

RICHTER RATNER
BUILDERS
1912

T.E.A.R.™ REVIEW
TECHNICAL EVALUATION ANALYSIS RECOMMENDATION

“ IN EVERY RESPECT, THE
PREPARATION AND CONSTRUCTION
OF OUR PROJECTS IS A MATTER
OF DETAILS. EACH RECEIVES
OUR FULLEST ATTENTION,
UNDERSTANDING, CREATIVITY,
FLEXIBILITY, AND DILIGENCE. FOR
IT IS IN THESE DETAILS THAT WE
FIND SOLUTIONS TO THE INHERENT
CHALLENGES OF OUR INDUSTRY.”

-Marc Heiman
President+CEO

BUILDERS

1912

Our approach as builders requires scrupulous attention to detail in planning as well as execution.

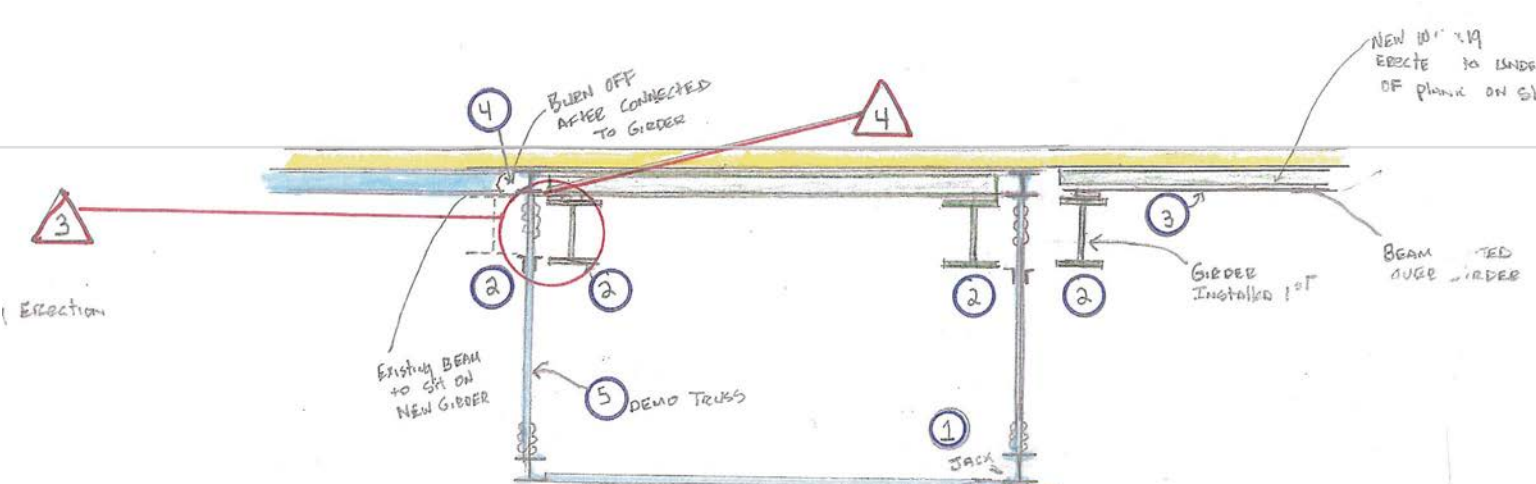
That means thoroughly grasping all aspects of selected materials and proposed methods. It means scrutinizing each element, method, and process for alignment with project parameters.

WE KNOW

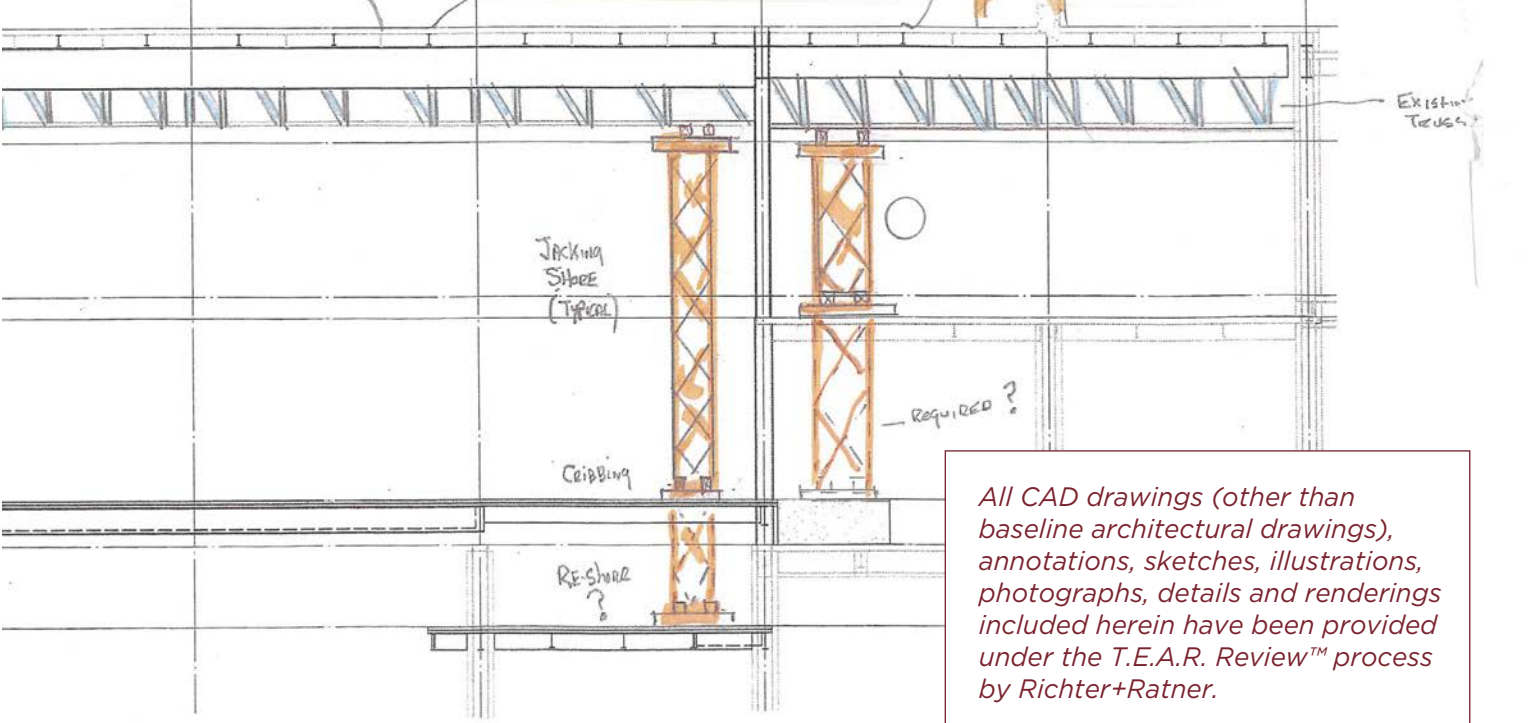
Such attention to detail is the basis of R+R's proprietary **T.E.A.R.™ Review†**, a rigorous assessment addressing all facets of project-specific elements. Critical findings and determinations maximize efficiencies toward successful and cost-effective project completion.

The depth of involvement and degree of precision we bring to many vital aspects of a project are illustrated in the examples that follow. These studies exemplify our profound and abiding commitment as builders.

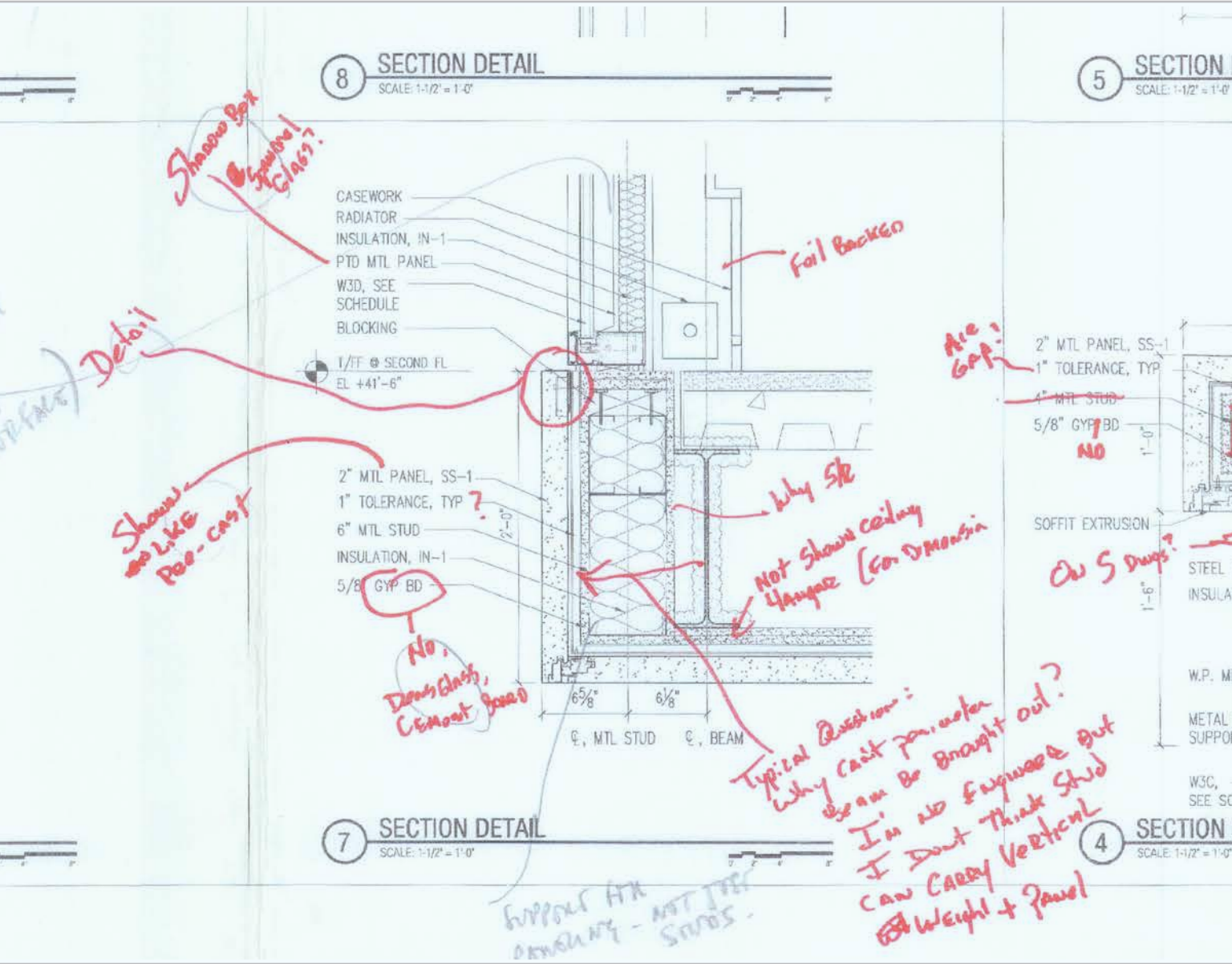
Your project demands nothing less.



DETAILS



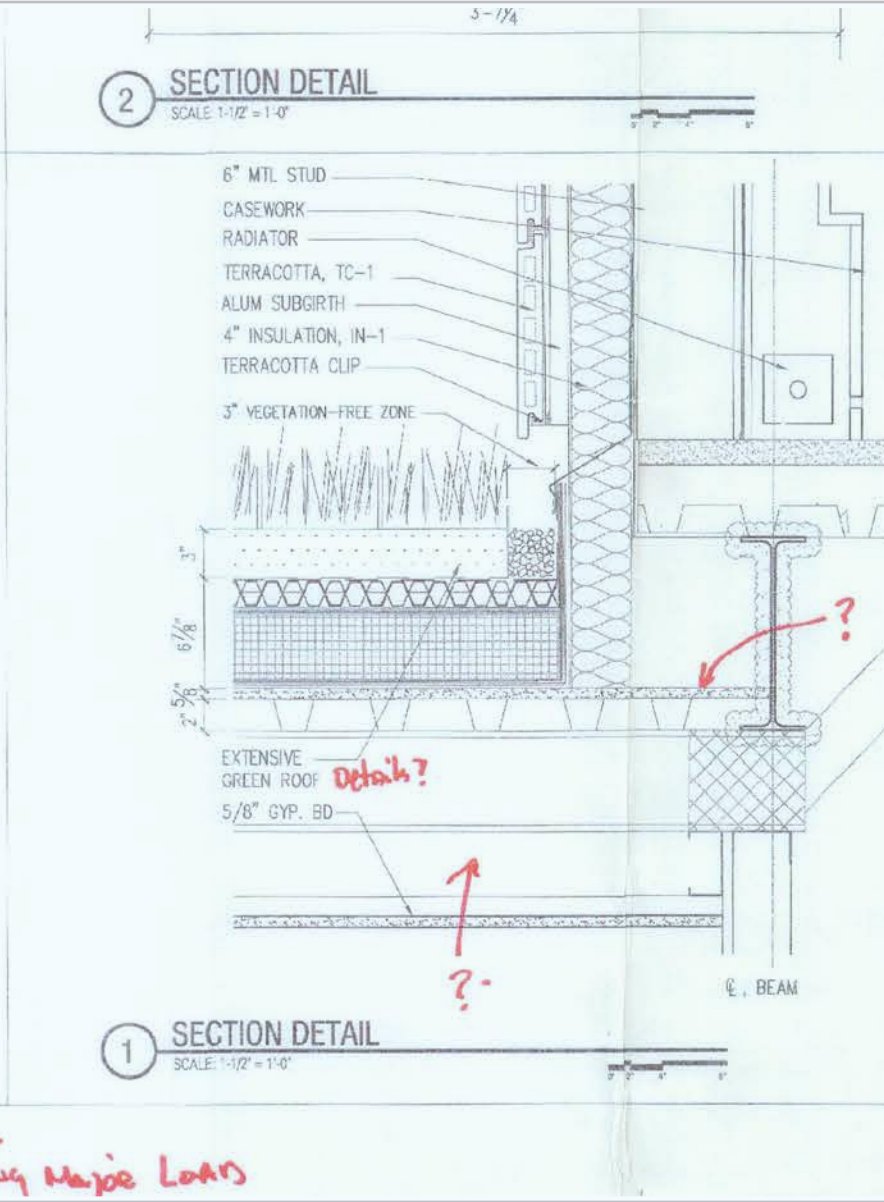
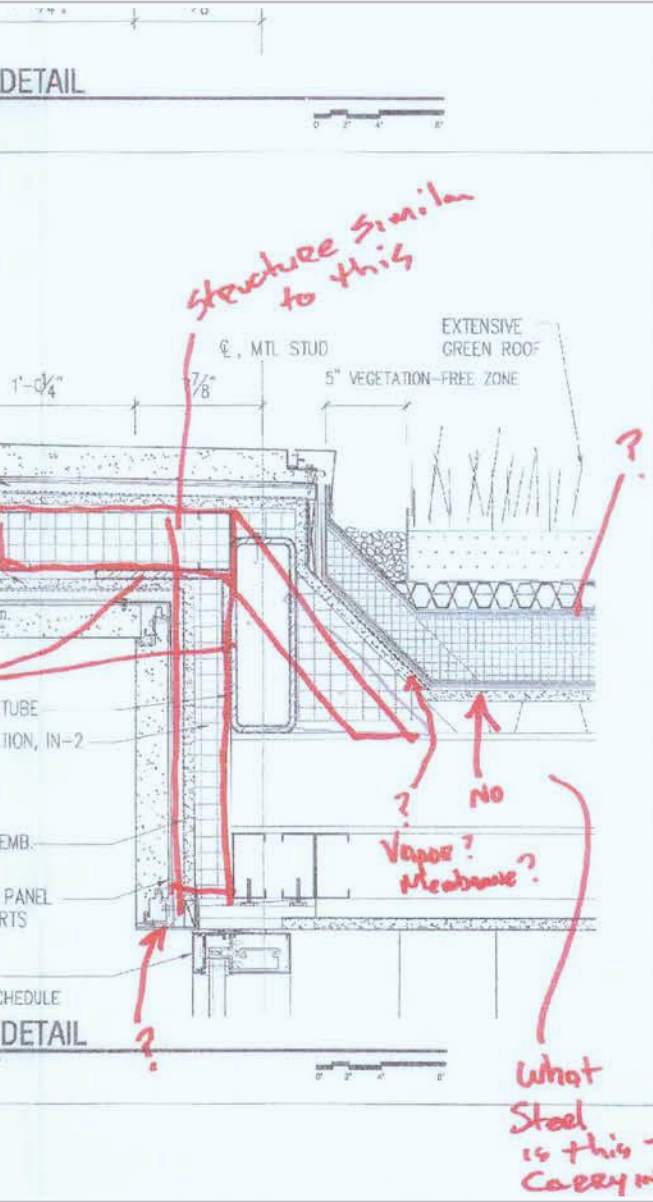
All CAD drawings (other than baseline architectural drawings), annotations, sketches, illustrations, photographs, details and renderings included herein have been provided under the T.E.A.R. Review™ process by Richter+Ratner.



T.E.A.R.™ Review:

Review 200+ pages of drawings to identify alternate Means and Methods, Constructability issues, and Value Engineering ideas.

COLLABORATION



T.E.A.R.™ Result:

A fully "Redlined" set of drawings that enabled R+R & the Project Team to produce an efficient set of Bid Documents.

⌚ = SEQUENCE

CAUTIONS



X-BRACING Will BE IN THE WAY
TBD what portion CAN COME OUT DURING ERECTION



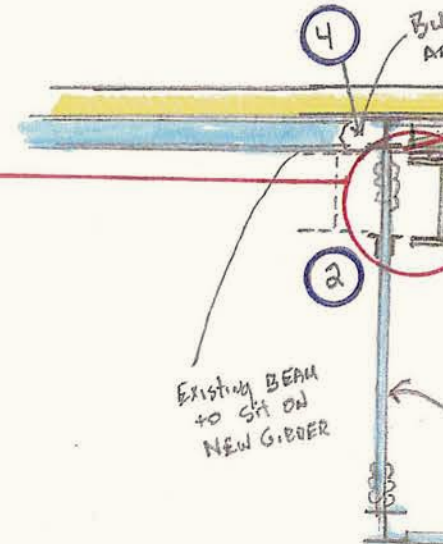
SHORING JACKS Will Congest the
SITE, ESPECIALLY w/ RE-STORES



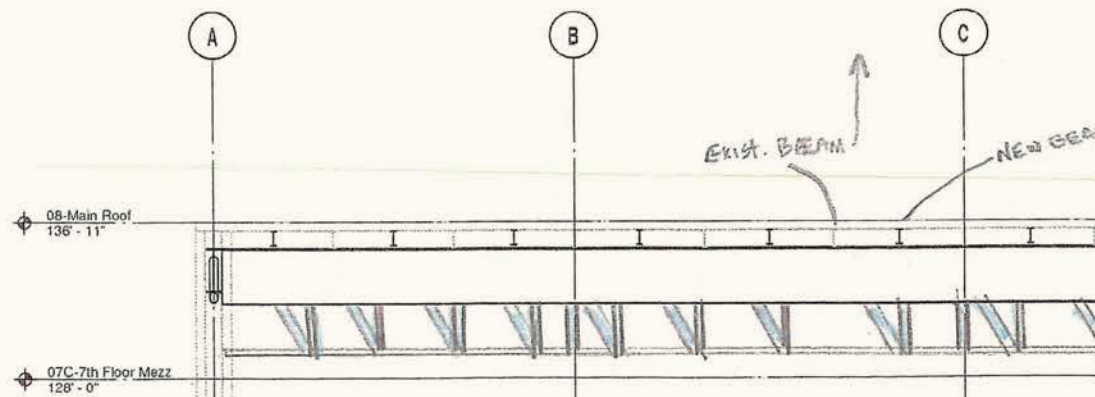
THERE Will BE MAJOR CONNECTION
DETAILS COLUMN TO GIRDER



UNKNOWN CONDITION AT TOP OF
TRUSS TO EXISTING PRE-CAST EDGES



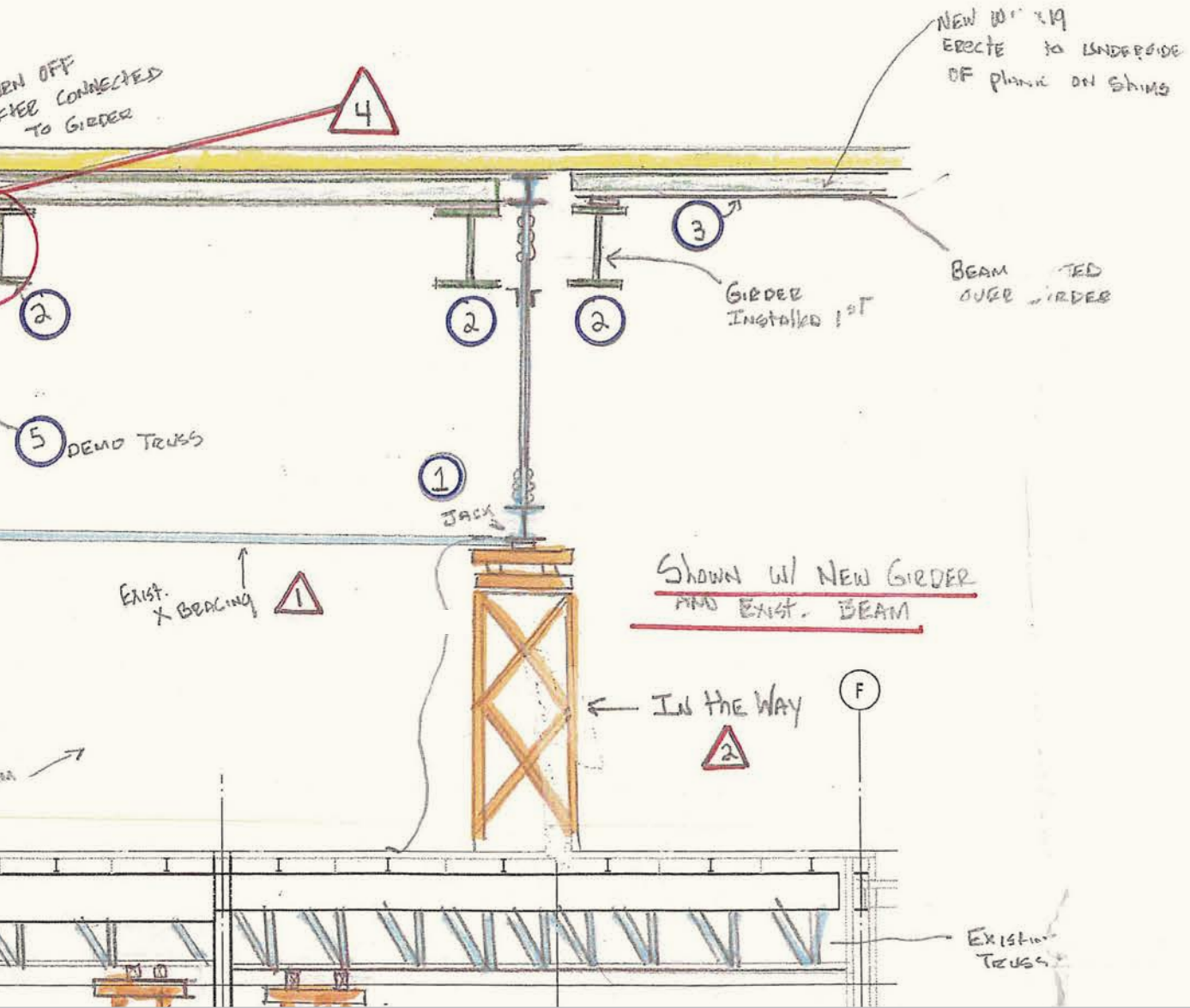
SHOWN w/ EXISTING
BEAM



T.E.A.R.™ Review:

Examine phasing and logistics for a major replacement of structural steel in an existing building which had to be performed in multiple stages due to structural stability.

LOGISTICS



T.E.A.R.™ Result:

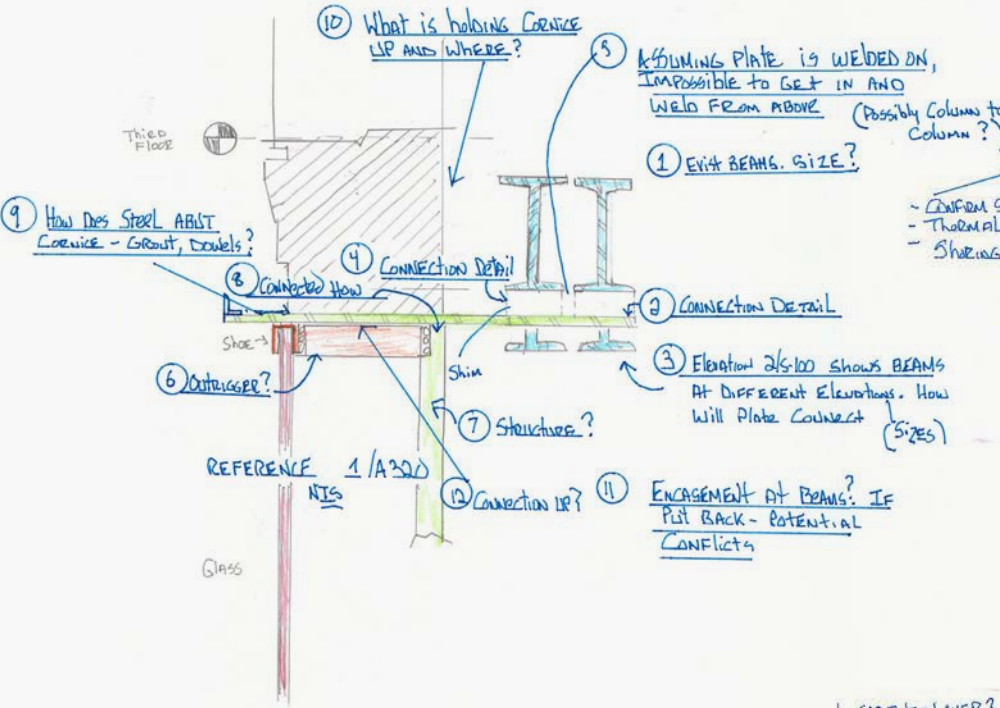
A sequence was established that minimized additional shoring while maintaining an efficient Logistical Approach.

Other

- Arch details to be clarified/ coordinated with CW/FRAMING
- NEED to CONFIRM EXISTING STRUCTURE - IF PROBLEMS NOT DONE, NEED PROBE PACKAGE
- - The TYPE OF FIREPROOFING of EXISTING BEAMS TBD ESPECIALLY WHERE EXPOSED

Things For Constructability Eng And Highlans to Teal out That Could Help COST, SPEED OF Installation and other EFFICIENCIES

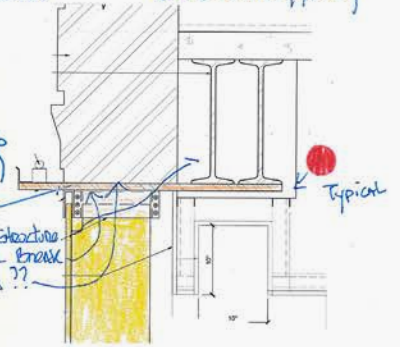
- ① Differentiation of SCOPE:
 - STEEL CONTACTOR/ HA ASSOC.
 - CW JOB/ENG/ WORK WITH HA
 - BY CW SUB
 - (ASSUME MORE COST EFFECTIVE FOR CONTROL, TOLERANCES, RESPONSIBILITY, etc)



⑤ ASSUMING PLATE IS WELDED ON, IMPOSSIBLE TO GET IN AND WELD FROM ABOVE (Possibly Column to Column?)

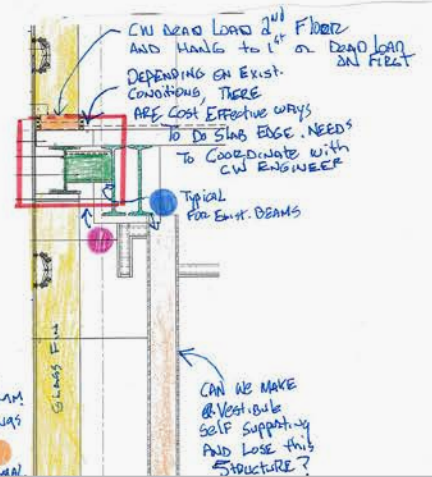
① EXIST BEAMS SIZE?

- CONFIRM STRUCTURE
- THERMAL BREAK
- SHIRING??



③ Elevation 2/5/100 SHOWS BEAMS AT DIFFERENT ELEVATIONS. How Will Plate Connect (SIZES)

⑪ ENGAGEMENT AT BEAMS? IF PUT BACK - POTENTIAL CONFLICTS

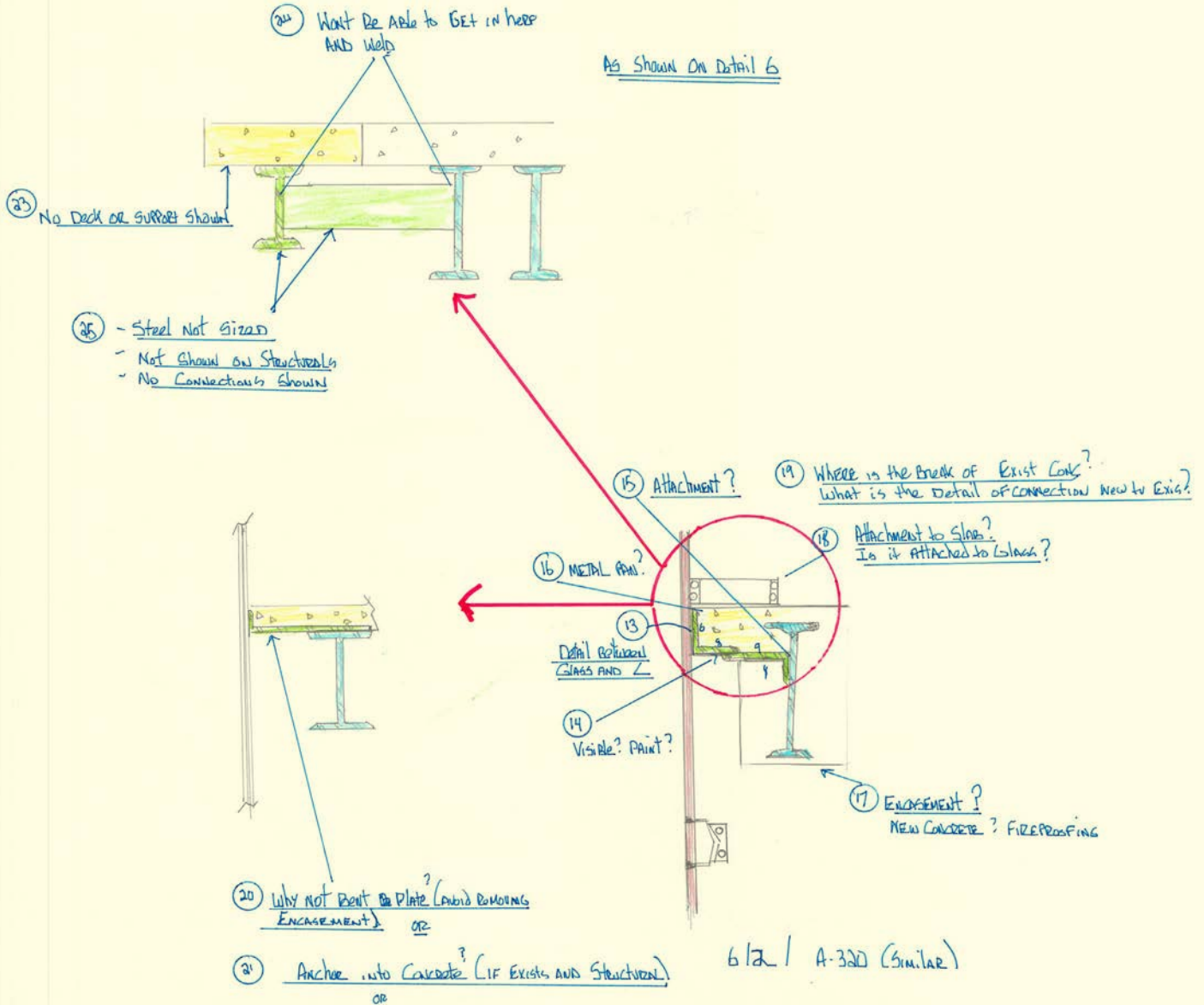


● SET INTER LAYER? Will MAKE THINNER, POSSIBLY 3 LAYERS of 6MM! (SAVED of CW ENGINEER SAVINGs FOR COST)

T.E.A.R.™ Review:

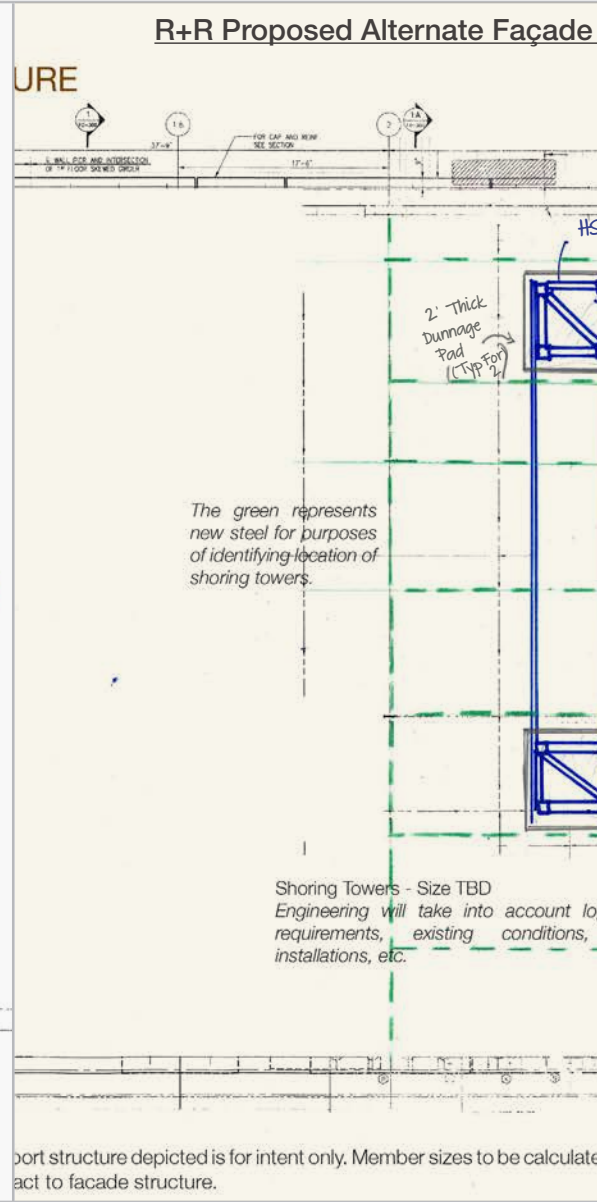
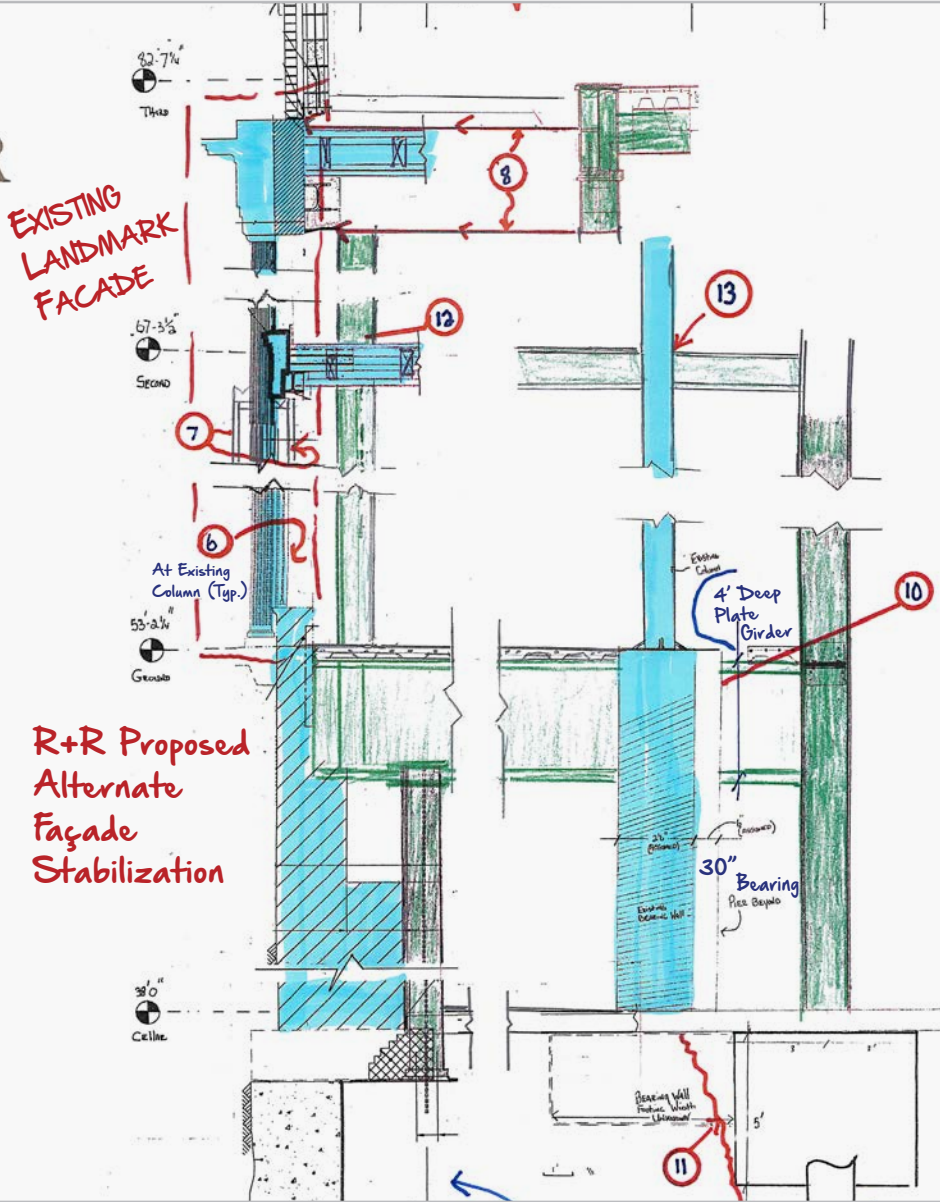
Outline areas of concern w/Constructability and Means & Methods to propose to design team for integration into design.

CONSTRUCTABILITY



T.E.A.R.™ Result:

Any conflicts were identified and all additional information was integrated into design documents.

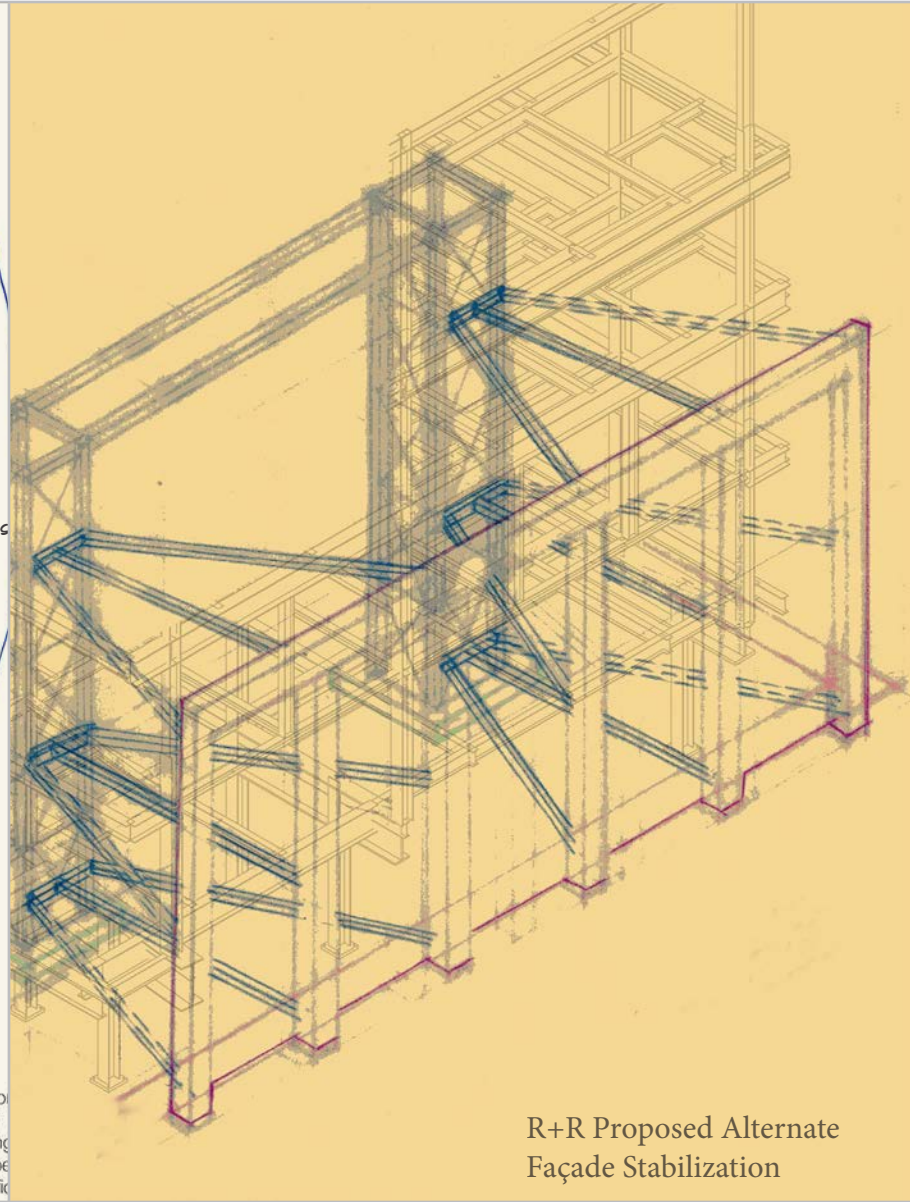


T.E.A.R.™ Review:

Present an Alternate Shoring System to hold up an existing façade. As designed it would conflict with pile installation.

SEQUENCING

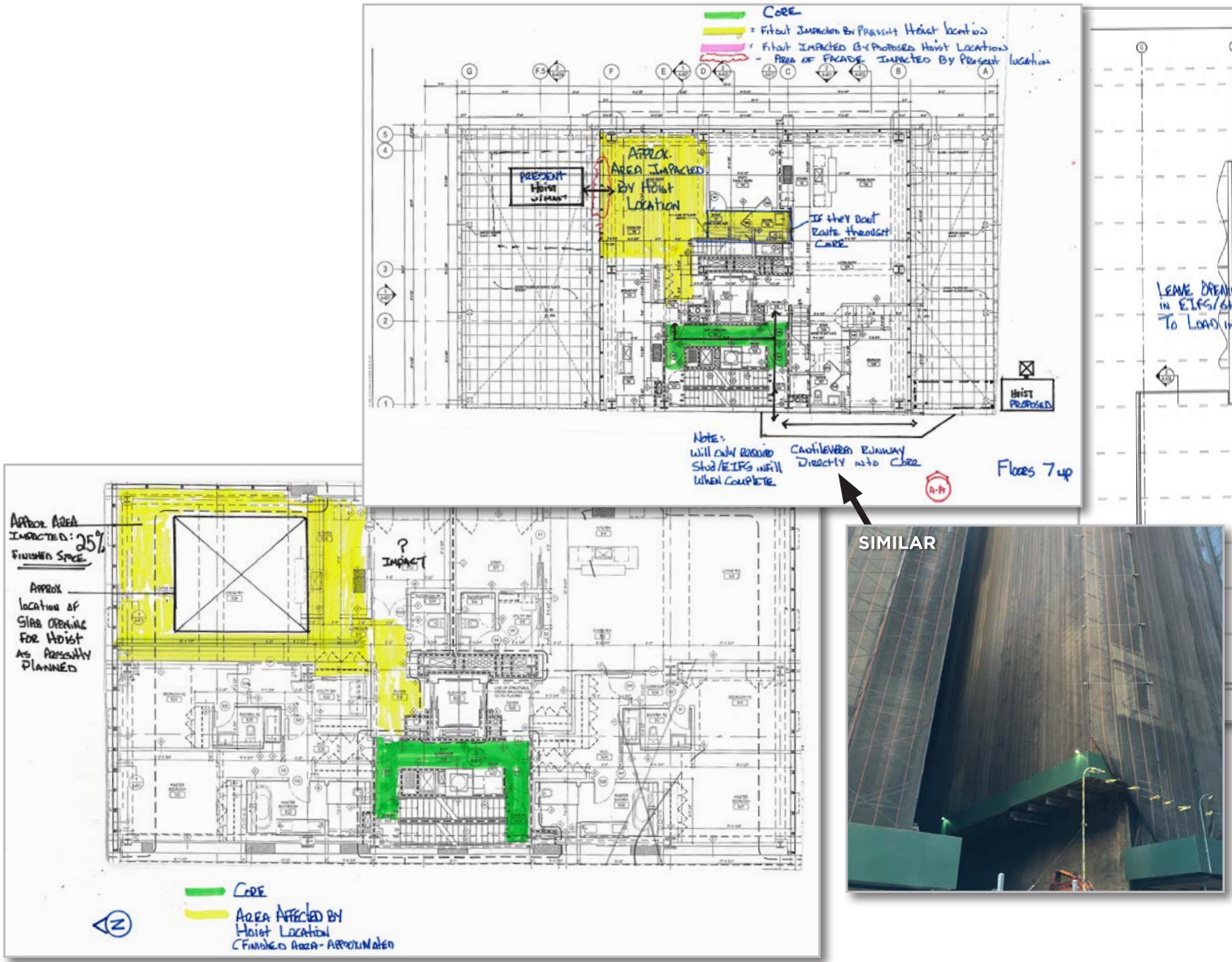
Stabilization



T.E.A.R.™ Result:

A system was designed and proposed that would keep the shoring in a remote location that would not interfere with the proposed work.

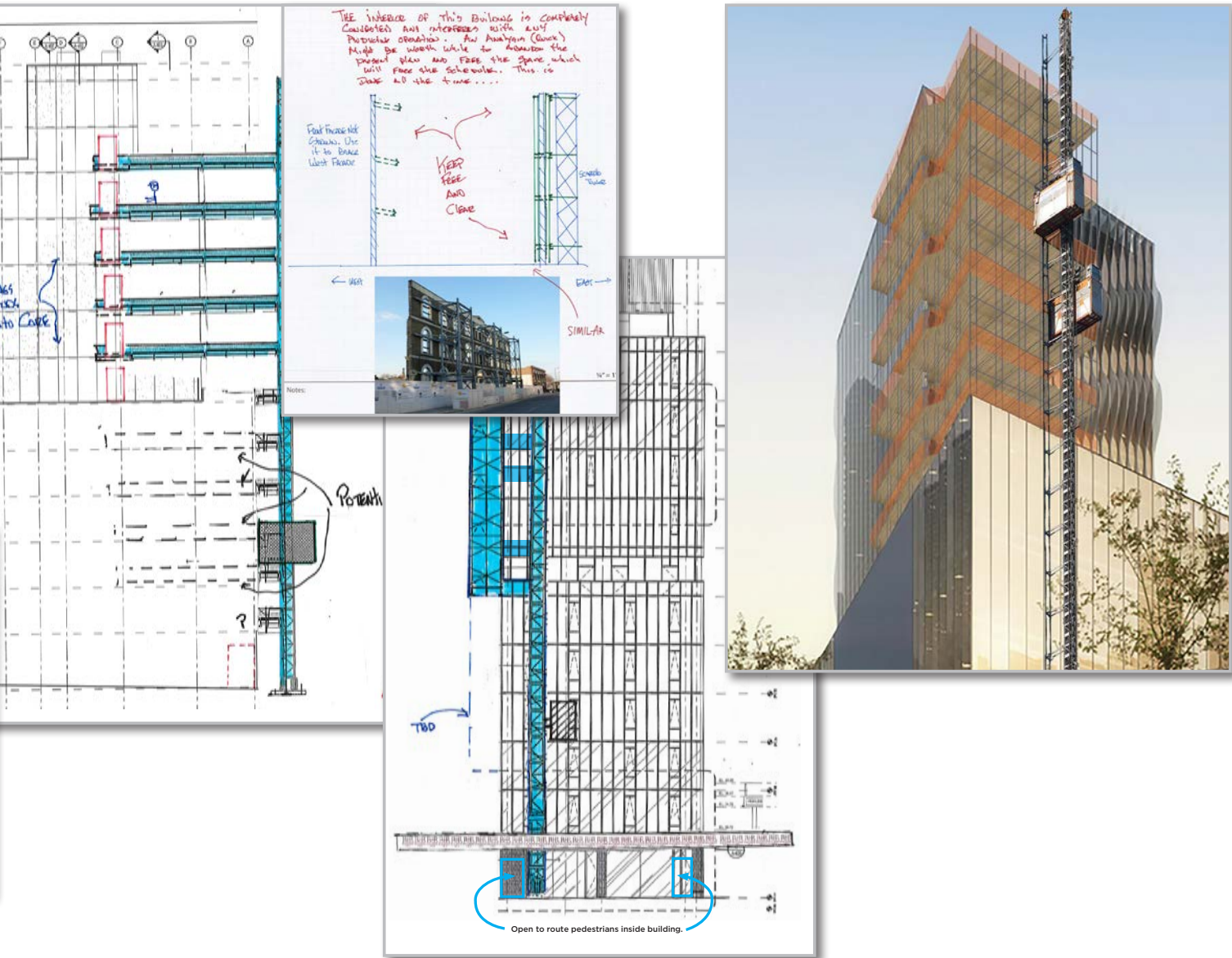
TECHNICAL EVALUATION ANALYSIS RECOMMENDATION™



T.E.A.R.™ Review:

Review proposed location of interior hoist that was impacting the delay of finishes.

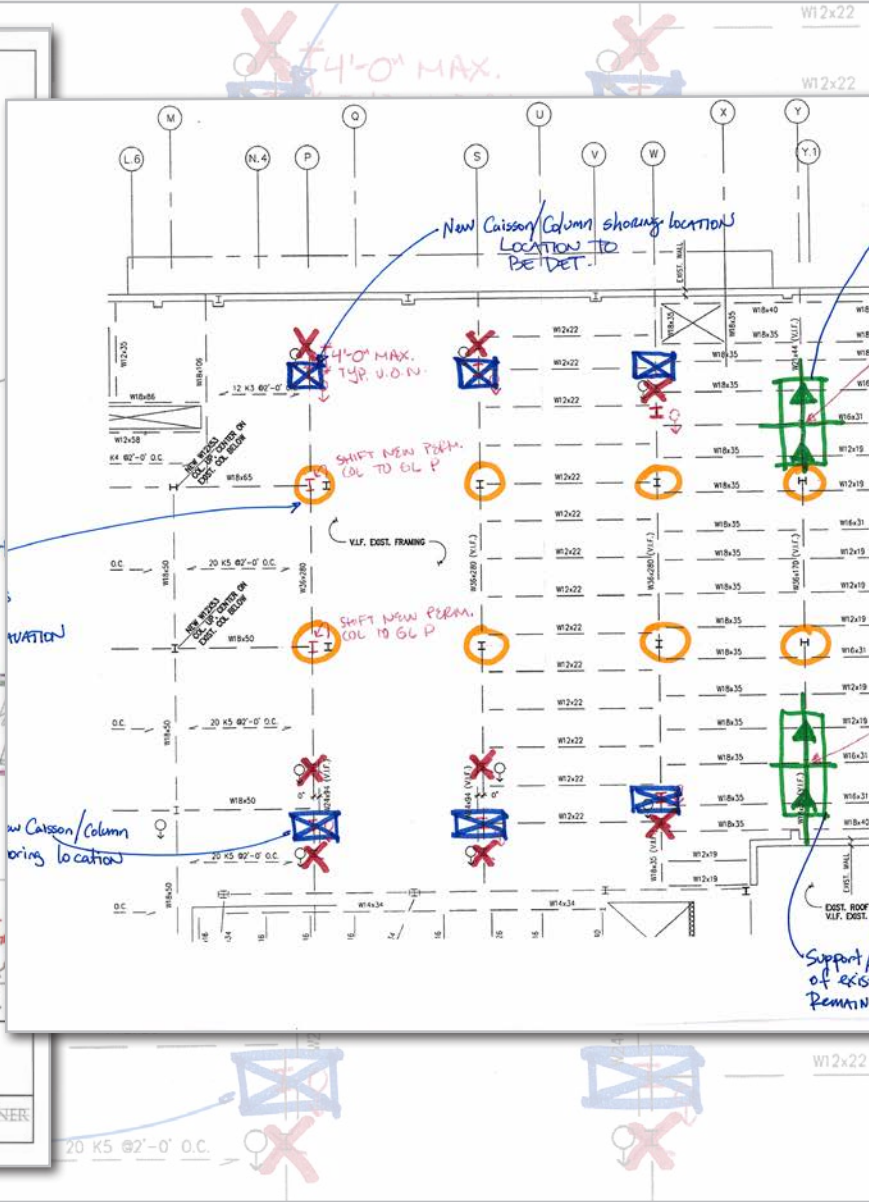
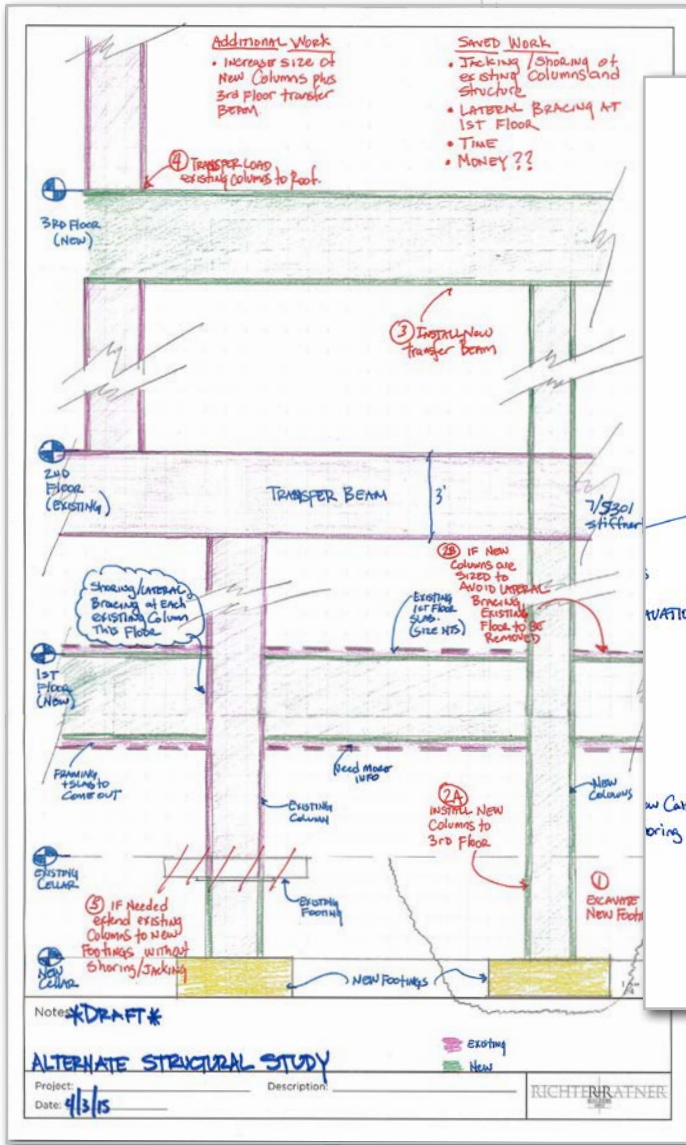
LOGISTICAL STUDY TO REDUCE SCHEDULE



T.E.A.R.™ Result:

It was determined to place the hoist on the exterior (not interior as proposed) with a cantilevered scaffold. This would bring manpower & materials into core of the building thus minimizing impact on interior fit-out and related schedule.

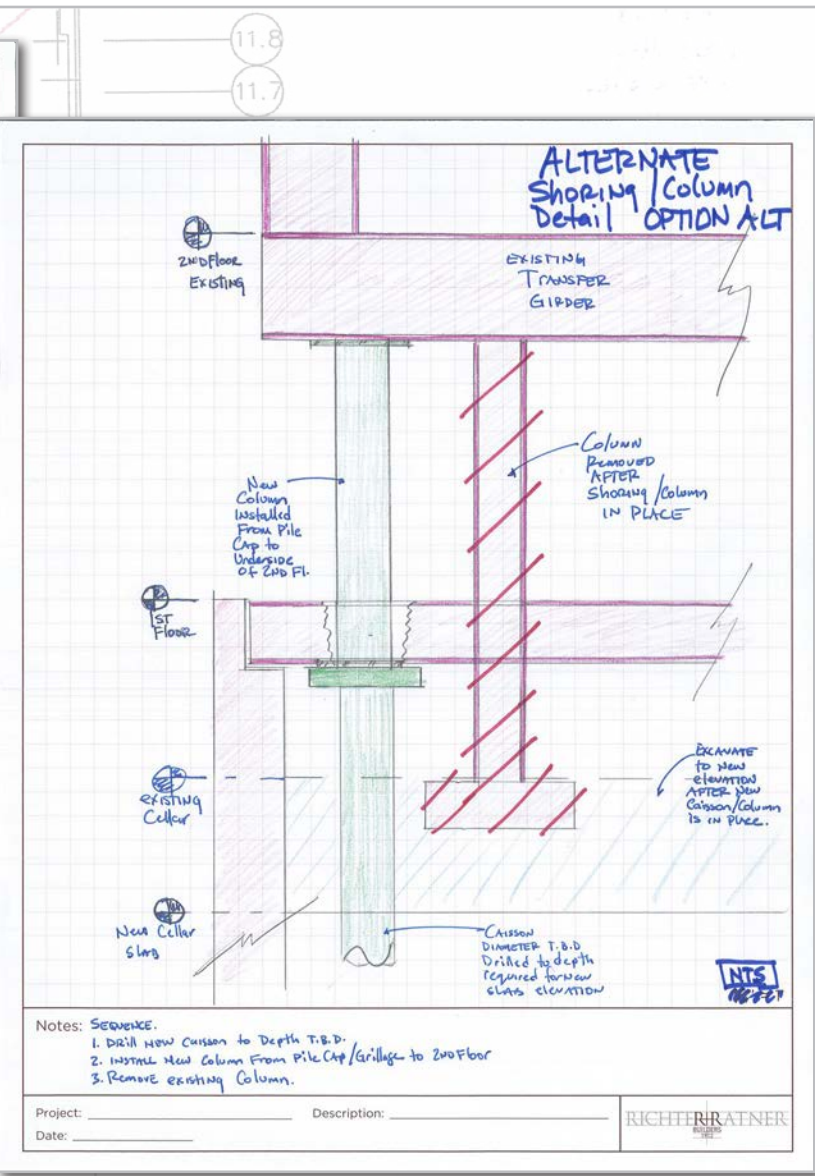
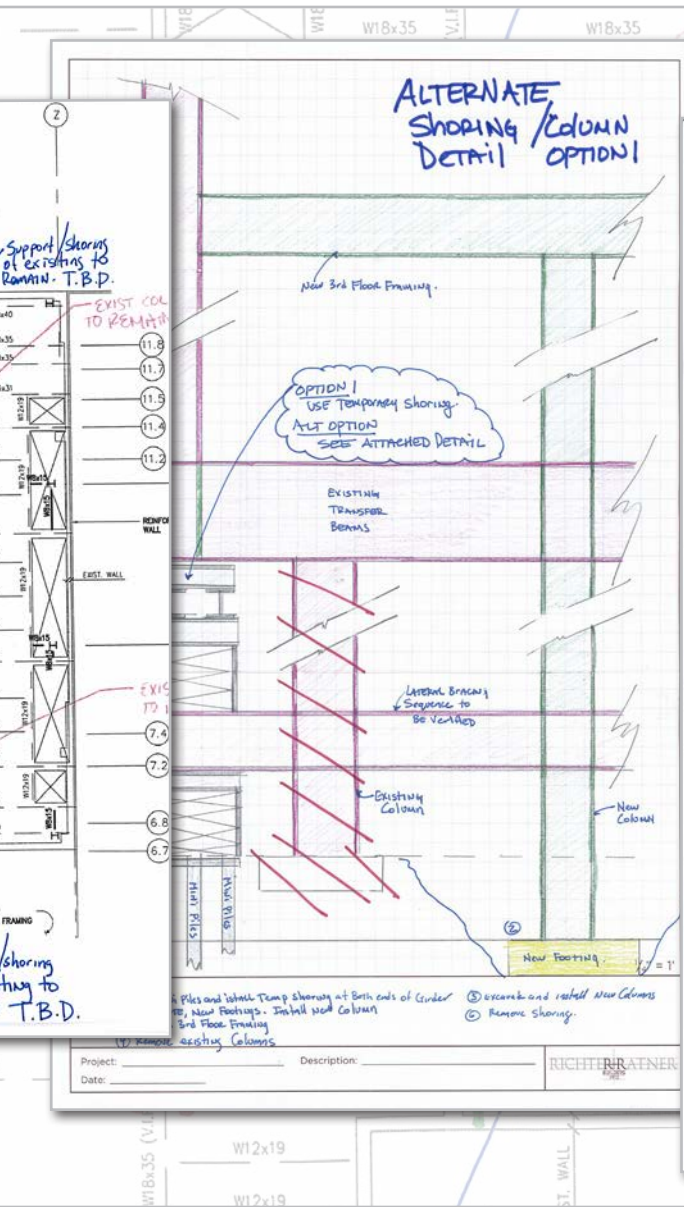
TECHNICAL EVALUATION ANALYSIS RECOMMENDATION™



T.E.A.R.™ Review:

Study for alternate method of jacking structure for removal of columns.

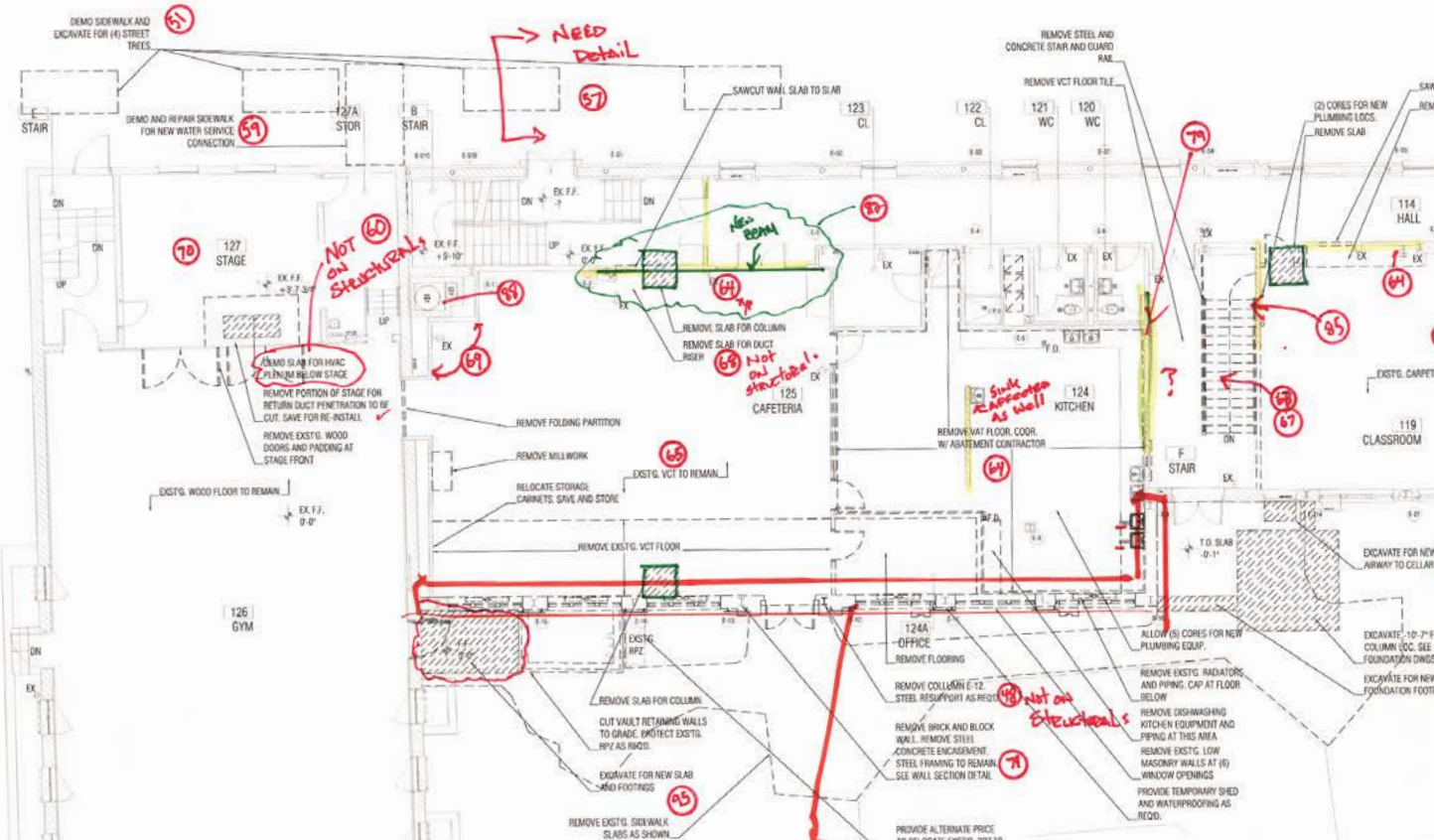
VALUE ENGINEERING



T.E.A.R.™ Result:

Alternate method achieved utilizing alternate shoring approach which resulted in considerable savings.

TECHNICAL EVALUATION ANALYSIS RECOMMENDATION™



KEY NOTES

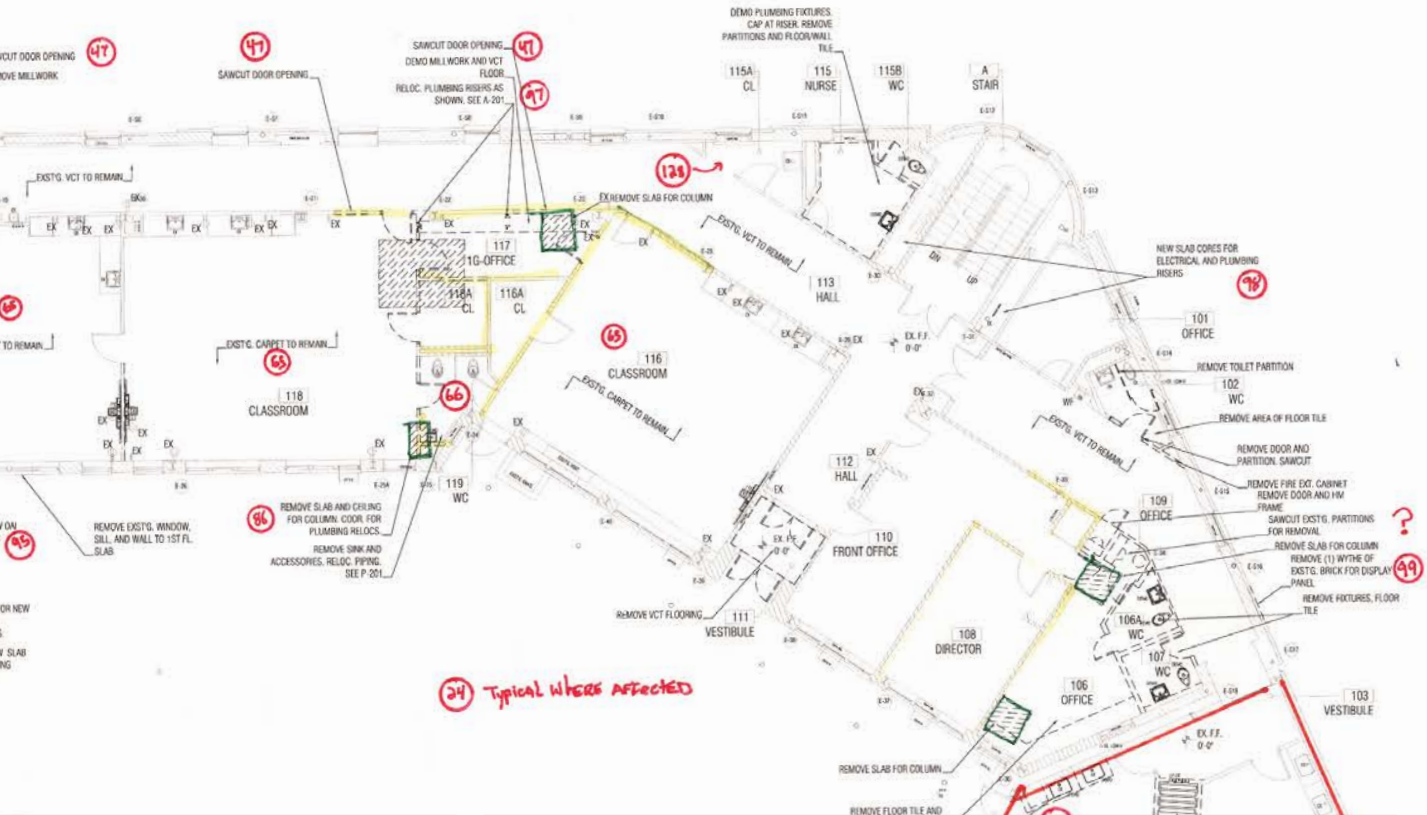
Note #	Description
24	New outlets where existing are to remain but walls will come out
28	First floor framing does not show slab opening for duct at 129. Need details
29	Similar to above, New partitions/electrical at 129
47	Blank
48	D101 states to remove column E-12. Must be a mistake. Nothing shown on structural
51	R+R internal note
57	D-101 calls for excavating tree pits need details
59	Where is connection for new fire service?

60	Drawings (D101) call for new slab opening at Room 129
62	Same as 60
64	Typical for #3, existing electric in walls will be affected
65	Existing finishes called out to remain will be affected
66	Existing bathroom will be affected by structural work
67	Stair will be removed leaving a slab opening. No new
68	Drawing calls for removal of slab for duct. Opening no
69	This wall is not shown on Architecturals
70	Some kind of opening will need to be made for equip
71	Need details

T.E.A.R.™ Review:

Review 200+ pages of drawings to identify alternate Means and Methods, Constructability issues, and Value Engineering ideas.

DRAWING REVIEW



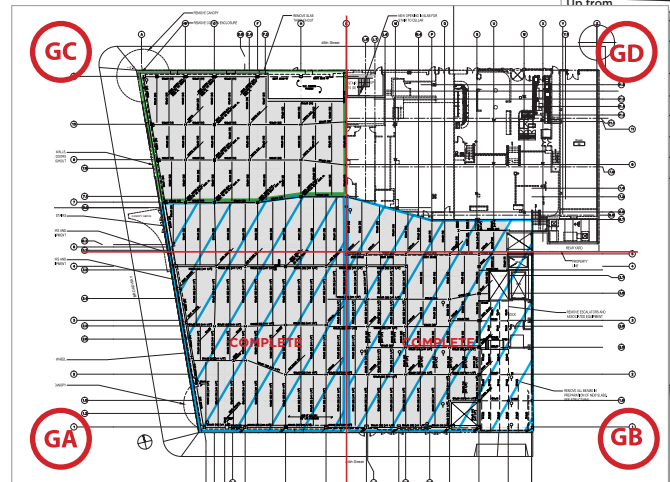
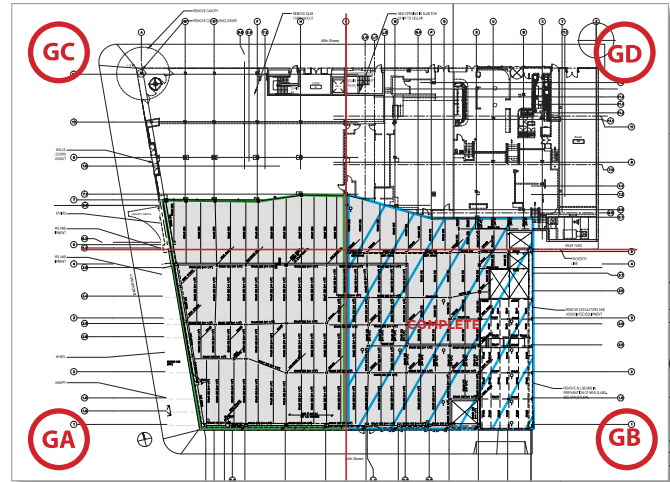
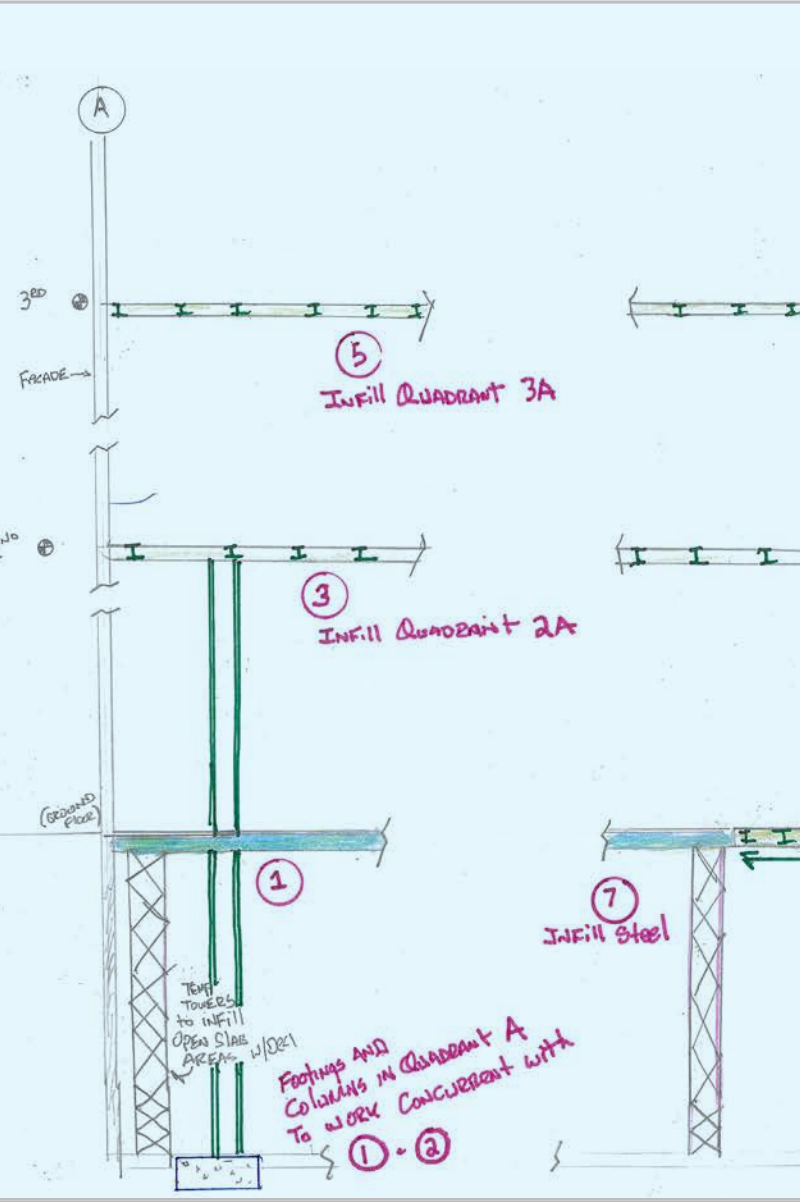
24 Typical Areas Affected

7. Not on structural - need details
structurals work shown to close
not on structurals
ment/materials to go down to cellar

79	Calling for new partition but shown as existing to remain on demolition drawing
82	At need beam installation and related showing adjacent finishes to remain will have to get removed for accessibility
85	There is a shaft shown in this location on 1st floor Construction Plan but no other drawings, including structurals, show it.
86	Note on demo drawing for Room 118 calls for slab to be removed. Need structural details.
88	Calls for new risers. Existing walls will need to be opened up
95	Structural drawings do not show work in this location
97	D101 calls for relocating. Plumbing risers & references A201. No information there to price
98	How will this be accessed?
99	Need details
128	Is this open presently?

T.E.A.R.™ Result:

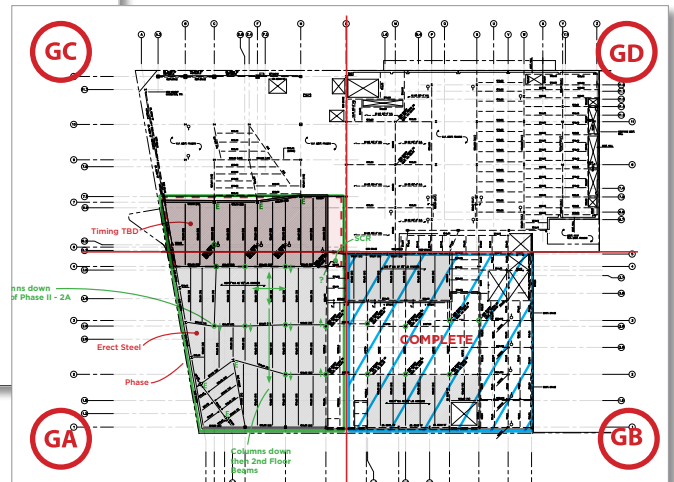
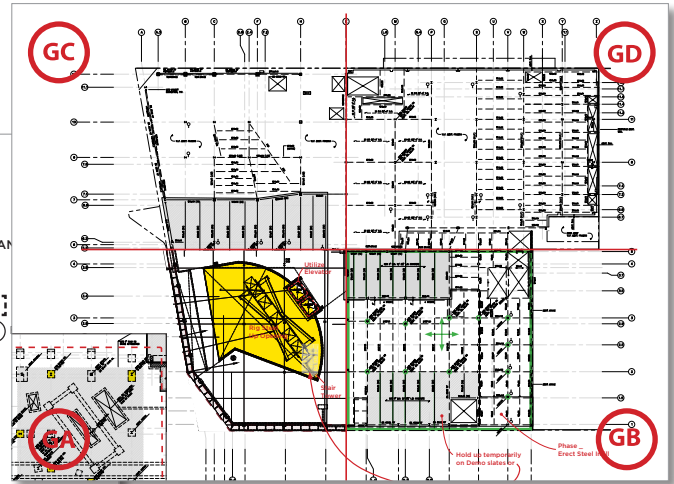
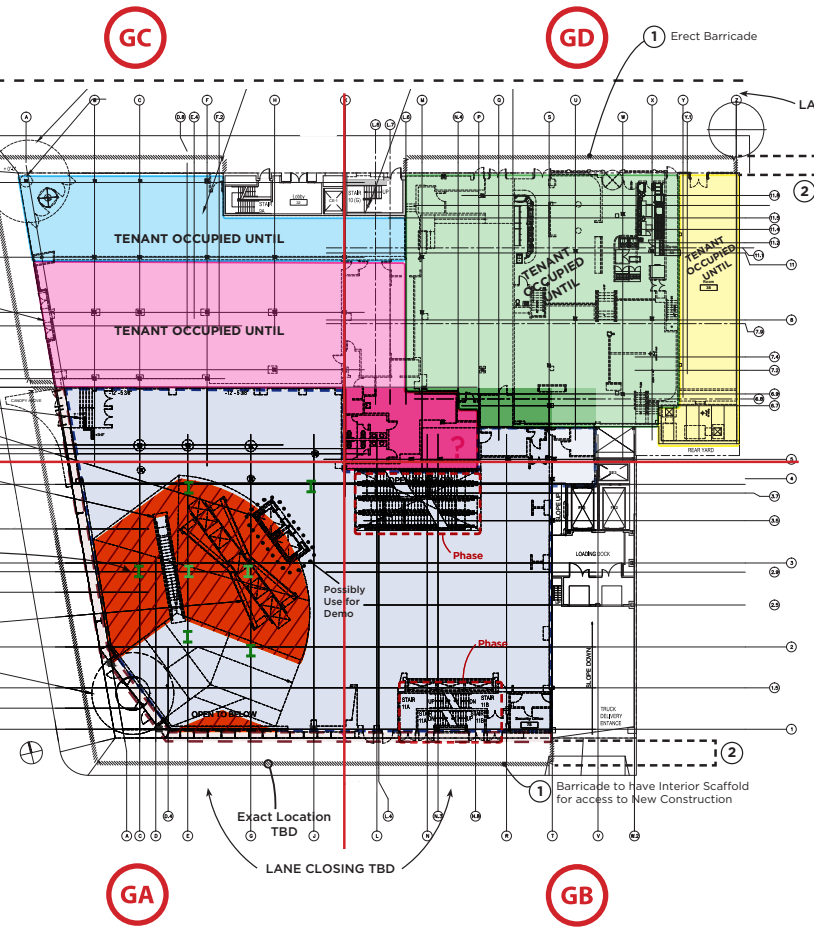
A fully “Redlined” set of drawings was produced that enabled R+R & the Project Team to produce an efficient set of Bid Documents, outlining many critical components.



T.E.A.R.™ Review:

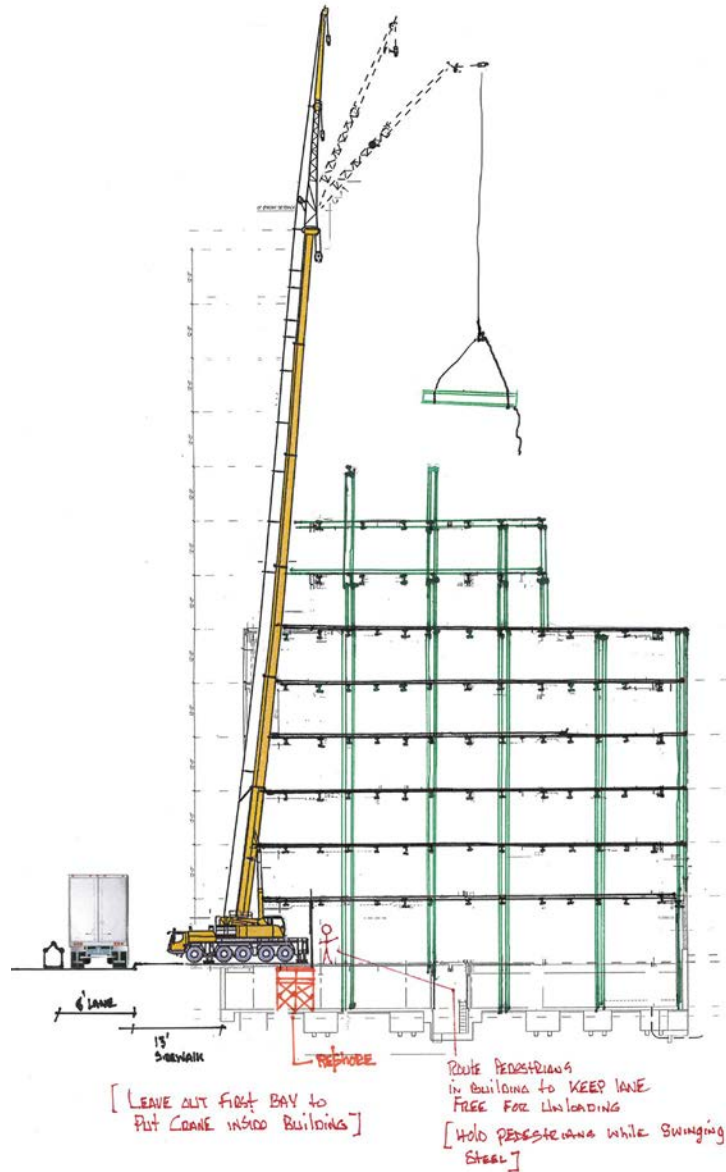
Examine phasing and logistics for a major replacement of structural steel in an existing building which had to be performed in multiple stages due to the structural stability.

PHASING



T.E.A.R.™ Result:

A sequence was established that minimized additional shoring while maintaining an efficient Logistical Approach.



T.E.A.R.™ Review:

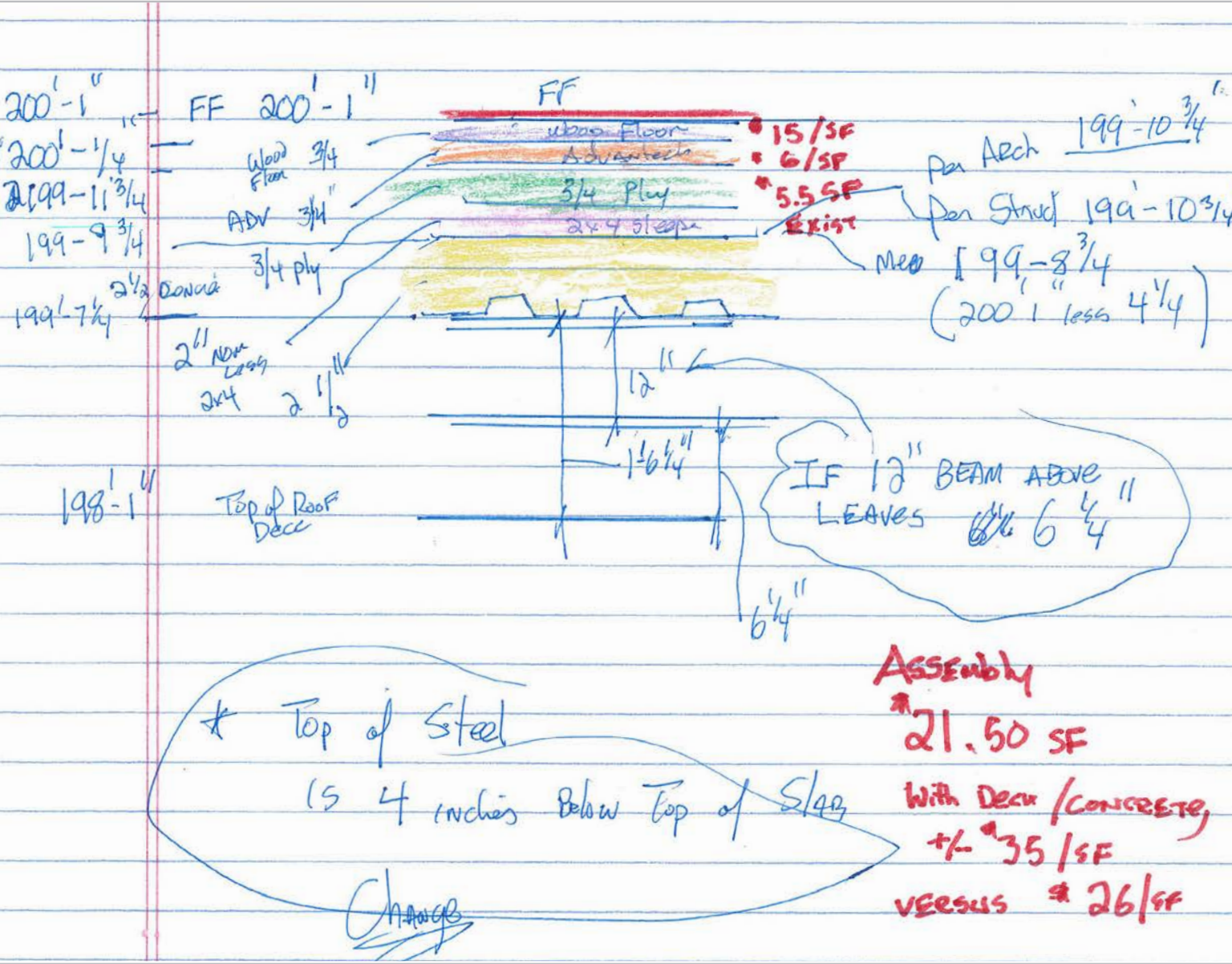
Intent on erecting steel by hand with belief that there is no place for a crane. This would result in an erection process 40% longer than if a crane was used.

LOGISTICS



T.E.A.R.™ Result:

The crane was placed partially inside the building.

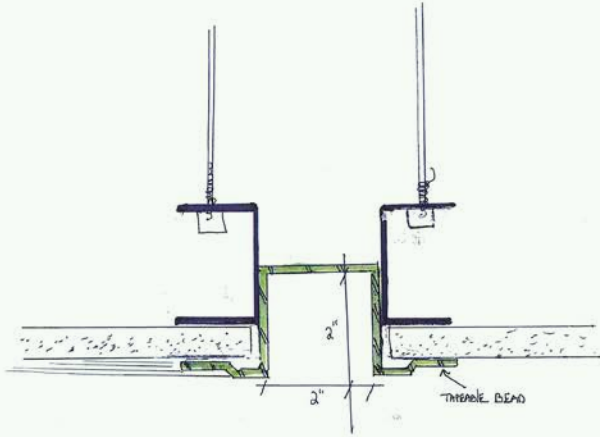


T.E.A.R.™ Review:

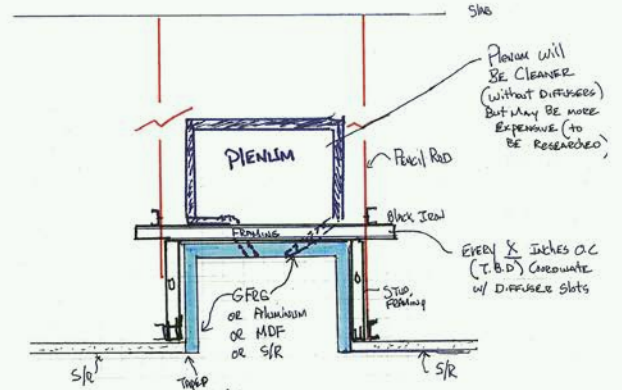
Cost studies based on Architect's request to meet "Shape & Form" leaving freedom for Means & Methods & Materials.

COST STUDIES

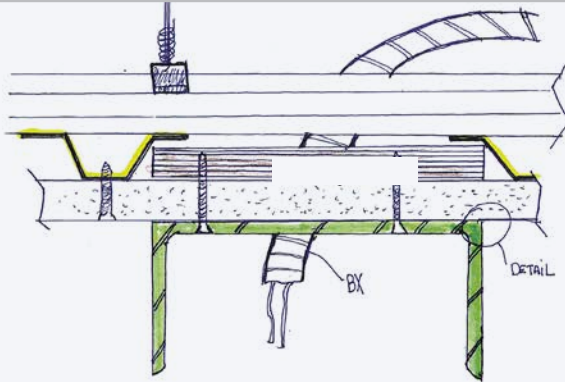
RECESSED DETAILS



PRE-MANUFACTURED OFF THE SHELF BRAKE FORM

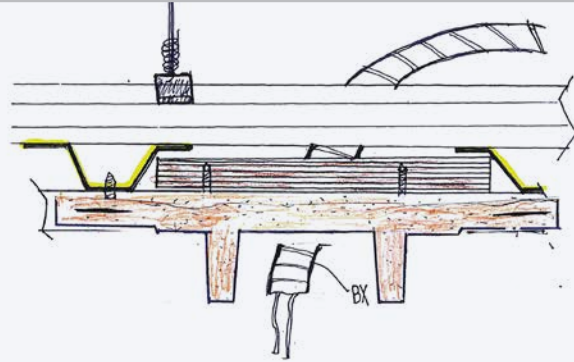


ALTERNATE APPROACH



Aluminium Channel

Estimated Furnish Price	\$4/LF
Estimated Install Price	\$8/LF
Quantity	4,250
Total	\$51,000

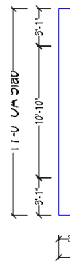
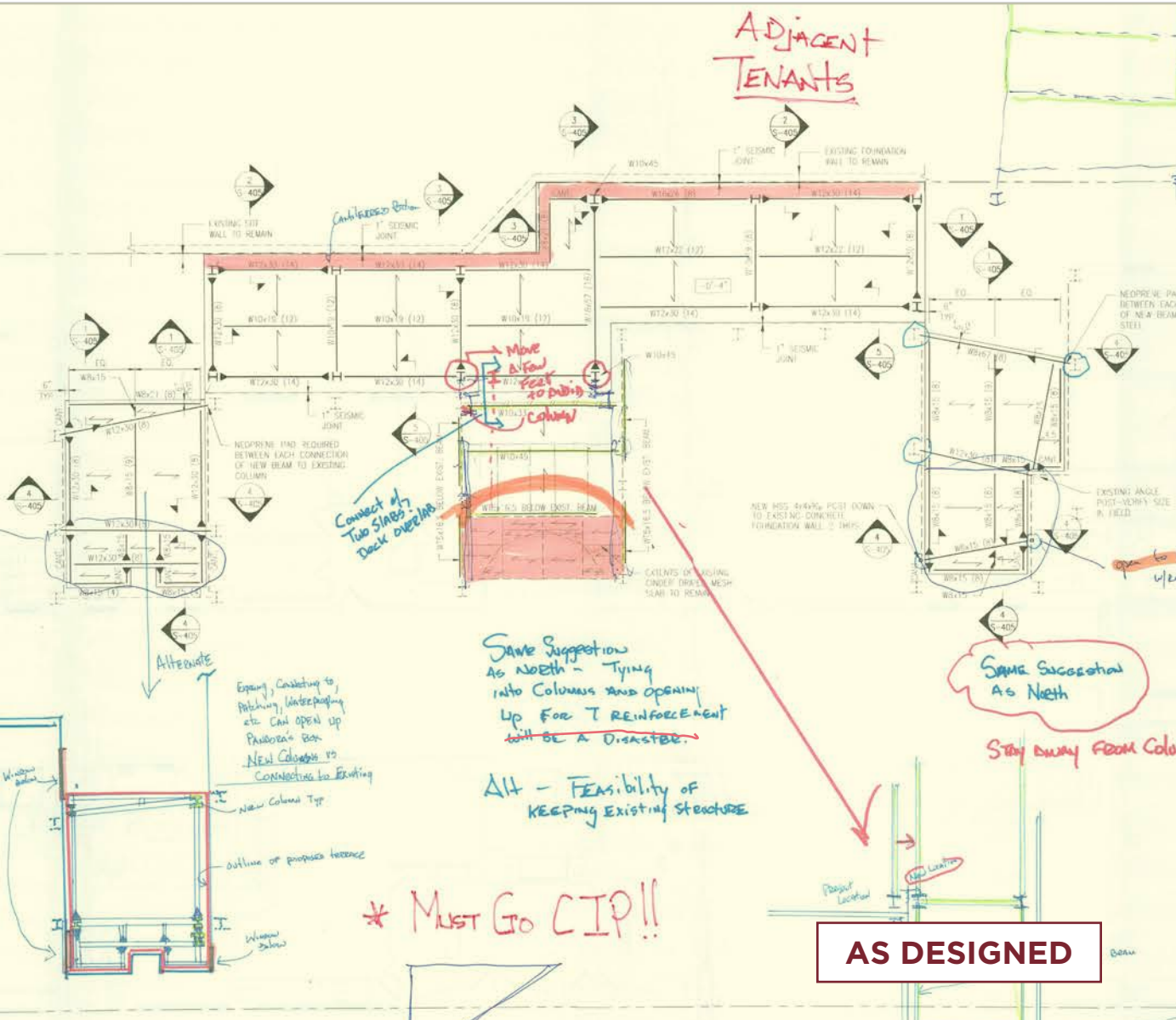


GFRG "Channel"

Estimated Furnish Price	\$7.5/LF
Estimated Install Price	\$10/LF
Quantity	4,250
Total	\$74,375

T.E.A.R.™ Result:

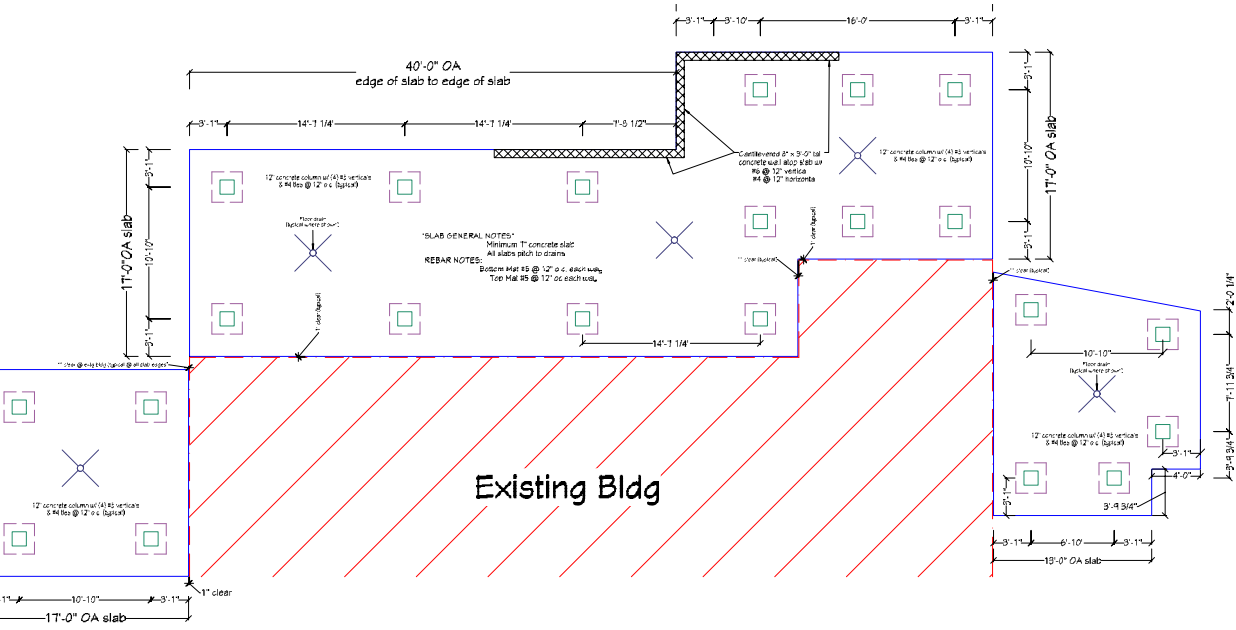
Multiple schemes were presented utilizing multiple products and processes.



T.E.A.R.™ Review:

Examine the steel structure as designed to see if there is an alternate means for constructing.

DRAWING REVIEW / VALUE ENGINEERING



Elevated Slab Plan

PROPOSED

General Notes

Revised as per comments	2/19/13
Preliminary drawing for review	2/6/13
No.	Date
Revision/Issue	

Firm Name and Address

R+R Richter-Ratner Co.
43 W. 36th St., 13th Floor
New York, NY 10018

Drawn By: AP

Project Name and Address

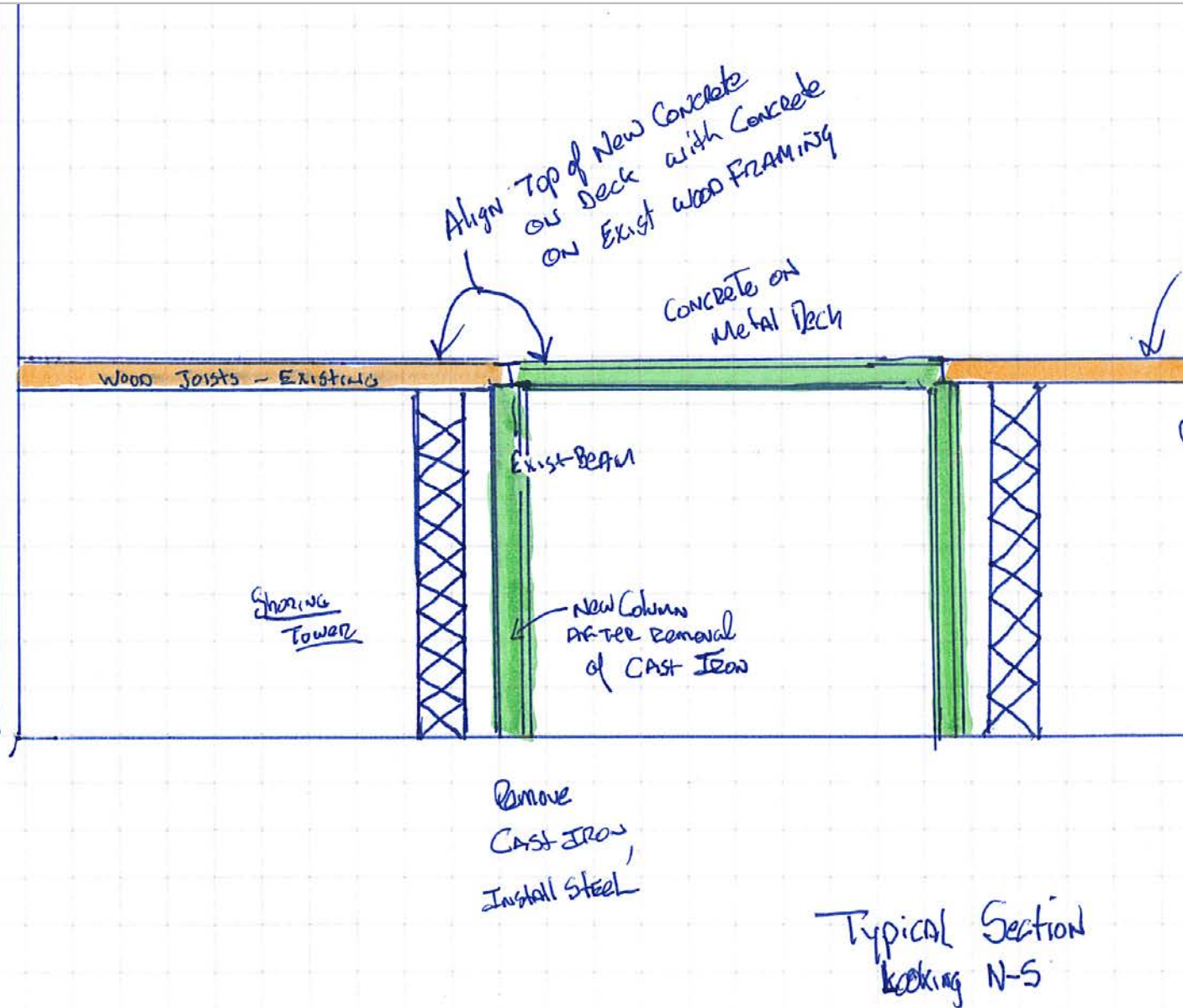
Terraces

Project	Sheet
Date	1 of
Scale	1/4" = 1'-0"

T.E.A.R.™ Result:

R+R proposed Cast-In-Place Concrete and took on the responsibility to redesign it, which was a better installation and yielded a 25% savings.

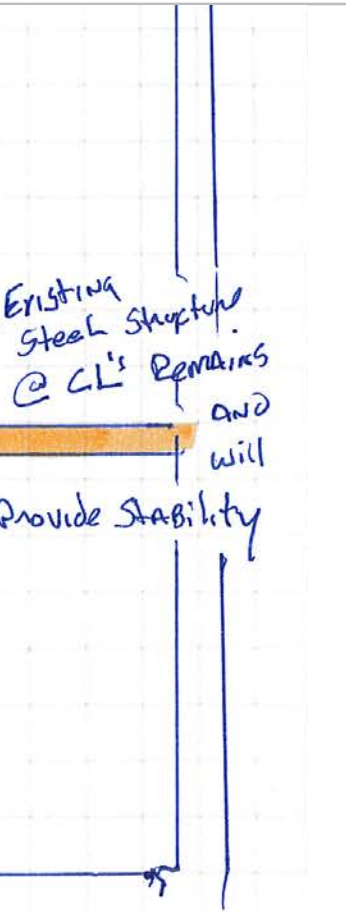




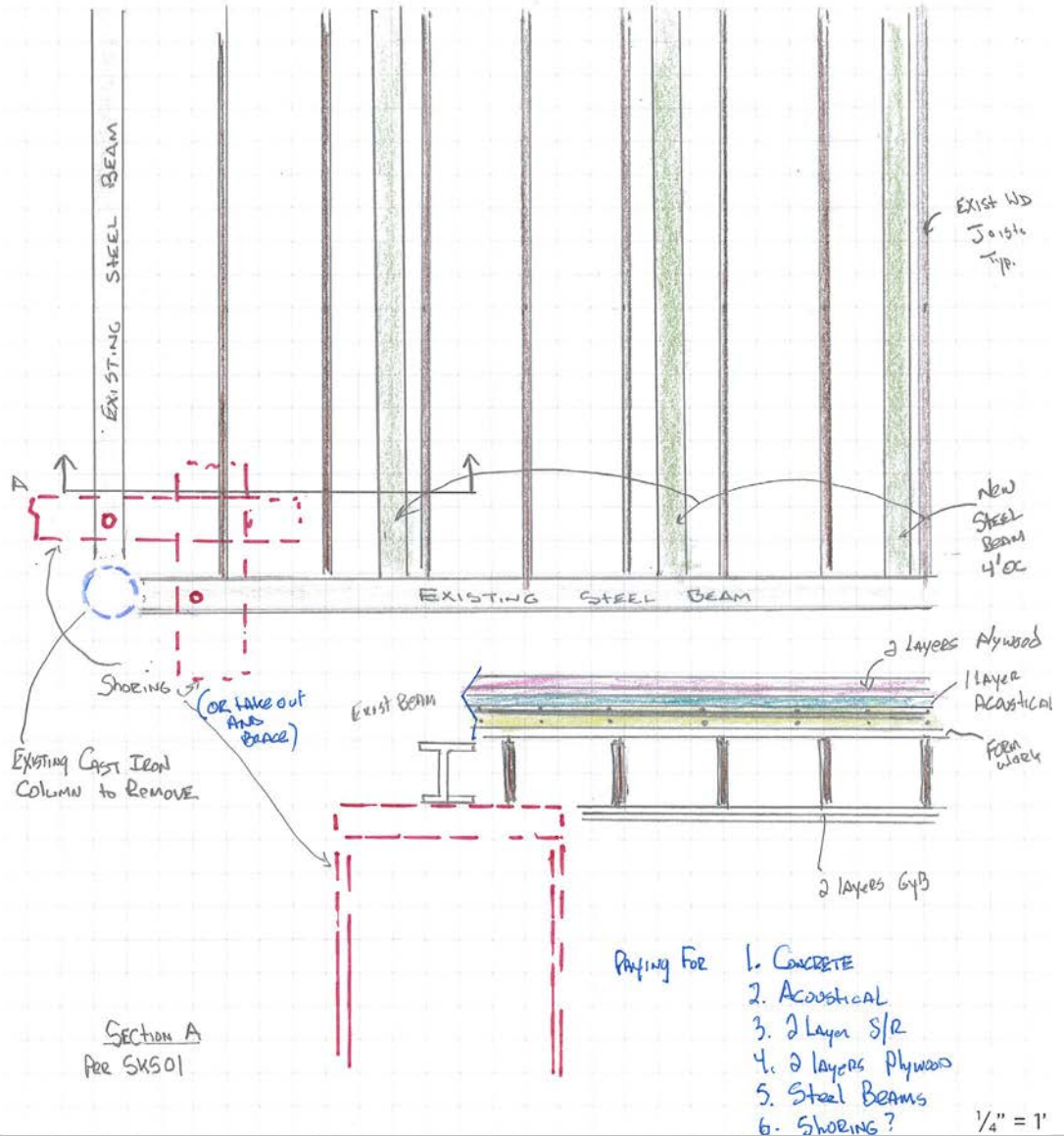
T.E.A.R.™ Review:

Assess feasibility of integrating new structure with the structure in existing building while maintaining structural stability.

MEANS & METHODS



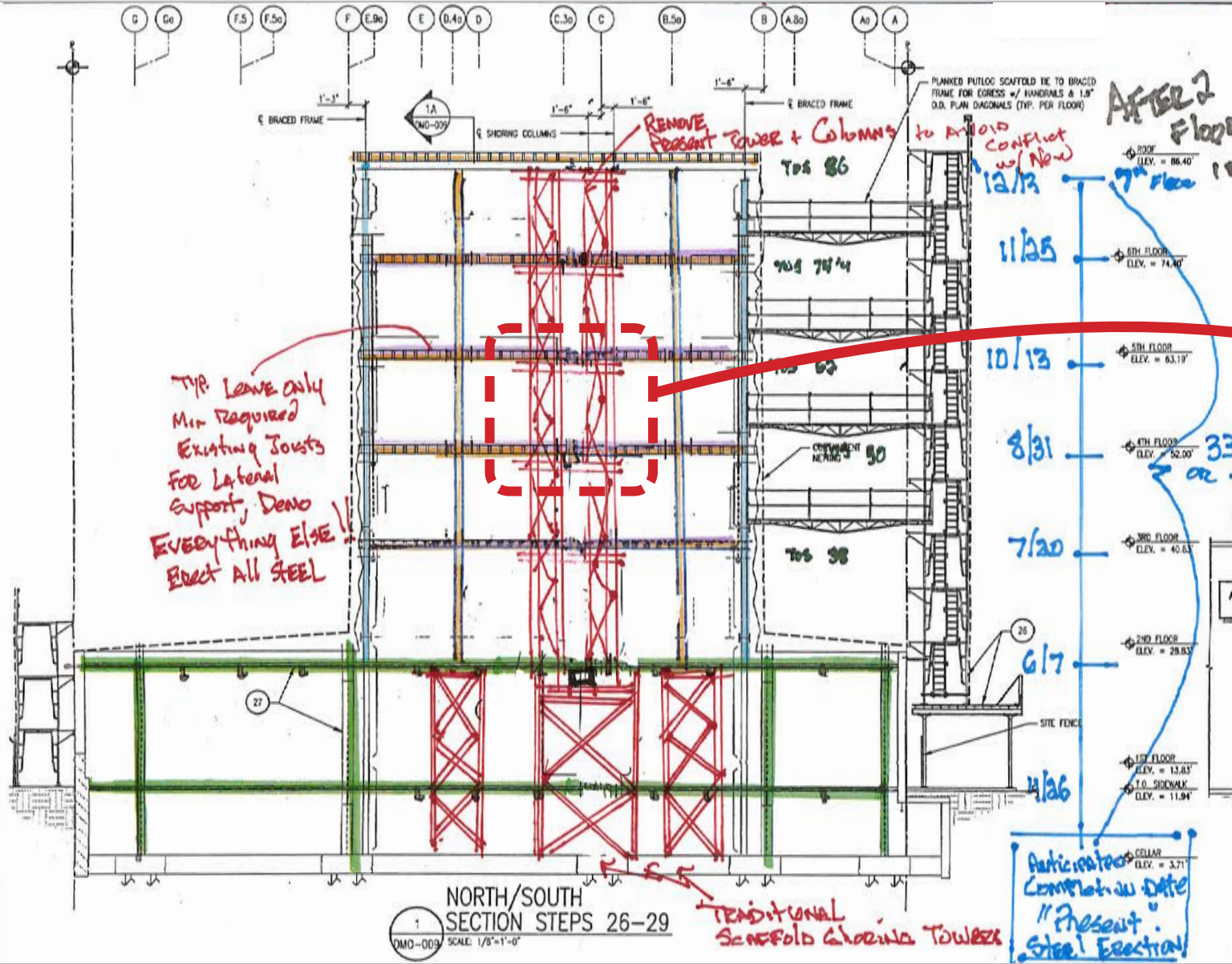
Existing Steel Structure @ CL's Remains AND will provide stability



T.E.A.R.™ Result:

A series of shoring and bracing was introduced in a manner that minimized each floor having lateral bracing.

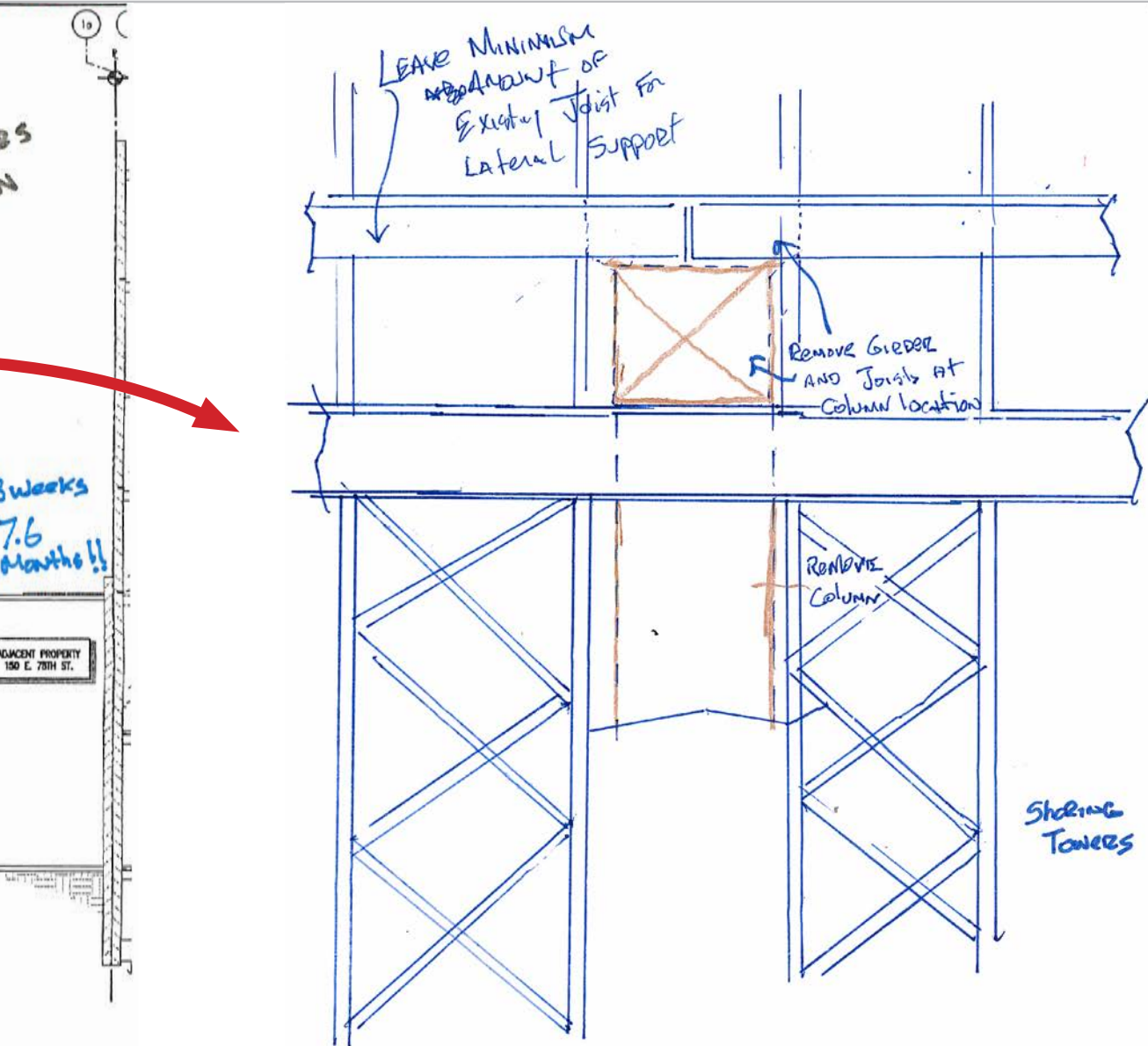
TECHNICAL EVALUATION ANALYSIS RECOMMENDATION™



T.E.A.R.™ Review:

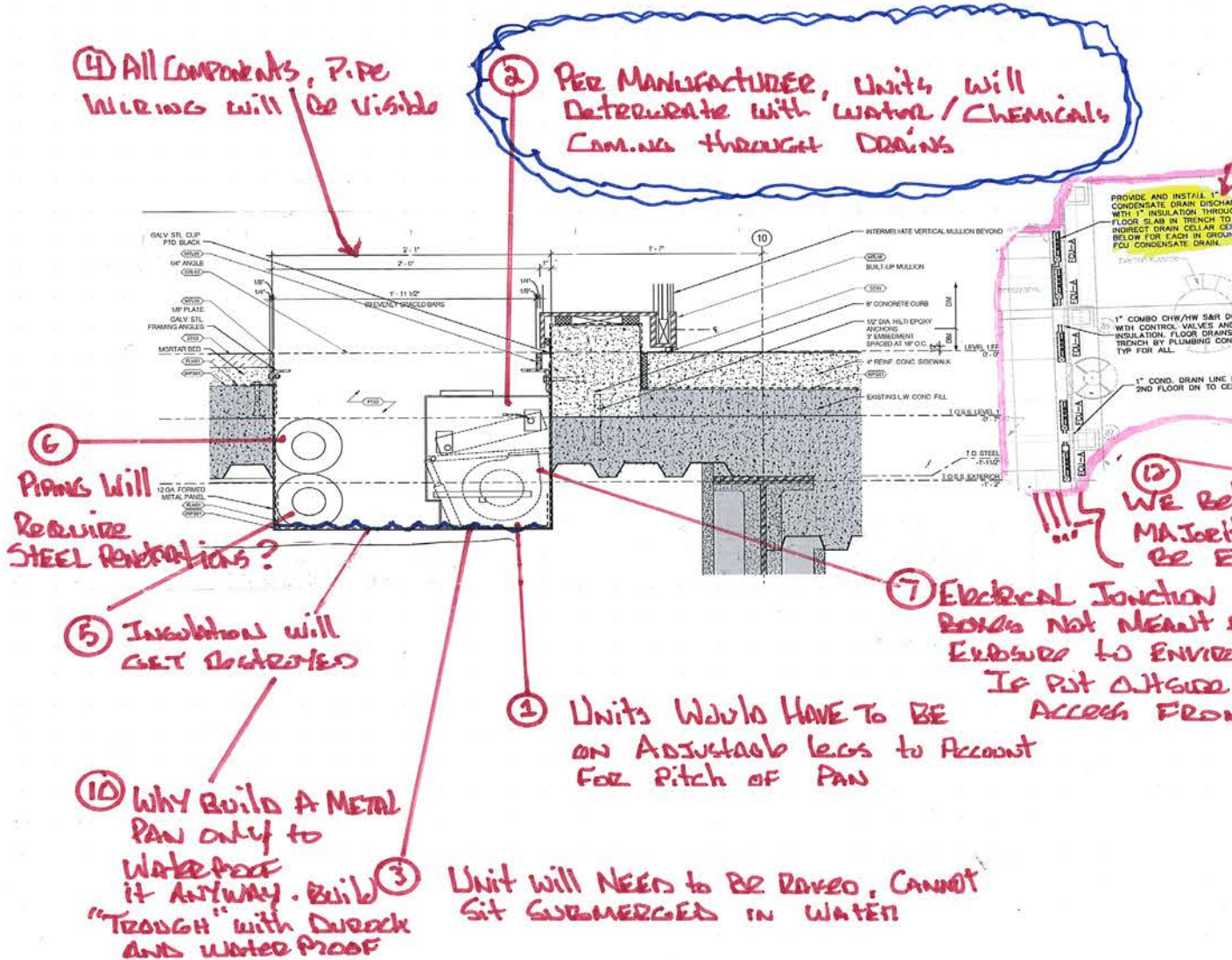
Present shoring design impedes progress of erection of structure.

LOGISTICS



T.E.A.R.™ Result:

Alternate shoring system which frees up erection area and allows for a more expedited process.



T.E.A.R.™ Review:

Study Alternate Means & Methods to achieve a more cost effective approach to construct a custom trough.

MEANS & METHODS / VALUE ENGINEERING

THE RFI RESPONSE, REJECTING OUR PROPOSED ALTERNATE, WAS REJECTED PRIMARILY BECAUSE ACCESS NEEDS TO BE AVOIDED FROM BELOW. GIVEN NOTES HEREIN, IT DOESN'T APPEAR AN OPTION TO HAVE UNITS ABOVE. THESE POINTS NEED TO BE ADDRESSED PRIOR TO ADDITIONAL PROPOSED SOLUTIONS

15 WP ISSUE AND MORE ACCESS FROM BELOW

11

4 OF 6 DRAINS MAY BE ABLE TO BE CUT IN HALF WITH SLOPING NEW CONCRETE

WANT TO REMOVE A PORTION OF THE STEEL CAN, ELIMINATED IF UNITS GO BELOW

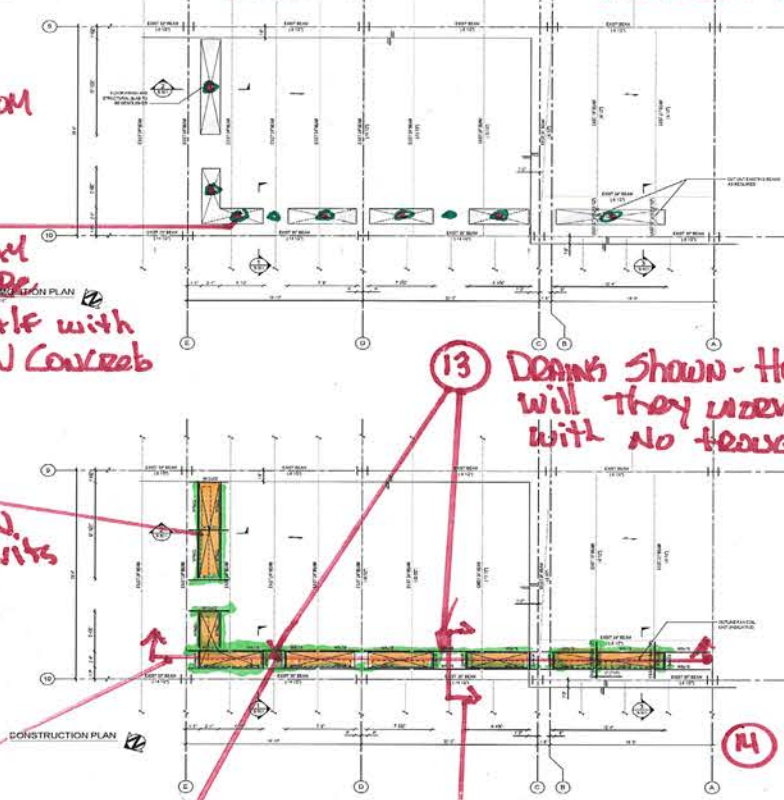
FOR CONCRETE - WILL REQUIRE WORK FROM BELOW !!!

13 NEED LONGITUDINAL SECTION (ARCHITECTURAL)

9 TYP. HOW DO YOU WATERPROOF EXPOSED FIREPROOFING

8 NO SECTIONS THROUGH AREA WITHOUT DRAIN PAN. HOW WILL THIS WORK?

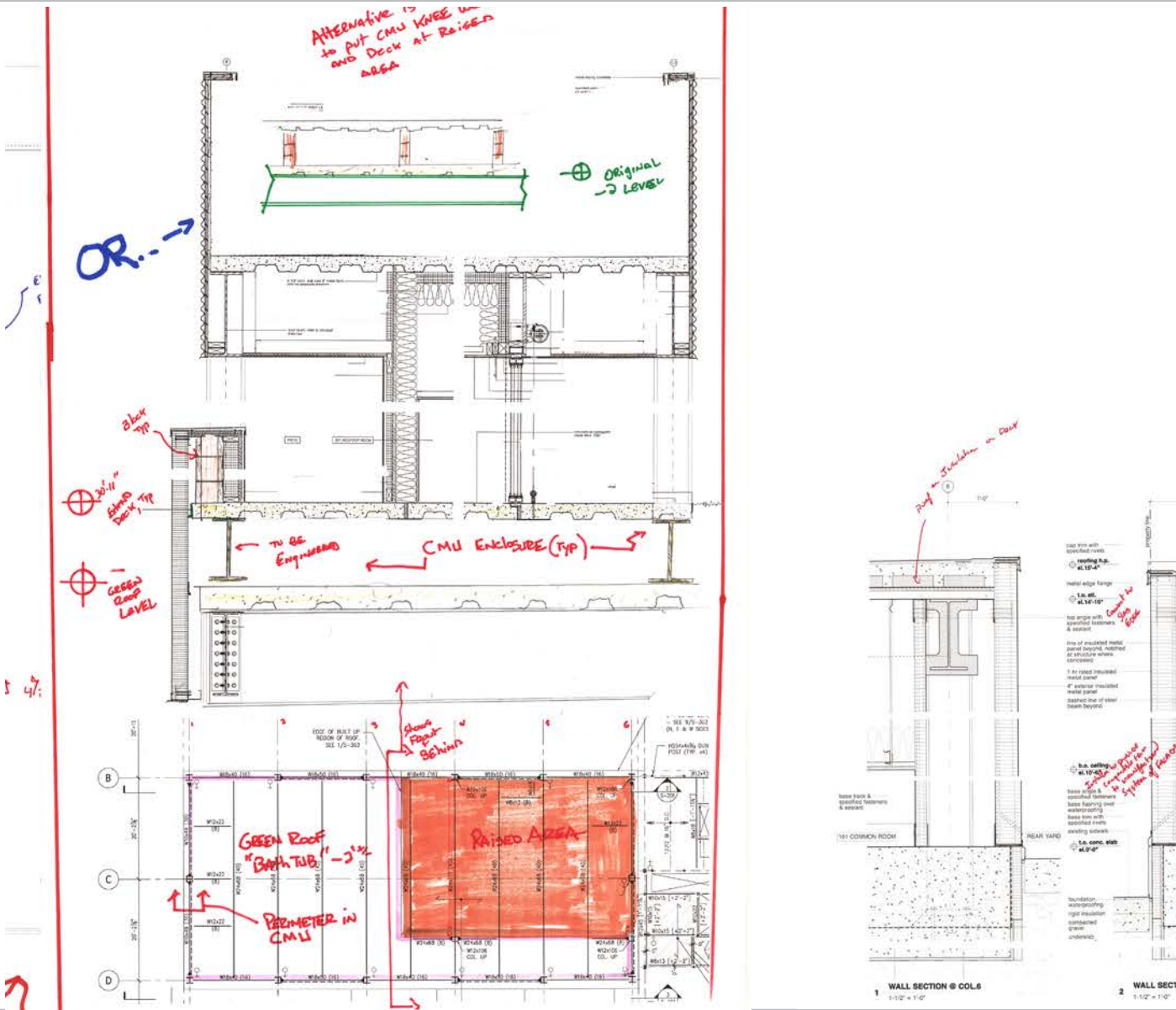
14 PLUMBING CLEAN-OUTS NEED TO BE ACCESSIBLE ANYWAY FROM BELOW



T.E.A.R.™ Result:

Multiple conflicts and questions were identified in this "RFI" in order to get feedback which could allow for alternate methods to be proposed.

TECHNICAL EVALUATION ANALYSIS RECOMMENDATION™



T.E.A.R.™ Review:

Review full set of drawings to identify alternate Means and Methods, Constructability issues, and Value Engineering ideas.

STAGE 2 - SHORING & STEEL PREP

SEQUENCE OF OPERATIONS:

Option 1:

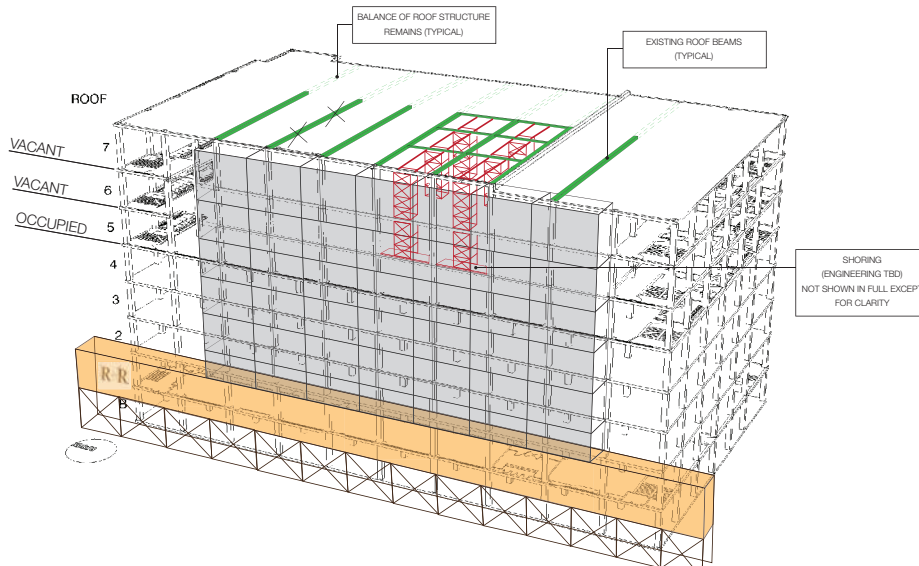
- + Remove roof & structure at new transfer girder lines which would require extensive shoring.

Option 2:

- + Remove all structure at footprint of new double height space
- + Provide shoring of existing steel at roof
- + Demolish E/W beams & columns to allow for new steel installation

VARIABLES

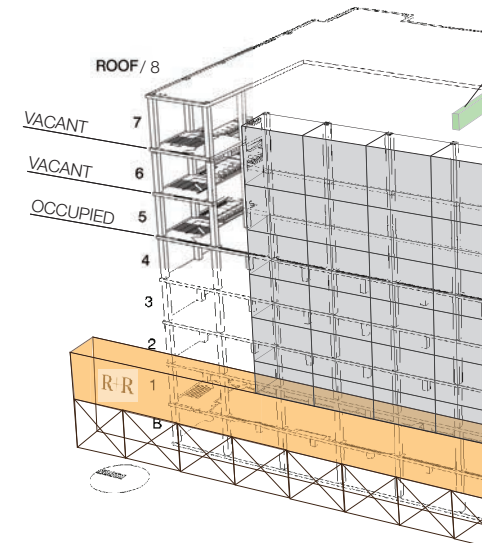
- + Extent of reinforcement of columns
- + Availability of 5th floor possession
- + Floors 5 & 6 are vacant with 6th and 7th floor slabs left in place (2 vacant floors required to erect steel)



SEQUENCE OF OPERATIONS:

1. Existing Columns are removed
2. Erect transfer girders and ancillary steel
3. Steel will need to be erected on off-horizon below (unless 5th floor can be vacated completely)
4. Roof gets closed up leaving 8th floor open

[Shoring not shown for clarity]
[Existing steel not shown for clarity]



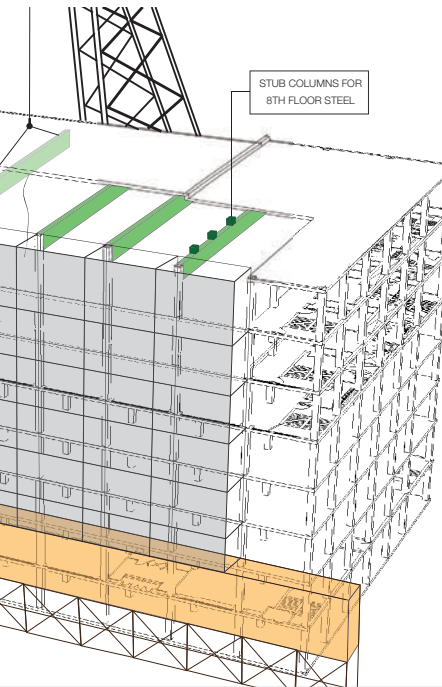
T.E.A.R.™ Review:

Develop a sequence of stabilization, demolition, and steel erection to allow for building to be renovated while maintaining structural integrity.

SEQUENCING

STAGE 3 - ROOF STEEL ERECTION

Steel
hours as only one floor is vacant
during erection)
columns protruding

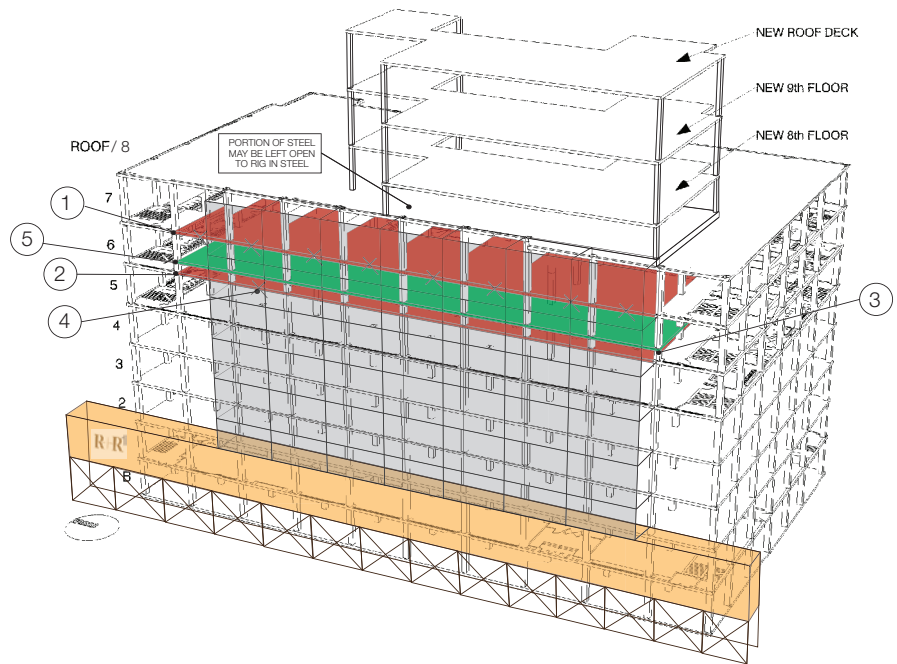


STAGE 5 - INSTALLATION OF NEW 6TH FLOOR

SEQUENCE OF OPERATIONS:

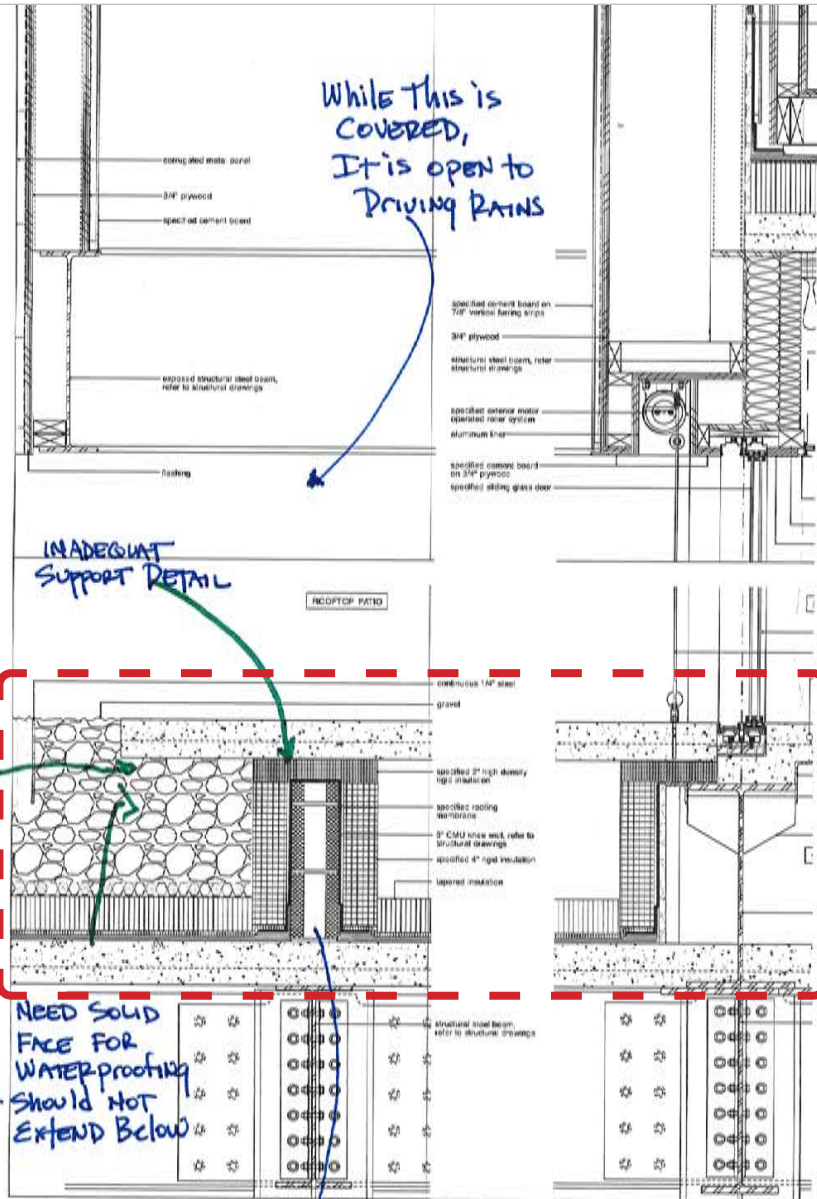
1. Remove 7th floor slab
2. Load 6th floor steel during OFF hours as there is only 1 vacant floor below
3. Install new 6th floor using existing 6th floor slab as work platform
4. Remove existing 6th floor
5. Install metal deck and concrete on 6th floor (metal deck and concrete will be left out for access to demolish existing 6th floor)

R|R



T.E.A.R.™ Result:

This was achieved by performing multiple studies outlining the step-by-step approach while taking into account many factors that directly impacted the erection process

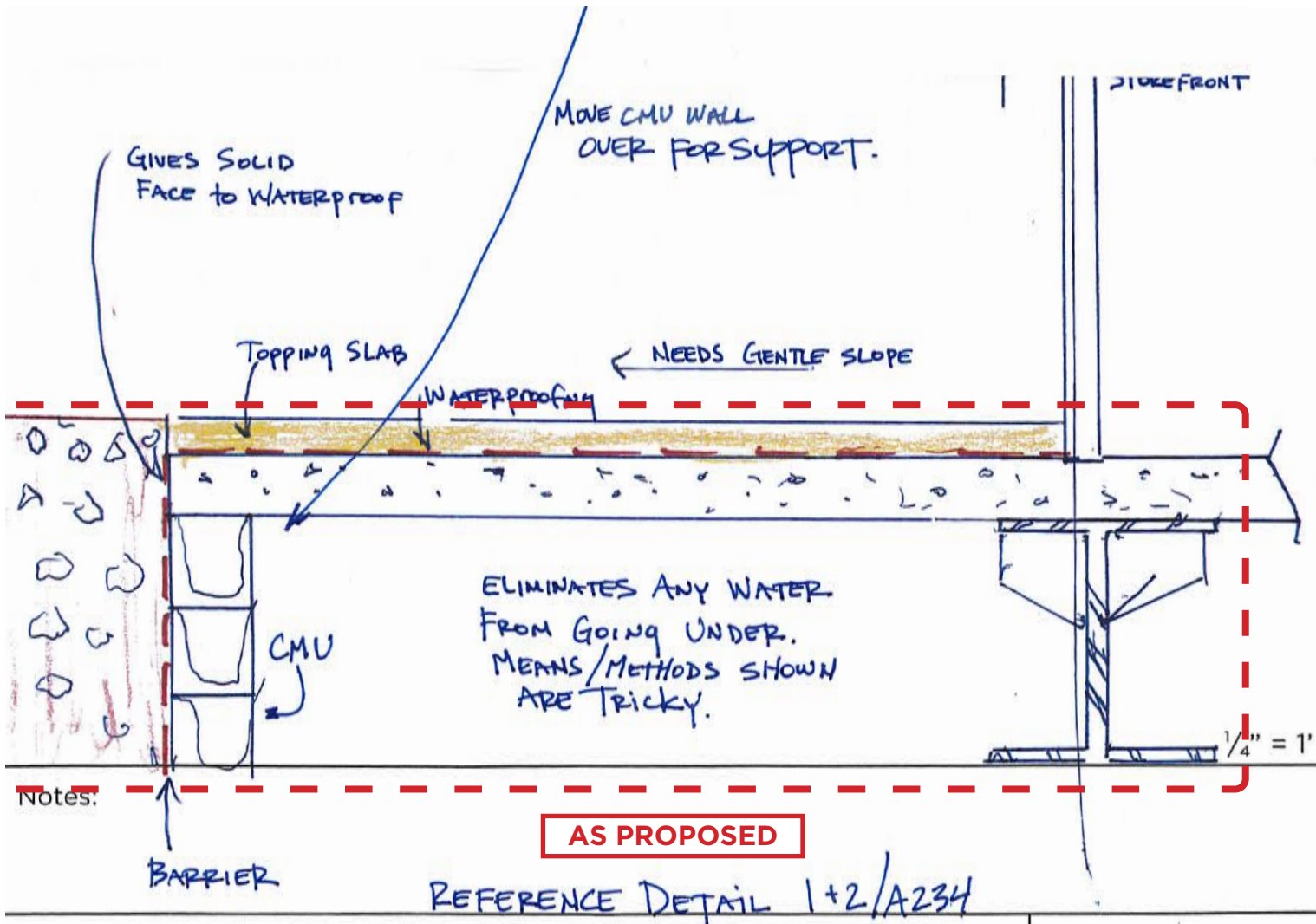


AS DRAWN

T.E.A.R.™ Review:

Address concerns of various Details that were not feasible to be constructed as shown as well as to alleviate concerns of waterproofing.

CONSTRUCTABILITY



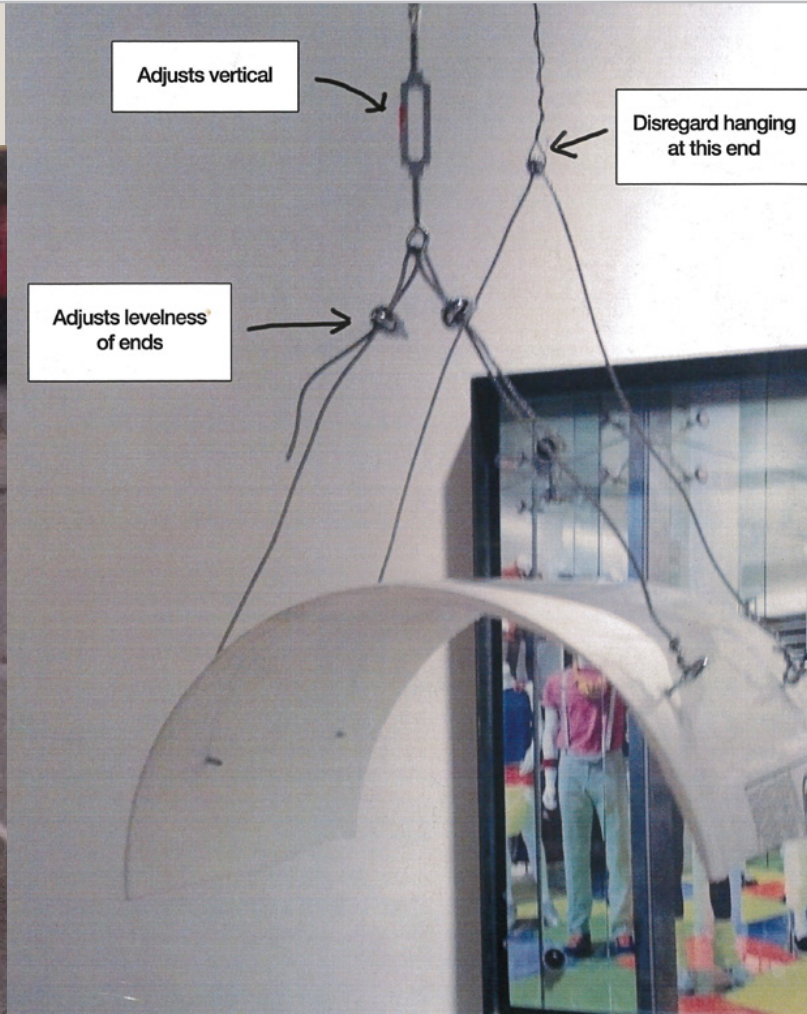
Project: _____
Date: _____

Description: _____

RICHTER/RATNER
BUILDERS
1912

T.E.A.R.™ Result:

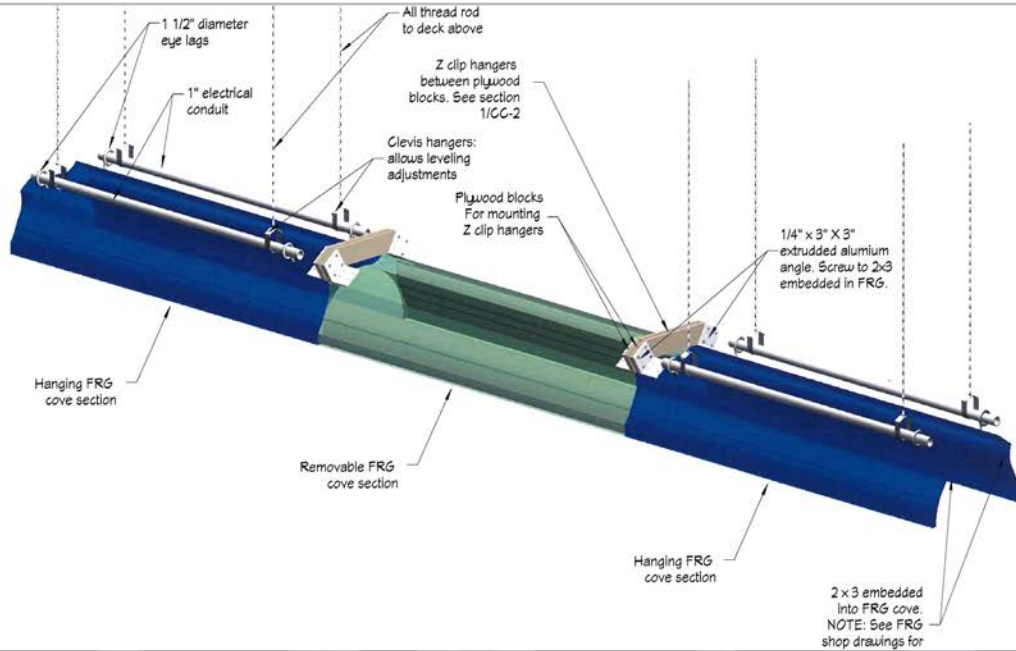
An alternate Detail was provided which addressed multiple issues which was ultimately integrated into the Construction Documents.



T.E.A.R.™ Review:

Take a concept and make it reality given only a rendering and no specific details.

MOCK-UP FOR CONSTRUCTABILITY



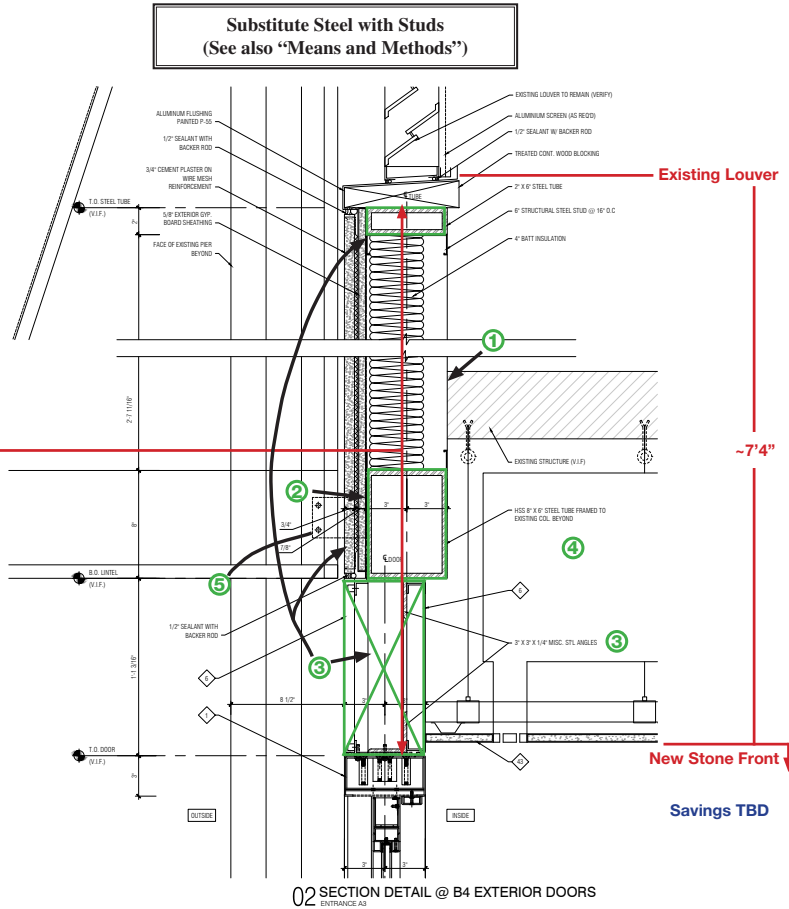
T.E.A.R.™ Result:

Perform multiple mock-up and studies until the most cost-effective and feasible approach was achieved.

Keyed Notes

1. Edge of slab will likely conflict with structure.
2. Needs moisture barrier. (Weep won't work.)
3. Not necessary for steel on 3 levels.
4. Fascia.
5. What is this clip?

The idea would be to have structural studs here



Subcontractor Awards / Potential Additional Savings

Once the market is aware that we are awarded the Contract, we will receive additional bids from Subcontractors. This may result in additional savings. During the compilation of the bid, we were left with a few hours to analyze 60-80 subcontractor bids. Given the intricacy of this project, items may be missed or duplicated. This may lead to increases or decreases in pricing. One trade, as an example included, we believe (however it needs the time to scope it further) has led to a savings (see adjacent).

Re-use Revolving Doors

There are six (6) revolving doors scheduled to be removed. There are seven (7) new. This savings can be used for 1, 2, or all.

Note: As with all alternates and other break-outs, number will vary from subcontractor to subcontractor. We have approximated the unit costs for this evaluation.

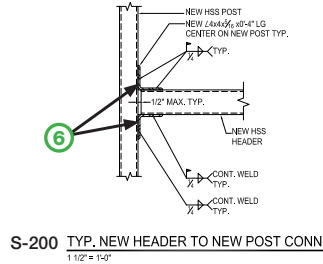
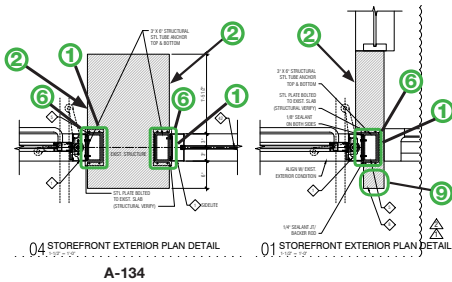
A. Delete new revolving doors	7 @ \$85,000	(\$595,000)
B. Delete demolition of existing doors	7 @ \$2,000	(\$14,000)
C. Add removal and storage	7 @ \$15,000	\$105,000
D. Allow for repair / miscellaneous parts	7 @ \$5,000	\$35,000
E. Reinstall doors	7 @ \$20,000	\$140,000
Total savings		(\$329,000)
Or (\$47,000) Each (Direct cost only)		

Other Savings ... TBD

T.E.A.R.™ Review:

To be explicit in a competitive bid process about issues and concerns with Details, Constructability, and Cost Savings ideas

ANALYSIS & VALUE ENGINEERING



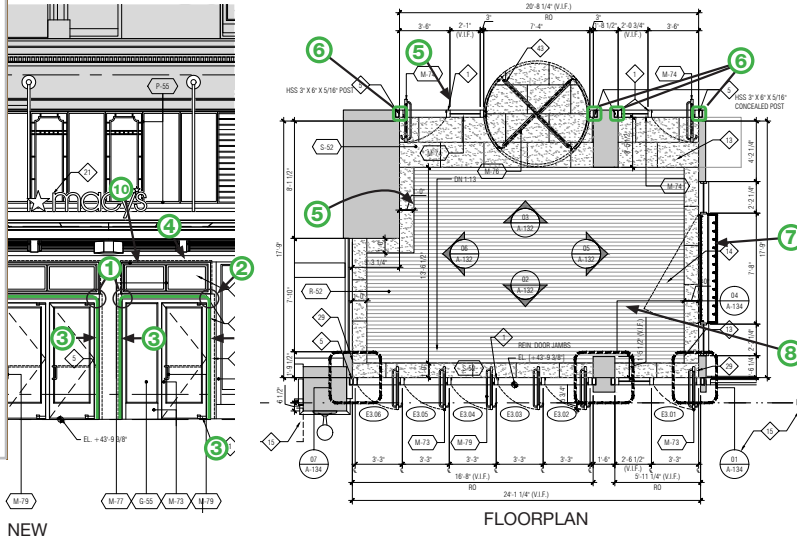
These examples represent a few ideas of possible cost savings. This Flagship is an icon in New York City and is going through a total overhaul. Our goal is to find other cost savings so the scope is not reduced in such a way that will affect the visual appearance of the project (i.e. not stripping paint but painting over at façade).

Specific Notes (Refer to drawings)

1. Connect horizontal to structure
2. Confirm structure beyond
3. Eliminate vertical steel
4. Unclear what dotted line is (if recessed).
5. Impact on floor with existing walls, elevator, etc.
6. See cost impact study on adjacent page
7. Demo drawings show removal by us of all lintels (if ready), framing protection by others.
8. Reflected ceiling plan doesn't show changes in elevation.
9. Will likely lose this nib.
10. Per section 2/A-133 - What is 6" plate connecting to?

General Notes

1. On 12/5/12, Dawson approved the anchoring of frames - top and bottom without side jam anchors.



Possible savings by eliminating vertical steel tubes recessed in walls.*

*Note that some items are included in the present pricing, others are potential field conditions. The possible reflected savings are show below. There are 14 recessed tubes.

A. Repair metal - must be opened wide, then closed to jamb (Exterior)	14 @ \$2,500	\$35,000
B. Repair interior stone or other finish	14 @ \$3,000	\$42,000
C. Patch substrate	14 @ \$750	\$10,500
D. B1 Instance, lose nib walls	1 @ \$5,000	\$5,000
E. Steel Tubes	14 @ \$3,000	\$42,000
F. Avoid conflict of doors/windows with angles connecting vertical and horizontal (per S-200) (Estimate of possible redesign and/or shop's modification)		\$25,000
G. Demolition (Hand chasing)	14 @ \$1,200	\$16,800
H. Other - it is likely that there is a conflict with conduit, misc. steel anchors, structure, or other conditions.	14 @ \$5,000	\$70,000
	Direct cost only	\$246,300

T.E.A.R.™ Result:

A full analysis was prepared which would allow items to be addressed prior to award, thus minimizing potential change orders and/or delays.



T.E.A.R.™ Review:

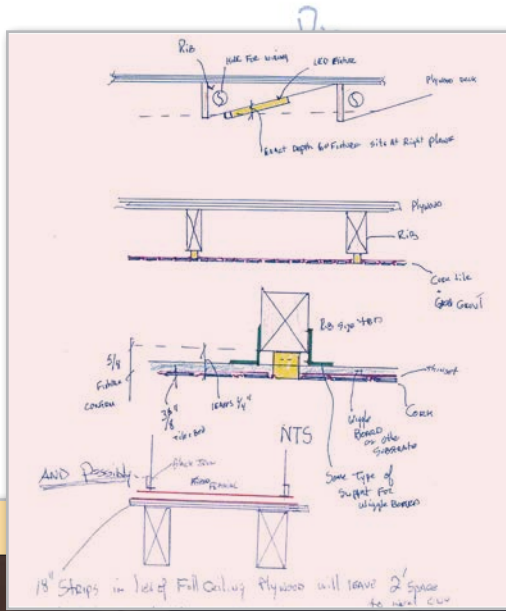
Client desired to utilize a product manufactured overseas.

INGENUITY



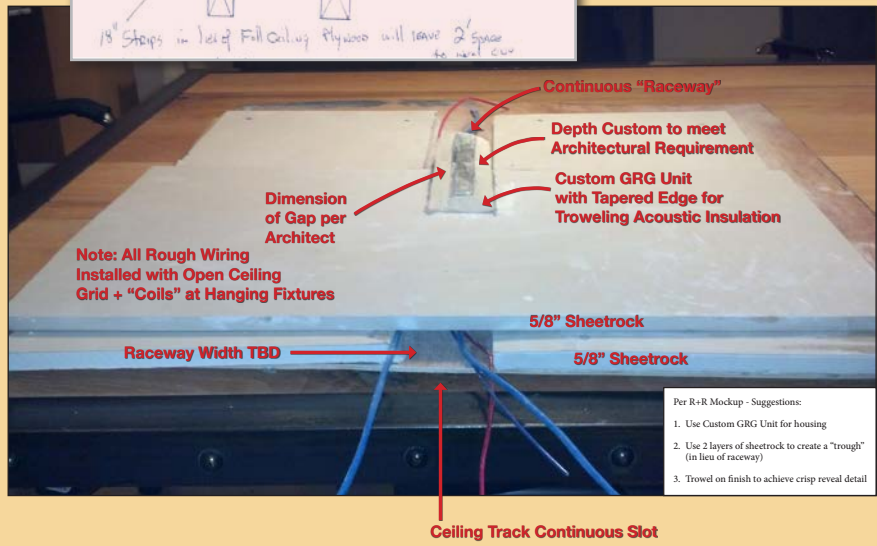
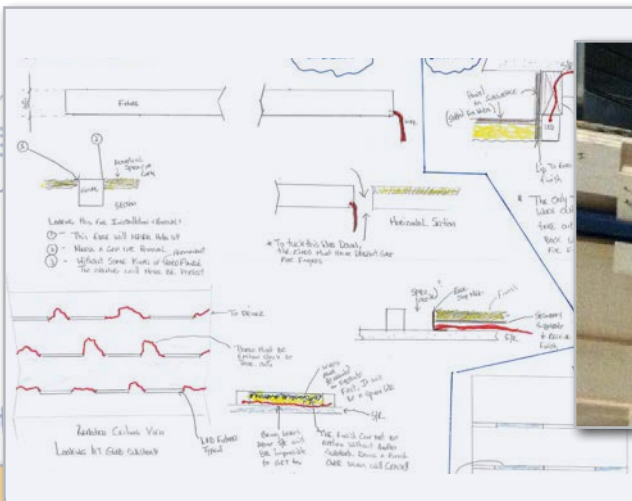
T.E.A.R.™ Result:

We came up with a plan to make it modular and have it shipped across the ocean.



FOR WIRING

Exact Dep

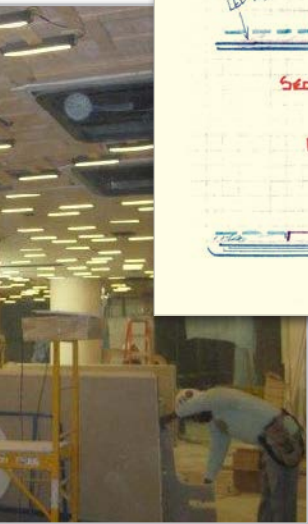
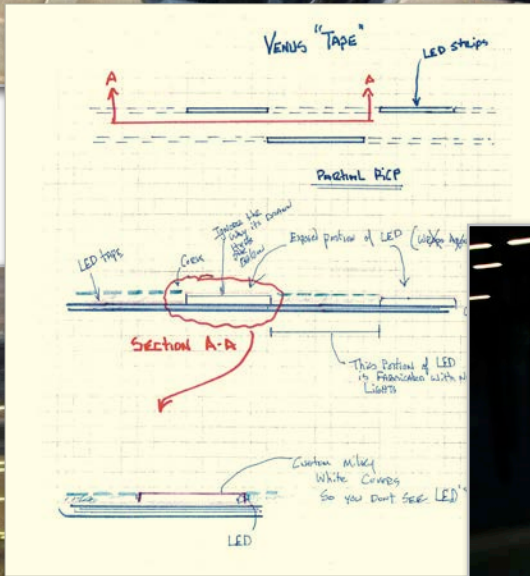
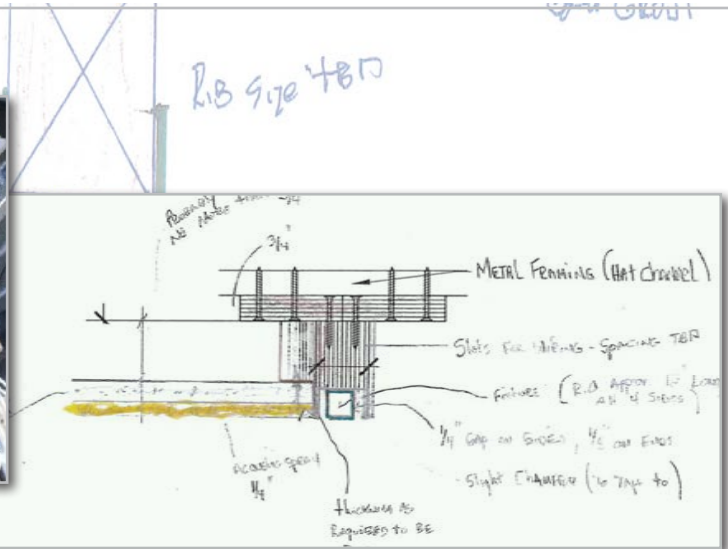
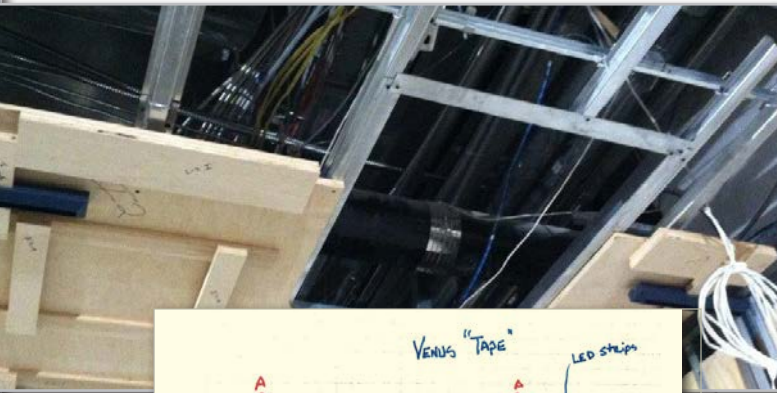


- Per R-R Mockup - Suggestions:
1. Use Custom GRG Unit for housing
 2. Use 2 layers of sheetrock to create a "trough" (in lieu of raceway)
 3. Trowel on finish to achieve crisp reveal detail

T.E.A.R.™ Review:

Take a concept and make it reality with a challenge of reveals being used in compound curve ceiling with over 800 LED lights.

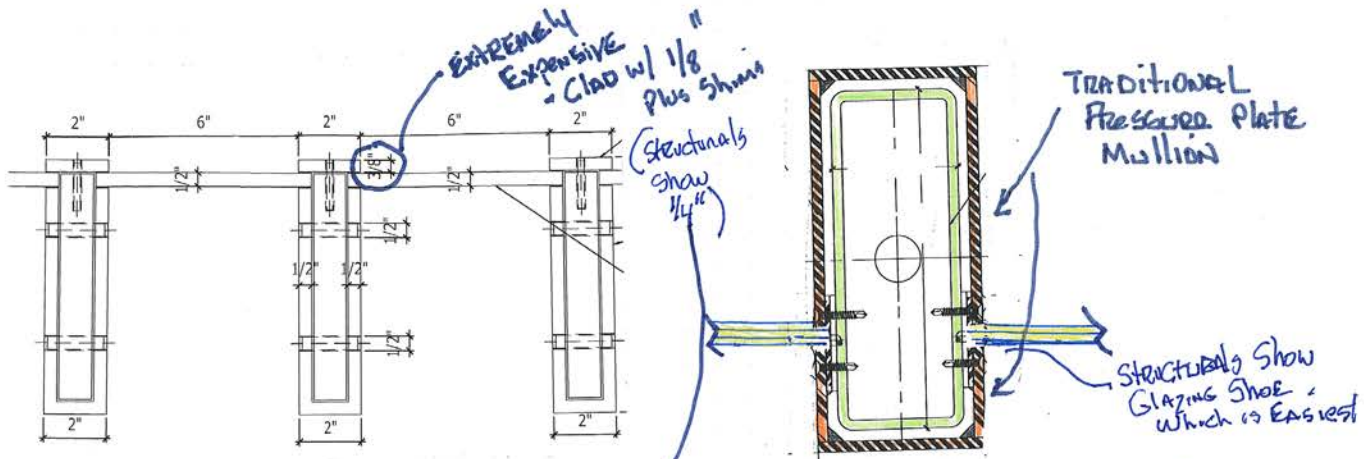
EVOLUTION - CONCEPT TO EXECUTION



in lieu of Fall ceiling plywood will leave 2' space

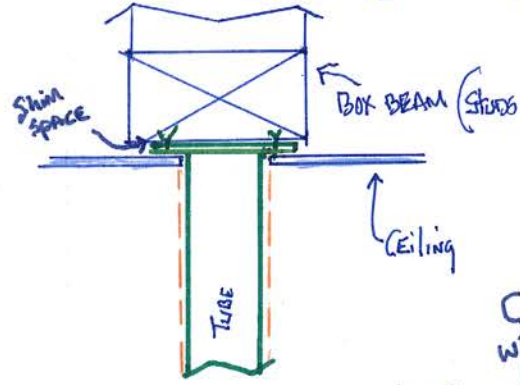
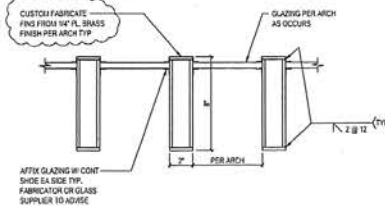
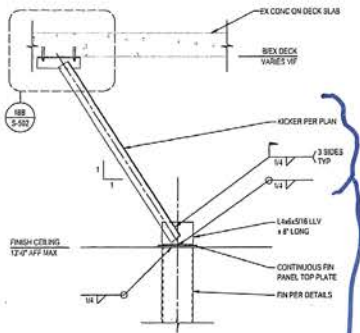
T.E.A.R.™ Result:

Perform multiple mock-up and studies until the most cost-effective and feasible approach was achieved.



As Planned

POTENTIAL OPTION (REVERSE)



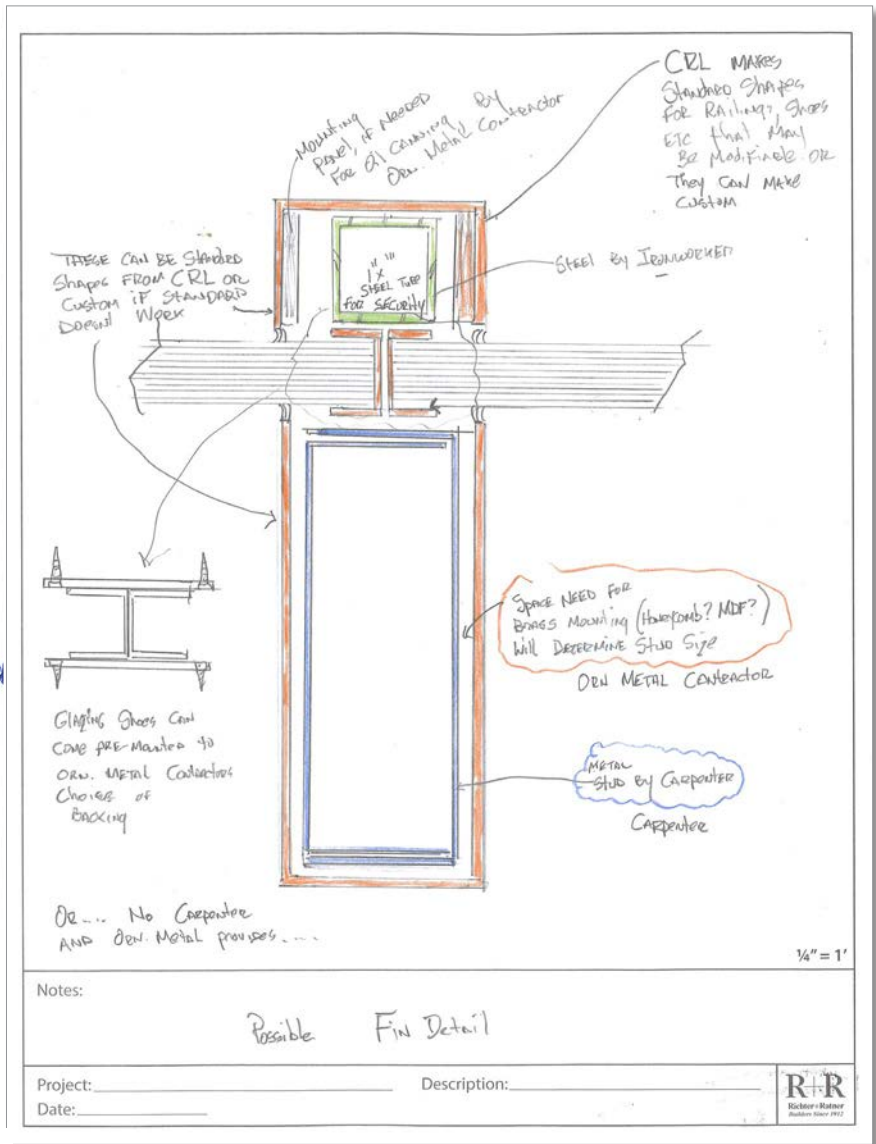
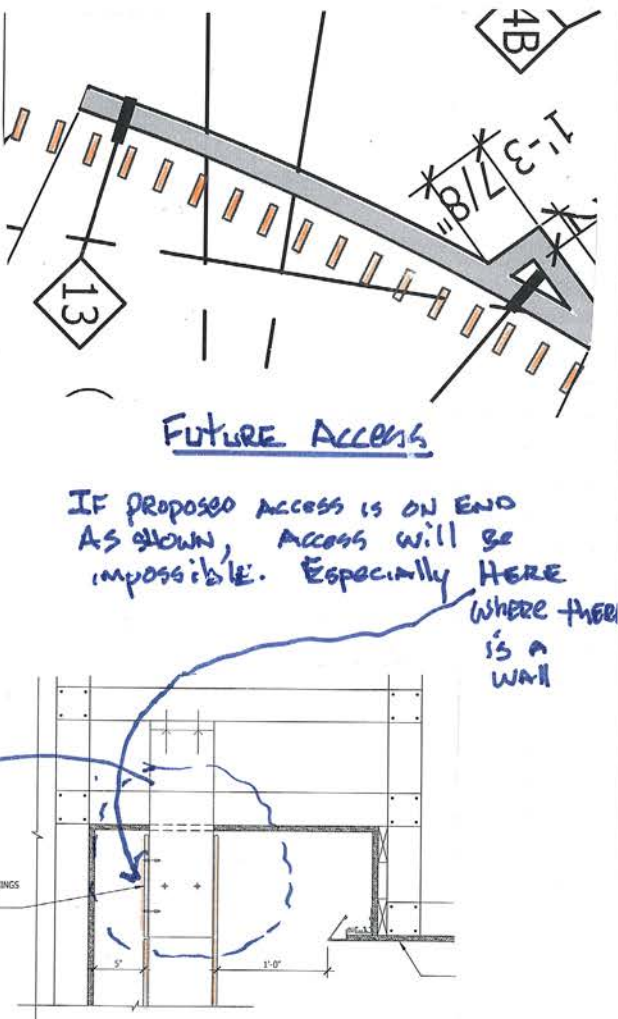
Conflicts with S Swags
ACCESS PANEL WITH FIN AND END CAPS FINISH SATIN BRASS

CONFIRM NOT NEEDED.
Shim Headers could Series

T.E.A.R.™ Review:

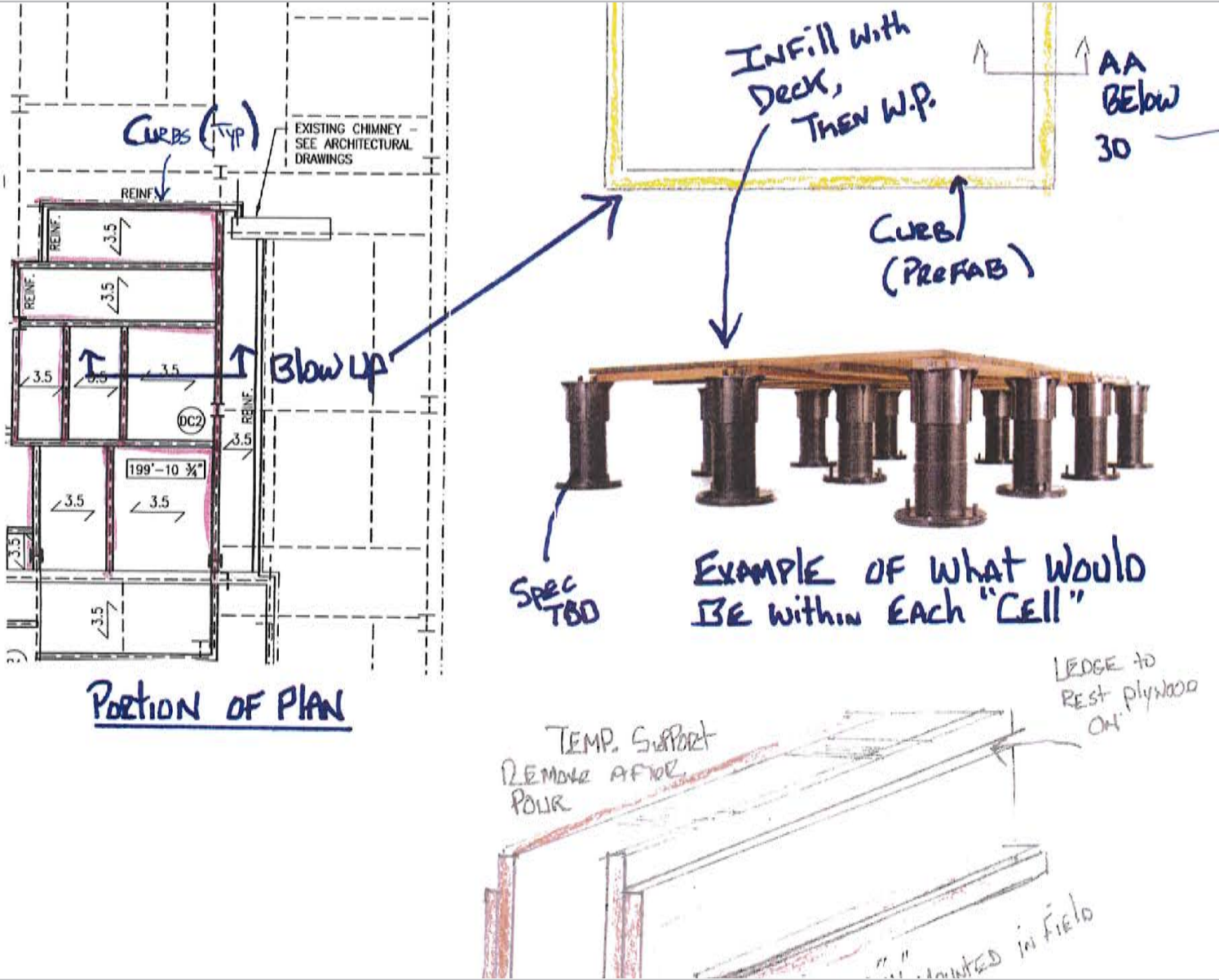
Being tasked to bring the budget of an element of a project down from \$3MM to \$1.5MM while maintaining design intent.

VALUE ENGINEERING



T.E.A.R.™ Result:

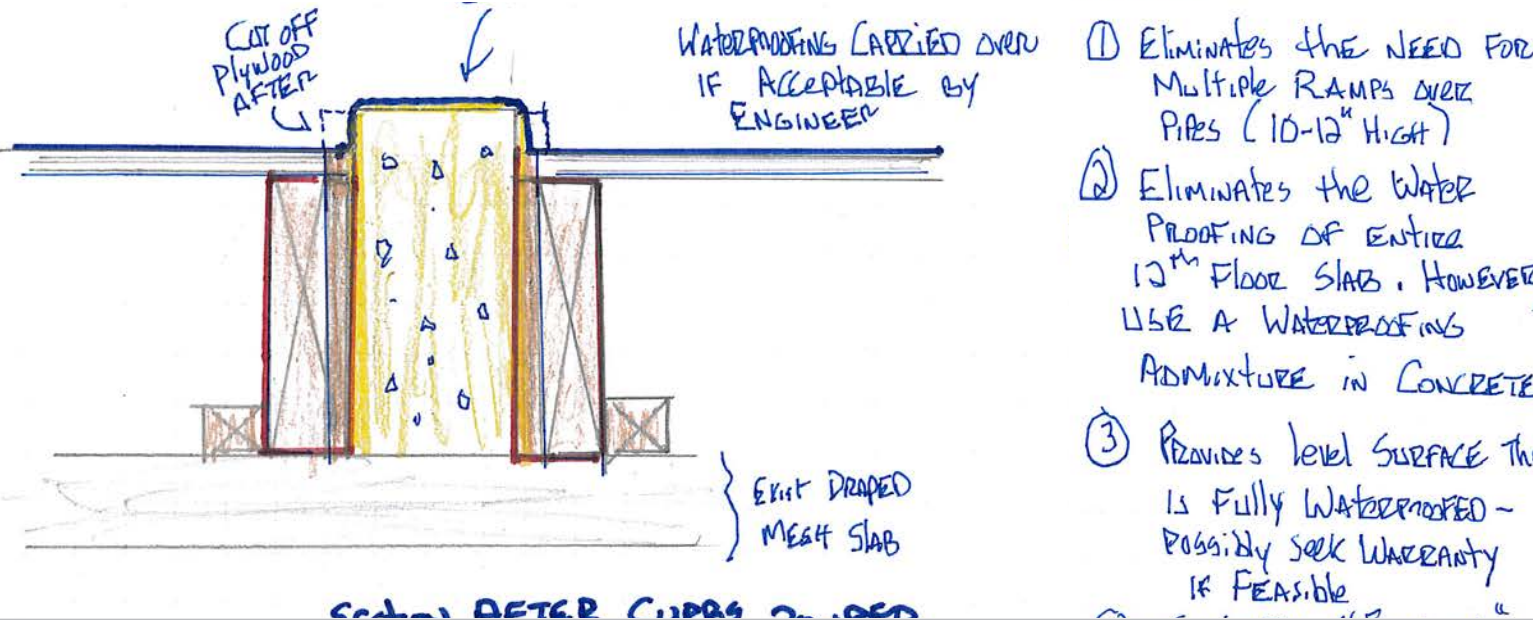
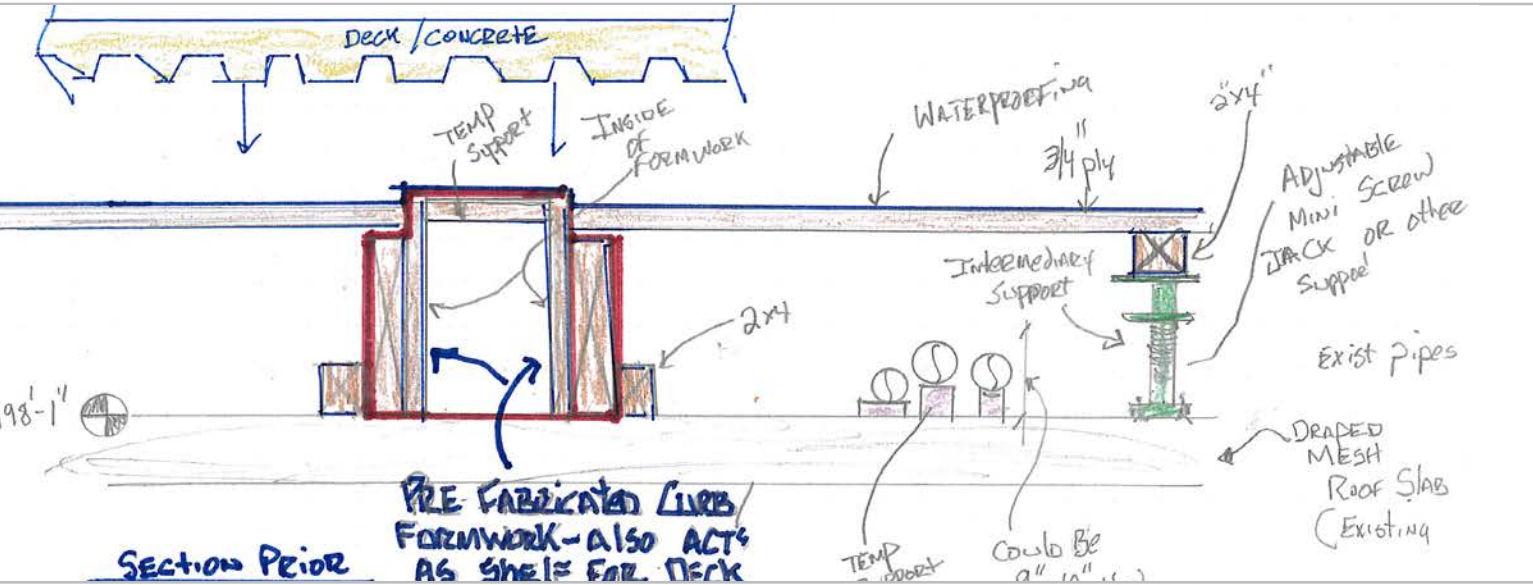
Alternate materials and methods were proposed that achieved the goal while maintaining design intent.



T.E.A.R.™ Review:

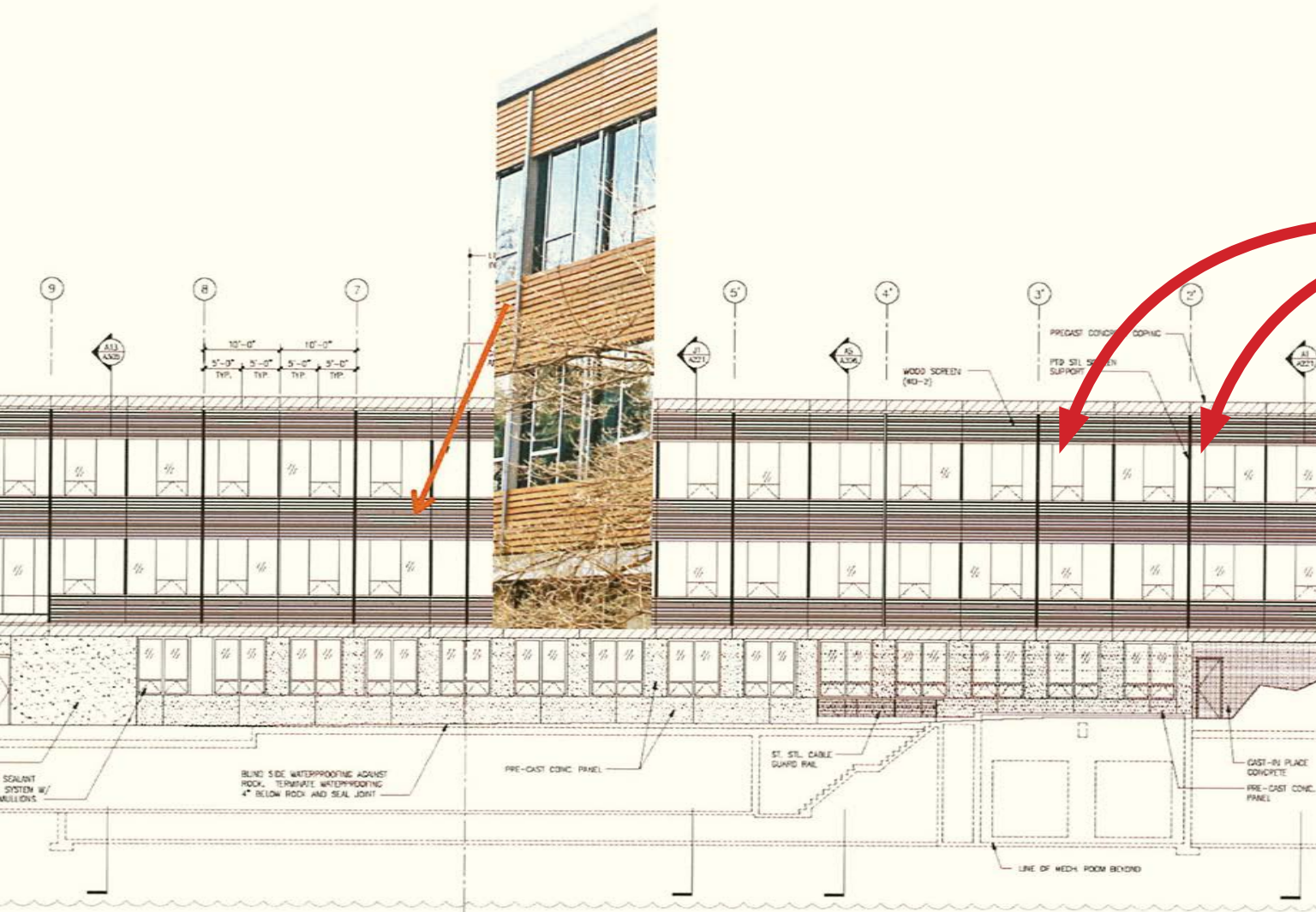
Provide alternate means of raising a roof deck.

PROCESS



T.E.A.R.™ Result:

Multiple approaches were presented to the design team for approval. A modified approach was agreed upon & utilized.

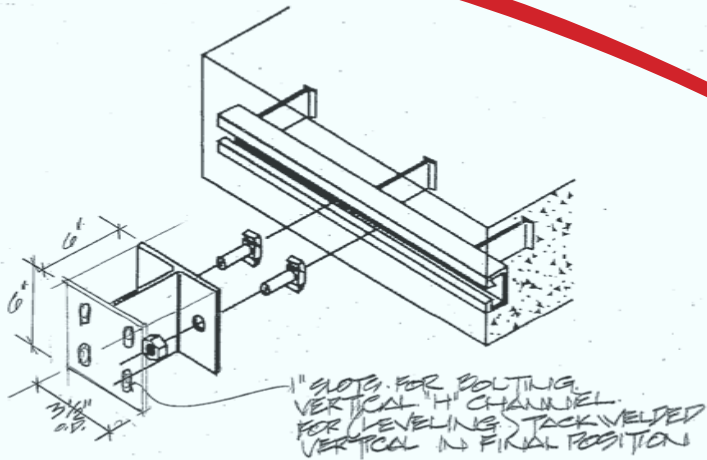


T.E.A.R.™ Review:

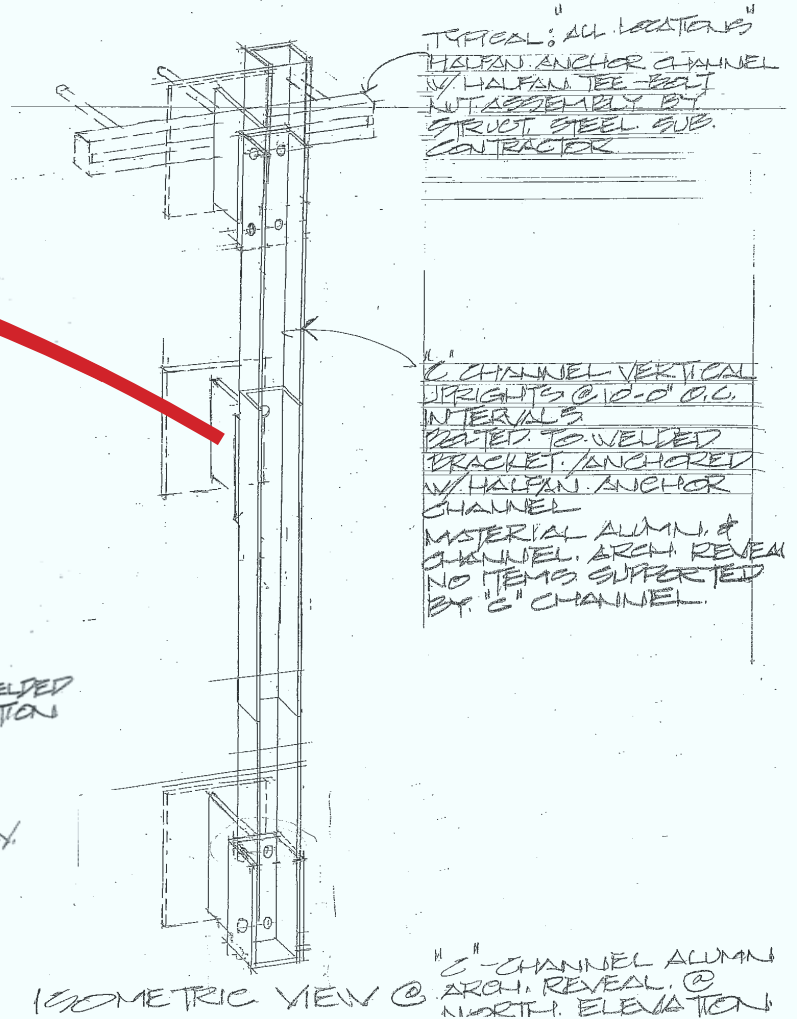
Required to find over 10% savings from a \$30MM budget without sacrificing Design.

VALUE ENGINEERING

R+R Alternate Mullion Detail

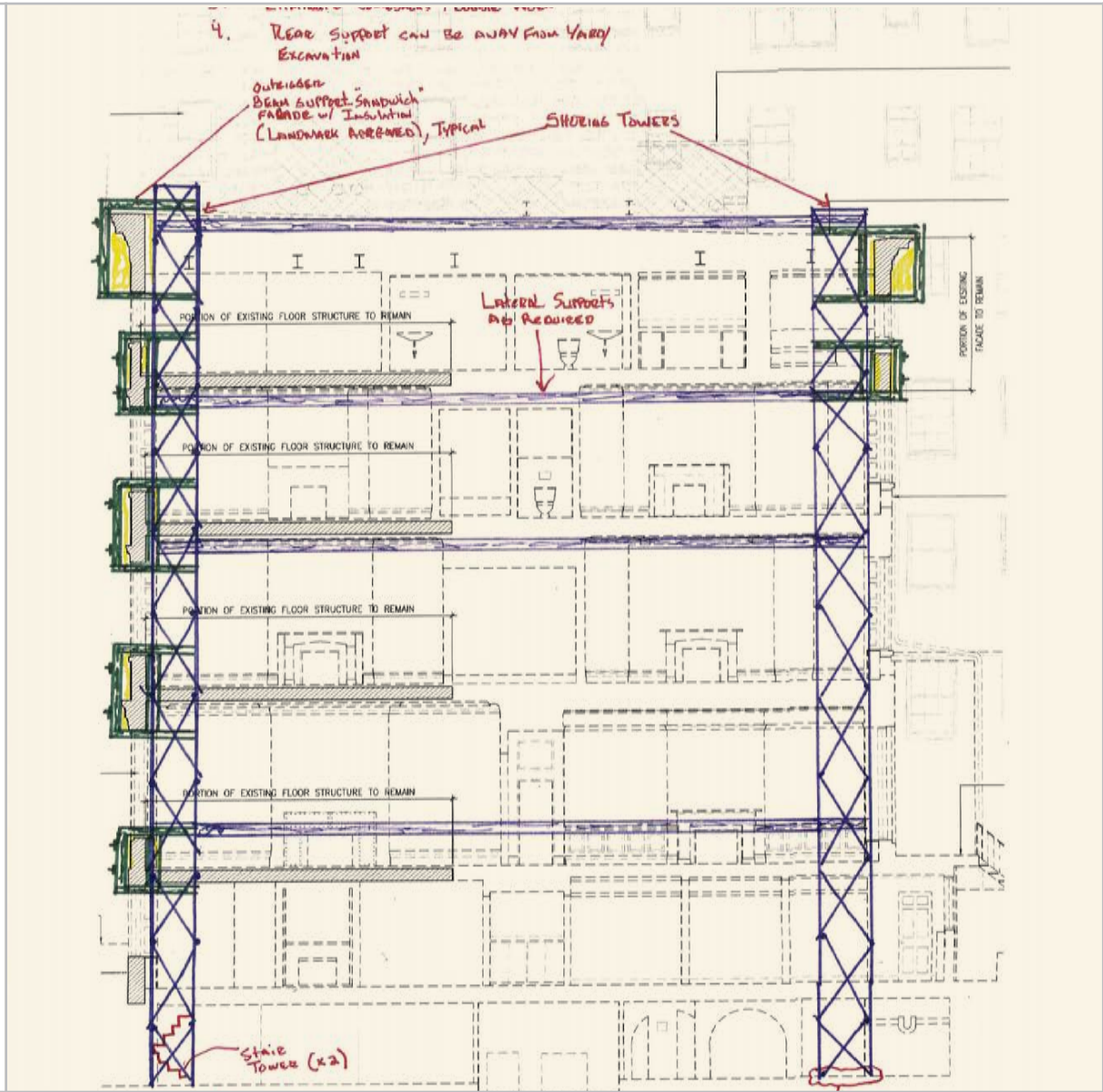


ISOMETRIC VIEW "TYPICAL"
@ HALFEN CHANNEL ANCHORS
W/ BRACKET, NORTH./TOP & BOT. ELEV.



T.E.A.R.™ Result:

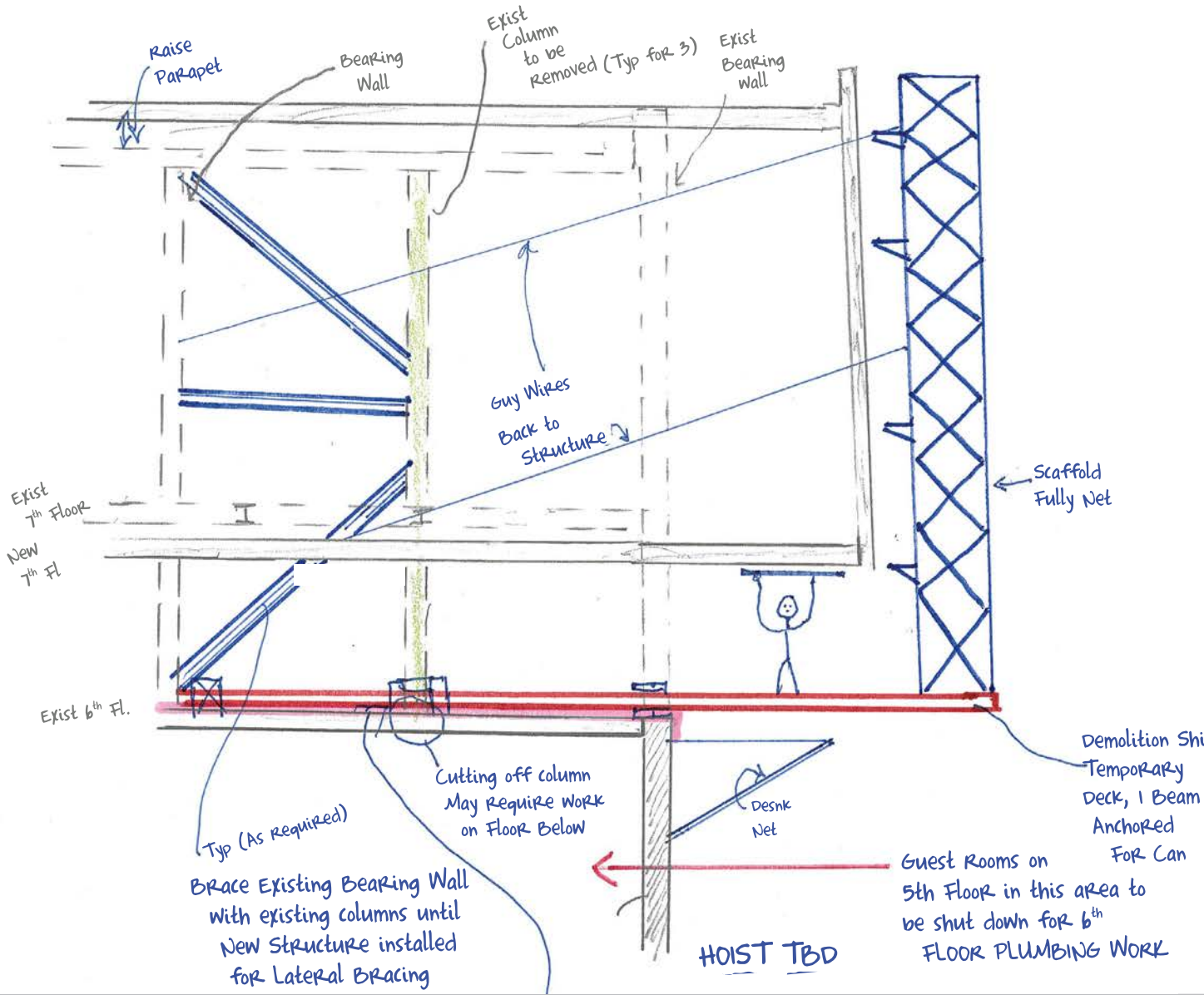
This was just one element of the Value Engineering exercise that helped achieve the overall savings.



T.E.A.R.™ Review:

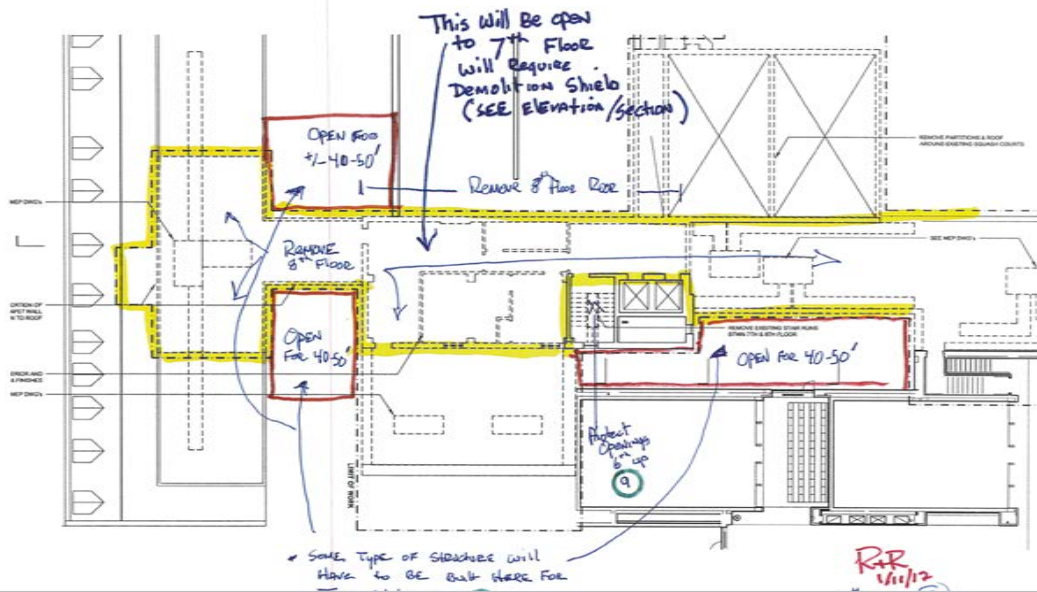
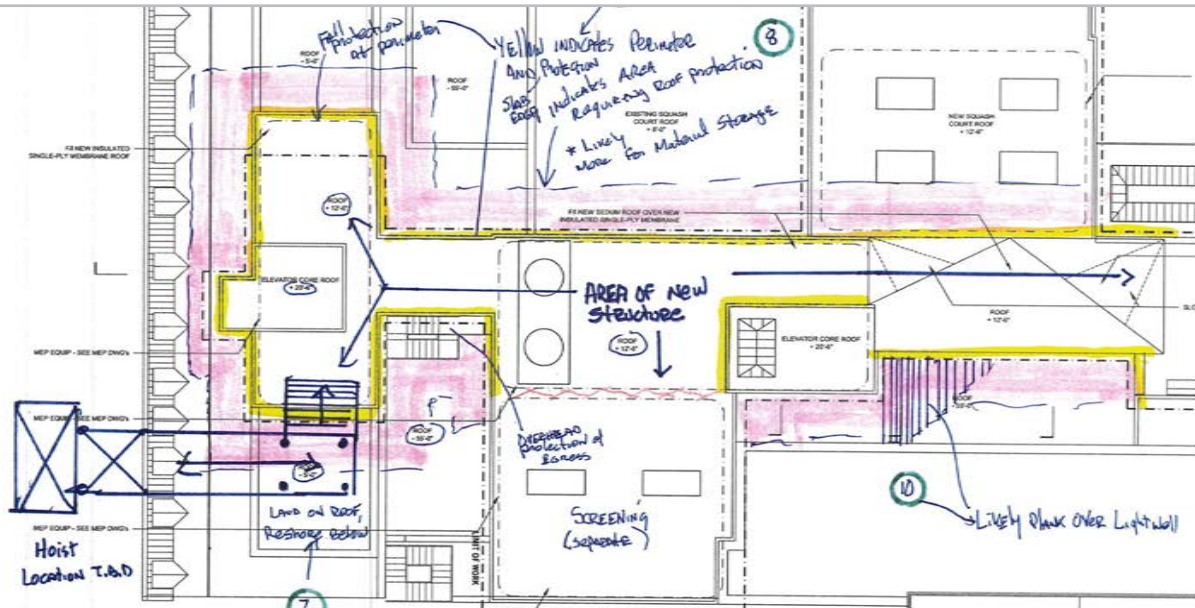
Study of how to install building cantilevered over edge of existing

LOGISTICS



T.E.A.R.™ Result:

Determined that the use of a cantilevered work platform and scaffolding will allow for the best access and safety.

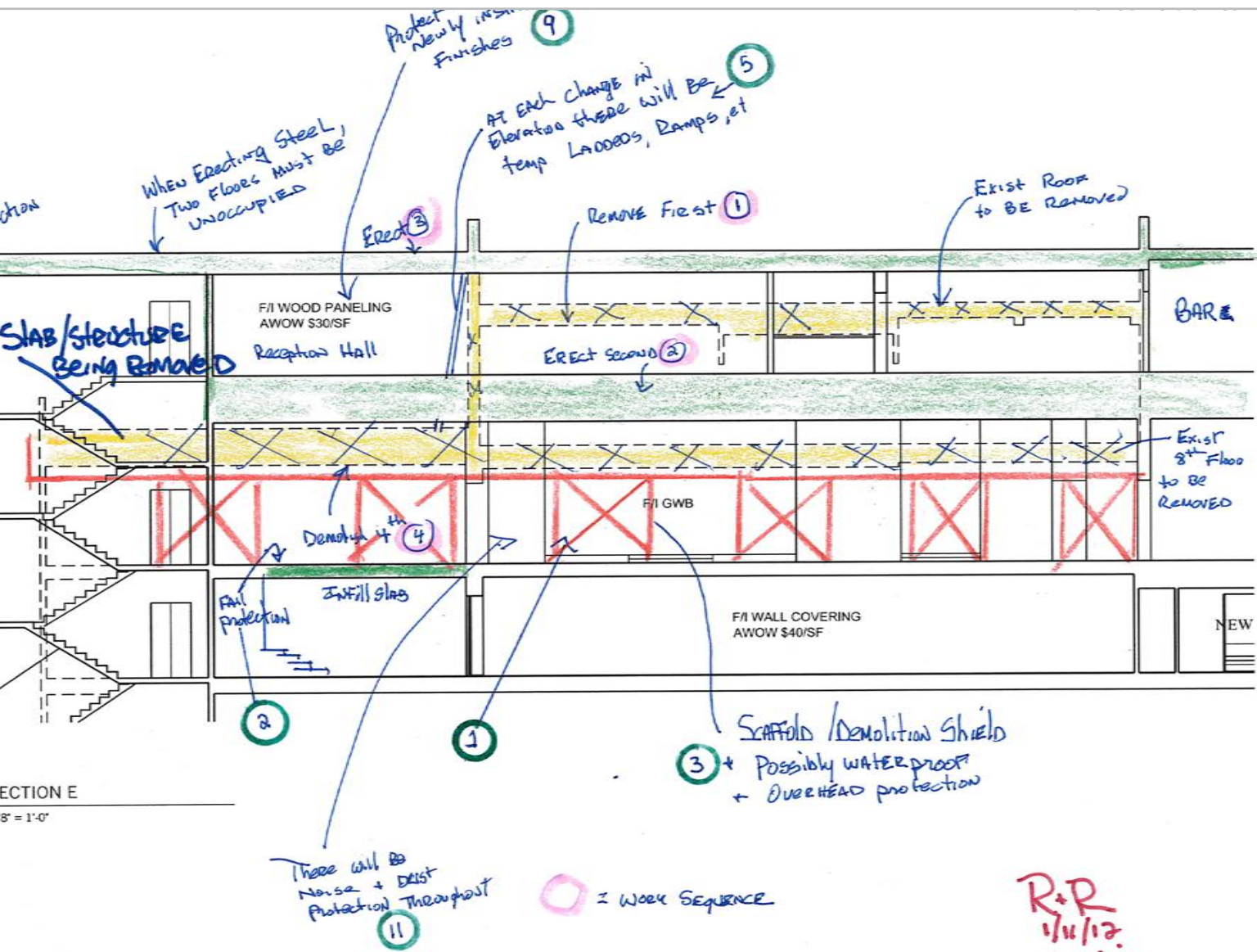


5 S 1/2

T.E.A.R.™ Review:

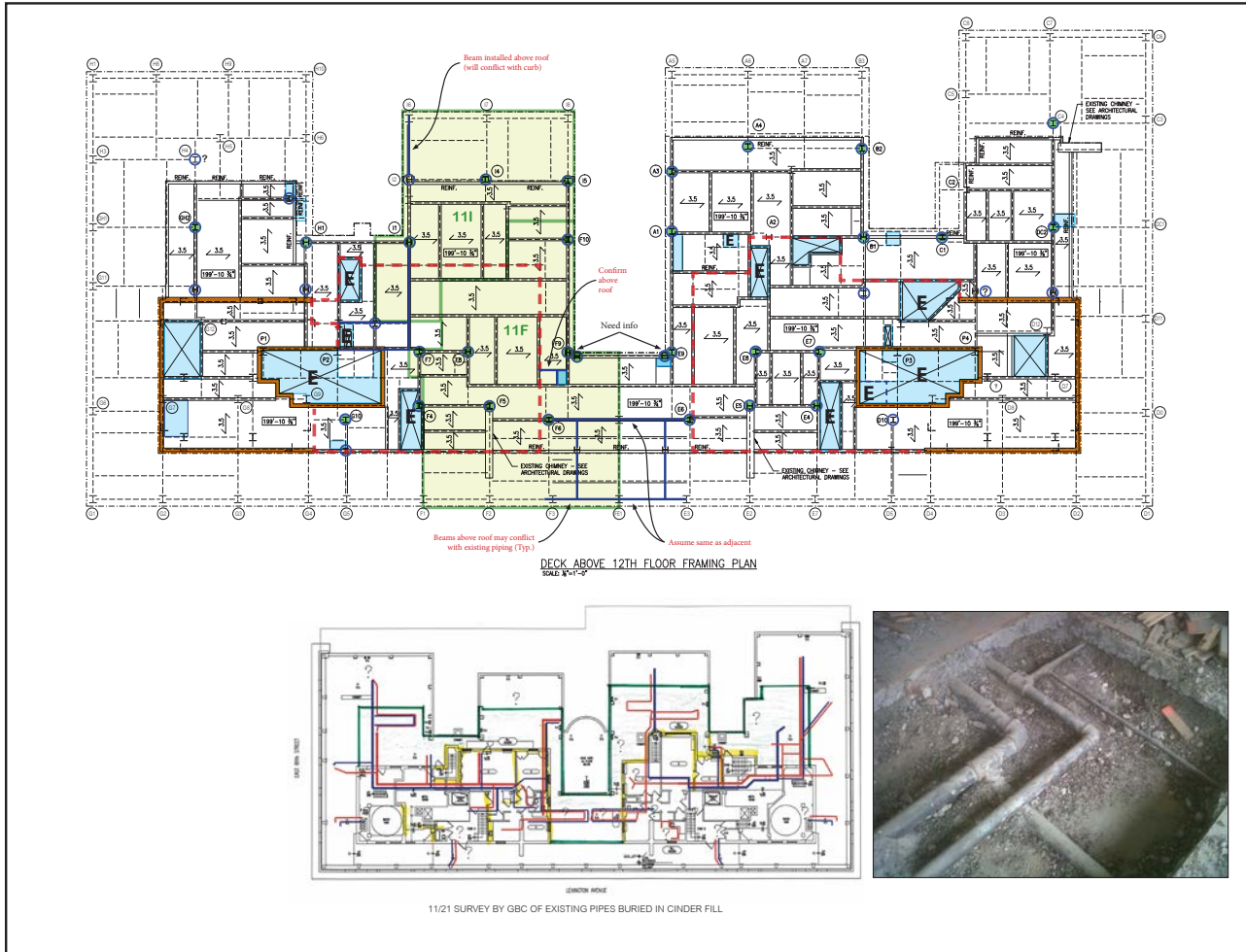
Logistical and Phasing study for a rooftop addition over an occupied building.

PHASING



T.E.A.R.™ Result:

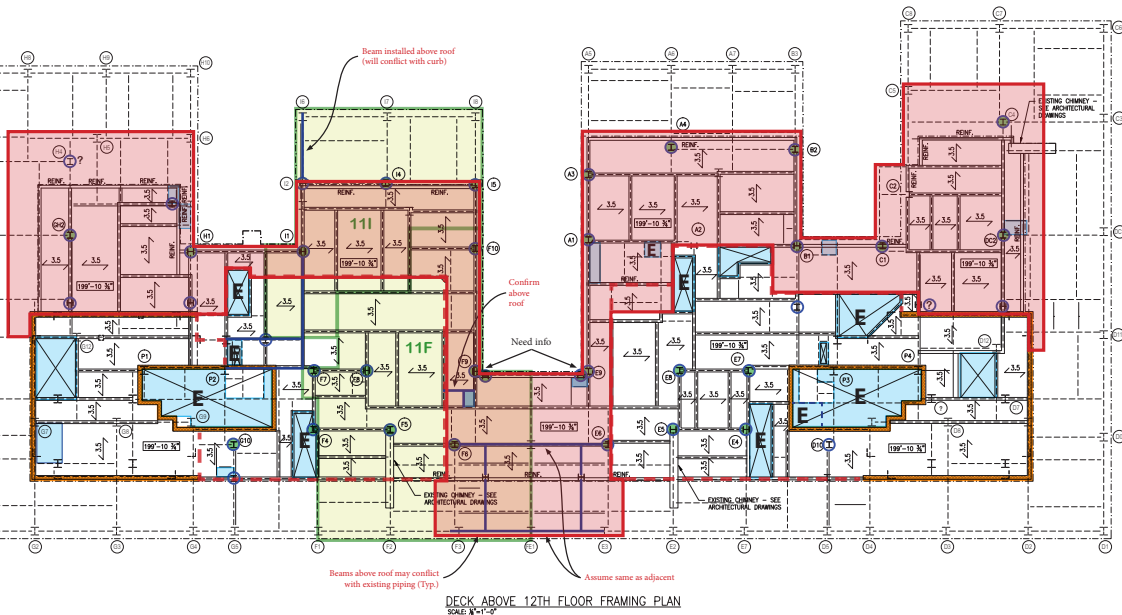
It was determined to alternate roof slabs installation to allow for a 2-story safety zone for steel erection.



T.E.A.R.™ Review:

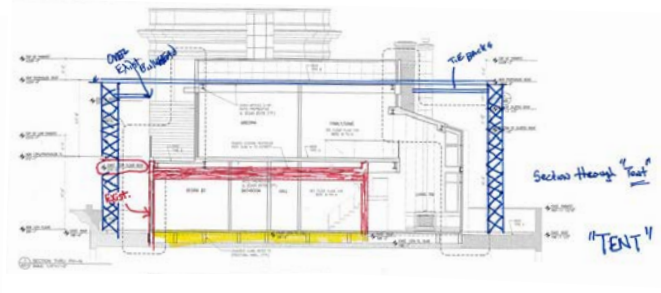
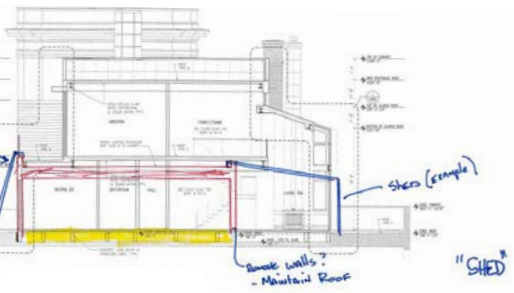
Provide alternate means of erecting a structure on an existing building.

FEASIBILITY (ROOFTOP ADDITION)



LEGEND

- = Existing structure to remain
- = Column Up
- = Column on existing column (Others up from new beam)
- - - = Existing structure to be removed.
- = Occupied tenants on the 11th floor
- = New slab opening on existing 12th floor
- E = Existing slab opening on existing 12th floor
- = New beams above roof
- Text = Need input from consultant
- = Approximate area of shed



STUDY FOR THE ERECTION
OF A NEW STRUCTURE
OVER OCCUPIED BUILDING

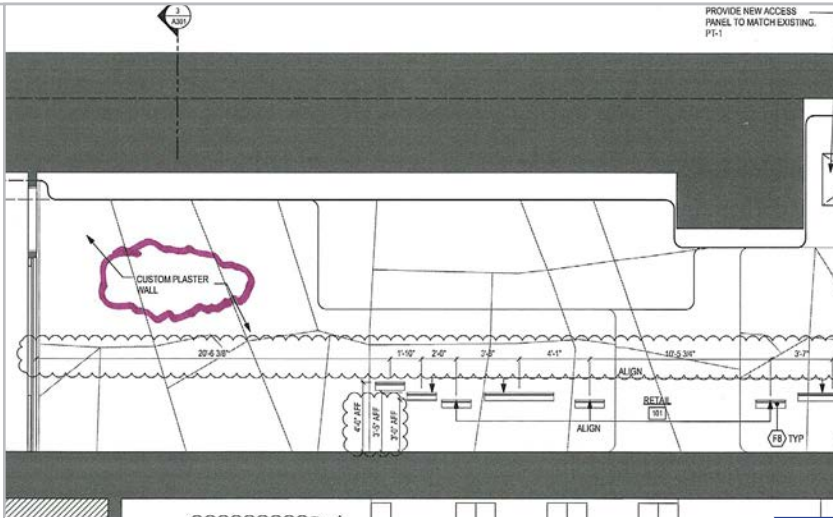
APPROXIMATE AREA OF SHED



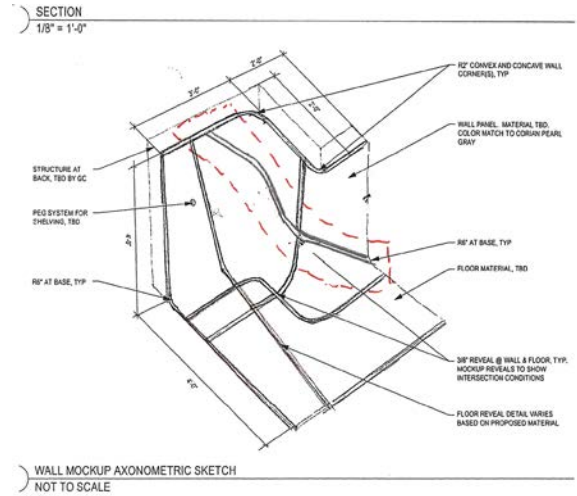
T.E.A.R.™ Result:

Multiple approaches were presented to the design team for approval. A modified approach was agreed upon & utilized.





Original Intent: Plaster



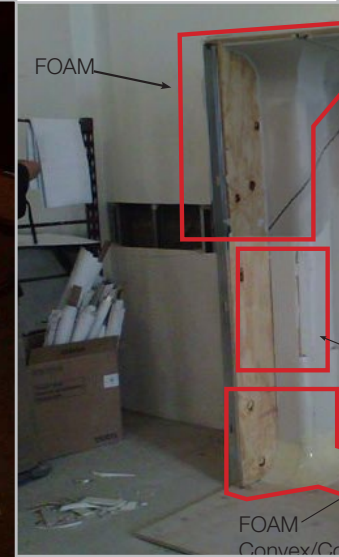
Issue: Double compound curves can't work with typical reveals.



Mock-up prepared by R+R for Quality Control and Foam w/Skimcoat



Change to GFRG



On-Site Mock-up

T.E.A.R.™ Review:

Take a concept and make it reality with a challenge of reveals being used in compound curves, where the proposed material was cost-prohibitive.

VALUE ENGINEERING



Multiple attempts out of plaster per original intent.

3

Exploring Foam

4

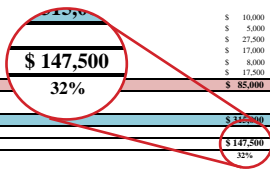


Mock-up	included	included	included	included
Frame/Sheet rock walls	included	included	included	included
1x1 floor ceilings	included	included	included	included
ceiling ceilings	included	included	included	included
Moldings and Reveals:	included	included	\$ 195,000	included
- Vertical 6" and 2"	included	included	included	included
- Reveals in walls	included	included	included	included
- Reveals in Ceilings	included	included	included	included
- Reveals at Soffits and Fascias, Balconse corners	included	included	included	\$ 50,000
6" Cove Base and Ceiling	included	included	included	included
Balconse corners	included	included	included	included
-Taper Reveals to floor from walls	included	included	included	included
Carved Plaster walls at bottom of stair for all required framing (Womb)	included	included	\$ 80,000	\$ 72,500
Level 5 Finish	included	included	included	included
Light Pockets	included	included	included	included
Soffit, boxes & mini domes	included	included	included	included
Blocking for railings, wall fixtures, tops, toilet accessories, cabinets, stairs	included	included	included	included
Build out soffit to create blackout shade for sky light and 3 windows	included	included	included	included
2'x 2' access door for EW heater & AHU unit	included	included	included	included
Install doors frames, hardware & toilet accessories	included	included	included	included
	\$ 412,570	\$ 486,674	\$ 537,100	\$ 462,500
				\$ 542,040

DELETE MOLDINGS AND "WOMB"	\$ (148,750)	withdrew	withdrew	\$ (229,500)	\$ (300,140)
Delete all moldings (Furnish)	Included	Included	Included	Included	Included
Include all straight reveals in walls and ceilings	Included	Included	Included	Included	Included
Keep Light Troughs in FRG	Included	Included	Included	Included	Included
	\$ 263,820			\$ 233,000	\$ 241,900
		withdrew			

Awarded Contract					\$ 230,000
-------------------------	--	--	--	--	------------

ADD BACK FOR MOLDINGS AND WOMB:					
Foam Moldings (Furnish)				\$ 10,000	
Contingency for Re-make				\$ 5,000	
Moldings (Install)				\$ 27,500	
3D model Ribs at Womb				\$ 17,000	
Foam at Womb				\$ 8,000	
Plaster at Womb				\$ 17,500	
Total Add:				\$ 85,000	



Total					\$ 345,000
Savings from Bid					\$ 147,500
					32%

Savings from Specified to Final Installation.

8



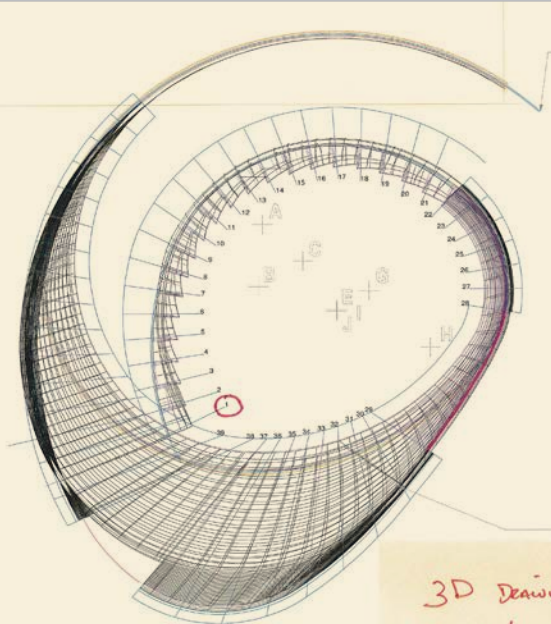
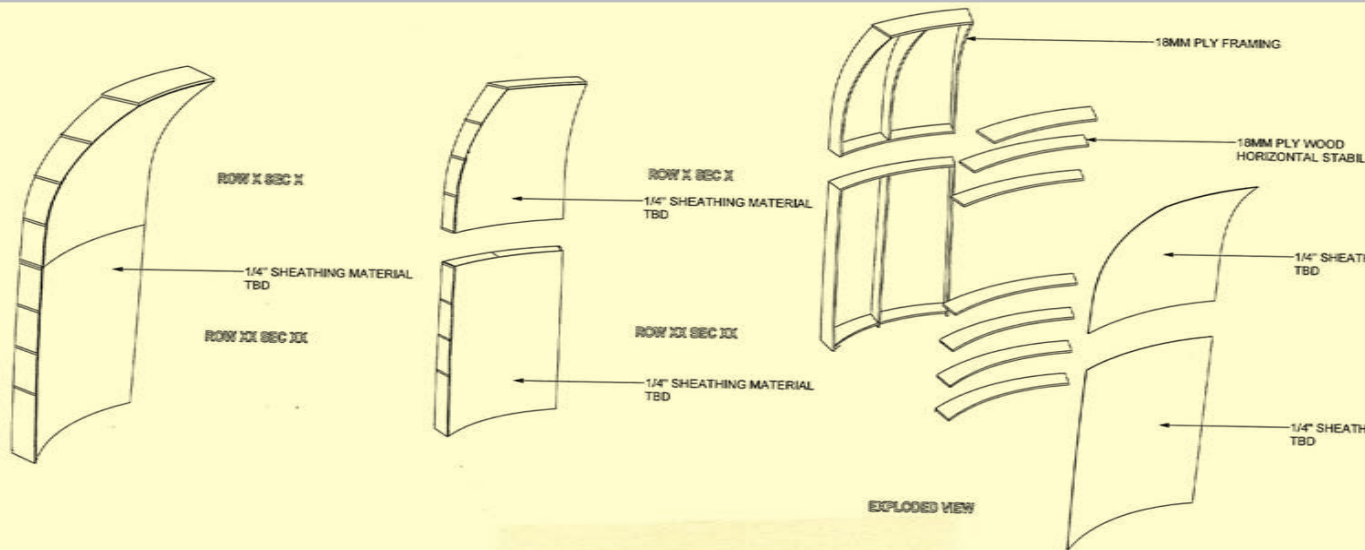
Finished Product.

9

T.E.A.R.™ Result:

Perform multiple mock-ups and studies until the most cost-effective and feasible approach was achieved.





T.E.A.R.™ Review:

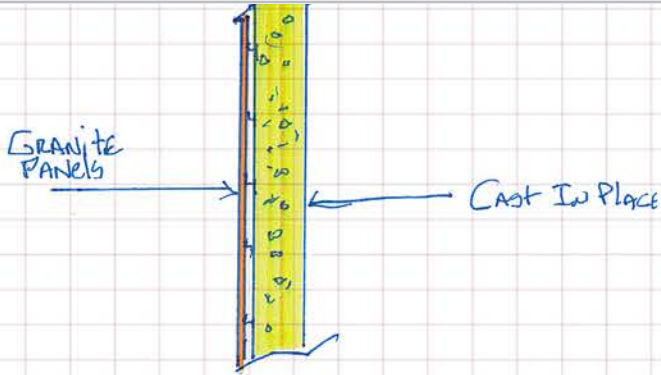
Studies to achieve optimal approach for installation of compound curve elliptical walls.

CREATIVITY (PANELIZATION)



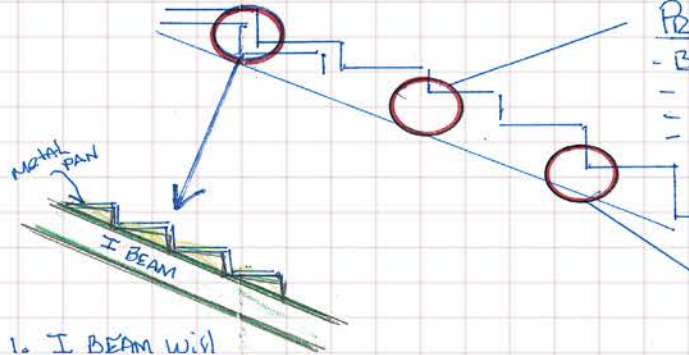
T.E.A.R.™ Result:

Explore the idea of panelization with wood modeled and fabricated on a CNC machine.



AT GRANITE WALLS

* C.I.P. better substrate THAN STEEL which will HAVE TO BE INFILLED FOR WATERPROOFING + A Gert SYSTEM



1. I BEAM WILL REDUCE HEAD ROOM IN GALLERY CL E-F, 7-9 AND MEZZANINE
2. 3 TRADES INSTEAD OF ONE
3. WATERPROOFING MORE DIFFICULT

① ASSUMPTION ON PRESENT INTENT
STEEL, METAL PAN, CONCRETE

PILE CAP INTEGRATED IN SLAB



- Fas
1. D
 2. P
 3. E
 - 4.
 - 5.
 - 6.
 - 7.

T.E.A.R.™ Review:

Study of a proposed method of structure for a new cultural building on piles.

VALUE ENGINEERING

Pre-Cast Concrete

- Off Site
- BETTER HEAD ROOM
- BETTER W.P.
- ERECTION T.B.D

CONCRETE IN LIEU OF STEEL WORK AT
Most Areas. Cantilever T.B.D

3

Cast in Place

(SEE NOTE ON NEXT PAGE ABOUT PLANT)

- LESS CONCERN ABOUT SIZE OF PIECES. Pre-Cast AND STEEL WILL REQUIRE TWO CRANES
- BETTER FOR W.P
- BETTER HEAD ROOM BELOW

Construction Study

Building a CIP Structure will allow for more controls
Build a CONCRETE PLANT ON SITE AND AVOID
TWO CRANES (AVOID ONE ON THE BARGE, ^{KEEP} SMALLER
ONE ON LAND)

ELIMINATE IN GRADE PILE CAPS. LET PILES
RUN HIGH AND INTEGRATE CAP IN SLAB

ELIMINATE WORK THAT WOULD BE REQUIRED
TO FIREPROOF + PROTECT STEEL

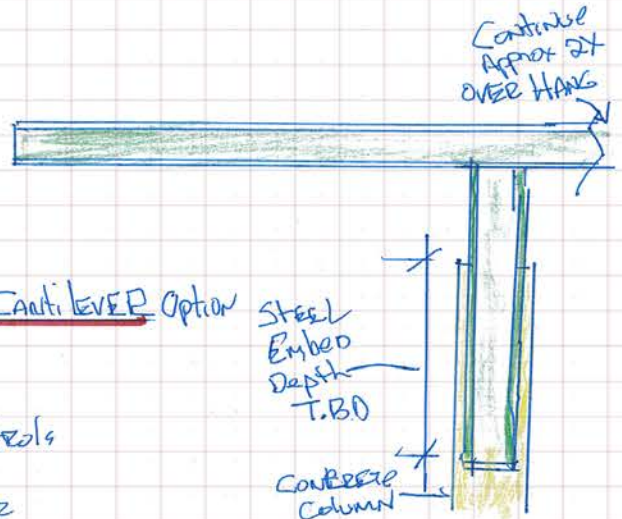
CONCRETE SHEAR WALLS WILL HAVE BENEFITS WITH
ATTACHING GRANITE AND OTHER

ONE TRADE

LESS LEAD TIME

SUPER STRUCTURE STUDY (Cont'd)

- ELIMINATE FIREPROOFING REQ'S



1/4" = 1'

T.E.A.R.™ Result:

Propose Cast-In-Place Concrete in lieu of steel and eliminate double slab.

RICHTER+RATNER

45 WEST 36TH STREET, 12TH FL

NEW YORK, NY 10018

212.936.4500

RICHTERRATNER.COM