



15 Brickyard Road
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September 21, 2021

Kevin Birchmore
The McKernon Group
381 New Road
Brandon, VT 05733

**Re: Structural Evaluation and
Recommendations**
Project: 27 S Main Street, Whiting, VT
HSE Project # 21186



Dear Kevin,

HARRIS STRUCTURAL ENGINEERING (HSE) is pleased to submit this brief report presenting the summary of our site visit and assessment of the residential structure, located at 27 S Main Street, Whiting, VT.

On September 14, 2021, I visited the structure to review and evaluate the structure.

The structure is a 2 story Colonial/Georgian revival style meeting house/town hall. The main original portion was constructed in 1906. There is a 1 story rear addition that was not reviewed. The main portion is roughly 36' x 52'. The main portion has a shallow foundation (cast in place concrete) and crawlspace. Concrete block (faced to look like stone) walls and wood framed roof. The roofing is slate. The upper floor is currently in use as the town library and the lower floor as assembly space. The crawlspace area could not be fully reviewed due to limited access but both the north and south sides were reviewed up close from the access at the rear.

Observations of the structure in its current state and discussions:

- The overall integrity of the structure appears in decent shape condition considering the age and apparent foundation issues and rot at the floor joists.
- Roof lines appear mostly true and straight, only a moderate dip in the main ridgeline typical of older structures. Walls appear relatively plumb (slight lean of both north and south walls toward the southern side); Upper floor appears mostly level, first floor has large settlement at northern wall. Main 2nd floor dropped girder shows visible deflection wave.
- There are some noticeable cracks in the concrete block walls visible from the exterior, some follow joint lines, some vertical through the blocks.
- The 1st floor joists and the columns supporting the second story floor are supported by timber girders and pads at the interior of the crawlspace. It appears several of the supporting pads are not original and have been added over the years. Some of the girders also appear to have been retrofitted.

- The south side foundation is severely broken/crumbled in the middle portion and a gap has opened from grade into the crawlspace. This area appears to have been attempted to repair/slow the degradation with a cast concrete curb, but this has settled away from the building. Several large vertical cracks in the footing are visible from the crawlspace.
- The rear crawlspace access foundation is also crumbling adjacent to the opening.
- The depth of the foundation can be seen here and appears to be roughly 3' tall but only buried by 24" or so and varying depending on the exterior grading.
- The north side foundation appears in better shape from the crawlspace than the southern, no major cracks/ or broken concrete. However, in this area the many of the joists have extreme rot damage where they bear on the concrete foundation. A steel angle has been retrofitted (bolted to the foundation to support the joists where the wood has less rot.
- Extremely moist/damp conditions in the crawlspace. High presence of clay/expansive soils.
- No gutter/no gravel drip edge on south side, parking lot on north.

From my observations, it appears the structure is in decent shape, and it is our opinion that there is no immediate risk of structural failure. However, to ensure continued safety and improve performance, the following is recommended as soon as practical:

It appears the lack of foundation reinforcing steel, brittle concrete and expansive natural soils coupled with the improper frost protection have led to the south foundation wall issues as well as the north wall settlement and most likely the cracking of the concrete blocks throughout. The damp/moist crawlspace conditions and poor drainage along with high grade at the north appear to have caused much of the wood rot.

- Limit occupancy at the upper level, no more than 20 people at a time, bookshelves and other heavily loaded items should be limited near the south wall to try to distribute the loading
- The damaged portion of foundation on the south side requires more immediate replacement/repair, but it appears the entire foundation will require replacement at some point. A concrete frost wall and footing properly sized around the entire perimeter would be ideal. This could be done all at once by cribbing and lifting the structure or could be done in phases. Costs and contractor preferences will determine. A licensed structural engineer should be involved to properly size and detail the new foundations.
 - An alternate approach to new complete foundations would be to underpin the existing foundations with new concrete support the walls, remove the damaged portions and replaced. This underpinning could be done with one of the following options: Screw anchors/helical piers, drilled cast in place concrete piers, oversized concrete footings placed in phases 3 – 5' at a time until complete. See SK for some schematic details, assume spacing of piers/screw anchors to be at 6 – 8'. These design concepts shall be used for early pricing only, actual design sizing of spacing may change.
- Areas of cracking/spalling/crumbling joints should be reviewed by a qualified mason and a restoration plan/schedule should be formulated.
- Wood joists/timbers supported by foundation members should be inspected for rot damage and replaced as needed. New joists sistered to existing appears necessary for many of the joists severely damaged at the north wall.
- Drainage issues appear present near the foundations, some regrading is recommended with possible drain rock and drywells necessary.

If you have any questions regarding this report, please contact us at (802) 764-5954.

Respectfully,



Andrew P. Harris, P.E.
Principal Engineer
VT PE Structural 8601

Limitations

Our services consist of professional opinions and conclusions developed in accordance with generally accepted structural engineering principals and practices. We provide no other warranty, either expressed or implied. Our conclusions and recommendations are based upon the information provided to us regarding the existing structure; the results of our site visit; and professional judgment and analysis.

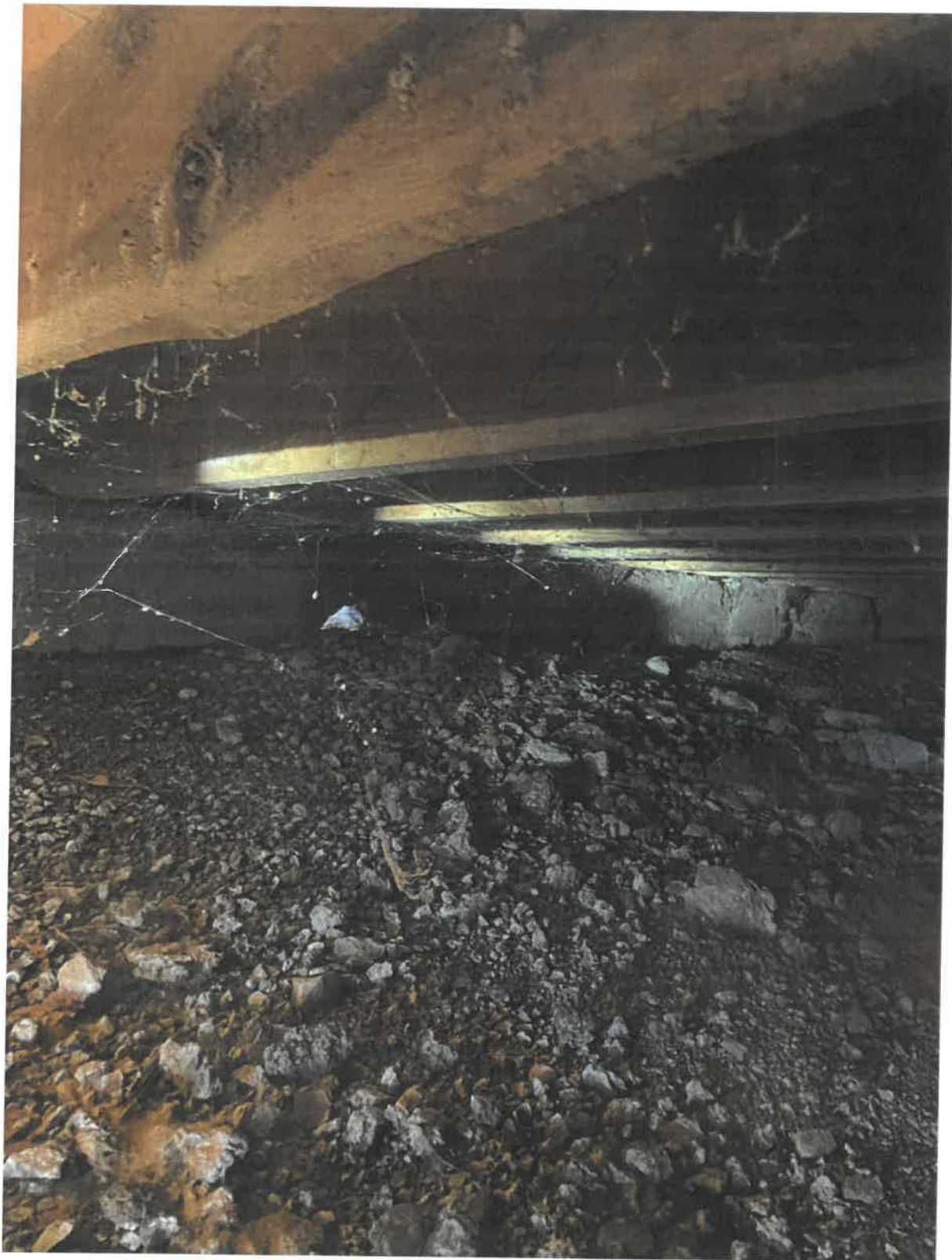
This brief report has not been prepared for use by parties other than Kevin Birchmore, McKemon Group, and their client's needs. It may not contain enough information for the purposes of other parties or other uses.

The findings of this report are valid as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes, works of man, from legislation or the broadening of knowledge. Therefore, this report is subject to review and should not be relied upon after a period of two years.

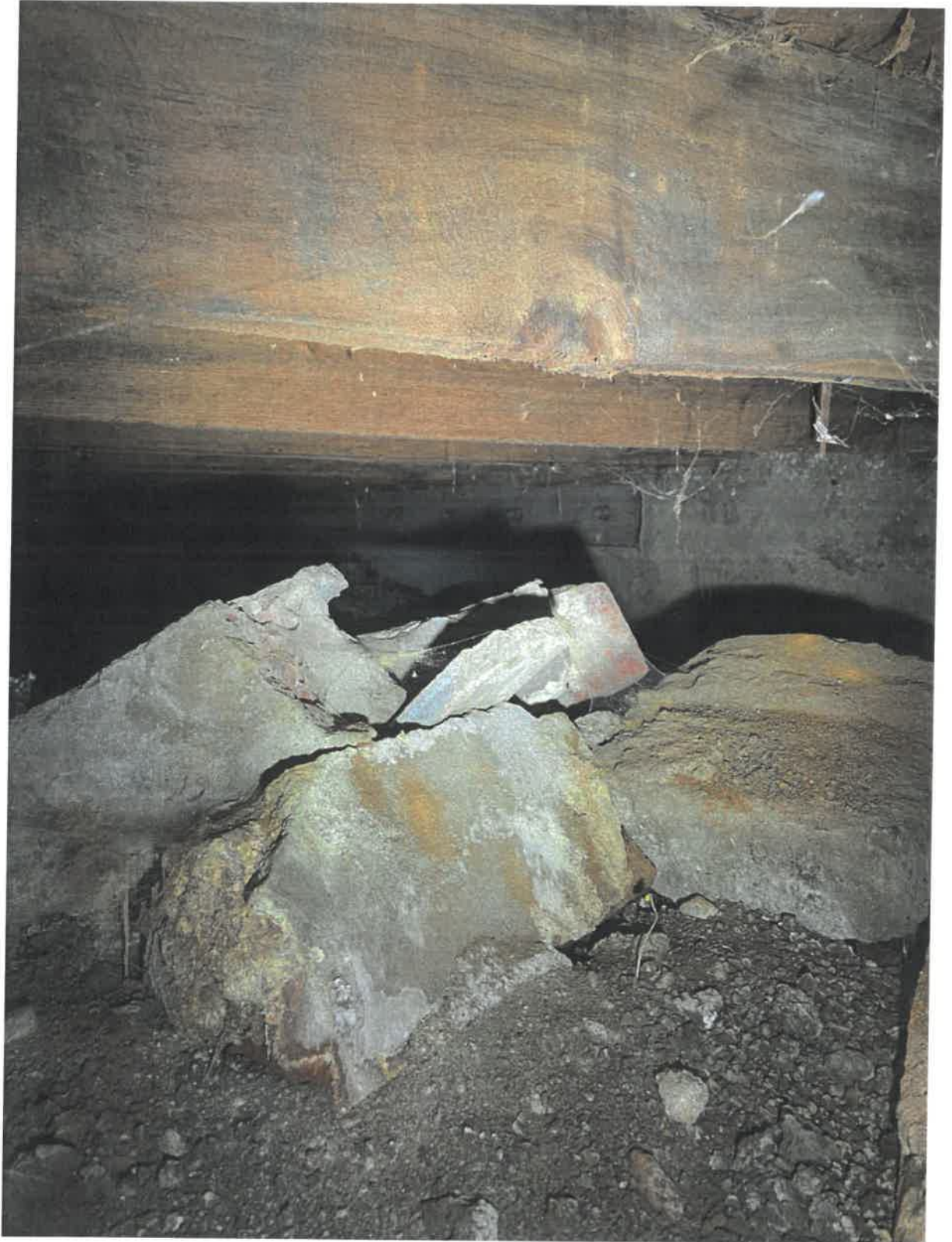
Pictures from site visit September 14, 2021













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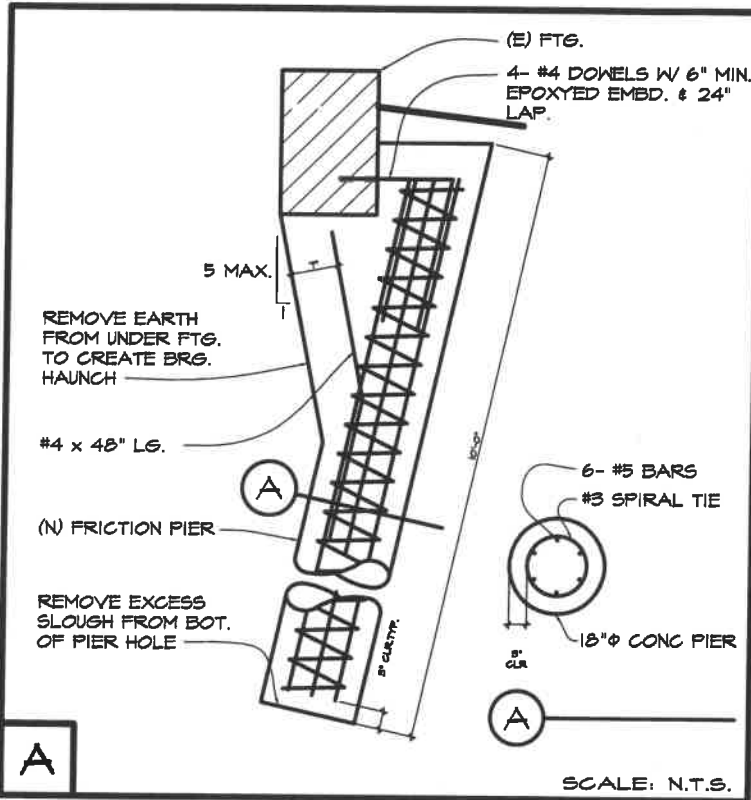
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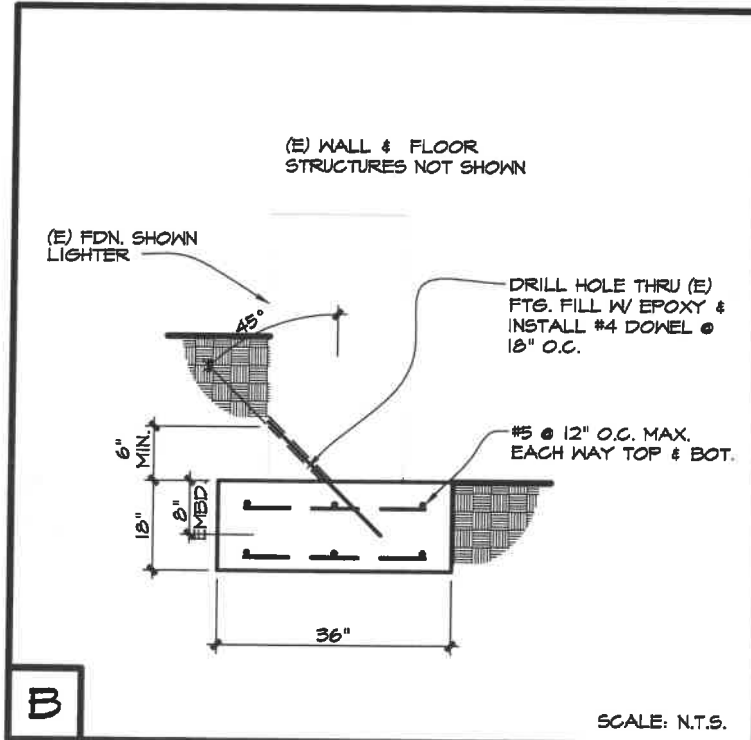
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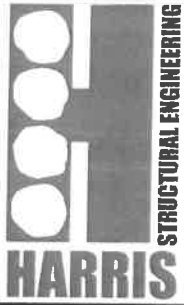
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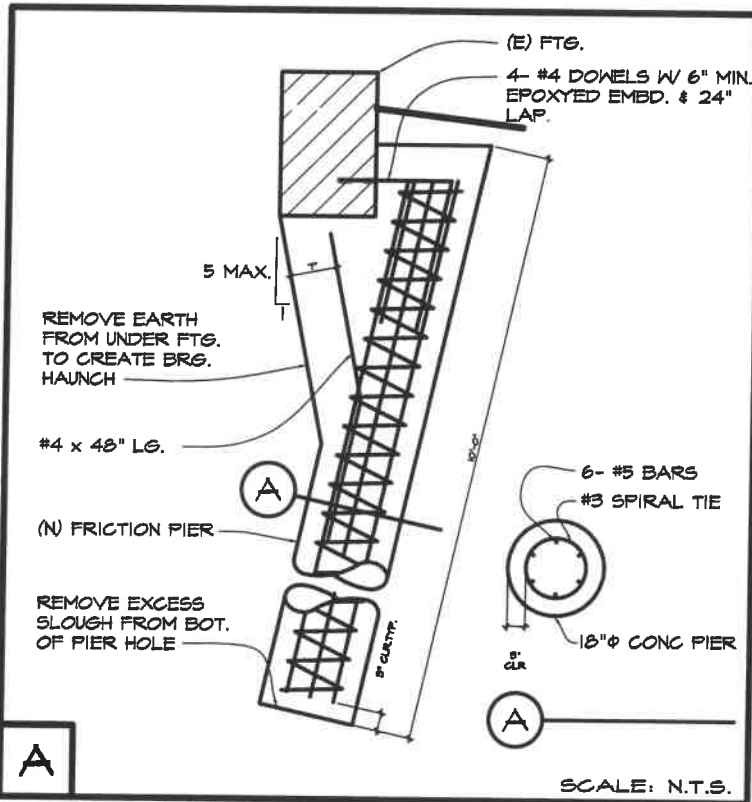
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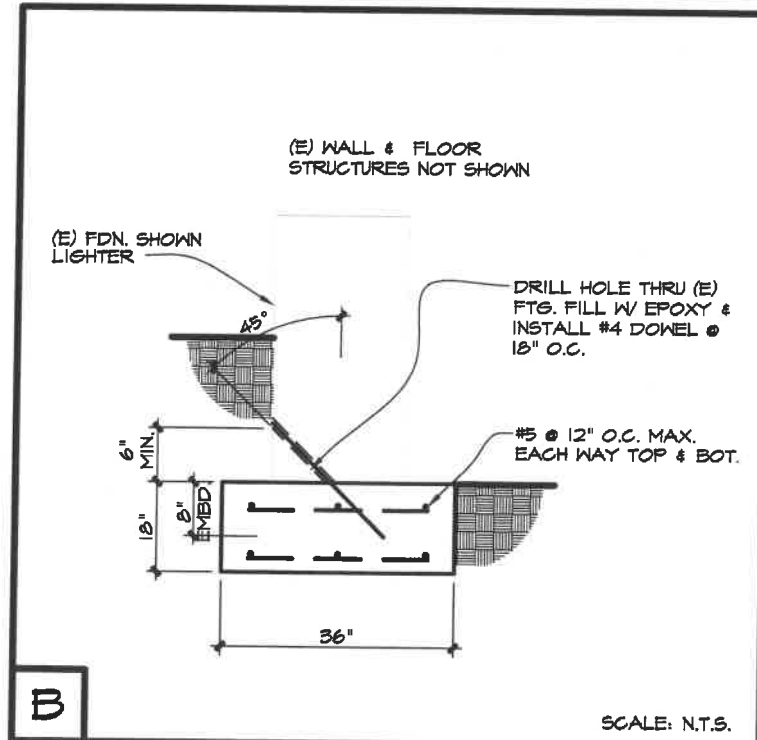
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