93 Pleasant Street
Stone Wall Preservation
HDC Application
February 17, 2023

Narrative Summary

In accordance with direction received at the January HDC meeting, the design and construction team has conducted further investigations on the existing stone wall, and prepared a temporary shoring workplan to secure the wall in place during construction. The findings of these investigations and engineering are included in this application package and are summarized as follows.

The entire length of the backside of the stone wall was excavated and inspected, as detailed in attached report. In summary, the dry-stack stone wall is inherently unstable due to a split and uneven foundation, open gaps between rocks, lateral soils pressures, discontinuity between front and back stone courses, and vertical misalignment. This is due to the effects of 300 years of weather and gravity, and also from changes made to the wall over time, such as increasing its height and backfill. These changes have exerted forces upon the wall for which it was not originally designed.

Due to these factors, the wall continues to slowly erode, lean over, and dishevel, requiring ongoing repairs to prevent collapse – much as it has in the past years. Previous repairs are evident in the current wall. Bits of mortar, chinking, and mismatched stone occur here and there as they have accumulated over the years. In this same way, the appearance will continue to evolve over time and in the future will not look like it does now.

According to the attached shoring workplan, reinforcements during site excavation may be implemented to prevent collapse during construction. However, after shoring is removed the wall is expected to become further destabilized due to soils and bedrock vibrations upon the inherently unstable existing conditions discovered within the wall. Additional damaging impacts to individual stones are noted in the attached workplan.

In best efforts to protect the wall during construction and ensure its historic integrity, the design team proposes to stabilize the wall to prevent further decay. To do this, the wall must be temporarily disassembled and then re-laid. The attached documentation, as previously submitted describes the proposed process and sequence for treatment of the wall.

<u>Precedents</u> - Historic stone walls recently rebuilt and preserved

- North Cemetery, National Register of Historic Places; 210 foot dry laid stone wall built circa 1753; rebuilt 2016 per City of Portsmouth with review by NH Division of Historic Resources.

- Wentworth Gardner House, 49 Mechanic Street, stone wall built circa 1760; rebuilt 2015 as part of a “hands-on masonry conservation class to teach participants how to document, dismantle and then reconstruct a late 18th-century stone retaining wall using traditional mortars and building practices”.

JOHN TURNER
CONSULTING

February 09, 2023

Lynn Kramer – EVP

McNabb Properties Ltd.

McNabb Properties Ltd.
3 Pleasant Street – 4th Floor
Portsmouth, NH 03801
lynn@mcnabbgroup.com
Ph: (508) 439-9501

Re: **Pleasant Street Development - Retaining Wall Evaluation**
93 Pleasant Street
Portsmouth, New Hampshire 03801
JTC Project No. 23-04-010

Dear Ms. Kramer:

As requested, John Turner Consulting (JTC) has completed our evaluation regarding the dry-laid stone retaining wall that bounds Court Street at the rear of the 93 Pleasant Street site. This letter summarizes the results of our evaluation and observations. The purpose of our services was to evaluate the stability of the existing stone wall; specifically, the probability of major repairs required to the existing retaining wall if shored during construction as compared to a complete tear down prior to construction activities and rebuild after construction activities have commenced. JTC understands that the proposed construction will require bedrock removal to approximately 7 feet below the base of the existing wall (sidewalk elevation) within 3 feet of the existing wall to construct a new building foundation. The wall will have to be further shored vertically to allow for placement of utilities below and perpendicular to the wall.

JTC has assessed the stability of the existing wall based on:

- Construction Documents provided by Severino;
- *Wall Shoring Proposal* prepared by H.B. Fleming, Inc.;
- Site inspection by JTC on January 24, 2023.
- Conference with representatives of McNabb Properties, Severino Trucking, and H.B. Fleming at site visit on January 24, 2023

Based on our site visit the existing, historical wall is dry-laid stone wall approximately 140 feet long with a height varying from approximately 6.0 feet to 6.5 feet in height that runs along court street. The wall retained/supported the existing parking area surcharge at the site. JTC understands that portions of the wall had bowed and been repaired/reconstructed at least twice in recent years. Mortared repairs were also observed at numerous locations throughout the wall. Many chinking stones supporting the larger dry-laid stones were missing. Large void spaces were noted between wall courses and poor stone to stone contact in general. Upon excavation of the retained soils it was apparent that some of the void spaces penetrated the full width of the wall. The base of the wall is generally supported on bedrock for 3/4 of its

length with the wall height varying from approximately 2 feet to 6 feet on the retained side. The remainder of the wall is founded on soil overlying shallow bedrock. For approximately 1/3 its length the wall is 2 wythes thick with the inner wythe on the retained side being supported on bedrock and the outer/street-side wythe extending to the elevation of the existing sidewalk, i.e., the wall is split in two vertically.

Based on the existing conditions of the stone wall, JTC has concluded that the likelihood of maintaining the wall in its existing condition is much more probable with a complete documentation of the existing wall condition and a subsequent tear down (pre-construction) and rebuild of the wall (post construction) rather than by attempting to shore the wall during construction. While the shoring method proposed by H.B. Fleming will stabilize the wall as a whole to ensure site and public safety, it cannot guarantee the internal stability of the existing wall. The existing condition of the wall is problematic. The existing wall contains many voids and the actual stone to stone contact is limited at many locations. Movements of the wall created by vibrations from bedrock removal will likely shift the stone adversely within the shoring. The vibrations from bedrock removal will also most likely affect the wall differentially as its base support and composition are not the same along three separate lengths of the wall. The shoring may also require through bolting to connect each side of the shoring together to enclose the wall. This may result in some damage to the stone wall or require removal of stones from within the wall which will diminish its internal stability. Furthermore, the flowable fill to be used within the shoring will most likely require power washing for removal post-construction which may result in damage/movement of the wall.

We trust the foregoing and attached meet your needs at this time. If you have any questions, or require additional information, please do not hesitate to contact this office.

Respectfully,
JOHN TURNER CONSULTING, INC.

Thomas A. McIntosh III, P.E. (MA)
Senior Geotechnical Engineer
John Turner Consulting, Inc. (JTC)
19 Dover Street
Dover, New Hampshire 03820
Ph: (508) 446-6180
E-mail: tmcintosh@consultjtc.com

Stephen C. Lanne, PE (NH)
Vice President of Engineering
John Turner Consulting, Inc. (JTC)
19 Dover Street
Dover, New Hampshire 03820
Ph: (413) 222-1675
E-mail: slanne@consultjtc.com

Attachments: Photo Log

JOHN TURNER CONSULTING

PHOTO LOG

John Turner Consulting, Inc.	**Site Location:** 93 Pleasant Street - Portsmouth, NH

Photo No. **1**	**Date:** 01/24/23

Description: Stone Wall – Retained Side.

Photo No. **2**	**Date:** 01/24/23

Description: Stone Wall Face.

Photo No. **3**	**Date:** 01/24/23

Description: Wall Void Example 1 (Typical).

Photo No. **4**	**Date:** 01/24/23

Description: Wall Void Example 2 (Typical).

From: Scotty Linscott <scotty@hbfleming.com>
Sent: Thursday, February 2, 2023 6:04 AM
To: Ryan Duntley <rduntley@severinotrucking.com>
Subject: 93 Pleasant

Hi Ryan,
Attached is our proposal for supporting the existing wall.

As you are aware, the existing wall is dry laid. Over the years it appears that some repairs have been made to the structure. There appears to be some loose stones, and it is our understanding that there has been some bulging of the wall in the past, and localized repairs have been made.

Although we do feel we could support the wall, there is a strong chance that there will be some bulging or loose stones that fall out during installation of the support system. We cannot quantify the degree of damage to expect, but we do know that damaging these structures can open up a can of worms and the area of damage can expand as the repairs are being made. We cannot be responsible for these repairs or the costs associated with them, because the condition of the wall is variable and there is a limited ability to fully analyze the current stability. We understand this leaves you in a quandary, but we also would like to be up front as to the viability of a trouble free process of supporting the wall, completing the ledge removal, backfilling of the wall and partial removal of the support system.

If you would like to discuss this matter further, please do not hesitate to contact me.

Kindest Regards,

"Scotty" John S. Linscott IV
H.B. Fleming, Inc.
O-207-799-8514
C-207-749-1187

H.B. FLEMING, INC.

CONTRACTING · ENGINEERING

89 Pleasant Ave. South Portland, ME 04106

Phone 207-799-8514 Fax 207-799-8538

www.hbfleming.com

PILE DRIVING BRIDGES SUBMARINE PIPELINES

PROPOSAL

Proposal Submitted To:

Name: Severino
Telephone:

Date: February 2, 2023
Project: 93 Pleasant St.
Location: Portsmouth, NH

Attention: Ryan

Scope of Work:

Furnish labor, material and equipment to design, furnish and install a drilled soldier pile structure to support the existing stone wall.

Our proposal is based on supporting +/- 140 LF of dry laid stone wall during the excavation and ledge removal that is required to construct the proposed foundation. The structure will consist of 9" diameter drilled piles that will be spaced at 6'-8'. Installed on the front and back of the existing dry set stone wall.The piles will be grouted into rock sockets.Timber lagging will be installed between the piles and flowable fill or lean concrete will be placed on the foundation side of the wall to lock the stone together. Walers will be installed as required to support the structure.

We have included the cost to support the wall in the area of the sewer tie in.

We will make every effort to protect the historic wall, but we cannot be liable for repairs that are required due to loose stones that are present in the wall.

We exclude excavation, drill spoils/water/slurry removal, and relocation of utilities. We also assume that OSHA safe clearances will be provided from any overhead utilities.

We will require stable, level access for our drill to complete the work.

Authorized Signature: "Scotty" John S. Linscott IV

93 Pleasant Street, Treadwell House

Stone Wall Masonry – Temporary removal and reconstruction

December 16, 2022

Old Stone Wall, History & Work Plan

History

Historic accounts mention a stone wall on this site, predating the existing Jenness-Treadwell house. The original structure on the site was built circa 1696 for Thomas Packer Senior[1]. "Many remember the appearance before the fire of 1813 of the spot on which is now Ex-Mayor Jenness's residence. In front, on Pleasant street, was a stone wall higher than the present iron fence, and on that wall an open fence. There were many stone steps to pass over before the front door was reached. The house was of two stories, of a dark color, and the whole of the premises had more the appearance of a castle than of a common dwelling. … Mrs. Packer was fond of making extensions to her domicil, and therefore, it is said, when her husband was absent from home on any long journey, he would find some addition to the house on his return. The house was thus so enlarged that it became desirable for a public house. "[2] An early survey by Greenleaf indicates open area at the back which may have been bounded by this same wall, other maps indicate a pound. As early as 1634 town pounds were constructed of wood to keep roaming animals, primarily pigs, away from farms. By 1781, stone replaced wood. Town commissioned pounds became common in the following years and a common size for these structures was 30 feet square and were 6 feet tall with walls 4' thick at the bottom to 2' at the top giving them that standard ⅛ batter. They were built to be "horse high, bull strong, and hog tight." The size and grandeur depended on the wealth of the community and were often the best built stone walls in the area but by the late 1800's, most town pounds were obsolete and in disrepair. The current stone wall that runs along Court St has approximately the same mass as a standard pound that would be 30 square, 6' tall, 4' thick at the bottom, 2' thick at the top. The long stones that are in the existing wall may have been used as cornerstones or through stones of the original wall that once purportedly acted as a town pound and shelter from raids.

Current Condition

Repairs and back excavation to the wall ten years ago were for purposes of straightening its "leaning out over the sidewalk" condition. This work revealed a dressed face at the back of the wall, indicating that when originally constructed it was free standing. Subsequent backfill over centuries has placed lateral forces on this wall for which it was not designed to withstand. Periodically and gradually it leans out over the sidewalk, creating unsafe pedestrian conditions requiring continual repairs to replumb the wall. Many such repairs over the years are clearly evident. These repairs include mortar, stone shims, and mismatched larger stones which are not original to the historic wall. The current condition of the wall includes the original stones in good condition, plus many failing recent mortar joint repairs, added stone shims, and mismatched newer replacement stones.

Work Plan

Our request is to protect the stone wall from potential construction damage and to mitigate the need for future invasive repairs, by temporarily removing and safely storing it during construction, and then rebuilding it with the original stored materials after site excavation, utility and foundation work is complete. This workplan will protect the wall from damage which could occur from collapse during construction due to excavation of bedrock found behind and under the wall. This bedrock is contiguous to the bedrock upon which this wall partially sits. Temporarily and safely removing the stones will protect them from damage that would occur if the wall was left in place. Protecting in-place with shoring was pursued but found unfeasible. Because the wall is a dry-laid, multi-wythe three-foot-thick wall it would require through-rods 24" on center, which would damage some of the stones and would be ineffective for utility excavation below the wall. Restoring its original historic aesthetic with the original, undamaged, well-coursed and dry-laid stones is paramount. By protecting the wall in this way, we have the opportunity to not only repair previous repairs, but to properly restore this historic wall more closely to its original state and prevent damage from future repairs.

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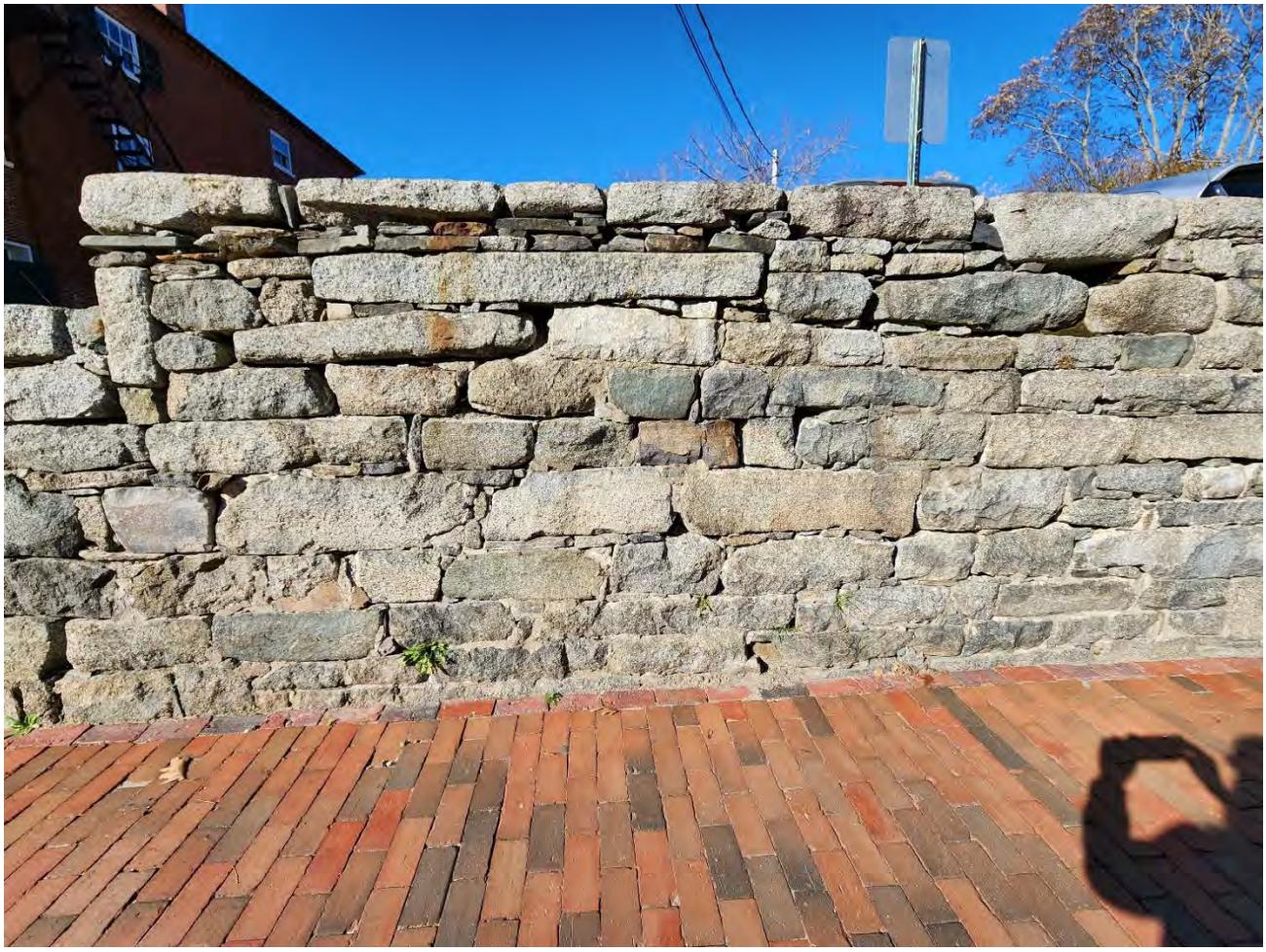
[1] Dennis Robinson, "What to know about the History of Portsmouth's 93 Pleasant Street", Portsmouth Herald, April 25, 2021

[2] Brewster's Rambles, pp 318

Existing Conditions - Front wall, Court Street

1. 

2. 

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17. 

Existing Conditions - Side(East) Wall

18. 

19. 

20. 

21. 

22. 

Existing Conditions - Rear (north) wall

23. 

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P.O. Box 202 Candia, NH 03034
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Ms. Lynn Kramer
Executive Vice President
McNabb Group
3 Pleasant Street, Suite 400
Portsmouth, NH

December 13, 2022

Re: 93 Pleasant Street
Mortar Rubble Wall Reconstruction

Ms. Kramer,

Based on our site meeting Thursday September 22nd we offer the following process and procedure.
The wall will be removed and reconstructed in like or better condition, maintaining and enhancing the historic value and appearance.

Removal:

1. Close sidewalk with MUTCD signage and add crosswalks at appropriate locations.
2. Remove sidewalk and place portable concrete barrier.
3. Document face of wall appearance with pictures and elevations.
4. Excavate wall on back side.
5. Remove each stone, clean and palletize.
6. Discard mortar and stones that were incorporated in previous wall repair.
7. Transport to staging area.

Reconstruction:

1. Excavate and pour new reinforced 1' x 5' concrete footing at 4' deep for frost protection.
2. Transport pallets as wall construction begins.
3. Increase depth and width of wall with additional stones and concrete below grade and on backside to create 1:4 batter.
4. Place and mortar salvaged stones on backside to give "laid-dry" appearance.
5. Incorporate new stones having same characteristics as original era to replace previous repair material.
6. Place 4" aggregate underdrain with stone and fabric.
7. Backfill with granular backfill material.

Please see attached picture of bridge in Peterborough, NH reconstructed with similar method this past year.

Thank you,

Bernard F. Lee
Chief Estimator

CC: Ryan Duntley

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EXCAVATING CONTRACTOR

SITE DEVELOPMENT *ROAD CONSTRUCTION* *SAND AND GRAVEL*

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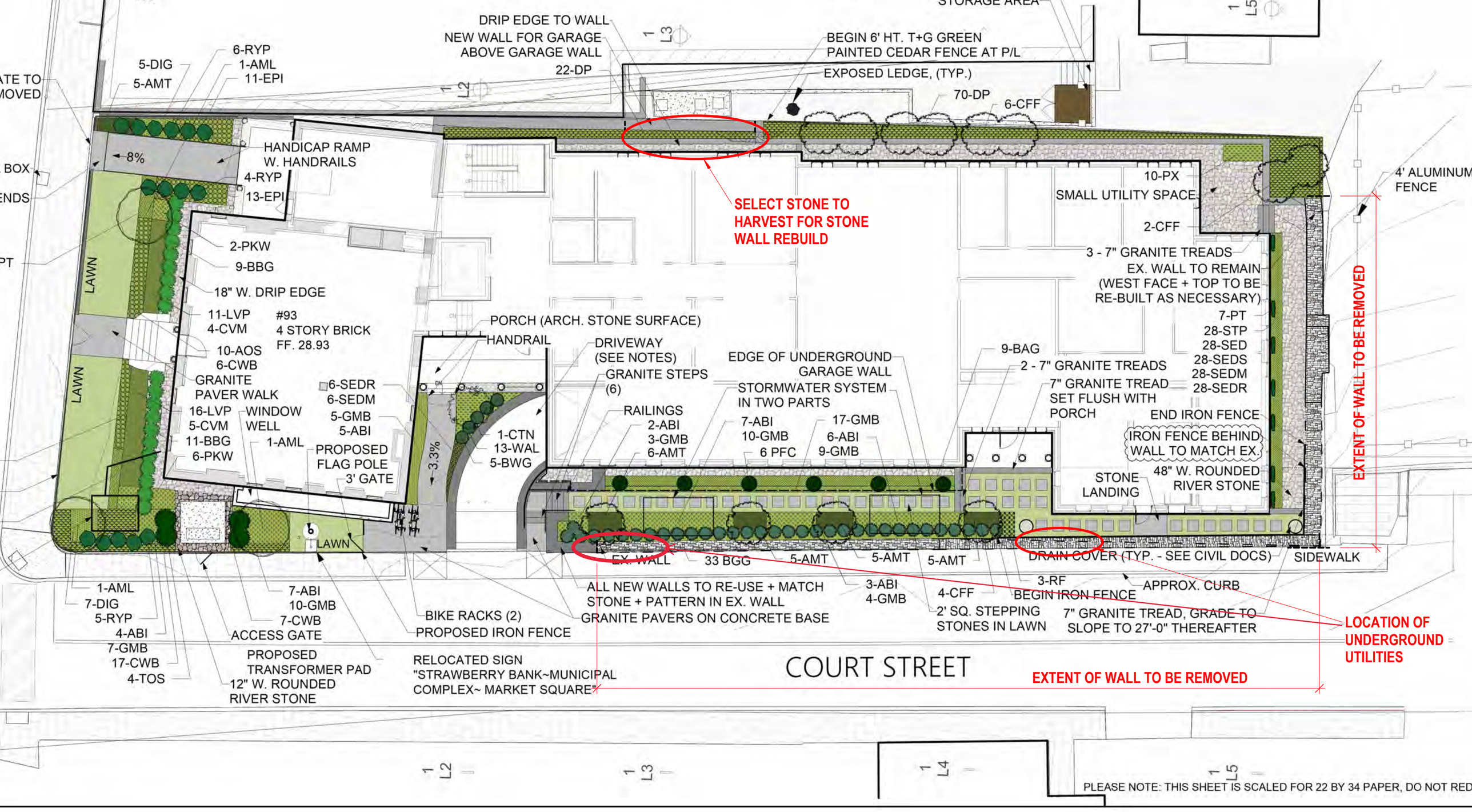
EXCAVATING CONTRACTOR

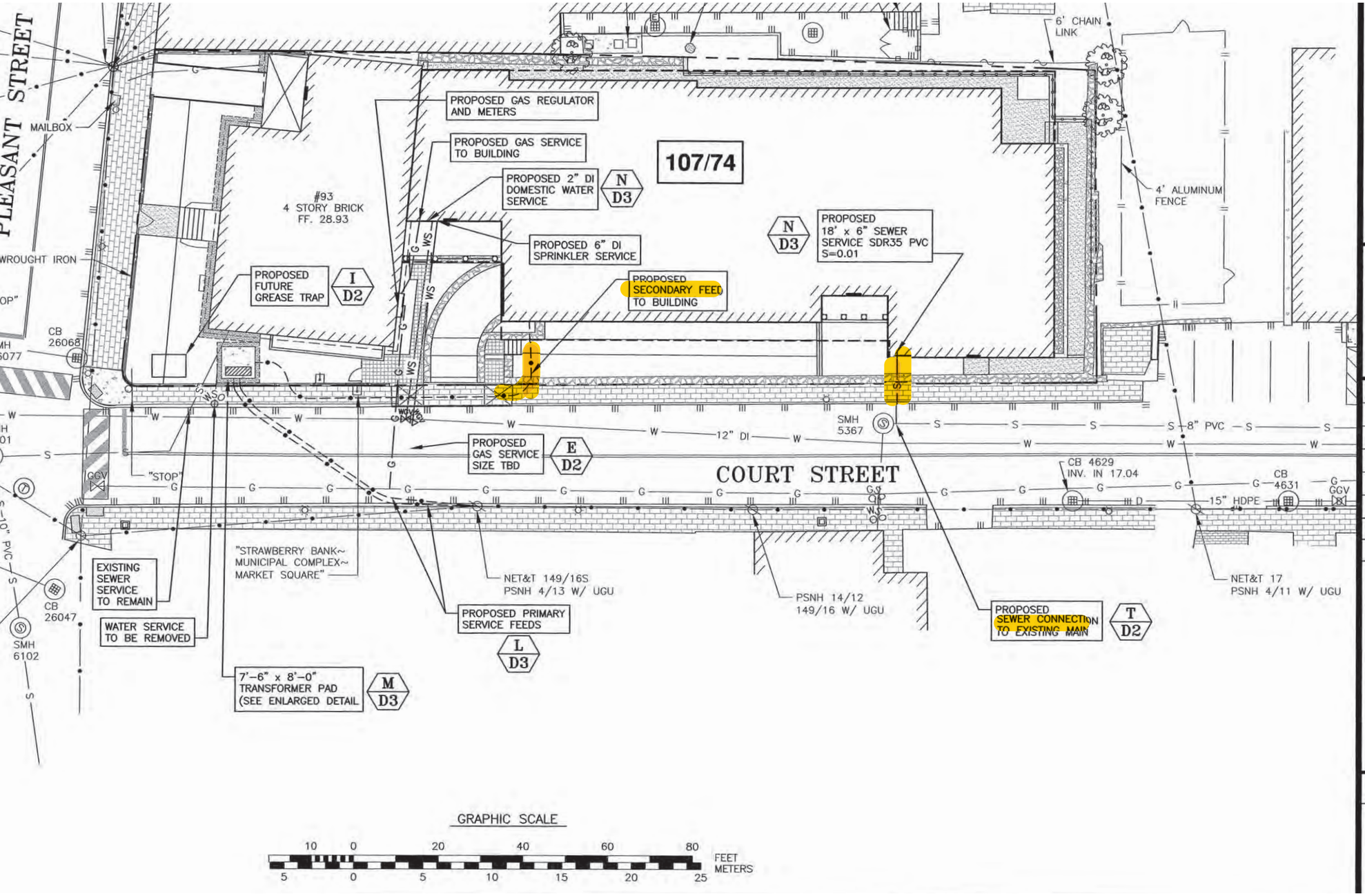


P1.0A

LANDSCAPE SITE PLAN
93 PLEASANT STREET

HDC REVISION 3
12.16.2022

ARCOVE ARCHITECTS



GRAPHIC SCALE

10 0 20 40 60 80 FEET

5 0 5 10 15 20 25 METERS

INDICATES THAT EQUIPMENT IS NECESSARY. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR PORTSMOUTH. THE SURVEY SHALL BE COMPLETED AND ANY REQUIRED EQUIPMENT INSTALLED, TESTED, AND ACCEPTED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

10) COMMUNICATIONS CONDUIT LOCATION SUBJECT TO CONFIRMATION FROM UTILITY PROVIDERS.

11) THE EXISTING WATER MAIN IN COURT STREET IS SHALLOW. INSTALL NEW UTILITIES WITH CAUTION. ELECTRICAL SERVICE WILL BE PLACED UNDER THE WATER MAIN. FIRE SERVICE SHALL BE INSTALLED WITH 5' OF COVER AND INSULATION IMMEDIATELY AFTER TAPPING THE MAIN. NOTIFY CITY WHEN WORK IS TO TAKE PLACE.

COMMERCIAL DEVELOPMENT
93 PLEASANT STREET
PORTSMOUTH, N.H.

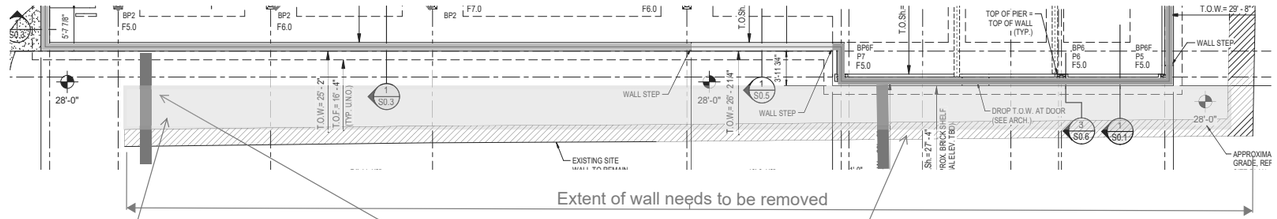
NO.	DESCRIPTION	DATE
7	UTILITY CONNECTIONS	6/30/22
6	BUILDING, GREASE TRAP	6/3/22
5	REVISED LAYOUT	11/1/21
4	NOTE 11	10/20/21
3	SUBMIT FOR TAC	9/20/21
2	REVISED BUILDING/EXTERIOR LAYOUT	9/7/21

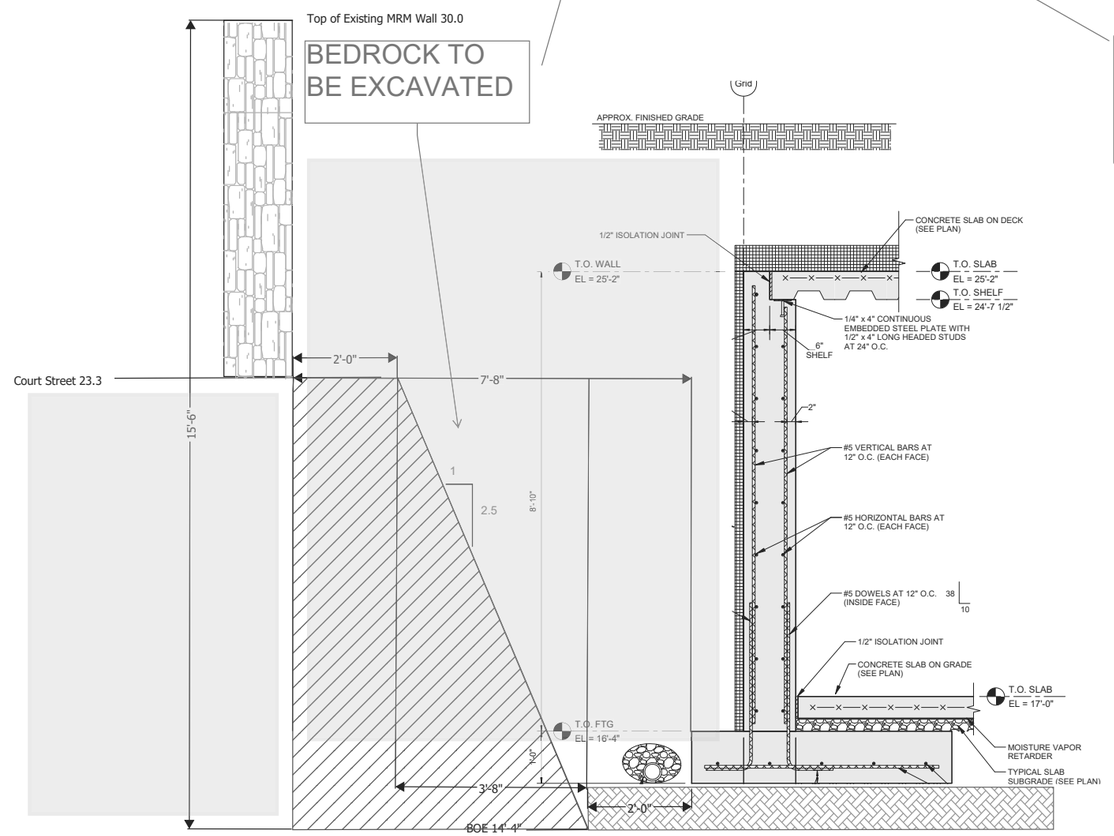
REVISIONS

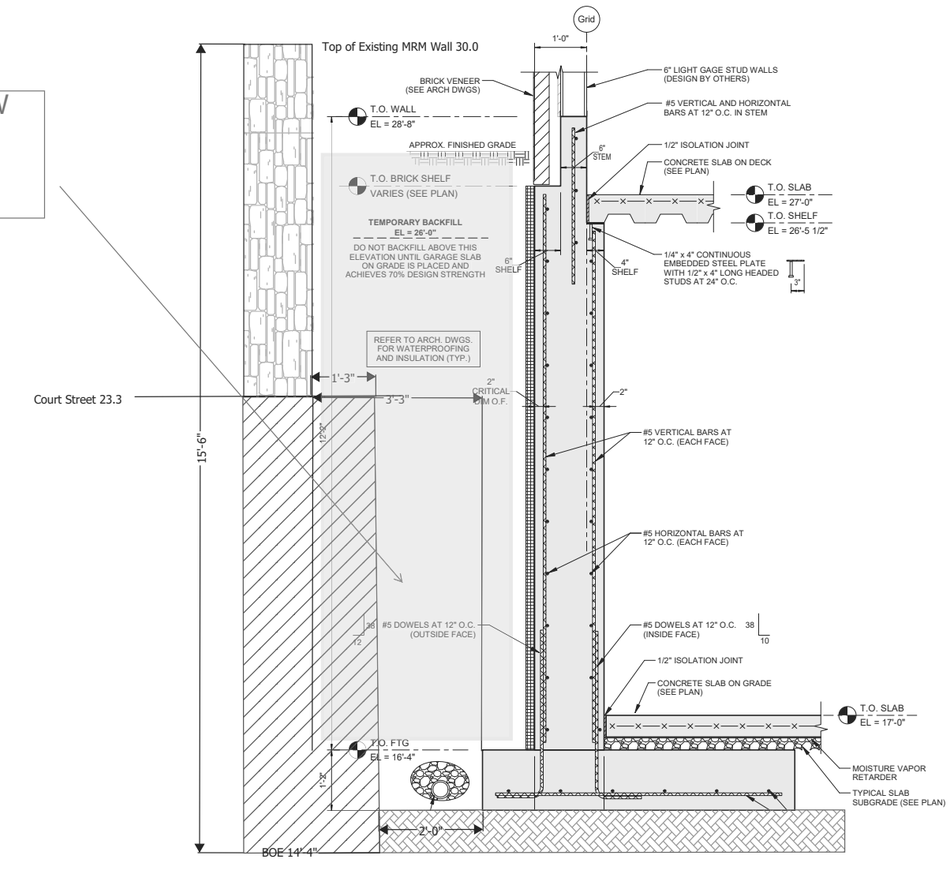
SCALE: 1" = 20' DECEMBER 2020

UTILITY PLAN

C5







Foundation sections vs. Existing wall conditions

93 Pleasant Street - Portsmouth, NH

SEVERINO TRUCKING CO. INC.
EXCAVATION CONTRACTOR
P.O. Box 202
512 Raymond Road
Candia, NH 03034
Office: 603-483-2133
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www.severinotrucking.com