

**NOTES**

KEY

- APPROVED DTX ALIGNMENT
- PENNSYLVANIA AVENUE ALIGNMENT
- MISSION BAY ALIGNMENT
- EXISTING RAIL INFRASTRUCTURE

DRAFT

CONCEPTUAL  
DESIGN ONLY

DRAWN	CHECKED	APPROVED
MJM	SDF	JS
04-22-16	04-29-16	04-29-16

CLIENT

CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

PROJECT

SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

TITLE

KEY PLAN  
CORRIDOR ALIGNMENTS

DRAWING NUMBER

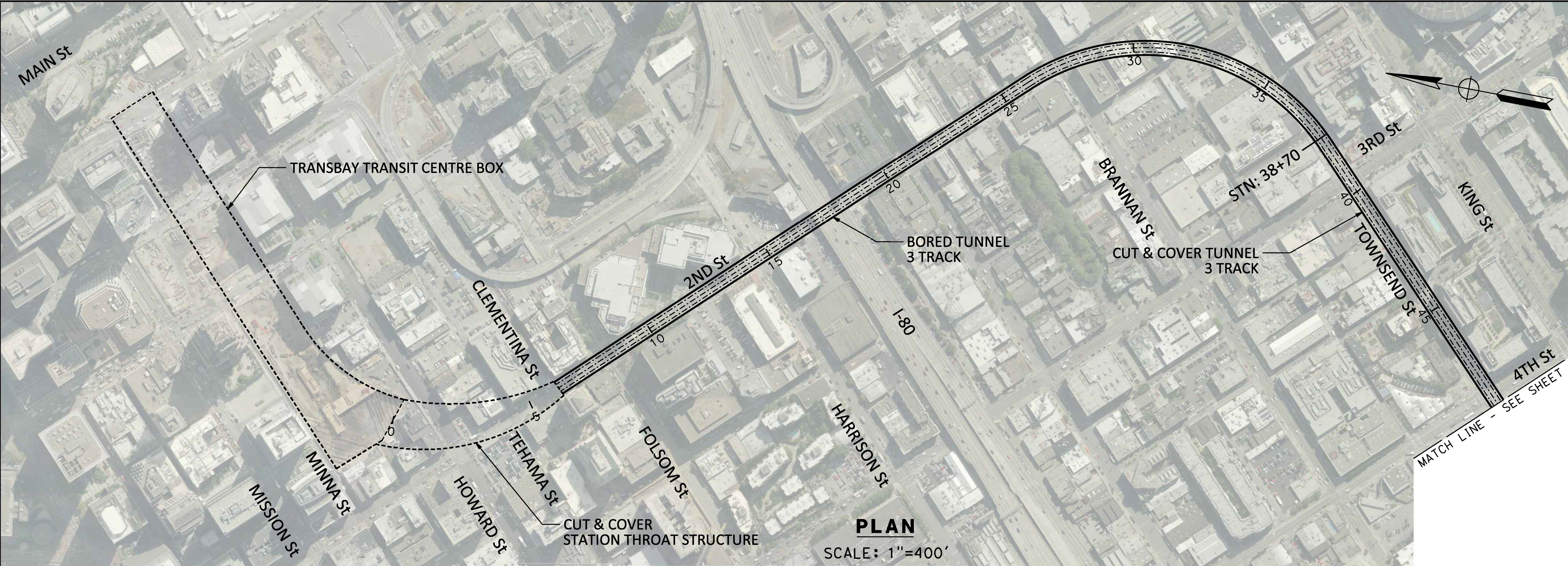
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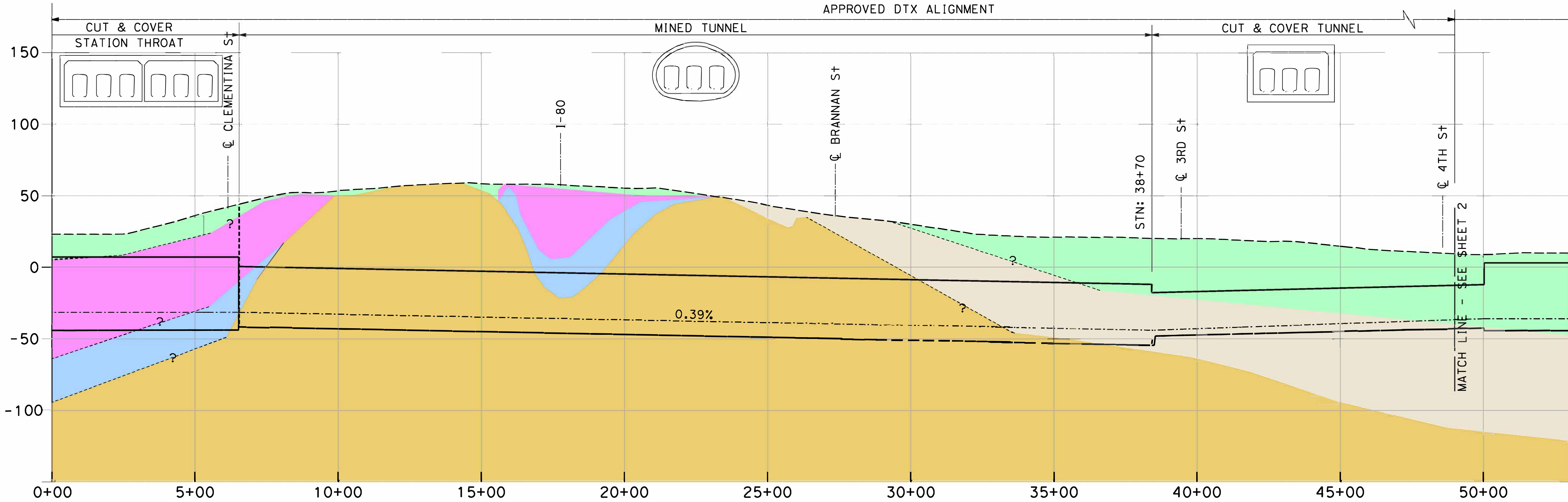
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A





**PLAN**  
SCALE: 1"=400'



**PROFILE**  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

**NOTES**

1. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED INFORMATION AVAILABLE AT TIME OF STUDY AND MAY CHANGE WITH ACTUAL GROUND INVESTIGATION.
2. VENTILATION AND FIRE LIFE SAFETY REQUIREMENTS HAVE NOT BEEN CONSIDERED AS PART OF THIS STUDY.

**DRAFT**  
CONCEPTUAL  
DESIGN ONLY

**GEOLOGICAL KEY:**

- ?--- ASSUMED BOUNDARY
- ARTIFICIAL FILL
- YOUNGER BAY MUD
- UPPER LAYERED SEDIMENTS
- OLD BAY CLAY
- LOWER LAYERED SEDIMENTS
- SLOPE DEBRIS/RAVINE FILL
- FRANCISCAN COMPLEX BEDROCK

**ch2m**



DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

**CLIENT**  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

**PROJECT**  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

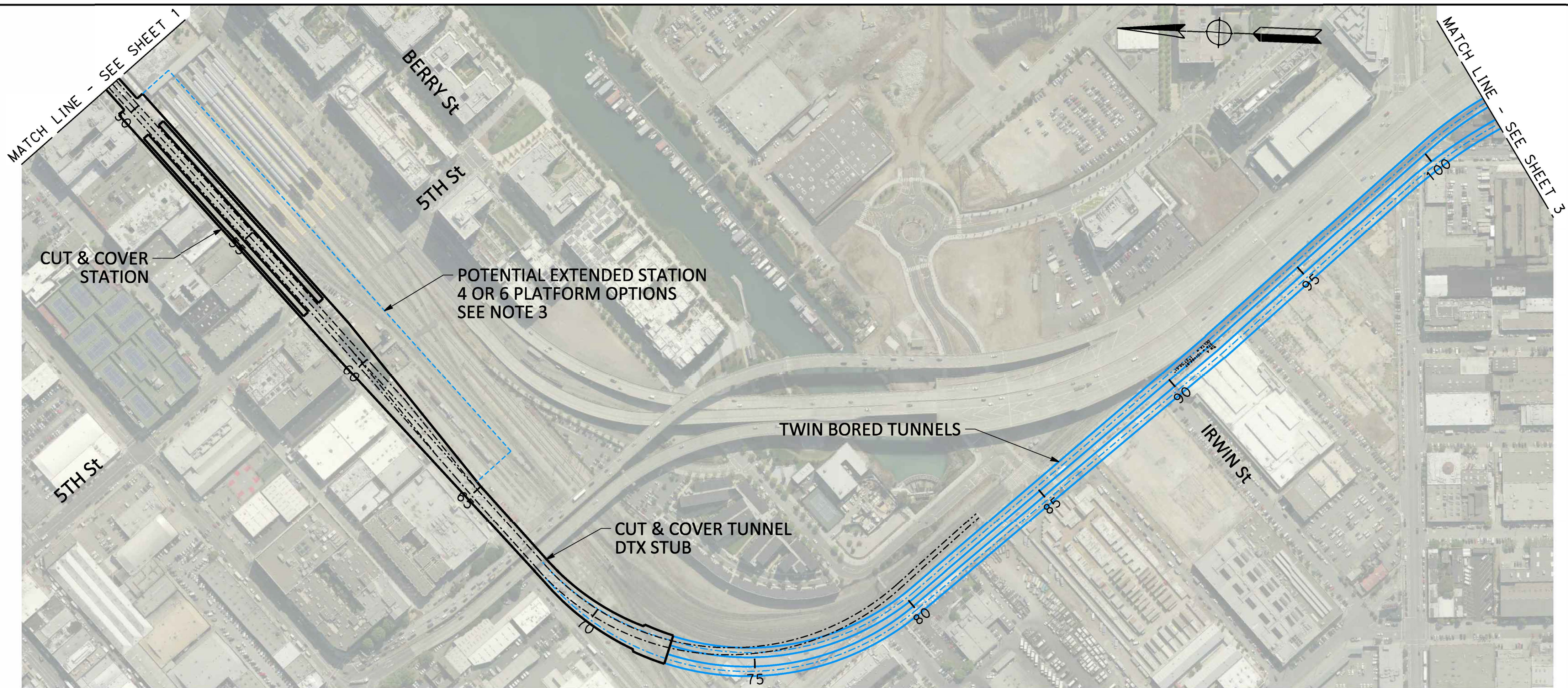
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ALIGNMENT 2: PENNSYLVANIA AVENUE  
PLAN AND PROFILE

**DRAWING NUMBER**  
EXHIBIT 2.1

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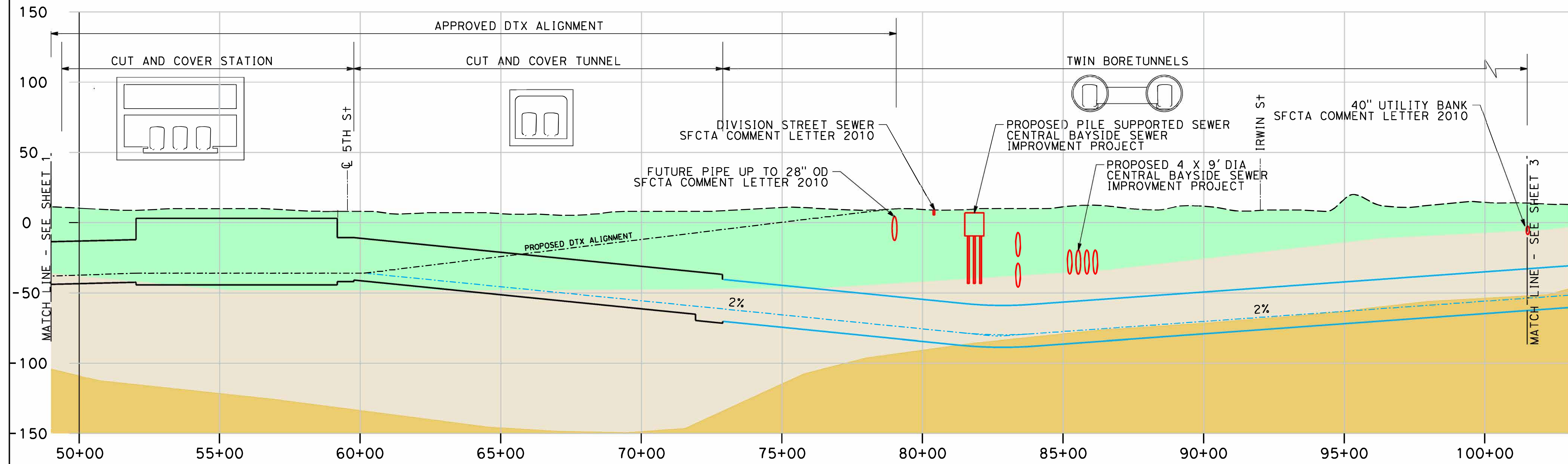
SCALE	REV
AS SHOWN AT 11" X 17"	A





PLAN

SCALE: 1"=400'



PROFILE

SCALE: Horiz: 1"=400'  
Ver+: 1"=80'

NOTES

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2. VENTILATION AND FIRE LIFE SAFETY REQUIREMENTS HAVE NOT BEEN CONSIDERED AS PART OF THIS STUDY.
3. ASSUMES RELOCATION OF EXISTING RAILYARD. REFER TO EXHIBITS 4.1 & 4.2 FOR STATION ARRANGEMENT WITH 4 AND 6 PLATFORMS. REFER TO PROJECT REPORT FOR RAILYARD RELOCATION PROPOSALS.

DRAFT  
CONCEPTUAL  
DESIGN ONLY

GEOLOGICAL KEY:

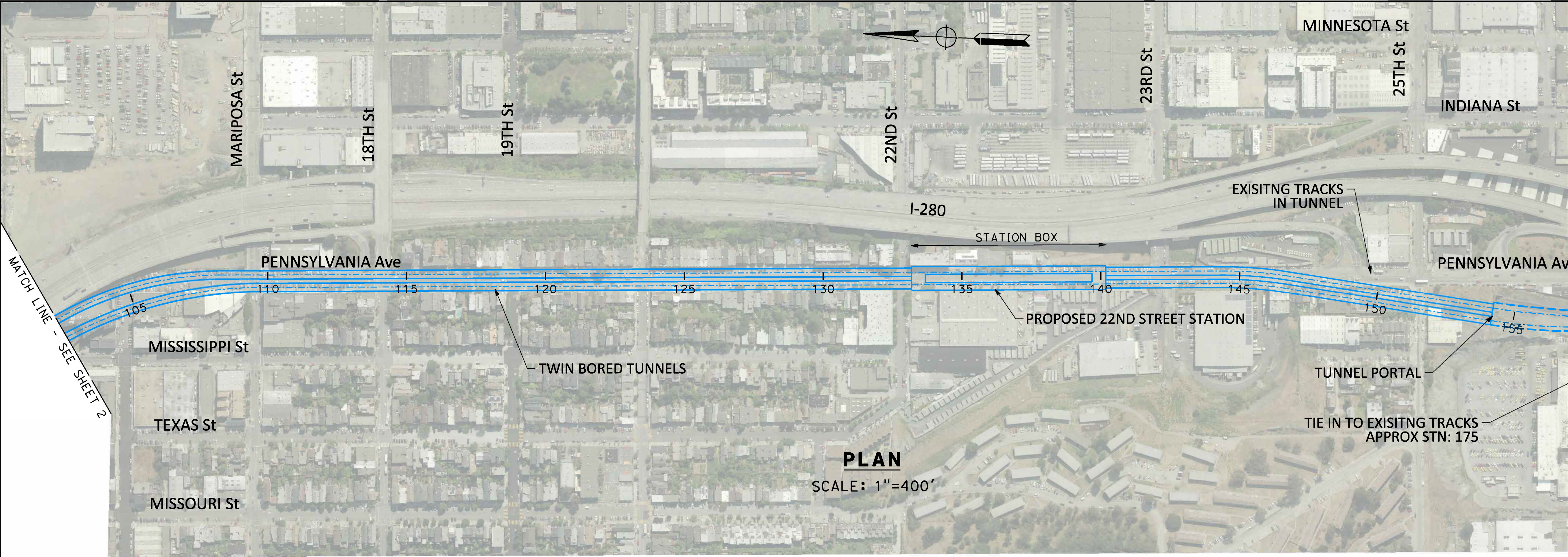
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ch2m

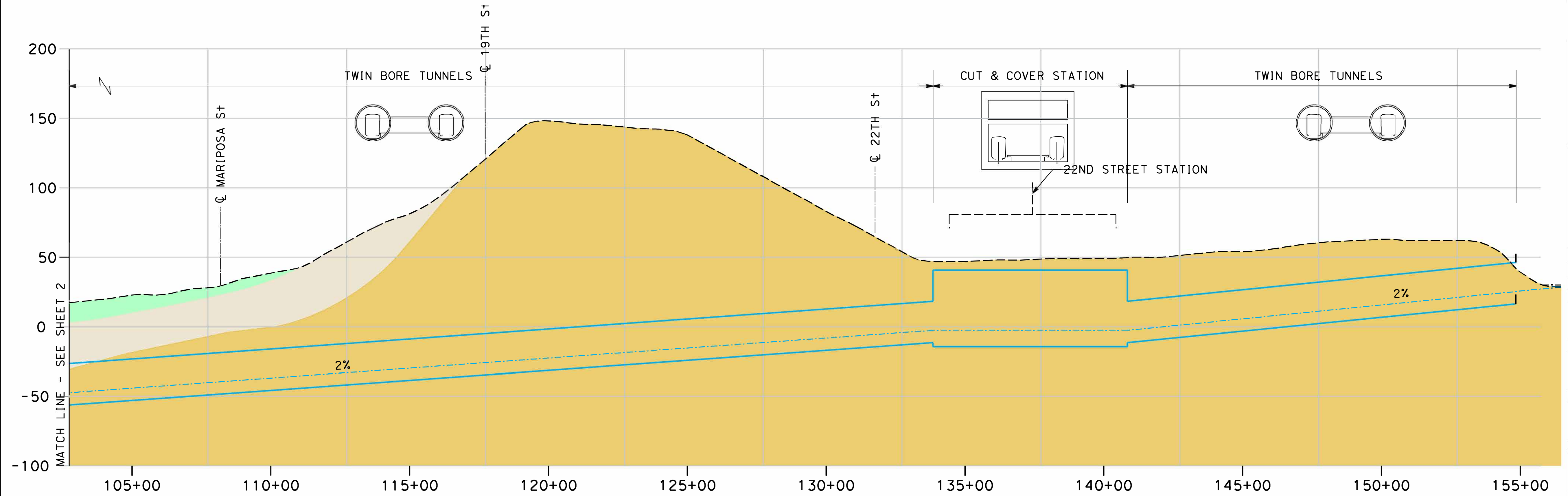


DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16
CLIENT		
CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT		
PROJECT		
SF RAILYARD ALTERNATIVES AND I-280 BOULEVARD FEASIBILITY STUDY		
TITLE		
ALIGNMENT 2: PENNSYLVANIA AVENUE PLAN AND PROFILE		
DRAWING NUMBER		
EXHIBIT 2.2		
STATUS		
IN PROCESS, FOR DISCUSSION ONLY		
SCALE	REV	
AS SHOWN AT 11" X 17"	A	





**PLAN**  
SCALE: 1"=400'



**PROFILE**  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

**NOTES**

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3. 22ND STREET STATION LOCATION AND DEPTH ARE INDICATIVE ONLY. REQUIRES FURTHER INVESTIGATION.

**DRAFT**

CONCEPTUAL  
DESIGN ONLY

**GEOLOGICAL KEY:**

- ?--- ASSUMED BOUNDARY
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DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

**CLIENT**

CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

**PROJECT**

SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

**TITLE**

ALIGNMENT 2: PENNSYLVANIA AVENUE  
PLAN AND PROFILE

**DRAWING NUMBER**

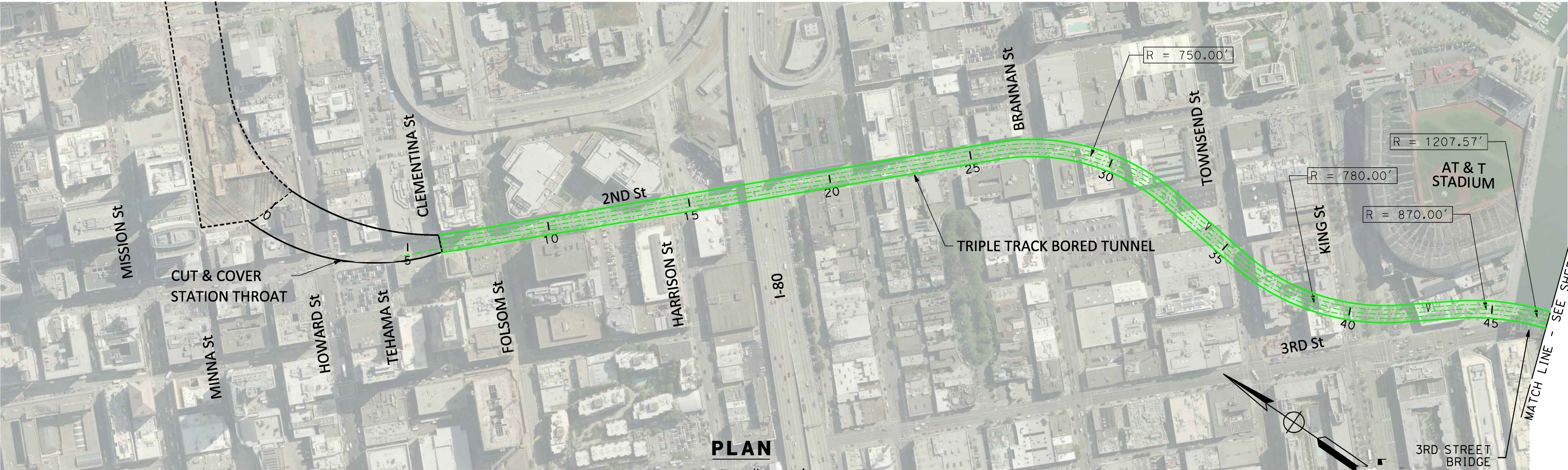
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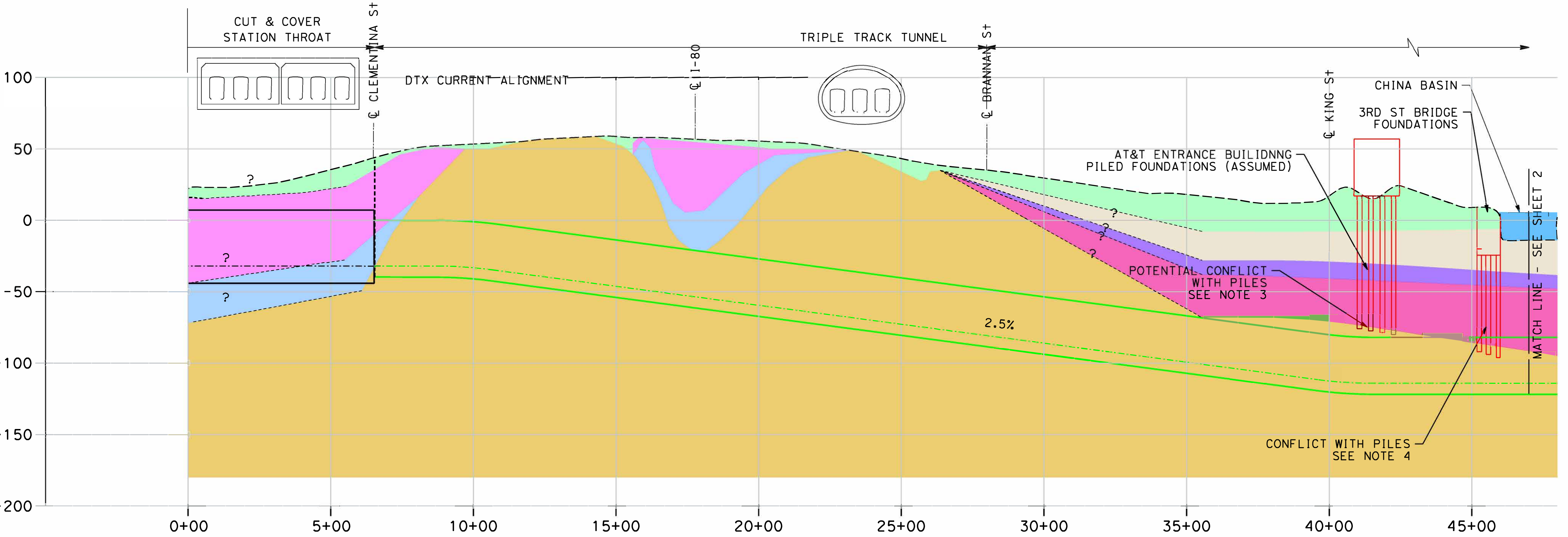
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A





PLAN  
SCALE: 1"=400'



PROFILE  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

NOTES

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2. VENTILATION AND FIRE LIFE SAFETY REQUIREMENTS HAVE NOT BEEN CONSIDERED AS PART OF THIS STUDY.
3. POTENTIAL CONFLICT WITH PILES TO AT&T ENTRANCE BUILDING MAY BE AVOIDED BY LOWERING ALIGNMENT ALTHOUGH BUILDING PROTECTION MEASURES WOULD BE REQUIRED.
4. CLASH WITH BRIDGE FOUNDATIONS WILL REQUIRE MAJOR PROTECTION WORKS OR COMPLETE RECONSTRUCTION.

DRAFT  
CONCEPTUAL  
DESIGN ONLY

GEOLOGICAL KEY:

- ?--- ASSUMED BOUNDARY
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ch2m



DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

CLIENT  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

PROJECT  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

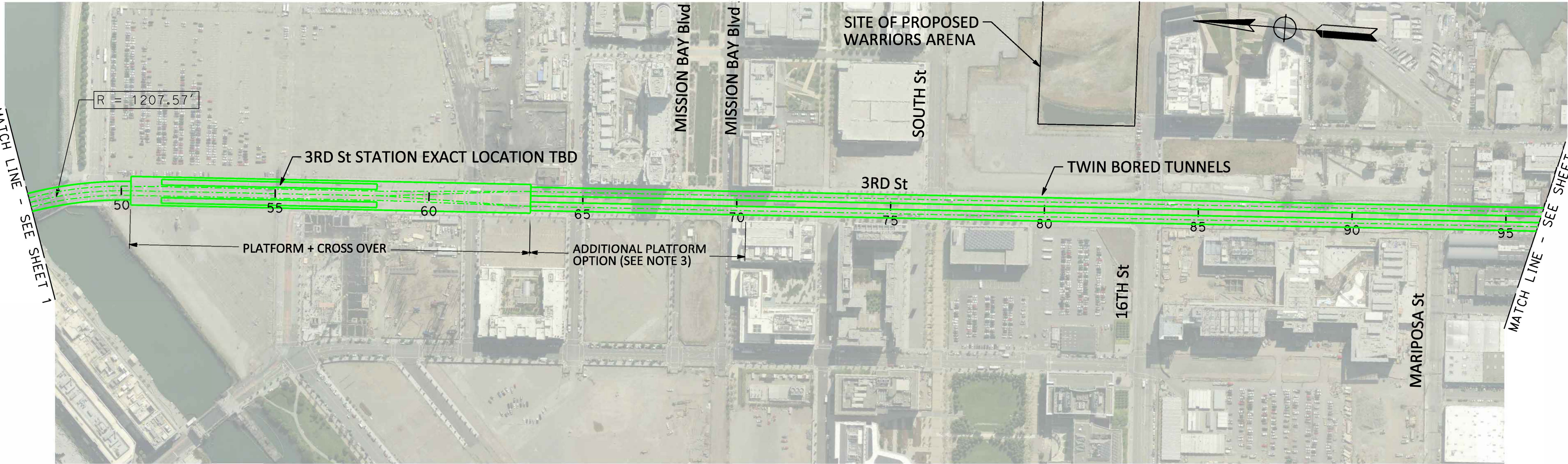
TITLE  
ALIGNMENT 3: MISSION BAY  
PLAN AND PROFILE

DRAWING NUMBER  
EXHIBIT 3.1

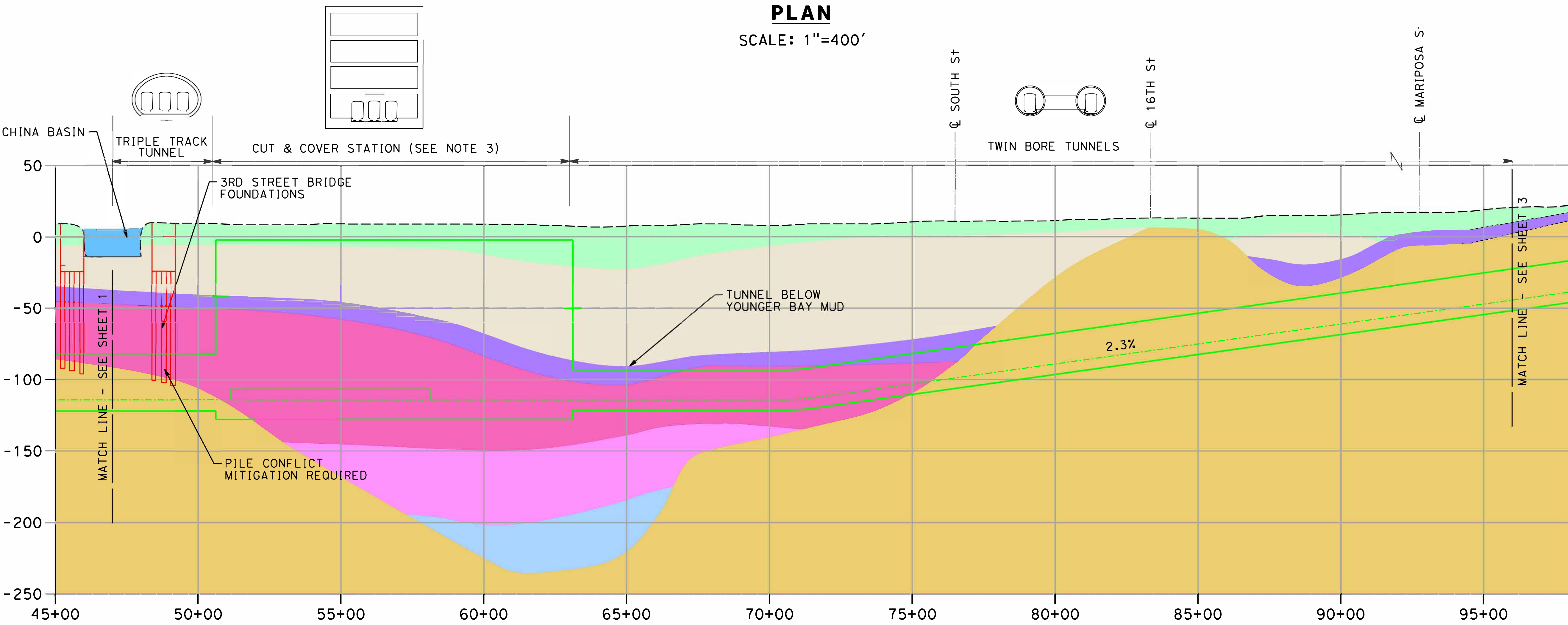
STATUS  
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A





**PLAN**  
SCALE: 1"=400'



**PROFILE**  
SCALE: Horiz: 1"=400'  
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3. FOR STATION DETAIL SEE EXHIBIT 5.1 AND FOR ALTERNATIVE BORED TUNNEL STATION SEE EXHIBIT 5.2. ADDITIONAL PLATFORM OPTIONS SHOWN FOR BOTH

**DRAFT**  
CONCEPTUAL  
DESIGN ONLY

**GEOLOGICAL KEY:**

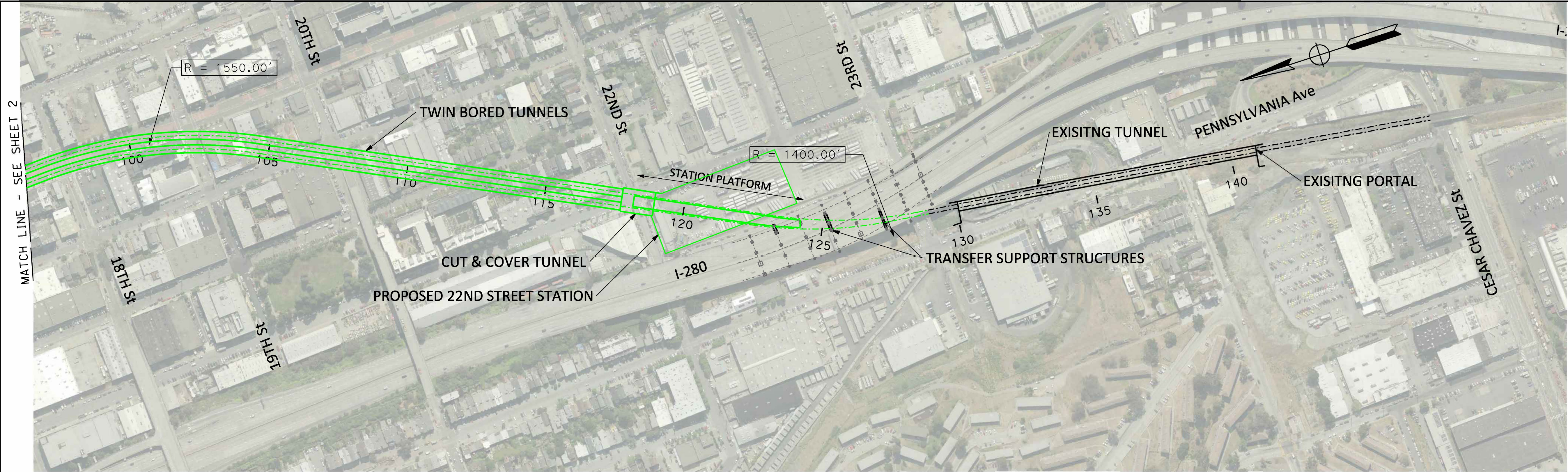
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**ch2m**

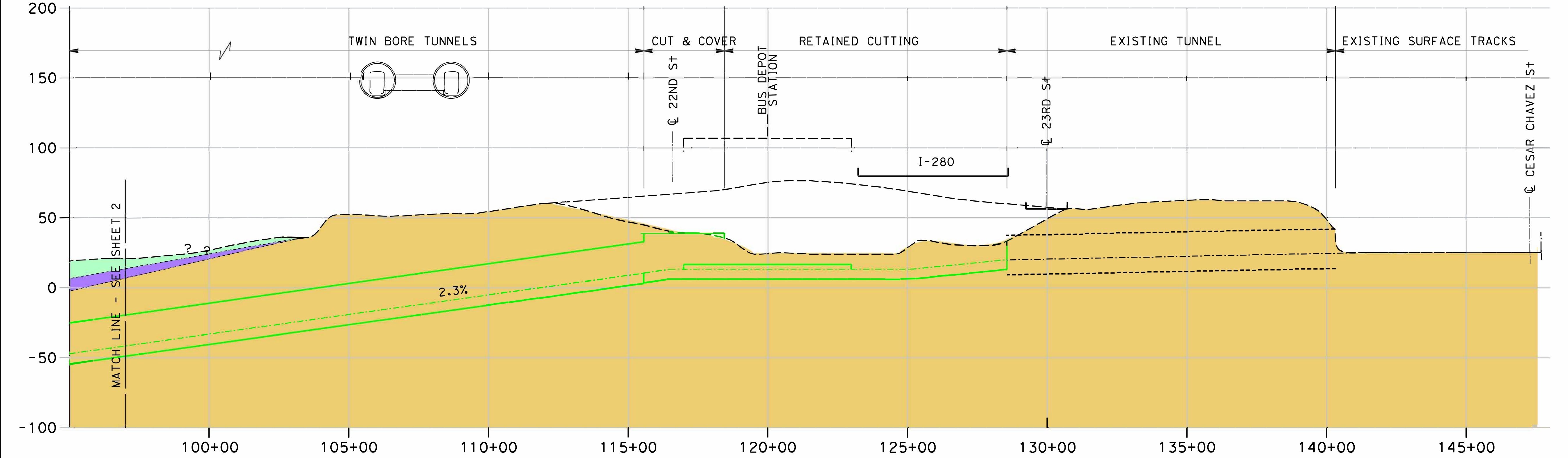


DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16
CLIENT		
CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT		
PROJECT		
SF RAILYARD ALTERNATIVES AND I-280 BOULEVARD FEASIBILITY STUDY		
TITLE		
ALIGNMENT 3: MISSION BAY PLAN AND PROFILE		
DRAWING NUMBER		
EXHIBIT 3.2		
STATUS		
IN PROCESS, FOR DISCUSSION ONLY		
SCALE		REV
AS SHOWN AT 11" X 17"		A





**PLAN**  
SCALE: 1"=400'



**PROFILE**  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

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DRAFT

CONCEPTUAL  
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DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

**CLIENT**

CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

**PROJECT**

SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

**TITLE**

ALIGNMENT 3: MISSION BAY  
PLAN AND PROFILE

**DRAWING NUMBER**

EXHIBIT 3.3

**STATUS**

IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A

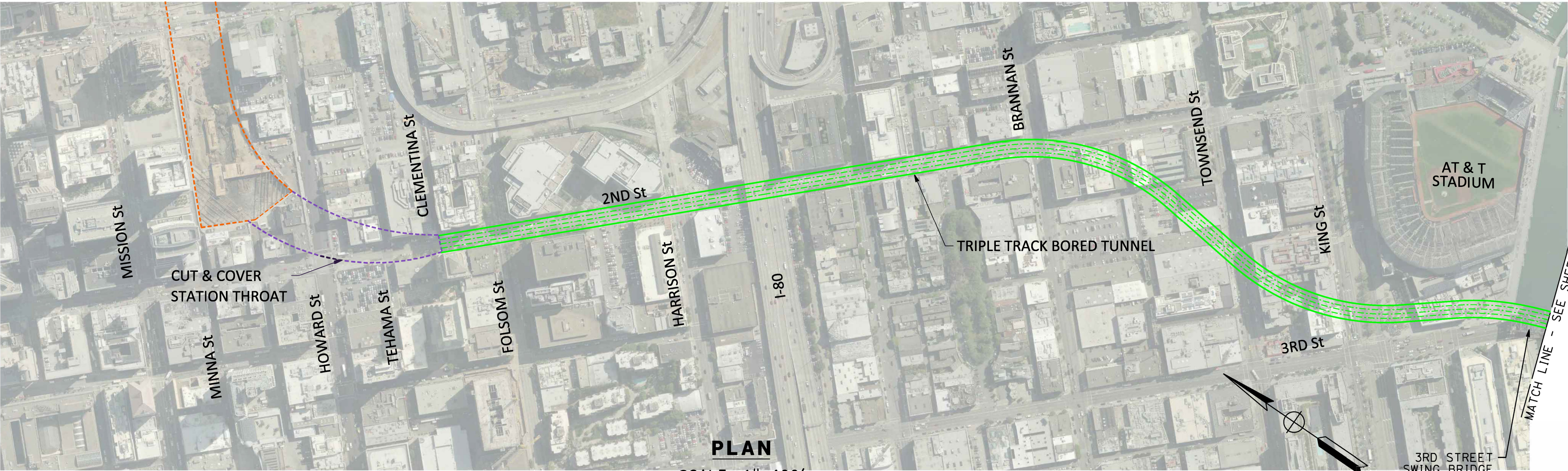
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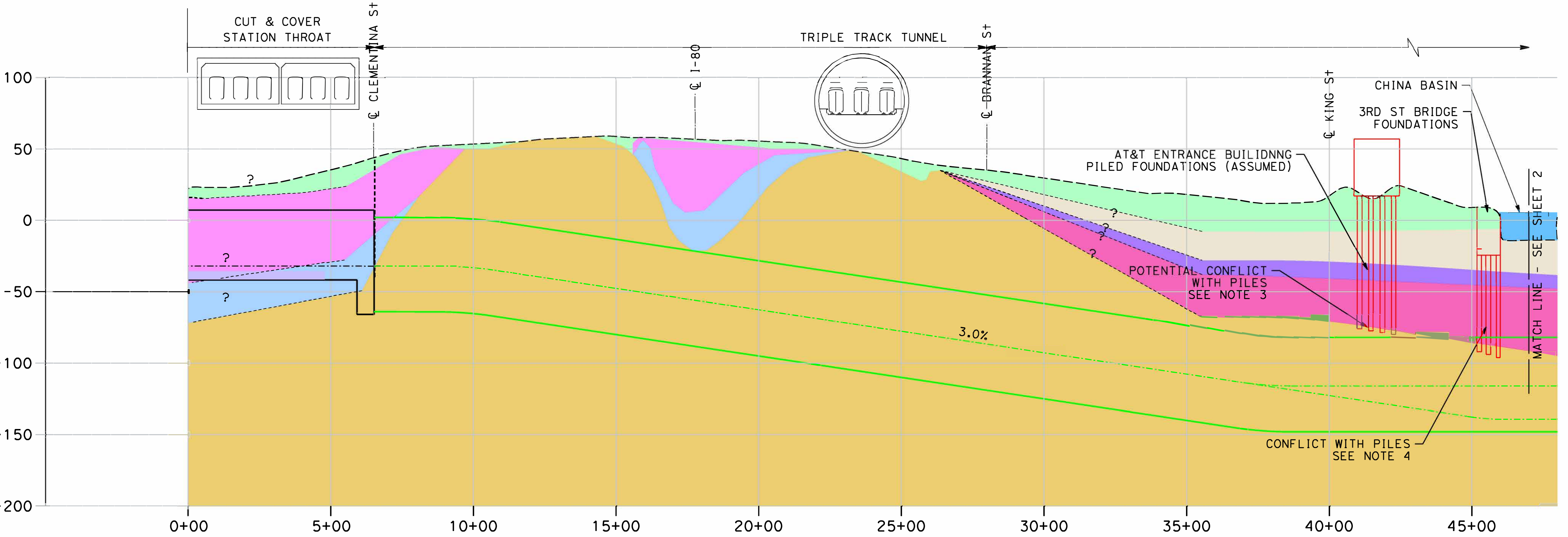
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Page A-7





PLAN  
SCALE: 1"=400'



PROFILE  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

NOTES

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3. POTENTIAL CLASH WITH PILES TO AT&T ENTRANCE BUILDING MAY BE AVOIDED BY LOWERING ALIGNMENT ALTHOUGH BUILDING PROTECTION MEASURES WOULD BE REQUIRED.
4. CLASH WITH BRIDGE FOUNDATIONS WILL REQUIRE MAJOR PROTECTION WORKS OR COMPLETE RECONSTRUCTION.

DRAFT  
CONCEPTUAL  
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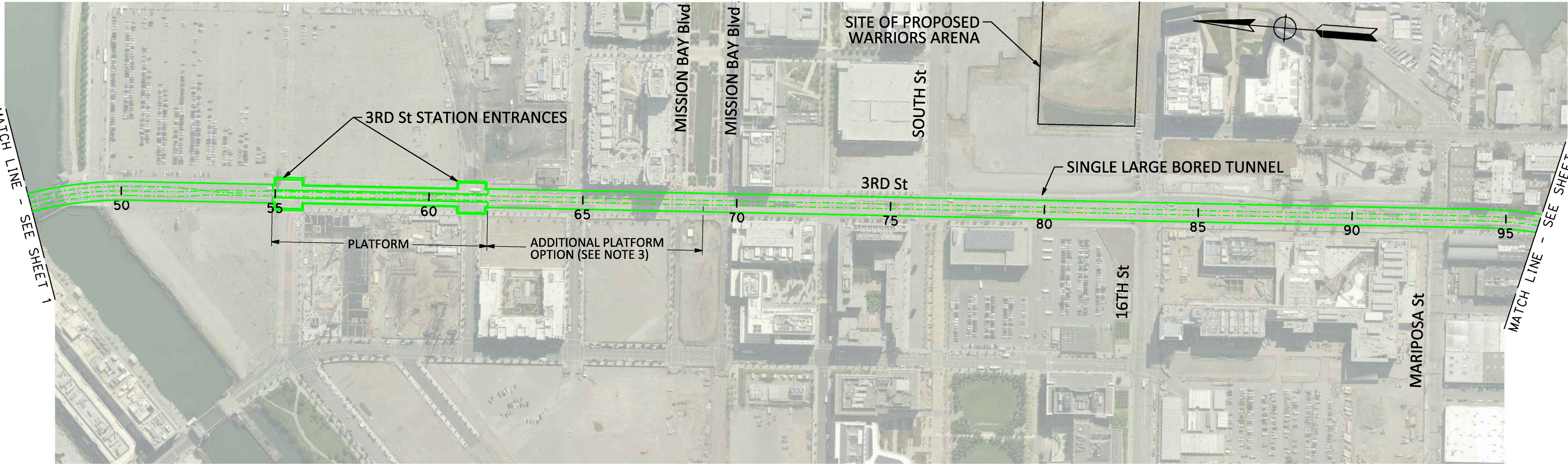
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ch2m

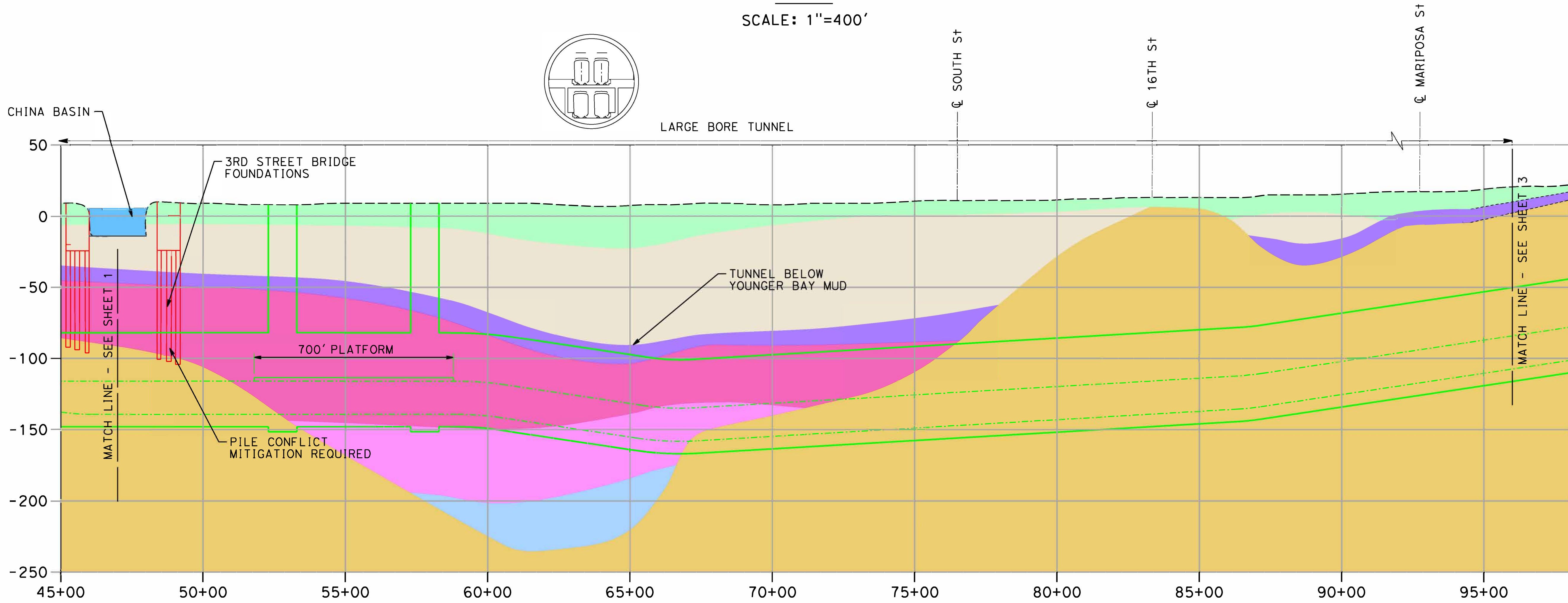


DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16
CLIENT		
CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT		
PROJECT		
SF RAILYARD ALTERNATIVES AND I-280 BOULEVARD FEASIBILITY STUDY		
TITLE		
ALIGNMENT 3: MISSION BAY PLAN AND PROFILE		
DRAWING NUMBER		
EXHIBIT 3.1B		
STATUS		
IN PROCESS, FOR DISCUSSION ONLY		
SCALE	REV	
AS SHOWN AT 11" X 17"	B	





**PLAN**  
SCALE: 1"=400'



**PROFILE**  
SCALE: Horiz: 1"=400'  
Vert: 1"=80'

**NOTES**

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- 3. FOR STATION DETAIL SEE EXHIBIT 5.2 AND FOR ALTERNATIVE BOX STATION SEE EXHIBIT 5.1. ADDITIONAL PLATFORM OPTIONS SHOWN FOR BOTH

**DRAFT**  
CONCEPTUAL  
DESIGN ONLY

**GEOLOGICAL KEY:**

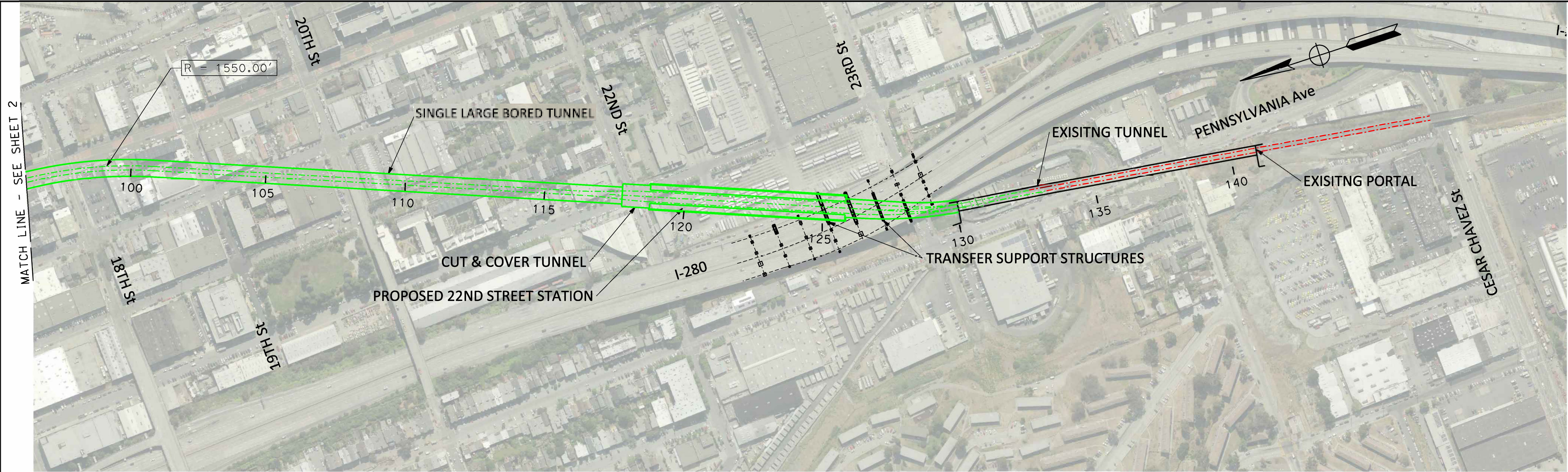
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ch2m



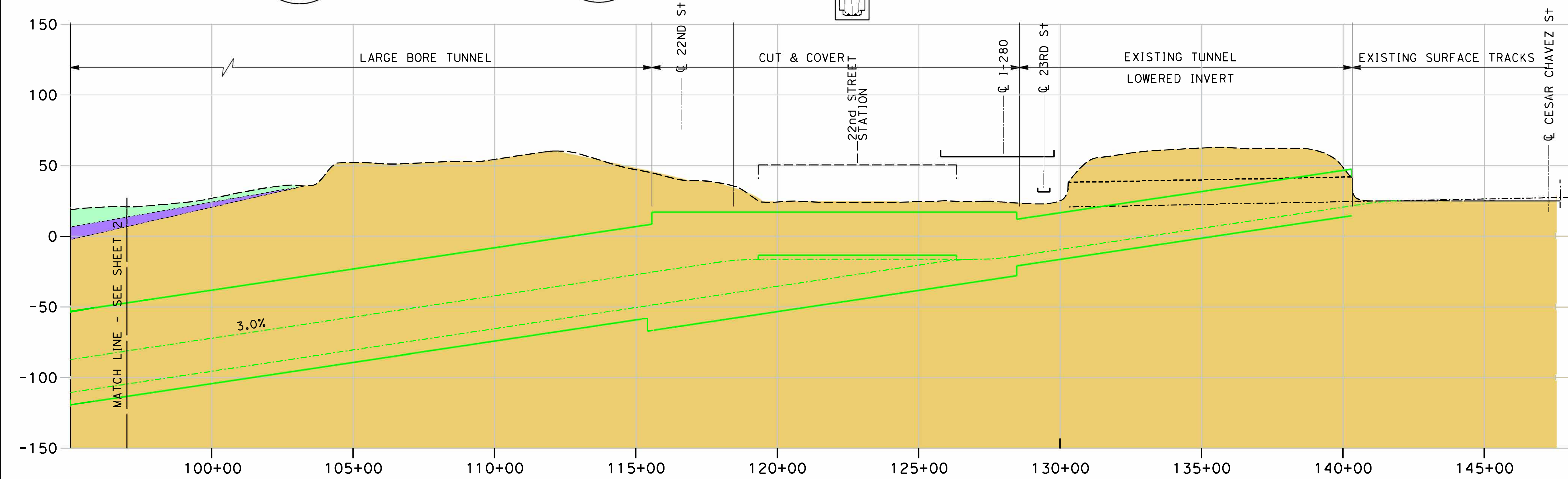
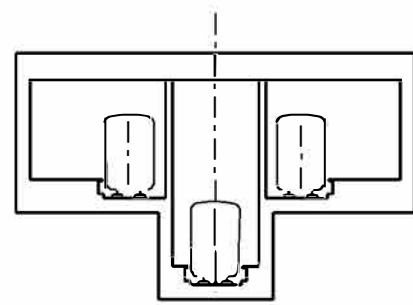
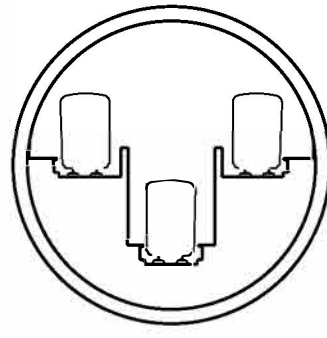
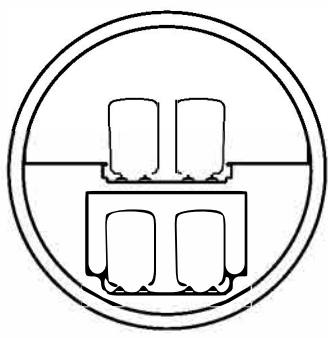
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MJM	SDF	JS
06-03-16	06-03-16	06-09-16
CLIENT		
CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT		
PROJECT		
SF RAILYARD ALTERNATIVES AND I-280 BOULEVARD FEASIBILITY STUDY		
TITLE		
ALIGNMENT 3: MISSION BAY PLAN AND PROFILE		
DRAWING NUMBER		
EXHIBIT 3.2B		
STATUS		
IN PROCESS, FOR DISCUSSION ONLY		
SCALE		REV
AS SHOWN AT 11" X 17"		B





PLAN

SCALE: 1"=400'



PROFILE

SCALE: Horiz: 1"=400'  
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NOTES

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DRAFT

CONCEPTUAL  
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ch2m



DRAWN	CHECKED	APPROVED
MJM	SDF	JS
09-08-16	09-16-16	09-16-16

CLIENT  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

PROJECT  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

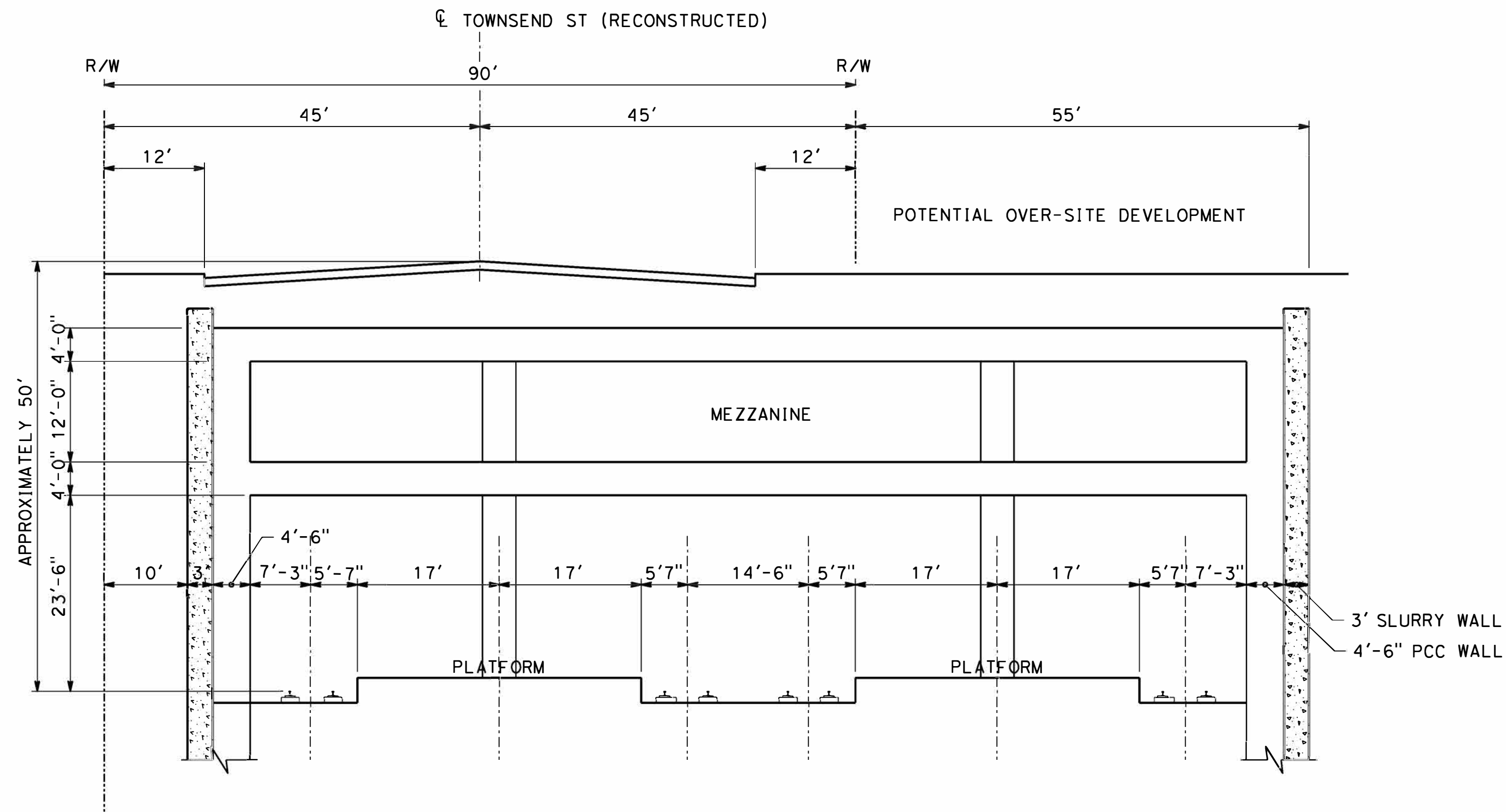
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BAY PLAN AND PROFILE

DRAWING NUMBER  
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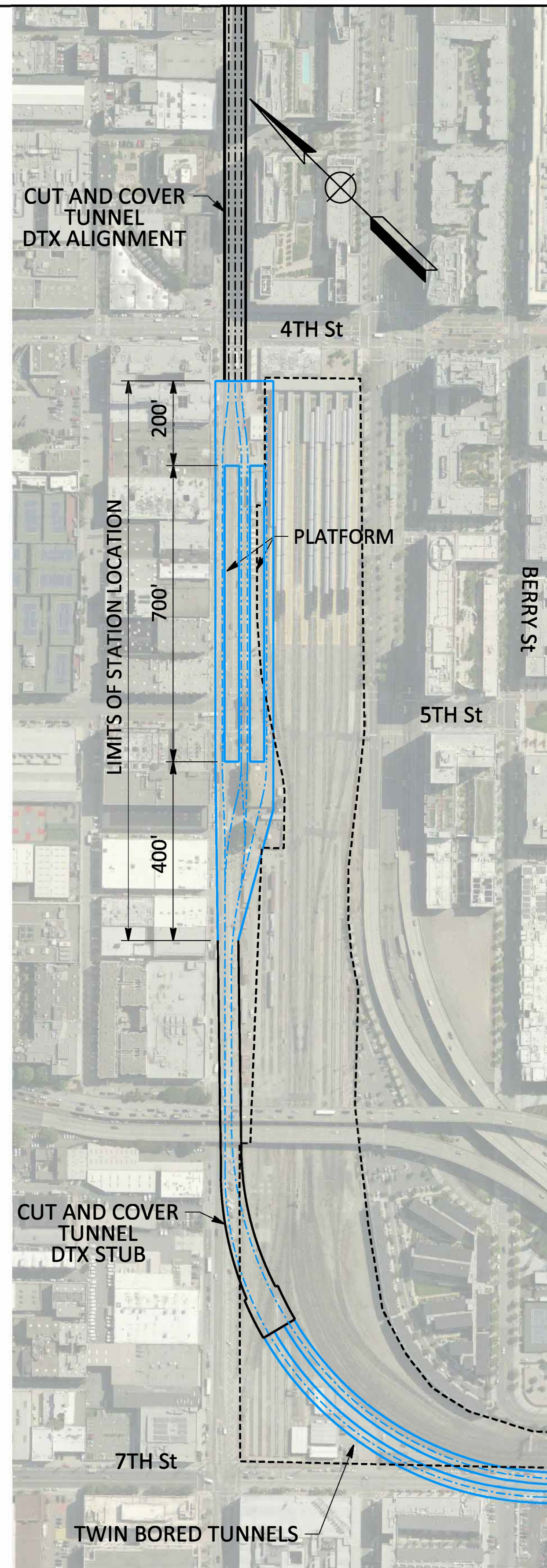
STATUS  
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	B





SECTION



PLAN

**CONSTRUCTION ASSUMPTIONS:**

- STATIONS BUILT USING ASSUMED CUT AND COVER METHOD WITH SLURRY WALL (APPROX. 3' THICK) AND A STRUCTURAL CONCRETE WALL (APPROX. 4'-6" THICK).
- DEPTH OF SLURRY WALLS AND OTHER GROUND TREATMENT REQUIREMENTS TO BE DETERMINED.
- ASSUMED MINIMUM CONSTRUCTION EASEMENT OF 10' WIDTH SHOWN BEYOND LIMIT OF SLURRY WALL.
- TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT DTX PROPOSAL.
- A MEZZANINE LEVEL IS PROVIDED AS AN ACCESS POINT TO PLATFORMS AND STREET LEVEL.
- STREET LEVEL ENTRANCE STRUCTURES ARE NOT SHOWN. LOCATIONS TO BE DETERMINED.
- STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE SAME LEVEL AS MEZZANINE.
- STATION STRUCTURE OUTSIDE RIGHTS OF WAY CAN BE DESIGNED FOR OVERSITE DEVELOPMENT.

**OPERATION ASSUMPTIONS:**

- FOUR TRACKS AND FOUR PLATFORM EDGES.
- FOUR STOPPING TRACKS AT SINGLE LENGTH PLATFORMS.
- ONE TRACK TERMINATES AT CURRENT RAILYARD LOCATION, ALL OTHER TRACKS PASS THROUGH FROM THE SOUTH.

DRAFT

CONCEPTUAL  
DESIGN ONLY

DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

**CLIENT**  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

**PROJECT**  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

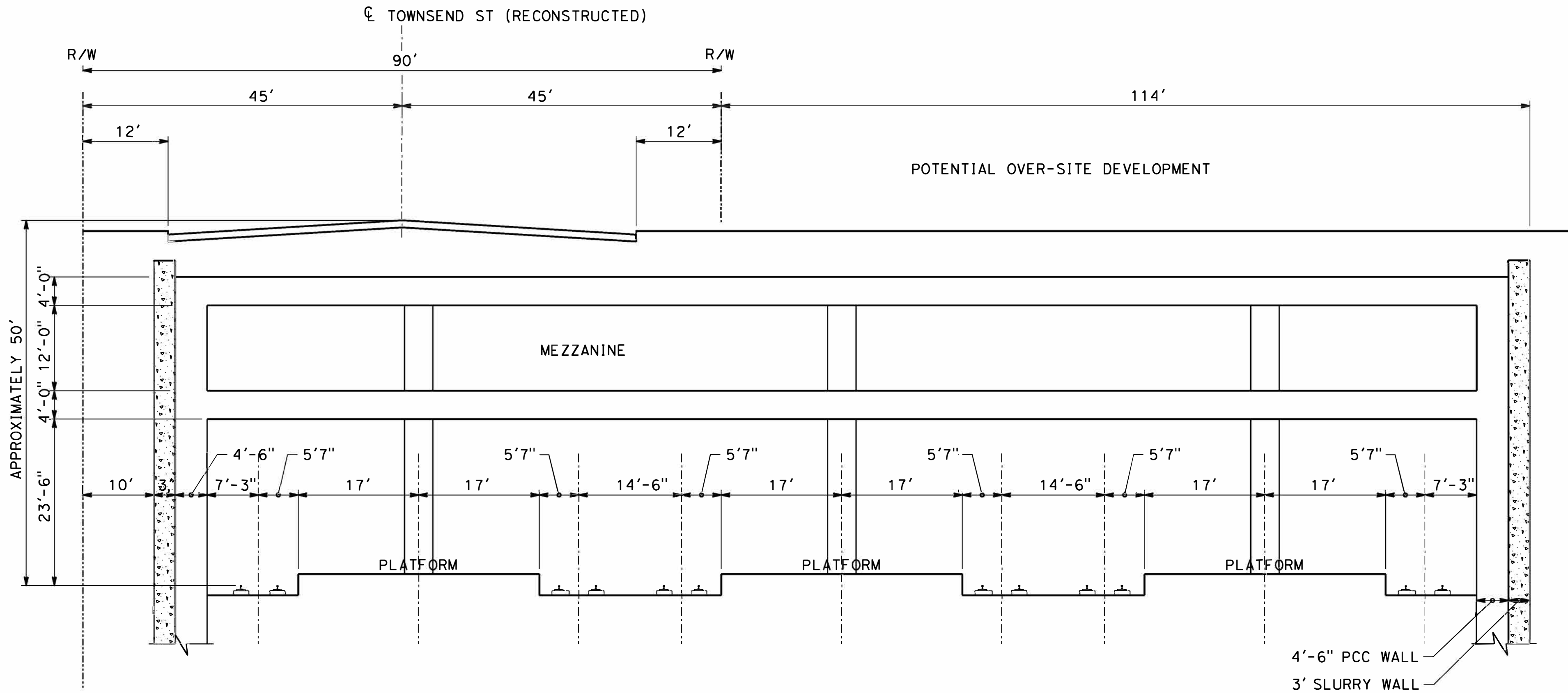
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ALIGNMENT 2: PENNSYLVANIA AVENUE  
STATION CONFIGURATION OPTION C

**DRAWING NUMBER**  
EXHIBIT 4.1

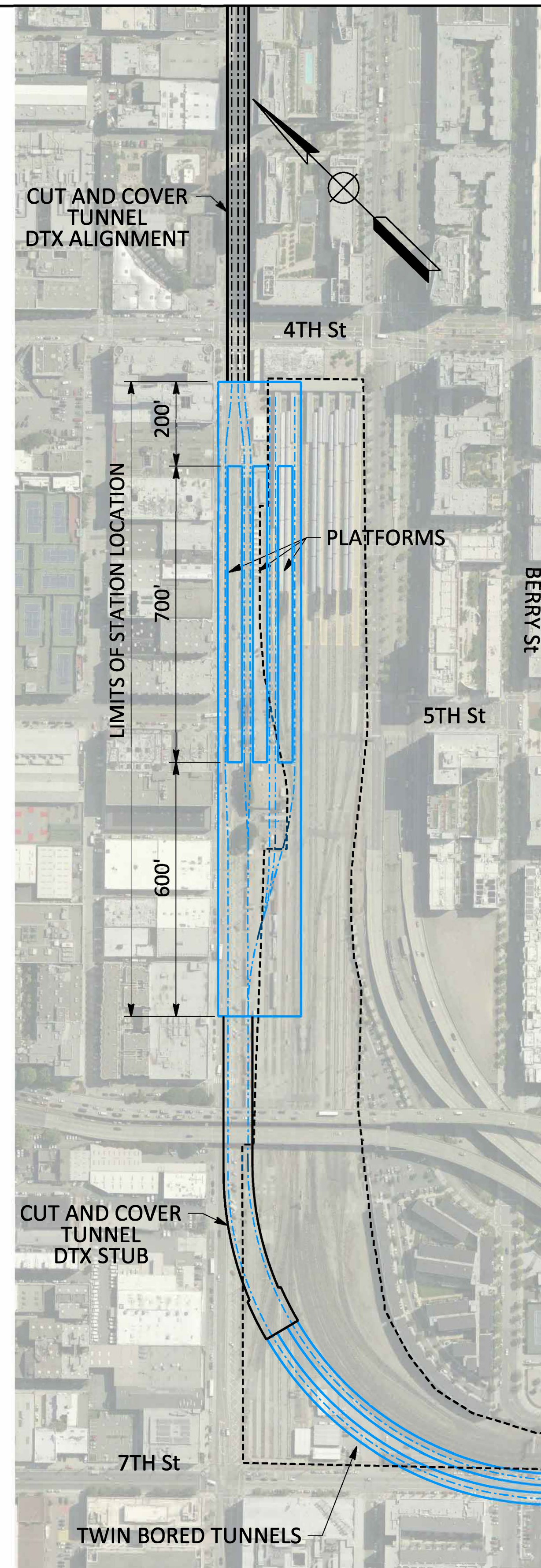
**STATUS**  
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A





SECTION



PLAN

CONSTRUCTION ASSUMPTIONS:

1. STATIONS BUILT USING ASSUMED CUT AND COVER METHOD WITH SLURRY WALL (APPROX. 3' THICK) AND A STRUCTURAL CONCRETE WALL (APPROX. 4'-6" THICK).
2. DEPTH OF SLURRY WALLS AND OTHER GROUND TREATMENT REQUIREMENTS TO BE DETERMINED.
3. ASSUMED MINIMUM CONSTRUCTION EASEMENT OF 10' WIDTH SHOWN BEYOND LIMIT OF SLURRY WALL.
4. TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT DTX PROPOSAL.
5. A MEZZANINE LEVEL IS PROVIDED AS AN ACCESS POINT TO PLATFORMS AND STREET LEVEL.
6. STREET LEVEL ENTRANCE STRUCTURES ARE NOT SHOWN. LOCATIONS TO BE DETERMINED.
7. STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE SAME LEVEL AS MEZZANINE.
8. STATION STRUCTURE OUTSIDE RIGHTS OF WAY CAN BE DESIGNED FOR OVERSITE DEVELOPMENT.

OPERATION ASSUMPTIONS:

1. SIX TRACKS AND SIX PLATFORM EDGES.
2. SIX STOPPING TRACKS AT SINGLE LENGTH PLATFORMS.
3. THREE TRACKS TERMINATE AT CURRENT RAILYARD LOCATION, ALL OTHER TRACKS PASS THROUGH FROM THE SOUTH TO NORTH.

DRAFT  
CONCEPTUAL  
DESIGN ONLY

ch2m



DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

CLIENT  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

PROJECT  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

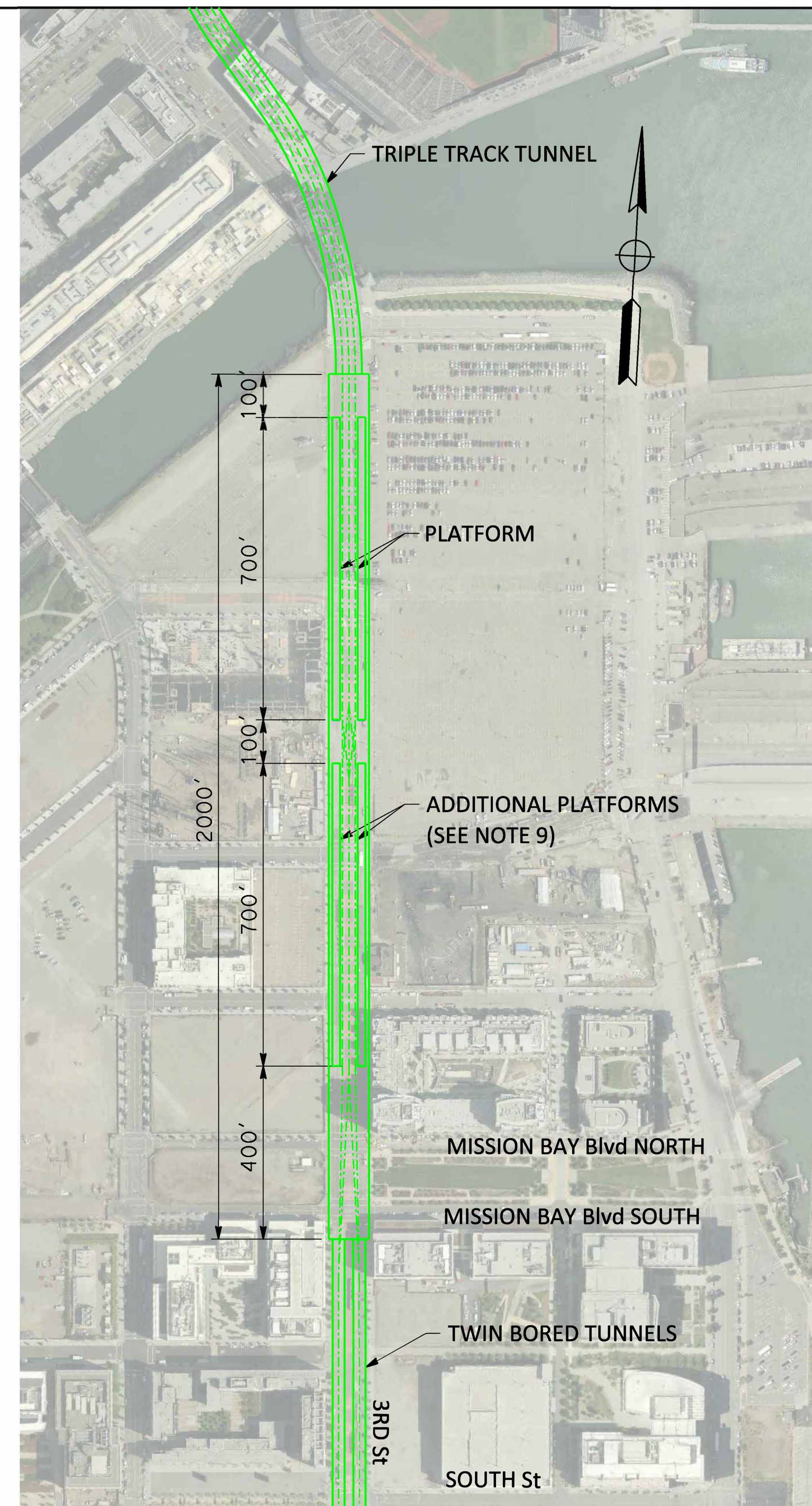
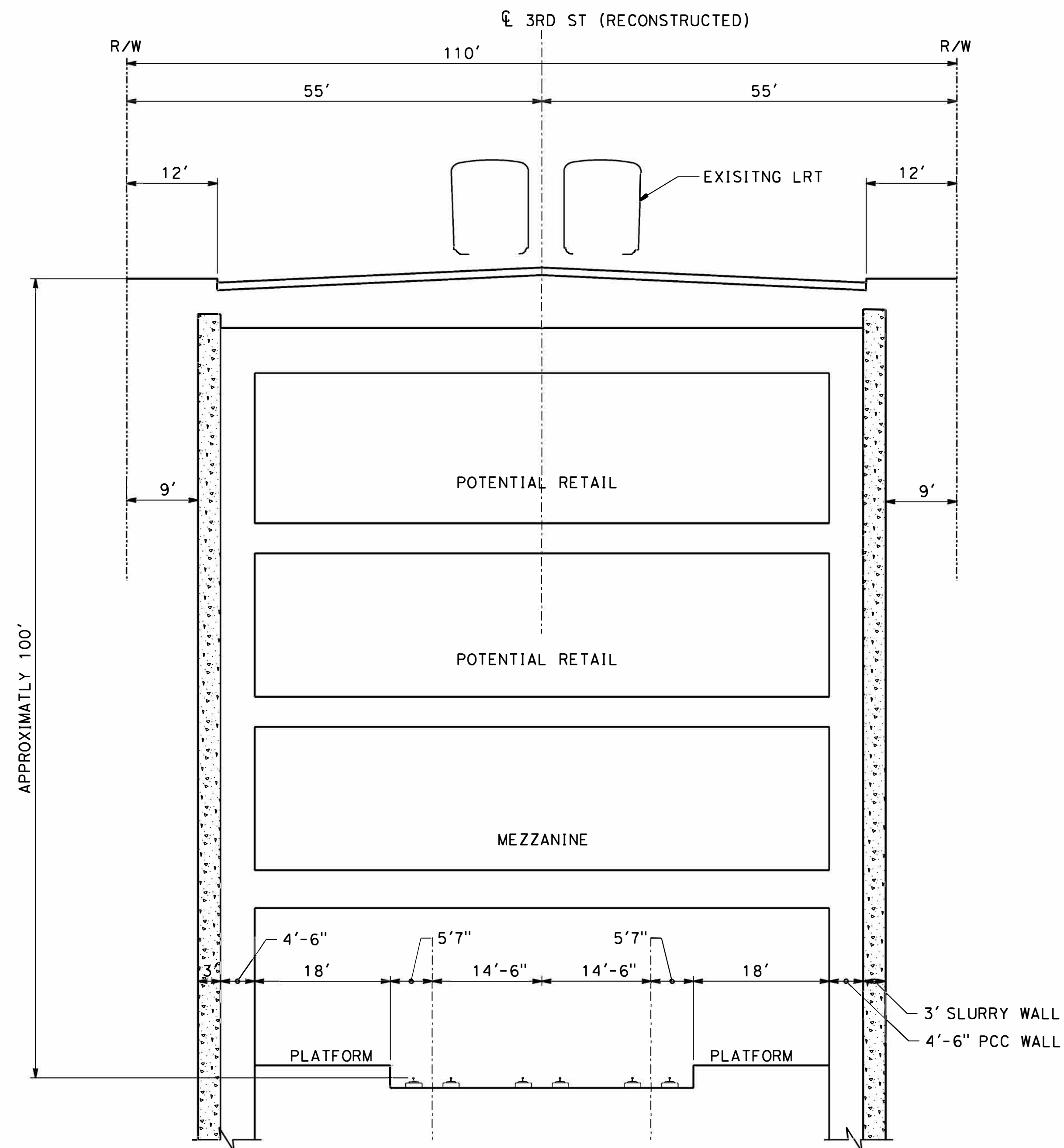
TITLE  
ALIGNMENT 2: PENNSYLVANIA AVENUE  
STATION CONFIGURATION OPTION D

DRAWING NUMBER  
EXHIBIT 4.2

STATUS  
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A





### **CONSTRUCTION ASSUMPTIONS:**

1. STATIONS BUILT USING ASSUMED CUT AND COVER METHOD WITH SLURRY WALL (APPROX. 3' THICK) AND A STRUCTURAL CONCRETE WALL (APPROX. 4'-6" THICK).
2. DEPTH OF SURROUND WALLS AND OTHER GROUND TREATMENT REQUIREMENTS TO BE DETERMINED.
3. ASSUMED MINIMUM CONSTRUCTION EASEMENT OF 9' WIDTH SHOWN BEYOND LIMIT OF SLURRY WALL.
4. TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT DTX PROPOSAL.
5. A MEZZANINE LEVEL IS PROVIDED AS AN ACCESS POINT TO PLATFORMS AND STREET LEVEL.
6. STREET LEVEL ENTRANCE STRUCTURES ARE NOT SHOWN. LOCATIONS TO BE DETERMINED.
7. STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE SAME LEVEL AS MEZZANINE.
8. EXISTING AT WOULD BE DIVERTED OR SUSPENDED DURING CONSTRUCTION OF ROOF SLAB. TOP DOWN METHOD COULD BE USED TO REINSTATE FOR EXCAVATION OF LOWER LEVELS.
9. ADDITIONAL PLATFORMS OPTION SHOWN WOULD GIVE ADDITIONAL CAPACITY DURING EVENTS AT AT&T PARK AND CHASE CENTER

### OPERATION ASSUMPTIONS:

1. THREE TRACKS AND TWO PLATFORM EDGES.
2. TWO STOPPING TRACKS AT DOUBLE LENGTH PLATFORMS.
3. ONE BYPASS TRACK.
4. ALL THREE TRACKS PASS THROUGH FROM THE SOUTH TO THE NORTH.
5. CROSSOVER LENGTH IS FOR SWITCHING TO BYPASS TRACK ONLY

DRAFT

CONCEPTUAL  
DESIGN ONLY



<b>DRAWN</b>	<b>CHECKED</b>	<b>APPROVED</b>
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

**CLIENT**

CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

	<b>PROJECT</b>
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SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

TITLE
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**ALIGNMENT 3: MISSION BAY  
STATION CONFIGURATION OPTION A**

**DRAWING NUMBER**

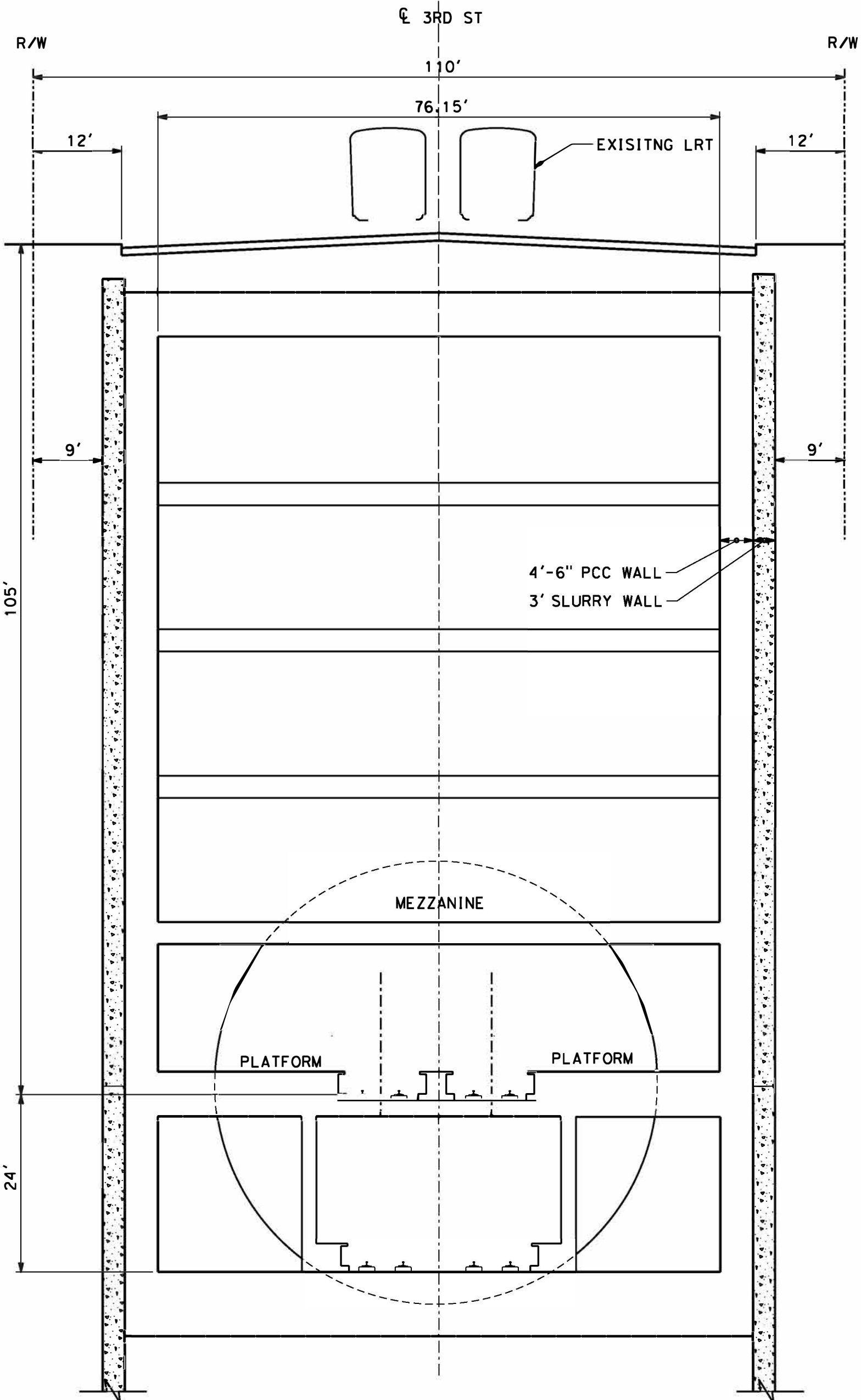
## EXHIBIT 5.1

	<b>STATUS</b>

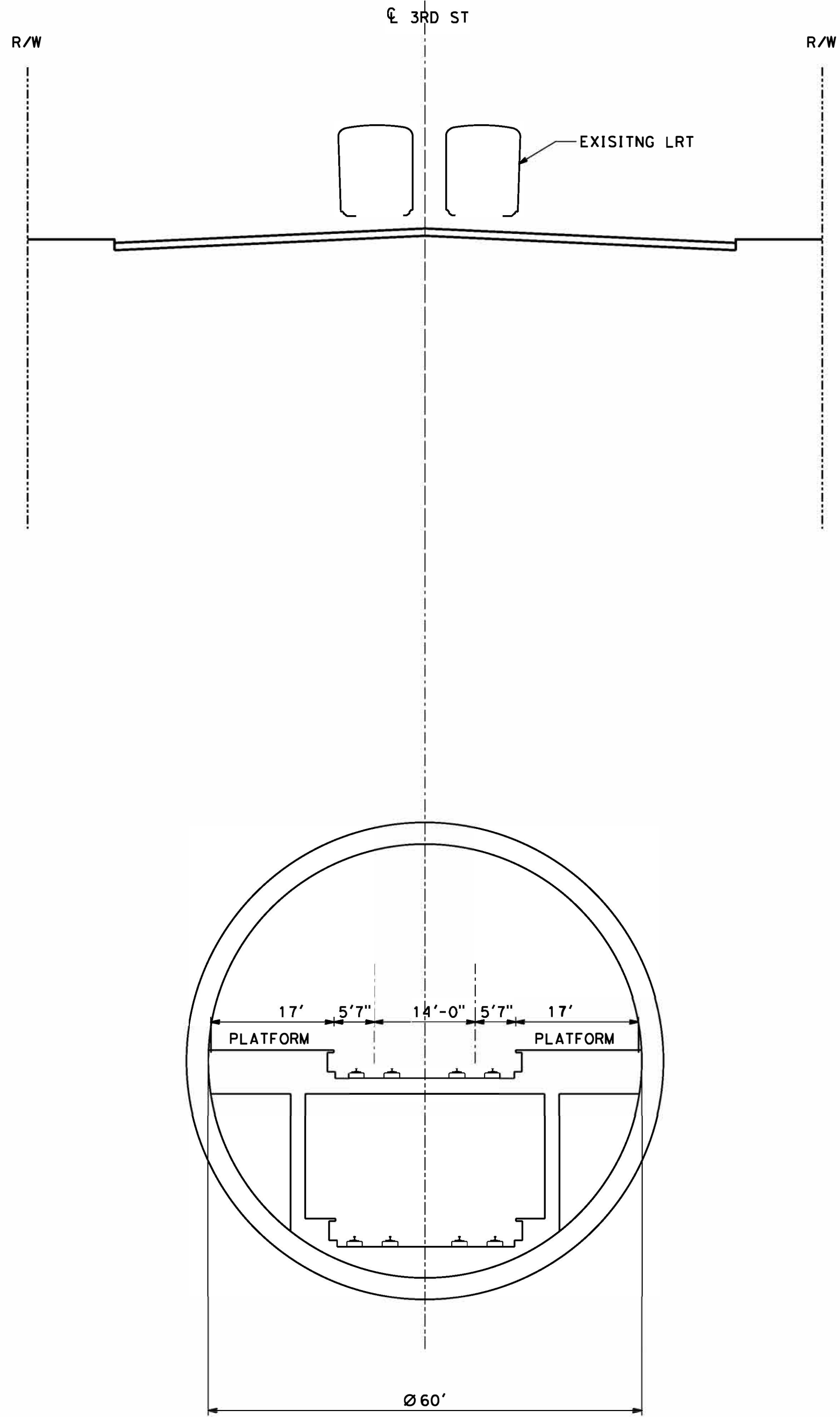
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A

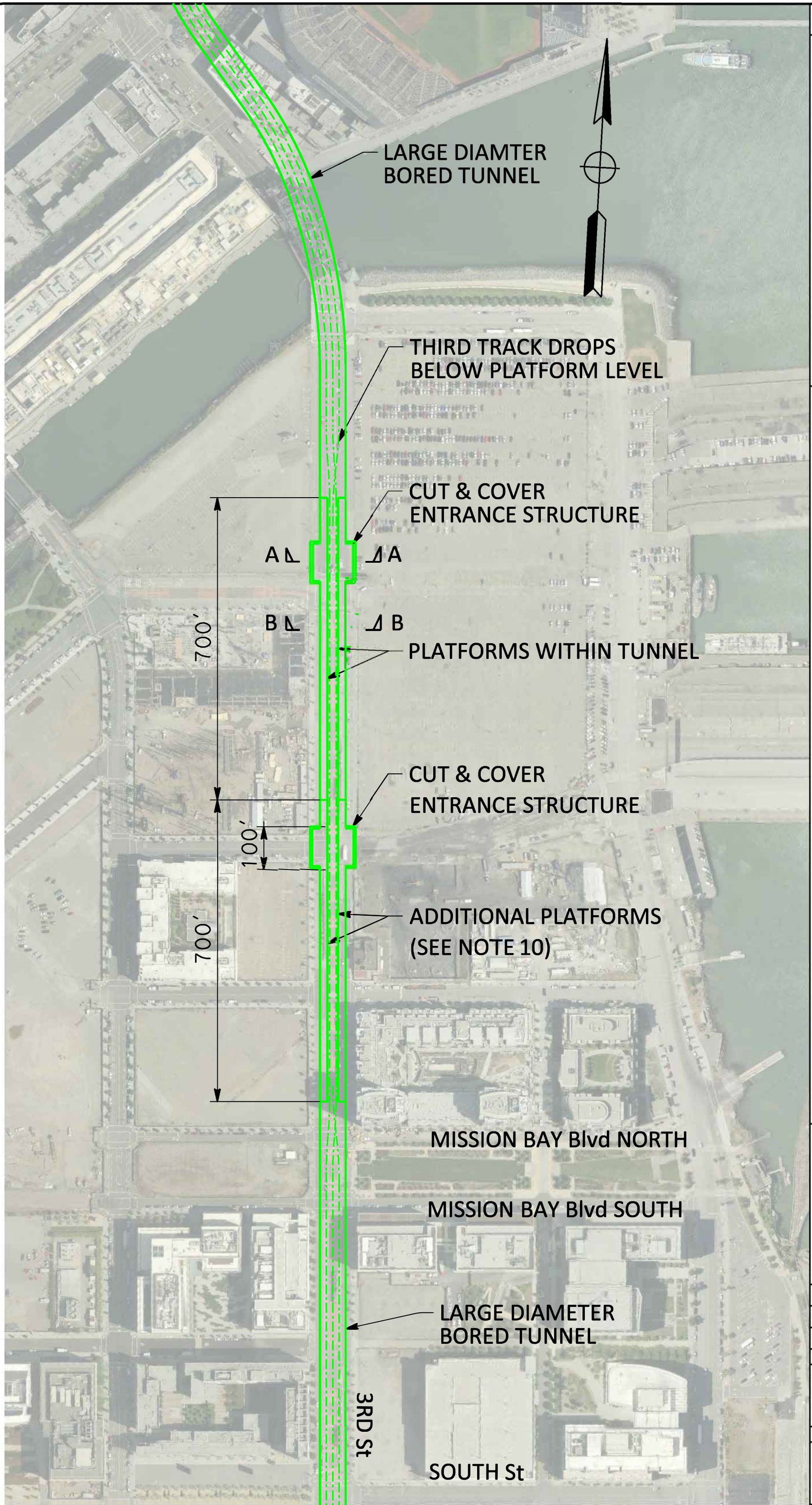




SECTION A-A



SECTION B-B



PLAN

CONSTRUCTION ASSUMPTIONS:

1. LARGE DIAMETER BORED TUNNEL IS CONSTRUCTED USING A SINGLE TBM FOR THE FULL LENGTH.
2. ENTRANCE STRUCTURES ARE CONSTRUCTED IN ADVANCE OF TBM
3. ENTRANCE STRUCTURES BUILT USING CUT AND COVER METHOD WITH SLURRY WALL (APPROX. 3' THICK) AND A STRUCTURAL CONCRETE WALL (APPROX. 4'-6" THICK).
4. DEPTH OF SLURRY WALLS AND OTHER GROUND TREATMENT REQUIREMENTS TO BE DETERMINED.
5. ASSUMED MINIMUM CONSTRUCTION EASEMENT OF 9' WIDTH SHOWN BEYOND LIMIT OF SLURRY WALL.
6. TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT DTX PROPOSALS.
7. STREET LEVEL ENTRANCE STRUCTURES ARE NOT SHOWN. LOCATIONS TO BE DETERMINED.
8. STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE WITHIN ENTRANCE STRUCTURES.
9. EXISTING LRT WOULD BE TEMPORARILY SUPPORTED DURING CONSTRUCTION OF ENTRANCE STRUCTURE.
10. ADDITIONAL PLATFORMS OPTION SHOWN WOULD PROVIDE ADDITIONAL CAPACITY DURING EVENTS AT AT&T PARK AND CHASE CENTER

OPERATION ASSUMPTIONS:

1. THREE TRACKS AND TWO PLATFORM EDGES.
2. TWO STOPPING TRACKS AT DOUBLE LENGTH PLATFORMS.
3. ONE BYPASS TRACK AND ONE STOPPING TRACK BELOW PLATFORM.
4. THREE TRACKS PASS THROUGH FROM THE SOUTH TO THE NORTH.
5. 3RD AND 4TH TRACKS COULD BE EXTENDED END OF TUNNEL FOR TRAIN STORAGE.

DRAFT  
CONCEPTUAL  
DESIGN ONLY

ch2m



DRAWN	CHECKED	APPROVED
MJM	SDF	JS
06-03-16	06-03-16	06-09-16

CLIENT  
CITY AND COUNTY OF SAN FRANCISCO,  
PLANNING DEPARTMENT

PROJECT  
SF RAILYARD ALTERNATIVES AND I-280  
BOULEVARD FEASIBILITY STUDY

TITLE  
ALIGNMENT 3: MISSION BAY  
STATION CONFIGURATION OPTION C

DRAWING NUMBER  
EXHIBIT 5.2

STATUS  
IN PROCESS, FOR DISCUSSION ONLY

SCALE	REV
AS SHOWN AT 11" X 17"	A