Structural Evaluation Report for Existing Buildings at Livingston Mountain Communications Site Camas, Washington

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Prepared by:

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Prepared for:

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April 21, 2014

Executive Summary

At your request, WDY, Inc has completed a structural review of the existing communications building and the accessory garage building located on the top of Livingston Mountain in Camas, Washington The intent of this audit is to provide an opinion on the deficiencies in the primary gravity (vertical) and lateral force resisting systems of the structure

Our opinions are based on our experience with similar structures constructed during the same period as that reviewed Removal of existing finishes to observe hidden conditions and destructive testing to determine existing material strengths were not part of this scope of services, and therefore material strengths used in calculating the building capacity were assumed using current guidelines for buildings of this type and era No existing building drawings are available to review for this audit

Our scope of work was completed as an ASCE-31 evaluation, using Tier I evaluation procedures ASCE-31 is one of a series of publications sponsored by the Federal Emergency Management Agency (FEMA) to provide local decision makers, design professionals and building owners information regarding the risks posed by existing building hazards in the event of an earthquake This document is the current recognized code standard for existing building evaluation

In conversations with the Clark County Building Department, there does not appear to be any mandatory requirements for upgrading the existing structure provided there is no change of occupancy to a higher hazard

A brief calculation of wind loads was made per the current IBC Wind loading governs lateral loading on the accessory garage building and was used for safety checks For the communication building, it was determined that seismic forces govern design of the primary lateral force resisting system, so no further wind load analysis was done Consideration of geotechnical issues (soils and foundations) was limited to the quick check procedures of ASCE-31

Existing buildings are evaluated to one of two performance levels Life Safety, or Immediate Occupancy The Life Safety level was used for both buildings on the project site

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Building Description

Communications Building

The communications building is a two-story concrete structure located on a flat site at the top of Livingston Mountain The ground level is approximately 20" above grade We estimate the building was constructed in the mid to late 1950's The building currently houses communication equipment No additions to the building appear evident

The primary gravity structural system is constructed of a cast in place concrete slab and beam system for the roof and second floor, interior cast in place concrete columns, perimeter cast in place concrete walls Reinforcing steel in the concrete building components is unknown at this time The floor and roof construction appear to be identical The main level floor is non–structural slab on grade Foundations are unknown at this time but would appear to be conventional continuous footings around the perimeter and spread footings for interior columns Minimal cracking was evident in the floor slabs, beams and columns This suggests that adequate reinforcing is present Concrete perimeter walls had hairline cracking Cracks were present on all exterior walls with significantly more cracking on the north wall Cracking on the north wall appeared to be random with additional cracks located at points where anchors appeared to extend thru the wall

The primary lateral force (earthquake and wind) resisting system consists of concrete floor and roof diaphragms connected to concrete shear walls located at the perimeter of the building

Accessory Garage Structure

The accessory garage structure is a single story structure located next to the communication building The floor slab elevation is approximately 6" above grade The building currently is storage for miscellaneous electrical fixtures and components

The primary gravity system is constructed of cold formed galvanized steel "C" shaped panels that are approximately 3" deep x 16" wide The panels nest together to form the interior and exterior walls and roof structure The thickness of the steel panels is unknown The floor is a non –structural slab on grade Foundations are unknown at this time but would appear to be conventional continuous footings around the perimeter

The primary lateral force (earthquake and wind) resisting system consists the steel panels described above attached to the concrete floor with ¼" anchor bolts at 16" on center Lateral loads are transferred to the walls by flat strap x-bracing at the ceiling plane

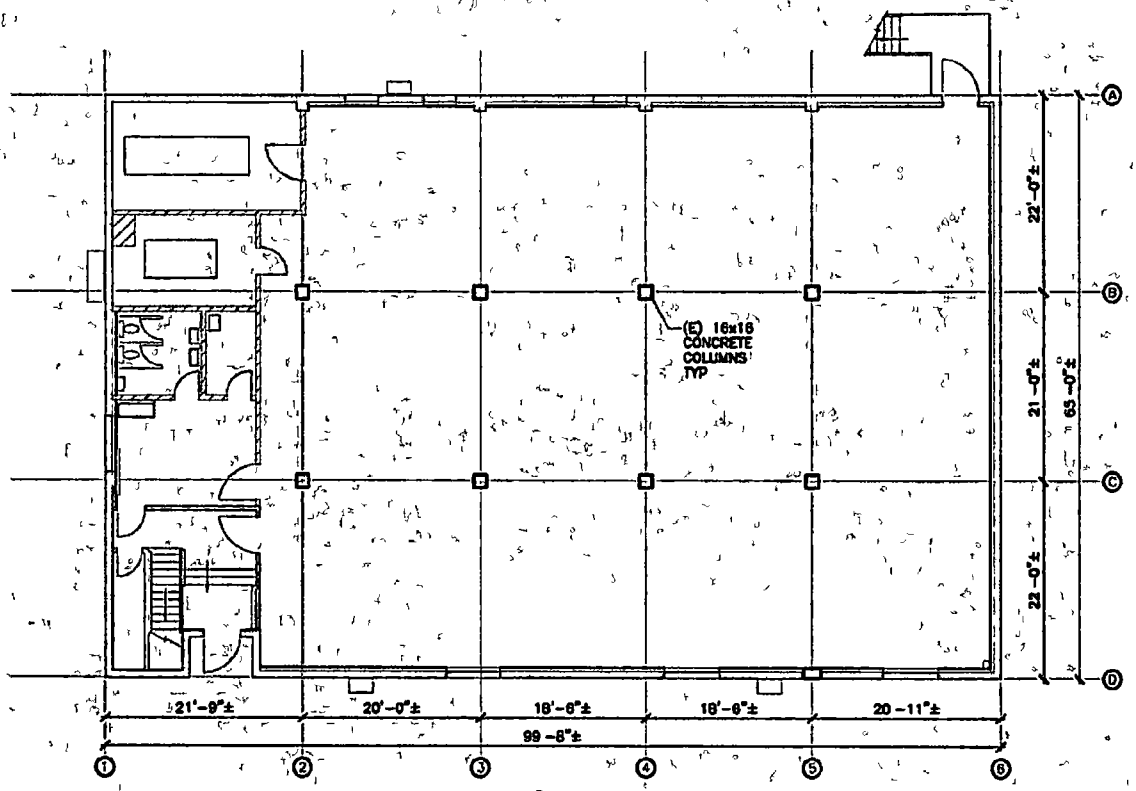


Figure 1

EXISTING MAIN LEVEL PLAN

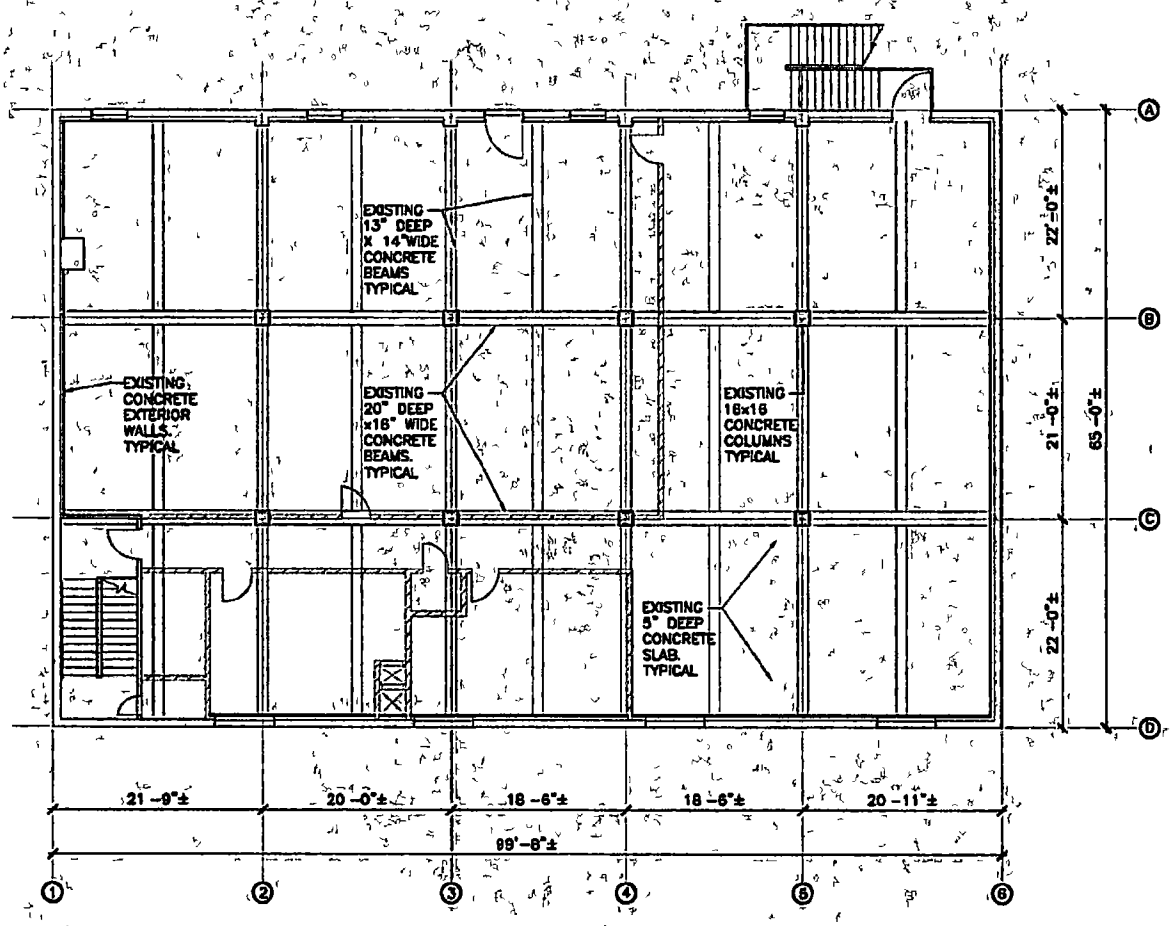


Figure 2

EXISTING SECOND FLOOR FRAMING PLAN

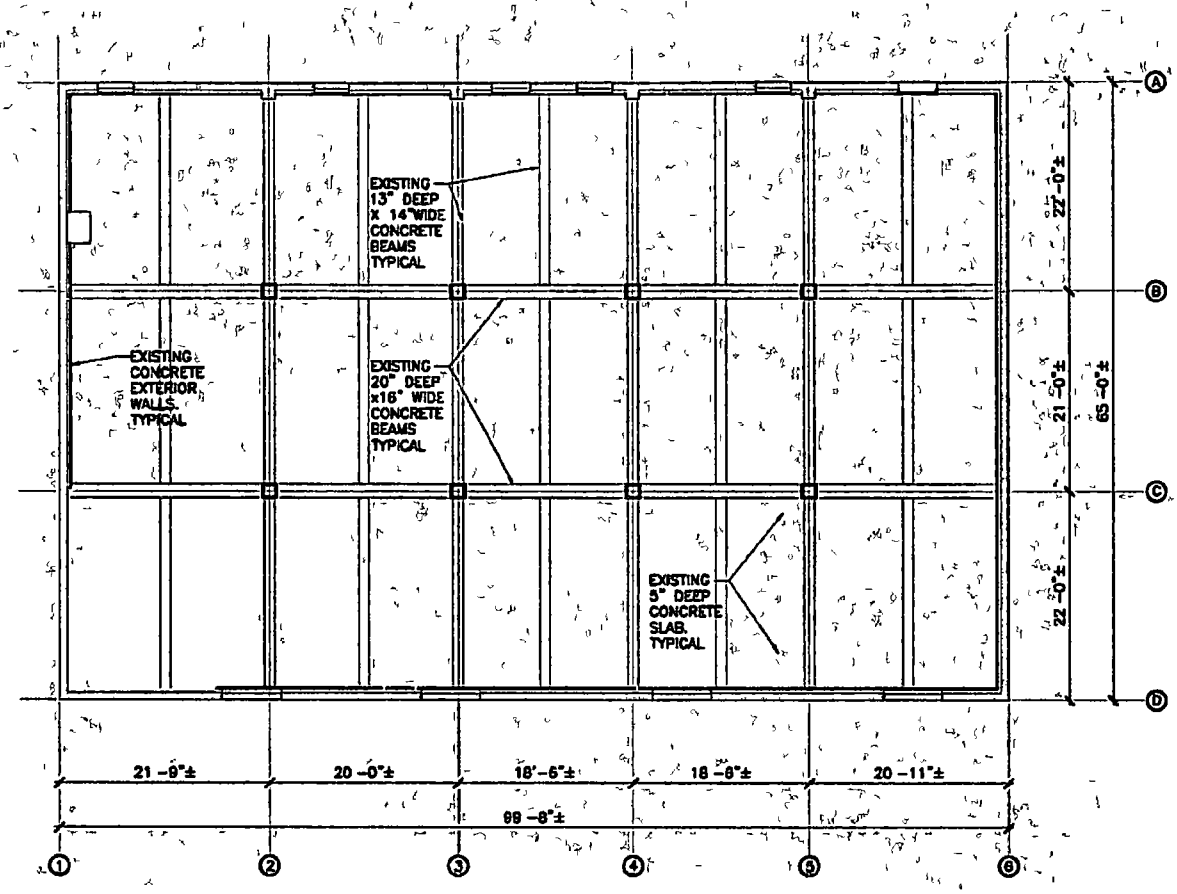


Figure 3

EXISTING ROOF FRAMING PLAN

Building Data Summary

Table 1

COMMUNICATIONS BUILDING INFORMATION

Property Location **Latitude** **Longitude**	 45 679 -122 376	**ASCE 31** **Building Type**	 C2 Concrete shear walls with stiff concrete diaphragm
Year Constructed	Anticipated mid 1950's	**Additions (yr)**	N/A
Total Building Area	12,960 sq ft	**Number of Stories**	Two
Basement	N/A	**Story Height**	14 ft
Transverse Dimension	65'-0"	**Longitudinal Dimension**	99'-8"
Ext Transverse Walls	10" (nom) concrete	**Ext Longitudinal Walls**	10" (nom) concrete
Roof Diaphragm	Estimated 5" concrete slab	**Floor Diaphragm**	Estimated 5" concrete slab
Roof framing	13" deep x 14" wide concrete purlins at 9 to 10 feet on center	**Floor framing**	13" deep x 14" wide concrete purlins at 9 to 10 feet on center
Interior Roof Support	20" deep x 16" wide concrete beams at 21' on center with 16" square concrete columns	**Interior Floor Support**	20" deep x 16" wide concrete beams at 21' on center with 16" square concrete columns
Ground level floor	Concrete slab on grade	**Foundations**	Anticipated concrete continuous perimeter and interior spread footings (not field verified)
Site Visit Date	April 9, 2014	**Engineer**	Jim Gipe, P E

Table 1A
ACCESSORY GARAGE INFORMATION

Property Location		**ASCE 31 Building Type**	S3 Steel Light Frame
Latitude	45 679		
Longitude	-122 376		
Year Constructed	Unknown	**Additions (yr)**	N/A
Total Building Area	576 sq ft	**Number of Stories**	One
Basement	N/A	**Story Height**	10 ft
Transverse Dimension	24'-0"	**Longitudinal Dimension**	24'-0"
Ext. Transverse Walls	Light gage steel panels	**Ext. Longitudinal Walls**	Light gage steel panels
Roof Diaphragm	Steel flat strap cross bracing	**Floor Diaphragm**	N/A
Roof framing	3" deep "C" shaped galvanized steel panels	**Floor framing**	N/A
Ground level floor	Concrete slab on grade	**Foundations**	Anticipated concrete continuous perimeter turn down edge footings (not field verified)
Site Visit Date	April 9, 2014	**Engineer**	Jim Gipe, P E

Site Hazards

Table 2

SOILS INFORMATION

Description	(QPv) Quartenary Pliocene Volcanic Rock
Soil Type.	D
Soil Stability.	Unknown
Reference:	Default value per ASCE-31

Comments:

Soil type from generalized geologic map of Clark Co (Schuster 2002)

Table 3

SEISMIC HAZARD

Hazard		Probability of Exceedance 10% in 50 years	MCE
Spectral Acceleration[1]	**0 2 sec period**	0 82 g	1 23 g
	1 0 sec period	0 36 g	0 54 g
Vulnerability[2]	**Fault Rupture**	Unknown	Unknown
	Landslide	Unknown	Unknown
	Liquefaction	No	No

1 FEMA Maps, Reference B1

2 Washington Department of Natural Resources – Liquefaction Susceptibility Map for Clark Co

Comments:

Hazard vulnerability to be determined by future geotechnical study if required

Table 4

WIND HAZARD

Parameter	Description
Wind Speed (mph)	135 mph (Ultimate)
Site Exposure Category:	B
Site Exposure Description	Site is located on top of a mountain in a rural area Forested area with large fir trees and surface roughness extending downhill from the site for more than 20x structure height in each principal direction

Table 5

SNOW HAZARD

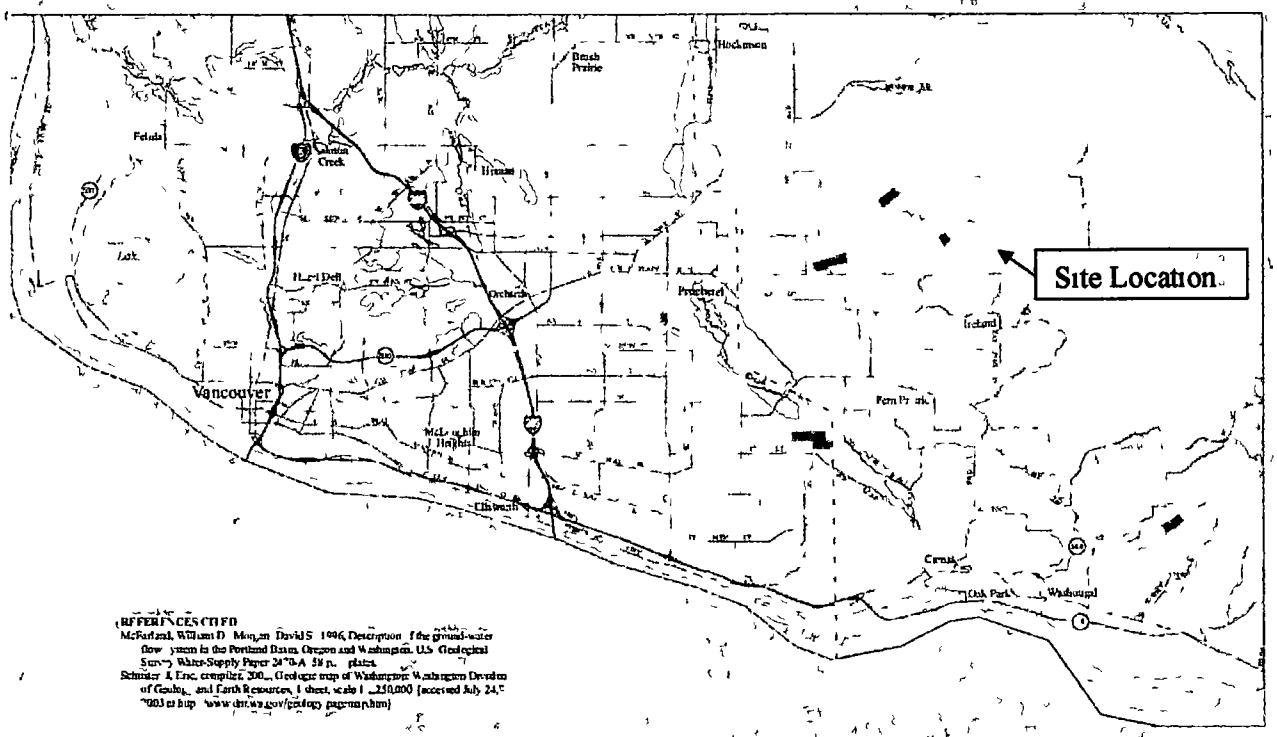
Parameter	Description
Ground snow load (psf)	30 psf (Min design roof snow = 25 psf)
Snow drift locations:	None – short parapets around building perimeter
Roof slope (degrees):	< 0 25" per foot (generally flat)

Comments:

Ground snow load from Clark County

Figure 4

LIQUEFACTION HAZARD MAP



REFERENCES CITED
McFarland, William D. Morgan, David S. 1996, Description of the ground-water flow system in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Supply Paper 2470-A, 58 p., plates.
Schuster, J. Eric, compiler, 2001, Geologic map of Washington: Washington Division of Geology and Earth Resources, 1 sheet, scale 1:250,000. [accessed July 24, 2003 at http://www.dnr.wa.gov/geology/pagemap.htm]

Evaluation Procedures

The objective of this study is to determine if the existing building meets the owner's demand and acceptance criteria for gravity, seismic, wind and snow loads

Gravity Evaluation Procedure

The gravity (i e dead plus live) demand and acceptance criteria of the local current building code with

Wind Evaluation Procedure

The wind evaluation demand and acceptance criteria is in accordance with the current local building code

Snow Evaluation Procedure

The snow evaluation (including snow drift) demand and acceptance criteria is in accordance with the current local building code of record

Seismic Evaluation Procedure

The seismic evaluation demand and acceptance criteria is as follows

Seismic Demand	Performance Level	Acceptance Criteria
2/3 MCE	Life Safety	ASCE 31
0 75 times the smaller of 2/3 MCE & 10% in 50-year spectral acceleration	Life Safety	ASCE 31

The seismic evaluation is being accomplished utilizing ASCE 31 Tier 1 procedures as a screening tool, along with engineering judgment, to identify whether critical structural and nonstructural elements are identified as acceptable or deficient Deficiencies are noted as non-compliant on the following ASCE-31 checksheets

Evaluation Findings – Gravity, Wind, Snow

Communication Building

For gravity loading we performed calculations that estimated the capacities of the existing concrete support members The reinforcing of the concrete components is unknown at this time

Columns - Using an assumed minimum reinforcing of (4) #6 bars and a concrete strength of 3000 psi, we found the 16" square concrete columns to have approximately 265k ult of capacity Total dead loads combined with anticipating a floor live load of 125 psf and roof snow load 25 psf combine to 207k ult loading This seems relatively conservative considering plane concrete column of this size could likely support 385k of service load taking into account a safety factor of 2

Floor Slab and Beams – We attempted to calculate capacities of the slab and beam system with minimum assumed reinforcing With the minimum steel, the members failed to achieve even dead load capacity Since there are no signs of gravity load distress, it became evident that either the concrete floor and roof system are heavily reinforced or they have steel beams encased within them The second floor currently supports existing battery racks and old communications equipment in one area We estimate the existing battery racks are imposing close to 170 psf on the floor system There were no signs of overstress on the existing slab, sub purlins or beams in this area The floor appeared to be level and did not show any signs of deflection or settlement By the condition of the existing construction we do not anticipate the existing gravity load resisting system to have problems carrying the existing gravity loads applied to the structure

Wind loads on the building calculate out at approximately 29 kips ultimate on the east and west end walls of the building This translates to a shear stress of 4 5 psi The shear stress level is well below the 100 psi compliance limit per ASCE-31 Existing building walls appear to be adequate for wind loads

Accessory Garage Building

For gravity loading we are unable to calculate the capacities of the existing steel wall and roof panels due to the unknown thickness of the steel Except for some corrosion starting to take place on the outer surface, the roof and wall panels are in good condition We do not see any signs of overstress from past snow loading and don't feel this structure is deficient to support current gravity loads

Since this building is so light, wind loading controls the lateral demand on the structure We calculated the wind loads per ASCE-7-10 and found the shear load to the wall to be approximately 115 plf ASD This would be worst case assuming the south side wall with short wall panels and large garage door openings does not carry any lateral load and that the load is transferred to the solid north wall The existing wall panels are anchored down with ¼" diameter anchors at 16" on center A load of approximately 150 pounds would be applied to each anchor The steel capacity of the existing ¼" anchors is approximately 475 pounds We do not know how the anchors are embeded into the concrete, but it is reasonable to assume very minimal embedment should provide 150 pounds of resistance We also calculated the overturning force created by the wind loads on the walls We calculated 760 pounds of uplift at the wall ends This load is likely being transferred to 2 or 3 of the ¼" sill anchors near the corners of the building We did not see any signs of overstress from lateral loading The existing building appears to be adequate for current code wind loads

Evaluation Findings – Communications Building Seismic

Table 6

STRUCTURAL CHECKLIST FROM ASCE-31 FOR BUILDING TYPE C2

3.7.9 Basic Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2

Each of the evaluation statements on this checklist shall be marked compliant (C), non-compliant (NC), or not applicable (N/A) for a Tier 1 Evaluation Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation Certain statements may not apply to the buildings being evaluated For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure, corresponding section numbers are in parentheses following each evaluation statement

C3.7 9 Basic Structural Checklist for Building Type C2

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)

[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)

Note On above item, wall cracks on the exterior perimeter walls meet the size requirements listed to be compliant, but have an odd pattern on the north wall. This wall did not appear to have any construction joints to allow for shrinkage. This might account for random cracking that has occurred. See appendix photo #3

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)

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)

Note On item above, reinforcing steel is unknown at this time.

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 or diaphragms 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)

Note On item above, reinforcing steel is unknown at this time.

3.7.9S Supplemental Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms

This Supplemental Structural Checklist shall be completed where required by Table 3-2 The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist

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)

C NC [N/A] FLAT SLABS Flat slabs/plates not part of 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)

[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)

[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)

[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)

[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 diaphragm 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)

3.8 Geologic Site Hazards and Foundations Checklist

This Geologic Site Hazards and Foundations Checklist shall be completed when required by Table 3-2

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure, corresponding section numbers are in parentheses following each evaluation statement

Geologic Site Hazards

The following statements shall be completed for buildings in regions of high or moderate seismicity

[C] NC N/A LIQUEFACTION Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy (Tier 2 Sec 4 7 1 1)

[C] NC N/A SLOPE FAILURE The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2 Sec 4 7 1 2)

[C] NC N/A SURFACE FAULT RUPTURE Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2 Sec 4 7 1 3)

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations

[C] NC N/A FOUNDATION PERFORMANCE There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2 Sec 4 7 2 1)

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level

[C] NC N/A DETERIORATION There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2 Sec 4 7 2 2)

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations

C NC [N/A] POLE FOUNDATIONS Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy (Tier 2 Sec 4 7 3 1)

The following statements shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity

[C] NC N/A OVERTURNING The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$ (Tier 2 Sec 4 7.3 2)

C NC [N/A] TIES BETWEEN FOUNDATION ELEMENTS The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C (Section 3 5 2 3 1, Tier 2 Sec 4 7 3 3)

C NC [N/A] DEEP FOUNDATIONS Piles and piers shall be capable of transferring the lateral forces between the structure and the soil This statement shall apply to the Immediate Occupancy Performance Level only (Tier 2 Sec 4 7 3 4)

C NC [N/A] SLOPING SITES The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height This statement shall apply to the Immediate Occupancy Performance Level only (Tier 2 Sec 4 7 3 5)

3.9.1 Basic Nonstructural Component Checklist

This Basic Nonstructural Component Checklist shall be completed when required by Table 3-2

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation Certain statements may not apply to the buildings being evaluated For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure, corresponding section numbers are in parentheses following each evaluation statement

Partitions

C [NC] N/A UNREINFORCED MASONRY Unreinforced masonry or hollow clay tile partitions shall be braced at a spacing of equal to or less than 10 feet in regions of low and moderate seismicity and 6 feet in regions of high seismicity (Tier 2 Sec 4 8 1 1)

Note Most of the partitions walls appeared to be 6" unreinforced cmu walls. These walls had cracks at various locations but occurred mostly above door openings.

Ceiling Systems

C NC [N/A] SUPPORT The integrated suspended ceiling system shall not be used to laterally support the tops of gypsum board, masonry, or hollow clay tile partitions Gypsum board partitions need not be evaluated where only the Basic Nonstructural Component Checklist is required by Table 3-2 (Tier 2 Sec 4 8 2 1)

Light Fixtures

[C] NC N/A EMERGENCY LIGHTING Emergency lighting shall be anchored or braced to prevent falling during an earthquake (Tier 2 Sec 4 8 3 1)

Parapets, Cornices, Ornamentation and Appendages

C NC [N/A] URM PARAPETS There shall be no laterally unsupported unreinforced masonry parapets or cornices with height-to-thickness ratios greater than 1 5 A height-to-thickness ratio of up to 2 5 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2 (Tier 2 Sec 4 8 8 1)

C NC [N/A] CANOPIES Canopies located at building exits shall be anchored to the structural framing at a spacing of 6 feet or less An Anchorage spacing of up to 10 feet is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2 Sec 4 8 8 2)

Masonry Chimneys

[C] NC N/A URM CHIMNEYS No unreinforced masonry chimney shall extend above the roof surface more than twice the least dimension of the chimney A height above the roof surface of up to three times the least dimension of the chimney is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2 (Tier 2 Sec 4 8 9 1)

Building Contents and Furnishing

[C] NC N/A TALL NARROW CONTENTS Contents over 4 feet in height with a height-to-depth or height-to-width ratio greater than 3-to-1 shall be anchored to the floor slab or adjacent structural walls A height-to-depth or height-to-width ratio of up to 4-to-1 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2 Sec 4 8 11 1)

Mechanical and Electrical Equipment

C NC N/A EMERGENCY POWER. Equipment used as part of an emergency power system shall be mounted to maintain continued operation after an earthquake (Tier 2 Sec 4 8 12 1)

Note Item above is unknown

[C] NC N/A HAZARDOUS MATERIAL EQUIPMENT HVAC or other equipment containing hazardous material shall not have damaged supply lines or unbraced isolation supports. (Tier 2 Sec 4 8 12.2)

[C] NC N/A DETERIORATION There shall be no evidence of deterioration, damage, or corrosion in any of the anchorage or supports of mechanical or electrical equipment. (Tier 2 Sec 4 8 12 3)

[C] NC N/A ATTACHED EQUIPMENT Equipment weighing over 20 lb that is attached to ceilings, walls, or other supports 4 feet above the floor level shall be braced. (Tier 2 Sec 4 8 12 4)

Piping

C NC [N/A] FIRE SUPPRESSION PIPING Fire suppression piping shall be anchored and braced in accordance with NFPA-13 (NFPA, 1996) (Tier 2 Sec 4 8 13 1)

C [NC] N/A FLEXIBLE COUPLINGS Fluid, gas, and fire suppression piping shall have flexible couplings. (Tier 2 Sec 4 8 13 2)

Hazardous Materials Storage and Distribution

[C] NC N/A TOXIC SUBSTANCES Toxic and hazardous substances stored in breakable containers shall be restrained from falling by latched doors, shelf lips, wires, or other methods. (Tier 2 Sec 4 8 15 1)

Conclusions

The existing condition of the both structures evaluated was good considering the potential age of the buildings The only sign of structural distress noted was cracking on the exterior concrete walls Cracks in walls are common and could be due to many different reasons The wall cracks noted were tight and did not appear to be detrimental to the function of the structure Based on existing condition of the structure we feel that the floor and roof system of the communications building were likely designed to support heavy loads

A few non-compliant items were noted on the ASCE-31 check sheets The non-compliant items were all for secondary components in the building Most notably are the interior masonry partition walls that are likely unreinforced and unanchored to the concrete structure This presents the highest hazard as these walls will likely collapse during a moderate or larger seismic event Other non-compliant items found are common for older structures don't present high seismic hazards

Check list items that are unknown were for reinforcing steel in the existing concrete Since we did not observe any cracking in the concrete at these connections points, we assume that there is some amount of reinforcing present With reinforcing present, most of these items would become compliant

At this time the building owner is not proposing any significant additions to or remodel of the existing communications building or garage structure, and we are not aware of any plans to change the present use or occupancy of the building Therefore the current code does not require any upgrades to the building's structural system or components If the owner wishes to make voluntary life safety upgrades to the building we would recommend choosing non-compliant items from the ASCE-31 checksheets These items would be removed or brought into compliance of the ASCE-31 or current code

Limitations

This report is intended to identify possible structural conditions within the scope that may be deficient and be potential safety hazards This report is based on our site observations of exposed-to-view structural members

This report is intended to assist the owner in identifying possible building deficiencies and seismic hazards WDY, Inc provides no warranty or guarantee either expressed or implied

References

A. Guideline Documents

1 American Society of Civil Engineers, *Seismic Evaluation of Existing Buildings*, ASCE/SEI 31 -03, 2003

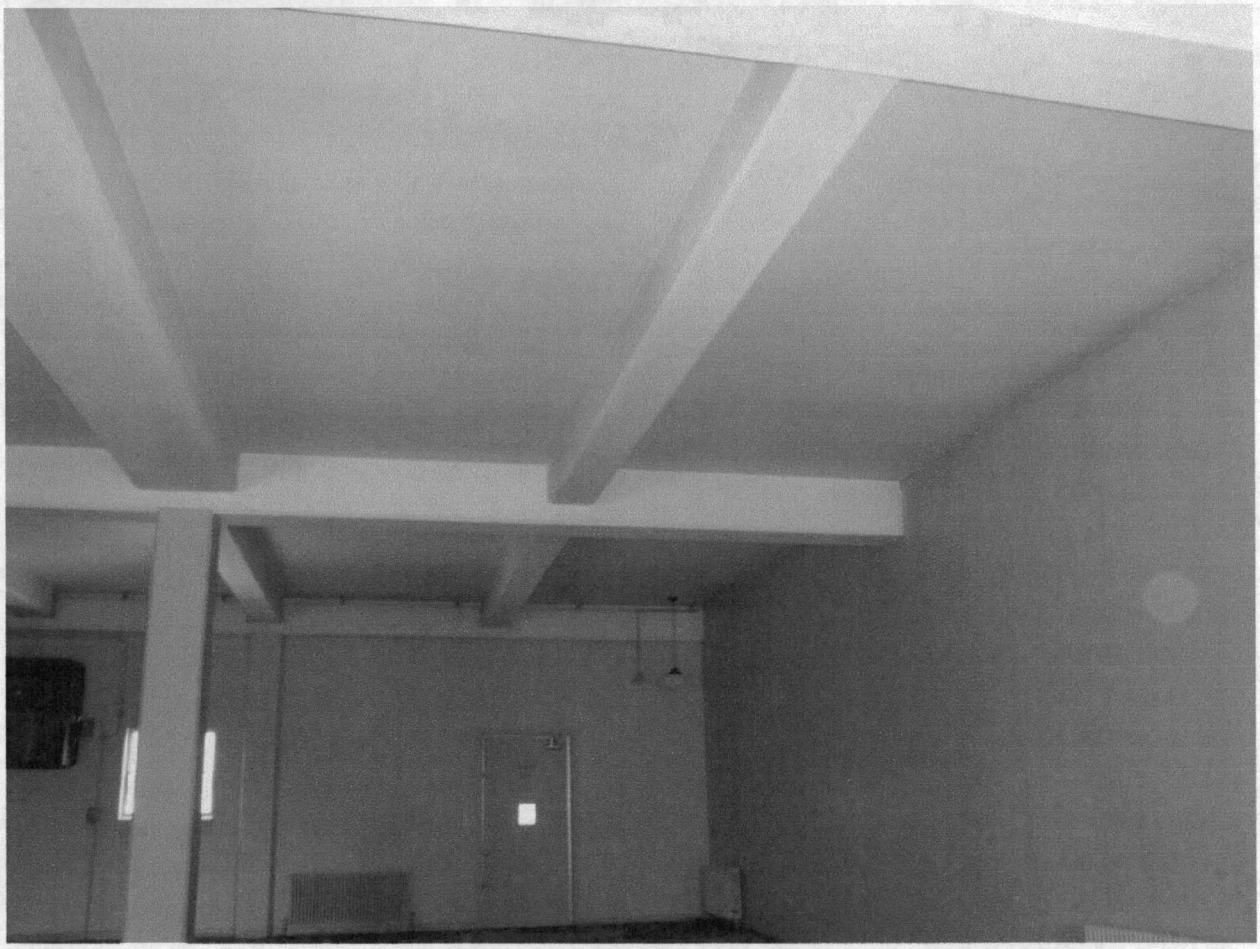
2 International Code Council, Inc , *International Building Code*, 2011

B. Geotechnical Documents

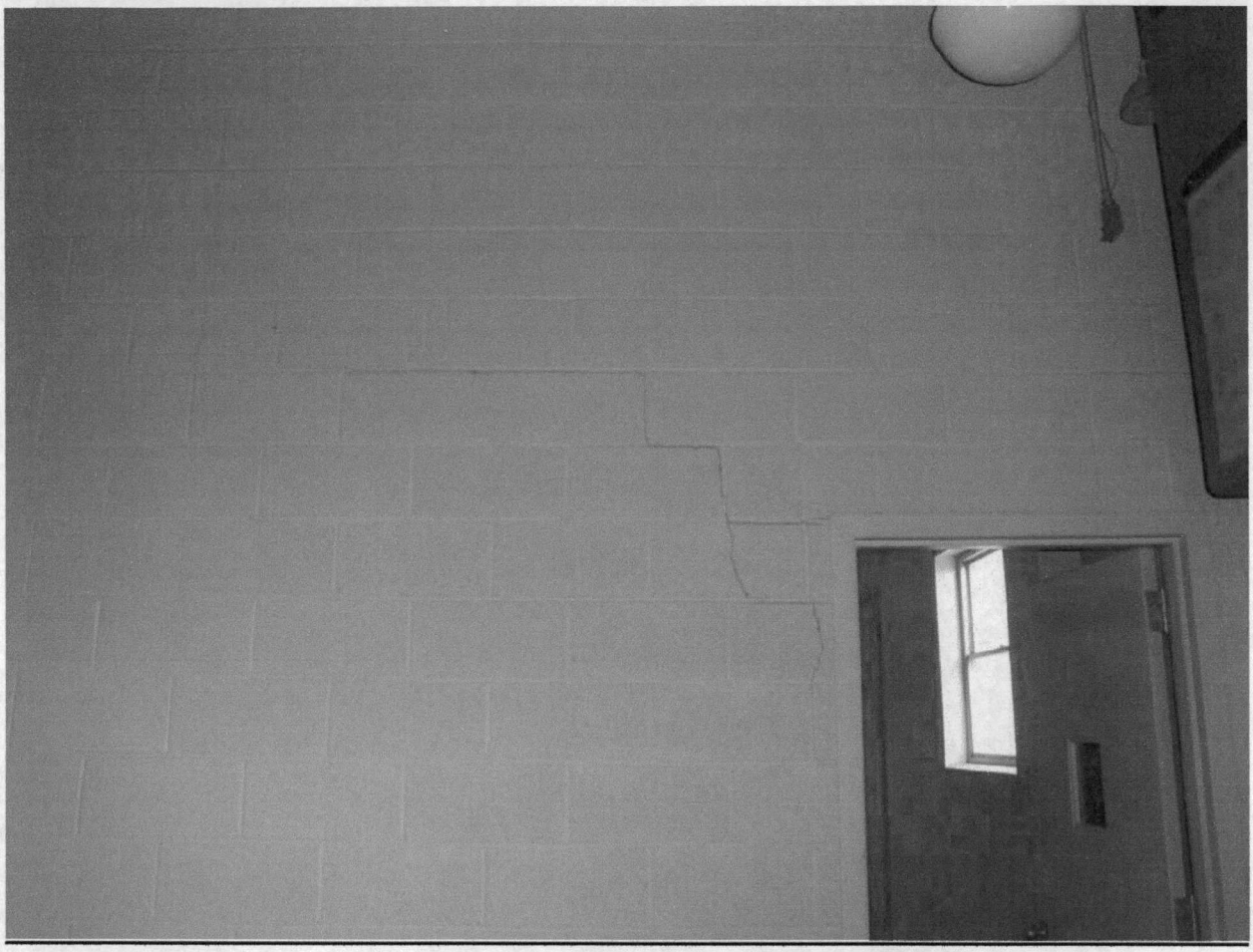
3 United States Dept of the Interior, U S Geological Survey, *Western U S Region Hazard Maps*, 2%/50 year & 10%/50 year, revised 2009

4 Washington State Department of Natural Resources, *Liquefaction maps of Clark County*

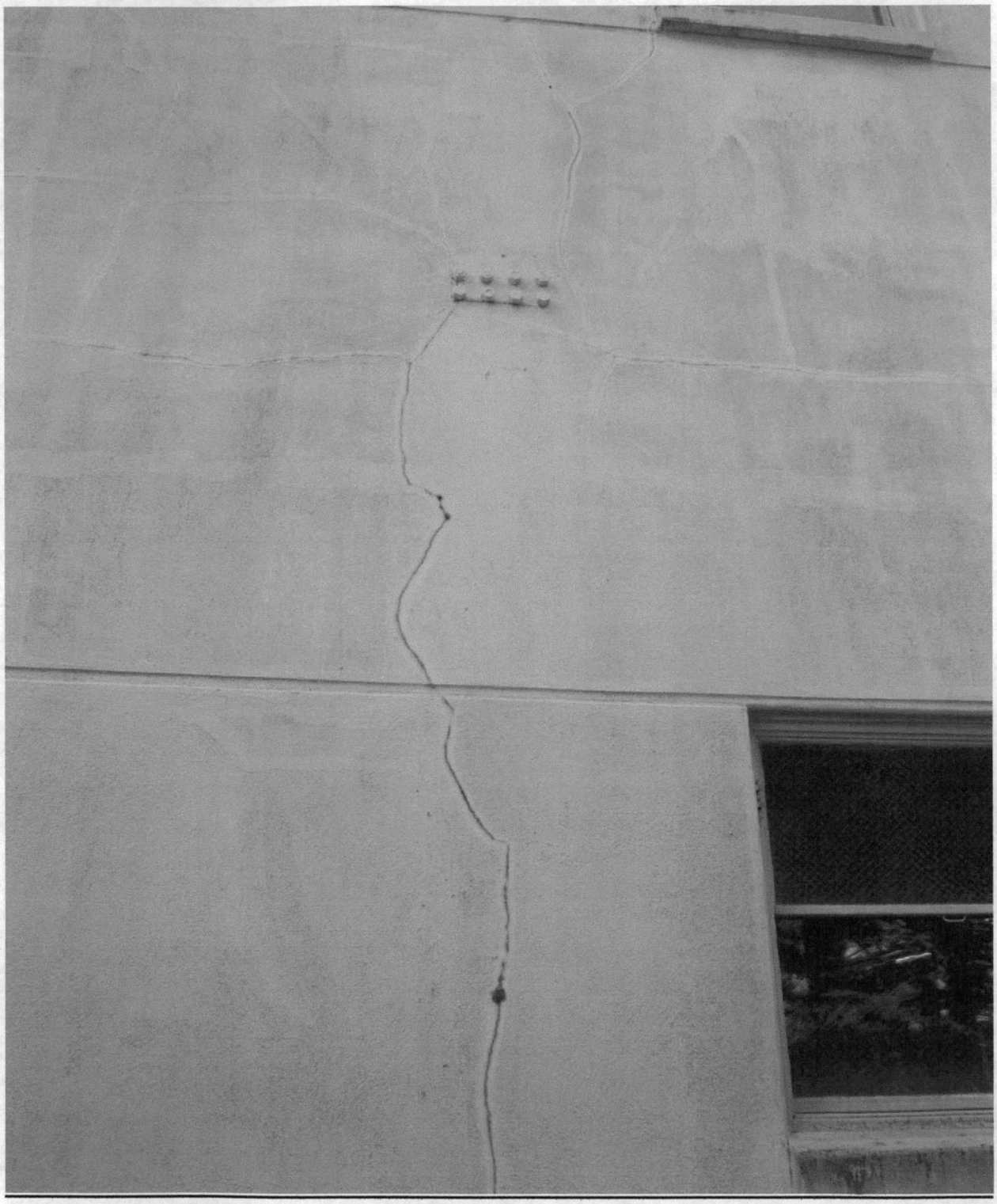
Appendix A – Building Photographs



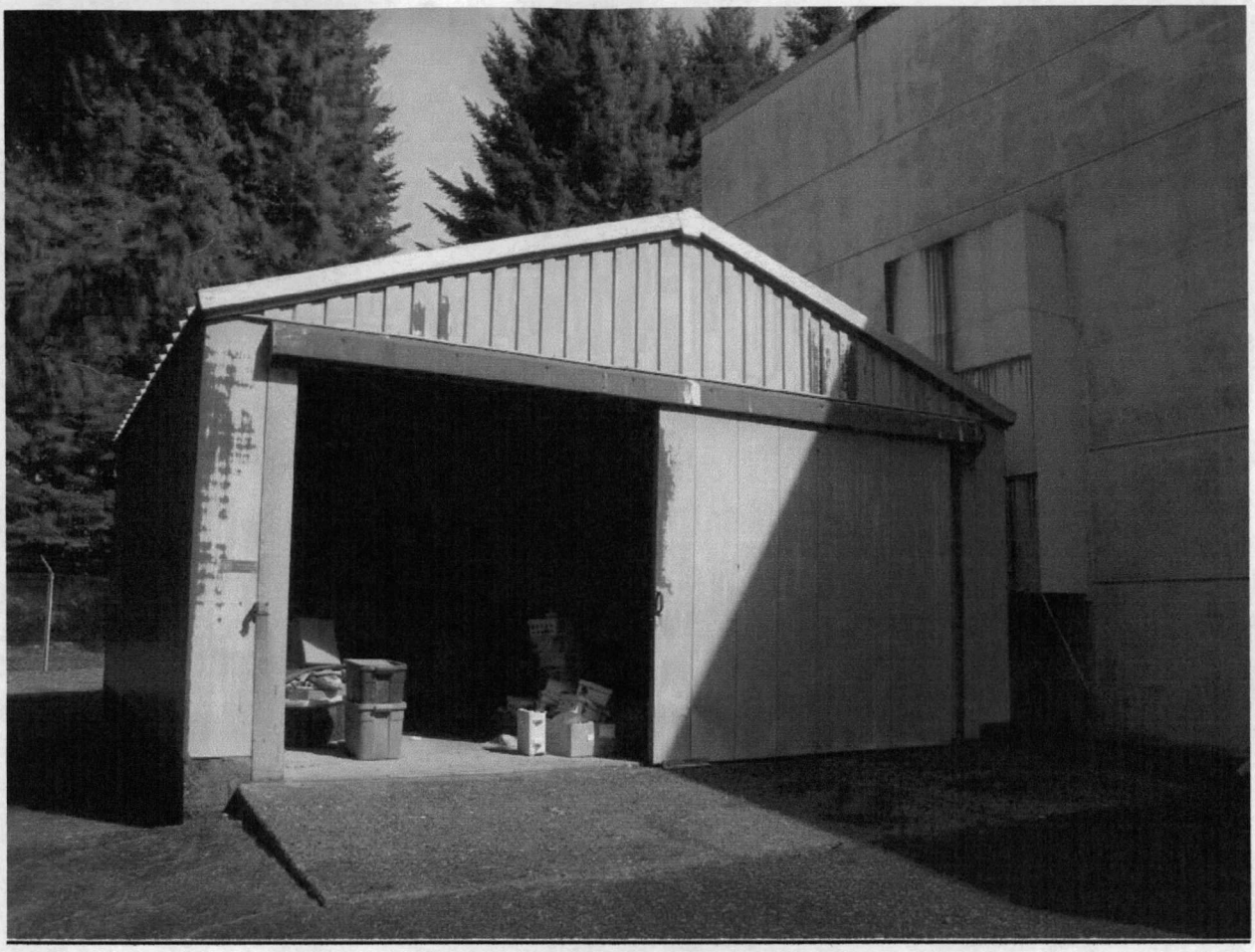
1. Typical construction of floor and roof supports beams and columns



2. Interior CMU partition walls with cracks at openings



3. Wall cracking on north wall



4. Accessory Garage Structure

5. Accessory Garage Wall Panels and Sill Anchors

6. Accessory Garage Structure Roof Panel Condition

Appendix B – Calculations

COMMUNICATIONS BLDG - SIGMA CHECK SEISMIC PER ASCE-31

BUILDING WT

ROOF = 99.5' x 65' x 5" SLAB (150 PSF) = 404k

MAIN BEAMS - 2(99.5)(325 PLF) = 64k

SUB BEAMS - 9(65)(195 PLF) = 114k

TOTAL = 582k

TILT WALL = 8'(10/12)(150)(327 LF) = 327k

TOTAL = 910k

2ND FLOOR

SLABS & BEAMS = 582k SAME AS ROOF

TILT WALLS = 14.5'(10/12)(150)(327 LF) = 592k

TOTAL = 1174k

TOTAL WT = 2084k

PSEUDO LATERAL FORCE PER ASCE-31 EQ 3-1

$V = C S_a W$

$C = 1.2$

$S_a = \frac{S_{D1}}{T}$ $T = C_t h_n^{3/4} = .02(28)^{3/4} = .24$ sec

$S_{D1} = \frac{2}{3} F_v S_1 = .40$

$S_a = \frac{.40}{.24} = 1.66 > S_{DS} \Rightarrow$ USE $S_{DS} = .64$

$V_{ISMIC} = 2084(.64)(1.2) = 1600k$

SHEAR STRESS CHECK PER ASCE 31-03-12

$v_{AVE} = \frac{1}{\mu}\left(\frac{V_s}{A_w}\right)$

N-S DIR

$A_w = 118'(12)(10") = 14,160 in^2$

E-W DIR

$A_w = 128'(12)(6") = 9,000 in^2$

$\mu = 1.5$ — ASSUME UNREINFORCED

$V_s = 1560k$

N-S DIR

$v_{AVE} = \frac{1}{1.5}\left(\frac{1560k}{14160 in^2}\right)(1000) = 73.4 psi < 100 psi$ OK

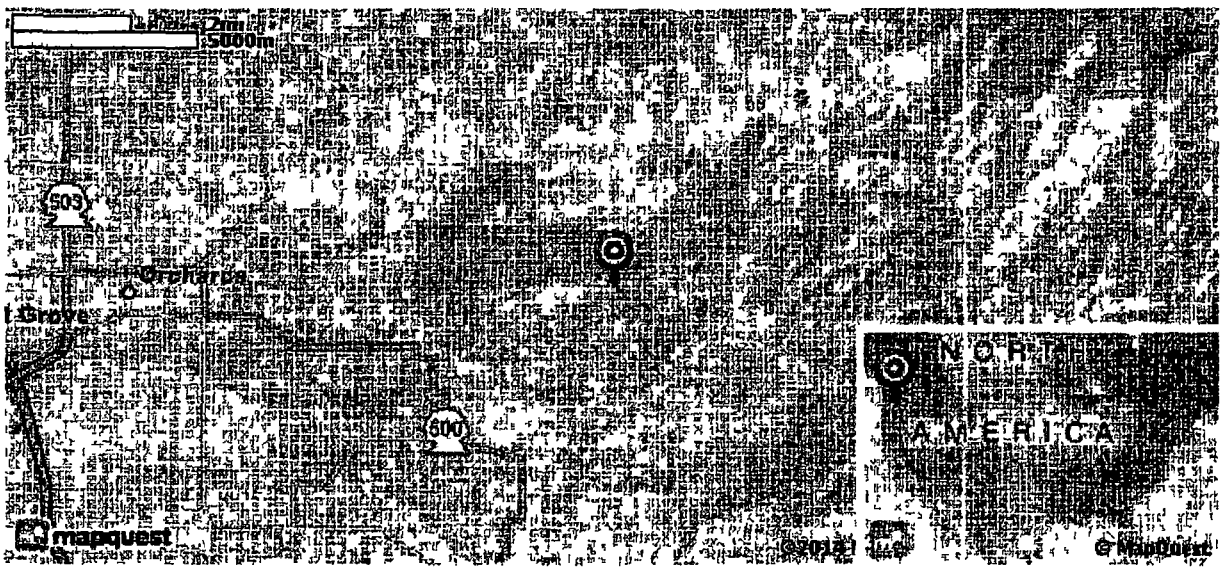
E-W DIR

$v_{AVE} = \frac{1}{1.5}\left(\frac{650}{19000}\right) = 34.7 psi < 100 psi$ OK

USGS Design Maps Summary Report

User-Specified Input

Report Title	Livingston Mt Communication Building Eval Thu April 24, 2014 20 01 59 UTC
Building Code Reference Document	2009 NEHRP Recommended Seismic Provisions (which utilizes USGS hazard data available in 2008)
Site Coordinates	45 679°N, 122 367°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

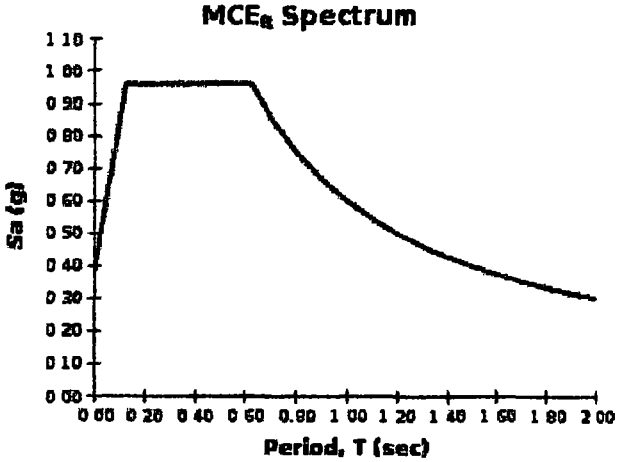


USGS-Provided Output

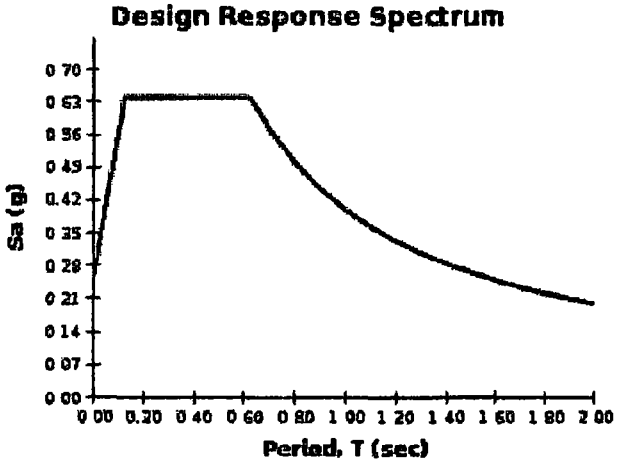
S_S =	0 818 g	S_{MS} =	0 960 g	S_{DS} =	0 640 g
S_1 =	0 355 g	S_{M1} =	0 600 g	S_{D1} =	0 400 g

For information on how the S_S and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please view the detailed report.

MCE_R Spectrum



Design Response Spectrum



For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report

WIND LOAD CHECK

V = 135 MPH ULT

EXP B

PER ASCE 7-10 CHAPTER 28 PART 2

BUILDING IS LOCATED AT TOP OF HILL ; $K_{zt} = 1.19$ H = 500'

$L_h = 5000$

x = 0

G = .85

$P_s = \lambda K_{zt} P_{s30}$

P_{s30} FROM FIGURE 28.6.1 BUILDING IS < 30' TALL ⇒ $\lambda = 1.0$

HORIZONTAL PRESSURES

A = 28.95 PSF

B = 19.2 PSF

$P_{sA} = 28.95 (1.0)(1.19) = 34.5$ PSF

$P_{sB} = 19.2 (1.0)(1.19) = 22.8$ PSF

a = 10(.65) = 6.5' ← CONTROLS

a = 4(30) = 12'

$Z_{cr} = 15'$

COMMUNICATIONS BLDG

CALCULATE WIND LOADS ON SHORT WALLS OF BLDG.

$W_{ROOF} = 8'(34.5 PSF) = 276$ PLF $8'(22.8 PSF) = 180$ PLF

$W_{FLOOR} = 14.5'(34.5 PSF) = 500$ PLF $14.5'(22.8) = 330$ PLF

LOAD TO EAST OR WEST WALL = $12.5'(276 + 500) + 21.5'(180 + 330)$

$= 9.7K + 10.2K = 25.8K$ ULT

SHEAR STRESS ON WALLS = $25.8K / 53'(10)(2) = 4.5$ PSI

SHEAR FORCES ARE VERY LOW, FAR LESS THAN THE ASCE-31 LIMIT OF 100 PSI. EXIST WALLS OK FOR WIND DEMANDS.

WIND LOAD CHECK - GARAGE BLDG

$a = .1(24) = 2.4 \rightarrow < 3$ USE 3' MIN

OR $.4(13.5') = 5.4'$

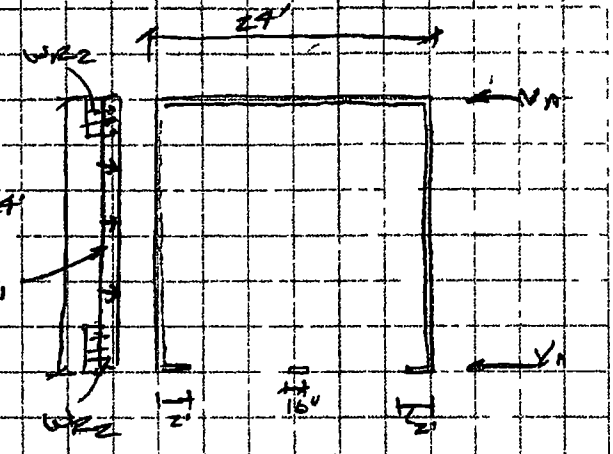
$z_a = 6'$

$P_{S30} = 34.5$ PSF

$P_{S6} = 22.8$ PSF

$P_{S15} = 15.1\,(1.19) = 18$ PSF

$P_{S30} = 8.9\,(1.19) = 10.6$ PSF

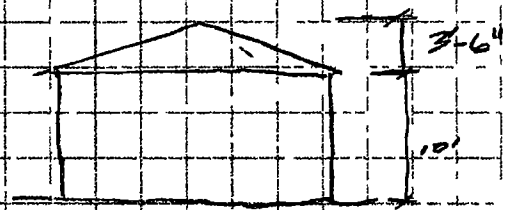


$W_{R1} = 5'(22.8\,PSF) + 3.5(10.6) = 151$ PLF

$W_{R2} = 5(34.5) + 3.5(18) = 235$ PLF

$V_R = 235(6) + 151(6) = 2315$ LBS ULT

SHEAR LOAD IN N-S DIR IS 2 EQUAL.



SOUTH WALL RIGHT ESSENTIALLY FOR A MOMENT FRAME OUT OF 3" DEEP x 8" WIDE HEAVY GAGE STL STUDS. THIS SYSTEM ALTHOUGH HAS CAPACITY TO RESIST LOADS IT WOULD NOT MEET CURRENT CODE => ASSUME STRUCTURE WORKS AS 3 SIDED STRUCTURE W/ LOADS IN E+W DIR TRANSFERRING TO NORTH WALL

LOAD @ NORTH WALL = $2(2315)(.6) = 2780$ LBS ASD

$W_{WALL} = 2780/24' = 115$ PLF

EXIST STL PANELS W/ 1/4" ABS @ 16" O.C. SHOULD BE CAPABLE OF RESISTING 115 PLF OK

CHK OVERTURNING:

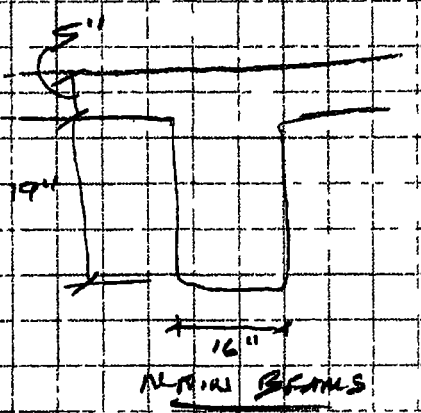
$T_{(+)W} = 2780(10') - .6(725\,LBS)(12') - .6(150)(24') = 765$ LBS

AT WIND BLDG

24'

THIS LOAD WOULD APPEAR TO BE 3 OR 4 OF THE 1/4" SILL ANCHORS OK

FLOOR BEAM CHECK



TYPICAL BEAMS

ASSUME - 3ksi CONC
- 40 ksi STL
MINIMUM REINFORCING STL

LL = 125 PSF

DL = 62.5 PSF

$W_u = 21'(125(1.6) + 62.5(1.2)) + 35(1.2)$

$= 6.7 k/f$

$M_{u\,POS} = wl^2/11 = 22.5'k$

$M_{u\,NEG} = wl^2/9 = 27.5'k$

BEAM CAPACITY

$\rho_{MIN} = .0033$ $b = 16$ $d = 24 - 1.5 = 22.5$

$f = \frac{A_s}{bd} \Rightarrow A_s = \rho bd = .0033(16)(22.5) = 1.18\,in^2$

$M_n = \phi A_s f_y z = 93'k < M_{u\,N.G.}$

MINIMUM STEEL WOULD NOT BE ENOUGH TO CARRY DEAD LOADS OF THE STRUCTURE W/O SIGNIFICANT CRACKING. SINCE NO CRACKING IS EVIDENT IN THE SLAB & BEAM SYSTEM, IT IS SAFE TO ASSUME ADEQUATE REINFORCING EXISTS TO CARRY HEAVY EQUIPMENT LOADS THAT CURRENTLY EXIST ON THE SECOND FLOOR

COLUMN CHECK - (E) 16" SQUARE

ASSUME 3000 PSI CONC AND GRADE 40 STL.

DEAD LOADS - SLAB = 62.5 PSF (22 x 20) = 27.5k

BEAMS - 20(32.5) = 6.5k

SUBBEAMS = 22(2)(19.5) = 8.5k

TOTAL = 42.5k / FLOOR

x2 FLOOR & ROOF = 85k

LIVE -

SNOW = 25 PSF (22 x 20) = 11k / COL.

FLOOR - ASSUME - 125 PSF

= (22 x 20)(125) = 55k

ESTIMATED TOTAL SERVICE LOAD ON LOWER LEVEL COLUMNS.

P = 85 + 55 + 11k = 151k

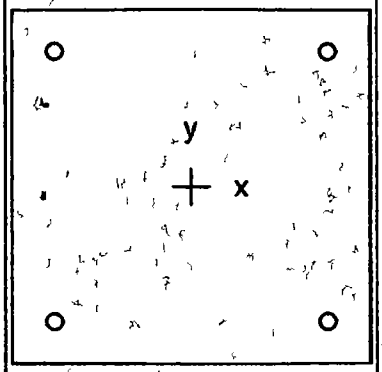
CHECKING COLUMN W/ LESS THAN 1% REINFORCING

COLUMNS HAVE ULTIMATE CAPACITY OF APPROXIMATELY 266k

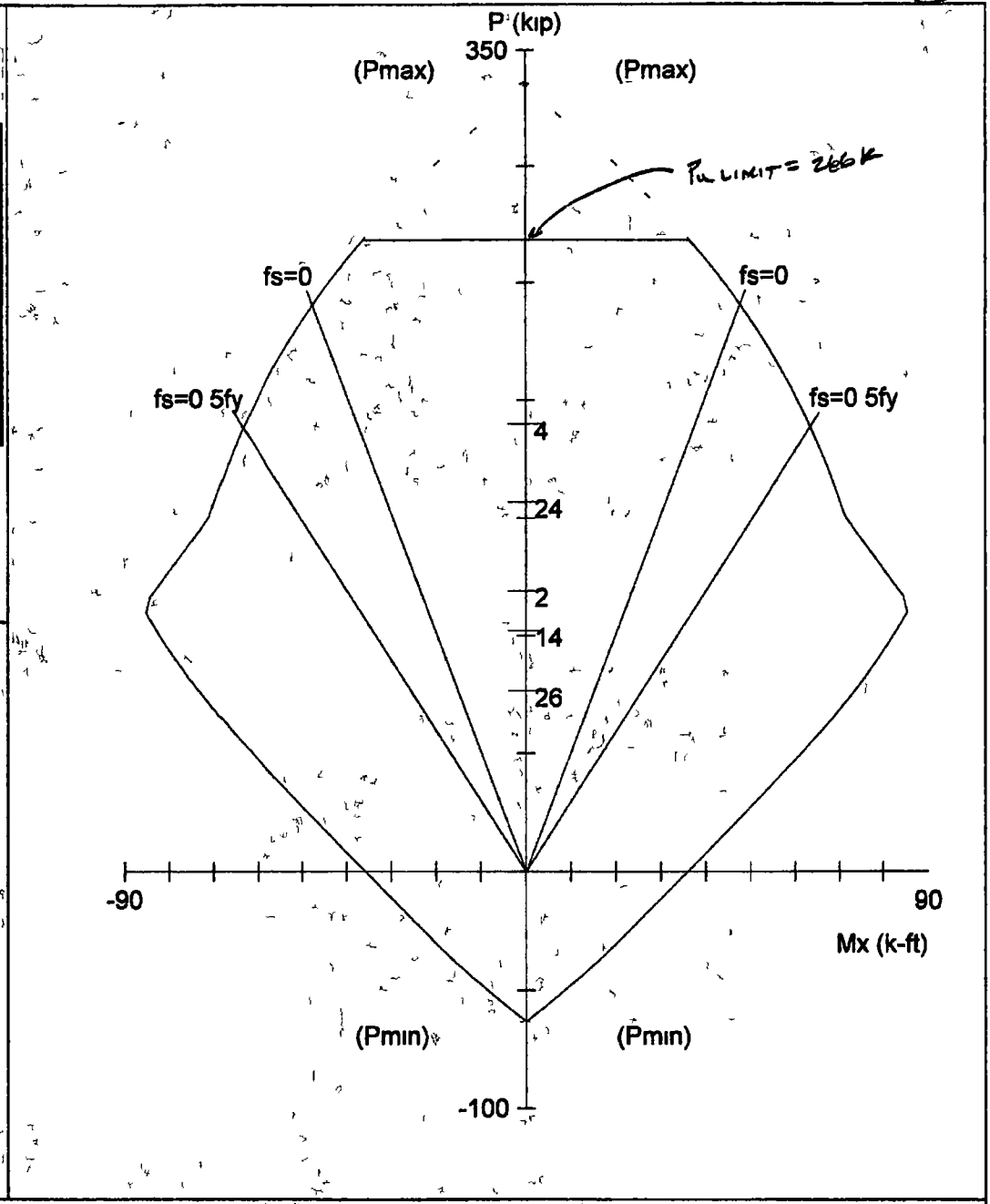
APPLICATED ULTIMATE LOAD = 1.2(85) + 1.6(55) = 190k OK

EVEN MINIMALLY REINFORCED COLUMNS APPEAR TO BE

ADEQUATE FOR ASSUMED LOADING



16 x 16 in



Code ACI 318-02

Units English

Run axis About X-axis

Run option Investigation

Slenderness Not considered

Column type Architectural

Bars ASTM A615

Date 04/24/14

Time 18 10 10

pcaColumn v4 10 Licensed to WDY Inc License ID 54210-1013887-4-1F05A-1E9E2

File P \2014\14929 ATC Livingstone Mt Building Eval\Analysis\Typ Col col

Project

Column

Engineer

f'c = 3 ksi	fy = 40 ksi	Ag = 256 in^2	4 #6 bars
Ec = 3122 ksi	Es = 29000 ksi	As = 1 76 in^2	rho = 0 69%
fc = 2 55 ksi		Xo = 0 00 in	Ix = 5461 33 in^4
e_u = 0 003 in/in		Yo = 0 00 in	Iy = 5461 33 in^4
Beta1 = 0 85		Min clear spacing = 11 50 in	Clear cover = 1 50 in

Confinement Tied phi(a) = 0 8, phi(b) = 0 9, phi(c) = 0 65

General Information

File Name P \2014\14929 ATC Livingstone Mt Building Eval\Analysis\Typ Col col
Project
Column Engineer
Code ACI 318-02 Units English

Run Option Investigation Slenderness Not considered
Run Axis X-axis Column Type Architectural

Material Properties

f'c = 3 ksi fy = 40 ksi
Ec = 3122 02 ksi Es = 29000 ksi
Ultimate strain = 0 003 in/in
Beta1 = 0 85

Section

Rectangular Width = 16 in Depth = 16 in

Gross section area, Ag = 256 in^2
Ix = 5461 33 in^4 Iy = 5461 33 in^4
Xo = 0 in Yo = 0 in

Reinforcement

Bar Set ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0 38	0 11	# 4	0 50	0 20	# 5	0 63	0 31
# 6	0 75	0 44	# 7	0 88	0 60	# 8	1 00	0 79
# 9	1 13	1 00	# 10	1 27	1 27	# 11	1 41	1 56
# 14	1 69	2 25	# 18	2 26	4 00			

Confinement Tied, #3 ties with #10 bars, #4 with larger bars
phi(a) = 0 8, phi(b) = 0 9, phi(c) = 0 65

Layout Rectangular
Pattern All Sides Equal (Cover to longitudinal reinforcement)
Total steel area As = 1 76 in^2 at rho = 0 69% (Note rho < 1 0%)
4 #6 Cover = 1 5 in

Load Combinations

U1 = 1 400*Dead + 0 000*Live + 0 000*Wind + 0 000*EarthQuake + 0 000*Snow
U2 = 1 200*Dead + 1 600*Live + 0 000*Wind + 0 000*EarthQuake + 0 500*Snow
U3 = 1 200*Dead + 1 000*Live + 0 000*Wind + 0 000*EarthQuake + 1 600*Snow
U4 = 1 200*Dead + 0 000*Live + 0 800*Wind + 0 000*EarthQuake + 1 600*Snow
U5 = 1 200*Dead + 1 000*Live + 1 600*Wind + 0 000*EarthQuake + 0 500*Snow
U6 = 0 900*Dead + 0 000*Live + 1 600*Wind + 0 000*EarthQuake + 0 000*Snow
U7 = 1 200*Dead + 0 000*Live - 0 800*Wind + 0 000*EarthQuake + 1 600*Snow
U8 = 1 200*Dead + 1 000*Live - 1 600*Wind + 0 000*EarthQuake + 0 500*Snow
U9 = 0 900*Dead + 0 000*Live - 1 600*Wind + 0 000*EarthQuake + 0 000*Snow
U10 = 1 200*Dead + 1 000*Live + 0 000*Wind + 1 000*EarthQuake + 0 200*Snow
U11 = 0 900*Dead + 0 000*Live + 0 000*Wind + 1 000*EarthQuake + 0 000*Snow
U12 = 1 200*Dead + 1 000*Live + 0 000*Wind - 1 000*EarthQuake + 0 200*Snow
U13 = 0 900*Dead + 0 000*Live + 0 000*Wind - 1 000*EarthQuake + 0 000*Snow

Service Loads

No	Load Case	Axial Load kip	Mx @ Top k-ft	Mx @ Bot k-ft	My @ Top k-ft	My @ Bot k-ft
1	Dead	85 00	0 00	0 00	0 00	0 00
	Live	55 00	0 00	0 00	0 00	0 00
	Wind	0 00	0 00	0 00	0 00	0 00
	EQ	0 00	0 00	0 00	0 00	0 00
	Snow	0 00	0 00	0 00	0 00	0 00

Factored Loads and Moments with Corresponding Capacities

NOTE Each loading combination includes the following cases
First line - at column top
Second line - at column bottom

No	Load Combo	Pu kip	Mux k-ft	fMnx k-ft	fMn/Mu	N A depth in	eps_t	Phi
1	1 U1	119 00	0 00	83 29	999 999	6 10	0 00395	0 827
2		119 00	0 00	83 29	999 999	6 10	0 00395	0 827
3	1 U2	190 00	0 00	62 89	999 999	11 56	0 00067	0 650
4		190 00	0 00	62 89	999 999	11 56	0 00067	0 650
5	1 U3	157 00	0 00	69 95	999 999	10 03	0 00122	0 650
6		157 00	0 00	69 95	999 999	10 03	0 00122	0 650
7	1 U4	102 00	0 00	82 92	999 999	4 82	0 00579	0 900
8		102 00	0 00	82 92	999 999	4 82	0 00579	0 900
9	1 U5	157 00	0 00	69 95	999 999	10 03	0 00122	0 650
10		157 00	0 00	69 95	999 999	10 03	0 00122	0 650
11	1 U6	76 50	0 00	73 56	999 999	3 63	0 00867	0 900
12		76 50	0 00	73 56	999 999	3 63	0 00867	0 900
13	1 U7	102 00	0 00	82 92	999 999	4 82	0 00579	0 900
14		102 00	0 00	82 92	999 999	4 82	0 00579	0 900
15	1 U8	157 00	0 00	69 95	999 999	10 03	0 00122	0 650
16		157 00	0 00	69 95	999 999	10 03	0 00122	0 650
17	1 U9	76 50	0 00	73 56	999 999	3 63	0 00867	0 900
18		76 50	0 00	73 56	999 999	3 63	0 00867	0 900
19	1 U10	157 00	0 00	69 95	999 999	10 03	0 00122	0 650
20		157 00	0 00	69 95	999 999	10 03	0 00122	0 650
21	1 U11	76 50	0 00	73 56	999 999	3 63	0 00867	0 900
22		76 50	0 00	73 56	999 999	3 63	0 00867	0 900
23	1 U12	157 00	0 00	69 95	999 999	10 03	0 00122	0 650
24		157 00	0 00	69 95	999 999	10 03	0 00122	0 650
25	1 U13	76 50	0 00	73 56	999 999	3 63	0 00867	0 900
26		76 50	0 00	73 56	999 999	3 63	0 00867	0 900

*** End of output ***

EXISTING BUILDING
05/13/14

AMERICAN TOWER
CORPORATION

LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS, WA 98607

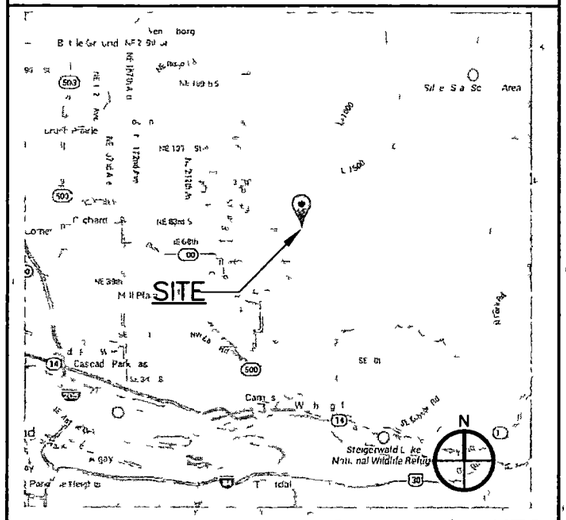
PROPRIETARY INFORMATION

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO ATC & AT&T MOBILITY SERVICES IS STRICTLY PROHIBITED

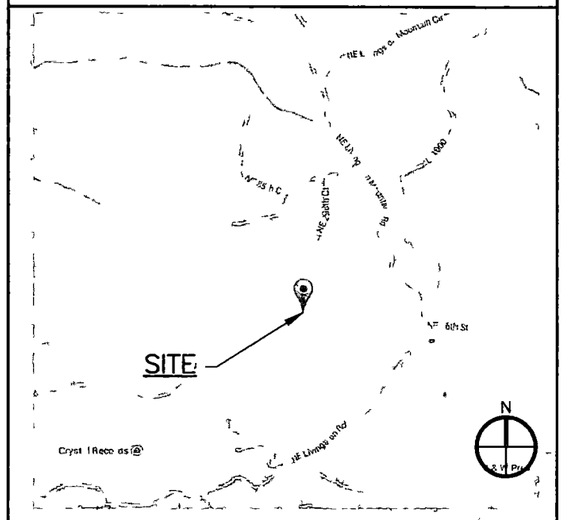
10248 REGISTERED ARCHITECT
STEVEN M N PLOWMAN
STATE OF WASHINGTON

NOTE ARCHITECTURAL STAMP AND SIGNATURE APPLIES TO SHEETS IN DRAWING INDEX INDICATED BY AN X ON LEFTMOST COLUMN

VICINITY MAP



GENERAL LOCATION MAP



PROJECT INFORMATION

BUILDING AREAS
COMMUNICATIONS BUILDING
FIRST FLOOR 6 480 SQ/FT
SECOND FLOOR 6 480 SQ/FT
GARAGE 576 SQ/FT
BUILDING MATERIALS
COMMUNICATIONS BUILDING
EXT WALLS POURED–IN–PLACE CONCRETE
INT WALLS POURED–IN–PLACE CONCRETE AND CMU
PERIMETER WALLS FURRING WOOD STUDS WITH INSULATION GYP BD
GARAGE
PRE–FAB METAL BUILDING
NO INTERIOR WALL OR FINISHING

BUILDING USE TELECOMMUNICATIONS EQUIPMENT
OCCUPANT LOAD NOT OCCUPIED EXCEPT FOR EQUIPMENT MAINTENANCE BY AGREEMENT WITH CLARK COUNTY

OCCUPANCY S–1

FIRE ALARM BY SEPARATE SUBMITTAL TO FIRE MARSHALL

LAND USE ZONE R–10

DRAWING INDEX

	DWG NO	DESCRIPTION
X	T–1 0	TITLE SHEET
X	A–1 0	OVERALL SITE PLAN
X	A–2 0	ENLARGED FIRST FLOOR PLAN
X	A–2 1	ENLARGED SECOND FLOOR PLAN
X	A–3 0	ELEVATIONS
X	A–3 1	ELEVATIONS

DRIVING DIRECTIONS

FROM PORTLAND MERGE ONTO I–405 NORTH KEEP RIGHT AT THE FORK FOLLOW SIGNS FOR INTERSTATE 5 N/SEATTLE AND MERGE ONTO I–5 N TAKE EXIT 2 FOR 39TH STREET/WASHINGTON 500 E KEEP RIGHT AT THE FOR FOLLOW SIGNS FOR WA–500 E AND MERGE ONTO WA–500 E TURN RIGHT ONTO NE FOURTH PLAINS RD CONTINUE ONTO WA–500 E/NE 4TH PLAIN RD TURN LEFT ONTO NE 53RD ST SLIGHT LEFT ONTO NE BRADFORD RD CONTINUE ONTO NE 53RD STREET TURN LEFT ONTO NE LIVINGSTON RD SLIGHT LEFT ONTO NE LIVINGSTON MOUNTAIN RD

APPROVAL/SIGN OFF OF CONSTRUCTION DRAWINGS

CONSULTANT GROUP SIGN OFF	DATE	SIGNATURE	ATC SIGN OFF	DATE	SIGNATURE
CONSTRUCTION COORDINATOR			COMPLIANCE		
LANDLORD S REPRESENTATIVE			CONSTRUCTION MANAGER		
PROJECT MANAGER			DEPLOYMENT MANAGER		
SITE ACQUISITION			EQUIPMENT ENGINEER		
ZONING			INTERCONNECT		
SITE AQUISITION MANAGER			OPERATIONS		
PERMITS			RF ENGINEER		
			RF ENGINEER MANAGER		
REVIEWERS SHALL CLEARLY PLACE INITIALS ADJACENT TO EACH REDLINE NOTE AS DRAWINGS ARE BEING REVIEWED					

LEGAL DESCRIPTION

29900 NE LOOKOUT RD
CAMAS WA

PARCEL # 137286000

no permit on Bldg
Structural Eval. only
of Bldg

AMERICAN TOWER CORPORATION

GPA ARCHITECTS LLC
2701 NW Vaughn, Suite 764
Portland, OR 97210
503 274-7800

DATE	05/13/14
DRAWN BY	LTW
CHECKED BY	RS

REVISIONS

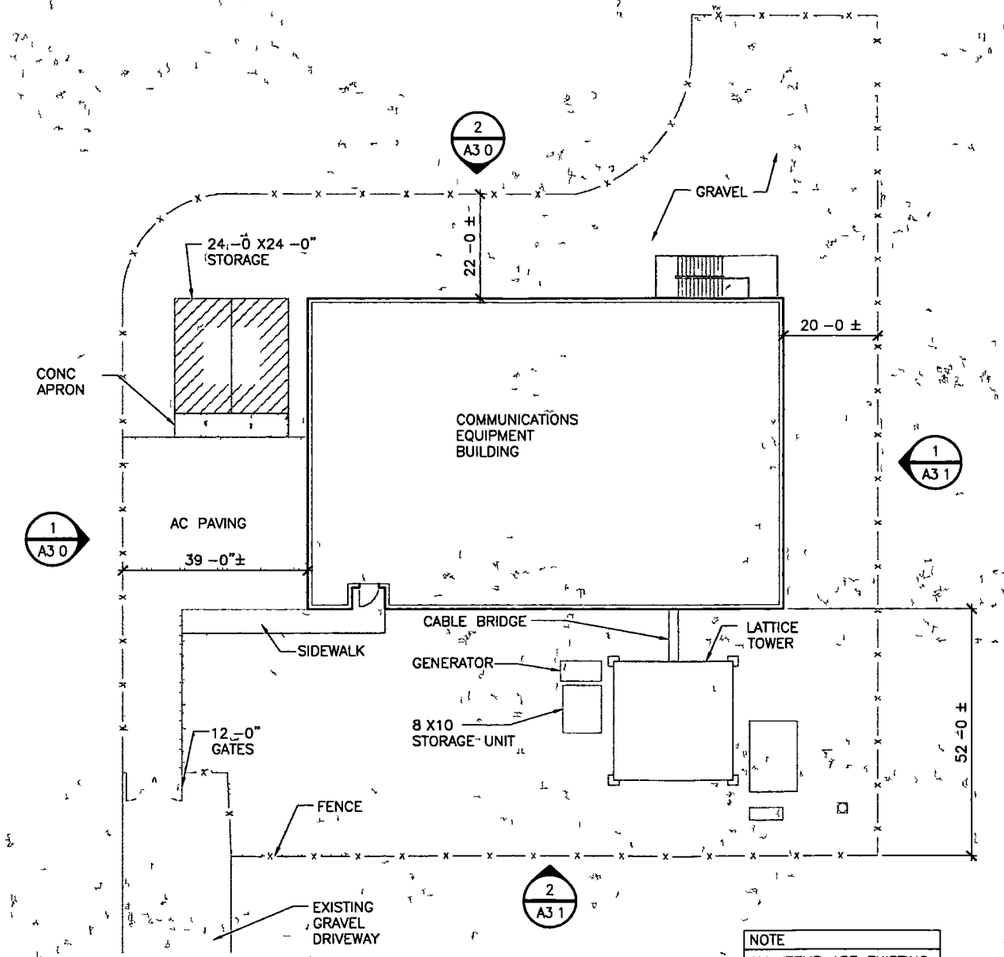
REV	DATE	DESCRIPTION	BY

10248 REGISTERED ARCHITECT
STEVEN M.N. PLOWMAN
STATE OF WASHINGTON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T–1.0



NOTE
ALL ITEMS ARE EXISTING

N
ZMAC

OVERALL SITE PLAN

22" X 34" SCALE: 1/16" = 1'-0"
11" X 17" SCALE: 1/32" = 1'-0"

1

AMERICAN TOWER CORPORATION

GPA
ARCHITECTS, LLC
2701 NW Vaughn, Suite 764
Portland, OR 97210
503-274-7800

DATE	05/13/14
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REVISIONS

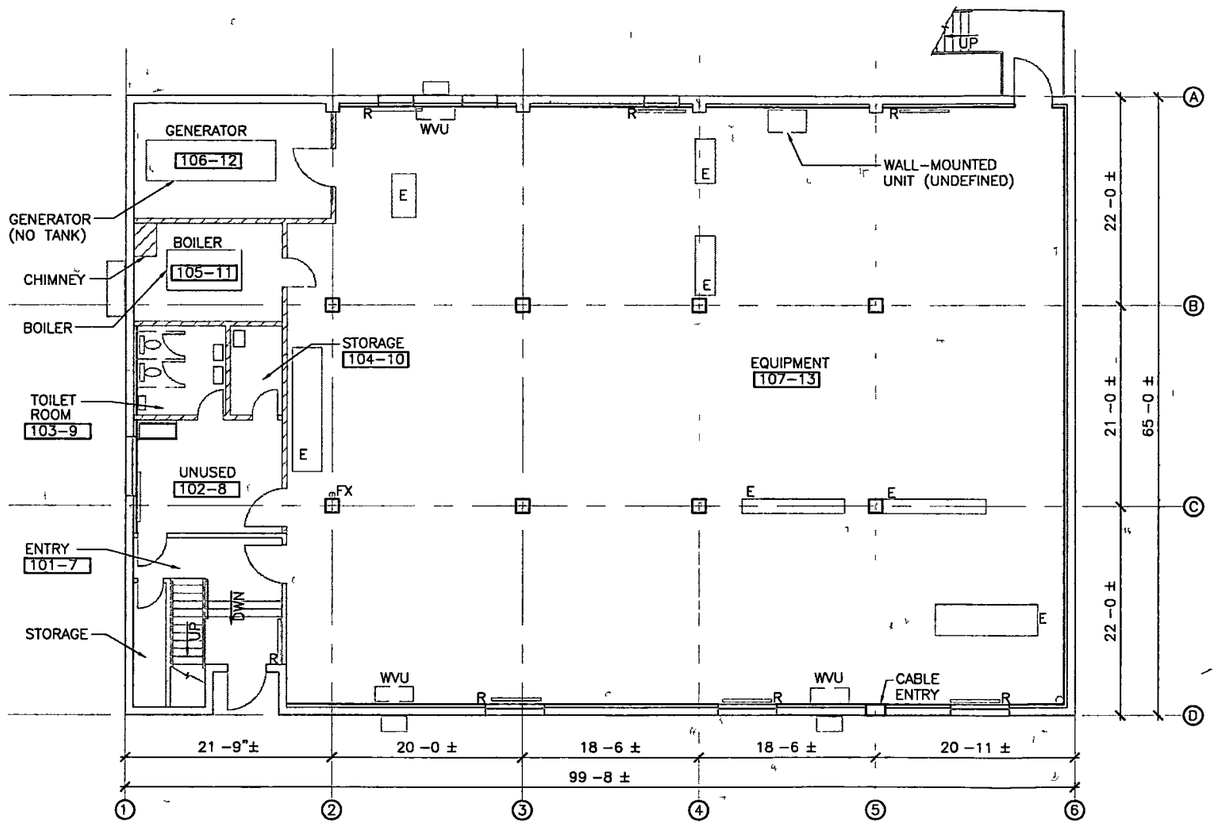
REV	DATE	DESCRIPTION	BY

10248 REGISTERED ARCHITECT
STEVEN M. H. PLOTKIN
STATE OF WASHINGTON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
A-1



ENLARGED FIRST FLOOR PLAN

22" X 34" SCALE 1/8" 1-0"
11 X 17" SCALE. 1/16" 1-0

1

ZMAG N

LEGEND

E	COMMUNICATIONS AND ELECTRICAL EQUIPMENT
WVU	WALL VENTILATION UNIT
R	RADIATOR
FX	FIRE EXTINGUISHER
000–0	ROOM NUMBER ÷ PHOTO FILE
	POURED–IN–PLACE CONCRETE
	CMU
	POURED–IN–PLACE CONCRETE WITH INSULATED FURRING

NOTE
ALL ITEMS ARE EXISTING

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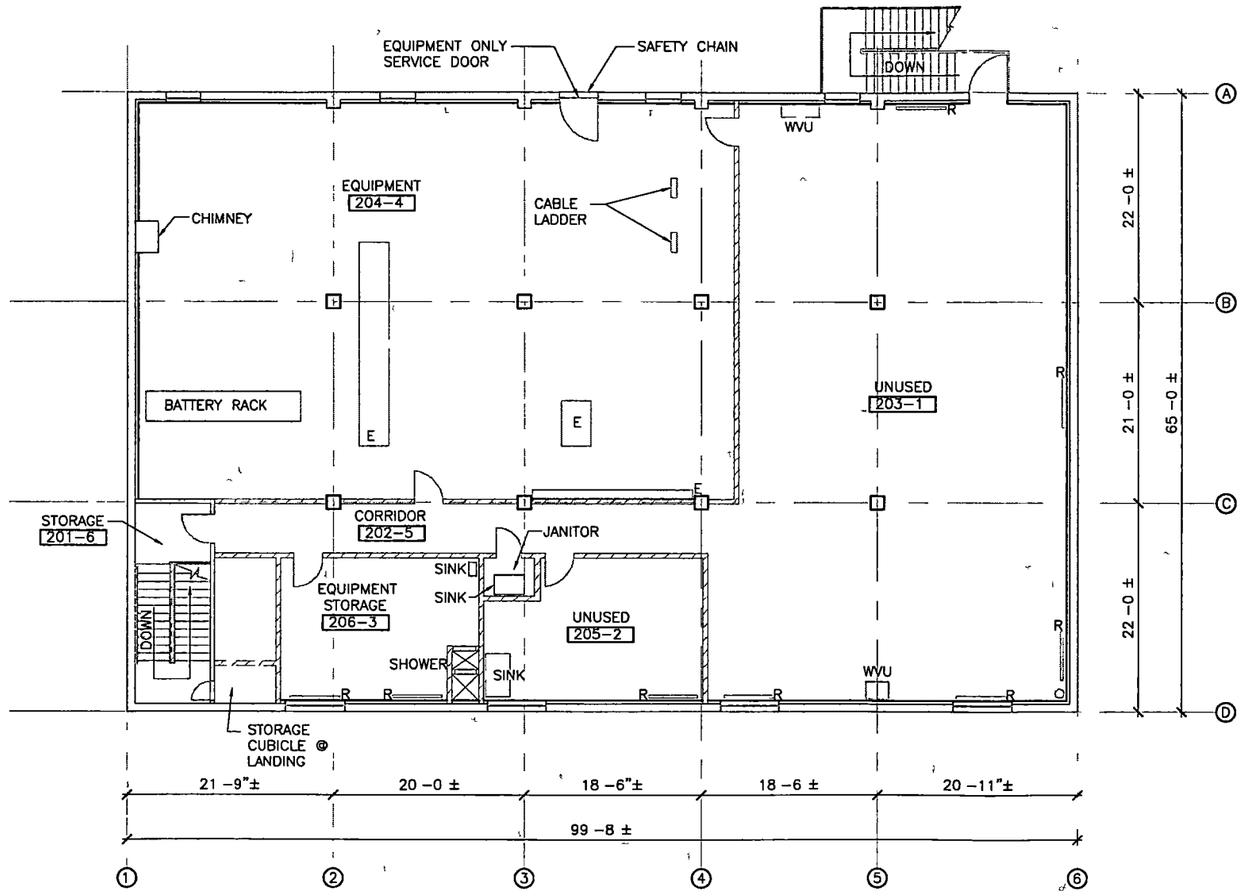
STATE OF WASHINGTON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
A–2.0



LEGEND

E	COMMUNICATIONS AND ELECTRICAL EQUIPMENT
WVU	WALL VENTILATION UNIT
R	RADIATOR
FX	FIRE EXTINGUISHER
000-0	ROOM NUMBER – PHOTO FILE
	POURED-IN-PLACE CONCRETE
	CMU
	POURED-IN-PLACE CONCRETE WITH INSULATED FURRING

NOTE
ALL ITEMS ARE EXISTING

ZMAG N

ENLARGED SECOND FLOOR PLAN

22" X 34" SCALE 1/8" = 1'-0"
11" X 17" SCALE 1/16" = 1'-0"

1

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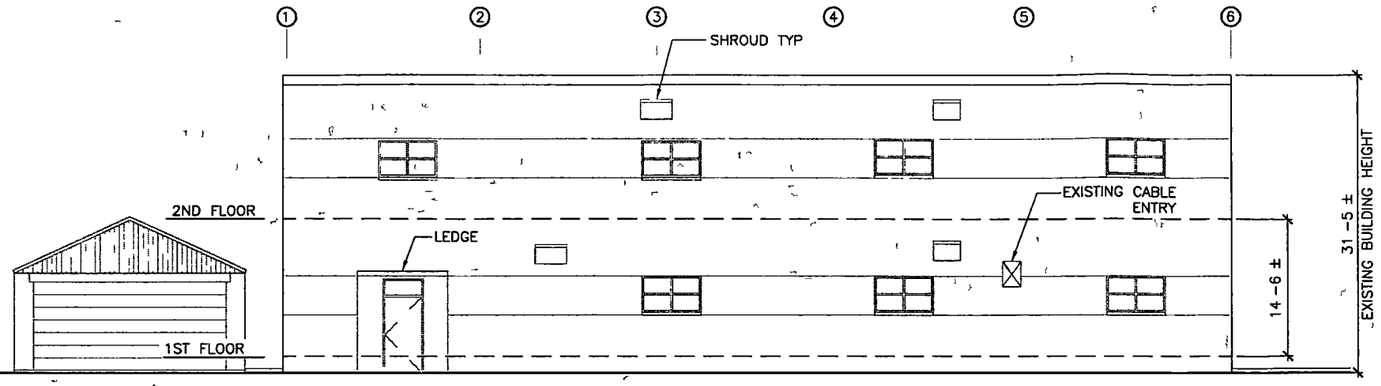
10248 REGISTERED ARCHITECT
STEVEN M N. PLOWMAN
STATE OF WASHINGTON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

SHEET TITLE
ENLARGED SITE PLAN

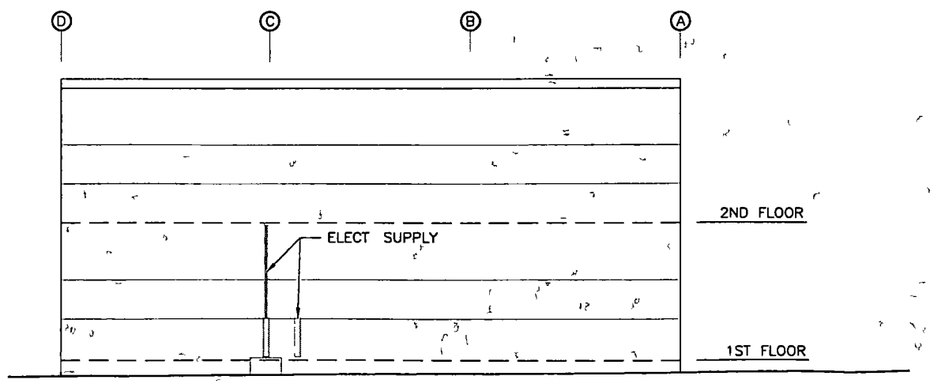
SHEET NUMBER
A-2.1



SOUTH ELEVATION

22" X 34" SCALE: 1/8" = 1'-0"
11" X 17" SCALE: 1/16" = 1'-0"

1



EAST ELEVATION

22" X 34" SCALE: 1/8" = 1'-0"
11" X 17" SCALE: 1/16" = 1'-0"

2

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REVISIONS

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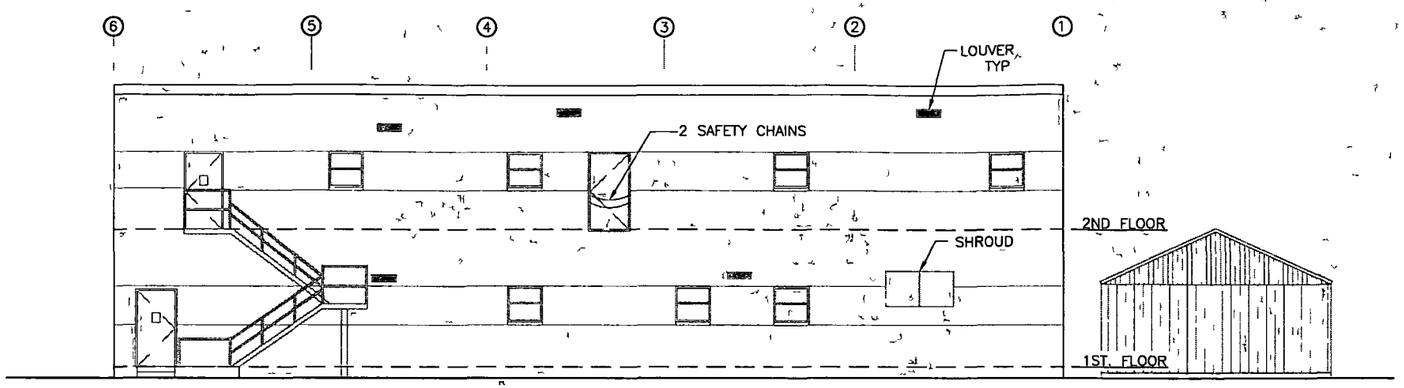
10248 REGISTERED ARCHITECT
STEVEN M.H. PLOWMAN
STATE OF WASHINGTON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

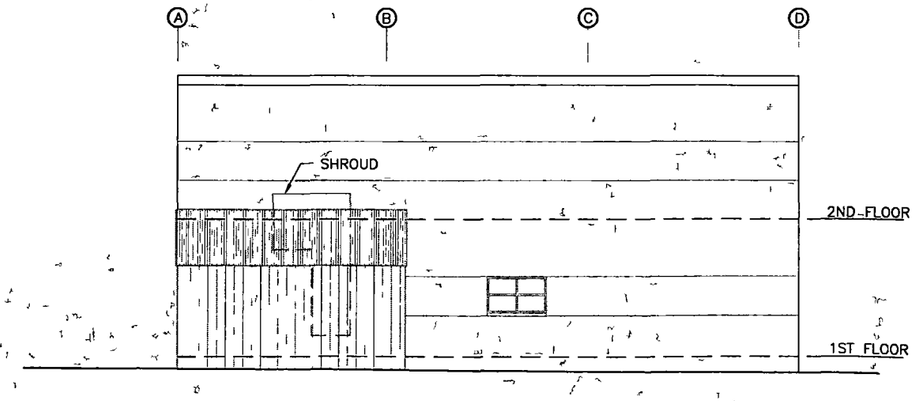
SHEET TITLE
ELEVATIONS

SHEET NUMBER
A-3.0



NORTH ELEVATION

22" X 34" SCALE 1/8" 1'-0"	1
11" X 17" SCALE. 1/16" 1'-0"	



WEST ELEVATION

22" X 34" SCALE. 1/8" 1'-0"	2
11" X 17" SCALE 1/16" 1'-0"	

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REVISIONS

REV	DATE	DESCRIPTION	BY

10248 REGISTERED ARCHITECT
STEVEN M.FL PLO WAAN
STATE OF WASH ~ TON

SITE
ATC SITE #
LIVINGSTON MOUNTAIN
LIVINGSTON MOUNTAIN
CAMAS WA 98607

SHEET TITLE
ELEVATIONS

SHEET NUMBER
A-3.1