Condition Assessment

ARCHITECTURAL

OVERVIEW

The Carter G. Woodson Home is in poor condition. The building has been vacant for many years and the constant infiltration of water because of a leaking roof had caused significant to the exterior envelope, the wood and masonry structure and the interior finishes. Although the East Elevation is in good condition, the remaining elevations are in poor condition. Because of rot and termite damage to portions of the wood support system, the main stair is sagging as are the floors in several of the rooms. The deteriorating wood framing members in conjunction with open and failing mortar joints has caused near collapse of the west wall elevation at the third floor and the southwest corner of the two story addition. The lack of heat and proper ventilation of the interior along with the high level of water infiltration has led to damage of the plaster walls, the decorative wood elements and the wood flooring.

METHODOLOGY

Beyer Blinder Belle and the design team performed several site visits to closely inspect both the exterior envelope conditions and the interior conditions in order to be able to describe the physical conditions and deteriorated areas of the building. In order to describe the physical conditions, distilled by features, materials and systems, with a description of deteriorated areas, a conditions assessment legend will be provided for both the exterior and the interior. These matrices will identify symbols for each condition, example photographs of the condition taken at the site, the designated locations of the condition and probable causes for the noted deterioration. Following the matrices will be elevation and floor plan drawings that key in the locations of damage and deterioration that was defined in the matrices. These drawings will then be followed by narratives describing the conditions of the structural, mechanical, electrical, and plumbing systems in detail with accompanying photographs. Analysis of hazardous materials, potable water and survey underground water and sanitary lines was not included in this assessment.

EXTERIOR LEGEND

Figure 4-001: East Elevation – Exterior Conditions Assessment Legend

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR BRICK	BIO GR	Biological Growth	South Elevation, Brick Below East Elevation Entry Stair	
	DESCRIPTION		POTENTIAL CAUSES	
	Unwanted growth or infestation of fungi, algae, microbes or plants that may result in organic staining and bio-deterioration of the pore structure of the masonry. (Photo: South elevation at grade.)		Biological growth is associated with excess moisture in protected areas and is related to fluctuations in temperatures. It often occurs where there is not adequate drainage of rain water. It also provides the perfect environment for insect and animal infestations, and may indicate elevated moisture levels within the substrate.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR BRICK	CC	Cementitious Coating	West Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	A cementitious coating has been applied to the top half of the West Elevation at the two story addition. Significant cracks in the brick load bearing wall have translated through the coating, causing it to be unstable and separate from the brick. (Photo: West Elevation at second floor line).		Structural failure of the southwest corner of the West Elevation is caused by failing structure in openings on the South Elevation, resulting in cracks in the cementitious coating. Continuous vegetative growth has also contributed to increased moisture levels in the substrate and subsequent failing of mortar joints and coating.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR BRICK	CJ	Crack Through Masonry Joint	Discrete locations on North, East, South and West Elevations	
	DESCRIPTION		POTENTIAL CAUSES	
	A crack that follows the mortar joints of the brick and doesn't translate through the brick. In some cases these cracks result in brick displacement. (Photo: East Elevation – note that photo also shows displacement of brick outward)		Joints open due to weathering or differential stresses from movement within the building envelope. The mortar can be further damaged with salts and moisture migration.	

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
DIS-B	Dislocated Brick	North, West and South Elevations	
DESCRIPTION		POTENTIAL CAUSES	
Brick units that have shifted out of plumb or are not level. (Photo: West Elevation -Three Story Structure above Window W304).		Dislocation of the brick units may be caused by differential movement within the masonry wall or deterioration of adjacent mortar caused by excessive penetration of moisture within the wall.	

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
IC	Incompatible Patch	West and South Elevations	
DESCRIPTION		POTENTIAL CAUSES	
Previous repair of the masonry which is physically incompatible with the historic fabric (Photo: Patch at East Elevation below water course.)		Previous penetrations through the brick which have been abandoned have required patching. The patching materials are not sympathetic to the historic fabric and may fail as a result of improper testing of the repair system or a misunderstanding of the long term effects of the repair from weathering.	

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
MI-B	Missing Brick	North, West and South Elevations	
DESCRIPTION		POTENTIAL CAUSES	
Brick units that have dislodged completely from the masonry wall or that have been removed. (Photo: West Elevation - Two Story Structure - above Window W108).		Caused by deterioration of mortar, allowing brick to shift in combination with differential movement resulting in brick fully dislodging from masonry arch or wall. Deterioration of mortar and resulting loss of brick has also been accelerated on the West and North Elevations due to excessive plant growth on the elevations, trapping moisture in joints.	

<table>
<tr><td rowspan="4">EXTERIOR BRICK</td><th>SYMBOL</th><th>CONDITION</th><th>LOCATION</th><th>EXAMPLE IMAGE</th></tr>
<tr><td>Outward Bulging</td><td>OB</td><td>North, West and South Elevation</td><td rowspan="3"></td></tr>
<tr><th colspan="2">DESCRIPTION</th><th>POTENTIAL CAUSES</th></tr>
<tr><td colspan="2">Brick is showing evidence of bulging outward, in some cases as much two inches. (Photo: North elevation at joint between 1874 and 1880 two story additions).</td><td>Weak mortar joints in conjunction with deterioration of the interior wood structure that gives lateral stability to the load bearing walls. Also, failing footings or a lack of footings could contribute to the bulging.</td></tr>
</table>

<table>
<tr><td rowspan="4">EXTERIOR BRICK</td><th>SYMBOL</th><th>CONDITION</th><th>LOCATION</th><th>EXAMPLE IMAGE</th></tr>
<tr><td>OJ-B</td><td>Open Joints</td><td>All Exterior Elevations</td><td rowspan="3"></td></tr>
<tr><th colspan="2">DESCRIPTION</th><th>POTENTIAL CAUSES</th></tr>
<tr><td colspan="2">Complete or partial loss of pointing mortar. This condition allows moisture to migrate into the masonry substrate and may also result in potential structural instability. Open joints are most prevalent on the South Elevation but are also located across areas of all facades (Photo: South Elevation - West Corner).</td><td>Joints open due to weathering or differential stress from movement within the building envelope. The mortar on the South, West and North elevations are particularly weak and susceptible to deterioration.</td></tr>
</table>

<table>
<tr><td rowspan="4">EXTERIOR BRICK</td><th>SYMBOL</th><th>CONDITION</th><th>LOCATION</th><th>EXAMPLE IMAGE</th></tr>
<tr><td>P/G</td><td>Paint/Graffiti on Brick</td><td>East Elevation</td><td rowspan="3"></td></tr>
<tr><th colspan="2">DESCRIPTION</th><th>POTENTIAL CAUSES</th></tr>
<tr><td colspan="2">Red paint has been applied directly to the brick below and partially above the marble water course. (Photo: East Elevation above marble water course).</td><td>Paint has frequently been applied to the East Elevation to cover over graffiti as a substitute for cleaning the spray paint directly off the brick.</td></tr>
</table>

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION
RS	Replacement Sill	South Elevation and West Elevation - Three Story Portion
DESCRIPTION		**POTENTIAL CAUSES**
Non-matching brick has been installed as a replacement for a previous wood sill. (Photo: South Elevation - Window W106).		Rot and deterioration of the wood sills due to lack of regular painting and maintenance led to select sills being replaced. At the time of replacement, brick was used instead of wood.

EXAMPLE IMAGE

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION
SMJ	Sealant at Mortar Joints	East Elevation
DESCRIPTION		**POTENTIAL CAUSES**
Application of sealant over the existing mortar or into open mortar joints. Aged sealant is now failing (Photo: East Elevation directly above water course).		Sealant was applied as an effort to repair the failing thin mortar joints on the East Elevation. This repair is inappropriate due to the potential for the sealant to trap moisture within the mortar joints, which will accelerate deterioration of both the mortar and the brick.

EXAMPLE IMAGE

EXTERIOR BRICK

SYMBOL	CONDITION	LOCATION
SP-B	Brick Spall	East Elevation
DESCRIPTION		**POTENTIAL CAUSES**
Detachment of brick fragment from brick unit. (Photo: East Elevation above window W102).		Spalls may be caused by pressure within wall, expansion of embedded ferrous elements or from repair materials that are overly hard in comparison to the surrounding substrate.

EXAMPLE IMAGE

EXTERIOR CONCRECTE MASONRY UNIT

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
CMU-I	CMU Infill	West, South Elevation	
DESCRIPTION		POTENTIAL CAUSES	
Existing window opening has been filled with concrete masonry units either to stabilize opening or prevent entry through opening. (Photo: South Elevation - Infill at Window W107).		Instability of brick masonry and mortar due to consistent moisture penetration as well as rotting of opening framing resulted in failed opening support.	

EXTERIOR STONE

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
DIS-S	Dislocation of Stone	Bluestone at East Elevation Stairs to Basement	
DESCRIPTION		POTENTIAL CAUSES	
Stone units that are out of plumb or not level. (Photo: West Elevation - Stairs to Basement Entry).		Dislocation of individual stone units may be caused by differential movement, impact, deterioration of adjacent mortar or vegetative growth in mortar joints.	

EXTERIOR STONE

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
HC	Hairline Crack in Single Unit	East Elevation	
DESCRIPTION		POTENTIAL CAUSES	
Fracture or fissure in single stone unit at mid-span. (Photo: East Elevation - Stone Lintel Above Window W203).		Cracks through a single unit are due to excess flexural stresses within the wall system from differing expansion and contraction rates between mortar and the brick or from localized load increase due to expanding metal. It may also be caused be excessive loading of the center of the lintel span.	

EXTERIOR STONE	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
	OP-S	Open Joint	East Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	Complete or partial loss of pointing mortar. This condition allows moisture to migrate into the masonry substrate and may also result in potential structural instability. (Photo: East Elevation - Stone at Stone Water Course).		Joints open due to weathering or differential stress from movement within the building envelope or due to weak mortar that is susceptible to deterioration. Loss of mortar is consistent at most stone locations on the East Elevation.	

EXTERIOR STONE	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
	SP-S	Stone Spall	East Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	Detachment of stone fragment from base stone unit. (Photo: East Elevation at Stone Water Course to the right of the Entry Door).		Spalls may be caused by pressure within the stone, from impact damage, from the expansion of embedded ferrous elements or from repair materials that are overly hard in comparison to the surrounding substrate.	

EXTERIOR STONE	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
	ST-M	Staining-Metallic	East Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	When water runs off a corroding metallic element, the transfer of ions can cause metallic deposits to build up on masonry elements. This type of staining most often occurs with iron or steel (orange rust color). (Photo: Staining of marble at front door entry sill).		Lack of regular maintenance and painting for the front door steel gate and front stoop iron railings has caused significant rust and loss of metal. On going exposure to water is causing splashing of metallic deposits on the stone, resulting in the staining.	

EXTERIOR WOOD

SYMBOL	CONDITION	LOCATION
DIS-W	Dislocated Wood Member	East Elevation

DESCRIPTION	POTENTIAL CAUSES
Wood members that are out of plumb or have separated from the substrate. (Photo: East Elevation Painted Wood Cornice).	Lack of regular maintenance and painting of the wood members has resulted in significant paint loss, allowing for wood to absorb moisture. The absorption of moisture caused the wood members to deform, pulling away from the substrate.

EXAMPLE IMAGE

EXTERIOR WOOD

SYMBOL	CONDITION	LOCATION
ME	Missing Element	Exterior Windows on North, West and South Elevations, Front Door

DESCRIPTION	POTENTIAL CAUSES
Missing component of wood members at window and door frames and trim. (Photo: East Elevation - Front Entry Door Paneled Return).	Severe wood rot will eventually lead to disintegration of material and result in the loss of the element. Missing element may also be caused by rusting or inadequate anchoring or vandalism.

EXAMPLE IMAGE

EXTERIOR WOOD

SYMBOL	CONDITION	LOCATION
MP	Missing Putty	All Exterior Windows

DESCRIPTION	POTENTIAL CAUSES
Glazing putty loss at perimeters of glass lites. (Photo: South Elevation - Interior of Window W204).	Continuous weathering leads to breakdown and drying out of the putty material, leaving these areas vulnerable to moisture penetration.

EXAMPLE IMAGE

EXTERIOR WOOD

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
PL	Paint Loss	Wood Window Frames and Door Frames at All Exterior Elevations	
DESCRIPTION		POTENTIAL CAUSES	
Failure of paint coating, which acts as a protective sacrificial layer against weathering. The loss of paint exposes the wood substrate to moisture penetration, deterioration and eventually will lead to wood rot. (Photo: East Elevation - Sill at Window W201).		Most paint coatings fail due to age and weathering. In some cases, when the substrate is not prepared correctly or is too wet, the coating cannot maintain a bond and will fail. Paint loss is most severe at areas of high weathering, such as window sills, base of frames, projecting elements and horizontal members.	

EXTERIOR WOOD

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WR	Wood Rot	Windows at West and South Elevations	
DESCRIPTION		POTENTIAL CAUSES	
Decay of wood substrate, eventually leading to failure and loss of material. This process is accelerated by moisture, fluctuations in temperature and poor maintenance. (Photo: East Elevation - Base of Wood Surround at Entry Door).		Failure of protective paint coating and prolonged exposure to direct weathering.	

EXTERIOR METAL

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
CORR	Corrosion	Window Grilles on East, West and South Elevations, Cast Iron Entry Railing	
DESCRIPTION		POTENTIAL CAUSES	
Oxidation of the metal substrate, in severe cases, leads to through metal corrosion and loss of material. Corrosion may affect the color, texture or form of the metal object and cause staining to surrounding areas. (Photo: East Elevation - Cast Iron Railing).		Paint loss and prolonged exposure to moisture.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR METAL	FMA	Ferrous Metal Anchors	East Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	Ferrous metal strips set into mortar joints to surface mount materials to the brick masonry. (Photo: East Elevation above Window W102).		Anchors were set into masonry to anchor signage and if not treated will continue to rust and expand, jeopardizing adjacent masonry stability.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR METAL	GR	Metal Grille	East Elevation Basement and First Floor Windows, All West and South Elevation Windows	
	DESCRIPTION		POTENTIAL CAUSES	
	Metal security grille bolted to anchors set in mortar joints at brick masonry. (Photo: South Elevation - Window W105).		Security grilles were installed to prevent vandalism and forced entry to the building. Ferrous metal anchors set in masonry joints have rusted and caused damage to adjacent masonry.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
EXTERIOR METAL	MTL-LS	Metal Loss of Section	East Elevation - Cast Iron Entry Railing	
	DESCRIPTION		POTENTIAL CAUSES	
	Oxidation of the metal substrate, in severe cases, leads to through metal corrosion and loss of material. (Photo: East Elevation - Cast Iron Railing).		Paint loss and prolonged exposure to moisture.	

EXTERIOR KEY ELEVATION

Figure 4-002: East Elevation – Diagram of Exterior Conditions Assessment

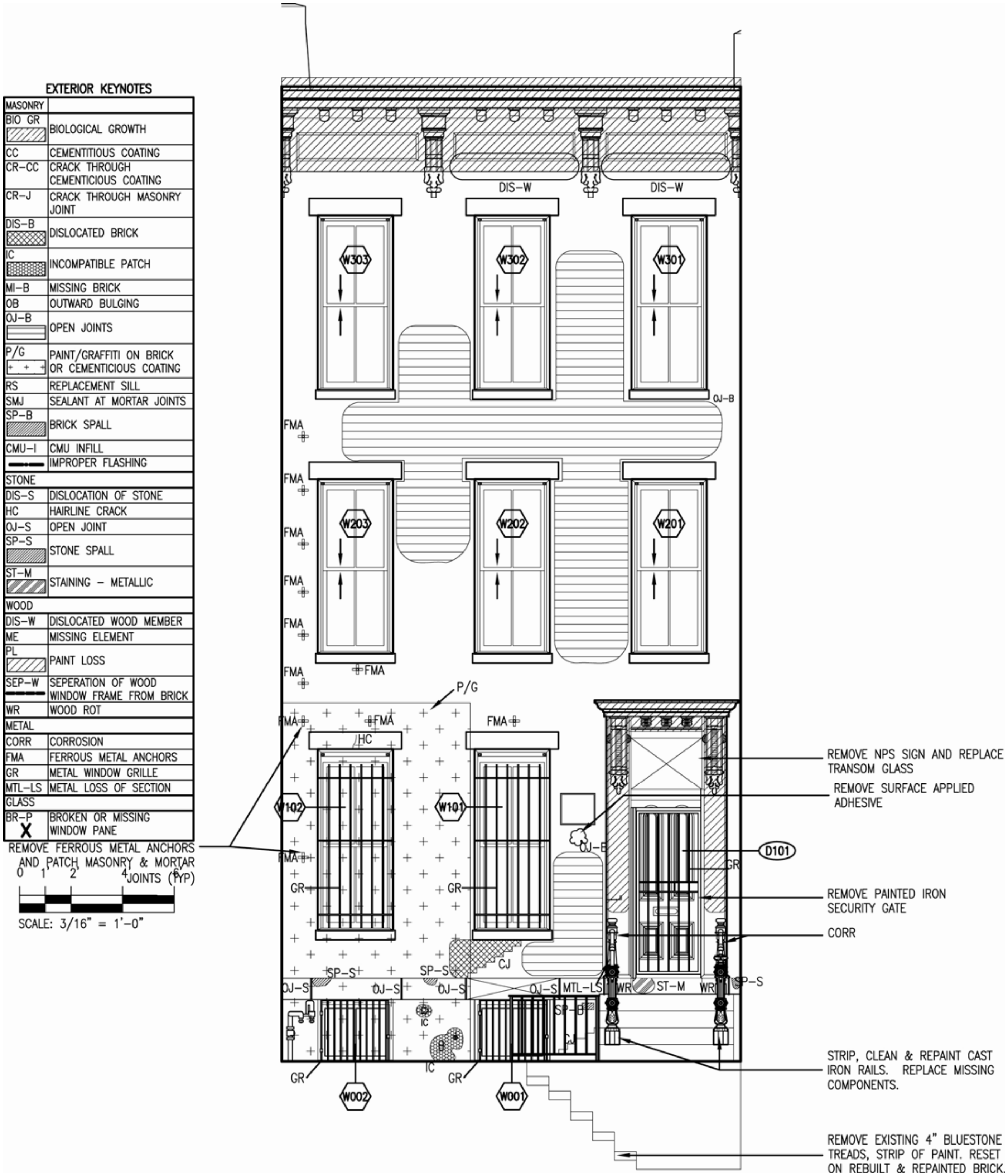


Figure 4-003: West Elevation – Diagram of Exterior Conditions Assessment

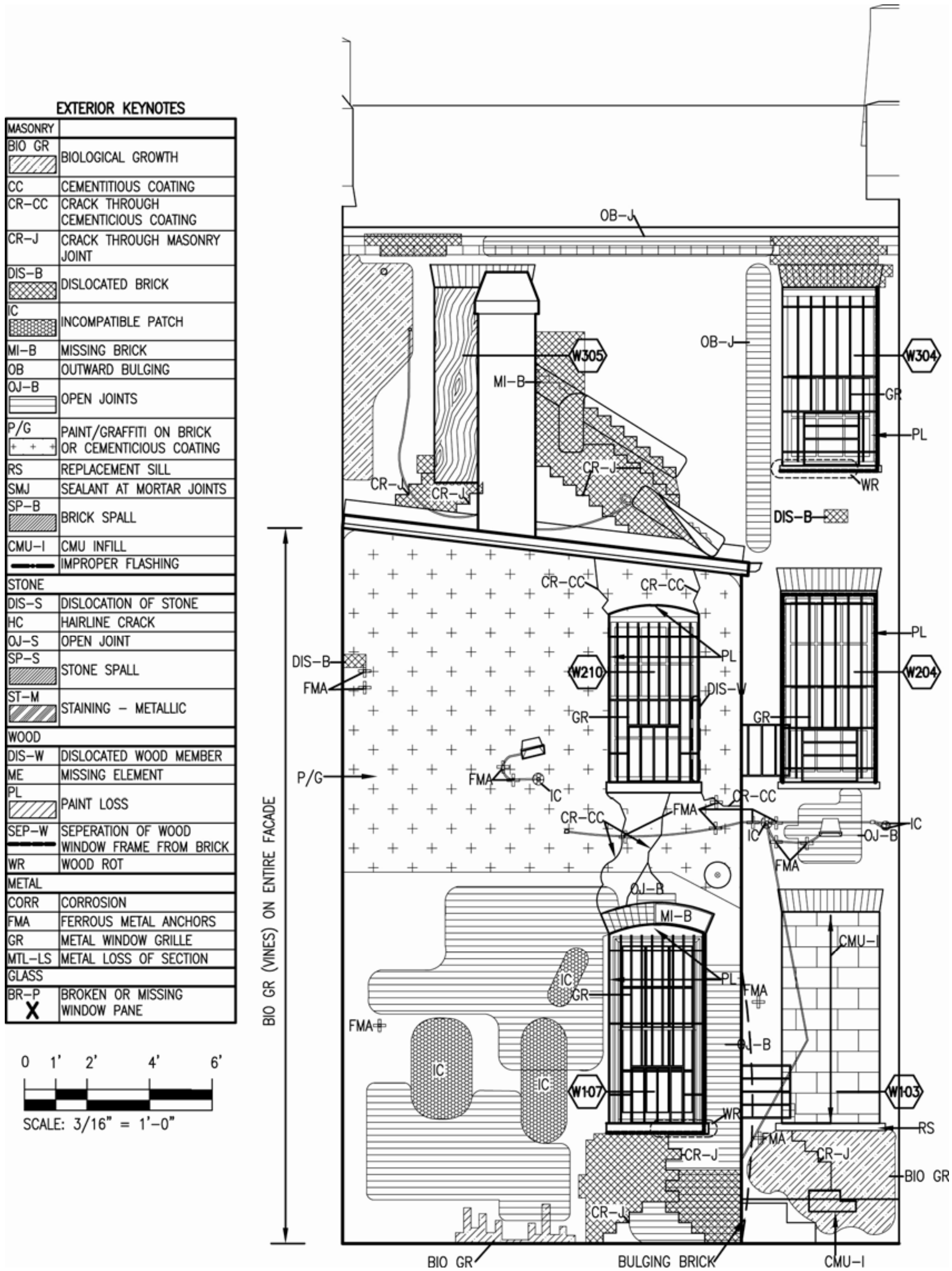


Figure 4-004: South Elevation – Diagram of Exterior Conditions Assessment

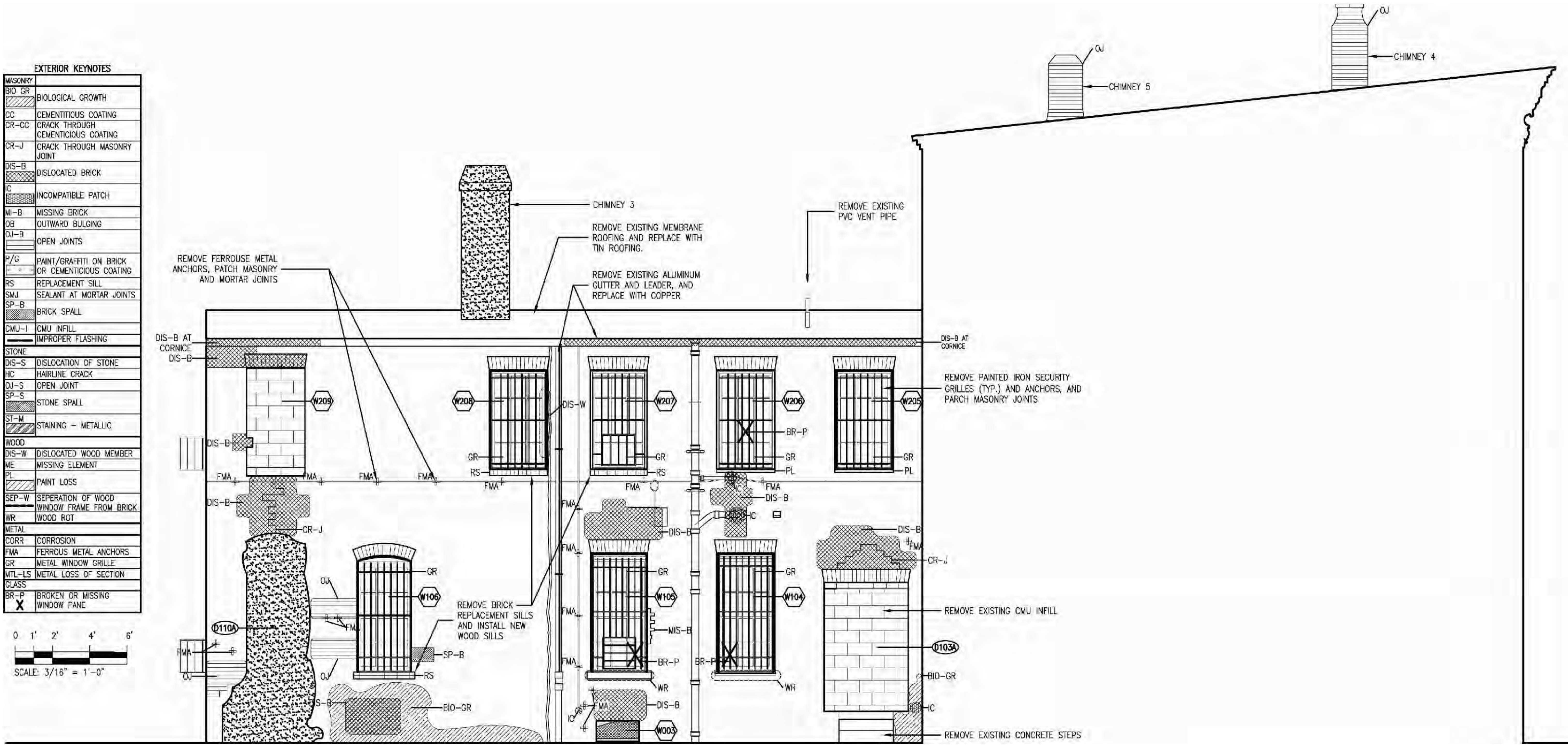


Figure 4-005: North Elevation – Diagram of Exterior Conditions Assessment

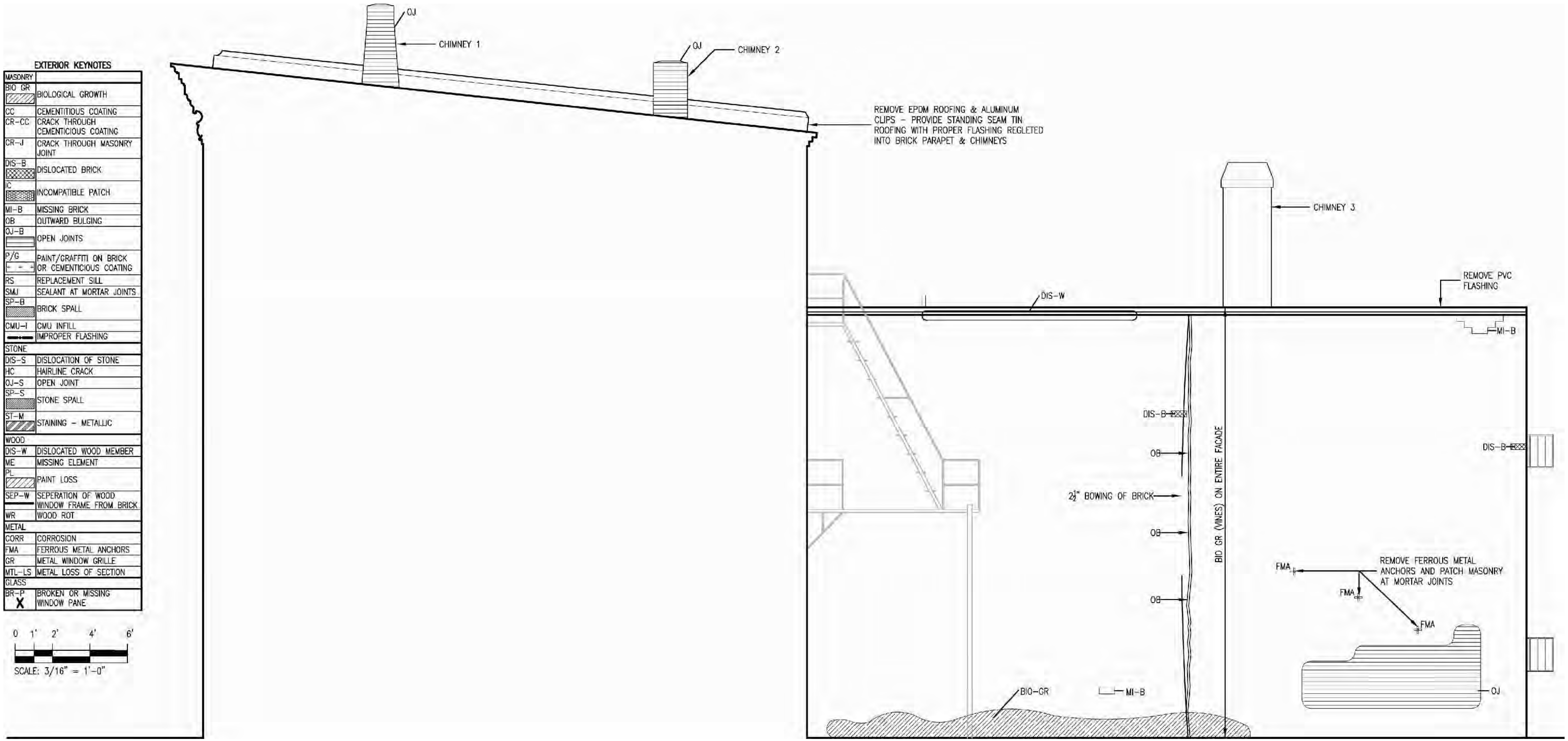
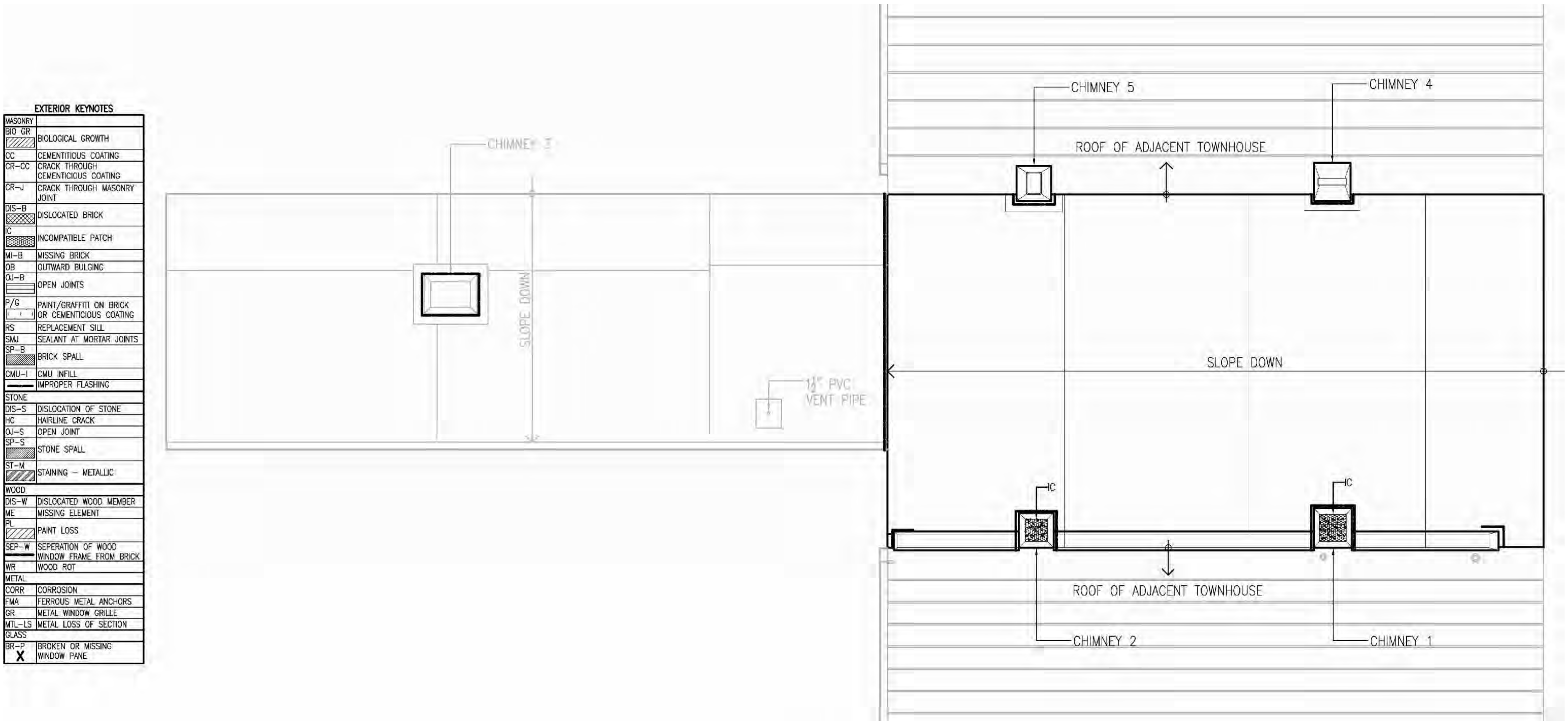


Figure 4-006: Roof – Diagram of Exterior Conditions Assessment



INTERIOR LEGEND

Figure 4-007: Interior Conditions Assessment

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR BRICK	OJ-I	Interior Open Joints	Basement North Elevation	
	DESCRIPTION		POTENTIAL CAUSES	
	Complete or partial loss of pointing mortar. This provides access for moisture migration into the masonry substrate and may also result in potential structural instability. (Photo: North Elevation at Basement).		Joints open due to differential stresses from movement within building envelope and can be further damaged with salts and moisture migration as a result of flooding of the basement.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR STONE	SS	Stone Soiling	Fireplace Hearths – Rooms 104, 105	
	DESCRIPTION		POTENTIAL CAUSES	
	This problem type refers to any foreign matter (inorganic or organic) which accumulates on a building surface over time, commonly referred to as dirt, grime, or other residue. (Photo: Stone hearth at fireplace in Room 105).		Building has been abandoned for a significant amount of time, and deterioration of interior ceiling and wall finishes has resulted in accumulation of debris on the floors.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR METAL	SR	Surface Rust at Steel	Steel Columns and Beams at Basement	
	DESCRIPTION		POTENTIAL CAUSES	
	Corrosion of metal due to consistent exposure to moisture. Corrosion may affect the color, texture, or form of the metal object and may cause staining to surrounding materials (Photo: Steel column in Basement).		Corrosion is caused by continuous moisture exposure in conjunction with lack of maintenance of paint coating on steel. Frequent infiltration of rain water into the basement due to the lack of a water tight exterior envelope is also accelerating the corrosion.	

INTERIOR PLASTER

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
PL-L	Complete Loss of Plaster from Lath or Masonry	Interior Elevations of Rooms 103, 110, 205, 210, 305	
DESCRIPTION		**POTENTIAL CAUSES**	
Complete breakdown of bonding of scratch coat keys with wood lath or bonding of scratch coat with brick masonry resulting in loss of plaster. (Photo: Loss of plaster at South Elevation of Room 210).		Consistent water infiltration as a result of failing roof and open mortar joints along the exterior masonry walls results in plaster holding moisture causing a weakened bond between the plaster and the substrate, eventually resulting in failure.	

INTERIOR PLASTER

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
PL-LWBD	Complete Loss of Plaster Wall Board	Ceilings of Rooms 102, 103, 105, 110, 201, 203, 205, 210, 305	
DESCRIPTION		**POTENTIAL CAUSES**	
Separation and loss of plaster board from either wood lath or wood structure resulting in complete failure of board. (Photo: Ceiling of Room 203).		Consistent water infiltration as a result of failing roof resulting in plaster board absorbing moisture. Deflection of structure causes nails attaching wall board to lath or wood structure to fail.	

INTERIOR PLASTER

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
PL-HC	Hairline Crack in Plaster Wall	Interior Elevations of Rooms 102, 104, 105, 201, 202, 203, 205, 302, 303	
DESCRIPTION		**POTENTIAL CAUSES**	
Crack through the surface of the plaster that does not extend into substrate (Photo: Crack at East wall of Room 302).		Hairline cracks in plaster throughout the building are a result of continued settlement of structure, significant fluctuation in temperature and moisture levels.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR PLASTER	PL-MC	Major Crack in Plaster Wall	Interior Elevations of Rooms 102,103, 104, 105, 110, 201, 202, 203, 205, 208, 210, 301, 303, 305	
	DESCRIPTION		POTENTIAL CAUSES	
	Crack through surface material that may extend into substrate. (Photo: Crack at East wall of Room 101).		Cracks may open in plaster due to differential stresses from movement of the building envelope or substrate settlement. If element becomes unstable, it could lead to loss of material.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR PLASTER	PL-S	Separation of Plaster from Wood Lath or Masonry	Interior Elevations of Rooms 102, 105, 201, 301, 305	
	DESCRIPTION		POTENTIAL CAUSES	
	Partial breakdown of bonding of scratch coat keys with wood lath or bonding of scratch coat with brick masonry resulting in partial separation of plaster from substrate. (Photo: Loss of plaster at South Elevation of Room 210).		Consistent water infiltration as a result of failing roof and open mortar joints along the exterior masonry walls results in plaster holding moisture causing a weakened bond between the plaster and the substrate, eventually resulting in separation.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR PLASTER	PNT-W	Failed Paint on Wall	Interior Elevations of Rooms 102, 202. 301	
	DESCRIPTION		POTENTIAL CAUSES	
	Breakdown of paint coating. (Photo: Failed paint at Room 301).		This condition indicates that the walls are holding significant moisture, weakening the bond between the paint and the plaster substrate. The source of the moisture must be controlled before any repainting to ensure a new coating will last, and to prevent additional interior damage.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR PLASTER	WDM	Severe Water Damage	Interior Elevations of Rooms 103, 201, 202, 205, 301, 305	
	DESCRIPTION		POTENTIAL CAUSES	
	The irreversible loss of scales, flakes, or layers from a surface. This may occur on interior plaster due to moisture penetration, deterioration from salts, or inherent properties in the material. (Photo: South Elevation Detail - Room 201).		Severe water damage at walls is a sign of a serious water infiltration problem. Once the water infiltration begins, the plaster will retain the moisture and the problem will continue to spread.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
NTERIOR WINDOWS	W-CRK	Cracked or Broken Window Glass	Windows W102, W106, W201, W202, W206,	
	DESCRIPTION		POTENTIAL CAUSES	
	Cracked glass window unit. (Photo: East Elevation - Interior of Window W202).		Cracked glass may be a result of impact or differential movement within the frame due to fluctuations in relative humidity/temperature from the exterior to the interior.	

	SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
INTERIOR WOOD FLOORS	WD-FF	Failed Floor Board	Flooring at Rooms 208, 301	
	DESCRIPTION		POTENTIAL CAUSES	
	Pine strip flooring has failed, resulting in unstable floor boards. (Photo: Failed floor board at Room 208 entry).		Continuous exposure to moisture has resulted in wood rot and failing of select wood members.	

INTERIOR WOOD FLOORS

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WD-PC	Incompatible Metal Patch	Flooring at Rooms 102, 104	
DESCRIPTION		POTENTIAL CAUSES	
An incompatible wood patch has been installed in locations where there has been significant wear to the flooring. (Photo: Metal floor patch in Room 104).		The pine plank flooring is a very soft flooring material that is susceptible to significant wear if not properly maintained. The finish coat of the wood flooring has been completely worn away resulting in significant wearing of the floor boards, causing in splintering and gaps.	

INTERIOR WOOD FLOORS

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WD-PC	Plywood Patch	Flooring at Rooms 103, 109, 201, 305	
DESCRIPTION		POTENTIAL CAUSES	
Plywood panel sheathing has been installed at locations where the existing wood floor is failing. (Photo: Plywood panels at Room 103).		In order to maintain safe access to the entire house plywood panels were installed in select areas where the flooring and/or supporting structure below had failed due to wood rot or termite damage.	

INTERIOR WOOD FLOORS

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WD-SW	Significant Wear	All Interior Wood Floors	
DESCRIPTION		POTENTIAL CAUSES	
Significant wear of the wood surface resulting in exposed and pronounced grain. (Photo: Wear at floor of Room 303).		The pine plank flooring is a very soft flooring material that is susceptible to significant wear if not properly maintained. The finish coat of the wood flooring has been completely worn away resulting in significant wearing of the floor boards, resulting in splintering and gaps.	

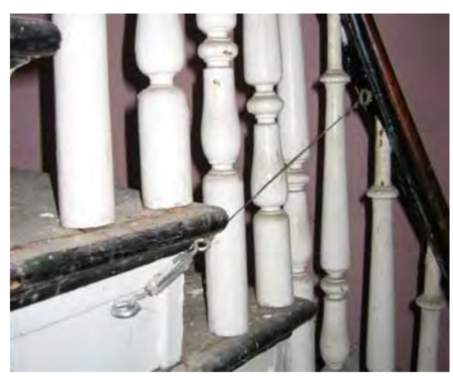
INTERIOR WOOD FLOORS

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WD-TD	Termite Damage	Wood Flooring in Rooms 103, 201, 301, 305	
DESCRIPTION		**POTENTIAL CAUSES**	
Deterioration and loss of section of wood as a result of termite infestation. (Photo: Termite damage at wood floor - Room 305).		Continuous water infiltration in combination with cool temperature and little air circulation provides an ideal environment for termites to thrive. The most significant termite damage has occurred in direct correspondence with areas below two primary roof leaks.	

INTERIOR WOOD FLOORS

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
WD-SFL	Sagging Floor	Flooring at Rooms 103, 109, 110, 201, 208, 210, 301	
DESCRIPTION		**POTENTIAL CAUSES**	
Floor structure is failing resulting in flooring sagging in discrete locations. (Photo: Sagging of wood floor at Southwest corner of Room 109).		The wood joists have separated from the masonry because of moisture damage, termite damage or deflection, resulting in unsupported section of floor.	

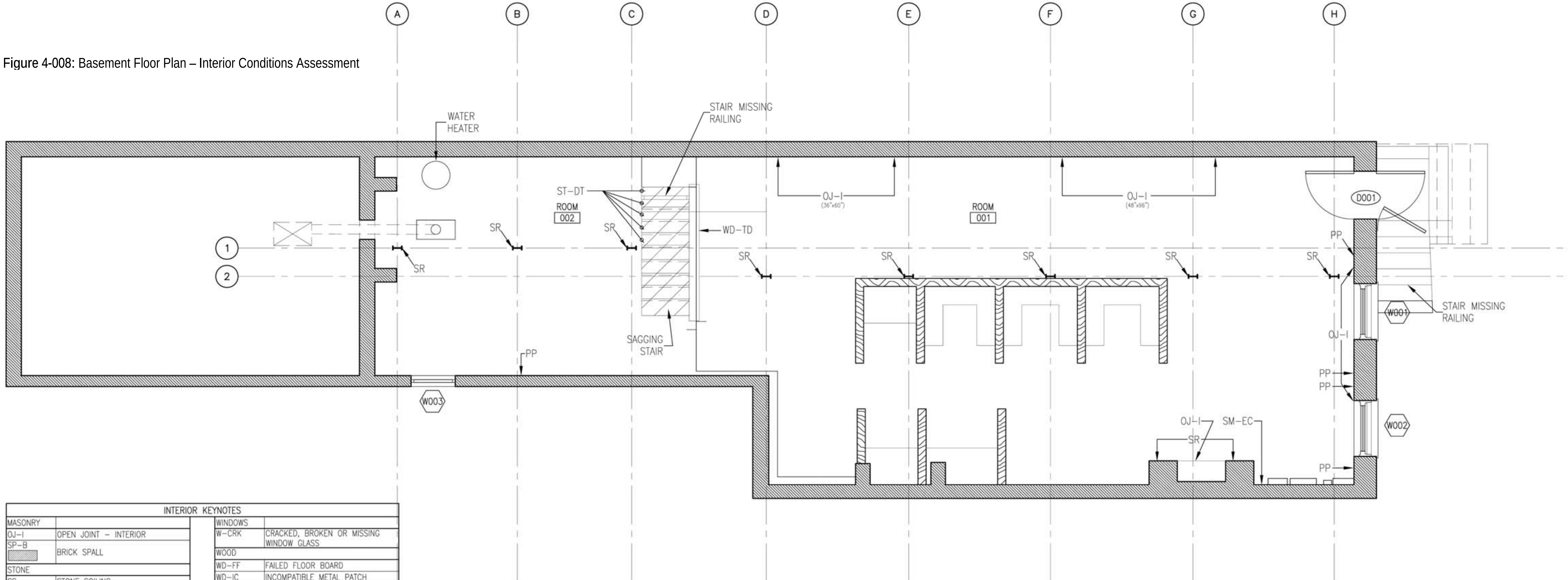
INTERIOR WOOD STAIR

SYMBOL	CONDITION	LOCATION	EXAMPLE IMAGE
STR-IR	Unstable Railing	Main Stair - First to Second Floor	
DESCRIPTION		**POTENTIAL CAUSES**	
The failing support structure of the Main Stair has caused the main railing to be unstable and it has lost capacity for significant lateral load. Metal cables and screws have been installed to maintain tension, and thus stability, in the railing. (Photo: Temporary support devices installed at first floor railing).		The first floor framing below this stair lost significant section due to termite damage, resulting in the stair sagging and the railing, becoming unstable. Although the stair support has been sistered with new structure, the railing still remains unstable.	

<table>
<tr><td rowspan="4">INTERIOR WOOD STAIR</td><th>SYMBOL</th><th>CONDITION</th><th>LOCATION</th><th>EXAMPLE IMAGE</th></tr>
<tr><td>STR-ST</td><td>Sagging Tread</td><td>Main Stair - First to Second Floor</td><td rowspan="3"></td></tr>
<tr><th colspan="2">DESCRIPTION</th><th>POTENTIAL CAUSES</th></tr>
<tr><td colspan="2">The failing support structure of the Main Stair has caused the stringer to sag, resulting in the shifting of most stair treads leading from the first to the second floor. (Photo: Sagging Stair treads at first floor)</td><td>Similar to the stair railing, the stair treads have shifted in conjunction with the stair stringer as a result of the termite damage to the stair support structure.</td></tr>
</table>

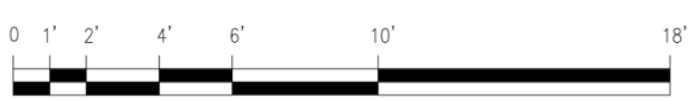
INTERIOR KEY FLOOR AND REFLECTED CEILING PLANS

Figure 4-008: Basement Floor Plan – Interior Conditions Assessment



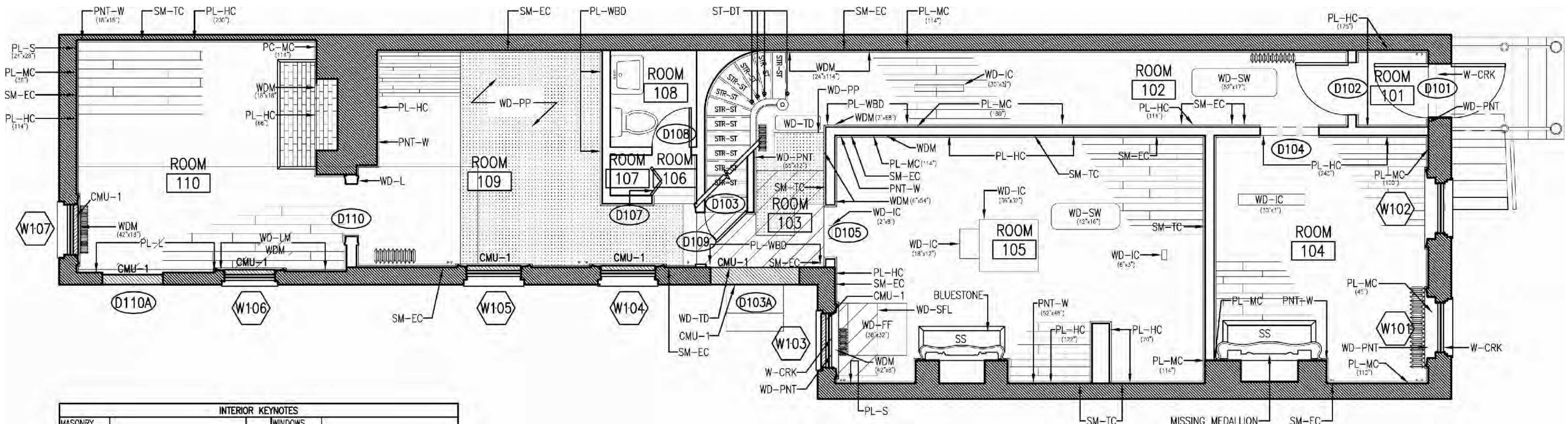
INTERIOR KEYNOTES			
MASONRY		WINDOWS	
OJ-I	OPEN JOINT – INTERIOR	W-CRK	CRACKED, BROKEN OR MISSING WINDOW GLASS
SP-B	BRICK SPALL	WOOD	
STONE		WD-FF	FAILED FLOOR BOARD
SS	STONE SOILING	WD-IC	INCOMPATIBLE METAL PATCH
METAL		WD-PP	PLYWOOD PATCH
PP	PIPE PENETRATION	WD-SW	SIGNIFICANT WEAR
SR	SURFACE RUST AT STEEL	WD-TD	TERMITE DAMAGE
PLASTER		WD-SFL	SAGGING FLOOR
PL-L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY	WD-PNT	PAINT LOSS
PL-WBD	COMPLETE LOSS OF PLASTER WALL BOARD	WD-L	MISSING OR DAMAGED MOLDING
PL-HC	HAIRLINE CRACK IN PLASTER WALL	STR-IR	UNSTABLE RAILING
PL-MC	MAJOR CARACK IN PLASTER WALL	STR-ST	SAGGING TREAD
PL-S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY	STR-DT	DAMAGED OR BROKEN TREAD
PNT-W	FAILED PAINT ON WALL	WALLS	
WDM	SEVERE WATER DAMAGE	SM-EC	SURFACE MOUNTED ELECTRICAL CONDUIT / JUNCTION BOX
		SM-TC	SURFACE MOUNTED TLEPHONE CONDUIT / JUNCTION BOX

LEGEND	
X	COLUMN GRIP DESIGNATION



SCALE: 3/16" = 1'-0"

Figure 4-009: First Floor Plan – Interior Conditions Assessment



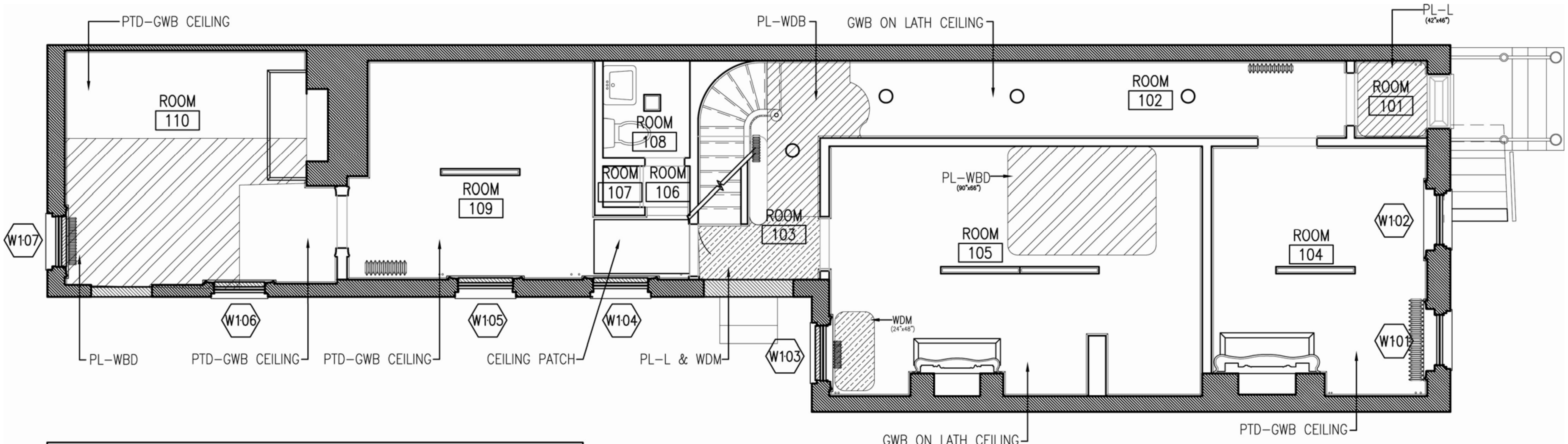
INTERIOR KEYNOTES

MASONRY		WINDOWS	
OJ-I	OPEN JOINT – INTERIOR	W-CRK	CRACKED, BROKEN OR MISSING WINDOW GLASS
SP-B	BRICK SPALL	WOOD	
STONE		WD-FF	FAILED FLOOR BOARD
SS	STONE SOILING	WD-IC	INCOMPATIBLE METAL PATCH
METAL		WD-PP	PLYWOOD PATCH
PP	PIPE PENETRATION	WD-SW	SIGNIFICANT WEAR
SR	SURFACE RUST AT STEEL	WD-TD	TERMITE DAMAGE
PLASTER		WD-SFL	SAGGING FLOOR
PL-L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY	WD-PNT	PAINT LOSS
PL-WBD	COMPLETE LOSS OF PLASTER WALL BOARD	WD-L	MISSING OR DAMAGED MOLDING
PL-HC	HAIRLINE CRACK IN PLASTER WALL	STR-IR	UNSTABLE RAILING
PL-MC	MAJOR CARACK IN PLASTER WALL	STR-ST	SAGGING TREAD
PL-S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY	STR-DT	DAMAGED OR BROKEN TREAD
PNT-W	FAILED PAINT ON WALL	WALLS	
WDM	SEVERE WATER DAMAGE	SM-EC	SURFACE MOUNTED ELECTRICAL CONDUIT / JUNCTION BOX
		SM-TC	SURFACE MOUNTED TLEPHONE CONDUIT / JUNCTION BOX

0 1' 2' 4' 6' 10' 18'

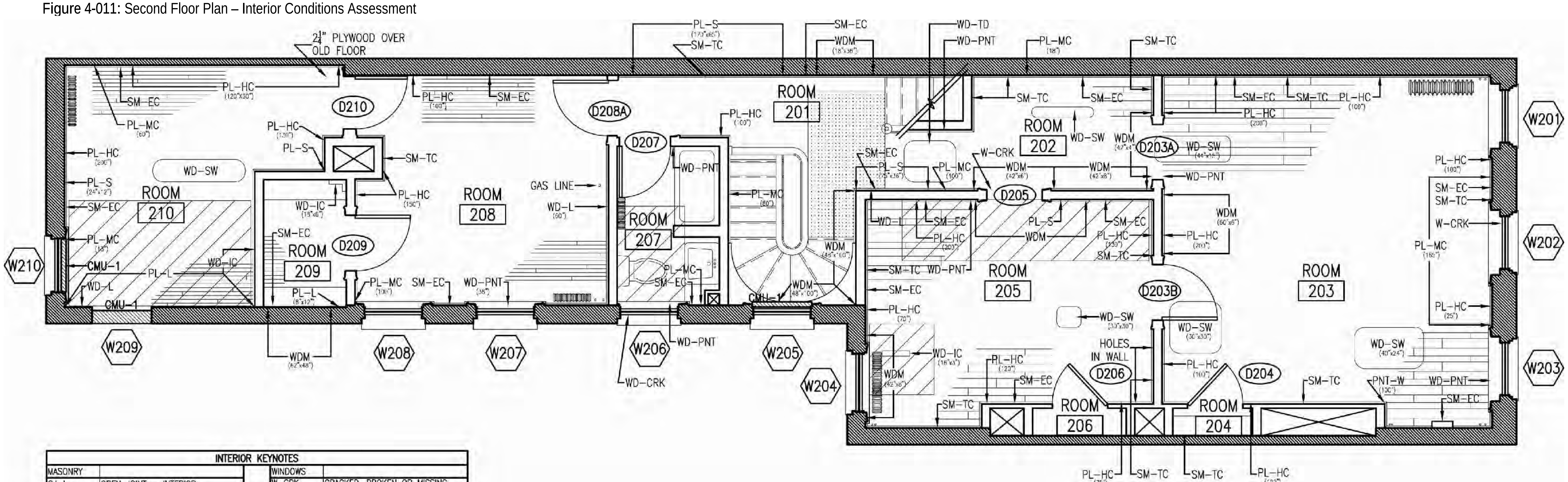
SCALE: 3/16" = 1'-0"

Figure 4-010: First Floor Reflected Ceiling Plan – Interior Conditions Assessment



REFLECTED CEILING INTERIOR KEYNOTES			
PLASTER		LIGHT FIXTURES	
PL–L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY		FLUORESCENT LIGHT FIXTURE
PL–WBD	COMPLETE LOSS OF PLASTER WALL BOARD OR ROCK LATH		INCANDESCENT LIGHT FIXTURE
PL–S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY		RECESSED INCANDESCENT LIGHT FIXTURE
WDM	SEVERE WATER DAMAGE		

Figure 4-011: Second Floor Plan – Interior Conditions Assessment



INTERIOR KEYNOTES

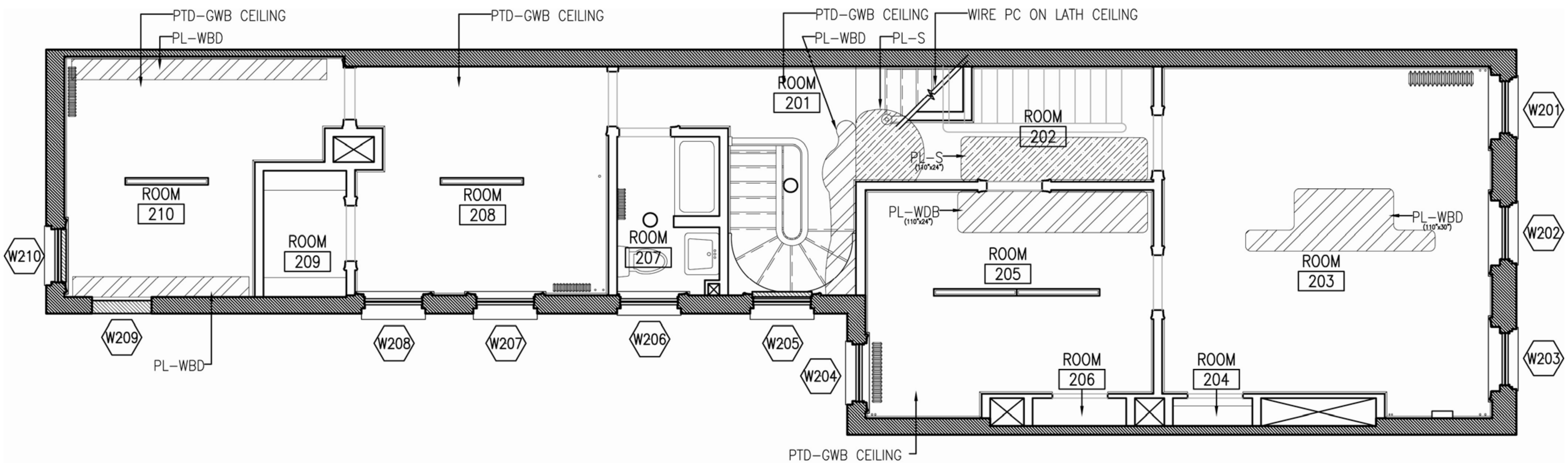
MASONRY	
OJ-I	OPEN JOINT – INTERIOR
SP-B	BRICK SPALL
STONE	
SS	STONE SOILING
METAL	
PP	PIPE PENETRATION
SR	SURFACE RUST AT STEEL
PLASTER	
PL-L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY
PL-WBD	COMPLETE LOSS OF PLASTER WALL BOARD
PL-HC	HAIRLINE CRACK IN PLASTER WALL
PL-MC	MAJOR CARACK IN PLASTER WALL
PL-S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY
PNT-W	FAILED PAINT ON WALL
WDM	SEVERE WATER DAMAGE

WINDOWS	
W-CRK	CRACKED, BROKEN OR MISSING WINDOW GLASS
WOOD	
WD-FF	FAILED FLOOR BOARD
WD-IC	INCOMPATIBLE METAL PATCH
WD-PP	PLYWOOD PATCH
WD-SW	SIGNIFICANT WEAR
WD-TD	TERMITE DAMAGE
WD-SFL	SAGGING FLOOR
WD-PNT	PAINT LOSS
WD-L	MISSING OR DAMAGED MOLDING
STR-IR	UNSTABLE RAILING
STR-ST	SAGGING TREAD
STR-DT	DAMAGED OR BROKEN TREAD
WALLS	
SM-EC	SURFACE MOUNTED ELECTRICAL CONDUIT / JUNCTION BOX
SM-TC	SURFACE MOUNTED TLEPHONE CONDUIT / JUNCTION BOX

0 1' 2' 4' 6' 10' 18'

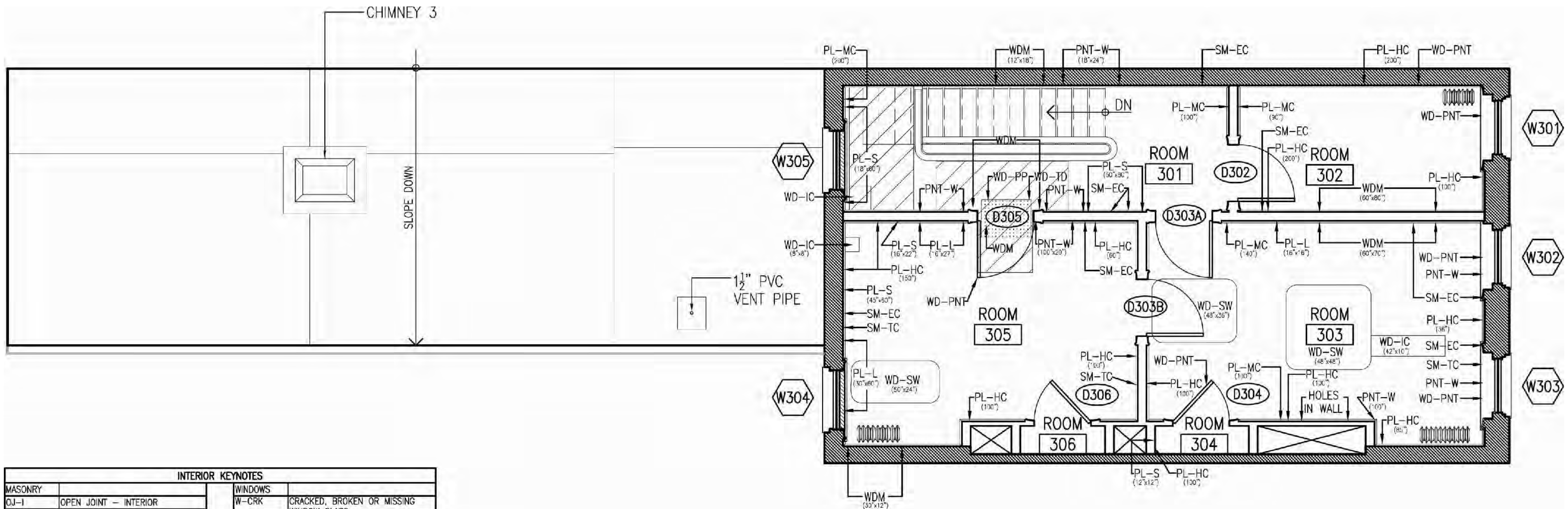
SCALE: 3/16" = 1'-0"

Figure 4-012: Second Floor Reflected Ceiling Plan – Interior Conditions Assessment

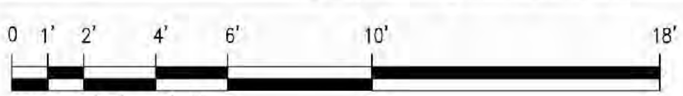


REFLECTED CEILING INTERIOR KEYNOTES			
PLASTER		LIGHT FIXTURES	
PL–L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY		FLUORESCENT LIGHT FIXTURE
PL–WBD	COMPLETE LOSS OF PLASTER WALL BOARD OR ROCK LATH		INCANDESCENT LIGHT FIXTURE
PL–S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY		RECESSED INCANDESCENT LIGHT FIXTURE
WDM	SEVERE WATER DAMAGE		

Figure 4-013: Third Floor Plan – Interior Conditions Assessment

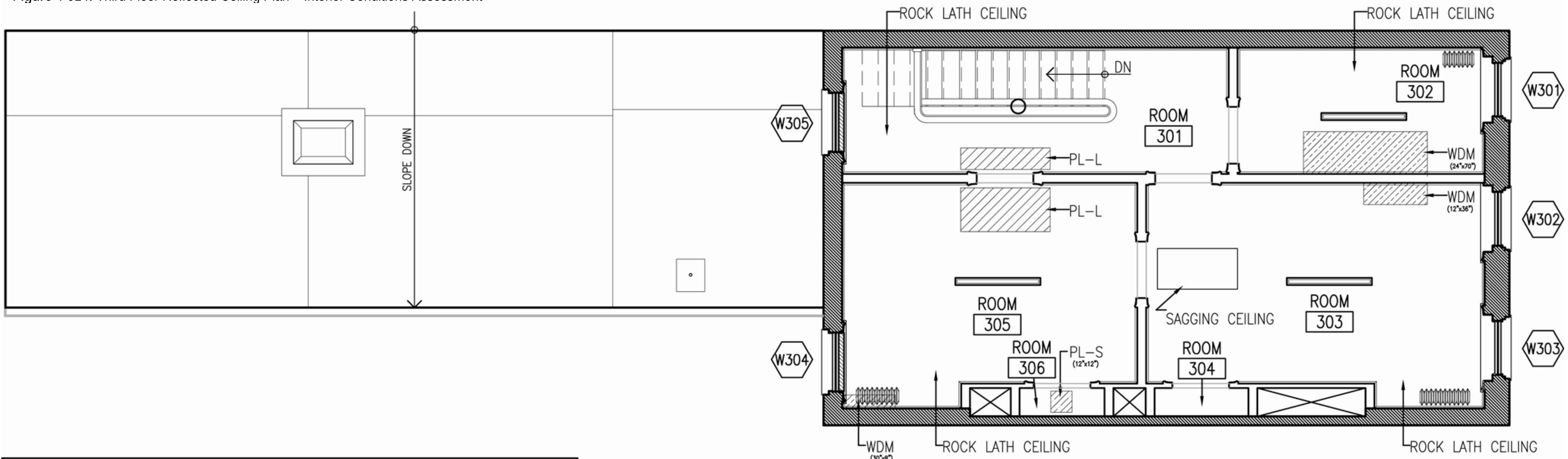


INTERIOR KEYNOTES			
MASONRY		WINDOWS	
OJ-I	OPEN JOINT – INTERIOR	W-CRK	CRACKED, BROKEN OR MISSING WINDOW GLASS
SP-B	BRICK SPALL	WOOD	
STONE		WD-FF	FAILED FLOOR BOARD
SS	STONE SOILING	WD-IC	INCOMPATIBLE METAL PATCH
METAL		WD-PP	PLYWOOD PATCH
PP	PIPE PENETRATION	WD-SW	SIGNIFICANT WEAR
SR	SURFACE RUST AT STEEL	WD-TD	TERMITE DAMAGE
PLASTER		WD-SFL	SAGGING FLOOR
PL-L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY	WD-PNT	PAINT LOSS
PL-WBD	COMPLETE LOSS OF PLASTER WALL BOARD	WD-L	MISSING OR DAMAGED MOLDING
PL-HC	HAIRLINE CRACK IN PLASTER WALL	STR-IR	UNSTABLE RAILING
PL-MC	MAJOR CARACK IN PLASTER WALL	STR-ST	SAGGING TREAD
PL-S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY	STR-DT	DAMAGED OR BROKEN TREAD
PNT-W	FAILED PAINT ON WALL	WALLS	
WDM	SEVERE WATER DAMAGE	SM-EC	SURFACE MOUNTED ELECTRICAL CONDUIT / JUNCTION BOX
		SM-TC	SURFACE MOUNTED TLEPHONE CONDUIT / JUNCTION BOX



SCALE: 3/16" = 1'-0"

Figure 4-014: Third Floor Reflected Ceiling Plan – Interior Conditions Assessment



REFLECTED CEILING INTERIOR KEYNOTES

PLASTER		LIGHT FIXTURES	
PL-L	COMPLETE LOSS OF PLASTER FROM LATH OR MASONRY		FLUORESCENT LIGHT FIXTURE
PL-WBD	COMPLETE LOSS OF PLASTER WALL BOARD OR ROCK LATH		INCANDESCENT LIGHT FIXTURE
PL-S	SEPARATION OF PLASTER FROM WOOD LATH OR MASONRY		RECESSED INCANDESCENT LIGHT FIXTURE
WDM	SEVERE WATER DAMAGE		

CODE REQUIREMENTS FOR TREATMENT

The following code analysis is based on the District of Columbia Building Construction Code which incorporates the International Building Code (IBC) for the year 2000. It is assumed that jurisdiction is given to local code, any National Park Service recommended code, NFPA-500 Building Construction and Safety Code and ADA Accessible Guidelines.

The local building code in the District of Columbia is the DC Construction Codes (DCCC), which adopts and amends the IBC 2000.

It should be noted that per DCCC Section 3603.1, building code requirements are not mandatory for existing buildings classified by the federal, state or local government as historic and are judged by the code official to be safe. However, new construction requirements should be applied whenever the historic fabric of the building is not adversely affected.

Occupancy and Construction:

The application of specific code guidelines are based on the anticipated uses of the Carter G. Woodson Home. For this Historic Structure Report, it is assumed that the home will be used as museum and exhibition space over the three floors of the house, with the basement not accessible to the public. It is assumed that office space needed by the National Park Service to support the museum and exhibition portions of the program will be located in the adjacent properties that have been purchased by the NPS. The ancillary space in the two adjoining properties north of the Carter G. Woodson home are not a part of this Historic Structure Report, but their square footage and capacity for egress and circulation to the Woodson home will be considered. The uses for the Carter G. Woodson Home fall under IBC code categorization A-3 - Assembly.

The existing structure is a three-story building (with basement), with a two-story addition in the rear of the house (with a partial basement). All floors total approximately 3200 square feet. If the two adjacent properties purchased by the National Park Service are included, square footage totals approximately 8800 square feet. Building height is 36'-6" measured from the sidewalk to the top of the roof.

The Carter G. Woodson Home's exterior, including the two story addition, addition, is constructed of masonry walls, and the interior wood framing is unprotected. Under IBC the fire-resistance rating type is III-B – Exterior Masonry Wall, Frame Unprotected (Table 601). Based on this classification, the IBC allows for a maximum building height of 55 feet and a maximum area limitation of 9500 square feet on each of two stories (Table 503). Section 504.2 of IBC states that a building protected throughout with an approved automatic sprinkler system will permit an augmentation of the specified values of Table 503 by increasing the maximum height with an additional 20 feet and the maximum number of stories by one. The house is therefore in compliance with the height and story limitations if fully sprinkled. Currently there is not a sprinkler system in the house.

Egress:

If the maximum occupant load of the home does not exceed 50 persons, IBC allows for only one means of egress for museum and exhibit spaces. Currently, only the front door (D101) of the home opens to the exterior. If the Park Service desires this door to remain closed, door D103A in Room 103 that is currently filled-in can be restored, and counted as a point of egress for the home. If the maximum occupancy load for the home is over 50 persons, two means of egress are required (Table 1004.2.1).

IBC states that stairways serving an occupant load of 50 or less shall have a width of not less than 36 inches (1003.3.3.1). This measurement is taken from handrail to handrail. As the historic stair within the home measures less than 36 inches in width (32-33"), it can not be used as a means of egress for the additional stories unless judged by the building official to not constitute a distinct life safety hazard. Such exceptions to code might be acceptable due to the historic nature of the site. At least one additional stairway will have to be added to the site; possibly located in the adjacent property owned by the National Park Service, as to not disrupt the historic fabric of the home or the visitor experience. The existing stair is unrated and serves three stories of the building. This stair is currently the only means of egress from the second and third floors.

From the first floor, occupants will exit through the front door, with a clear width of 34 inches, which provides exit capacity for 226 persons (34"/.15 inches per person).

Concerning exit access travel distance, the home falls well within IBC's guidelines. As a path of exit within the house may include unenclosed stairways or ramps, the distance of travel shall also be included in the travel distance measurement (1004.2.4). Following IBC, the maximum travel distance in the home is 200 feet (Table 1004.2.4) and 250 feet with a sprinkler system. The travel distance from the third floor of the home to a first floor exit would fall well within this limit.

Exits will need to be properly signed and lighted in accordance with emergency systems and regulations, with access to the exits signed and kept open and clear.

Accessibility:

The Americans with Disabilities Act (ADA) mandates access for the disabled and includes the highly specific range of detailed provisions that are to be made to provide full access for all visitors to the public areas of the home. These standards will guide the National Park Service in providing as complete access as is practical and consistent with the historic fabric of this historic site.

General architectural provisions that are ADA requirements include:

- Clear path width of minimum 36" (except at doorways)

- Doorways measuring 32” clear
- Level walking surface, curb ramp at maximum slope 1:6 – no longer than 2’ length; running slopes not exceeding 1:20
- Maximum ramp slope of 1:12, maximum rise for any run shall be 30”
- Thresholds at maximum ½” height
- Handrails on stairs 34-38” height measured from stair nosing
- Clear space between handrail and wall to measure 1 ½”
- Door Hardware with a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate, and mounted no higher than 48” above finished floor. (ADA 4.13.9)

Below is an account of how these provisions compare to the actual built conditions of the Carter G. Woodson Home. While minor deficiencies could be corrected; in a majority of cases, the feature or element in violation is original to the house, and should not be altered.

Access from Street - Currently, the ground floor of the building is approximately 38” above the sidewalk level at the east entrance, with 5 steps that reach the ground level. In the rear of the building, the first floor is 18” from the ground level. At least one of the Carter G. Woodson Home’s entrances must be handicapped accessible, which would include ramping to reach the first floor or introducing a lift. The historic iron handrail on the front steps of the Carter Woodson house measures only 30” from the marble steps which is not ADA compliant. There is also a 7 ½” threshold at the front door of the property which is also not ADA compliant. A handicapped accessible route into the building will have to be provided.

Stair Width - Both the stair run to the second floor and the stair run to the third floor measure approximately 28” clear width between handrail and the wall. Handrails are approximately 27” from the nose of the treads. Neither circumstance is ADA compliant. Also, no handrail is provided on the wall side of these stairs. An additional handrail may have to be provided at the historic stair. The other clearance issues must remain as is in order not to alter the historic fabric. A fully compliant stair can be provided in the adjacent structure.

Door Widths – Door width clearance varies throughout the building.

- Door widths (clear) on the first floor range in measurement from 34” (front door) to 31 ¾”.
- Door widths (clear) on the second floor range from 32” to 29” (this smallest width is for the door to room 207).
- Door widths (clear) on the third floor are all approximately 32”.

However, the 32” clear width exists often at a door frame where the door is missing, and therefore the width may become smaller once a door is restored to the location.

Door Hardware – The historic door hardware is not ADA compliant, however if the doors are left open for the visitor experience, this should not be a problem.

Clear Path Widths – The clear path widths vary throughout the building.

- Clear path widths on the first floor range from 37" to 27"; this smallest area is between the newel post for the stair and the corner of room 205.
- Clear path widths on the second floor range from 36" to 28" - this smallest dimension is at the stair landing, from the handrail to the wall.
- Clear path widths on the third floor range from 72" to 29" - this smallest dimension is the hallway from the handrail to the wall.

Again, if the primary circulation for access to the Woodson Home is in the adjacent building, these clearances will not be as critical.

Toilet Facilities - Toilet facilities on the Carter G. Woodson property are not ADA compliant. Toilet facilities for visitors will be provided in the adjacent structure and will be designed to be fully compliant.

Elevator - If more than one floor of the historic home is open to the public, an elevator or lift will have to be installed to provide universal access on all levels. Such an elevator or lift would have to be located in the adjacent building owned by the National Park Service if it is to access all levels and interfere as little as possible with the historic structure. Section Six: Treatment and Use illustrates possible locations for an elevator. If it is not deemed possible or desirable to install a lift or elevator, alternate experiences for the visitor can be provided such as audio/visual presentations, that share the experience of viewing the upper floors while not providing full accessibility.

Fire Protection and Life Safety:

Currently, the Carter G. Woodson Home has an existing fire alarm system that was installed in 1989, with the control panel in the front entry hall. The pull stations, flashing lights and bells are located at the stairs on each floor. Operation of the present system does not meet today's ADA requirements regarding device locations, light levels and noise levels.

If full sprinkler coverage is introduced into the Carter G. Woodson Home, the building can then potentially be used on all three levels for museum and exhibition space. Installation of sprinklers will increase occupant life-safety and significantly increase the protection of the historic fabric in the event of fire. However, a portion of the historic fabric will have to be compromised, and there will be significant visual intrusion.

Summary:

The Carter G. Woodson Home can be restored to its period of significance to accommodate both the anticipated museum and exhibition uses on two levels, and all three levels if a fully compliant sprinkler system is installed in the structure. To follow ADA compliance, a ramp or lift will have to be installed to enter the building at ground level. If the National Park Service chooses to open more than the first floor of the historic home to the public, an elevator or lift will have to be installed in the adjacent building to provide universal access to all three levels of the home. Toilet facilities that are ADA compliant will have to be provided in the adjacent structure.

Figure 4-015: 9th Street (East) Façade of Carter Woodson Home (RSA, 2006)

Figure 4-016: Crack in lintel at window W101. (RSA, 2006)

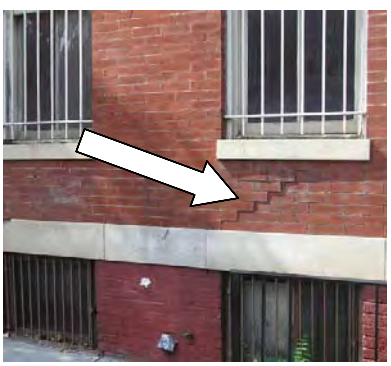


Figure 4-017: Shifting brick. (RSA, 2006)

STRUCTURAL

Robert Silman Associates, PLLC (RSA) visited the Carter G. Woodson Home at 1538 9th St., NW, Washington, DC, on September 28, 2006 and November 8, 2006. Architectural drawings of floor plans and elevations from Beyer Blinder Belle served as background drawings for field notes. All additional information herein is based on field observations and limited measurements of the structure where it is currently exposed. No probes or testing, destructive or non-destructive, are within the scope of this initial study.

This structure consists of exterior masonry bearing walls and is framed primarily with timber floor joists spanning north-south that pocket into the masonry walls. A wrought-iron beam with column supports is below the first floor framing. The Period 1 structure is of an “L” shaped configuration with three stories with a basement to the east and a two-story structure to the west. The later two-story addition (Period 2) has similar construction to the Period 1 portion, but has no basement.

Investigation efforts included a general assessment of visible structural conditions. Structural recommendations to address described conditions are indicated in the section entitled Recommendations for Treatment. All structural sketches can be found at the end of the Structural Assessment section.

EXTERIOR

East Elevation: (Refer to SSK-6 at end of section)
The east elevation is composed of brick masonry with limestone lintels and sills and appears to be in relatively good structural condition with no apparent areas of instability. Open mortar joints are numerous in the façade and joints near the first and second floor level appear to be filled with caulk. Such conditions do not represent current structural problems, but may lead to problems further down the road if left untreated. See architectural recommendations for masonry treatments.

Visible shifting of the brick above the second floor lintels may be indicative of a lintel problem at the inner wythes of brick. It may also be caused by the result of localized masonry movement or mortar deterioration. The lintel above window W101 at first floor has a vertical crack at midspan (Figure 4-016). This type of midspan crack typically indicates excess flexural stress, which may result from a localized load increase from expanding embedded metal or may originate from a localized material weakness. There is no apparent settlement of the brick above associated with this cracked lintel.

Shifting in masonry is noted above the basement windows W002 and W003 as well (Figure 4-017). Water stains and a slight outward bulging in the brick are also apparent in this area. Water infiltration and subsequent mortar deterioration and expansion of iron ties in the masonry above the basement may be a possible cause.

Figure 4-018: Spalling at front door. (RSA, 2006)

Figure 4-019: Stone rotation at front stoop, facing south. (RSA, 2006)

.

Figure 4-021: West elevation. (RSA, 2006)

.

Figure 4-022: Loose and missing bricks at top of window W107. (RSA, 2006)

Spalling and delamination are visible at the iron cramps along the limestone lintels and watertable above the basement windows. These conditions do not represent a structural concern at this time, however architectural treatment is warranted – see architectural recommendations.

The front stoop has some visible structural problems (Figure 4-019). The landing constructed of a single stone slab. At the stone bearing along the main building wall, localized masonry deterioration is apparent. In addition, the stone slab appears to be sloping inward toward the building wall. This is likely the result of the front steps rotating outward toward the sidewalk due to settlement. It is possible that there is not a footing at the front of the steps and settlement of soil behind the basement stair wall is causing the observed movement.

Figure 4-020: West elevation after plant removal. (RSA, 2006)

West Elevation: (Refer to SSK-7 at end of section)
Observation of the west elevation presented the worst structural conditions found on the house. The west elevation was almost entirely covered with biological growth during our initial visit, and was subsequently removed by the National Park Service. This type of plant growth on masonry is detrimental because it allows for the retaining of moisture at the surface of the masonry. Also, propagation of the small root anchoring systems of the plants through the bricks causes cracks and loosening of mortar. Figure 4-020 and 4-021 show the rear elevation before and after removal of this biological growth.

Severe brick deterioration is evident at window openings W107 and W210. Figure 4-022 & 023 show the top and bottom of window W107. At the top of this window, bricks are missing from the arch, and at the bottom, brick units and mortar joints are cracked and the wall bulges outward.

Figure 4-023: Loose bricks and rotting wood sill at window W107. (RSA, 2006)

North Elevation: Figure 4-024 shows bulging along the north elevation. The brick has bulged outward approximately the width of one wythe of brick (about 4 inches). This is likely the result of foundation movements in combination with insufficient connection of the exterior wall to the floor diaphragms within.

South Elevation: (Refer to SSK-7 at end of section)
The south elevation shows signs of further structural problems. The wall below the door opening D110A at this elevation is bulging outward above the foundation. Many open mortar joints and cracking are evident here as well. The rotation appears to take place near the bottom of the south elevation in its transition from the foundation wall (if present) at grade and the first floor of the Period 2 addition which bears on the south wall at approximately 2 feet above grade - see Figure 4-025.

Figure 4-024: Bulging of north elevation. (RSA, 2006)

Figure 4-025: South elevation, outward building of brick. (RSA, 2006)

Figure 4-026: Cracking below second floor window W209. (RSA, 2006)

More severe cracking and shifting brick is shown in Figure 4-026 below window W209. Concrete masonry units (CMU) have been used as infill in W209 and D110A to prevent further structural deterioration. Not visible in this Figure 4-026 is the serious shifting of brick above the second floor window (W209).

Figure 4-027 depicts spalling and missing brick at the painted iron security grilles of the first floor window – W208. The observed conditions are largely the result of excess and sustained moisture intrusion within the masonry. Subsequent freeze-thaw cycling and the development of rust with embedded iron elements results in displacement and disassembly of the masonry. Foundation movements and the loss of bracing from the interior wood floor diaphragms appear to also be associated with the excessive movement in the masonry. Such movement is also manifested in the separated mortar joint running along the joint between the Period 1 and Period 2 two-story construction - Figure 4-028.

Figure 4-027: Spalling brick at first floor south wall window. (RSA, 2006)

Figure 4-028: Separation of mortar at joint, between Period I and Period II construction. (RSA, 2006)

Figure 4-029: Cracking and bulging of west wall. (RSA, 2006)

Figure 4-031: Brick masonry shifting above flat arch and interior lintel of window W304. (RSA, 2006)

Figure 4-032: Photo 18. Diagonal cracking below window W303) at west wall. (RSA, 2006)

Figure 4-030: Roof and west elevation at third floor. (RSA, 2006)

Roof: (Refer to SSK-5 at end of section)
The joint where the lower roof meets the west elevation of the three-story structure significant deterioration was noted, largely due to water intrusion where the roof abuts the base of the exterior masonry wall (Figure 4-030). The poor condition of the exterior west wall at the third floor is visible from this vantage point. The wall is deflecting downward and has extensive cracking. EPDM roofing has been used to patch some cracks, however the repairs have failed and the damaged areas are open to the elements and allow direct water infiltration (Figure 4-029). The wall is sinking due to a failing support beam below that spans sidewall to sidewall at the stair inside (see SSK-3).

Brick above the window W304 lintel (Figure 4-031) are loose and bulging out of plane. The exterior flat arch has been apparently rebuilt or repaired, evidenced by relatively recent re-pointing, however additional shifting and displacement is evident subsequent to the repairs. Figure 4-032 depicts additional diagonal cracking below the window sill of window W303 at this same wall.

At the upper roof, there are four chimneys that show signs of deterioration, varying from missing mortar to open joints at the top, creating entry points for water (Figure 4-033).

Figure 4-033: Masonry deterioration at chimneys. (RSA, 2006)

INTERIOR

Basement and First Floor Framing: (Refer to SSK-1 at end of section)
The basement occurs only below the Period 1 portion townhouse while the Period 2 addition was constructed with only a small crawlspace above grade. This crawl space varies in depth but is approximately 16". All floor joists in the basement were accessible and visually inspected (Figure 4-034). Framing in the western portion of the basement is significantly worse than that observed in the eastern side. Floor joists in this west portion are typically 2¼" x 7½" @ 16" on center (o.c.) and span between the north and south masonry walls. Most of these joists have been replaced.

Figure 4-034: Floor joists as viewed from basement, facing west. (RSA, 2006)

The joists bear on pockets in the brick masonry walls and are continuous over a line of steel beams and posts, running east-west at 4'-8" from the north wall (Figure 4-034). The steel beam (6-1/8" depth, 3-3/8" flange width) bears on steel posts (5" depth, 3" flange width) spaced at approximately 7'-4" feet on center. In general, the bearing condition of the joists in the area west of the stair has been compromised due to wood and masonry deterioration. Many joists have rotted in the masonry pockets due to moisture or insect infestation. Many of the joists also fail to bear properly on the steel beam (Figure 4-035).

Figure 4-035: Steel beam not bearing on brick as it should. (RSA, 2006)

The steel construction is typically labeled as being Phoenix Iron Company, with isolated members indicating the Carnegie Company. Overall, the member sizes appear to match early steel more closely than the earlier wrought iron sizes which could have been used at the time of original construction. Welding between the posts and the top plates also provide evidence that the material is more likely be steel than wrought iron, since welding of wrought iron is much less common. The allowable material stresses for early steel of this era is 16000 PSI in bending and 10000 PSI in shear. By comparison, the allowable stresses for wrought iron of this period are generally documented to be 12000 PSI in bending and 7500 PSI in shear.

Figure 4-036: Rotted bearing condition. (RSA, 2006)

Live load capacity for all areas of the first floor framing was calculated to be >100 psf, with the assumption that all framing conditions are repaired to at least match the original sizes and configuration and bear upon the steel beams.

A number of the floor joists in the western area of the basement have rotted at the bearings as shown in Figure 4-036.

Figure 4-037: Insufficient Joist Bearing at north wall. (RSA, 2006)

Repairs on the joists have been attempted and many of the joists have been sistered or partially lapped with new lumber. Unfortunately, most of the repairs have been executed improperly. Much of the sistered lumber falls short of the bearing wall, leading to a condition of limited or no bearing (Figure 4-037).

Surface rust and minor delamination are evident on the steel columns (Figure 4-040). Signs of rust are localized, and capacity reduction is negligible. The steel beams appear to be in sound condition.

Figure 4-038: Base of column severely deteriorated. (RSA, 2006)

Figure 4-039: Rotted bearing end of stair framing. (RSA, 2006)

Figure 4-041: Sagging at stairs. (RSA, 2006)

Figure 4-042: Fireplace, deterioration – southeast end. (RSA, 2006)

Figure 4-040. Rust and delamination at base of steel column. (RSA, 2006)

Joists near the southwest window opening W003 do not have proper bearing at the masonry wall. Wood posts (4x4) at the window are deteriorated, and one of the bases has rotted almost completely (Figure 4-038).

Joists visible in the crawl space below the Period 2 two-story addition are in poor condition, particularly at the south bearings.

The stairs into the basement are sagging considerably. Closer inspection revealed that the stairs frame into floor joists that have completely lost their bearing at the masonry wall. In addition, many of the joists have clear signs of past termite infestation. Though the insect infestation appears currently inactive, the damage has taken its toll on the load-bearing capacity of the joists (Figure 4-039 and Figure 4-041).

The foundation walls appear to be in relatively good structural condition, with some expected breakdown of the binder in the mortar joints leaving a loose sandy exterior surface, particularly toward the bottom of the walls.

Floor joists in the eastern side of the basement are in much better condition than those in the western side. They are typically 2½"x9½" @ 12" o.c. At 6'6" south of the north wall, they bear on a steel beam (6" depth and 3-3/8" flange width) supported on posts (5” depth and 2¾” flange width) spaced at approximately 7 feet. Bearing conditions are solid and bridging on both sides of the steel beam also assists the joists to distribute the load.

The fireplace in the basement is suffering from joint deterioration and deteriorating brick in the arch (Figure 4-042). The fireplace is headed off with a 2”x9 ¾” timber beam; however, the trimmers are insufficiently supported along the face of the chimney (Figure 4-043). It appears that the wood beam along the face of the chimney has been cut so that it no longer spans across the chimney width.

Figure 4-043: South chimney with insufficient trimmer support. (RSA, 2006)
.

Joists within the width of the chimneys frame into a 2½”x9½” header along the north wall by mortise and tenon connections (Figure 4-044). The header opposite the west chimney is missing its bottom 4 inches and is cracked horizontally through the full span right at the tenons. The deterioration may be the result of a previous overstress condition; however, the similar header opposite the east chimney appears sound.

Figure 4-044: Header corresponding to party wall chimneys – splitting at north wall header. (RSA, 2006)

First Floor and Second Floor Framing: (Refer to SSK-2 at end of section) The first floor presents significant areas of sagging and displacement, particularly at the Period 2 two-story addition to the west. As depicted in Figure 4-045, the flooring in Room 110 suffers severe deterioration of both floor framing and perimeter masonry bearing walls. The framing in this location is over the crawlspace and has rotted and displaced along the south bearing conditions. The load bearing masonry, particularly along the window lines, has shifted and begun to disassemble. In Room 109, where the basement below transitions from crawl space to basement, there is further sagging of the floor (Figure 4-046). This is due to the rotted bearing ends of the floor joists observed from the basement area below.

Figure 4-045: Room 110 - First floor, southwest corner. (RSA, 2006)

Figure 4-046: Room 109 - Floor sagging at first floor. (RSA, 2006)

Figure 4-047: Sistered floor joists visible from first floor. (RSA, 2006)

Figure 4-048: Deterioration at lintel of door D103A. (RSA, 2006)

Figure 4-050: Room 105 - Fireplace in room east of stairwell. (RSA, 2006)

Figure 4-047 illustrates the sistered second floor joists as visible from Room 110 on the first floor. The joists are 1¾" x 7½" @ 16" o.c. These repairs do not currently appear sufficient to provide adequate strengthening of this floor, with insufficient lap lengths and connections between original joist and added sister, and the joists were observed to have poor bearing on the south wall. The joists have shifted from their bearings and represent a disengagement of the floor diaphragm from the masonry bearing wall. This lack of diaphragm bracing plays a significant part in the amount of masonry movement and cracking observed in this area.

The wood lintel above the door D103A along the south alley has severely deteriorated, likely due to the combined effects of sustained moisture infiltration and termite damage (Figure 4-048).

The stairwell, depicted in Figure 4-049, is deflecting downward toward the basement because of significant first floor framing deterioration observed in the basement below. The entire structural system including the upper story walls connected to the stair appears to be deflecting downward as well, corresponding to significant water penetration into the house from the roof joint at the three story elevation directly above the stair.

Figure 4-049: Room 103 - Fallen plaster at stairwell. (RSA, 2006)

The fireplace in Room 105, east of the stairwell, appears to be missing a lintel (Figure 4-050). This can be observed from within the fireplace area, looking upward into the chimney. The brick masonry is arching at this time and the observed condition does not represent a significant instability.

Room 104 exhibits extensive cracking in the wall plaster and around the windows. One typical diagonal crack is depicted in Figure 4-051 at window W102, corresponding to shifting in the masonry observed from the exterior. Though much of the plaster deterioration is architectural in nature (see architectural recommendations), cases such as this are examples where structural distress within may translate to the finishes.

Figure 4-051: Room 104 - Crack at bottom lintel of window. (RSA, 2006)

Second Floor and Third Floor Framing: (Refer to SSK-3 at end of section)
Significant structural deterioration is present in the two-story structure, translating up from the observations at the first floor and foundation levels. Most dramatic are the conditions observed in Room 210, where the brick masonry is unstable around and below window W209 on the south wall (Figure 4-052). The windows depicted are in-filled with CMU, possibly as a means of security as well as for temporary support of the failing flat arch construction at the window heads. The inner wythe of flat arch at the W209 has failed, and the masonry at the jambs and sill are largely disassembled.

Figure 4-052: Room 210 - Brick failure at window. (RSA, 2006)

Figure 4-053: Room 210 - Floor sagging. (RSA, 2006)

The floor at the corner of Room 210, as shown in Figure 4-053, is deflecting significantly where joists have deteriorated and pulled away from their bearings, as observed from the first floor level. The disengagement of the floor diaphragm appears to be a major contributing factor to the shifting and deterioration of the exterior masonry wall.

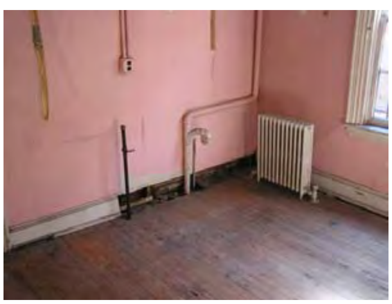


Figure 4-054: Room 208 - Floor sagging below east wall. (RSA, 2006)

Typical roof framing in the western portion consists of 3” x 3 ½” wood rafters @ 2’-0” on center with 2” x 4” ceiling joists @ 16” on center.

In Room 208, significant deflection of the floor framing along the east wall is visible (Figure 4-054 & 4-055). Closer inspection of the framing below the base of the stud wall shows evidence of previous repairs and modification. It appears that the beam below the east wall was at one time spliced near its south end; however the splicing detail appears to have been inadequate and failed, resulting in the downward deflection along this wall.

Figure 4-055: Room 208 - Floor sagging below east wall. (RSA, 2006)

Severe water damage is also evident at the second floor level and within the third floor framing, as shown in Figure 4-057. By the stair (Room 201), perhaps the most significant structural problem within the main house can be observed. Here, the main support beam for the exterior brick masonry wall at the third floor level is found to be fully deteriorated. The

Figure 4-056: Photo 44. Room 205 - Cracking at window along west wall, original construction. (RSA, 2006)

Figure 4-057: Room 201 - Fallen plaster ceiling and framing damage. (RSA, 2006)

Figure 4-058: Room 205 - Cracks in wall. (RSA, 2006)

beam is built up from four joists, but has suffered severe decomposition as a result of an apparent failure in the roofing system at the interface between the lower roof of the three story west elevation. Water has been infiltrating the framing and the fabric of the house over a prolonged period of time and the damage has translated downward all the way to the first floor framing.

In Figure 4-056, 4-058, 4-059 & 4-060, significant cracking is evident below the sill at window W204 of Room 205. This is likely the result of a lintel or arch failure above the first floor window below. The window opening and radiator likely have contributed to increased moisture levels. As a result, it is likely that localized floor framing deterioration may also be found in this area. Typical third floor framing in this area consists of 2” x 9 ¾” wood joists @ 16” on center.

Figure 4-059: Room 205 - Cracks in wall. (RSA, 2006)


Figure 4-060: Room 301 - Top of staircase, third floor. (RSA, 2006)


Figure 4-061: Room 305 - Diagonal cracks, west wall. (RSA, 2006)


Figure 4-062. Room 305 - Ceiling damage. (RSA, 2006)

Third Floor and Roof Framing: (Refer to SSK-4 at end of section)
The stair opening shifts from a north-south orientation to east-west at the third floor.

Figure 4-060 shows a CMU in-filled window (W303) at the top of the staircase on the third floor. Diagonal crack patterns in the wall at this window indicate that the wall is deflecting downward with the wall supporting the stairwell. Diagonal cracks in the west wall of Room 305 suggest this same type of settlement (Figure 4-061). Substantial cracking of the plaster is indicative of large movements in the exterior masonry, which is corroborated by observations from the exterior. The movement corresponds to the severe deterioration of the built-up wood transfer beam at the third floor framing level, which was observed from the floor level below.

Ceiling failure is evident on the third floor at the partition wall south of the staircase. This plaster failure is primarily due to water damage, but some localized fire damage was also observed (Figure 4-062). The finish damage appears to correspond to previous framing damage, which has since been repaired.

Ceiling joists visible from this opening are double 2x6 @ 16” o.c. running north-south. The roof rafters have been replaced with 2x8 @ 16” o.c. at this particular location. The original roof rafters, still intact over Room 303 were measured as 2 ½” x 8 ½” @ approximately 3’-10” on center.

Structural Analysis Summary

Figure 4-063: Live Load Table

Structural Summary[1]

Floor	Room ID	Calculated Live Load Capacity (psf) [2,3]	Number of People Allowed [4,5]	Live Load per IBC Code	Allowed Occupancy
1	101	54 100	2	40 psf for residential 50 psf for office 100 psf for movable seating assembly use	Repaired framing satisfactory for use as house museum.
	102	54 100	19		
	103	77 100	18		
	104	54 100	27		
	105	54 100	47		
	106, 107, 108	77 100	5		
	109	77 100	24		
	110	Framing unknown	--		
2	201	50	13	40 psf for residential 50 psf for office 100 psf for movable seating assembly use	Repaired framing satisfactory for use as house museum.
	202	45 100	8		
	203	45 100	51		
	205	45 100	27		
	207	50	7		
	208	50	27		
	209	50	2		
	210	50	22		
3	301	68	11	40 psf for residential 50 psf for office 100 psf for movable seating assembly use	Satisfactory for residential use. Material testing and/or visual grading may permit increased capacity to allow office use.
	302	42	11		
	303	42	26		
	305	68	28		
Roof	High	31	N.A.	30 psf for snow load	Reinforcement required to meet code requirements.
	Low	15	N.A.		

Notes:
1. Floor capacity based upon existing framing configuration with recommended repairs.
2. Top number refers to capacity if joists do not bear on interior steel girder.
3. Wood species, grade, and corresponding properties have been assumed to be Southern Pine, No. 2. Material testing recommended to confirm.
4. Number of people calculation based on structural capacity of floor in repaired condition; other limitations such as occupancy, fire safety, or egress should be considered.
5. Average weight of a person assumed to be 200 lbs, average area per person assumed to be 4 sq. ft. Area of a room = (length -1)*(width - 1) in ft^2.

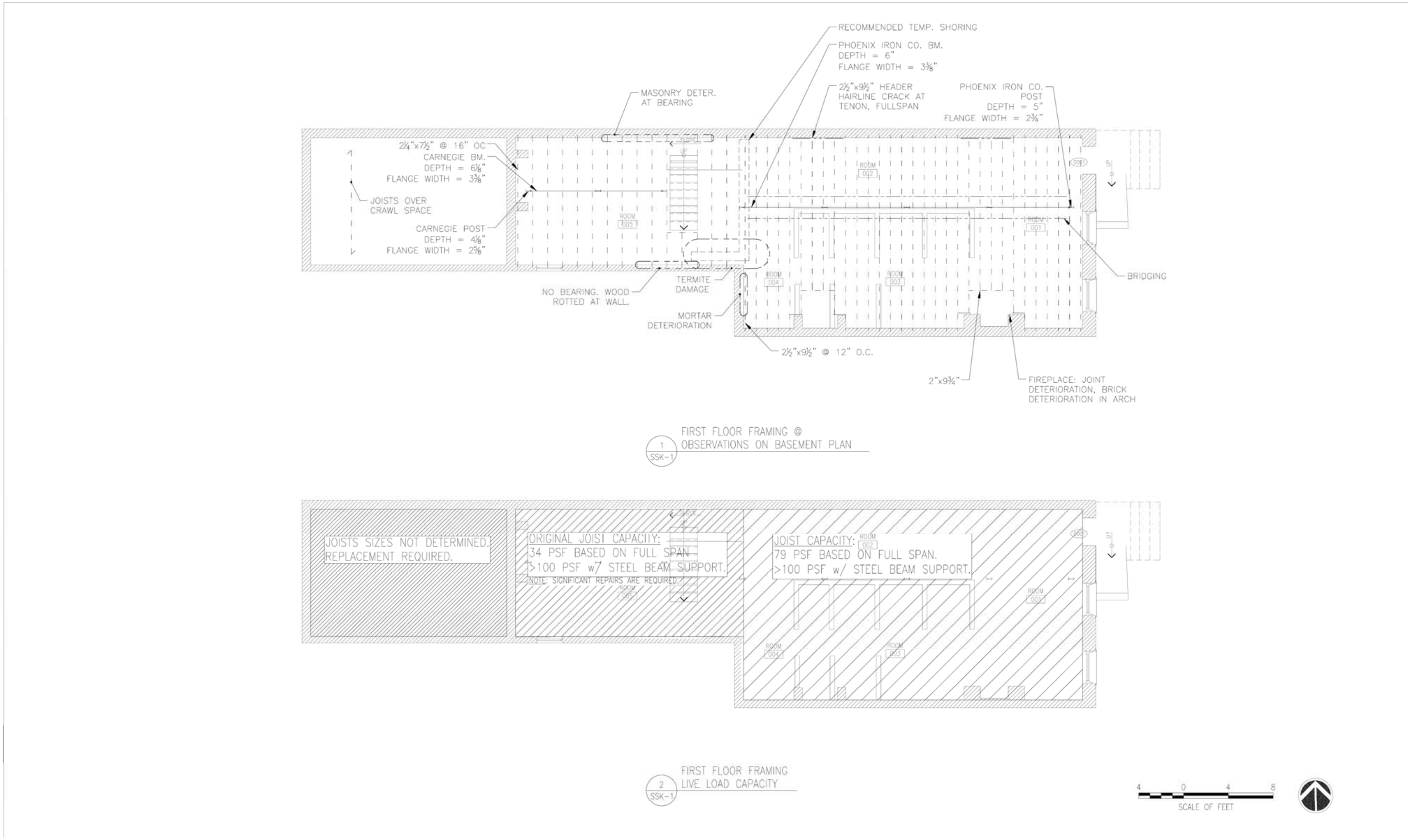


Figure 4-064. Floor framing on plans.

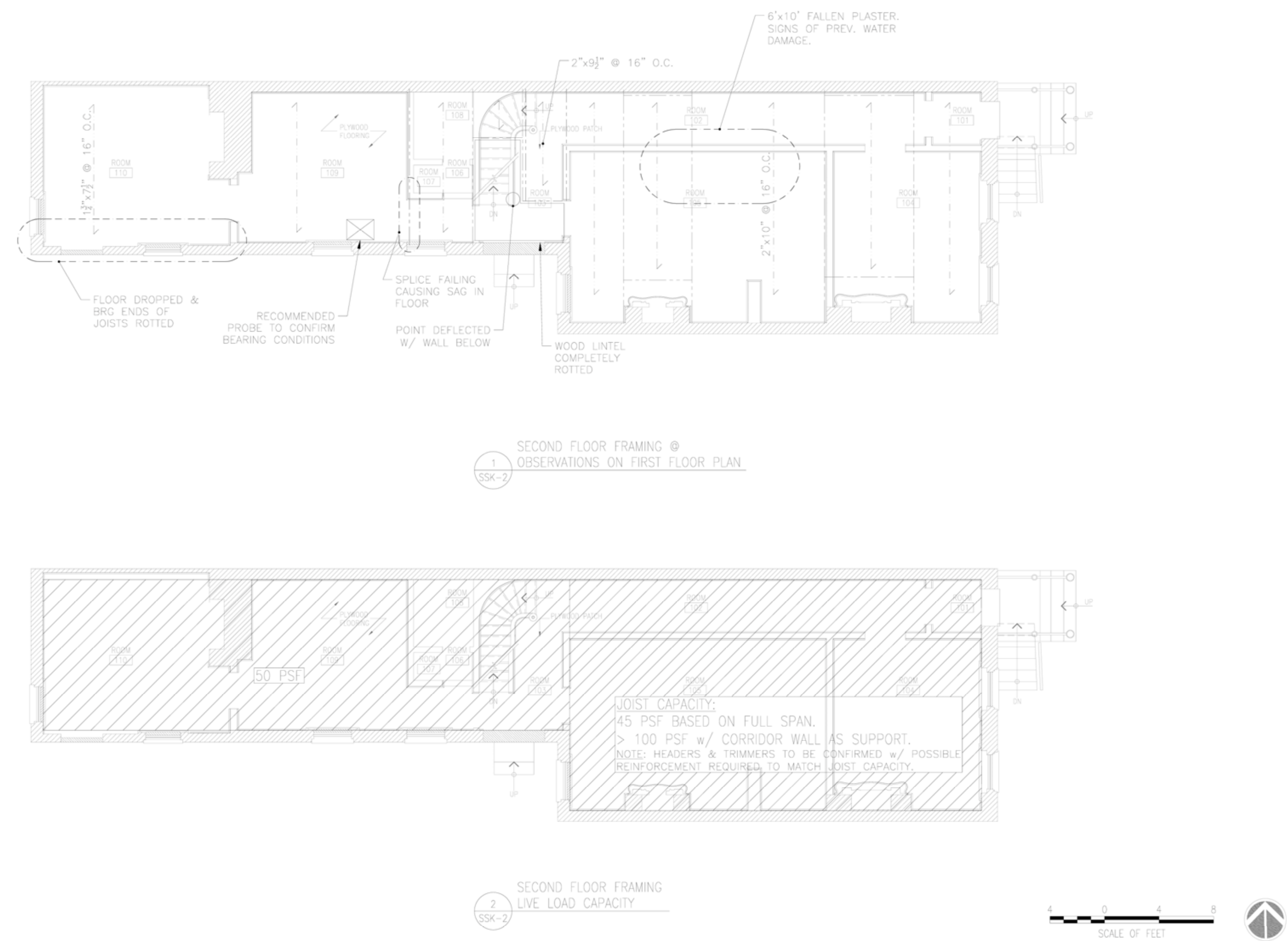


Figure 4-065. Second Floor Framing.

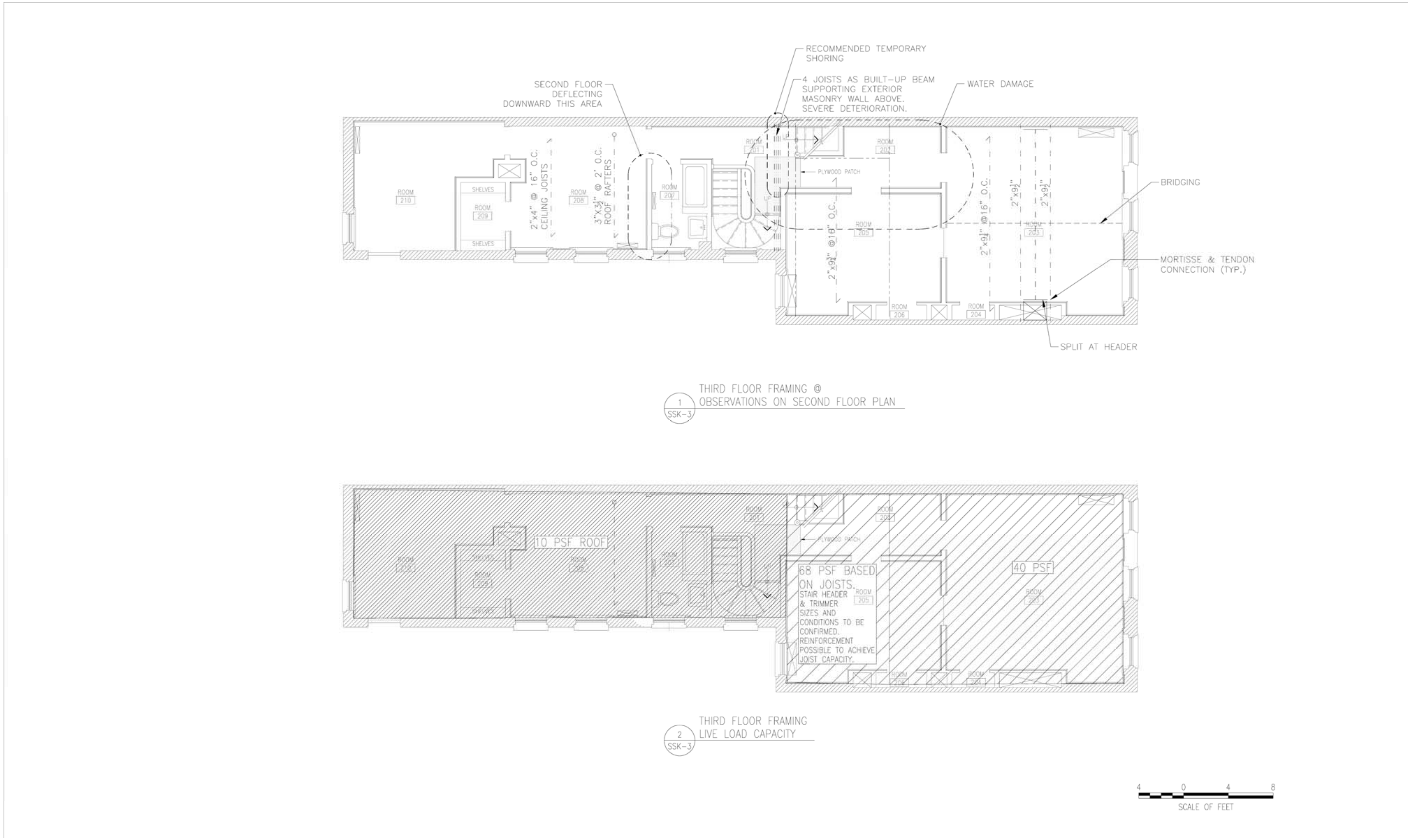


Figure 4-067. Third Floor Framing.

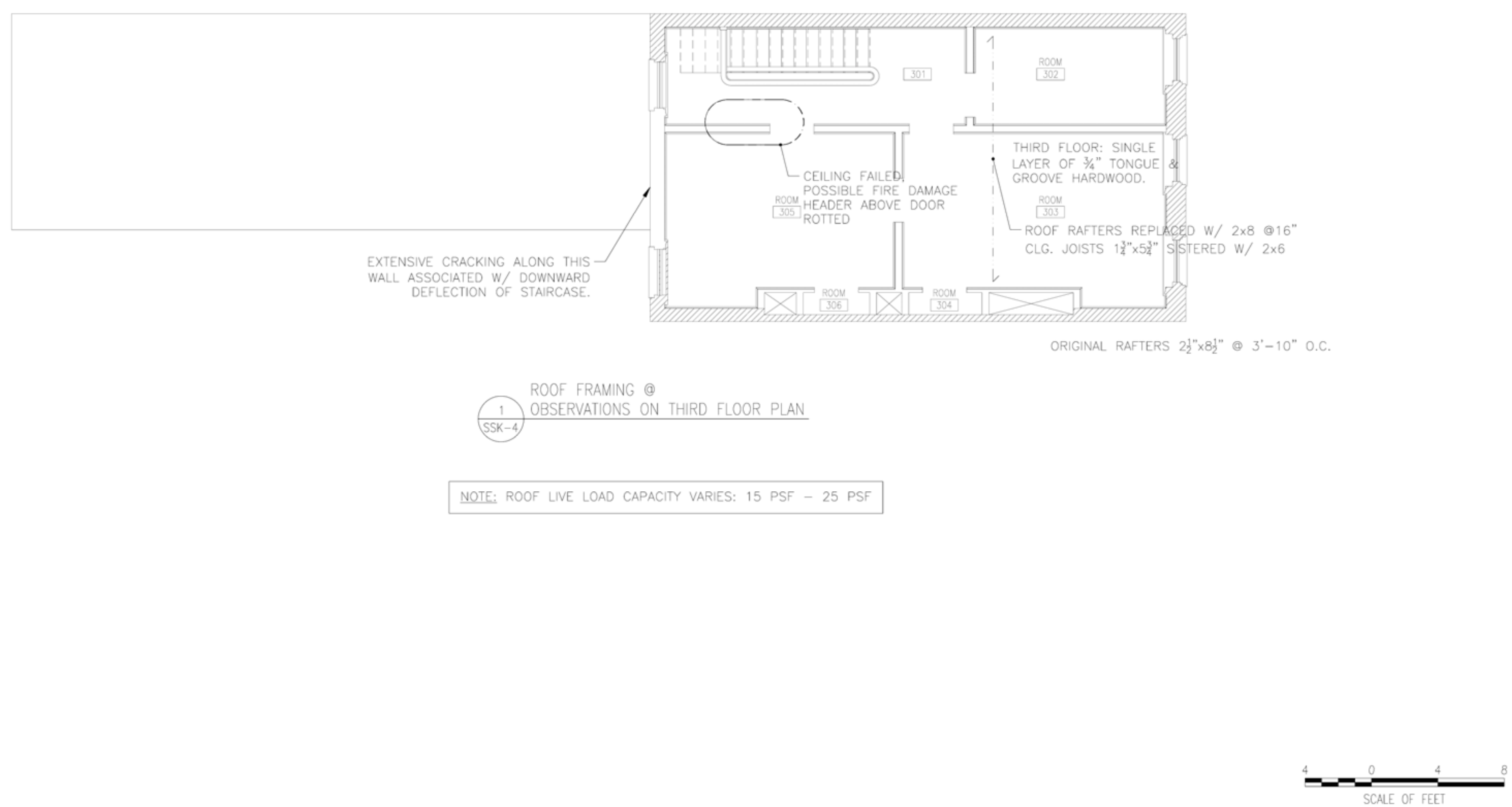


Figure 4-068. Roof framing.

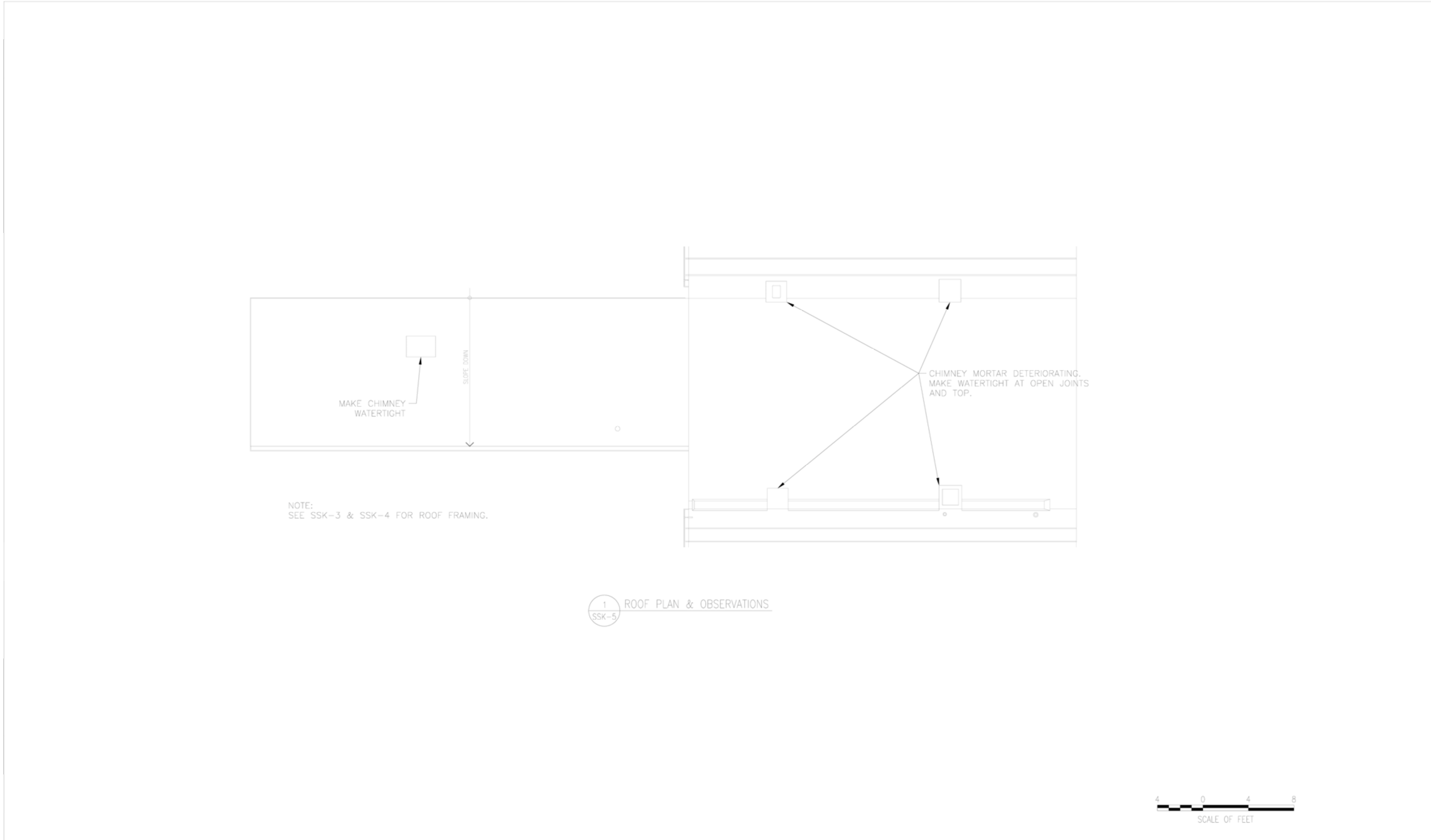


Figure 4-069. Roof Plan and Observations.

Figure 4-070. Front and Rear Elevations.

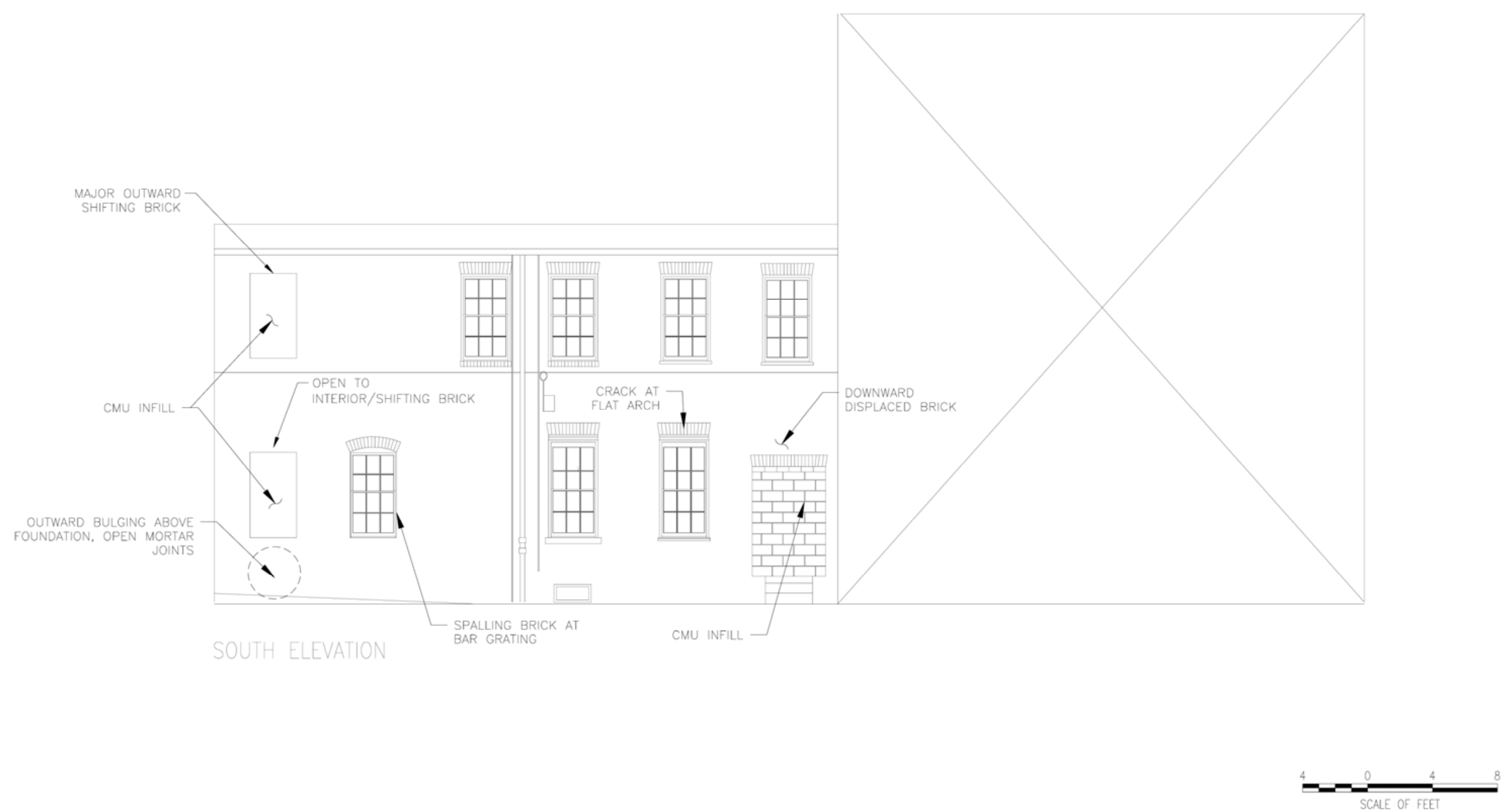


Figure 4-071. South Elevation.

Figure 4-072: View of typical radiator and surface mounted conduit. (Photo: GHT, 2006)

Figure 4-073: Typical radiator. (Photo: GHT, 2006)

Figure 4-074: Radiator Pipes. (Photo: GHT, 2007)

MECHANICAL

The existing mechanical heating system is in poor condition.

The building has no air conditioning system and the existing heating system is based on a gas fired boiler that feeds hot water to radiators throughout the building. The entire system is currently inoperable. The typical radiators are covered with multiple layers of paint on the exterior, and the inside of the radiators and associated piping is corroded and oxidized. Figures 4-072 and 4-073 demonstrate the condition of the typical radiators. A further description of all radiator types can be found in the Section 3: Physical Description – Interior. These radiators all date to Period 3 and are all manufactured by the American Radiator Company. After cleaning, they could potentially be reused. The piping for this heating system was installed late in Period 2 or in early Period 3 and was thus run exposed along the walls and ceilings. This piping, if replaced, could be used with the reconditioned existing radiator units as part of a new heating system.

Figure 4-075: Existing boiler and water heater. (Photo: GHT, 2007)

The backbone of the existing heating system is the existing boiler. The existing gas fired boiler was installed in 1989 and is located in the basement at the northwest corner. The boiler was manufactured by Hydro-Therm and the following information was recorded from the label on the unit: Model Number HC-100B, Serial Number NW-6688, Net IBR capacity of 68,700 BTU/H output with input of 100,000 BTU/H. This boiler is a replacement for an earlier boiler. One can see that the vent pipes for the existing boiler have been retrofitted into a hole to the flue that once received vent pipes from an earlier boiler. There is no information available for this earlier boiler. The boiler flue is extended and connected to outside through the sleeve in the exterior wall. The boiler has lost its controls and is not in operable condition.

Figure 4-076: Boiler exhaust connection to flue. (Photo: GHT, 2007)

Figure 4-077: Metal tubes in flue as evidence of early duct work. (Photo: GHT, 2007)

Based on the indication of a fuel tank on one of the 1980's existing conditions drawings, it is assumed that the existing mechanical system prior to radiators had an oil furnace with fuel oil tank located in the basement. The design team also observed the metal tubes in the flues at both fireplace locations. The tubes penetrate the walls at the basement, and were noted at the first and third floors. Based on the fireplace grilles in place and the circular collar on the back of these grilles, the original heating system for the building is believed to be an early hot air ducted system that circulated the hot air via metal ducts that elbowed to grilles on each floor. These ducts were then attached to the furnace in the basement.

The existing black iron gas piping is the only component of the existing heating system that can be reused. The existing boiler does not meet the current code of IMC2000 (with District of Columbia supplements). Currently no combustion air is provided for the boiler which is required by code.

Figure 4-078: Elbow of metal tube in flue at third floor. (Photo: GHT, 2007)

ELECTRICAL

Figure 4-079: Wiring in the basement. (Photo: GHT, 2006)

The buildings electrical wire system is in a reasonable state of repair and appears to be reliable. The wire installed in the wall is over 30 years old and has a potential additional life span of 20 years. The existing wiring is not grounded. Rooms have at least a receptacle or two mounted in the base boards. Additional receptacles are wired in plastic covered cable surface mounted to the walls and base boards (wire mold). These outlets and conduit were installed during an electrical upgrade in 1989. In the basement the newer wire that was installed is BX type cable; this wire is protected with a metal shielded jacket. BX was installed at a later date in the basement to feed the vertical conduit. Some surface plug strips in the rooms were connected back to the new panels directly with BX type cable. The wire exposed in the basement is the best indicator of the condition of the rest of the building. The wire is run both through the structural beams and under the beams and has little or no protection unless run along side a pipe.

Figure 4-080: Wiring in the basement. (Photo: GHT, 2006)

Figure 4-083: Old electrical panel. (Photo: GHT, 2007)

Figure 4-081: Electrical panels and electric meter in the basement. (Photo: GHT, 2006)

The existing lighting in the house was installed in 1989 in coincidence with the installation of the upgraded fire alarm system. These fixtures are a mixture of fluorescent and incandescent fixtures and they do not date to Period 3 – the Period of Significance.

Figure 4-082: Modern breakers in electrical panel in basement. (Photo: GHT, 2006)

The routing of the wire in the walls is unknown. The spacing of the receptacles in the house, although not installed to the density necessary to meet modern code requirements for a residence, does meet the requirements for a commercial establishment. The wire to these receptacles is safe and properly protected from overload. Most rooms have had outlets in wire mold surface mounted to the walls or base board was mentioned earlier. This was done to get additional power to the rooms. The wiring in the basement is not consistently secured to the ceiling joists and will need to be further supported if they remain.

Figure 4-084: Detail of modern electrical meter. (Photo: GHT, 2007)

Figure 4-085: Electrical panel in room 203. (Photo: GHT, 2007)

The electrical service was upgraded probably at the same time the surface raceway was installed in 1989. The primary electrical panel is located in the basement. The location of an earlier electrical power service is apparent from the abandoned meter socket figure to the left of the new service and meter. The electrical service is in good condition. The size is presumed to be 200 amps single phase 120 / 240 volts manufactured by Square D. The rating of the breaker was not visible at the time of inspection. A sub panel manufactured by Square D was installed on the second floor in Room 203 and serves the power requirements on this level; this panel is in acceptable condition and could be used for future loads as calculations would permit. The electrical panels described in the basement and second floor are the only two electrical panels in the house.

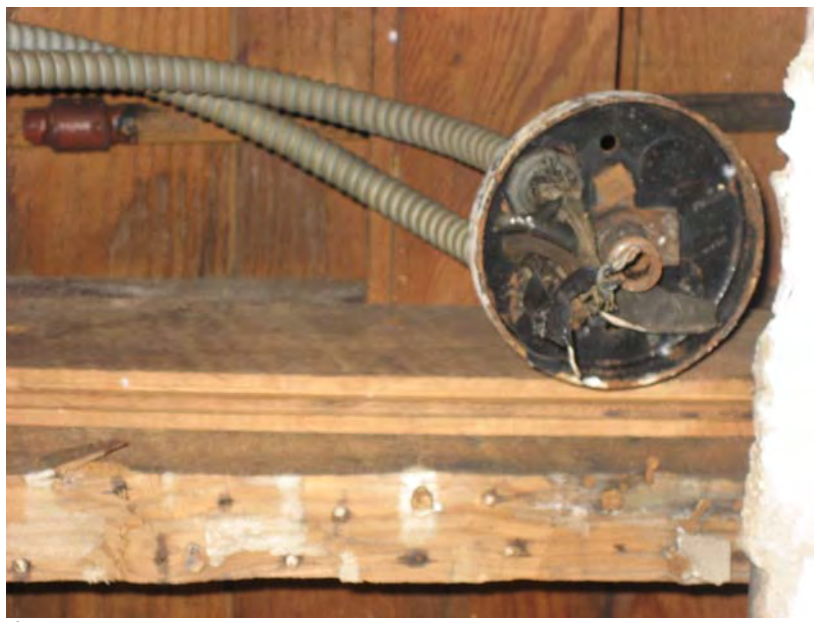


Figure 4-086: Retrofitted junction box at ceiling of second floor. (Photo: GHT, 2007)

Figure 4-087: Radiator, radiator piping, sink and gas piping (Photo: GHT, 2006)

PLUMBING

The building has two bathrooms and a kitchen area. Room 108 has a porcelain toilet and a sink both manufactured by Gerber. Room 207 has a porcelain toilet and sink. The sink was made by Gerber, similar to the first floor bathroom sink, but the toilet was made in Venezuela. This bathroom also has an enameled metal tub/shower. In Room 208, PVC piping extends out from the wall indicating where a sink was removed. Similarly, gas piping has been cut that indicated where a stove was once located (Figure 4-087)

Much of the hot and cold copper pipe has been removed; remaining copper pipe was left in place only because it was difficult to get to. The integrity of the pipe pieces that remains is questionable. See figures 4-088, 4-089, 4-089, 4-090 & 4-091 for a representation of the remaining piping. Because of the age of the remaining copper pipe used for hot and cold water in the house, piping was joined together with hi content lead in the sweat fittings. If the existing water pipes were to remain the lead content of the water could potentially be unacceptable. It is recommended that the water be tested for lead. All lead fittings must be replaced.

Figure 4-088: Remaining piping that has been cut. (Photo: GHT, 2006)

The gas service for the house enters the house at the east side on Ninth Street at street level. The gas meter has been removed and the gas piping appear to date to the 1950's. The existing gas fired domestic hot water heater depicted on the right side of figure 4-075 is located in the basement is manufactured by Bradford. The tank size is approximately 18" round by 46" tall and about approximately 40 gallons of capacity. The water heater flue was extended and connected to outside through the sleeve in the exterior wall, see figure 4-087.The domestic water heater is connected with gas but the hot water supply and building system piping was forcibly removed. Future operation of this hot water heater is questionable.

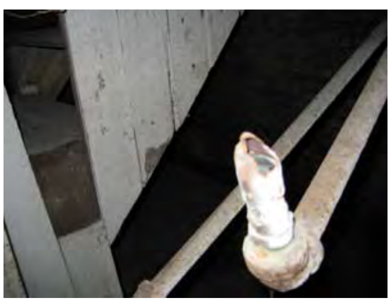


Figure 4-089: Remaining piping that has been cut. (Photo: GHT, 2006)

The existing sanitary waste and vent line is run outside the building along the south elevation and is a cast iron pipe installed in during Period 1. The sanitary waste pipe in the house has been converted to PVC plastic during the 1989 renovation and appears to be in tact. The sewer line from the building to the street should be scoped to verify its integrity.

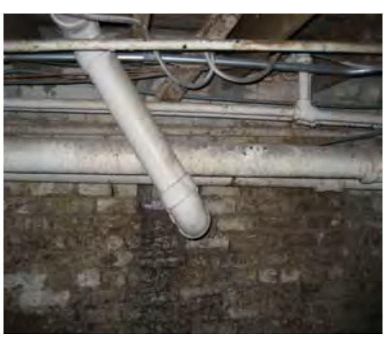


Figure 4-090: PVC sanitary waste pipe. (Photo: GHT, 2006)

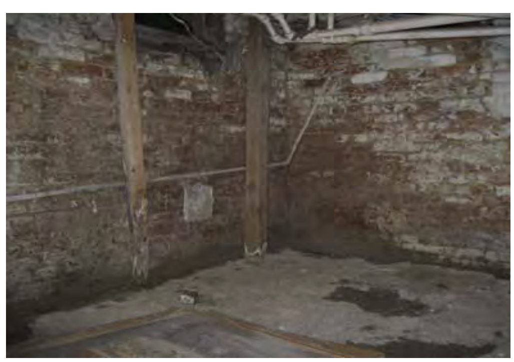


Figure 4-091: Remaining piping. (Photo: GHT, 2006)

FIRE AND LIFE SAFETY

Figure 4-092: Fire alarm system. (Photo: GHT, 2006)

The building had a fire alarm system installed in accordance with the 1989 drawings that were filed with the building department, see figures 4-092, 4-093, & 4-094 and also see Appendix D – Archival Documents. The control panel for this system is in the front entry hall (room 102) and was installed surface mounted. The pull stations, strobes and bells are located at the stairs on each floor. The graphic above the main control panel is seen in figure 4-096. Operation of the present system is questionable. Even if the existing system operated correctly, it would not meet today's fire code or ADA requirements. The pull stations are mounted above ADA height and the flashing lights are not bright enough. The existing mounting heights of the pull device are mounted 8 to 12 inches higher than the required code height. The candela rating of the strobes used on the system is to low and does not meet candela rating of today's fire code. Lastly the fire alarm bells would require to being adjusted to the proper sound level. The exterior fire alarm bell meets the current commercial code. The existing fire alarm system does include heat detectors. These heat detectors were only installed in the basement only.

There is currently no sprinkler system installed in the building.

Figure 4-093: Fire alarm system. (Photo: GHT, 2006)

Figure 4-094: Fire alarm system. (Photo: GHT, 2006)

Figure 4-096: Graphic above the main control panel. (Photo: GHT, 2006)

TELEPHONE

Figure 4-095: Telephone panel in room 206. (Photo: GHT, 2006)

The present telephone distribution home runs to a Room 206, and the power for this telephone panel is shown on the 1989 permit drawings. Telephone wiring has been run throughout the house in wire mold and terminates at various junction boxes that are mounted to the baseboards. This telephone wiring dates to the 1980's improvements.

SECURITY

Although it was not clear as to what the comprehensive security system was, various window contact security devices were noted on all first floor windows. These security devices were probably installed at the same time as the electrical upgrades that occurred in the late 1980’s.