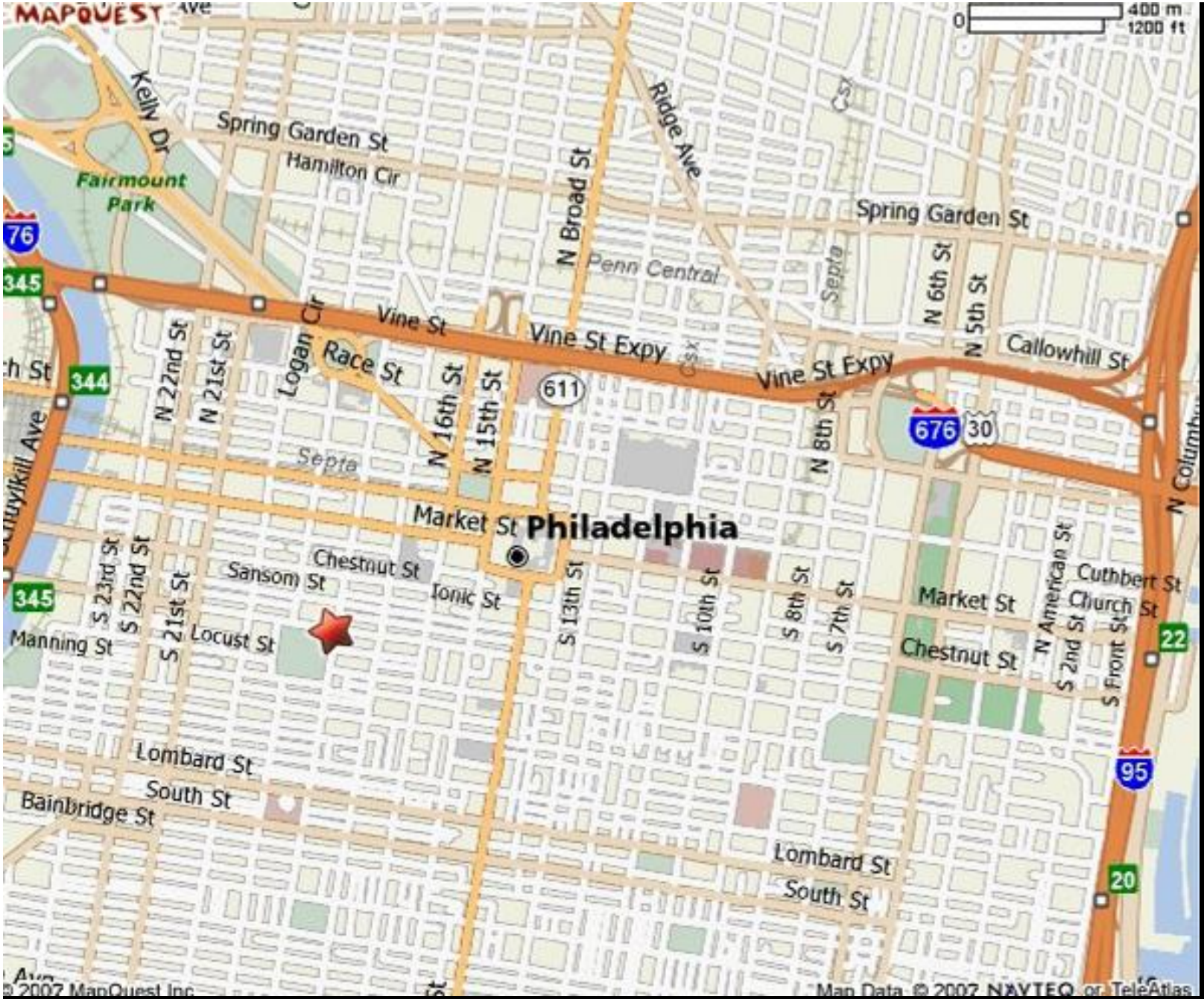
RITTENHOUSE CLUB FAÇADE TEMPORARY LATERAL SUPPORT

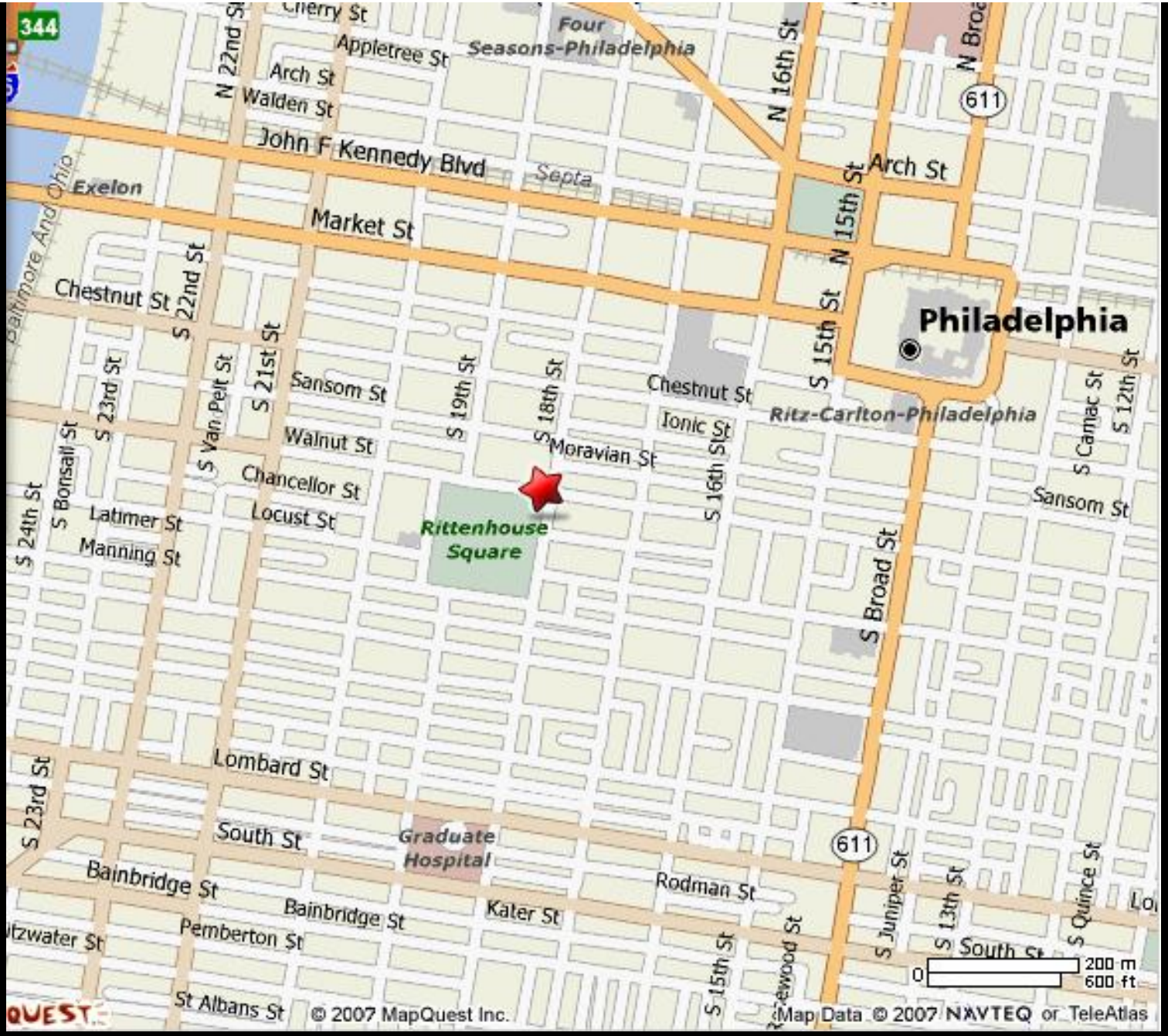
10 RITTENHOUSE SQUARE, PHILADELPHIA, PA

Sergio K. Londono

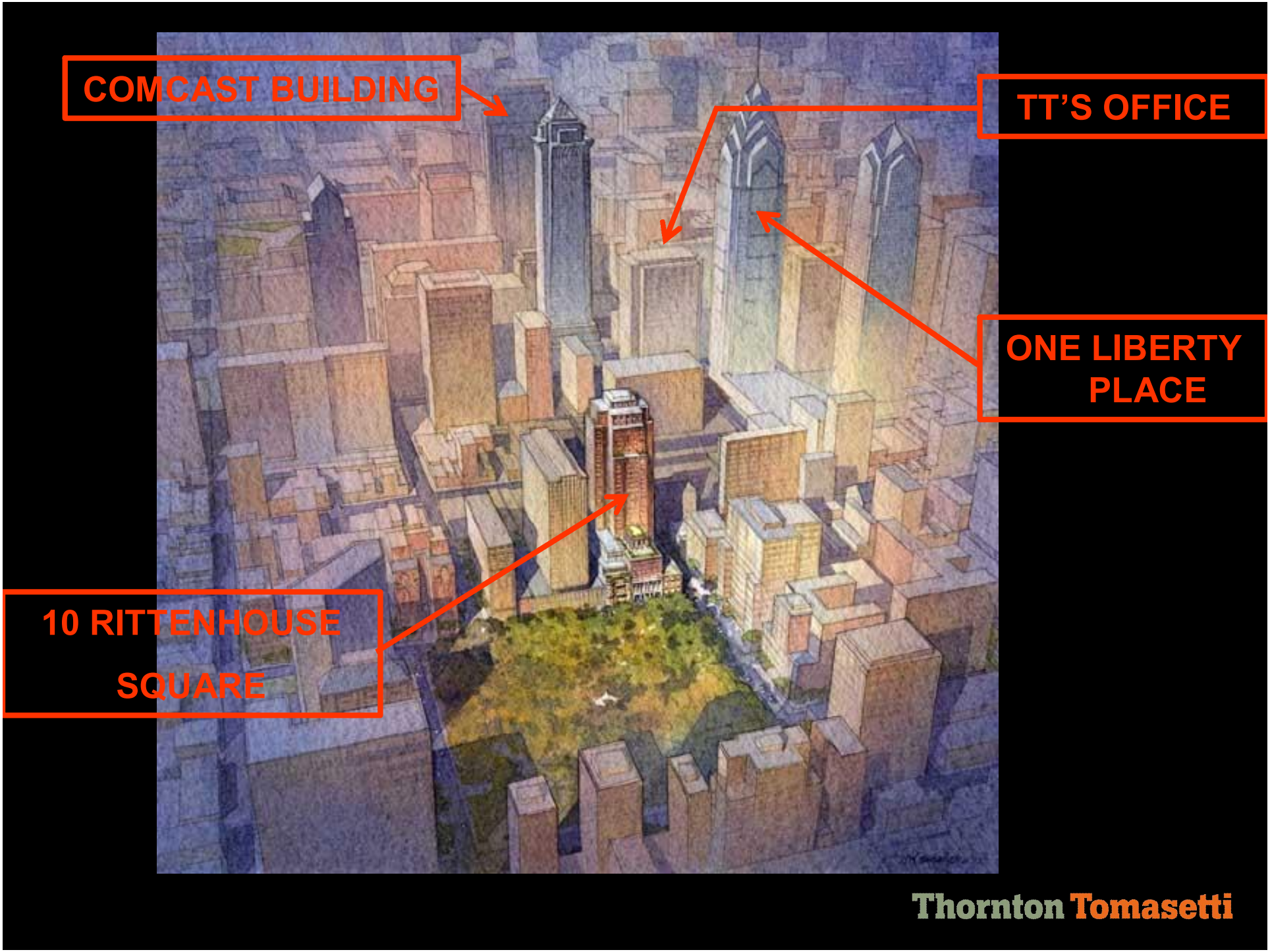
Thornton Tomasetti



Thornton Tomasetti



Thornton Tomasetti


COMCAST BUILDING
TT'S OFFICE
ONE LIBERTY PLACE
10 RITTENHOUSE SQUARE
Thornton Tomasetti

10 RITTENHOUSE SQUARE PROJECT

PHILADELPHIA, PA

Thornton Tomasetti

RITTENHOUSE CLUB FAÇADE TEMPORARY LATERAL SUPPORT PROJECT

TEAM MEMBERS

- Owner: Philadelphia Rittenhouse Investors
- Design Architect: Robert A.M. Stern Architects - RAMSA
- Architect of Record: Polatnick Zacharjasz Architects - PZA
- Owner Representative: CB Development
- Structural Engineer: Thornton Tomasetti
- Geotechnical Engineer: McClymont & Rak
- General Contractor: Turner Construction
- Steel Contractor: Berlin Steel

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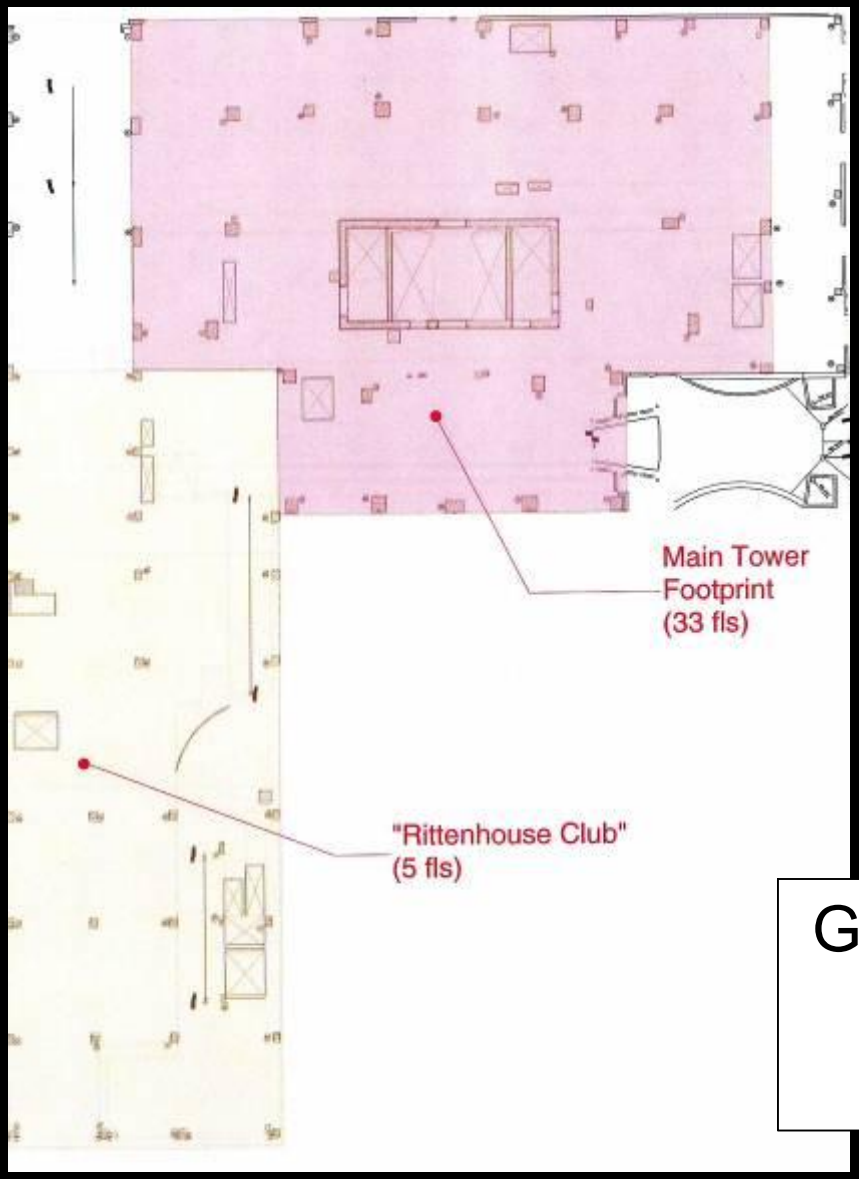
SANSOM STREET



SOUTH 18TH STREET

GENERAL LAYOUT OF 10 RITTENHOUSE SQUARE PROJECT

WALNUT STREET

Thornton Tomasetti

ADJACENT BUILDINGS

VAN RENSSELAER BUILDING

(RETAIL / RESIDENTIAL)

ALISON BUILDING

(RETAIL / RESIDENTIAL)

PARKING

GARAGE

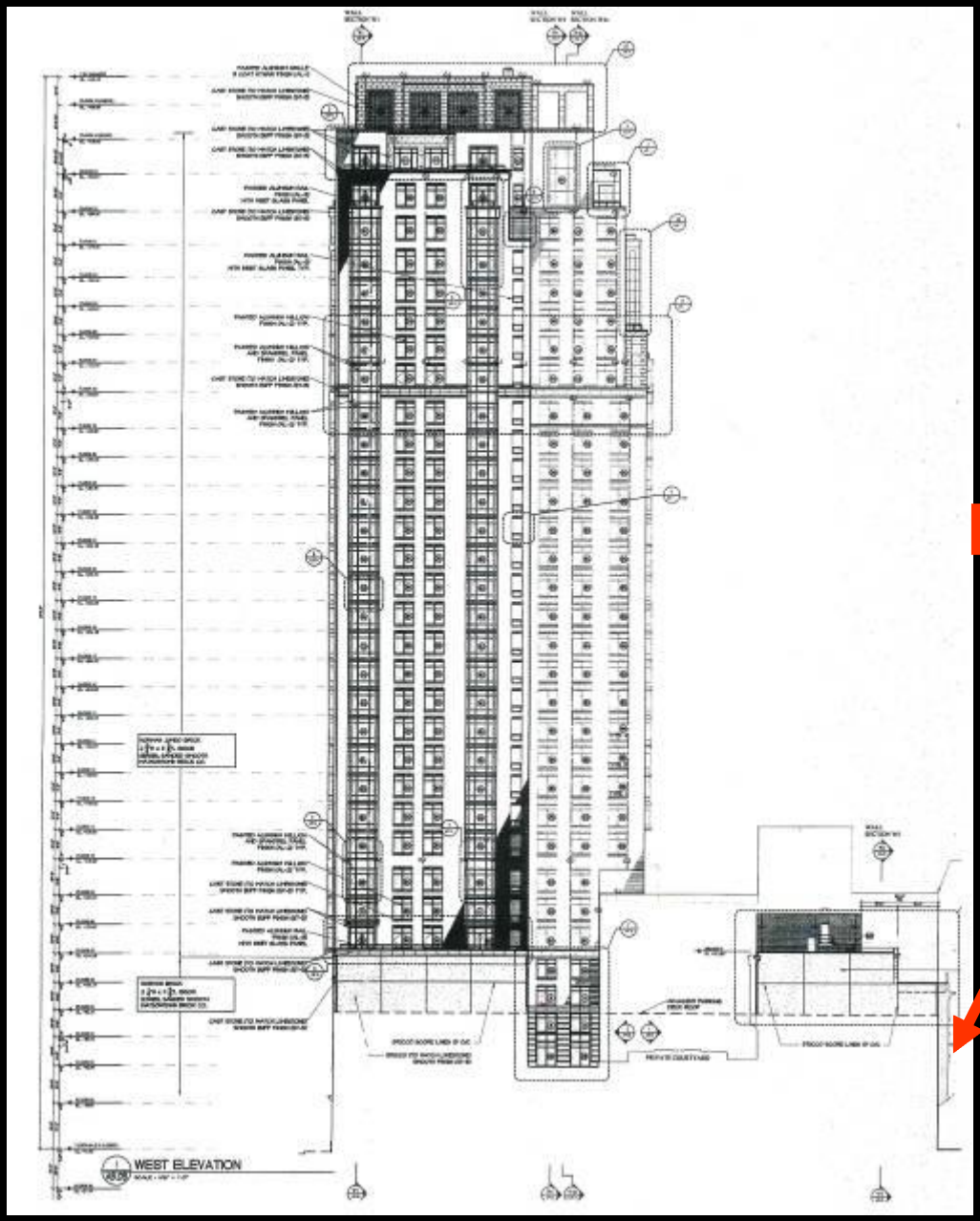
RITTENHOUSE CLUB

Thornton Tomasetti

Thornton Tomasetti

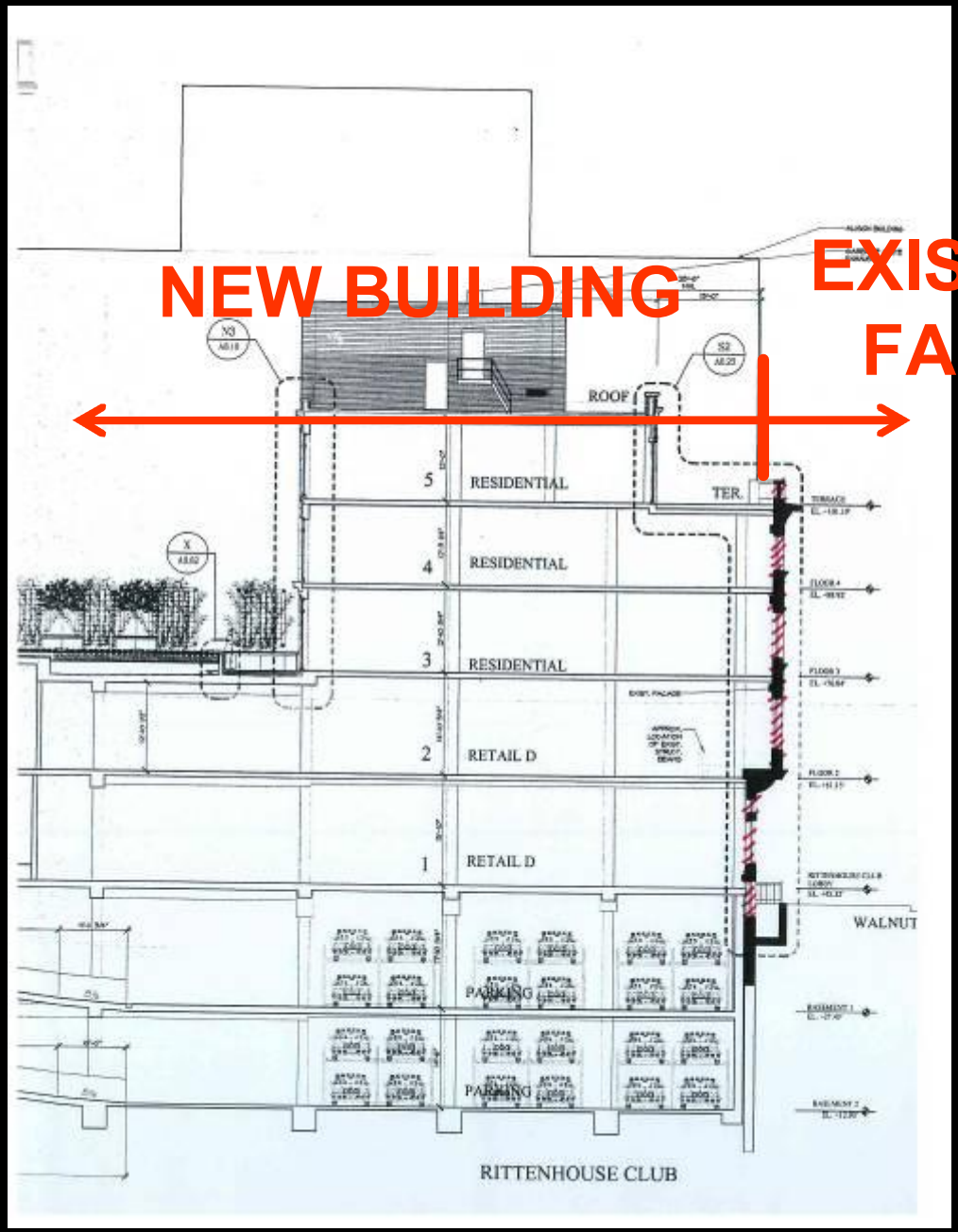
RITTENHOUSE CLUB IN 2003

Thornton Tomasetti



FAÇADE TO BE RETAINED

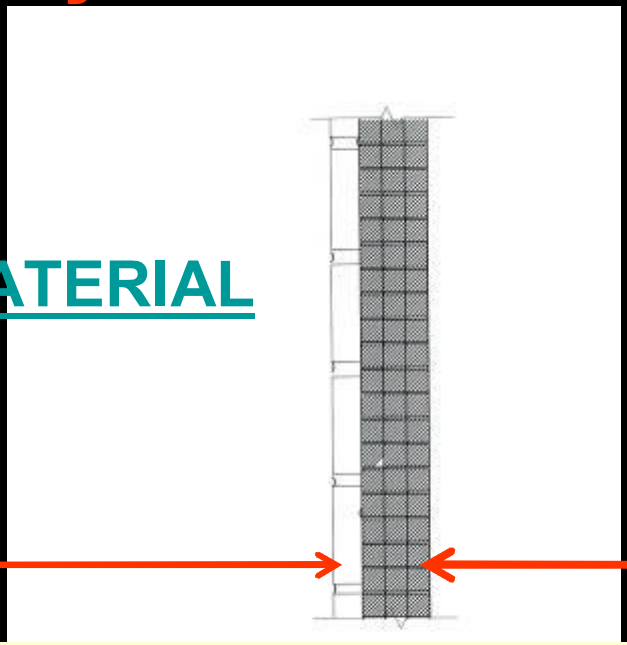
Thornton Tomasetti



Cross Section through new building

Thornton Tomasetti

COMPOSITION OF THE FAÇADE ASSEMBLY



EXPOSED MATERIAL

BACKUP MATERIAL

LIMESTONE

3 SOLID BRICK WYTHES

- SELF SUPPORTED FAÇADE BEARING ON FOUNDATION WALL
- MONOLITHIC CONSTRUCTION
- POCKETS IN BACK OF LIMESTONE WITH BRICKS LAID INSIDE INTERLOCKING THE ASSEMBLY
- A FEW BLIND ANCHORS PLACED APPARENTLY AT RANDOM LOCATIONS

Thornton Tomasetti

GEOMETRY

Thornton Tomasetti

BRACING REQUIREMENT

- Façade structural system was self supported brick wall.
- Floors were wooden joists parallel to the façade.

THEREFORE THERE WOULD BE NO NEED TO PICK UP THE FAÇADE WEIGHT.

ONLY LATERAL BRACING WAS REQUIRED

WHY BRACING MUST GO OUTSIDE

- DIFFICULT TO BUILD BRACING WITHIN EXISTING BUILDING BEHIND
- WOULD HAVE BEEN SUBJECT TO DEMOLITION LOADS
- AVOIDING OBSTRUCTIONS WITH THE NEW BUILDING CONSTRUCTION
- SEEMED EASIER TO INTEGRATE TO NEW BUILDING

ESTABLISHING BRACING SUPPORT POINTS

FLOORS

STONE PIERS

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SUPPORT POINTS ON THE FRONT OF THE FACADE

POINTS OF INTERSECTION BETWEEN STONE PIERS & FLOORS

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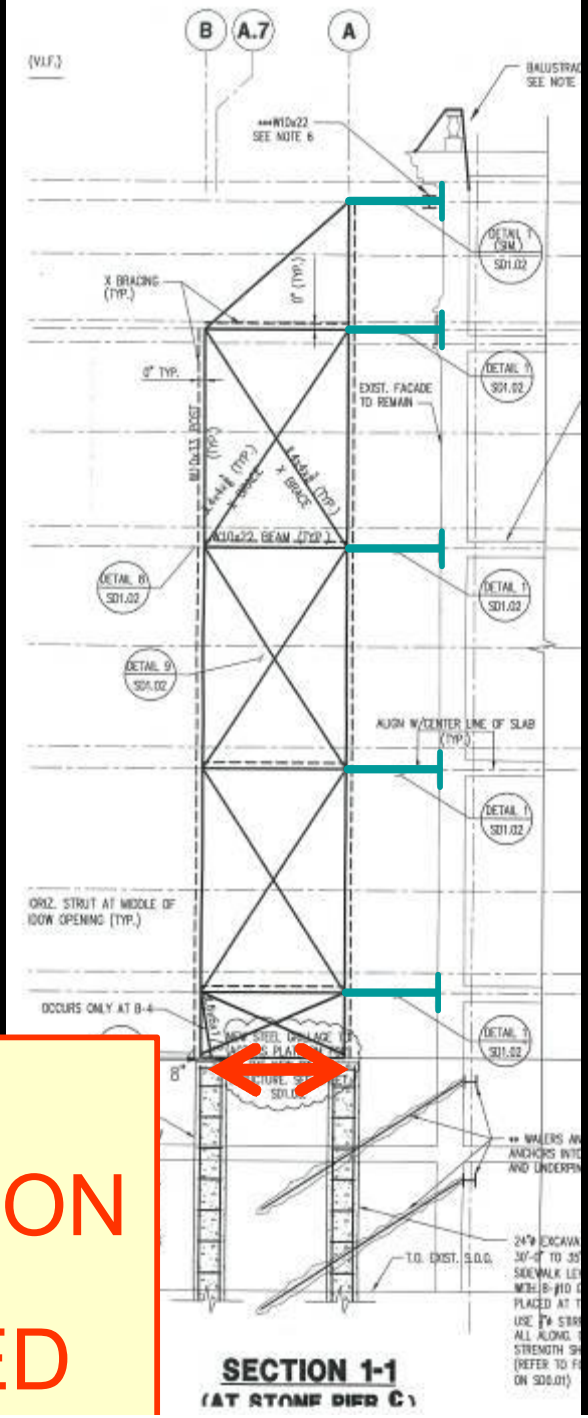
VERTICAL TRUSS



10 FEET WIDE

DEEP FOUNDATION REQUIRED

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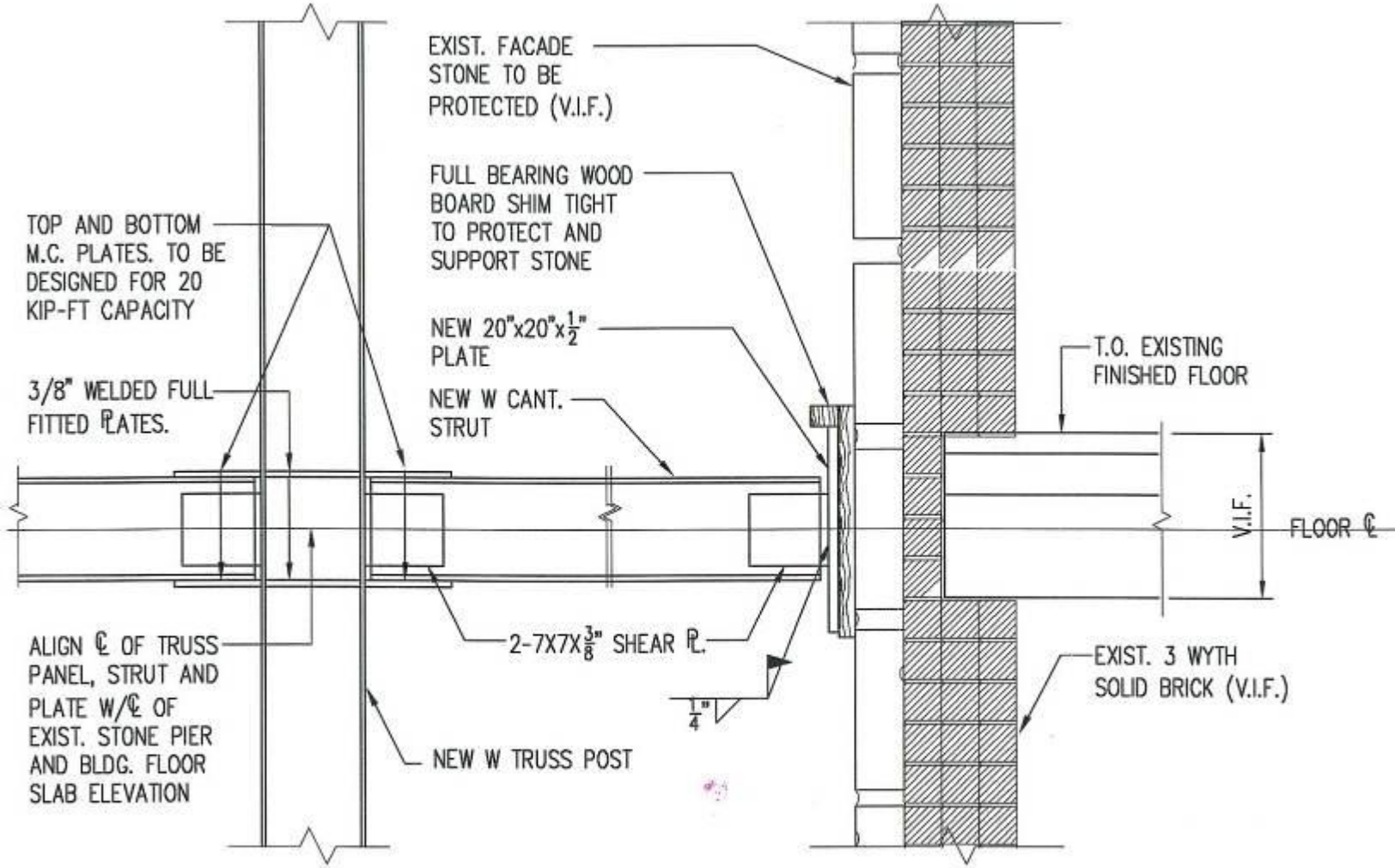

DETAIL 1

SCALE: N.T.S.

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SUPPORT POINTS ON THE BACK OF THE FACADE

- NO DRILLING
- NO PENETRATIONS
- NO HOLES

RESTRICTIONS IMPOSED BY THE HISTORICAL COMMISSION

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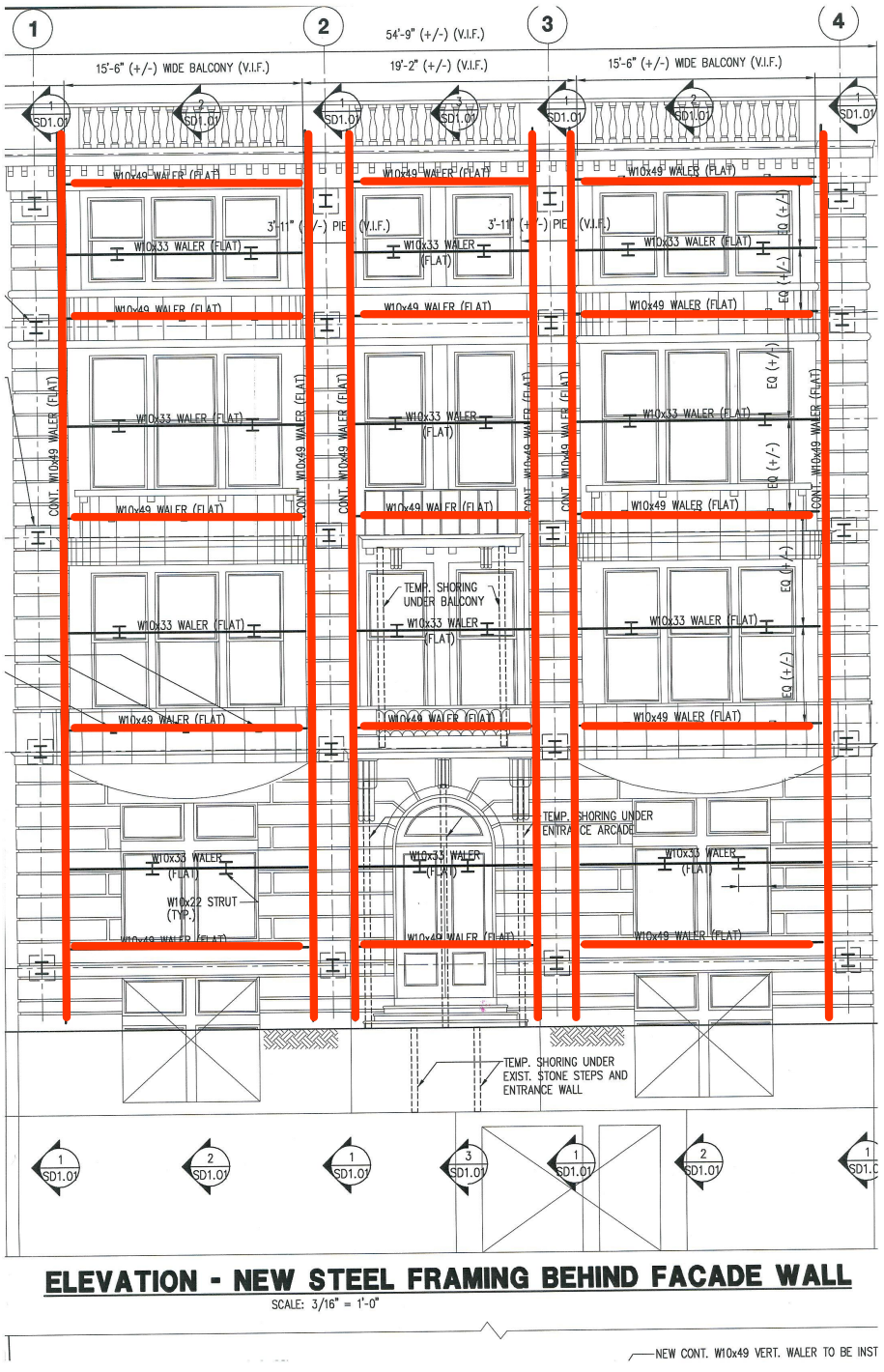

STEEL FRAMING (WALERS) BEHIND THE FACADE

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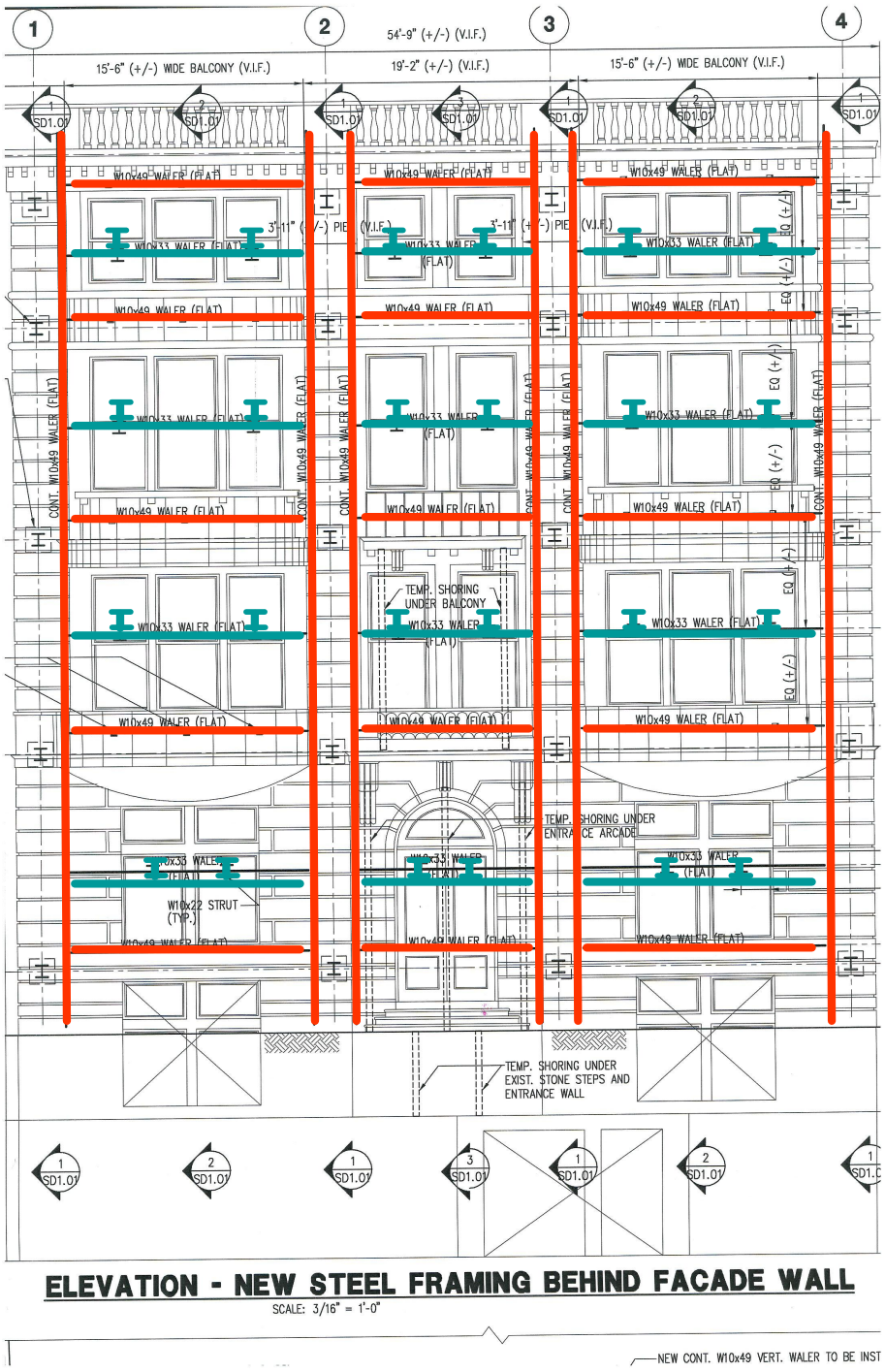

STRUT AND WALER SYSTEM PASSING THROUGH THE WINDOWS TO PICK UP THE STEEL FRAMING BEHIND THE FACADE

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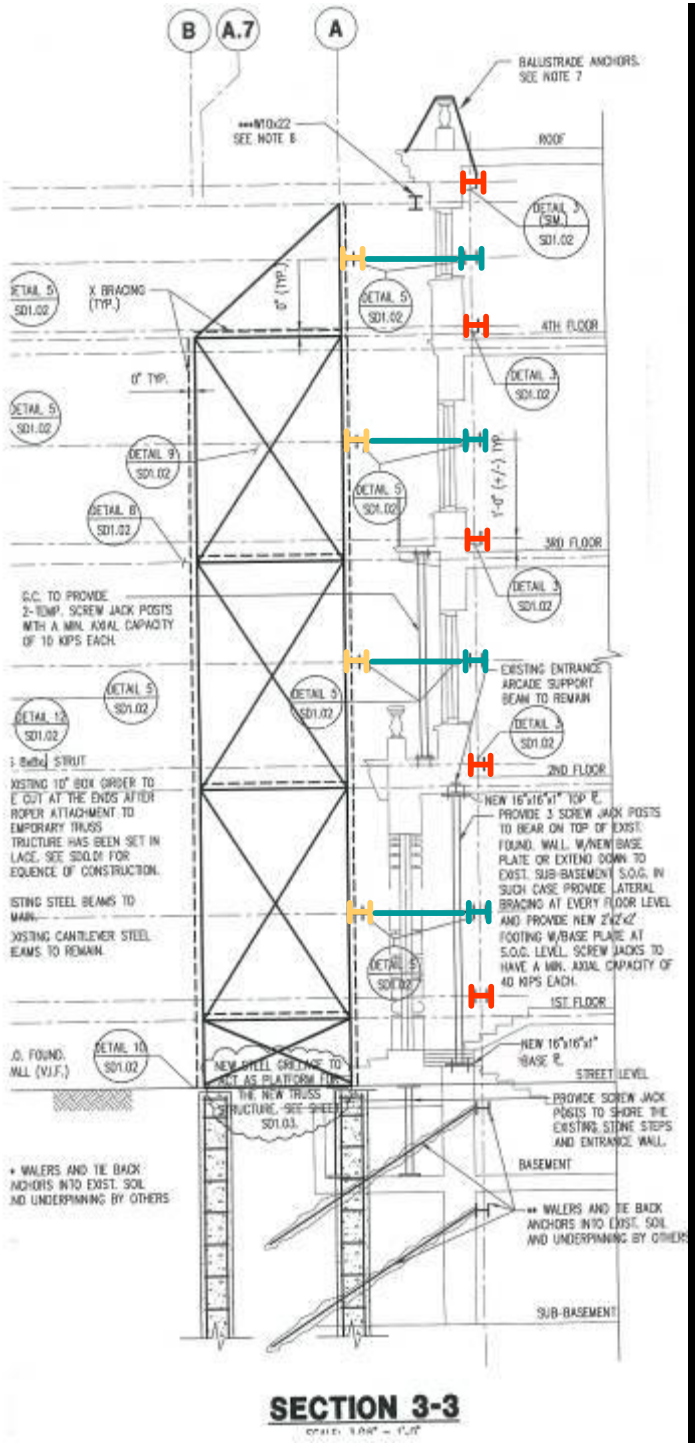
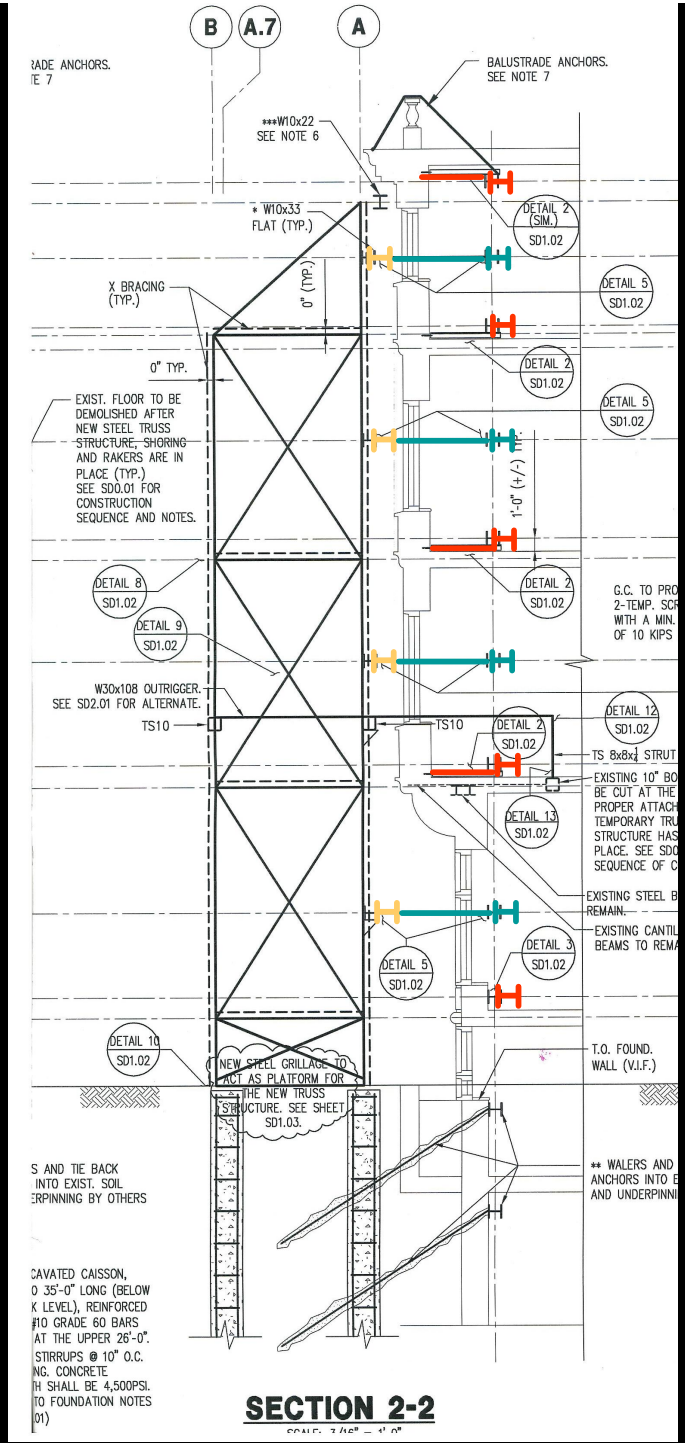
STRUT AND WALER SYSTEM



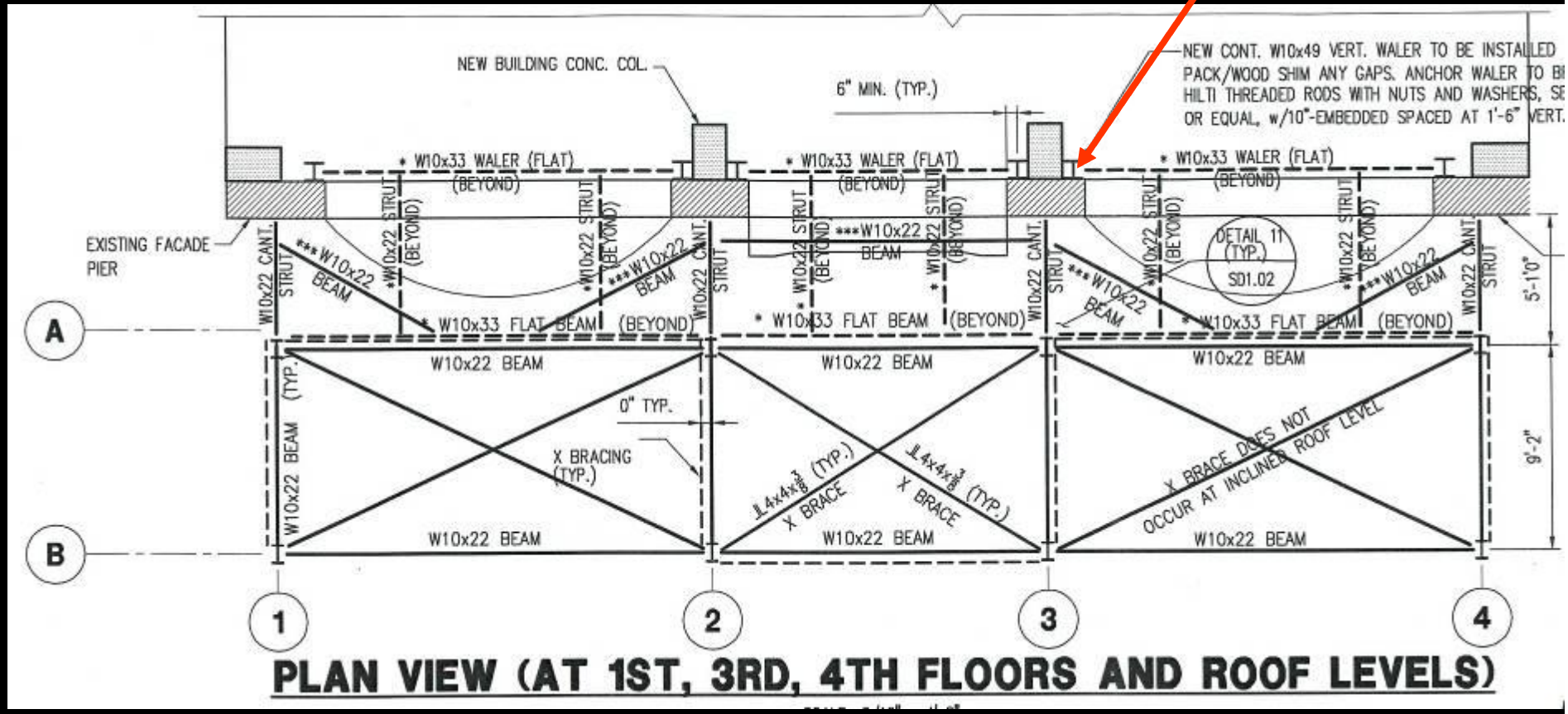
Thornton Tomasetti



STRUT AND WALER SYSTEM IN FRONT OF BALCONIES

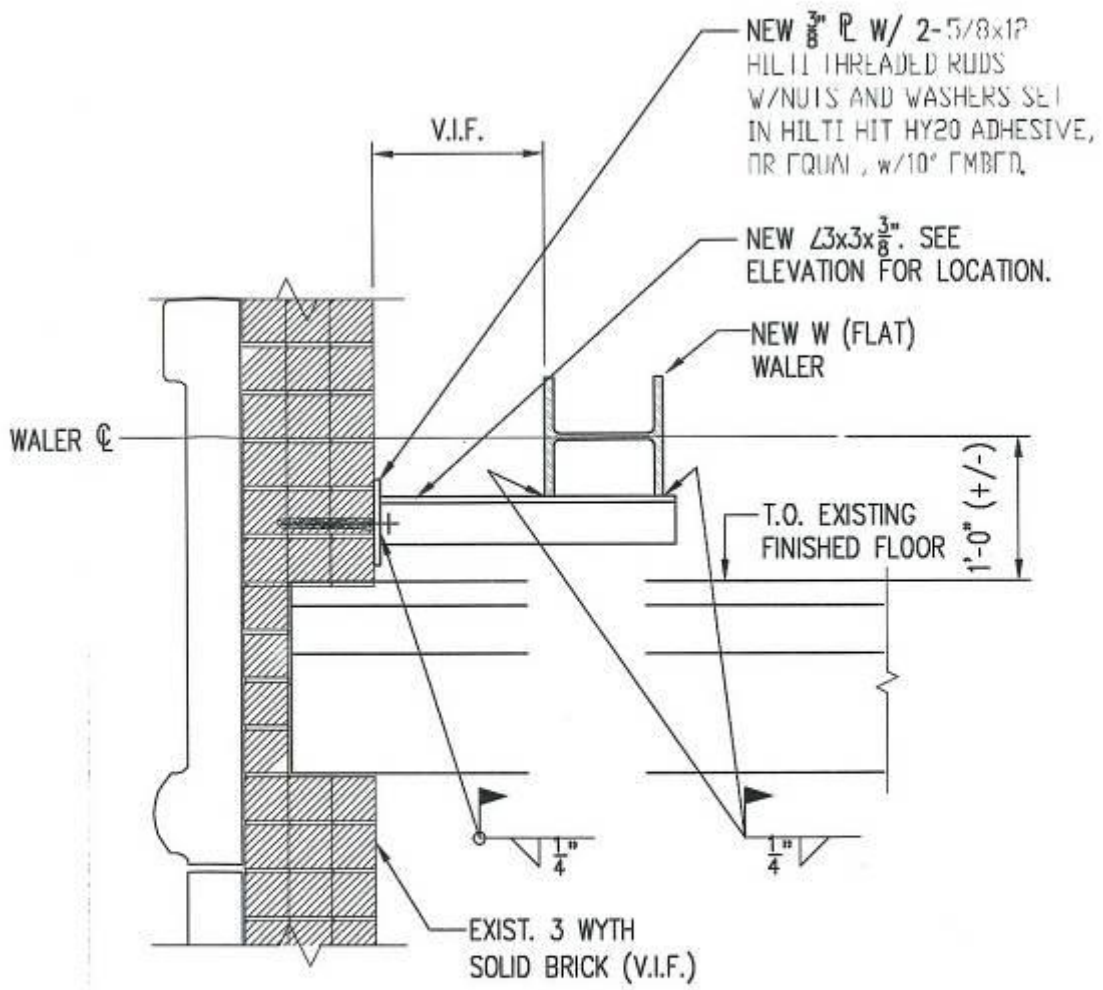
Thornton Tomasetti

WALERS TO BE ATTACHED TO BACK OF FAÇADE WITH HILTI THREADED RODS INSERTED IN BRICK BACKUP 10” EMBED SPACED @ 1’-6” o.c.



PLAN VIEW (AT 1ST, 3RD, 4TH FLOORS AND ROOF LEVELS)

Thornton Tomasetti



DETAIL 2

SCALE: N.T.S.

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BALCONY SUPPORT

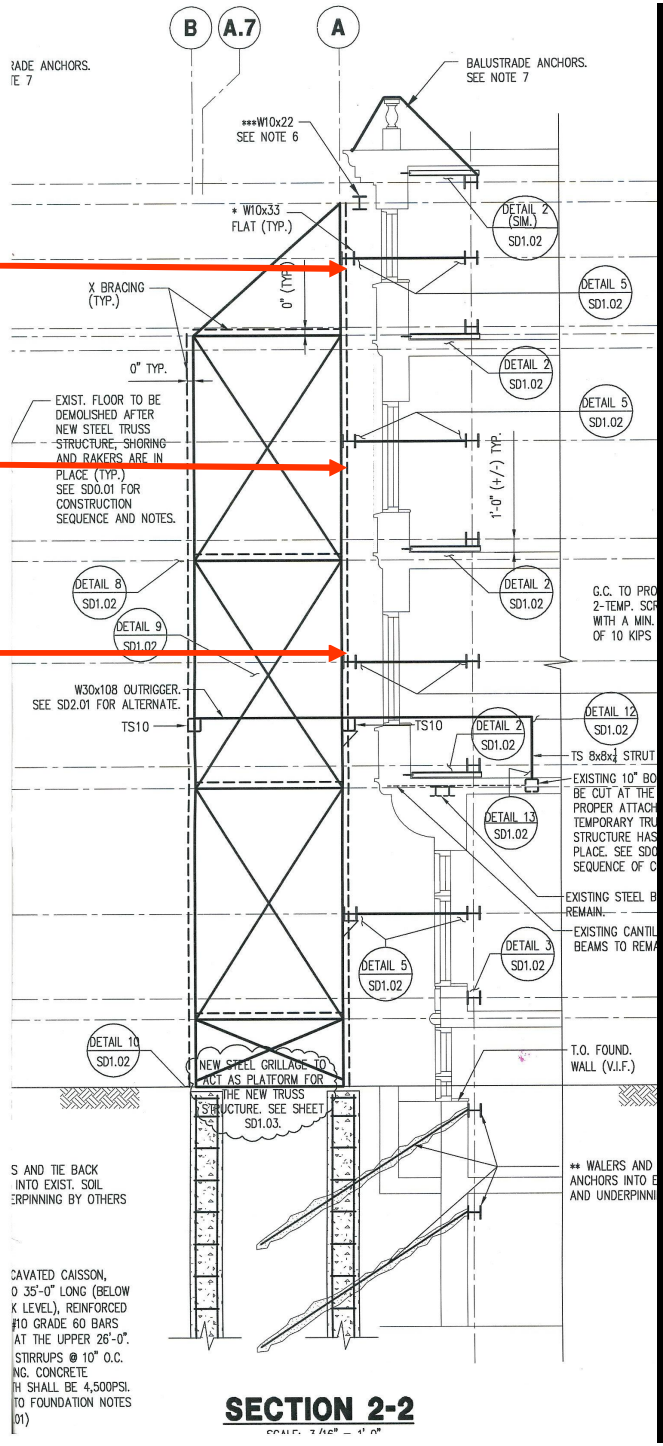
Thornton Tomasetti

Thornton Tomasetti

BAY WINDOW

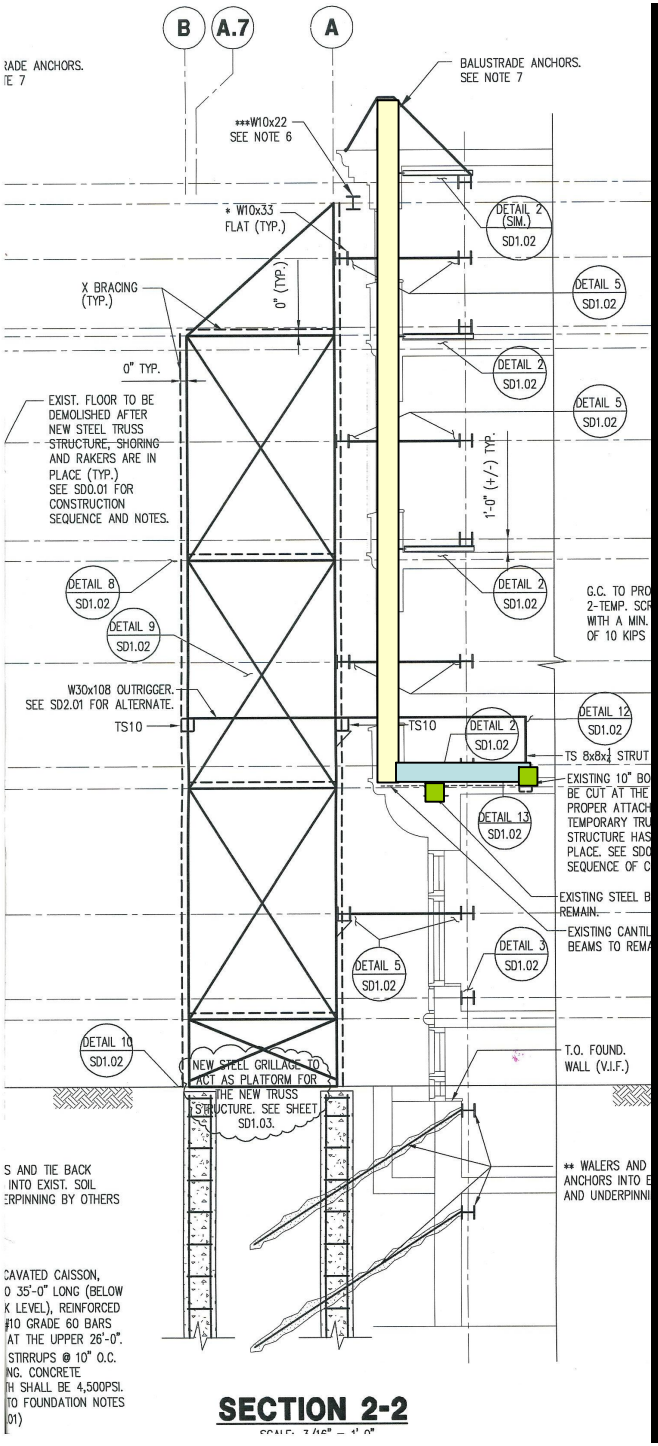
BAY WINDOW

BALCONY



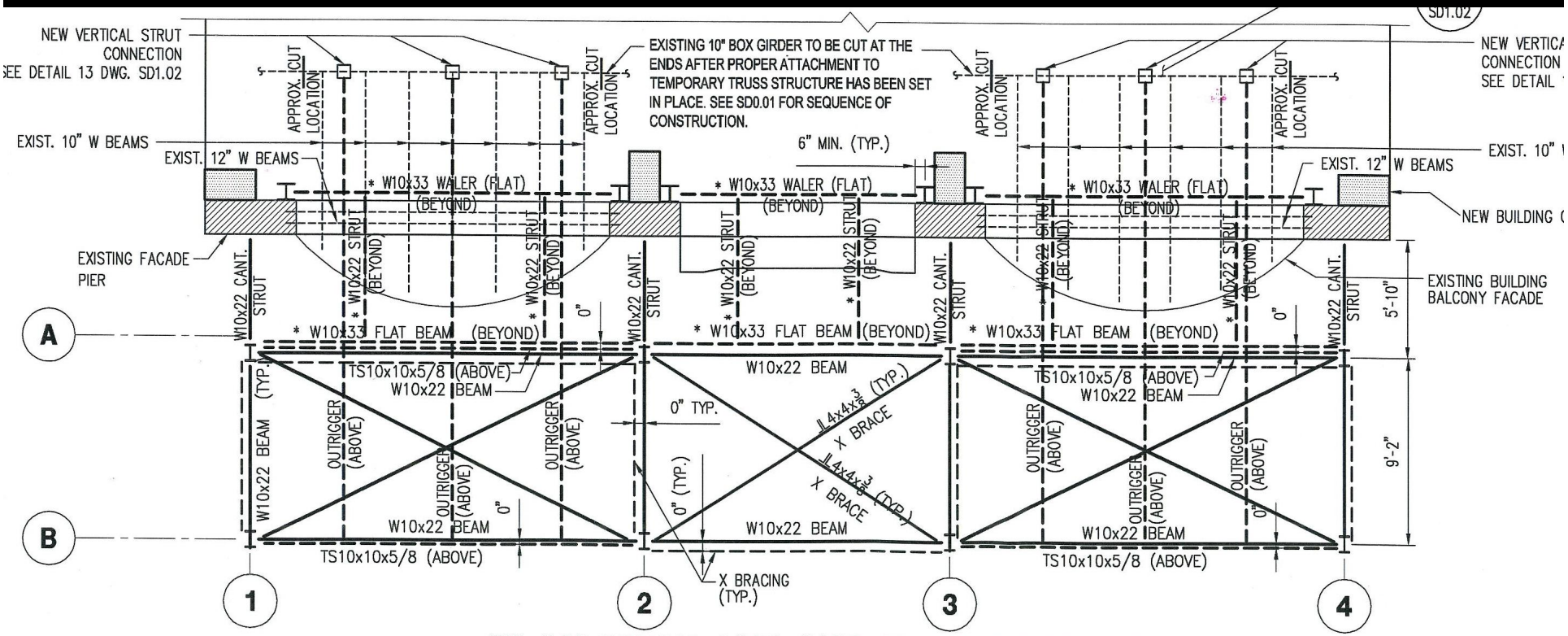
SECTION 2-2

Thornton Tomasetti



SECTION 2-2

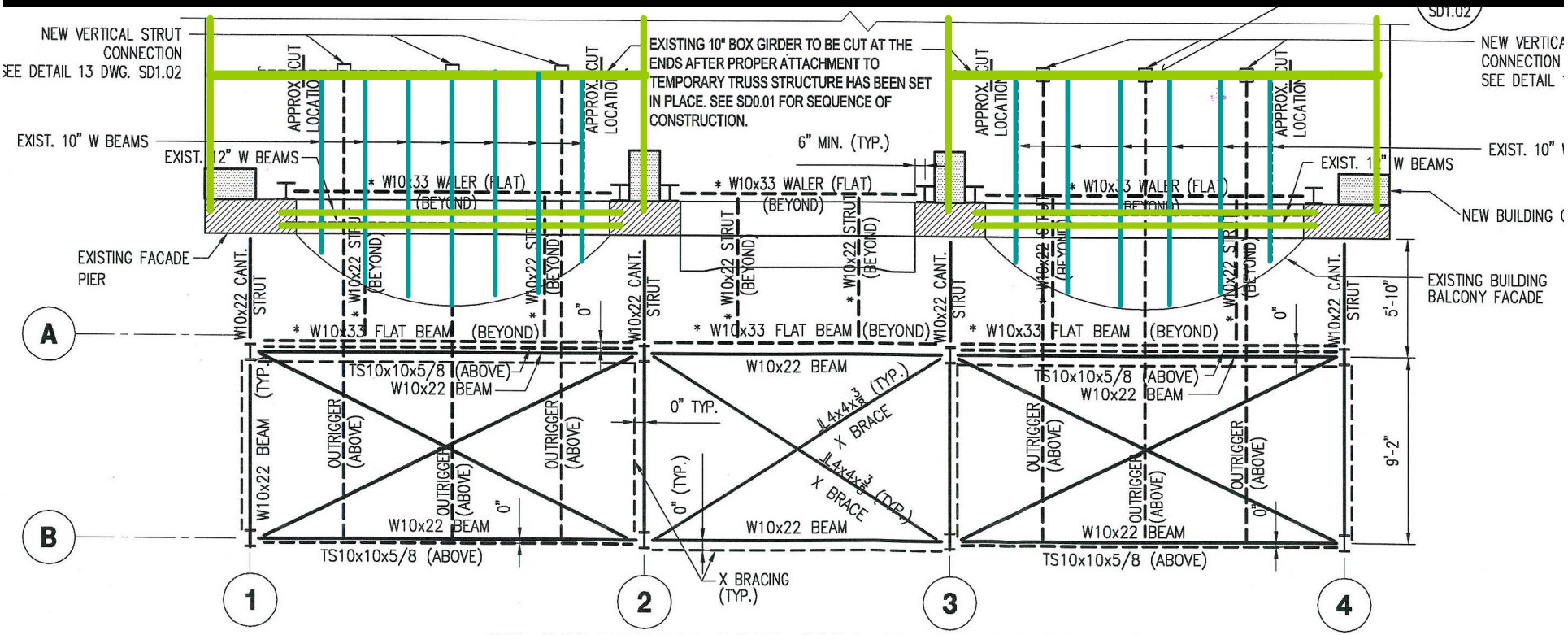
Thornton Tomasetti



PLAN VIEW (AT 2ND FLOOR LEVEL)

SCALE: 3/16" = 1'-0"

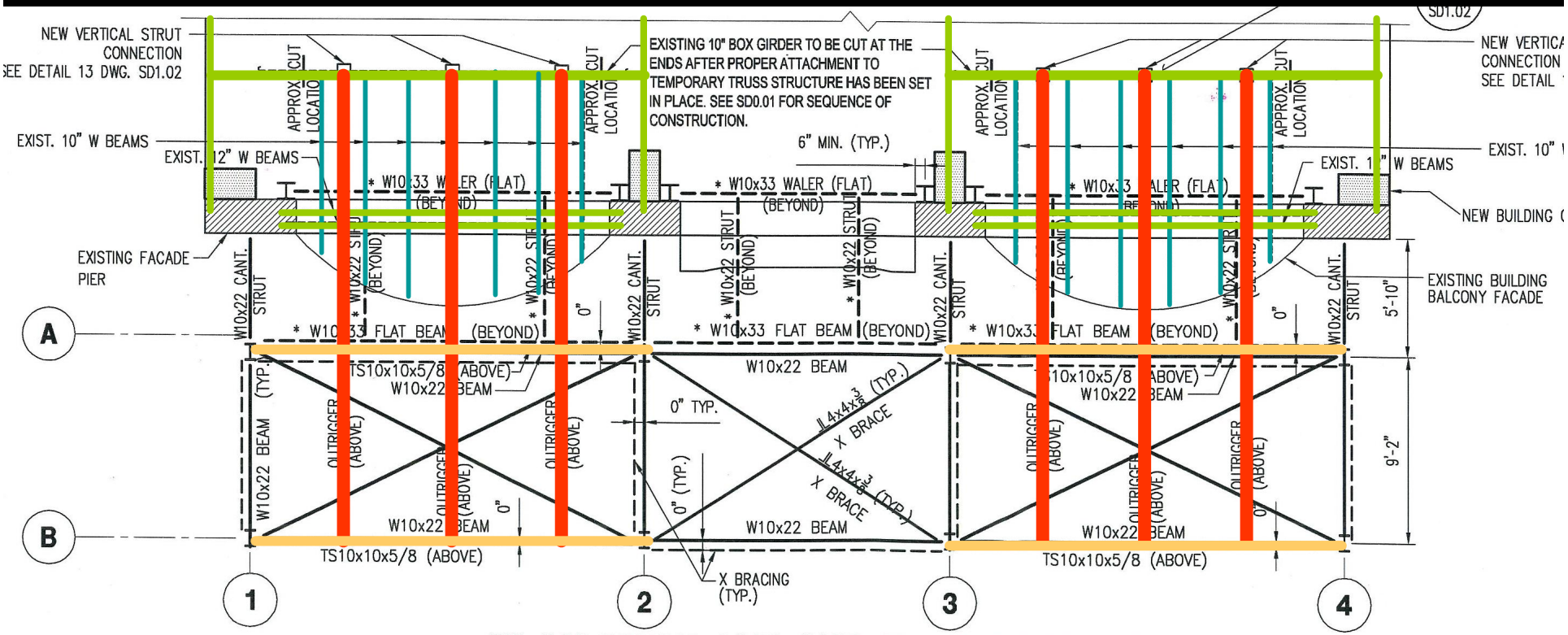
Thornton Tomasetti



PLAN VIEW (AT 2ND FLOOR LEVEL)

SCALE: 3/16" = 1'-0"

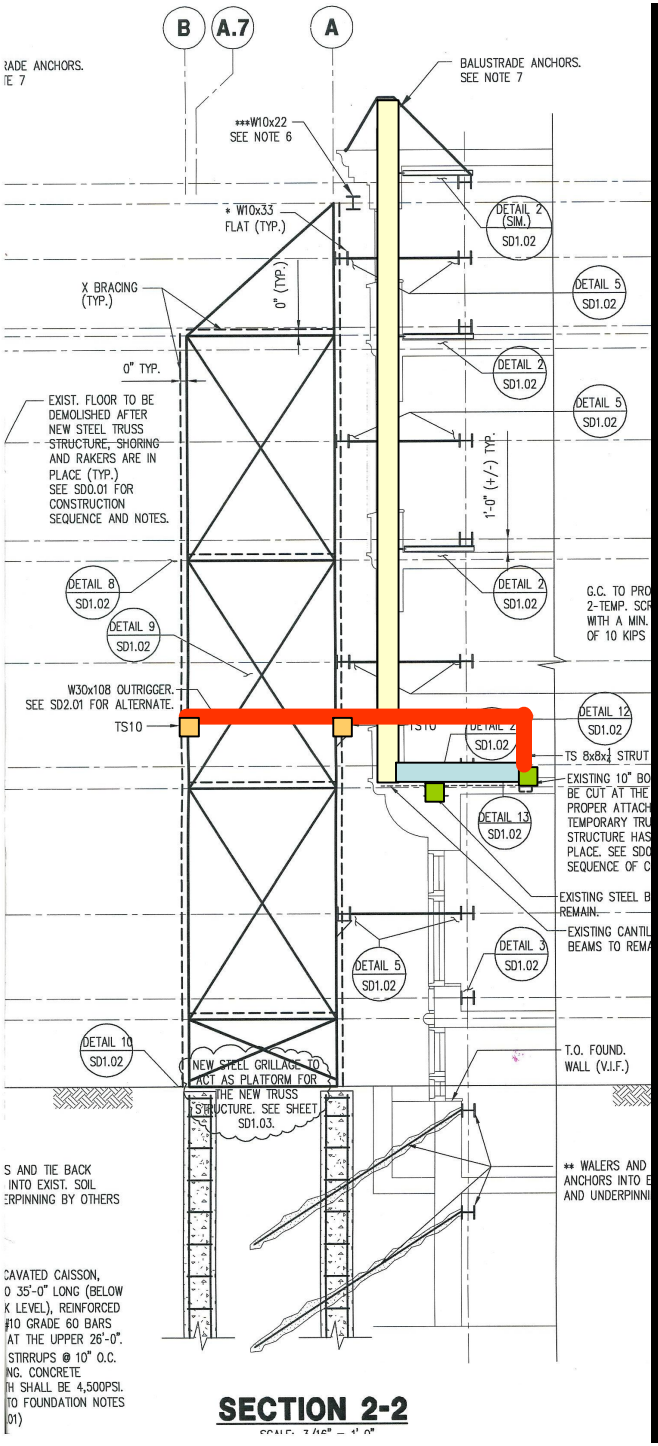
Thornton Tomasetti



PLAN VIEW (AT 2ND FLOOR LEVEL)

SCALE: 3/16" = 1'-0"

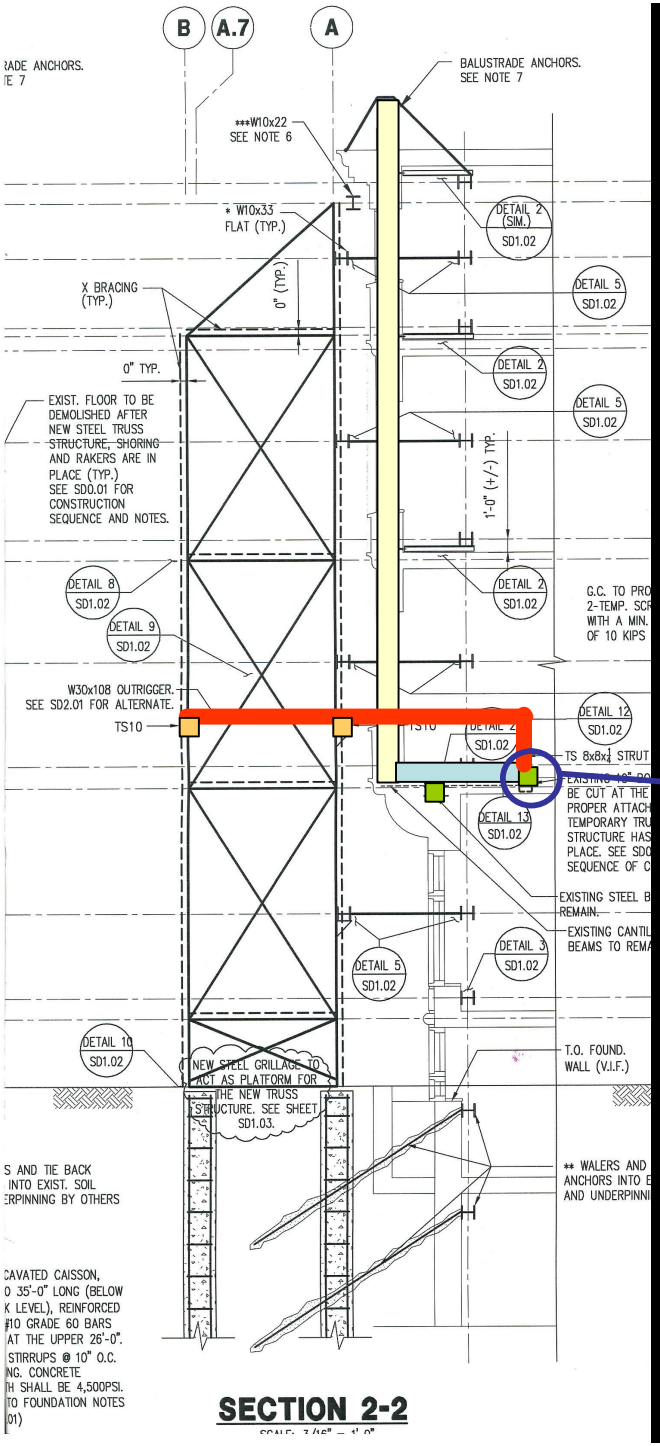
Thornton Tomasetti



SECTION 2-2

SCALE: 3/16" = 1'-0"

Thornton Tomasetti



BOX BEAM TO BE CUT

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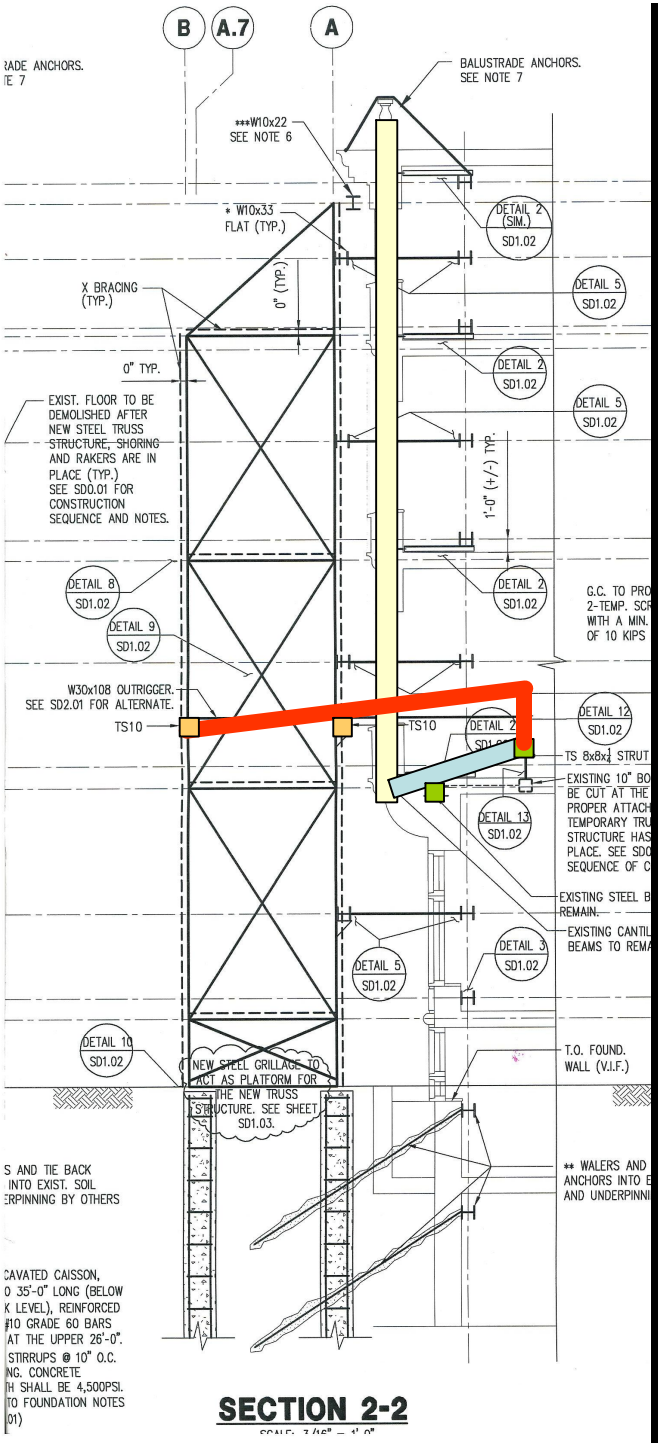

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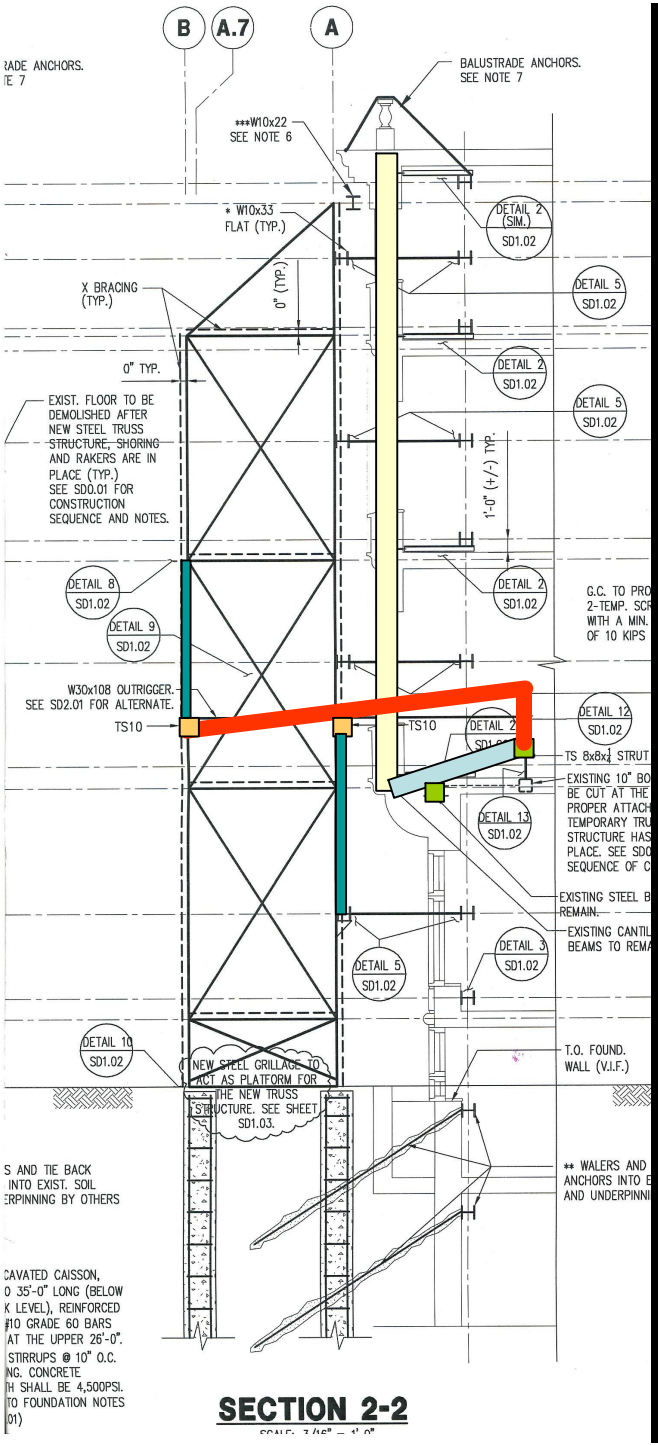
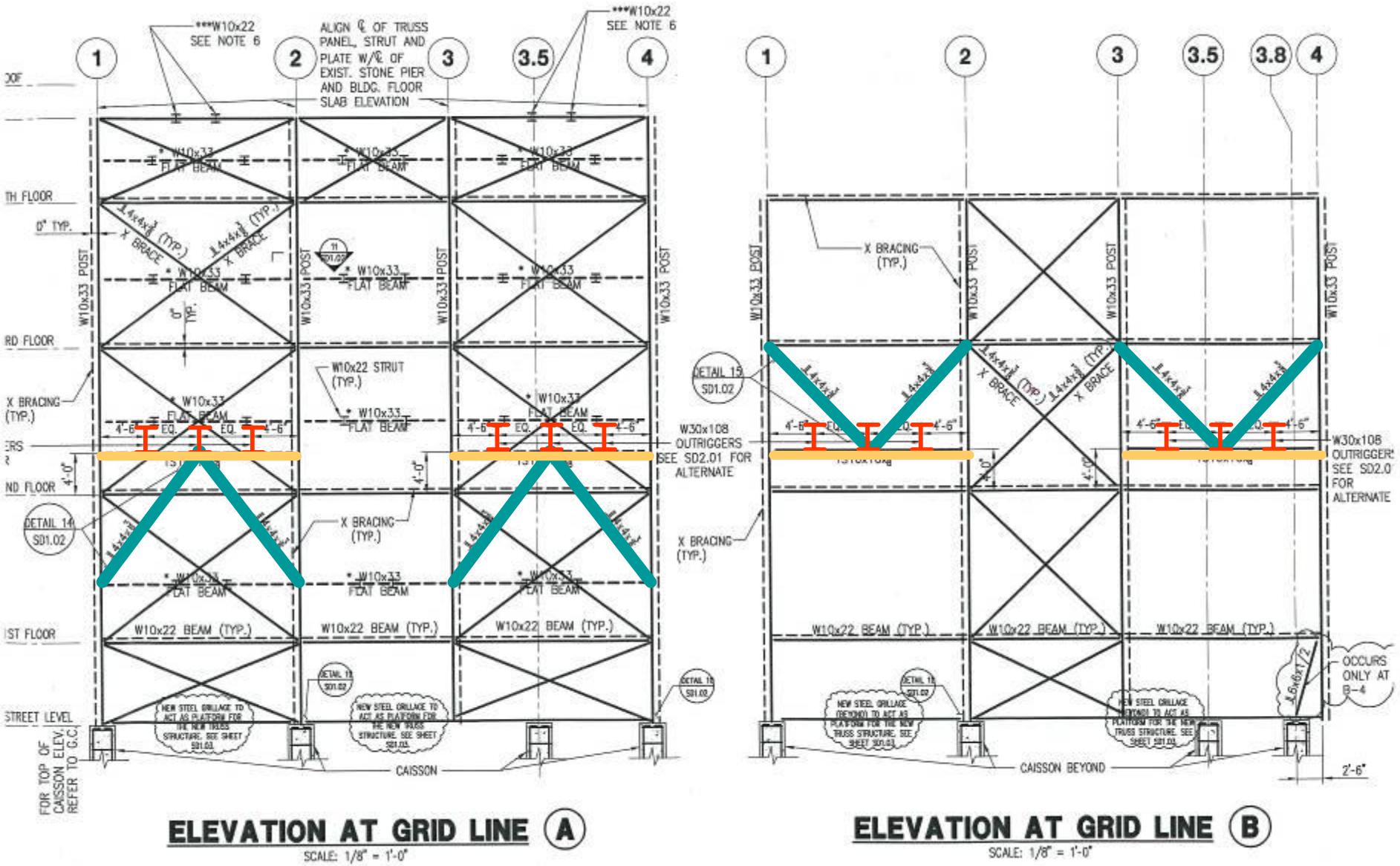


SECTION 2-2

Thornton Tomasetti



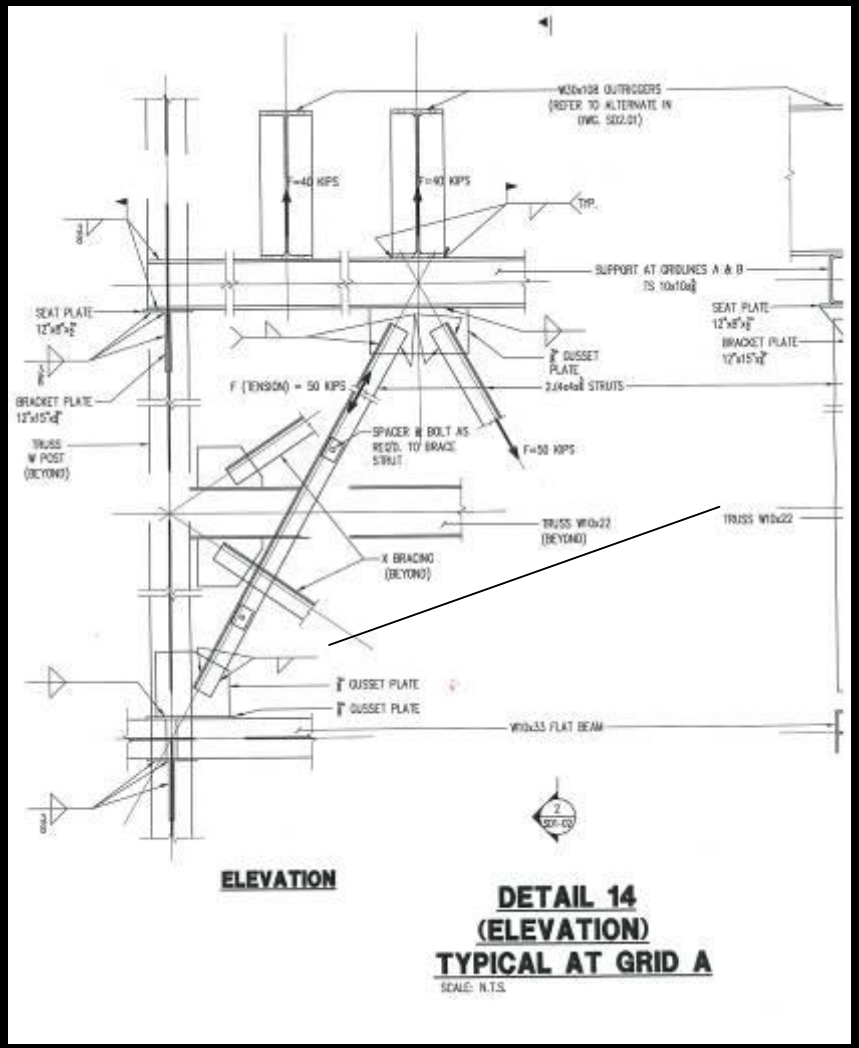
ELEVATION AT GRID LINE (A)

SCALE: 1/8" = 1'-0"

ELEVATION AT GRID LINE (B)

SCALE: 1/8" = 1'-0"

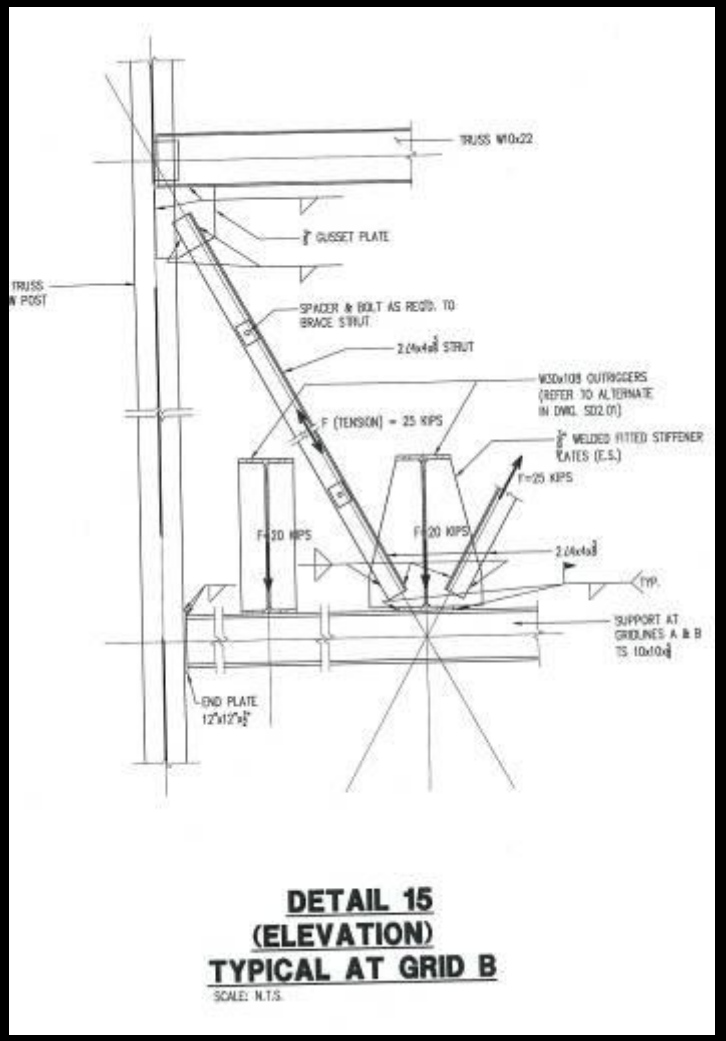
Thornton Tomasetti



ELEVATION

DETAIL 14
(ELEVATION)
TYPICAL AT GRID A

SCALE: N.T.S.



DETAIL 15
(ELEVATION)
TYPICAL AT GRID B

SCALE: N.T.S.

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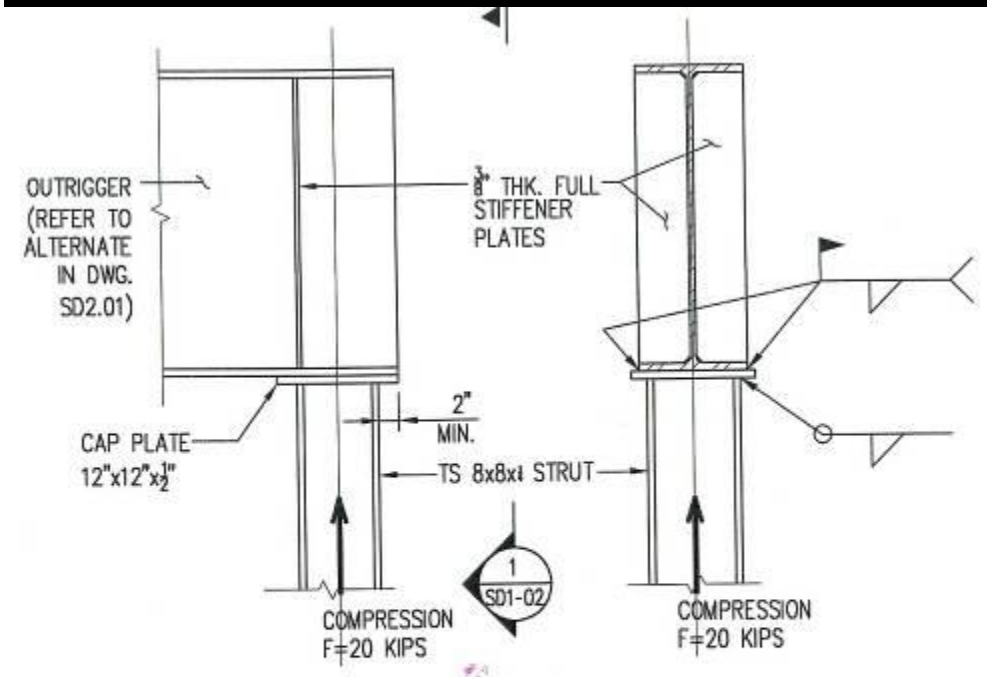
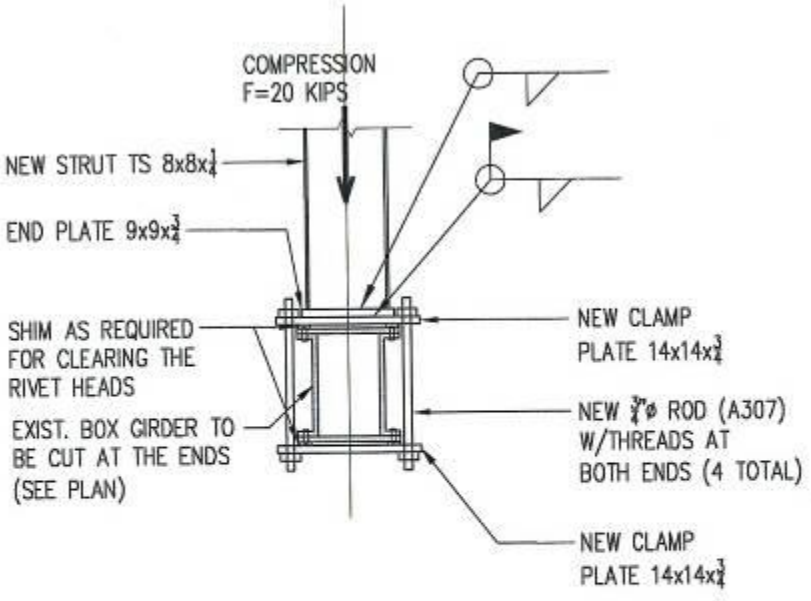


ELEVATION **SECTION 1**

DETAIL 12

SCALE: N.T.S.



DETAIL 13 (ELEVATION)

SCALE: N.T.S.

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Thornton Tomasetti

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WIND ANALYSIS

ASCE 7-02

90 MPH

TOTAL HORIZONTAL LOAD = 50 kips Approx.

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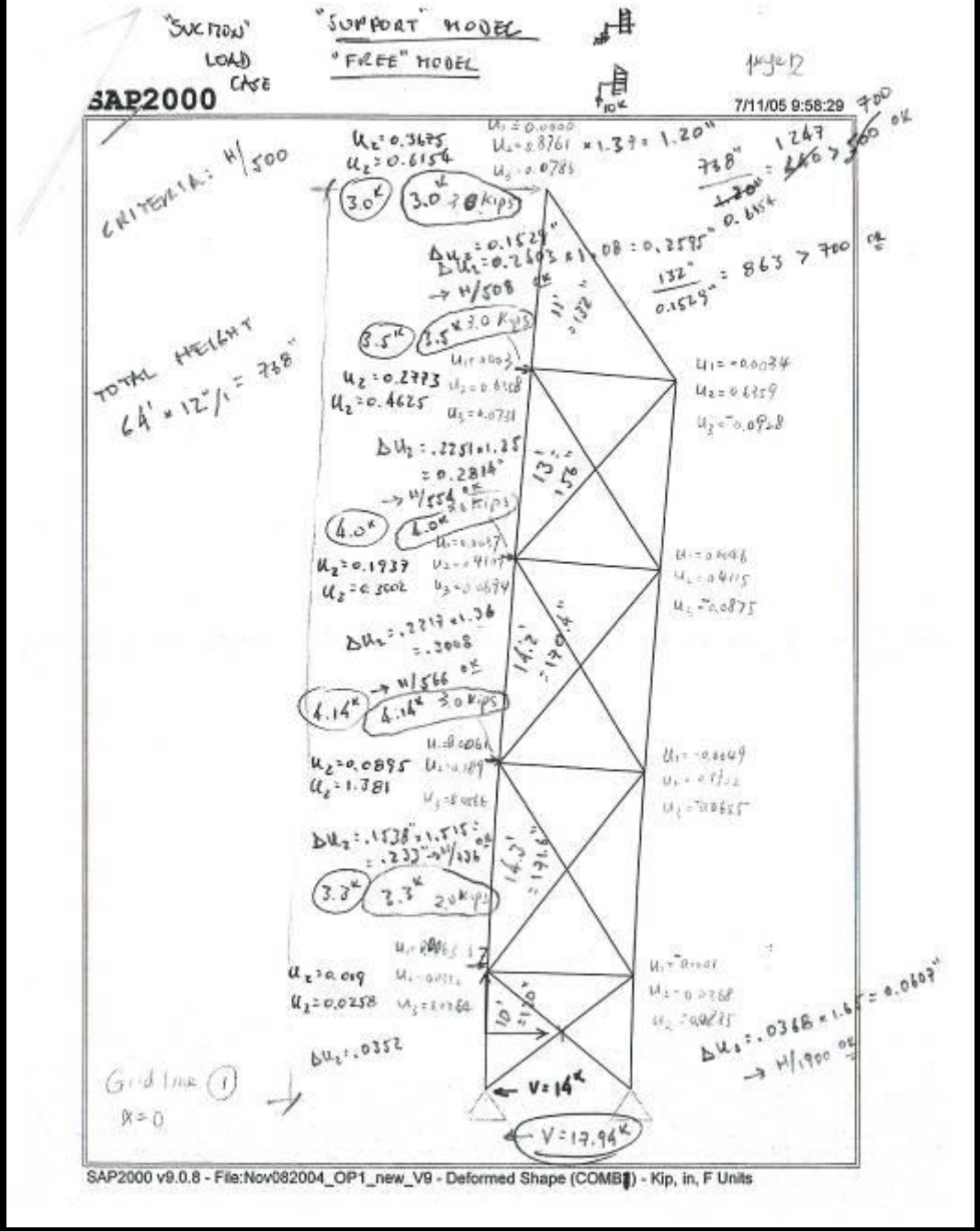

LEEWARD WIND ANALYSIS

"SUPPORT" MODEL

"FREE" MODEL

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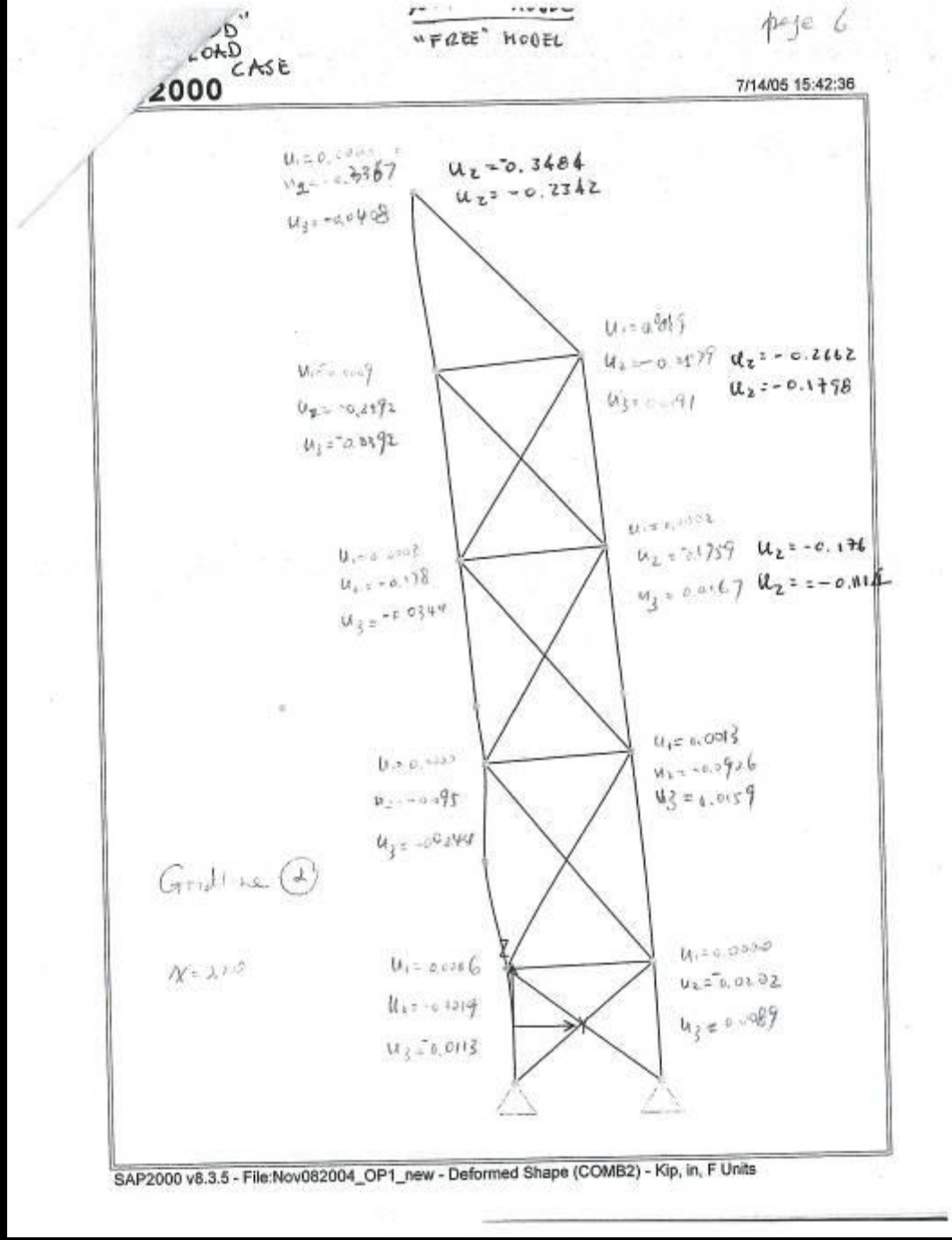


WINDWARD WIND ANALYSIS

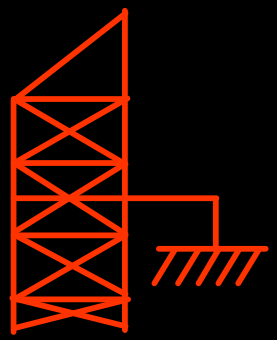
"SUPPORT" MODEL

"FREE" MODEL

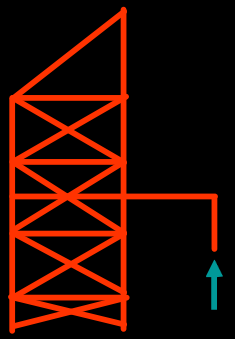
Thornton Tomasetti

DESIGN ALTERNATIVE DEPENDING ON THE ASSUMPTION OF HOW THE LOADS WOULD BE APPLIED ON THE BRACING SYSTEM AT THE MOMENT OF CUTTING THE BOX BEAM AND RELEASING THE BALCONY WEIGHT (WEIGHT UNKNOWN)

"SUPPORT" MODEL



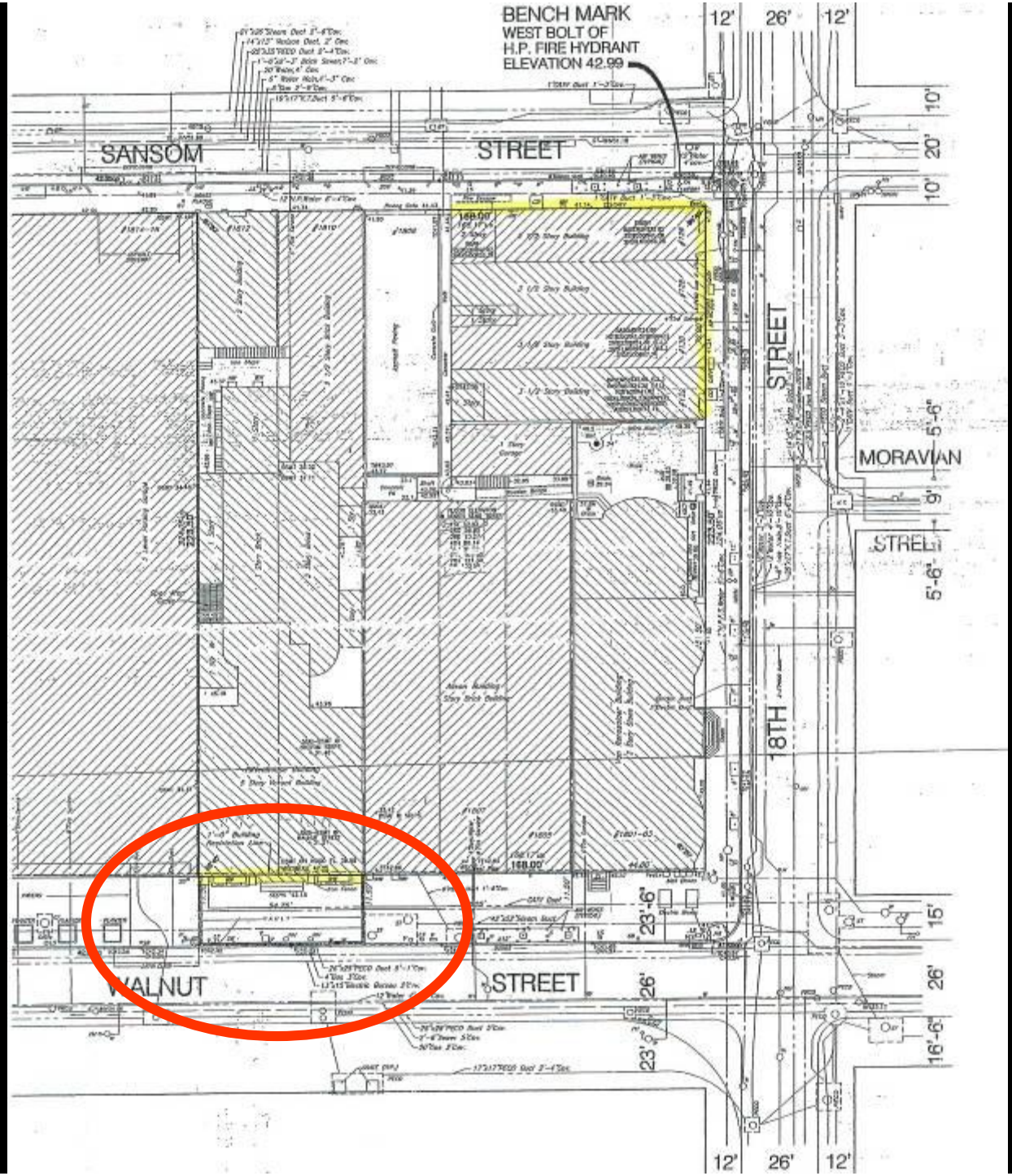
"FREE" MODEL



FOUNDATION DESIGN

UNDERGROUND OBSTACLES

- UTILITY LINES (STEAM, GAS, ELECTRICITY, COMMUNICATIONS)
- VAULT EXTENDING OUT TO THE CURB
- MANHOLE (STEAM LINE INSPECTION)



PUBLIC UTILITY SURVEY

Thornton Tomasetti

Sent By: CB DEVELOPMENT SERVICES INC; 2155660339; Jun-15-06 5:01PM; Page 4/5

Master Locators, Inc.
Vaccum Excavation Data

Master Locators Inc.
Specializing in Leak & Utility Locating
2426 East Helms Manor
Bootlwyn, PA 19061
Fax: (610) 494-5251
Phone: (610) 494-6764

Date: June 9, 2006

Customer: Phila. Rittenhouse Developer
Project: Rittenhouse Club
Location: 1811 Walnut St. Philadelphia, PA

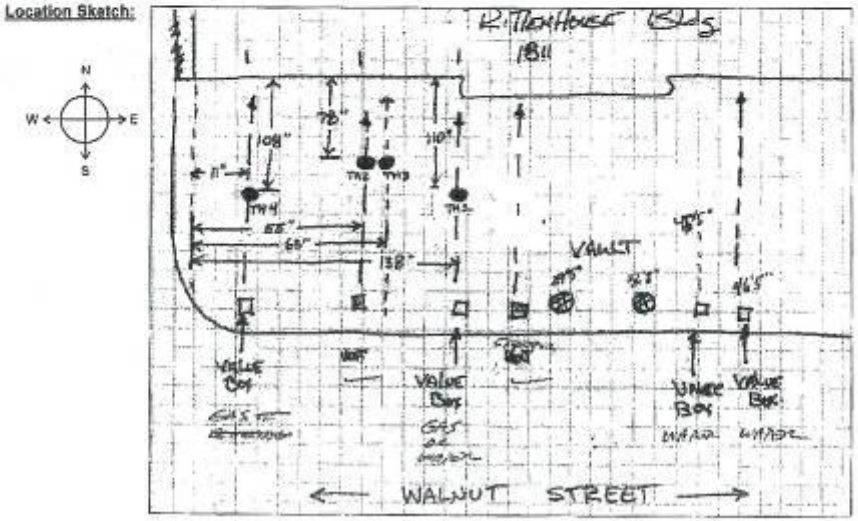
Test Hole Data:

Test Hole (TH) #	Hole Location - Horizontal distance		Depth of Hole	Result
	East from West Edge of Rittenhouse Club Building	South from face of Rittenhouse Club Building		
1	138"	110"	10 ft	No utilities found
2	55"	78"	2 ft 6 in	4" Cast Iron Pipe (assumed water) found at 1 ft 9 in deep
3	83"	78"	8 ft	Unknown utility found at 7'6" deep (see Note 1)
4	11"	108"	9 ft	No utilities found (see Note 2)

Notes:

1. Bottom of hole filled with water - unable to obtain accurate information on utility size, type and condition
2. Unkown utility located 24"-36" west of TH#4 approx. 36" deep - outside fence and scope of construction area

Location Sketch:



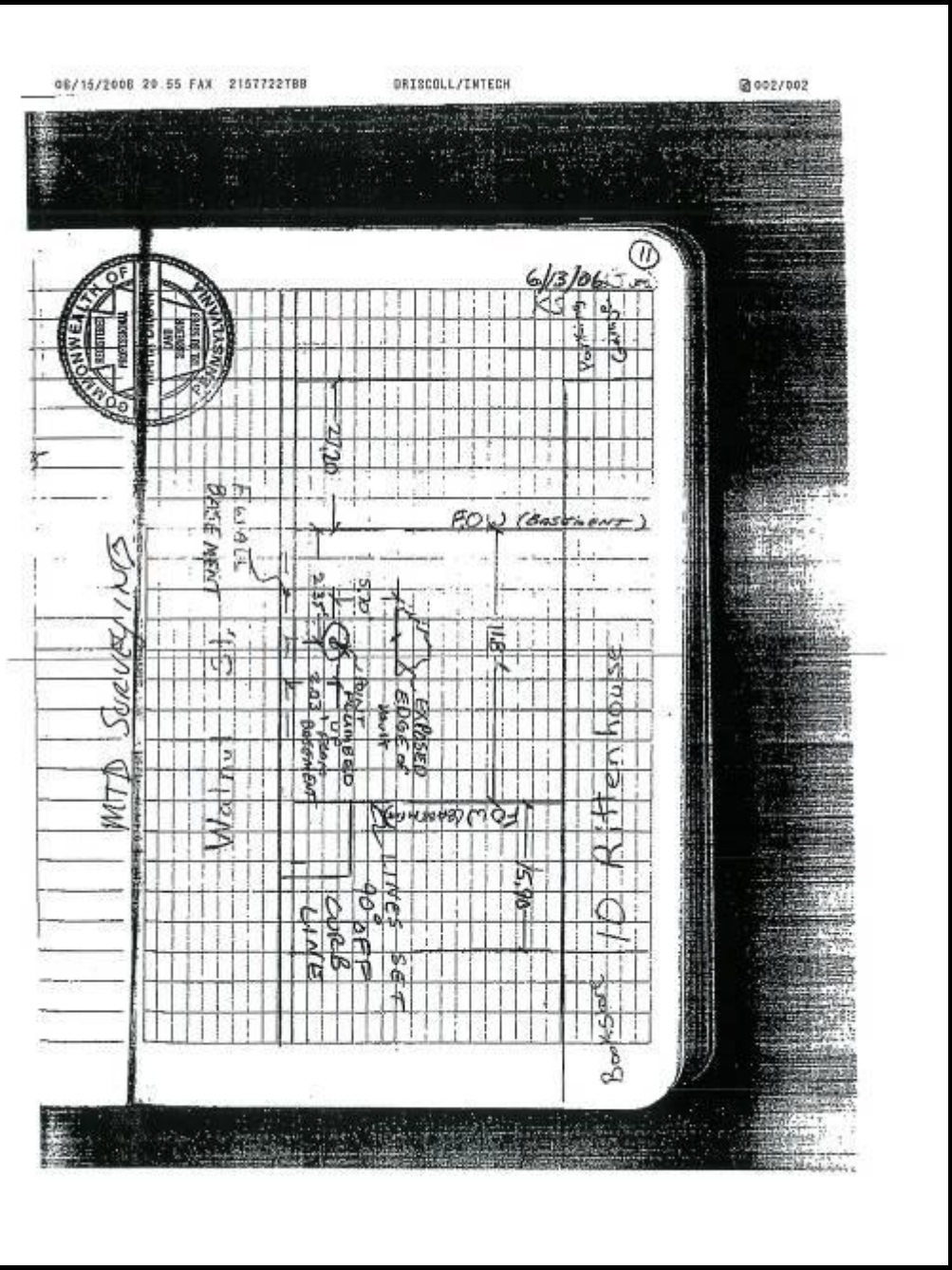
Report by: Kyle Sareyka

C:\Documents and Settings\Kyle\Desktop\Master Locators\Projects\Rittenhouse Developers\Rittenhouse VE Data - 9June2006

SURVEY OF UTILITY LINES ACCESSING THE BUILDING

(OBSTACLES)

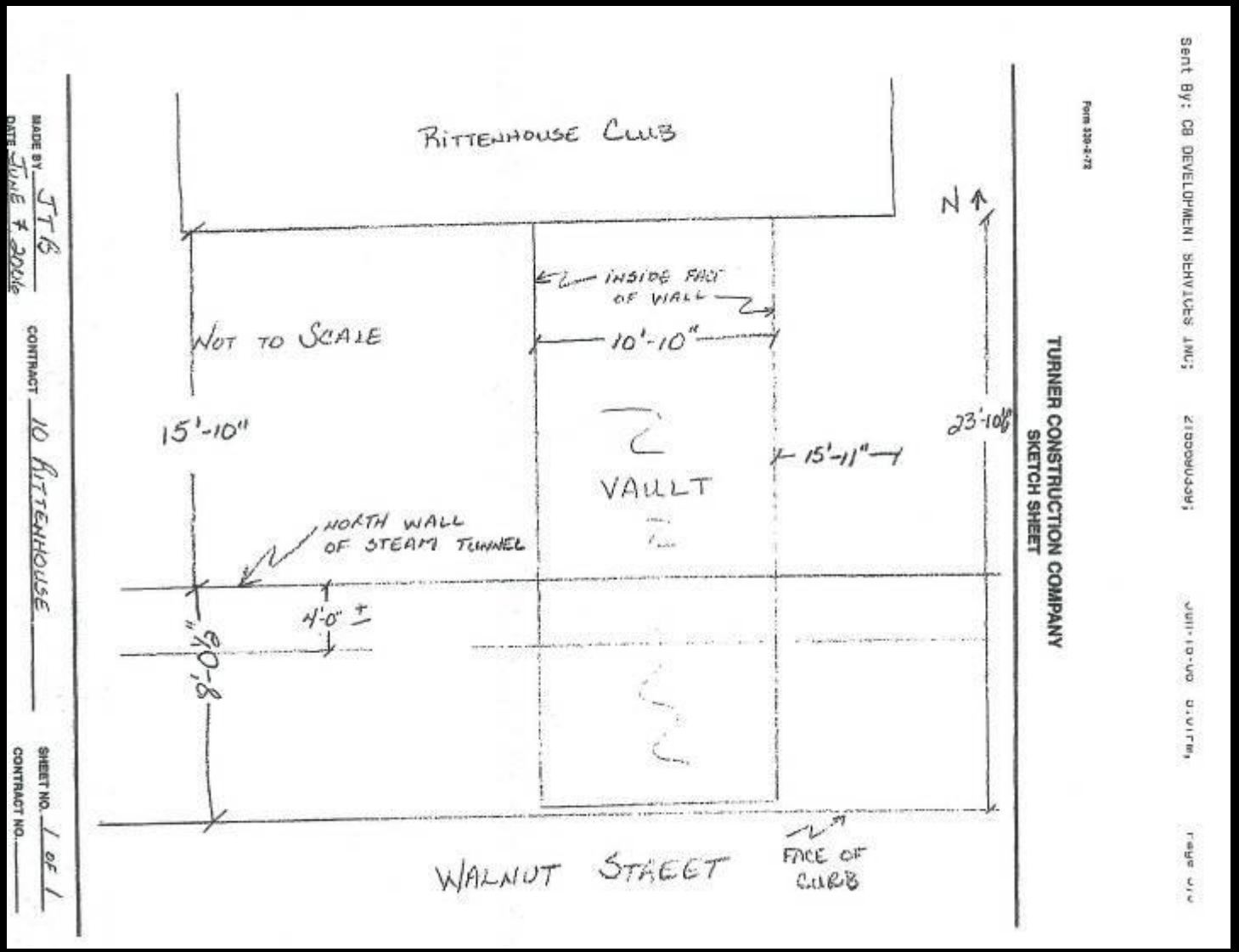
Thornton Tomasetti



STEAM LINE SURVEY

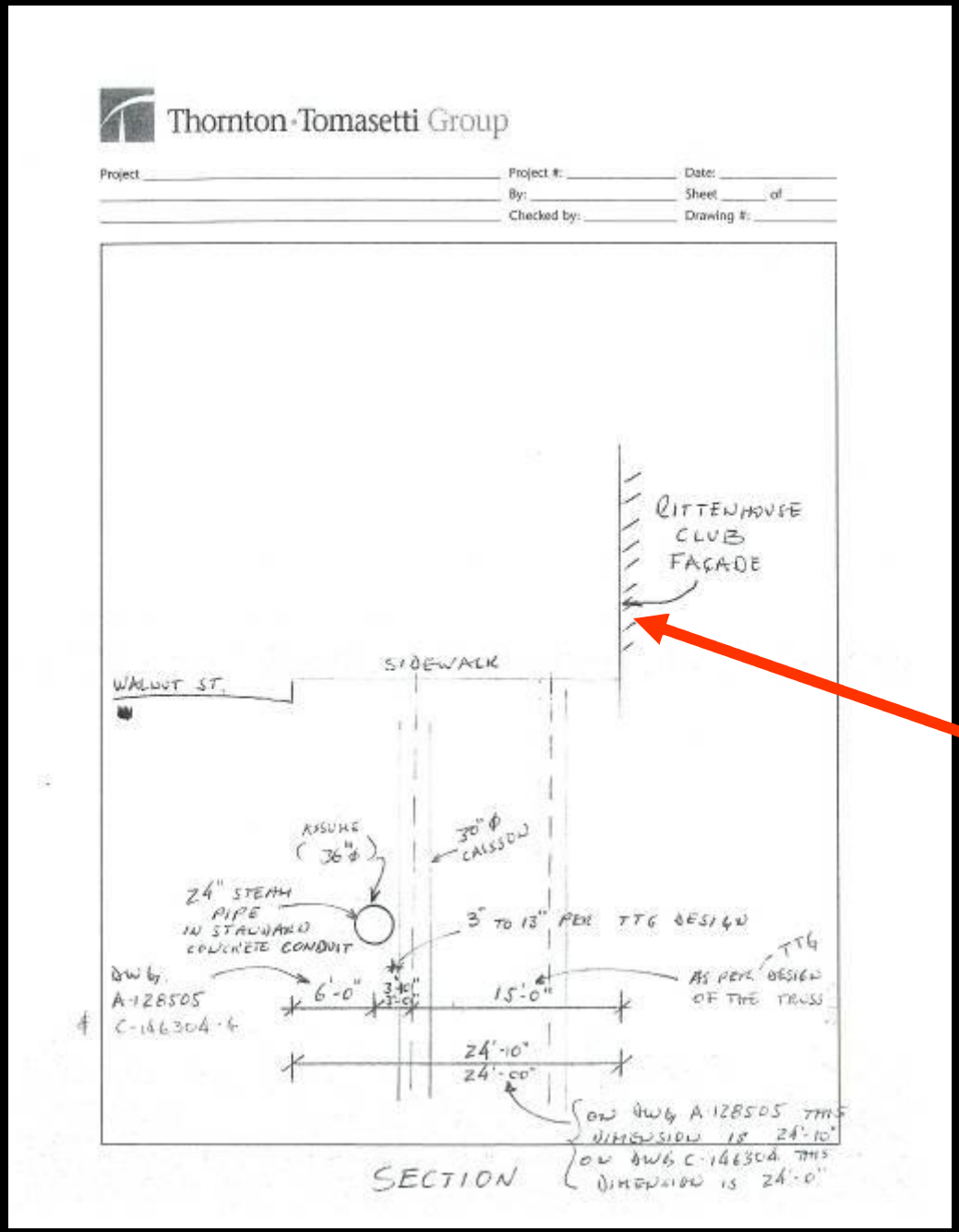
20 FEET DEEP

Thornton Tomasetti



SURVEY OF VAULT IN FRONT OF FAÇADE UNDER SIDEWALK

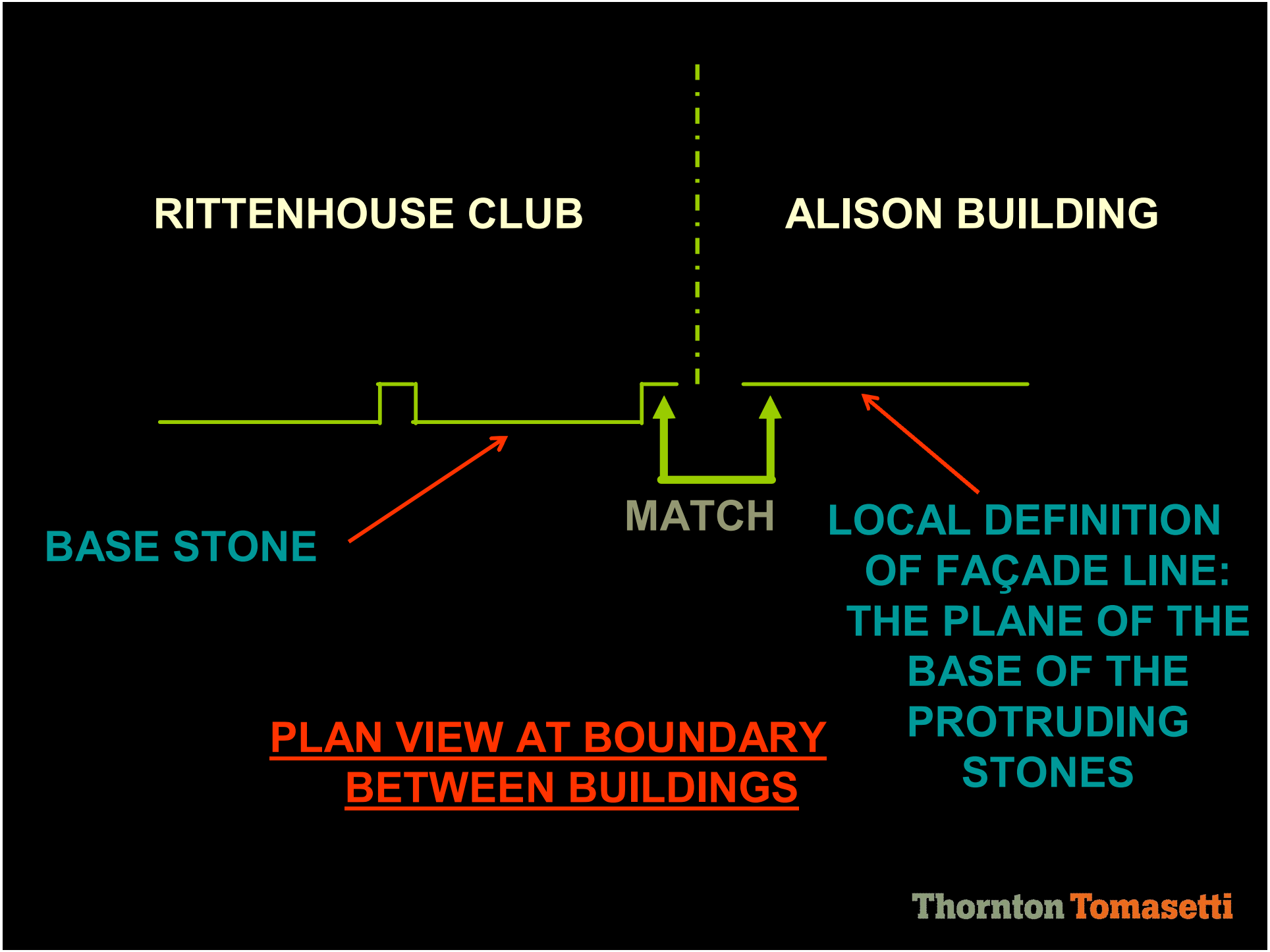
Thornton Tomasetti



ACCOMMODATING THE CAISSONS THROUGH THE UTILITY LINES

FAÇADE LINE!!!

Thornton Tomasetti

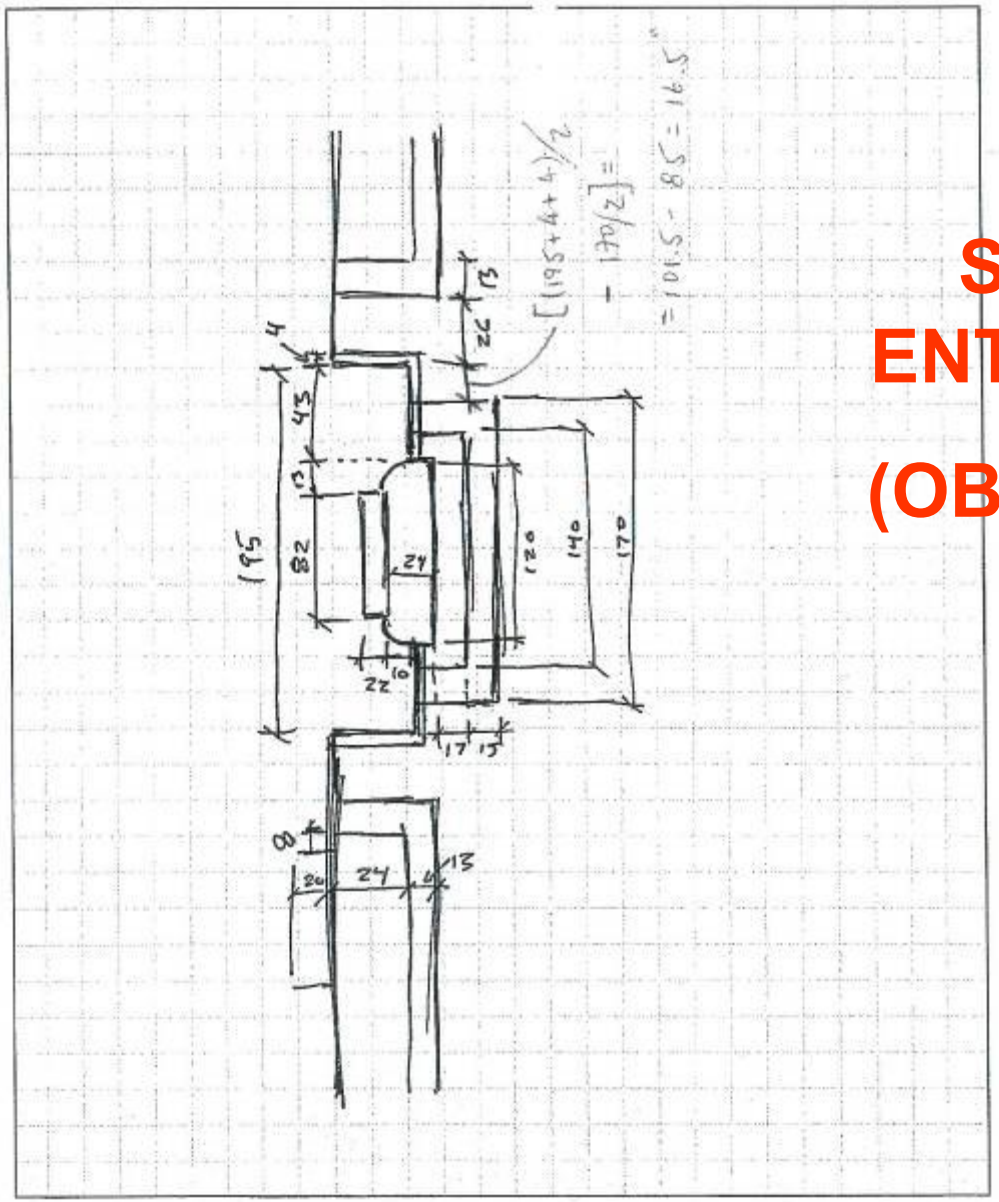

RITTENHOUSE CLUB
ALISON BUILDING
BASE STONE
MATCH
LOCAL DEFINITION OF FAÇADE LINE: THE PLANE OF THE BASE OF THE PROTRUDING STONES
PLAN VIEW AT BOUNDARY BETWEEN BUILDINGS
Thornton Tomasetti

Thornton Tomasetti Group

Project _____ Project #: _____ Date: _____

By: _____ Sheet _____ of _____

Checked by: _____ Drawing #: _____



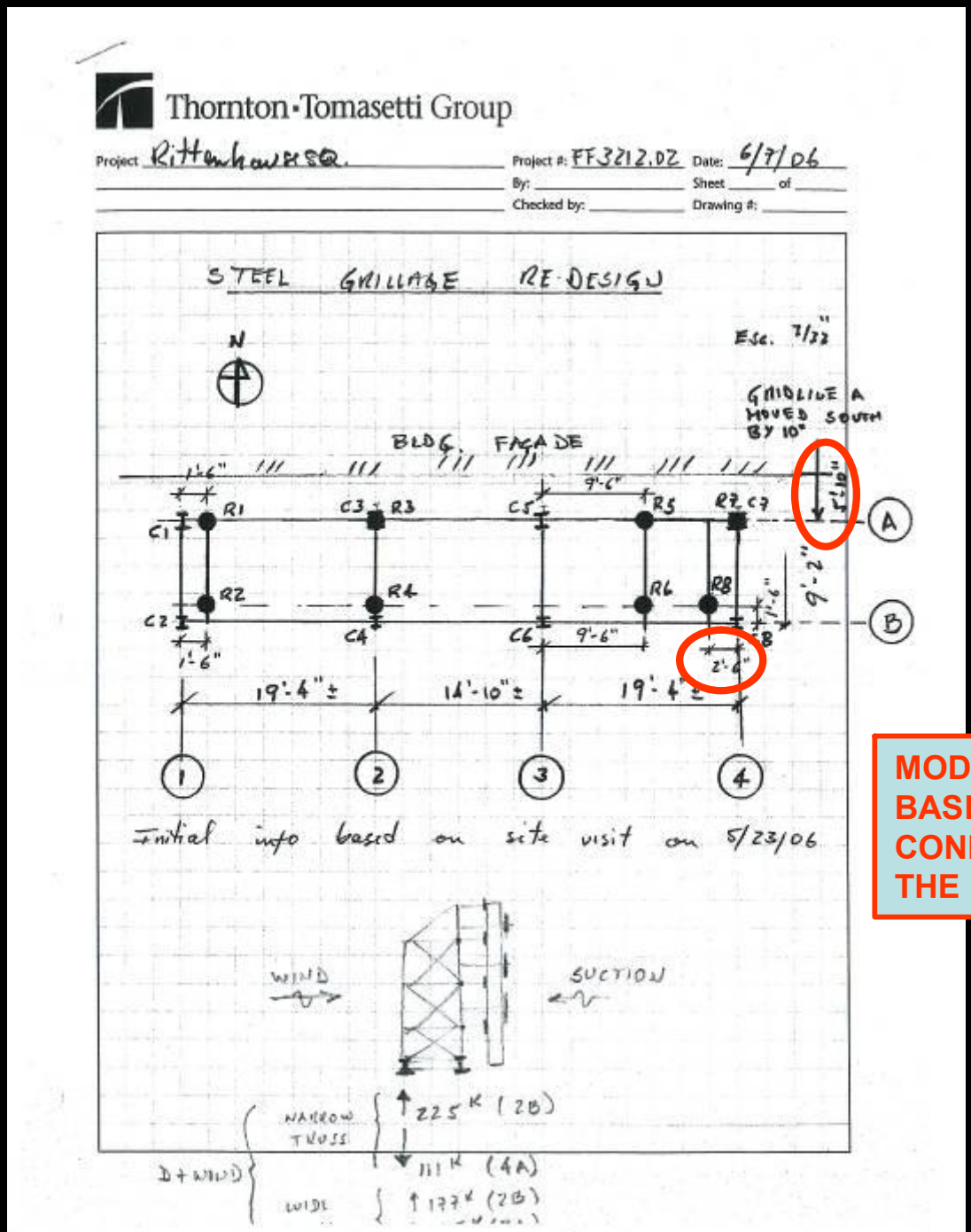
SURVEY OF ENTRANCE STEPS

(OBSTACLE FOR THE STEEL GRILLAGE)

Thornton Tomasetti

BOTTOM TRANSFER FRAMING (GRILLAGE)

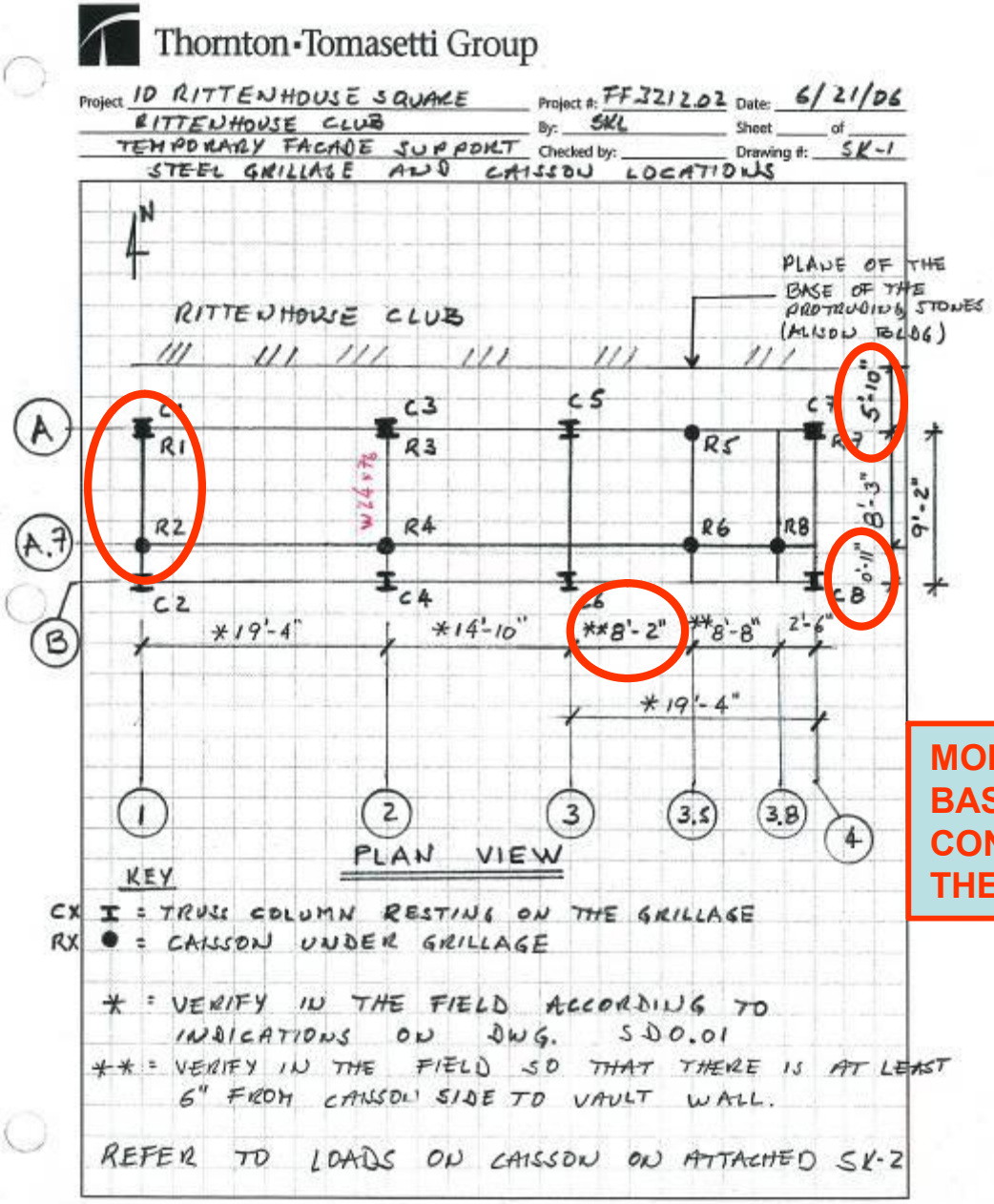
Thornton Tomasetti



GRILLAGE DESIGN PARTIAL PROGRESS

MODIFIED DIMENSIONS BASED ON EXISTING CONDITIONS FOUND IN THE FIELD

Thornton Tomasetti



FINAL ARRANGEMENT OF THE STEEL GRILLAGE

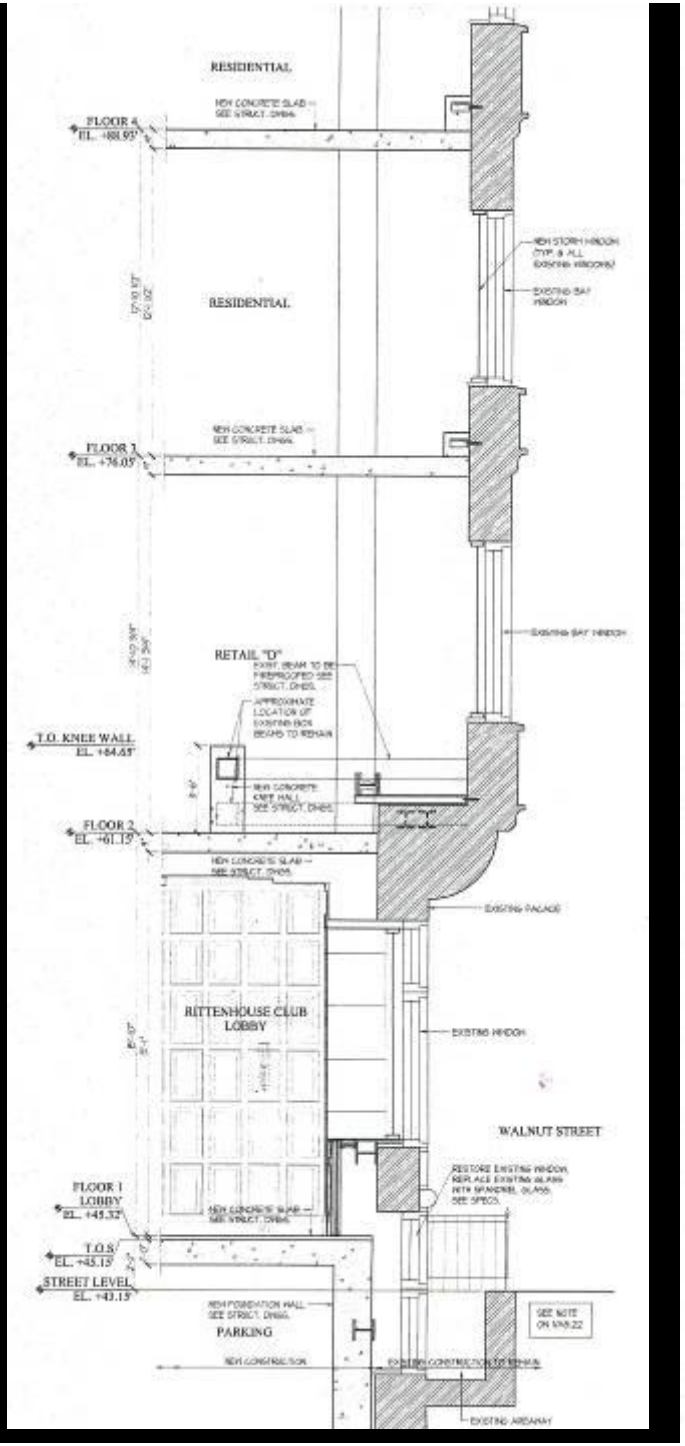
MODIFIED DIMENSIONS BASED ON EXISTING CONDITIONS FOUND IN THE FIELD

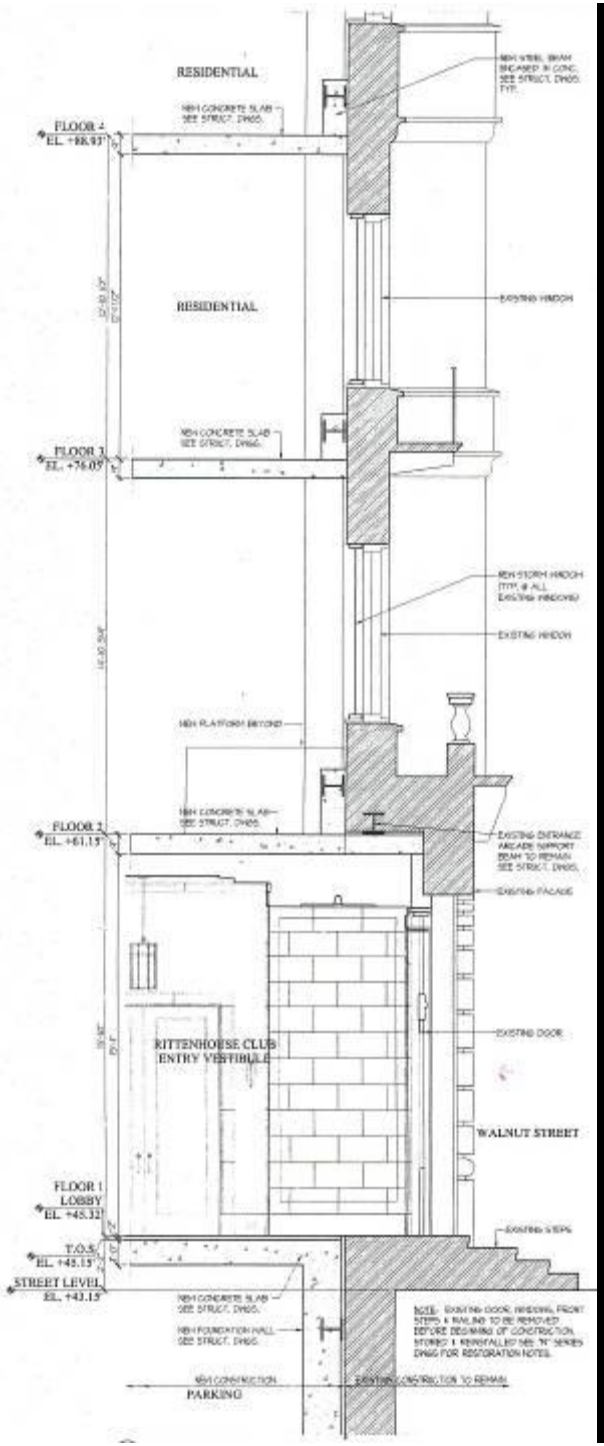
Thornton Tomasetti

Thornton Tomasetti

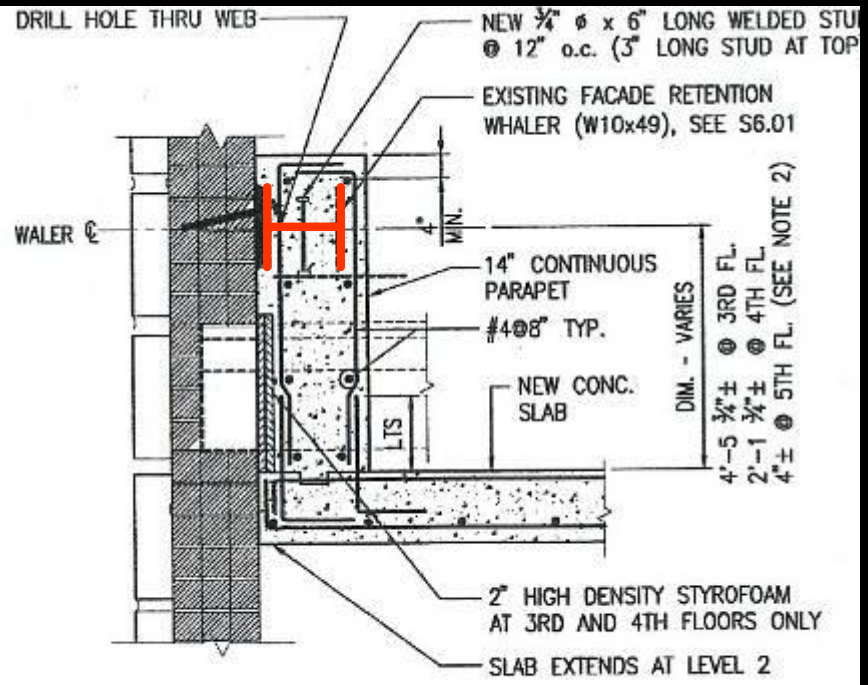
INTEGRATION OF THE EXISTING FAÇADE INTO THE NEW BUILDING

Thornton Tomasetti





Thornton Tomasetti



SECTION DETAIL AT SLAB EDGE AT 3RD, 4TH, 5TH FLOORS

5
S6-01

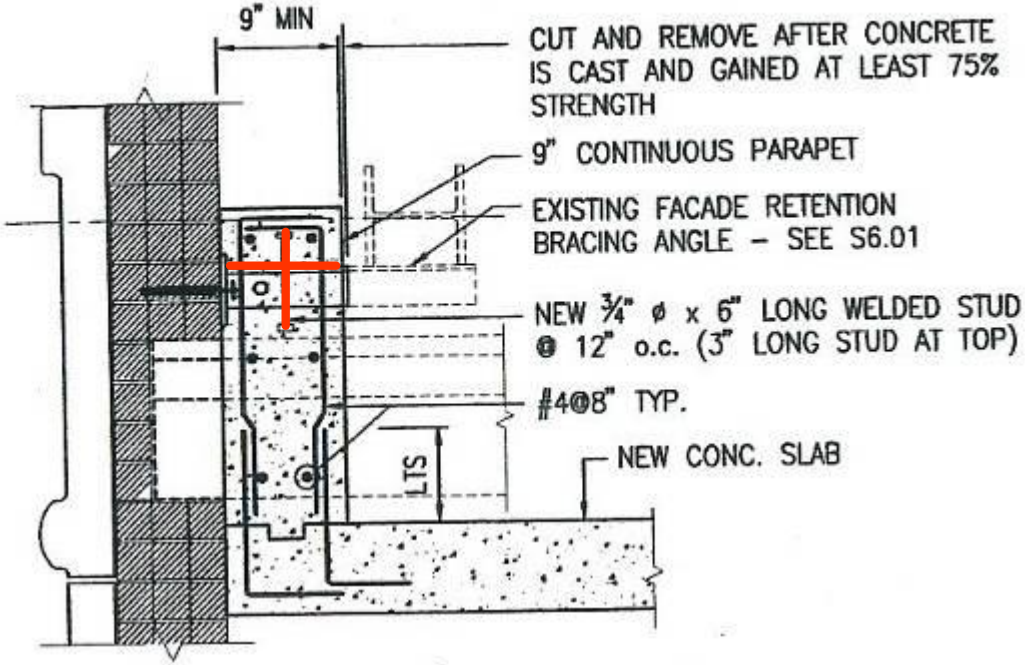
3/4" = 1'-0"

NOTES:

1. PARAPET IS INTERRUPTED IN FRONT OF BALCONY DOORS AT 2ND AND 3RD FLOORS.

2. PARAPET IS DOWNTURNED AT LEVEL 5, DIMENSION SHOWN ASSUMES OLD AND NEW SLAB THICKNESS IS APPROX. SAME.

Thornton Tomasetti



SECTION DETAIL AT SLAB EDGE AT 3RD, 4TH, 5TH FLOORS

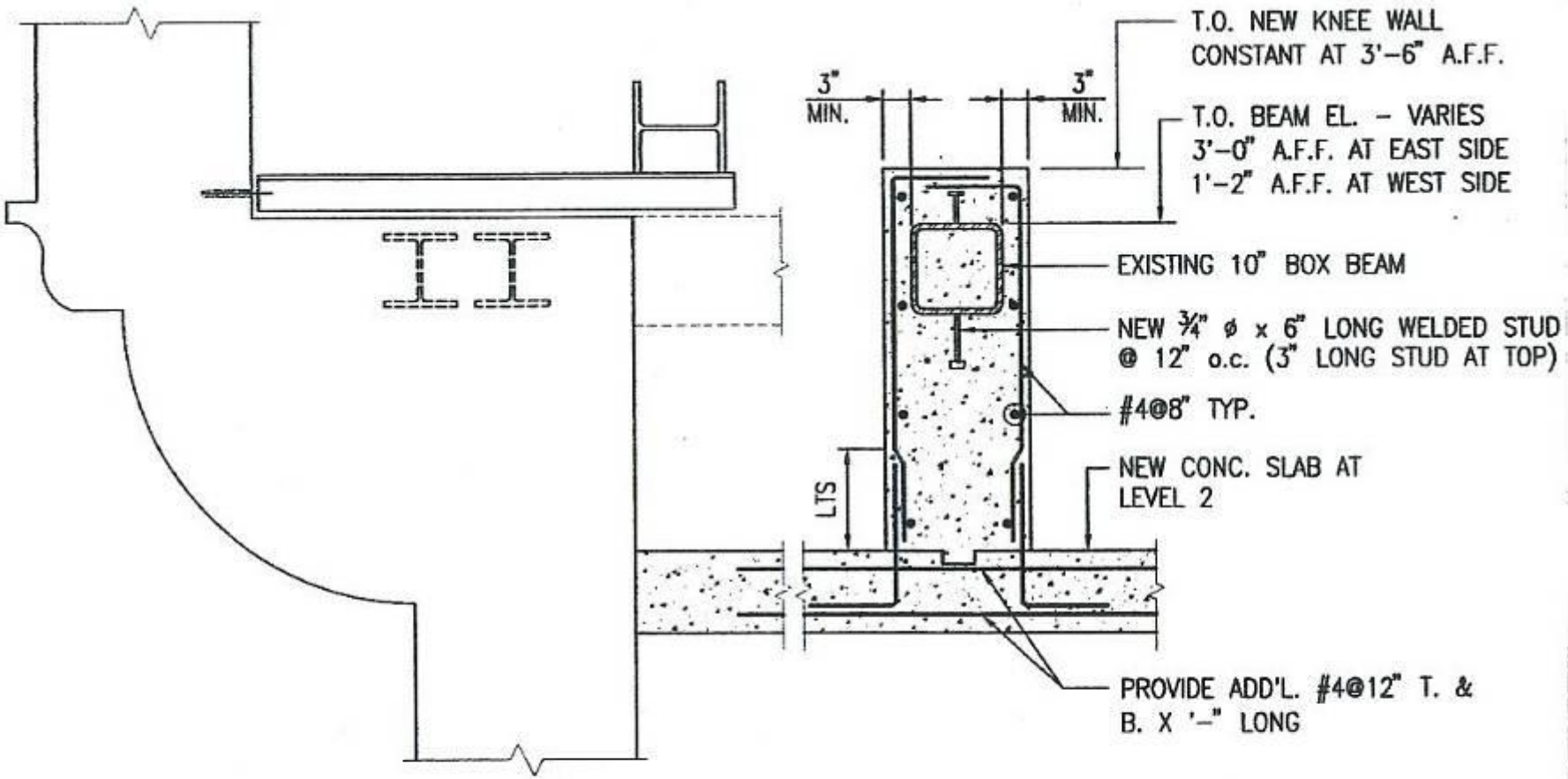
6
S6-01

3/4" = 1'-0"

NOTES:

1. PARAPET IS DOWNTURNED AT LEVEL 5.

Thornton Tomasetti

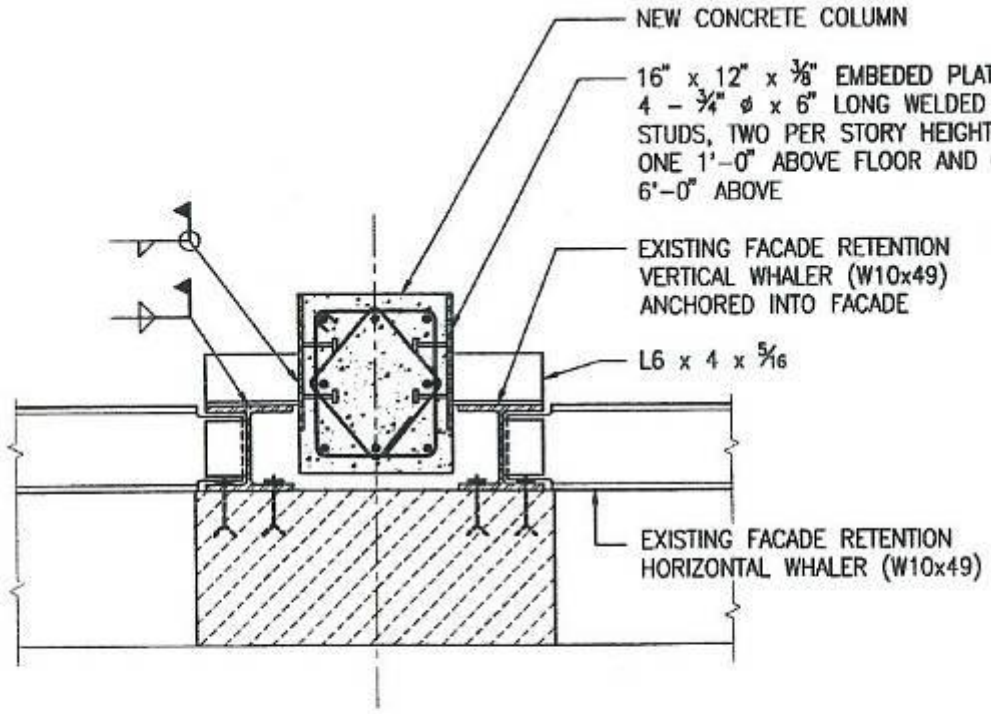


SECTION DETAIL AT SLAB EDGE AT 2ND FLOOR

7
S6-01

3/4" = 1'-0"

Thornton Tomasetti



PLAN DETAIL AT PIER / COLUMN

4
S6–01

3/4" = 1'–0"

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CONSTRUCTION OF THE BRACING STRUCTURE

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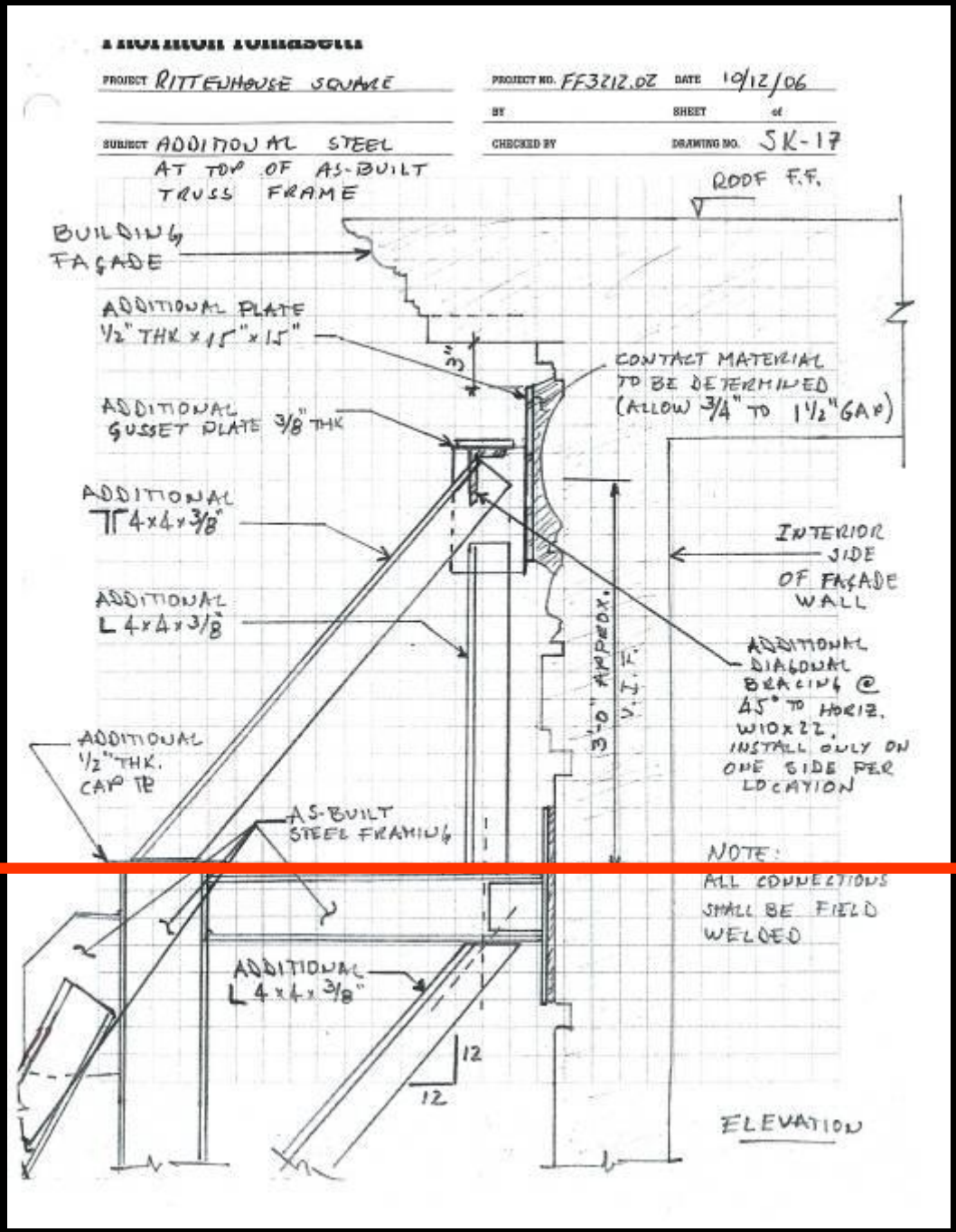

ADDITIONAL STEEL REQUIRED DURING CONSTRUCTION

ADDITIONAL

AS BUILT

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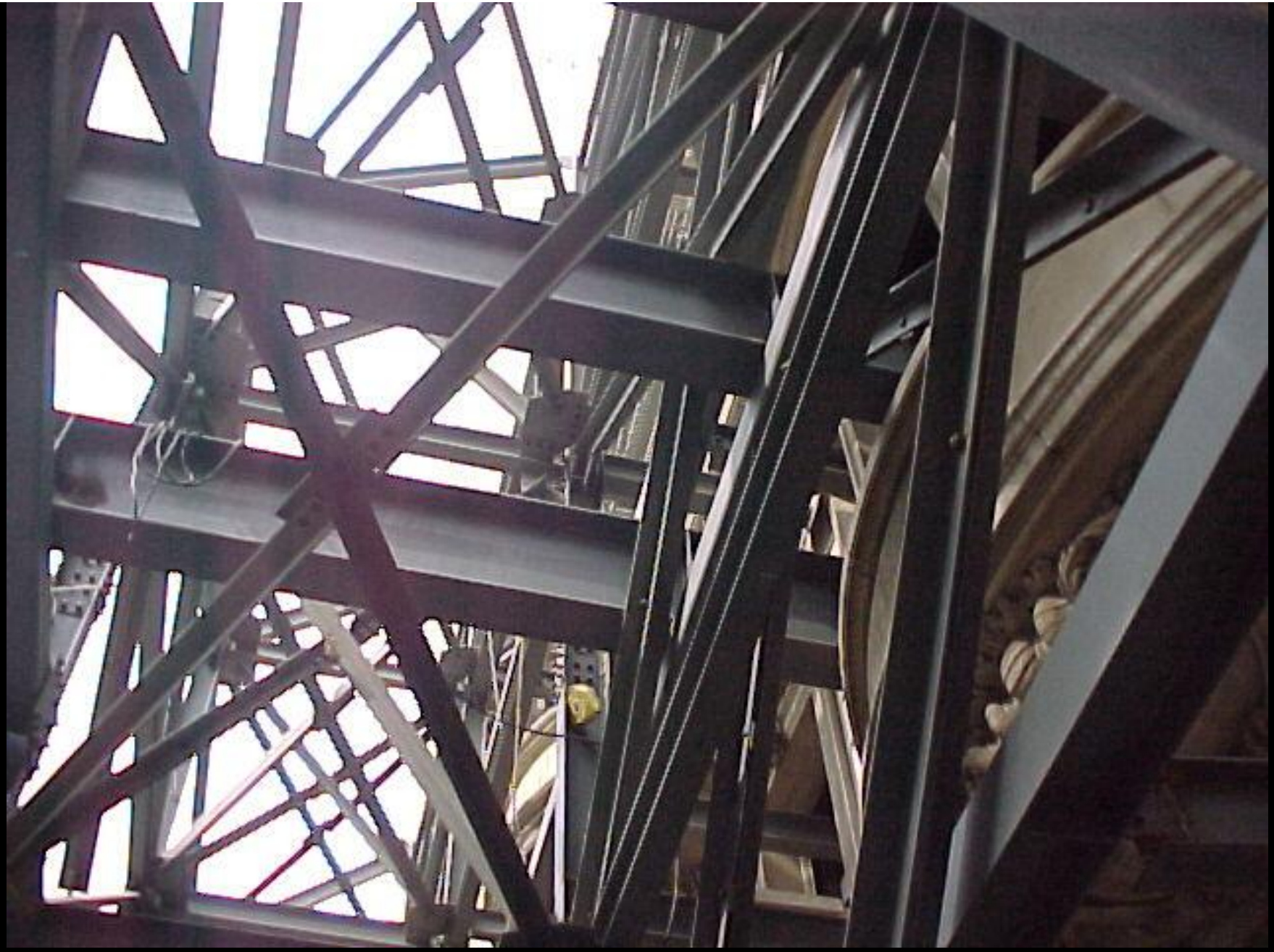

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DEMOLITION OF THE RITTENHOUSE CLUB BUILDING
(WITH EXCEPTION OF THE FAÇADE)

Thornton Tomasetti

Thornton Tomasetti

Thornton Tomasetti

Thornton Tomasetti

Thornton Tomasetti

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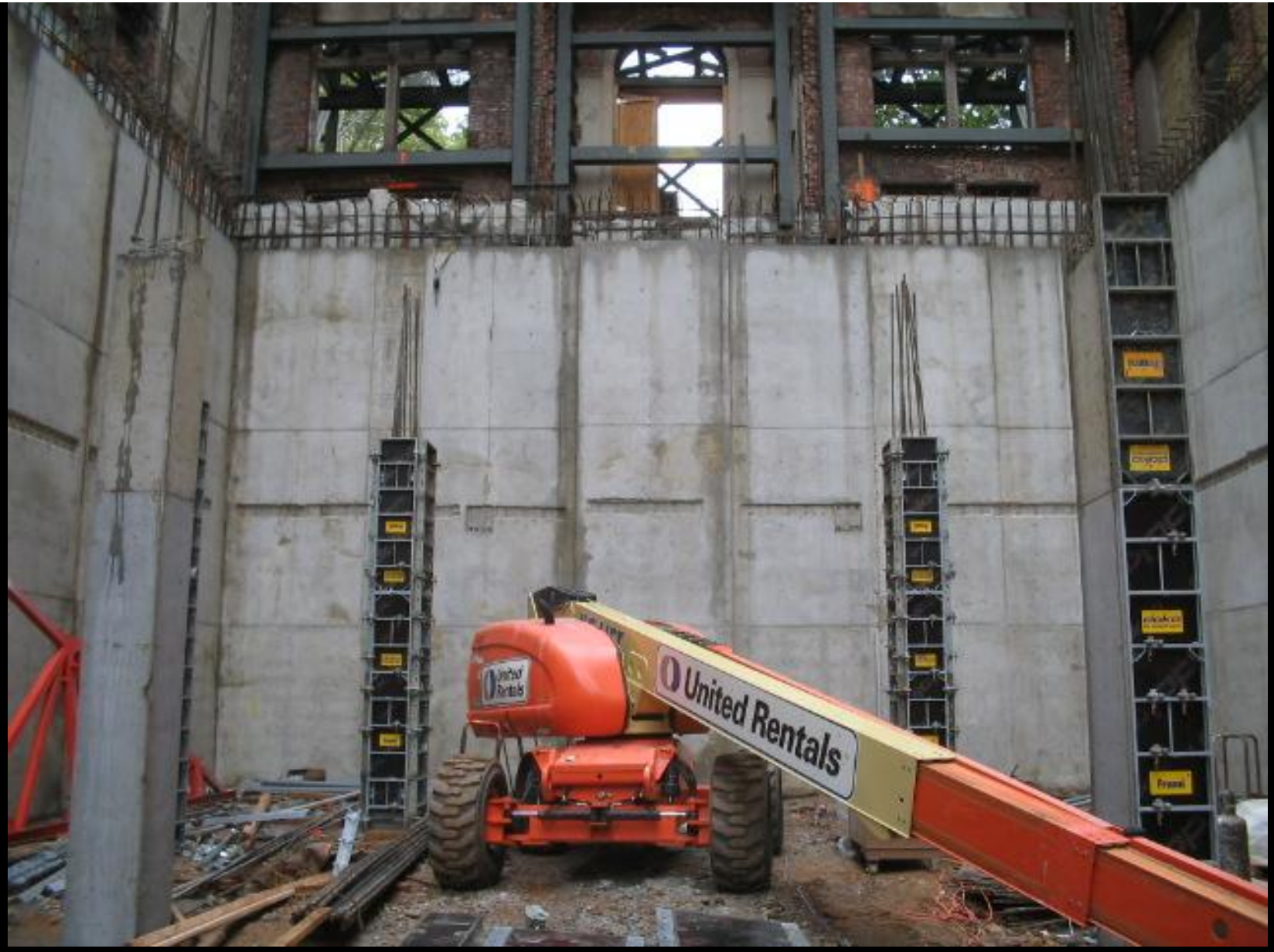
Thornton Tomasetti



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RITTENHOUSE CLUB FAÇADE TEMPORARY LATERAL SUPPORT

PARTICIPATING STAFF FROM TT

NEWARK OFFICE

- Robert Nacheman
- Sergio Londono
- Tayfun Denis
- Jun Yu
- Leonardo Garzon
- Yasser Abdelaziz
- Chris Christoforou (Coordination)
- Alexander Uregian (Coordination)

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PARTICIPATING STAFF FROM TT

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- David Kane
- Allan Hsieh (R.I.P.)
- Brad Landis

NEW YORK OFFICE

- Joelle Kirchick Nelson
- Erleen Hatfield (Coordination)
- Patrick Healy (Coordination)

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THANK YOU

ERECTION WORK IN PROGRESS

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