Appendix A: Conceptual Design Drawings, Alignment Alternatives
Appendix A: Refined Revised Rail Corridor Alignments

TRANSBAY TRANSIT CENTER

AT&T PARK

POTENTIAL 3RD STREET STATION
(SEE EXHIBIT 3.2 FOR DETAILS)

3RD STREET BRIDGE

SITE OF PROPOSED
CHASE CENTER
WARRIORS ARENA

PROPOSED 4TH AND TOWNSEND STREET STATION
(SEE EXHIBIT 2.2 FOR DETAILS)

4TH ST AND KING ST
CALTRAIN STATION/RAIL YARD

POTENTIAL LOCATION FOR 22ND STREET STATION

EXISTING TUNNEL SECTION

EXISTING PORTAL

NOTE:

KEY

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

DRAFT
CONCEPTUAL
DESIGN ONLY

CH2M
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
EXHIBIT 1.0

SCALE
AS SHOWN AT 11" X 17"

REV
A

IN PROCESS, FOR DISCUSSION ONLY

Page A-1

Page A-1
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.

GEOLICAL KEY:
- Assumed Boundary
- Artificial Fill
- Younger Bay Mud
- Upper Layered Sediments
- Old Bay Clay
- Lower Layered Sediments
- Slope Debris/Ravine Fill
- Franciscan Complex Bedrock

EXHIBIT 2.1
ALIGNMENT 2: PENNSYLVANIA AVENUE
PLAN AND PROFILE

SCALE: 1" = 400'
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.

3. ASSUMES RELOCATION OF EXISTING RAIL YARD. REFER TO
EXHIBITS 4.1 & 4.2 FOR STATION ARRANGEMENT WITH
4 AND 6 PLATFORMS. REFER TO PROJECT REPORT FOR
RAILYARD RELOCATION PROPOSALS.

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

PROFILE

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

DRAFT
CONCEPTUAL
DESIGN ONLY

BY
MGM
SDF JS
06-03-16 06-09-16

CITY AND COUNTY OF SAN FRANCISCO,
PLANNING DEPARTMENT

SF RAIL YARD ALTERNATIVES AND 1-280
BOULEVARD FEASIBILITY STUDY

ALIGNMENT 2: PENNSYLVANIA AVENUE
PLAN AND PROFILE

IN PROCESS, FOR DISCUSSION ONLY

AS SHOWN AT 11" X 17"

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

GEOLOGICAL KEY:
- ARTIFICIAL FILL
- YOUNGER BAY MUD
- UPPER LAYERED SEDIMENTS
- OLDER CLAY
- LOWER LAYERED SEDIMENTS
- SLOPE DEBRIS/RAVINE FILL
- FRANCISCAN COMPLEX BEDROCK

SCALE: 1"=400'

DRAFT
CONCEPTUAL DESIGN ONLY

CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT
PROJECT: SF RAIL YARD ALTERNATIVES AND 1-280 BOULEVARD FEASIBILITY STUDY
ALIGNMENT 2: PENNSYLVANIA AVENUE PLAN AND PROFILE

EXHIBIT 2.3

IN PROCESS, FOR DISCUSSION ONLY

AS SHOWN AT 11" X 17"
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.
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.

GEOLOGICAL KEY:
- ARTIFICIAL FILL
- YOUNGER BAY MUD
- UPPER LAYERED SEDIMENTS
- OLD CLAY
- LOWER LAYERED SEDIMENTS
- SLOPE DEBRIS/RAVINE FILL
- FRANCISCAN COMPLEX BEDROCK

EXHIBIT 3.1
ALIGNMENT 3: MISSION BAY PLAN AND PROFILE

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

DRAWN
DRAFT
CONCEPTUAL DESIGN ONLY

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

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

PROFILE

PLAN
SCALE: 1"=400'
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.

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:

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

SITE OF PROPOSED WARRIORS ARENA

PLAN

SCALE: 1"=400'

PROFILE

SCALE: Hor'iz: 1"=400' Ver'it: 1"=80'

NOTES

CLIENT
CITY AND COUNTY OF SAN FRANCISCO, PLANNING DEPARTMENT
PROJECT
SF RAIL YARD ALTERNATIVES AND 1-280 BOULEVARD FEASIBILITY STUDY
TITLE
ALIGNMENT 3: MISSION BAY PLAN AND PROFILE

DRAWN
CHECKED
APPROVED

DRAFT
CONCEPTUAL DESIGN ONLY

AS SHOWN AT 11" X 17"
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.
3. 22ND STREET STATION LOCATION AND DEPTH ARE INDICATIVE ONLY. Requires further investigation.

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**

DRAFT
CONCEPTUAL
DESIGN ONLY

PLAN
SCALE: 1"=400'

PROFILE
SCALE: Hor'lz: 1"=400' Ver'tl: 1"=80'

MATCH LINE - SEE SHEET 2

TWIN BORED TUNNELS

PROPOSED 22ND STREET STATION

CUT & COVER TUNNEL

TRANSFER SUPPORT STRUCTURES

EXISTING TUNNEL

PENNSYLVANIA Ave

EXISTING PORTAL

SAMPSON ST

ST. GRIFFIN

100

110

100

1-280

1725

1-280

136

140

130

2.3%
NOTES
1. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED INFORMATION AVAILABLE AT THE 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.
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.

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

DRAFT
CONCEPTUAL DESIGN ONLY

GUT & COVER STATION THROAT
CUT & COVER STATION THROAT

PLAN
SCALE: 1"=400'

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

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

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

AS SHOWN AT 11" X 17"

PAGE 8
3RD ST STATION ENTRANCES
CHINA BASIN
SITE OF PROPOSED WARRIORS ARENA

PLAN
SCALE: 1"=400'

PROFILE
SCALE: horz: 1"=400'
vert: 1"=80'

NOTES
1. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED
   INFORMATION AVAILABLE AT THE 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.
3. FOR STATION DETAIL SEE EXHIBIT 5.2 AND FOR ALTERNATIVE
   BOX STATION SEE EXHIBIT 5.1.
   ADDITIONAL PLATFORM OPTIONS

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

CITY AND COUNTY OF SAN FRANCISCO,
PLANNING DEPARTMENT
SF RAILYARD ALTERNATIVES AND 1-280
BOULEVARD FEASIBILITY STUDY
ALIGNMENT 3: MISSION BAY
PLAN AND PROFILE

AS SHOWN AT 11" X 17"

SCALE REV
AS SHOWN AT 11" X 17"

IN PROCESS, FOR DISCUSSION ONLY

PAGE B-9
NOTES

1. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED INFORMATION AND MAY BE SUBJECT TO CHANGE WITH ACTUAL GROUND INVESTIGATION.
2. VENTILATION AND FIRE LIFE SAFETY REQUIREMENTS HAVE NOT BEEN CONSIDERED AS PART OF THIS STUDY. INFORMATION AVAILABLE AT TIME OF STUDY AND AS SHOWN AT 11" X 17"
3. CONCEPTUAL DESIGN ONLY. REQUIRES FURTHER INVESTIGATION.
4. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED INFORMATION AND MAY BE SUBJECT TO CHANGE WITH ACTUAL GROUND INVESTIGATION.

GEOLOGICAL KEY:
- 3.00% SLOPE DEBRIS/RAVINE FILL
- YOUNGER BAY MUD
- OLD BAY CLAY
- YOUNGER BAY MUD
- UPPER LAYERSED SEDIMENTS
- FRANCISCAN COMPLEX BEDROCK
- LOWER LAYERSED SEDIMENTS
- SLOPE DEBRIS/RAVINE FILL
- ARTIFICIAL FILL
- ASSUMED BOUNDARY

PLAN

SCALE: 1"=400'

PROFILE

SCALE: Hor'iz: 1"=400'
Vert: 1"=80'

DRAT
CONCEPTUAL
DESIGN ONLY

LARGE BORE TUNNEL
EXISTING TUNNEL
EXISTING SURFACE TRACKS
120+00
125+00
130+00
135+00
140+00
145+00
0
50
150
100
150
100
50
0
-50
-100
-150
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00

PROPOSED 22ND STREET STATION
LARGE BORE TUNNEL
CUT & COVER TUNNEL
TRANSFER SUPPORT STRUCTURES
EXISTING TUNNEL
EXISTING SURFACE TRACKS
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00
0
50
100
50
0
-50
-100
-150
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00

EXHIBIT 3.3B

3. 22ND STREET STATION LOCATION AND DEPTH ARE BASED ON LIMITED INFORMATION AND MAY BE SUBJECT TO CHANGE WITH ACTUAL GROUND INVESTIGATION.
4. VENTILATION AND FIRE LIFE SAFETY REQUIREMENTS HAVE NOT BEEN CONSIDERED AS PART OF THIS STUDY.
5. THE STRATIGRAPHY SHOWN IS BASED ON LIMITED INFORMATION AND MAY BE SUBJECT TO CHANGE WITH ACTUAL GROUND INVESTIGATION.
6. CONCEPTUAL DESIGN ONLY. REQUIRES FURTHER INVESTIGATION.

IN PROCESS, FOR DISCUSSION ONLY
AS SHOWN AT 11" X 17"
SECTION

POTENTIAL OVER-SITE DEVELOPMENT

3' SLURRY WALL

4'-6" PCC WALL

MEZZANINE

PLAN

CONSTRUCTION ASSUMPTIONS:
1. STATIONS BUILT USING ASSUMED CUT AND COVER METHOD (CUT AND COVER WALLS ARE PASSED TO LEFT AND A STRUCTURAL TENTATION WALLS TO THE RIGHT)
2. DEPTH OF SLURRY WALLS AND OTHER GROUND TREATMENT
3. MECHANICAL SLOPE TO BE DETERMINED
4. PLATFORMS AND PLATFORM STRUCTURES TO BE DETERMINED
5. PLATFORM LINES TO BE DETERMINED AS AN ACCESS POINT TO STREET LEVEL OUTSIDE RIGHTS OF WAY
6. PLATFORM LINES OUTSIDE RIGHTS OF WAY TO BE DETERMINED
7. STATION PLATFORM OUTSIDE RIGHTS OF WAY TO BE DETERMINED
8. PLATFORM HEIGHT TO BE DETERMINED

OPERATION ASSUMPTIONS:
1. FOUR TRACKS AND FOUR PLATFORM SIDES
2. STATIONS BUILT TO SAME PLATFORM LOCATION, ALL OTHER TRACKS PASS THROUGH FROM THE SOUTH

SF RAIL YARD ALTERNATIVES AND I-280 BOULEVARD FEASIBILITY STUDY
ALIGNMENT 2: PENNSYLVANIA AVENUE STATION CONFIGURATION OPTION C

IN PROCESS, FOR DISCUSSION ONLY

DRAFT
CONCEPTUAL DESIGN ONLY
CONSTRUCTION ASSUMPTIONS:
1. STATIONS BUILT USING ASSUMED CUT AND COVER METHOD WITH SLURRY WALL (APPROX. 3' THICK) AND A STRUCTURAL PCC WALL (APPROX. 4'-6" THICK).
2. DEPTH OF SLURRY WALLS AND OTHER GROUND TREATMENT SHOWN BEYOND LIMIT OF SLURRY WALL.
3. TWIN BORED TUNNELS ARE BASIS FOR DESIGN.
4. REQUIRED SUBURBAN ITEMS TO BE DETERMINED.
5. STATION PLATFORMS AND STREET LEVEL STRUCTURES ARE NOT SHOWN.
6. STATION PLATFORMS AND STREET LEVEL STRUCTURES ARE NOT DISTRICT.
7. STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE SHOWN ON SITE.
8. FUTURE BUILDING HEIGHTS OF NEW BUILDINGS CAN BE DETERMINED.

OPERATION ASSUMPTIONS:
1. SIX TRACKS AND SIX PLATFORMS DESIGNED.
2. THREE TRACKS AND THREE PLATFORMS DESIGNED ALONG 7TH ST.
3. ALL OTHER TRACKS PASS THROUGH THE SOUTH TO NORTH.
4. TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT REQUIREMENTS TO BE DETERMINED.

STATION CONFIGURATION OPTION D
1. ESTIMATES AND COST FOR THIS OPTION.
2. TRACK AND PLATFORM DIMENSIONS ARE BASED ON CURRENT REQUIREMENTS TO BE DETERMINED.
3. STATION PLATFORMS AND STREET LEVEL STRUCTURES ARE NOT SHOWN.
4. STATION PLATFORMS AND STREET LEVEL STRUCTURES ARE NOT SHOWN.
5. STATION OPERATION AND PLANT ROOMS ARE ASSUMED TO BE SHOWN ON SITE.
6. FUTURE BUILDING HEIGHTS OF NEW BUILDINGS CAN BE DETERMINED.

EXHIBIT 4.2
CITY AND COUNTY OF SAN FRANCISCO,
PLANNING DEPARTMENT
SF RAILYARD ALTERNATIVES AND I-180
BOULEVARD FEASIBILITY STUDY
ALIGNMENT 2: PENNSYLVANIA AVENUE
STATION CONFIGURATION OPTION D

PLAN

SECTION

TOWNSEND ST (RECONSTRUCTED)

POTENTIAL OVER-SITE DEVELOPMENT

4'-6" PCC WALL
3' SLURRY WALL

DRAFT
CONCEPTUAL
DESIGN ONLY

AS SHOWN AT 11' X 17"
CONCEPTUAL VISUALIZATIONS OF 16TH & 7TH STREETS

OPTION 1: FUTURE WITH SURFACE RAIL: DTX + TRENCHED STREETS

OPTION 2: PENNSYLVANIA AVENUE: DTX + EXTENDED TUNNEL

OPTION 3: MISSION BAY: MODIFIED DTX + 3RD ST TUNNEL