



J. R. ASSOCIATES

DESIGN SERVICES

FEBRUARY 9, 2009
CHIEF BELSITO
TOWN OF MILLBURY FIRE DEPT.
126 ELM STREET
MILLBURY, MA.

RE: WALLS OUT OF LEVEL & FALLING DEBRIS FROM WALLS

DEAR CHIEF BELSITO,

AS PER OUR INSPECTIONS OF THE BUILDING LOCATED AT 126 ELM STREET, MILLBURY, MA., THE FOLLOWING INFORMATION HAS BEEN NOTED AS TO THE EXISTING CONDITION OF THE STRUCTURAL BRICK WALLS;

- WE CHECKED THE WALLS FOR PLUMBNESS AND FOUND THAT THE FRONT ELEVATION WALL FACING ELM STREET APPEARED TO BE LEVEL.
- THE LEFT SIDE ELEVATION ALSO APPEARED TO BE LEVEL.
- THE RIGHT SIDE ELEVATION WAS OUT OF LEVEL BY 1/2" ON THE FIRST FLOOR AND 1 1/4" IN 6'-0 OUT OF LEVEL ON THE SECOND FLOOR WALLS.
- THE REAR WALL ALSO WAS 1 1/4" IN 6'-0 OUT OF LEVEL ON THE SECOND FLOOR WALL.
- BOTH OF THESE WALLS WERE TILTING OUTWARD FROM THE FLOOR LINE TO THE ROOF.
- THE STAIRS GOING UP TO THE SECOND FLOOR HAS PULLED AWAY FROM THE WALL BY 1/2"
- THE SUSPENDED CEILING HAD ALSO VISUALLY PULLED AWAY FROM THE WALL BY 1 1/4"

THE ORIGINAL BUILDING PLANS WERE DESIGNED BY HARRY L. MEACHAM ASSOCIATES IN MAY OF 1946. THE TWO STORY PORTION OF THIS BUILDING IS 66'-2" LONG BY 35'-0 WIDE. THE RIDGE RUNS DOWN THE 66'-2" DIRECTION. THE EXISTING RAFTERS AS PER DESIGN ARE 2" X 10", 12" o/c. THE MAXIMUM ALLOWED SPAN BY DEFLECTION IS 17'-9". THEREFORE, THESE RAFTERS CAN BE USED IN THIS DESIGN, HOWEVER, THERE IS VERY LITTLE FACTOR OF SAFETY IN THE LONGEVITY OF THE DESIGN. UPON



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VISUAL INSPECTION, YOU CAN SEE A BOW IN THE RIDGE AS IT MOVES AWAY FROM THE ENDS OF THE BUILDING. THE CEILING JOISTS ARE DOUBLE 1" X 8", 24" o/c AND ARE LOCATED APPROX. 1/3 THE DISTANCE UP FROM THE CEILING LINE. THESE CEILING JOISTS USED TO TIE THE TWO ENDS OF THE RAFTERS TOGETHER SHOULD HAVE BEEN PLACED RIGHT AT THE BOTTOM OF THE RAFTER WHERE IT MEETS THE TOP OF WALL. THE MINIMUM SIZE WE FEEL OF THESE CEILING JOISTS CONSIDERING THAT THEY ARE CLEAR SPAN OF 35'-0, SHOULD HAVE BEEN A MINIMUM OF 2" X 12", 12" o/c. THIS IS ONE REASON WHY ONE OF THE WALLS IS PULLING AWAY FROM THE RAFTERS. OVER TIME, THE WEIGHT OF SNOW AND THE BASIC DEAD LOADS ARE FORCING THE RAFTERS TO PUSH THE WALL OUT. THE RIGHT HAND SIDE MASONRY WALL FROM THE SECOND FLOOR LINE UP IS ALSO PULLING AWAY FROM THE BUILDING DUE TO THE FACT THAT THERE IS NO STRUCTURAL TIE OF THE WALL TO THE FRAME OF THE BUILDING. ALSO, UPON VISUAL INSPECTION, YOU CAN SEE THAT THE MASONRY BLOCK WALL WAS CONSTRUCTED WITH BRICK INTERVALS AND WAS NOT BUILT AS A STRUCTURAL MASONRY WALL. IF THIS HAD BEEN DONE, THERE WOULD HAVE BEEN RE-ROD IN EVERY THIRD CELL AND FILLED SOLID WITH CONCRETE FROM THE FOUNDATION RIGHT UP THE TO THE ROOF LINE. ALSO, AT THE SECOND FLOOR LINE AND ALONG THE TOP OF THE WALL THERE WOULD HAVE BEEN A BOND BEAM FILLED WITH CONCRETE AND RE-ROD TO TIE THE ENTIRE BUILDING TOGETHER AS ONE STRUCTURAL UNIT.

THE EXISTING BUILDING PLANS SHOW NO FULL CROSS SECTION OF THE BUILDING OR EVEN A FULL WALL CROSS SECTION. THE ROOF RAFTERS AND CEILING JOISTS DO NOT TIE INTO THE MASONRY WALL AT ALL. THE FLOOR JOISTS ARE SHOWN TO BE 2" X 9", 16" o/c AND APPEAR TO BE SITTING ON THE MASONRY END WALL. HOWEVER, THERE IS NO DETAIL INDICATING IF THESE JOISTS ARE TIED INTO THE MASONRY WALL OR IF THEY ARE JUST FIRECUT INTO THE BLOCK. IF THEY ARE JUST FIRECUT INTO THE BLOCK, THEY WILL HAVE NO STRUCTURAL CAPABILITY TO HOLD THE WALL FROM TILTING AWAY FROM THE BUILDING OVER TIME.

UPON VISUAL INSPECTION OF THE EXTERIOR, YOU CAN SEE WHERE THE WALLS HAD BEEN POINTED IN THE PAST. PIECES OF MORTAR ARE FALLING FROM THE WALLS DUE TO THE MOVEMENT IN WALL ITSELF.



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THIS IS NOT CAUSED BY SETTLEMENT OF THE FOUNDATION, ESPECIALLY SINCE THE BUILDING HAS BEEN HERE SINCE 1946. THERE WOULD BE CRACKS ALONG THE MORTAR JOINTS CLOSE TO THE GROUND IF IT WERE FROM SETTLING.

THERE ARE SEVERAL DEGREES OF REPAIR THAT CAN BE ACCOMPLISHED.

1. THE RIGHT SIDE AND REAR WALLS CAN BE REMOVED AND REBUILT AS STRUCTURAL MASONRY WALLS WITH BRICK VENEER TO MATCH. THESE WALLS CAN BE TIED TO THE OTHER WALLS BY MEANS OF BOND BEAMS. THE WALLS WOULD HAVE TO BE TAKEN DOWN TO THE FIRST FLOOR LEVEL AND REBUILT. THE REAR WALL WOULD HAVE TO BE DONE IN SECTIONS DUE TO THE ROOF RAFTERS SITTING ON IT. PRESENTLY, THE WALL SITS ON A STEEL BEAM BELOW. THERE WOULD HAVE TO BE A RE-ROD WELDED TO THE TOP OF THE BEAM AND CONTINUE UP THE MASONRY WALL SO AS TO SECURE THE WALL TO THE REST OF THE STRUCTURE.
2. THE RIGHT SIDE WALL CAN BE TIED OFF TO THE OPPOSITE WALL BY MEANS OF TIE RODS. THIS WOULD PREVENT THE WALL FROM MOVING ANY FURTHER THAN ITS PRESENT LOCATION. THE REAR WALL WOULD HAVE TO BE TIES TO THE FRONT WALL BY MEANS OF ADDING NEW CEILING JOISTS AT THE CORRECT LOCATION AND ENSURE THAT THE RAFTERS AND CEILING JOISTS ARE FASTENED TO THE TOP OF THE EXISTING WALL.

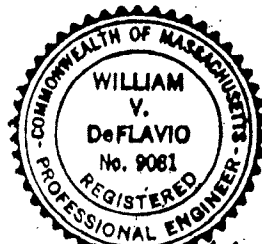
PLANS FOR ITEMS NUMBER 1. CAN BE DRAWN UP AT A FEE OF \$ 3,500.00

PLANS FOR ITEM NUMBER 2. CAN BE DRAWN UP FOR A FEE OF \$ 2,000.00

PLEASE FEEL FREE TO CALL WITH ANY QUESTIONS YOU MAY HAVE. IF YOU DO DECIDE TO MOVE AHEAD WITH CORRECTING THIS SITUATION, WE CAN START ON THESE PLANS A.S.A.P. THANK YOU.

SINCERELY YOURS,

JOHN F. RIEL



William V. DeFlavio



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FEBRUARY 20th, 2012

CHIEF BELSITO
TOWN OF MILLBURY FIRE DEPT.
126 ELM STREET
MILLBURY, MA.

RE: WALL & ROOF REINFORCEMENT

CONTRACT

DEAR CHIEF BELSITO,

THE FOLLOWING IS A CONTRACT TO PREPARE CONSTRUCTION DRAWINGS FOR THE REINFORCEMENT OF THE EXISTING WALLS AND ROOF AT THE FIRE STATION LOCATED AT 126 ELM STREET IN MILLBURY, MA. AS PER OUR LETTER DATED FEBRUARY 9, 2009, WE INTEND TO PREPARE A SET OF DRAWINGS BASED ON OPTION # 2. TO TIE THE WALLS OFF SO AS TO PREVENT ANY FURTHER MOVEMENT. THIS OPTION IS ONLY A TEMPORARY FIX AND AT SOME POINT THESE WALLS NEED TO BE RECONSTRUCTED COMPLETELY.

TOTAL COST OF ABOVE WORK:

\$ 2,000.00

(two thousand dollars)

PLEASE SIGN CONTRACT BELOW AND RETURN ORIGINAL TO MY OFFICE. WORK WILL BEGIN UPON RECEIPT OF CONTRACT. PAYMENT IN FULL UPON RECEIPT OF FINAL STAMPED DRAWINGS. THANK YOU.

SINCERELY,

JOHN RIEL

ACCEPTED: _____

DATE: _____

2/22/12