



OPTIMUS STRUCTURAL DESIGN LLC

CONSULTING ENGINEERS

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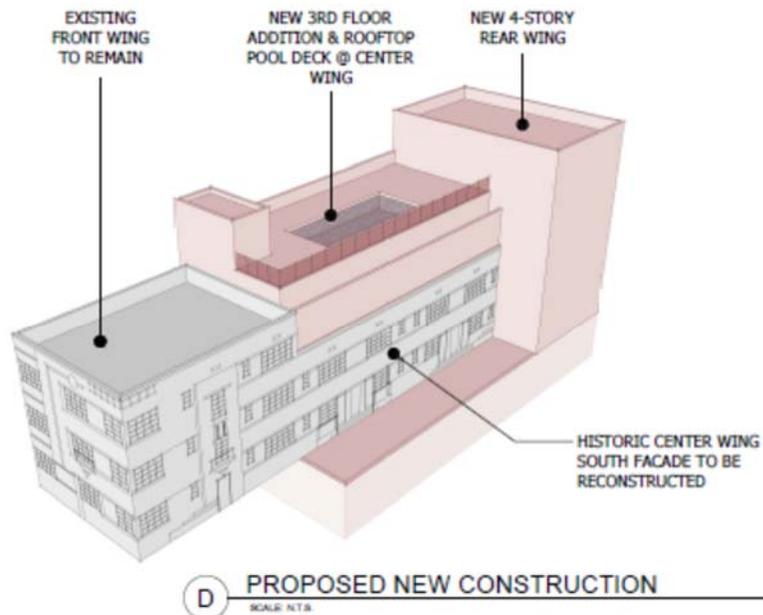
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www.optimusd.com

Essex House

1001 Collins Avenue, Miami Beach, FL 33139

Structural Assessment of the Existing Buildings **Related to the proposed scope of alterations:** **Feasibility and Constructability Study**





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Optimus Structural Design LLC conducted a preliminary structural engineering evaluation related to the proposed scope of alterations and additions at the Essex House project, impacts on the existing building structure. We also identified the areas which require repairs as part of the overall project scope, and assessed the general condition of the existing structure.

This report is based on our visual observations of the existing structural components at the above noted property during our prior site visits in 2017 thru 2018 while working on 40-year recertification of the buildings; review of the existing conditions and available information regarding the project; proposed scope of alterations and additions developed by STA Architects and impacts on the existing structure. The report identifies the potential structural issues and includes proposed repair / bracing details, it also includes proposed scheme for basement construction as well as bracing of the existing façade portion to remain.

1. Existing structural framing description

The existing structures consist of two and tree story Hotel buildings, with 70 living units, and are approximately 29,000 square feet in adjusted area. The elevated floor construction consists of wood joists framing with T&G wood sheathing supported on the interior wood load bearing walls and exterior CMU walls as observed during our site visits and shown on the available existing structural drawings. The exterior walls are 8” unreinforced CMU construction.

The roof framing consists of wood joist with wood sheathing framing, similar to the levels below, based on the existing structural drawings and visual observations.

The ground level appears to be constructed with wood framing and crawl space below in some areas, and 4” / 5” concrete slab on compacted grade in other areas.

Existing foundations were not visible during our site visit. Based on the existing structural drawings, concrete spread footings were used during the original construction.

The exterior walls were observed to be unreinforced CMU construction. The walls at the original construction areas most likely do not have vertical reinforcement, reinforcement at window and door openings, etc.

Stucco at the exterior walls appeared to be in good conditions in most locations but may require some repairs as part of the restoration of the façade. Buildings were observed maintained and painted.

2. Proposed alterations and impacts on existing structures

The scope of the proposed alterations includes demolition of the entire two-story center wing of the North building, preserving the north, west, and south walls of the three-story front wing of this building. A new basement is proposed in the area of demolition, with a new three story structure



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above, which includes reconstruction of the South façade of the center portion. The South Building (Main Building) remains as is, without alterations.

We evaluated the proposed alterations in relation to the existing structural framing which must remain in place as part of the project scope, as well as feasibility of the proposed basement. While the idea of a basement in close proximity to the existing structures may appear to be challenging, in our professional opinion and experience with similar projects, the basement is feasible.

We have worked on similar projects in Miami Beach area, which included basement construction. In some cases basement was very close to the existing buildings and alley ways with utilities. These projects include adjacent Clevelander Hotel, Anglers Hotel, 601 – 685 Washington Hotel, etc. For the Essex House project we considered two options for basement construction – sheet piles with tremie seal, hydrostatic mat slab on augercast piles above the tremie seal and soil mix / injection method with perimeter secant piles (hydrostatic slab on augercast piles similar to the tremie seal option).

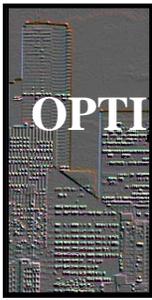
The Anglers Hotel and Clevelander Hotel basements were designed and constructed using perimeter sheet piles and tremie seal, while 601-685 Washington Hotel basement was constructed utilizing the soil mix/injection method. Due to the close proximity to the existing walls of the façade which will be preserved in the Essex House project, we feel that soil mix method may be advantageous to accommodate the propose basement construction and to limit the impact on the existing façade and adjacent buildings. After soil mixing is performed, and secant piles are installed around the perimeter of the basement, the area of the basement can be excavated and work commence on the interior of the basement. The attached drawings represent the schematic concept of basement design and construction.

As an alternative, the basement may be constructed with perimeter sheet piles and tremie seal on the interior, however there are certain items that need to be considered while choosing the basement construction option. Below are just a few points we considered which relate to the basement construction:

- Cost consideration is always an important issue in every construction project. Cost wise the temporary sheet piles and tremie seal is lower than soil mixing. However the new vibration rules to keep it under 0.5 inches per second will most likely require pressing sheets. Permanent press sheets will overcome the cost differential to a soil mix solution.
- Water intrusion on a soil mix is 10 times less than sheet pile / tremie construction, minimizing dewatering during construction.
- The secant pile wall does not have vibrations, which is an advantage over sheet pile driving.
- Dewatering next to existing building affects their foundation performance and may cause settlements.

The above noted items will be further reviewed and evaluated during the structural design stage of the project, and the most effective basement construction solution will be selected. At this point we are intending to proceed with the soil mixing option for the basement design and construction.

As far as bracing of the remaining façade portion which will be preserved at the North building, we suggest similar bracing to what was done at the 601-685 Washington Hotel to preserve the historic



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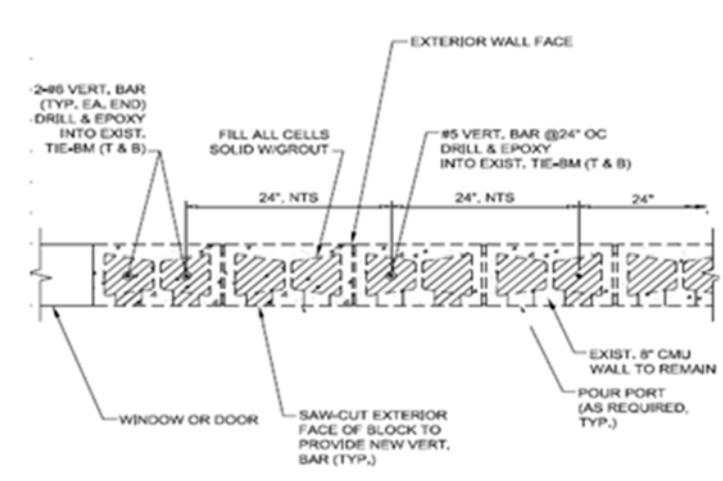
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façade along Washington Avenue. We propose to use braces by Meadow Burke or equal which will be attached to the existing façade at the indicated locations and will brace the façade in place until the interior of the building is reconstructed and façade is re-attached to the interior structural framing, which will serve as a permanent bracing for the façade. The braces should be installed prior to the complete demolition of the interior framing, and since the interior framing is wood framing, it can be easily cut at the proposed brace locations. Braces to be removed after the façade is re-attached to the new interior building framing. We also propose to reinforce existing remaining foundations under the remaining façade with helical piles, to eliminate potential settlement and stabilize foundations during construction. The new structure and the basement will be designed to be supported on pile foundations, to eliminate surcharge loads induced on the existing structures and existing foundations. The proposed façade bracing as well as underpinning of the façade foundations with helical piles are shown on the attached drawings prepared by our office.

The remaining portion of the historic façade will require reinforcement. The existing exterior CMU walls will require reinforcement installed at 24" minimum with additional reinforcement at all corners, intersections and at each window and door opening. All cells will require to be grouted from inside or outside of the wall. Existing window openings will required to be reinforced by installation of two bars in grouted cells at each side of each opening. Some larger openings may require new concrete tie columns. The typical CMU wall retrofit detail is below for reference.



The Main Building of the Essex House project will remain without major alterations or additions, we do not anticipate any significant impact from the new construction on this building.

3. Conclusion

Based on our research, visual observations and evaluation of the proposed scope for the Essex House project, it is our professional opinion that the project construction including the new basement are feasible without detrimental effects on the adjacent structures and the remaining portion of the historic facade. Our group will be involved in structural design of the project as well as the inspections during



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the construction phase of the project. We have worked on quite a few projects in Miami Beach which included historic preservation as part of the project scope. Some of these projects are Clevelander Hotel, 601-685 Washington Hotel, National Hotel, 10th Street Auditorium and Beach Patrol Headquarters, 418 Meridian Hotel (Urbanica), Lincoln Theatre (now H&M).

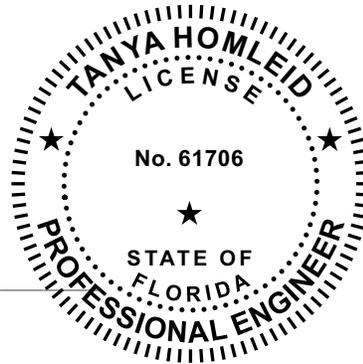
The conclusions and recommendations of this report are based on Optimus Structural Design LLC interpretation of the existing conditions at the time of writing. As a routine matter, in order to avoid possible misunderstanding, nothing in this report should be construed directly or indirectly as a guarantee for any portion of the structure.

To the best of our knowledge and ability, this report represents an accurate appraisal of the present condition of the building based upon careful evaluation of observed conditions, to the extent reasonably possible.

We trust that this report is responsive to your needs. Should you have any questions regarding the report contents, please feel free to contact this office at any time.

Respectfully submitted,

Optimus Structural Design LLC



SIGNED: _____
Tanya Homleid, P.E.

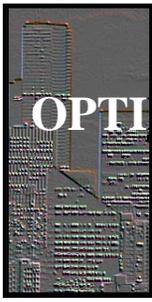
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Tanya Homleid, State of Florida, Professional Engineer, License No. 61706.
This item has been digitally signed and sealed by Tanya Homleid, PE.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.
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Reference #1 – Clevelander Hotel Basement during construction





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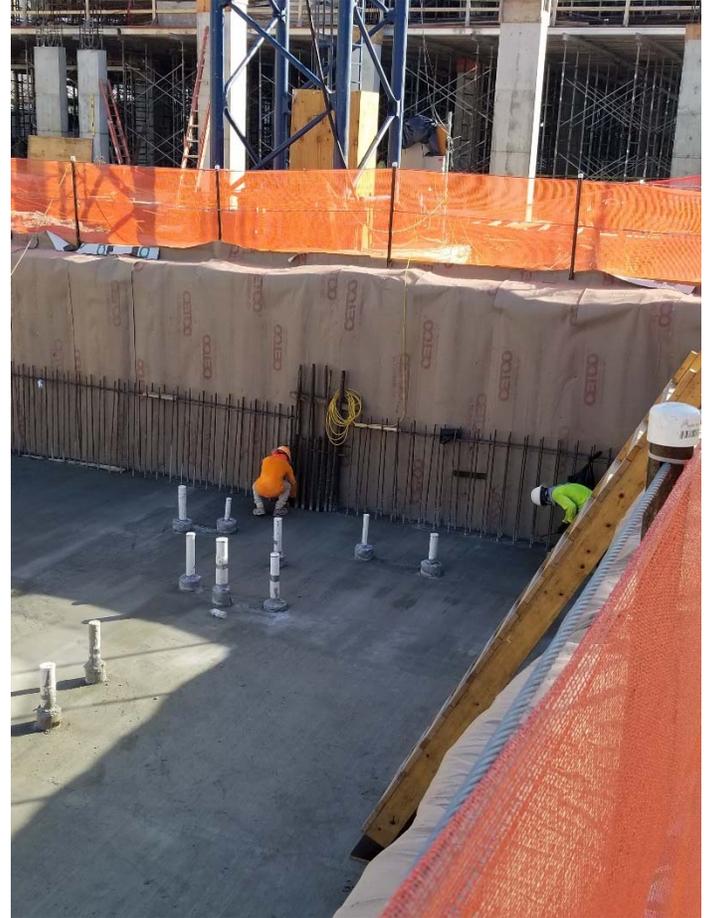
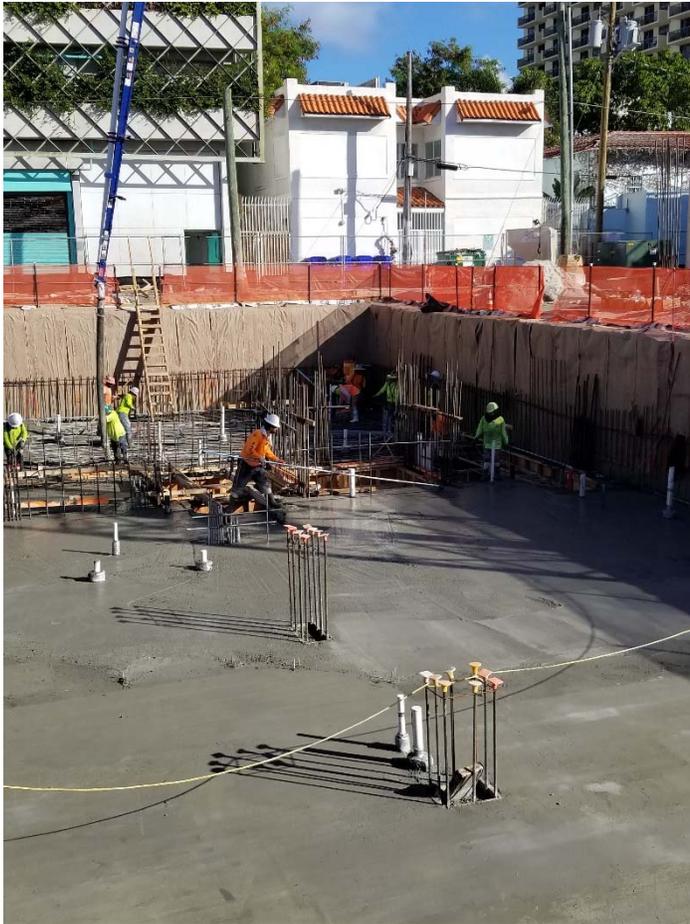
CONSULTING ENGINEERS

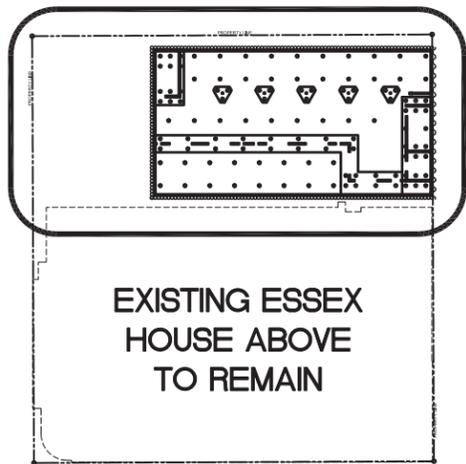
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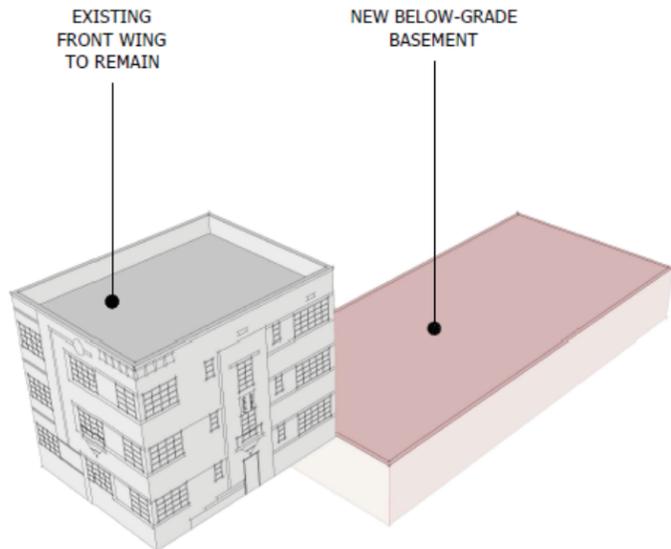
Reference #2 – 601-685 Washington Hotel Basement during construction





CLEVELANDER SITE
(FOR REFERENCE)

EXISTING ESSEX HOUSE ABOVE TO REMAIN



PROPOSED BASEMENT CONSTRUCTION
SCALE: N.T.S.



PROPOSED TEMPORARY STEEL SHEET PILES ALONG EAST SIDE

PROPOSED SECANT PILE SYSTEM AROUND 3 SIDES OF BASEMENT

PROPERTY LINE

PROPOSED SECANT PILE SYSTEM AROUND 3 SIDES OF BASEMENT

8" CONCRETE RETAINING WALL ALL AROUND

TYP. AUGER TENSION PILES

+/-36" THICKENED MAT @ PILEGROUPS UNDER COLUMNS/WALLS

+/-24" CONCRETE MAT

EXISTING ESSEX HOUSE ABOVE TO REMAIN

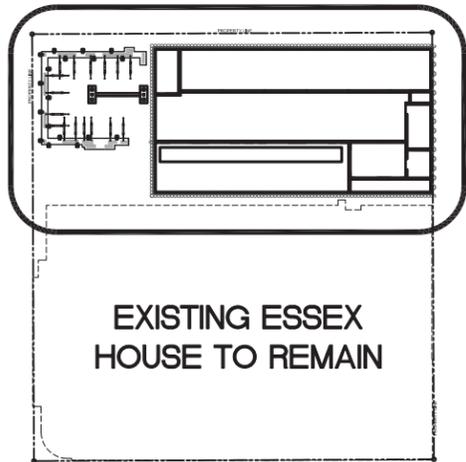
BASEMENT PLAN

SCALE: 3/32"=1'-0"

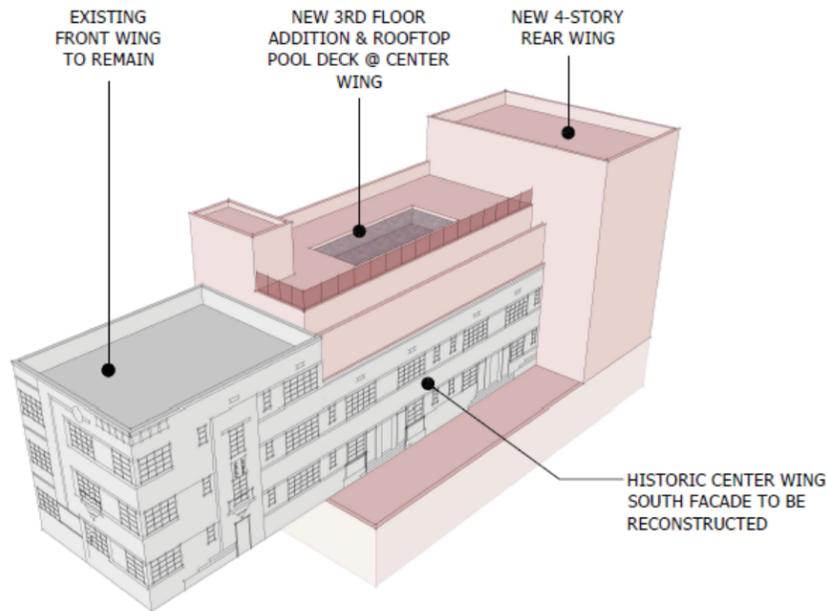
SKETCH No:
SKS-A

PROJECT No:
PROJECT NAME: **ESSEX HOUSE**
SKETCH TITLE:
DATE:
SCALE:

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CLEVELANDER SITE
(FOR REFERENCE)



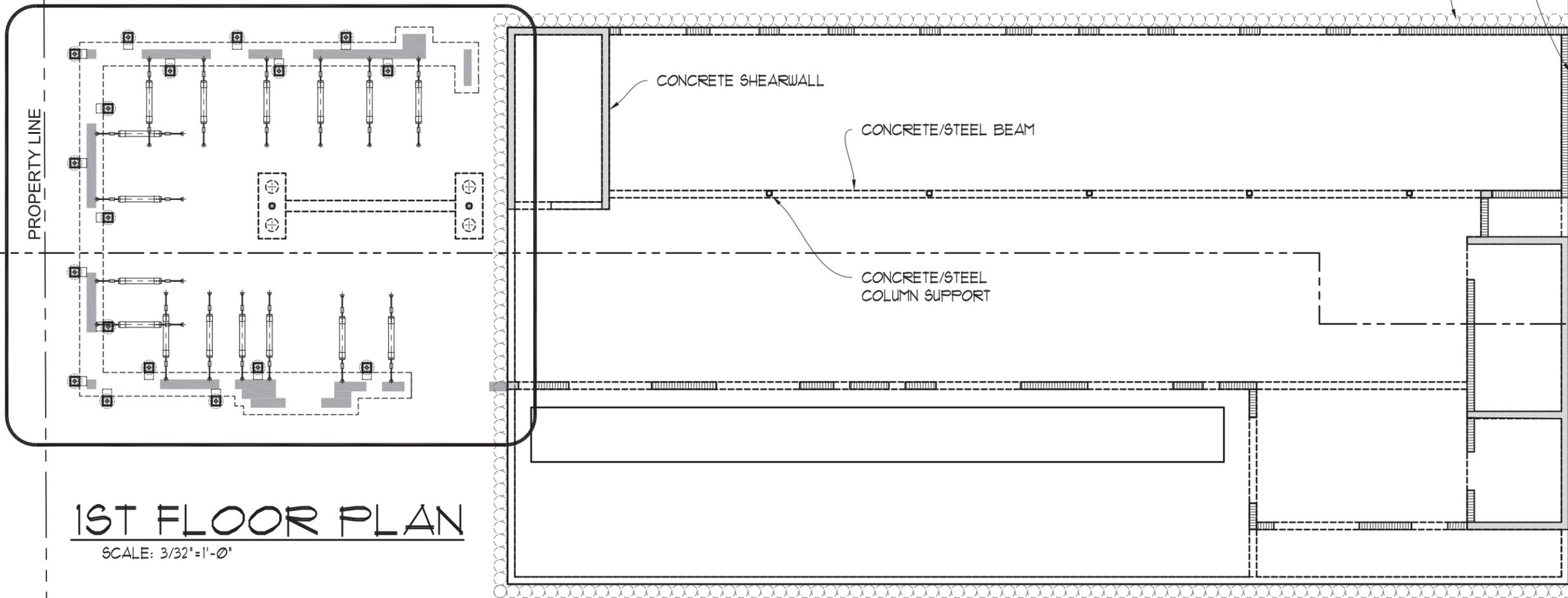
D PROPOSED NEW CONSTRUCTION
SCALE: N.T.S.

PROPOSED TEMPORARY STEEL SHEET PILES BELOW GRADE ALONG EAST SIDE

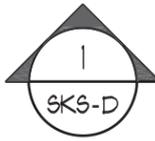
PROPOSED SECANT FILE SYSTEM BELOW GRADE AROUND 3 SIDES OF BASEMENT



SEE SKS-C FOR ENLARGED PLAN



1ST FLOOR PLAN
SCALE: 3/32" = 1'-0"



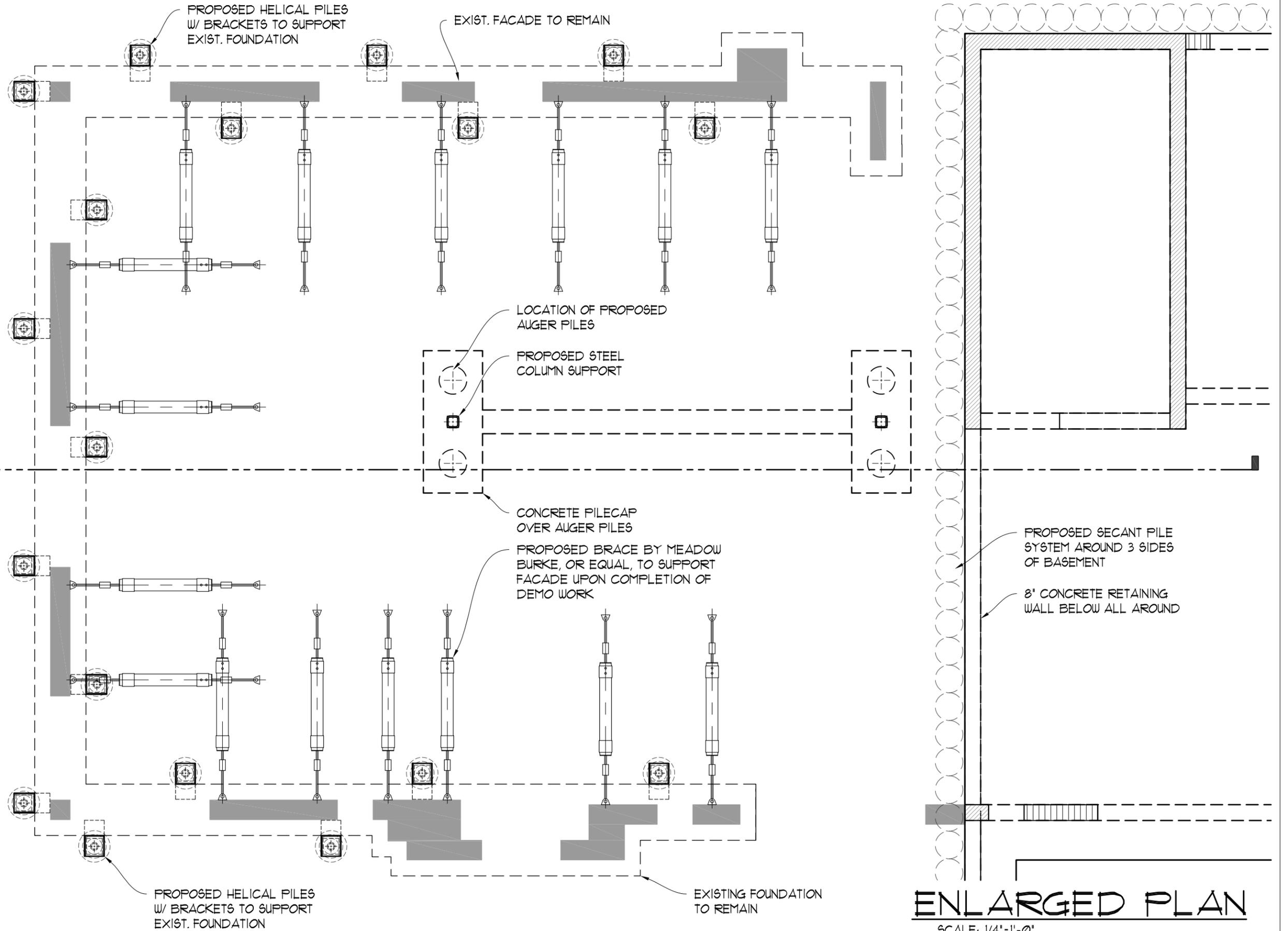
SKETCH No:
SKS-B

PROJECT No:
PROJECT NAME: **ESSEX HOUSE**
SKETCH TITLE:
DATE:
SCALE:

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PROPERTY LINE



ENLARGED PLAN
SCALE: 1/4"=1'-0"

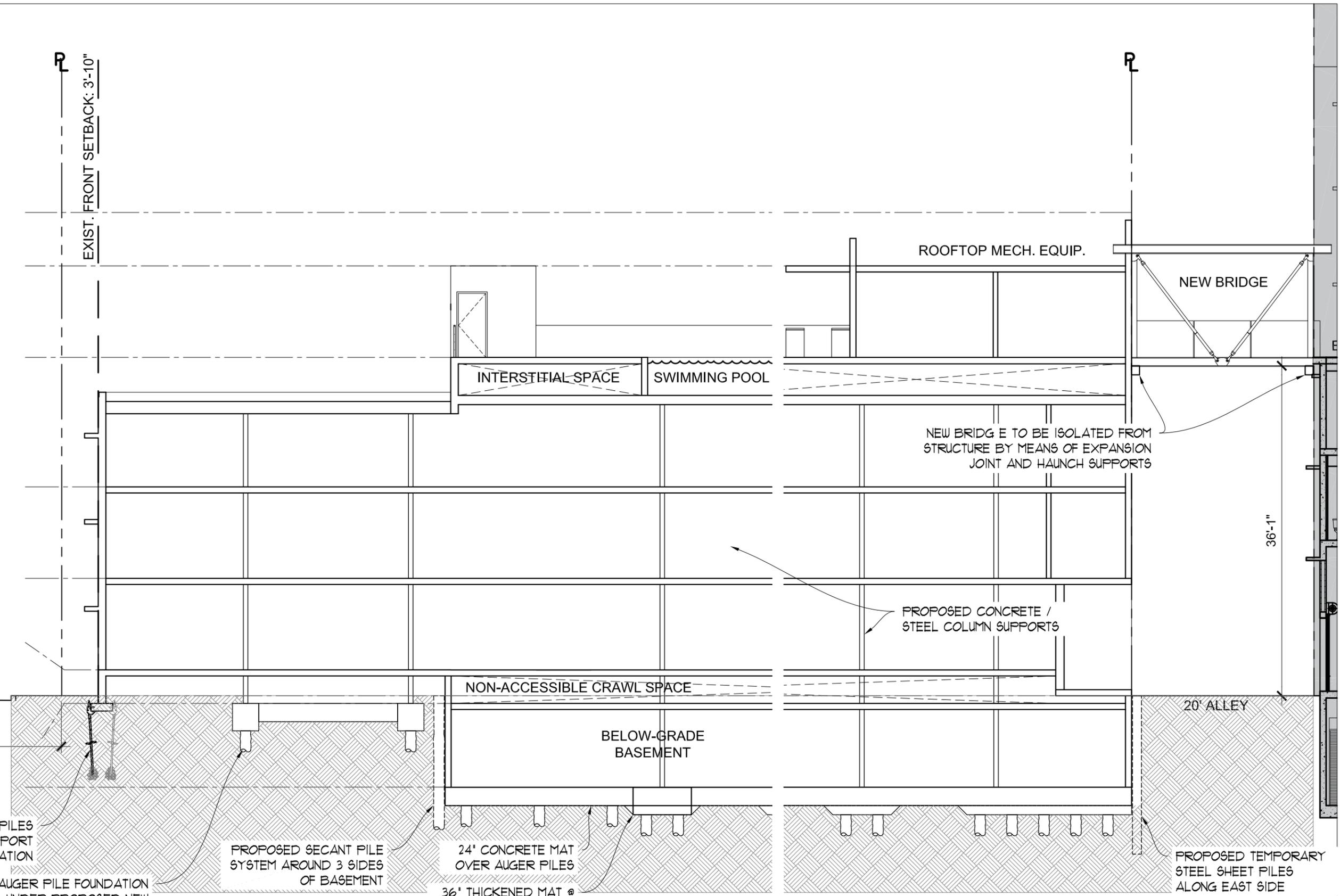
SKETCH No:
SKS-C

PROJECT No:
PROJECT NAME: **ESSEX HOUSE**
SKETCH TITLE:
DATE:
SCALE:

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- ◆ MAX. ROOF HEIGHT
EL. 50'-0" (+59.0' NGVD)
- ◆ T.O. ROOF LEVEL
EL. 44'-2" (+53.2' NGVD)
- ◆ T.O. FOURTH LEVEL
EL. 34'-2" (+43.2' NGVD)
- ◆ T.O. THIRD LEVEL
EL. 20'-0" (+29.0' NGVD)
- ◆ T.O. SECOND LEVEL
EL. 10'-0" (+19.0' NGVD)
- ◆ T.O. GROUND FL / DFE
EL. 0'-0" (+9.0' NGVD)
- ◆ T.O. GRADE
EL. -2'-10" (+6.1' NGVD)
- ◆ T.O. BASEMENT CLG. SLAB
EL. -3'-8" (+5.3' NGVD)
- ◆ T.O. BASEMENT FIN. FLR.
EL. -12'-10" (-3.9' NGVD)

EXIST. FRONT SETBACK: 3'-10"



PROPOSED HELICAL PILES
W/ BRACKETS TO SUPPORT
EXIST. FOUNDATION

AUGER PILE FOUNDATION
UNDER PROPOSED NEW
COLUMNS

PROPOSED SECANT PILE
SYSTEM AROUND 3 SIDES
OF BASEMENT

24' CONCRETE MAT
OVER AUGER PILES
36' THICKENED MAT @
PILEGROUPS UNDER
COLUMNS/SHEARWALLS

PROPOSED TEMPORARY
STEEL SHEET PILES
ALONG EAST SIDE

LONGITUDINAL SECTION

SCALE: 1/4" = 1'-0"

SKETCH No:
SKS-D

PROJECT No:
PROJECT NAME: **ESSEX HOUSE**
SKETCH TITLE:
DATE:
SCALE:

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