failure surfaces. Slide computes the factor of safety for different potential failure surfaces defined by the user's search criteria. The reported factor of safety for a slope is the lowest factor of safety computed for the failure surfaces within the search region.

The subsurface profiles used for stability analyses varied slightly between cross sections based on available subsurface information near each cross-section. For all stability analyses, modeled subsurface conditions included a surficial layer parallel to the slope and horizontal strata representing unconsolidated silt and sand units. At depth (approximately 66 to 91 feet deep), a stronger soil layer was modeled to represent over consolidated Pre-Vashon soil units. Soil strength parameters were determined from index property correlations, engineering judgment, and area experience. For correlation of soil data and parameters, we used Foundation Analysis and Design by Joseph E. Bowles (Bowles 1982) and the Naval Facilities Engineering Command Design Manual 7.01 (NAVFAC 1986). The slope stability cross-sections, including the soil stratigraphy and the shear strength parameters, are presented in the *Stability and Risk Evaluation Update Memorandum*, Appendix E-2.

The slope stability analyses were conducted for shallow and deep-seated failure modes at each of the areas of concern. The shallow slope failures modeled instability in a surficial soil layer that was approximately 10 to 15 feet thick. The deep slope failures modeled failure surfaces that were farther back from the slope (e.g., 15 to 90 feet). The depth of modeled deep failures varied; the deep failures were specifically configured to intercept the structure or infrastructure.

4.2.2 Results of Stability Analyses

The results of stability analyses are summarized below for deep and shallow failures. The relative likelihood of failure associated with the factor of safety (FOS) is presented in Section 4.3.1.

Shallow Failure Results

Location of Shallow Failures	Static FOS	Comment
Pritchard Building	1.0	Failure in surficial soils, does not extend beyond edge of slope
O'Brien Building	1.1	Failure in surficial soils, does not extend beyond edge of slope
Governor's Mansion	1.0	Failure in surficial soils, does not extend beyond edge of slope
South Powerhouse (includes diesel tank)	1.0	Failure in surficial soils, does not extend beyond edge of slope
North Powerhouse	1.3	Slope reportedly reconstructed as a reinforced slope (The Portico Group 1998). Failure below reinforcing layer
North Parking Lot	1.0	Failure in surficial soils, does not extend beyond edge of slope
Greenhouse	1.0 to 1.1	Failure 15 feet from edge of slope ; the lower factor of safety (1.0) reflects localized seepage conditions
Soldier Pile and Tieback Wall west of GA Building	1.3	Assumed surficial failure of slope at toe of wall
Slope West of GA Building	1.1	Failure in surficial soils, does not extend beyond edge of slope

Deep Failure Results

Location of Deep Failures	Static FOS	Comment
Pritchard Building	1.1	Assumed failure at edge of Pritchard Building, approximately 15 feet from edge of slope.
O'Brien Building	1.3	Assumed failure at edge of O'Brien Building, approximately 25 feet from edge of slope.
Governor's Mansion	1.3	Assumed failure at edge of Governor's Mansion, approximately 25 feet from edge of slope.
South Powerhouse	1.4	Assumed failure beneath Powerhouse
North Powerhouse	1.5	Assumed failure beneath Powerhouse

Location of Deep Failures	Static FOS	Comment
North Parking Lot	1.4	Assumed failure 50 ft from top of slope
Greenhouse	1.2	Assumed failure at edge of Greenhouse, approximately 15 feet from edge of slope
Soldier Pile and Tieback Wall west of GA Building	1.6	Assumed failure at south edge of GA Building, approximately 90 feet from soldier pile wall
GA Building	1.2	Assumed failure affecting utilities near north side of GA building, approximately 20 feet from edge of slope

4.3 Slope Risk Evaluation

A slope risk evaluation was performed using the results of the slope stability analyses and the informational review of campus buildings and infrastructure. "Risk" represents the combination of the likelihood of occurrence of a slope failure and the resulting consequences of the slope failure. By combining the results of the slope stability analyses and our understanding of campus operations, a risk matrix was developed to assist the GA in prioritizing future stabilization measures and other activities. An overview of the slope risk evaluation is discussed in this section. The complete memorandum documenting the evaluation is presented as the *Stability and Risk Evaluation Update Memorandum* in Appendix E-2.

4.3.1 Likelihood of Failure

The likelihood of slope instability is commonly described by a factor of safety against failure. Slopes with lower factors of safety are at a higher likelihood for failure than slopes with higher factors of safety. For this study, the factor of safety computed from the stability analyses was used to rank existing campus slopes under the following categories for likelihood of failure:

- Less likelihood of failure - factor of safety greater than 1.1
- Moderate likelihood of failure - factor of safety between approximately 1.0 and 1.1
- High likelihood of failure - factor of safety approximately 1.0 or less

It should be noted that the factors for safety were used for relative ranking of failures and that a factor of safety of 1.1 is still relativity low.

4.3.2 Consequences

An understanding of the consequences of a slope failure is needed to evaluate the potential impacts of slope failures and assist in prioritizing slope stabilization options. For example, a slope with a high likelihood of failure that does not have any potential impacts from failure would have lower priority than a slope failure that could damage campus infrastructure. Three different categories of consequences were established to help rank the impact to the campus if a slope failure occurred:

- Low consequences of failure are limited to minor public perception and maintenance requirements; the response can likely be handled by GA personnel.
- Medium consequences of failure include damage to local infrastructure (including loss of service utilities, parking, etc), cosmetic damage to structures, and moderate maintenance activities; the response by GA may require assistance from an outside entity.
- High consequences of failure include damage to structures or damage to campus infrastructure that results in large-scale loss of service; the response by GA is likely to involve outside technical consultants and may include emergency repair or construction.

4.3.3 Risk

"Risk" is a combination of the likelihood of failure and the resulting consequence of failure if it occurs. The risk evaluation was performed to assist the GA in identifying and prioritizing potential stabilization projects. A high-risk slope is a slope with a high likelihood of failure and high consequences of failure. A low risk slope is a slope with a low likelihood of failure or low consequences of failure. A risk matrix summarizing the results of the risk evaluation of the campus slopes is presented in the *Stability and Risk Evaluation Update Memorandum* in Appendix E-2. The results of the risk evaluation indicated that high-risk failures included:

- Shallow slope failures near and south of the Powerhouse
- Shallow slope failures near the Pritchard Building
- Shallow slope failures near the Greenhouse

These high-risk failures have the potential to affect buildings such as the Pritchard Building and the Greenhouse. A failure on slopes above the Powerhouse has the potential to affect the Powerhouse and utility services to the campus; failure in this area could also affect the large diesel oil storage tank.

The results also indicated that moderate-risk failures included:

- A deep failure that intercepts the edge of the Pritchard Building
- Shallow slope failures near the Governor's Mansion
- Shallow slope failures near the North Parking Area

These high-and moderate-risk failures were then compared to potential slope stabilization alternatives to develop a short list of alternatives for schematic designs.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Capitol Campus has a documented history of shallow slope failures as well as geomorphic evidence that much larger landslides have occurred in geologic history after the retreat of the Vashon-age glacier. Many of the failures observed on slopes near the campus occur because of natural causes. In some cases, failures have been caused by human activities, such as loading with fill or other material placed on the top of slopes and excavations made at the base of slopes.

5.1 Causes of Slope Failures

Slope failures that have affected the Capitol Campus include "shallow" slope failures and "deep-seated" landslides. Shallow slope failures refer to ground movement that typically affects the outermost 5 to 15 feet of soil on a slope. Shallow failures are relatively common in the Puget Sound area, originating in loose surface soils, natural colluvium, fill, and debris and landscaping materials. Historically, in the Puget Sound and on the Capitol Campus, these shallow failures are caused by saturation of loose / soft surface soil that typically occurs during or soon after periods of wet weather. The slope failures can affect infrastructure and structures at the top of the slope within the slide zone. Shallow failures occur relatively quickly – usually in the timeframe of a few minutes. These slides often travel down slope as a semi-fluid flow and can damage structures located at the base of the slope. Many historic slope failures at the Capitol Campus (e.g., slides documented from winter 1996 storms and others) are considered "shallow".

The large, ancient landslides visible on campus slopes were probably caused by loss of support at the bottom of the slope caused by post-glacial downcutting of the Deschutes River. This process is no longer occurring, and as a result, these ancient landslides may be currently stable. However, changes in grade (e.g., adding fill at the top of the slope or cutting at the toe of the slope) or changes in surface and groundwater can re-activate ancient landslides. Slopes within stable ancient landslides may still be subject to shallow surface slides even if the deep-seated landslide feature is apparently stable. Because the consequences of re-activating the ancient landslides could be significant, the ongoing stability of the ancient landslides should be confirmed by the monitoring described in this report.

5.2 Slope Setbacks

Construction close to campus slopes should be avoided unless site-specific studies demonstrate that the development can be accomplished with an acceptable risk. Development is considered to include utilities, pavements (roadways, parking lots, sidewalks), and structures. The recommended setbacks have considered:

- The risk of development – whether slope failure would result in unacceptable risk because of damage to the development or safety risks related to failure
- The relative likelihood of slope failure at different distances from the slope edge
- The varying sensitivity to slope movement for different types of development

- The potential for loading the slope or creating conditions that would detrimentally affect slope stability.

Based on these considerations, we recommend the following setbacks from the slope edge for campus development:

- 0 to 30 feet – no development in this zone. In addition, vegetation should not be disturbed without an evaluation of potential effects of disturbance.
- 30 to 50 feet – non-critical development that can tolerate creep or slope movement. This includes limited development of features that would not result in an unsafe condition if the slope failed. Paved areas and some utilities could be considered in this zone. Utilities in this zone should be designed with flexible connections and automatic shutoff capabilities in case of rupture.
- Greater than 50 feet – critical structures and infrastructure could be constructed in this zone.

Infiltration facilities are an exception to the above setbacks. Infiltration facilities are features designed to allow stormwater to percolate into the subsurface. Infiltration facilities may include (but are not limited to) ponds, swales, vaults, dispersion pipes, trenches, and similar facilities. To avoid increasing groundwater levels at the slope edge and thereby reducing stability, infiltration facilities should not be allowed on the west campus except under limited circumstances, and they should not in any case be located closer than 100 feet of the slope edge. Site-specific evaluations should be performed at the location of any proposed facilities that would infiltrate more than 125% of the associated infiltration area.

Stormwater should be managed to minimize infiltration into slope areas. In particular, because stormwater pipes should not discharge on or above the campus slopes, new or existing stormwater discharge lines may need to be installed or replaced on slopes. Currently, the west campus stormwater lines are of variable pipe type and condition. Replacing these pipes or constructing new stormwater systems should include designs that:

- Use a flexible and strong material such as welded high density polyethylene (HDPE) that can withstand minor slope movements,
- Include an anchor system at the top of the slope and potentially on the slope to hold the pipe in place, and
- Discharge at the base of the slope with erosion protection to prevent slope instability caused by erosion of the slope.

5.3 Recommended Maintenance Activities

Regular maintenance activities can reduce the likelihood of slope failures. Key maintenance activities are associated with storm drains, other utilities, and landscaping and pavements. Specific maintenance activities related to the existing soldier pile wall are also important for slope stability.

5.3.1 Storm Drain Systems

The Capitol Campus has an extensive storm drain system of variable age and construction. Appropriate operation and maintenance of this system will reduce the potential for raising groundwater elevations at locations that could increase the likelihood of slope failure. It is important that storm drain systems within about 200 feet of the slope edge be intact and not leaking or overflowing stormwater. Systems in this area should be evaluated for broken or separated pipes, and catch basins should be regularly cleaned. The existing NPDES permit requirements may provide guidelines for maintenance related to these facilities.

5.3.2 Other Utilities

Existing utilities such as water and gas may be present near slope edges (e.g., within about 20 feet). The ground surface near these utilities should be regularly inspected for signs of cracking or movement that could cause damage to these utilities. An annual inspection of the slope edge area to document conditions should be conducted for this purpose.

5.3.3 Landscaping and Pavements

Landscaping practices can contribute to slope instability. Lawn cuttings and brush piles should not be placed at the top of or on slopes, because these materials can become saturated and unstable. In addition, irrigation near slope edges should be minimized to the extent possible, and irrigation systems within about 50 feet of a slope edge should include automatic shutoff systems that would stop flow to a section of line that is broken.

Landscaping activities should also consider reduction or removal of shallow rooted species such as English Ivy and blackberries. Unlike many native shrubs and trees, shallow rooted species do not provide rooting systems that are beneficial to slope stability. In addition, ivy may harm tree health on slopes where tree root systems are improving slope stability. A discussion of these species is provided in the memorandum in Appendix E-1, and a vegetation management program is described in the memorandum presented in Appendix E-3.

Proper maintenance of pavements near slope edges (e.g., within about 20 feet) can reduce infiltration of surface water that could contribute to slope failures. Maintenance should include filling cracks with hot tar and maintaining a pavement surface that conveys surface water towards the storm drain system.

5.3.4 Soldier Pile Wall

Based on our observations, the following maintenance activities are recommended for the soldier pile wall west of the GA building:

1. Remove vegetation growing on the wall and maintain a vegetation-free wall. Trim vegetation at the toe of the wall to allow access for wall inspection.
2. Evaluate the presence of lagging board gaps and determine if voids are present behind the wall. This evaluation will require access with a ladder from the bottom of the wall or a rope/harness system from the top of the wall. A specialized consultant may be required to determine whether voids are present behind the lagging with methods such as geophysical assessment or manual removal of lagging boards.

3. If there is a gap between the lagging boards and the soil, the area should be backfilled with a granular material that does not allow water pressure to build up. Potentially suitable materials include pea gravel, sand, or controlled density fill (CDF); the use of these materials should be evaluated by a professional engineer based on the characteristics of the voids.

5.4 Recommended Monitoring

Regular observation and monitoring is recommended to identify signs of slope instability movement before large amounts of movement or damage occur.

General site observations should be completed near the slope edge on at least an annual basis and documented in maintenance logs and with photographs. Key features to observe and document include:

- Buildings and structures near slopes – observe and document condition of foundations and walls.
- Walkways and pavements – observe and document cracking and tilting. Note width and depth of cracks.
- Ground surface – observe and document the surface conditions near slope edges including any sloughing, cracking, settlement, or low spots.
- Groundwater - observe and document seepage or groundwater discharge, especially in areas where the condition had not been seen previously.

Specific monitoring with the current installed inclinometers and piezometers is recommended as described in the Monitoring Plan provided in Appendix D. Possible future monitoring could include installing additional inclinometers and piezometers and establishing new surface survey monitoring points. A schematic design with these components is described in the memorandum presented in Appendix E-3.

5.5 Potential Stabilization Alternatives

A general description of potential stabilization alternatives for addressing slope stability issues was presented in the *Stability and Risk Evaluation Update Memorandum* in Appendix E-2. Alternatives evaluated included no action; observations, instrumentation, and maintenance; dewatering; earthwork; in-situ reinforcement; a reinforced slope; and a structural (e.g., soldier pile) wall. The approximate relative costs for the stabilization alternatives as well as potential advantages and disadvantages of each are presented in the *Stability and Risk Evaluation Update Memorandum* (Appendix E-2).

From the potentially applicable stabilization alternatives, four alternatives were selected by GA personnel to be developed as schematic designs. These alternatives included:

- A campus-wide instrumentation program
- A soldier pile wall at the Pritchard Building
- A reinforced slope above the south side of the Powerhouse
- Campus vegetation management

6.0 SCHEMATIC AND FINAL DESIGNS

Based on evaluations and discussions with GA personnel, four stabilization alternatives were selected to develop further into schematic designs. From these four alternatives, one or more stabilization approaches will be selected to bring to the final design phase to support a GA project in 2010.

6.1 Schematic Design

The four stabilization alternatives were selected by the GA based on the results of the risk evaluation. The four alternatives were chosen for different purposes. The soldier pile wall near the Pritchard Building and the reinforced slope above the Powerhouse were selected to address risks to structures at these locations from slope failures with relatively high likelihood of failure. A campus-wide instrumentation program was selected as a lower cost way to monitor the long-term performance of campus slopes with particular emphasis on locations with higher risks from failure (inclinometers would be installed on slopes above the Powerhouse and near the North Parking Lot; survey points would be installed throughout campus). A vegetation management program was selected by GA as a lower cost alternative to remove vegetation that could adversely affect slope stability.

The schematic designs were prepared to assist the GA in selecting a project to plan and construct in 2010. Schematic design information will also assist the GA in future project planning. The alternatives selected for schematic design included:

- A campus-wide instrumentation program with four inclinometers, four piezometers, and multiple survey monitoring points
- A 160-foot-long soldier pile wall near the Pritchard Building
- A reinforced slope area of about 25,000 ft^2 above the south side of the Powerhouse
- A vegetation management program to remove or reduce ivy and other invasive species on campus slopes

The *Revised Schematic Design Alternatives* memorandum summarizing the schematic designs is presented in Appendix E-3. The memorandum includes a description of each alternative, the goal of the alternative, and cost estimate information. Estimated costs (estimated in 2009) for the four schematic design range from approximately $115,000 to $1,500,000.

6.2 Selected Stabilization Alternative for 2010

The campus-wide instrumentation program and the vegetation management program are being considered by GA for implementation in 2010 if budget priorities allow.

7.0 CLOSING

This report has been prepared exclusively for the use of the Washington State Department of General Administration and their consultants for specific application to slope stability assessment at the Capitol Campus in Olympia, Washington. We encourage review of this report by bidders and/or contractors as it relates to factual data only (exploration logs, laboratory results, etc.). The conclusions and recommendations presented in this report are based on the explorations and observations completed for this study and review of documents from GA archives. The conclusions and recommendations presented in this report are not intended as, nor should they be construed to represent, a warranty regarding the slope stability.

Judgment has been applied in interpreting and presenting the results. Variations in subsurface conditions are common, and actual conditions encountered may be different from those observed in the borings. If site project plans are developed based on our studies, we recommend that we be given the opportunity to review the plans and specifications to verify that they are in accordance with the conditions described in this report. It should be specifically noted that the topography shown on site plans was developed from LiDAR data and is not equivalent to survey information.

The explorations were performed in general accordance with locally accepted geotechnical engineering practice, subject to the time limits and financial and physical constraints applicable to the services for this project, to provide information for the areas explored. There are possible variations in the subsurface conditions between the test locations and variations over time.

The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous site activities or uses of the site and/or resulting from the introduction onto the site of materials from offsite sources are outside the scope of service for this report and have not been investigated or addressed.

GOLDER ASSOCIATES INC.

Katy Cottingham

Katy S. Cottingham, P.E.
Project Engineer

Frank S. Shuri

Frank S. Shuri, P.E., L.G., L.E.G.
Principal and Senior Consultant

State of Washington Licensed Geologist Hydrogeologist 1337
Deborah Ladd

Deborah Ladd State of Washington 30264 Registered Professional Engineer

Deborah Ladd, P.E. L.Hg.
Senior Consultant Geotechnical Engineer

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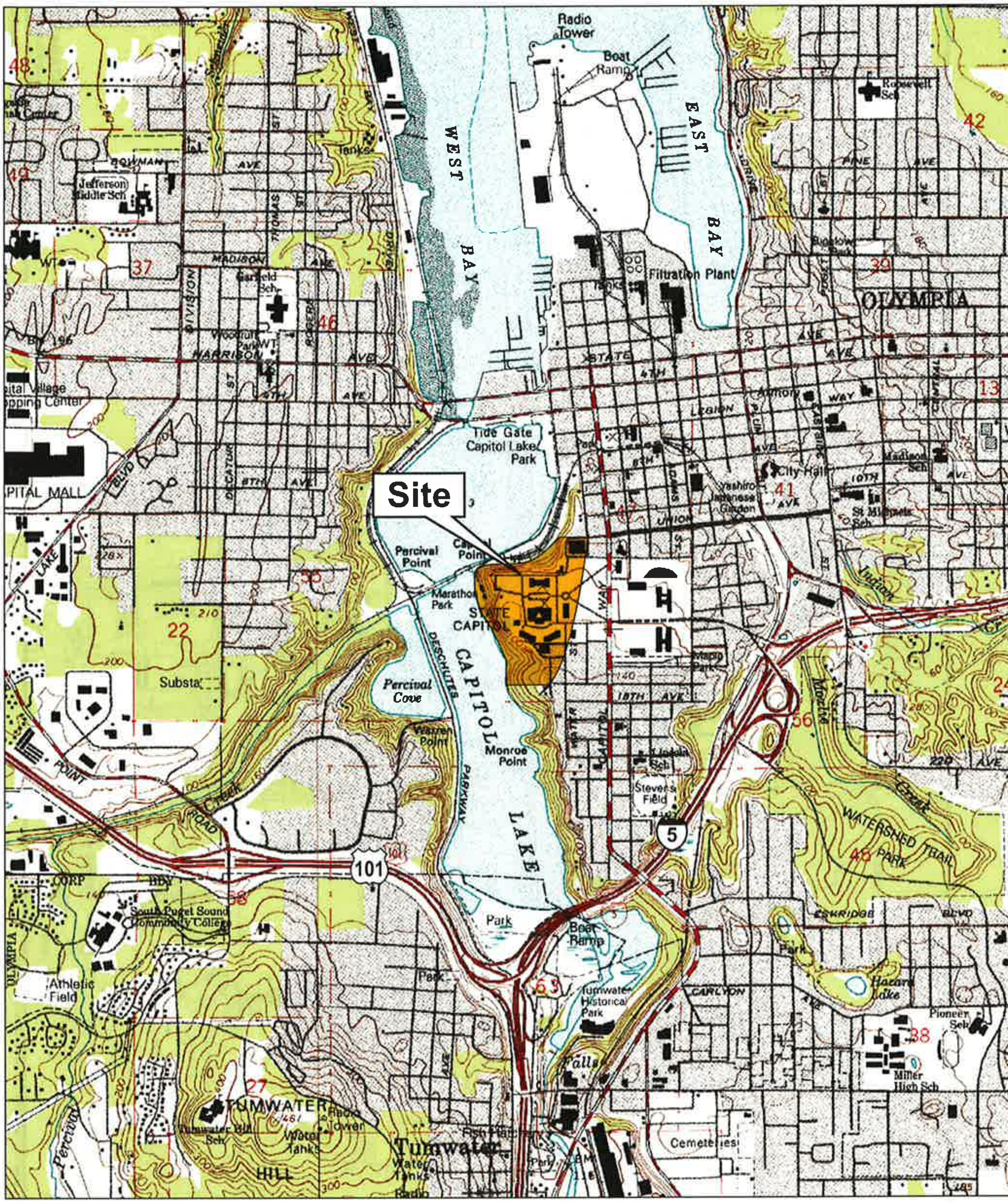
FIGURES



0 2000

SCALE IN FEET

Source: *USGS 7.5 Minute Topographic Quadrangle Map, Tumwater, WA, 1994*

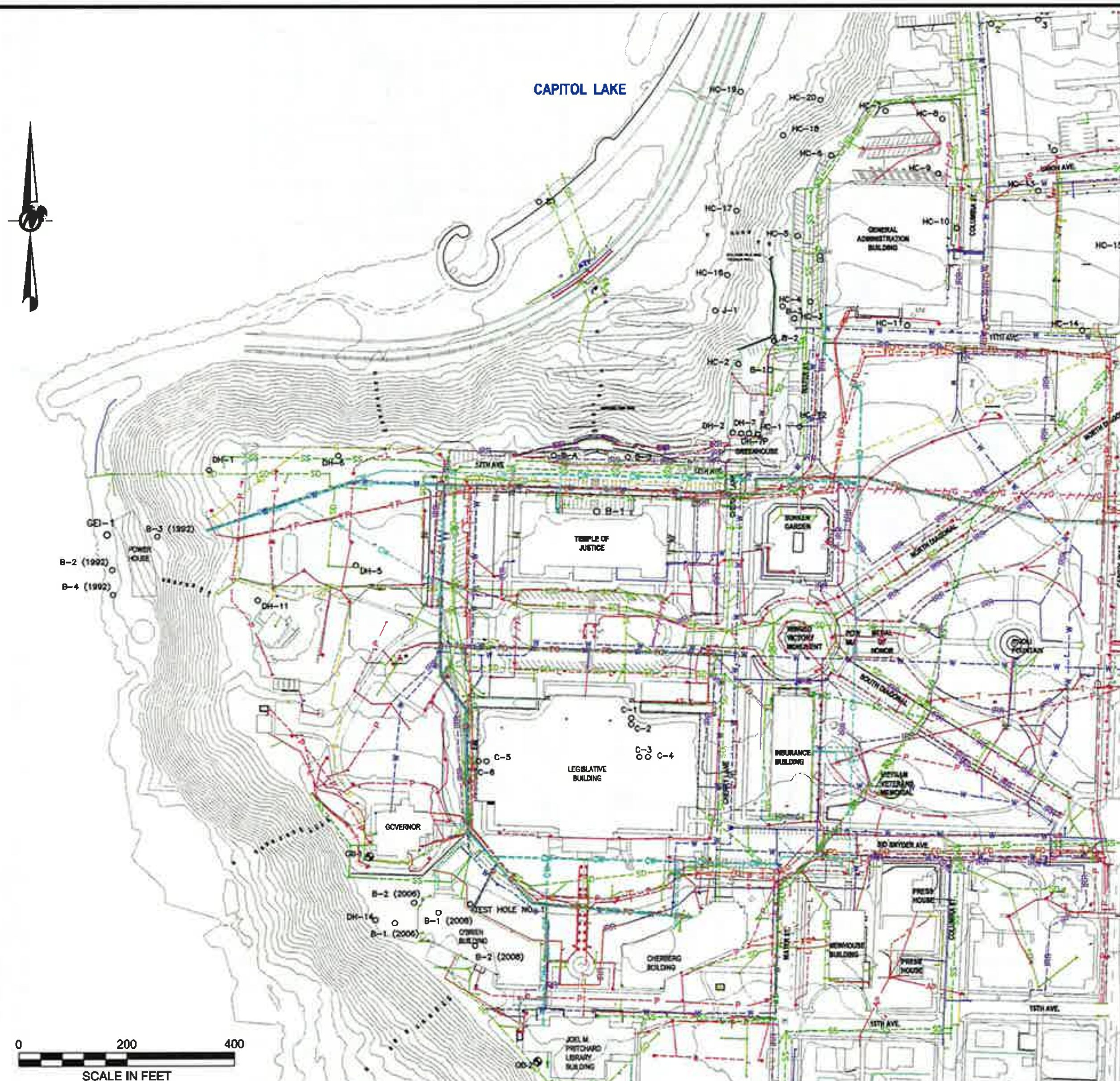
FIGURE **1**

VICINITY MAP

WAGA/HILLSIDE EVAL&PRELIM DESIGN/WA

08393287400fig01.ai | Mod: 10/15/09 | AMP

Golder Associates



LEGEND

GB-1 APPROXIMATE LOCATION OF GOLDER BORING AND INCLINOMETER

B-2 APPROXIMATE LOCATION OF BORING BY OTHERS

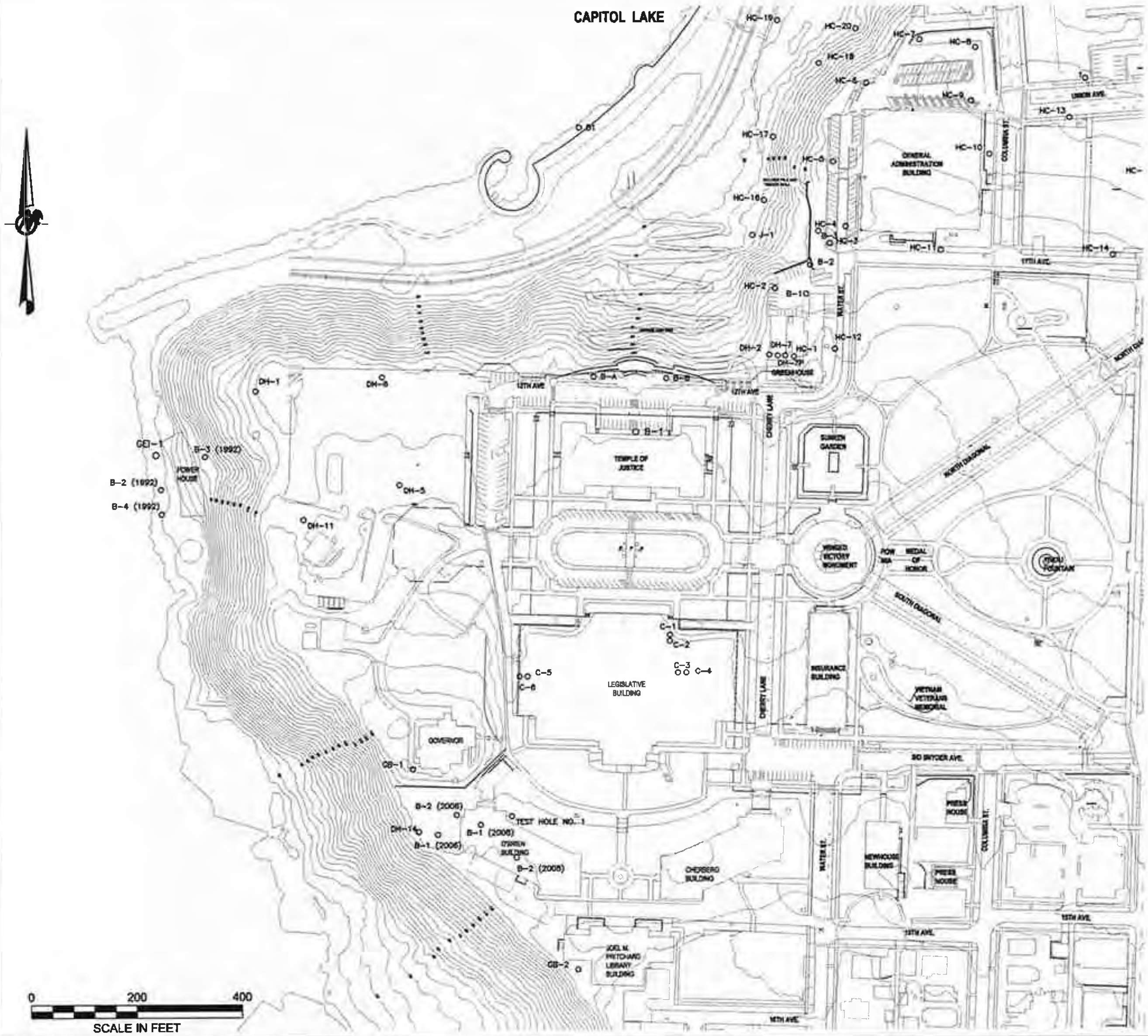
SOURCE:
BASE MAP: PARAMETRIX DECEMBER 2008
TOPOGRAPHIC CONTOURS: PUGET SOUND LIDAR CONSORTIUM, DOWNLOAD 2008

DATUM:
HORIZONTAL: NAD 1983
VERTICAL: NAVD 88

K:\CAD\Projects\2008\083932871\Working\083932871 Figure 2 Site Plan.dwg | Utilities11X17 | Mod: 12/22/2009, 10:19 | Plotted: 12/22/2009, 10:45 | kCottingham

FIGURE 2
PROJECT CAD DATABASE PLAN
WAGA/HILLSIDE EVAL&PRELIM DESIGN/WA

Golder Associates



LEGEND

B-2 ○ APPROXIMATE LOCATION OF BORING IN DATABASE

SOURCE:
BASE MAP: PARAMETRIX DECEMBER 2008
TOPOGRAPHIC CONTOURS: PUGET SOUND LIDAR CONSORTIUM, DOWNLOAD 2006

DATUM:
HORIZONTAL NAD 1983
VERTICAL NAVD 88

FIGURE 3
HISTORIC EXPLORATIONS
WAGA/HILLSIDE EVAL&PRELIM DESIGN/WA

Golder Associates

Map Projection:
Washington State Plane
North Zone NAD 1983

Source:
Gerstel (maps, 1996a and 1996b),
Puget Sound LiDAR Consortium (LiDAR data, Feb. 2002),
Golder Associates Inc. (field visits and LiDAR interpretation, 2009)

This figure was originally produced in color. Reproduction in black and white may result in a loss of information.

FIGURE 4
SHADED RELIEF MAP OF CAPITAL CAMPUS
WAGA/HILLSIDE EVAL AND PRELIM DESIGN/WA

083932/F14R01_CapitolCampus_LandFeatures.mxd | 3/2/2010 | BVANG-JOHNSON

Golder Associates

REPORT

General Administration Building Soldier Pile Wall Inspection GA# 08-076

Submitted To: Washington State Department of General Administration
210 West 11th Street SE
2nd Floor, Room 206
Olympia, Washington 98504-1012

Submitted By: Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, Washington 98052 USA

July 20, 2010

Project No. 083-93287.700

A world of capabilities delivered locally

Golder Associates

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1.0 HISTORY

1.1 Wall History and Construction

The soldier pile wall was constructed in 1988-1989 following slope failures near the General Administration (GA) Building and the Greenhouse during the winters of 1987 and 1988. Historical drawings and previous geotechnical explorations indicate that during initial development of the site, up to 65 feet of uncontrolled fill was placed to fill in a ravine in the area south of the soldier pile wall near the Greenhouse. The ravine fill placement occurred in the early 1900s (Golder, 2010b GA Project #08-076). The general location of the soldier pile wall is shown in Figure 1.

Based on design drawings by Sverdrup Corporation (1988), the wall was constructed as a combined cut/fill structure. The upper portion of the wall was backfilled to restore approximately the pre-slope failure site grades. Slide debris in front of the soldier pile wall was excavated and removed to allow for installation of a second row of tieback anchors and to create a flat bench.

Mr. Dave Lohrengal of the General Administration provided personal recollections of the soldier pile wall construction. He noted that debris, garbage, and voids were encountered during the drilling and installation of the tieback anchors. In addition, settlement of the ground surface was observed at the top of the wall after construction. Settlement was observed behind the wall on both the GA portion of the wall and the Greenhouse portion of the wall. The observed settlement was approximately 2 to 3 feet. While settlement in some areas was observed a short time after construction, Mr. Lohrengal recalled the asphalt settling at the Greenhouse for 2 to 3 years after construction. The contractor returned to the site several times to backfill voids with soil; it was Mr. Lohrengal's recollection that the voids were identified following settlement at the ground surface. He did not recall the contractor using concrete to backfill voids.

1.2 Objectives of Wall Inspection

Following removal of ivy and other vegetation from the wall face in the spring of 2010, up to 3 feet of ground subsidence was observed over limited areas at the top of the soldier pile wall. In addition, several wood lagging boards spanning between the soldier piles appeared to be deteriorating. These observations raised concerns about the condition and potential performance of the wall. The ground subsidence raised questions about the possible presence of voids behind the wall. As voids collapse, the surrounding soil can fill the void. The process repeats and the void can chimney up behind the wall, finally resulting in observed settlement at the ground surface. The wood lagging boards retain the soil between the steel soldier piles. Deterioration of the lagging boards could compromise the ability of the boards to retain soil, again potentially resulting in significant loss of ground behind the wall.

In this context, a field inspection of the retaining wall was performed to evaluate presence or absence of voids behind the wall and to evaluate the condition of the lagging boards. The field inspection and results are discussed in Section 2. Recommendations for remediation and future monitoring of the wall are presented in Section 3.

2.0 FIELD INSPECTION

Golder Associates Inc. (Golder) performed a field inspection to investigate the potential for voids behind the wall (that might be the cause of subsidence at the ground surface) and deterioration of the wood lagging boards spanning between the piles. The methodology used to investigate these concerns is presented in Section 2.1, while the results of our inspection are presented in Section 2.2.

2.1 Methodology

The field inspection of the wall was performed on June 14 and June 15, 2010 by Katy Cottingham, PE, and Alec Liebman of Golder. The work involved access to the wall face using ropes and consequently was performed with the assistance of Mr. Adam Lederer of Skala Inc., an Industrial Rope Access Trade Association (IRATA) Level III certified safety supervisor.

The inspection consisted of two primary components: (1) probing between or behind lagging boards to determine the presence or absence of voids, and (2) evaluating the condition of the wood lagging boards using drill resistance.

Probing for voids was accomplished using a steel rod and a metal ruler to measure the distance from the back of the wood lagging boards to the soil surface behind the wall. Probing occurred at approximately 5 foot vertical intervals in each soldier pile bay. If a void was encountered, the location, depth, and approximate extents of the void were noted. The position of probing locations was determined based on measurements from the top of the wall or the tieback rows. The uppermost row of tiebacks is referred to as Row 1. If two rows of tiebacks are present, the lower row is referred to as Row 2. These locations were then overlaid on an elevation view of the soldier pile wall based on as-built drawings prepared by Frontier Foundations (1988).

The condition of the wood lagging boards was evaluated using an IML F-400S Resistograph tool, which measures the resistance of penetration by a 3mm-diameter drill bit as it drills through the lagging board. As the drill bit progresses, a graph is generated which is then analyzed to determine the condition of the wood and the extent of any deterioration or decay that might be occurring. Drill resistance logging was performed at approximately 5-foot vertical intervals in each soldier pile bay and on any lagging boards that showed particular visible deterioration.

2.2 Observations

2.2.1 Voids

Voids were encountered at a number of locations behind the lagging boards. The locations of voids are shown in Figure 2. Voids were grouped in to two general categories: smaller voids that are generally less than 1 foot deep and are less than 1 foot in height; and larger voids that extend between 1 foot and 3 feet behind the lagging boards and are between 2 feet and 6 feet in height. The location and extents of voids shown are approximate. Reasonable effort was made to determine the extent of voids; however, additional voids may be present behind the wall that were not encountered during the field investigation. Pictures of voids encountered are shown in Photos 1, 2, and 3.

Concrete was encountered directly behind the lagging in the upper 10 to 15 feet of the soldier pile wall in several locations. The locations where concrete was observed are shown in Figure 1. Concrete may be present at other locations where it could not be directly observed using our investigation techniques. The presence of concrete behind the wood lagging was unexpected. The design drawings by Sverdrup Corporation show a 2 foot thick zone of free draining granular backfill immediately behind the wood lagging, and accounts by Mr. Dave Lohrengal recalled the contractor backfilling with soil. The soil conditions and the presence or absence of voids behind the concrete could not be determined.

In general, the upper 10 to15 feet of the soldier pile wall was drier relative to the lower portion of the wall. Soils in the upper portion of the wall may be drier than soils in the lower portion of the wall. Alternatively, the concrete behind the wood lagging may be inhibiting water flow through the face of the wall.

In several areas, the void was observed to begin near the bottom of the concrete behind the lagging, indicating soil loss up to this level. In soldier pile Bay G, however, the void had chimneyed up to approximately 1.5 feet above the bottom of the concrete.

Voids may have been present and not backfilled at the time of wall construction. With the size of voids observed, signs of soil migration down the wall face and piles of soil at the bottom of the wall would typically be expected. However, signs of soil migration on the face of the wall were observed only at Bay N (see Photo 4). A pile of soil was not observed at the toe of the wall in this area. If soil was migrating through the gaps in the lagging board, there would be piles of soil at the toe of the wall. Soil piles (often called fans due to their shape) were not observed at the toe of the wall. While it is possible that the evidence of soil piles or fans was obstructed due to heavy vegetation, the surface of the bench at the base of the wall was relatively smooth and flat as observed after vegetation removal. It is our opinion that if large quantities of soil had migrated from behind the lagging, the soil would be visible at the base of the wall. Therefore, it is our opinion that the voids did not develop recently.

2.2.2 Wood Lagging

In general, the wood lagging appeared to be pressure-treated. Boards were nominally 4 inches think and 6 inches high. A total of 122 drill resistance tests were performed at the locations shown in Figure 3. The techniques for analyzing the drill resistance test results are described in Appendix B. The drill resistance graphs displayed a wide range of conditions varying from fully competent to completely deteriorated. A common pattern noted while reviewing the graphs was the deterioration of the wood on the backside of the lagging board. This is likely caused by the soil resting against the back of the wood allowing water in the soil to migrate into the wood. Note that the nominal design thickness of the lagging boards was 4 inches (Sverdrup Corporation 1988).

Based on our analyses of the results, the wood lagging at each test was assigned to one of the following categories:

A. Where the thickness of intact wood was 3 inches or greater, or where the average drill resistance was greater than about 50 percent of the maximum value of the most resistant boards. Lagging boards in this category are considered to be in acceptable condition, and no action is necessary. About 70 percent of the test results are in this category.

B. Where the thickness of intact wood is less than 3 inches or where the average drill resistance was less than about 50 percent of the maximum value of the most resistant boards, the lagging board should be replaced. About 30 percent of the test results are in this category.

Deterioration of the wood lagging boards does not appear to be confined to a specific area of the wall. It should be noted that not every lagging board was tested and that the test locations are assumed to be representative of the wood lagging condition in the general area of the test. Three lagging boards were observed to be in noticeably poor condition, exhibited by signs of cracking of the boards or visible deterioration on the face. When tested, these boards exhibited little to no measurable drill resistance.

3.0 RECOMMENDATIONS

3.1 Restoration

Based on the observations described above, we recommend several restoration activities for the soldier pile wall that should be performed within the next year. These activities consist of:

1. Vegetation Removal – Although most of the vegetation on the wall was removed earlier this year, the process should be completed, particularly the removal of roots from behind lagging boards and stumps from the face of the wall. This may require the use of chemicals or products to kill established vegetation in the wall face and may require removal of lagging boards to facilitate vegetation removal. Vegetation (both alive and dead) within a distance of 5 feet from the toe of the wall should also be cleared.
2. Replace Wood Lagging – Category B lagging boards should be replaced. The areas where deteriorating boards were encountered are shown in Figure 2. Since testing was not performed on every board, visual inspection of untested boards should be performed during restoration work if possible to identify other boards that may need replacement. In some cases, it may be advisable to replace lagging in proximity to Category B boards. It should be noted that the existing voids behind the wall present an opportunity for replacing lagging relatively easily with minimal potential for additional loss of ground, provided that appropriate methods are used. In this context, it will be relatively cost-effective to replace any questionable boards during the restoration, as opposed to later when adequate backfill is in place.
3. Lagging boards should be repositioned or replaced as necessary to reduce gaps between lagging boards to 1/8 inch or less (see Photo 5).
4. Backfilling Voids – Voids behind the wood lagging should be backfilled with a free-draining granular material.

Design drawings and specifications for these restoration activities are beyond the scope of this study but should be prepared at a later time prior to implementing these activities.

For budgeting purposes, we contacted a shoring contractor to provide an approximate cost to replace wood lagging boards and backfill the identified voids. Their cost estimate for this work is $30,000 and is based on limited discussions and the results of our study, without a site visit by the contractor. This is a general order-of-magnitude cost and is subject to change based on the final construction documents and specifications. The cost does not include vegetation removal, as it was assumed that could be performed by the GA. Other cost considerations are observation and documentation of remediation activities by a geotechnical engineer, estimated to be on the order of $7,000. There is significant uncertainty in the estimates provided herein as the project scope has not yet been determined.

Failure to backfill voids increases the risk for additional ground subsidence. It is recommended that the voids be backfilled at the earliest practical time. Delaying the project further increases the risk of ground subsidence and the potential for damage to campus infrastructure.

3.2 Inspection and Maintenance Program

The establishment of an on-going maintenance program will help to maintain the performance of the soldier pile wall and may identify signs of concern before they become a problem. We recommend the inspection and maintenance program consist of the following tasks:

1. Vegetation Control – Remove vegetation on the wall face and trim or cut vegetation within a distance of 5 feet from the toe of the wall on an annual basis.

2. Annual Inspection – An annual visual inspection of the wall should be performed by GA personnel. Pertinent observations to be noted include:

   a. Subsidence or cracks at the ground surface behind the wall, the presences of piles of soil at the toe of the soldier pile wall, and similar features that could indicate loss of ground.

   b. The general condition of the wood lagging boards to identify any new or ongoing deterioration.

   c. Large displacements of the soldier piles, tiebacks or walers (the horizontal steel elements spanning between piles supporting the tiebacks), or excessive corrosion of the steel components.

Annual inspections should include photographs to document these conditions and allow comparison over several years.

1. Monitoring of Instruments and Survey Monuments – Two survey monuments are located behind the soldier pile wall, and an inclinometer is located downslope from the toe of the wall. Several other survey monuments and piezometers are located in the vicinity of the wall. The locations of these instruments are shown on Figure 1. These instruments should be monitored in accordance with the procedures described in the Monitoring Report (Golder 2010a, GA Project #08-076). Additional readings should be performed if subsidence is observed at the ground surface or cracks are observed behind the soldier pile wall.

2. Specialty Inspection – An inspection of the soldier pile wall should be performed approximately every 5 to 10 years by a qualified geotechnical or civil engineer. The inspection should evaluate the condition of the wood lagging boards and evaluate the presence of voids behind the lagging, as well as the general condition of the soldier piles, tiebacks, and associated structural components. The specialty inspection should be performed at the earliest practical time if subsidence is observed at the ground surface, the monitoring points or inclinometer measurements indicate that settlement or movement of the ground has occurred, if piles of soil are observed at the toe of the wall, or if other signs of distress are observed during the annual inspection.

4.0 CLOSING

This report has been prepared exclusively for the use of the Washington State Department of General Administration and their consultants for specific application to the soldier pile wall at the General Administration building. The conclusions and recommendations presented in this report are based on the investigation completed for this study and our previous work with the General Administration. Judgment has been applied in interpreting and presenting the results.

GOLDER ASSOCIATES INC.

KATY S. COTTINGHAM
STATE OF WASHINGTON
45203
REGISTERED
PROFESSIONAL ENGINEER

Katy Cottingham

Katy Cottingham, PE
Project Engineer

Mark Liebman
Senior Consultant

Frank S. Shuri

Frank S. Shuri, LEG, PE
Principal and Senior Consultant

5.0 REFERENCES

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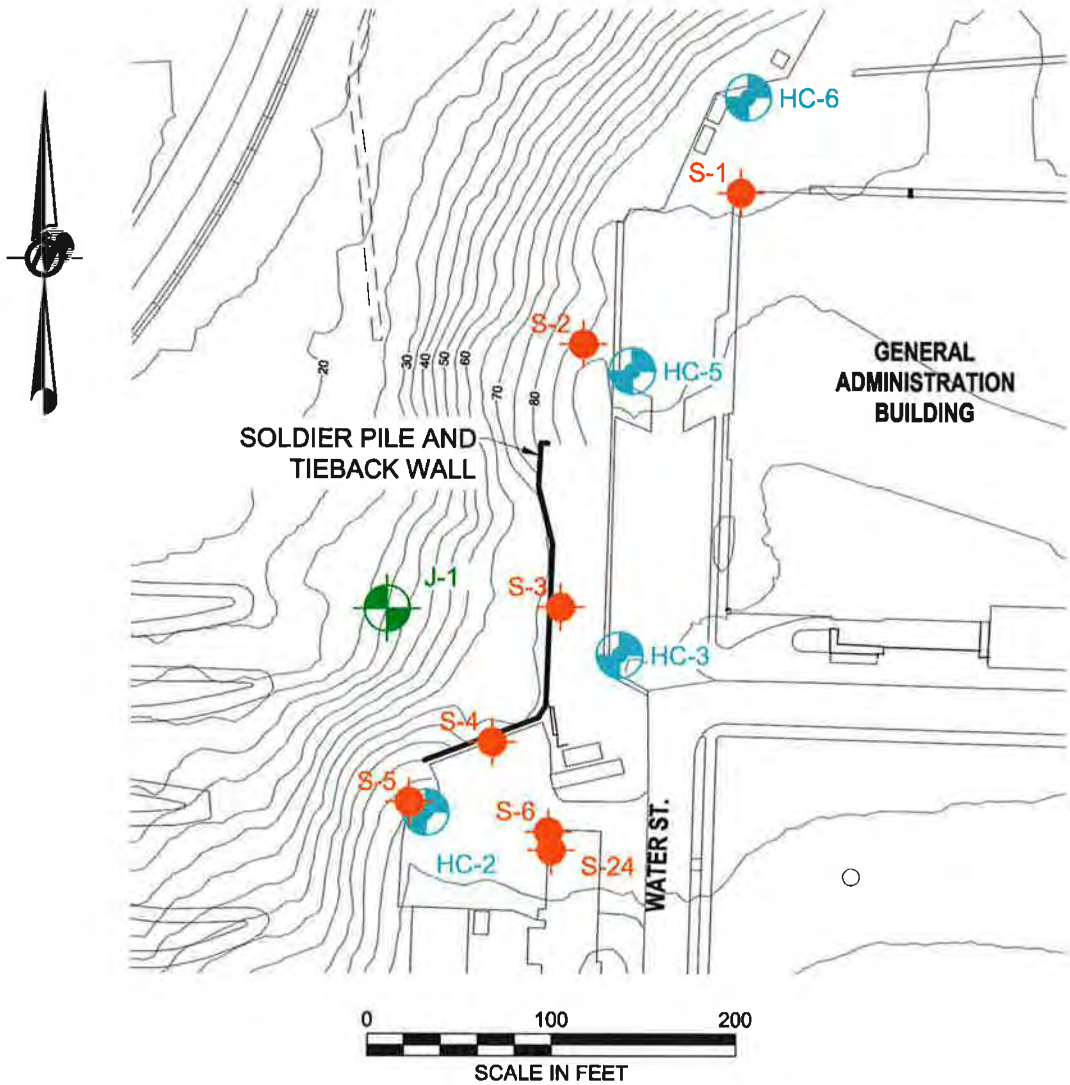
FIGURES



LEGEND

J-1 INCLINOMETER

HC-2 STANDPIPE PIEZOMETER

S-1 SURVEY MONITORING POINT

SOURCE:
BASE MAP: PARAMETRIX DECEMBER 2008
TOPOGRAPHIC CONTOURS: PUGET SOUND LIDAR CONSORTIUM, DOWNLOAD 2008

DATUM:
HORIZONTAL: NAD 1983
VERTICAL: NAVD 88

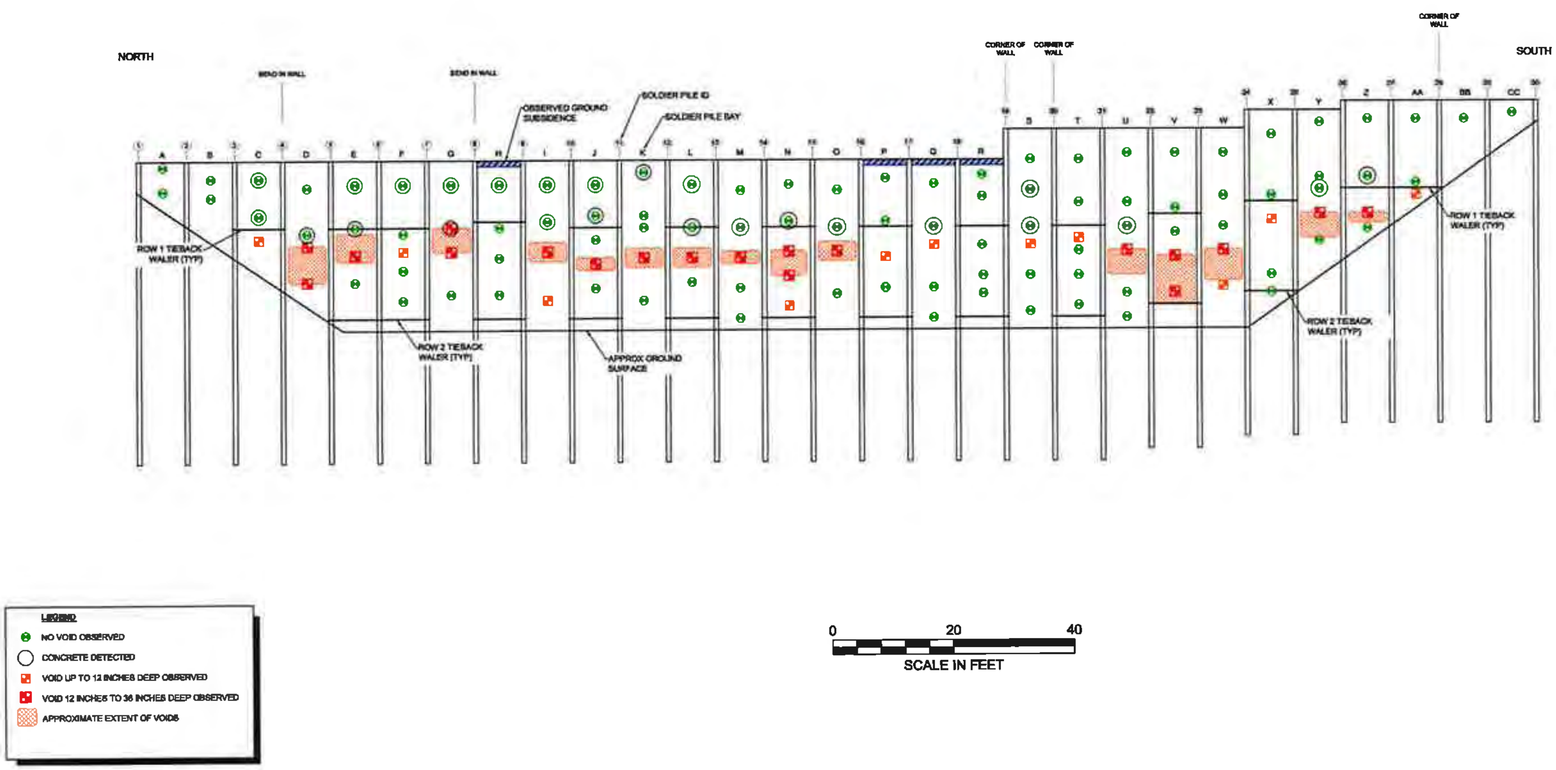
FIGURE 1

LOCATION OF INSTRUMENTS NEAR WALL

WAGA/Hillside Eval&Prelim Design/WA

K:\CAD\Projects\2008\08393287\700\08393287.610 Monitoring Locations.dwg | SP Instruments | Mod: 07/19/2010, 14:45 | Plotted: 07/19/2010, 14:45 | kCottingham

Golder Associates



NOTES:

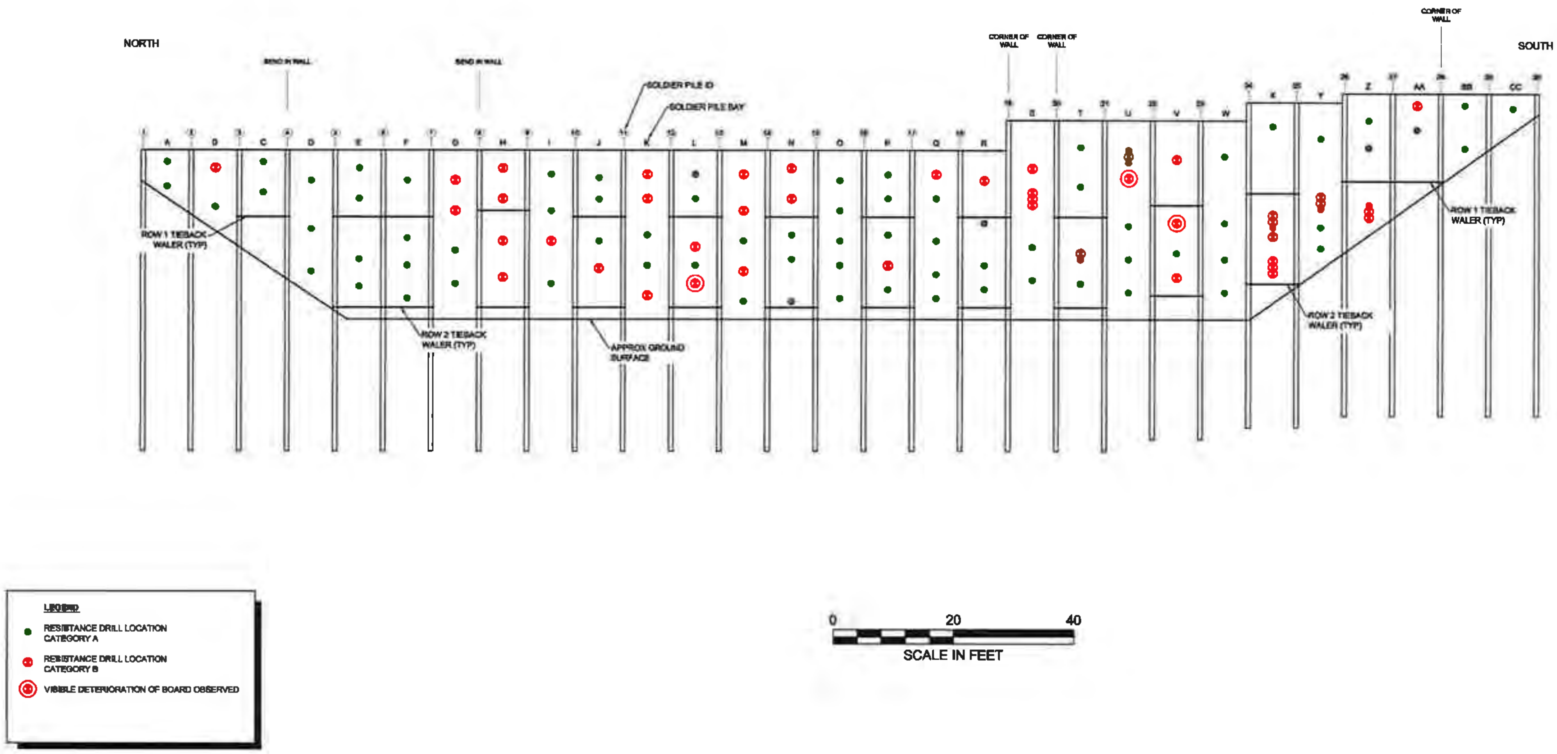
1. VOID LOCATIONS AND EXTENTS ARE APPROXIMATE AND BASED ON THE FIELD INSPECTION PERFORMED ON JUNE 14TH AND JUNE 15TH, 2010.

2. SOLDIER PILE WALL ELEVATION BASED ON AS-BUILT DRAWINGS (FRONTIER FOUNDATIONS, 1988) AND FIELD OBSERVATIONS.

FIGURE 2
LOCATION OF OBSERVED VOIDS
WAGA/Soldier Pile Wall Insepction/WA

Golder Associates

K:\CAD\Projects\2008\083\0287\700\soldier pile wall sketch.dwg | Voids | Mod: 07/19/2010, 14:55 | Plotted: 07/19/2010, 14:55 | kCottingham



NOTES:

1. DRILL RESISTANCE LOCATIONS ARE APPROXIMATE AND BASED ON THE FIELD INSPECTION PERFORMED ON JUNE 14 AND JUNE 15, 2010.

2. SOLDIER PILE WALL ELEVATION BASED ON AS-BUILT DRAWINGS (FRONTIER FOUNDATIONS, 1988) AND FIELD OBSERVATIONS.

FIGURE 3

LOCATION OF DRILL RESISTANCE TESTS

WAGA/Soldier Pile Wall Insepction/WA

Golder Associates

K:\CAD\Projects\2008\083932\87\700soldier pile wall sketch.dwg | Wood | Mod: 07/19/2010, 14:54 | Plotted: 07/19/2010, 14:54 | kCottingham

APPENDIX A
PHOTOGRAPHS

Photo 1. Void in Bay G, at approximately the upper tieback row, looking through gap between lagging boards. Void up to 3 feet deep. Note concrete at top of picture. Void has chimneyed up behind concrete approximately 1.5 feet. Void extends to approximately 4 feet below the row 1 tiebacks.

Photo 2. Void at Bay N, approximately 4 feet below the upper tieback row. Photo taken looking through gap between lagging boards. Void extends approximately 2 to 2.5 feet behind the wood lagging. Note concrete above ruler.

Photo 3. Void behind lagging board in Bay L. Void extends to approximately 3 feet behind the wood lagging (on right side of photograph) and is up to approximately 3 feet high.

Photo 4. Bay N at approximately 8 feet below the upper tieback row. Indication of soil movement through gaps in lagging board and down wall face. Observed at the bottom of 2.5-ft-deep void.

Photo 5. Gaps between lagging boards from Bay M, looking south.

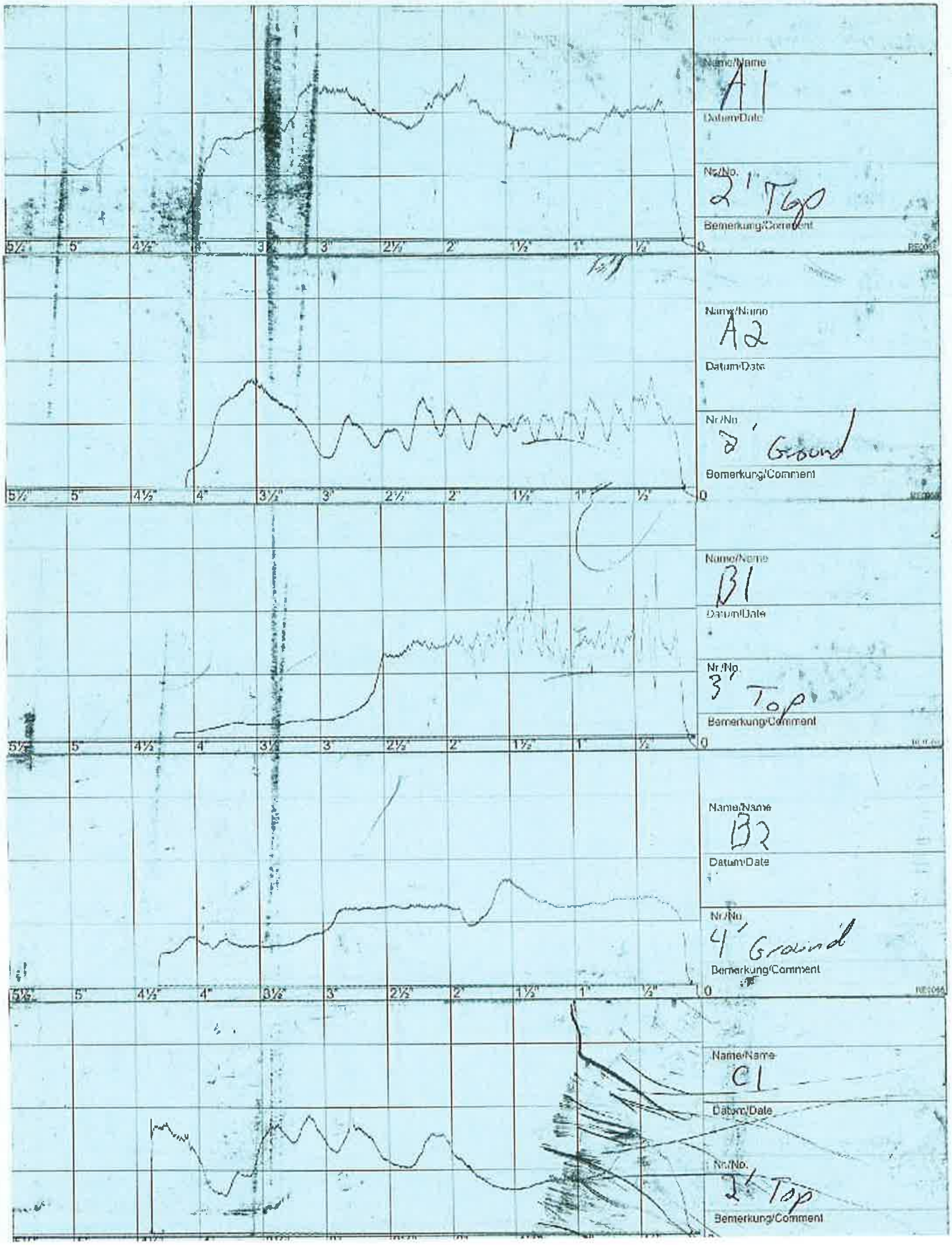
APPENDIX B
DRILL RESISTANCE METHODOLOGY AND RESULTS

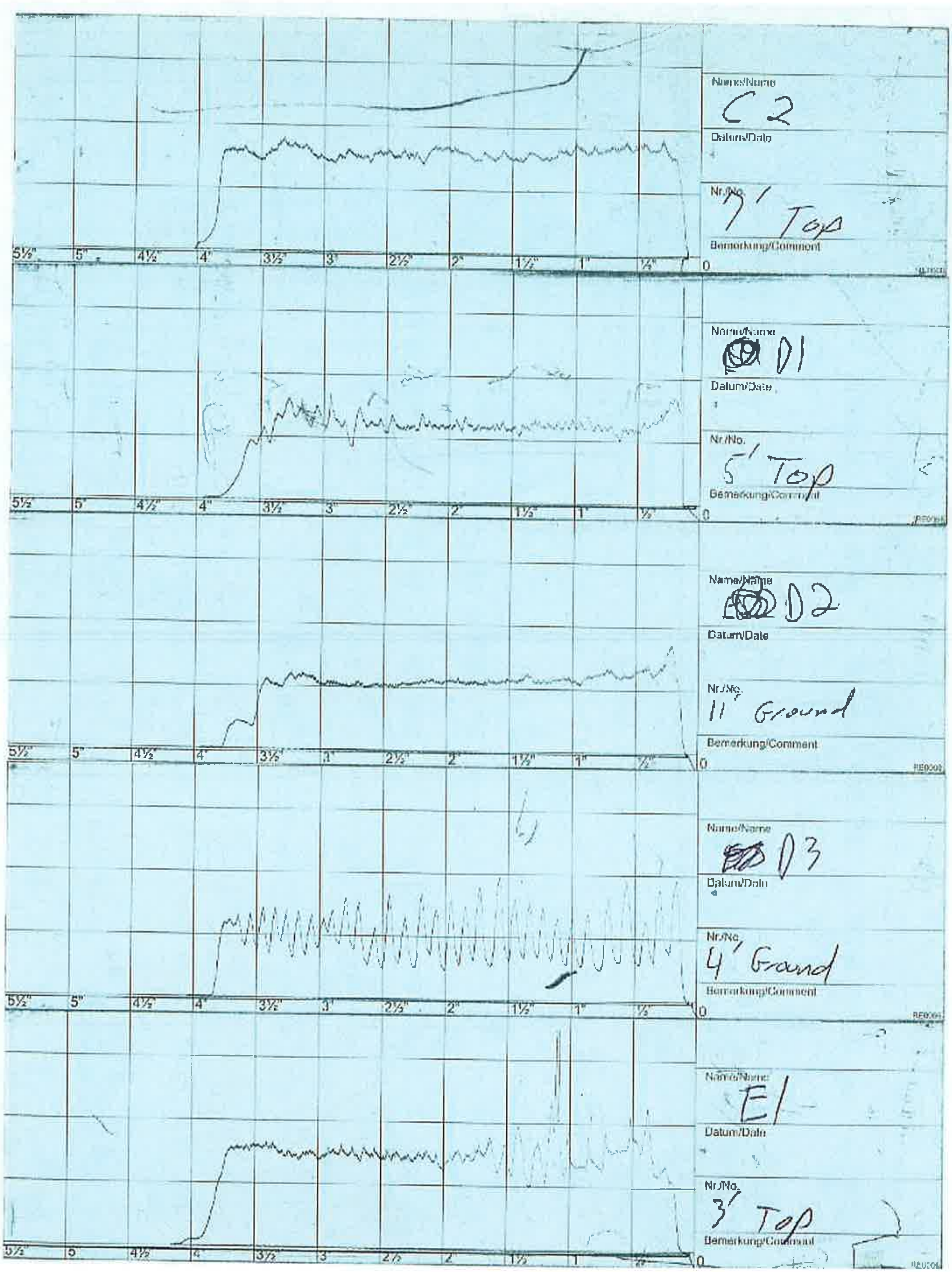
APPENDIX B

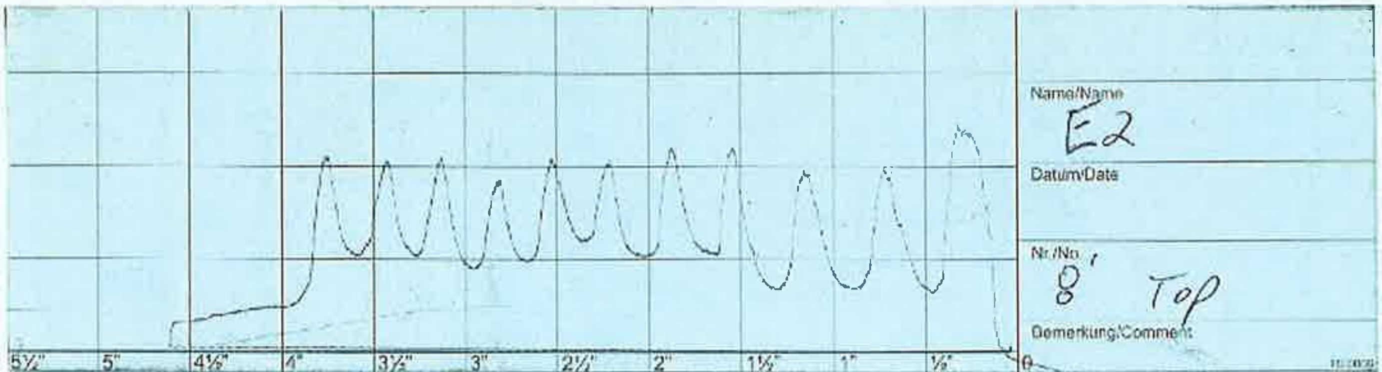
Drill Resistance Testing

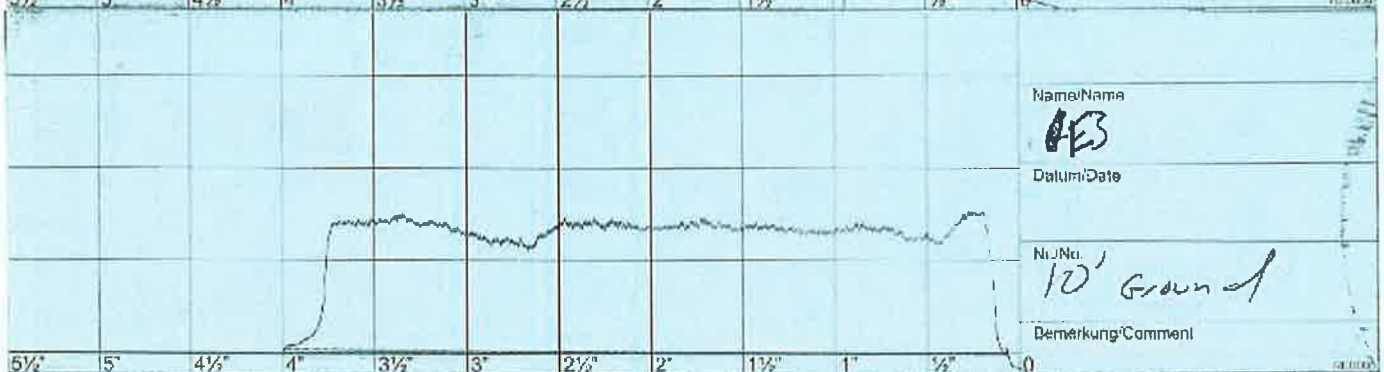
The following sections describe the procedures for evaluating the condition of the wood lagging boards.

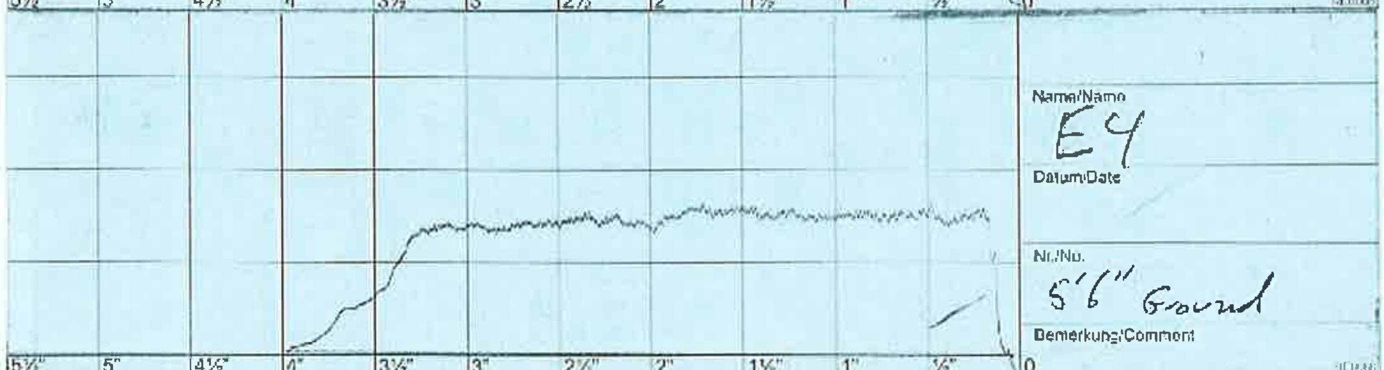
The condition of the wood lagging boards was evaluated using an IML F-400S Resistograph tool, which measures the resistance to penetration by a 3mm drill bit. As the drill bit progresses, a graph is generated which is then analyzed to determine the condition of the component and extent of any deterioration or decay that might be occurring in the wood. The graph is generated from right to left, with the tool in contact with the surface at initiation of the test. The peaks and valleys seen in the graphs are caused by the individual growth rings of the timber used. The peaks represent the growth rings (hard wood) created during the colder seasons of the year while the valleys represent the lignin (soft wood) created during the warmer seasons. As the wood deteriorates, the peaks and valleys become less defined and the resistance measured decreases.

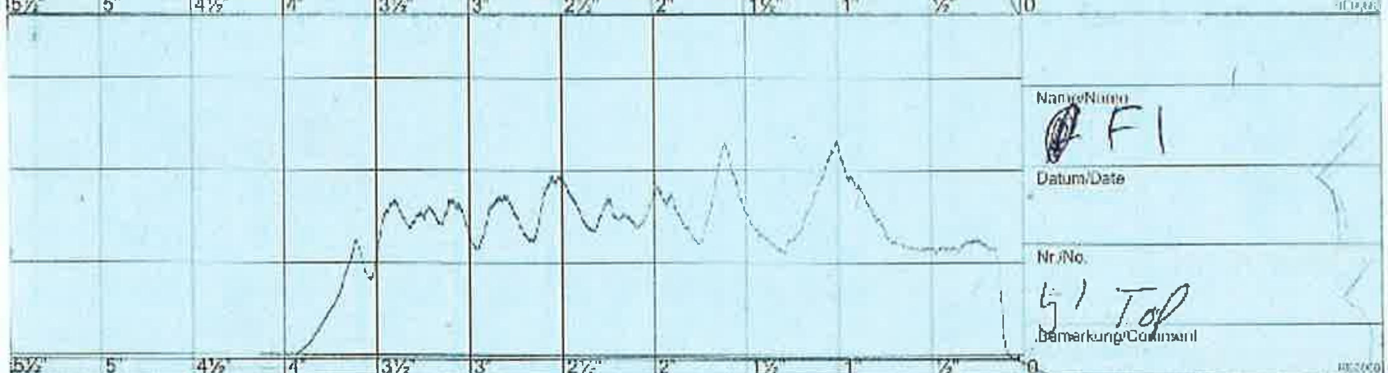

Name/Name A1
Datum/Date
Nr/No. 2' Top
Bemerkung/Comment
Name/Name A2
Datum/Date
Nr/No. 2' Ground
Bemerkung/Comment
Name/Name B1
Datum/Date
Nr/No. 3' Top
Bemerkung/Comment
Name/Name B2
Datum/Date
Nr/No. 4' Ground
Bemerkung/Comment
Name/Name C1
Datum/Date
Nr/No. 2' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

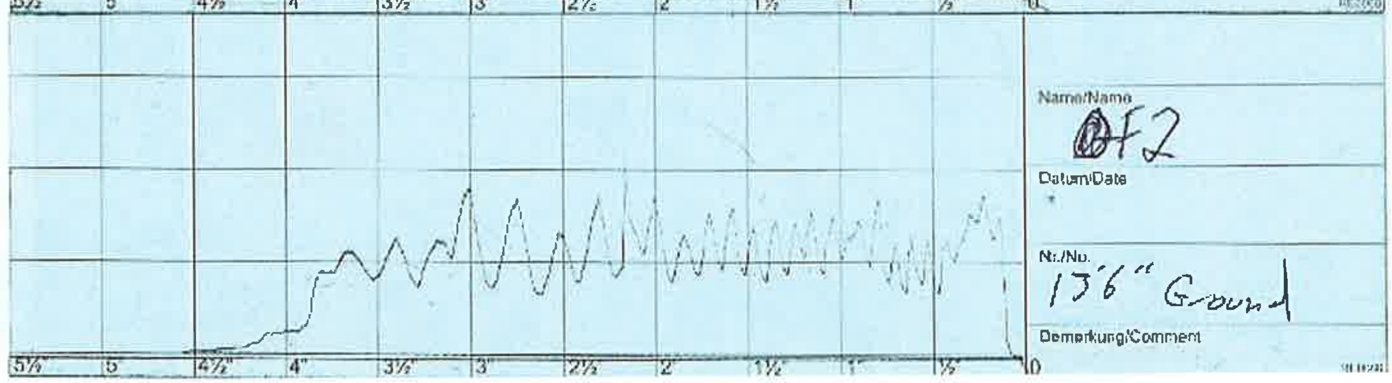

Name/Name C2
Datum/Date
Nr./No. 7' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name D1
Datum/Date
Nr./No. 5' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name D2
Datum/Date
Nr./No. 11' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name D3
Datum/Date
Nr./No. 4' Grand
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name E1
Datum/Date
Nr./No. 3' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

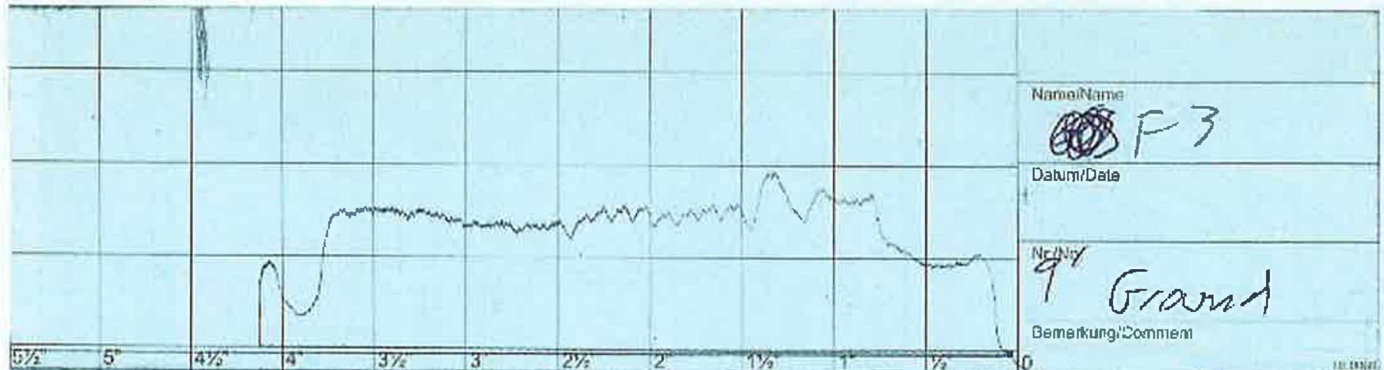

Name/Name
E2
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

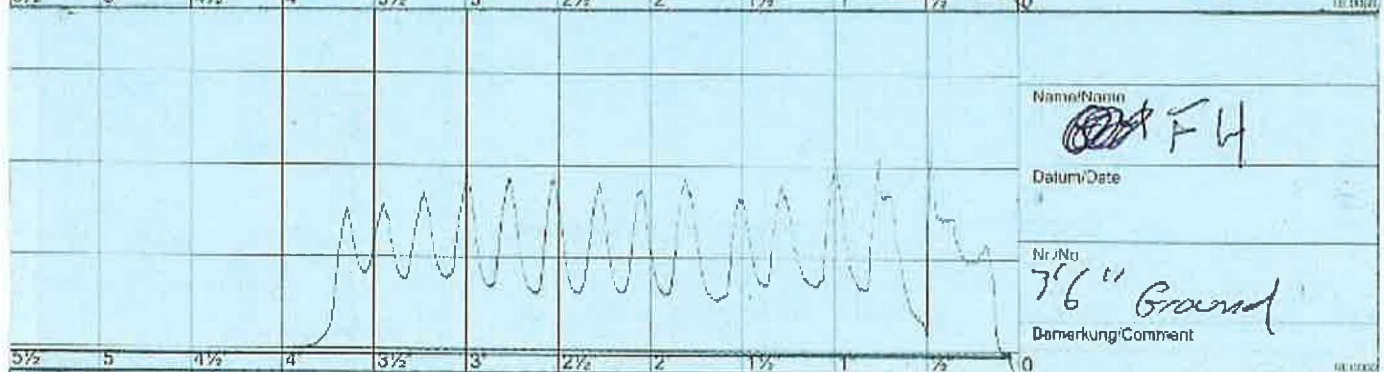

Name/Name
E3
Datum/Date
Nr./No.
10' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

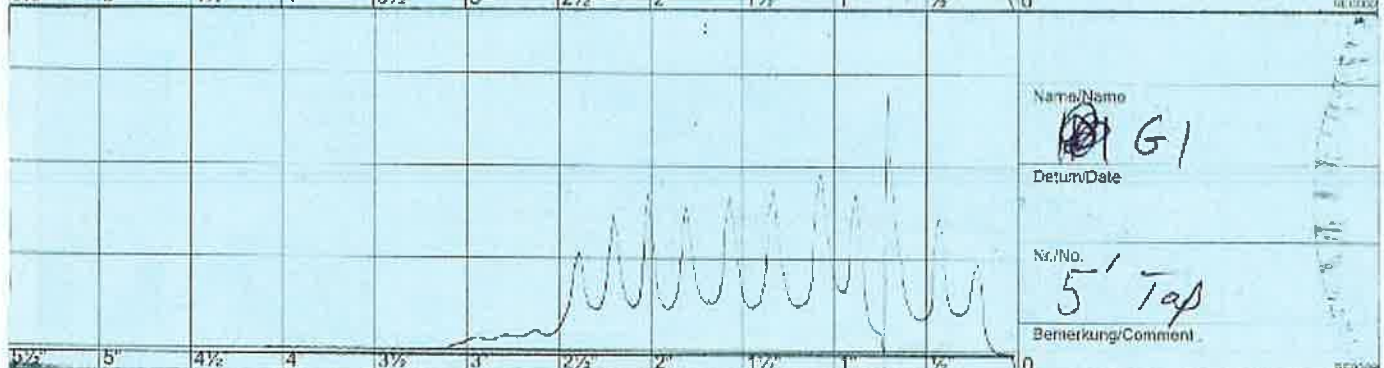

Name/Name
E4
Datum/Date
Nr./No.
5'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

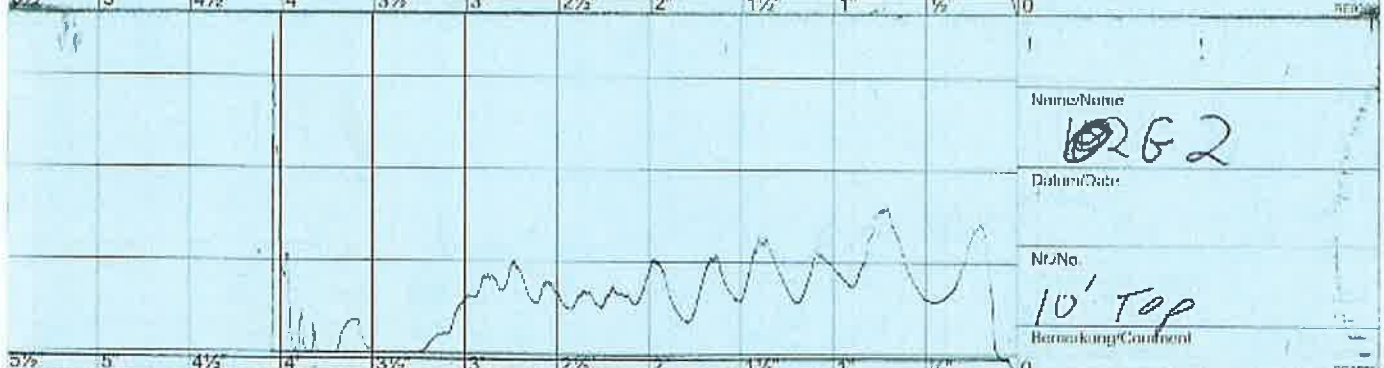

Name/Name
F1
Datum/Date
Nr./No.
5' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

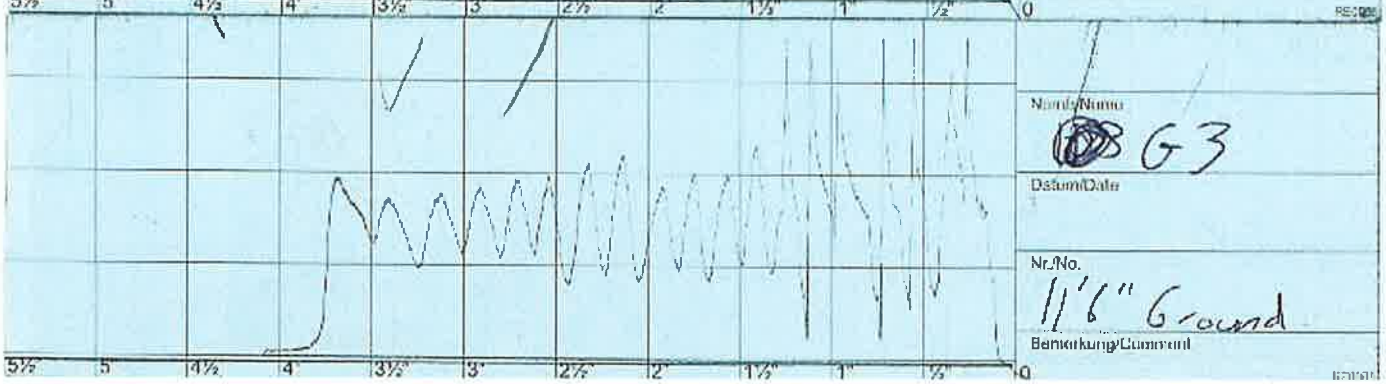

Name/Name
F2
Datum/Date
Nr./No.
13'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

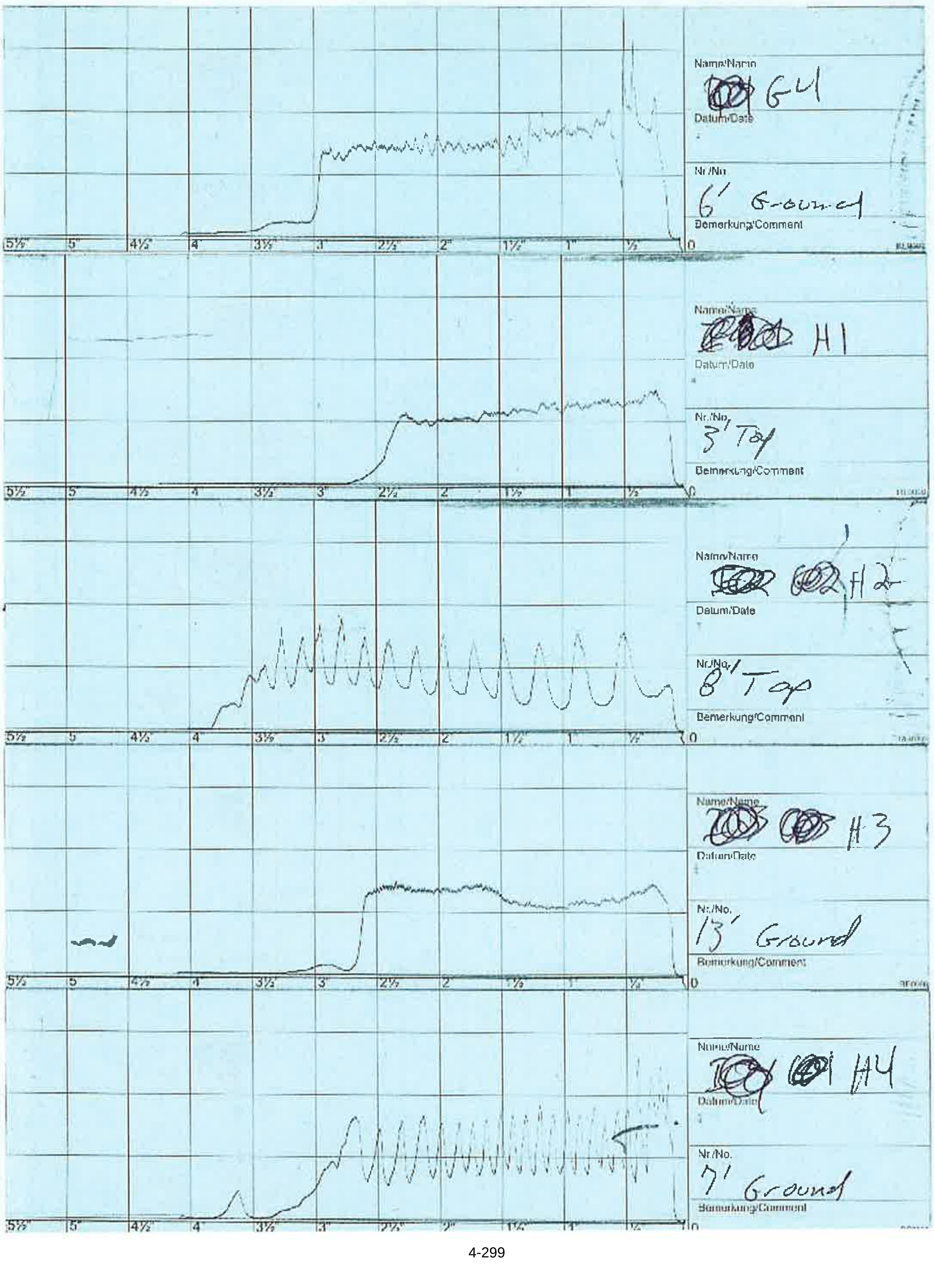

5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
F3
Datum/Date
Nr./No.
9' Ground
Bemerkung/Comment

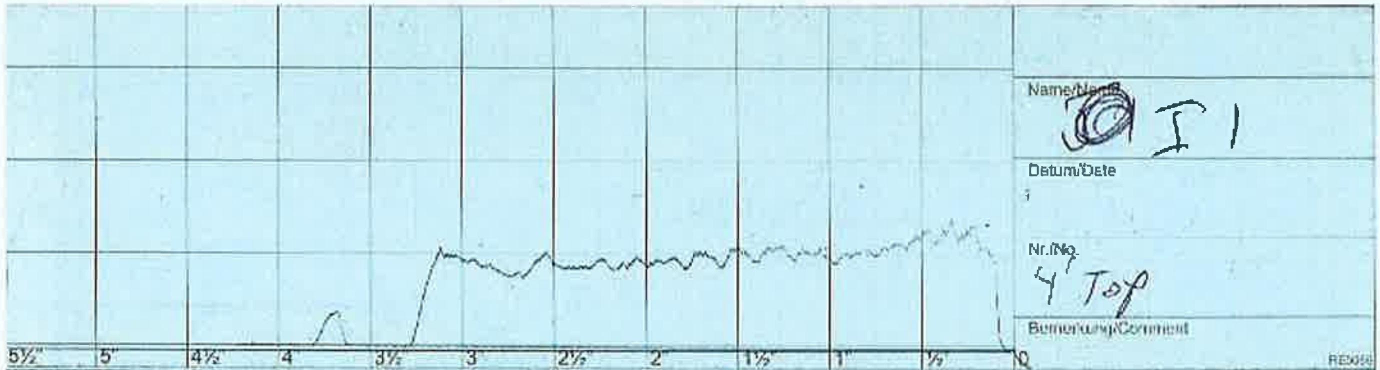

5½ 5 4½ 4 3½ 3 2½ 2 1½ 1 ½ 0
Name/Name
F4
Datum/Date
Nr./No.
7'6" Ground
Bemerkung/Comment

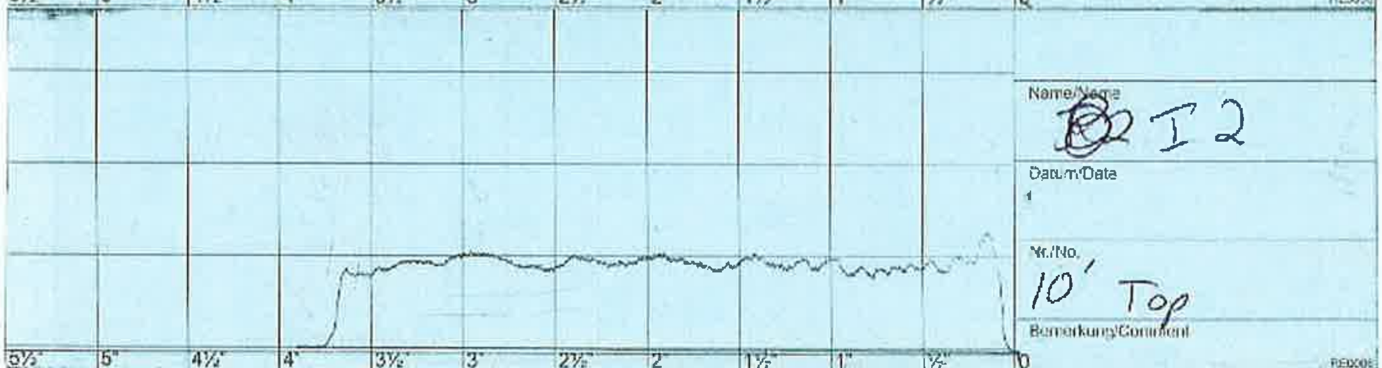

5½ 5" 4½ 4 3½ 3 2½ 2" 1½" 1" ½ 0
Name/Name
G1
Datum/Date
Nr./No.
5' Top
Bemerkung/Comment

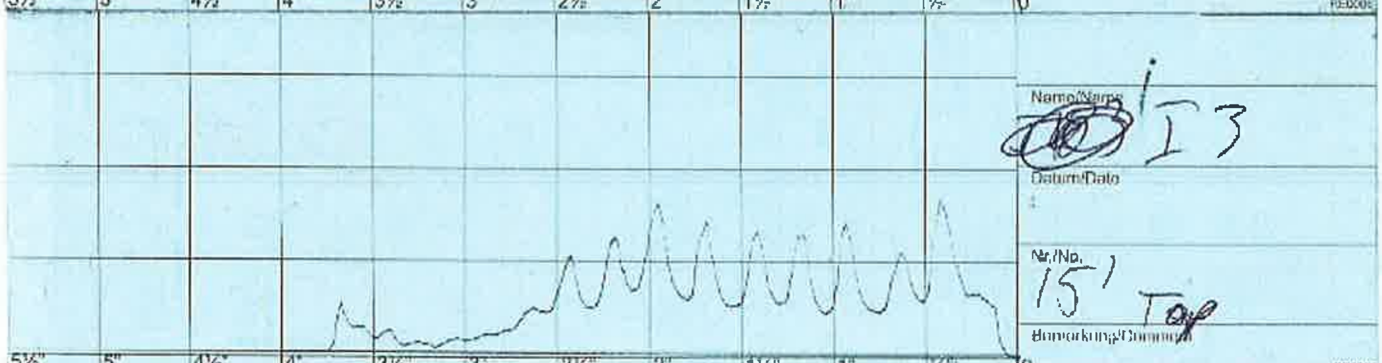

5½ 5" 4½" 4" 3½ 3" 2½ 2 1½" 1" ½" 0
Name/Name
G2
Datum/Date
Nr./No.
10' Top
Bemerkung/Comment

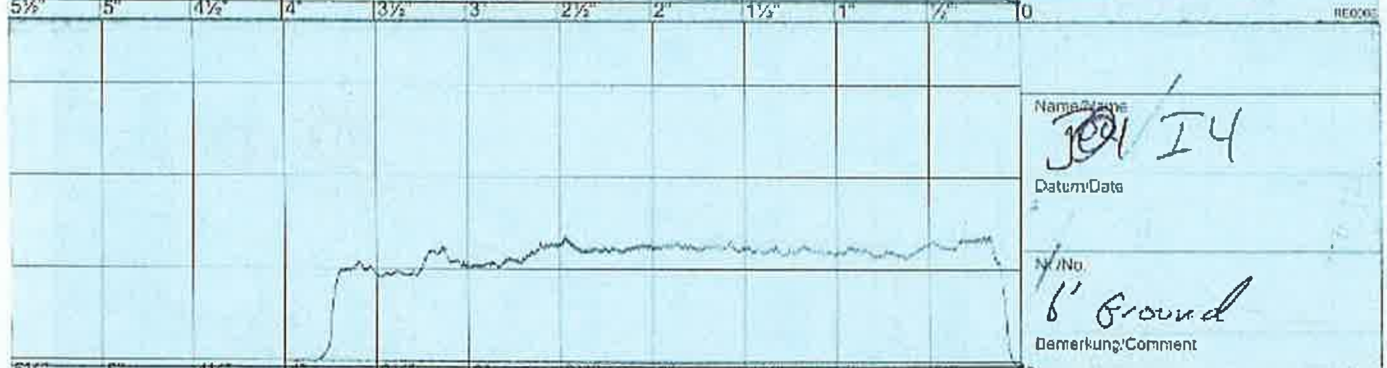

5½" 5" 4½ 4" 3½" 3" 2½ 2" 1½" 1" ½" 0
Name/Name
G3
Datum/Date
Nr./No.
11'6" Ground
Bemerkung/Comment

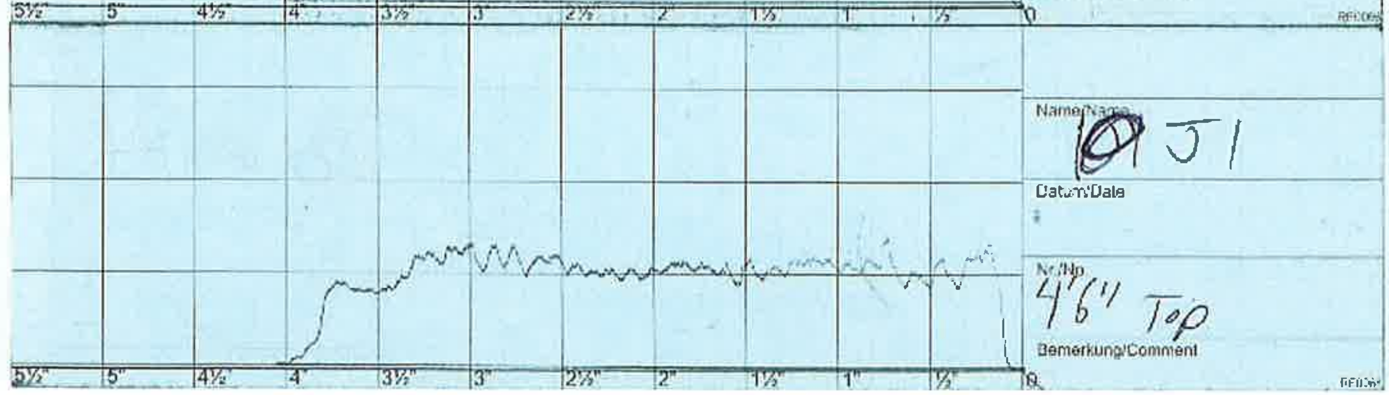

Name/Name [redacted] G4
Datum/Date
Nr./No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name [redacted] H1
Datum/Date
Nr./No.
3' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name [redacted] H2
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name [redacted] H3
Datum/Date
Nr./No.
13' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name [redacted] H4
Datum/Date
Nr./No.
7' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

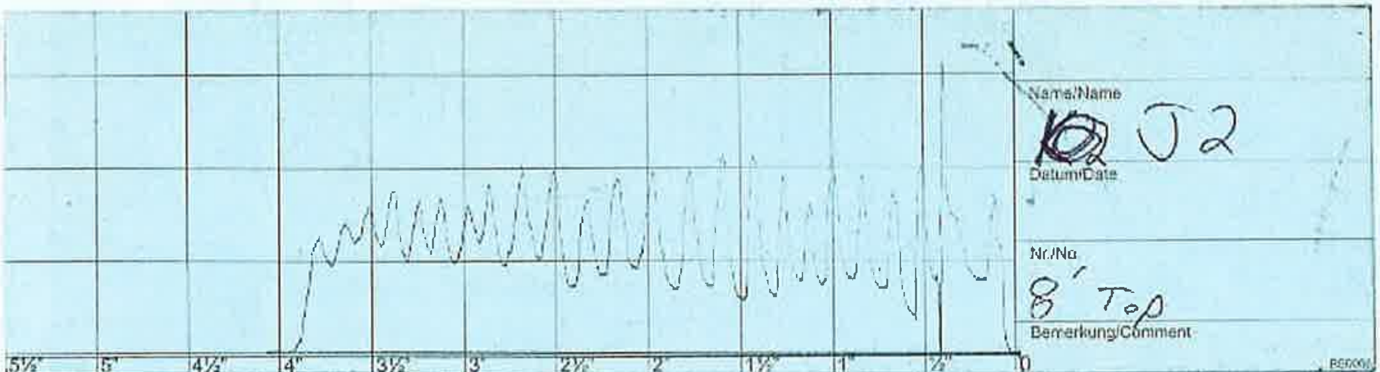

Name/Name
I 1
Datum/Date
Nr./No.
4' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

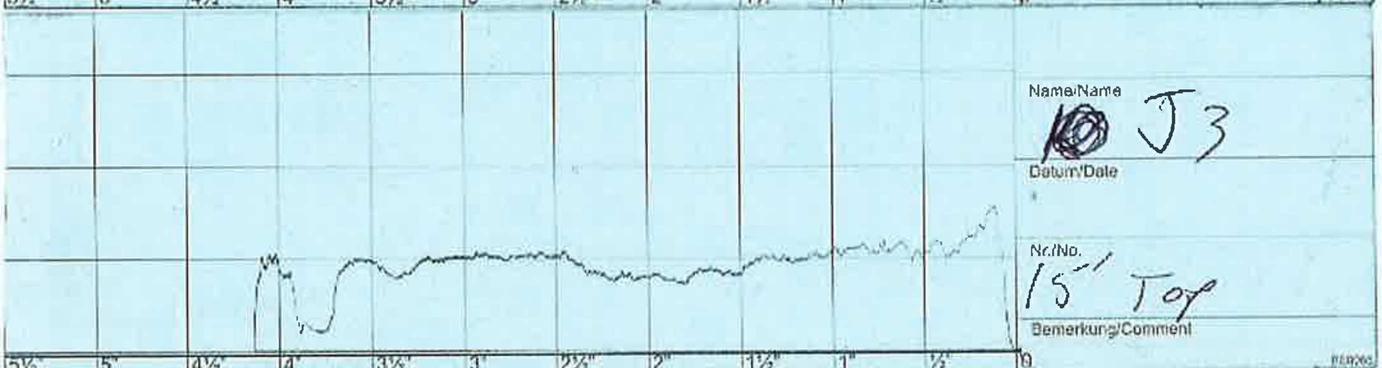

Name/Name
I 2
Datum/Date
Nr./No.
10' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

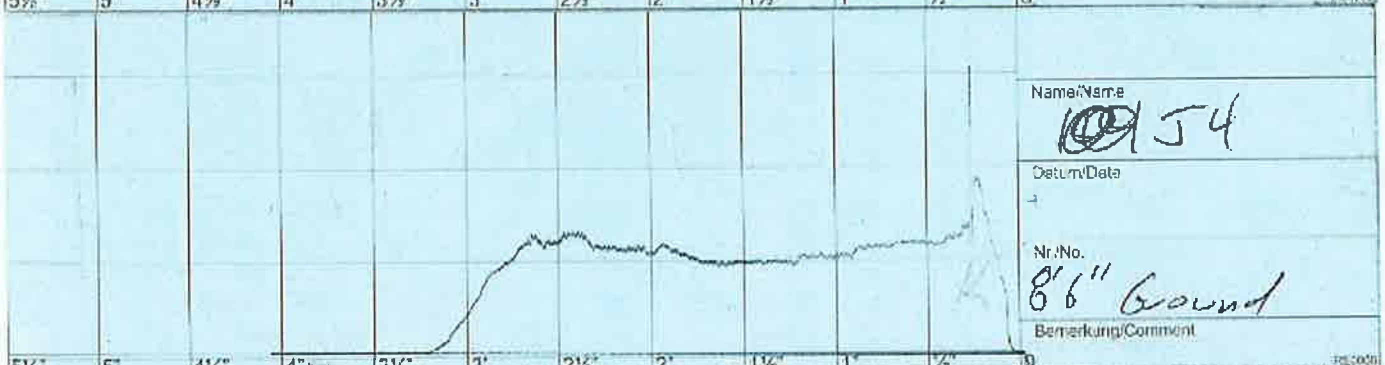

Name/Name
I 3
Datum/Date
Nr./No.
15' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

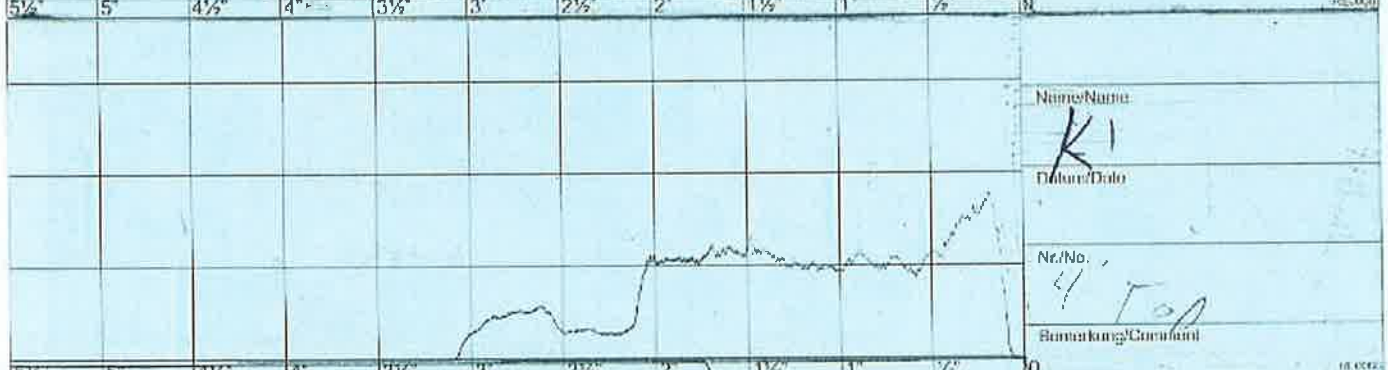

Name/Name
I 4
Datum/Date
Nr./No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

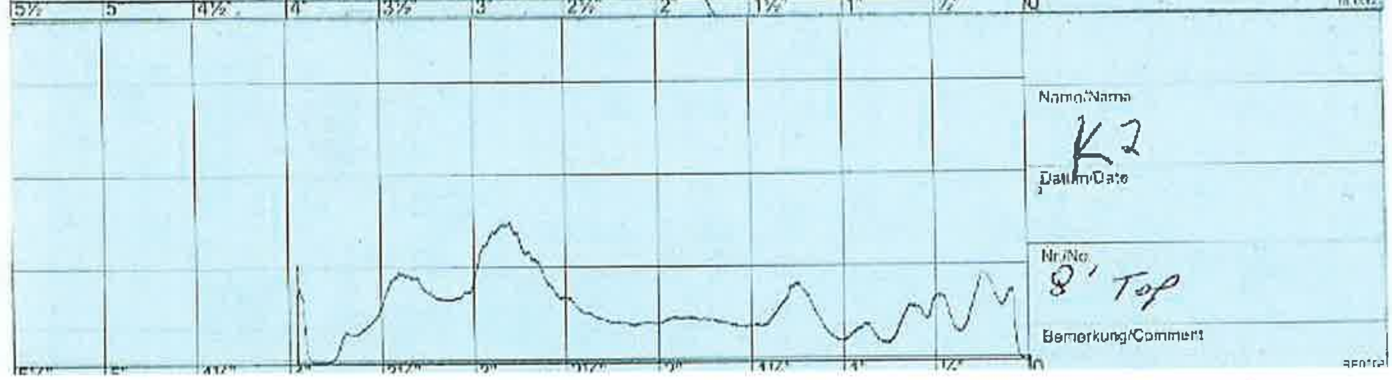

Name/Name
J 1
Datum/Date
Nr./No.
4'6" Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

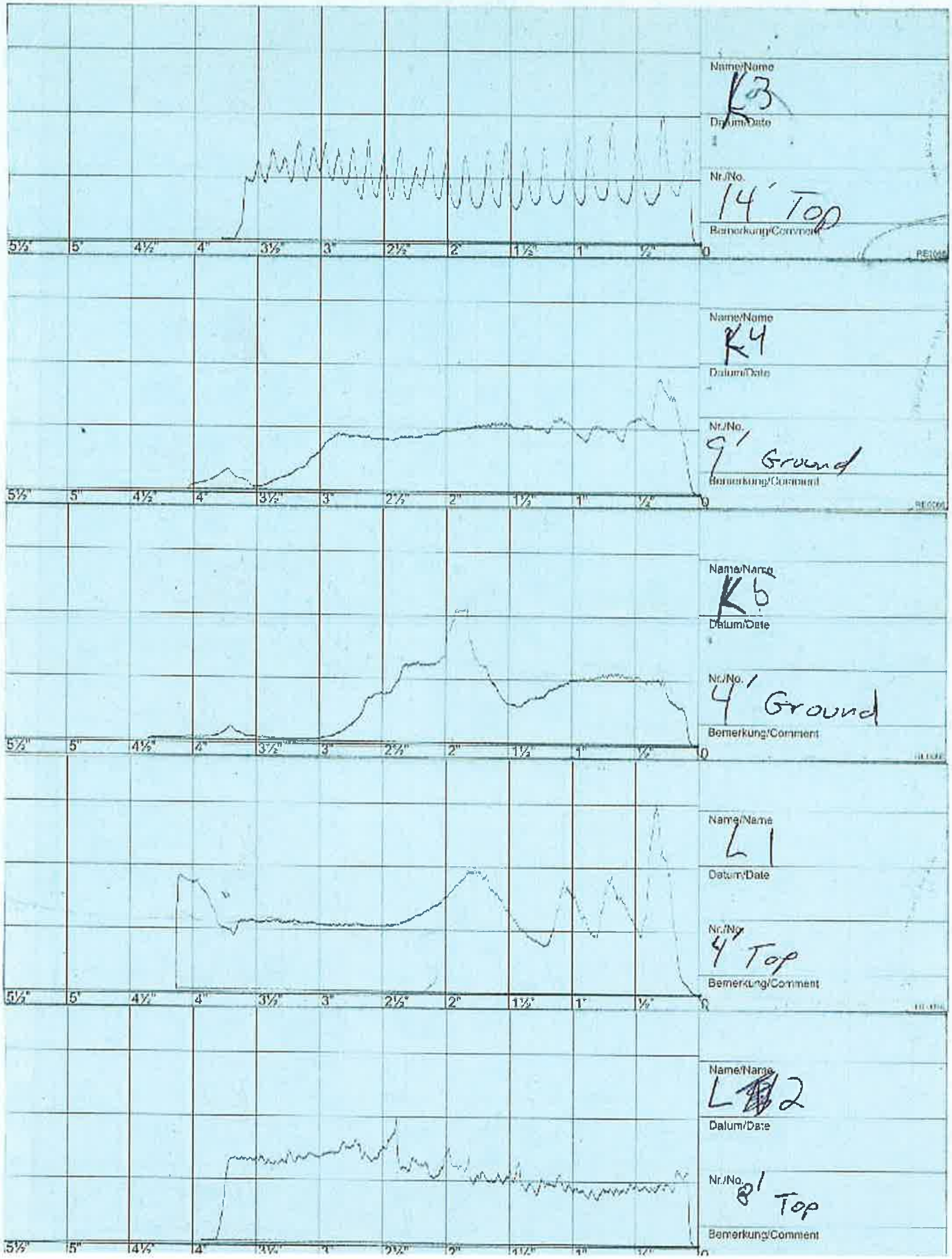

Name/Name
J2
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

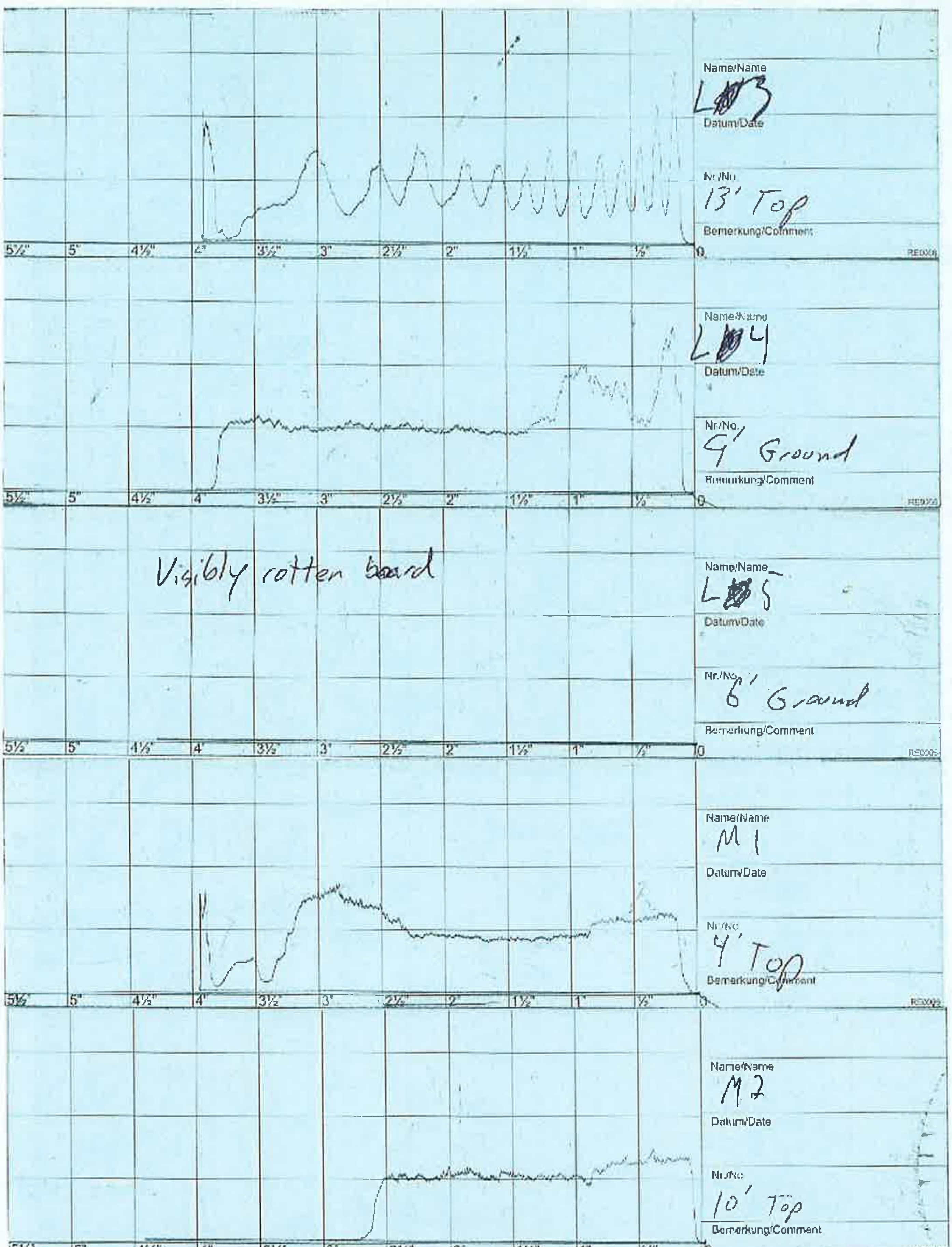

Name/Name
J3
Datum/Date
Nr./No.
15' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

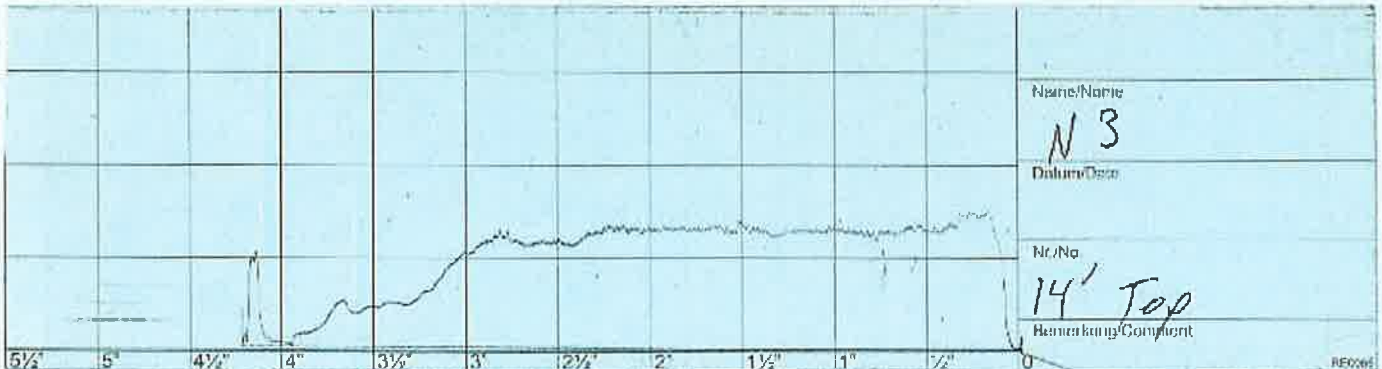

Name/Name
J4
Datum/Date
Nr./No.
8'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

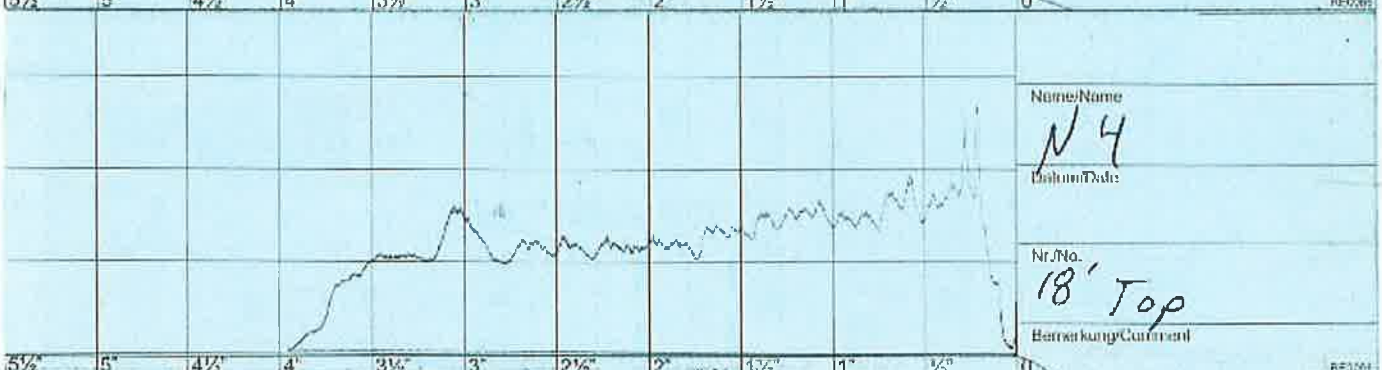

Name/Name
K1
Datum/Date
Nr./No.
4' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

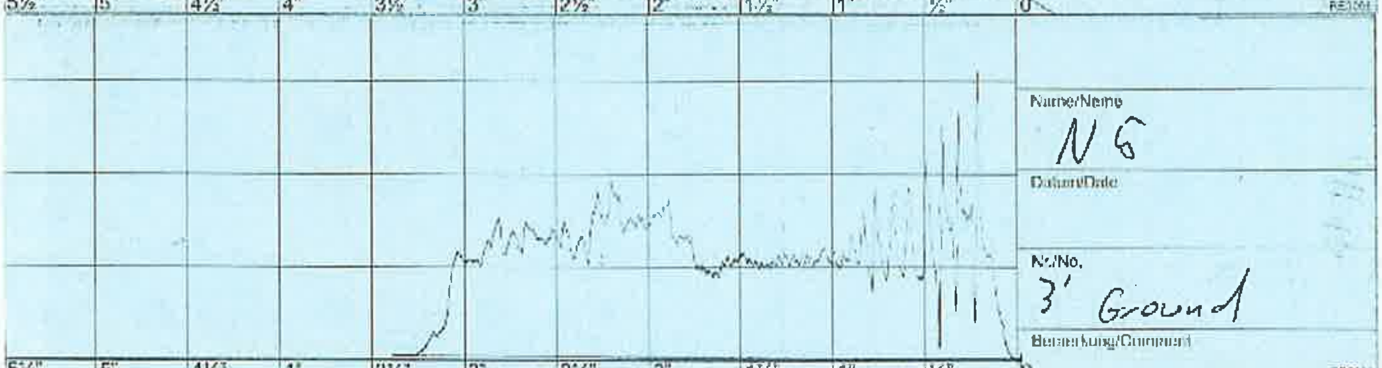

Name/Name
K2
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment

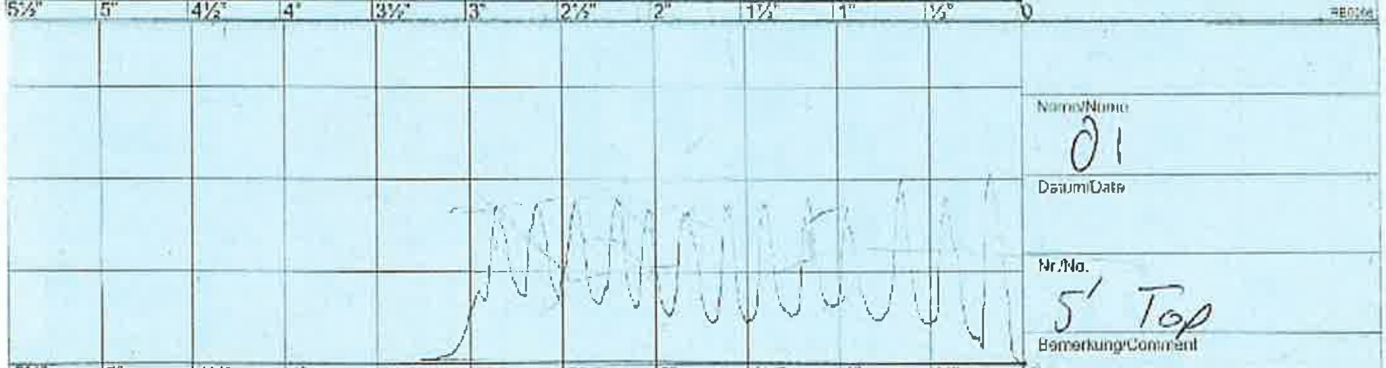

Name/Name
K3
Datum/Date
Nr./No.
14' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
K4
Datum/Date
Nr./No.
9' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
K5
Datum/Date
Nr./No.
4' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
L1
Datum/Date
Nr./No.
4' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
L2
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

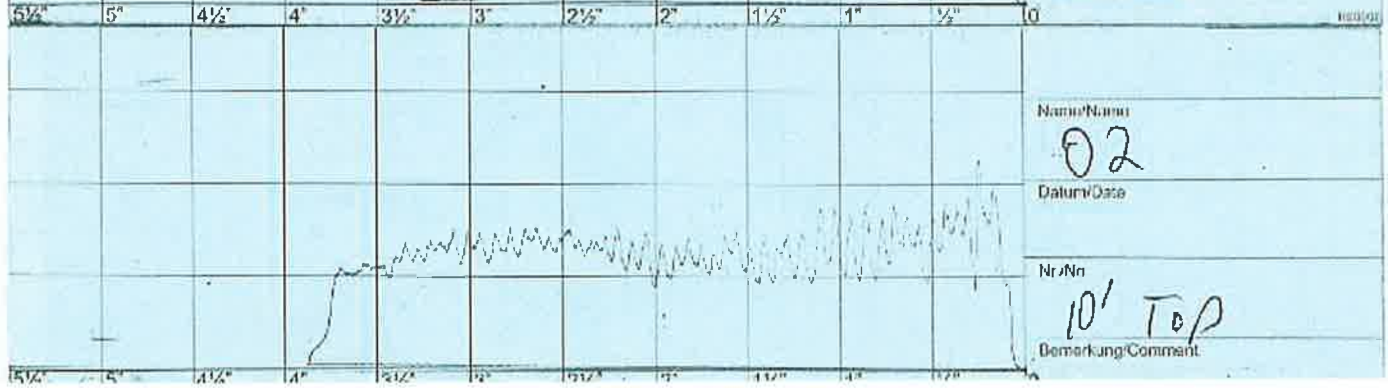

Name/Name
L3
Datum/Date
Nr/No.
13' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
L4
Datum/Date
Nr/No.
9' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Visibly rotten board
Name/Name
L5
Datum/Date
Nr/No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
M1
Datum/Date
Nr/No.
4' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
M2
Datum/Date
Nr/No.
10' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

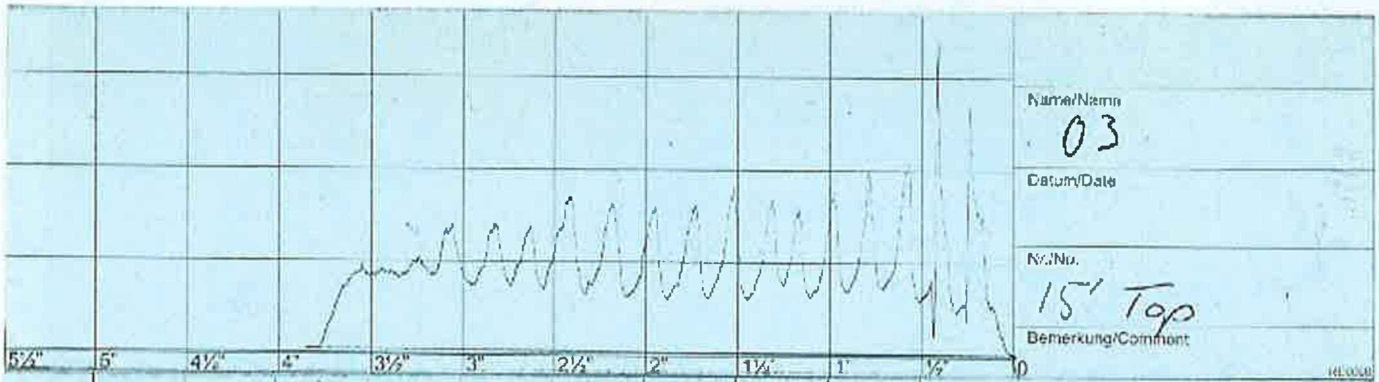

Name/Name
N 3
Datum/Date
Nr./No.
14' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

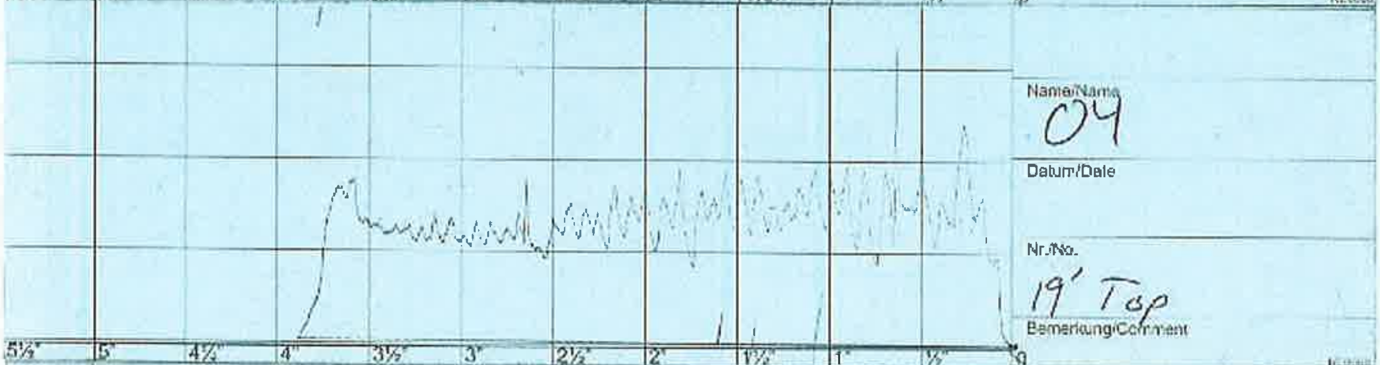

Name/Name
N 4
Datum/Date
Nr./No.
18' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

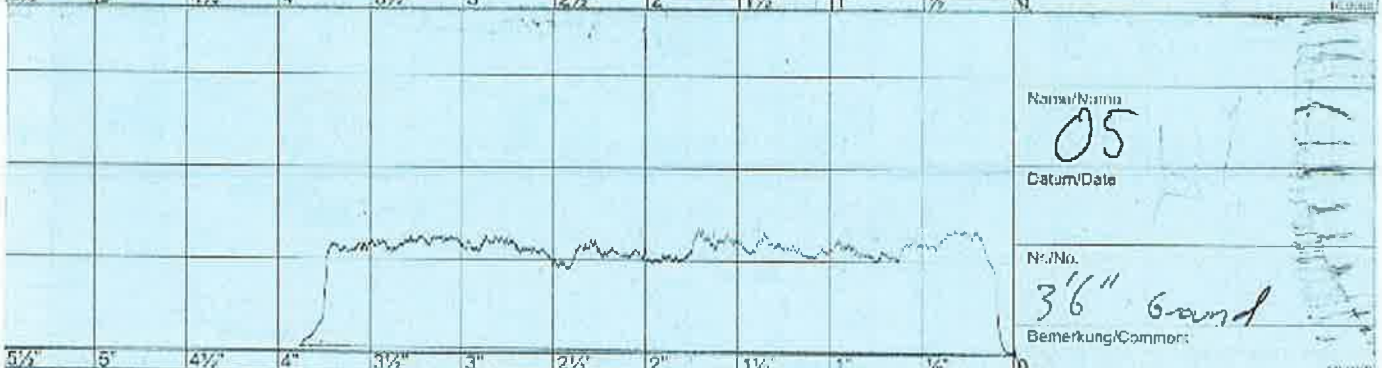

Name/Name
N 6
Datum/Date
Nr./No.
3' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

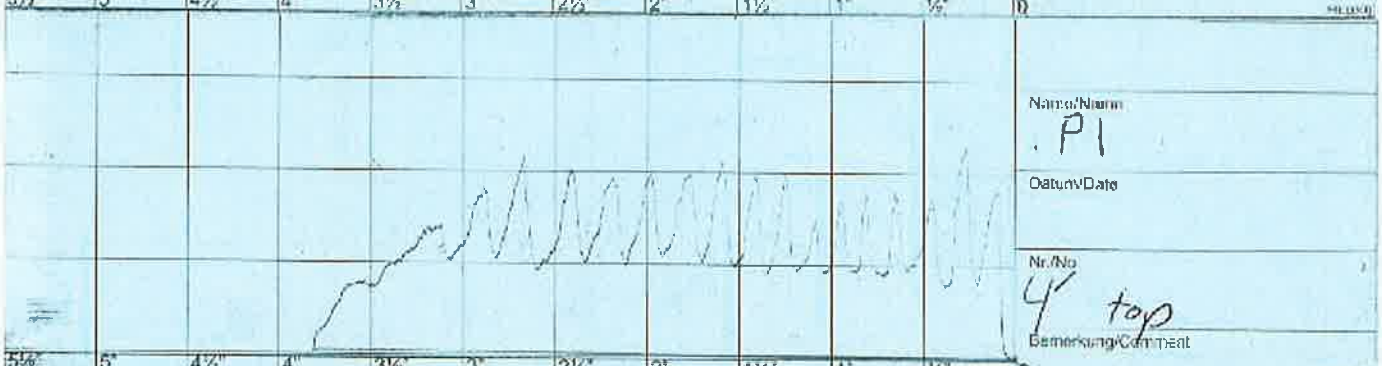

Name/Name
O 1
Datum/Date
Nr./No.
5' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

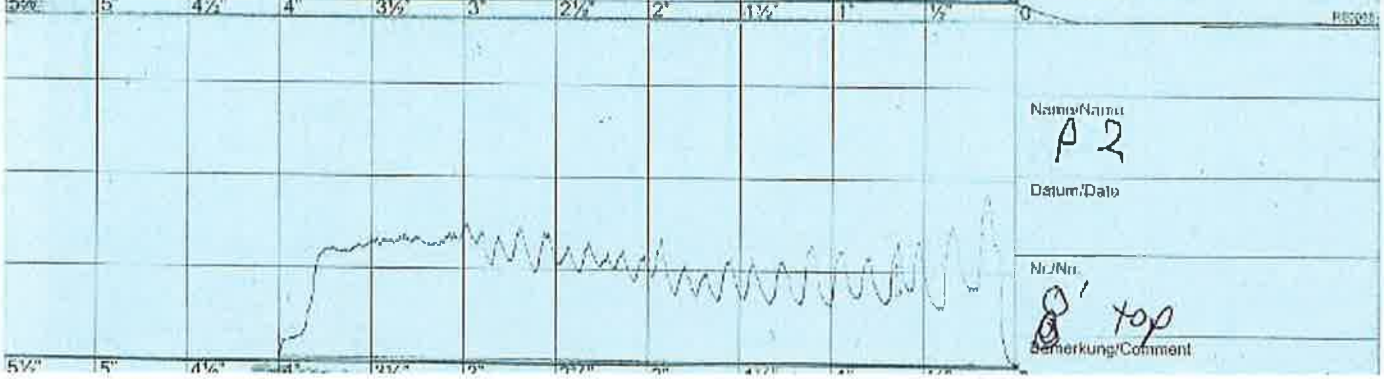

Name/Name
O 2
Datum/Date
Nr./No.
10' Top
Bemerkung/Comment

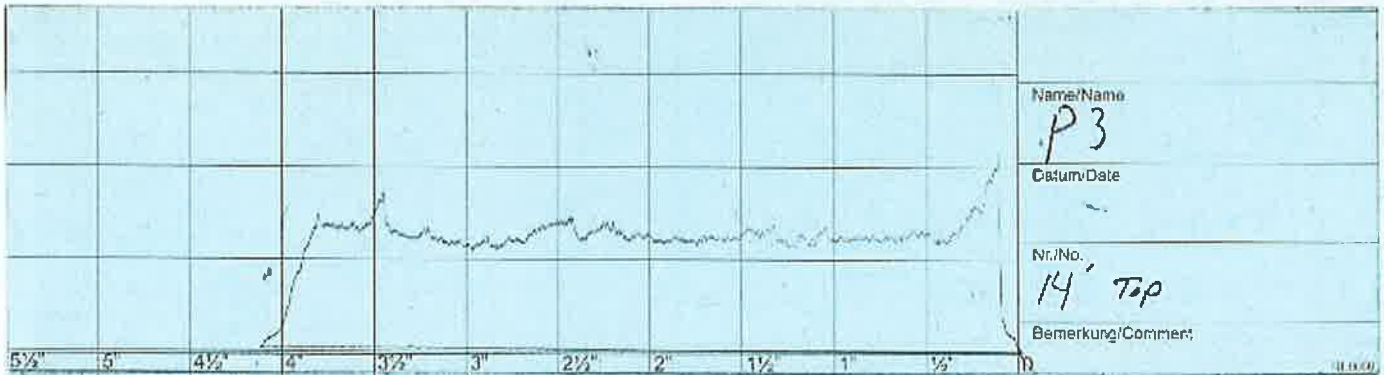

Name/Name
03
Datum/Date
Nr./No.
15' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

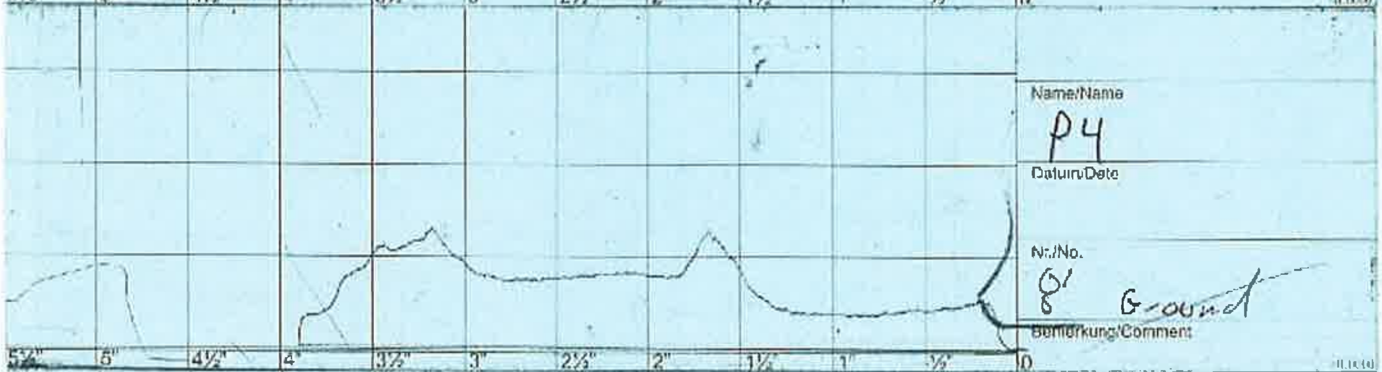

Name/Name
04
Datum/Date
Nr./No.
19' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

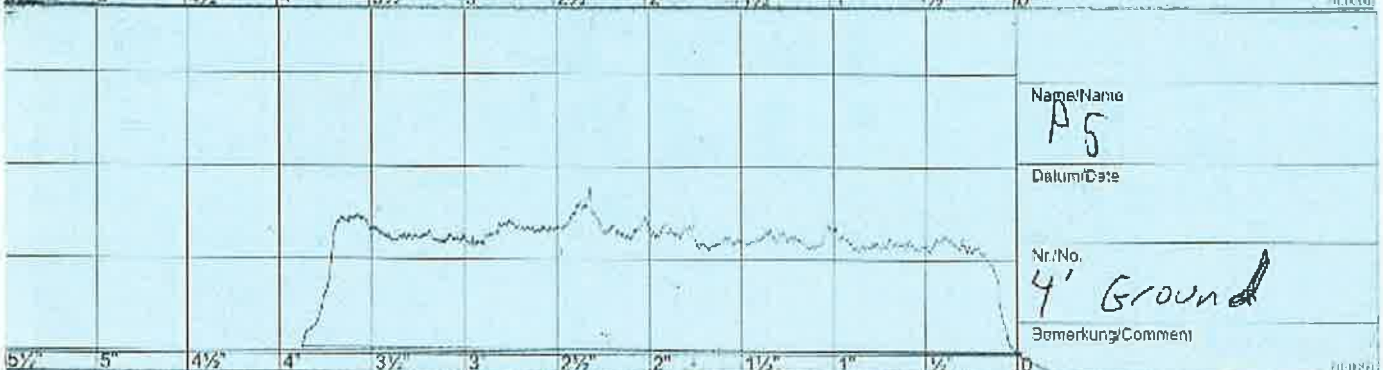

Name/Name
05
Datum/Date
Nr./No.
3'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

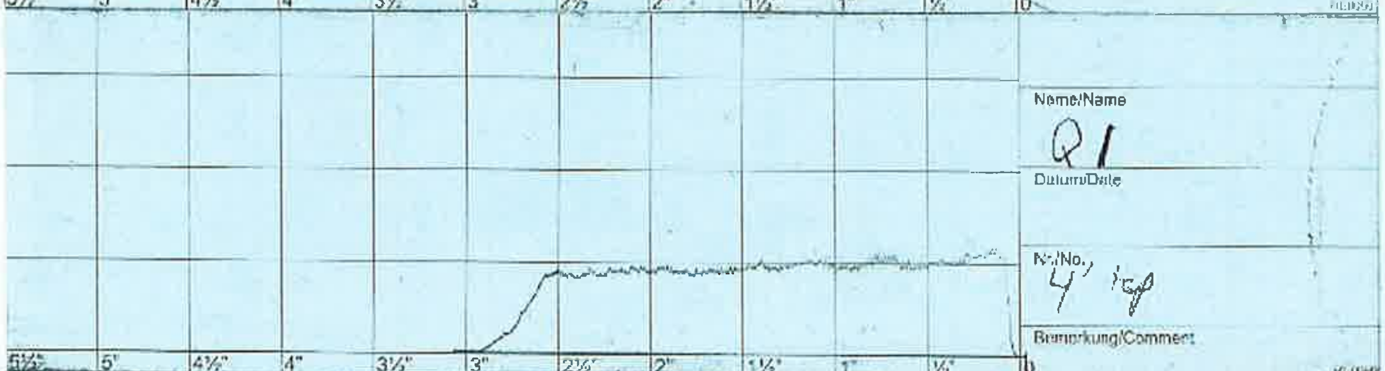

Name/Name
P1
Datum/Date
Nr./No.
4' top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

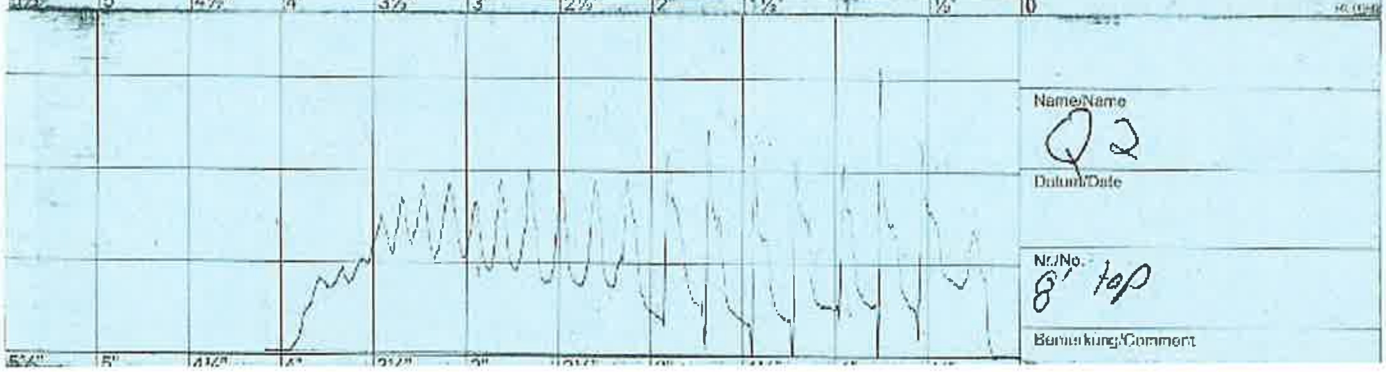

Name/Name
P2
Datum/Date
Nr./No.
8' top
Bemerkung/Comment
5½" 5" 4½"

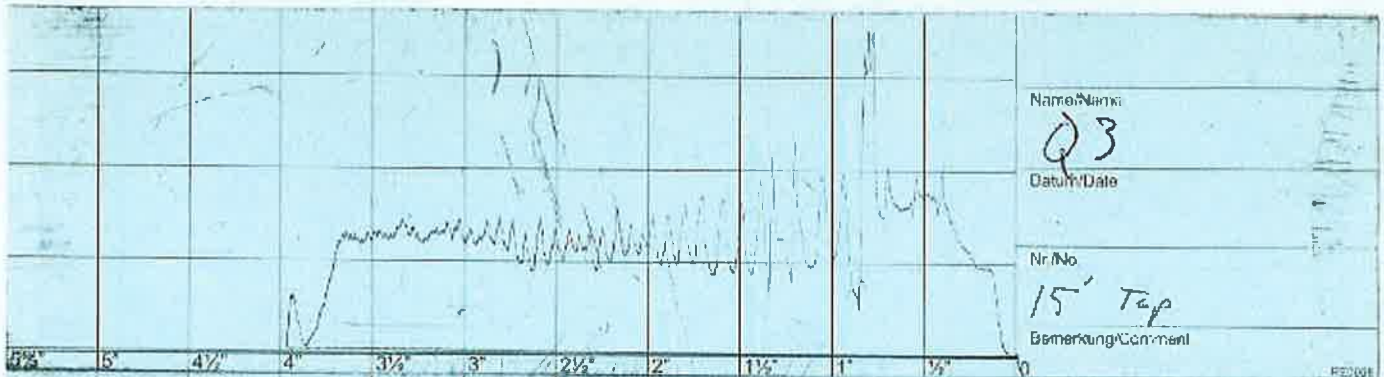

Name/Name
P3
Datum/Date
Nr./No.
14' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

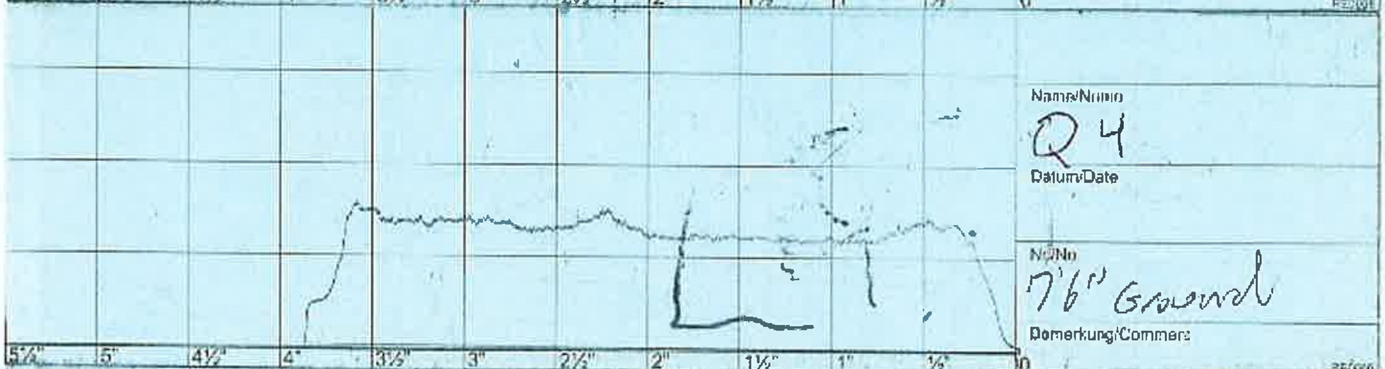

Name/Name
P4
Datum/Date
Nr./No.
8' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

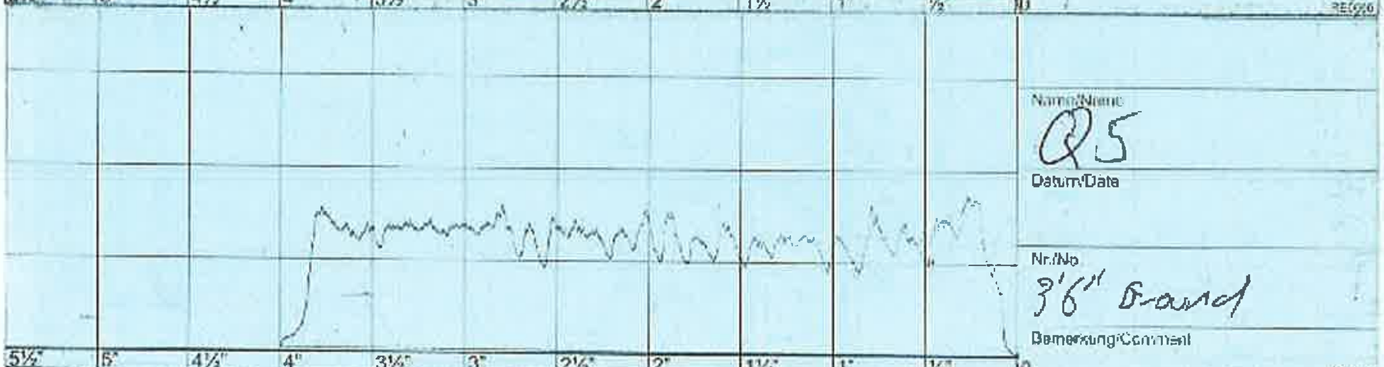

Name/Name
P5
Datum/Date
Nr./No.
4' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3 2½" 2" 1½" 1" ½" 0

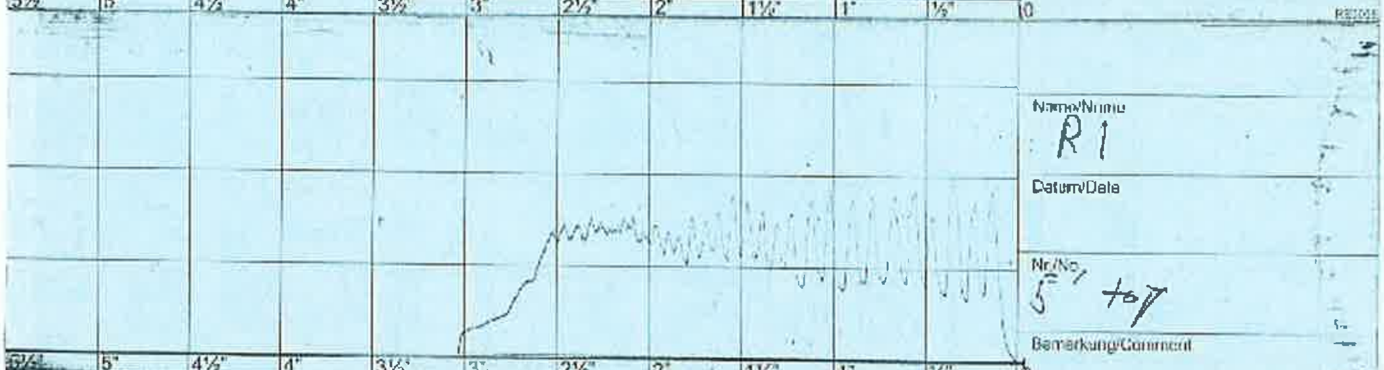

Name/Name
Q1
Datum/Date
Nr./No.
4' top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

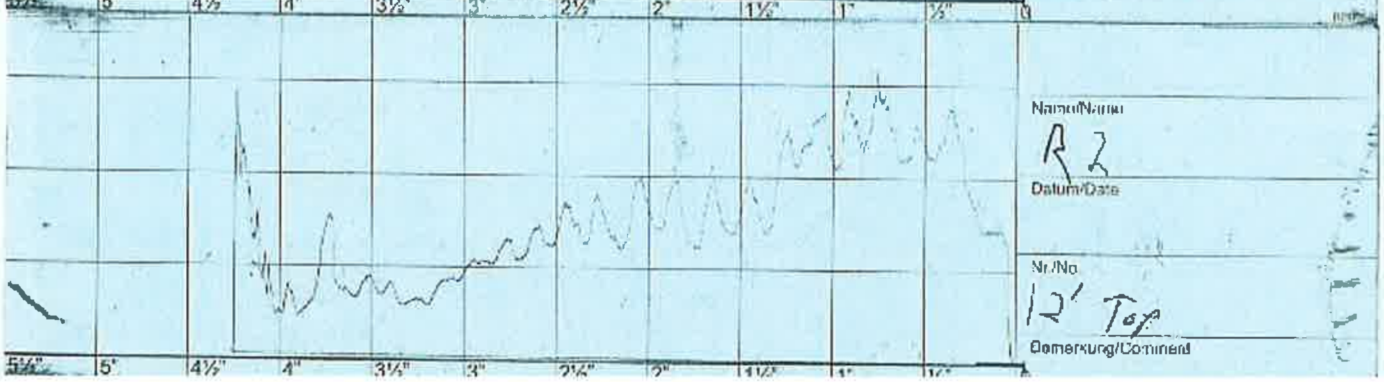

Name/Name
Q2
Datum/Date
Nr./No.
8' top
Bemerkung/Comment

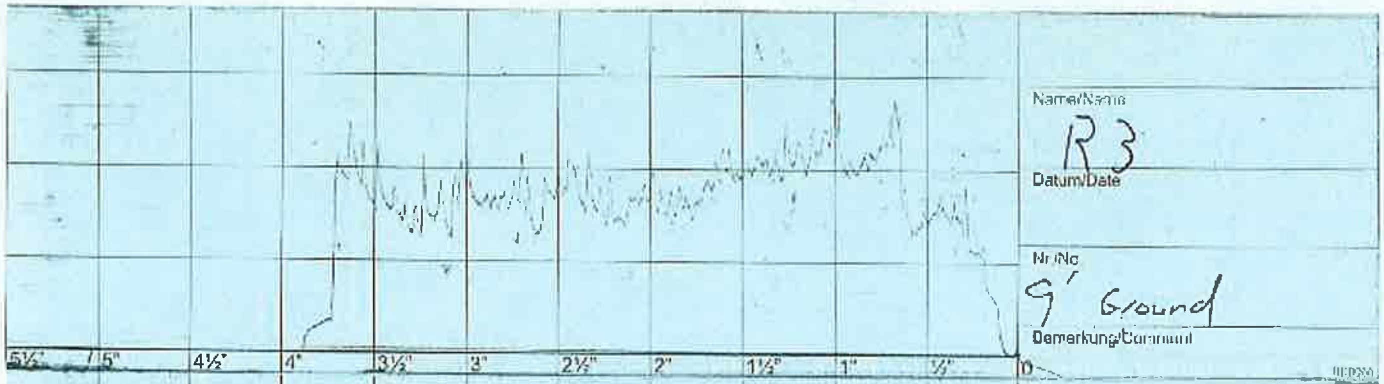

Name/Name
Q3
Datum/Date
Nr./No
15' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

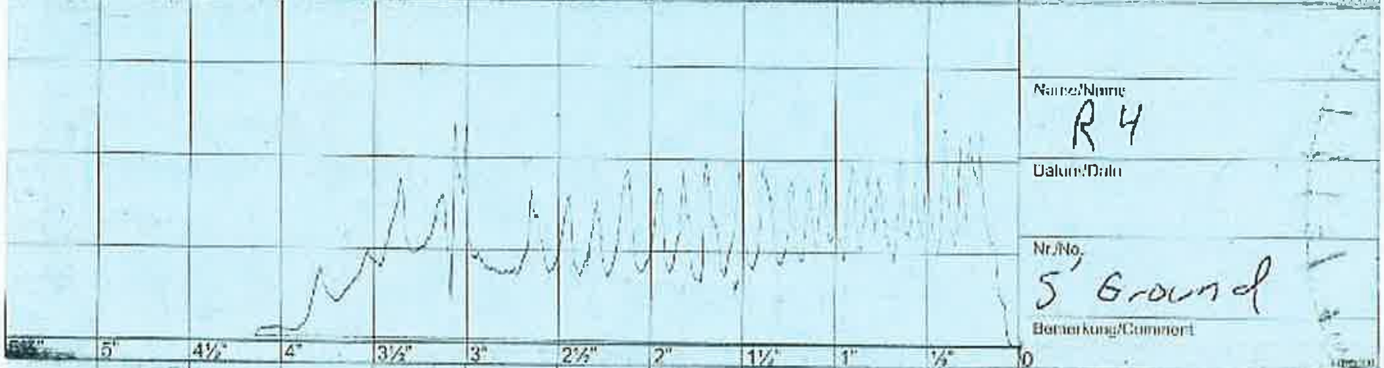

Name/Name
Q4
Datum/Date
Nr./No
7'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

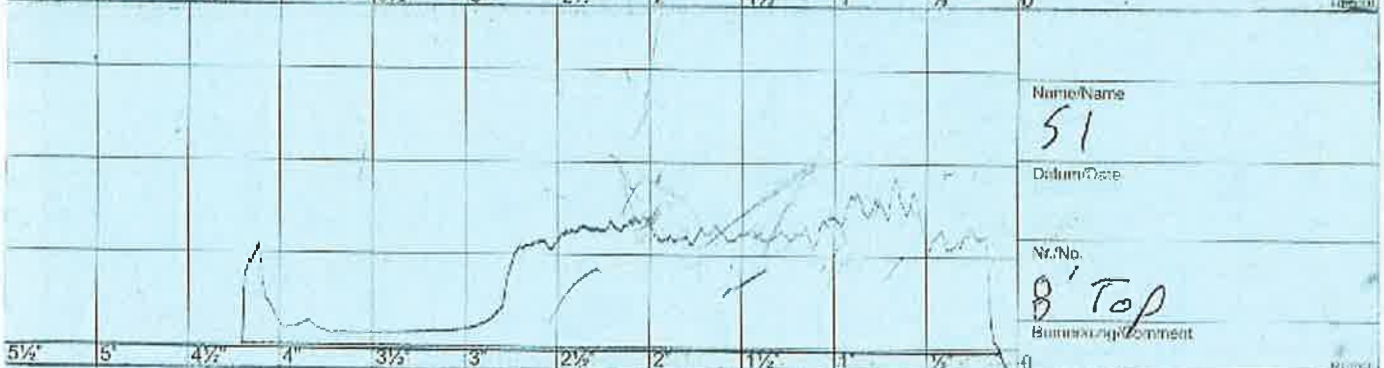

Name/Name
Q5
Datum/Date
Nr./No
3'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

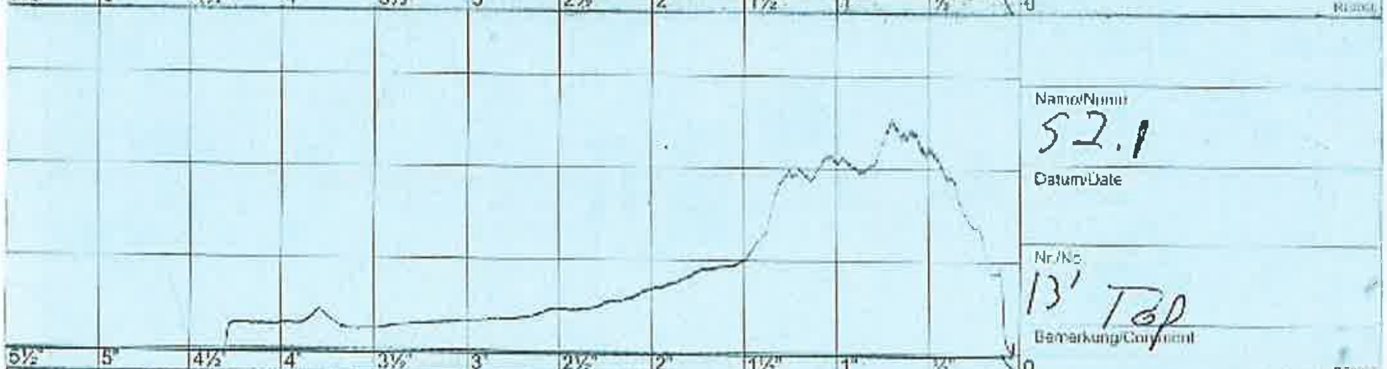

Name/Name
R1
Datum/Date
Nr./No
5' top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

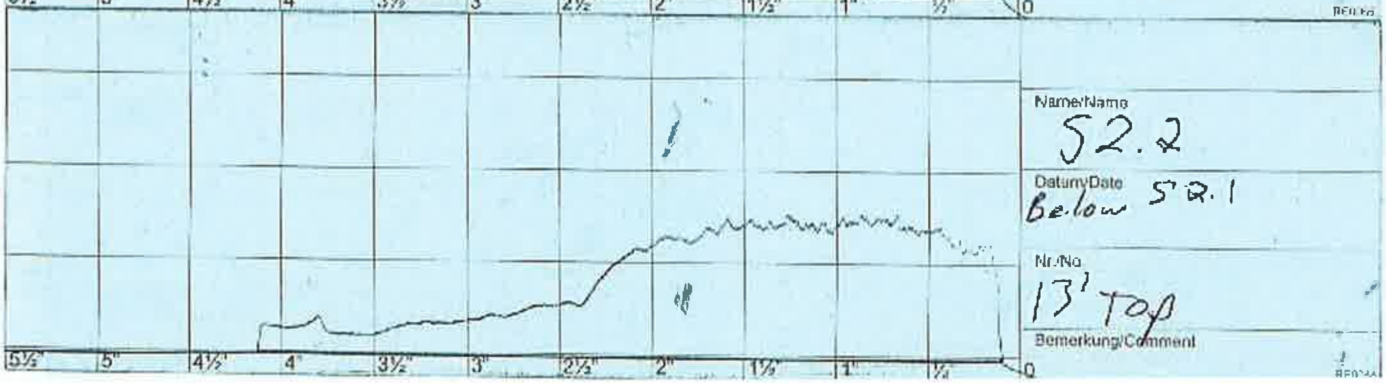

Name/Name
R2
Datum/Date
Nr./No
12' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½"

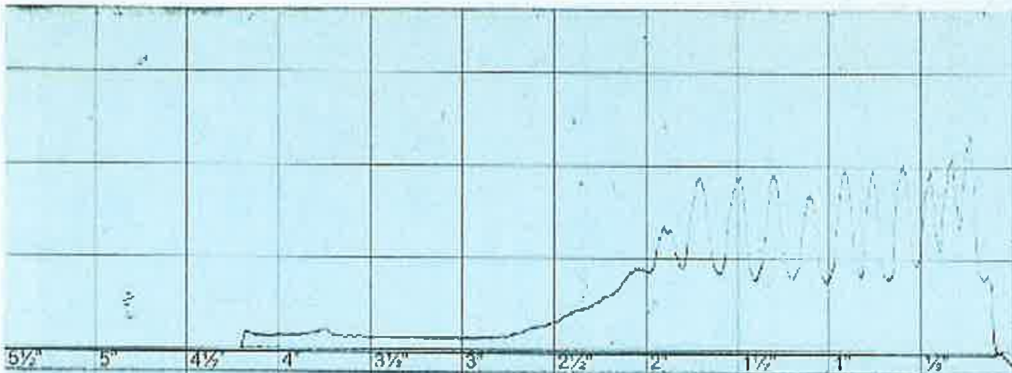

Name/Name
R3
Datum/Date
Nr./No.
9' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
R4
Datum/Date
Nr./No.
5' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
S1
Datum/Date
Nr./No.
8' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
S2.1
Datum/Date
Nr./No.
13' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
S2.2
Datum/Date
Below S2.1
Nr./No.
13' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

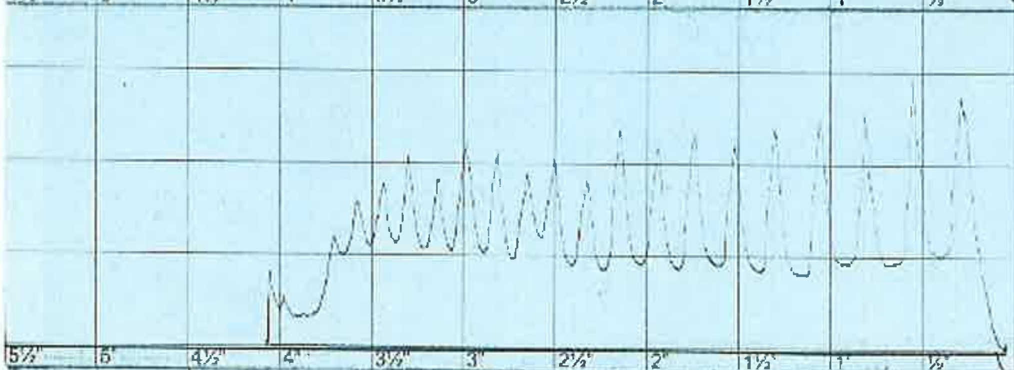


Name/Name
S2.3

Datum/Date
above
S2.1

Nr./No.
13' Top

Bemerkung/Comment

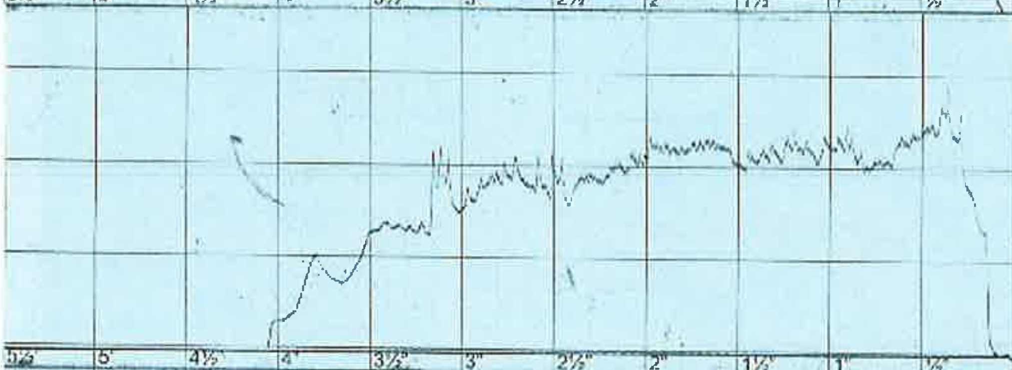


Name/Name
S3

Datum/Date

Nr./No.
12' Ground

Bemerkung/Comment

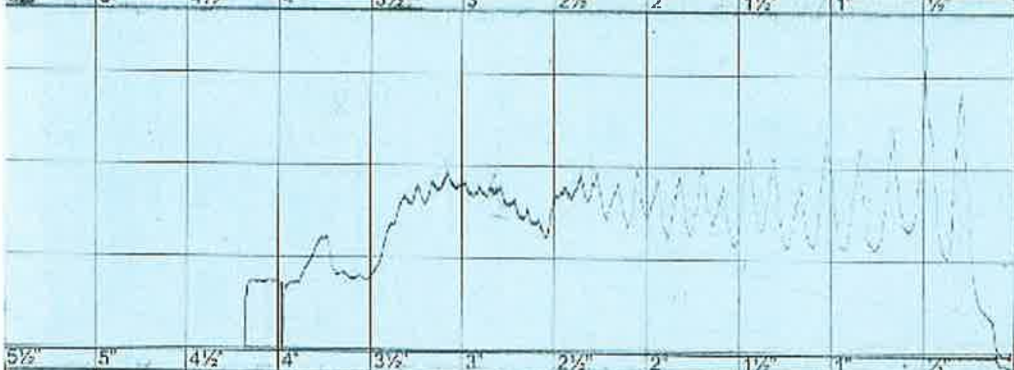


Name/Name
S4

Datum/Date

Nr./No.
6'6" Ground

Bemerkung/Comment

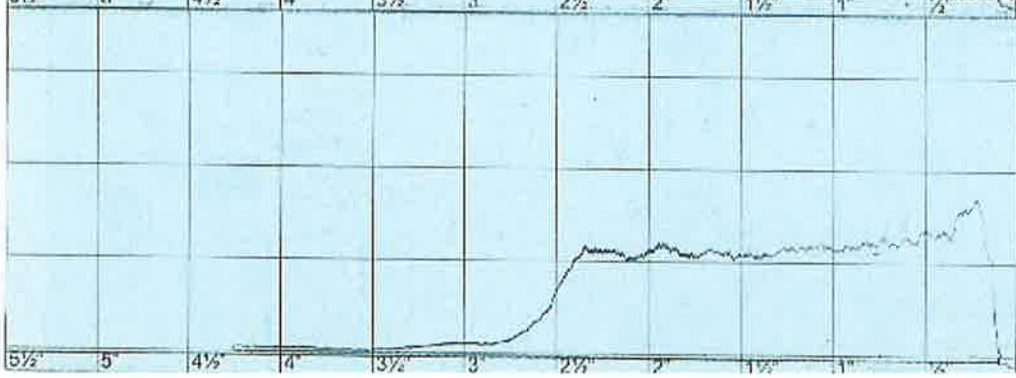


Name/Name
T1

Datum/Date

Nr./No.
6' Ground

Bemerkung/Comment

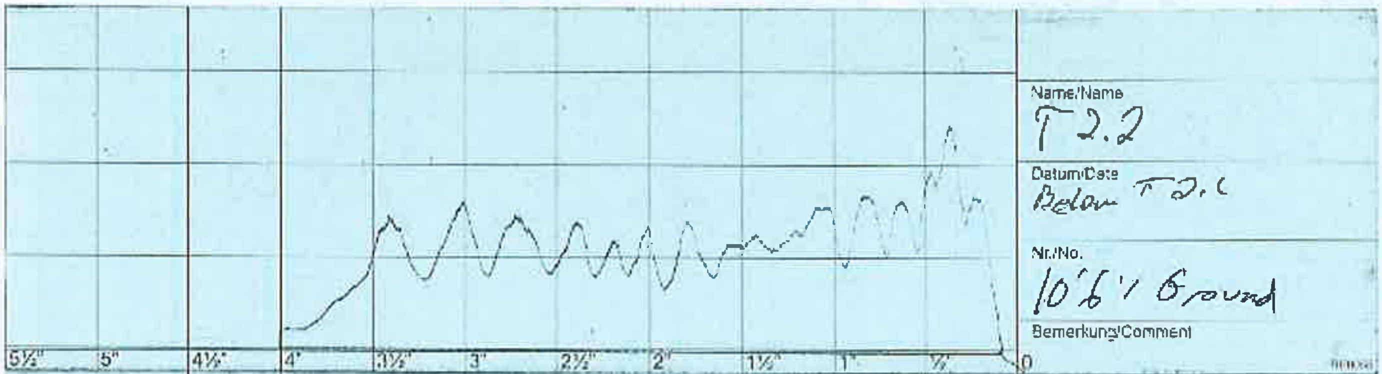


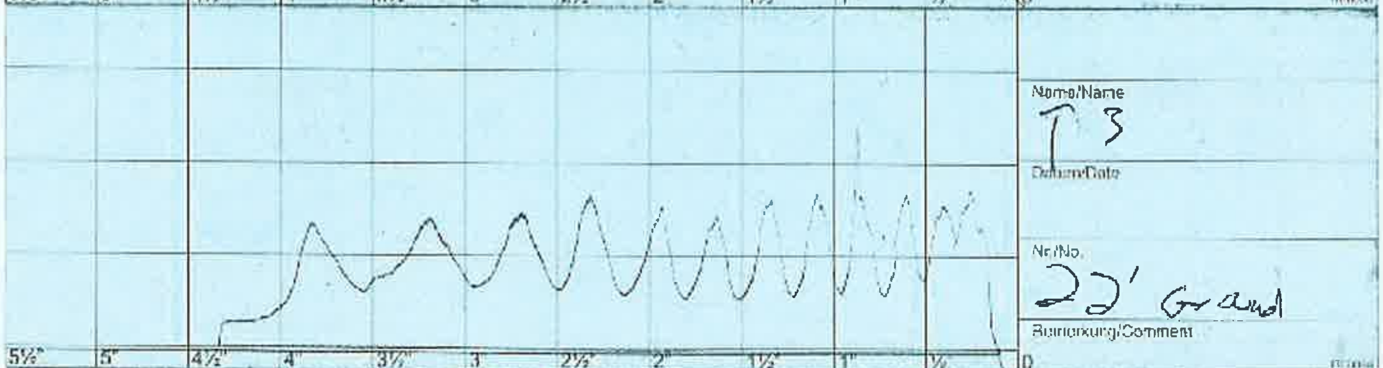
Name/Name
T2.1

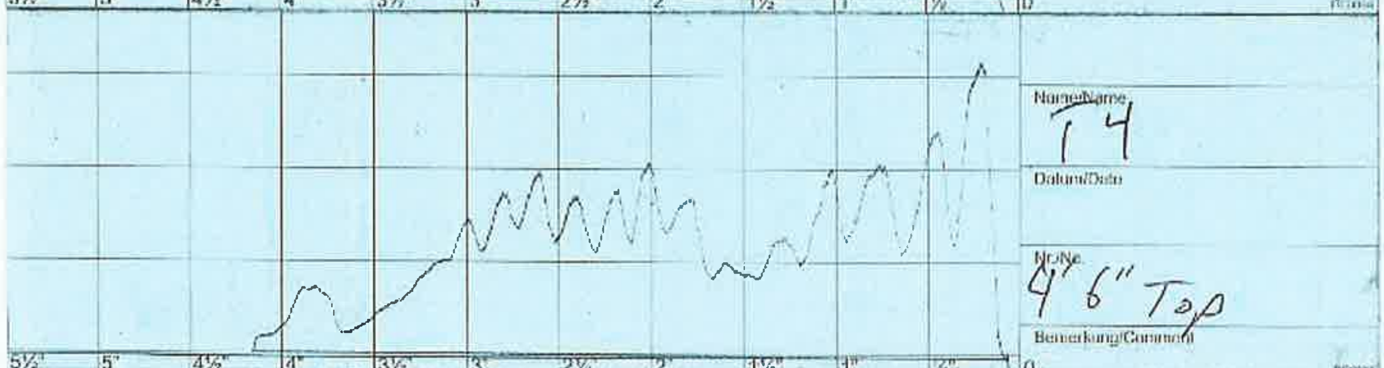
Datum/Date

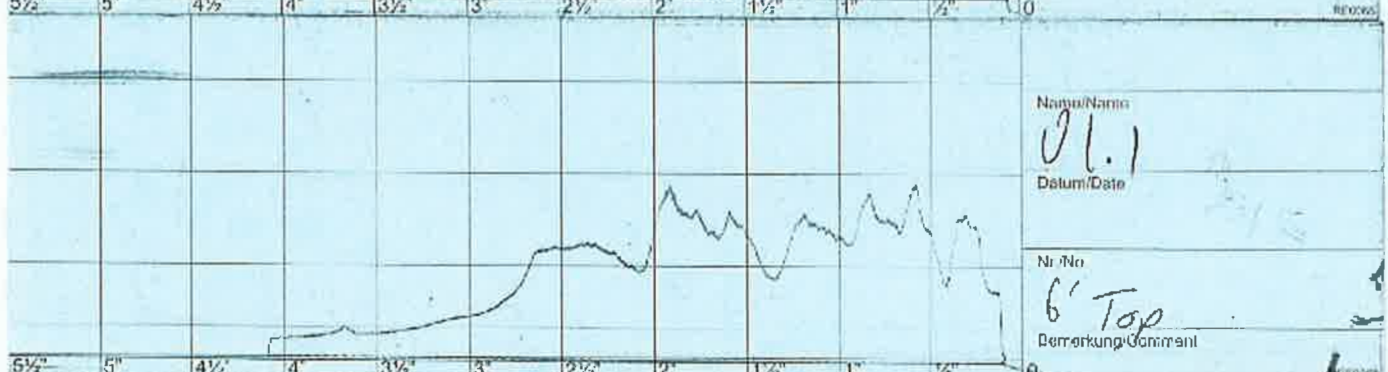
Nr./No.
10'6" Ground

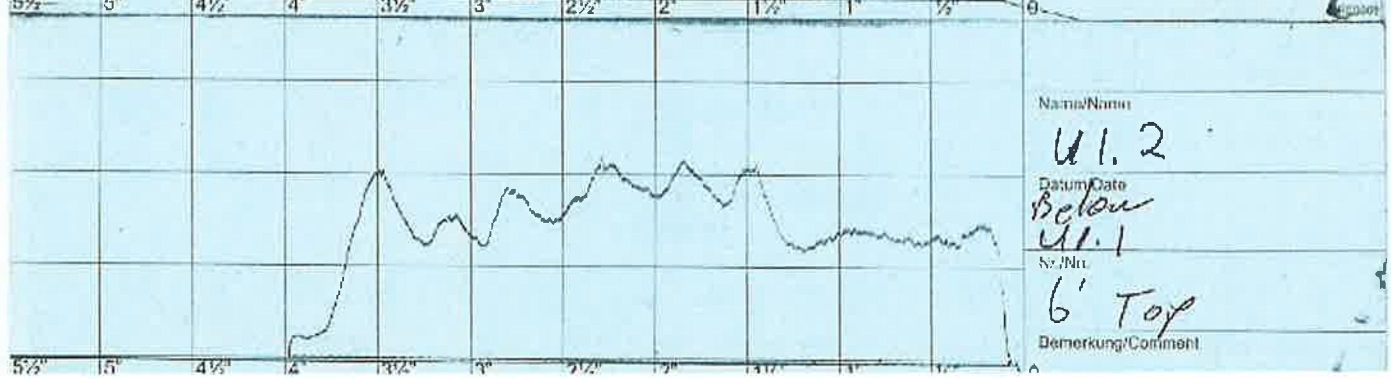
Bemerkung/Comment

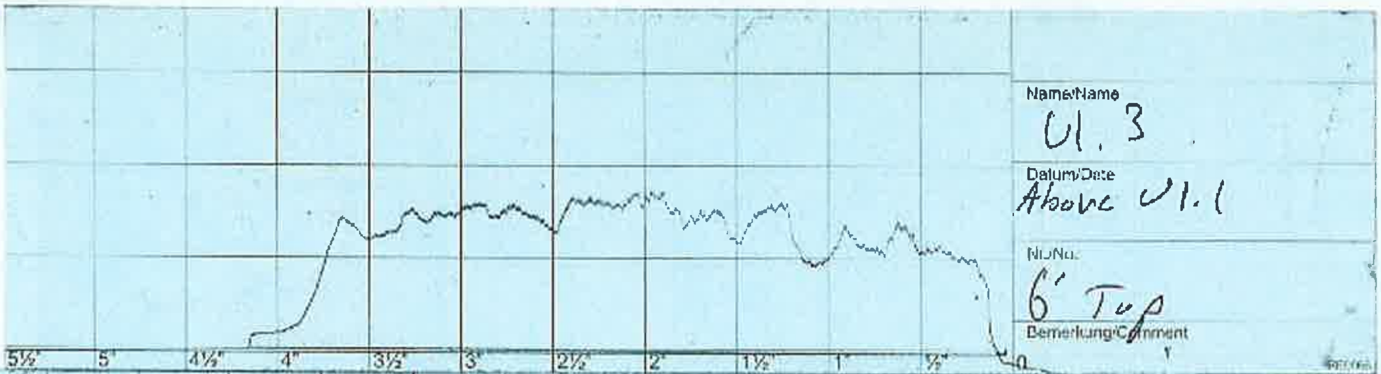

Name/Name
T 2.2
Datum/Date
Below T 2.1
Nr./No.
10'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

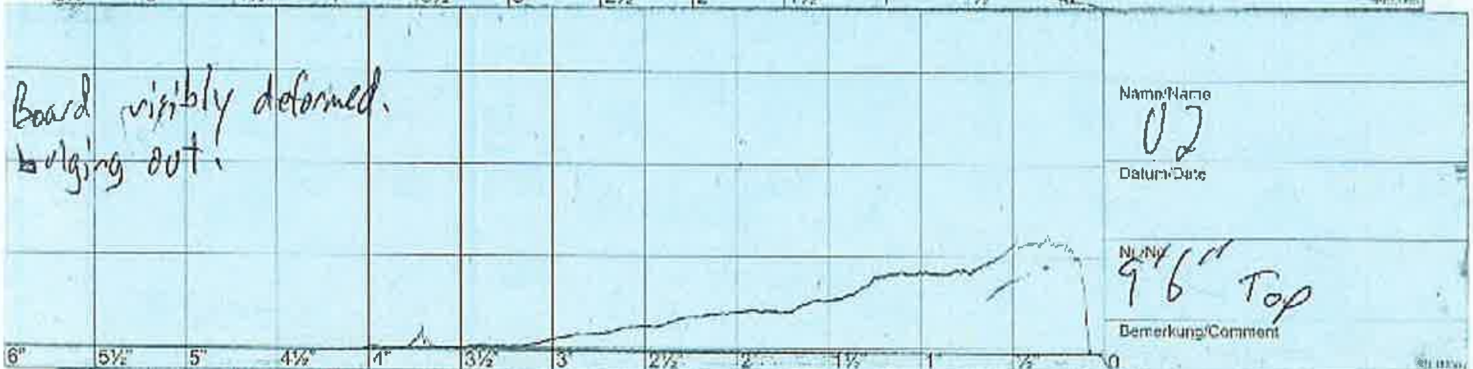

Name/Name
T 3
Datum/Date
Nr./No.
22' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

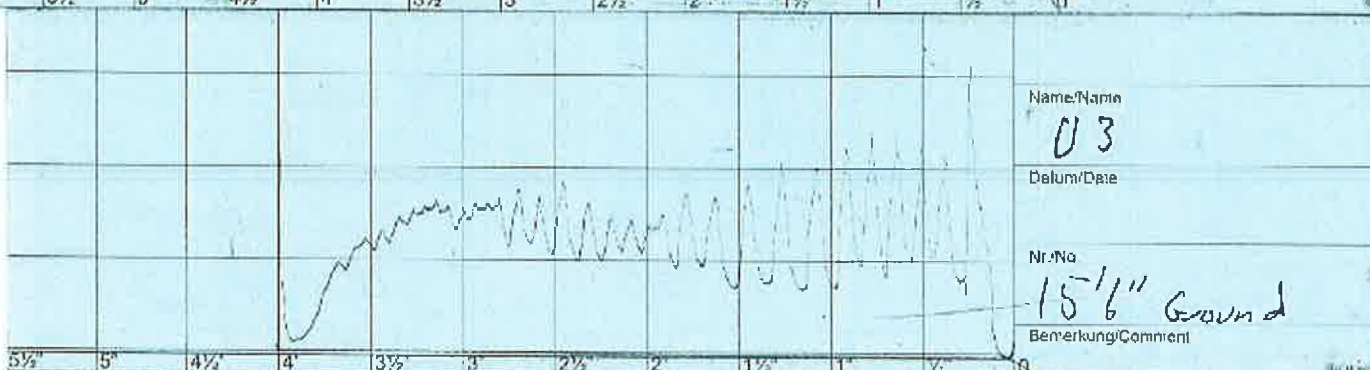

Name/Name
T 4
Datum/Date
Nr./No.
4' 6" Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

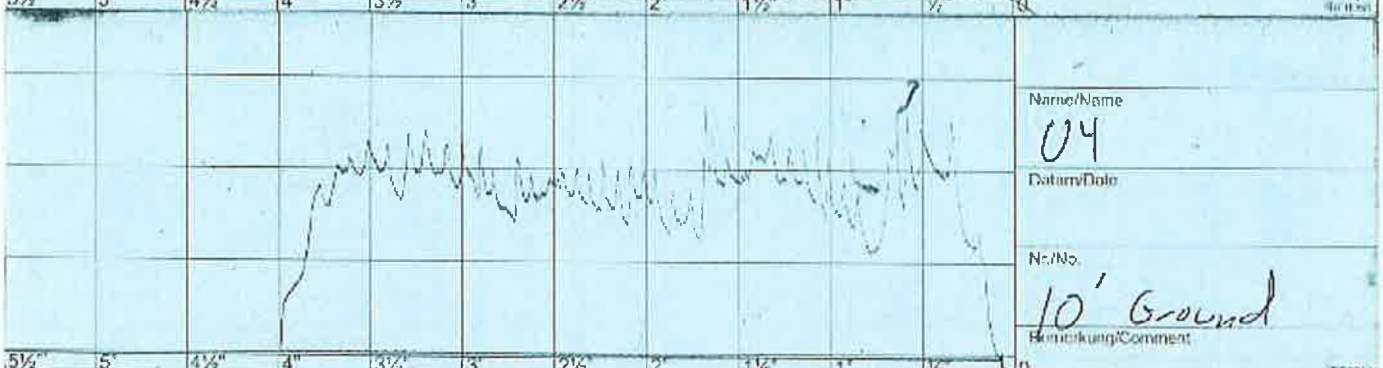

Name/Name
U 1.1
Datum/Date
Nr./No.
6' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

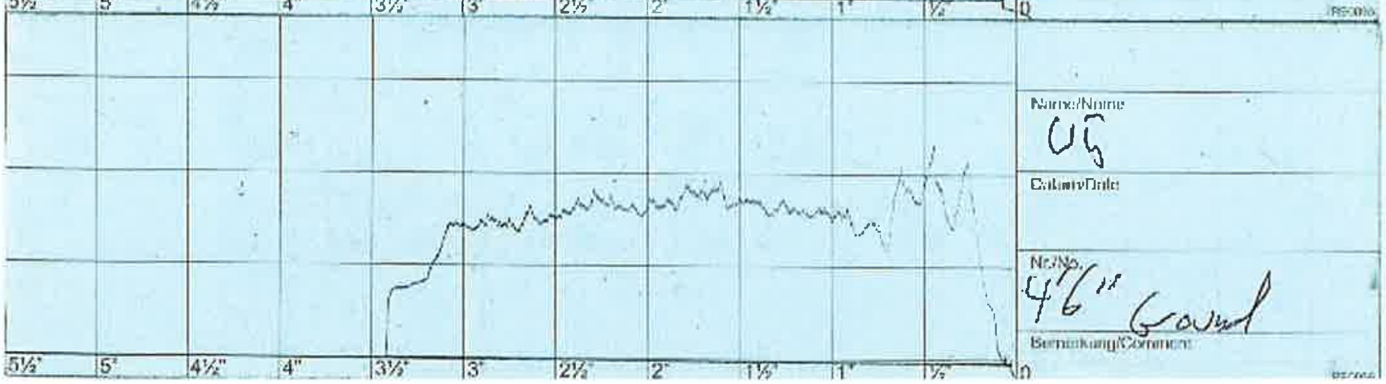

Name/Name
U 1.2
Datum/Date
Below U 1.1
Nr./No.
6' Top
Bemerkung/Comment

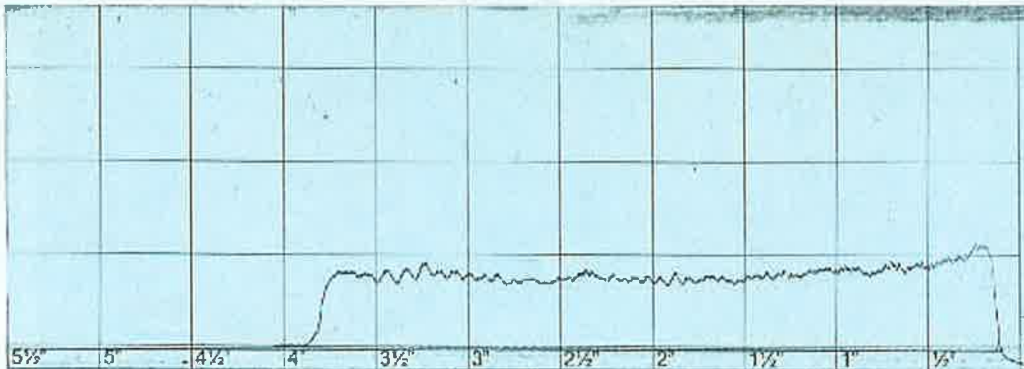

Name/Name
U1.3
Datum/Date
Above U1.1
Nr/No
6' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Board visibly deformed.
bulging out!
Name/Name
U2
Datum/Date
Nr/No
9'6" Top
Bemerkung/Comment
6" 5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

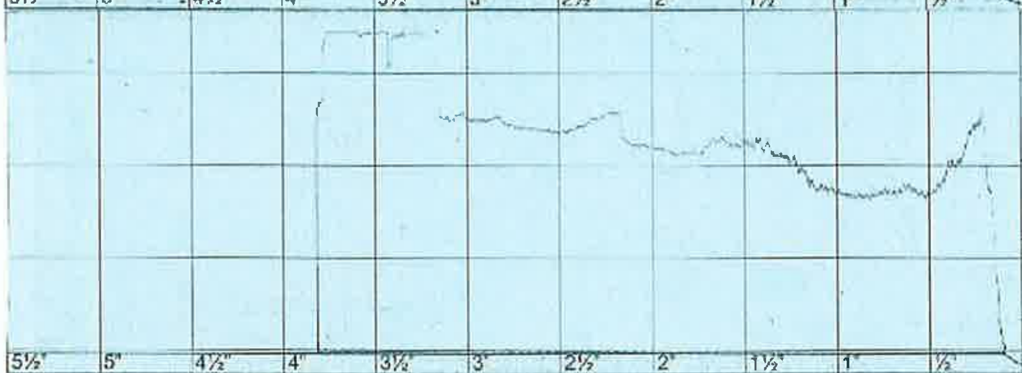

Name/Name
U3
Datum/Date
Nr/No
15'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
U4
Datum/Date
Nr/No
10' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

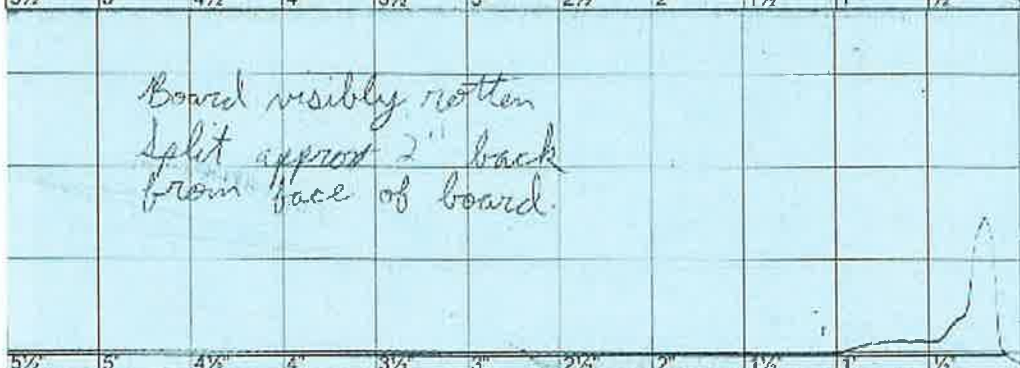

Name/Name
U5
Datum/Date
Nr/No
4'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0



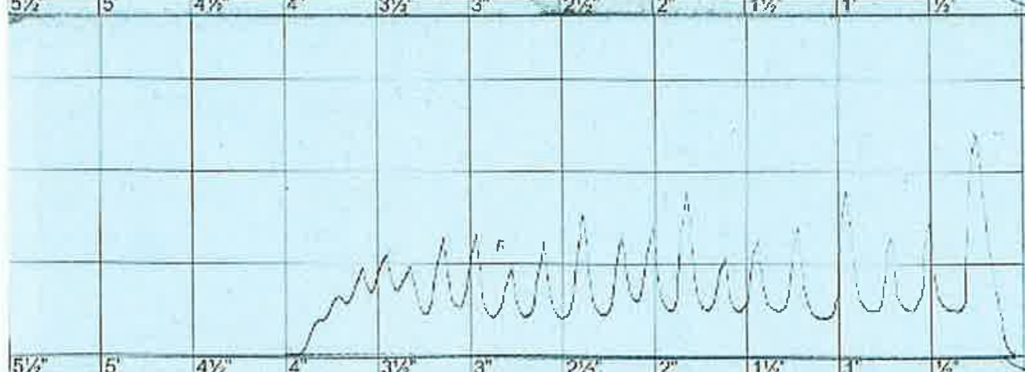
Name/Name
V1
Datum/Date
Nr./No.
7' Ground
Bemerkung/Comment



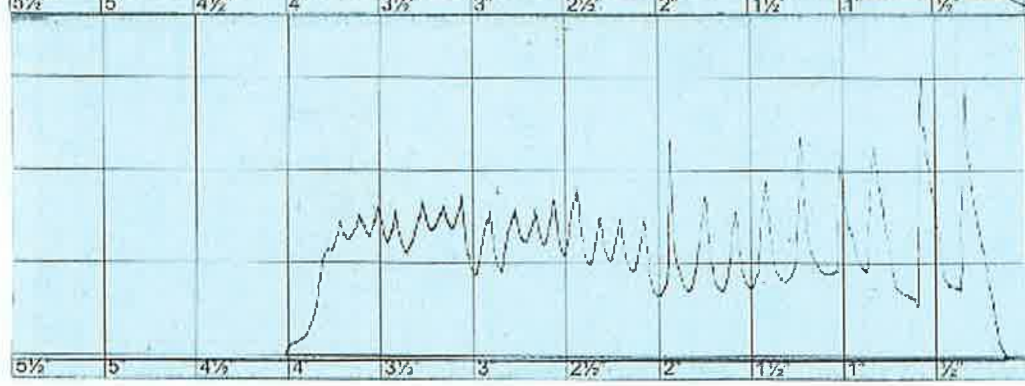
Name/Name
V2
Datum/Date
Nr./No.
11' Ground
Bemerkung/Comment



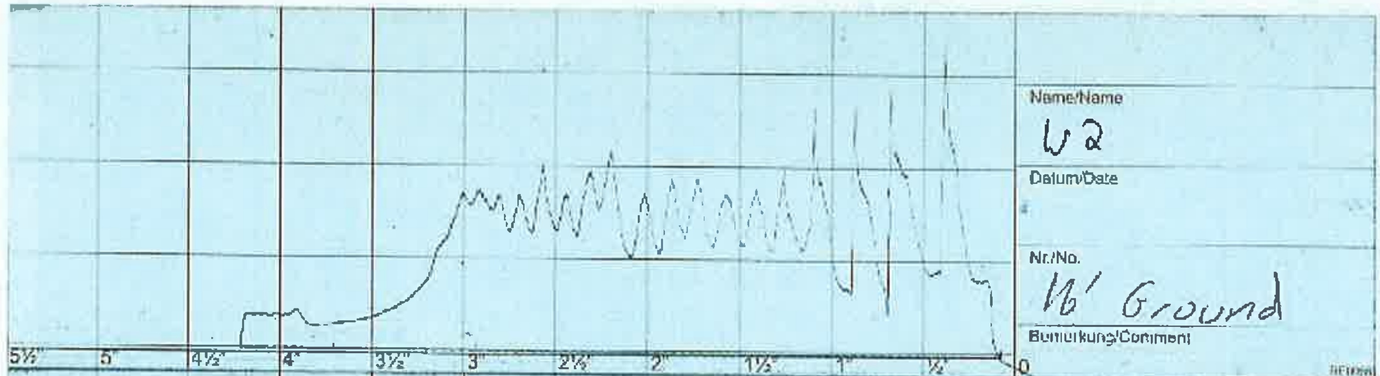
Name/Name
V3
Datum/Date
Nr./No.
16' Ground
Bemerkung/Comment

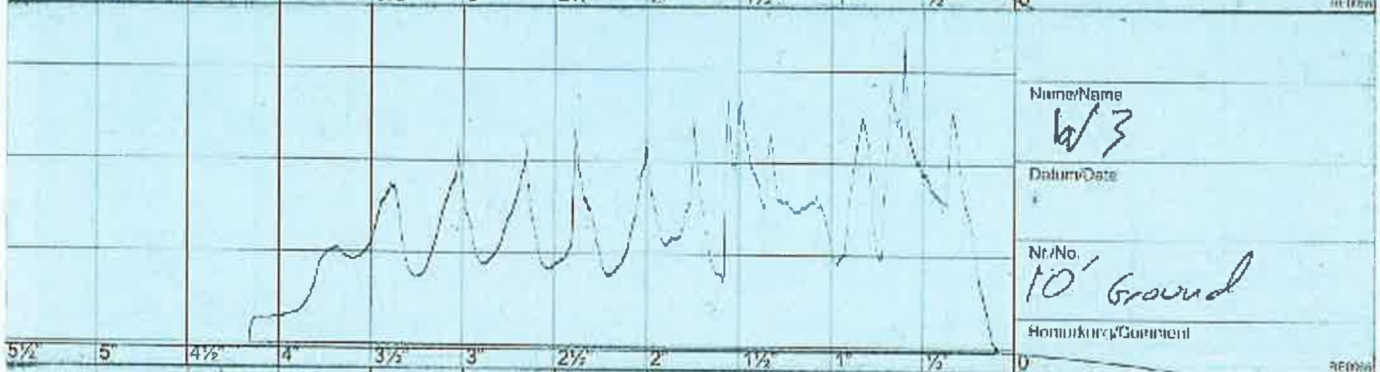


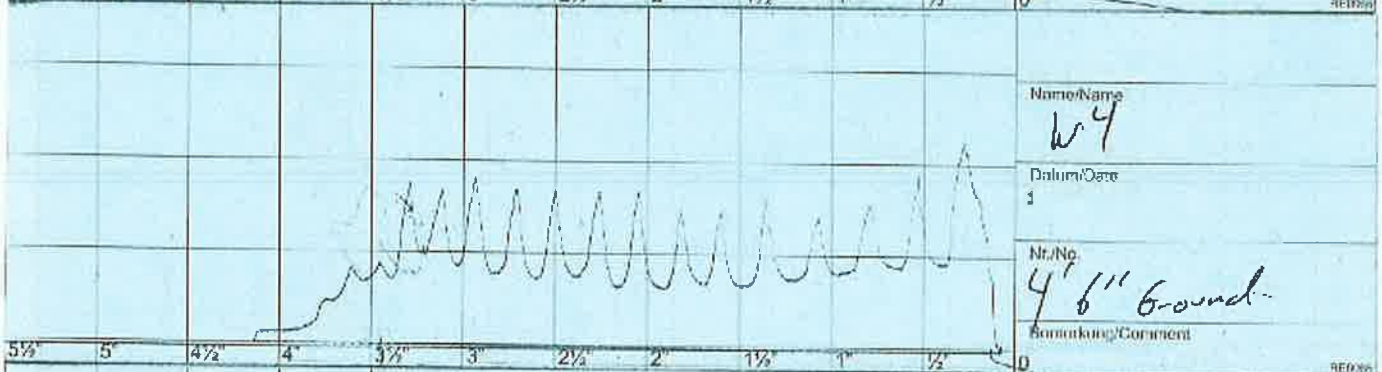
Name/Name
V4
Datum/Date
Nr./No.
6'6" Top
Bemerkung/Comment

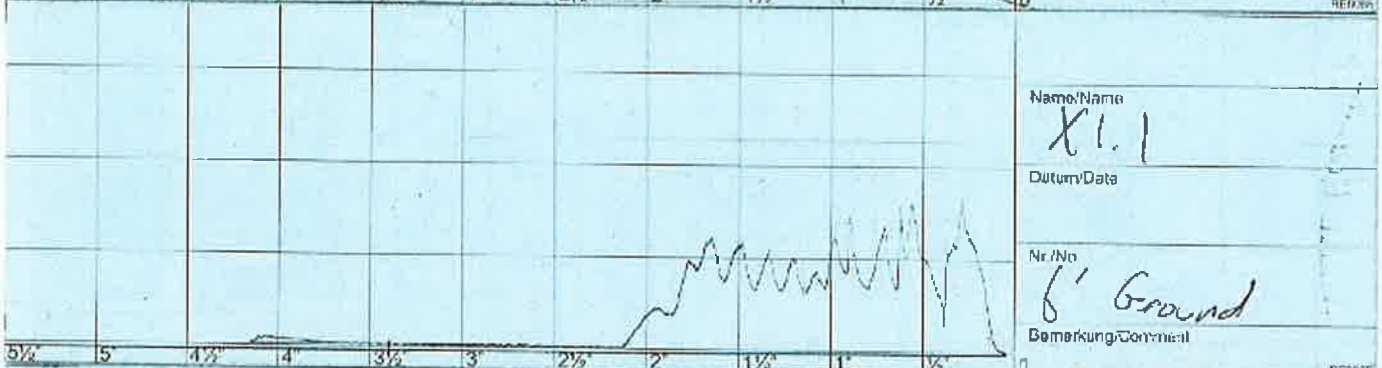


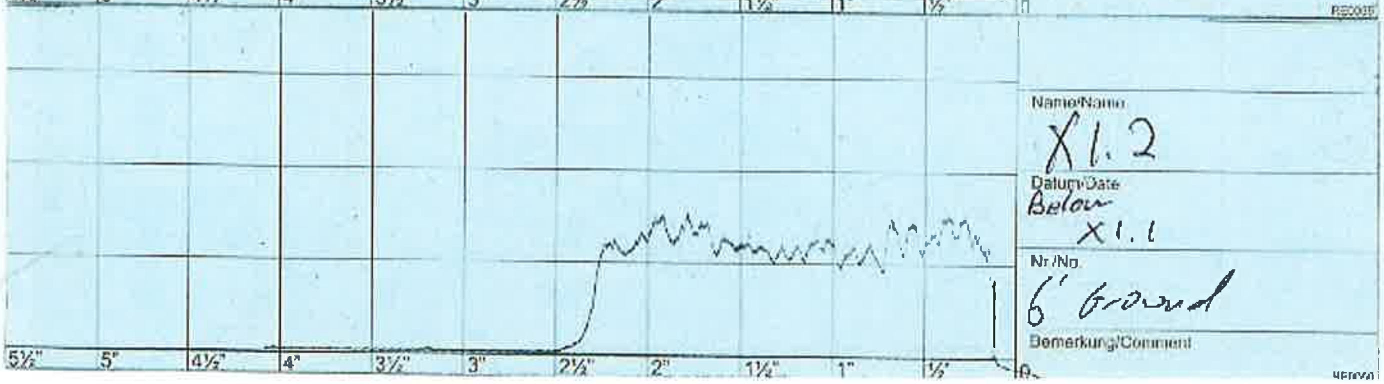
Name/Name
W1
Datum/Date
Nr./No.
6' Top
Bemerkung/Comment

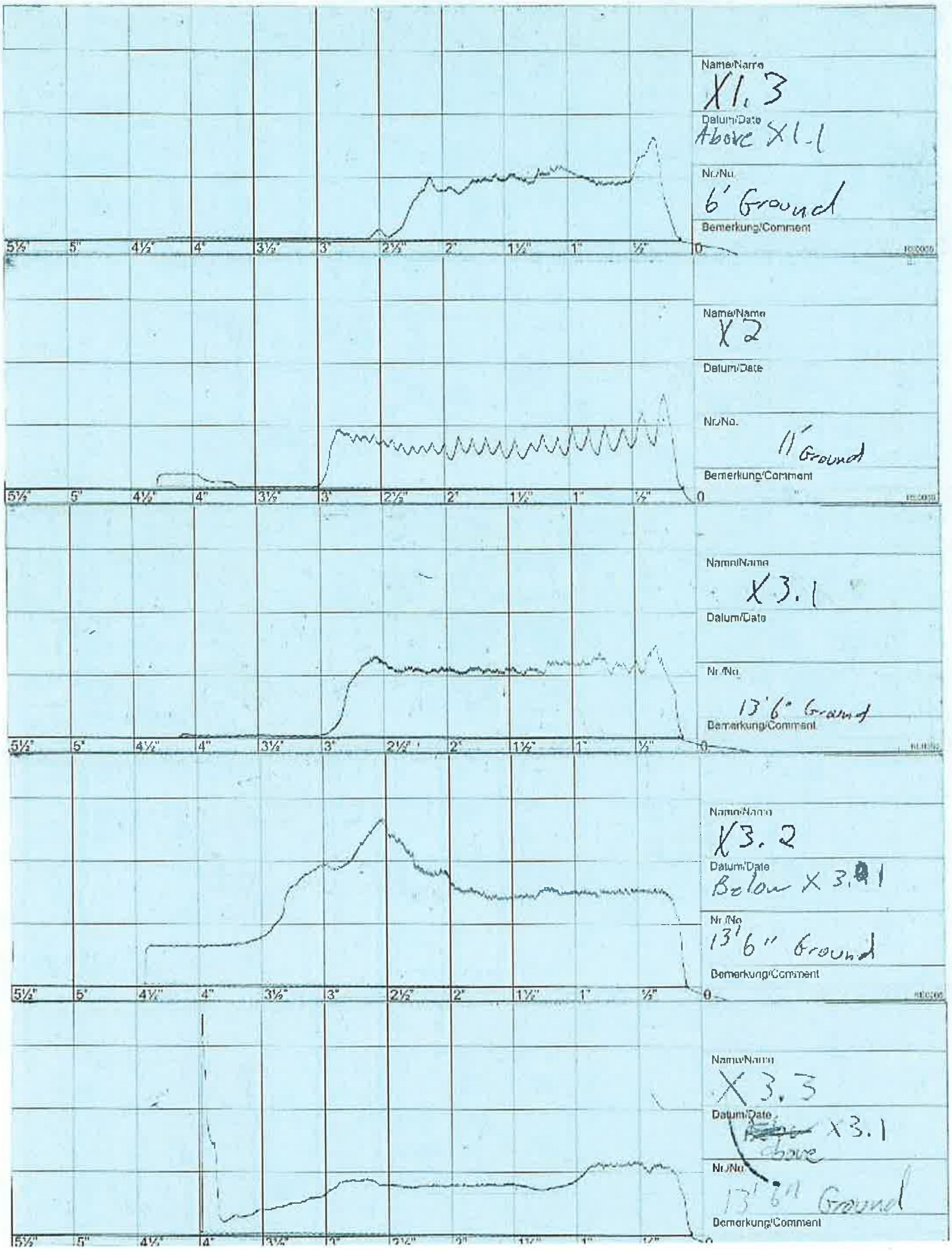

Name/Name
W2
Datum/Date
Nr./No.
16' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
W3
Datum/Date
Nr./No.
10' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

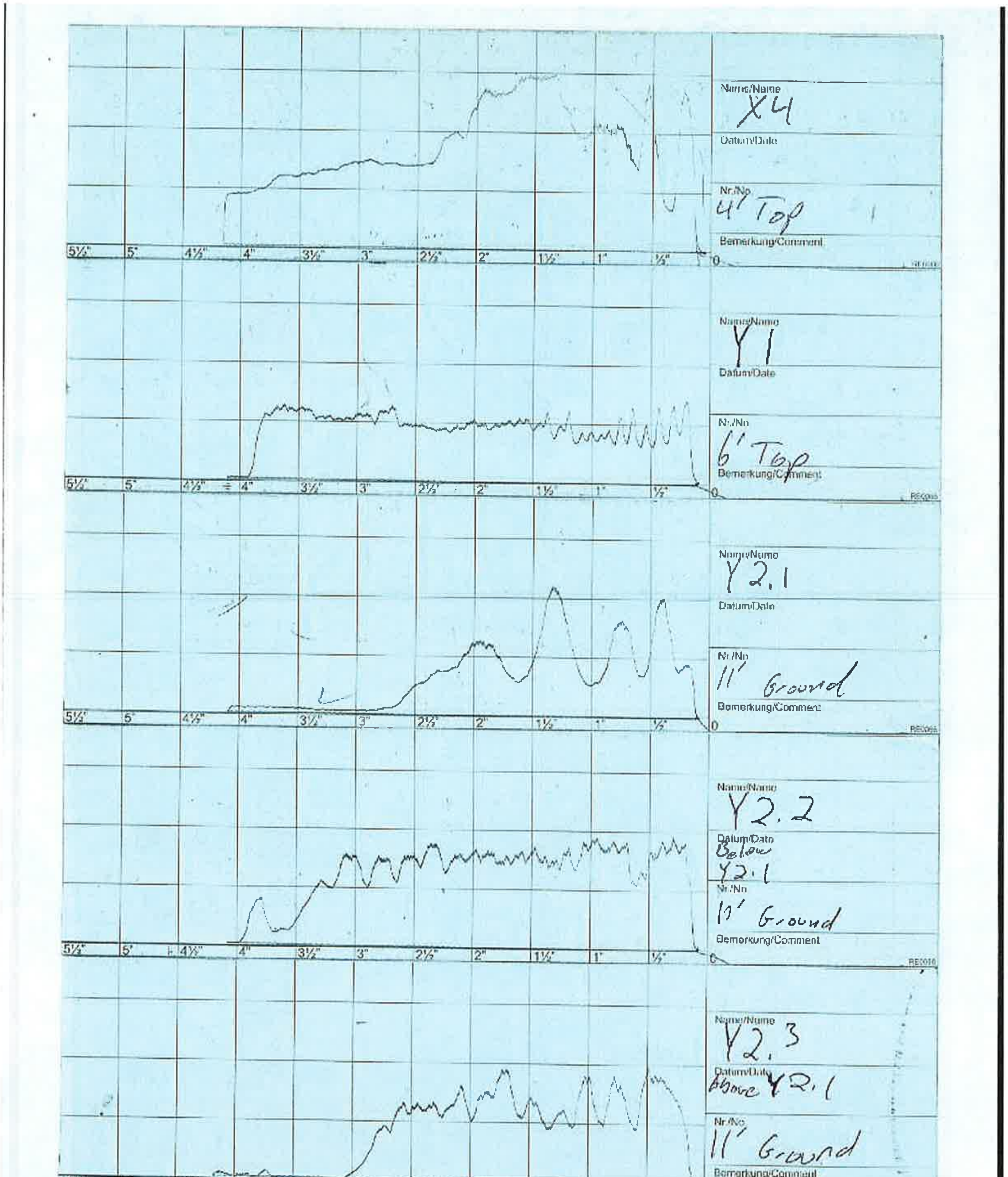

Name/Name
W4
Datum/Date
Nr./No.
4' 6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
X1.1
Datum/Date
Nr./No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

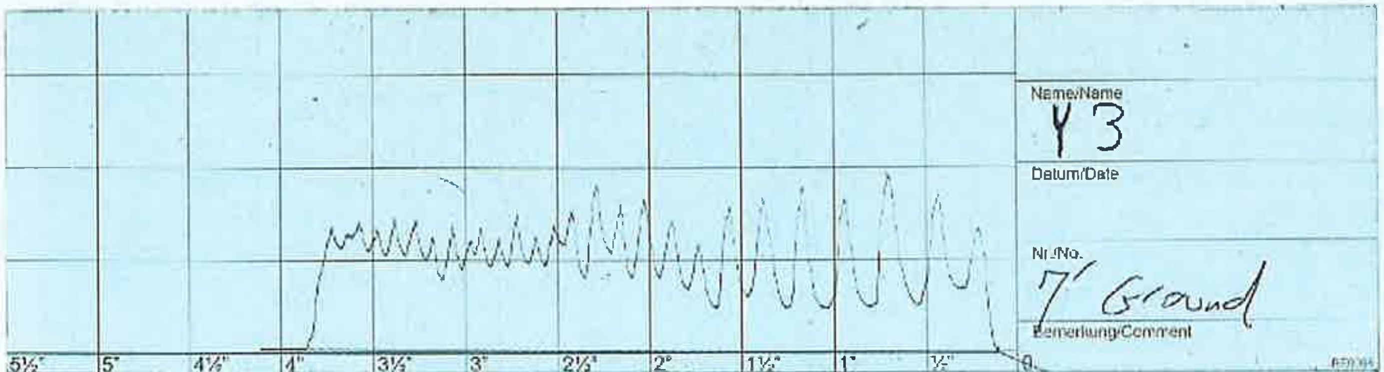

Name/Name
X1.2
Datum/Date
Below
X1.1
Nr./No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

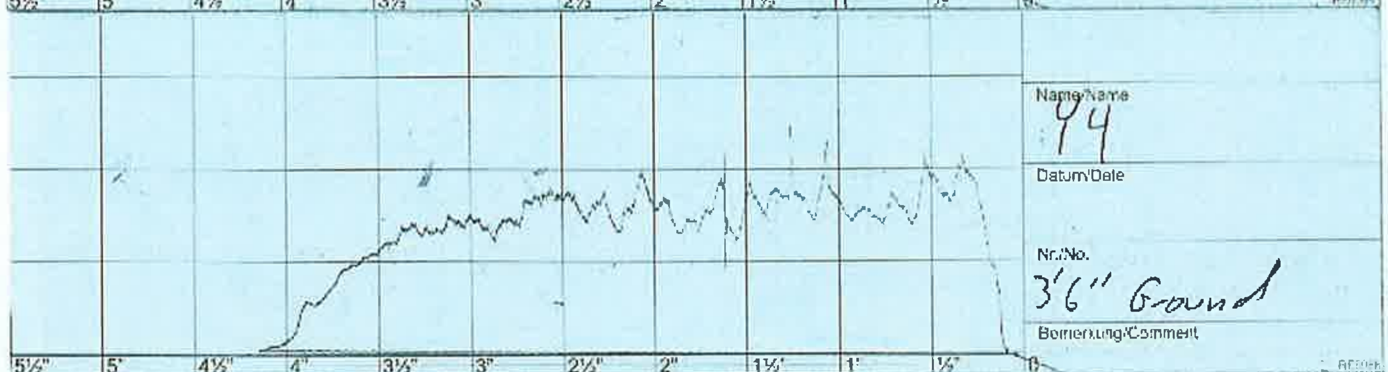


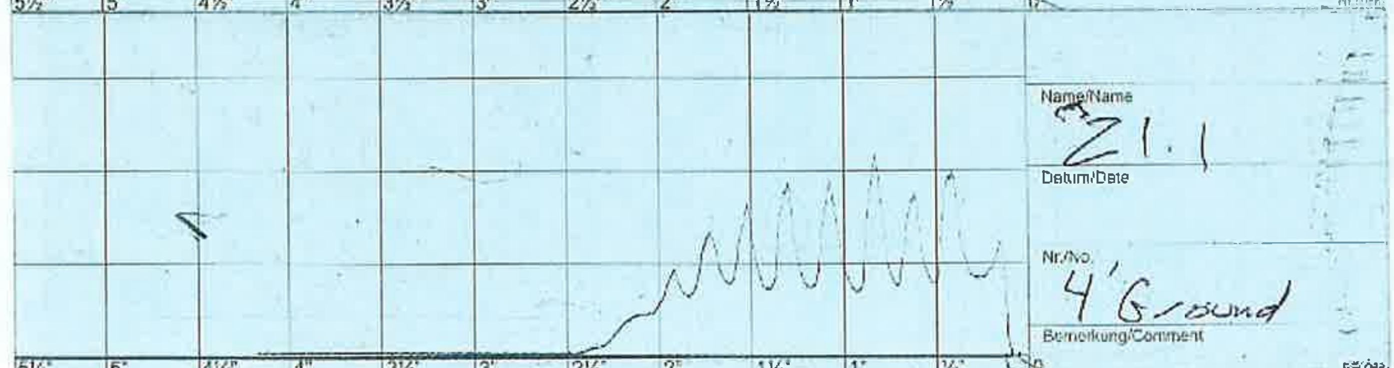
Name/Name
X1.3
Datum/Date
Above X1.1
Nr/No.
6' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
X2
Datum/Date
Nr/No.
11' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
X3.1
Datum/Date
Nr/No.
13'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
X3.2
Datum/Date
Below X3.1
Nr/No.
13'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name
X3.3
Datum/Date
above X3.1
Nr/No.
13'6" Ground
Bemerkung/Comment

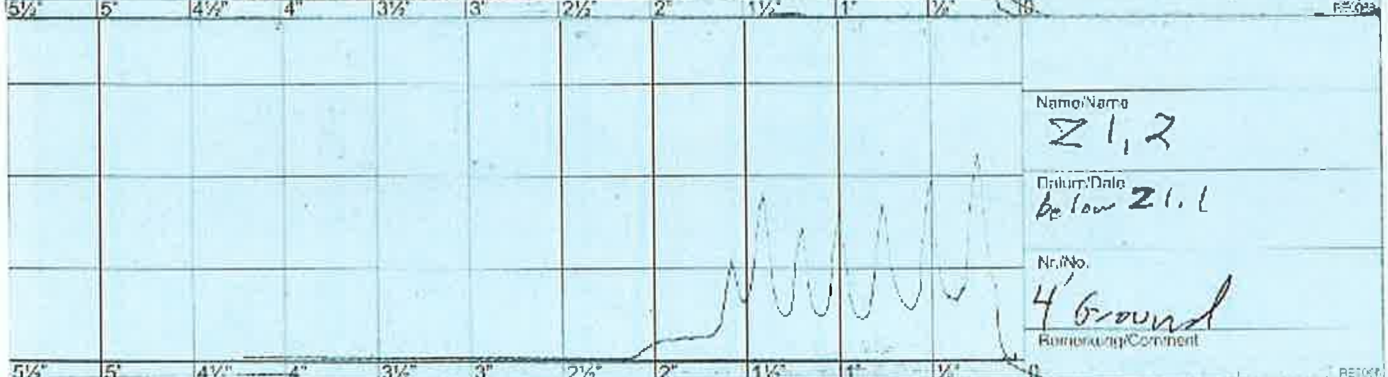


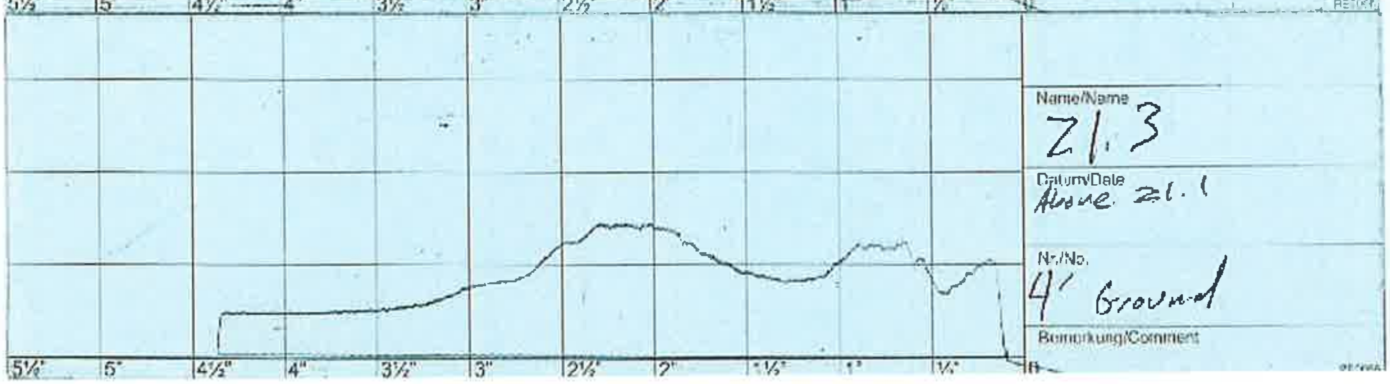
Name/Name X4
Datum/Date
Nr./No 4' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name Y1
Datum/Date
Nr./No 6' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name Y2.1
Datum/Date
Nr./No 11' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name Y2.2
Datum/Date Below Y2.1
Nr./No 11' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0
Name/Name Y2.3
Datum/Date Above Y2.1
Nr./No 11' Ground
Bemerkung/Comment

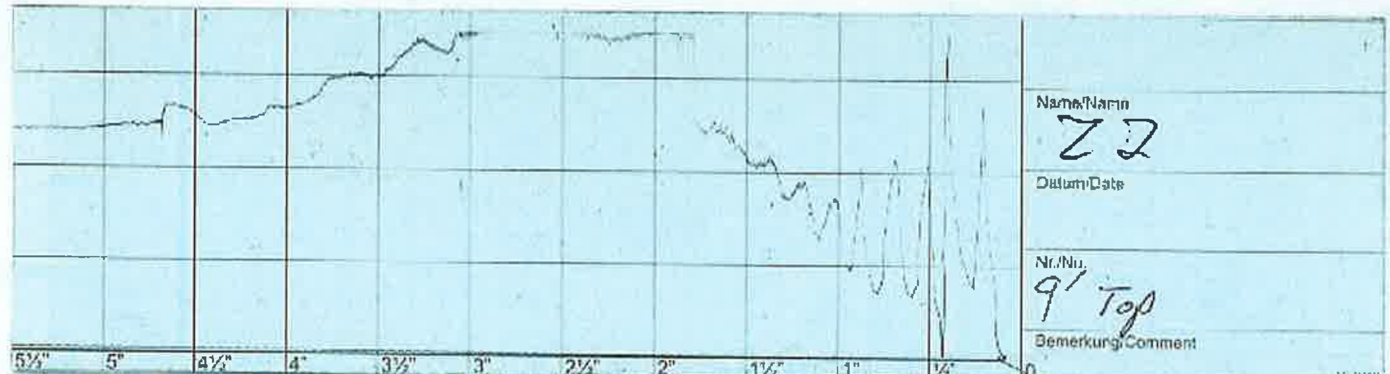

Name/Name
Y3
Datum/Date
Nr./No.
7' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

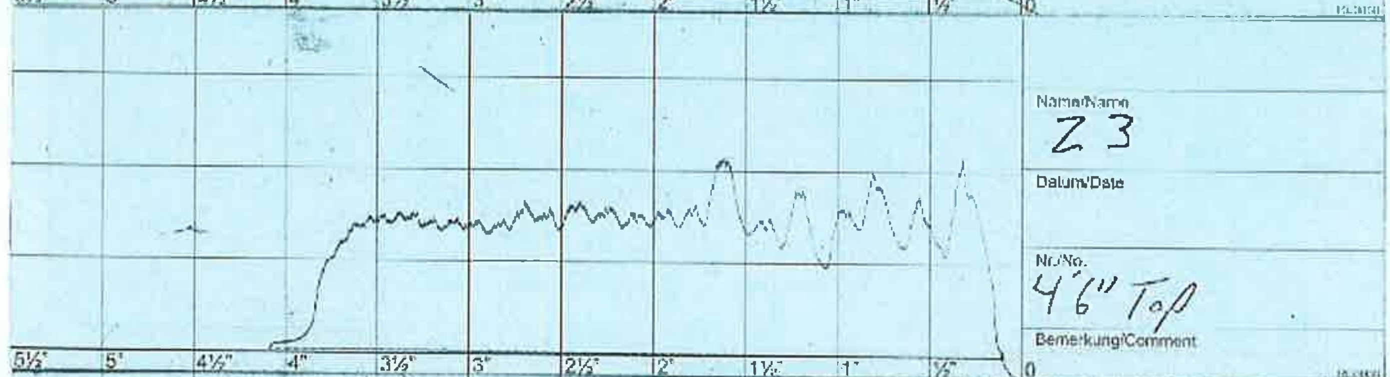

Name/Name
Y4
Datum/Date
Nr./No.
3'6" Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

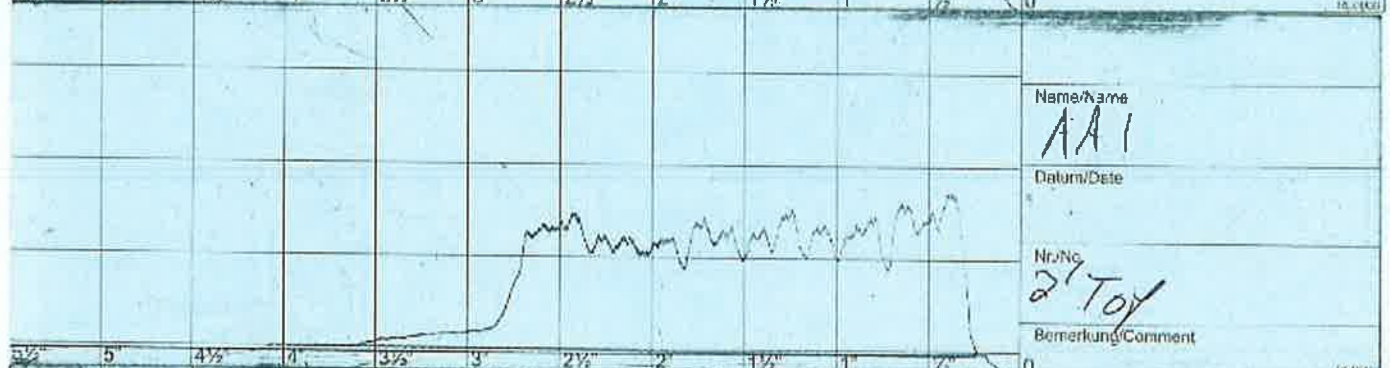

Name/Name
Z1.1
Datum/Date
Nr./No.
4' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

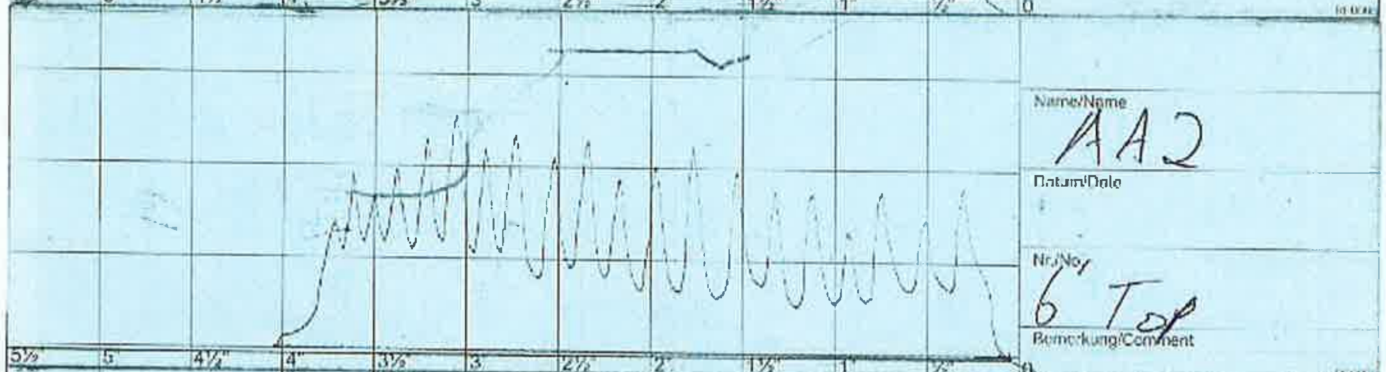

Name/Name
Z1,2
Datum/Date
below Z1.1
Nr./No.
4' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

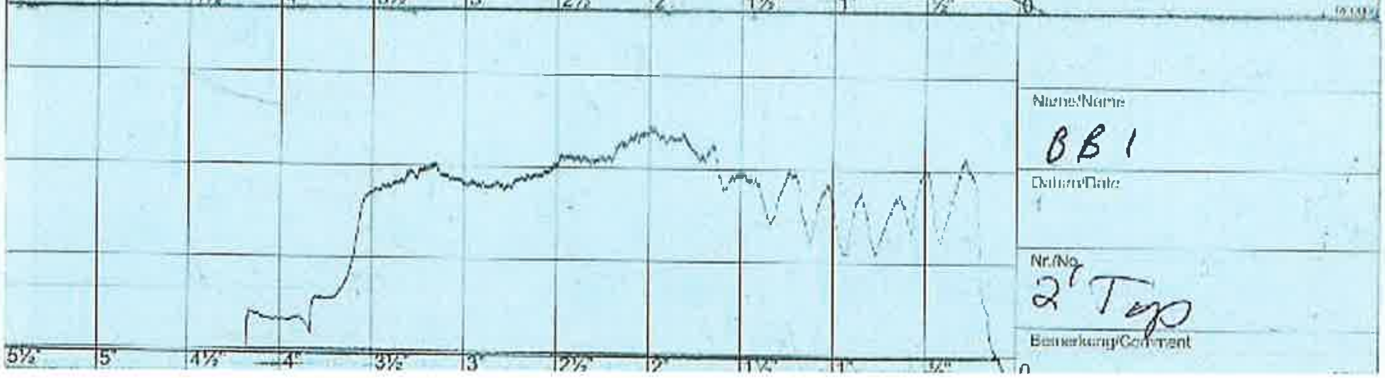

Name/Name
Z1.3
Datum/Date
Above Z1.1
Nr./No.
4' Ground
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0

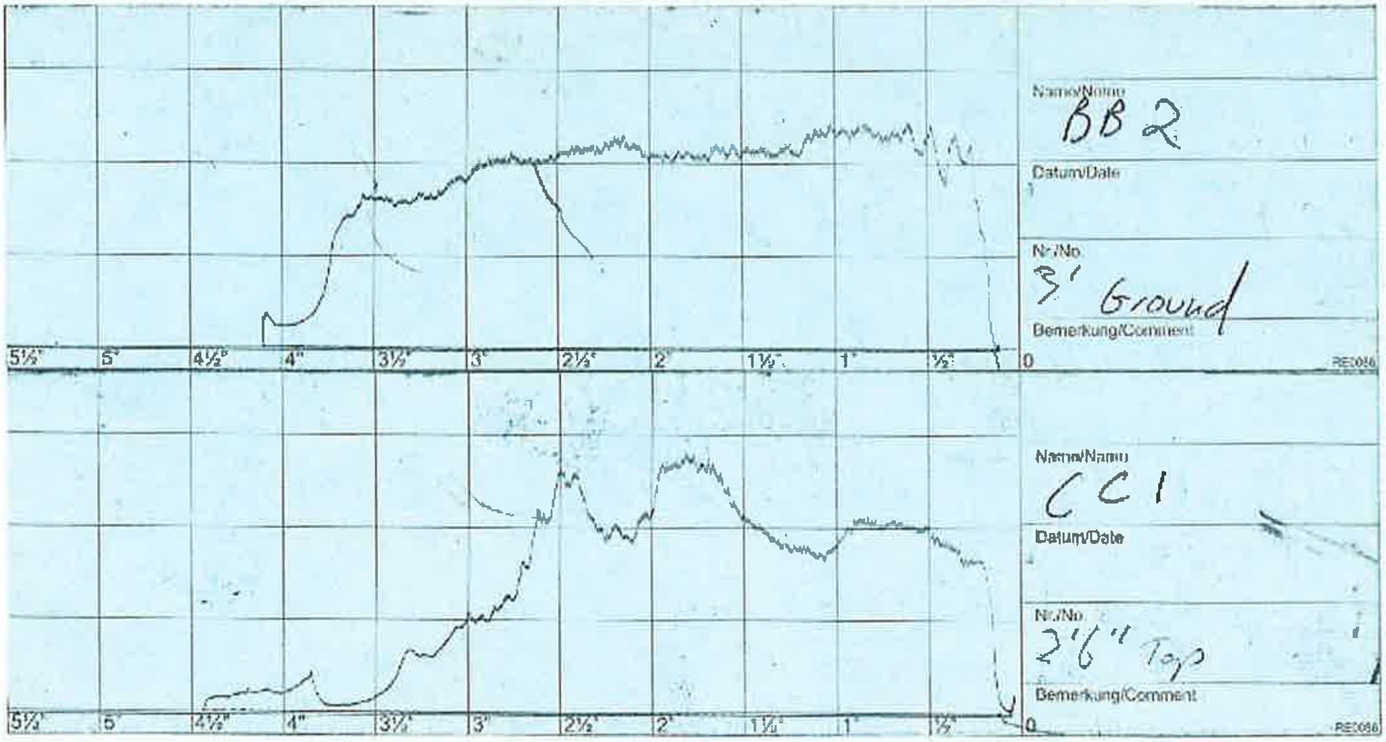

Name/Name
ZZ
Datum/Date
Nr./No.
9' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
Z3
Datum/Date
Nr./No.
4'6" Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
AA1
Datum/Date
Nr./No.
2' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
AA2
Datum/Date
Nr./No.
6' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


Name/Name
BB1
Datum/Date
Nr./No.
2' Top
Bemerkung/Comment
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½" 0


5½"
5"
4½"
4"
3½"
3"
2½"
2"
1½"
1"
½"
0
Name/Name
BB 2
Datum/Date
Nr./No.
3' Ground
Bemerkung/Comment
RE0056
Name/Name
CC 1
Datum/Date
Nr./No.
2'6" Top
Bemerkung/Comment
RE0056

Basic Structural Checklist for Building Type C2:
Concrete Shear Walls with Stiff Diaphragms

These buildings have floor and roof framing that consists of cast-in-place concrete slabs, concrete beams, one-way joists, two-way waffle joists, or flat slabs. Floors are supported on concrete columns or bearing walls. Lateral forces are resisted by cast-in-place concrete shear walls. In older construction, shear walls are lightly reinforced but often extend throughout the building. In more recent construction, shear walls occur in isolated locations and are more heavily reinforced with boundary elements and closely spaced ties to provide ductile performance. The diaphragms consist of concrete slabs and are stiff relative to the walls. Foundations consist of concrete spread footings, mat foundations, or deep foundations.

Building System

C NC N/A LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)

C NC **N/A** MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)

C NC N/A WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.3.2.1)

C NC N/A SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)

C NC N/A GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)

C **NC** N/A VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)

Few concrete walls stop below 1st floor

C NC N/A MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)

C NC N/A TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

C NC N/A DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC **N/A** POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used. (Tier 2: Sec. 4.3.3.5)

C NC N/A CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9)

Lateral Force Resisting System

C NC N/A COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical-load-carrying system. (Tier 2: Sec. 4.4.1.6.1)

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C **NC** N/A SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f'c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1)

Shear Wall Stress Check Summary		
Level	**North-South**	**East-West**
4th	**155**	**218**
3rd	**264**	**371**
2nd	**347**	**488**
1st	**320**	**487**
Ground	**342**	**386**

C NC N/A REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2)

8" walls, #5 @ 15" o.c., ρ = 0.00258
10" walls, #4 @ 16" e.f., ρ = 0.00250

Connections

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1)

C NC N/A FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

Lap length of dowels is short

**Supplemental Structural Checklist for Building Type C2:
Concrete Shear Walls with Stiff Diaphragms**

Lateral-Force-Resisting System

C **NC** N/A DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the components for Life Safety and shall meet the requirements of Sections 4.4.1.4.9, 4.4.1.4.10, 4.4.1.4.11, 4.4.1.4.12, and 4.4.1.4.15 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.2)

Column tie spacing of 14" o.c. is greater than d/4

C NC **N/A** FLAT SLABS: Flat slabs/plates not part of the lateral-force-resisting system shall have continuous bottom steel through the column joints for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.3)

C **NC** N/A COUPLING BEAMS: The stirrups in coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the confined core of the beam with hooks of 135° or more for Life Safety. All coupling beams shall comply with the requirements above and shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.3)

Beams do not appear to have any stirrups

C NC N/A OVERTURNING: All shear walls shall have aspect ratios less than 4-to-1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.4)

Shortest wall width ~ 5' for aspect ratio of 3-to-1 at ground floor

C **NC** N/A CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements shall be confined with spirals or ties with spacing less than $8d_b$. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.5)

Walls do not appear to have confinement reinforcement

C NC N/A REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6)

C NC N/A WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.7)

Diaphragms

C NC N/A DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1)

C **NC** N/A OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

Exterior walls at stair cores and some walls at elevator cores are not well connected to floor diaphragm.

C NC **N/A** PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

C NC N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Connections

C NC **N/A** UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

Seismic Calculations

GA Building Predesign Update

(MKA Project #: 90020.01)

ASCE 31 Evaluation

Building Weights

By: EYC   Date: 8/20/12   Time: 8:47AM

File: I:\GABldg\Engineers\EYC\[GABldg- ACSE31ConcSWCheck 20120807.xls]Weights

Summary

Trib to	Floor *kips*	Walls *kips*	Total *kips*
Roof	6570	1504	8074
4th	6250	800	7050
3rd	6250	800	7050
2nd	6250	989	7239
1st	6250	1177	7427
			36840 ***kips***

GA Building Predesign Update

(MKA Project #: 90020.01)

ASCE 31 Evaluation

Lateral Loads, Tier 1

By: EYC Date: 8/20/12 Time: 8:47AM

File: I:\GABldg\Engineers\EYC\[GABldg- ACSE31ConcSWCheck 20120807.xls]Lateral

Ground Motion Parameters (Sec. 3.5.2.3.1)

Site Class = D

S_S =	1.16	F_a =	1.04	S_{DS} =	0.80
S_1 =	0.43	F_v =	1.57	S_{D1} =	0.45

Period Determination (Sec. 3.5.2.4)

C_t = 0.02
h_n = 68.57
β = 0.75
T = 0.477

Pseudo Lateral Force (Sec. 3.5.2.1)

S_a =	0.80	(Short Period)
C =	1.0	Concrete SW > 4 stories
W =	36840	*kips*
V =	29527	*kips*

Vertical Force Distribution (Sec. 3.5.2.2)

k = 1.00

Level	Height *ft*	Weight *kips*	wh^k	wh^k / sum(wh^k)	Fx *kips*	V *kips*
Roof	68.57	8074	553634	0.360	10618	
4th	54.94	7050	387327	0.252	7429	10618
3rd	41.82	7050	294831	0.192	5655	18047
2nd	28.7	7239	207759	0.135	3985	23702
1st	12.92	7427	95957	0.062	1840	27687
						29527
Sum		**36840**	**1539508**	**1.00**	**29527**	
	13.63					
	15.78		3.156			
	3.945		7.5744			

GA Building Predesign Update

(MKA Project #: 90020.01)

ASCE 31 Evaluation

Shear Wall Stress Check -- ASCE 31, Tier 1

By: EYC Date: 8/20/12 Time: 8:47AM

File: I:\GABldg\Engineers\EYC\[GABldg- ACSE31ConcSWCheck 20120807.xls]Shear Check

Shear Stress Check (Sec. 3.5.3.3)

$v_{avg} = (1/m)^* (V_J/A_w)$

$m =$ 2 Concrete, Immediate Occupancy Performance

$V_J =$ Story shear

$A_w =$ Net area of solid wall in direction considered

		North-South Loading			**East-West Loading**		
Level	V_J	Total Wall Area	v_{avg}	**< 100 *psi***	Total Wall Area	v_{avg}	**< 100 *psi***
	kips	*sq in*	*psi*		*sq in*	*psi*	
4th	10618	34200	155	**NC**	24300	218	**NC**
3rd	18047	34200	264	**NC**	24300	371	**NC**
2nd	23702	34200	347	**NC**	24300	488	**NC**
1st	27687	43200	320	**NC**	28400	487	**NC**
Ground	29527	43200	342	**NC**	38200	386	**NC**

GA Building Predesign Update

(MKA Project #: 90020.01)

ASCE 31 Evaluation

Rigid Diaphragm Stress Check

By EYC Date 8/20/12 Time 8:50AM

File: I:\GABldg\Engineers\EYC\[GABldg- RigidDiaph 20120807.xls]ConcreteShearWall

Direction of Loading: **East-West**

V=	13844	*kips*	Atot =	46812	vavg =	296
Bldg Width=	230	*ft*				
CM=	109	*ft*				
E=	-8	*ft*				
M_t=	-86648	*k-ft*				
5% Torsion						
$M_T(+)$=	72553	*k-ft*				
$M_T(-)$=	-245846	*k-ft*				

In-Plane of Loading — relative rigidity — shear per wall — 5% Accidental Torsion

Wall	Length	Heigth	Thickness	D	Deltaflex/ F	Deltash/F	Rrel	RD	Xr	d	Rd	Rd^2	Direct Shear	Torsional Shear	Total Shear	Torsional Shear +	Total Shear	Torsional Shear -	Total Shear	Design Shear	Shear Stress	shear / 3rootf'c	Vu (kips/ft of wall)	Thickness	Vn (kips/ft of wall)	mVn	Check
	ft	*ft*	*in*	*ft*					*ft*				*k*	*k*	*k*	*k*	*k*	*k*	*k*	*k*	*psi*						
A	6	16	10	0	91	10	0	0		-115	-13	1530	31	6	**37**	-5	**31**	17	**48**	**48**	**66**	0	8	10	18	36	OK
B	27	16	13	0	1	2	2	0		-115	-220	25385	509	100	**609**	-84	**509**	284	**793**	**793**	**188**	1	29	13	18	36	OK
C	5	16	10	0	157	12	0	0		-115	-11	1238	25	5	**30**	-4	**25**	14	**39**	**39**	**64**	0	9	10	22	44	OK
D	8	16	8	24	48	9	0	3		-91	-12	1099	35	5	**41**	-5	**35**	16	**51**	**51**	**66**	0	6	8	18	36	OK
E	8	16	8	44	48	9	0	6		-71	-9	670	35	4	**39**	-4	**35**	12	**47**	**47**	**62**	0	6	8	22	44	OK
F	12	16	8	52	14	6	0	12		-63	-15	948	63	7	**70**	-6	**63**	19	**82**	**82**	**72**	0	7	8	18	36	OK
G	12	16	8	62	14	6	0	15		-53	-13	672	63	6	**69**	-5	**63**	16	**79**	**79**	**69**	0	7	8	22	44	OK
H	8	16	8	68	48	9	0	9		-47	-6	295	35	3	**38**	-2	**35**	8	**43**	**43**	**56**	0	5	8	18	36	OK
I	17	16	8	84	5	4	0	37		-31	-14	426	116	6	**122**	-5	**116**	18	**134**	**134**	**82**	0	8	8	18	36	OK
J	17	16	8	84	5	4	0	37		-31	-14	426	116	6	**122**	-5	**116**	18	**134**	**134**	**82**	0	8	8	22	44	OK
K	22	16	8	100	2	3	1	74		-15	-11	172	197	5	**202**	-4	**197**	15	**211**	**211**	**100**	1	10	8	22	44	OK
L	24	16	8	108	2	3	1	97		-7	-7	47	238	3	**241**	-2	**238**	8	**247**	**247**	**107**	1	10	8	18	36	OK
L2	24	16	8	108	2	3	1	97		-7	-7	47	238	3	**241**	-2	**238**	8	**247**	**247**	**107**	1	10	8	33	66	OK
L3	10	16	8	108	25	7	0	19		-7	-1	9	48	1	**48**	0	**48**	2	**49**	**49**	**52**	0	5	8	33	66	OK
M	13	16	8	108	11	6	0	29		-7	-2	14	72	1	**73**	-1	**72**	3	**74**	**74**	**60**	0	6	8	33	66	OK
N	7	16	8	204	72	10	0	23		89	10	876	30	-4	**30**	4	**33**	-13	**30**	**33**	**50**	0	5	8	33	66	OK
O	16	16	8	230	6	5	0	89		115	45	5120	104	-20	**104**	17	**121**	-58	**104**	**121**	**78**	0	8	8	33	66	OK
P	22	16	8	230	2	3	1	170		115	85	9727	197	-39	**197**	32	**229**	-109	**197**	**229**	**108**	1	10	8	18	36	OK
E1	40	16	14	24	0	1	6	133		-99	-549	54481	1472	250	**1721**	-209	**1472**	709	**2180**	**2180**	**324**	2	55	14	73	146	OK
E2	80	16	14	134	0	1	38	5146		11	412	4428	10221	-188	**10221**	157	**10378**	-532	**10221**	**10378**	**772**	5	130	14	73	146	OK
Totals							**52**	**5995**	**115**			**107611**	**13844**		**14255**		**14054**		**15010**								

Perp to Plane of Loading

Wall	Length	Heigth	Thickness	D	Deltaflex/ F	Deltash/F	Rrel	RD	Yr	d	Rd	Rd^2	Direct Shear	Torsional Shear	Total Shear	Torsional Shear +	Total Shear	Torsional Shear -	Total Shear	Design Shear	Shear Stress	shear / 3rootf'c	Vu (kips/ft of wall)	Thickness	Vn (kips/ft of wall)	mVn	Check
1	13	16	8	0	11	6	0	0		-123	-33	4101		15		-13		43		**43**	**34**	0	3	8	18	36	OK
2	20	16	8	0	3	4	1	0		-123	-74	9166		34		-28		96		**96**	**50**	0	5	8	18	36	OK
3	5	16	10	11	157	12	0	1		-112	-10	1174		5		-4		14		**14**	**23**	0	3	10	22	44	OK
4	20	16	8	11	3	4	1	7		-112	-68	7603		31		-26		87		**87**	**46**	0	4	8	18	36	OK
5	18	16	10	60	3	3	1	37		-63	-39	2438		18		-15		50		**50**	**23**	0	3	10	22	44	OK
5b	26	16	10	60	1	2	1	81		-63	-85	5384		39		-32		110		**110**	**35**	0	4	10	18	36	OK
5c	26	16	10	60	1	2	1	81		-63	-85	5384		39		-32		110		**110**	**35**	0	4	10	22	44	OK
5d	20	16	10	60	2	3	1	45		-63	-48	3018		22		-18		62		**62**	**26**	0	3	10	18	36	OK
6	42	16	8	72	0	2	4	259		-51	-184	9455		84		-70		238		**238**	**59**	0	6	8	18	36	OK
7	12	16	10	80	11	5	0	24		-43	-13	554		6		-5		17		**17**	**11**	0	1	10	22	44	OK
8	13	16	8	80	11	6	0	22		-43	-12	505		5		-4		15		**15**	**12**	0	1	8	18	36	OK
9	26	16	8	90	1	3	1	97		-33	-36	1191		16		-14		46		**46**	**19**	0	2	8	18	36	OK
9a	13	16	10	100	9	4	0	34		-23	-8	183		4		-3		10		**10**	**6**	0	1	10	22	44	OK
9b	13	16	10	110	9	4	0	37		-13	-4	59		2		-2		6		**6**	**4**	0	0	10	22	44	OK
10	26	16	8	100	1	3	1	108		-23	-25	582		11		-10		32		**32**	**13**	0	1	8	18	36	OK
11	9	16	15	100	18	4	0	29		-23	-7	157		3		-3		9		**9**	**5**	0	1	15	33	66	OK
12	9	16	15	120	18	4	0	35		-3	-1	3		0		0		1		**1**	**1**	0	0	15	33	66	OK
13	9	16	15	140	18	4	0	41		17	5	81		-2		2		-6		**6**	**4**	0	1	15	33	66	OK
14	20	16	8	209	3	4	1	126		86	52	4435		-24		20		-67		**67**	**35**	0	3	8	18	36	OK
15	5	16	10	209	157	12	0	19		86	8	685		-4		3		-10		**10**	**17**	0	2	10	22	44	OK
16	29	16	8	220	1	2	1	307		97	135	13058		-61		51		-174		**174**	**63**	0	6	8	18	36	OK
17	20	16	8	220	3	4	1	133		97	58	5646		-27		22		-75		**75**	**39**	0	4	8	18	36	OK
N1	72	16	14	140	0	1	28	3988		17	474	7937		-216		181		-612		**612**	**51**	0	9	14	73	146	OK
Totals							**45**	**5486**	**123**			**82798**															

4-328

Direction of Loading: **North-South**

V=	13844	kips	Atot =	55500	vavg = 249
Bldg Width=	220	ft			
CM=	180	ft			
E=	37	ft			
M_T=	506589	k-ft			
5% Torsion					
$M_T(+)$=	860867	k-ft			
$M_T(-)$=	356310	k-ft			

5% Accidental Torsion

Never Reduce

In-Plane of Loading

Wall	Length	Heigth	Thickness	D	Deltaflex/ F	Deltasn/F	Rrel	RD	Xr	σ	Ro	Ro^2	Direct Shear	Torsional Shear	Total Shear	Torsional Shear +	Total Shear	Torsional Shear -	Total Shear	Design Shear	Shear Stress	shear / 3rootf'c	Vu (kips/ft of wall)	Thickness	Vn (kips/ft of wall)	mVn	Check
	ft	ft	in	ft					ft				k	k	k	k	k	k	k	k	psi						
1	13	16	8	0	11	6	0	0		-123	-33	4101	84	-88	**84**	-115	**84**	-62	**84**	**84**	**67**	0	6	8	18	36	OK
2	20	16	8	0	3	4	1	0		-123	-74	9166	188	-198	**188**	-257	**188**	-138	**188**	**188**	**98**	1	9	8	18	36	OK
3	5	16	10	11	157	12	0	1		-112	-10	1174	29	-28	**29**	-36	**29**	-19	**29**	**29**	**48**	0	6	10	22	44	OK
4	20	16	8	11	3	4	1	7		-112	-88	7603	188	-180	**188**	-234	**188**	-126	**188**	**188**	**98**	1	9	8	18	36	OK
5	18	16	10	60	3	3	1	37		-63	-39	2438	189	-102	**189**	-133	**189**	-72	**189**	**189**	**88**	1	11	10	22	44	OK
5b	26	16	10	60	1	2	1	81		-63	-85	5384	418	-226	**418**	-294	**418**	-158	**418**	**418**	**134**	1	16	10	18	36	OK
5c	26	16	10	60	1	2	1	81		-63	-85	5384	418	-226	**418**	-294	**418**	-158	**418**	**418**	**134**	1	16	10	22	44	OK
5d	20	16	10	60	2	3	1	45		-63	-48	3018	235	-127	**235**	-165	**235**	-89	**235**	**235**	**98**	1	12	10	18	36	OK
6	42	16	8	72	0	2	4	259		-51	-184	9455	1119	-490	**1119**	-637	**1119**	-343	**1119**	**1119**	**276**	2	27	8	18	36	OK
7	12	16	10	80	11	5	0	24		-43	-13	554	92	-34	**92**	-44	**92**	-24	**92**	**92**	**64**	0	8	10	22	44	OK
8	13	16	8	80	11	6	0	22		-43	-12	505	84	-31	**84**	-40	**84**	-22	**84**	**84**	**67**	0	8	8	18	36	OK
9	26	16	8	80	1	3	1	97		-33	-36	1191	335	-95	**335**	-124	**335**	-67	**335**	**335**	**134**	1	13	8	18	36	OK
9a	13	16	10	100	9	4	0	34		-23	-8	183	105	-21	**105**	-27	**105**	-15	**105**	**105**	**67**	0	8	10	22	44	OK
9b	13	16	10	110	9	4	0	37		-13	-4	59	105	-12	**105**	-15	**105**	-8	**105**	**105**	**67**	0	8	10	22	44	OK
10	26	16	8	100	1	3	1	108		-23	-25	582	335	-67	**335**	-88	**335**	-47	**335**	**335**	**134**	1	13	8	18	36	OK
11	9	16	15	100	18	4	0	29		-23	-7	157	90	-18	**90**	-23	**90**	-13	**90**	**90**	**56**	0	10	15	33	66	OK
12	9	16	15	120	18	4	0	35		-3	-1	3	90	-3	**90**	-3	**90**	-2	**90**	**90**	**56**	0	10	15	33	66	OK
13	9	16	15	140	18	4	0	41		17	5	81	90	13	**103**	17	**107**	9	**99**	**107**	**66**	0	12	15	33	66	OK
14	20	16	8	209	3	4	1	128		86	52	4435	188	137	**325**	179	**366**	96	**284**	**366**	**191**	1	18	8	18	36	OK
15	5	16	10	209	157	12	0	19		86	8	685	29	21	**50**	28	**57**	15	**44**	**57**	**84**	1	11	10	22	44	OK
16	29	16	8	220	1	2	1	307		97	135	13056	434	359	**793**	466	**900**	251	**685**	**900**	**323**	2	31	8	18	36	OK
17	20	16	8	220	3	4	1	133		97	58	5646	188	155	**343**	202	**389**	109	**296**	**389**	**203**	1	19	8	18	36	OK
N1	72	16	14	140	0	1	28	3966		17	474	7937	8811	1260	**10071**	1638	**10449**	883	**9694**	**10449**	**864**	5	145	14	73	146	OK
										-123																	
Totals							**45**	**5486**	**123**			**82798**	**13844**		**15789**		**16372**		**15207**	**16372**							

Perp to Plane of Loading

Wall	Length	Heigth	Thickness	D	Deltaflex/ F	Deltasn/F	Rrel	RD	Yr	σ	Ro	Ro^2	Direct Shear	Torsional Shear	Total Shear	Torsional Shear +	Total Shear	Torsional Shear -	Total Shear	Design Shear	Shear Stress	shear / 3rootf'c	Vu (kips/ft of wall)	Thickness	Vn (kips/ft of wall)	mVn	Check
A	8	16	10	0	91	10	0	0		-114	-13	1508		6		-5		17		**17**	**24**	0	3	10	18	36	OK
B	27	16	13	0	1	2	2	0		-114	-219	25018		99		-83		282		**282**	**67**	0	10	13	18	36	OK
C	5	16	10	0	157	12	0	0		-114	-11	1220		5		-4		14		**14**	**23**	0	3	10	22	44	OK
D	8	16	8	24	48	9	0	3		-90	-12	1079		5		-5		15		**15**	**20**	0	2	8	18	36	OK
E	8	16	8	44	48	9	0	6		-70	-9	654		4		-4		12		**12**	**16**	0	1	8	22	44	OK
F	12	16	8	52	14	6	0	12		-62	-15	923		7		-6		19		**19**	**17**	0	2	8	18	36	OK
G	12	16	8	62	14	6	0	15		-52	-12	651		6		-5		16		**16**	**14**	0	1	8	22	44	OK
H	8	16	8	68	48	9	0	9		-46	-8	284		3		-2		8		**8**	**10**	0	1	8	18	36	OK
I	17	16	8	84	5	4	0	37		-30	-13	404		6		-5		17		**17**	**10**	0	1	8	18	36	OK
J	17	16	8	84	5	4	0	37		-30	-13	404		6		-5		17		**17**	**10**	0	1	8	22	44	OK
K	22	16	8	100	2	3	1	74		-14	-11	154		5		-4		14		**14**	**7**	0	1	8	22	44	OK
L	58	16	8	108	0	1	9	944		-6	-56	361		25		-21		73		**73**	**13**	0	1	8	18	36	OK
M	13	16	8	108	11	6	0	29		-8	-2	11		1		-1		2		**2**	**2**	0	0	8	33	66	OK
N	7	16	8	204	72	10	0	23		90	10	892		-5		4		-13		**13**	**19**	0	2	8	33	66	OK
O	16	10	8	230	6	5	0	89		116	45	5195		-20		17		-58		**58**	**38**	0	4	8	33	66	OK
P	22	16	8	230	2	3	1	170		116	85	9869		-39		33		-110		**110**	**52**	0	5	8	18	36	OK
E1	40	16	14	24	0	1	8	132		-90	-500	45211		226		-191		646		**646**	**96**	1	16	14	73	146	OK
E2	60	16	14	134	0	1	38	5146		20	752	14719		-340		288		-971		**971**	**72**	0	12	14	73	146	OK
Totals							**59**	**6726**	**114**			**108556**															

Design Sheet

MAGNUSSON
KLEMENCIC
ASSOCIATES

Structural + Civil Engineers

PROJECT GA Building - Shear wall strength check			SHEET 1
LOCATION Olympia, Washington	CLIENT	DATE 07/30/2012	BY EYC

8" wall

5/8" ϕ @ 15" o.c. each way (#5)

$A_{steel} = 0.31\ in^2 \times 12''/15''$

$= 0.248\ in^2$

$A_{conc} = 12'' \times 8''$

$= 96\ in^2$

$\rho_t = 0.00258$

$V_n = A_{cv}\,(\alpha_c \lambda \sqrt{f'_c} + \rho_t f_y)$ [ACI 318]

* Material properties must be adjusted for "expected strength" [ASCE 41]

$A_{cv} = A_{conc} = 96\ in^2$

$\alpha_c = 2.0$

$\lambda = 1.0$ (nwc)

Lower bound → Expected strength factor

1.50 for f'_c

1.25 for f_y

$V_n = (96\ in^2)(2.0 \cdot 1.0 \cdot \sqrt{1.5 \cdot 2500} + 0.00258 \cdot 1.25 \cdot 20{,}000)$

$= 17.958$ kips

<u>V_n = 17.958 kips/ft of wall for 8" wall</u>

10" wall

1/2" ϕ @ 16" o.c. each way, each face (#4)

$A_{steel} = 0.20\ in^2 \times 2 \times 12''/16''$

$= 0.30\ in^2$

$A_{conc} = 12'' \times 10''$

$= 120\ in^2$

$\rho_t = 0.0025$

$V_n = 120\ in^2\ (2.0 \cdot 1.0 \cdot \sqrt{1.5 \cdot 2500}) + 0.0025 \cdot 1.25 \cdot 20{,}000)$

$= 22.197$ kips

<u>V_n = 22.197 kips/ft of wall for 10" wall</u>

$m = 2.0$

Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
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PROJECT GA Building - Shear wall strength check		SHEET 2
LOCATION Olympia, Washington	CLIENT	DATE 07/30/2012 BY EYC

Inner wall thicknesses

$\rho = 1/4\ \%$

13" wall

$V_n = (12" \times 13")\ [2.0 \cdot 1.0\ \sqrt{1.5 \cdot 2500} + 0.0025 \cdot 1.25 \cdot 20{,}000]$

$V_n = 28{,}856$ kips/ft of wall for 13" wall

15" wall

$V_n = (12" \times 15")\ [2.0 \cdot 1.0 \cdot \sqrt{1.5 \cdot 2500} + 0.0025 \cdot 1.25 \cdot 20{,}000]$

$V_n = 33{,}295$ kips / ft of wall for 15" wall

Assume new shear walls

$f'_c = 5000\text{psi}$

$f_y = 60{,}000\text{ psi}$

10" wall

$V_n = 120\text{ in}^2\ [2 \cdot 1 \cdot \sqrt{1.5 \cdot 5000} + 0.0025 \cdot 1.25 \cdot 60{,}000]$

$V_n = 43.3k$

12" wall

$V_n = 144\text{ in}^2\ [2 \cdot 1 \cdot \sqrt{1.5 \cdot 5000} + 0.0025 \cdot 1.25 \cdot 60{,}000]$

14" wall

$V_n = 14 \times 12\ [2 \cdot 1 \cdot \sqrt{1.5 \cdot 5000} + 0.0025 \cdot 1.25 \cdot 60{,}000]$

$V_n = 73.2\ k$

MF
BF
new ones

RAM

Gravity Calculations

Design Sheet

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PROJECT GA BUILDING PRE-DESIGN SHEET 1
LOCATION OLYMPIA, WA CLIENT DATE 7/31/12 BY JZ

LOADING CRITERIA

DEAD LOAD: 2 1/2" SLAB
2 1/2" TOPPING SLAB

SDL = 10 psf

LIVE LOAD: 125 psf (GROUND FLOOR)
100 psf (1st FLOOR)
50 psf (2nd - 4th FLOOR) REDUCED ⇒ 20 psf
25 psf (ROOF)

20 psf (PARTITIONS - ALL FLOORS)

MATERIAL PROPERTIES

CONCRETE: f'_c = 2,500 psi
STEEL: f_y = 40 ksi

COLUMN & FOOTINGS

TYPICAL COLUMN: M-13
TRIBUTARY AREA: 480 FT²

DL = 369.8^k
LL = 240^k (UNREDUCED) ⇒ REDUCED = 196.8^k

P_u = 758.64 ⇒ D/C = 0.77
ϕP_n = 987.7^k

TYPICAL FOOTING: 12' x 12'

σ_r = 3.93 ksf ⇒ D/C = 0.98
σ_a = 4 ksf

JOISTS

TYPICAL JOIST: 7" x 16 1/2" (1st FLOOR)
5 1/2" x 16 1/2" (2nd - ROOF)

TRIBUTARY WIDTH: 2'-11 1/2"
SPAN LENGTH: 24'-0"

FLEXURE

INTERIOR SPANS:

POSITIVE MOMENT

	ϕM_n^+	M_u^+	D/C
1st FLOOR	36.29 k-ft	27.87 k-ft	0.77
2nd - 4th FLOOR	30.37 k-ft	20.92 k-ft	0.69
ROOF	20.91 k-ft	17.78 k-ft	0.85

NEGATIVE MOMENT

	ϕM_n^-	M_u^-	D/C
1st FLOOR	47.43 k-ft	58.70 k-ft	1.24
2nd - 4th FLOOR	35.16 k-ft	44.0 k-ft	1.25
ROOF	25.40 k-ft	37.4 k-ft	1.47

EXTERIOR SPANS:

POSITIVE MOMENT

	ϕM_n^+	M_u^+	D/C
1st FLOOR	55.44 k-ft	47.0 k-ft	0.85
2nd - 4th FLOOR	49.83 k-ft	35.3 k-ft	0.71
ROOF	30.89 k-ft	30.0 k-ft	0.97

Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES
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PROJECT GA BUILDING PRE-DESIGN — SHEET 2
LOCATION OLYMPIA, WA — CLIENT — DATE 8/1/12 — BY JZ

SHEAR

- NO STIRRUPS FOR JOISTS
  $\Rightarrow \phi V_n = \phi V_c$

	ϕV_n	V_u	D/C
1st FLOOR	8.14 k	14.6 k	1.79
2nd - 4th FLOOR	6.39 k	11.0 k	1.72
ROOF	6.39 k	9.3 k	1.46

BEAMS

TYPICAL BEAM: 20" x 20 1/2"

BEAM SPACING: 24'-0"
SPAN LENGTH: 20'-0"

FLEXURE

INTERIOR SPANS:

POSITIVE MOMENT

	ϕM_n^+	M_u^+	D/C
1st FLOOR	156.57 k-ft	142.23 k-ft	0.91
2nd FLOOR	137.82 k-ft	105.59 k-ft	0.77
3rd FLOOR	137.82 k-ft	105.62 k-ft	0.77
4th FLOOR	137.82 k-ft	105.68 k-ft	0.77
ROOF	122.03 k-ft	89.23 k-ft	0.73

NEGATIVE MOMENT

	ϕM_n^-	M_u^-	D/C
1st FLOOR	194.37 k-ft	272.30 k-ft	1.40
2nd FLOOR	156.98 k-ft	201.90 k-ft	1.29
3rd FLOOR	156.98 k-ft	202.40 k-ft	1.29
4th FLOOR	156.98 k-ft	203.30 k-ft	1.30
ROOF	156.98 k-ft	172.50 k-ft	1.10

EXTERIOR SPANS:

POSITIVE MOMENT

	ϕM_n^+	M_u^+	D/C
1st FLOOR	244.51 k-ft	142.2 k-ft	0.58
2nd FLOOR	201.00 k-ft	106.8 k-ft	0.53
3rd FLOOR	201.00 k-ft	106.1 k-ft	0.53
4th FLOOR	201.00 k-ft	105.7 k-ft	0.53
ROOF	156.46 k-ft	99.6 k-ft	0.64

SHEAR

INTERIOR SPANS:

	ϕV_n	V_u	D/C
1st FLOOR	59.85 k	85.74 k	1.43
2nd FLOOR	44.18 k	63.62 k	1.44
3rd FLOOR	44.18 k	63.67 k	1.44
4th FLOOR	44.18 k	63.76 k	1.44
ROOF	44.18 k	53.91 k	1.22

EXTERIOR SPANS:

	ϕV_n	V_u	D/C
1st FLOOR	70.30 k	84.88 k	1.21
2nd FLOOR	59.85 k	62.31 k	1.04
3rd FLOOR	59.85 k	61.88 k	1.03
4th FLOOR	59.85 k	61.42 k	1.03
ROOF	44.18 k	54.28 k	1.23

Design Sheet

MAGNUSSON KLEMENCIC ASSOCIATES

Structural + Civil Engineers

PROJECT GA BUILDING PRE-DESIGN — SHEET 1

LOCATION — CLIENT — DATE 7/27/12 — BY JZ

GRAVITY LOADS

DEAD: SLAB: 2½" ⇒ 31.25 psf (TYP.) + 31.25 psf topping = 62.5 psf
3" ⇒ 37.5 psf (GROUND FLOOR) + 31.25 psf topping = 68.75 psf

JOISTS: 7" x 14" x 150 x 1/144 = 102.083 p/f (GROUND + 1st FLOOR)
5½" x 14" x 150 x 1/144 = 80.2083 p/f (TYP.)

BEAMS: 20" x (20½" − 2½") x 150 x 1/144 = 375 lb/ft (TYP.)

TYPICAL BEAM SPAN = 20'-0"
TYPICAL BEAM SPACING = 24'-0"
⇒ 375 lb/ft x 20' x 1 x (1/24' x 20') = 15.625 psf (TYP.)

TYPICAL JOIST SPAN = 24'-0"
TYPICAL JOIST SPACING = 2'-11½"
⇒ 7 JOISTS PER BAY
⇒ 102.083 lb/ft x 24' x 7 x (1/24' x 20') = 35.73 psf (GR. + 1st FLOOR)
80.2083 lb/ft x 24' x 7 x (1/24' x 20') = 28.073 psf (TYP.)

SDL = 10 psf

⇒ DL ⇒ = 10 psf + 68.75 psf + 35.73 psf + 15.625 psf = 130.105 psf (GROUND FLOOR)
= 10 psf + 62.5 psf + 35.73 psf + 15.625 psf = 123.855 psf (1st FLOOR)
= 10 psf + 62.5 psf + 28.073 psf + 15.625 psf = 116.198 psf (ALL OTHERS) ← INCLUDING ROOF

LIVE:
GROUND STORAGE = 125 psf
1st FLOOR = 100 psf
2nd – 4th FL. = 50 psf
ROOF = 25 psf
PARTITIONS = 20 psf

COL. DL 20" x 20" (TYP.)

3 x (13.12' − 20½"/12 in/ft) x 20" x 20" x 1/144 x 150 pcf/1000 = 14.26 k (1,3,4 ST.)
(12.92' − 20½"/12) x 20" x 20" x 1/144 x 150 pcf/1000 = 4.67 k (5th ST.)
(15.79' − 20½"/12) x 20" x 20' x 1/144 x 150 pcf/1000 = 5.87 k (2nd ST.)
Σ = 24.8 k

TYPICAL COL M-13

TRIB. AREA = 20' x 24' = 480 FT²

⇒ DL = (130.105 psf + 123.855 psf + 4 x 116.198 psf) x 480 ft² x 1/1000 lb/k = 345 k

⇒ Σ DL = 345 k + 24.8 k = 369.8 k

⇒ LL = (125 psf + 100 psf + 3 x 50 psf + 25 psf + 5 x 20 psf) x 480 ft² x 1/1000 lb/k = 240 k

TYPICAL FOOTING: 12' x 12' BEARING AREA
⇒ A = 144 ft²

D+L = 369.8 k + 240 k = 609.8 k

* 609.8 k / 144 ft² = 4.23 ksf > 4 ksf (MAX. SOIL BEARING PRESSURE)

COL. STRENGTH:
TYP COL 24" x 24" ⇒ A_g = 576 in²
AT BASE 7 - 1¼" ϕ bars ⇒ A_s = 8.59 in²
5/8" ϕ @ 2¾" pitch spiral reinf.
f'_c = 2.5 ksi
* F_y = 40 ksi

$\Rightarrow \phi P_{n,max} = 0.75 \times 0.85 \times [0.85 \times 2.5\,ksi \times (576\,in^2 - 8.59\,in^2) + 40\,ksi \times 8.59\,in^2] = 987.7^k$

$P_u = 1.2 \times 369.8^k + 1.6 \times 240^k = 827.76^k$ (Including ground floor) < 987.7 k – OK.

CHECK JOISTS

TYPICAL JOIST:
7"W x 14" + 3" D (GROUND) b_{eff} = 14 1/4"
7"W x 14" + 2 1/2" D (1st FLOOR) b_{eff} = 14 1/4"
5 1/2"W x 14" + 2 1/2" D (ALL OTHERS) b_{eff} = 15"

TYPICAL REINFORCEMENT:

TRIBUTARY WIDTH = 2'-11 1/2" T-BEAM WIDTH = 35.5"
SPAN = 24'-0"

TYPICAL INTERIOR JOISTS: J4, J104, J204, J304, J404, J504

UNIFORM LOAD ON JOIST:

DEAD: 78.75 psf x (2'-11 1/2") + 102.083 lb/ft = 335.1 lb/ft (GROUND FL.)
72.5 psf x (2'-11 1/2") + 102.083 lb/ft = 316.6 lb/ft (1st FL.)
72.5 psf x (2'-11 1/2") + 80.2083 lb/ft = 294.7 lb/ft (ALL OTHERS)

LIVE: 145 psf x (2'-11 1/2") = 428.958 lb/ft (GROUND FL)
120 psf x (2'-11 1/2") = 355 lb/ft (1st FL.)
70 psf x (2'-11 1/2") = 207.083 lb/ft (2nd-4th FL.)
45 psf x (2'-11 1/2") = 133.125 lb/ft (ROOF)

FACTORED LOADS:

1.2D + 1.6L:

1.2 x 335.1 lb/ft + 1.6 x 428.958 lb/ft = 1088.45 lb/ft (GROUND FL.)
1.2 x 316.6 lb/ft + 1.6 x 355 lb/ft = 947.92 lb/ft (1st FL.)
1.2 x 294.7 lb/ft + 1.6 x 207.083 lb/ft = 684.97 lb/ft (2nd-4th FL.)
1.2 x 294.7 lb/ft + 1.6 x 133.125 lb/ft = 566.64 lb/ft (ROOF)

WORST CASE POSITIVE MOMENT: (SIMPLY SUPPORTED BEAM)

$$M_u^+ = \frac{w\ell^2}{8}$$

M_u^+ = 78.37 k-ft (GROUND FL.)
= 68.25 k-ft (1st FL.)
= 49.32 k-ft (2nd-4th FL.)
= 40.80 k-ft (ROOF)

WORST CASE NEGATIVE MOMENT: (FIXED-FIXED BEAM)

$$M_u^- = \frac{w\ell^2}{12}$$

M_u^- = 52.25 k-ft (GROUND FL.)
= 45.50 k-ft (1st FL.)
= 32.88 k-ft (2nd-4th FL.)
= 27.20 k-ft (ROOF)

M_u^+ = 26.13 k-ft (GROUND FL.)
= 22.75 k-ft (1st FL.)
= 16.44 k-ft (2nd-4th FL.)
= 13.60 k-ft (ROOF)

PROJECT GA BUILDING PRE-DESIGN | SHEET 3
LOCATION | CLIENT | DATE 7/27/12 | BY JZ

STRENGTH CHECK:

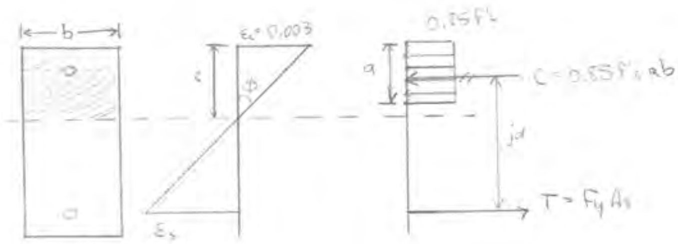
$d = H - 1'' = 16''$ (GROUND FL)
$= 15\frac{1}{2}$ (ALL OTHERS)

$f_y = 40$ ksi
$f'_c = 2.5$ ksi

$b = 7''$ (GR. + 1^{st} FL.)
$= 5\frac{1}{2}''$ (ALL OTHERS)

$A_s^+ = 0.196\ in^2$ (ROOF)
$= 0.307\ in^2$ (ALL OTHERS)

$A_s^- = 1.203\ in^2$ (GR. + 1^{st} FL.)
$= 0.889\ in^2$ (2^{nd} - 4^{th} FL.)
$= 0.614\ in^2$ (ROOF)



$\Rightarrow\ a = \dfrac{F_y A_s}{0.85 f'_c b}$

$jd = d - a/2$

$M_n = F_y A_s jd$

AT INTERIOR SPANS,
* ASSUME T-BEAM FOR POSITIVE MOMENT STRENGTH

							ACI $w\ell^2/16$
ϕM_n^+ =	37.65	k-Ft	(GROUND FL.)	≥ 32.16	k-Ft	O.K.	35.78
=	36.29	k-Ft	(1^{st} FL.)	≥ 27.87	k-Ft	O.K	30.72
=	30.37	k-Ft	(2^{nd} - 4^{th} FL.)	≥ 20.92	k-Ft	OK.	21.25
=	20.91	k-Ft	(ROOF)	≥ 17.78	k-Ft	O.K.	16.99

ϕM_n^- =	49.23	k-Ft	(GROUND FL.)	≤ 67.7	k-Ft	N.G.
=	47.43	k-Ft	(1^{st} FL.)	≤ 58.7	k-Ft	N.G.
=	35.16	k-Ft	(2^{nd} - 4^{th} FL.)	≤ 44.0	k-Ft	N.G.
=	25.40	k-Ft	(ROOF)	≤ 37.4	k-Ft	N.G.

TYPICAL EXTERIOR JOISTS:
J1
J101
J201
J301
J401
J501

At EXTERIOR SPANS,

$1 - 5/8''\phi \rightarrow 1 - 1''\phi$ (GROUND - 4^{th} FL.)
$1 - 1/2''\phi \rightarrow 1 - 3/4''\phi$ (ROOF)
} only A_s^+ changes

ϕM_n^+ =	57.53	k-Ft	(GROUND FL)	≥ 54.3	k-Ft	O.K.	$w\ell^2/11$
=	55.44	k-Ft	(1^{st} FL.)	≥ 47.0	k-Ft	O.K.	
=	49.83	k-Ft	(2^{nd} - 4^{th} FL.)	≥ 35.3	k-Ft	OK.	
=	30.89	k-Ft	(ROOF)	≥ 30	k-Ft	OK.	

PROJECT GA BUILDING PRE-DESIGN SHEET 4
LOCATION CLIENT DATE 7/27/12 BY JZ

CHECK BEAMS

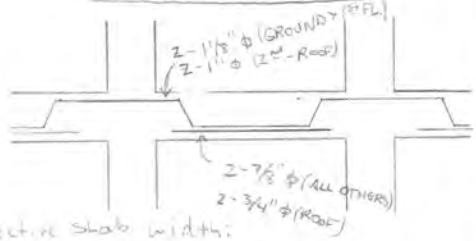
LOADS TRANSFERED TO BEAMS:

DEAD 335.1 lb/ft x 24' = 8042.4 lb (GROUND FL.)
316.6 lb/ft x 24' = 7598.4 lb (1st FL.)
294.7 lb/ft x 24' = 7072.8 lb (ALL OTHERS)

LIVE: 428.958 lb/ft x 24' = 10294.99 lb (GROUND FL.)
355 lb/ft x 24' = 8520 lb (1st FL.)
207.083 lb/ft x 24' = 4969.99 lb (2nd - 4th FL.)
133.125 lb/ft x 24' = 3195 lb (ROOF)

TYPICAL INTERIOR BEAMS:
B502
B409
B309
B209
B109
B4

TYPICAL REBAR LAYOUT



Effective slab width:

20/4 = 5' = 60"
8 x 3" = 24" => 20 + 24 x 2 = 68"   USE 60"
8 x 2 1/2 = 20" -> 20 + 20 x 2 = 60"
(24' - 20/12)/2 = 134

=> T-BEAM WIDTH = 60"

STRENGTH CHECK:

ASSUME d = 4 - 1 1/2" = 19 1/2" (GROUND FLOOR)
19" (ALL OTHERS)

fy = 40 ksi   20 x 20 1/2" BEAMS
f'c = 2.5 ksi
b = 20"

As+ = 1.20 in² (ALL OTHERS)
= 0.88 in² (ROOF)

As- = 3.98 in² (GROUND + 1st FLOOR)
3.14 in² (2nd - ROOF FL.)

AT INTERIOR SPANS,

φMn+ = 161.37 k-ft (GROUND FL.) ≤ 162.44 k-ft N.G.
= 156.57 k-ft (1st FL.) ≥ 142.23 k-ft OK.
= 137.82 k-ft (2nd FL.) ≥ 105.59 k-ft OK.
= 137.82 k-ft (3rd FL.) ≥ 105.62 k-ft O.K.
= 137.82 k-ft (4th FL.) ≥ 105.68 k-ft O.K.
= 122.03 k-ft (ROOF) ≥ 89.23 k-ft O.K.

φMn- = 200.87 k-ft (GROUND FL.) ≤ 312.6 k-ft N.G.
= 194.87 k-ft (1st FL.) ≤ 272.3 k-ft N.G.
= 156.98 k-ft (2nd FL.) ≤ 201.9 k-ft N.G.
= 156.98 k-ft (3rd FL.) ≤ 202.4 k-ft N.G.
= 156.98 k-ft (4th FL.) ≤ 203.3 k-ft N.G.
= 156.98 k-ft (ROOF) ≤ 172.5 k-ft N.G.

TYPICAL EXTERIOR BEAMS:
B508
B408
B308
B208
B108
B3

AT EXTERIOR SPANS,

2-7/8" φ -> 3-1 1/8" φ (GROUND + 1st FL.)
2-1 1/4" φ (2nd - 4th FL.)
2-3/4" φ -> 2-1" φ (ROOF)
} Only As+ changes

φMn+ = 252.01 k-ft (GROUND FL.) ≥ 185.5 k-ft OK.
= 244.51 k-ft (1st FL.) ≥ 142.2 k-ft OK
= 201.00 k-ft (2nd FL.) ≥ 106.8 k-ft O.K.
= 201.00 k-ft (3rd FL.) ≥ 106.1 k-ft O.K.
= 201.00 k-ft (4th FL.) ≥ 105.7 k-ft O.K.
= 156.46 k-ft (5th FL.) ≥ 99.6 k-ft OK.

SHEAR CHECK

JOISTS

$\phi V_c = \phi 2\sqrt{f'_c}\, b_w d$ $\Rightarrow$ $\phi = 0.75$, $\sqrt{f'_c} = \sqrt{2500} \approx 50\text{psi}$

assume $d \approx H - 1'' = 16''$ (GROUND FL.), $15\frac{1}{2}''$ (ALL OTHERS)

$= 0.75 \times 2 \times 50\text{psi} \times 7'' \times 16'' \times 1/1000 = 8.4^k$ (GROUND FL.)
$= 0.75 \times 2 \times 50\text{psi} \times 7'' \times 15\frac{1}{2}'' \times 1/1000 = 8.14^k$ (1st FL.)
$= 0.75 \times 2 \times 50\text{psi} \times 5\frac{1}{2}'' \times 15\frac{1}{2}'' \times 1/1000 = 6.39^k$ (2nd FL. - ROOF)

GROUND FL.	$\phi V_n = 8.4^k$	$\leq 16.9^k$	N.G.
1st FL.	$= 8.14^k$	$\leq 14.6^k$	N.G.
2nd - 4th FL.	$= 6.39^k$	$\leq 11^k$	N.G.
ROOF	$= 6.39^k$	$\leq 9.3^k$	N.G.

BEAMS

$\phi V_s = \dfrac{A_v f_y d}{s}$
$\phi V_c = \phi 2\sqrt{f'_c}\, b_w d$

$\Rightarrow$ $A_v = 2 \times 0.11\text{in}^2 = 0.22\text{in}^2$, $f_y = 40\text{ksi}$, $\sqrt{f'_c} = 50\text{psi}$, $d \approx H - 1.5 = 19.5''$ (GROUND FL.), $= 19''$ (ALL OTHERS), $b_w = 20''$

INTERIOR BEAM TRANSVERSE REINF.
s = 4" (GROUND + 1st FL.)
s = 8" (2nd FL. - ROOF)

EXTERIOR BEAM TRANSVERSE REINF. (1st INT. COL.)
s = 3" (GROUND + 1st FL.)
s = 4" (2nd - 4th FL.)
s = 8" (ROOF)

INTERIOR BEAM,

$\Rightarrow \phi V_n = 0.75\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19.5''}{4''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19.5''}{1000}\right) = 61.425^k$ (GROUND FL.)

$= 0.75\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19''}{4''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19''}{1000}\right) = 59.85^k$ (1st FL.)

$= 0.75\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19''}{8''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19''}{1000}\right) = 44.175^k$ (2nd FL. - ROOF)

EXTERIOR BEAM,

$\Rightarrow \phi V_n = 0.75\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19.5''}{3''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19.5''}{1000}\right) = 72.15$ (GROUND FL.)

$\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19''}{3''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19''}{1000}\right) = 70.3^k$ (1st FL.)

$\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19''}{4''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19''}{1000}\right) = 59.85^k$ (2nd - 4th FL.)

$\left(\dfrac{0.22\text{in}^2 \times 40\text{ksi} \times 19''}{8''} + \dfrac{2 \times 50\text{psi} \times 20'' \times 19''}{1000}\right) = 44.175^k$ (ROOF)

INTERIOR CHECK, EXTERIOR CHECK,

	Interior ϕV_n			Exterior ϕV_n		
GROUND	61.425^k	$\leq 98.153^k$	N.G.	72.15^k	$\leq 102.831^k$	N.G.
1st FL.	$= 59.85^k$	$\leq 85.744^k$	N.G.	$= 70.3^k$	$\leq 84.88^k$	N.G.
2nd FL.	$= 44.175^k$	$\leq 63.623^k$	N.G.	$= 59.85^k$	$\leq 62.305^k$	N.G.
3rd FL.	$= 44.175^k$	$\leq 63.671^k$	N.G.	$= 59.85^k$	$\leq 61.877^k$	N.G.
4th FL.	$= 44.175^k$	$\leq 63.764^k$	N.G.	$= 59.85^k$	$\leq 61.416^k$	N.G.
ROOF	$= 44.175^k$	$\leq 53.906^k$	N.G.	$= 44.175^k$	$\leq 54.273^k$	N.G.

Chapter 39.35D RCW
High-performance public buildings

Chapter Listing

RCW Sections

39.35D.010 Finding -- Intent.

39.35D.020 Definitions.

39.35D.030 Standards for major facility projects -- Annual reports.

39.35D.040 Public school district major facility projects -- Standards -- Annual reports -- Advisory committee.

39.35D.050 Annual reports -- Submission to legislature.

39.35D.060 Guidelines for administration of chapter -- Amendment of fee schedules -- Architecture and engineering services -- Building commissioning -- Preproposal conferences -- Advisory committee.

39.35D.070 Liability for failure to meet standards.

39.35D.080 Affordable housing projects -- Exemption.

39.35D.090 Use of local building materials and products -- Intent.

39.35D.800 Performance review -- Report.

39.35D.010
Finding — Intent.

(1) The legislature finds that public buildings can be built and renovated using high-performance methods that save money, improve school performance, and make workers more productive. High-performance public buildings are proven to increase student test scores, reduce worker absenteeism, and cut energy and utility costs.

(2) It is the intent of the legislature that state-owned buildings and schools be improved by adopting recognized standards for high-performance public buildings, reducing energy consumption, and allowing flexible methods and choices in how to achieve those standards and reductions. The legislature also intends that public agencies and public school districts shall document costs and savings to monitor this program and ensure that economic, community, and environmental goals are achieved each year, and that an independent performance review be conducted to evaluate this program and determine the extent to which the results intended by this chapter are being met.

(3) The legislature further finds that state agency leadership is needed in the development of preparation and adaptation actions for climate change to ensure the economic health, safety, and environmental well-being of the state and its citizens.

[2009 c 519 § 8; 2005 c 12 § 1.]

Notes:

Findings -- 2009 c 519: See RCW 43.21M.900.

39.35D.020
Definitions.

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Department" means the department of enterprise services.

(2) "High-performance public buildings" means high-performance public buildings designed, constructed, and certified to a standard as identified in this chapter.

(3) "Institutions of higher education" means the state universities, the regional universities, The Evergreen State College, the community colleges, and the technical colleges.

(4) "LEED silver standard" means the United States green building council leadership in energy and environmental design green building rating standard, referred to as silver standard.

(5)(a) "Major facility project" means: (i) A construction project larger than five thousand gross square feet of occupied or conditioned space as defined in the Washington state energy code; or (ii) a building renovation project when the cost is greater than fifty percent of the assessed value and the project is larger than five thousand gross square feet of occupied or conditioned space as defined in the Washington state energy code.

(b) "Major facility project" does not include: (i) Projects for which the department, public school district, or other applicable agency and the design team determine the LEED silver standard or the Washington sustainable school design protocol to be not practicable; or (ii) transmitter buildings, pumping stations, hospitals, research facilities primarily used for sponsored laboratory experimentation, laboratory research, or laboratory training in research methods, or other similar building types as determined by the department. When the LEED silver standard is determined to be not practicable for a project, then it must be determined if any LEED standard is practicable for the project. If LEED standards or the Washington sustainable school design protocol are not followed for the project, the public school district or public agency shall report these reasons to the department.

(6) "Public agency" means every state office, officer, board, commission, committee, bureau, department, and public higher education institution.

(7) "Public school district" means a school district eligible to receive state basic education moneys pursuant to RCW

28A.150.250 and 28A.150.260.

(8) "Washington sustainable school design protocol" means the school design protocol and related information developed by the office of the superintendent of public instruction, in conjunction with school districts and the school facilities advisory board.

[2011 1st sp.s. c 43 § 249; 2006 c 263 § 330; 2005 c 12 § 2.]

Notes:

Effective date -- Purpose -- 2011 1st sp.s. c 43: See notes following RCW 43.19.003.

Findings -- Purpose -- Part headings not law -- 2006 c 263: See notes following RCW 28A.150.230.

39.35D.030
Standards for major facility projects — Annual reports.

(1) All major facility projects of public agencies receiving any funding in a state capital budget, or projects financed through a financing contract as defined in RCW

39.94.020, must be designed, constructed, and certified to at least the LEED silver standard. This subsection applies to major facility projects that have not entered the design phase prior to July 24, 2005, and to the extent appropriate LEED silver standards exist for that type of building or facility.

(2) All major facility projects of any entity other than a public agency or public school district receiving any funding in a state capital budget must be designed, constructed, and certified to at least the LEED silver standard. This subsection applies to major facility projects that have not entered the grant application process prior to July 24, 2005, and to the extent appropriate LEED silver standards exist for that type of building or facility.

(3)(a) Public agencies, under this section, shall monitor and document ongoing operating savings resulting from major facility projects designed, constructed, and certified as required under this section.

(b) Public agencies, under this section, shall report annually to the department on major facility projects and operating savings.

(4) The department shall consolidate the reports required in subsection (3) of this section into one report and report to the governor and legislature by September 1st of each even-numbered year beginning in 2006 and ending in 2016. In its report, the department shall also report on the implementation of this chapter, including reasons why the LEED standard was not used as required by RCW 39.35D.020(5)(b). The department shall make recommendations regarding the ongoing implementation of this chapter, including a discussion of incentives and disincentives related to implementing this chapter.

(5) For the purposes of determining compliance with the requirement for a project to be designed, constructed, and certified to at least the LEED silver standard, the department must credit one additional point for a project that uses wood products with a credible third-party sustainable forest certification or from forests regulated under chapter 76.09 RCW, the Washington forest practices act. For projects that qualify for this additional point, and for which an additional point would have resulted in formal certification under the LEED silver standard, the project must be deemed to meet the standard under this section.

[2011 c 99 § 1; 2005 c 12 § 3.]

39.35D.040
Public school district major facility projects — Standards — Annual reports — Advisory committee.

(1) All major facility projects of public school districts receiving any funding in a state capital budget must be designed and constructed to at least the LEED silver standard or the Washington sustainable school design protocol. To the extent appropriate LEED silver or Washington sustainable school design protocol standards exist for the type of building or facility, this subsection applies to major facility projects that have not received project approval from the superintendent of public instruction prior to: (a) July 1, 2006, for volunteering school districts; (b) July 1, 2007, for class one school districts; and (c) July 1, 2008, for class two school districts.

(2) Public school districts under this section shall: (a) Monitor and document appropriate operating benefits and savings resulting from major facility projects designed and constructed as required under this section for a minimum of five years following local board acceptance of a project receiving state funding; and (b) report annually to the superintendent of public instruction. The form and content of each report must be mutually developed by the office of the superintendent of public instruction in consultation with school districts.

(3) The superintendent of public instruction shall consolidate the reports required in subsection (2) of this section into one report and report to the governor and legislature by September 1st of each even-numbered year beginning in 2006 and ending in 2016. In its report, the superintendent of public instruction shall also report on the implementation of this chapter, including reasons why the LEED standard or Washington sustainable school design protocol was not used as required by RCW

39.35D.020(5)(b). The superintendent of public instruction shall make recommendations regarding the ongoing implementation of this chapter, including a discussion of incentives and disincentives related to implementing this chapter.

(4) The superintendent of public instruction shall develop and issue guidelines for administering this chapter for public school districts. The purpose of the guidelines is to define a procedure and method for employing and verifying compliance with the LEED silver standard or the Washington sustainable school design protocol.

(5) The superintendent of public instruction shall utilize the school facilities advisory board as a high-performance buildings advisory committee comprised of affected public schools, the superintendent of public instruction, the department, and others at the superintendent of public instruction's discretion to provide advice on implementing this chapter. Among other duties, the advisory committee shall make recommendations regarding an education and training process and an ongoing evaluation or feedback process to help the superintendent of public instruction implement this chapter.

(6) For projects that comply with this section by meeting the LEED silver standard, the superintendent of public instruction must credit one additional point for a project that uses wood products with a credible third-party sustainable forest certification or from forests regulated under chapter 76.09 RCW, the Washington forest practices act. For projects that qualify for this additional point, and for which an additional point would have resulted in formal certification under the LEED silver standard, the project must be deemed to meet the requirements of subsection (1) of this section.

[2011 c 99 § 2; 2006 c 263 § 331; 2005 c 12 § 4.]

Notes:

Findings -- Purpose -- Part headings not law -- 2006 c 263: See notes following RCW 28A.150.230.

39.35D.050
Annual reports — Submission to legislature.

On or before January 1, 2009, the department and the superintendent of public instruction shall summarize the reports submitted under RCW

39.35D.030(4) and 39.35D.040(3) and submit the individual reports to the legislative committees on capital budget and ways and means for review of the program's performance and consideration of any changes that may be needed to adapt the program to any new or modified standards for high-performance buildings that meet the intent of this chapter.

[2005 c 12 § 5.]

39.35D.060
Guidelines for administration of chapter — Amendment of fee schedules — Architecture and engineering services — Building commissioning — Preproposal conferences — Advisory committee.

(1)(a) The department, in consultation with affected public agencies, shall develop and issue guidelines for administering this chapter for public agencies. The purpose of the guidelines is to define a procedure and method for employing and verifying activities necessary for certification to at least the LEED silver standard for major facility projects.

(b) The department and the office of the superintendent of public instruction shall amend their fee schedules for architectural and engineering services to accommodate the requirements in the design of major facility projects under this chapter.

(c) The department and the office of the superintendent of public instruction shall procure architecture and engineering services consistent with chapter

39.80 RCW.

(d) Major facility projects designed to meet standards identified in this chapter must include building commissioning as a critical cost-saving part of the construction process. This process includes input from the project design and construction teams and the project ownership representatives.

(e) As provided in the request for proposals for construction services, the operating agency shall hold a preproposal conference for prospective bidders to discuss compliance with and achievement of standards identified in this chapter for prospective respondents.

(2) The department shall create a high-performance buildings advisory committee comprised of representatives from the design and construction industry involved in public works contracting, personnel from the affected public agencies responsible for overseeing public works projects, the office of the superintendent of public instruction, and others at the department's discretion to provide advice on implementing this chapter. Among other duties, the advisory committee shall make recommendations regarding an education and training process and an ongoing evaluation or feedback process to help the department implement this chapter.

(3) The department and the office of the superintendent of public instruction shall adopt rules to implement this section.

[2006 c 263 § 332; 2005 c 12 § 6.]

Notes:

Findings -- Purpose -- Part headings not law -- 2006 c 263: See notes following RCW 28A.150.230.

39.35D.070
Liability for failure to meet standards.

A member of the design or construction teams may not be held liable for the failure of a major facility project to meet the LEED silver standard or other LEED standard established for the project as long as a good faith attempt was made to achieve the LEED standard set for the project.

[2005 c 12 § 10.]

39.35D.080
Affordable housing projects — Exemption.

Except as provided in this section, affordable housing projects funded out of the state capital budget are exempt from the provisions of this chapter. On or before July 1, 2008, the *department of community, trade, and economic development shall identify, implement, and apply a sustainable building program for affordable housing projects that receive housing trust fund (under chapter

43.185 RCW) funding in a state capital budget. The *department of community, trade, and economic development shall not develop its own sustainable building standard, but shall work with stakeholders to adopt an existing sustainable building standard or criteria appropriate for affordable housing. Any application of the program to affordable housing, including any monitoring to track the performance of either sustainable features or energy standards or both, is the responsibility of the *department of community, trade, and economic development. Beginning in 2009 and ending in 2016, the *department of community, trade, and economic development shall report to the department as required under RCW 39.35D.030(3)(b).

[2005 c 12 § 12.]

Notes:

***Reviser's note:** The "department of community, trade, and economic development" was renamed the "department of commerce" by 2009 c 565.

39.35D.090
Use of local building materials and products — Intent.

It is the intent and an established goal of the LEED program as authored by the United States green building council to increase demand for building materials and products that are extracted and manufactured locally, thereby reducing the environmental impacts and to support the local economy. Therefore, it is the intent of the legislature to emphasize this defined goal and establish a priority to use Washington state based resources, building materials, products, industries, manufacturers, and other businesses to provide economic development to Washington state and to meet the objectives of this chapter.

[2005 c 12 § 13.]

39.35D.800
Performance review — Report.

The joint legislative audit and review committee, or its successor legislative agency, shall conduct a performance review of the high-performance buildings program established under this chapter.

(1) The performance audit shall include, but not be limited to:

(a) The identification of the costs of implementation of high-performance building[s] standards in the design and construction of major facility projects subject to this chapter;

(b) The identification of operating savings attributable to the implementation of high-performance building[s] standards, including but not limited to savings in energy, utility, and maintenance costs;

(c) The identification of any impacts of high-performance buildings standards on worker productivity and student performance; and

(d) An evaluation of the effectiveness of the high-performance building[s] standards established under this chapter, and recommendations for any changes in those standards that may be supported by the committee's findings.

(2) The committee shall make a preliminary report of its findings and recommendations on or before December 1, 2010, and a final report on or before July 1, 2011.

[2005 c 12 § 14.]

General Administration Building

The General Administration Building is located on the Capitol Campus. This facility has two (2) diesel generators. Generator #1 is a 100KW unit manufactured by Marathon Electric and purchased in 1982. It is connected to an electrical distribution riser identified as Feeder A-South that serves the south half of the building. Generator #2 is an 80KW unit manufactured by Cummins and purchased in 1988. Generator #2 is connected to an electrical distribution riser identified as Feeder B-North that serves the north half of the building.

Emergency/Standby Feeders A-South and B-North are connected to separate ASCO 940 automatic transfer switches (ATS's) in a common enclosure. Panel nameplates identify the north feeder ATS as ATS 2 and the south feeder transfer switch is identified as ATS 3. The two Generators and ATS's 2 & 3 are located on the penthouse level.

ATS's 2 and 3 each serve both life safety and selected standby loads. Life safety loads include exit sign and egress lighting, fire alarm, generator accessories, and building access controls. Optional standby loads include computer and network services, convenience outlets, air compressors, select HVAC, communications equipment, and kitchen small appliance circuits. Electrical panels served by these ATS's are as follows:

> ATS 2: 208/120 volt panels 5NX1, 4NX1, 3NX1, 2NX1, 1NX1, 1NX2, 1NX2A, 1NX3, and GNX1 are served by ATS 2.
>
> ATS 3: 208/120 volt panels 5SX1, 5SX2, 4SX1, 4SX2, 4SX3, 3SX1, 2SX1, 1SX1, GSX1, and BSX1 are served by ATS 3.

A third ATS, identified at ATS 1, has been added in the basement and is connected to the 80KW generator through Panel GNX1. ATS 1 serves 208 volt panels BSX2, BSX3, BSX4, and the UPS in the basement telecommunications room.

See attached survey sheet, One-Line Diagram, and panel schedules for additional information.

Upon loss of normal utility power, the generator distribution system provides power for life safety and selected stand-by loads described above. Server room processing equipment is supported by uninterruptable power supplies (UPS's) until the load is transferred to the generator. Washington State Patrol, server room and select station computers can continue limited operations during a power outage. Other building operations would shut down and most employees could not continue working until normal power was restored.

Current Code requires that emergency and standby loads have separate transfer switches. As part of any future changes or upgrades to the generator distribution system, the inspection authority may require that this situation be addressed.

BUILDING: **GA BUILDING**

EQUIP INFORMATION	GENERATOR #1 S	GENERATOR #2 N
SIZE	100KW	80KW
VOLTS/PH	208/3	
CIRCUIT BREAKER	250/3	225/3
MAKE	MAGNA ONE/MARATHON ELECT ILI CORP	ONAN
MODEL #	140D-343 N-855G 440FDR8016GG-F393 W	80DGDA L30592A
SERIAL #	5793 11032098 MB-95118	F880130387
MANUF YEAR	1982	1988
FUEL TYPE	DIESEL	DIESEL
GPH	25	6
FUEL TANK SIZE	500 GALLON UGST	SHARED
CONDITION	OK	OK
		702
REMARKS		NEW MOUNTS, FELL OFF MOUNT DURING LAST EARTHQUAKE

BUILDING: **GA BUILDING**

EQUIP INFORMATION	ATS #1	ATS #2 (B)	ATS #3 (A)
SIZE	300A	260A	260A
VOLTS/PH	208/3	208/3	208/3
NEC SYSTEM CATEGORY			
MAKE	GENERAC	ASCO	ASCO
MODEL #	97A04431-W	B940326049	B940326049
SERIAL #	40349	S87931-2	S87931-2
MANUF YEAR	?		
NORMAL FEEDER	2-1/2"C - 4#4/0 + #4GND CU	3"C-4#300 +#4GND CU	3#C-4#300+4GND CU
GENERATOR FEEDER	2-1/2"C - 4#4/0 + #4GND CU	2"C-4#4/0CU	3"C-3#350 +1#4/0 _1 1#1GND CU
PANEL FEEDER	2-1/2"C - 4#4/0 + #4GND CU	3"C-4#300+#4GND CU	3"C-4#250+#4GND CU
MAINT & BY-PASS			
CONDITION	GOOD	OK	OK
LOADS			
CODE DEFICIENCIES			
REMARKS			

FEEDER A

THREE PHASE PANEL SCHEDULE

ID:	**5SX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 400 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☒ Main Lugs		☐ 10K
Location:	SOUTH PENTHOUSE	☐ Surface	☐ Isolated Gnd		☐ Main Breaker		☐ 22K
	CH	☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	PANEL 5SX2		225/3	1	A	2				
				3	B	4				
				5	C	6				
				7	A	8	225/3		PANEL 4SX1	
				9	B	10				
				11	C	12				
			100/3	13	A	14	-			
				15	B	16	-			
				17	C	18	-			
	PANEL 4SX2		225/3	19	A	20				
				21	B	22				
				23	C	24				
				25	A	26	225/3		PANEL 4SX3	
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
				0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

ATS2 **THREE PHASE PANEL SCHEDULE** FEEDER B

ID:	**5NX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 400 Amps	Assembly AIC:
Section:	1 OF 1	☐ Flush		☐ Main Lugs	☐ 10K
Location:	NORTH PENTHOUSE	☒ Surface	☐ Isolated Gnd	☒ Main Breaker 400A	☐ 22K
	EATON CH	☐ NEMA 3R	☐ SPD	☐ Feed Thru Lugs	☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - PENTHOUSE		20	1	A	2	20			
			20	3	B	4	20			
			20	5	C	6	20			
	LTG - ELEVATOR #5		20	7	A	8	20			
	AC UNIT 123D FIRST FLOOR		30/2	9	B	10	20			
	WSP COMPRESSOR ROOM			11	C	12	20			
			-	13	A	14	20			
			-	15	B	16	20			
			-	17	C	18	20			
			-	19	A	20	225/3		4NX1	
			-	21	B	22				
			-	23	C	24				
	TVSS		30/3	25	A	26	-			
				27	B	28	-			
				29	C	30	-			
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				

	A	B	C	
	A	B	C	PHASE
LTG, MECH	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPACE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

5SX1 **THREE PHASE PANEL SCHEDULE** ATS3

ID:	**4SX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush		☐ Main Lugs		☐ 10K
Location:	4TH FLOOR ELECT SW CH	☒ Surface	☐ Isolated Gnd	☒ Main Breaker 225A		☐ 22K
		☐ NEMA 3R	☐ SPD	☒ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	WOMENS LOUNGE		20	1	A	2	20		NO ID	
	CORRIDOR SOUTH		20	3	B	4	20			
	RCPT - TELEPHONE ROOM			5	C	6	20			
	LTG & RCPT THIS ROOM			7	A	8	20			
	DFPM FIRE ALARM			9	B	10	-			
	CARD KEY			11	C	12	-			
	CARD READER POWER			13	A	14	-			
				15	B	16	-			
				17	C	18	-			
	SSU		30/3	19	A	20	-			
				21	B	22	-			
				23	C	24	-			
			-	25	A	26	-			
			-	27	B	28	-			
			-	29	C	30	-			
			-	31	A	32	-			
			-	33	B	34	-			
			-	35	C	36	-			
			-	37	A	38	-			
			-	39	B	40	-			
			-	41	C	42	-			
				A	B	C	PHASE			
	LTG, PHONE			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

5SX1 **THREE PHASE PANEL SCHEDULE** ATS3

ID:	**4SX2**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush		☒ Main Lugs		☐ 10K
Location:	4TH FLR ELEC CLOSET SW CH	☒ Surface	☐ Isolated Gnd	☐ Main Breaker		☐ 22K
		☐ NEMA 3R	☐ SPD	☐ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG		20	1	A	2	20		FLOOR OUTLETS PHOTO LAB	
	LTG		20	3	B	4	20		FLOOR OUTLETS PHOTO LAB	
	LTG		20	5	C	6	20		FLOOR OUTLETS PHOTO LAB	
	LTG - RMS 425, ABI +K OUTLET		20	7	A	8	20		LIGHTS	
	PANEL 4A6		20	9	B	10	20		LIGHTS	
	PANEL 4A6		20	11	C	12	20		OUTLETS	
	PANEL 4A6		30	13	A	14	30/3		OUTLETS	
	R5-30 PLUG DATA PHONE RRD		20	15	B	16	20		OUTLETS	
	SPARE		20	17	C	18	20		OUTLETS	
	OUTLETS		20	19	A	20	20		OUTLETS	
	OUTLETS		20	21	B	22	20		OUTLETS	
	OUTLETS		20	23	C	24	20		OUTLETS	
	OUTLETS		20	25	A	26	20		OUTLETS	
	OUTLETS		20	27	B	28	20		OUTLETS	
	SPARE TO HAND HOLE REV, SW WING		20	29	C	30	20		IG RECEPTS REV. TELE/DATA ROOM	
	SPARE TO HAND HOLE REV, SW WING		20	31	A	32	20		IG RECEPTS REV. SW WING	
	SPARE TO HAND HOLE REV, SW WING		20	33	B	34	20		IG RECEPTS REV. SW WING	
	IG RECEPTS REV. SW WING		20	35	C	36	20		IG RECEPTS REV. SW WING	
	IG RECEPTS REV. SW WING		20	37	A	38	20		IG RECEPTS REV. SW WING	
	IG RECEPTS REV. SW WING		20	39	B	40	20		IG RECEPTS REV. SW WING	
			20	41	C	42	20			
				A	B	C	PHASE			
	LTG, RECPT			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

5NX1 | **THREE PHASE PANEL SCHEDULE** | ATS2

ID: **4NX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps	Assembly AIC:
Section: 1 OF 1	☐ Flush		☐ Main Lugs	☐ 10K
Location: 4TH FLR ELEC RM N CH	☒ Surface	☐ Isolated Gnd	☒ Main Breaker 225A	☐ 22K
	☐ NEMA 3R	☐ SPD	☒ Feed Thru Lugs	☐ 42K
	☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - ELEC VAULT		20	1	A	2	20		EMERG LTG REVENU	
	CORRIDOR WEST		20	3	B	4	20		LEG & RECEPT THIS ROOM	
	RCPTS - TELE ROOM		20	5	C	6	20		EMERGENCY LTG OUTSIDE BACK	
	FIRE ALARM POWER SUPPLY		20	7	A	8	20			
	L6-30 SERVER ROOM		30/2	9	B	10	20			
				11	C	12	20			
	L6-30 SERVER ROOM		30/2	13	A	14	20			
				15	B	16	20			
			20	17	C	18	20			
			100/3	19	A	20	20			
				21	B	22	20			
				23	C	24	20			
			20	25	A	26	30/3		SSU	
			20	27	B	28				
			20	29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
	LTG, SERVER ROOM			A	B	C	PHASE			
				0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

THREE PHASE PANEL SCHEDULE

ID:	**4SX3**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps	Assembly AIC:
Section:	1 OF 1	☐ Flush		☒ Main Lugs	☐ 10K
Location:	CHILD EXPLOITATION RM	☒ Surface	☐ Isolated Gnd	☐ Main Breaker	☐ 22K
	WESTINGHOUSE CH	☐ NEMA 3R	☐ SPD	☐ Feed Thru Lugs	☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG		20	1	A	2	20		LIGHTING 425	
	LTG		20	3	B	4	20		LIGHTING 425	
	LTG		20	5	C	6	20		LIGHTING 425	
	LTG		20	7	A	8	20		LIGHTING 425	
	SPARE		20	9	B	10	20		EXHAUST FAN	
	OUTLETS		20	11	C	12	-		SPARE	
	OUTLETS		-	13	A	14	-		SPARE	
	OUTLETS		-	15	B	16	-		SPARE	
	OUTLETS		-	17	C	18	-		SPARE	
	OUTLETS		-	19	A	20	-		SPARE	
	OUTLETS		20	21	B	22	20		SPARE	
	PROCESSOR		20/2	23	C	24	20		SPARE	
				25	A	26	30/3		TVSS	
	SPACE			27	B	28			TVSS	
	SPACE			29	C	30			TVSS	
	SPACE			31	A	32			SPACE	
	SPACE			33	B	34			SPACE	
	SPACE			35	C	36			SPACE	
	SPACE			37	A	38			SPACE	
	SPACE			39	B	40			SPACE	
	SPACE			41	C	42			SPACE	
				A	B	C	PHASE			
	LTG, SERVER ROOM			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

THREE PHASE PANEL SCHEDULE

ID:	**3SX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush		☐ Main Lugs		☐ 10K
Location:	3RD FLR ELEC CLST SW CH	☐ Surface	☐ Isolated Gnd	☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD	☒ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	CORRIDOR LTG N & E		20	1	A	2	20		NO ID	
	CORRIDOR SOUTH		20	3	B	4	20		LTG & RCPT THIS ROM	
	TELE ROOM RECEPT		20	5	C	6	20			
			20	7	A	8	20			
	PHONE ROOM OUTLET - RM BEHIND SE		20	9	B	10				
	PHONE ROOM OUTLET - RM BEHIND SE		20	11	C	12				
			20	13	A	14				
			20	15	B	16				
			20	17	C	18				
	SSU		30/3	19	A	20				
				21	B	22				
				23	C	24				
				25	A	26				
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				

	A	B	C	
				PHASE
LTG, PH	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

THREE PHASE PANEL SCHEDULE

ID:	**2SX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	2ND FLR ELEC RM SW	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☒ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	PWR SUPPLY FA		20	1	A	2	20		CORRIDOR NO. & EAST	
	DORRIDOR N&S KEY DOX MOTOR POOL		20	3	B	4	20		LTG - ROOM 201	
	RCPT - TELE ROOMS		20	5	C	6	20		LTG & RCPT THIS ROM	
	A&E SERVICES		20	7	A	8	30		SPARE	
	LS-30 IS ROOM		20	9	B	10	30		LS-30 IS ROOM	
	LS-30 IS ROOM		30	11	C	12	30		LS-30 IS ROOM	
			20	13	A	14	30/2		IS-RM 204 L-6-30	
	CARD CONTROL BSS		20	15	B	16			IS-RM 204 L-6-30	
			20	17	C	18	30/2			
	SSU		30/3	19	A	20				
				21	B	22	20			
				23	C	24	20			
				25	A	26	20			
				27	B	28	20			
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
	LTG & DATA (REMOVED)			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

THREE PHASE PANEL SCHEDULE

ID:	**2NX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	2ND FLR ELEC CLST N	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☒ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	FIRE ALARM		20	1	A	2	20		CORRIDOR EAST	
	SPARE		20	3	B	4	20		SPARE CAPACITY:	
	RCPT - TELECOM RM		20	5	C	6	20		FIRE ALARM	
	LTG - RECPT 2N		20	7	A	8	20		SPARE CAPACITY:	
				9	B	10				
				11	C	12				
				13	A	14				
				15	B	16				
				17	C	18				
				19	A	20				
				21	B	22				
				23	C	24				
				25	A	26	30/3		SSU	
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
	LTG & FIRE			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

4NX1

THREE PHASE PANEL SCHEDULE

ID: **3NX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps	Assembly AIC:
Section: 1 OF 1	☐ Flush		☐ Main Lugs	☐ 10K
Location: 4RD FLR ELEC RM N	☒ Surface	☐ Isolated Gnd	☒ Main Breaker 225	☐ 22K
	☐ NEMA 3R	☐ SPD	☒ Feed Thru Lugs	☐ 42K
	☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - ELECT VAULT		20	1	A	2	20		DORRIDOR EAST	
	FA POWER SUPPLIES		20	3	B	4	20		CORRIDOR S. WEST AND CLAIM ST.	
	REC. TEL ROOMS		20	5	C	6	20		FORRESTRY RADIO	
	NO ID		20	7	A	8	20		OUTLET THIS ROOM	
	NO ID		20	9	B	10				
	LTG 7 RCPT THIS ROOM		20	11	C	12				
	FIRE PANEL		20	13	A	14				
			20	15	B	16				
			20	17	C	18				
			20	19	A	20				
			20	21	B	22				
			20	23	C	24				
			20	25	A	26	30/3		SSU	
			20	27	B	28				
			20	29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				

	A	B	C	
				PHASE
LTG	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

1NX1

THREE PHASE PANEL SCHEDULE

ID:	**1NX2**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☒ Main Lugs		☐ 10K
Location:	1ST FLR SERVER RM	☒ Surface	☐ Isolated Gnd		☐ Main Breaker		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	SPARE		70/3	1	A	2	100/3		INX3	
	SPARE			3	B	4				
	MR SLIM A/C THIS ROOM		20	5	C	6				
	UPS THIS ROOM		70/3	7	A	8	60/3		SPARE	
	UPS THIS ROOM			9	B	10			SPARE	
	UPS THIS ROOM			11	C	12			SPARE	
			-	13	A	14	-			
			-	15	B	16	-			
	SPARE		20/2	17	C	18	20		TELEPHONE PANEL	
	SPARE			19	A	20	20		FLOOR BOX #4	
	SO CARD		20	21	B	22	20		FLOOR BOX #3	
	WORK BENCH		20	23	C	24	-			
	FLOOR BOX #2		20	25	A	26	30/3		SSU	
	FLOOR BOX #1		-	27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
	OTHER PANELS, DATA RECPT			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

1NX2

THREE PHASE PANEL SCHEDULE

ID:	**1NX2-A**	Enclosure:	Voltage: 208/120, 4W		Rating: 100 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☒ Main Lugs		☐ 10K
Location:	1ST FLR ELECT RM S	☒ Surface	☐ Isolated Gnd		☐ Main Breaker		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	MAIN		100/3	1	A	2	-			
				3	B	4	-			
				5	C	6	-			
	TV OUTLET CONF RM		20	7	A	8	20		RCPT - 121B	
	LTG - CONF ROOM		20	9	B	10	20		RCPT - 121A	
	LTG - CONF ROOM		20	11	C	12	20		RCPT 121 AND RECP ROOM	
	RCPT -121A		20	13	A	14	20		RCPT - PLUG MOLD & 121C	
	RCPT - 121F		20	15	B	16	20		RCPT - PLUG MOLD & 121C	
	RCPT - 121 D, E, F		20	17	C	18	20		RCPT - 121E	
	RCPT - 121 A CHIEF		20	19	A	20	20		RCPT - 121B	
	RCPT - 121F CHIEF		20	21	B	22	20		RCPT - 121B	
	RCPT - 121A		20	23	C	24	20		RCPT - RECP ROOM 121C	
	RCPT - 121 G, H		20	25	A	26	20			
	PARE		20	27	B	28	-			
	RCPT - 121H		20	29	C	30	-			
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
	LTG AND RCPT			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

THREE PHASE PANEL SCHEDULE

ID:	**1SX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	1ST FLR ELECT RM SW	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☒ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - CORR NE AND E		20	1	A	2	20		LTG - CORR NW AND W	
	LTG - WSP AND OPER		20	3	B	4	20		LTG - LOBBY	
	RCPT - TEL RMS		20	5	C	6	20		SPARE CAPACITY:	
	RCPT - LOBBY		20	7	A	8	20		LTG - ST. PATROL	
	TELE EQUIP AND LTG G7		20	9	B	10	20		LTG - ST. PATROLS COMP ROOM	
	TELE EQUIP AND LTG G7		20	11	C	12	20		NO ID	
	POWER COND WSP COMPUTER RM		100/3	13	A	14			EMER LTG LOBBY	
				15	B	16				
				17	C	18				
			30	19	A	20	20			
	LTG & RCPT - THIS ROOM		20	21	B	22	70/3			
			20	23	C	24				
			20	25	A	26				
			20	27	B	28	20			
			20	29	C	30	20			
			20	31	A	32	20			
			20	33	B	34	-			
			20	35	C	36	-			
	SSU		30/3	37	A	38	-			
				39	B	40	-			
				41	C	42				

A	B	C	PHASE
0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

2NX1

THREE PHASE PANEL SCHEDULE

ID:	**1NX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	1ST FLR ELECT RM N	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☒ SPD		☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
			-	1	A	2	225/3		PANEL 1NX2	
			-	3	B	4				
			-	5	C	6				
	CORRIDOR LIGHTS		20	7	A	8	20		NO ID	
	LTG - RCPT THIS ROOM		20	9	B	10				
	COMP HUB		20	11	C	12				
	RCPT - TELE ROOM		20	13	A	14				
				15	B	16				
				17	C	18				
				19	A	20				
				21	B	22				
				23	C	24				
				25	A	26	30/3		SSU	
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
				0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

1SX1

THREE PHASE PANEL SCHEDULE

ID:	**GSX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	GRND FLR ELEC RM SW	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	CARD READER		20	1	A	2	20/3		DIESLE FUEL PUMP (EMERG GEN)	
	NO ID		30/3	3	B	4				
	NO ID			5	C	6				
	NO ID			7	A	8	20		LTG - SO. STAIRS	
	LTG - EXIT LIGHTS		20	9	B	10	20		LTG - EXIT SIGNS SO. STAIRS	
	LTG - EXIT LIGHTS		20	11	C	12	20		CLOCK SYSTEM	
	LTG - CORRIDOR		20	13	A	14	20		BS MT TELE ROOM	
	LTG - CORRIDOR EAST		20	15	B	16	20		FIRE ALARM PANEL	
	LTG - WEST STAIRS, W. CARD KEY		20	17	C	18	20		SUMP PUMP AT ELEV PIT	
	LTG - EXIST SIGN WEST STAIR, HALON		20	19	A	20	20		FIRE ALARM PANEL L&I COMP ROOM	
	LTG - EXIST SIGNS & EAST STAIRS		20	21	B	22	20		CLOCK SYSTEM	
	LTG - EAST STAIRS		20	23	C	24	20		FPU IN BASMNT XFMR VAULT	
			20	25	A	26	20		LTG - EMERG LTG TELECOM BASMNT	
	TELE EQUIPMENT ROOM		20	27	B	28	20		NO IDE	
	BASMENT ELEC ROOM		20	29	C	30	20		LEROY'S KEY CARD #13	
	LTG & RCPT THIS ROOM		20	31	A	32	30/3		SSU	
	RCPT BELOW PANEL		20	33	B	34				
	RCPT BELOW PANEL		20	35	C	36				
	KEY BOX POWER (OVER DOOR)		20	37	A	38	100/3		BSX1	
	RCPT - BELOW		20	39	B	40				
	RCPT - BELOW		20	41	C	42				

	A	B	C	
				PHASE
LTG, FIRE	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

1NX1

THREE PHASE PANEL SCHEDULE

ID:	**GNX1**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	GRND FLR ELEC RM N	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs TO ATSM		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - CORRIDOR WEST		20	1	A	2	20		LTG - EXIT LIGHTS LOADING DOCK DOORS	
	LTG - NO STAIRS		20	3	B	4	20		LTG - EXIT LIGHTS LOADING DOCK DOORS	
	LTG - EXIST SIGNS		20	5	C	6	20		SUMP PUMP #5 ELEV.	
	NO ID		20	7	A	8	20/3		SUMP PUMP BASEMENT NE	
	LGT & RCPT - THIS ROOM		20	9	B	10				
	NO ID		20	11	C	12				
	LTG & RCPT - BASEMENT N. XFMR RM		20	13	A	14	20		SPACE	
	EXIT SIGNS		20	15	B	16	-		SPACE	
	SPACE		20	17	C	18	20		E-LIGHTS	
	SPARE		20	19	A	20	-			
	SPARE		-	21	B	22	-			
	FIRE ALARM COMPONENTS		20	23	C	24	-			
	SSU		30/3	25	A	26	-			
				27	B	28	-			
				29	C	30	-			
			-	31	A	32	-			
			-	33	B	34	-			
			-	35	C	36	-			
			-	37	A	38	-			
			-	39	B	40	-			
			-	41	C	42	-			
				A	B	C	PHASE			
	LTG, SUMP, FIRE			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	KVA	AMPS
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

ATS-1 **THREE PHASE PANEL SCHEDULE** ATS-1

ID: **BSX2**	Enclosure:	Voltage: 208/120, 4W		Rating: 250 Amps	Assembly AIC:
Section: 1 OF 1	☐ Flush			☒ Main Lugs	☐ 10K
Location: BASEMENT SERVER RM	☒ Surface	☐ Isolated Gnd		☐ Main Breaker	☐ 22K
	☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs	☐ 42K
CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	BSX4		225/3	1	A	2				
				3	B	4				
				5	C	6				
				7	A	8	225/3		BSX3	
				9	B	10				
				11	C	12				
				13	A	14				
				15	B	16				
				17	C	18				
				19	A	20				
				21	B	22				
				23	C	24				
				25	A	26				
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
				0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

BSX2 | **THREE PHASE PANEL SCHEDULE** | ATS-1

ID:	**BSX3**	Enclosure:	Voltage: 208/120, 4W		Rating: 100 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	BASEMENT SERVER RM	☒ Surface	☐ Isolated Gnd		☒ Main Breaker 225		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
	WESTINGHOUSE	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	RCPT - SOUTH WALL		20	1	A	2	20		RCPT - NORTH WALL	
	RCPT - SOUTH WALL		20	3	B	4	20		RCPT - NORTH WALL	
	RCPT - SOUTH WALL		20	5	C	6	20		RCPT - WEST WALL	
	RCPT - NORTH WALL		20	7	A	8	30/2		PHONE PLUG	
	RCPT - NORTH WALL		20	9	B	10				
	RCPT - NORTH WALL		20	11	C	12	20		ACCESSOR LOCK	
			20	13	A	14	30/2			
			20	15	B	16				
			20	17	C	18	20		LTG - B8A	
			20	19	A	20	30		LTG - B8A	
			20	21	B	22	20/2		30A/PHASE 208 4 WIRE RCPT	
			20	23	C	24			FOR MICRO FICHE MACHINE	
			20	25	A	26	30/2		30A/PHASE 208 4 WIRE RCPT WEST	
			20	27	B	28			WALL FOR UPS	
			20	29	C	30	100/3		UPS	
			20	31	A	32				
			20	33	B	34				
			20	35	C	36	30/3		SSU	
			20	37	A	38				
			20	39	B	40				
			20	41	C	42	20			

	A	B	C	
				PHASE
LTG DATA C SERVER ROOM	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

UPS **THREE PHASE PANEL SCHEDULE**

ID:	**BSX32**	Enclosure:	Voltage: 208/120, 4W		Rating: 100 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☐ Main Lugs		☐ 10K
Location:	SERVER ROOM	☒ Surface	☐ Isolated Gnd		☒ Main Breaker		☐ 22K
		☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
				1	A	2	100/3		MAIN	
				3	B	4				
				5	C	6				
	SPACE		20/2	7	A	8	30/2		UPS CABINET 2	
				9	B	10				
	GA UPS		20	11	C	12	30/2		UPS #1	
				13	A	14				
				15	B	16	50/2		UPS #2	
				17	C	18				
				19	A	20				
				21	B	22				
				23	C	24				
				25	A	26				
				27	B	28				
				29	C	30				
				31	A	32				
				33	B	34				
				35	C	36				
				37	A	38				
				39	B	40				
				41	C	42				
				A	B	C	PHASE			
	UPS PHONE			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

BSX2

THREE PHASE PANEL SCHEDULE

ID:	**BSX4**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush		☒ Main Lugs		☐ 10K
Location:	BASEMENT MAINT SW	☒ Surface	☐ Isolated Gnd	☐ Main Breaker		☐ 22K
		☐ NEMA 3R	☐ SPD	☐ Feed Thru Lugs		☐ 42K
	CH	☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - THIS ROOM		20	1	A	2	20		RCPT - BELOW PNL	
	RCPT - EAST WALL		20	3	B	4	20		RCPT - BELOW PNL	
	RCPT - EAST WALL		20	5	C	6	20			
	RCPT		20	7	A	8	20		BSS TV SCREEN OUTLET	
	RCPT		20	9	B	10	20		BSS LIGHTS	
	RCPT		20	11	C	12	20		BSS LIGHTS	
	RCPT		20	13	A	14	20		BSS KITCHEN OUTLETS	
	RCPT		20	15	B	16	20		BSS KITCHEN OUTLETS	
	US WEST EQUIPEMNT		20	17	C	18	20		BSS INSTAHOT	
			20	19	A	20	20			
			100/3	21	B	22	20/2			
				23	C	24				
				25	A	26	30/3		SSU	
			100/3	27	B	28				
				29	C	30				
				31	A	32	15/3		GRINDER	
			100/3	33	B	34				
				35	C	36				
				37	A	38	20/3		BSS AGE PUMP	
			-	39	B	40				
			-	41	C	42				
				A	B	C	PHASE			
	RCPT, LTG KITCHEN			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER

REPLACE PANEL LABEL TO RED

THREE PHASE PANEL SCHEDULE

ID:	**BSX1**	Enclosure:	Voltage: 208/120, 4W	Rating: 225 Amps	Assembly AIC:
Section:	1 OF 1	☐ Flush		☐ Main Lugs	☐ 10K
Location:	BASEMENT ELECT RM SW	☒ Surface	☐ Isolated Gnd	☒ Main Breaker 225	☐ 22K
		☐ NEMA 3R	☐ SPD	☐ Feed Thru Lugs	☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral	☐ Double Lugs	☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - SEWAGE ROOM		20	1	A	2	-			
			20	3	B	4	-			
			20	5	C	6	-			
			20	7	A	8	-			
			20	9	B	10	-			
			20	11	C	12	-			
			20	13	A	14	-			
			20	15	B	16	-			
	LTG & RCPT THIS ROOM		20	17	C	18	-			
	SSU		-	19	A	20	-			
			-	21	B	22	-			
			-	23	C	24	-			
			-	25	A	26	-			
			-	27	B	28	-			
			-	29	C	30	-			
			-	31	A	32				
			-	33	B	34				
			-	35	C	36				
			-	37	A	38				
			-	39	B	40				
			-	41	C	42				
				A	B	C	PHASE			
	LTG			0.0	0.0	0.0	KVA CONNECTED			

LOAD SUMMARY

Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	KVA	AMPS
CONNECTED	0.0	0.0
CALCULATED	0.0	0.0

SPARE CAPACITY: 100.0%

REMARKS:
* GFCI CIRCUIT BREAKER

5SX1 FEEDER A

THREE PHASE PANEL SCHEDULE

ID:	**5SX2**	Enclosure:	Voltage: 208/120, 4W		Rating: 225 Amps		Assembly AIC:
Section:	1 OF 1	☐ Flush			☒ Main Lugs		☐ 10K
Location:	SOUTH PENTHOUSE	☒ Surface	☐ Isolated Gnd		☐ Main Breaker		☐ 22K
	CH	☐ NEMA 3R	☐ SPD		☐ Feed Thru Lugs		☐ 42K
		☐ NEMA 12/3R	☐ 200% Neutral		☐ Double Lugs		☐ Service Rated

CODE	DESCRIPTION	VA	BKR	CKT	PHASE	CKT	BKR	VA	DESCRIPTION	CODE
	LTG - SOUTH PENTHOUS		20	1	A	2	20		AIR COMPRESSOR ALTERANTE	
	LTG - GEN RM		20	3	B	4	20			
	LTG - ELEV #3		20	5	C	6	20		BATT CHG GEN	
	LTG - ELEV #1		20	7	A	8	20		GEN. HTR	
	LTG - ELEV #2		20	9	B	10	20		AIR DRYER	
	SPARE		20	11	C	12	20		BATT. CHG GEN RM 100KW	
	120V GEN RM		20	13	A	14	20		GEN RM EX. FAN	
			20	15	B	16	20		BATT. EMERG. LGT.	
	TRANSMITTER PWR		20	17	C	18	20/2		GEN HTR	
	AIR COMP, CONT. PWR.		20	19	A	20				
			20	21	B	22	30/3		AIR COMPRESSOR #1	
			20	23	C	24				
			20	25	A	26				
			20	27	B	28	30/3		AIR COMPRESSOR #2	
			20	29	C	30				
			20	31	A	32				
			20	33	B	34	-			
			20	35	C	36	-			
	AG LAB FAN 53		30/3	37	A	38	30/3		POWER FAN E-3	
				39	B	40				
				41	C	42				

	A	B	C	
				PHASE
LTG, MECH	0.0	0.0	0.0	KVA CONNECTED

LOAD SUMMARY

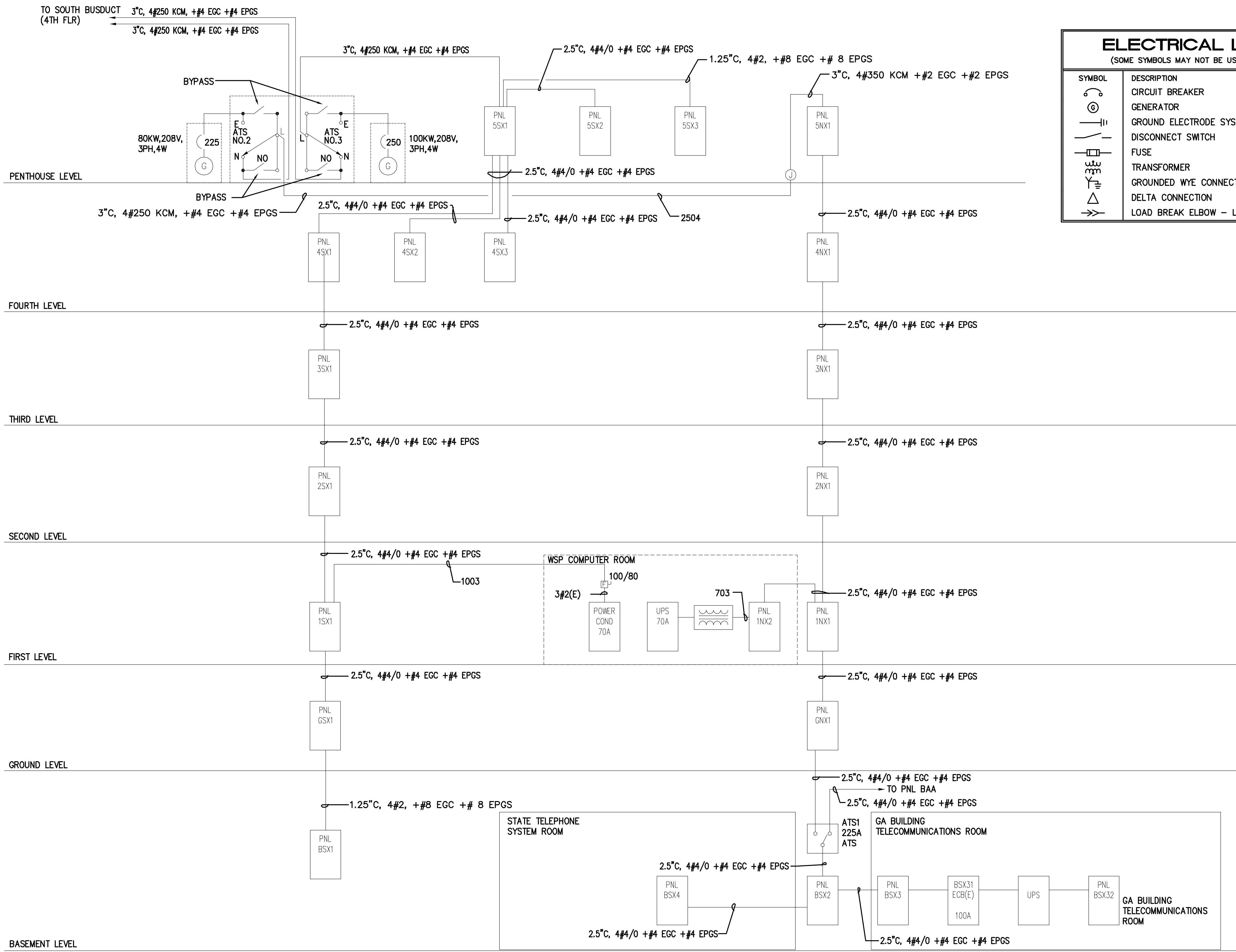
Code	Description	KVA			KVA
L	Lighting	0.0	X	125%	0.0
R	Receptacles	0.0	X	100%	0.0
R	Receptacles over 10KVA	0.0	X	50%	0.0
C	Computers	0.0	X	100%	0.0
M	Motors	0.0	X	100%	0.0
LM	Largest Motor	0.0	X	125%	0.0
K	Kitchen	0.0	X	100%	0.0
N	Noncoincident	0.0	X	0%	0.0
W	Water Heater	0.0	X	125%	0.0
	Remainder	0.0	X	100%	0.0

TOTAL LOAD	**KVA**	**AMPS**
CONNECTED	**0.0**	**0.0**
CALCULATED	**0.0**	**0.0**

SPARE CAPACITY: 100.0%

REMARKS:

* GFCI CIRCUIT BREAKER



ELECTRICAL LEGEND

(SOME SYMBOLS MAY NOT BE USED ON DRAWINGS)

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	GENERATOR
	GROUND ELECTRODE SYSTEM
	DISCONNECT SWITCH
	FUSE
	TRANSFORMER
	GROUNDED WYE CONNECTION
	DELTA CONNECTION
	LOAD BREAK ELBOW – LOAD BREAK BUSHING

GENERATOR ONE-LINE DISTRIBUTION DIAGRAM - GENERAL ADMIN BUILDING

SCALE: NTS

PREPARED BY:
HULTZ BHU engineers inc
2407 North 31st Street
Phone: (253) 383-3257
general@hultzbhu.com
Tacoma, WA 98407
Fax: (253) 383-3283
Job Number: 12-067

PROJECT TITLE: GENERATOR ONE-LINE DISTRIBUTION DIAGRAM GENERAL ADMINISTRATION BUILDING

PROJECT ADDRESS: 210 11TH AVE SW OLYMPIA, WA. 98501

STAMP

REVISIONS

PROJECT NO. 98074

DRAWN KKM | CHECKED CTU

DATE 8/22/2012

TITLE GENERATOR ONE-LINE DIAGRAM GENERAL ADMINISTRATION BLDG

SHEET E5.10