



# MEMO

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Date: November 7, 2022

Re: Stone Retaining Wall located on 40 N High and partially on 38 N High;  
Informal Review of Submittals, Preservation POV



Fig. 1: View of 40 N High and north side of 38 N High, with the retaining wall marked in red (Kooi, Bernie. *Overall plan view of property*. 2021. 40 North High Street, Korda/Nemeth Engineering, Inc. 2021, p.1).

## INTRODUCTION and BACKGROUND

This project involves a stone retaining wall located mostly on 40 N High's property. The site consists of 3 areas; the western-most portion contains a one-story, mid-twentieth century dentist's office while the second has parking accessed from drives to the north and south of the building (see note 1 per Fig. 1). The rear has a stone retaining wall that drops approximately 6'-3" to a low-sloped lot filled with some gravel, construction debris, stray stones, vegetation, and a gnarled tree along N Blacksmith Lane (see note 2 per Fig. 2). This lowest section is level with the lot immediate to 40 N High's south, 38 N High. Both 36 and 38 N High date to 1960, and appear to be constructed as a retail duplex with parking off Wing Hill Lane in a layout similar to 40 N High with the buildings facing N High. A small single vehicle loading dock lies to the rear of 38 N High, with a stone coursed wall extending east to a narrow stair and the 1934 stone privy allegedly built by Forest Wing for his mother. The stone retaining wall then runs from the privy to the east and then turns north. After almost 70 feet north, the stone retaining wall returns 15 to

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20 feet to the west, from where it extends a few feet north, perpendicular to the new COhatch building. The portion of the wall in the southeast corner is the subject of this review.

In May 2021, the City of Dublin Planning Department contacted Preservation Designs LTD to informally review this retaining wall, assessing its historic integrity and potential as well as thoughts on its preservation, removal/reconstruction, or demolition. Photographs and a structural assessment by Bernie Kooi, a licensed engineer with Korda/Nemeth Engineering, were the basis for this report. The engineer noted several concerns along the wall from the privy to approximately 20 feet north from the southeast corner, and he proposed to reconstruct and rebuild the wall. He also recommended replacing the stone wall with an engineered system to better resist the increased loading from the-proposed buildings for 40 and 36-38 N High. Based on this information and limited research, Preservation Designs found this stone retaining wall retains all seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. After reviewing the engineer’s report, Preservation Designs recommended consulting with professional stonemasons whose expertise may provide other ways to preserve more of the wall without fully deconstructing it, as well as outlining strategies to prevent its deterioration, such as limiting excessive loading from parked cars.

In October 2022, the City of Dublin Planning Department contacted Preservation Designs about reviewing the proposed engineering assessment and drawings from Osborn Engineering as well as the reconstruction method proposed by Vic Art Masonry to complete the necessary repairs to the wall. It is important to note that Preservation Designs is not providing a full review including background research of the site and its history, nor comments regarding proposed buildings or other future work. Instead, this report is specifically limited to the information given or already known and applying this reviewer’s understanding of the City of Dublin’s historic zoning districts code and its preservation guidelines to this stone retaining wall in making a recommendation on its preservation. These comments do not (and cannot) identify every issue that may be of concern to the City of Dublin and its various review boards. As always, the final determination of these issues lies with the City of Dublin.

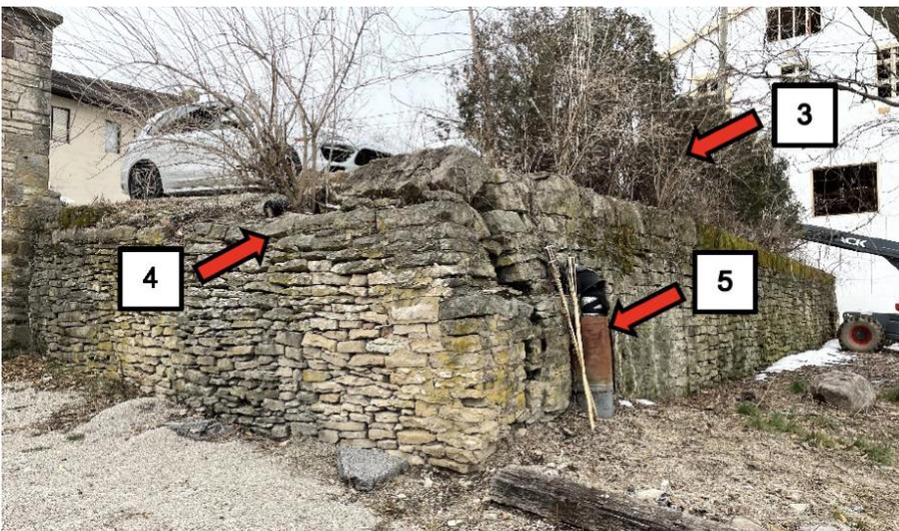


Fig. 2: View of retaining wall, looking northwest at the southeast corner (Kooi, Bernie. *Overall view of wall*. 2021. 40 North High Street, Korda/Nemeth Engineering, Inc. 2021, p.1).

STRUCTURAL MATERIALS REVIEW

While both engineering assessments note this type of dry-laid stone wall was constructed around the 19<sup>th</sup> and early 20<sup>th</sup> Centuries, the earlier Korda assessment also provided information on how this dry-stone wall worked: a free-

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draining material fill lay behind the interlocking stones which retain the soil, allowing water to percolate through and beside the wall to prevent a build-up of pressure behind the wall. Both assessments noted the wall bulge on the southern portion of the wall (4), likely caused by channeled drainage runoff above, as well as a crooked, vertical crack or “wall separation” just north of the southeast corner (near 5). Korda’s report attributed the bottom half of the east wall at the southeast corner being pushed further east by trapped, swelling soil, causing the bump out visible in the center of Fig. 2. Korda’s assessment also noted the deterioration due to vegetation, including roots and vines at the top of the wall (3 and 4).

The Korda assessment also addressed the later use of mortar. According to the engineer, the mortar-filled joints (most likely dating from alterations and subsequent repairs) are not original and are trapping water, thereby increasing the lateral pressure outwards and compromising the wall’s structure. A sewer pipe was added slightly north of the southwest corner (5), causing additional issues. The pipe punctures the middle of the stone retaining wall and then turns down and enters grade below. Mortar was probably added at this time to stabilize the area around the pipe. However, these mortared joints are preventing the wall from functioning as originally intended and instead contribute to its deterioration.

Osborn Engineering also included four drawings to address problems and guide the repair. Their drawings note to rebuild 20 linear feet of wall from the southeast corner to the west and six feet of wall from the southeast corner to the north. They also call for backfilling the first six feet north from the inside face of the rebuilt south wall with clay and installing a four-foot area in plan of pea gravel from the face of the clay backfill. Additionally, Osborn proposes installing two drainage pipes, one in each backfill type, both running parallel with the south wall. The drainage pipe in the clay backfill will be a 4” perforated underdrain pipe, sloped towards the east wall and exiting no less than 2” above grade. Another drainage pipe 7’-0” from the south wall’s interior face will be a 6” perforated underdrain pipe and exits approximately 1’-11¾” from the top of the south wall. The finished grade above is regraded to better channel surface runoff to the 6” perforated underdrain, and to prevent water from overflowing the top of the south wall.

### THOUGHTS on this STONE WALL and its PRESERVATION

Preservation Designs reviewed the Osborn submittals, compared them with the earlier Korda engineering assessment and our own observations, have the following comments.

- Osborn items include:
  - Osborn Drawings: Sheets C-003 and S-100 both show slightly different information regarding locations of pea gravel backfill and clay or earth backfill.
  - Osborn Drawings: Preservation Designs did not see the minimum slope for both perforated pipes (is this 1% slope to the east?). 
  - Osborn Drawings: the perforated pipes exit the east wall, but there is no detail on their exterior appearance. Ideally, having white PVC sticking out of the wall does not lend itself to a historic look. Instead, the exterior appearance should reflect what the original masons used on this wall for drainage points, provided the historic appearance would not inversely impact the wall’s structural integrity. (See PHOTO 2 for what may be such a drainage exit point). If no existing historic drainage point can be used as a reference, the next best way would be terminating those pipes so no PVC is visible and then using a termination device appropriate to c.1900, provided the design would not interfere with the wall’s structural integrity. 
  - Osborn Drawings: Sheet S-100 appears to not match the location of the section marker noted on C-003. Either S-100’s drawing should be flipped so that the wall is on the right side of the section or that the section outlined on C-003 is mirrored to face West, not East. 

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- Korda items (potential conflicts or omissions with Osborn recommendations):
  - The Korda report states roots and other vegetative matter should be removed from the entire length of the stone retaining wall, not just the southeast corner. Adding this to the statement of work would ensure its completion. Coordinate with the owner, the City of Dublin or another entity having authority regarding who would conduct this work, if this work is approved. 
  - The Korda report notes the south wall's top row of dressed, rectangular stones are missing, likely due to the drain-off from the parking area above. Ideally, the stone mason should add back the original stones or their reproductions, if the originals are not available, as part of the scope of work. The top of these dressed stones should correspond to the top of wall shown on Osborn's Sheet S-100. 
  - The Korda report noted that a lower segment of wall, corresponding to the southern-most portion of the east wall (see PHOTO 3), had shifted east. The Osborn report does not note this shift east. (See also the additional request for information below regarding the wall's northeast corner having an apparently similar condition.) 
  - The Korda report noted that mortar-filled joints were inhibiting the retaining wall's design function to shed water behind and through. The Osborn report did not provide information regarding mortaring joints, whether in wall areas that are to be rebuilt or are to remain as-is. Please confirm what areas require mortar, if any, and how would the wall's traditional water shedding function would be impacted and if any additional mitigation would be necessary. 
  - Regarding the exposed sewer pipe penetrating the east wall (see note 5 in Fig. 2), please provide information on how rebuilding the wall would be best accomplished, also taking into account if the sewer pipe were to stay as-is, or if the sewer pipe could be moved westward, inside the eastern wall during the rebuild (the preferred option). If the sanitary pipe were to stay as-is, what additional work is needed, including mortaring, sanitary repairs, etc? Please provide any details of this work if this work is approved. 
- Please provide information:
  - Where the new perforated pipes exit the stone, would splash blocks need to be installed below, or would mortar need to anchor the pipes in place on the wall? 
  - Would the PVC drainage pipes need some sort of grill or screen to prevent animals from using and/or obstructing the exiting water's flow? Would the far end of the perforated pipes need a cap? 
  - In May 2021, Preservation Designs conducted a brief site visit, taking photos including of the northeast corner of the stone retaining wall, where it appears to have some lateral shifting similarly to that at southeast corner (see PHOTO 4). Preservation Designs asks for the structural engineer(s) to review this portion of the wall and devise any additional work, if necessary. 
  - The construction of the new COhatch building north of the eastern half of 40 N High's lot appears to have affected a segment of the retaining wall, showing a small leg of the wall roughly disassembled per PHOTO 5. Please confirm if work is needed to stabilize the northern retaining wall and/or the stub retaining wall that is perpendicular to 25 North Street's building (COhatch). 
  - Please provide guidance regarding the parking lot at the top of the retaining wall. The original wall design could not have accounted for parking, much less the heavier vehicles in use today. Should parking at this location be removed or reduced, and if parking can remain, what guidelines should it follow? What is the minimum clear distance in plan need where parking and/or vehicular traffic can occur? What barriers should be used to prevent areas from receiving vehicular traffic (such as parking bumpers) would work best? 
  - Regarding the rebuilding of a portion of the stone wall, are there any foundation materials or issues that would be unacceptable from the structural point of view? The mason believes the wall originally sat on clay, and is assuming a 1500psi of undisturbed soil; however, Dublin's Historic District is known for having

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limestone near its surface. Ideally, a soil report would inform the engineer of the types of soil in this area and the best methods for reconstruction. 

REVIEW of the PROPOSED HISTORIC MASON

Vic Art Masonry, owned by James Cox, provided a four-page proposal outlining their work in rebuilding this stone retaining wall, as well as three pages of similar work completed previously. Preservation Designs has the following comments or observations.

- Please provide information regarding:
  - The current proposed work states the existing 1950s low retaining wall, located behind 36 N High, would be utilized to replace stones deemed unable to be reutilized. Please outline your procedure regarding procuring new stone, in case this is also needed. Ideally this would be from the same source as what was originally used on the retaining wall, which is believed to be on-site or from a nearby quarry. It is important for any new stone to match the form, texture, and color of the stone it is replacing. 
  - Regarding the use of historic mortar, this should depend on whether the structural engineer(s) feel mortar in general would be needed, and if so, what areas and what specific mortar type, and if weeps or other material and/or details are necessary. From the historical perspective, the wall functioned without the use of mortar, so returning the wall to its original function would be ideal. 
  - The current proposal did not include a safety plan, and the representative projects provided are of retaining walls appearing shorter than this six-foot-plus wall. Excavating the existing soil and fill behind the retaining wall could destabilize the remaining soil and/or the wall. Please ensure all work is conducted under Occupational Safety and Health Administration (OSHA) standards, including a review of the soil analysis report. 
  - Also, regarding the 1950s retaining wall located behind 36 N High, a row of large, rectangular dressed stones, similar to the ones used on top of the retaining wall, sit a few feet east of the 1950s wall (see PHOTO 6). Please ensure these stones are to remain, ideally in their existing locations, unless there is evidence that they are the stones missing from the top of the southern portion of the retaining wall. 
  - Regarding the drainage of the new perforated PVC to be installed (see notes regarding Osborn Drawings), if Vic Art Masonry has any familiarity with what a drainage point would have looked like historically, whether similar to what is seen in PHOTO 2 or is typical historically for Central Ohio, please provide this information for review and the project's potential use. 

SUMMARY STATEMENT

Preservation Designs reviewed the materials from the Osborn Engineers and Vic Art Masonry and identified some conflicts with earlier items. In addition, we found other matters worthy of consideration now or as part of future projects. Hopefully, these items can be addressed and the project can proceed to ensure this historic wall can be maintained and preserved to last well into the next century. While some of the comments and observations above are addressed to the originators of that work or proposal, some may require review and approval of an owner, agency, or the City of Dublin itself. Preservations Design's intent was to draw attention to items that could affect the preservation of the retaining wall as a whole, whether in the short term or decades into the future, and does not mean to assign work or responsibility outside anyone's scope.

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**PHOTOS**



PHOTO 1: Panoramic Photo taken from the southeast corner of the 36 N High lot, from looking west (left) up Wing Hill Lane and north (right) up N Blacksmith Lane (Photo downloaded from the Google Maps website, 'Street View', accessed November 4, 2022, at <https://www.google.com/maps/@40.1002827,-83.1131823,3a,84y,268.38h,92.84t/data=!3m6!1e1!3m4!1sek7jLdJ6VVRXo-oYpW1Smw!2e0!7i16384!8i8192>).

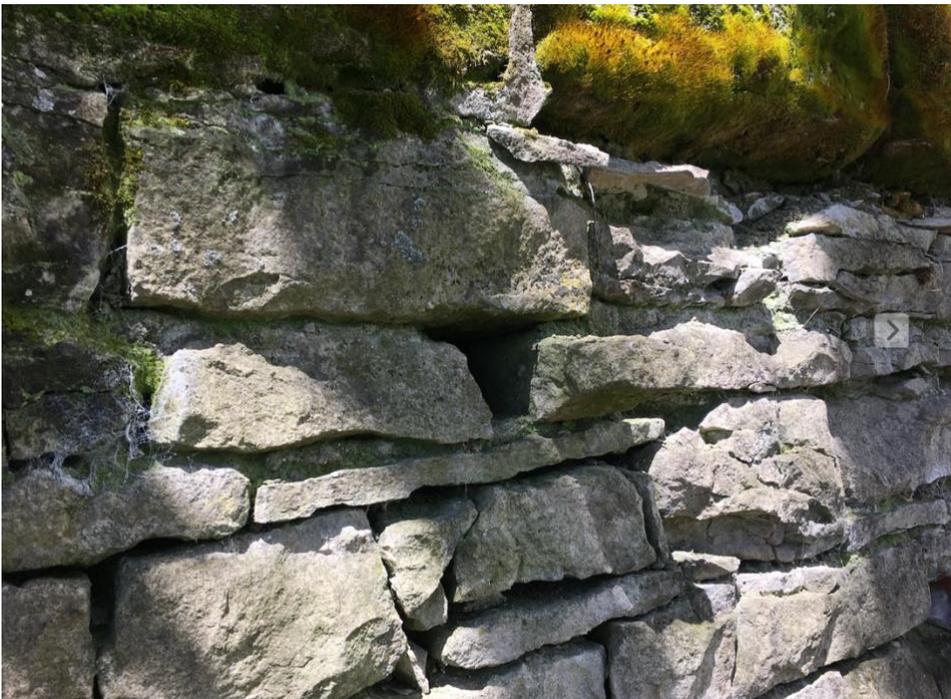


PHOTO 2: Possible original drainage outlet found on the eastern retaining wall (Preservation Designs, May 2021).

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**PHOTO 3:** Photo of southeast corner of the retaining wall, with a red line highlighting the eastern shift of the lower portion of that wall (Preservation Designs, May 2021).



**PHOTO 4:** Observed concern a few feet south of the northwest corner of the wall where stone appears to be shifting out, bowing similarly to the east wall immediately north of the southeast corner (Preservation Designs, May 2021).

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PHOTO 5: Photo of northeast corner (a) of the retaining wall, looking west. From this northeast corner, the wall jogged about twenty some-odd feet west and then turned north. At the time this photo was taken, the retaining wall return was broken (b) just short of then under-construction COhatch building (c) at 25 North Street (Preservation Designs, May 2021).



PHOTO 6: Panoramic Photo taken from Wing Hill Lane, looking west up the hill on the left side of the photo, and north at the two-story privy. Please note the large rectangular stone blocks on the west end of the parking area. (Photo downloaded from the Google Maps website, 'Street View', accessed November 6, 2022, at <https://www.google.com/maps/@40.1002473,-83.1134869,3a,90y,318.1h,85.74t/data=!3m6!1e1!3m4!1sjHX9cg-o3rY8YmFHI1nl7Q!2e0!7i16384!8i8192> ).