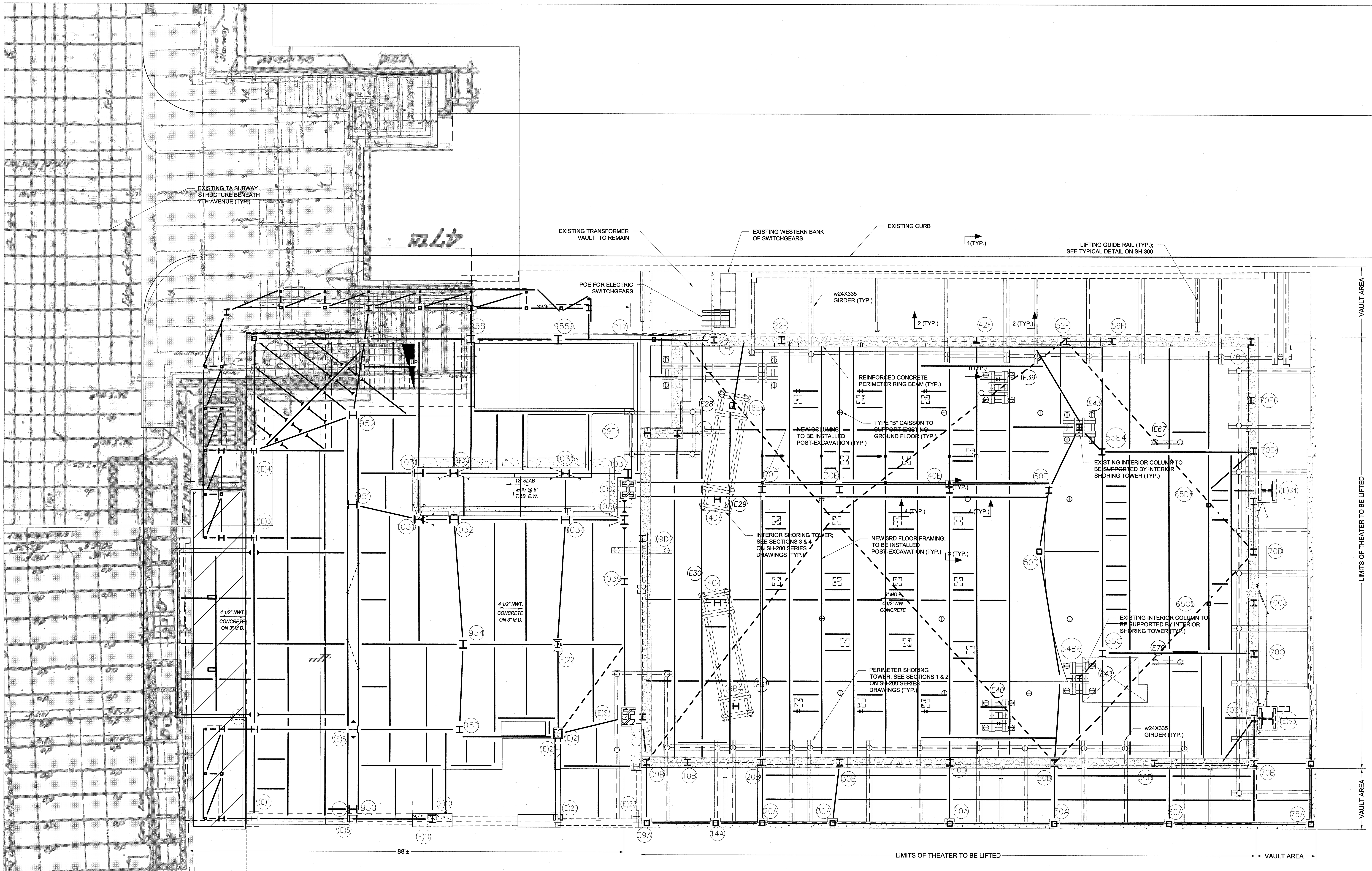

TEMPORARY SHORING TOWER LAYOUT PLAN (PRE-EXCAVATION)

SCALE 1/8"=1'-0"

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SHORING TOWER LAYOUT PLAN

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RF/TM

Scale:
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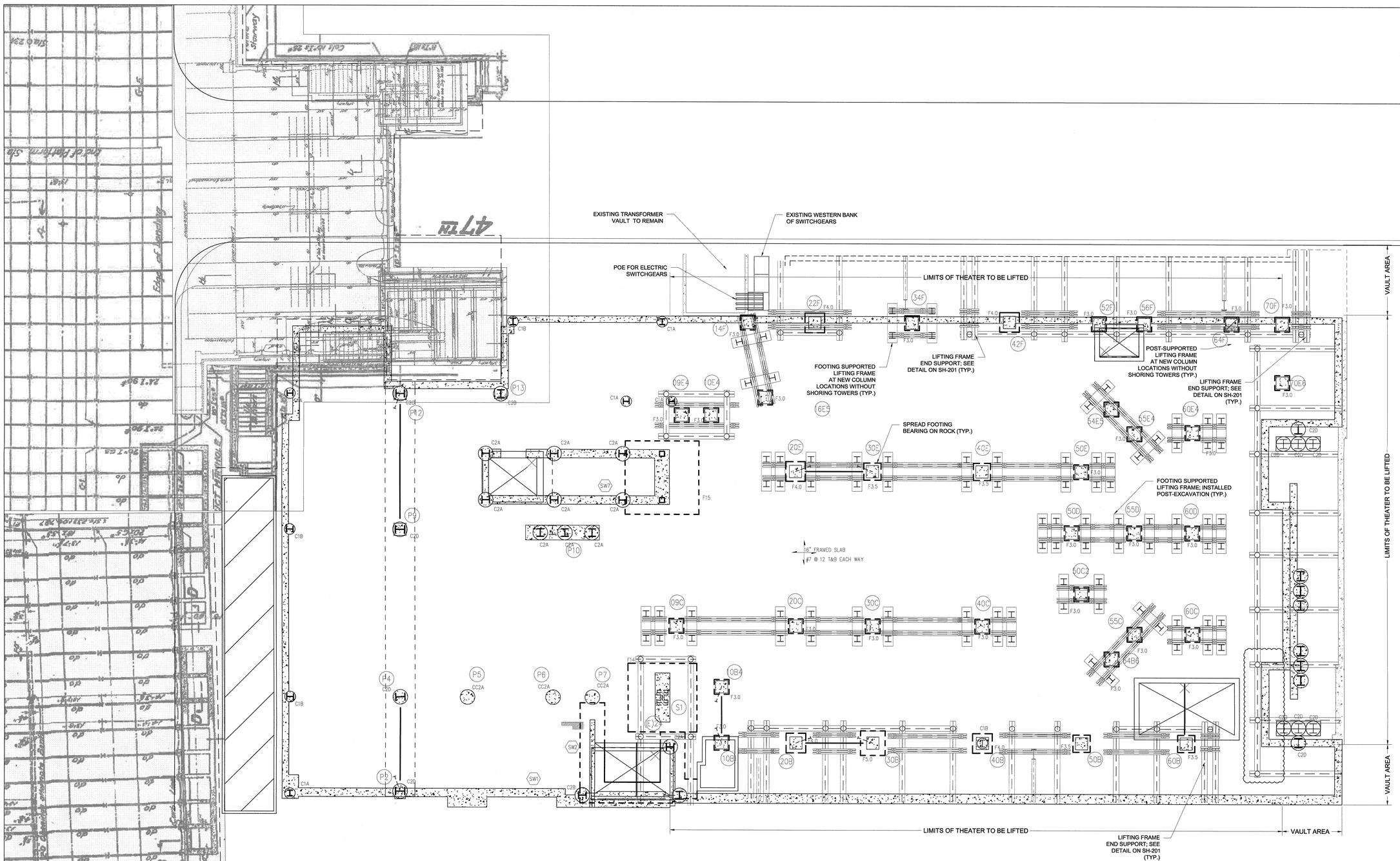

LIFTING FRAME LAYOUT PLAN (FINAL LIFT SHOWN)

SCALE 3/16"=1'-0"

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PHASE 4 - LIFTING & JACKING PLAN (2ND LIFT SHOWN)

Project Number:	Signature & Seal:
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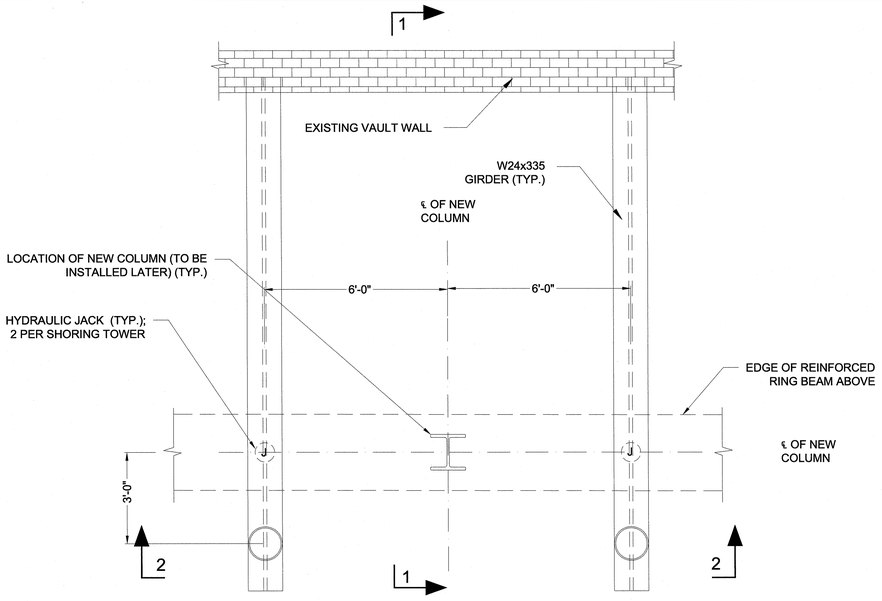
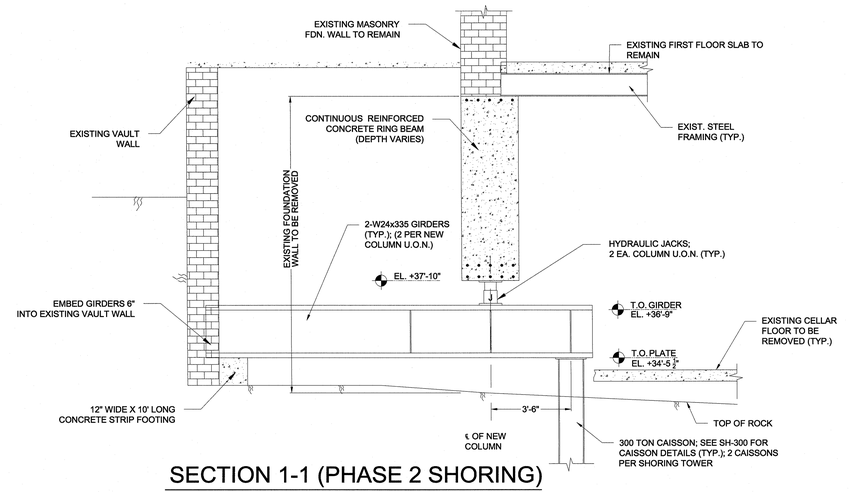


DETAIL "A" AT RING BEAM (PHASE 2 SHORING)

SCALE 1/2"=1'-0"



SECTION 1-1 (PHASE 2 SHORING)

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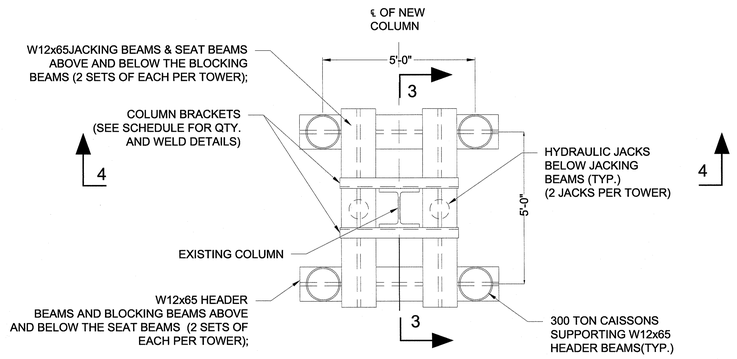

DETAIL "B" AT INT. EX. COL. (PHASE 2 SHORING)

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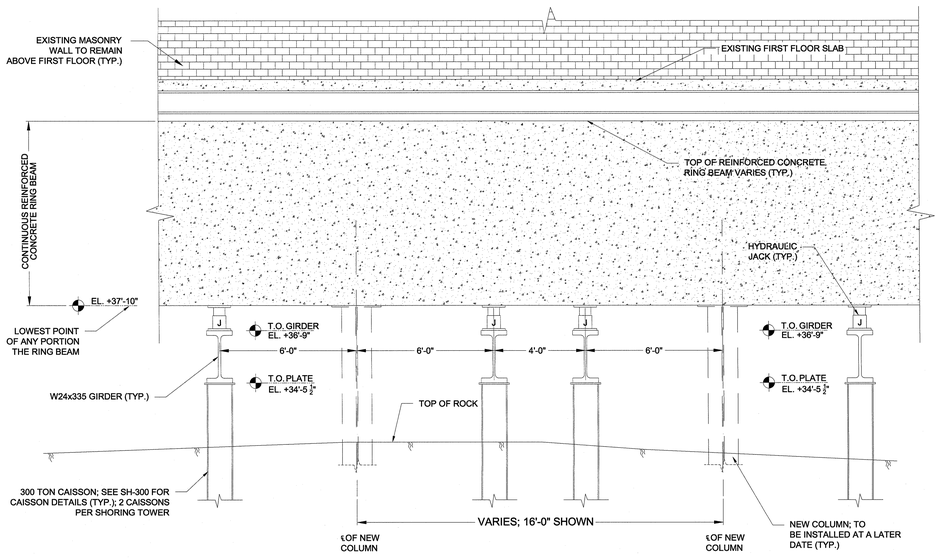

SECTION 2-2 (PHASE 2 SHORING) - INITIAL SETUP

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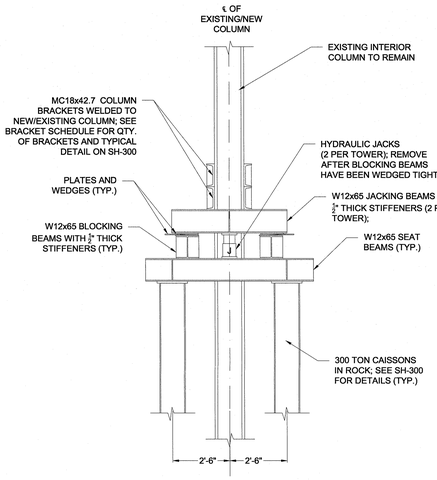

SECTION 3-3 (PHASE 2 SHORING)

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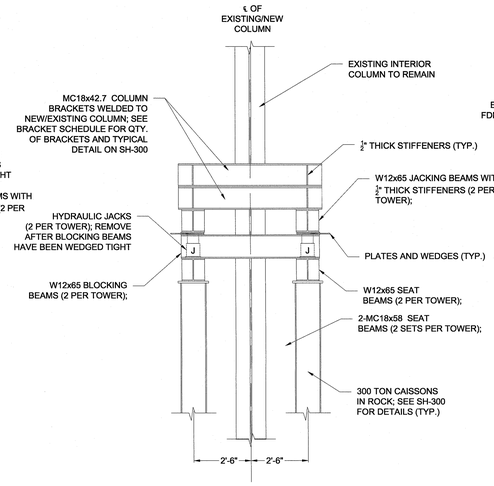
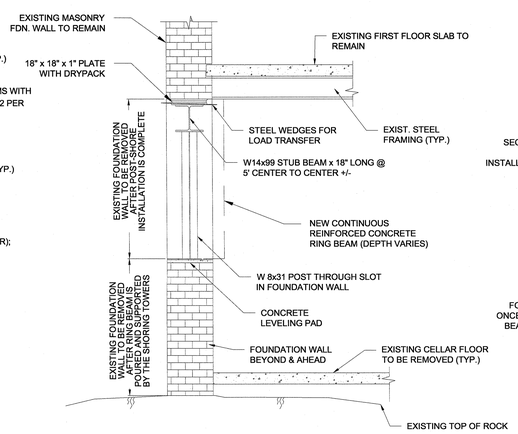


SECTION 4-4 (PHASE 2 SHORING)

SCALE 3/8"=1'-0"

SHORING SECTINOS FOR EXISTING INTERIOR COLUMNS



SECTION 5-5 (PRE-SHORING FOR RING BEAM INSTALLATION

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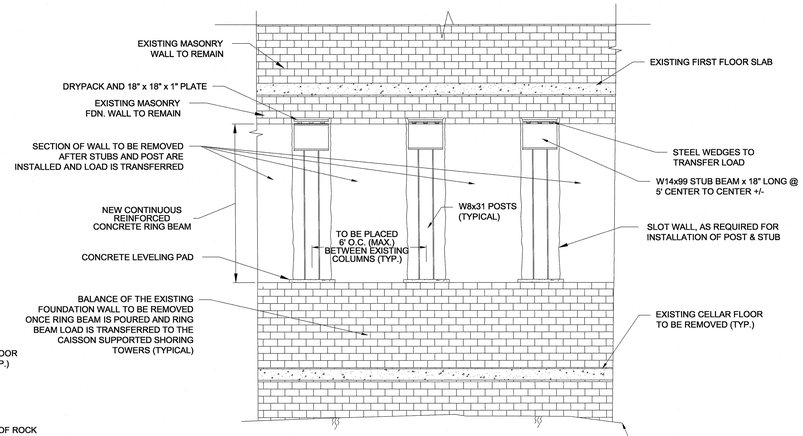

SECTION 6-6 (PRE-SHORING FOR RING BEAM INSTALLATION

SCALE 3/8"=1'-0"

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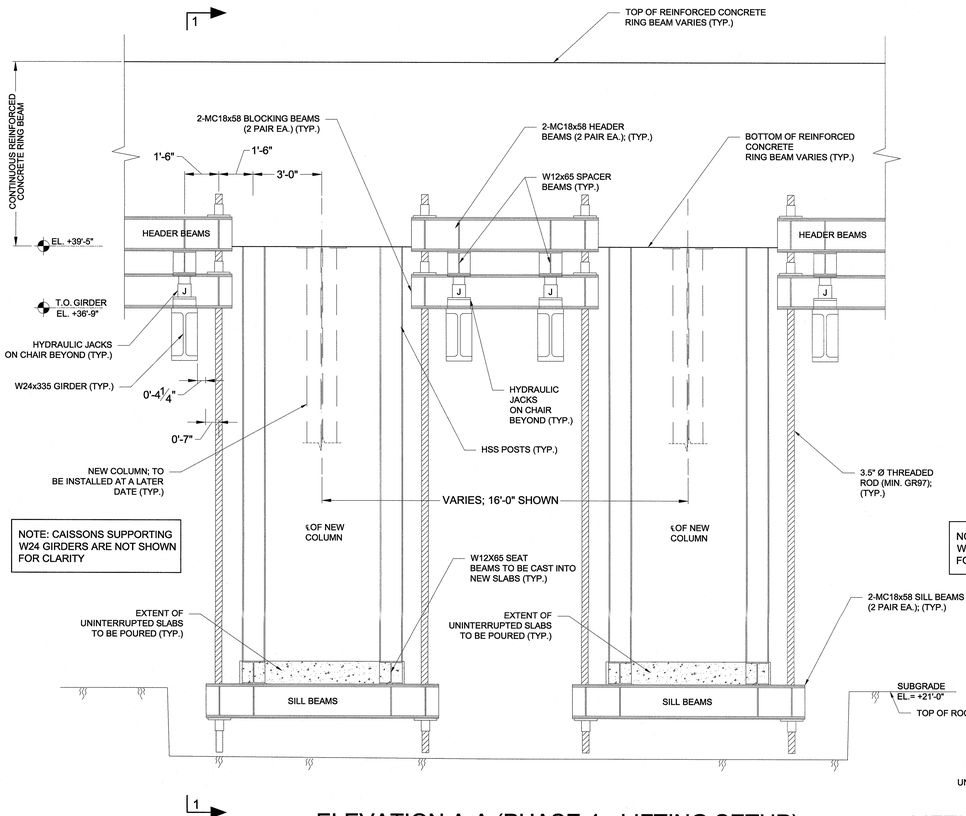

ELEVATION A-A (PHASE 4 - LIFTING SETUP)

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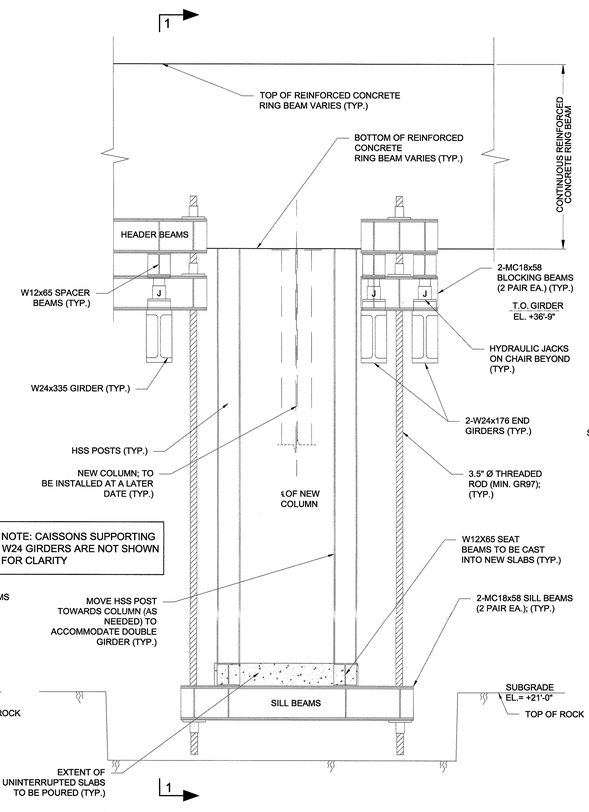

LIFTING FRAME "END" DETAIL (PHASE 4 - LIFTING SETUP)

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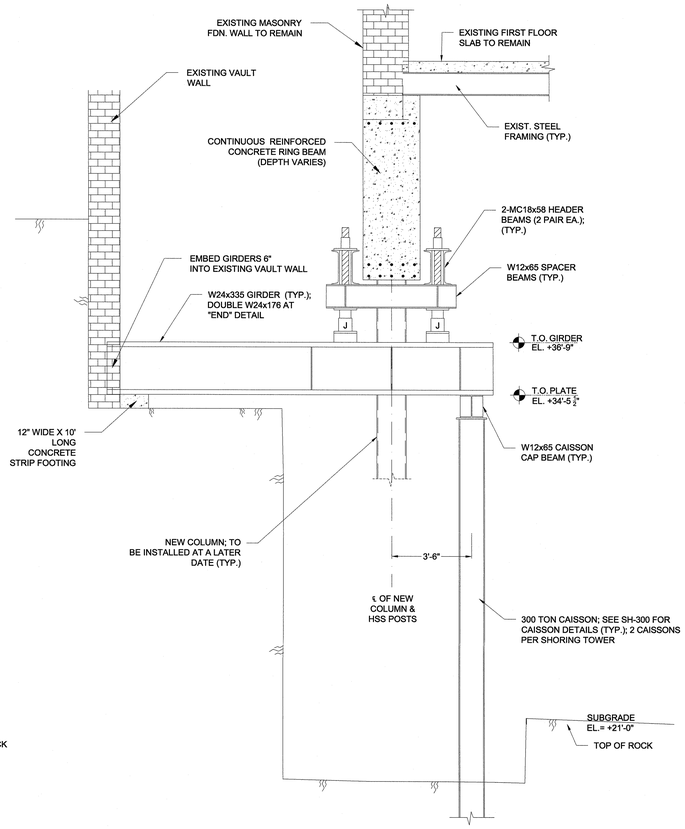

SECTION 1-1 (PHASE 4 LIFTING)

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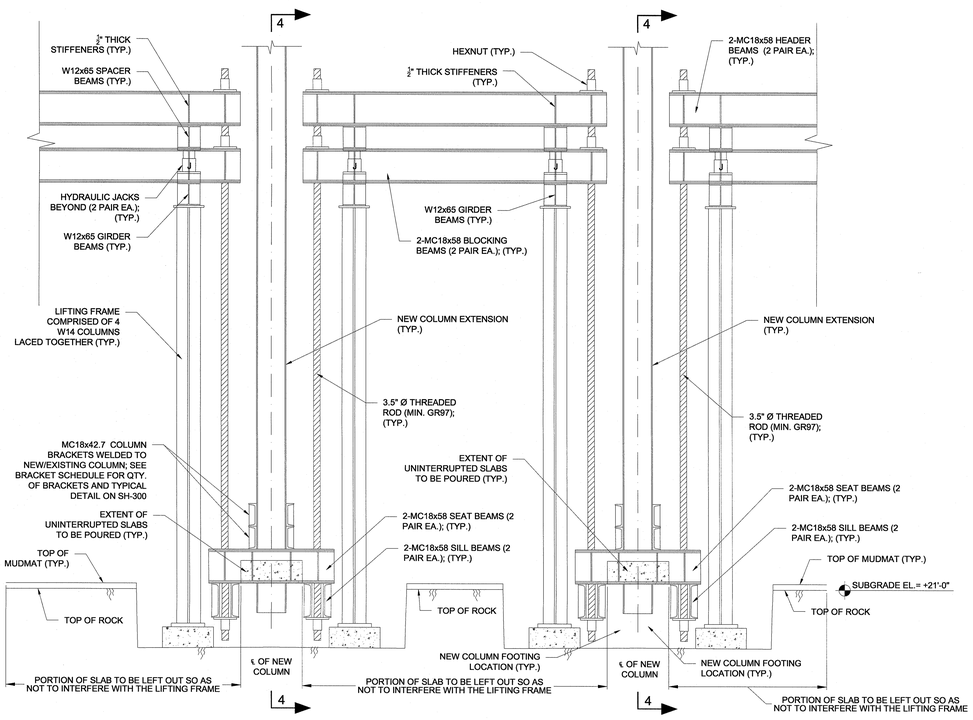

SECTION 3-3 AT INTERIOR COLUMN (PHASE 4 LIFTING)

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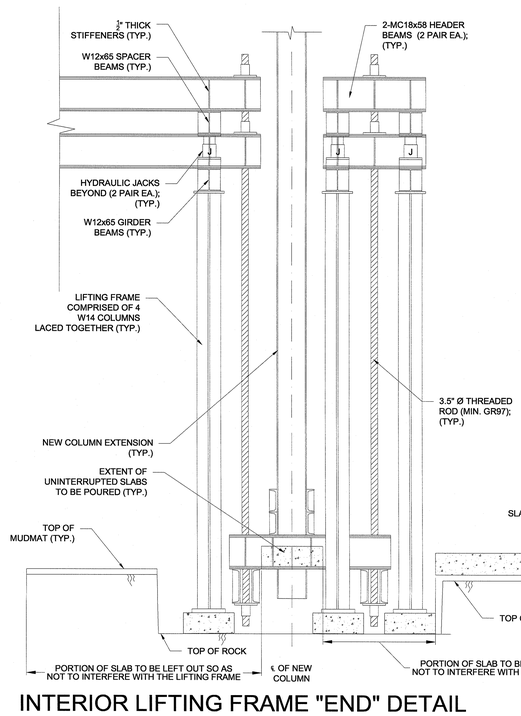

INTERIOR LIFTING FRAME "END" DETAIL (PHASE 4 - LIFTING SETUP)

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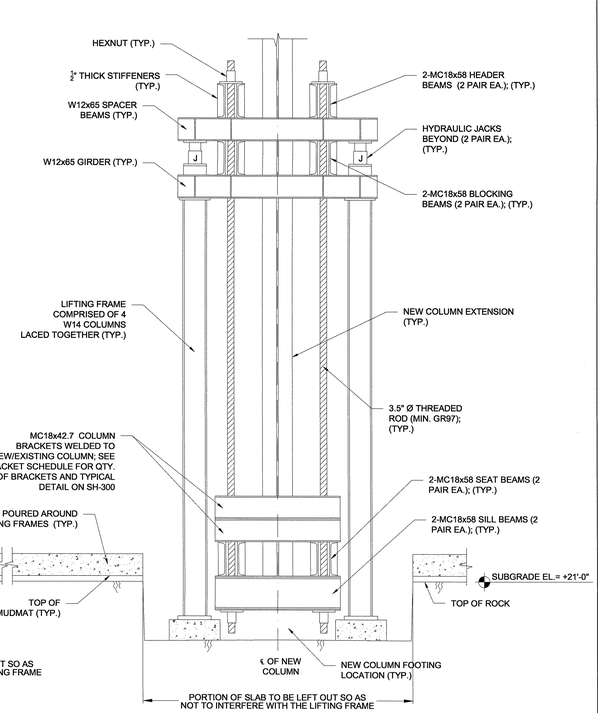

SECTION 4-4 AT INTERIOR COLUMN (PHASE 4 LIFTING)

SCALE: 3/8"=1'-0"

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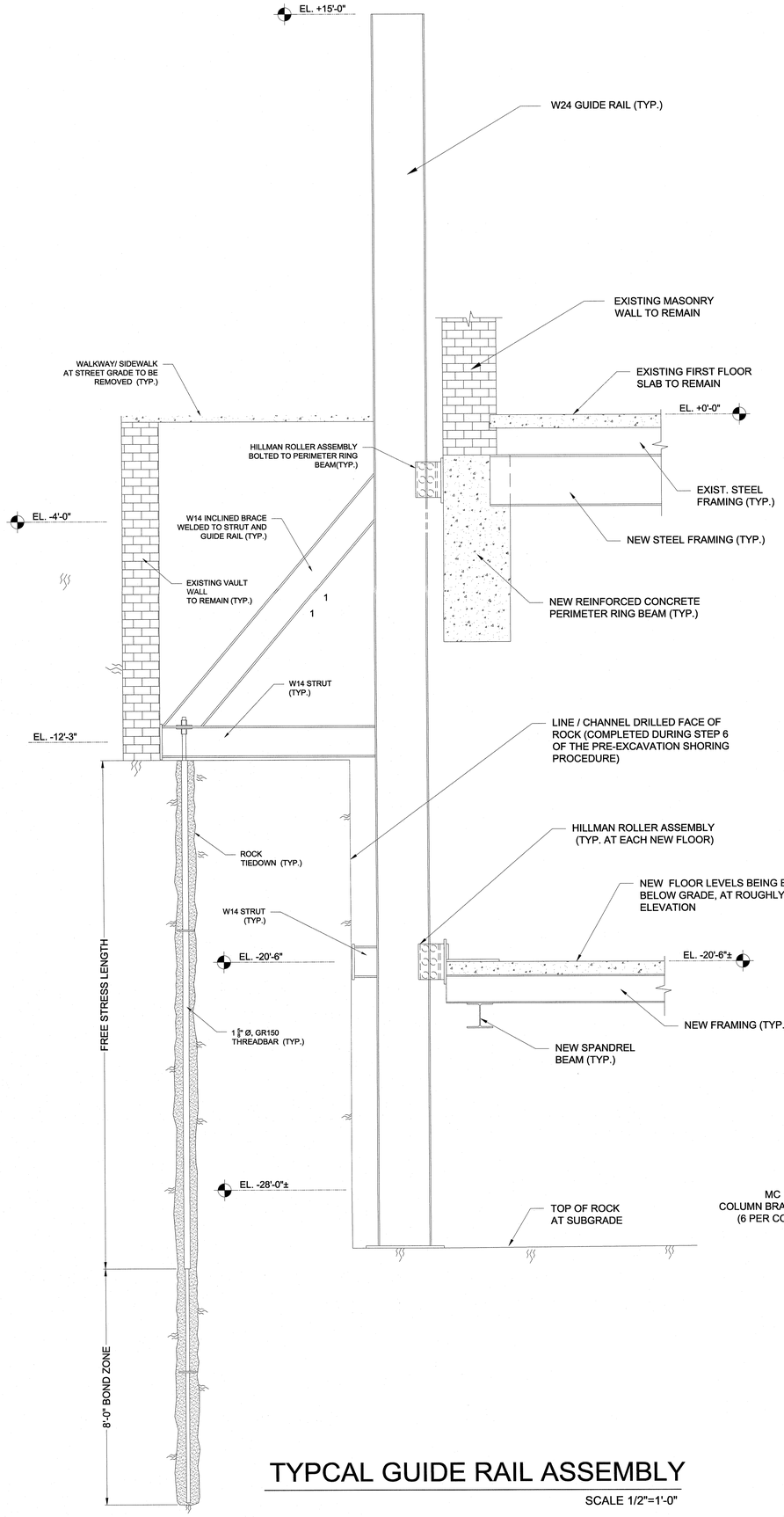

TYPCAL GUIDE RAIL ASSEMBLY

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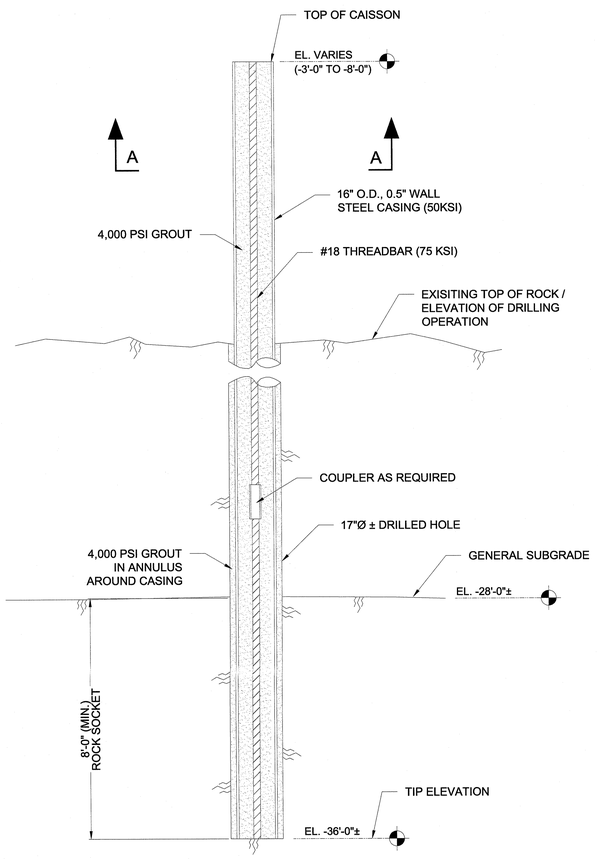

TYPE "A" TEMP. CAISSON DETAILS

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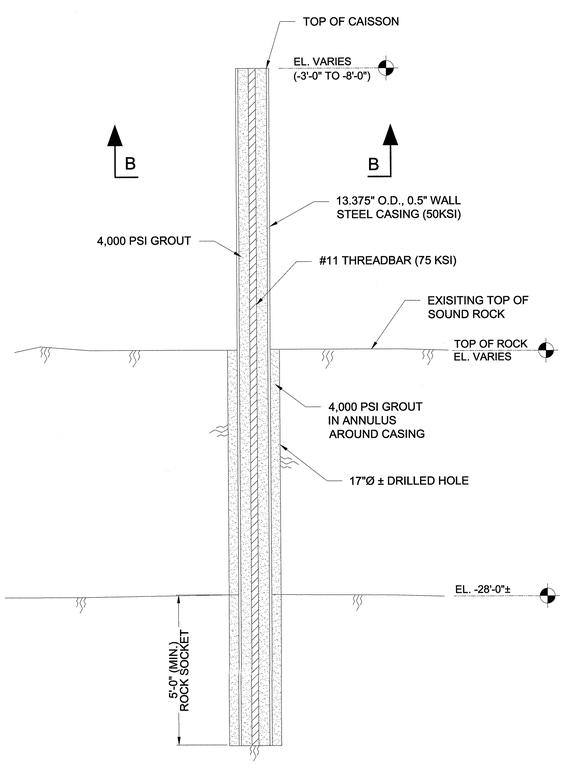

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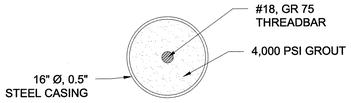

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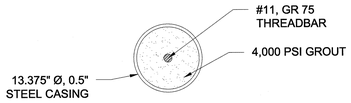

SECTION B-B

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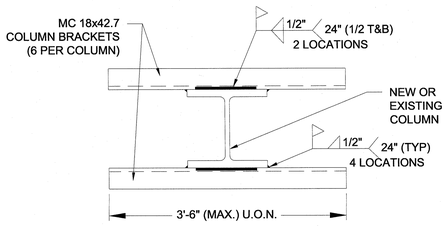
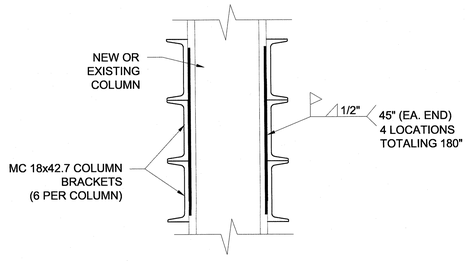


PLAN VIEW



SECTION VIEW

TYPICAL COLUMN BRACKET DETAILS

SCALE 1"=1'-0"

CONCRETE/GROUT:

1. GROUT FOR THE SHORING/LIFTING MINI-CAISSONS SHALL BE A 4,000 PSI MIX. MIX SHALL BE SITE MANUFACTURED AT 5.5 GALLONS OF WATER PER 1 SACK (94 LBS) OF TYPE II or III CEMENT WITH 8 OZ. OF RHEOBUILD 1000 SUPER-PLASTISIZER, IF NEEDED FOR FLOWABILITY.
2. GROUT AND ITS TESTING (BY OTHERS) IS NOT SUBJECT TO CONTROLLED INSPECTION PER NYC BUILDING CODES, AS IT IS FOR TEMPORARY SHORING. EOR (URBAN) SHALL DETERMINE TESTING REQUIREMENTS PRIOR TO POURING.

INSTALLATION NOTES:

1. ALL TEMPORARY SHORING/LIFTING MINI-CAISSONS SHALL BE INSTALLED IN LOCATIONS AS SHOWN.
2. REMOVE EXISTING CELLAR SLAB AND EXCAVATE TO ROCK (ONLY A FEW FEET).
3. SET UP DRILL EQUIPMENT ON PROPER LOCATION AND PLUMB THE MAST.
4. INSTALL DOWN-THE-HOLE-HAMMER.
5. DRILL HOLE THROUGH ROCK TO DEPTH SHOWN IN DETAILS.
6. REMOVE HAMMER AND INNER RODS, AND FLUSH HOLE CLEAN.
7. INSTALL STEEL CASING AND REINFORCING BAR. NOTE THAT THE CASING AND BAR WILL EXTEND ABOVE THE DRILLING SURFACE ELEVATION. IF THIS IS NOT FEASIBLE, AN EXTENSION PIECE OF CASING MAY BE WELDED ON AND GROUTED AT A LATER DATE (IN THIS CASE, MAKE SURE THAT THREADBAR EXTENDS AT LEAST 2 FEET ABOVE TOP OF CASING, SO THAT THREADBAR EXTENSION MAY BE COUPLED ON TOP AS NEEDED).
8. TREMIE PUMP GROUT THROUGH UNTIL GOOD GROUT FLOWS OUT OF THE TOP OF THE CASING.
9. MAKE SURE THAT GROUT ALSO FILLS THE ANNULUS AROUND THE CASING.

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SH-300

PHASE 2 SHORING PROCEDURE (PRE-EXCAVATION):

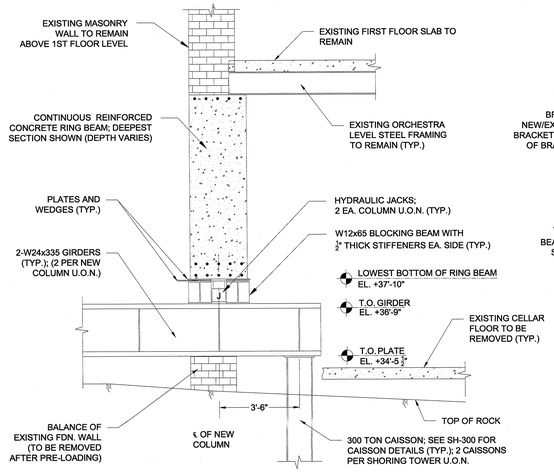
1. INSTALL OPTICAL MONITORING POINTS FOR THE PURPOSE OF PERFORMING CONTINUOUS OBSERVATION AND RECORDING OF ALL VERTICAL AND HORIZONTAL MOVEMENTS DURING CONSTRUCTION.
2. INSTALL ACCESS RAMP, MOBILIZE EQUIPMENT TO CELLAR LEVEL.
3. REMOVE THE EXISTING CELLAR SLAB ON GRADE AND EXCAVATE TO THE BOTTOM OF THE EXISTING COLUMN FOOTINGS.
4. INSTALL ALL OF THE DRILLED ELEMENTS INCLUDING THE 16" Ø TEMPORARY SHORING MINI-CAISSONS (TYPE "A"), THE 13" Ø TEMPORARY SHORING CAISSONS (TYPE "B") AND THE PERMANENT 24" Ø CAISSONS THROUGH THE EXISTING SUPER COLUMN FOOTINGS. FOR TEMPORARY SHORING CAISSONS, FOLLOW LOCATIONS SHOWN ON SH-100 (SEE DRAWING SH-300 FOR CAISSON DETAILS).
5. INSTALL THE TEMPORARY STEEL SUPPORT FRAMING TO SUPPORT THE UNDERSIDE OF THE EXISTING FIRST FLOOR ORCHESTRA LEVEL SLAB.
6. DEMOLISH AND REMOVE THE EXISTING MASONRY PIERS SUPPORTING THE FIRST FLOOR ORCHESTRA LEVEL SLAB.
7. SIMULTANEOUSLY WITH STEP 6, CHOP VERTICAL SLOTS IN THE EXISTING PERIMETER FOUNDATION WALL OF THE THEATER AND INSTALL TEMPORARY STUB BEAMS AND POSTS ALONG THE HORIZONTAL ALIGNMENT OF THE PROPOSED RING BEAM (SEE SECTIONS 5-5 AND 6-6 ON SH-200).
8. AFTER THE STUB BEAMS AND POSTS ARE INSTALLED, DEMOLISH AND REMOVE A PORTION OF THE PERIMETER FOUNDATION WALL, EQUAL TO THE HEIGHT OF THE PROPOSED RING BEAM, SO THAT THE RING BEAM CAN BE CAST ATOP THE REMAINING LOWER PORTION OF THE WALL.

8A. INSTALL TEMPORARY SHORING TO SUPPORT EXISTING PERIMETER COLUMNS WITHIN THE RING BEAM.

9. FORM AND POUR THE NEW PERIMETER REINFORCED CONCRETE RING BEAM AS SHOWN ON STRUCTURAL DRAWINGS S-531 THROUGH S-533. INSTALL PLATES AND WEDGES AND GROUT BETWEEN THE TOP OF THE PERIMETER RING BEAM AND THE UNDERSIDE OF THE BRICK RING BEAM ABOVE.

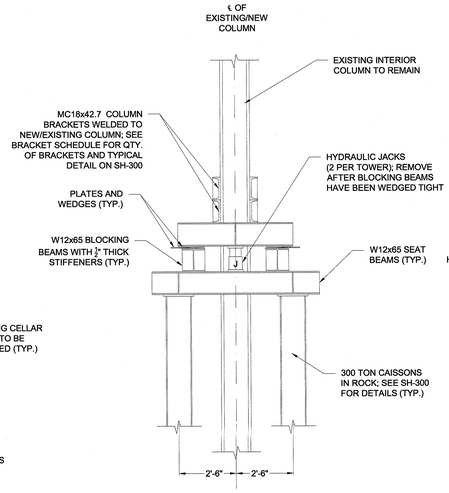
9A. PRE-DEFLECT EXISTING PERIMETER COLUMNS, CUT COLUMNS ABOVE THE RING BEAM, AND INSTALL NEW COLUMNS BASE PLATES TO BEAR ON TOP OF THE NEW RING BEAM (SEE STRUCTURAL DRAWING S-532 FOR PROPOSED PROCEDURE AND DETAILS).

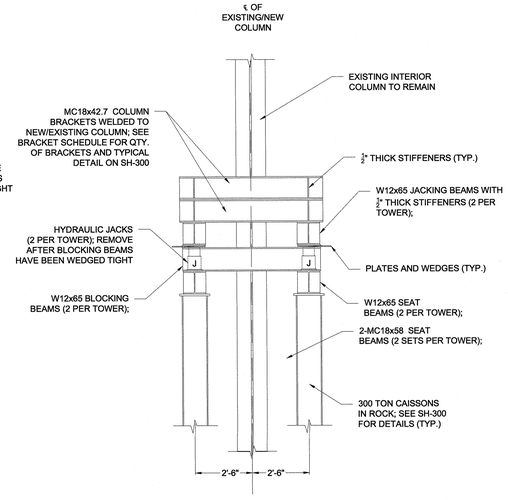
10. WELD THE JACKING BRACKETS AND INSTALL THE SHORING TOWER ASSEMBLIES AT THE EXISTING, INTERIOR COLUMNS. CONCURRENTLY, INSTALL THE SHORING TOWER ASSEMBLIES AT THE NEW COLUMN LOCATIONS BENEATH THE PERIMETER RING BEAM (SEE SECTIONS 1 AND 2 ON SH-200).
11. INSTALL HYDRAULIC JACKS AT EACH SHORING TOWER AT THE PERIMETER AND INTERIOR COLUMNS. GRADUALLY INCREASE THE LOAD IN THE JACKS UNTIL A $\frac{3}{16}$" UPWARD MOVEMENT IS NOTICED. RECORD THE JACKING PRESSURE AND CORRESPONDING JACKING LOAD AT EACH SHORING TOWER FOR FUTURE REFERENCE.
12. AT THE INTERIOR COLUMNS, PLATE AND WEDGE BETWEEN THE TOP OF THE BLOCKING BEAM AND THE UNDERSIDE OF THE WELDED COLUMN BRACKET. AT THE PERIMETER RING BEAM, PLATE AND WEDGE BETWEEN THE BLOCKING BEAM AND THE UNDERSIDE OF THE RING BEAM. RETRACT AND REMOVE THE HYDRAULIC JACKS.
13. REPEAT STEP 12 AT ALL SHORING TOWERS, BOTH AT THE PERIMETER AND INTERIOR, UNTIL EACH HAS BEEN PRELOADED.
14. LINE DRILL VERTICAL HOLES IN THE ROCK ALONG THE OUTSIDE PERIMETER OF THE NEW THEATER SUB-CELLAR SPACE AND COMMENCE ROCK EXCAVATION.
15. PLACE A 3" CONCRETE MUDSLAB TO ELEVATION +21.25.



PERIMETER PRE-LOADING DETAIL (PHASE 2 SHORING)

SCALE 3/8"=1'-0"





INTERIOR COLUMN PRE-LOADING DETAILS (PHASE 2 SHORING)

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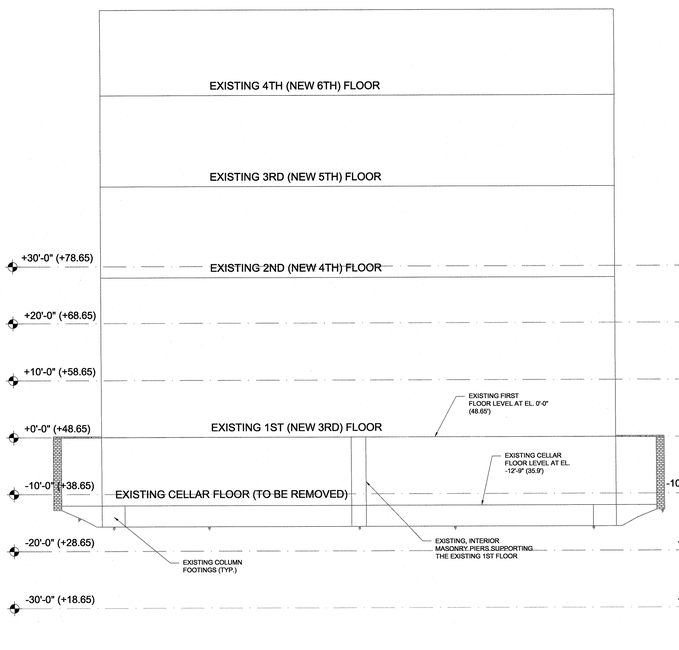
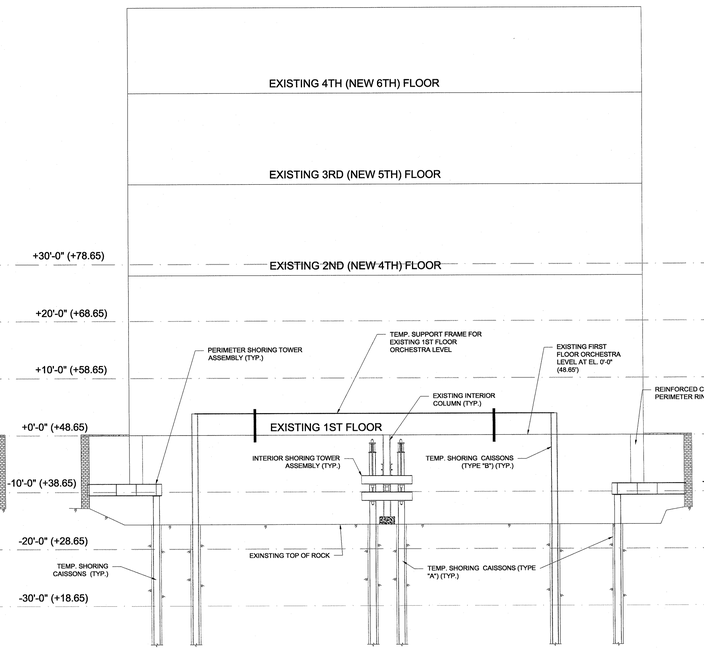
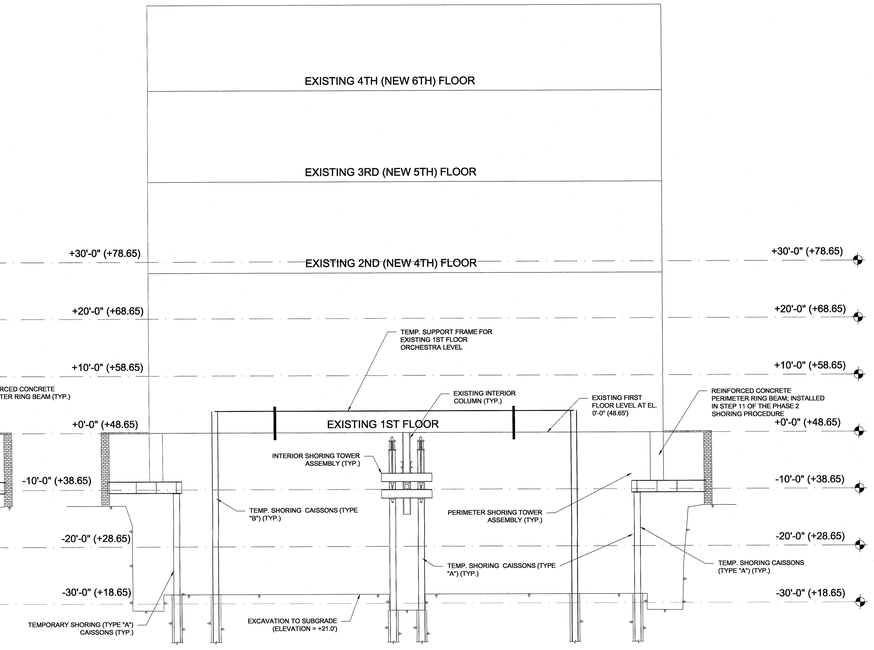


EXISTING THEATER BUILDING SECTION



THEATER BUILDING SECTION AFTER INSTALLATION OF THE SHORING TOWERS



THEATER BUILDING SECTION AFTER EXCAVATION TO SUBGRADE IS COMPLETE

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Sheet Title:
CONCEPTUAL DIAGRAMS (PHASE 2 - SHORING)

Project Number:

Drawn By: RF

Checked By: RF/TM

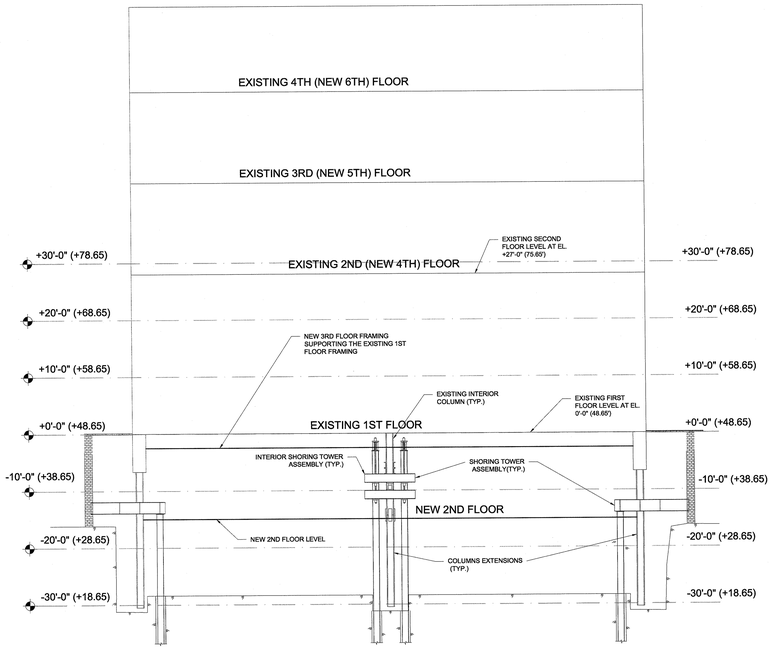
Scale: 1/8" = 1'-0"

Signature & Seal:

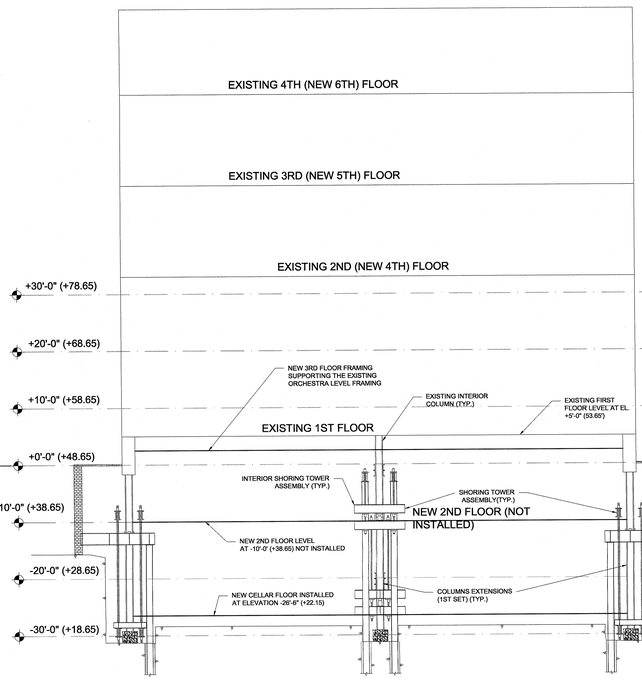
Sheet Number:
SH-400

PHASE 4 JACKING AND LIFTING PROCEDURE (POST-EXCAVATION):

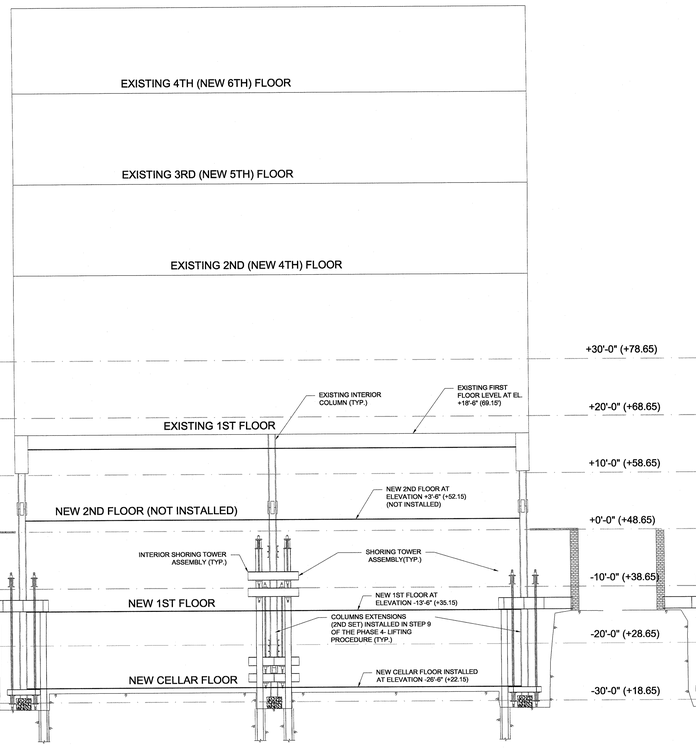
1. AFTER EXCAVATION IS COMPLETE, INSTALL THE NEW 3RD FLOOR FRAMING, INCLUDING THE METAL DECKING AND COLUMN EXTENSIONS DOWN TO THE NEW COLUMN FOOTINGS BELOW THE SUB-CELLAR LEVEL (ALL STEEL WORK BY OTHERS).
2. SHIM AS REQUIRED BETWEEN THE EXISTING FIRST FLOOR ORCHESTRA LEVEL FRAMING AND THE NEW 3RD FLOOR FRAMING INSTALLED IN STEP 1 ABOVE (BY OTHERS) TO TRANSFER THE LOAD OFF OF THE TEMPORARY SLAB SUPPORT FRAME AND ONTO THE NEW 3RD FLOOR FRAMING. INSTALL X-BRACING AS REQUIRED (BY OTHERS).
3. AFTER THE FIRST FLOOR LOAD HAS BEEN TRANSFERRED TO THE NEW 3RD FLOOR FRAMING, REMOVE THE TEMPORARY SLAB SUPPORT FRAMING AND ITS ASSOCIATED TYPE "B" CAISSONS.
4. RECONFIGURE THE COLUMN SHORING TOWERS TO INCLUDE THE JACKING ASSEMBLIES.
5. INSTALL HYDRAULIC JACKS IN ALL OF THE SHORING TOWERS. GRADUALLY INCREASE THE JACKING PRESSURE IN ALL JACKS SIMULTANEOUSLY UNTIL THE COLUMNS ARE RAISED $\frac{1}{8}$" UPWARD. RECORD JACKING PRESSURE AND CORRESPONDING JACKING LOADS AND COMPARE THE RESULTS TO THE JACKING DATA OBTAINED FROM THE PRE-LOADING PHASE. LOWER THE HEXNUTS ABOVE THE SEAT BEAMS SO THAT THEY ARE TIGHT TO THE TOP OF THE SEAT BEAMS.
6. INCREASE THE STROKE ON THE JACK AND REPEAT THIS PROCEDURE IN $\frac{1}{2}$" INCREMENTS UNTIL 70% OF THE STROKE LENGTH IN THE JACK IS REACHED. ONCE 70% OF THE STROKE LENGTH IS REACHED, RELEASE THE PRESSURE ON THE JACK AND ALLOW THE JACKS TO RETRACT UNTIL THE JACKING ASSEMBLY IS RESET FOR THE NEXT LIFTING INCREMENT. LOWER THE JACKING BEAM AND SUPPORTING HEX NUTS TO THE TOP OF THE RETRACTED JACKS.
7. CONTINUOUSLY SURVEY THE MONITORING POINTS FOR ANY UNEXPECTED MOVEMENTS.
8. AFTER ALL INSPECTIONS AND DATA HAVE BEEN REVIEWED AND ARE ACCEPTABLE, REPEAT THE JACKING SEQUENCE IN STEP 6 AND 7 ABOVE SIX TIMES. AFTER SIX SUCCESSFUL CYCLES , INCREASE THE JACKING INCREMENTS TO 1". CONTINUE RAISING THE THEATER IN 1" INCREMENTS UNTIL THE THEATER IS RAISED A TOTAL OF 5 FEET.
9. INSTALL THE COLUMN EXTENSIONS (BY OTHERS) DOWN TO THE NEW COLUMN FOOTINGS BELOW THE SUB-CELLAR LEVEL. SHIM AS REQUIRED.
10. INSTALL THREADED ROD EXTENSIONS PIECES AND SLAB SUPPORT CHANNELS BELOW SUBGRADE.
11. POUR THE NEW 12" THICK REINFORCED 1ST FLOOR CONCRETE SLAB OVER THE MUDSLAB AT SUBGRADE. THE TOP OF THE FINISHED FLOOR IS TO BE AT ELEVATION +22.15'.
12. REPEAT THE JACKING SEQUENCE IN STEPS 6 AND 7 ABOVE UNTIL THE NEW 1ST FLOOR SLAB IS RAISED TO ELEVATION +35.65 (13.5' LIFT).
13. REPEAT STEPS 9, 10, AND 11 AND THEN POUR THE NEW 12" THICK CELLAR FLOOR SLAB TO ELEVATION +22.15 (SIMILAR TO HOW THE NEW 1ST FLOOR SLAB WAS POURED IN STEP 11).
14. REPEAT STEP 12 UNTIL THE NEW CELLAR SLAB IS RAISED TO ELEVATION +35.15' (13.0' LIFT) AND THE NEW 1ST FLOOR SLAB IS RAISED TO +48.65.
15. INSTALL THE FINAL SET OF COLUMN EXTENSIONS SO THAT THE COLUMNS ARE BEARING ON STEEL SHIMS ATOP THE NEW COLUMN FOOTINGS.
16. LOWER THE COLUMNS ONTO THE STEEL SHIMS AND INSTALL NON-SHRINK GROUT BELOW THE COLUMN BASE PLATES.
17. REMOVE THE TEMPORARY SHORING TOWERS, LIFTING FRAMES, AND JACKING ASSEMBLIES.
18. INSTALL THE NEW FOUNDATION WALLS.
19. INSTALL THE NEW 16" THICK REINFORCED CONCRETE SLAB ON GRADE AT THE SUB-CELLAR TO ELEVATION +22.65.



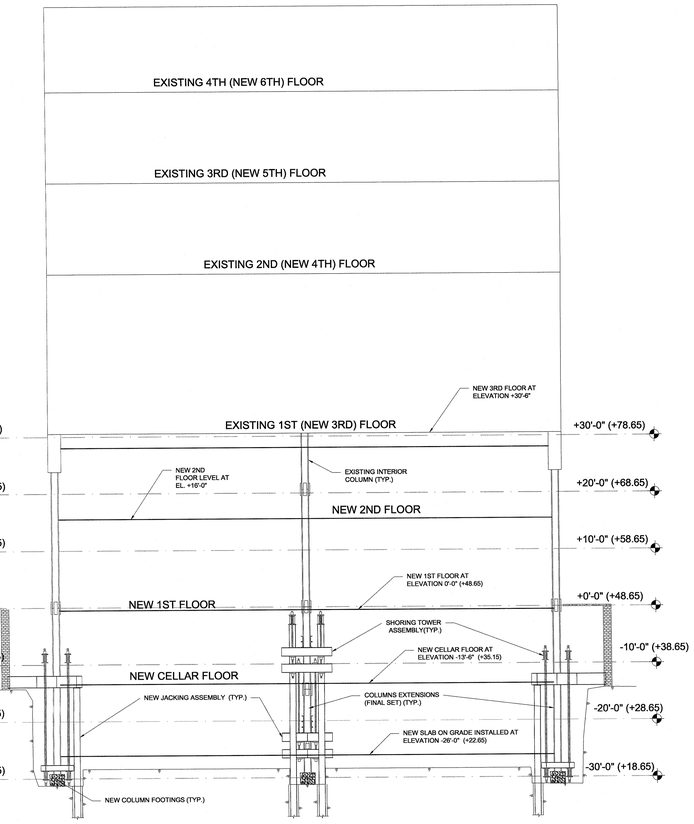
THEATER BUILDING SECTION
PRIOR TO 1ST LIFT



THEATER BUILDING SECTION
AFTER 1ST LIFT (5'-0" LIFT)



THEATER BUILDING SECTION
AFTER 2ND LIFT (13'-6" LIFT)



THEATER BUILDING SECTION
AFTER 3RD AND FINAL LIFT (13'-0" LIFT)

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