

Request:

We are seeking the Historic Development Commissions (HDC) approval to replace 2 eight foot garage doors with a single 16 foot steel door.

Background:

At the August 2022 meeting the HDC approved our proposal to install 2 eight foot steel doors on our garage. The door replacement were part of structural rehabilitation of the garage. The first step in the rehabilitation is returning structural integrity to the garage. The contractor, Mr Bob Bartlett of B&T GCCM inc, began work and realized that the east and west vertical columns on the front of the garage (north facing) were no longer sitting on footings. The front, or north, facing wall is visible from the street and where the the garage doors reside. The concrete below the columns has deteriorated and contributed to the raking or shifting of the structure that was primarily caused by the removal of the rear load bearing wall by a previous owner. Additionally a previous owner extended the length of the garage about 4 feet and didn't replace the structural header or tie the roof trusses in the extension to the main garage which added to the instability of the structure.

Once the contractor, Bob Bartlett, realized the extent of the problem on the north facing wall of the garage I contacted David Ansdorf PE a structural engineer who surveyed the house and garage prior to purchase. Mr. Ansdorf, Mr. Bartlett and I met on October 11th to review the situation and determine the corrective actions needed.

Survey Results; and proposed solution;

Although a number of options we discussed Mr. Bartlett and Mr. Ansdorf concluded that both of the east and west vertical columns on the north face of the garage need to be moved 3 inches toward the center of the garage as part of an overall design to preserve the structure and assure it's integrity going forward. This approach would result in the elimination of the center column and installation of a single 16 ft door.

An excerpt from Mr. Ansdorf's report follows;

I was asked to design a beam and column system to support the front of the garage. The garage at present has 2 garage doors. These doors are about 20 years old. The size of the doors means that there is not enough space to create enough lateral resistance to wind loads. This caused the garage to rack badly. It has been pulled back into square, but needs better lateral resistance to prevent the same thing from happening again. The plan is to convert the 2 doors to one door that will leave a little more space on the sides because there is no center post. This will require a beam along the front edge of the garage to support the roof.

The beam required is a LVL 3.5" x 9.25". It will be supported by a column on each end of the same size. The columns and beam will be connected with straps as shown on the detail below. Fasten the columns to the floor with framing angles or a post base. The new door looks like 2 doors with a center post. This

should preserve the look of the garage while still making it strong enough to resist lateral wide loads.

Notes:

Structural Design

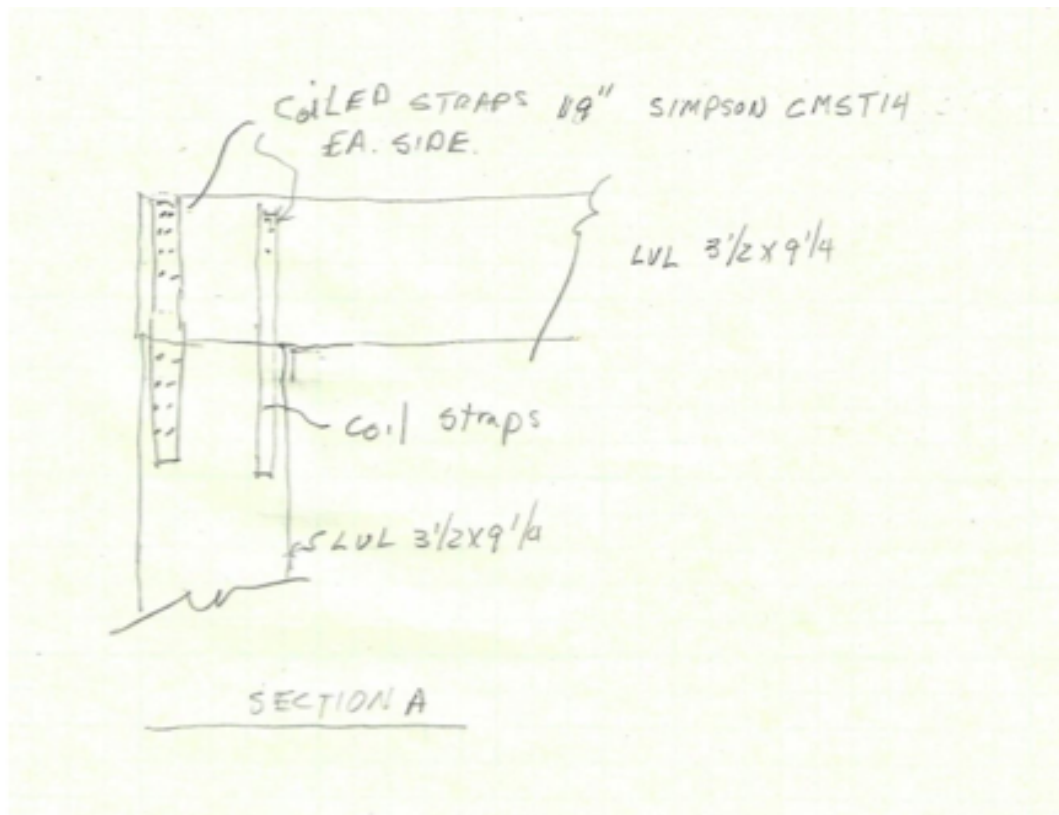
1. Design live load is 20 psf for the roof
2. Design dead load is 80 psf for the roof
3. Ground snow load is 20 psf
4. Wind design speed 115 mph, exposure C.

Wood

1. All dimension lumber is Hemfir #2 or better
2. All wood exposed to earth, concrete or weather should be pressure treated to resist rot.
3. LVL Specs $F_b=3100$, $E=2.0$
4. The LVL will come in pieces each 1.75" thick.
 - a. For a two piece LVL (3.5" thick) fasten them together with Simpson SDS 1/4" x 3.5" screws in two rows at 16" on center.

General

1. All dimensions are approximate and should be field verified.



An excerpt from Mr. Bartlett report:

I'm glad you arranged to meet with Dave Arnsdorf and myself to discuss the issues regarding the front wall discovered while leveling the garage walls.

While we have had good success in leveling both side and rear walls it became apparent that the existing front (north) wall framing and foundation bearing points are no longer able to handle the different wind loads that were being placed on it and would need to be re-engineered and framed in some fashion to create a solid wall structure.

Of the various options we discussed (new footing, relocate the bearing points creating unusable garage door sizes, new framed wall) I agree with Dave Arnsdorf that the option of installing a single opening utilizing the Simpson Portal Frame system will create the best working garage for

you as well as having little impact on the exterior visually. With the addition of the new 16' single garage door which mimics a double door you will be keeping the original look of the garage while significantly extending its useful life.

Photographs of the foundation base of the east and west vertical columns;

Please note that in the four photographs below that the east and west columns are no longer sitting on or connected to the foundation and therefore are effectively floating.

Exterior view of east vertical column footing for the north face of the garage.



Interior view of east column footing for the north face of the garage



Exterior view of west column footing of the north face of the garage.



Interior view of west column footing of the north face of the garage.



Challenge to keeping two doors:

Assuming the structural solution noted above by Ansdorf and Bartlett is required to assure structural integrity the question becomes what impact does that have on keeping 2 single garage doors. If the two vertical columns are moved 3 inches toward the center of the garage there will no longer be room for 2 single garage doors that will accommodate our car. The current garage doors are 96 inches in width. Our car is 90 1/2 inches wide with the mirrors extended. Loosing 3 inches, thereby reducing the opening to 93 inches on each door. According to Mr Ansdorf and Bartlett along with Chris Yoder of Ann Arbor Door System this reduction in horizontal clearance would not provide for the safe ingress and egress of our car. The garage would, in effect, become a storage structure.

New garage door design:

Existing Doors: The existing garage doors are made of wood and are approximately 20 years old. The HDC previously approved replacing them with steel doors of a similar design.



New Door; The new 16 foot 4 inch steel garage door will be designed to replicate the look of the existing garage doors to the degree possible. The proposed new door is from the same manufacturer and of the same material approved by the HDC in August of 2022. We have added the architectural detail of door handles and hinges to enhance the appearance of two doors. If the Committee feels the handles and hinges detract from the design we can eliminate them.

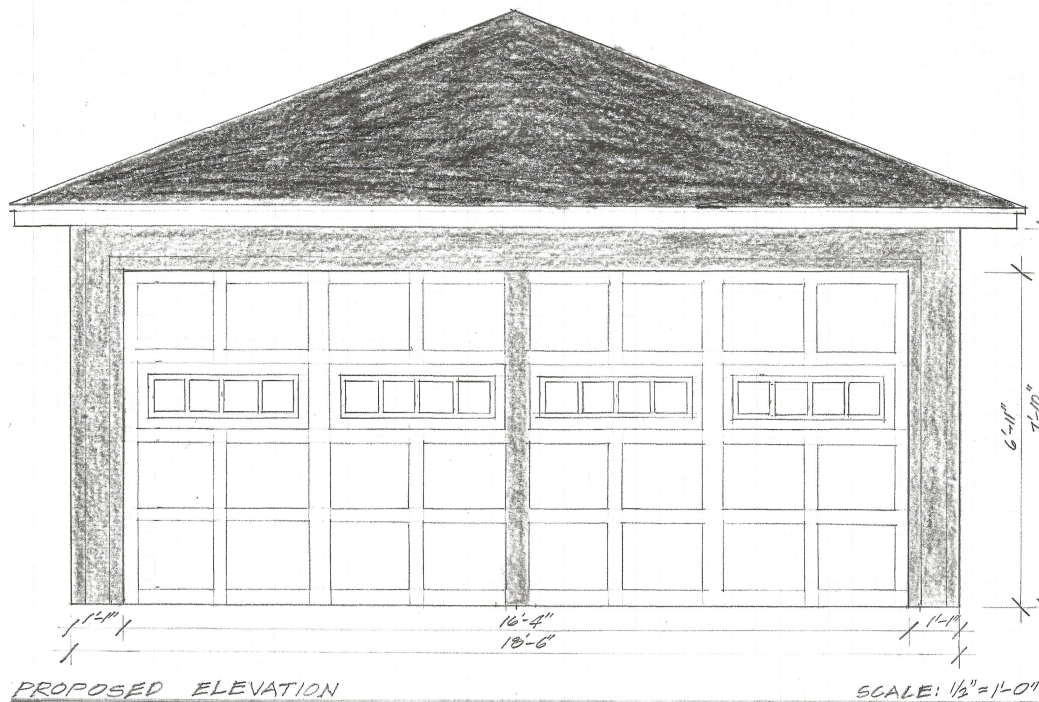
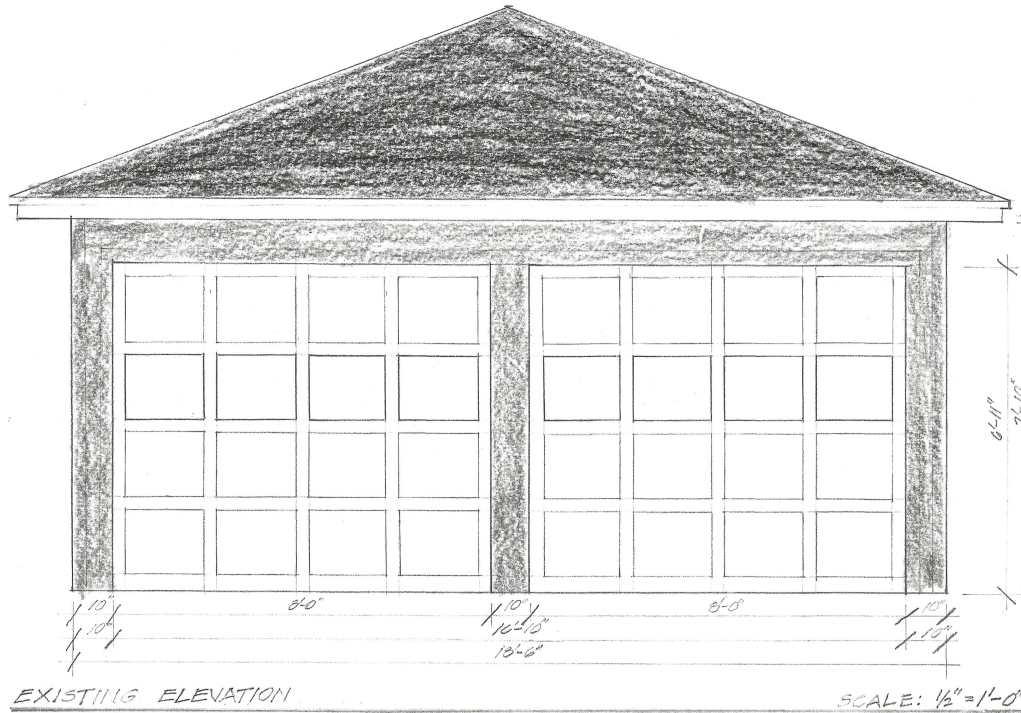
Option 1; New Door with handles and hinges to enhance the image of 2 doors



Option 2; New door without handles and hinges.



Although I am unable to show it on either image of the new door we will paint the 6 inch center vertical column that separates the panels the same color as the existing 10 inch vertical column between the existing doors. We believe this will visually improve the image of to replicate the look and feel of the existing 2 door look. I have included elevations of both the existing and proposed doors with this center column colored in for your consideration.

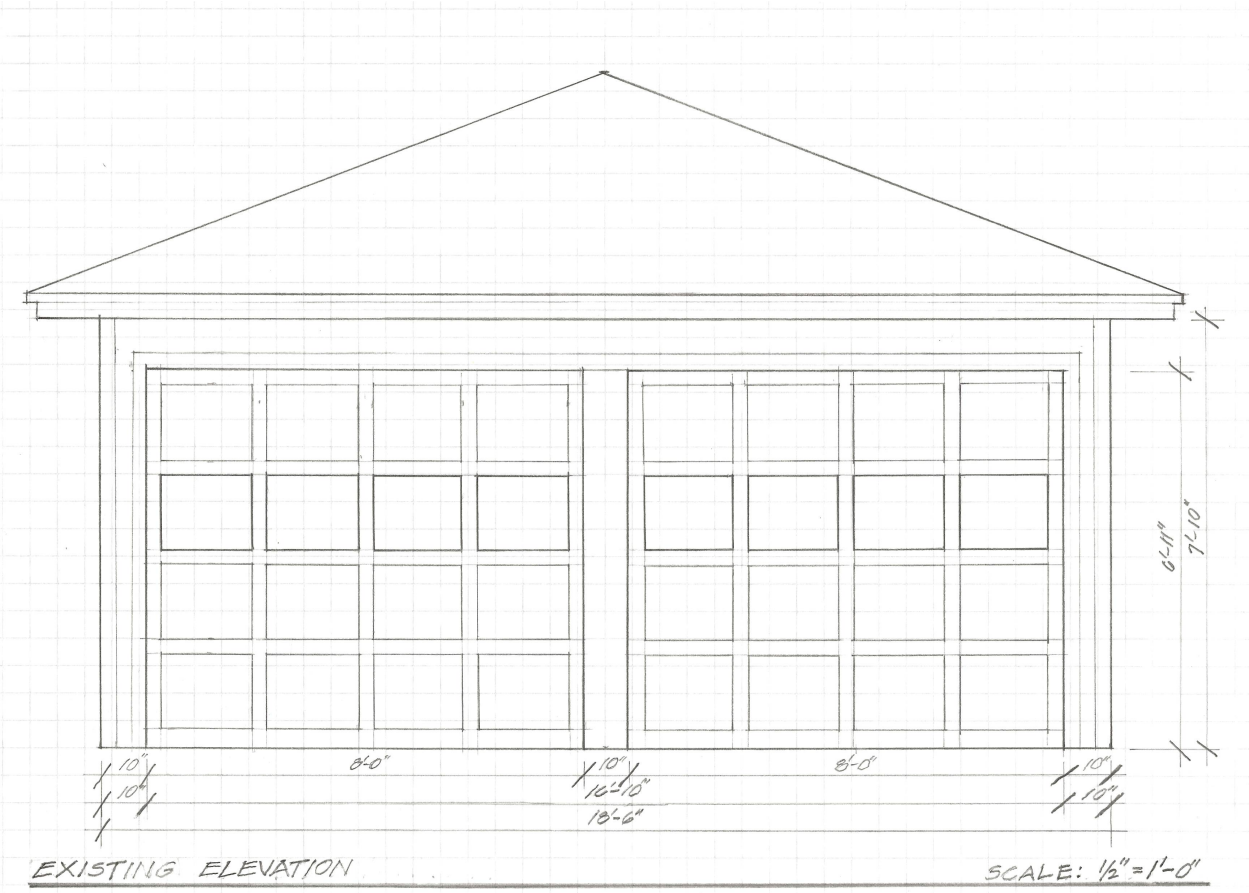


The other change I could not replicate in the above image is the impact of moving the east and west columns in 3 inches towards the center of the garage. The plan is to keep the current wood cladding and trim to preserve the look and feel of the structure. When we build the new interior columns we will remove the existing 1X4 that is next to the door to expose the wood cladding. The exterior wood cladding beneath the existing 1X4 has sufficient length to allow us to expose the cladding to maintain the historic look and feel. We will then finish the trim on the new column with a painted 1X4 which will also preserve the look and feel of the existing columns.

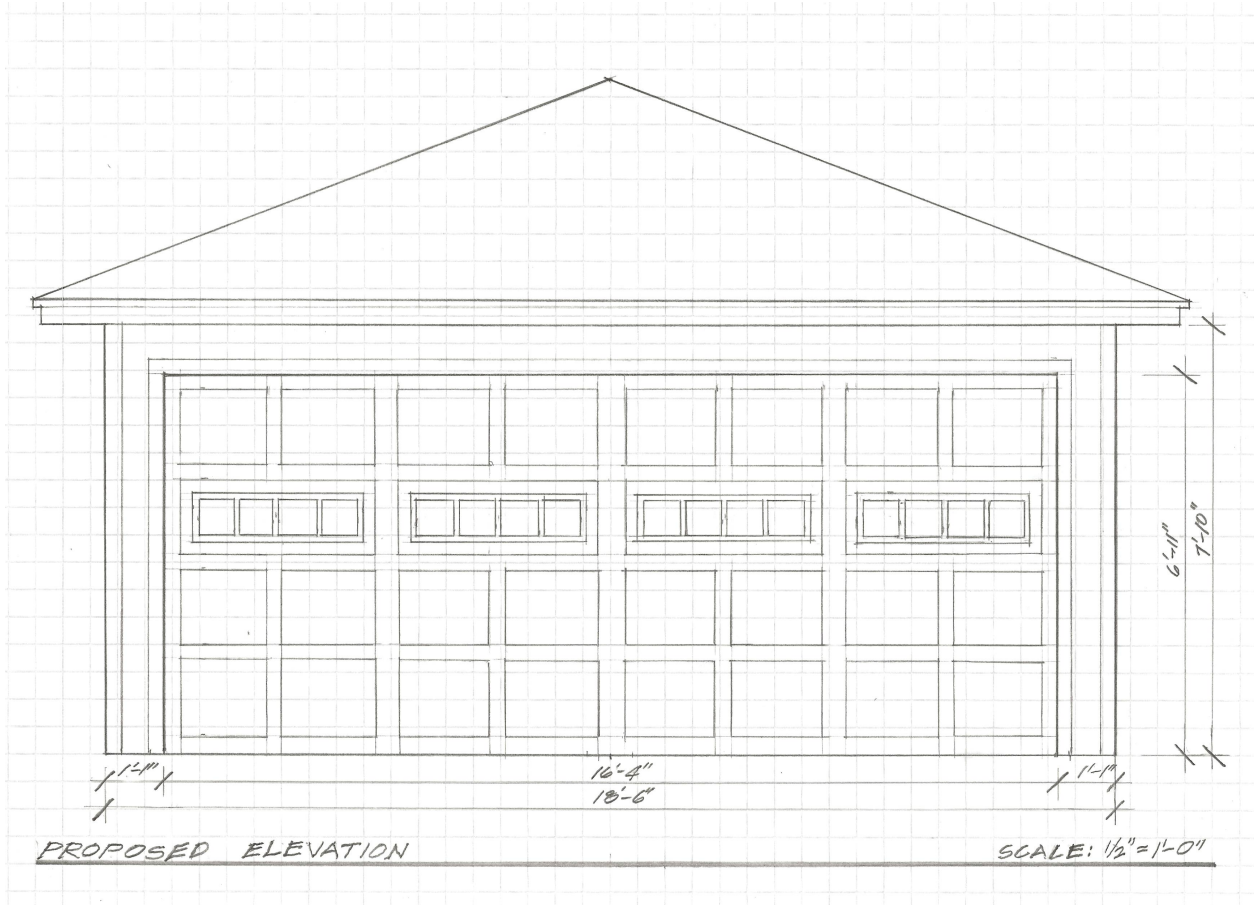


Elevation Drawings of the existing and proposed north face;

Existing elevation.



Proposed elevation:



Neighbors garage doors:

A number of our neighbors have a single wide door or a single double wide door. In each instance the garages face the street. These garages are present in the homes to our immediate east , 1013 W Liberty, and west 1033 W Liberty.

1013 West Liberty - immediately east of our garage.



1033 West Liberty - immediately west of our house.



Additionally, as I walk the neighborhood there are a number of double wide garage doors facing the street in numerous locations all of which are in our historic district. For instance the garage door below is on our block at 1040 W Liberty.

