

# Village of Calumet 512 Portland Street—Curto Building Structural Assessment



October 18, 2017



October 17, 2017

Village of Calumet  
Attn: Jeff Ratcliffe, Owner's Representative  
PO Box 724  
Houghton MI 49931

RE: 512 Portland Street  
Structural Assessment Report

Dear Jeff:

The inspection of 512 Portland Street in the Village of Calumet has been completed. The initial inspection was conducted on Wednesday June 14<sup>th</sup>, 2017 and included the attic space, second floor, first floor, basement and exterior. On July 6<sup>th</sup> a second inspection was conducted using a drone to inspect the roof.

The following is a list of concerns and deficiencies noted during the inspection:

#### Roof/Attic

- The existing roof on the South half of the building has deteriorated substantially.
- The roof rafters are in question, specifically on East half adjacent to the Luigi's Building. The higher roof of Luigi's has a potential to create drift loading on the 512 Portland structure.
- The roof/ceiling of the porch on the second floor along the South side is wet and has moisture damage.
- Additional supports are installed on each side of the chimney. Sagging of the roof is noticeable in the chimney area and adequate support and bearing of the support beams is lacking.
- The existing rafters do not include any collar ties.

#### Second Floor

- The porch area contained some dead pigeons and the floor is covered with pigeon feces which can be detrimental to building elements.
- A vertical crack is evident at the chimney.
- The porch area is wet with several openings allowing moisture infiltration.
- The East end of the second floor is buckled.
- There are openings in the second floor and some of exposed floor joists have been notched which has reduced their capacity.
- There is a noticeable sag in the floor as you enter from the porch area.
- The bearing wall framing between the porch and the main building needs reinforcement.

#### First Floor

- The framing of the wall between the porch and main building is in need of reinforcement/replacement.
- Charring of a section of the second floor joists and floor decking is evident which may have reduced their structural capacity.
- There are openings in the floor at several locations.

### Basement

- The concrete ceiling and roof of the area below the porch is wet. Moisture damage is evident and the concrete appears to be crumbling.
- The structural steel framing supporting the concrete ceiling/roof below the porch is severely corroded.
- The mortar joints of the rock foundation walls below the porch area are in need of tuck-pointing/repair.
- The masonry walls supporting the West side of the porch lies on the concrete roof of the basement below. A noticeable deflection is apparent.
- The steel framing supporting the floor at the stairwell is in need of review of structural capacity.
- The foundation wall supporting the header to the main basement is in need of repair.

### Exterior

- The South wall, particularly near the East end is rotting with moisture damaged along with the eaves.
- The North side sandstone is in need of tuck-pointing with some sections in need of replacement.
- The masonry at the doorway directly to the basement is in need of repair/tuck-pointing.
- Sealing/repair of the top of the masonry walls is required to restrict moisture infiltration.

The majority of structural deficiencies observed are due to long term moisture infiltration. Other deficiencies are the result of alterations made to building members and an apparent fire. The pigeon feces are not only an environmental concern but it is acidic and over time will damage building elements. The wood floor framing and steel beams supporting the framing may be compromised from the long term corrosive effect of the feces.

### Recommendations:

1. Analyze reinforce main roof rafters as required to support anticipated loading.
2. Analyze and reinforce/replace roof members and West entry to basement.
3. Install new roofing throughout.
4. Seal all exterior opens which allow moisture and bird access.
5. Reinforce/replace second floor and wall framing as required.
6. Reinforce/replace first floor and wall framing as required.
7. Reinforce/replace exterior wall of porch area due to rotting framing and siding.
8. Replace charred framing members as required.
9. Infill openings in wood flooring areas.
10. Provide new masonry bearing wall in basement below porch foundation wall. Provide thickened slab footing for new wall.
11. Remove slab outside of building footprint of porch, fill the basement area outside the building footprint with sand and restore ground surface and sloped away from the building for drainage.
12. Tuck-point masonry areas as needed.

Select photos of the inspection which highlight areas of concern are attached. I have also included basic floor plans with concern areas noted and an opinion of cost for the recommendations listed.

If you have any questions please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "B. J. Givens".

Barry J. Givens, P.E.  
Division1Desig

# PHOTO DOCUMENTATION



Figure 1—Drone view of the existing roof.

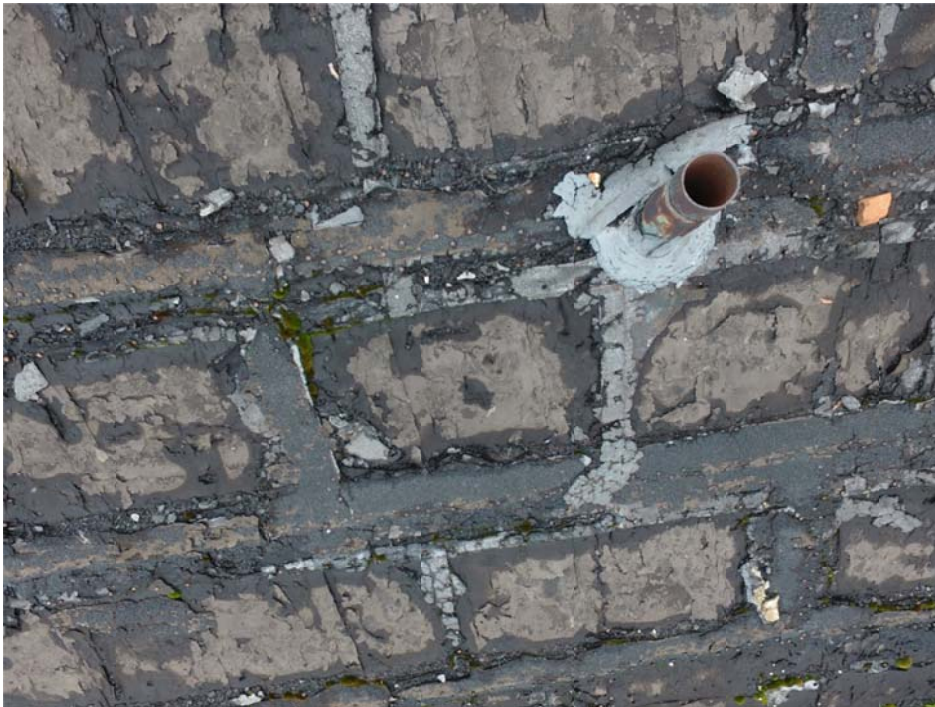


Figure 2—Drone close up view of the roofing and existing vent





Figure 3—Drone view of dormer--note severe condition of roof.



Figure 4—Drone view of eave with moss and deterioration visible.



Figure 5—Drone view of chimney patch.



Figure 6—Drone view of North roof note sag in roof from chimney patch to eave.





Figure 7—View of roof framing in attic looking West.



Figure 8—View of roof framing in attic looking East.



Figure 9—View of beam bearing in attic—replacement or reinforcement recommended.



Figure 10—View of beam bearing in attic—replacement or reinforcement recommended.





Figure 11—View of structural connector dislodged in attic.



Figure 12—View of crack at chimney on second floor.



Figure 13—View of notched floor joists at second level.



Figure 14—View of East end of second floor porch—wet ceiling, buckled floor and pigeon feces.





Figure 15—View of notched floor joist.



Figure 16—View of charred floor joists and floor boards.



Figure 17—View of sagging header at ground floor.



Figure 18—View of sagging header at ground level.



Figure 19—View of rock foundation wall in basement---mortar is deteriorating.



Figure 20—View of concrete/steel of porch area in basement





Figure 21—View of steel framing at stairwell to basement—capacity is in question.



Figure 22—View of corroded steel in roof of porch area in basement.





Figure 23—View of corroded steel in roof of porch area in basement.



Figure 24—View of notched beam supporting first floor framing.



Figure 25—View of ceiling debris from porch area roof in basement.



Figure 26—View of bearing of first floor joists is need of reinforcement.





Figure 27—View of bearing condition of first floor joist at beam in need of reinforcement.



Figure 28—Roof framing at West entrance to basement—capacity in question.



Figure 29—View of area below South porch and above basement—block wall sets on deteriorating concrete.



Figure 30—View of South Wall—block wall supporting wall sets on deteriorating concrete slab of basement.





Figure 31—View of North side sandstone—tuck-pointing needed as well as top sealing.



Figure 32—Framing protruding from South wall—not corrosion of bottom flange/web.



Figure 33—Rotted wall boards of South wall.



Figure 34—Brick repair needed at SW corner of structure.





Figure 35—Tuck-pointing needed at NE corner.



Figure 36—Tuck-pointing/infill needed at North wall sandstone.





Figure 37—Block repair needed at West entrance to basement.



Figure 38—Framing/concrete deterioration of slab over basement area.

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ROOF BEAM  
BEARING

RAFTER  
ANALYSIS FOR  
SNOW LOAD

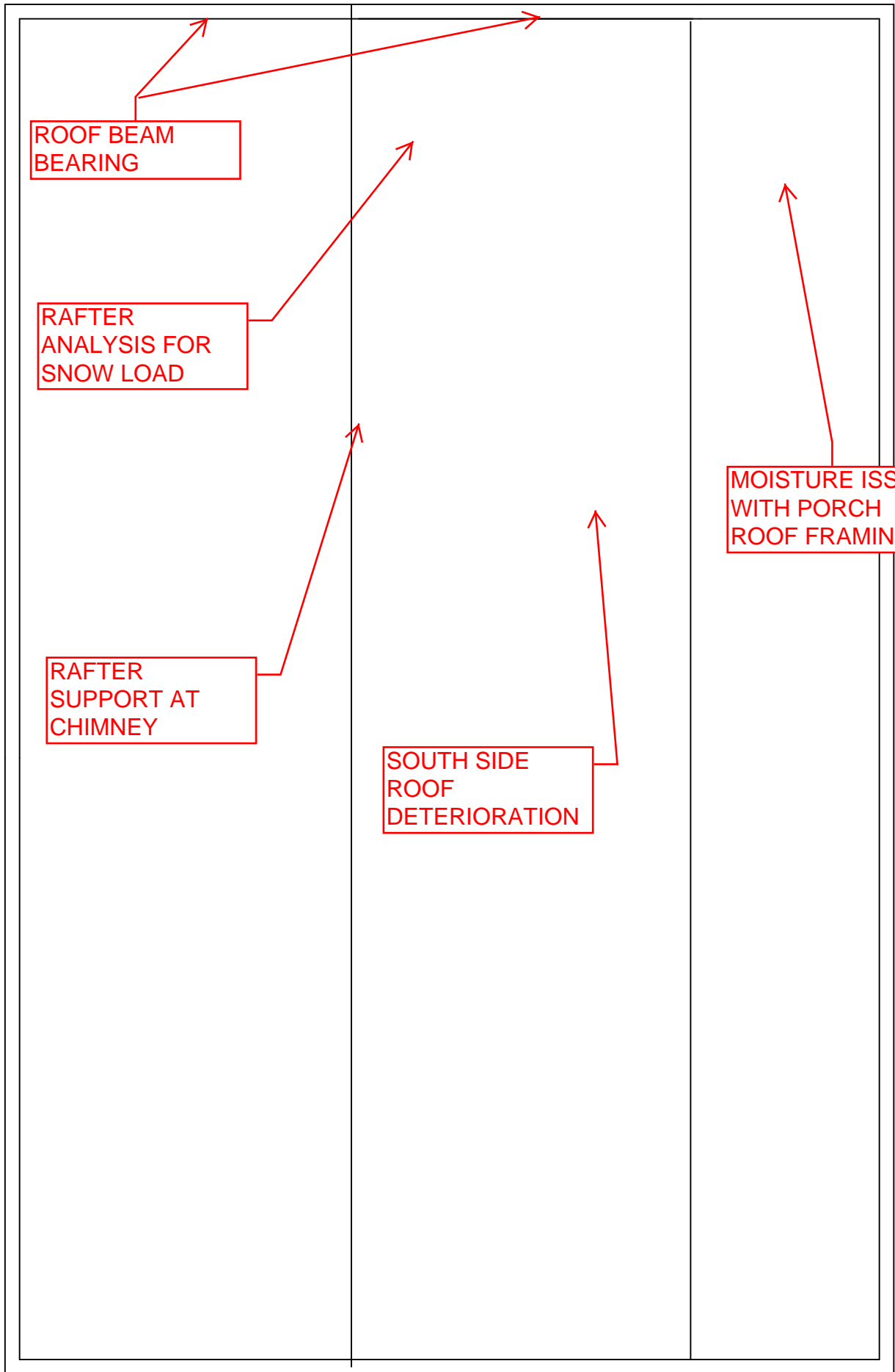
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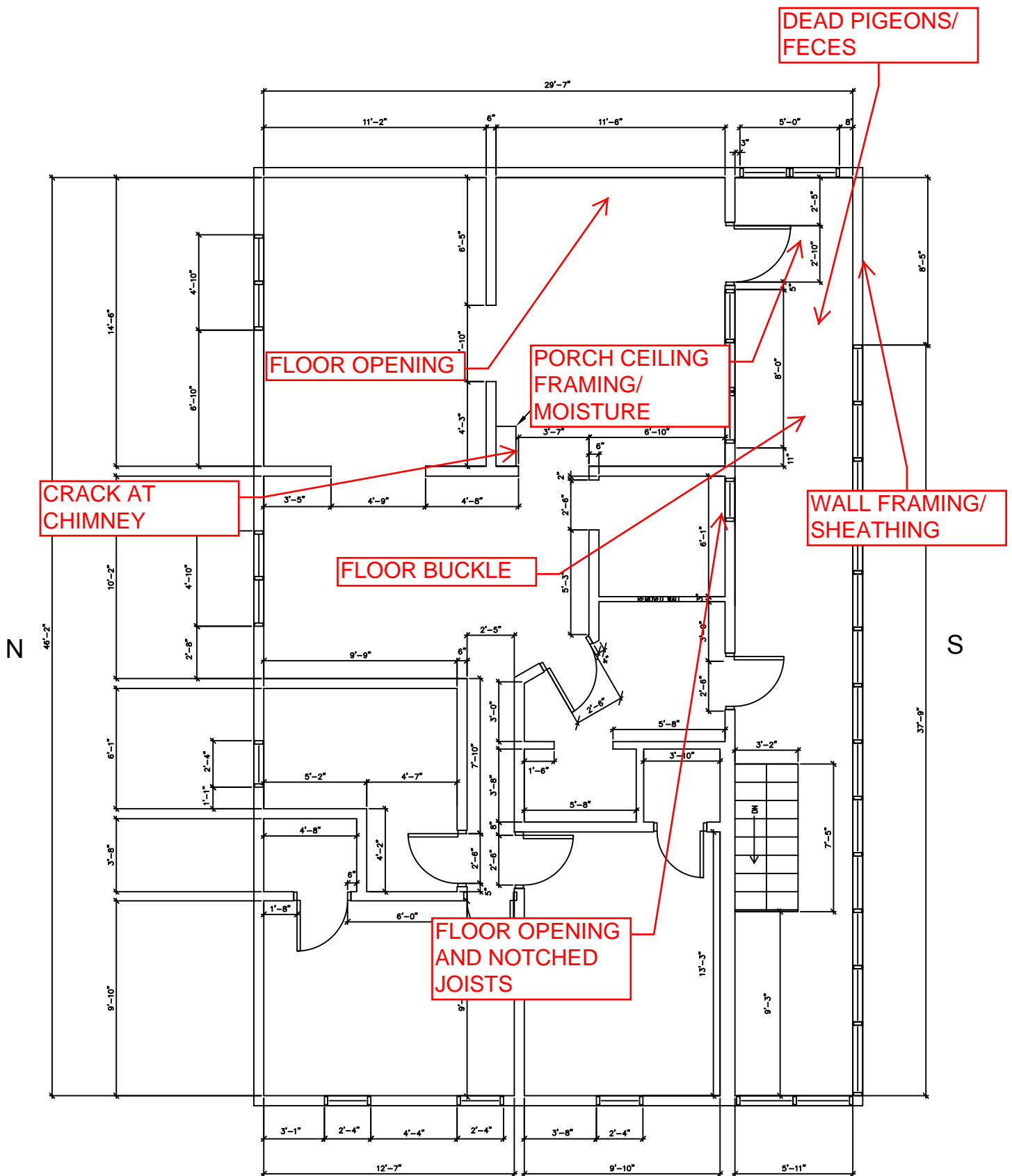
SOUTH SIDE  
ROOF  
DETERIORATION

MOISTURE ISSUE  
WITH PORCH  
ROOF FRAMING

S

ROOF PLAN





SECOND FLOOR PLAN





SANDSTONE  
TUCKPOINT/  
REPLACEMENT

CONCRETE AND  
STEEL  
DEGRADATION  
THROUGHOUT

STEEL FRAMING  
SUPPORTING  
FLOOR IN  
QUESTION

REINFORCE  
FLOOR JOIST  
BEARINGS

FLOOR BEAM  
NOTCHED

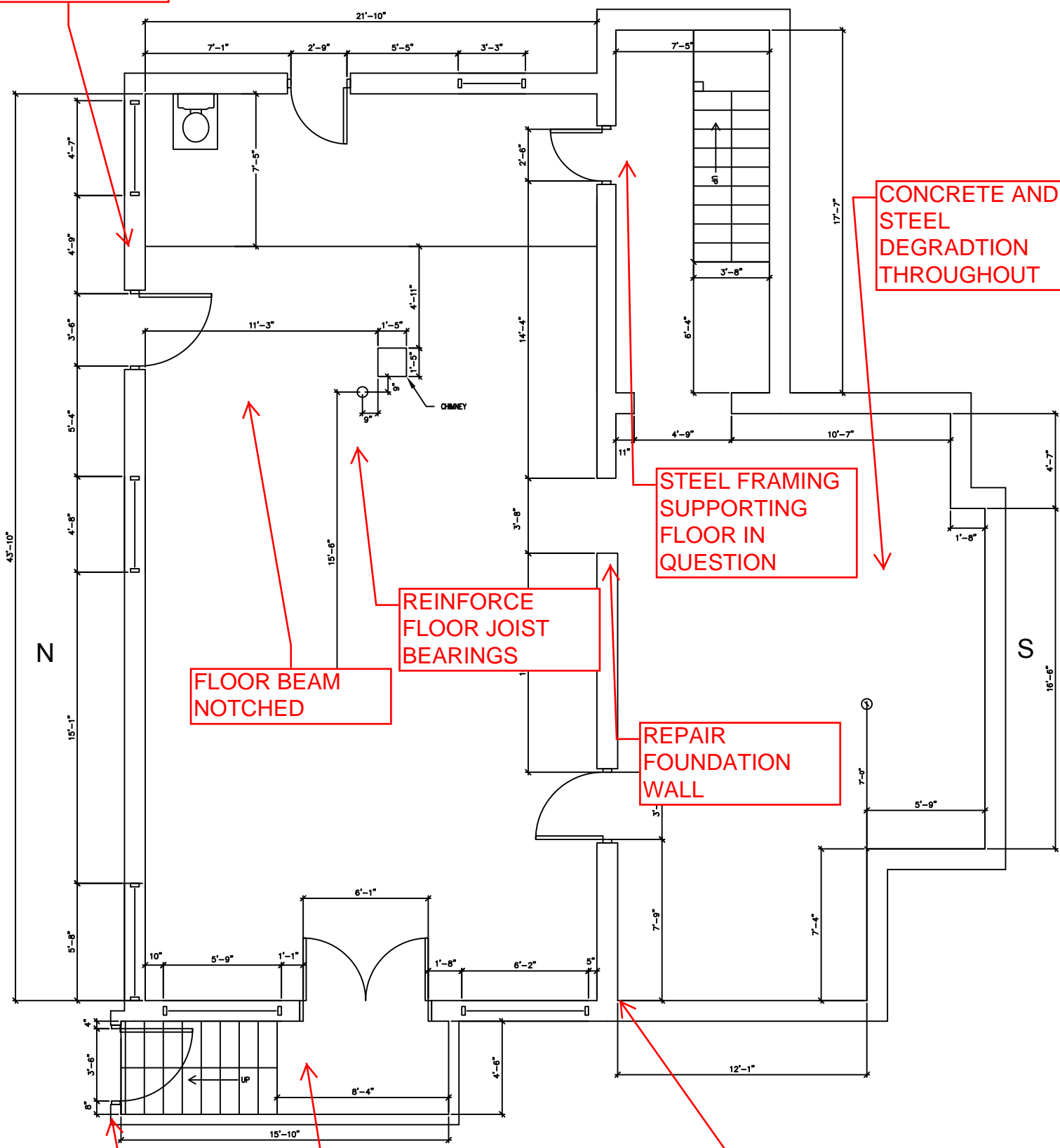
REPAIR  
FOUNDATION  
WALL

BRICK TIE AND  
REPAIR

BLOCK  
TUCKPOINING/  
REPAIR NEEDED

REVIEW CAPACITY OF  
ROOF FRAMING

BASEMENT PLAN



# COST OPINION

512 PORTLAND		QUANTITY	UNITS	COST/UNIT	COST
STABILIZATION	REMOVE SLAB	300	SFT	\$ 7.00	\$ 2,100.00
	REMOVE WALL	800	SFT	\$ 2.50	\$ 2,000.00
	REMOVE ROOFING	1800	SFT	\$ 2.50	\$ 4,500.00
	DISPOSAL	1	LSUM	\$ 6,000.00	\$ 6,000.00
	WALL FRAMING INT.	200	SFT	\$ 10.00	\$ 2,000.00
	WALL FRAMING/FINISH EXT.	400	SFT	\$ 12.00	\$ 4,800.00
	FLOOR FRAMING/DECK	600	SFT	\$ 6.00	\$ 3,600.00
	SHORE SUPPORT	1	LSUM	\$ 4,000.00	\$ 4,000.00
	MASONRY WALL	200	SFT	\$ 30.00	\$ 6,000.00
	TUCKPOINT	120	SFT	\$ 25.00	\$ 3,000.00
	FOOTING	28	LFT	\$ 60.00	\$ 1,680.00
	ROOF FRAMING/DECK	400	SFT	\$ 9.00	\$ 3,600.00
	ROOFING	1800	SFT	\$ 6.00	\$ 10,800.00
	SAND FILL	80	CYD	\$ 15.00	\$ 1,200.00
				SUBTOTAL =	\$ 55,280.00
			15%	DESIGN/ENG.	\$ 8,292.00
			10%	CONTINGENCY	\$ 5,528.00
				EST. TOTAL =	\$ 69,000.00