# Transbay Transit Center

## CAC Presentation

## Early Below Grade Package

14 February 2012

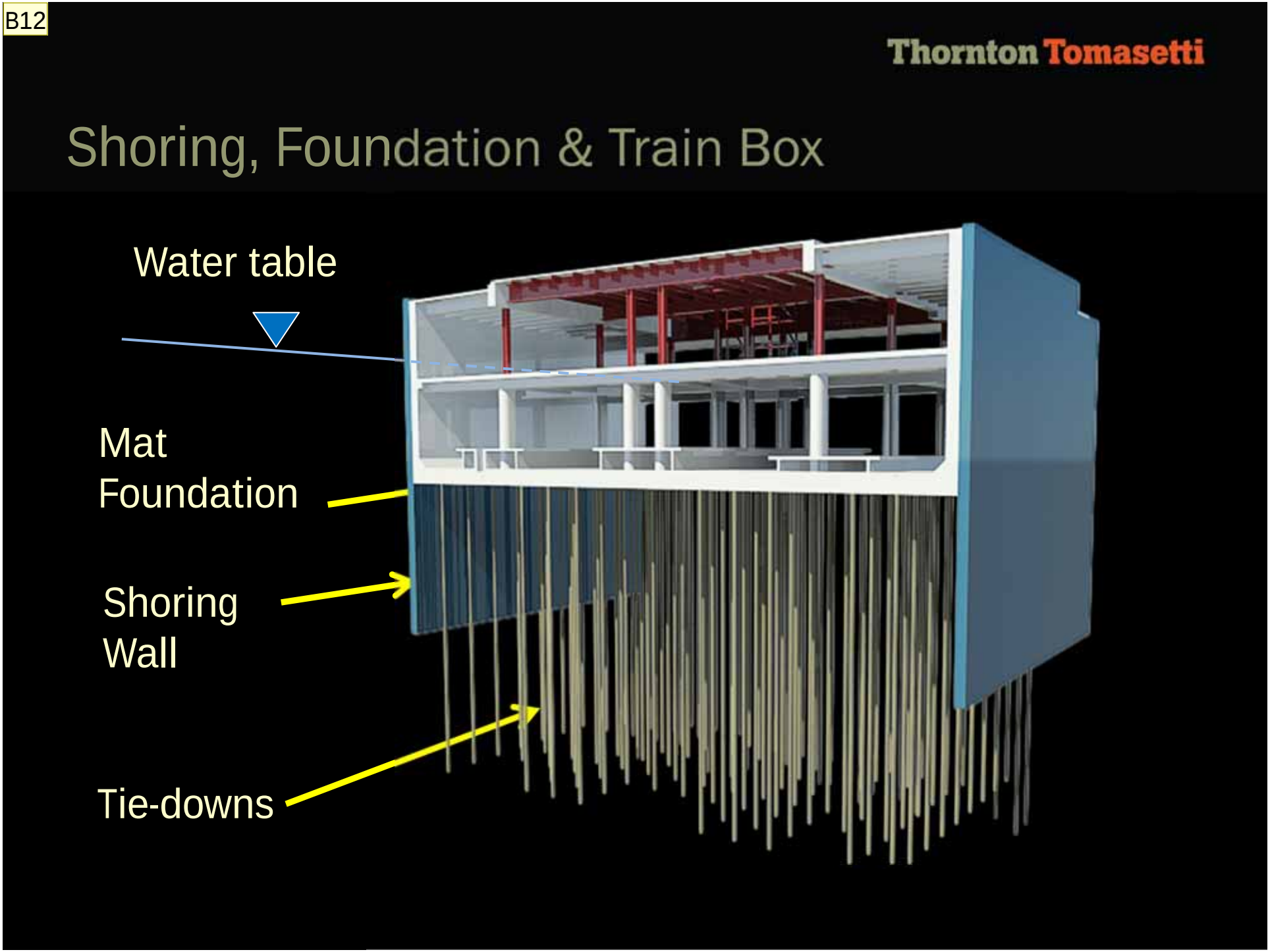
EARLY BELOW GRADE PROCESS

- Currently executing the Buttress and Shoring Package
- Objectives
  - To include the substantial majority of below grade structural concrete work
  - Provide waterproofing for the mat slab and foundation walls
  - Incorporate cast-in elements for pipes, electrical and structural items
  - Incorporate a major seismic joint
  - Accommodate bracing and construction equipment platform (trestle)
  - Accommodate dewatering
  - Accommodate utility penetrations

B12

Thornton Tomasetti

# Shoring, Foundation & Train Box



## Slide 3

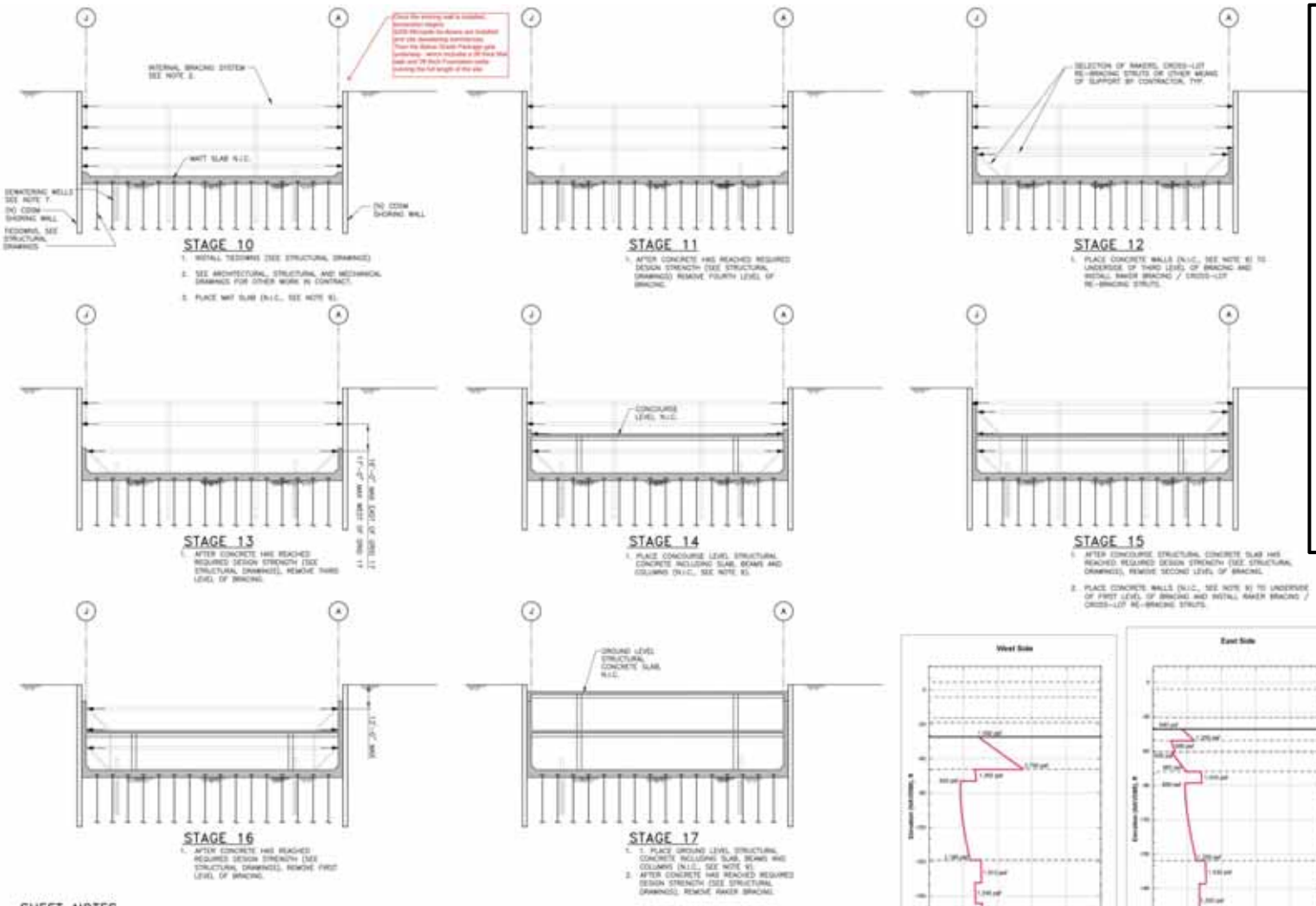
**B12**

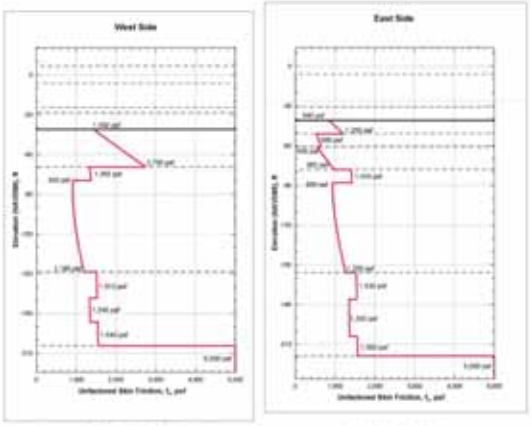
animate this slide to sequentially show:
1. shoring walls
2. Mat slab (& shoring)
3. Lower concourse and columns

THEN ON A NEW SLIDE:
4. Steel frame & concrete ground floor slab
5. Steel superstructure

SHOW SHORING WALLS IN SAY BLUE, CONCRETE IN GREY; STEELWORK IN RED PRIMER

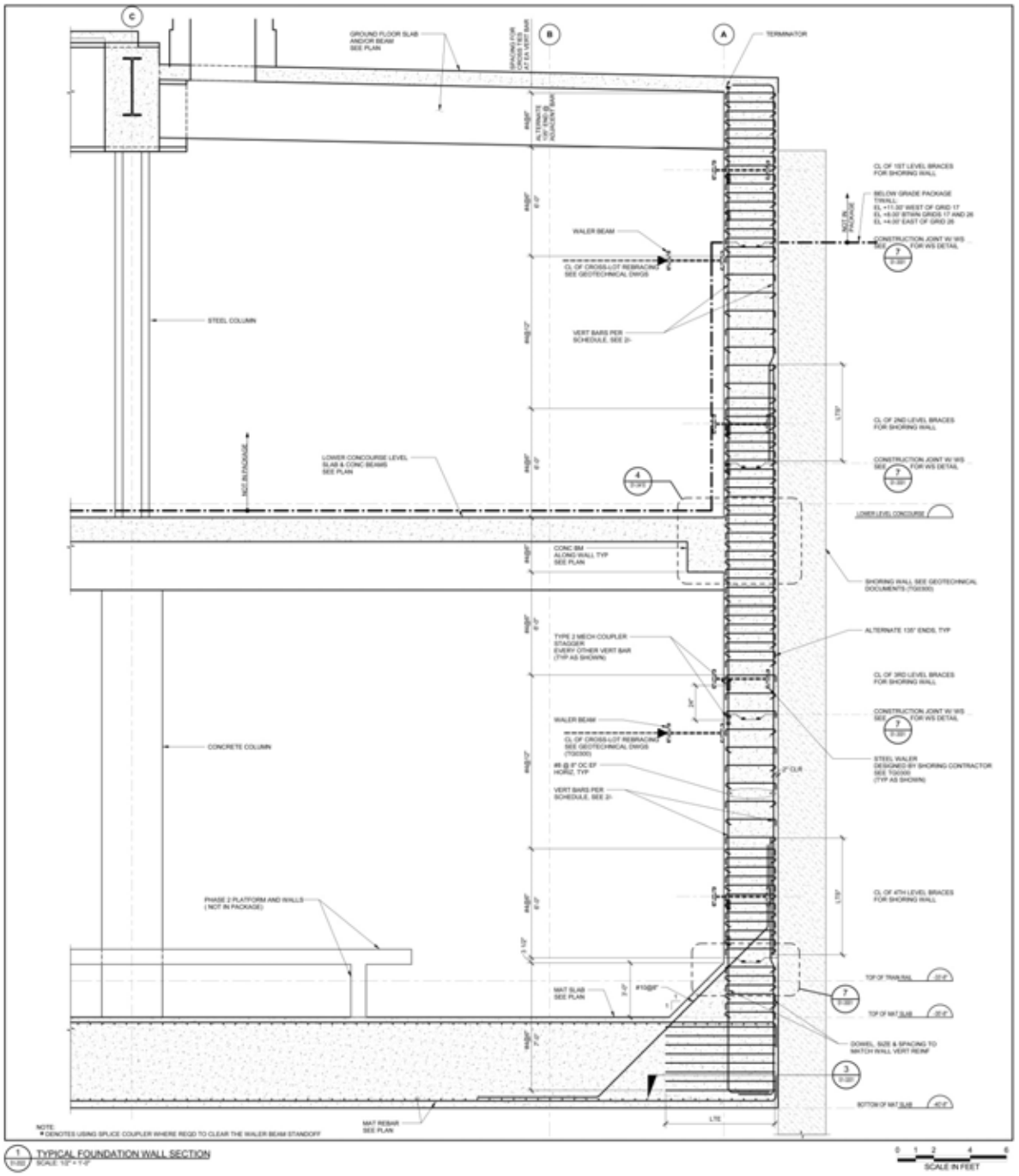
BGibbons, 9/15/2011



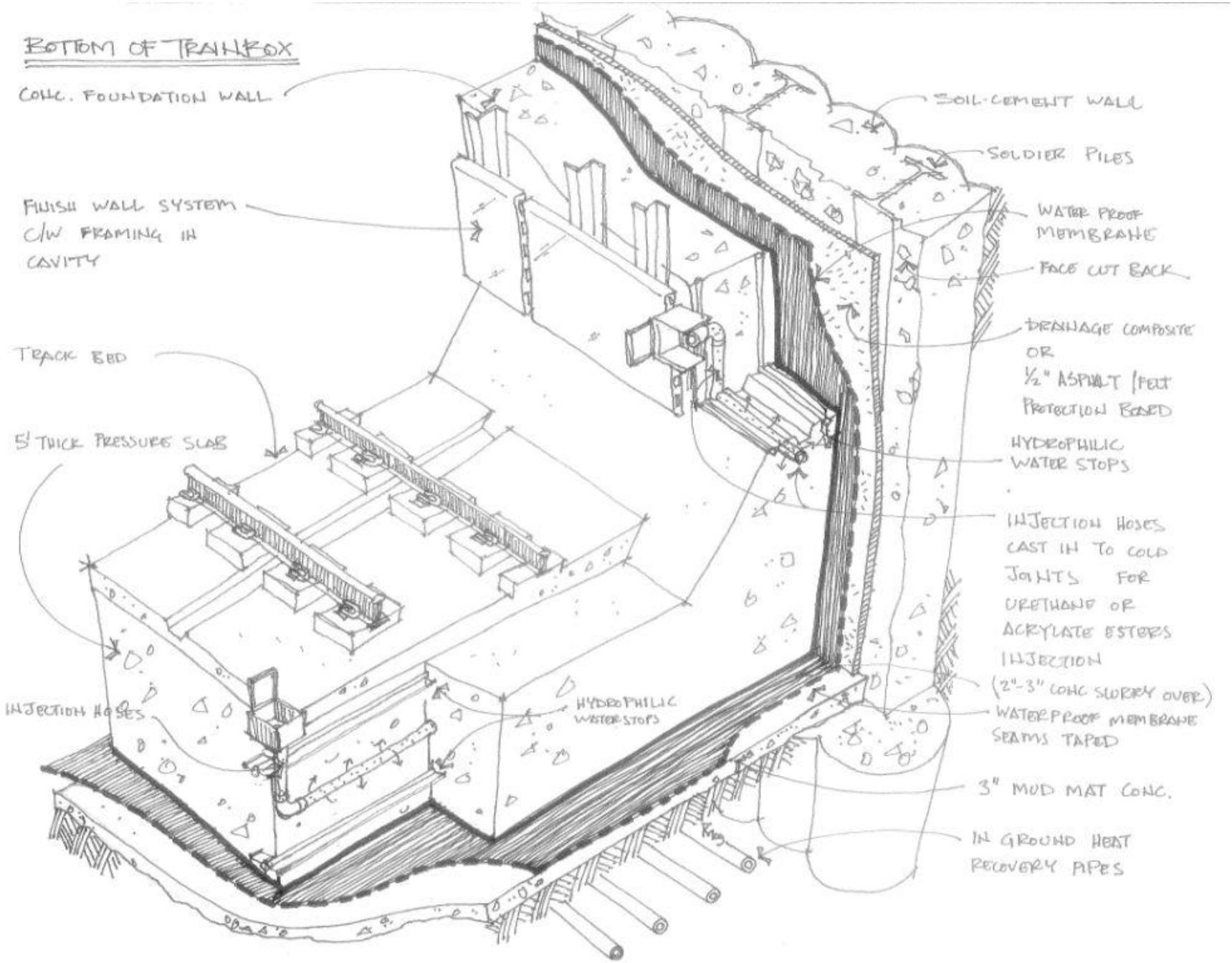

- Once the shoring wall is installed, excavation begins.
- 2250 Micropile tie-downs are installed and site dewatering commences.
- Then the Below Grade Package gets underway : which includes a 5ft thick Mat slab and 3ft thick Foundation walls running the full length of the site

Currently executing the Buttress and Shoring Package

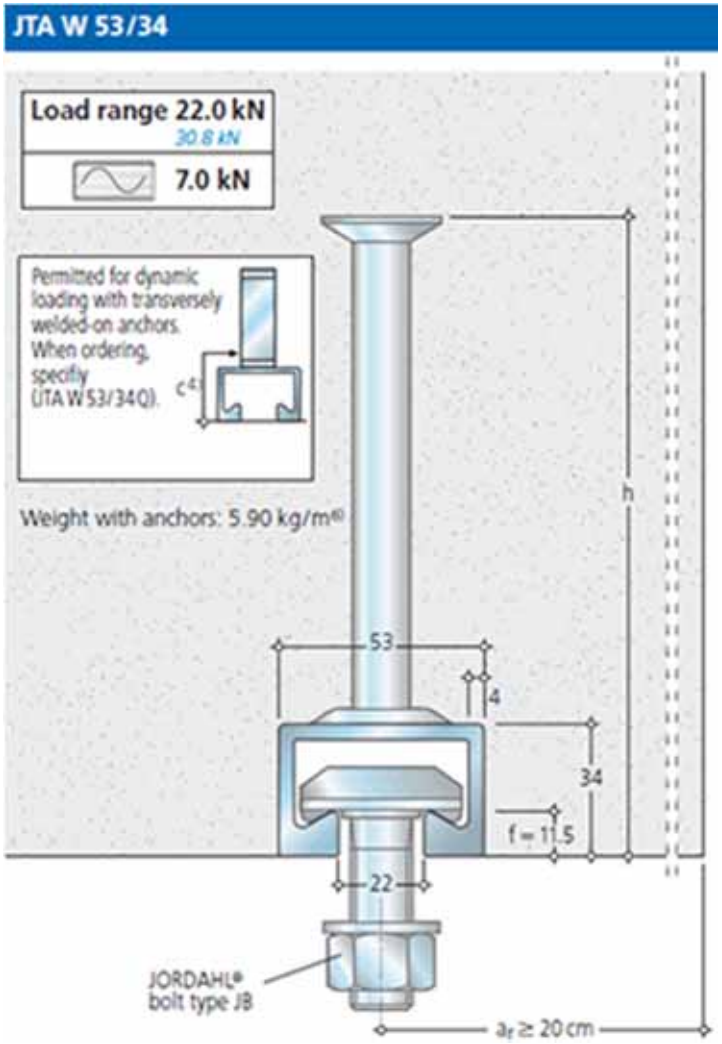



TYPICAL FOUNDATION WALL SECTION

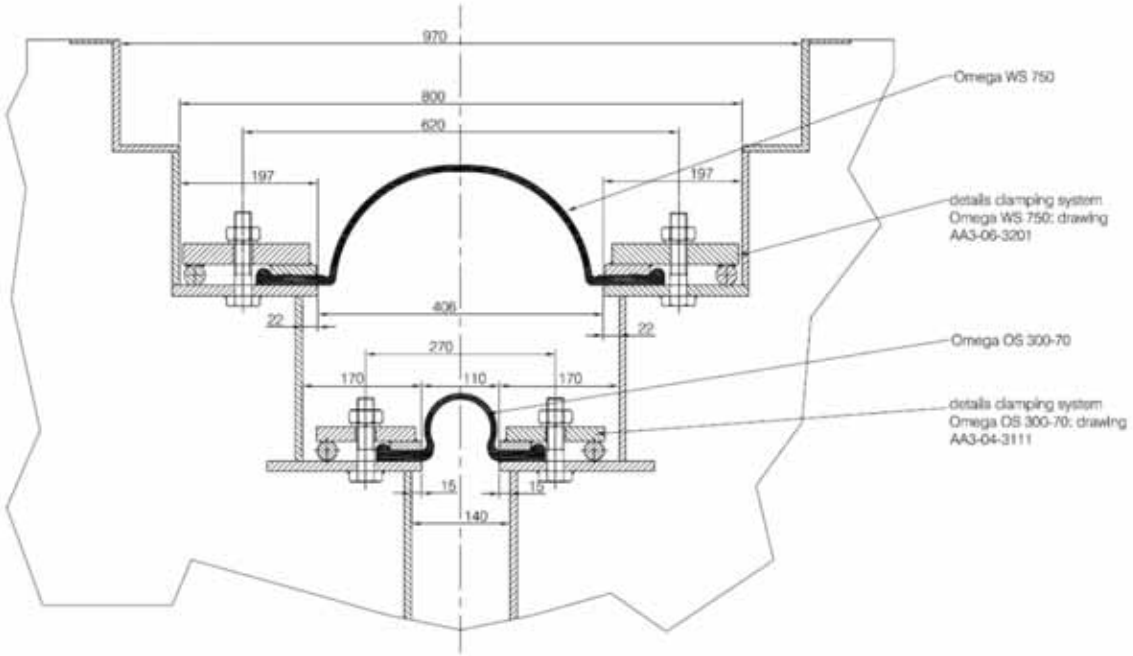
To Include The Substantial Majority Of Below Grade Structural Concrete Work

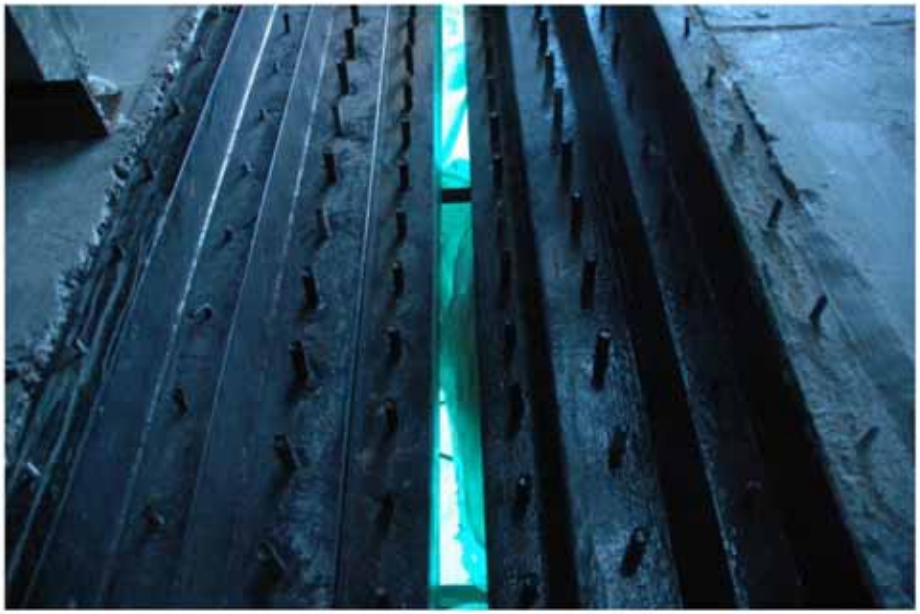



Provide Waterproofing For The Mat Slab And Foundation Walls

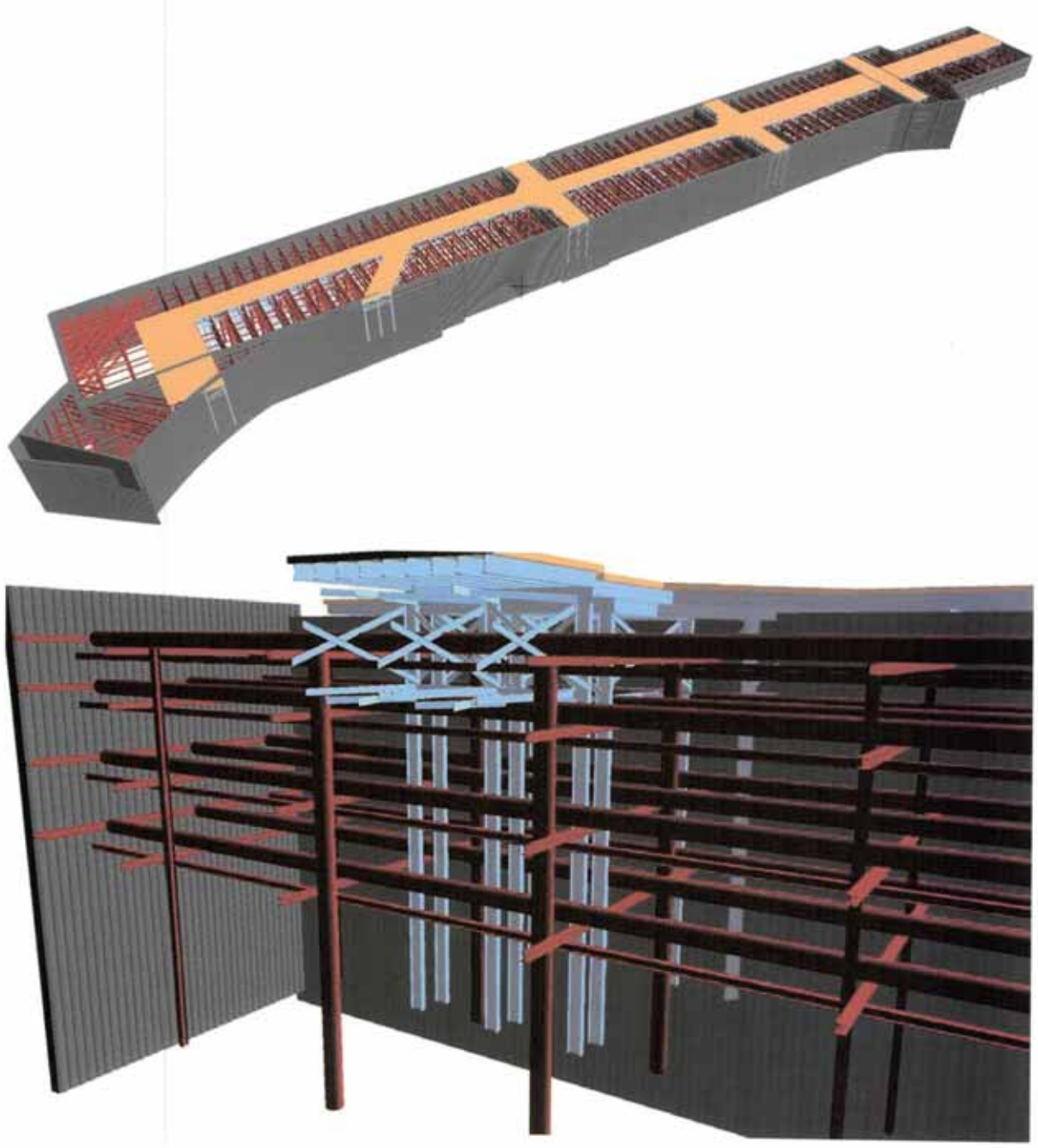



Incorporate Cast-in Elements For Pipes, Electrical And Structural Items

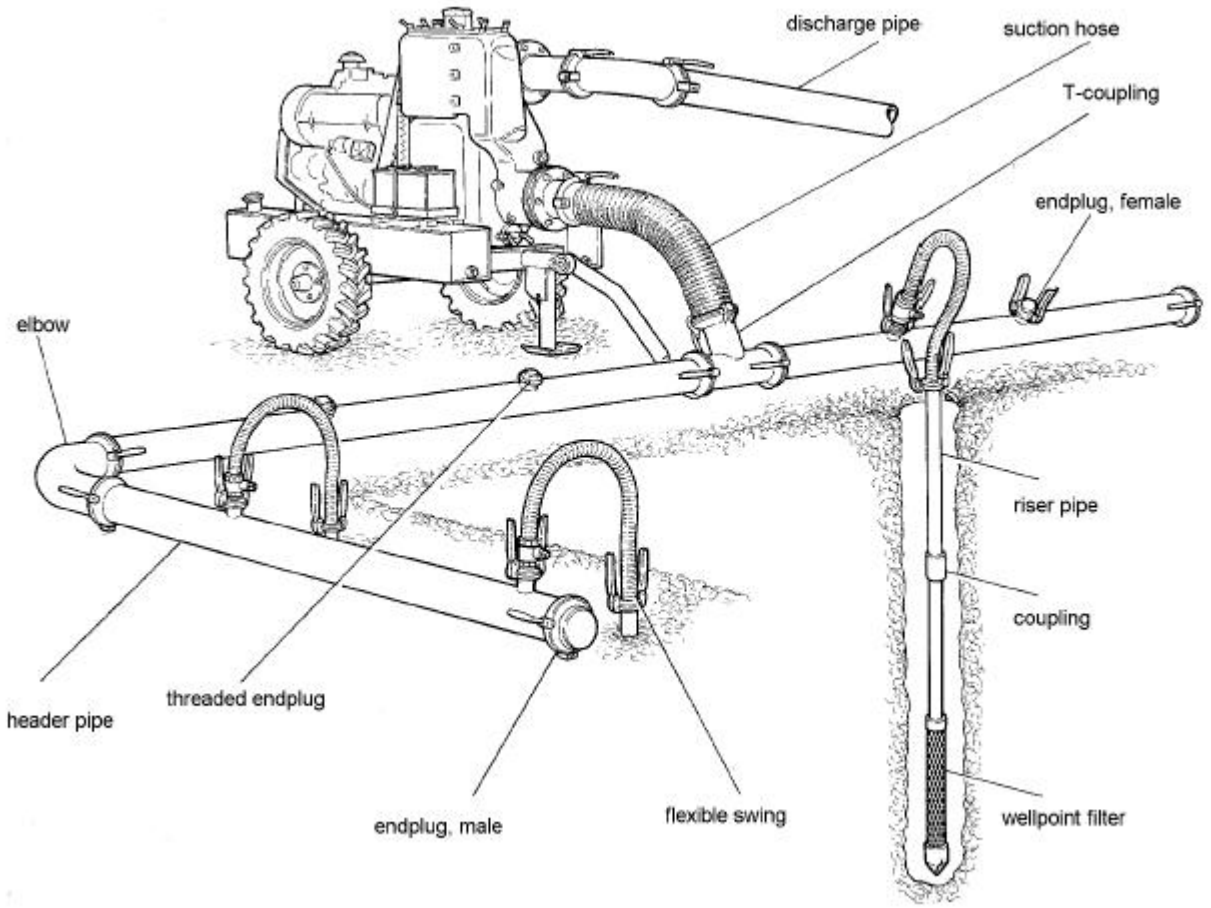


Incorporate a Major Seismic Joint



Accommodate Bracing And Construction Equipment  Platform (Trestle)

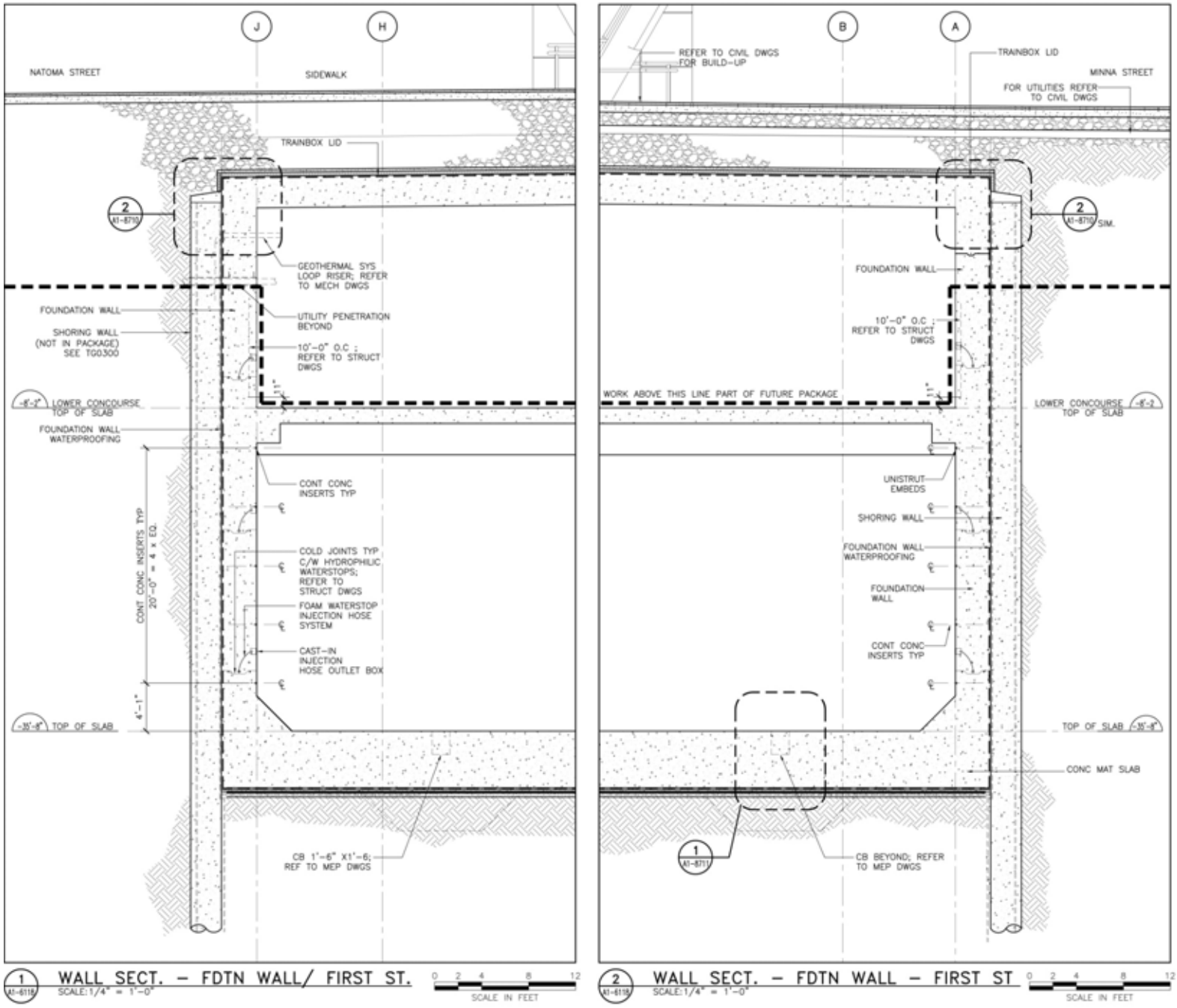



Accommodate Dewatering

Accommodate Utility Penetrations

EARLY BELOW GRADE DRAWINGS

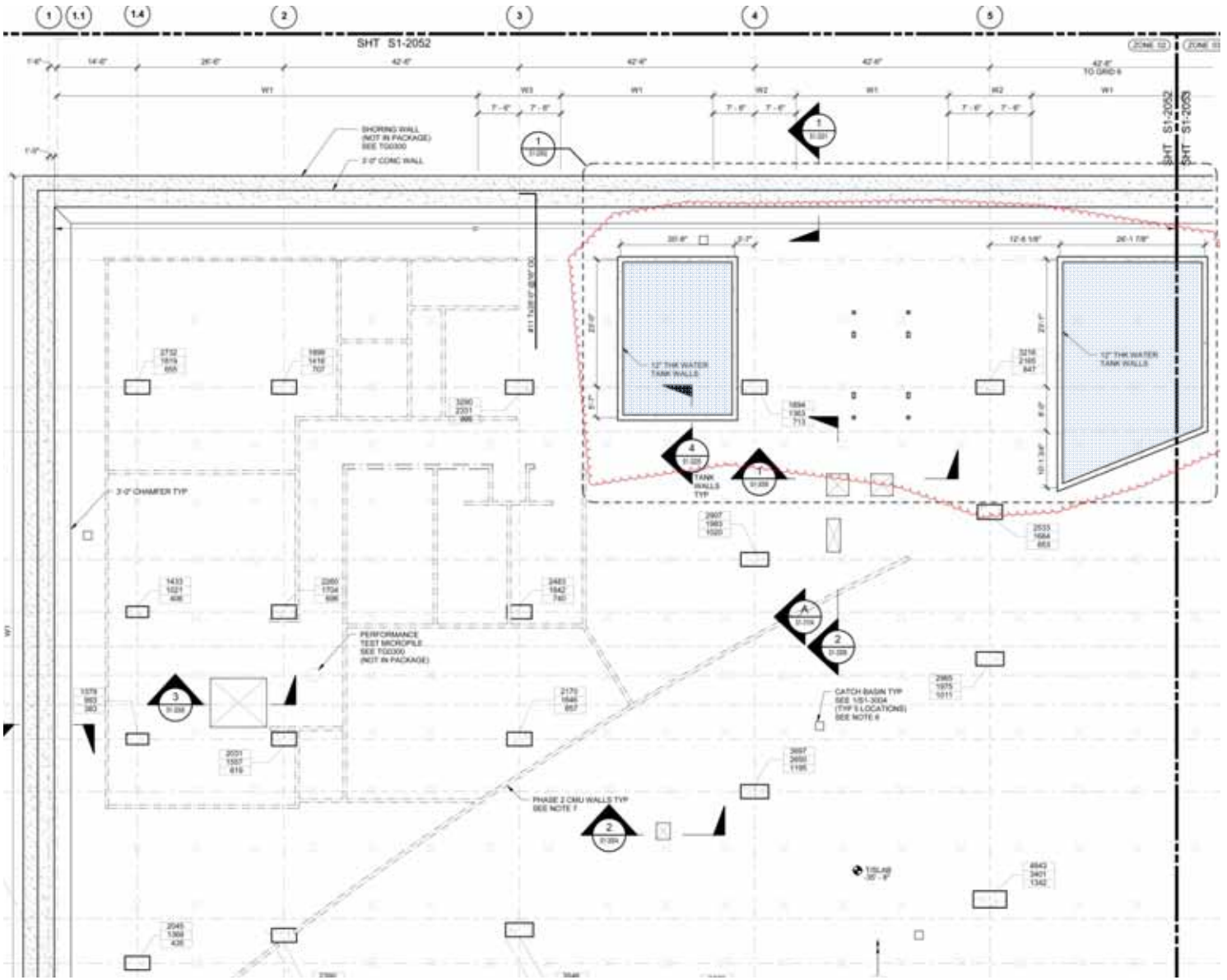
- Approximately 450 drawings in the package
- Consultant drawings and specifications
    - Structural
    - Architectural
    - Mechanical
    - Electrical
    - Plumbing



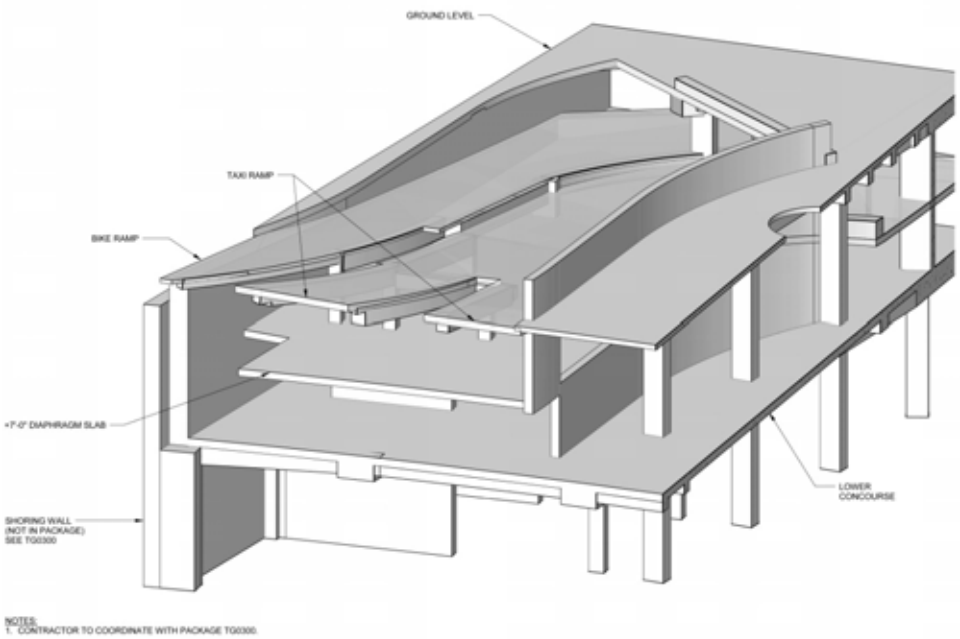

Scope of Early Below Grade Package

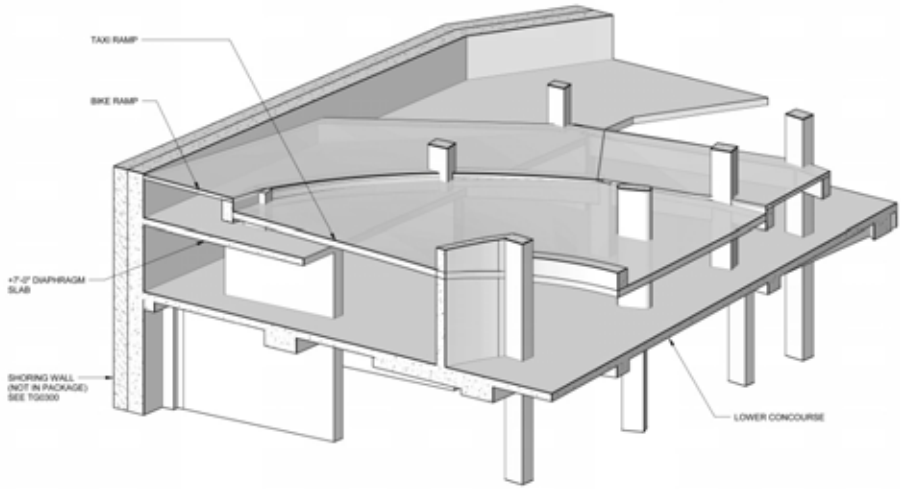
STRUCTURAL

- Concrete Mat slab
- Foundation walls
- Concrete structural columns
- Water storage tanks
- Vehicle and Bike Ramps
- Tiedowns

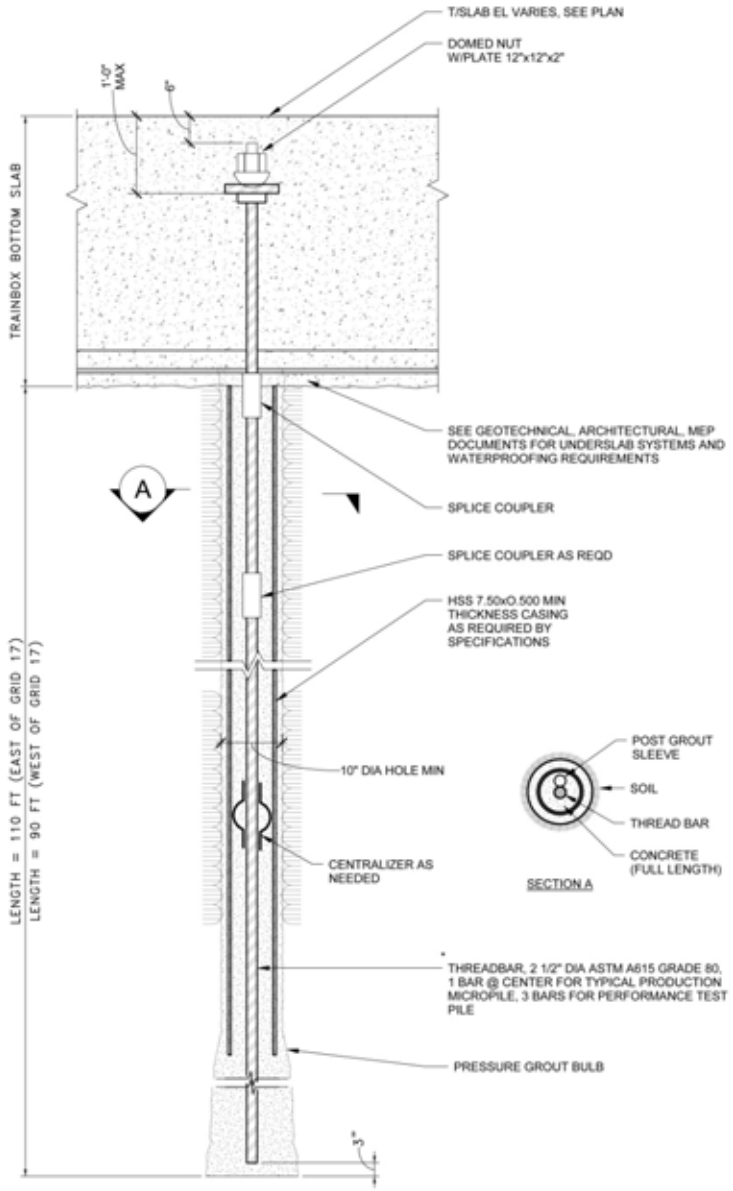



Water Storage Tanks




Vehicle and Bike Ramps




NOTES:

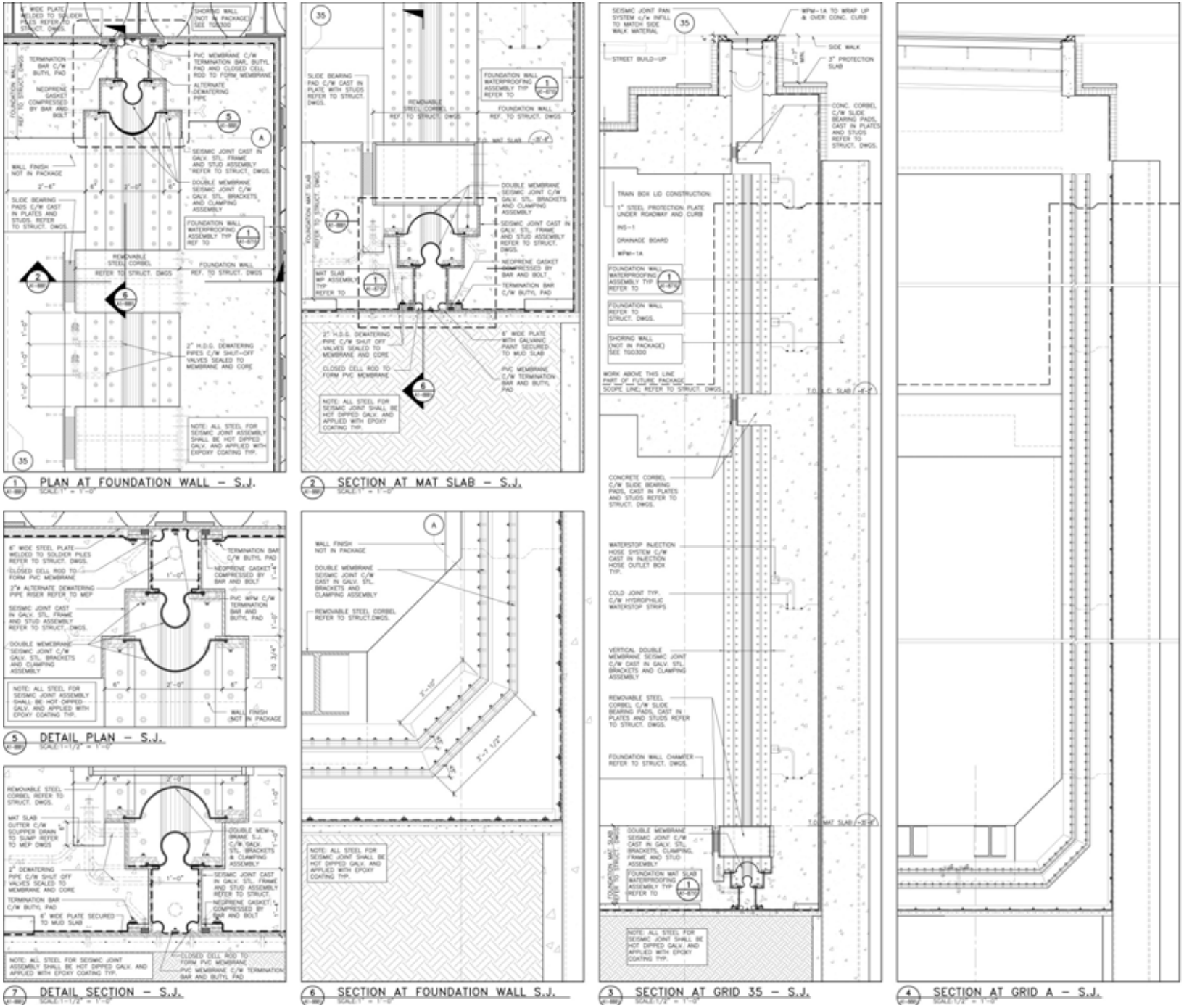
1. THE PILE EMBED LENGTHS SPECIFIED ARE FOR BIDDING PURPOSES ONLY. THE CONTRACTOR'S BID CAN BE BASED ON HIS OWN MICROPILE DESIGN. THE REQUIRED DESIGN LOAD OF THE PILE IS 200 KIPS IN TENSION. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE PILE TO MEET THE DESIGN LOAD REQUIREMENT TIMES A FACTOR OF SAFETY AND A FACTOR FOR ADJUSTMENT FOR TEMPORARY DRAINED CONDITION, AND STIFFNESS AND OTHER REQUIREMENTS STATED IN THE PROJECT SPECIFICATION. AS STATED IN THE SPECIFICATION, CONTRACTOR'S DESIGN IS TO BE VALIDATED BY A PERFORMANCE TEST PROGRAM TO BE CARRIED OUT AT THE BOTTOM OF THE EXCAVATION.
2. MICROPILE SHALL BE POST GROUTED PER FHWA-SA-97-070 AND CONSTRUCTED BY PRESSURE GROUTING THROUGH THE CASING.
3. * THE REINFORCEMENT SPECIFIED IS A MINIMUM REQUIREMENT.

- Installed in BSE package
- Top of micropiles cast in to Mat slab to hold down building
- Building expected to rise due buoyancy 1 1/2"
- Returns to rest after building is fully loaded

2300 Tiedowns

ARCHITECTURAL

- Slab edge drawings
    - Locations of slab opening for stairs, escalators and elevators
    - Opening locations for drains, sumps, pipes and major conduits
- Room layouts
    - Provide location of reinforcing for future rooms
- Waterproofing
- Seismic joint
- Cast in channels
    - Support of future MEP items
    - Support of ceilings
    - Support of future overhead catenary power system for trains




Seismic Joint

MECHANICAL

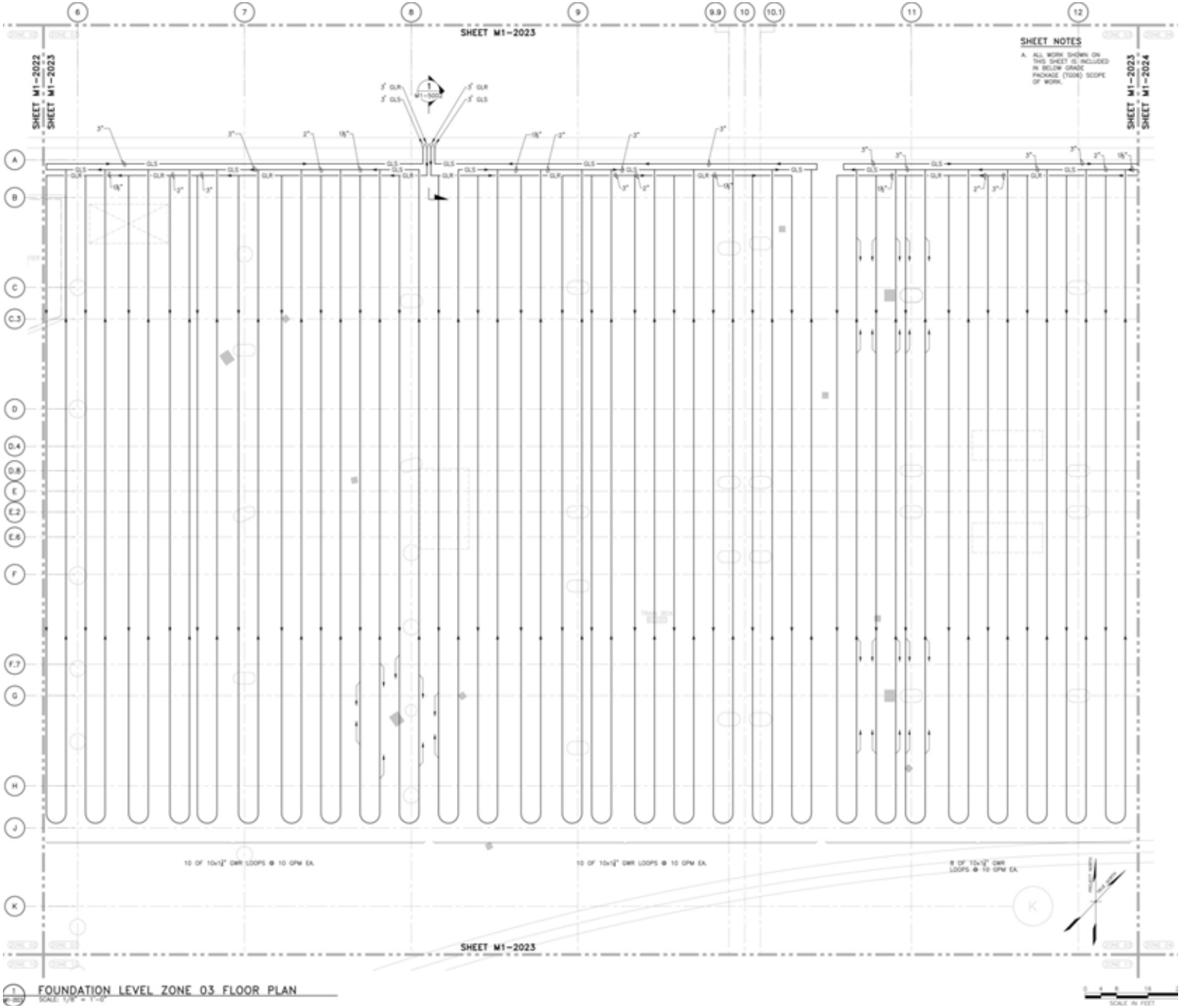
- Geothermal loop system

ELECTRICAL

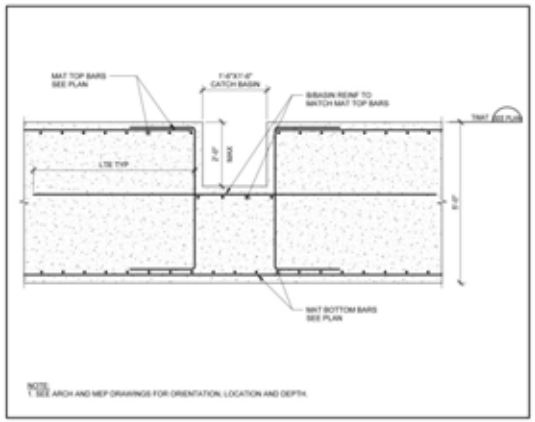
- Cast in boxes and conduits
- Grounding system

PLUMBING

- Cast in pipes and sleeves for future pipes
- Sump pits and drains

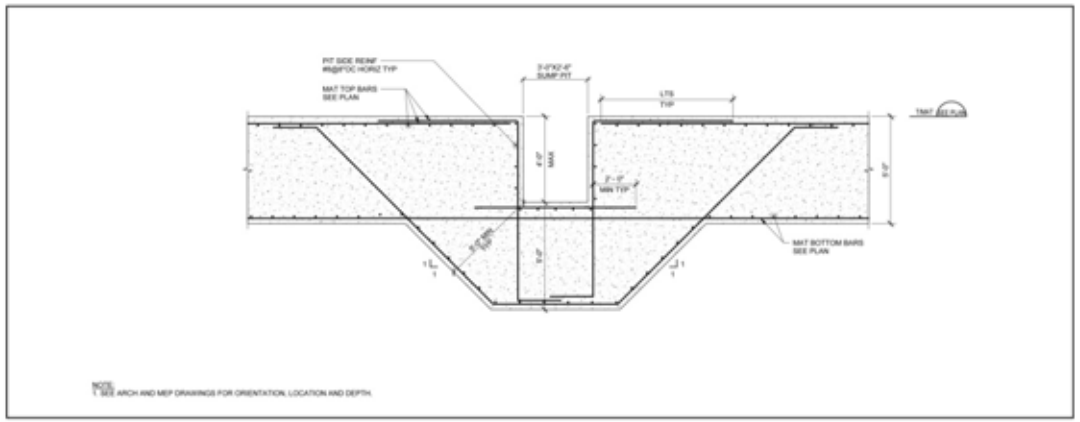



Geothermal Loop System



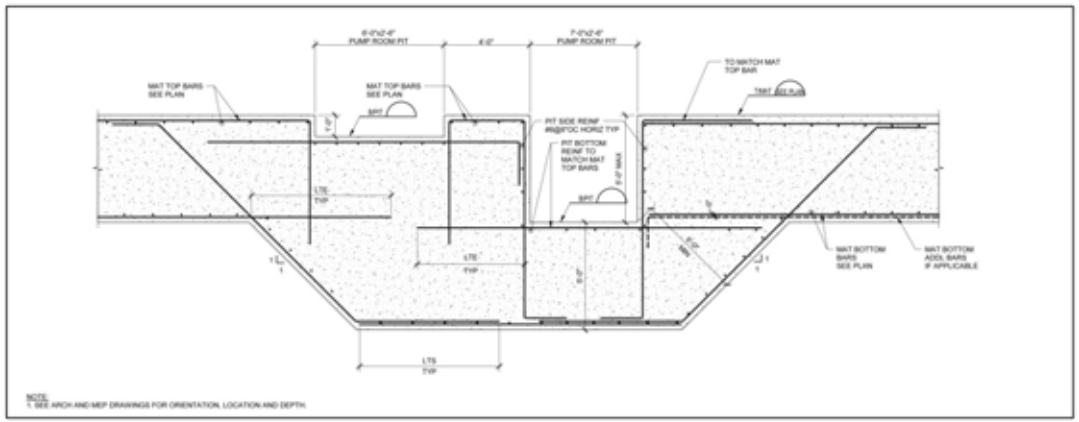

1 S-502 MAT DETAIL AT CATCH BASIN (DEPTH ≤ 2'-0")
SCALE: 3/4" = 1'-0"

0 1/2 1 2 3
SCALE IN FEET



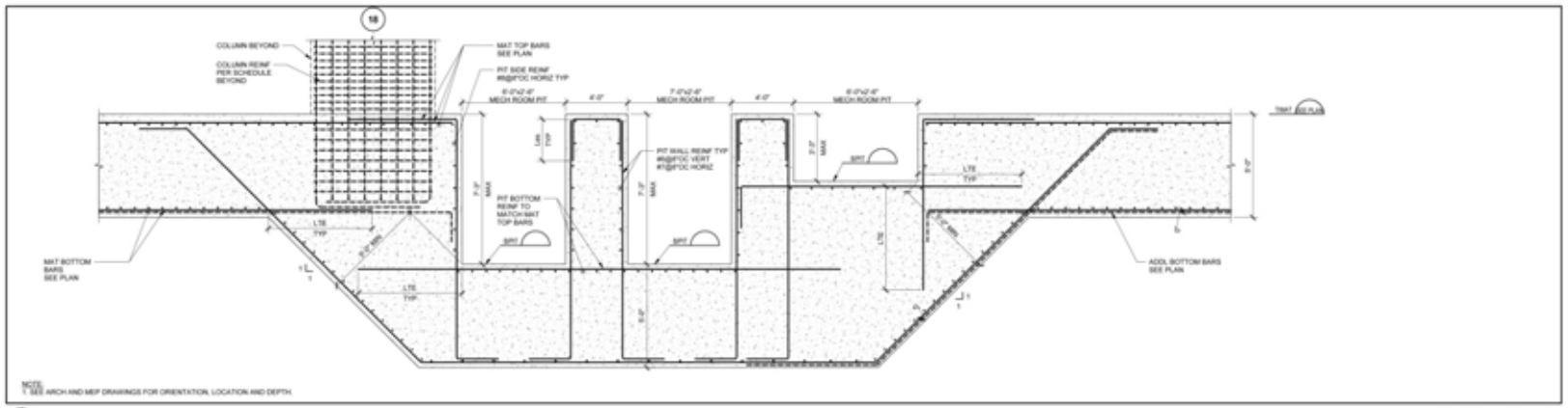

2 S-502 MAT DEPRESSION SECTION - ONE PIT CASE
SCALE: 1/2" = 1'-0"

0 1 2 4 6
SCALE IN FEET




3 S-502 MAT DEPRESSION SECTION - TWO PIT CASE
SCALE: 1/2" = 1'-0"

0 1 2 4 6
SCALE IN FEET




4 S-502 MAT DEPRESSION SECTION - THREE PIT CASE
SCALE: 1/2" = 1'-0"

0 1 2 4 6
SCALE IN FEET

Sump Pits and Drains

t3

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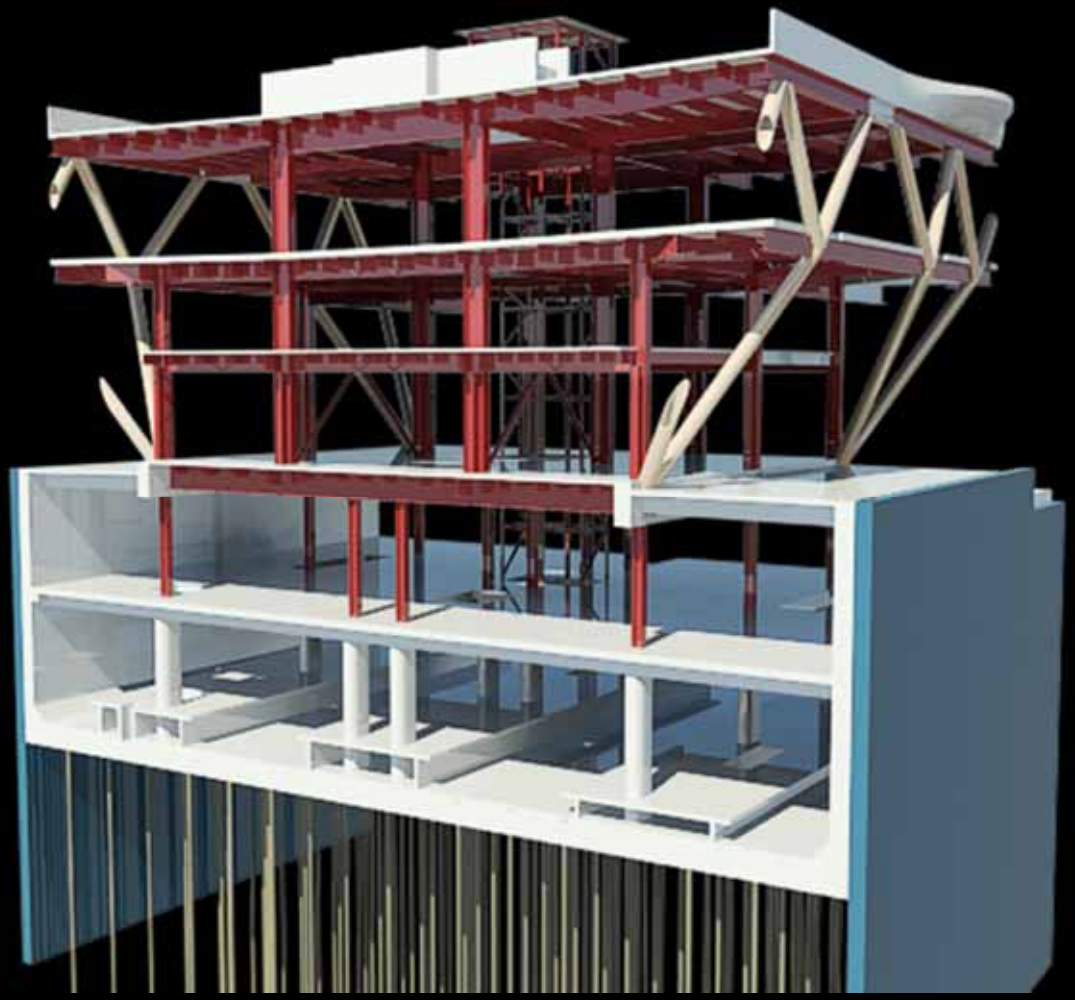

## Slide 28

**t3** Do not animate

ttuser, 9/21/2011