APPENDIX B
01 Sample Project Definition Report

Vincent Grade/Acton Station Second Platform Project
Project Definition and Concept Design Report

Aerial view of Vincent Grade/Acton Station

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Vincent Grade/Acton Station Second Platform Project

Project Definition and Concept Design

Project Definition

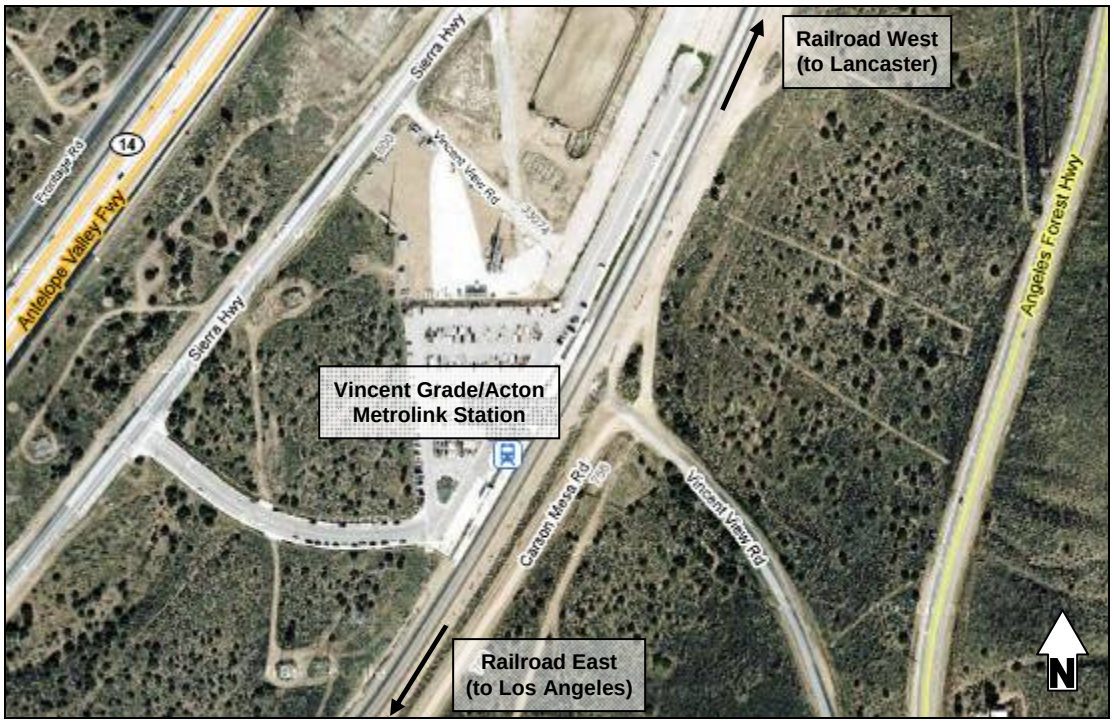
Location: Metrolink Valley Subdivision, MP 61.4

District of Acton, County of Los Angeles, California

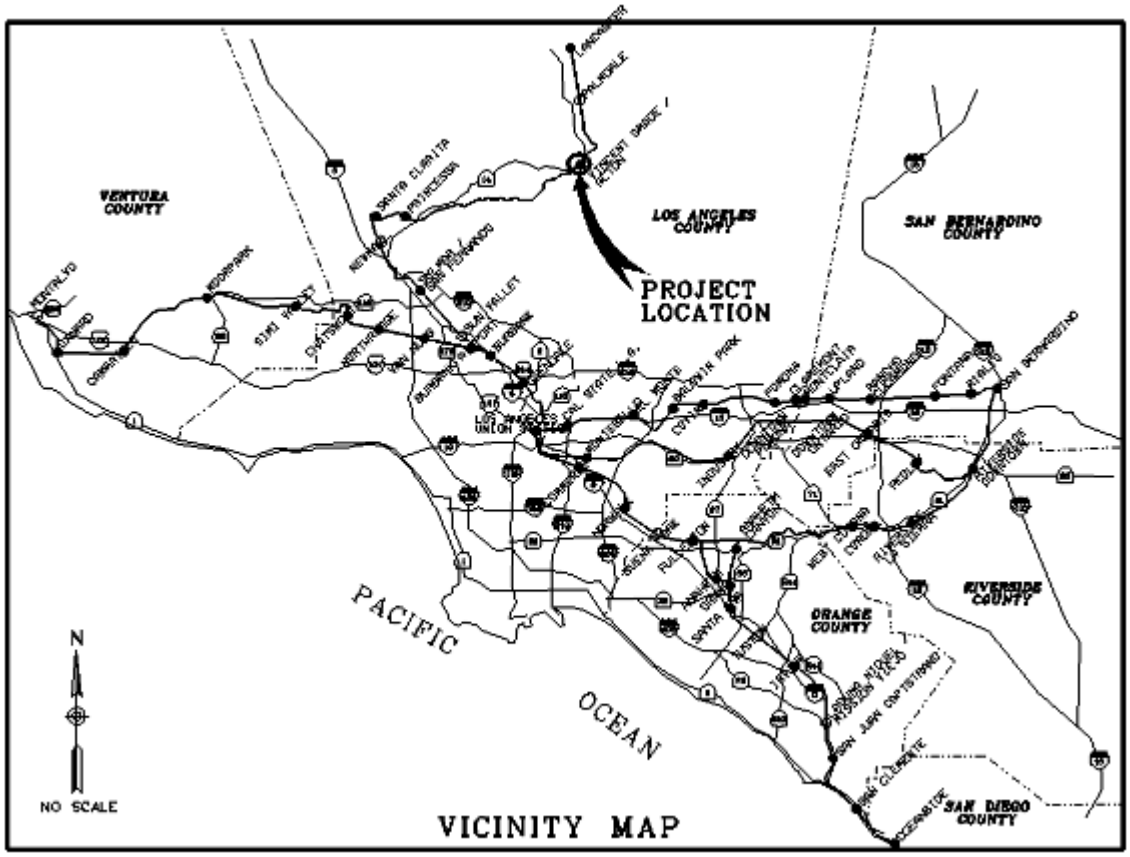
Project: The Vincent Grade/Acton Station Second Platform Project proposes to construct a 600-foot long second slab-on-grade platform with three passenger shelters, one at-grade pedestrian crossings, and the potential of additional roadway access to the new platform. Metrolink operates east-west traversing Antelope Valley Line through the Vincent Grade/Acton Metrolink Station.

Project Location

The Second Platform Project will be located along Metrolink's Valley Subdivision, adjacent to Vincent Siding Track, directly across from the existing Vincent Grade/Acton Station (730 West Sierra Highway) in the District of Acton, County of Los Angeles, California. The project site can be accessed from Vincent View Road via Angeles Forest Highway and will extend adjacent to and generally parallel to Carson Mesa Road within the Southern California Regional Rail Authority right-of-way.



Location Map
Source: Google Maps



Vicinity Map

All directions given in this report will be geographic directions, as opposed to railroad directions.

Major Project Components

The existing Vincent Grade/Acton Metrolink Station is a single platform station along the Antelope Valley Line. The Vincent siding is offset 28 to 29.5 feet east of the mainline and opposite from the existing platform located in the District of Acton, County of Los Angeles. Passengers can access the existing station from Sierra Highway to the west. At present, the adjacent Vincent Siding Track is utilized solely as a freight passing track through the station.

The Second Platform Project proposes to utilize the existing Vincent Siding Track to additionally serve Metrolink passengers by developing a second platform and supporting facilities, including one at-grade pedestrian crossings for access and three passenger shelters for protection from adverse weather conditions. These and other significant features of the proposed second track improvements include:

Second Platform

A 600-foot second platform will be constructed directly across from the existing station platform adjacent to the existing Vincent Siding. The design of the second platform will include the installation of a mini-high platform ramp compliant with the American Disabilities Act (ADA), one ticket validation machine, foundations for a future ticket vending machine and three passenger shelters.

Siding Track Realignment

The proposed location of the second platform is on the outside of the curved siding track. The new platform cannot be placed on the outside of the curve because of sight-distance limitations for train crews. The project concept includes realigning the adjacent siding track to a tangential alignment adjacent to the proposed platform. This track realignment would provide for minimum 20.0 ft. track spacing to allow for placement of an inter-track fence.

Passenger Shelters

Three shelters will be provided on the proposed platform. Shelters will be aligned with the existing shelters on the opposite side of the railroad tracks. An accessible path of travel complying with ADA will be provided from the existing passenger drop-off area to the proposed platform.

Pedestrian At-Grade Crossings

One new pedestrian at-grade crossings will be installed connecting the north ends of the proposed platform. The trainman ramps at the end of the existing platform will be removed and replaced by the pedestrian at-grade crossings that will extend approximately 50 feet from the ends of the platforms. The at-grade crossing will be fitted with all standard signals, signs and fencing. The grade crossing panel crossing surfaces will be joined with an asphalt concrete walkway.

Lighting and Electrical Facilities

Light fixtures will be provided to illuminate the proposed platform at night. Electrical capacity requirements will be determined and, if electrical system improvements are necessary, they will be incorporated into the construction documents.

Utility Relocations

Locations of known utility lines will be identified on the design plans, and compared against all the locations where improvements are proposed. All known conflicts will be identified on the construction documents and will be protected where points of conflict exist.

Construction Cost

The total project cost including design, design support, materials, construction, project management, construction management, flagging, agency costs and contingencies is $6,151,355. The estimate is in 2011 first quarter dollars.

Project Approvals

Director, Engineering and Construction _____ Date: _____

Director, Operations _____ Date: _____

Site Description

Right-of-Way

Southern Pacific Valuation Maps show the railroad right-of-way line to be 100 feet in either direction main line track. Proposed platform, track realignments and at-grade crossing developments will remain within the existing railroad right-of-way.

Adjacent Land Use

Adjacent land is owned by Southern California Edison Ltd. (APN 3056-004-838) and Watt Enterprises (APN 3056-004-058). According to Assessor Map 3056-004, Carson Mesa Road and Vincent View Road are public roads situated on privately owned property (see Appendix E, Item No. 1- Assessor's Parcel Map).

Land adjacent to the existing railroad right-of-way is primarily vacant and unutilized with the exception of two 60 foot wide roads maintained by the County of Los Angeles. Pursuant to the Assessors Parcel Map (3056-004), Carson Mesa Road (a dirt road) encompasses the full western border and 60 feet into both properties. Likewise, Vincent View Road (a paved road) encompasses the full southern border and 60 feet into the Watt property. As made evident on visits to the site, Vincent View Road and Carson Mesa Road are used frequently as public access for residences that are south of the SCE property. No other uses of these properties were evident in site visits or research.

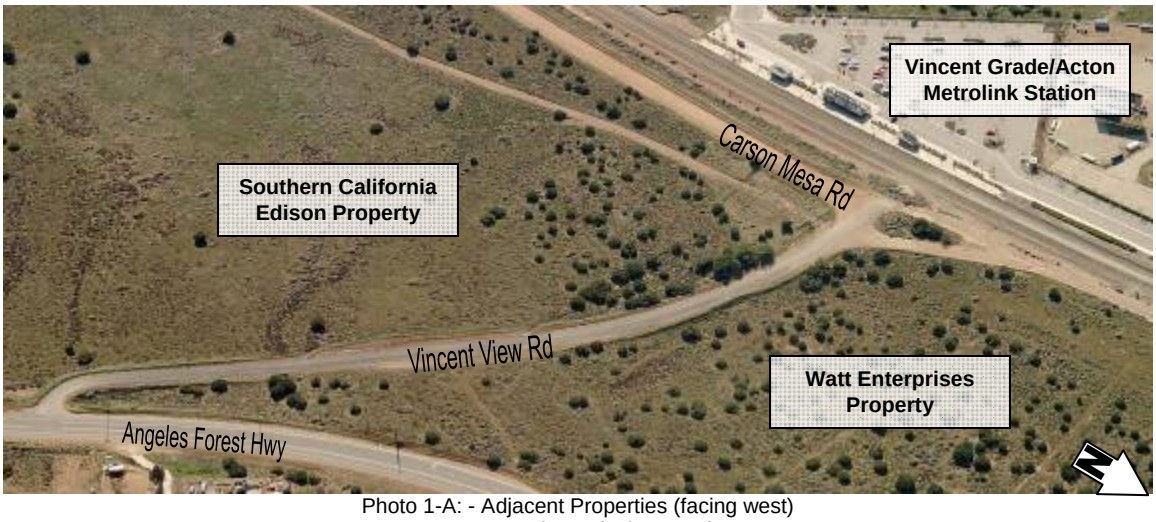


Photo 1-A: - Adjacent Properties (facing west)
Source: Microsoft Live Local

Photo 1-B: Carson Mesa Road (facing south)

Photo 1-C: Carson Mesa Road (facing north)

Existing Track Geometry and Speed

The Vincent Grade/Acton Station is on the Valley Subdivision at Milepost 61.4. In this location, there are two tracks curved at 00°40'00''on a 1.7 percent grade. Distance between the centerline of the mainline and siding tracks range from 28 feet, 7 inches at the south side of the station to 29 feet, 6 inches at the north side of the station with a minimum distance of 28 feet, 2 inch minimum occurring near the south end of the station. Maximum railroad speed for the Valley Subdivision mainline is 75 miles per hour (mph) for passenger trains and 45 mph for freight trains. Maximum railroad speed for the Vincent Siding is 49 mph for passenger trains and 35 mph for freight trains.

A 640-foot setout track extends from Vincent Siding north of the station.

Existing Signal Facilities and Train Control

There are no signal facilities or train control within the project site. The nearest signal facility is approximately 235 feet north of the proposed at-grade crossing and will not be affected by the proposed project.

Existing Station

The Vincent Grade/Acton Metrolink Station was built in the late 1990s. Metrolink Station Road is the only public entrance to the station and connects Sierra Highway to the station's triangle shaped, asphalt concrete (AC) passenger parking lot. At the end of Metrolink Station Road is a bus turn-around that is directly adjacent to the south side of the platform.

Between the station buildings and parking lot curb is a 12 foot wide sidewalk with various planters.

Existing Parking

The existing parking lot directly west of the existing station platform has approximately 420 parking spaces. Handicap parking is provided west of the main station building (center building) facing the platform. Disability compliant access to the station is provided with ramps to a 12 foot wide sidewalk that runs parallel to the existing platform. The Second Platform Project is not anticipated to affect the number or location of required parking spaces.

Existing Platform

The existing Vincent Grade/Acton Station is made up of a single platform west of the mainline track. The platform is 600 feet long with a minimum width of 16 feet. Three shelters are provided on the existing platform, one large shelter toward the center of the platform and two smaller shelters, closer to ends of the platform.

The large shelter includes ticket vending machines, multi-trip ticket validating machines, security office, public phones and Metrolink information phones. Benches are incorporated into all shelters. Trash receptacles are located within and between shelters. Drinking fountains are provided on the existing platform as well as newspaper vending machines. Electronic Metrolink message signs with speakers are incorporated on various light posts along the platform.

Additionally, an ADA accessible mini-platform is located on the south end of the existing platform. The existing wooden railing on the mini-high on the existing platform was observed to be inadequate. At the direction of Metrolink this railing is to be replaced with a standard metal tubular railing as part of this project (see Photo 1).

Photo 1: Existing ADA Mini-Platform Ramp

The edges of the platform adjacent to the tracks have yellow tactile warning tile, a yellow stripe and text warning passengers to stay clear of trackside platform edges. Red brick door locators are spaced along the entire platform (see Photo 13).

Existing Shelters

The three existing shelters follow an old-western theme. The large shelter in the center is themed as an old-western train station and titled “VINCENT GRADE ACTON STATION” while the other two shelters are also old-western themed and titled “STORE” and “HOTEL” (see Photos 2 – 5). Columns are all wood painted green and walls are stone finished. Roofs are brown and beige painted wood.

Photo 2: "STORE” Shelter (Parking Lot Side View)

Photo 3: Main Shelter (Train Side View)


Photo 4: "HOTEL" Shelter (Inside Furnishings)


Photo 5: "HOTEL" Shelter (Train Side View)

Existing Landscape and Irrigation

Planters are located intermittently parallel to the length of the existing platform adjacent to and behind the existing shelters. Platform ingress and egress is made possible through 13 feet to 15 feet wide breaks in the planters, garnered with overhead signage at two locations (see Photos 6 – 7).


Photo 6: Overhead Signage at Platform Ingress/Egress


Photo 7: Planters and Sidewalk

Natural vegetation is east of the existing Vincent Siding and within the project area that is bordered by a three-foot high Carson Mesa Road embankment to the east and a railroad embankment to the west. The project area is 3-feet lower in elevation from both the Vincent Siding tracks and the Carson Mesa Road embankment and is in a natural drainage path (see Photos 10 - 11).

Existing Fences

There are decorative old-western themed, "corral," wood fences in between shelters separating the parking area and sidewalk from the platform. There is also a 6-foot chain link fence between the track and parking lot north of the platform (see Photo 8 – 9). At present, there is no inter-track fencing between the main track and Vincent Siding.

Likewise, there is no fencing, right-of-way fence or otherwise, along the east side of Vincent Siding. The entire project area on the east side of Vincent Siding is accessible by foot (see Photo 10-11).

Photo 8: Ornate Wood Fence

Photo 9: Chain Link Fence at South End

Existing Drainage

Existing patterns show drainage traversing south through the project area, currently the site of an earthen ditch, bounded by the railroad embankment to the west and the Carson Mesa Road embankment to the east. Drainage captured in the project area continues on its southerly course parallel to the tracks and beyond the project area. Drainage generated on the opposite side of the tracks (existing station side) traverse beneath the tracks, through a corrugated metal pipe located 300 feet north of the existing platform. At that point, flow enters the earthen ditch, travels through the project area, and continues on its south-southwesterly course.

Photo 10: Looking down on Drainage Ditch
Direction: Facing Southwest

Photo 11: Standing in Drainage Ditch
Direction: Facing Northeast

Existing Lighting

Platform lights are green ornamental lamp post with 14 foot tall fluted shaft, park model reflector shade and 175W Metal Halide lamp. Shelter lights are tamper resistance luminaries with 100W Metal Halide lamp and clear prismatic polycarbonate lens. Area lights are 25 foot pole gray shoe-box luminaries (see Photos 12 - 14).


Photo 12: Parking Lot Area Lighting


Photo 13: Platform Lighting


Photo 14: Shelter Lighting

Existing Communications & Electrical

Electrical power for the station is provided from the Southern California Edison pad-mounted transformer located adjacent to the communication building at the northeast corner of the parking lot. The utility pad-mounted transformer provides two separate services, one for the communication building and the other for the main platform shelter, through two separate meters and service cabinets.

Communication/data signals for the changeable message signs, the public address system, the credit card validation and account debit transactions come from lines in the communications building at the northeast corner of the parking lot (see Photo 15).


Photo 15: Communication Shelter

Existing Roadway Facilities

Vincent View Road is an asphalt concrete paved road with standard crown. No curb or roadway dike designates the edges; instead, Vincent View Road is intermittently bordered on its edges by a short (1-3 foot) high dirt berm.

Carson Mesa Road is a dirt road with an approximately 4 foot high dirt berm at its border with the Metrolink right-of-way. In 2005, the County of Los Angeles approved design plans to improve Carson Mesa Road and these plans are available at the County, although the County does not anticipate commissioning these plans for construction for another three years (late-2011), at the earliest. It should be noted that the proposed county improvements intrude into Metrolink right-of-way.

Access Before and After Construction

Passengers will be able to use the existing Vincent Grade/Action Station throughout construction of the Second Platform Project. The construction plan calls for a minimum of two weekend windows that would limit train traffic during the construction of the pedestrian at-grade crossings. Construction access is possible from Vincent View Road; however, passenger access to the second platform after construction will be restricted. Passengers will be able to access the second platform from the existing station and by crossing at the two proposed at-grade pedestrian crossings.

Design Constraints

Due to the generally vacant nature surrounding the Vincent Grade/Acton Station, there are no known features that would create a physical vertical or horizontal clearance issues.

Evidence of Existing Utilities

From visual inspection of a surveyed landscape, a buried Sprint Fiber Optic cable and a buried AT&T Fiber Optic cable are located east of the tracks within the project area. Pothole information supports these findings and are summarized in Appendix F. Vincent Grade/Acton Station construction drawings show electrical and data/communication lines within the existing station and platform to supply electricity to existing platform lighting, ticket vending machines, multi-trip ticket validation machines and provide power and lighting to the existing communication building and parking lot (see Appendix F).

Project Concept

Second Platform

A second slab-on-grade platform will be installed, matching the existing platform in length and location relative to the railroad tracks. The second platform will be constructed 5 feet- 4 inches east and 8 inches above top-of-rail elevation on the Vincent Siding, in compliance with Metrolink Standard Plan 4000, allowing Metrolink trains traveling along Vincent Siding to be able to approach the station with enough horizontal clearance and allowing passengers to safely board the trains. An ADA mini-high platform will be near the south end of the second platform to allow for ADA compliant loading and unloading of passengers requiring handicap access. The ADA mini-high platform will be consistent with Metrolink Standard Plan 4001. Tubular steel handrails will be installed on the existing and proposed mini highs.

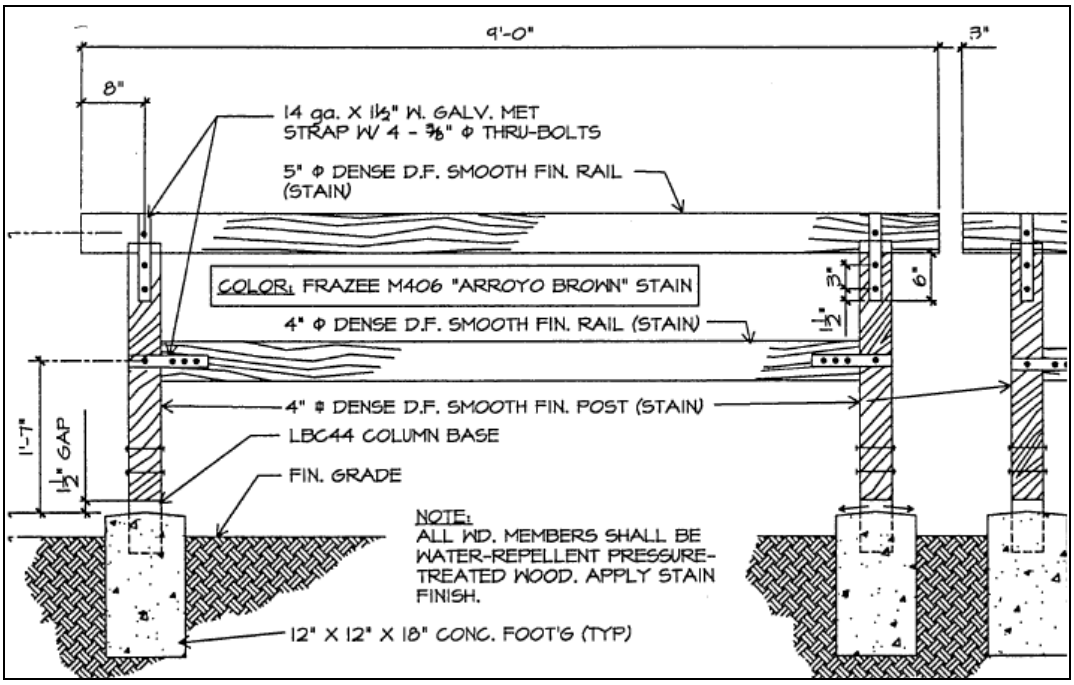
Architectural elements of the second platform will match the existing platform. These include elements such as three western frontier village themed shelters and simulated wood barrel trash cans in order to remain consistent with the County of Los Angeles, District of Acton development standards that states development is to mimic “Western frontier village, circa 1890’s style” (Los Angeles County Municipal Code 22.44.126.3).

Fences

A new inter-track fence will be installed in between tracks and extend 150 feet beyond the ends of each proposed at-grade crossing. This 4-foot high galvanized steel fence will be installed for the full length of the platforms except at the at-grade pedestrian grade crossings where the inter-track fence will break for approximately ten feet to allow for passenger thoroughfare. The inter-track fence will be consistent with Metrolink Standard Plan 2910.

Welded wire mesh fence will traverse the Metrolink right-of-way 150 feet beyond the outside ends of the at-grade passenger crossing. The welded wire mesh fence will be consistent with Metrolink Standard Plan 2911.

Plank and post “old west” corral fencing with concrete foundations, similar to the fencing in the landscaped planters on the existing platform will define landscape and other off-limit areas, similar to the existing platform. Woodcrete® concrete fencing, fencing made of reinforced concrete posts that give the appearance of crafted wood fence, will traverse the backside of the second platform (see “Detail of Woodcrete® Concrete Fencing” below)

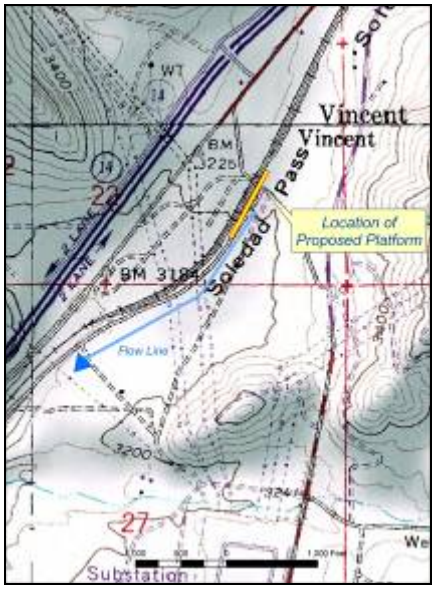


Detail of Woodcrete® Concrete Fencing

Drainage

In order to facilitate adequate drainage along the platform, the platform has been designed with a 1 percent grade sloping away from the tracks. This design directs sheet flow away from the tracks, into the existing drainage ditch (between Carson Mesa Road and the railroad embankment) that directs natural flow in the southwesterly direction (see “Direction of Natural Site Drainage” figure below).

The perimeter of all shelters will have perimeter gutters that will discharge flow to side of the platform opposite the tracks, preventing water from collecting within the passenger shelters or from dispensing onto the tracks.



Direction of Natural Site Drainage

At-Grade Pedestrian Crossings

One at-grade pedestrian crossing will be installed connecting the north end of the existing and proposed platforms. The existing trainman ramp at the ends of the existing platform will be removed and replaced by the pedestrian at-grade crossing.

All pedestrian at-grade crossing panels will installed per Metrolink's standard 2006 and 4010 to include 8 foot, 1½ inch wide crossing panels, a minimum 10-foot wide pedestrian refuge area and a minimum 40-foot long pedestrian ramp connecting the proposed platform to the pedestrian refuge area. The intertrack panel that typically joins the inner field panels will be substituted with asphalt concrete.

The at-grade crossing will be fitted with all standard signals, signs and fencing, pursuant to Metrolink standard plan 4010, to enhance the safety of passengers crossing two live tracks.

Shelters

Three new shelters will be installed, identical in size and design to the existing shelter on the north side of the existing platform currently identified with signage reading "Hotel". The three proposed shelters will have a combined capacity of 72 persons, which is consistent with the normal peak boarding count for any given train.

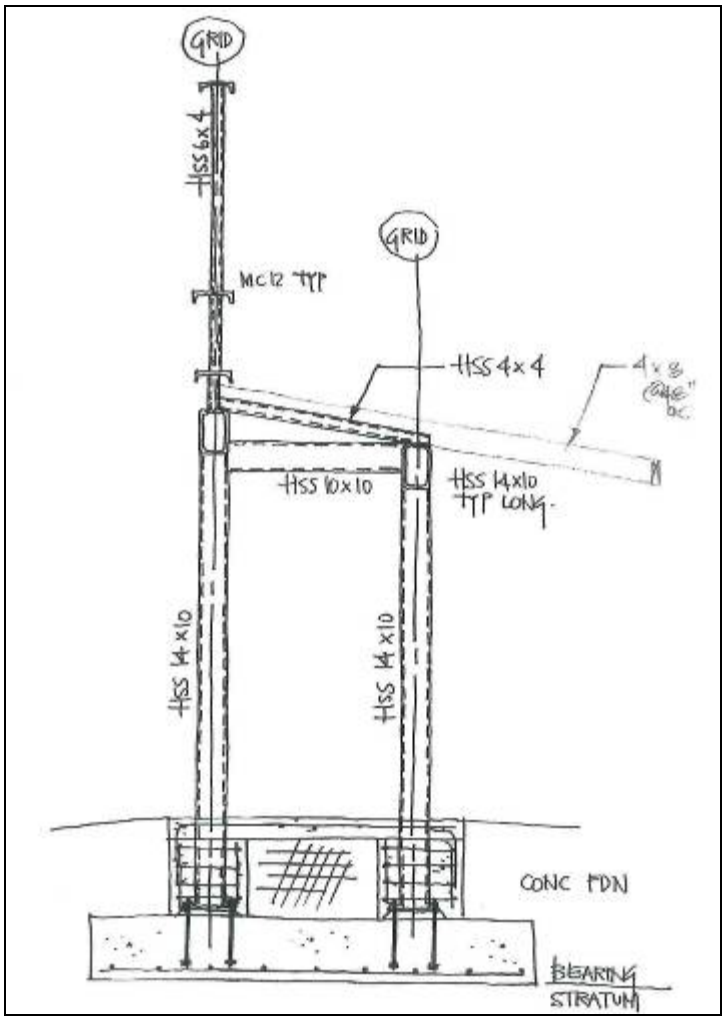
Overall shelter dimensions are approximately 12'-6" by 33'-0", providing approximately 400 square feet of covered area. Shelter design is Southwest Pueblo styling resembling a building, with plaster walls appearing worn to reveal a thin-set brick veneer. Other elements include wood framed windows, composition shingle roof, and vertical plaster fascia above the roof for signage. Seating will match the existing period style iron benches with wood slat supports at seating and back rest surfaces. Each shelter will have 3 six-foot long benches. Concrete flooring will match the existing structure, consisting of stamped and colored concrete resembling worn timbers. Refer to Site Description: Existing Shelters subsection for images of existing shelter.

The shelter will be constructed of Type V non-rated construction per the County of Los Angeles Building Code (Title 26), based on the 2007 CA Building Code, which is based on the 2006 International Building Code.

Shelter Foundations
The foundations for the shelters shall be reinforced concrete pad foundations. Pad foundations shall be tied together with grade beams. An allowable soil bearing capacity of 2,500 pounds per square foot shall be used based on the geotechnical report dated January 30, 2009. Site class is Class "D."

Foundations shall bear a minimum of 18 inches below existing grade elevations for frost protection.

Shelter Superstructure
The shelter shall be supported by a tube steel moment frame. Sizes and connections shall be similar to the existing shelters (see Preliminary Transverse Section below).



Preliminary Transverse Section of Shelter Superstructure

Electrical Power

Electric power is brought to the station at the meter located in the existing main shelter electrical room. The meter supplies a main switchboard “MS” next to the meter. The system supplies electric power to the lighting on the platform and in the parking lot and the ticket vending machines, heaters and other equipment powered by electricity. During the preliminary design, main switchboard “MS” will be opened and examined to determine if sufficient capacity is available to supply the new second platform and grade crossing warning devices. If not, the electric utility will be contacted to bring in additional capacity to the station. If there is sufficient capacity within the existing “MS” switchboard, a new electrical line from the “MS” switchboard will be provided to cross under the tracks in casing to serve the proposed platform.

Lighting

The parking lot lights and the existing platform will remain unchanged. Lighting will be added to the proposed second platform and shelters to allow passengers to use the station before sunrise and after sunset. Lighting standards will match the existing platform, shelter and area lighting standards.

Lighting standards for the proposed platform will meet Acton Community Standard District Architectural Style Guideline for a full fixture cut-off as well as Metrolink's Design Guideline of an average 4-foot-candle requirement for the platform area. The proposed platform will have lighting standards spaced at 50 feet on-center instead of following the spacing of the existing lighting fixtures of 25 feet on-center.

Data/Communication

Provision for a future ticket machine at one of the proposed shelters will be provided. A communication line will need to run from the second platform changeable message signs to the communication shelter at the north end of the station. The new data/communication lines will run in casings under the tracks to the proposed platform.

Ticket Validating Machines

Two standard Metrolink ticket validating machines will be installed near each end of the proposed platform; however, plans do not call for any ticket vending machines to be installed on the second platform as part of this proposed second platform project.

The southern-most shelter will be outfitted with a concrete footing and empty conduits leading to a pull box for a future ticket vending machine.

Utilities

A direct buried Sprint fiber optic cable and a buried AT&T fiber optic cable are located east of the tracks within the project area.

The Sprint fiber optic line is located 10 feet inside the railroad right of way, east of the existing Vincent Siding, and generally runs parallel to the siding. Sprint has a hand hole to access this line located approximately 1,030 feet south of SCRRA MP 420 (MTA MP 62.18). The Sprint fiber optic line in this area is direct buried and may need protection.

The AT&T fiber optic line is located adjacent to Vincent View Road and connects to a cabinet near the end of Vincent View Road (approximately 15 feet east of the Sprint fiber optic cable). At the cabinet, the AT&T cable is redirected north and travels parallel to and 15 east of the Sprint cable. The AT&T fiber optic cable line is buried outside the railroad right-of-way and should not conflict with the proposed platform improvements.

The Vincent Grade/Acton Station construction drawings show electrical and data/communication lines within the existing station to supply electricity to the existing platform lighting, ticket vending machines, multi-trip ticket validating machines and to provide power and lighting to the existing communication building and parking lot. No electrical lines are known to exist within the proposed project area, although electricity will need to be directed underneath the tracks from the transformer on the west side of the tracks to supply power to all proposed improvements.

A SCE utility power pole is located north of the existing parking lot between Vincent View Road and the existing parking lot. SCE utility power is brought to Vincent Station from the existing utility power pole to the station's existing main shelter electrical room. Refer to the electrical power section above for a detail description of power supply to the proposed platform from the existing main shelter electrical room.

Structural Design Criteria

Platform layout and supporting facilities will follow the criteria set forth in Section 7.0 - Stations of the SCRRA Design Criteria Manual, published in January 2003, jointly with Metrolink Engineering Standard plans, following the index revised October 31, 2006.

Codes of the local jurisdiction, namely the Acton Community Standards District will be followed, as available on the County of Los Angeles Municipal Code website at http://municipalcodes.lexisnexis.com/codes/lacounty/.

The applicable codes and standards that regulate the design of the proposed shelter buildings are as follows:

CBC	California Building Code – 2007
ASCE	American Society of Civil Engineers – Minimum Design Loads for Buildings and Other Structures – ASCE 7-05
AISC	American Institute of Steel Construction – 9th Edition Steel Construction Manual ASD
NDS	National Design Specification – 2005 by the American Wood Council
ACI	American Concrete Institute – Building Code Requirements for Structural Concrete – 318-05
TMS	The Masonry Society – Building Code Requirements for Masonry Structures – ACI 530-05/ASCE 5-05/TMS 402-05
Green Book	Standard Specifications for Public Works Construction, 2006 Edition

The design live and lateral loads that will govern the design of the proposed shelter buildings are as follows:

Live Loads:

Roof Live Loads	
Typical roof	20 PSF

Lateral Loads:

Wind Load Criteria	
Basic Wind Speed (3-second gust)	85 MPH
Exposure Category	C
Wind Importance Factor, I_W	1.0
Seismic Load Criteria	
Mapped Earthquake Spectral Response Acceleration at Short Periods, S_S	1.951g
Mapped Earthquake Spectral Response Acceleration at 1-second Period, S_1	0.690g
Site Class	D
Seismic Design Category	D
Seismic Use Group	II
Seismic Importance Factor, I_E	1.0

Design and Construction Issues

Limitations in Concept Design Data

As conceived, the second platform would be serviced by passenger trains running on the Vincent Siding track. At the location where the siding track crosses through the station, the siding track is aligned at a 00o40'00'' curve with the proposed project location on the outside of the curve and the existing station on the inside of the curve. This poses a safety issue for train operators who must be able to view the end of the passenger train before departure from the station.
Consequently, track realignment is necessary to remedy this situation. The Vincent Siding track would need to be aligned into a tangent track, entirely removing the 00o40'00'' curve that is presently in place. Although the material can likely be reused, the track section (ballast, subballast and subgrade) would need to be resurfaced to accommodate a tangent track. Costs associated with this improvement are summarized in Appendix C: Estimate of Probable Construction Cost.

Construction Phasing / Operational Restrictions

The construction of the second platform will take place under "Form B" track control wherein the SCRRA Employee In Charge (EIC) and flagman will take control of the tracks immediately adjacent to Vincent Siding for a period of time to construct the second platform. This type of track control will allow trains to continue to operate on Vincent Siding with the expressed consent from the EIC and flagman. The main track will not be impacted during the construction of the second platform.

The siding track and Main Track will need to be taken out of service for a period of eight hours for each track to install the at-grade crossing panels and intertrack fence. One weekend closure of the tracks at Vincent Station would facilitate the at-grade panel installation.

Capacity of Existing Electric Power Facilities

Further investigation is required to determine the capacity of the existing electric power facilities, and the added electric load for the lighting and power associated with the second platform. If the existing capacity is insufficient to supply the additional loads, then coordination with the Southern California Edison Company (SCE) is required to determine the contractor responsibility associated with installing additional capacity. This investigation and determination will take place during the design phase of the task.

Modifications to Existing Improvements and Facilities

The existing Vincent Station will remain largely intact throughout and after construction of the second platform. The trainman ramps at both ends of the existing platform would be the only elements of the existing platform that would need to be removed to accommodate the connection to the proposed at-grade pedestrian crossing.

Potential Utility Relocations

Preliminary utility investigations indicate the presence of a Sprint and AT&T fiber optic line within the railroad right-of-way. Although surveyors have indicated these fiber optic lines are within railroad right of way, both lines are located outside the area designated

for second platform construction. The lines may require protection to avoid conflicts during construction of the second platform; however, they will likely not require relocation.

Although initial inspection of the station shows no SCE electrical lines within the railroad right-of-way underneath or near the Vincent Station tracks, several overhead power lines are visible south of the station, beyond the area designated for second platform construction. The precise location of these SCE utility facilities and any other utility lines that may periodically encroach onto railroad right-of-way will be confirmed with official utility company correspondence that has been initiated in the concept design phase and completed in the preliminary engineering phase of the project.

Probable Permits Required

The Acton Town Council will review the design of the platform and its shelters, the lighting design and Woodcrete® concrete fencing (reinforced concrete posts that appear to be crafted wood posts), as proposed for the backside of the platform, to ensure conformity with the District of Acton Community Design Standards. Any construction and grading permitting will be issued by the County of Los Angeles Building and Safety Departments and not by the Town Council because they do not have permitting jurisdiction.

The County of Los Angeles is the ultimate owner of the proposed platform and provided that all work to construct the second platform project remains in the Southern California Regional Rail Authority right-of-way, the design plans will not need to be signed by the County of Los Angeles. However, the design plans will still need to be reviewed by the County of Los Angeles for environmental conformity as well as to obtain official grading and construction permits. With respect to environmental conformity, the project is anticipated to make no adverse impact onto any sensitive environmental areas and will likely result in an approved Categorical Exemption to be filed with the County of Los Angeles Regional Planning department.

Right-of-Way Constrains or Requirements

The Southern California Regional Rail Authority right-of-way is constrained to 100 feet offset in either direction of the existing mainline. The proposed second platform project will be contained within the existing Southern California Regional Rail Authority right-of-way; no additional right-of-way will be required to construct the second platform project.

Construction Cost Estimate

The total estimated project cost as detailed in the attached Engineer's Preliminary Estimate is summarized below (see Estimate of Probable Construction Cost, Appendix C). The cost of the project may be revised by a number of unanticipated considerations. The following considerations have been accounted for in the project cost estimate:

The project cost estimates are as follows:

- Administrative: $152,100
- Site Work: $31,000
- Railroad Work: $760,000
- Grade Crossing: $571,000
- Cast-in-Place Concrete: $673,000
- Architectural: $207,000
- Electrical: $39,000

The total project cost including design, design support, materials, construction, project management, construction management, flagging, agency costs and contingencies is $6,151,355. The estimate is in 2011 first quarter dollars.

Quantities used in the estimate are approximate and based on the conceptual sketches. The preliminary cost estimate is supported by a concept-level Construction Cost Estimate and a Materials List, which were developed utilizing unit prices from recent SCRRA projects and other sources. Where allowances, lump sum estimates or percent-of-construction costs were included, those are so indicated.

Appendices

Appendix A – Track Chart

Appendix B – Drawings

Appendix C – Engineer's Estimate of Probable Construction Cost

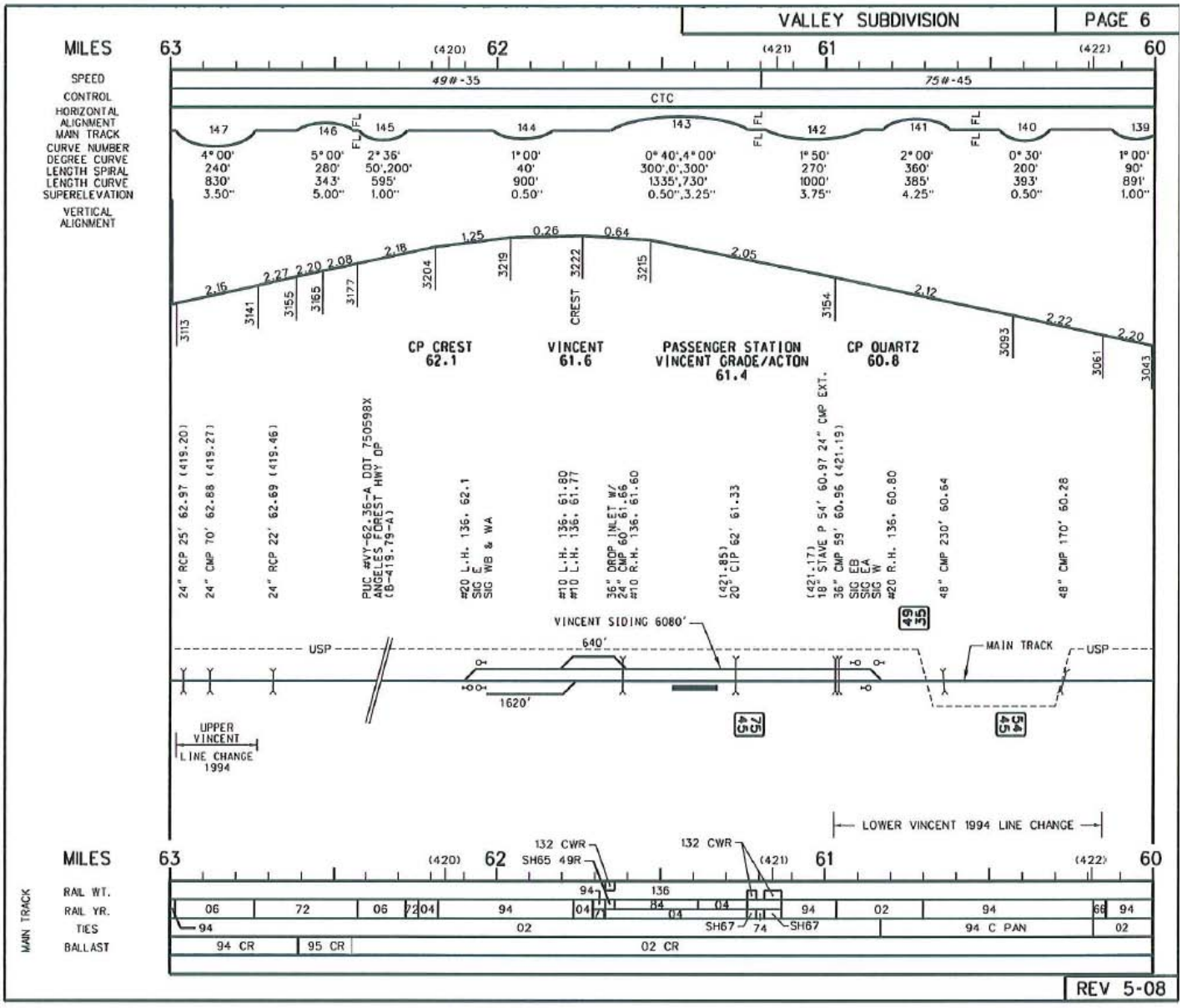
Appendix D – Site Photos

Appendix E – Right of Way Data

Appendix F – Utilities Data

Appendix G – Preliminary Geology and Geotechnical Evaluation (Group Delta)

Appendix A – Track Chart

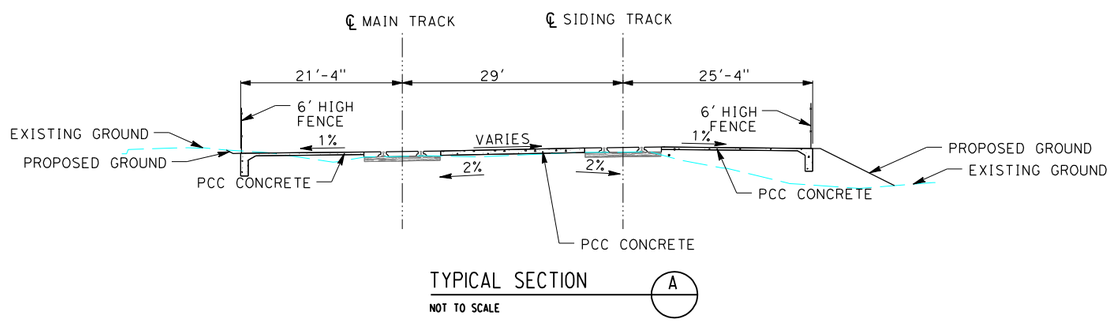


Appendix B – Drawings

1. Second Platform Site Plan (dated 4/30/2009)
2. Second Platform Shelter Options (dated 2/20/2009)
3. Curved Platform Sight Distance (dated 4/30/2009)
4. Siding Track Realignment Plan – 3 sheets (dated 4/30/2009)

TO LOS ANGELES
RR EAST

TO LANCASTER
RR WEST



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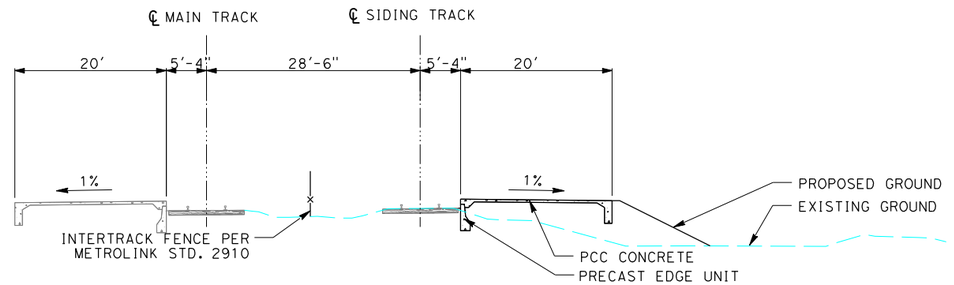

TYPICAL SECTION B
NOT TO SCALE

50 25 0 50
SCALE

LEGEND
FENCE
HANDRAIL

HDR Engineering, Inc.
ONE COMPANY *Many Solutions*
3230 El Camino Real, Suite 200
Irvine, CA 92602

SCRRA
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
COMMUTER RAIL PROJECT

VINCENT GRADE/ACTON STATION
SECOND PLATFORM PROJECT

SCALE: 1"=50'
DATE: 04-30-2009

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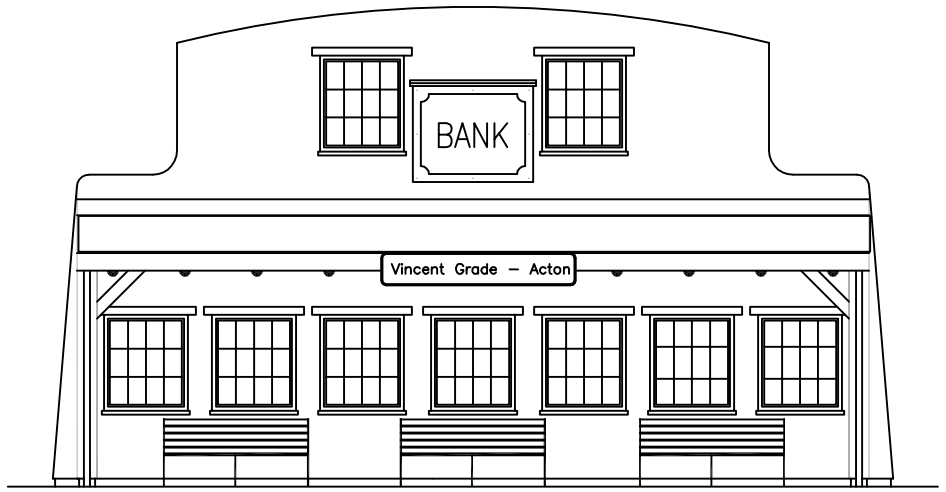

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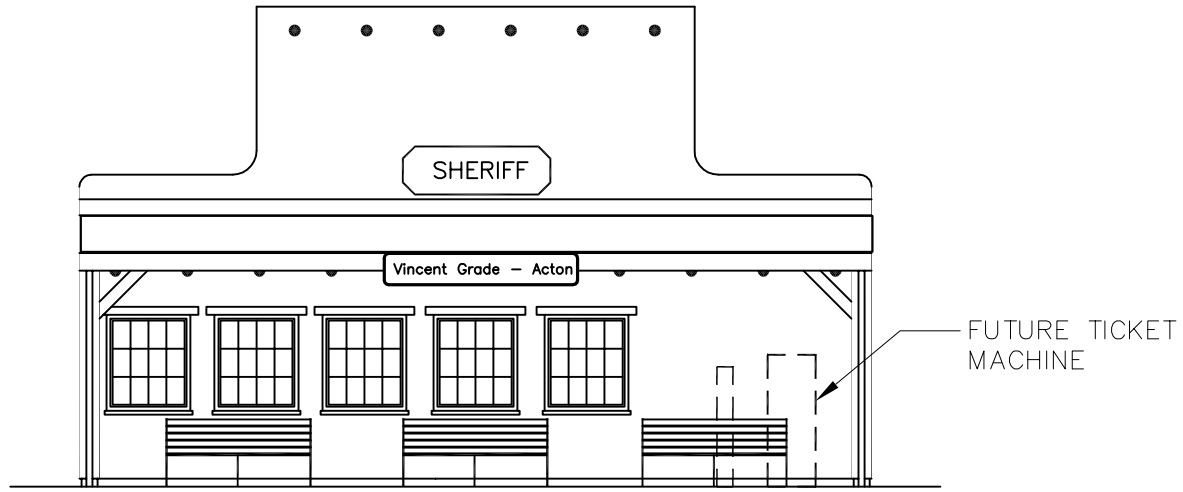

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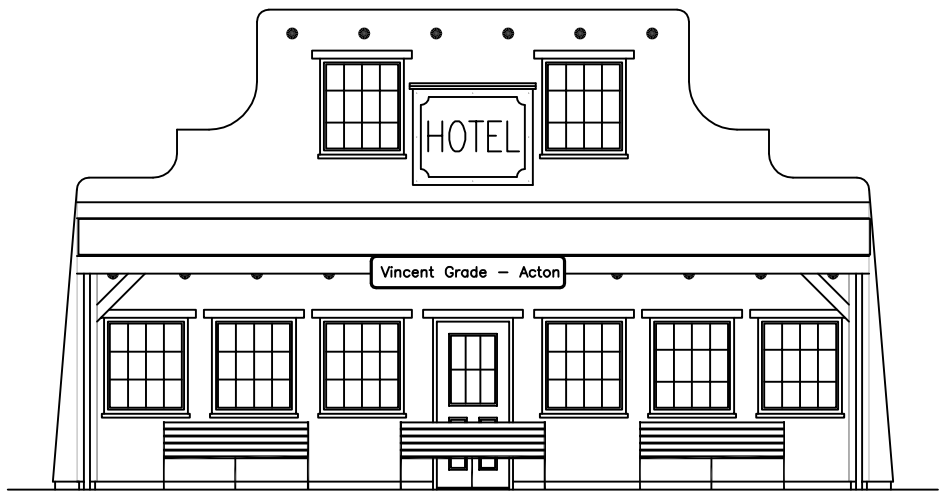
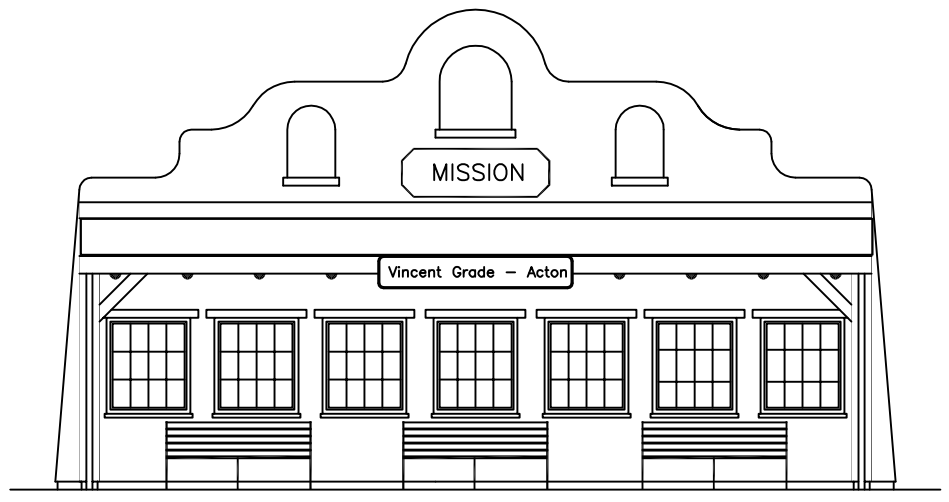


EXISTING SHELTER "HOTEL"



DESIGN CONCEPT "C"

0 4' 8' 16'

SCALE

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SCRRA

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
COMMUTER RAIL PROJECT

STATION SHELTER OPTIONS
TRACK ELEVATION

SCALE: 1/8"=1'-0"
DATE: 2-20-09

CONCEPTUAL NOT FOR CONSTRUCTION

HDR Engineering, Inc. ONE COMPANY *Many Solutions* 3230 El Camino Real, Suite 200 Irvine, CA 92602	SCRRA SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY COMMUTER RAIL PROJECT	VINCENT GRADE-ACTON STATION SECOND PLATFORM PROJECT CURVED PLATFORM SIGHT DISTANCE	SCALE: DATE:

...\Exhibit-Curved Platform.dgn 4/29/2009 5:20:30 PM

CONCEPTUAL NOT FOR CONSTRUCTION

HDR Engineering, Inc. ONE COMPANY *Many Solutions* 3230 El Camino Real, Suite 200 Irvine, CA 92602	SCRRA SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY COMMUTER RAIL PROJECT	VINCENT GRADE-ACTON STATION SECOND PLATFORM PROJECT TRACK REALIGNMENT - SHEET 1 OF 3	SCALE: 1" = 100' DATE: 04-30-09

CONCEPTUAL NOT FOR CONSTRUCTION

HDR Engineering, Inc. ONE COMPANY *Many Solutions* 3230 El Camino Real, Suite 200 Irvine, CA 92602	SCRRA SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY COMMUTER RAIL PROJECT	VINCENT GRADE-ACTON STATION SECOND PLATFORM PROJECT TRACK REALIGNMENT - SHEET 2 OF 3	SCALE: 1" = 100' DATE: 04-30-09

CONCEPTUAL NOT FOR CONSTRUCTION

HDR Engineering, Inc. — ONE COMPANY *Many Solutions* — 2230 El Camino Real, Suite 200 Irvine, CA 92602

SCRRA — SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
COMMUTER RAIL PROJECT

VINCENT GRADE-ACTON STATION
SECOND PLATFORM PROJECT
TRACK REALIGNMENT - SHEET 3 OF 3

SCALE: 1" = 100'
DATE: 04-30-09

Appendix C – Estimate of Probable Construction Cost

Total estimated engineer's estimate of probable construction cost as detailed on the attached Engineer's Preliminary Estimate of Probable Construction Cost is approximately $6,151,355, assuming start of construction in 2011.

Project contingency is based only on construction costs.

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

ENGINEER'S ESTIMATE
Vincent Grade/Acton Station Second Platform
Acton, California
Concept Design
April 29, 2009

ITEM NO.	DESCRIPTION		QUANTITY	UNIT COST	TOTAL COST	NOTES
01000	ADMINISTRATIVE	7%			$ 152,100	see detail
02000	SITE WORK				$ 31,000	see detail
02450	RAILROAD WORK				$ 760,000	see detail
02459	GRADE CROSSINGS				$ 571,000	see detail
03300	CAST-IN-PLACE CONCRETE				$ 673,000	see detail
06000	ARCHITECTURAL				$ 207,000	see detail
16000	ELECTRICAL				$ 39,000	see detail
	CONSTRUCTION CONTINGENCY	20%			$ 486,620	percent of construction
	SUB-TOTAL: CONSTRUCTION COSTS				$ 2,919,720	
	CIVIL / STRUCTURAL ENGINEERING					
	GEOTECHNICAL INVESTIGATION				$ 50,000	**place holder**
	SURVEY / AERIAL MAPPING				$ 50,000	**place holder**
	DESIGN & DESIGN SUPPORT	10%			$ 291,972	
	SIGNALS				$ 1,000,000	**place holder**
	PROGRAMMING				$ -	**not included in estimate**
	DESIGN & DESIGN SUPPORT				$ -	**not included in estimate**
	CONSTRUCTION				$ -	**not included in estimate**
	CONSTRUCTION MANAGEMENT	10%			$ 291,972	percent of construction
	AGENCY COSTS	6%			$ 175,183	percent of construction
	PROJECT MANAGEMENT	2%			$ 58,394	percent of construction
	FLAGGING	5%			$ 145,986	percent of construction
	PERMITTING / CITY REQUIREMENTS	1%			$ 29,197	percent of construction
	ENVIRONMENTAL MITIGATION				$ -	
	OWNER-PROVIDED MATERIALS				$ -	contractor supplies all materials
	SUB-TOTAL: ENGINEERING & AGENCY COSTS				$ 2,092,705	
	PROJECT CONTINGENCY	25%			$ 729,930	Percent of Construction costs only. Does not include contingency on Engineering & Agency costs.
	INFLATION RATE	3.50%	2	years	$ 409,000	all costs escalated to assume a 2011 start of construction
TOTAL:					**$ 6,151,355**	

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

CONSTRUCTION COST ESTIMATE
Vincent Grade/Acton Station Second Platform
Acton, California
Concept Design
April 29, 2009

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
01000	**ADMINISTRATIVE**					
01505.01	Mobilization	1	LS	$ 114,075	$ 114,075.00	7.5% of construction
01505.02	Demobilization	1	LS	$ 38,025	$ 38,025.00	2.5% of construction
				ADMINISTRATIVE SUBTOTAL	**$ 152,100.00**	
02000	**SITE WORK**					
02050	Demolition and Removal	105	SF	$ 10	$ 2,000.00	2 PCC Trainman Ramps
	Site Clearing	0.28	AC	$ 5,000	$ 2,000.00	Light brush
	Rough Grade	1.00	LS	$ 15,000	$ 15,000.00	
02453	Ballast fill between tracks	7	CY	$ 100	$ 1,000.00	Price from recent similar project
02479	Railroad Signage- Station Identification	1	LS	$ 10,000	$ 10,000.00	Price from recent similar project
02513	Asphalt concrete (Replaces intertrack panel between double tracks)	6	TON	$ 80	$ 1,000.00	Price from recent similar project
				SITE WORK SUBTOTAL	**$ 31,000.00**	
02450	**RAILROAD WORK**					
	Remove and Reinstall Turnouts - Setout Track	2	EA	$ 90,000	$ 180,000.00	Price from recent similar project
	Realign Siding - Existing Track	4,500	TF	$ 100	$ 450,000.00	Price from recent similar project
	Setout Track - Secondhand 136 lb. Rail	650	TF	$ 200	$ 130,000.00	Price from recent similar project
				RAILROAD WORK TOTAL	**$ 760,000.00**	
02459	**GRADE CROSSINGS**					
	Signals	1	EA	$ 500,000	$ 500,000.00	Price per John Campbell
	Panels	20	TF	$ 2,000	$ 40,000.00	Price from recent similar project
	Gravel Blanket- Rock (Assume 6-in depth)	347	SF	$ 5	$ 2,000.00	Price from recent similar project
	Concrete	25	CY	$ 1,125	$ 29,000.00	Price from recent similar project
				GRADE CROSSINGS SUBTOTAL	**$ 571,000.00**	
03300	**CAST-IN-PLACE CONCRETE**				$ -	
	Platform	200	CY	$ 1,125	$ 225,000.00	Price from recent similar project
	Platform Edge Unit (Pre-Cast)	70	CY	$ 1,125	$ 79,000.00	Price from recent similar project
	Mini-High Ramp	3	CY	$ 1,125	$ 4,000.00	Price from recent similar project
	Shelter Foundations (Assume 3-ft. depth)	140	CY	$ 1,575	$ 221,000.00	Price from recent similar project
	Structural Steel	24,000	LB	$ 6	$ 144,000.00	Price from recent similar project
				CAST-IN-PLACE CONCRETE SUBTOTAL	**$ 673,000.00**	
06000	**ARCHITECTURAL**					
	Platform Striping	600	LF	$ 6	$ 4,000.00	Price from recent similar project
	Tactile Warning Tile	600	LF	$ 62	$ 38,000.00	Price from recent similar project
	Intertrack Fencing (Assume 4-ft. height)	1,027	LF	$ 55	$ 57,000.00	Price from recent similar project
	Right-of-Way Fencing (Assume 6-ft. height)	915	LF	$ 30	$ 28,000.00	Price from recent similar project
	Right-of-Way Gates in Fencing (Each End of Platform)	2	EA	$ 141	$ 1,000.00	Price from recent similar project
	Handrails (For both existing and proposed mini-high ramps)	100	LF	$ 140	$ 14,000.00	Price from recent similar project
	Benches	10	EA	$ 1,000	$ 10,000.00	Price from recent similar project
	Windows	30	EA	$ 1,000	$ 30,000.00	Price from recent similar project
	Shelter Plastering	1	LS	$ 10,000	$ 10,000.00	Price from recent similar project
	Shelter Wall Preparations	1	LS	$ 10,000	$ 10,000.00	Price from recent similar project
	Shelter Roofs	1	LS	$ 5,000	$ 5,000.00	Price from recent similar project
				ARCHITECTURAL SUBTOTAL	**$ 207,000.00**	
16000	**ELECTRICAL**					
	Decorative Platform Lighting	12	EA	$ 2,000	$ 24,000.00	Price from recent similar project
	Electrical Work	1	LS	$ 15,000	$ 15,000.00	Price from recent similar project
				ELECTRICAL SUBTOTAL	**$ 39,000.00**	
SUBTOTAL CONSTRUCTION COST:					**$ 2,433,100.00**	
	CONSTRUCTION CONTINGENCY (20%)	1	LS	$ 486,620	**$ 486,620.00**	20% of construction
TOTAL CONSTRUCTION COST:					**$ 2,919,720.00**	

Appendix D – Site Photos

The following are Site Photographs in addition to the photos included within the report.

Southwest facing view (view toward LA Union Station)
Pictured: (Left to Right) Subject Site, Vincent Siding, Mainline Track, Existing Platform

Northeast facing view (view toward Lancaster)
Pictured: (Left to Right) Existing Platform, Mainline Track, Vincent Siding, Subject Site

View of Existing Vincent Station Building from Subject Site (Center Building)
Pictured: (Front to Back) Subject Site, Vincent Siding, Existing Station Building

View of Subject Site, facing southwest

View of Subject Site, facing northeast

View of Subject Site, facing southwest

Appendix E – Right of Way Data

1. Assessors Parcel Map: APN 3056-04
2. Adjacent Vacant land- “SCE Property”
    a. Preliminary Report
    b. Legal Description
    c. Vesting Deed
    d. Item # 2: “Road Deed”
3. Adjacent Vacant land- “Watt Property”
    e. Preliminary Report
    f. Legal Description
    g. Vesting Deed
    h. Item #2: “Road Deed”
    i. Item #3: “Certificate of Compliance/Legal Description”

Please note: Please contact Gerard Reminiskey at Gerard.Reminiskey@hdrinc.com or (951) 320-7326 to receive a full copy of Appendix E.

Appendix F – Utilities Data

1. Pothole Location Map (dated 12/24/2008; modified 3/3/2009)
2. Pothole Report by SAF-r-DIG (dated 1/22/2009)

Utility Matrix

Owner	Description	Type	Location
Sprint	Communication	Fiber (Direct Bury)	Parallel to tracks; East of Vincent Siding; 10-ft west of SCRRA ROW
AT&T	Communication	Fiber	Parallel to tracks; East of Vincent Siding; 5-ft west of SCRRA ROW and north of Vincent View Road
Southern California Edison	Electrical		Out of Project Area; south of Vincent Grade/Acton Station

Pothole Summary

Pothole No.	Distance from Surface (ft)	Utility Size (in)	Utility Type	Utility Structure	Utility Material	Utility Owner
1	To Top: 4.60 To Bottom: 4.65	0.5	Fiber Optic	Duct Bank	PVC	Sprint
2	To Top: 3.00 To Bottom: 3.04	0.5	Fiber Optic	Duct Bank	PVC	Sprint
3	To Top: 3.75 To Bottom: 3.84	0.5	Fiber Optic	Duct Bank	PVC	Sprint
4	To Top: 3.70 To Bottom: 3.87	2.0	Fiber Optic	Duct Bank	PVC	AT&T

Please note: Please contact Gerard Reminiskey at Gerard.Reminiskey@hdrinc.com or (951) 320-7326 to receive a full copy of Appendix F.

Appendix G – Preliminary Geology and Geotechnical Evaluation

UPDATE GEOTECHNICAL ENGINEERING REPORT
METROLINK VINCENT GRADE/ ACTON STATION EXPANSION
VINCENT GRADE/ ACTON STATION
730 WEST SIERRA HIGHWAY
ACTON, LOS ANGELES COUNTY, CALIFORNIA

Prepared for

HDR Engineering, Inc.
2280 Market Street
Suite #200
Riverside, CA 92501

GROUP DELTA CONSULTANTS

Prepared by

GROUP DELTA CONSULTANTS, INC.
370 Amapola Avenue, Suite 212
Torrance, CA 90501

Project No. L-837-02
January 30, 2009

GROUP DELTA CONSULTANTS

Geotechnical Engineering

Geology

HydroGeology

Earthquake Engineering

Materials Testing & Inspection

Forensic Services

January 30, 2009

HDR Engineering, Inc.
2280 Market Street
Suite #100
Riverside, CA 92501

Attention: Mr. Gerard Reminskey, Project Manager GDC No. L-837-02

Subject: Update Geotechnical Engineering Report
Metrolink Vincent Grade/Acton Station Expansion
Vincent Grade/ Acton Station
730 West Sierra Highway
Acton, Los Angeles County, California

Mr. Gerard Reminskey:

Group Delta Consultants Inc. (GDC) is pleased to submit this Update Geotechnical Engineering Report for the Vincent Grade/ Acton Station expansion project. The proposed station expansion project includes a new station platform and passenger drop-off area along the south side of the Metrolink (Southern California Rail Road Authority) right-of-way, opposite the existing Vincent Grade/ Acton Station facility.

We appreciate the opportunity to provide geotechnical and geologic services for this project. If you have any questions pertaining to our report, or if we can be of further service, please do not hesitate to contact us.

Respectfully submitted,
GROUP DELTA CONSULTANTS, INC.

Joseph D. Barr III, PG 8480/RCE 70708
Project Engineer

REGISTERED PROFESSIONAL ENGINEER
JOSEPH DANIEL BARR III
No. C 70708
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

Steve H. Kolthoff, CEG 1965
Associate Geologist, exp. 8/31/09

PROFESSIONAL GEOLOGIST
STEVEN HARM KOLTHOFF
NO. 1965
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Distribution: (8) Addressee

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VINCENT GRADE/ ACTON STATION
730 WEST SIERRA HIGHWAY
ACTON, LOS ANGELES COUNTY, CALIFORNIA

1.0 INTRODUCTION

GDC's understanding of the proposed project is based on information provided in the project RFP from Metrolink (SCRRA) for contract E737C-08, and discussions with HDR Engineering, Inc. The Vincent Grade/ Acton Station Expansion Project includes a new station platform, passenger drop-off area, pavements and landscape areas south of the existing Vincent Grade/Acton Station facility and along the SCRRA right-of-way.

1.1 Project Description

The location of the existing Vincent Grade/Acton Station is shown in the enclosed Vicinity Map, Figure 1. The locations of the proposed new passenger platform and appurtenant improvements are shown on the enclosed Exploration Location Plan, Figure 2. The project site is located southeast of the existing Vincent Grade/ Acton Station along the south side of the SCRRA right-of-way, and adjacent to the unimproved Carson Mesa Road, Acton, Los Angeles County, California.

The proposed improvements for this project are anticipated to be a new passenger platform with an open-air passenger shelter, passenger pick-up/drop-off area, and associated pavement and landscape areas. Foundation loads for the new platform are not known; however, maximum column loads are anticipated to be on the order of 100 kips. Maximum wall loads are expected to range up to about 2 kips per foot.

1.2 Purpose and Scope of Work

The purpose of our investigation is to provide geotechnical engineering recommendations for the site preparation, grading and earthwork, and the design and construction of the planned improvements, including: the passenger platform, appurtenant structures, slabs, and pavements.

The **GDC** authorized scope of work for the update geotechnical investigation included:

- Review of available published geologic maps, published geologic/geotechnical reports and data, and review of the previous geotechnical consultants' work and/or reports provided by Los Angeles County, Department of Public Works, HDR, Inc., and/or SCRRA.

- Limited field explorations consisting of excavating 2 test pits, and sampling of near surface soils for geotechnical engineering testing and analyses.

- Performing limited laboratory testing to characterize and evaluate the engineering properties of the soils encountered.

- Performing engineering analyses of the field data, laboratory results, and review of previous geotechnical consultants' work to develop geotechnical recommendations for the planned construction

- Preparation of this Update Geotechnical Engineering Report including recommendations on site grading and excavations, foundation bearing capacity and lateral resistance, seismic design considerations for the proposed new passenger platform and auxiliary structures, and access roadway/ parking area pavement design.

1.3 Research- Prior Geotechnical Work

The Los Angeles County, Department of Public Works, Materials Engineering Division has previously prepared the referenced geotechnical report (LACoDPW, 1998) covering the existing Vincent Grade/ Acton Station. The referenced geotechnical report provided recommendations for the construction of the existing station and parking area. The referenced LACoDPW geotechnical report (1998) was reviewed prior to starting work on this project, and is enclosed as Appendix D. **GDC** has reviewed, concurs with, and accepts the previous geotechnical consultant's work as a part of the work performed on this project.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

The shallow subsurface conditions at the site were investigated by excavating 2 test pits to depths of about 2 feet. Access to the project site was limited due to railroad activities. Representative bulk samples of the near-surface soils encountered were taken from each of the test pits for laboratory testing and analyses. The explorations were performed under the continuous technical supervision of our field geologist, who also maintained detailed logs of the soils encountered, classified the materials, and assisted in obtaining soil samples. Details of the field exploration program, including copies of the test pit logs, are included in Appendix A.

2.2 Laboratory Testing Program

The soil samples obtained from the test pits were taken to our laboratory for further visual examination and laboratory testing. Laboratory test results assist in classifying samples, for evaluating their physical properties and engineering characteristics, and in correlating soils across the site. Details of the laboratory testing program, including test results, are included in Appendix B.

3.0 GEOLOGY AND SEISMIC SETTING

3.1 Geography

The project site is located in the Soledad Pass on the northern margin of the San Gabriel Mountains, Los Angeles County, California. The topography is within the high desert terrain of Antelope Valley. This area consists of elevated older alluvial fan deposits surrounded by rolling foothills, and steep mountains. The mountain canyons and draped alluvial fans are deeply incised by streams and gullies, with drainage trending toward the main channel of the Santa Clara River.

3.2 Regional Geology

Regionally, the project site is within the northeastern portion of the Transverse Ranges Geomorphic Province of California. The Transverse Ranges are characterized by roughly east-west trending mountains with intervening sediment floored valleys. The northern and southern boundaries of the Transverse Ranges are formed by reverse and/or strike-slip fault scarps. The convergent deformational features of the Transverse Ranges are a result of the north-south shortening due to the "Big Bend" area on the San Andreas Fault; resulting in local and regional transpression, reverse and strike-slip faulting, and uplift of the surrounding mountains.

3.3 Local Geology

The project site is situated in a local alluvial valley, south of the Soledad Pass on the northern margin of the eastern San Gabriel Mountains. The project site is underlain by minor recent alluvial soils (Holocene age) and older alluvial terrace soils (Pleistocene age); below which Mesozoic age granitic bedrock is present. The depth of alluvium at the site is estimated to be in excess of 200 feet.

No known faults are mapped as crossing the project site, and The California Geological Survey (CGS) has not mapped the project site within an Earthquake Fault Hazard Zone. However, the project site has been mapped approximately 3.3 miles southwest of the trace of the San Andreas Fault (Dibblee, 2001). The San Andreas Fault is considered an active (fault movement within the last 11,000 years, per the Alquist-Priolo Act of 1972) right-lateral (dextral) strike-slip fault, which constitutes the present plate tectonic boundary between the North American Plate and Pacific Plate.

3.4 Seismic Setting

The project site is located within the seismically active area of southern California, and there is the potential for the site to experience strong ground shaking from active local and regional faults. The following faults contribute at least 1% or greater contribution to the seismicity of the site. The United States Geological Survey (USGS) has located the project site within approximately 3.5 miles of the San Andreas Fault. The USGS estimates the San Andreas Fault to have the potential to generate a maximum credible earthquake with a Moment Magnitude, M_W ranging from 7.3 to 8.1. The results of the Seismic Hazard Deaggregation (http://eqint.cr.usgs.gov/deaggint/2002/index.php) indicate that the San Andreas Fault is the controlling fault for the site and contributes 37.5% to the principal source of seismicity.

Other faults within the vicinity of the project site include the Sierra Madre, San Gabriel, Clamshell-Sawpit, and Verdugo Faults which are located between about 13 to 20 miles from the site. These faults have the potential to generate a maximum credible earthquake with a moment magnitude, M_W, ranging between 6.7 and 7.2.

4.0 SITE CONDITIONS

4.1 Surface Conditions

The project site consists of vacant, generally unimproved land along the south side of the existing SCRRA right-of-way, southeast of the existing Vincent Grade/ Acton Station facility. The unimproved Carson Mesa Road runs through the southeastern portion of the project site. The existing grades at the site gently slope to the southwest at a gradient greater 20H:1V. Locally, graded slopes, comprised of railroad fill and ballast, have been constructed along the main line of the SCRRA right-of-way. Railway fill and ballast constructed slopes vary in height to a maximum of about 3 feet with gradients ranging from about 1.5H:1V to 2H:1V. The elevation change at the project site is approximately 3 to 5 feet, descending from northeast to southwest. Surface drainage is by sheet flow across the project site, and drains into the Santa Clara River basin to the south and southwest.

4.2 Subsurface Conditions

The shallow subsurface conditions at the project site were directly observed in the exploration test pits. The subsurface conditions at depth are inferred from the referenced geotechnical report by LACoDPW (1998).

The project site is underlain by a thin (approximately 6 inches in thickness) veneer of recent colluvial soil overlying dense, hard Pleistocene-age older alluvial soils. Portions of the project site are also underlain by existing fill materials, including gravels, railroad ballast, and possibly debris. Existing fill was not encountered during the field exploration; however, it should be anticipated that existing fill could be present anywhere on the project site. The recent colluvial soil consists of silty sand with trace clay that is generally brown to tan-brown, slightly moist to dry, and medium dense to dense. The recent colluvial soil was deposited by outwash and reworking of the older alluvial soils, derived from the bedrock and older alluvial deposits draping the local ridges of the San Gabriel Mountains.

The Pliestocene-age older alluvial soils underlying the site consist of inter-fingered layers of silty sand, sand, and clayey sand. The older alluvial soils are generally orange-brown to red-brown and tan-brown, slightly moist to dry, and dense. As stated in the referenced geotechnical report (LACoDPW, 1998) the older alluvial soils extend to greater than the total depth of the explorations, with a maximum exploration depth of 50 feet below ground surface. As inferred from published geologic maps (Dibblee, 2001), the total depth of older alluvial soils at the project site is estimated to be in excess of 200 feet.

4.3 Ground Water

Ground water was not encountered in the test pits to a maximum depth of 2 feet below existing grade. Ground water was also not encountered in the previous consultant's geotechnical borings, to a depth of 50 below existing grade (LACoDPW, 1998). The California Geologic Survey (CGS), has published the following reports: *Seismic Hazard Evaluation of the Pacifico Mountain 7.5-Minute Quadrangle, Los Angels County, California* ***SHZR 104*** (2003, 2005a) and *Seismic Hazard Evaluation of the Palmdale 7.5-Minute Quadrangle Los Angels County, California* ***SHZR 105*** (2003, 2005b), which provide an evaluation of the historical shallow ground water levels within the Pacifico Mountain and Palmdale Quadrangles in the vicinity of and including the project site. The ground water contour map in the reports indicate the depth to "the historically highest shallow ground water in perched, semi-perched, and other water table settings." Due to the presence of relatively shallow bedrock in the vicinity of the project site, the depth to historic highest groundwater is not clearly depicted in Plates 1.2 of the ***SHZR's 104*** and ***105***. From the text of the SHZR's, the depth to the historic highest groundwater table in the Soledad Pass is inferred to be in excess of 40 feet below the ground surface. Therefore, from review of the referenced LACoDPW (1998) geotechnical report and the CGS SHZR's covering the vicinity of the project site, localized shallow perched water and/or saturated alluvial soil at the project site are not anticipated.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 General

Based on the findings of the field explorations, engineering analyses of the soil samples taken, and review of the previous consultant's work, it is the opinion of this firm that the project site is suitable for the proposed construction from a geotechnical standpoint. The proposed new rail passenger platform, with open-air passenger shelter may be constructed approximately at grade. The proposed new passenger drop-off area, improvements to Carson Mesa Road, and landscaping area improvements are also planned to be constructed at-grade. Also, since the proposed project is located within an active seismic region and in close proximity to a major seismic source, the San Andreas Fault, the project should be constructed in accordance with the 2007 California Building Code (Code) and the seismic ground motions provided in section 6.1, of this report.

At this time, no basements or subterranean levels, no retaining walls, no slopes: graded fill, cut, or natural, no storm-water infiltration system, and no private sewage disposal system are planned for the project. Should any of these aforementioned improvements be considered or incorporated into the final project plans, the project geotechnical consultant, **GDC**, should evaluate the proposed improvements from a geotechnical engineering standpoint, and provide geotechnical recommendations for construction.

The proposed new passenger platform may be supported on conventional shallow foundations bearing into the either competent, dense older alluvial soil, or new compacted structural fill, and may be designed per the recommendations given in section 5.5 Shallow Foundations of this report. Following demolition of any existing structures and/or other improvements, site grading should include the removal and replacement of any existing, uncertified fill and loose native soils with properly compacted, engineered fill. In access roadway/ parking areas and areas to receive hardscape and/or pavement, the removal and recompaction should extend to a minimum depth of 12 inches below proposed grade.

5.2 Removals

Prior to the start of grading, demolition will be required to remove any existing improvements, including but not limited to: fences, slabs, foundations, pavements, tanks, and existing utilities. The civil engineer should identify the presence and location of all existing utilities on the property. Precautions should be taken to remove, relocate or protect existing utilities, as appropriate.

Also prior to the start of grading, any vegetation and topsoil should be stripped. The vegetation should be removed from the site. The topsoil may be stockpiled and reused in planned landscape areas. In addition, trees and shrubs should be cleared, so that no roots larger than ½-inch in diameter remain. Any soils loosened during clearing should also be removed.

Artificial fill materials were not encountered during the field exploration; however, it should be anticipated that existing fill could be present anywhere on the site and could locally extend deeper than 3 feet. Any and all existing fill should be considered to be uncertified and should be removed and replaced with properly compacted fill. In addition, demolition activities may disturb near surface soils, which will also require removal and re-compaction.

Any existing fill materials encountered in areas of proposed foundations should be overexcavated to expose competent older alluvial soils and recompacted as structural fill to a minimum depth of 2 feet below the bottom of the proposed foundations. All overexcavation removals in proposed foundation areas should extend a minimum of 2 feet beyond the foundations of the proposed platform, or a distance equal to the depth of excavation, whichever is greater. Alternatively, foundations may be deepened to extend through existing fill materials and bear into dense, competent older alluvial soils.

Pavement areas should be overexcavated to a minimum depth of 12 inches below the top of the pavement. The actual limits for removals should be determined by the project geotechnical engineer, when final grades are established for the building pad. In addition, the project geotechnical engineer should observe and evaluate removals during grading, based on the actual conditions encountered.

5.3 Grading and Earthwork

All grading and earthwork should be performed in accordance with the 2007 California Building Code, Los Angeles County Building Code, Metrolink engineering specifications, and GDC recommendations. General Guidelines for grading and earthwork are included herein.

1. The grading contractor is responsible for notifying the project geotechnical engineer of a pre-grading meeting prior to the start of grading operations and anytime that the operations are resumed after an interruption.

2. Prior to the start of earthwork the existing improvements will require demolition. Existing utilities should be removed, relocated or protected, as appropriate.

3. The project area should be stripped and cleared of any vegetation. In addition, any uncertified existing fill should be excavated. Any soils disturbed during demolition activities should also be removed. Removals and/ or over-excavations should be performed as stated in section 5.2 Removals, of this report. The actual limits for all removals should be reviewed by the project geotechnical engineer when final elevations and grades are established and should also be reviewed during grading, based on the actual conditions encountered.

4. Vertical excavations up to 5 feet in height may be performed in older alluvial soils. Temporary excavations greater than 5 feet in height should be sloped at a gradient of 1H:1V or flatter. Temporary shoring will be required in areas where any planned temporary excavation will remove lateral support from any existing railroad right-of-way, structure, street, or other improvement.

5. The bottoms of the completed excavations should be observed by the project geotechnical engineer, while the excavations are proofrolled with loaded equipment. Any loose or yielding soils should be overexcavated and recompacted to the limits determined by the project geotechnical engineer.

6. The exposed bottoms of excavations for removals and pads should then be scarified to a depth of 6-inches, moisture conditioned to the optimum moisture content, and compacted to at least 90% relative compaction as determined by ASTM D 1557-07. If the exposed bottom is clayey, moisture conditioning should be to 2 percent wet of optimum.

7. Any fill placed to construct the proposed project: under foundations and/or structures, pavements, any new fill slopes, and any backfill placed adjacent to buried walls is defined as "structural fill." All structural fill should consist of predominantly sandy soils, and should be free of expansive clay, rock greater than 8 inches in maximum size, debris and other deleterious materials. All structural fill should be compacted to at least 90% of the maximum dry density determined by ASTM D 1557-07. Fill placed in non-structural and landscape areas should be compacted to at least 90% of the maximum dry density.

8. Compacted fill slopes up to a maximum of 4 feet in height should be constructed with a maximum gradient of 2H:1V. Compacted fill slopes are considered as "structural fill" and should be constructed as compacted to at least 90% of the maximum dry density determined by ASTM D 1557-07. The project geotechnical consultant, **GDC**, should be requested to provide geotechnical and grading recommendations for the construction of compacted fill slopes, if they incorporated into the final project.

9. In general, the near surface soils encountered in the explorations may be used for fill. However, fine-grained soils will require careful moisture control and will be difficult to dry back if they are wet, or become wet. All fill soils shall be approved by the project geotechnical engineer before use.

10. All earthwork and grading should be performed under the observation of the project geotechnical engineer. Compaction testing of the fill soils shall be performed at the discretion of the project geotechnical engineer. Testing should be performed for approximately every 2 feet in fill thickness or 500 cubic yards of fill placed, whichever is more restrictive. If specified compaction is not achieved, additional compactive effort, moisture conditioning, and/or removal and recompaction of the fill soils will be required.

11. All materials used for asphalt, concrete and base shall conform to the 2006 "Green Book" or the equivalent, and shall be compacted to at least 95% relative compaction.

12. If, in the opinion of the geotechnical engineer, contractor, or owner, an unsafe condition is created or encountered during grading, all work in the area shall be stopped until measures can be taken to mitigate the unsafe condition. An unsafe condition shall be considered any condition that creates a danger to workers, on-site structures, on-site construction, or any off-site properties or persons.

5.4 Temporary Excavations

The excavations for removals and overexcavation under building pads and pavements are planned to extend to a depth of about 5 feet. However, locally removals may extend deeper. Temporary excavations should be readily accomplished by conventional heavy excavation equipment such as scrapers, loaders, dozers and excavators.

Construction slopes should be made with an inclination of 1H:1V or flatter, or shoring should be used. Flatter slopes may be necessary if loose existing fill or granular native soils are present. Where there is insufficient room to excavate 1H:1V temporary slopes, and where any temporary excavation will remove lateral support from an existing structure, street, or other improvement temporary shoring will be required. The project geotechnical consultant, **GDC**, should be requested to provide geotechnical recommendations for shoring design where necessary and appropriate to the proposed project.

Surcharge loads, such as vehicular traffic, heavy construction equipment, and stockpiled materials, should be kept away from the top of temporary excavations a horizontal distance at least equal to the depth of excavation. Surface drainage should be controlled and prevented from running down the slope face. Ponding water should not be allowed within the excavation. Even with the implementation of the above recommendations, some sloughing of slopes and unstable soil zones may still occur within temporary excavations, and workmen should be adequately protected. Construction equipment and foot traffic should be kept off excavation slopes to minimize sloughing.

All excavation slopes and shoring systems should meet the minimum requirements of the Occupational Safety and Health Association (OSHA) Standards. Maintaining safe and stable slopes on excavations is the responsibility of the contractor and will depend on the nature of the soils and ground water conditions encountered and his method of excavation. Excavations during construction should be carried out in such a manner that failure or ground movement will not occur. The contractor should perform any additional studies deemed necessary to supplement the information contained in this report for the purpose of planning and executing the excavation plan.

5.5 Shallow Foundations

5.5.1 Bearing Capacity

All proposed improvements are planned to be supported at grade. No basements are planned for the proposed development. Refer to Section 5.2 for recommendations regarding removals, overexcavation, and placement of structural fill under building/foundation areas. The proposed new passenger platform can be supported on shallow foundations placed in either dense, competent older alluvial soils, or new structural fill.

Footings having a minimum width of 1 foot and a minimum embedment of 1.5 feet may be designed for an allowable bearing capacity of 2,500 psf. The allowable bearing value may be increased at a rate of 200 psf for each additional foot of footing width or depth to a maximum of 4,000 psf. Bearing pressures may be increased by 1/3 for temporary seismic and wind loads. The foundation design should also consider the expansive nature of the subgrade soils, as discussed in section 5.11.

All foundation excavations should be checked by the project geotechnical engineer before the placement of reinforcing steel. Any loose or soft soils should be excavated and replaced with structural fill. The limits for the excavation should be determined by the geotechnical engineer.

5.5.2 Lateral Capacity

Resistance to lateral loads can be provided by friction developed between the bottom of the footings and the supporting soil, and by the passive soil pressure developed on the face of the footing. For design purposes a coefficient of friction of 0.40 may be used. The allowable passive pressure for competent older alluvial soils and/or engineered, compacted fill may be taken as the pressure developed from an equivalent fluid weight of 200 pcf, with a maximum of 3,000 pcf.

5.5.3 Foundation Settlement

The settlements of at-grade structures supported on conventional footings, with maximum column loads of 100 kips, are anticipated to be on the order of 1-inch. The settlements are expected to result primarily due to elastic compression of the new fill and native alluvial soils. The maximum differential settlement between equally loaded columns is expected to be on the order of ¼ inch.

5.6 Slabs-on-Grade

Concrete floor slabs may be supported on a properly prepared non-expansive subgrade, consisting of either dense, competent older alluvial soils, or structural fill. To reduce the potential for moisture transmission through the slabs, a Visqueen-type moisture barrier is recommended to be placed under the slab prior to the placement of concrete. The moisture barrier should be sandwiched between two layers of sand, each with a minimum thickness of 2 inches. Care should be taken not to puncture the moisture barrier during construction, and any utility penetrations should be wrapped. The slab design should also be based on the expansive nature of the subgrade, as discussed in Section 5.10.

5.7 Site Drainage

The site should be graded to maintain positive drainage, so all runoff is properly collected and conveyed to proper disposal in approved storm drains or drainage devices. The area around foundations should be sloped to drain runoff away and prevent ponding of water near foundations.

5.8 Utillity Installation

The bedding for sewer and water service pipelines should be a minimum of 4 inches thick and should consist of clean sand, No. 4 concrete aggregate, or gravel, and should have a sand equivalent of not less than 30. The pipe zone material, which extends to a level 12 inches above the pipe should consist of sand and should have a sand equivalent of no less than 30, and a maximum rock size of 1 inch.

Trench zone backfill extends from a level 12 inches above the pipe to finished subgrade. Trench zone material should have a maximum size of 2 inches and should contain no organic debris or other deleterious materials. It is anticipated that most of the excavated soils along the alignment can be used for trench zone backfill. However, silty and clayey soils may be more difficult to compact, and if wet will require drying back before compaction. All fill soils should be approved by the project geotechnical engineer. Fill soils proposed to be imported should be approved before being brought on site. All bedding and backfill materials should be mechanically compacted to at least 90% relative compaction. Jetting or flooding of backfill should not be permitted.

5.9 Soil Expansion Potential

The near surface soils encountered at the site generally consist of silty sand and silty to sandy clay with low to moderate plasticity. These soils have a low to moderate Expansion Potential.

5.10 Pavement Design

Pavement recommendations are presented in the Pavement Design table below. Prior to placing pavement, the existing grade should be overexcavated a minimum of 12 inches below the top of the pavement and recompacted to at least 95% relative compaction, as determined by ASTM D 1557-07. Deeper removals will be required if loose native soils, highly porous soils, or other unsuitable materials are encountered.

Pavement Design

Service Type	Pavement Type and Thickness* (inches)			Base Course Thickness* (inches)	Removal and Recompaction of Subgrade (inches)
	A/C	or	Concrete		
Pedestrian Walkway	---		4	2	12
Passenger Vehicles (TI = 5)	3		4	6	12
Passenger Vehicles/ Light Trucks (TI = 7)	4		4	6	12
Fire Lane/Trucks (TI = 9)	6		6	6	12

*- Pavement and base course thicknesses were determined using an R-value of 65 and the Traffic Indecies (TI's) noted.

A concrete pavement consisting of 6 inches of concrete over 6 inches of aggregate base is recommended to be used for trash enclosures and other areas that will be subjected to high wheel loads or abrasive wheel forces, i.e., where there is a tight turning radius. The pavement sections for other TI's can be provided upon request.

Following completion of grading, the exposed subgrade in pavement areas should be tested to confirm the appropriate R-value for use in establishing the final design section. The upper 6 inches of the subgrade and the aggregate base layer should be compacted to at least. The asphalt and base should conform to the specifications of the Standard Specifications for Public Works Construction, 2006 Edition ("The Green Book").

6.0 SEISMIC DESIGN CONSIDERATIONS

6.1 Seismic Ground Motion Values

An analysis of the seismic ground motions for the site was performed in accordance with the California Building Code (CBC) 2007 / ASCE 7-05. A seismic hazard deaggregation analysis was performed for the subject site (http://eqint.cr.usgs.gov/deaggint/2002/index.php). The site coordinates used are:

Latitude: 34.498 N
Longitude: -118.118 W

The deaggregation results are provided in the Site Specific Seismic Hazard Analysis, Appendix C. The deaggregation results indicated that the San Andreas Fault, which is 5.3 km (3.3 mi) from the site, is the closest fault to the site, and has the largest fault hazard contribution and therefore, is the controlling fault for the site.

According to CBC 2007 Section 1614A, a site specific seismic hazard analysis shall be performed in accordance with Section 21.2 of ASCE 7-05 if the building site is located within 10 kilometers of an active fault. Because the controlling fault, the San Andreas Fault, is within 10 kilometers of the site, the site specific hazard analysis was performed. The results of the required ground motion analysis, including the design response spectra, are provided in the Site Specific Seismic Hazard Analysis, Appendix C.

The soil "Site Class Definition" for the site is "D," stiff soil. The site-specific ground motion hazard analysis yielded a design spectrum where the spectral accelerations were significantly less than the Code driven spectrum accelerations for short periods (below about 1second), and where the spectral accelerations approached the Code driven minimum spectrum for longer periods (above about 1 second). Therefore, we recommend that the Code driven design spectrum should be used in the design of the proposed new passenger platform and appurtenant structures. The spectral accelerations are provided in Appendix C, and are also summarized below.

Mapped Spectral Acceleration Parameters for Site Class B
Site Coefficients: Fa = 1.0, Fv = 1.0

Period (Sec.)	Spectral Acceleration
0.2	S_S = 1.740g
1.0	S_1 = 0.860g

Peak Horizontal Ground Acceleration = 0.696g

Maximum Considered Earthquake Adjusted for Site Class D
Site Coefficients: Fa = 1.0, Fv = 1.5

Period (Sec.)	Spectral Acceleration
0.2	S_{MS} = 1.740g
1.0	S_{M1} = 1.290g

Peak Horizontal Ground Acceleration = 0. 696g

Design Earthquake Adjusted for Site Class D
Site Coefficients: Fa = 1.0, Fv = 1.5

Period (Sec.)	Spectral Acceleration
0.2	S_{DS} = 1.160g
1.0	S_{D1} = 0.860g

Peak Horizontal Ground Acceleration = 0.464g

6.2 Liquefaction and Seismic Settlement

Liquefaction involves a sudden loss in strength of a saturated, cohesionless soil (predominantly sand) caused by cyclic loading such as an earthquake. This phenomenon results in elevated pore-water pressures that temporarily transform the soil into a fluid mass resulting in vertical settlement and could include lateral deformations. Typically, liquefaction occurs in areas where ground water is less than 50 feet from the surface and where the soils are comprised of predominantly poorly-consolidated sands. Seismic ground motions can also induce settlement without liquefaction occurring, including within dry sands above the water table.

The project site is not mapped as being located within a State of California Liquefaction Seismic Hazard Zone (CGS, 2003a). Therefore, a quantitative liquefaction hazard potential analysis is not required per California Public Resources Code sections 2690 and 2693(b). Also, the project site is underlain by dense Pleistocene-age older alluvial soils which do not exhibit a potential liquefaction hazard (CGS, 2003, 2005a). Therefore, due to the age and relative density of the Pleistocene-age older alluvial soils at the site, the potential for liquefaction is considered low.

7.0 POST INVESTIGATION GEOTECHNICAL SERVICES

Post investigation geotechnical services will be required during project design and construction. It is recommended that **GDC** review the project plans and specifications prior to finalization. During construction, the site grading should be performed under the observation and testing of the project geotechnical engineer. This includes demolition, removals, excavation, installation of any shoring, installation of subsurface drainage systems, proof-rolling, placement of compacted fill and backfill, foundation excavations, and the placement and compaction of pavement base material.

8.0 LIMITATIONS

The conclusions and recommendations contained in this report are professional opinions, intended for the use of Metrolink (SCRRA) and their design consultants. This report has been prepared solely for the design of the improvements described herein, and may not contain sufficient information for other uses. The recommendations should not be extrapolated to areas not covered by this report, or used for other facilities without the review and approval of **GDC**. If this report, or any portion of this report, is provided to contractors, or included in specifications, it should be understood that they are provided for information only.

This investigation and these evaluations were performed in accordance with generally accepted local standards using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The recommendations for this project are, to a high degree dependent upon proper quality control of grading and foundation installation. Consequently, the recommendations are made contingent on the opportunity of **GDC** to observe grading operations and subgrade preparation. If parties other than **GDC** are engaged to provide such services, they must be notified that they will be required to assume complete responsibility for the geotechnical phase of the project by concurring with the recommendations in this report or provide alternate recommendations as deemed appropriate.

9.0 REFERENCES

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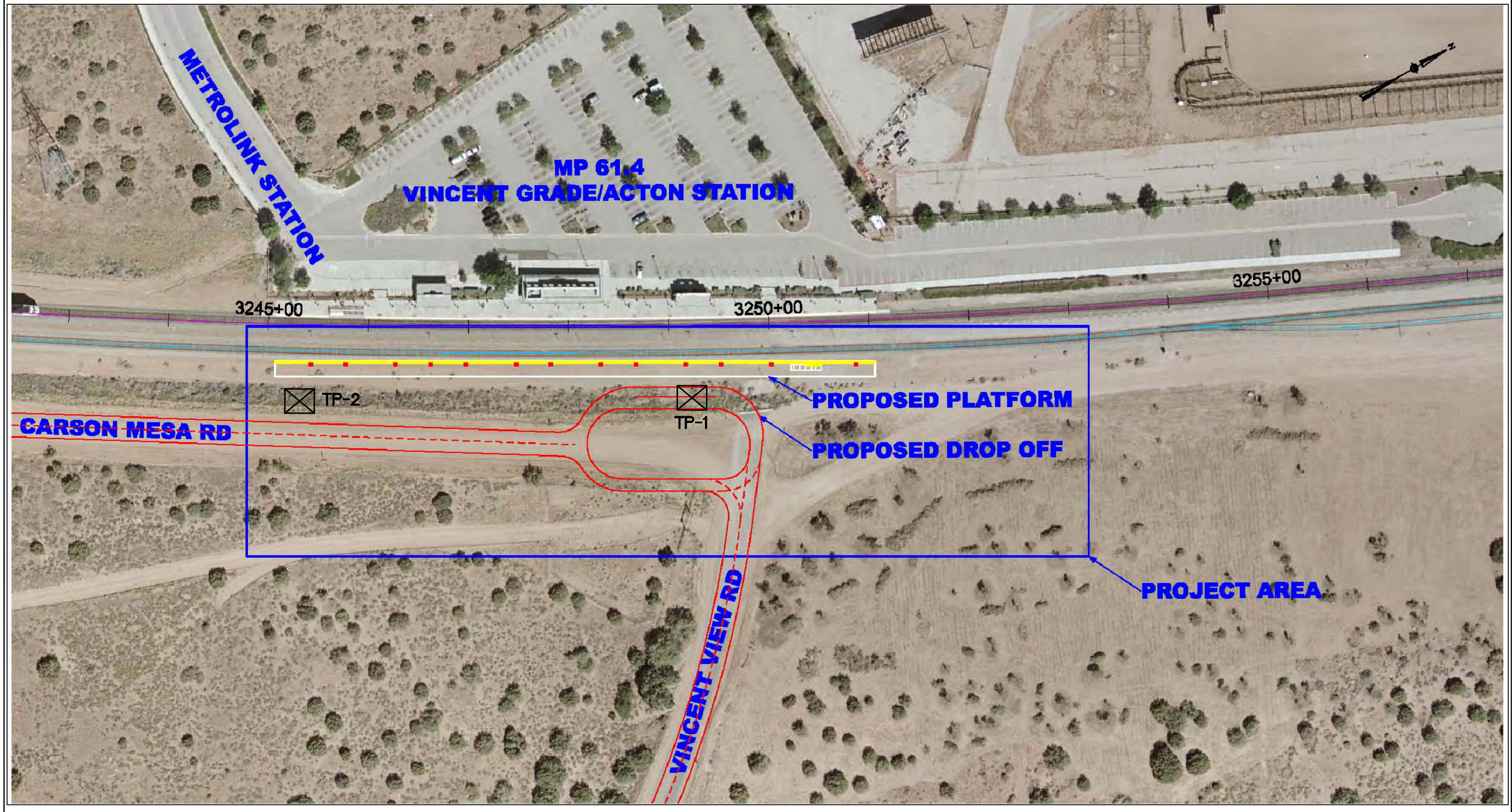
FIGURES

Not to Scale

GROUP DELTA CONSULTANTS	Vicinity Map	Project Number: L-837-02 Date: 1/26/09
Group Delta Consultants. INC. 370 Amapola Ave. Torrance, Ca 90501	Metrolink-Vincent Station	Figure 1



LEGEND

⊠ TP-2 Location and number of test pits

Reference: Vincent Grade/Acton Station Second Platform Facility/Utility Location Plan by HDR, Inc Dated 11/25/2008

DATE: 01/29/2009	DRAWN BY: J. Moreno	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	PROJECT NUMBER: L-837-02
REVISION:	APPROVED BY: J Barr	Exploration Plan Metrolink - Vincent Station Acton, Los Angeles County California	SCALE: NTS
REVISION:			FIGURE NUMBER: 2

APPENDIX A
FIELD EXPLORATION

APPENDIX A
FIELD EXPLORATION

The subsurface conditions at the site were investigated on November 11, 2008. The field exploration included digging two geotechnical test pits. The test pits were dug manually with hand equipment. The locations of explorations are shown on Figure 2. Summary of our field exploration program is presented in Table A-1.

The test pits were excavated to approximately 2 feet below the existing grade. The explorations were performed under the technical supervision of our field engineer, who also maintained detailed logs of the soils encountered, classified the materials, and assisted in obtaining soil samples. Representative bulk samples were taken from each of the test pits. Subsurface materials encountered in the test pits were visually classified and logged in accordance with the Unified Soil Classification System (USCS). The test pit logs are presented in Figures A-2 and A-3. A legend for the test pit logs is presented in Figure A-1. A key for soil classification is presented in Figure A-0.

Table A-1: Summary of Field Exploration

Exploration No.	Date Performed	Total Depth (feet)	Exploration Type
TP-1	11/11/08	2.0	Test Pit
TP-2	11/11/08	2.0	Test Pit

The following are attached and complete this appendix:

Figure A-0	Key for Soil Classification
Figure A-1	Legend for Log of Test Borings
Figures A-2 and A-3	Log of Borings

KEY FOR SOIL CLASSIFICATION

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)				
PRIMARY DIVISIONS			***GROUP SYMBOL***	***SECONDARY DIVISIONS***
COARSE GRAINED SOILS (less than 50% fines passing the No. 200 Sieve)	GRAVEL (% GRAVEL > % SAND)	CLEAN GRAVEL (Less than 5% fines)	GW	Well-graded gravel, gravel with sand, little or no fines
			GP	Poorly-graded gravel, gravel with sand, little or no fines
		"DIRTY" GRAVEL (More than 12% fines)	GM	Silty gravel, silty gravel with sand, silty or non-plastic fines
			GC	Clayey gravel, clayey gravel with sand, clayey or plastic fines
	SAND (% SAND ≥ % GRAVEL)	CLEAN SAND (Less than 5% fines)	SW	Well-graded sand, sand with gravel, little or no fines
			SP	Poorly-graded sand, sand with gravel, little or no fines
		"DIRTY" SAND (More than 12% fines)	SM	Silty sand, silty sand with gravel, silty or non-plastic fines
			SC	Clayey sand, clayey sand with gravel, clayey or plastic fines
FINE GRAINED SOILS (50% or more fines passing the No. 200 Sieve)	SILTS AND CLAYS (Liquid Limit less than 50)		ML	Inorganic silt, sandy silt, gravelly silt, or clayey silt with low plasticity
			CL	Inorganic clay of low to medium plasticity, sandy clay, gravelly clay, silty clay, Lean Clay
			OL	Low to medium plasticity Silt or Clay with significant organic content (vegetative matter)
	SILTS AND CLAYS (Liquid Limit 50 or more)		MH	Inorganic elastic silt, sandy silt, gravelly silt, or clayey silt of medium to high plasticity
			CH	Inorganic clay of high plasticity, Fat Clay
			OH	Medium to high plasticity Silt or Clay with significant organic content (vegetative matter)
HIGHLY ORGANIC SOILS			PT	Peat or other highly organic soils

Note: Dual symbols are used for coarse grained soils with 5 to 12% fines (ex: SP-SM), and for soils with Atterberg Limits falling in the CL-ML band in the Plasticity Chart. Borderline classifications between groups may be indicated by two symbols separated by a slash (ex: CL/CH, SW/GW).

CONSISTENCY CLASSIFICATION				
COARSE GRAINED SOILS		***FINE GRAINED SOILS***		
Blowcount SPT[1] (CAL)[2]	Consistency	Blowcount[3] SPT[1] (CAL)[2]	Consistency	Undrained Shear Strenth[3], S_u (ksf)
0-4 (0-6)	Very Loose	<2 (<3)	Very Soft	< 0.25
		2-4 (3-6)	Soft	0.25 -0.50
5-10 (7-15)	Loose	5-8 (7-12)	Firm	0.50 - 1.0
11-30 (16-45)	Med. Dense	9-15 (13-22)	Stiff	1.0 - 2
31-50 (46-75)	Dense	16-30 (23-45)	Very Stiff	2.0 - 4.0
>50 (>75)	Very Dense	>31 (>45)	Hard	>4.0

MOISTURE CLASSIFICATION
DRY - Absence of moisture, dusty, dry to the touch **MOIST-** Damp but no visible water **WET-** Visible free water, usually soil is below water table

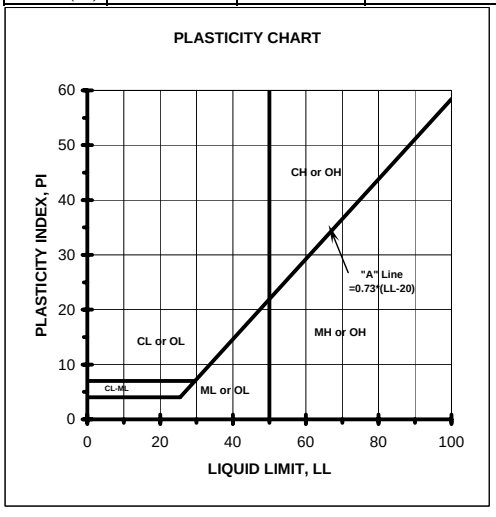
CONSISTENCY NOTES:

1. Number of blows of a 140-lb. hammer falling 30-inches to drive a 2-inch OD (1.375-inch ID) **SPT Sampler** [ASTM D-1585] the final 12-inches of driving
2. Number of blows of a 140-lb. hammer falling 30-inches to drive a 3-inch OD (2.42-inch ID) **California Ring Sampler** the final 12-inches of driving.
3. Undrained shear strength of cohesive soils predicted from field blowcounts is generally unreliable. Where possible, consistency should be based on S_u data from pocket penetrometer, torvane, or laboratory testing.

CLASSIFICATION CRITERIA BASED ON LABORATORY TESTS

Grain Size Classification

CLAY AND SILT	SAND			GRAVEL		COBBLES		BOULDERS	
	Fine	Medium	Coarse	Fine	Coarse				
US Std Sieve	**No. 200**	**No. 40**	**No. 10**	**No. 4**	**3/4"**	**3"**		**12"**		
Grain Size (mm)	0.075	0.425	2	4.75	19.1	76.2		304.8		



Classification of earth materials shown on the logs is based on field inspection and should not be construed to imply laboratory analysis unless so stated.

Granular Soil Gradation Parameters

Coefficient of Uniformity: $C_u = D_{60} / D_{10}$

Coefficient of Curvature: $C_C = (D_{30})^2 / (D_{10} \times D_{60})$

D_{10}= 10% of the soil is finer than this diameter

D_{30}= 30% of the soil is finer than this diameter

D_{30}= 60% of the soil is finer than this diameter

Group Symbol	Gradation or Plasticity Requirement
SW	C_u>6 and C_c between 1 and 3
GW	C_u>4 and C_c between 1 and 3
GP or SP	Clean gravel or sand not meeting requirement for GW or SW
GM or SM	Plots below "A" Line on Plasticity Chart or PI < 4
GC or SC	Plots above "A" Line on Plasticity Chart and PI > 7

FIGURE A-0

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Metrolink-Vincent Station	L-837-02	**LEGEND**

SITE LOCATION	START	FINISH	SHEET NO.
Vincent, Ca			1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
		0		▼ / *na*

SAMPLING METHOD

NOTES

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5			1									
10			2									
15			3									
20												

GRAB, CAL, SPT - Refers to the sampling method as described below

GRAB - Refers to collecting sample by method of placing disturbed soil cuttings into a plastic bag

CAL (CALIFORNIA MODIFIED) - A 3.0" o.d. split tube sampler lined with 2.42" i.d. metal sample rings generally driven into the soil by a free falling hammer

SPT (STANDARD PENETRATION TEST) - A 2.0" o.d. split spoon sampler with a 1.375" i.d. generally driven into the soil with a 140# hammer free falling a height of 30"

ABBREVIATIONS FOR OTHER TESTS:

AL = Atterberg Limits
CN = Consolidation
CO = Corrosivity
CP = Laboratory Compaction
DS = Direct Shear
GS = Grain Size Analyses
PP = Pocket Pen
RV = R-Value
WA = Wash on #200 Sieve

GDC_LOG_BORING_1A_LA2 L-837-02 BORING LOGS.GPJ GDCLOG.GDT 2/2/09

GROUP DELTA CONSULTANTS, INC.
370 Amapola Avenue, Suite 212
Torrance, CA 90501

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-1

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Metrolink-Vincent Station	L-837-02	**TP-1**

SITE LOCATION	START	FINISH	SHEET NO.
Vincent, Ca	11/11/2008	11/11/2008	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
	Hand Dug	SK	JDB

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
		2		▼ NA / *na*

SAMPLING METHOD

NOTES

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			B-1									Colluvial Soil: **Silty Sand (SM)** brown to tan brown, dry to slightly moist, medium dense to dense, trace clay Older Alluvial Soil: **Silty Sand (SM)** Orange brown to red/tan brown, dry to slightly moist, dense, few gravels to 6"
5												Total Depth: 2 feet Groundwater: Not encountered to maximum depth explored No caving No fill
10												
15												
20												

GDC_LOG_BORING_1A_LA2 L-837-02 BORING LOGS.GPJ GDCLOG.GDT 2/2/09

GROUP DELTA CONSULTANTS, INC.
370 Amapola Avenue, Suite 212
Torrance, CA 90501

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-2

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Metrolink-Vincent Station	L-837-02	**TP-2**

SITE LOCATION	START	FINISH	SHEET NO.
Vincent, Ca	11/11/2008	11/11/2008	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
	Hand Dug	SK	JDB

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
		2		▼ NA / *na*

SAMPLING METHOD

NOTES

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			B-1									Colluvial Soil: **Silty Sand (SM)** brown to tan brown, dry to slightly moist, medium dense to dense, trace clay Older Alluvial Soil: **Silty Sand (SM)** Orange brown to red/tan brown, dry to slightly moist, dense, few gravels to 8"
5												Total Depth: 2 feet Groundwater: Not encountered to maximum depth explored No caving No fill
10												
15												
20												

GDC_LOG_BORING_1A_LA2 L-837-02 BORING LOGS.GPJ GDCLOG.GDT 2/2/09

GROUP DELTA CONSULTANTS, INC.
370 Amapola Avenue, Suite 212
Torrance, CA 90501

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-3

APPENDIX B
LABORATORY TESTING

APPENDIX B
LABORATORY TESTING

B.1 General

Laboratory testing was performed by Group Delta Consultants, Inc., to aid in the classification of soils encountered in the borings and to evaluate their physical properties and engineering characteristics. The testing included soil classification and determination of the soil Resistance Value. Descriptions of the laboratory tests are provided below.

B.2 Soil Classification

The subsurface materials were classified visually in the field using the Unified Soil Classification System (USCS), in accordance with ASTM Test Methods D 2487 and D 2488. Soil classifications were modified as necessary based on further inspection and testing in the laboratory. The soil classifications are presented on the key for soil classification and on the boring logs, Figure A-0 of Appendix A.

B.3 Resistance Value (R-value) Testing

A suite R-value tests were performed on representative bulk samples of the soils encountered in the borings. The R-Value tests were performed in general accordance with ASTM Test Method D 2844 and Cal-Trans Test Method 301. The test results are summarized in the following table.

Summary of R-Value Tests

Test Pit	Depth (ft)	Soil Classification	R-Value
TP-1	0-2	SM	65

APPENDIX C
SEISMIC GROUND MOTIONS

APPENDIX C
CBC 2007/ASCE 7-05 SITE SPECIFIC SEISMIC HAZARD ANALYSIS

The acceleration response spectrum provided in this appendix is constructed in general accordance with CBC 2007 Section 1614A and ASCE 7-05 Chapter 21.

C.1 Construction of Probabilistic MCE

The site specific probabilistic maximum considered earthquake (MCE) spectral response accelerations are taken as the spectral response accelerations represented by a 5 percent damped acceleration response spectrum having a 2 percent probability of exceedance with a 50-yr. period.

The site specific probabilistic MCE was constructed using the probabilistic seismic hazard analyses computer program FRISKSP (Blake, 2000). The coordinates used for the subject site are listed below.

Latitude: 34.498 N
Longitude: 118.118 W

The ground motion attenuation relationships developed by Campbell (Campbell, 1997) for alluvial soils were used. The probabilistic MCE response spectrum is shown in Figure C-1.

Campbell (1997)	
Period (sec)	Sa (g)
0.01	0.6310504
0.03	0.6339123
0.05	0.7317374
0.075	0.8718668
0.1	1.0979378
0.15	1.4259709
0.2	1.5314776
0.3	1.5206739
0.5	1.3227822
0.75	1.0474473
1	0.8755599
1.5	0.6179324
2	0.4639752

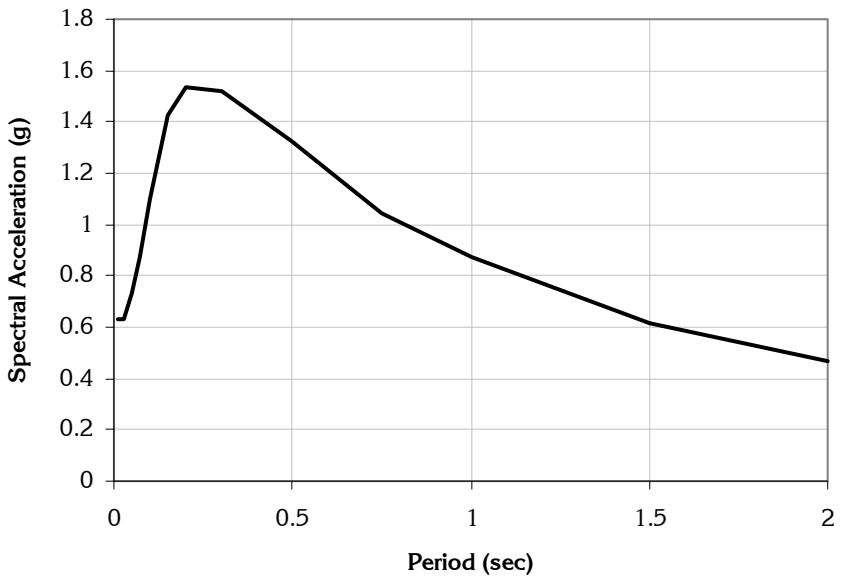


Figure C-1: Probabilistic MCE Acceleration Response Spectrum.

C.2 Construction of Deterministic MCE Spectrum

A seismic hazard deaggregation analysis was performed for the subject site using the United States Geological Survey (USGS) website: (http://eqint.cr.usgs.gov/deaggint/2002/index.php). The seismic hazard deaggregation result is provided in Table C-1. The seismic hazard deaggregation results list the individual faults which have a hazard contribution of greater than 1%. As shown in Table C-1, the San Andreas Fault (SAF) has the largest hazard contribution, is the closest seismic source to the site, and was used in the site specific deterministic seismic hazard analysis. The SAF is a strike-slip fault, located at a distance of about 5.3 km from the site and is capable of generating a M_W 7.5+ earthquake.

Table C-1: Seismic Hazard Deaggregation Result

*** Deaggregation of Seismic Hazard for PGA & 2 Periods of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2002 version ***
PSHA Deaggregation. %contributions. site: VG-AS long: 118.118 W., lat: 34.498 N.
USGS 2002-03 update files and programs. dM=0.2. Site descr:ROCK
Return period: 2475 yrs. Exceedance PGA =1.0343 g.
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00000

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
5.3	5.05	0.150	0.150	0.000	0.000	0.000	0.000	0.000
5.5	5.20	0.315	0.315	0.000	0.000	0.000	0.000	0.000
5.6	5.40	0.331	0.318	0.013	0.000	0.000	0.000	0.000
5.6	5.60	0.347	0.276	0.071	0.000	0.000	0.000	0.000
5.7	5.80	0.358	0.239	0.119	0.000	0.000	0.000	0.000
5.7	6.01	0.458	0.269	0.189	0.000	0.000	0.000	0.000
5.4	6.20	0.657	0.305	0.352	0.000	0.000	0.000	0.000
12.2	6.21	0.056	0.056	0.000	0.000	0.000	0.000	0.000
5.1	6.40	0.732	0.270	0.463	0.000	0.000	0.000	0.000
12.0	6.39	0.079	0.079	0.000	0.000	0.000	0.000	0.000
5.1	6.60	0.696	0.256	0.440	0.000	0.000	0.000	0.000
12.0	6.60	0.064	0.064	0.000	0.000	0.000	0.000	0.000
5.0	6.80	0.661	0.229	0.432	0.000	0.000	0.000	0.000
11.6	6.80	0.065	0.065	0.000	0.000	0.000	0.000	0.000
4.8	6.95	0.324	0.103	0.220	0.000	0.000	0.000	0.000
5.7	7.24	4.232	2.266	1.967	0.000	0.000	0.000	0.000
5.6	7.40	10.346	4.902	5.445	0.000	0.000	0.000	0.000
5.7	7.50	2.332	1.558	0.775	0.000	0.000	0.000	0.000
5.6	7.81	64.009	21.052	42.958	0.000	0.000	0.000	0.000
5.6	8.08	8.765	2.234	6.531	0.000	0.000	0.000	0.000
5.6	8.22	4.913	0.943	3.869	0.101	0.000	0.000	0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Mean src-site R= 5.6 km; M= 7.69; eps0= 1.45. Mean calculated for all sources.
Modal src-site R= 5.6 km; M= 7.81; eps0= 1.42 from peak (R,M) bin
Gridded source distance metrics: Rseis Rrup and Rjb
MODE R*= 5.6km; M*= 7.81; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 42.958

Principal sources (faults, subduction, random seismicity having >10% contribution)

Source Category:	% contr.	R(km)	M	epsilon0 (mean values)
California SS faults	94.60	5.6	7.77	1.43
Individual fault hazard details if contrib.>1%:				
SAF - Mojave Amod1	5.77	5.6	7.30	1.67
SAF-All southern segments Amod1	15.53	5.6	8.10	1.25
SAF - 1857 Amod1	25.80	5.6	7.80	1.43
SAF - Mojave Amod2	10.14	5.6	7.40	1.63
SAF - 1857 Amod2	37.35	5.6	7.80	1.43

********** Southern California **********

A site specific deterministic ground motion hazard study using the computer program SHAKE 2000, by G. Ordonez, was performed, utilizing the published ground motion attenuation relationship developed by Campbell (1997) for Site Class D. The response spectrum for the SAF is provided in Figure C-2.

Cambell (1997) San Andreas Fault	
Period (sec)	Sa (g)
0.05	0.5215
0.075	0.6465
0.1	0.7948
0.15	1.0067
0.2	1.0806
0.3	1.0647
0.5	0.9726
0.75	0.7888
1	0.6695
1.5	0.479
2	0.3623

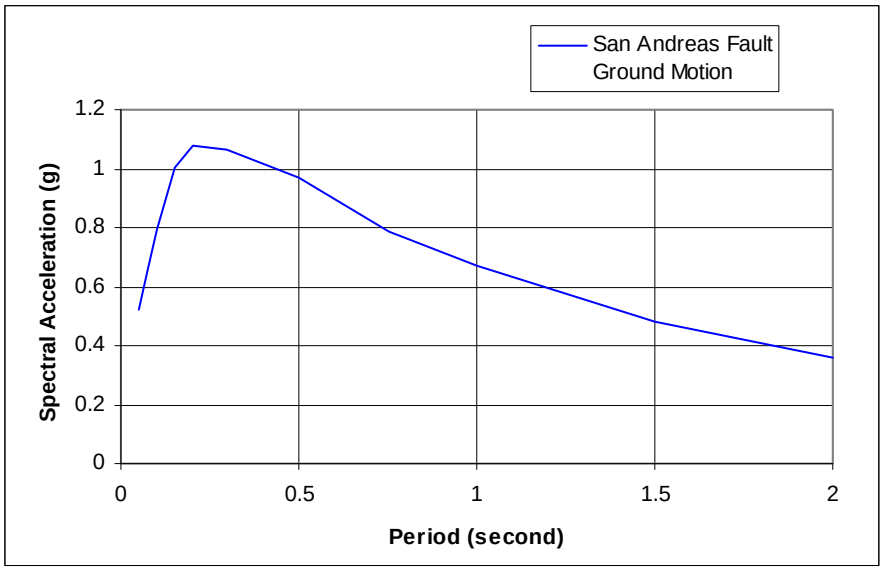


Figure C-2: Deterministic Response Spectrum for the San Andreas Fault.

To obtain the Deterministic MCE Ground Motion Spectrum in accordance with ASCE 7-05 Section 21.4, the spectral accelerations of the SAF Deterministic Ground Motion Spectrum were multiplied by 150%. This spectrum was then compared with the deterministic lower limit in accordance Figure 21.2-1 of ASCE 7-05 Chapter 21. Then spectrum with higher spectral accelerations was chosen as the site specific acceleration spectrum for the deterministic MCE event. The result is shown in Figure C-3.

Period (sec)	Fault GM Sa (g)	150% Fault GM Sa (g)	MCE Limit Period (sec)	MCE Limit Sa (g)
0.05	0.5215	0.78225	0.0	1.5
0.075	0.6465	0.96975	0.075	1.5
0.1	0.7948	1.1922	0.1	1.5
0.15	1.0067	1.51005	0.15	1.5
0.2	1.0806	1.6209	0.2	1.5
0.3	1.0647	1.59705	0.3	1.5
0.5	0.9726	1.4589	0.5	1.5
0.75	0.7888	1.1832	0.6	1.5
1	0.6695	1.00425	0.75	1.2
1.5	0.479	0.7185	1	0.9
2	0.3623	0.54345	1.5	0.6
			2	0.45

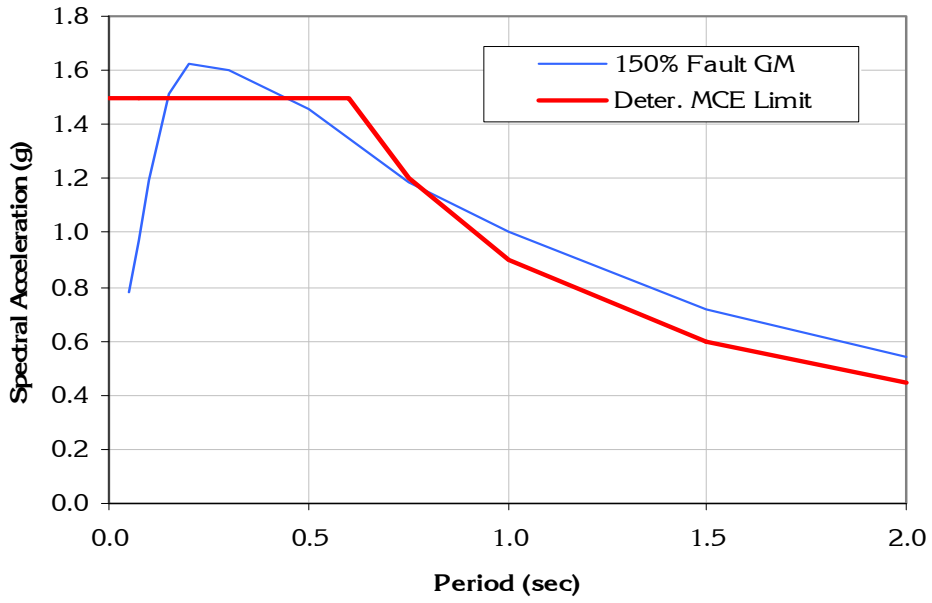


Figure C-3: Comparison of Deterministic MCE Ground Motion (SAF Ground Motion X 150%) and Deterministic MCE Lower Limit per ASCE 7-05

C.3 Site Specific MCE

According to Section 21.2.3 of ASCE 7-05, "the site-specific MCE spectral response acceleration at any period shall be taken as the **lesser** of the spectral response accelerations from the probabilistic MCE and the deterministic MCE".

Figure D-4 shows the comparison of probabilistic MCE spectrum and deterministic MCE spectrum.

Period (sec)	Det. MCE GM Sa (g)	Prob. MCE GM Sa (g)
0.0	1.50	0.95
0.075	1.50	1.38
0.1	1.50	1.74
0.15	1.51	2.22
0.2	1.62	2.38
0.3	1.60	2.35
0.5	1.50	2.13
0.75	1.20	1.73
1	1.00	1.47
1.5	0.72	1.04
2	0.54	0.75

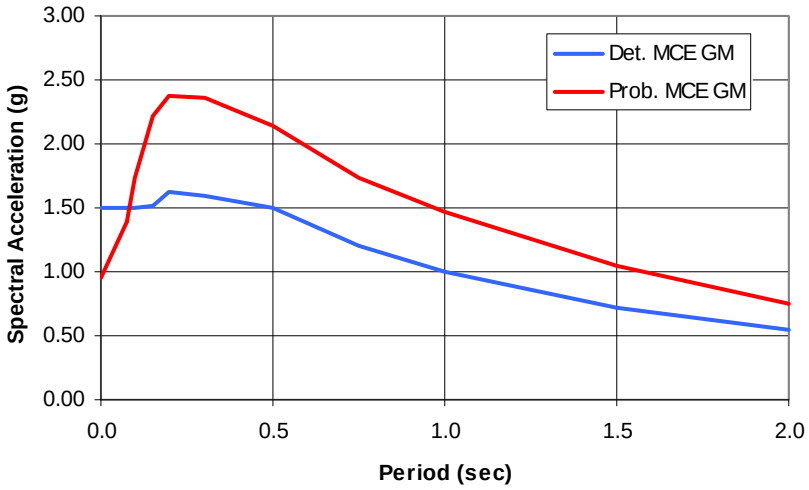


Figure C-4: Comparison of Probabilistic MCE and Deterministic MCE Spectra

The lesser of the two spectra was then taken as the site-specific MCE spectrum. The site specific spectral accelerations for the design spectrum are than taken as 2/3 of site specific MCE values. Per ASCE 7-05 the site specific design response spectrum cannot incorporate accelerations less than 80% of the code driven response spectrum, a spectral comparison is provided below. Additionally, the acceleration a 0.2 seconds period (S_{DS}) is not allowed to be less than 90 percent of the peak spectral acceleration. Also per ASCE 7-05, S_{D1} shall be taken as the greater value greater of either the spectral acceleration at a period of 1.0 second or two times of the spectral acceleration at a period of 2.0 seconds.

The site-specific design spectrum was then compared with code driven design spectra for the subject site in Figure C-5.

Period (sec)	Site Specific MCE Spectrum Sa (g)	Site Specific Design Sa (g)	Period (sec)	Code Design Sa (g)	80% of Code Spectrum Sa (g)
0.0	1.50	1.00	0	0.464	0.371
0.075	1.50	1.00	0.148	1.160	0.928
0.1	1.50	1.00	0.2	1.160	0.928
0.15	1.51	1.01	0.741	1.160	0.928
0.2	1.62	1.08	0.8	1.075	0.860
0.3	1.60	1.06	0.9	0.956	0.765
0.5	1.50	1.00	1	0.860	0.688
0.75	1.20	0.80	1.1	0.782	0.626
1	1.00	0.67	1.2	0.717	0.574
1.5	0.72	0.48	1.3	0.662	0.530
2	0.54	0.36	1.4	0.614	0.491
			1.5	0.573	0.458
			1.6	0.538	0.430
			1.7	0.506	0.405
			1.8	0.478	0.382
			1.9	0.453	0.362
			2	0.430	0.344

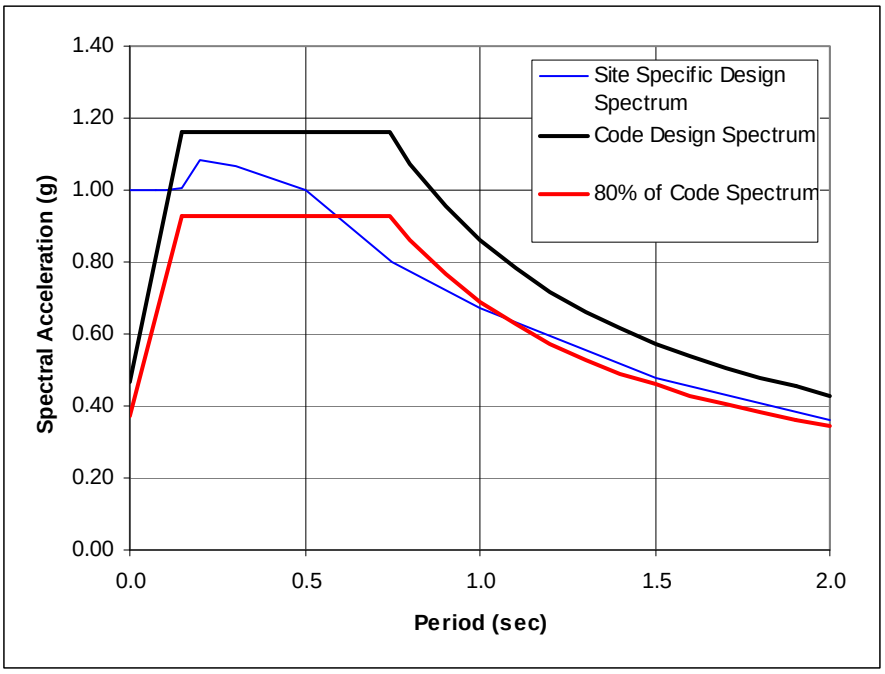


Figure C-5: Comparison of Site-Specific Design Spectrum and Code Design Spectra.

It can be observed that the site specific design spectral accelerations at short periods (less than 1 second) are about 10% to more than 20% lower than those of the Code Design Spectrum. Also, at longer periods (greater than 1second) the site specific design spectral accelerations approach with the allowable minimum (80% of) Code Design Spectrum. For conservatism, we recommend that the Code Design Spectrum be used for design of the proposed project. The recommended spectral acceleration at 0.2 second and 1.0 second are: S_{DS} = 1.160g and S_{D1} = 0.860g.

APPENDIX D
GEOTECHNICAL REPORT
VINCENT GRADE/ ACTON METROLINK STATION
LOS ANGELES CO., DEPARTMENT OF PUBLIC WORKS (1998)

September 3, 1998

TO: Diego Cadena
Architectural Engineering Division

Attention Lee Blum

FROM: Tom Hoagland TWH
Materials Engineering Division

VINCENT GRADE/ACTON METROLINK STATION
GEOTECHNICAL REPORT

In response to your correspondence dated July 6, 1998, we have conducted a geotechnical investigation for the subject project.

The results of the investigation are presented in the attached report, entitled Geotechnical Report, Vincent Grade/Acton Metrolink Station, Acton, California, dated September 3, 1998.

If you have any questions regarding this matter, please contact Rossana D'Antonio or James Shuttleworth at Extension 4923.

AN:hh
ME-6/SII:vgams

Attach.

VINCENT GRADE/ACTON METROLINK STATION

ACTON, CALIFORNIA

September 3, 1998

GEOTECHNICAL REPORT

VINCENT GRADE/ACTON METROLINK STATION ACTON, CALIFORNIA

Prepared for
Architectural Engineering Division
Los Angeles County
Department of Public Works

Prepared by
Materials Engineering Division
Los Angeles County
Department of Public Works

September 3, 1998

TABLE OF CONTENTS

INTRODUCTION

A geotechnical investigation has been conducted for the proposed Vincent Grade/Acton Metrolink Station that will be located on Sierra Highway just south of Vincent View Road in the Acton area of the unincorporated territory of Los Angeles County (Figure 1). The site is currently vacant, unpaved, and gently slopes from north to south at an approximate elevation of 3207 feet above sea level. A natural swale that drains to the south along the railroad tracks has been incised about 2 feet.

It is our understanding that the Metrolink Station will consist of three structures supported on spread footings or mat foundations, a private sewage disposal system and a parking lot.

The purpose of our investigation was to obtain subsurface information at the site and provide geotechnical recommendations for the design and construction of the project. Design parameters presented in this report have been derived from field and laboratory data.

SCOPE OF WORK

The scope of work performed for this investigation included the following tasks:

- Site observations
- Review of available soil and geology information in the vicinity of the site
- Subsurface exploration consisting of three bucket auger borings
- Excavation of four test pits for percolation testing
- Field and laboratory testing
- Engineering and geological analysis
- Preparation of this report

SUBSURFACE INVESTIGATION

To determine the on-site soil conditions and evaluate the site, three exploratory borings were completed. The borings were drilled using a Calweld bucket auger rig with an 18-inch diameter bucket and ranged in depth from 30 to 50 feet. The approximate locations of the borings are shown on Figure 2 and the borings logs are included in Appendix A. Bulk and relatively undisturbed samples of soils encountered in the borings were obtained for soil classification and testing purposes. A summary of the laboratory test results is included in Appendix B, and the test results have been used to construct the approximate soil profile at the site (Figure 3).

GEOLOGY

The site is situated in the Soledad Pass, a narrow, southwest draining, alluvial filled valley. Alluvial sediments consist of gravelly to silty sands at least 50 feet thick. These sediments lie unconformably on volcanic and granitic crystalline bedrock in a southwest trending structural graben. The site has an S_D soil profile (1997 Uniform Building Code).

SEISMICITY

The site is situated within Seismic Zone 4, approximately 2.9 miles (4.6 km) southwest of the San Andreas Fault. This fault is an active strike-slip fault classified as Seismic Source Type "A" (1997 Uniform Building Code). The anticipated maximum moment magnitude characteristic earthquake on this fault is M=7.1. The anticipated maximum moment magnitude multisegment earthquake on this fault is M=7.8 for a repeat of the 1857 event, the last large earthquake to occur on this part of the fault. Estimated ground motion with a 10% probability of exceedance within 50 years is greater than 0.7g (Peterson and others, 1996). Strong ground motion is anticipated at the site within the lifespan of the project and should be considered during design of structural elements. In the event of a large earthquake on the San Andreas fault, permanent ground deformation (northwest lateral movement) is likely to occur at the site.

GROUNDWATER

Borings completed during this investigation indicate groundwater is currently deeper than 50 feet below the ground surface. The nearest water well, #8698, located 0.8 mile north-northeast of the site, has an historic (May 9, 1966) high ground water level 184 feet below the ground surface. Water level information for this well is available from 1958 to 1983. There are no nearby surface bodies of water, nor blue line streams. Rainfall, irrigation, and sewage disposal will add water to the subsurface. This water evaporates out of the soil during most years, but probably percolates to great depth during high rainfall years. Based on this information, non-perched groundwater within the alluvial sediments above the crystalline rocks is not anticipated to rise to such a level as to affect the site during the lifespan of the project.

LIQUEFACTION

Liquefaction describes a phenomenon in which a saturated cohesionless soil loses strength due to static or seismic vibration. Liquefaction causes a temporary transformation of the soil to a fluid mass, resulting in a loss of foundation support. The soils at the site consist mainly of silty sands and clayey sands in a medium dense to dense condition; also, no groundwater was encountered during the exploration. Therefore, the potential for

liquefaction is insignificant.

SETTLEMENT

The anticipated settlement of the proposed buildings, supported on spread footings or mat foundations, is expected to be less than one inch. Differential settlement between footings will not exceed one-half inch.

SOLUBLE SULFATES

Selected samples of the on-site soils were tested to determine their sulfate content. Based on the results of laboratory testing, the on-site soil contains less than 2,000 parts per million of soluble sulfates.

CONCLUSIONS

1. The construction of the Vincent Grade/Acton Metrolink Station is feasible from a geotechnical standpoint.

2. Groundwater is greater than 50 feet in depth and is not anticipated to rise to levels that may adversely affect the site within the lifespan of the project.

3. The potential for liquefaction is insignificant.

4. Anticipated and differential settlement is within specified tolerable limits.

5. Special protection against sulfate induced corrosion will not be required for concrete construction.

6. The site is situated within Seismic Zone 4, approximately 2.9 miles (4.6 km) southwest of the active San Andreas Fault. This fault is classified as a Seismic Source Type "A". Estimated ground motion with a 10% probability of exceedance within 50 years is greater than 0.7g.

7. On-site sewage disposal will be feasible at the location of the test pits, provided our recommendations are incorporated in the design and implemented during construction

RECOMMENDATIONS

1. The allowable bearing capacity for a spread footing or mat foundation embedded a minimum of 1½ feet below final grade is 2500 psf.

2. The allowable passive resistance of the soils against the foundation may be assumed to be 200 pounds per square foot per foot of depth. The allowable passive pressure may be increased by one-third for lateral loading due to wind or seismic forces.

3. A coefficient of friction of 0.4 between the foundation and the supportive soils may be used in foundation design.

4. Prior to placement of steel or concrete, the excavations must be cleaned of all loose material.

5. A representative from this Division shall be present to observe all excavations.

6. Comply with the attached Grading Requirements (Appendix C).

7. Strong ground motion is anticipated at the site within the lifespan of the project and should be considered during design of structural elements.

8. Recommendations for design of the proposed private sewage disposal system are included in Appendix D and should be followed during construction.

9. Preliminary and final design plans shall be reviewed by this Division.

LIMITATIONS

This report has been prepared for the exclusive use of Architectural Engineering Division, Los Angeles County Department of Public Works for the specific site discussed herein. This report should not be considered transferrable to other sites or projects.

In the event that any modification in the design, configuration, or use of the site are planned, the conclusions and recommendations contained in this report are no longer valid.

This study was conducted according to generally accepted geotechnical engineering and engineering geology practice for projects of this type and magnitude. The conclusions and recommendations in this report are based on the field and laboratory investigations

combined with an extrapolation of soil conditions between the boring locations. Our conclusions and recommendations are professional opinions and are not meant to be a control of nature; therefore, no warranty is herein expressed or implied in this report.

If you should have any questions concerning this report, please contact Alejandro Nuñez or Robert A. Larson at extension 4923.

Prepared by:

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RG 3737, CEG 1126

Approved by:

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Geology Investigations Section

Approved by:

Rossana G. D'Antonio, Head
Geotechnical Engineering Investigations Section

References

1. Additions and Amendments to the Standard Specifications for Public Works Construction, 1994 Edition.

2. Bowles, Joseph E., Foundation Analysis and Design, McGraw - Hill, Inc., Fourth Edition, 1988.

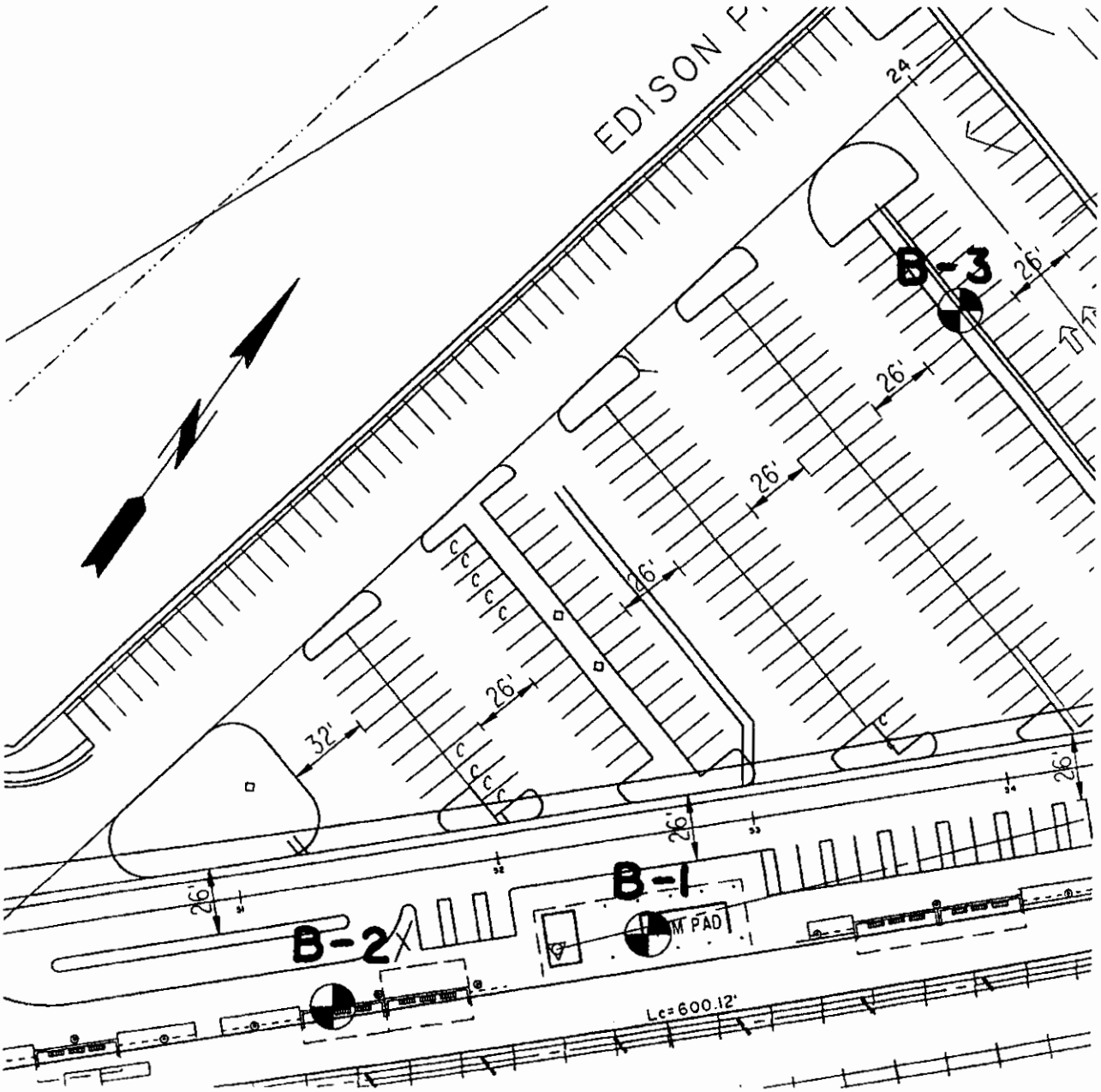
3. Naval Facilities Engineering Command (NAVFAC) Design Manuals 7.01 and 7.02, September 1986.

4. Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel. A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.D., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Division of Mines and Geology Open file report 96-08.

5. Preliminary Plans for Vincent Grade/Acton Metrolink Station, dated July 2, 1998.

6. Standard Specifications for Public Works Construction, 1994.

7. U.S.D.A., 2/4/1954, Aerial photos, Series AXJ-16K, Frames 25, 26



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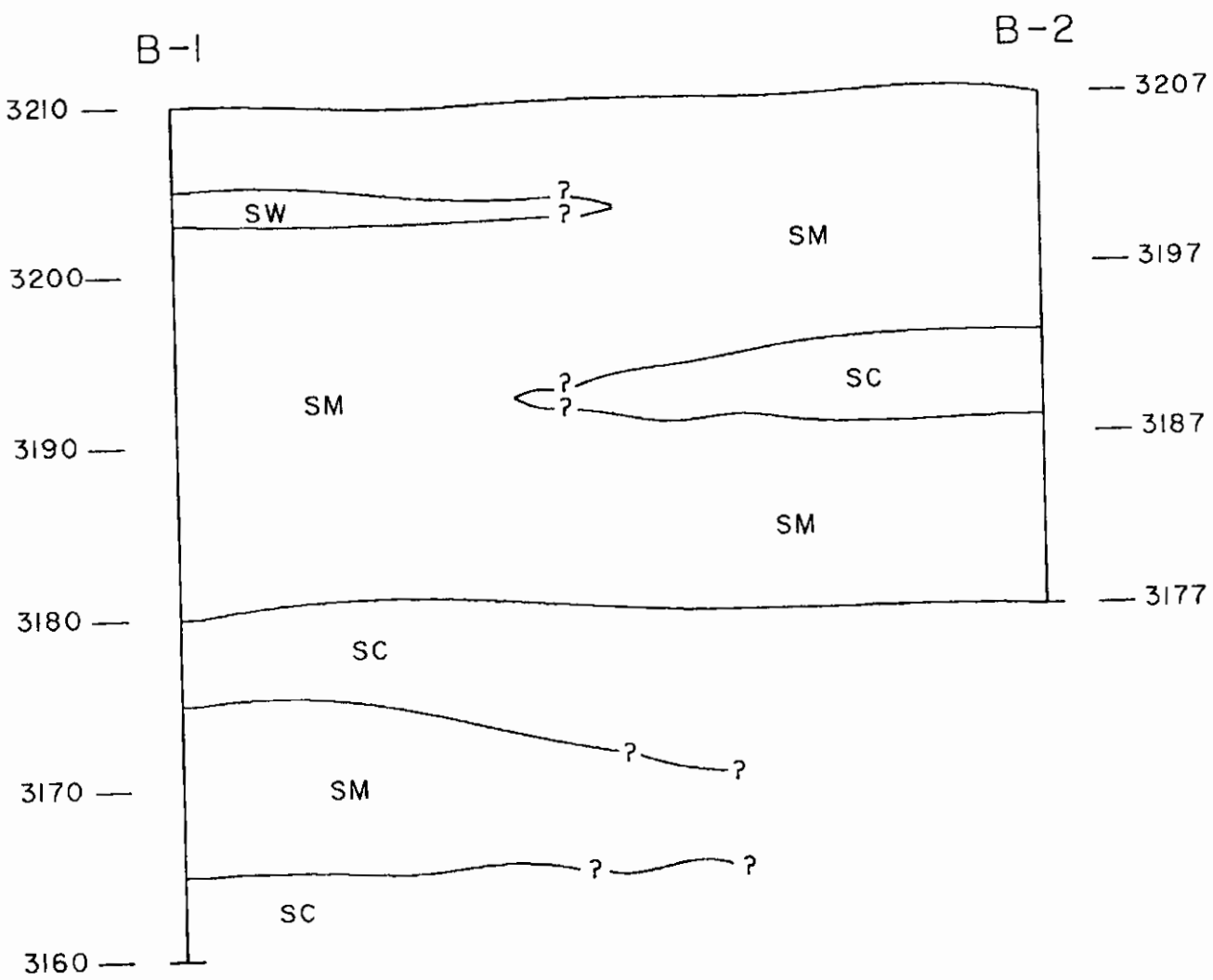
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
Materials Engineering Division

VINCENT GRADE
ACTON METROLINK STATION
BORING LOCATIONS
FIGURE 2

DATE:	SCALE:	PREPARED BY:
08/17/98	N.T.S.	A. YIRGU



LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
Materials Engineering Division

VINCENT GRADE
ACTON METROLINK STATION
APPROXIMATE SOIL PROFILE
FIGURE 3

DATE:	SCALE:	PREPARED BY:
08/17/98	N.T.S.	A. YIRGU

APPENDIX A

TEST BORING NOTES

1. Locations of test borings were determined from Preliminary Plans for Vincent Grade/Acton Metrolink Station, dated July 2, 1998.

2. Group symbols and soil descriptions are based on the Unified Soil Classification System (Standard Plan No. 3093-0). Laboratory classification criteria were used, unless otherwise indicated.

3. * Denotes soil classified by field identification procedures.

4. All borings were drilled with a Calweld 150A rotary rig using an 18-inch diameter bucket.

5. Neither groundwater nor bedrock was encountered during exploration.

MATERIALS ENGINEERING DIVISION
GEOTECHNICAL ENGINEERING SECTION

LOG OF BORING

PROJECT ACTON METROLINK STATION
LOCATION 280' W/O EX. HANDICAPPED RAMP AND 40' N/O RAILROAD TRACKS ℄
ELEVATION 3210± FT.
DATE DRILLED 07/29/98

BORING NO. B-1
LOGGED BY: A.N.

Depth (ft.)	Graphic Log	Soil Classification, Description	Dry Unit Wt. pcf	Moisture Content %	% Passing No. 4	% Passing No. 200
0		*SM, SILTY SAND dense, dry, brown				
5		*SW, WELL GRADED SAND dense, dry, reddish brown	112.3	3.6		
10		SM, SILTY SAND dense, dry, brown @ 10', rocks up to 5"			85.6	23.3
15			118.8	5.3		
20			117.6	6.1		
		@ 22', sand is coarser @ 23', sand is finer				
25						
30		@ 29', fragments of rock up to 5"				
		SC, CLAYEY SAND dense, moist, brown	120.7	9.7	81.7	27.8
35		@ 34', some gravel				
		SM, SILTY SAND dense, moist, brown	114.9	10.6		
40					85.9	21.0
45		*SC, CLAYEY SAND dense, moist, brown @ 47', fragments of rock up to 4"				
50			110.4	7.2		

End of Boring @ 50 ft.

MATERIALS ENGINEERING DIVISION
GEOTECHNICAL ENGINEERING SECTION

LOG OF BORING

PROJECT ACTON METROLINK STATION
LOCATION 405' W/O EX. HANDICAPPED RAMP AND 30' N/O RAILROAD TRACKS ℄
ELEVATION 3207± FT.
DATE DRILLED 07/29/98

BORING NO. B-2
LOGGED BY: A.N.

Depth (ft.)	Graphic Log	Soil Classification, Description	Dry Unit Wt. pcf	Moisture Content %	% Passing No. 4	% Passing No. 200	Blows per foot
0		*SM, SILTY SAND medium dense, dry, brown					
5		@ 7', sand content increased	109.1	3.0			
10		@ 10', sand content decreased	110.5	7.9			
15		SC, CLAYEY SAND dense, moist, brown	120.9	12.6	82.0	26.7	
20		SM, SILTY SAND dense, moist, brown @ 21', traces of gravel	115.2	4.6	81.2	16.1	
25							
30			120.9	9.6			

End of Boring @ 30 ft.

MATERIALS ENGINEERING DIVISION
GEOTECHNICAL ENGINEERING SECTION

LOG OF BORING

PROJECT ACTON METROLINK STATION
LOCATION 110' W/O EX. HANDICAPPED RAMP AND 260' N/O RAILROAD TRACKS ℄
ELEVATION 3217± FT.
DATE DRILLED 07/30/98

BORING NO. B-3
LOGGED BY: A.N.

Depth (ft.)	Graphic Log	Soil Classification, Description	Dry Unit Wt. pcf	Moisture Content %	% Passing No. 4	% Passing No. 200	Blows per foot
0		*SM, SILTY SAND medium dense, dry, brown @ 4', traces of gravel					
5		*SC, CLAYEY SAND dense, moist, brown	108.5	13.1			
10		*SM, SILTY SAND dense, moist, brown					
15		SC, CLAYEY SAND dense, moist, brown	118.4	13.0	85.1	37.5	
20		SC-SM, CLAYEY SAND WITH SILT dense, moist, brown			83.1	28.4	
25			116.8	11.5			
30							

End of Boring @ 30 ft.

TEST BORING NOTES

1. Locations of test borings were determined from Preliminary Plans for Vincent Grade/Acton Metrolink Station, dated July 2, 1998.

2. Group symbols and soil descriptions are based on the Unified Soil Classification System (Standard Plan No. 3093-0). Laboratory classification criteria were used, unless otherwise indicated.

3. * Denotes soil classified by field identification procedures.

4. All borings were drilled with a Calweld 150A rotary rig using an 18-inch diameter bucket.

5. Neither groundwater nor bedrock was encountered during exploration.

APPENDIX B

SUMMARY OF LABORATORY TEST RESULTS

Geotechnical Laboratory

PROJECT NAME: ACTON MTA STATION
TECHNICIAN: MIKE MURPHY/JENNY WADA
PROJECT NO.: X3002232

ENGINEER: ALEX NUNEZ
DATE: 8/13/98
PAGE: 1 **OF** 2

BORING/ SAMPLE	DEPTH	UNIFIED SOIL CLASSIFICATION					MOISTURE AND DENSITY				SAND EQUIV.	SO_4	DIRECT SHEAR				REMARKS
		Class.	ATTERBERG LIMITS		#4	#200	Υ_{field}	m.c.$_{field}$	$\Upsilon_{maximum}$	m.c.$_{optimum}$			$\phi_{ultimate}$	$c_{ultimate}$	$\phi_{maximum}$	$c_{maximum}$	
B - S	Ft.		LL	PI	% Pass	% Pass	pcf	%	pcf	%		ppm	Degree	psf	Degree	psf	
B1-1R	5-6.5						112.3	3.6				<2000					
2B	5-6.0																
3R	10-11.5																
4B	10-11.0	SM			85.6	23.3											
5R	15-16.5						118.8	5.3					40	50	40	50	
6B	15-16.0								138.8	7.1							
7R	20-21.5						117.6	6.1									
8B	20-21.0																
9R	25-26.5																
10B	25-26.0																
11R	30-31.5						120.7	9.5					30	290	38	360	
12B	30-31.0	SC	30	12	81.7	27.8											
13R	35-36.5						114.9	10.6									
14B	35-36.0																
15R	40-41.5																
16B	40-41.0	SM			85.9	21											
17R	45-46.5																
18B	45-46.0																
19R	49-50.5						110.4	7.2									
20B	49-50.0																
B2-1R	5-6.5						109.1	3				<2000	36	220	39	310	
2B	5-6.0																
3R	10-11.5						110.5	7.9									
4B	10-11.0								137.4	8							
5R	15-16.5						120.9	12.6					29	350	29	350	

*Remolded to 90%

SUMMARY OF LABORATORY TEST RESULTS

Geotechnical Laboratory

PROJECT NAME: ACTON MTA STATION
TECHNICIAN: MIKE MURPHY/JENNY WADA
PROJECT NO.: X3002232

ENGINEER: ALEX NUNEZ
DATE: 8/13/98
PAGE: 2 **OF** 2

BORING/ SAMPLE	DEPTH	UNIFIED SOIL CLASSIFICATION					MOISTURE AND DENSITY				SAND EQUIV.	SO_4	DIRECT SHEAR				REMARKS
		Class.	ATTERBERG LIMITS		#4	#200	Υ_{field}	m.c.$_{field}$	$\Upsilon_{maximum}$	m.c.$_{optimum}$			$\phi_{ultimate}$	$c_{ultimate}$	$\phi_{maximum}$	$c_{maximum}$	
B - S	Ft.		LL	PI	% Pass	% Pass	pcf	%	pcf	%		ppm	Degree	psf	Degree	psf	
B2-6B	15-16.0	SC	26	9	82	26.7											
7R	20-21.5						115.2	4.6									
8B	20-21.0	SM			81.2	16.1											
9R	25-26.5																
10B	25-26.0																
11R	29-30.5						120.9	9.6									
12B	29-30.0																
B3-1R	5-6.5						108.5	13.1					28	180	34	220	
2B	5-6.0																
3R	10-11.5																
4B	10-11.0								138.3	7.2							
5R	15-16.5						118.4	13					32	120	36	310	
6B	15-16.0	SC	29	11	85.1	37.5											
7R	20-21.5																
8B	20-21.0	SC-SM	24	5	83.1	28.4											
9R	25-26.5						116.8	11.5									
10B	25-26.0																
11R	29-30.5																
12B	29-30.0																

*Remolded to 90%

APPENDIX C

GRADING REQUIREMENTS

The following are requirements for grading and earthwork, including preparation of areas to receive fill, placement of fill, and excavations. These grading requirements are part of the geotechnical report, and in the case of conflict, the report will take precedence.

1. Maximum dry density tests used to determine the degree of compaction shall be performed in accordance with the American Standard for Testing Materials Method, ASTM Test Designation D-1557-91. Relative compaction shall be expressed as a ratio between the in-situ dry density and the maximum dry density obtained in the laboratory by the foregoing standard procedure.

2. Existing structures, foundations, trash, brush, vegetation, debris, loose fill, and deleterious material shall be removed and disposed of off-site. This removal must be concluded prior to fill placement.

3. Trees, plants, or man-made improvements not planned to be removed or demolished shall be protected by the contractor from damage or injury.

4. Existing ground, which is not satisfactory for the support of fill, shall be overexcavated as required by the geotechnical report. The surface shall then be plowed or scarified to a depth of at least eight (8) inches until the surface is free from ruts, hummocks, or other uneven features, which would inhibit uniform compaction.

5. Native soil free from organic material and other deleterious material may be used as compacted fill; however, selection of all soils, native or imported, is subject to final approval by the Geotechnical Engineer prior to placement.

6. Rock larger than four (4) inches in diameter is not permitted in the compacted fill without review and approval by the Geotechnical Engineer.

7. The selected fill material shall be placed in layers which, when compacted, shall not exceed six (6) inches in thickness. Layers shall be spread evenly and shall be thoroughly blade-mixed during spreading.

8. When the moisture content of the fill material is not sufficient to achieve the required compaction, water shall be added until the soils attain a moisture content to achieve the required compaction. When the moisture content of the fill material is excessive, the fill material shall be aerated by scarification or shall be blended with drier material, until the moisture content is reduced to an acceptable content to achieve the required compaction.

9. After each layer has been evenly spread, moisture-conditioned, and mixed, it shall be uniformly compacted to a minimum of 90 percent of maximum dry density, as determined by ASTM Test Designation D-1557-91. Appropriate compaction equipment shall be utilized to achieve the specified degree of compaction.

10. Compaction shall be by sheepsfoot rollers, vibrating sheepsfoot rollers, multiple-wheel pneumatic-tired rollers or other mechanical means acceptable to the Geotechnical Engineer. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required relative compaction has been obtained.

11. Field density tests shall be performed by the Geotechnical Engineer during grading operations. Sufficient tests of the fill soils shall be made to determine the relative compaction of the fill material in accordance with the following guidelines: 1) one test for each 2-foot vertical lift; 2) one test for each 1,000 cubic yards of material placed; 3) one test in the vicinity of each building pad for each 4-foot vertical lift or portion, thereof. Where sheepsfoot rollers are used, the compacted soil may be disturbed to a depth of several inches. Density tests shall be taken in compacted material below the disturbed zone. When these tests indicate that the required relative compaction is not achieved, the particular layer or portion, thereof, shall be reworked until the required density has been obtained.

12. Where fills are to be placed on slopes steeper than 5:1 (horizontal:vertical) gradient, the fill shall be keyed and benched into competent material.

13. Compaction of slopes shall be accomplished by overbuilding approximately three feet horizontally and trimming back to final grade. The actual amount of overbuilding may vary as field conditions dictate. The final slope face shall be mechanically compacted. Field density testing shall be performed to ensure that a satisfactory compacted fill slope is being developed.

14. The Contractor shall be responsible for stability of all temporary excavations during the construction. Recommendations by the Geotechnical Engineer pertaining to temporary excavations may be used as guidelines only.

15. As recommended by the Geotechnical Engineer, the contractor shall "shut down" or remove grading equipment from an area being tested.

16. Earth-moving operations shall be such that water is prevented from running into excavated areas. Excess water shall be promptly removed and the site kept dry.

17. Fill material shall not be placed, spread, or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the Geotechnical Engineer indicate that the moisture content of the fill material complies with the compaction requirements.

APPENDIX D

PERCOLATION TESTING FOR PRIVATE SEWAGE DISPOSAL SYSTEM

The intent of this study is to provide recommendations for a private sewage disposal system using a conventional septic tank and leach line at the proposed Acton Vincent Grade Metrolink site. The proposed leach line will be located within an island in the parking lot. Proposed grade is 1.5 feet below current grade. The site is situated at the distal edge of an alluvial fan in a desert environment. The soils are gravelly to silty sands. Groundwater is at least 50 feet beneath the ground surface.

Field Testing

Percolation tests to determine leach line absorption area were performed by a California Certified Engineering Geologist in four excavations at a depth between 4.5 and 5.5 feet. The locations of the test pits (TP) are shown on the attached plot plan. Two pits were completed for the primary disposal area and two were completed for the 100% expansion area. The four tests pits were completed on August 10, 1998 with a John Deere 710D rubber tire backhoe to a depth of 4.5 feet in alluvial sediments. The pits were enlarged and the sidewalls sloped back so the pits could be safely entered. At the bottom of each pit, an approximately one foot by one foot by one foot hole was dug by hand. A particle size analysis of a soil sample obtained from the hand dug pit in TP-1 is attached and indicates the soil is classified as a gravelly sand.

On August 11, 1998, these one cubic foot holes were presoaked by repeatedly filling them with water from a 2000 gallon water truck. On August 12, 1998, following the 24-hour presoak, the one cubic foot holes were topped off with water and the tests were conducted. The time for the water level to decrease from the fifth inch to the sixth inch (measured from the top) was recorded. Each test was conducted twice. The measurements are presented in Table 1. The backhoe pits were backfilled on August 12, 1998. The backhoe and water truck were provided by the Flood Maintenance Division.

TABLE 1 - Time for the sixth inch of water to drain from test pit
(measured with stopwatch and rounded to the nearest second)

	Test 1	Test 2
TP-1	4 min. 1 sec.	3 min. 50 sec.
TP-2	4 min. 2 sec.	4 min. 46 sec.
TP-3	4 min. 40 sec.	4 min. 53 sec.
TP-4	3 min. 57 sec.	3 min. 51 sec.

Leach Line System Design

A 500 gallon septic tank is proposed to service the restrooms at the Acton Vincent Grade Metrolink Station. Leach line absorption area in square feet of area (A) is determined using the Ryon Formula:

$A = (T+6.24)/29 \times C/2$

Where A = square feet of leaching area; T = time in minutes for the sixth inch of water to drain from the test pit; and C = capacity of septic tank in gallons.

In this case: $A = (4.88+6.24)/29 \times 500/2 = 95.86$ square feet

Based on the slowest time measured by the percolation test of 4 minutes 53 seconds and a septic tank size of 500 gallons, the minimum leach line absorption area is 96 square feet. This area must be increased by 50% if a leach field, rather than a leach line system is used.

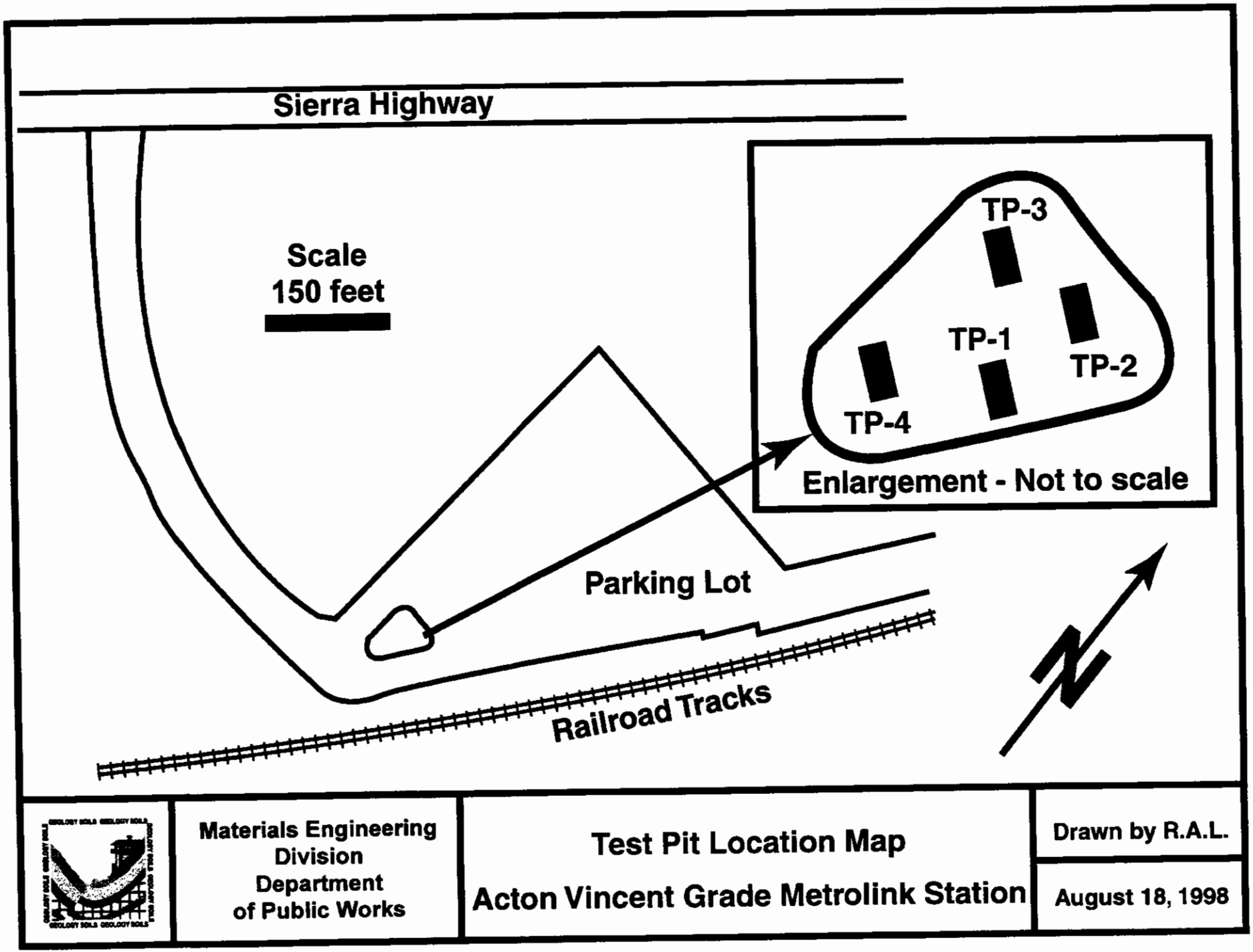
Guidelines provided by the Los Angeles County Department of Health Services allow 3 feet of absorption area per lineal foot of leach line for a 3 feet wide by 3 feet deep leach line trench filled with 12 inches of gravel below the pipe. These guidelines also allow 7 feet of of absorption area per lineal foot of leach line for a 3 feet wide by 5 feet deep leach line trench filled with 36 inches of gravel below the pipe.

Conclusions

Based upon the subsurface exploration presented in this report and the percolation tests provided herein, it is our professional opinion that on-site sewage disposal will be feasible on the site at the location of the test pits, provided our recommendations are incorporated in the design and implemented during construction. Percolation tests have also demonstrated an acceptable 100% expansion area for the leach line of the private sewage disposal system. The groundwater surface is more than 50 feet in depth and should not affect the proper performance of the disposal system during its lifespan.

Recommendations

According to guidelines provided by the Los Angeles County Department of Health Services, and the calculated absorption area determined above, the minimum length of a leach line in a 3 feet wide by 3 feet deep trench filled with 1 foot of gravel below the discharge pipe is 32 feet. An alternate design that meets the requirements is a minimum 14 feet long leach line in a 3 feet wide by 5 feet deep trench filled with 3 feet of gravel below the discharge pipe.



Materials Engineering Division
Department of Public Works

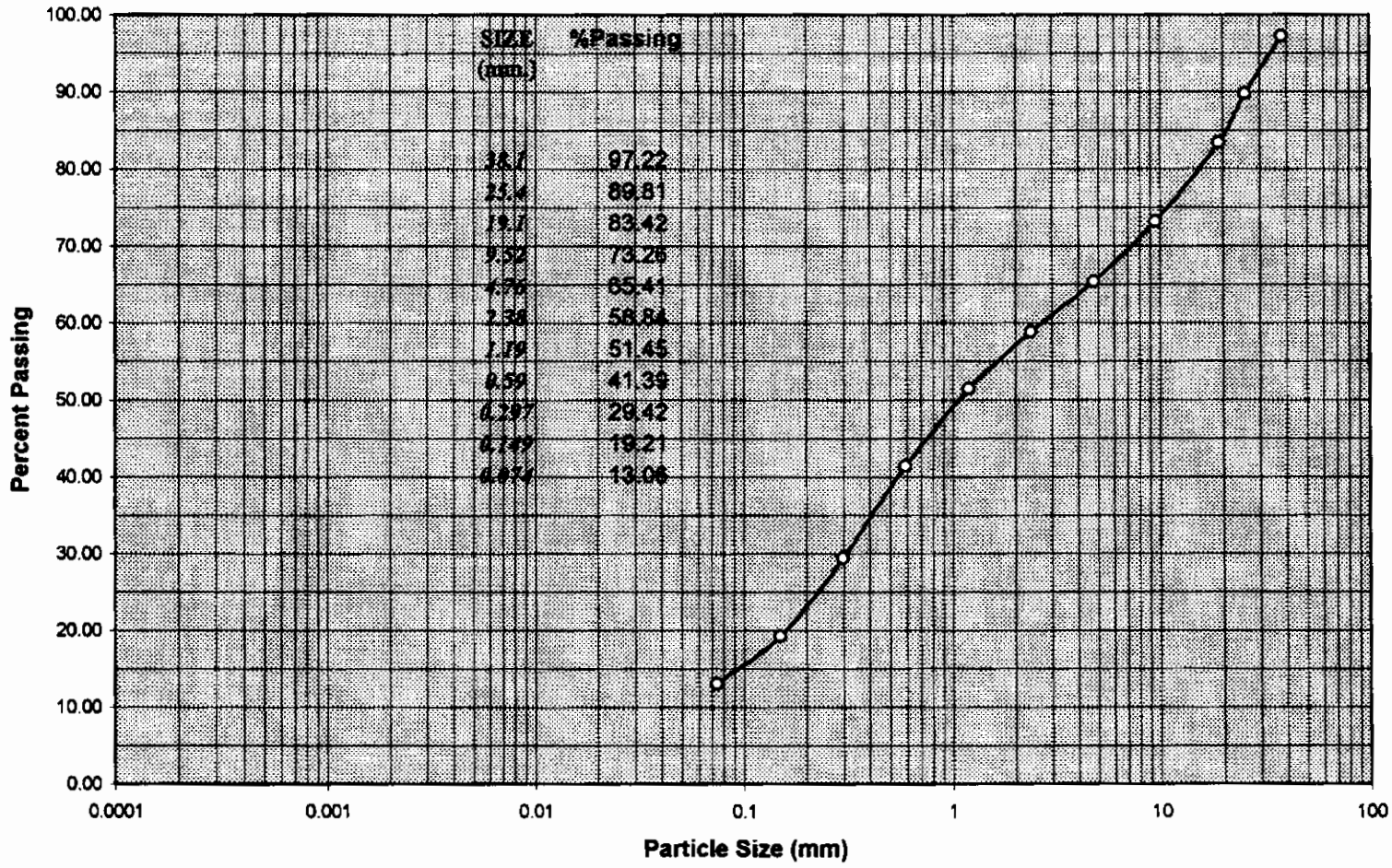
Test Pit Location Map
Acton Vincent Grade Metrolink Station

Drawn by R.A.L.

August 18, 1998

PROJECT NAME: ACTON LEACH FIELD
JOB NO. X3002232
BORING / SAMPLE NO. SINGLE SAMPLE

MECHANICAL ANALYSIS CURVE



%Retained #200	=	***86.9***	**D_{10} (mm) =**	***0.05***	**$C_u = D_{60} / D_{10}$ =** ***56.0***
%Retained #4	=	***34.6***	**D_{30} (mm) =**	***0.3***	
%#4 / %#200	=	***39.8***	**D_{60} (mm) =**	***2.8***	**$C_c = D_{30}^2/(D_{10} \times D_{60})$ =** ***0.6***

APPENDIX B
02 Sample CTO Scope of Work

SCOPE OF SERVICES
CONTRACT NO. E000-00
CTO NO. 000

Xxxx Xxxxxx Project

Description

1.0 OVERVIEW

1.1 Introduction

General Project Description

Project Objectives

The Project Description

MOU or Agreement Description

1.2 Project Location

The Project location (Street address and SCRRA Subdivision and mile posts)

1.3 General CTO Requirements

Consultant will provide overall management and coordination for this CTO. Consultant will designate a project manager with overall responsibility and task manager for day-to-day responsibility.

The work under this CTO will require key personnel with relevant experience in FRA regulated commuter railroad and Class I freight railroad engineering in system design, construction, operations, and safety. Because of the nature of the work and its schedule requirements it will require continuous interaction with SCRRA, and other technical staff, and will be available to meet in SCRRA offices twice per week. The qualification of each key personnel will be provided as a part of the CTO. The name and title of each key personnel will be provided in SCRRA Form DPM-06 – CTO Pricing Proposal.

2.0 PROJECT MANAGEMENT

2.1 Schedule

The Consultant shall submit a baseline schedule at the start of the CTO. The baseline schedule will serve as the basis for monitoring and controlling project activities to help Consultant decide how to use their resources to achieve time and cost goals; help management to evaluate alternatives; form the basis for determining staffing resources, materials, and capital requirements; and, provide a means for tracking progress. The

baseline schedule will be reviewed and approved by SCRRA. The schedule shall show different tasks to be completed, expected sequence of design, and effect of any changes to the overall schedule. The schedule will use Oracle's Primavera product, if possible. The Consultant will be required to provide SCRRA with an electronic as well as paper copy of the schedule.

Confirmation of milestone dates, more detailed schedule assumptions, and any additional milestones dates for coordinating the different design disciplines will be required as a part of a detailed master schedule to be submitted at the start of the design. The Consultant is expected to update the master schedule through the completion of the design.

The Consultant shall furnish a monthly schedule update for each task order to the SCRRA with sufficient detail to show the actual versus scheduled progress on tasks and subtasks. The schedule shall highlight critical path items.

Preliminary milestone dates, based on an assumed Notice to Proceed are established as follows:

ITEM	SCHEDULE
Surveys and Data Collection. Field, traffic, right-of-way (ROW), utility; geotechnical investigation; hydraulics and hydrology; and environmental assessments studies	_ months after NTP
Project Concept and Design Criteria (5% Design)	_ months after NTP
Preliminary Design (30% Design)	_ months after NTP
Interim Design (60% Design)	_ months after NTP
Pre-Final Design (90% Design)	_ months after NTP
Final Design (100% Design)	_ months after NTP
Camera-Ready Submittal	_ months after NTP
Post-Issuance Deliverables (Addenda)	_ months after NTP
Conformed Documents	_ months after NTP

Confirmation of these milestone dates and more detailed schedule assumptions and interim milestone dates will be defined in the Master Schedule. The Master Schedule will be statured and updated.

2.2 Meetings

In general, progress meetings shall be held monthly between the SCRRA Contract Manager, SCRRA Project Manager, Consultant Project Manager, Consultant CTO Task Manager(s), and appropriate Consultant technical leaders. Additional progress meetings

shall be scheduled at a frequency that is appropriate to the level of technical complexity and coordination requirements of each CTO. At monthly progress meetings, the Consultant shall be prepared to report on the status of all issues related to each CTO. The Consultant shall prepare and distribute minutes for all meetings utilizing SCRRA Form. A minimum of two meetings will occur during each phases of this CTO to review design effort and draft reports and drawings.

The meetings shall include but not be limited to reports on project progress, contract progress and overall project status. Other meetings and presentations will be scheduled as required. The Consultant will be responsible to attend those meetings, provide input, and to provide meeting minutes. The minutes shall include an action item list, which shall be kept current and reported on at the meetings.

2.3 Detailed Project Work Plan

The Consultant will prepare a detailed Project Work Plan (PWP) for this project. The PWP will describe, in detail, the activities and steps necessary to complete tasks outlined in this scope of work. The PWP shall also include information about the project management approach including team organization, team decision-making, roles and responsibilities and interaction with SCRRA. In addition, the PWP will include the project schedule, and a detailed project budget. If the Consultant needs to secure an agreement with the other railroads to access the railroad's property and perform the design, the executed agreement should be included with the detailed plan. The PWP shall identify studies to be conducted as part of the evaluation process for the Construction Project.

The PWP will be reviewed and approved by SCRRA. Consultant acknowledges that work on the detailed design will not commence until the PWP has been completed and submitted to SCRRA, and approval received in writing. The Consultant will not be reimbursed for costs incurred in contravention of this requirement.

Consultant's PWP shall provide details of how Consultant will manage the project and accomplish the specific work tasks. The PWP shall include a proposed project schedule and shall describe how Consultant will control that schedule. The PWP shall also include a schedule recovery approach for situations when Consultant fails to meet milestones.

The PWP shall address, but not be limited to, the following:

- Key project Information
  - Project Background
  - Project limits
  - Project purpose, benefits, goals, and objectives
  - Project sponsors and stakeholders
  - Project Scope
- Project description
- Project Management Approach
  - Project deliverables

  - Project organization
  - Roles, responsibilities and decision right
  - Project Risks
  - Lines of communication between Consultant, SCRRA, and other agencies
  - Meetings and conference calls
  - Reports
- Project schedule
- Project Budget and project design fee
- Document control
- Quality assurance and control procedures
- Project Approval

2.4 Communications

The Consultant shall maintain ongoing communications with SCRRA throughout the development of project designs. Regular coordination with SCRRA will allow for timely project planning and decision-making. The Consultant is responsible for all internal communications, including Sub-Consultants.

2.5 Project QA/QC

The overall quality assurance/quality control process will follow the steps defined in the SCRRA's Design Quality Assurance Plan (DQAP), which defines the procedures that govern the initiation, progress and execution of design work. The Consultant may suggest its own QA/QC plan that applies and updates SCRRA's QA/QC Manual.

3.0 SCRRA FURNISHED DOCUMENTS

SCRRA will furnish the following documents to the Consultant:

- Track Charts in electronic format for this area of the project.
- Composite maps in electronic format for this area of the project.
- Historical Right-of-Way drawings currently available on SCRRA files.
- Head-End videos.
- Copies of MOU, agreements.
- Project Study Report (PSR)

SCRRA Engineering Standards, Manuals, Guidelines, Right-of-Entry forms, and Specifications are available on SCRRA's website at www.metrolinktrains.com ("About Metrolink" and "Engineering and Construction"). The Consultant will obtain copies form the website as needed.

4.0 GENERAL REQUIREMENTS

4.1 General

Consultant will be responsible for meeting all the requirements of this Scope of Services.

Project management and administration for this CTO will be done as per SCRRA's Design Procedures Manual, Chapter 4.0. Project Work Plan (PWP), project records, QA/QC procedures, progress meetings, control of sub-consultant(s), progress reporting and billing, and CTO close-out will be as per SCRRA's Design Procedures Manual, Chapter 4.0 requirements.

4.2 Design Development

4.2.1 Research

The Consultant is expected to obtain all records, to which there is reasonable access, that illustrate or describe the current sub-surface and overhead utilities, existing easements and dedications, existing right-of-way, found monumentation, existing track alignments, existing railroad signal and communications facilities, local streets, storm drains, sanitary sewers, and other existing improvements in the vicinity of the project.

All available maps and as-builds will be collected. Any previous reports will be reviewed.

In general, the design shall make use of existing record drawings that show the property boundaries, streets, utilities, railroad tracks and structures, and other improvements.

The research services will include the following:

- Obtain Right-of-Way maps.
- Obtain records of existing storm drain facilities and structures.
- Define right-of-way boundaries.
- Obtain Existing lease and licenses.

4.2.2 Site visit and field inspection

The Consultant will visit the project site to review existing conditions. SCRRA representative will participate in the field inspection. Data collection will include photographs and sketches to assist in developing concepts.

4.2.3 Potholing

Consultant will conduct potholing investigation of utilities that present potential for conflicts with proposed project elements. Potholing services will include a maximum of 50 utility potholes.

3.5.4 Geotechnical Investigation

Consultant will conduct geotechnical investigation to ….

3.5.6 Surveying

Consultant will research available SCRRA horizontal and vertical control datums and monumentation within the project vicinity. Consultant will work with SCRRA to select the proper horizontal and vertical datum for the project. Upon selecting the appropriate datum, Consultant will research local agency control monumentation for a basis of the project control survey. Consultant will conduct a precise GPS control survey with GPS methods to establish horizontal coordinate values.

Aerial Mapping

The consultant will provide high-accuracy ground control for design level photogrammetry. Mapping prepared for SCRRA shall be in conformance with National Map Accuracy Standards (NMAS). The SCRRA control network will be based upon NAD 83, Epochs 2007, Geoid 03 and all geodetic surveying work performed for SCRRA shall adhere to this datum. The vertical datum for SCRRA projects shall be NAVD 88, as established by National Geodetic Survey (NGS). Aerial mapping and photogrammetry shall meet all the requirements shown on SCRRA Design Criteria Manual Section 20.0, Right-of-Way Mapping and Surveying. The aerial photography will include an approximate 1,500 ft. width centered on railroad right-of-way to facilitate design and planning work.

Field surveys shall be provided to control and supplement the aerial mapping and to accurately locate the existing track, signal and communication facilities, surface improvements, overhead and underground utilities, existing right-of-way lines, and other pertinent physical features that may affect the design.

The table below depicts various mapping scales and their applications.

Map Scale	Contour Interval	Mapping Application
1"= 20'	1 foot	Grade Crossing, Bridge, and Station Sites for Final Design
1"= 40'	1 foot	Standard Maps for Engineering Design (PE and PS&E)
1"= 100'	2 foot	Standard Maps for Environmental Studies, Feasibility Studies, Planning, and Conceptual Engineering
1"= 200'	5 foot	Corridor Studies

Table below gives a general idea of the pixel resolution as it correlates with various map scales. These correlations are typical, and the needs of the project may dictate a higher or lower level of output pixel resolution.

Target Map Scale		Orthophoto
1 in = x ft	Ratio, ft/ft	Pixel Res. (ft)
40	1:480	0.20
50	1:600	0.25
100	1:1,200	0.5

200	1:2,400	1.0
400	1:4,800	2.0

Planmetric feature content shall include: all railroad hardware, such as switches, signals, utility boxes, signs, etc.; all utility features, such as poles, manholes, utility boxes/vaults, culverts and fiber optic markers; and other basic planimetric features, such as roads, drains, buildings, parking lots.

Top of Rail Survey

Consultant will collect direct field data on the top of rail for all rails within the Metrolink right-of-way. All rail shots must be taken pairs (left and right rail directly opposite from each other); on tangents, every 100-feet interval; on curves, every 50-feet interval; at turnouts, about nine shots are needed: at switch points (PS - 2 shots), at point of frog (PF - 3 shots), and at the center of the last long tie (LLT – 4 shots); turnout sizes should be measured and determined in the field, then noted in the point descriptions for switch point shots; all shots along turnouts should be taken on the common rails.

Field Data for Design at Street Intersections

In anticipation of engineering design for connections to existing pavement, curbs, driveways and sidewalks, Consultant will collect field data for standard street intersections. More specifically Consultant will collect fixed objects such as valves, signs, utility vaults, utility poles, anchors, manhole rim.

Geometric and traffic operational conditions at the grade crossings should be identified. Geometric conditions includes the lane configuration of the crossing roadway back to and including the nearest signalized intersection or major intersection on either side of the crossing as well as driveways, curb delineation, channelization, or other features which could affect traffic operation in the vicinity of the crossing.

3.5.7 Diagnostic Meeting

Modifications of all highway-rail grade crossings or proposals for new highway–rail grade crossings shall be subject to the CPUC approval process. The lead Engineer and grade crossing design team should allow ample time in the design process for diagnostic reviews. The diagnostic process necessary to begin and complete the design of the highway-rail grade crossing is a several-step process. The diagnostic team should analyze the highway-rail grade crossing at various steps along the way to assess the progress of the overall design. Refer to SCRRA's Highway-Rail Grade Crossing Recommended Design Practices and Standards Manual, Section 3.2 and 7.1 for diagnostic meeting requirements.

CPUC applications shall be prepared by the Consultant, but will be submitted to the CPUC by SCRRA.

3.6 Utility Coordination

This task includes coordinating with SCRRA and impacted utility companies. The objective of this task is to coordinate with the utility companies to obtain information on the existing utilities and facilitate any relocation of the facilities in conjunction with this project.

Utilities shall be identified by the Consultant by:

- Obtaining a list of project-area facilities from Underground Service Alert (DIGALERT) at 1-800-422-4133
- Reviewing utility agreements, as provided by SCRRA and/or member agencies
- Coordination with SCRRA's ROW Encroachments Administrator
- Requesting utility as-built plans from project-area utility companies
- Conducting a field survey to locate all visible utilities and determining location of all poles, manholes, valve boxes, street and traffic lights, and appurtenances
- Performing potholing as necessary

3.7 Third Party Permits

The Consultant shall identify all third party permits that may be required to complete the project. The Consultant will prepare and submit permits, plans, specifications, details, and other applicable documents to appropriate local statutory authority for initial review during earlier design progress submittals, preferably after Interim (60% Design) Design submittal. All permit applications shall be prepared and submitted by the Consultant by completion of Pre-Final Design. Permits that must be obtained prior to award of the construction project shall be secured by the Consultant in coordination with the SCRRA Project Manager in advance of Invitation For Bid (IFB). The Consultant shall prepare a list of all permits for which the contractor will be responsible for incorporation by SCRRA into the Special Conditions.

Permit requirements shall be presented and tracked on SCRRA Form DPM-21: Permit Matrix. This matrix shall be provided with each design submittal. As a railroad property that supports interstate commerce, SCRRA is exempted from some local permitting requirements; the Consultant shall request and obtain confirmation by the SCRRA Project Manager of the applicability of all potential permits listed on the Permit Matrix.

Projects funded by Caltrans may require disabled access review by the Department of General Services (Office of State Architect) and other State approvals before a construction contract is awarded. The Consultant shall track the status of a State Architect review until final approval is received.

Permits required for this project are listed below:

- Building, plumbing, electrical, mechanical, excavation, grading, drainage, extensive public works improvements, and sewer permits as required by city and county codes and requirements.
- Relocation, or protection or reconstruction of fiber optic or oil lines.
- California Public Utilities Commission (CPUC) permits for grade crossings and grade separations.
- Prepare and submit temporary traffic control plans, consistent with SCRRA temporary traffic control guidelines, for all activities located within or in the vicinity of highway-rail grade crossings to SCRRA and appropriate local statutory authority for initial review. The Consultant is not responsible to obtain the actual permit.

4.8 Signal System Design

Signal system design will **not** be included as a part of this scope of services. Signal system design and construction will be done by SCRRA's On-Call S&C Design Services Consultant.

Consultant will coordinate with SCRRA's On-Call S&C Design Services Consultant to ensure that signal design requirements are reflected in the track and civil design and integrated with proposed construction staging and phasing plans. Consultant will coordinate with SCRRA's On-Call S&C Design Services Consultant the signal system design regarding traffic signal preemption calculations and proposed warning device relocations at grade crossings within the project limits. Costs of signal modifications and improvements will be evaluated in consideration of value engineering or cost savings approaches. Periodic signal/operations coordination meetings will be conducted to provide a seamless interface. Review of signal needs will also be conducted prior to submittals.

4.9 Contract Specifications

The Consultant will provide specifications for this project as per requirements shown on the SCRRA's Design Procedures Manual.

4.10 Cost Estimate

The Consultant shall prepare an Engineer's Estimate at each phase of design completion. The Project Cost Estimate shall capture the full range of capital costs related to the project. Project cost items shall be developed to a level of detail appropriate to the phase of design.

The Project Cost Estimate shall be supported by a detailed Construction Estimate and Materials List.

The Consultant will promptly advise SCRRA if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations.

4.11 Submittals

Progress submittals shall be transmitted to SCRRA so that they are received by the SCRRA Project Manager on or before the date indicated in the approved CTO scope of work. Multiple copies of submittals may be required.

4.12 Environmental Review

The Consultant will complete environmental clearance documentation for the Construction Project. The determination of the appropriate class of action and the Project's environmental impact will be made by SCRRA. The Consultant shall preliminarily fill in the FRA's Categorical Exclusion (CE) worksheet with the current project description and appropriate project maps, and submit it with the Project Work Plan to assist SCRRA and FRA in making a class of action determination.

If SCRRA/FRA determines the appropriate class of action is a CE, the Consultant will complete any additional studies and documentation for the CE in accordance with FRA's *Procedures for the Consideration of Environmental Impacts* (effective May 26, 1999) (Environmental Procedures). The Consultant will evaluate the project with the use of qualified environmental professionals to determine its impact, including conducting a review of existing literature, contacting relevant agencies and performing field reconnaissance. The Consultant will document the findings and submit the CE worksheet with supporting documentation for SCRRA and FRA review and approval.

If SCRRA/FRA does not concur that a CE is appropriate for this Construction Project, the Consultant will undertake an Environmental Assessment (EA) in accordance with FRA's Environmental Procedures.

The Consultant will conduct Construction Project scoping to determine the key issues, needed studies in accordance with FRA's Environmental Procedures and potential effects of the action and if determined appropriate in consultation with SCRRA/FRA, develop a public involvement plan that identifies key contacts within agencies, the news media, public officials, the general public, civic and business groups, relevant interest groups, present and potential riders/users, and private service providers/shippers. This plan will also identify how public involvement activities will be linked to key milestones in the planning/engineering and environmental process.

The Consultant, in coordination with SCRRA,, shall prepare an EA to include, but is not limited to, the following: definition of the project and existing conditions, identification of the purpose of and need for the Project, identification and analysis of project build alternatives and a no-action alternative, and an analysis of existing conditions in comparison to the impacts of the proposed action. The Consultant will submit a Draft Environmental Assessment to SCRRA, for review and comment.

The Consultant will address SCRRA/FRA comments and produce a Final Environmental Assessment for SCRRA/FRA for review and approval. If determined appropriate in consultation with SCRRA will circulate the draft EA for public and agency review and

comment. Through consultation with the SCRRA/FRA and confirmation that no significant impacts are anticipated, the Consultant will produce a draft Finding of No Significant Impact (FONSI) (along with a response to comment document if the EA is publically circulated) and submit it to SCRRA, for review and completion.

If there is an indication of potential for significant impact that cannot be mitigated and SCRRA/FRA determines that a draft Environmental Impact Statement (EIS) is required, SCRRA will establish scopes and costs for the preparation of an EIS as well as concomitant additional public outreach activities.

The Consultant is responsible for identifying all necessary permits required for the Construction Project's implementation.

The Consultant shall break down the cost for the following environmental tasks:

- Categorical Exclusion (CE) determination and FRA Categorical Exclusion (CE) determination worksheet
- Draft and Final Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI)
- Establish scopes and costs for the preparation of an Environmental Impact Statement (EIS)

4.13 Alternatives Analysis

The Consultant shall prepare two or more concepts that achieve a reasonable compromise between the designs. When either the initial composite or compromise alternatives are complete, Consultant shall prepare a presentation for SCRRA to discuss the alternatives.

In preparing the alternatives, the Consultant is encouraged to schedule regular workshop meetings with SCRRA to develop design solutions to specific problems. An allowance for approximately five design workshop meetings should be made in the proposal.

The analysis of alternatives shall consider the geometric alignment of the grade crossings and the adjoining streets, the layout of the crossing, the layout of the equipment protecting the crossing, and the flow of vehicular traffic through the crossing. In all cases, proper alignment of the crossing and the surrounding roads, and placement of warning devices shall take precedence over other design features. In general, the following hierarchy shall control the development of the alternatives:

- Alignment of roadway on approach to track crossing, and at its intersection with the railroad.
- Proper placement of railroad warning and other traffic control devices
- Maintaining proper surface drainage.
- Preservation of railroad right-of-way to the fullest extent possible.

- Minimizing future maintenance.
- Beautification

4.14 Construction Staging

Preliminary and Interim construction phasing or staging plan shall be developed which integrates the construction of all project work elements into a practical and feasible sequence. This plan shall accommodate the existing railroad traffic movements during construction, and shall accommodate the vehicular movements through the construction zones to the extent possible.

Constructability reviews shall be conducted to verify that the proposed design and staging approach shall allow for cost effective construction within the railroad operational and vehicular maintenance of traffic requirements within the project limits. A constructability report shall be developed to include identification of high-risk construction elements.

5.0 DETAILED DESIGN SCOPE

The Consultant shall develop detailed work scope, cost estimates, schedule and work plan required for preparing and completing the design elements, the level of design effort, and the engineering submittal required at each stage of design as described on the attached Design Scope Matrix and Design Submittal Matrix. The Consultant will prepare the design as per these matrices. The Consultant shall provide all labor, supervision, materials, supplies, and transportation as well as have sufficient financial resources to complete the scope of services indicated in the matrices. Any limitations and exception will be included in the scope of services submitted as a part of the CTO scope of services.

6.0 PURPOSE, SUBMITALS AND DELIVERABLES

The overall submittal process will follow the steps defined in the SCRRA Design Procedures Manual, which defines the required purpose, submittals, deliverables, and reviews.

6.1 Project Concept & Design Criteria (5% Design)

This stage of design will require approximately 5% of the overall design effort.

The purpose of the concept submittal is:

- To compare alternative design solutions.
- To establish a program cost estimate and/or determine the appropriateness of the established budget.
- To confirm the correctness and completeness of the project objectives.
- To convey the project to transportation and other interested groups.
- To assure SCRRA Director-level approval of project concept.

During the concept design phase, the Consultant shall perform the following work:

- Perform a field inspection to identify and measure critical clearances and evaluate existing conditions, including track alignment, evidence of utilities, identification and location of structures and railroad signal equipment, and identify potential Right-of-Way conflicts.
- Develop conceptual alignments and layouts utilizing digital photography (if available) enhanced to identifiable scale, with alignments in color. New alignments and structures, along with critical measurements, shall be identified.
- Obtain county assessor maps and railroad Right-of-Way maps to identify railroad property limits.
- Prepare Right-of-Way base maps for limits of the project.
- Contact Underground Service Alert (USA, or DigAlert) to identify utilities that may be affected by the project; begin assembling utility information using the SCRRA Utilities Matrix.
- Develop conceptual cost estimate.
- Single line signal design drawing identifying track configuration, signals and switches.
- Conceptual overview of alternative signal configuration.
- Prepare an SCRRA Project Definition Report to define the objective, major elements, anticipated schedule, and projected cost of the work.

Deliverables shall include, but shall not be limited to:

- Design Submittal Report, including a list of reports and analyses that should be prepared as a part of preliminary design.
- Project Definition Report (minimum 5 color copies). *Refer to Section 5.2.2.*
- **SCRRA Form DPM-23: Project Concept Checklist.**

6.2 Preliminary Design (30% Design)

The Preliminary Design Phase will commence after the SCRRA Director of Engineering and Construction approves the Project Concept and design criteria including any exceptions. At times, tasks will commence based on SCRRA developed concept. This phase of design will require about 30% of the overall effort, and on the average the engineering/technical work will be advanced to 30% of final design. The design criteria/exceptions will continue to be refined progressively as the design advances.

The purpose of this design phase is to:

- Describe project objectives and goals based on engineering analysis.
- Identify all stakeholders and incorporate their inputs towards realizing the project.
- Determine the constructability and functional feasibility of the project.
- Advance the design to a level where potential impacts on the environment, utility lines and drainage can be identified, quantified and solutions can be explored.
- Prepare preliminary Right-of-Way requirements maps.

- Identify initial operating impacts.
- Quantify potential impacts on local traffic circulation and mobility during construction.
- Identify potential adverse environmental impacts that must be mitigated.
- Identify possible construction staging and contractor staging areas.
- Prepare a preliminary engineer's estimate, including preliminary SCRRA materials list so that procurement coordination may begin.
- Develop vital and non-vital software logic as needed for applications involved.
- Develop preliminary system-wide communication backbone that may be fiber-optic or communication based.
- Preliminary recommendations on current or new signal and communication technologies.

The Consultant shall conduct project field work, work through SCRRA to initiate contacts with private and government agencies, individuals, and civic groups, and contact utility companies, as required, to ensure that the design job progresses smoothly and to avoid unexpected and costly omissions that would severely impact the project during the latter stages of design.

Deliverables include:

Drawings

- Title sheet, including project location
- Index of drawings
- Preliminary typical sections
- Track plan and profile sheets, including tabular presentation of curve data (track no., curve no., degree of curve, overall length, superelevation, spiral length, passenger speed and unbalance, freight speed)
- Basemapping, to include Right-of-Way limits, as obtained from railroad Right-of-Way maps or purchase and sale agreements provided by SCRRA, and from parcel maps obtained from the County Assessor's office
- Cross-sections at critical locations
- Type/size/location drawings for structures
- Plan for station designs
- Right-of-Way base maps for the construction limits
- Preliminary signal circuit designs
- Preliminary discussion of alternatives and scaled layout of preferred alternative
- Preliminary aspect charts

Specifications

- List of standard and special specifications.
- List of standard and reference drawings.

Estimate

- Preliminary Project Cost Estimate

Exhibits, Calculations and Reports

- Design Submittal Report, including a summary of preliminary Right-of-Way issues, including potential acquisitions, encroachments, or easements, and describing any discrepancies among available Right-of-Way documents
- Track schematic, color-coded, illustrating existing and proposed conditions within project limits (11" high strip map)
- Preliminary Utility Matrix
- Preliminary Traffic Impact Report (if required)
- Preliminary Geotechnical Report
- Preliminary Permit Matrix
- Design Interface Matrix
- Design Review Comments form, with responses
- Preliminary (using SCRRA part numbers) material list for all added and new equipment
- Signal design basis report describing the reasons for the project and operational benefits
- **SCRRA Form DPM-24: Preliminary Design Checklist.**

6.3 Interim Design (60% Design)

The Interim design may proceed in advance of SCRRA review comments on the Preliminary Design submittal with the approval of the SCRRA PM and based on the approved CTO. This design phase will require an additional 30% of the overall design effort to bring the design level to 60% design completion. The Interim Design submittal will include but not be limited to the following:

- Engineered alignments, based on up to date topographic information.
- Drainage layout and design, including Stormwater Management (SWM) facilities.
- Detailed mitigation measures for traffic related issues, if required.
- Coordination and preparation of temporary traffic control plans.
- Additional geotechnical investigations for final design purposes, if requested.
- Photometric calculations to support appropriate light levels as required by SCRRA and other agencies requirements.
- Developing landscaping details, where applicable.
- Identification of all permits requirements.
- Critical elevations, offsets and dimensions.
- Summary of potential public relations issues.
- Track layout with turnout details, including point of switch, headblock ties, frogs, and locations of insulated joints for all turnouts; except lateral turnouts of a single diverging track, standard crossover of two parallel tracks, and above-mentioned turnouts and crossovers where there is no roadway within 50 feet longitudinally

or 25 feet laterally of the point of switch. This track layout with turnout details does not need to be a part of the final design package.

- Prepare Right-of-Way requirements map for project limits.
- Interim recommendations on current or new signal and communication technologies.
- Evaluation and modifications to existing adjacent highway-rail grade crossings and wayside signal locations circuit plan designs and equipment within affected approaches.
- Interim signal facility and insulated joint locations.
- Review and recommendation on maintainability, safety, operational, signal visibility, communications control system equipment, and reliability enhancements.

  Work with the electrical utility company(s) to identify all required AC feed locations to ensure availability at various sites and to secure basic technical information and agreements for the designs to proceed.
- Quiet Zone signal system in accordance with FRA requirements.
- Interim radio system design consistent with FCC regulations providing complete coverage of the operating area. The task will include a coverage analysis indicating the adequacy of existing receiver/transmitter location and/or determining the need for additional locations.
- Develop interim vital and non-vital software logic as needed for applications involved.
- Interim system-wide communication backbone that may be fiber-optic or communication based.

The purpose of this design submittal is to:

- Confirm the designer's approach to the major engineering and functional issues.
- Confirm adequate advancement of the design.
- Confirm the adequacy program cost estimate and budgets or funding sources.
- Confirm that all affected agencies and utilities companies have agreed to the work.
- Identify preliminary signal facility layouts (by SCRRA signal Consultant).
- Define expected construction duration.
- Participate in diagnostic reviews of crossings that will be modified, at meeting(s) set up by Crossings and Encroachments engineer with affected local and regulatory agencies.
- Confirm practical locations for insulated joints and headblocks, keeping in mind the walkway, drainage, roadway, and interference from nearby tracks.

This submittal may be omitted on tasks at the discretion of the SCRRA Project Manager and/or Manager (Civil Engineering or C&S Engineering). In that case, the Pre-Final Design will serve as an Interim Design submittal.

The submittal for this phase of design will follow the format for Final submittal, except that the design is not advanced to 100% level. In general, all sheets to be included in the final design submittal shall be included at the interim submittal to demonstrate the work complete and the work remaining. The Track Signal Designer (SCRRA's Signal Designer) will utilize the approved Interim Design for all of its work. Review comments from the Preliminary Design will be incorporated during the progress of the Interim Design work.

Deliverables include:

Drawings

- Title Sheet with location map
- Index of Drawings
- General Notes
- Survey Control
- Track Schematic
- Track typical sections with station limits
- Photometric light levels
- Track plan and profile sheets, including tabular presentation of curve data (track no., curve no., degree of curve, overall length, superelevation, spiral length, passenger speed and unbalance, freight speed)
- Track geometry tables and sheets
- Track layouts showing the complete graphical turnout details to scale over the centerline of the track, including point of switch, headblock ties, frogs, and locations of insulated joints for all turnouts; except lateral turnouts of a single diverging track, standard crossover of two parallel tracks, and above-mentioned turnouts and crossovers where there is no roadway within 50 feet longitudinally or 25 feet laterally of the point of switch.
- Earthwork cross-sections at 50 ft. intervals showing utilities at the right elevations
- Drainage calculations and layouts, including SWM systems
- Composite utility or utility rearrangement plans
- Grading, erosion and sediment control plans
- Grade crossing plans
- Signing and striping plans
- Right-of-Way mapping showing existing Right-of-Way and any additional land required
- Preliminary Maintenance of Traffic (Traffic Control) Plans, including access roads if required
- Preliminary Construction Phasing Plans
- Preliminary landscape drawings
- Electrical and Mechanical Drawings associated with system control
- Temporary traffic control plans
- Interim aspect charts and final scaled layout
- Interim circuit designs and plans. Track circuit fouling protection, bonding, and locations of insulted joints on the circuit plans

- Interim advanced standard crossing protection layouts for all the crossings on the corridor
- Interim design for upgrading power switch machines to high voltage, high speed machines, when necessary
- Fiber splice, fiber distribution panel connections, fiber node detail designs when necessary
- VHLC rack local control panel, relays, batteries, rectifier and miscellaneous equipment redesign for control points, when necessary
- Interim design of enclosures location avoiding underground facilities and minimizing vibration impacts by operational movements, while ensuring access and security
- Review for single switch indications on crossovers to allow for track and time on one track at a time during inspection and testing
- Complete (using SCRRA part numbers) material list for all added and new equipment
- Interim design of signal AC power system. This could include a system-wide redundant AC power supply, individual feeds required at each signal case, or a combination of both systems
- Interim design of new underground cables

Specifications

- Index of Specifications
- Draft Scope of Work and Hours of Operation Specifications
- List of all Standard Specifications and preliminary write up for Project-Specific Specifications
- Project-Specific Specifications are complete in draft form

Estimate

- Draft Engineer's Estimate
- Quantity Estimate for Owner-Provided Materials

Exhibits, Reports and Calculations

- Design Submittal Report
- Track schematic, color-coded, illustrating existing and proposed conditions within project limits (11" high strip map)
- Final drainage calculations
- Final Geotechnical Report
- Final Traffic Impact Report
- Complete Utility Matrix
- Complete Permit Matrix (all permits identified)
- CPUC exhibits
- Design Interface Matrix
- Design Review Comments form, with responses
- **SCRRA Form DPM-25: Interim Design Checklist.**

6.4 Pre-Final Design (90% Design)

The pre-final design will not commence until the client provides the Consultant with Interim Design review comments and approval to proceed to 100% design unless otherwise authorized by the SCRRA Project Manager. This phase of design will require that the design be advanced to at least 90% of the overall design effort. Some components of the design may be progressed to 100% design.

After the Consultant has received SCRRA approval of the Pre-Final Design, the Consultant and its subconsultants shall at no additional cost to SCRRA, be responsible for promptly revising and correcting all post Pre-Final Design Submittals, plus plans, specifications and contract documents which contain errors, omissions, deficiencies, incomplete, poor quality or poorly coordinated work. This requirement for the Consultant to promptly revise and correct errors, omissions, deficiencies, incomplete, poor quality or poorly coordinated work at no cost to SCRRA shall extend from the Pre-Final Design of the project through the remaining design, construction and project close-out phases.

The purpose of the Pre-Final Design submittal is:

- To confirm adequate advancement and quality of the design and design documents.
- To finalize locations of signal facilities and insulated joints.
- To identify all required Right-of-Way impacts (including temporary easements, acquisitions, and lease revisions).
- To identify all required utility protections or relocations.
- To obtain required approvals from regulatory agencies.
- To refine the project schedule.

Deliverables are similar to the Interim Design submittal except that the design documents are advanced to 90% or higher design level, specifically:

- Top and toe of slope is identified
- Slope treatments are engineered
- Utility conflicts are engineered
- Culvert and utility crossing extensions are engineered
- Agreements are in place with agencies and utility companies
- Permit applications are complete
- Record of survey if there are property acquisitions
- **SCRRA Form DPM-26: Pre-Final Design Checklist**

6.5 Final Design (100% Design)

The final design will commence after the SCRRA Project Manager gives instructions and signed authorization to proceed to 100% design. Review comments from the 90% submittal will be incorporated during the progress of work to 100%.

The purpose of the Pre-Final Design submittal is:

- To confirm quality, completeness and adequacy of design for issuance for competitive bidding.

This phase of design will require that the final design deliverables be ready for bidding and construction. Deliverables shall comprise complete plans, specifications and shall include:

- Final Plans.
- Final Project-Specific Specifications
- Final Project Cost Estimate
- Schedule of Quantities and Prices
- Quantities take-off calculations and related drawings
- Track schematic, color-coded, illustrating existing and proposed conditions within project limits (11" high strip map)
- Final circuit designs and plans. Track circuit fouling protection, bonding, and locations of insulted joints on the circuit plans
- Complete (using SCRRA part numbers) material list for all added and new equipment

As well as:

- Design Submittal Report.
- Design Interface Matrix.
- Final Utility Matrix.
- Final Permits Matrix.
- Design Review Comments form, with responses.
- **SCRRA Form DPM-27: Final Design Checklist.**

6.6 Camera-Ready

The purpose of the Camera-Ready submittal is:

- To allow SCRRA to issue documents for competitive bidding.

Deliverables shall be suitable for issue as Invitation for Bids (IFB) and will include:

- Final plans, specifications and estimates (hardcopy plans and specifications affixed with seal of licensed engineer in responsible charge of the work)
- Schedule of Quantities and Prices
- CD containing above documents in native electronic format (i.e. MS Word, MS Excel, MicroStation)
- Engineering calculations
- Project Cost Estimate back-up
- Design Submittal Report

- Design Review Comments form, with responses
- **SCRRA Form DPM-28: Camera-Ready Checklist**

SCRRA Project Manager will transmit all pertinent information to Senior Contract Administrator according to the format set forth in **SCRRA Form DPM-29: Bidding Documents Checklist.** SCRRA Project Manager will complete and transmit **SCRRA Form DPM-30: Liquidated Damages Calculations Form** as part of the submittal to Senior Contract Administrator. The above information should be provided well in advance of the Invitation for Bids.

6.7 Post-Issuance Deliverables (Addenda)

Once submitted in camera-ready format, the plans, specifications, and bid form shall be considered controlled documents. Changes to drawings shall be called out in accordance with the requirements of the ***SCRRA CADD Drafting Standards, Guidelines, and Criteria***.

Any revisions to the IFB documents resulting bidder questions or any other reason must follow the following procedure:

- Changes to the IFB documents that have been sealed and signed by a licensed engineer shall be made by the original preparer of that document.
- No other body except the Consultant or SCRRA may initiate changes to documents.
- The Consultant shall notify SCRRA in writing of any proposed changes to the documents. Changes to documents shall be made by the Consultant only after review and approval by SCRRA.
- SCRRA will notify the Consultant in writing of SCRRA-proposed changes to the documents.
- SCRRA will assign and provide to the Consultant an Addendum number and issue date for use in preparing revised documents.
- Changes to drawings shall be made and annotated in accordance with the ***SCRRA CADD Drafting Standards, Guidelines, and Criteria***.
- Changes to specifications or bid forms shall be made an annotated as follows: Deletions to be indicated by strike-out. Additions to be indicated by boldface type. Changes to be marked with a vertical bar in each margin annotated with the appropriate change reference (e.g., A1 for Addendum 1). Footers to be modified to reflect addendum number and issue date. *Refer to sample documents in Appendix B.*

6.8 Conformed Documents

After award of the contract by SCRRA, the Consultant shall prepare a consolidated set of contract documents, called the Conformed Set. The purpose of the Conformed submittal is:

- To prepare a single set of contract documents to be issued for construction.

The Conformed Set shall incorporate the latest revisions made during the bid period by means of addenda into the IFB documents. Refer to SCRRA CADD Drafting Standards, Guidelines and Criteria for conforming procedures. Headers and footers shall be revised to reflect contract issuance for construction. *Refer to Section 4.8.5, sample documents in Appendix B, and the* ***SCRRA CADD Drafting Standards, Guidelines, and Criteria****.*

Deliverables shall be suitable for issuance for construction and shall include:

- Conformed plans and specifications (hardcopy plans and specifications affixed with seal of licensed engineer in responsible charge of the work)
- Bid form, incorporating actual prices of lowest responsive and responsible bidder to whom contract has been awarded
- CD containing above documents in native electronic format (i.e. MS Word, MS Excel, MicroStation)
- Revised engineering calculations, if any

7.0 REGULATIONS AND STANDARDS

7.1 General

The design shall meet all applicable parts of the State of California general laws, California Public Utilities Commission (CPUC) requirements, FRA safety requirements, and the specific project requirements. Where any conflict in criteria exists, the stricter criteria shall govern.

Unless specifically noted otherwise in these criteria, the latest edition of the standard, code, or guideline that is applicable at the time the design is initiated shall be used. If a new edition of or amendment to a standard, code, or guideline is issued before the design is completed, the design shall conform to the new requirements to the extent approved or required by the agency enforcing the standard, code, or guideline changed.

The most recent editions of the following publications and documents were used:

- AASHTO - American Association of State Highway and Transportation Officials
- ADA - Americans with Disabilities Act
- AREMA - American Railway Engineering and Maintenance-of-Way Association (AREMA) Recommended Practice
- Cal/OSHA - State of California Division of Occupational Safety and Health safety orders
- Caltrans - Caltrans Highway Design Manual (HDM)
- CBC – California Building Code
- CPUC – California Public Utilities Commission General Orders
- FRA – Federal Railroad Administration, Track Safety Standards, particularly 49 Code of Federal Regulations (CFR) 213, 214, 234, and 236
- FTA - Federal Transit Administration, Federal Highway Administration (FHWA)
- "Greenbook" Standard Specifications for Public Works Construction, written and promulgated by Public Works Standards, Inc.
- Government Codes of the State of California
- UBC—Uniform Building Code, including seismic requirements

- 49 CFR 195, Transportation of Hazardous Liquids by Pipeline

7.2 SCRRA Standards

SCRRA has developed a number of standard plans, specifications, and manuals that shall be applied to this project. In particular, standard plans and specifications shall be used wherever possible to reduce engineering and construction costs. All standards and manuals shall be adhered to throughout this project unless waived in writing by SCRRA Director of Engineering and Construction.

- SCRRA Engineering Standards
- SCRRA Standard Specifications
- SCRRA Design Criteria Manual
- SCRRA Design Procedures Manual
- SCRRA Design Quality Assurance Manual
- SCRRA CADD Standards
- SCRRA Track Maintenance, Right-of-Way and Structures Engineering Instructions
- Standard Operating Procedures (SOPs)

7.3 SCRRA Guidelines

The following SCRRA documents will also be referenced and revised as appropriate:

- SCRRA Highway-Rail Grade Crossings Recommended Design Practices and Standards Manual
- Grade Separation Guidelines
- Excavation Support Guidelines
- Landscape Design Guidelines
- Rails-with-trails Design Guidelines
- Quiet Zone Implementation Guidelines and Procedures
- SCRRA Temporary Traffic Control Guidelines

7.4 SCRRA Design Procedures Manual

The overall design process will follow the steps defined in the SCRRA Design Procedures Manual, which defines the required submittals, deliverables, and reviews. The manual also defines the development of specifications and estimates. As previously noted, the design shall incorporate existing SCRRA standards, plans, and specifications. Specifications shall be in CSI (Construction Specifications Institute) format.

8.0 DELIVERABLES

Consultant will control all project documents and will provide deliverables and final file material to SCRRA in both paper and electronic format as defined in the SCRRA Design Procedures Manual. Consultant shall maintain project documents and data in an

organized, logical fashion and shall be able to promptly retrieve and distribute project information.

The deliverables associated with this project are listed on the attached Design Submittal Matrix. The Consultant shall provide the submittal as per this matrix.

END OF SCOPE OF SERVICES

APPENDIX B
03 Sample SCRRA Standard Specifications

SECTION 32 31 13

CHAIN LINK FENCING AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Chain link fencing and gates including the chain-link fence fabric and posts, concrete for post bases, rails, ties, bands, bars, rods and other fittings and hardware designed to support the fabric in a vertical, taut position.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.

2. Section 03 31 00 - Structural Concrete.

1.02 REFERENCES

A. ASTM International (ASTM):

1. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

2. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

3. A392, Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

4. A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

5. A501 Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

6. A824, Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for use with Chain-Link Fence.

7. F552, Standard Terminology Relating to Chain-Link Fencing.

8. F567, Standard Practice for Installation of Chain Link Fence.

9. F626, Standard Specification for Fence Fittings.

10. F900, Standard Specification for Industrial and Commercial Security Gates.

11. F1043, Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Line Fence Framework.

12. F1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

B. American Welding Society (AWS).

C. Chain Link Manufacturer's Institute for "Galvanized Steel Chain Link Fence Fabric and Accessories."

D. SCRRA Engineering Standards ES5106, Right of Way Fencing, Chain Link Fence.

1.03 DEFINITIONS

A. See ASTM F552.

B. NPS: Nominal pipe size, in inches.

C. Installer or Applicator:

1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.

2. Installer and applicator are synonymous.

1.04 SUBMITTALS

A. Shop Drawings:

1. Submittals shall be made in accordance with provisions contained in Division 01.

2. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer's installation instructions.

3. Scaled plan layout showing spacing of components, accessories, fittings, and post anchorage.

4. Details of fence materials, foundations, anchorage details and gate details.

5. Source quality control test results.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Installer shall have a minimum two (2) years experience installing similar fencing.

2. Utilize only AWS certified welders.

B. Construct fence within reasonable close conformity to lines and grades shown on the Plans and at the locations as directed by the Engineer.

PART 2 - PRODUCTS

2.01 COMPONENTS

A. Components for Chain Link Fencing shall conform to SCRRA Engineering Standards ES5106, Right of Way Fencing, Chain Link Fence and these Specifications.

B. Chain Link Fabric:

1. Fabric type:

a. ASTM A392 zinc-coated steel:

1) Coated before weaving, 2.0 oz/sf.

2. Wire gage shall be 11-gage for fences 6 feet-0 inches and less and 9-gage for fences over 6 feet-0 inches in accordance with the Project Plans or as determined by the Engineer based on field conditions in accordance with SCRRA Engineering Standards ES5106.

3. Mesh size shall be 1 inch.

4. Selvage treatment:

a. Top: Knuckled.

b. Bottom: Knuckled.

C. Concrete:

1. Minimum cement content shall be 560 lbs/cu. yd.

2. Minimum 28-day compressive strength shall be 3,250 psi.

3. Concrete shall be supplied and tested in accordance with Section 03 31 00.

D. Line Post:

1. ASTM F1083 pipe:

a. Table 1, Schedule 40, regular grade, in sizes as specified on SCRRA Engineering Standards ES5106.

E. Corner or Terminal Posts:

1. ASTM F1083 pipe:

a. Table 1, Schedule 40, regular grade, in sizes as specified on SCRRA Engineering Standards ES5106.

F. Brace and Rails:

1. ASTM F1083 pipe:

a. Table 1, Schedule 40, regular grade, in sizes as specified on SCRRA Engineering Standards ES5106.

G. Tension Wire and bars:

1. Top and bottom of fabric:

a. ASTM A824, galvanized steel, Class 3.

b. Minimum 7-gage galvanized coil spring steel wire.

2. Tension bars used in fastening fabric to end and corner posts and gate frames:

a. ASTM A500 or A501, minimum 3/16 inches x 3/4 inches galvanized high carbon steel bars.

H. Fence Fittings (Post and Line Caps, Rail and Brace Ends, Sleeves-Top Rail, Tie Wires and Clips, Tension and Brace Bands, Tension Bars, Truss Rods):

1. ASTM F626.

2. Tie wires shall not be smaller than 11 gage galvanized steel, 6 gage aluminum wire or approved noncorrosive bands.

3. Truss or tension rods shall be adjustable 3/8 inches dia. galvanized steel rod.

a. Adjustable galvanized turnbuckles or other suitable tightening devices shall be provided as necessary.

I. Security Gate:

1. ASTM F900.

a. Gate posts in sizes as shown in SCRRA Engineering Standards ES5106.

2. Materials as specified for fence framework and fabric.

3. Hardware:

a. Galvanized per ASTM A153.

b. Hinges to permit gate opening as shown in the plans.

4. Hang gates on at least two (2) steel or malleable iron hinges not less than 3-inches in width, designed to clamp to the gate post and permit the gate to be swung as indicated in the plans. The bottom hinge shall have a socket to take the ball end of the gate frame.

5. Gates shall be provided with a combination steel or malleable iron catch and locking attachment system of approved design which will not rotate around the latch post.

6. Stops to hold gates open and a center rest with catch shall be provided where required.

J. Security Extension:

1. Extension arms for barbed wire shall be a type that can be attached to the tops of posts and carry three wire at approximately 5-1/2 inches centers.

2. Barbed wire shall be four-point pattern, composed of:

a. Two strand, 12-1/2 gage galvanized steel wire.

b. Barbs spaced at 5 inches centers.

c. Conform to ASTM A121.

2.02 SOURCE QUALITY CONTROL

A. Test related fence construction materials to meet the following standards:

1. Posts and rails:

a. ASTM F1043, Heavy Industrial.

2. Results of tests to be submitted with material certification submittals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with:

1. Manufacturer's instructions.

2. Lines and grades shown on approved Plans.

3. In accordance with ASTM F567.

4. In accordance with SCRRA Engineering Standards ES5106.

B. In case of conflict between four above mentioned installation procedures, SCRRA Engineering Standards ES5106 takes precedence; use in lieu of conflicting portions.

C. Work shall be performed by workmen who are thoroughly trained and experienced in the skills required to install the products of this Section.

D. Do not start fence installation before final grading is complete and finish elevations are established.

E. Drill holes for posts in firm, undisturbed or compacted soil.

F. Posts shall be placed in a vertical position, except as directed by the Engineer where they may be set perpendicular to the ground surface.

G. Posts shall be set in concrete footings conforming to the details shown on the plans or SCRRA Engineering Standards ES5106 and crowned at the top to shed water.

H. Place fence with bottom edge of fabric at maximum clearance above grade, as shown on Plans.

1. Correct minor irregularities in earth to maintain maximum clearance.

I. Space line posts at equal intervals not exceeding 10 feet on center.

J. Provide post braces for each gate, corner, pull and terminal post and first adjacent line post.

K. Install tension bars full height of fabric.

1. Rails: Fit rails with expansion couplings of outside sleeve type when called for in plans.

2. Install rails continuous for outside sleeve type for full length of fence

3. Provide expansion couplings in top rails at not more than 20 feet intervals.

4. Anchor top rails to main posts with appropriate wrought or malleable fittings.

L. Install bracing assemblies at all end and gate posts, as well as side, corner, and pull posts.

1. Locate compression members at mid-height of fabric.

2. Extend diagonal tension members from compression members to bases of posts.

3. Install so that posts are plumb when under correct tension.

M. Pull fabric taut and secure to posts and rails.

1. Secure so that fabric remains in tension after pulling force is released.

2. Secure to posts at not over 15 inches o.c., and to rails at not over 24-inches o.c., and to tension wire at not over 24-inches o.c.

3. Use U-shaped wire conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two (2) full turns.

4. Bend ends of wire to minimize hazards to persons or clothing.

5. Fabric shall be placed on the outside of poles away from the track or as directed by the Engineer.

N. Install post top at each post.

O. Gates:

1. Construct with fittings or by welding.

2. Provide rigid, weatherproof joints.

3. Assure right, non-sagging, non-twisting gate.

4. Coat welds with rust preventive paint, color to match pipe.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Chain Link Fencing will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

B. Chain Link Gates will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

C. Quantities of gates will be determined from actual count. When more than one gate is placed in an opening, each single unit placed will be counted as a gate. A gate unit complete shall include one gate with necessary fittings, hardware and gate posts with braces.

D. Chain Link Fencing and gates shall consist of a fabric, including posts, horizontal members, post anchorages, stretcher bars, tension wires and other required hardware and fittings, as shown on the Contract Documents.

4.02 PAYMENT

A. Chain Link Fencing furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

B. Chain Link Gates furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

C. Full compensation for furnishing and installing connections on Fencing and Gates, drilling anchor bolt holes and bolts shall be considered as included in the prices and no additional compensation will be allowed.

D. Full compensation for furnishing and installing fabric, posts, post tops, tension wires, post clips, wire ties and hog rings shall be considered as included in the prices and no additional compensation will be allowed.

E. Full compensation for clearing the line of the fence and disposing of the material, excavating high points in the existing ground, excavating and backfilling holes, disposing of surplus excavated material, and furnishing and placing concrete footings and connecting new fences to structures and existing cross fencing, and constructing temporary fences for protection of stock, shall be considered as included as listed on the Schedule of Quantities and Prices.

END OF SECTION

APPENDIX B
04 Sample Project Specific Specifications

SECTION 32 16 00

CURBS, GUTTERS, AND SIDEWALKS

The following are modifications to the SCRRA Standard Specifications:

PART 1 - GENERAL

REPLACE paragraph 1.01A with the following:

1.01 SUMMARY

A. This Section consists of furnishing all labor, materials and equipment necessary and incidental to the manufacture, transport and placement of curbs, gutters, sidewalks, stamped paving, or other related material, and providing all associated items.

REPLACE paragraph 1.01B with the following:

1.01 SUMMARY

B. It also includes adjusting to final grade existing utility/drainage frames and covers. For existing sewer and storm drain manholes adjustment, refer to Related Specification Section. Related Specification Sections include but are not necessarily limited to:

1. Division 01 – General Requirements
2. Section 03 21 00 – Reinforcing Steel
3. Section 03 30 00 – Cast-in-Place Concrete
4. Section 31 20 00 – Earthwork
5. Section 33 42 00 – Culvert and Drainage Pipe
6. Section 34 11 27 – Sub-Ballast and Aggregate Base
7. Section 34 71 50 – Highway-Rail Grade Crossings

ADD paragraph 1.02A parts 4 and 5:

1.02 REFERENCES

4. City of Simi Valley Standard Plans for Curb, Curb and Gutter, Sidewalk, Curb Ramp, Local Depression, Commercial Driveway, and Stamped Concrete(SV 51-80).

5. Caltrans: State of California Department of Transportation, Standard Plans 2010 for Curb, Curb Ramp, Sidewalk, and Gutter Depression.

PART 2 - PRODUCTS

REPLACE paragraph 2.01 with the following:

2.01 PORTLAND CEMENT CONCRETE

A. Portland cement concrete for the construction of curbs, gutters, longitudinal gutters, sidewalk, curb ramps, concrete paving, and median islands shall conform to SSPWC Section 201-1.

REPLACE paragraph 2.02 with the following:

2.02 REINFORCEMENT

A. All reinforcement for this portion of the Work shall conform to the provisions of Section 03 21 00. Reinforcing chairs shall be concrete.

ADD paragraph 2.04 with the following:

2.04 FILTER FABRIC

A. Filter fabric shall conform to Caltrans Standard Specifications 2010, Section 88-1.03.

PART 3 - EXECUTION

ADD paragraph 3.01 B and C with the following:

3.01 GENERAL

B. Legally dispose of all waste Material produced as a result of Contractor's operations. All waste Materials shall be removed from the City of Simi Valley/City of Moorpark/SCRRA property within 2 weeks of it being made waste. If necessary to protect the existing soils from contamination, install an impermeable barrier to protect the existing subgrade and runoff.

C. An existing utility/drainage, frame, and cover that found damaged, not of sufficient length to be raised to the required grade, or determined by the Resident Engineer to be in need of replacement, shall be removed and replaced with a new one.

REPLACE paragraph 3.03F with the following:

3.03 EXTRUDED PORTLAND CEMENT CONCRETE CURBS

F. Cure the extruded concrete for not less than 72 hours by the methods specified in Section 03 30 00 for modified Caltrans standard type gutter.

ADD paragraph 3.04B:

3.04 CAST-IN-PLACE CONCRETE CURB, AND COMBINED CURB AND GUTTER

B. Construction of Caltrans standard type A2-6 curb and gutter and modified Caltrans standard type gutter shall meet the requirements of Section 03 30 00.

ADD paragraph 3.05A:

3.05 PAVING ON BALLAST

A. Filter fabric shall be placed on top of ballast before the concrete is placed for sidewalk, crosswalk, and other concrete flatwork.

END OF SECTION

APPENDIX B
05 Sample Contract Addendum

METROLINK

Southern California Regional Rail Authority

ADDENDUM

Addendum Date: October 15, 2014
Addendum No: 2
METROLINK
IFB NUMBER: C3121-15
IFB TITLE: VENTURA COUNTY SEALED CORRIDOR PROJECT

In accordance with the Instructions to Bidders entitled "ADDENDA," we hereby issue Addendum No. 2, as indicated by the attached sheets.

Electronically acknowledge receipt of this Addendum on the online bidding system http://www.planetbids.com/portal/portal.cfm?CompanyID=13821#. This Addendum forms a part of the Contract documents, and with respect to the IFB documents, this Addendum shall govern. The cost of work included or excluded by this Addendum shall be reflected in the Bidder's Bid Price.

A. SUMMARY

The purpose of this Addendum is to:

1) Respond to questions/requests clarification via Q&A Log dated 10.15.14;
2) Amend the Project Specific Specifications;
3) Amend Project Drawings – Volumes 1, 2, 3, and 4;
4) Delete and replace Bid Forms BF-A, BF-F, and BF-J in their entirety; and
5) Amend Article GC-7 Liability and Indemnification, and Article SC-3 Insurance Requirements of Attachment D - Sample Contract Agreement.

B. MODIFICATIONS TO THE CONTRACT DOCUMENTS

All changes shall be made by replacing existing pages with the attached revised pages. Addendum revisions are identified by the Addendum Number, denoted by **A2 or change bars or change clouds** in the margins before each line of text modified unless the entire page or table information is revised in which case the Addendum Number **(A2)** will be noted in the margin at the top of the page. Pages changed due to relocation of line or paragraphs that are not modified by Addendum will not have identifying numbers, but are included to keep the IFB documents intact and continuous.

ITEM	SECTION TITLE	PAGE(S)
1	Q&A Log dated 10.15.14	4 pages
2	Project Specific Specifications	12 pages
3	Project Drawings – Volume I	19 pages
4	Project Drawings – Volume 2	27 pages

5	Project Drawings – Volume 3	5 pages
6	Project Drawings – Volume 4	11 pages
7	Bid Form BF-A Schedule of Quantities and Prices	17 pages (Page BF-5 to BF-21 in Book 2 of 2)
8	Bid Form BF-F List of Current Projects	1 page (Page BF-34 in Book 2 of 2)
9	Bid Form BF-J Bidders/Offeror Instructions: List all Subcontractors Pursuant to Public Cotnract Code, Sections 4100 ET SEQ. With Participation Greater than 0.5% of Total Price. List all Suppliers with Supply Contracts Over $100,000.	3 pages (Pages BF-39 to BF-41 in Book 2 of 2)
10	Article GC-7 Liability and Indemnification	Page SC-14 in Attachment D – Sample Contract Agreement
11	Article SC-3 Insurance Requirement	Page SC-3 in Attachment D – Sample Contract Agreement

Issued By: Amy L Wang Date: 10/15/2014

Amy Wang, Senior Contract & Compliance Administrator

IFB No. C3121-15 Ventura County Sealed Corridor Project
Questions/Answers Log as of 10.8.14

#	Question	Answer
1	We would like to request a 3 week extension due to the time required to line up subcontractors and price materials for this project. Identifying qualified subcontractors is a lengthy process and obtaining all of the necessary cost quotes for contractor supplied material is also a lengthy process. We find we do not have enough time to put our bid together and properly investigate all avenues to come up with the best price for this work. A three week extension would greatly assist us in providing Metrolink with a proper bid for this project.	See Addendum No. 1.
2	The documents state factory wired houses. Please advise what is meant by factory wired houses?	Factory wired house are described in Metrolink Specifications 34 42 46 Signal Equipment House 2.01 A and B.
3	Will open cut & cover be allowed for going under tracks? Please advise what technique must be followed when installing conduits under tracks?	Conduits under the track will be constructed as per SCRRA Engineering Standard No. ES5001. Engineering Standards are available on SCRRA's web site at www.metrolinktrains.com (About Us, Engineering & Construction). Horizontal direction drilling method of a conduit not carrying liquid substance is acceptable as per SCRRA Engineering Standard ES5001.
4	What is meant by refurbish cantilevers? Will the contractor be required to add fall protection equipment and devices to the existing cantilevers as part of the refurbishment?	This is at First Street crossing. The existing cantilever must meet the current Metrolink Engineering Standard ES 8320-01. Fall protection must meet the OSHA and CalOSHA requirements for fall protections.
5	Plans indicate that the existing DAX cable is currently terminated in the 8X6 house that is coming out at Moorpark Crossing. Will the contractor be allowed to splice the DAX Cable to enable terminating in the new 8X10 house should it be required?	No splicing of cable is allowed.
6	Plan sheet 21 of 21 for Moorpark Crossing as well as plan sheet 17 of 17 for first street, and like plan sheets for the remaining two crossings all show installing fiberglass pull boxes at each gate. (item 3 on plan sheets.) Please reference Metrolink signal standard ES8350-02. Note that on this standard drawing no fiberglass pull boxes are shown at each gate. The track boxes are shown (box with T in it) but there are no fiberglass pull boxes shown for each gate as shown on the signal plans. Is the contractor to follow the signal plans or the standard?	Observe Metrolink Signal Standard ES8350-02. Track boxes shall be used.
7	The schedule of values ask the contractor to price batteries and associated charging systems for the XB battery at Moorpark crossing. A review of the plans does not find that this crossing will incorporate the XB battery in the main or remote houses. Please advise? (ref, Sh. 9 & Sh. 18 of 21 VN 427.00)	A revised Schedule of Values will be submitted by an Addendum. Erringer and Sycamore will be the location with XB batteries and charging systems.
8	At Erringer Road is a new cantilever being installed here or is the existing cantilever being reused? If a new cantilever is being installed, is it to be supplied by SCRRA?	New cantilever will be Owner Furnished.
9	Bid Documents call for the contractor to transport and install cantilever(s). Will the railroad provide a new cantilever for Sycamore Drive?	New cantilever will be Owner Furnished.

IFB No. C3121-15 Ventura County Sealed Corridor Project
Questions/Answers Log as of 10.8.14

#	Question	Answer
10	The cantilever foundations found in the Metrolink Standards is no longer available. Will the Dixie Precast foundations be acceptable? Assuming new cantilevers are being provided. (see question prior questions)	Reference Engineering Standard ES8330 for cantilever foundation. Any request for deviations must be submitted following IB-5 Requests for Clarification or Approved Equals process in Instructions to Bidders.
11	There are 14 Metrolink trains, 12 Amtrak trains at 6 UP trains that run over this territory daily, excepting weekends. Are we correct to assume that all work will have to done at night and on weekends in order to obtain track and time to work on the project? Will any work windows be provided by the railroad? Will a test train be provided to assist in cutting over the crossings?	Night and weekend work are allowable subject to permit limitations imposed by the local jurisdiction. Work windows will not be provided. All work within the railroad right-of-way shall be performed under Form B protection. A test train is required. Test train will be provided by Metrolink with a six (6) week advance notice to Metrolink Operations.
12	Testing crossings. Will Metrolink require timing and recording of a minimum of 2 trains in both directions on all tracks with the unit on Main and the timing to be repeated with the unit on standby? Are we correct to assume the crossings will all have to be flagged during this testing and all crossings will require testing should a shunt be installed within their approach, even though they may not be a part of this project?	Yes, Authority will require timing and recording of warning times on main and standing. Crossings will need to be flagged during testing.
13	Are there empty conduits across Moorpark Avenue, Erringer Road, and Sycamore Drive?	Empty conduits were installed with concrete panels at Sycamore Drive and Erringer Road. These conduits will be used for any signal crossing of the existing street. There are no conduits across Moorpark Avenue. Authority is not planning to have new conduits. The conduit across the street at Moorpark Avenue will be installed by the Contractor.
14	What type of foundation will be used for cantilever?	Reference Engineering Standard ES8330 for cantilever foundation. Any request for deviations must be submitted following IB-5 Requests for Clarification or Approved Equals process in Instructions to Bidders.
15	The median island gate located on the north side of the crossing at Erringer Road does not meet CPUC requirements. Does this foundation require adjustment?	The median island at the compass-north side of the Erringer Road crossing will be removed and rebuilt per CPUC standard requirements as indicated on sheet C-16. The existing foundation will be adjusted as required by CPUC requirements.
16	Who is responsible for connection between railroad house and traffic signal junction box? Is there a need to provide junction box at railroad signal house?	The Contractor is responsible for the interconnection between railroad signal house and traffic control junction box. Junction box is required at the railroad signal house for the traffic signal interconnection.
17	Are the railroad signal gates and foundations to be provided by the owner?	The railroad signal gates and foundations will be provided to the Contractor by SCRRA. The Contractor will transport them from SCRRA facilities to the site at their own cost.

Bidder: _____

3. BID FORMS

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
METROLINK COMMUTER RAIL SYSTEM

IFB NO. C3121-15
VENTURA COUNTY SEALED CORRIDOR PROJECT

BF–A SCHEDULE OF QUANTITIES AND PRICES

DESCRIPTION	TOTAL PRICE
SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS	
SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS	
TOTAL BID PRICE (SUM OF SCHEDULES 1 AND 2)	

TOTAL BID PRICE IN WORDS: _____

_____ DOLLARS.

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
01 00 00	**GENERAL REQUIREMENTS**				
01 55 26.01	MAINTENANCE AND PROTECTION OF TRAFFIC	LS	1		
01 57 19.01	INSTALL AND MONITOR SWPPP EROSION CONTROL BMP	LS	1		
01 71 13.01	MOBILIZATION, MAXIMUM 5% OF BID	LS	1		
01 71 13.02	DEMOBILIZATION, 2% OF BID	LS	1		
	GENERAL REQUIREMENTS SUBTOTAL				
03 00 00	**CONCRETE**				
03 31 00.09	CONSTRUCT STAMPED CONCRETE PER CITY OF SIMI VALLEY STAMPED CONCRETE DETAIL SV 51-80	SF	1295		
	CONCRETE SUBTOTAL				
05 00 00	**METALS**				
05 52 00.01	INSTALL METAL HAND RAILING PER SCRRA ENGINEERING STANDARD ES4002, TYPE B	LF	105		
05 52 10.01	PEDESTRIAN SWING GATE PER SCRRA ENGINEERING STANDARD ES4002	EA	4		
	METALS SUBTOTAL				
09 00 00	**FINISHES**				

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
09 61 50.01	ADA DETECTABLE WARNING SURFACE (RAISED TRUNCATED DOME) PER SPPWC PLAN NO. 111-4, DIMENSIONS PER PLAN	SF	120		
				FINISHES SUBTOTAL	
31 00 00	**EARTHWORK**				
31 11 50.01	SAWCUT EXISTING PAVEMENT	LF	950		
31 11 50.02	REMOVE EXISTING AC PAVEMENT	SF	1295		
31 11 50.04	REMOVE EXISTING CURB AND GUTTER	LF	362		
31 11 50.05	REMOVE EXISTING SIDEWALK	SF	3170		
31 11 50.06	REMOVE EXISTING DRIVEWAY	SF	290		
31 11 50.07	REMOVE EXISTING STORM DRAIN PIPE	LF	7		
31 11 50.11	REMOVE EXISTING CATCH BASIN	EA	3		
31 11 55.01	INSTALL K-RAIL	LF	20		
				EARTHWORK SUBTOTAL	
32 00 00	**EXTERIOR IMPROVEMENTS**				
32 12 00.02	CONSTRUCT AC PAVEMENT, THICKNESS PER PLAN	SF	728		
32 12 00.03	COLD PLANE 0.15' EXISTING PAVEMENT WITH 015' HMA-SP-A OVERLAY	SF	5346		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 12 00.05	CONSTRUCT PAVED END RAMP PER SCRRA ENGINEERING STANDARD ES4201-03, DETAIL 7	SF	270		
32 12 00.07	CONSTRUCT 0.6' HMA-SP-A OVER 0.6' LCB OVER 1.15' CL-3-AB	SF	3048		
32 12 00.09	ADJUST STORM DRAIN MANHOLE TO GRADE	EA	1		
32 12 00.10	ADJUST PULLBOX TO GRADE	EA	5		
32 12 00.12	RELOCATE PULLBOX	EA	3		
32 16 00.05	CONSTRUCT TYPE A2-6 CURB PER CALTRANS 2010 STANDARD PLAN	LF	276		
32 16 00.06	CONSTRUCT TYPE A2-8 CURB PER CALTRANS 2010 STANDARD PLAN	LF	142		
32 16 00.07	CONSTRUCT TYPE A1-8 CURB PER CALTRANS 2010 STANDARD PLAN	LF	351		
32 16 00.09	CONSTRUCT SIDEWALK PER CALTRANS 2010 STANDARD PLAN	SF	3491		
32 16 00.12	CONSTRUCT CURB RAMP CASE C PER CALTRANS 2010 STANDARD PLANS	EA	5		
32 16 00.13	CONSTRUCT CROSS GUTTER PER SDPWC 122-5	SF	224		
32 16 00.14	CONSTRUCT GUTTER DEPRESSIONS PER CALTRANS STANDARD PLAN D-78A	EA	2		
32 17 23.01	REMOVE EXISTING SIGN	EA	25		
32 17 23.02	INSTALL NEW SIGN PER PLAN	EA	15		
32 17 23.03	FURNISH NEW SIGN MATERIAL (SINGLE SHEET ALUMINUM SIGN)	SF	175		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 17 23.04	SCRRA ES4012 4"SOLID THERMOPLASTIC WHITE EDGE LINE	SF	30		
32 17 23.05	SCRRA ES4012 4"SOLID THERMOPLASTIC DOUBLE YELLOW	SF	30		
32 17 23.06	DETAIL 9 - THERMOPLASTIC 4" WHITE (BROKEN 7-17)	SF	32		
32 17 23.07	DETAIL 21 - THERMOPLASTIC 4" SOLID DOUBLE YELLOW	SF	34		
32 17 23.08	DETAIL 22 - THERMOPLASTIC 4" SOLID DOUBLE YELLOW	SF	72		
32 17 23.09	DETAIL 25 - THERMOPLASTIC 4" SOLID YELLOW	SF	108		
32 17 23.10	DETAIL 38A - THERMOPLASTIC 8" SOLID WHITE	SF	111		
32 17 23.11	TYPE IV ARROW (L OR R)	SF	60		
32 17 23.12	TYPE VII (L) MARKING	SF	90		
32 17 23.13	CROSSWALK LIMIT LINE 12" SOLID WHITE	SF	548		
32 17 23.14	SCRRA ES4012 LIMIT LINE 24" SOLID WHITE	SF	85		
32 17 23.15	RAILROAD CROSSING SYMBOL	SF	276		
32 17 23.16	WORD SYMBOL	SF	85		
32 17 23.19	REFLECTIVE TYPE G PAVEMENT MARKING	EA	189		
32 17 23.20	REFLECTIVE TYPE H PAVEMENT MARKING	EA	182		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 17 23.21	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)	SF	144		
32 17 23.22	REMOVE THERMOPLASTIC TRAFFIC STRIPE (WHITE)	SF	82		
32 17 23.23	REMOVE THERMOPLASTIC PAVEMENT MARKINGS	SF	567		
32 17 23.24	REMOVE PAVEMENT MARKER	EA	352		
32 31 13.01	INSTALL 4' HIGH 1" MESH FABRIC CHAIN LINK FENCE	LF	169		
32 31 13.02	CONSTRUCT PIPE GATE PER SCRRA ES5107	EA	1		
32 31 16.01	WELDED WIRE MESH (RIGHT OF WAY FENCE: 8-FT HEIGHT) W/ BARBED WIRE (APWA STD. 600-3)	LF	92		
32 31 16.02	3-FT WIDE WALK GATE PER APWA STD 600-3	EA	2		
32 90 00.02	LANDSCAPE AND IRRIGATION REFURBISHMENT	LS	1		
				EXTERIOR IMPROVEMENTS SUBTOTAL	
33 00 00	**UTILITIES**				
33 00 00.04	MISCELLANEOUS UTILITY RELOCATION MOORPARK AVENUE	Allowance	1	10,000.00	10,000.00
				UTILITIES SUBTOTAL	**10,000.00**
34 00 00	**TRANSPORTATION**				
34 42 00.01	DEMOLITION AND REMOVALS OF EXISTING SIGNAL EQUIPMENT	LS	1		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
34 42 00.04	CONSTRUCT DRAINAGE INLET TYPE G0 PER CALTRANS STANDARD PLAN D-74B	EA	1		
34 42 00.04	CONSTRUCT DRAINAGE INLET TYPE G3 PER CALTRANS STANDARD PLAN D-73	EA	1		
34 42 00.05	CONSTRUCT CONCRETE COLLAR PER SPPWC STANDARD 380-4	EA	2		
34 42 00.06	CONSTRUCT 12" CMP	LF	10		
34 42 00.07	INSTALL 18" RCP	LF	9		
34 42 00.09	CONSTRUCT CONCRETE COLLAR ENCASEMENT PER DETAIL 4, SHEET G-5	SF	16		
34 42 16.01	FURNISH AND INSTALL 2C #6 TWISTED TACK WIRE	LF	450		
34 42 16.02	FURNISH AND INSTALL 7C #6 CABLE	LF	672		
34 42 16.03	FURNISH AND INSTALL 7C #14 CABLE	LF	672		
34 42 16.04	FURNISH AND INSTALL 19C #14 CABLE	LF	280		
34 42 16.05	FURNISH AND INSTALL 12C #14 CABLE	LF	240		
34 42 16.06	FURNISH AND INSTALL 3C #6 CABLE	LF	380		
34 42 18.01	FURNISH AND INSTALL CONDUIT UNDER ROADWAY	LF	1158		
34 42 18.02	FURNISH AND INSTALL CONDUIT UNDER TRACKS	LF	384		
34 42 18.03	FURNISH AND INSTALL CONDUIT (GENERAL)	LF	624		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
34 42 18.04	FURNISH AND INSTALL 4' X 4' CONCRETE PULLBOX	EA	4		
34 42 18.05	FURNISH AND INSTALL 24" X 18" FIBERGLASS PULLBOX	EA	7		
34 42 18.06	FURNISH AND INSTALL 10" X 17" CONCRETE PULLBOX	EA	4		
34 42 44.01	FURNISH, WIRE, AND INSTALL PLUG-IN RELAY	EA	12		
34 42 46.01	FURNISH, TRANSPORT AND INSTALL FACTORY-WIRED 10'X8' MAIN CROSSING HOUSE	EA	1		
34 42 46.02	FURNISH, TRANSPORT AND INSTALL FACTORY-WIRED 6'X6' AUXILIARY CROSSING HOUSE	EA	1		
34 42 46.03	FIELD, HOUSE AND CASE WIRING AND VERIFICATION	LS	1		
34 42 54.01	FURNISH, INSTALL, AND TEST TRACK CONNECTIONS AND BONDS	EA	4		
34 42 58.01	SIGNAL TESTING	LS	1		
34 42 60.01	FURNISH AND INSTALL SIGNAL SYSTEMS MISCELLANEOUS PRODUCTS	LS	1		
34 42 62.01	CONNECT HOUSE TO METER SERVICE	EA	1		
34 42 64.01	TRANSPORT, INSTALL, AND TEST ROADWAY GATES COMPLETE (OWNER FURNISHED)	EA	3		
34 42 64.02	TRANSPORT, INSTALL, AND TEST PEDESTRIAN GATES COMPLETE (OWNER FURNISHED)	EA	4		
34 42 64.03	TRANSPORT, INSTALL, AND TEST CANTILEVER COMPLETE	EA	1		
34 42 64.04	PROGRAM AND COMMISSION TRAFFIC PREEMPTION INTERCONNECTION RECORDER	EA	1		

Bidder: _____

SCHEDULE 1 - MOORPARK AVENUE GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
34 42 64.07	PROGRAM AND COMMISSION GCP 4000 UNIT	EA	1		
34 42 64.08	PROGRAM AND COMMISSION CROSSING CONTROLLER	EA	1		
34 42 64.09	PROGRAM AND COMMISSION MDA II RECORDER	EA	1		
34 42 64.10	FURNISH AND INSTALL NBS/WBS/TJC	EA	4		
34 71 50.01	TRAFFIC SIGNAL MODIFICATION MOORPARK AVENUE	LS	1		
34 72 20.01	REMOVE EXISTING ABANDONED TRACK	TF	55		
34 80 12.01	CONSTRUCT TYPE 2 PARKWAY DRAIN PER SPPWC STD PLAN 151-2	EA	1		
				TRANSPORTATION SUBTOTAL	
				SCHEDULE 1 BID TOTAL PRICE	

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
01 00 00	**GENERAL REQUIREMENTS**				
01 55 26.01	MAINTENANCE AND PROTECTION OF TRAFFIC	LS	2		
01 57 19.01	INSTALL AND MONITOR SWPPP EROSION CONTROL BMP	LS	3		
01 71 13.01	MOBILIZATION, MAXIMUM 5% OF BID	LS	1		
01 71 13.02	DEMOBILIZATION, 2% OF BID	LS	1		
				GENERAL REQUIREMENTS SUBTOTAL	
03 00 00	**CONCRETE**				
03 31 00.09	CONSTRUCT STAMPED CONCRETE PER CITY OF SIMI VALLEY STAMPED CONCRETE DETAIL SV 51-80	SF	1673		
				CONCRETE SUBTOTAL	
05 00 00	**METALS**				
05 52 00.01	INSTALL METAL HAND RAILING PER SCRRA ENGINEERING STANDARD ES4002, TYPE B	LF	438		
05 52 10.01	PEDESTRIAN SWING GATE PER SCRRA ENGINEERING STANDARD ES4002	EA	12		
				METALS SUBTOTAL	
09 00 00	**FINISHES**				

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
09 61 50.01	ADA DETECTABLE WARNING SURFACE (RAISED TRUNCATED DOME) PER SPPWC PLAN NO. 111-4, DIMENSIONS PER PLAN	SF	238		
				FINISHES SUBTOTAL	
31 00 00	**EARTHWORK**				
31 11 20.01	GRADING FOR SIGNAL HOUSES	CY	244		
31 11 50.01	SAWCUT EXISTING PAVEMENT	LF	1887		
31 11 50.02	REMOVE EXISTING AC PAVEMENT	SF	5983		
31 11 50.03	REMOVE EXISTING MEDIAN	SF	430		
31 11 50.04	REMOVE EXISTING CURB AND GUTTER	LF	721		
31 11 50.05	REMOVE EXISTING SIDEWALK	SF	5898		
31 11 50.08	REMOVE WROUGHT IRON FENCE AND PILASTERS	LF	10		
31 11 50.17	REMOVE EXIST PARKWAY DRAIN AND MISCELLANEOUS METAL FENCE	EA	1		
31 11 55.01	INSTALL K-RAIL	LF	60		
				EARTHWORK SUBTOTAL	
32 00 00	**EXTERIOR IMPROVEMENTS**				
32 12 00.01	CONSTRUCT 4" HMA PAVEMENT OVER 12" AGGREGATE BASE	SF	7625		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 12 00.02	CONSTRUCT AC PAVEMENT PER SCRRA STD PLAN ES4201-02	SF	1254		
32 12 00.03	COLD MILL EXISTING PAVEMENT AND CONSTRUCT 2" MINIMUM ASPHALT CONCRETE OVERLAY	SF	8385		
32 12 00.04	CONSTRUCT 8" AC PAVEMENT WITH GLASS GRID REINFORCEMENT PER SCRRA ES4001, DETAIL B. COORDINATE WITH INSTALLATION OF EXIT GATE VITAL INDUCTIVE LOOPS.	SF	3319		
32 12 00.05	CONSTRUCT PAVED END RAMP PER SCRRA ENGINEERING STANDARD ES4201-03, DETAIL 7	SF	399		
32 12 00.06	CONSTRUCT AC SLURRY	SF	6510		
32 12 00.09	ADJUST STORM DRAIN MANHOLE TO GRADE	EA	1		
32 12 00.10	ADJUST PULLBOX TO GRADE	EA	6		
32 12 00.12	RELOCATE PULLBOX	EA	10		
32 16 00.02	CONSTRUCT CONCRETE CURB & GUTTER TYPE A2-6, PER CITY OF SIMI VALLEY ROAD STANDARDS. SEE LIP OF GUTTER ELEVATIONS PER PLANS.	LF	226		
32 16 00.03	CONSTRUCT CONCRETE CURB & GUTTER TYPE A2-8, PER CITY OF SIMI VALLEY ROAD STANDARDS. SEE LIP OF GUTTER ELEVATIONS PER PLANS.	LF	464		
32 16 00.04	CONSTRUCT CONCRETE MEDIAN CURB TYPE A1-8 PER CITY OF SIMI VALLEY ROAD STANDARDS.	LF	516		
32 16 00.08	CONSTRUCT SIDEWALK PER CITY OF SIMI VALLEY ROAD STANDARDS	SF	4744		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 16 00.10	CONSTRUCT 6" PCC ADA RAMP AS SHOWN ON PLAN. SEE SHEET 5, DETAIL 4	SF	1353		
32 16 00.12	CONSTRUCT CURB RAMP CASE C PER CALTRANS 2010 STANDARD PLASN	EA	1		
32 16 00.15	CONSTRUCT CURB RAMP CASE G PER CALTRANS 2010 STANDARD PLANS	EA	1		
32 16 00.16	CONSTRUCT CONCRETE MEDIAN CURB TYPE B1 WITH 4" CF PER CITY OF SIMI VALLEY ROAD STANDARDS	LF	13		
32 16 00.17	CONSTRUCT CURB RAMP CASE F PER CALTRANS 2010 STANDARD PLANS	EA	2		
32 16 00.18	GRIND 1.5" ALONG THE JOIN LINE, ROUGHEN THE EX. DRIVEWAY, CLEAN SURFACE, AND PCC LEVELING 8" MAX WITH EPOXY	SF	185		
32 17 23.01	REMOVE EXISTING SIGN	EA	9		
32 17 23.02	INSTALL NEW SIGN PER PLAN	EA	22		
32 17 23.03	FURNISH NEW SIGN MATERIAL (SINGLE SHEET ALUMINUM SIGN)	SF	316		
32 17 23.04	SCRRA ES4012 4"SOLID THERMOPLASTIC WHITE EDGE LINE	SF	365		
32 17 23.05	SCRRA ES4012 4"SOLID THERMOPLASTIC DOUBLE YELLOW	SF	173		
32 17 23.06	DETAIL 9 - THERMOPLASTIC 4" WHITE (BROKEN 7-17)	SF	210		
32 17 23.07	DETAIL 21 - THERMOPLASTIC 4" SOLID DOUBLE YELLOW	SF	254		
32 17 23.08	DETAIL 22 - THERMOPLASTIC 4" SOLID DOUBLE YELLOW	SF	1013		
32 17 23.09	DETAIL 25 - THERMOPLASTIC 4" SOLID YELLOW	SF	280		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 17 23.10	DETAIL 38A - THERMOPLASTIC 8" SOLID WHITE	SF	216		
32 17 23.11	TYPE IV ARROW (L OR R)	SF	311		
32 17 23.12	TYPE VII (L) MARKING	SF	67		
32 17 23.13	CROSSWALK LIMIT LINE 12" SOLID WHITE	SF	326		
32 17 23.14	SCRRA ES4012 LIMIT LINE 24" SOLID WHITE	SF	205		
32 17 23.19	REFLECTIVE TYPE G PAVEMENT MARKING	EA	10		
32 17 23.20	REFLECTIVE TYPE H PAVEMENT MARKING	EA	10		
32 17 23.21	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)	SF	179		
32 17 23.22	REMOVE THERMOPLASTIC TRAFFIC STRIPE (WHITE)	SF	85		
32 17 23.23	REMOVE THERMOPLASTIC PAVEMENT MARKINGS	SF	431		
32 17 23.24	REMOVE PAVEMENT MARKER	EA	75		
32 31 13.02	CONSTRUCT PIPE GATE PER SCRRA ES5107	EA	6		
32 31 13.03	INSTALL EDGE FENCING WITH CONCRETE PIER FOUNDATION PER SCRRA ES5102	LF	631		
32 31 16.01	WELDED WIRE MESH (RIGHT OF WAY FENCE: 8-FT HEIGHT) W/ BARBED WIRE (APWA STD. 600-3)	LF	380		
32 31 16.02	3-FT WIDE WALK GATE PER APWA STD 600-3	EA	7		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
32 32 16.01	GRAVITY BLOCK RETAINING WALL FOR SIGNAL HOUSES	LS	1		
32 90 00.02	LANDSCAPE AND IRRIGATION REFURBISHMENT	LS	1		
				EXTERIOR IMPROVEMENTS SUBTOTAL	
33 00 00	**UTILITIES**				
33 00 00.04	MISCELLANEOUS UTILITY RELOCATION SIMI VALLEY CROSSINGS	Allowance	1	45,000.00	45,000.00
				UTILITIES SUBTOTAL	**45,000.00**
34 00 00	**TRANSPORTATION**				
34 42 00.01	DEMOLITION AND REMOVAL OF EXISTING SIGNAL EQUIPMENT	LS	1		
34 42 00.09	CONSTRUCT CONCRETE COLLAR ENCASEMENT PER DETAIL A, SHEET C-31	SF	232		
34 42 16.01	FURNISH AND INSTALL 2C #6 TWISTED TACK WIRE	LF	943		
34 42 16.02	FURNISH AND INSTALL 7C #6 CABLE	LF	3276		
34 42 16.03	FURNISH AND INSTALL 7C #14 CABLE	LF	3276		
34 42 16.04	FURNISH AND INSTALL 19C #14 CABLE	LF	936		
34 42 16.05	FURNISH AND INSTALL 12C #14 CABLE	LF	400		
34 42 16.06	FURNISH AND INSTALL 3C #6 CABLE	LF	1182		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
34 42 18.01	FURNISH AND INSTALL CONDUIT UNDER ROADWAY	LF	2748		
34 42 18.02	FURNISH AND INSTALL CONDUIT UNDER TRACKS	LF	452		
34 42 18.03	FURNISH AND INSTALL CONDUIT (GENERAL)	LF	2238		
34 42 18.04	FURNISH AND INSTALL 4' X 4' CONCRETE PULLBOX	EA	8		
34 42 18.05	FURNISH AND INSTALL 24" X 18" FIBERGLASS PULLBOX	EA	26		
34 42 18.06	FURNISH AND INSTALL 10" X 17" CONCRETE PULLBOX	EA	4		
34 42 44.01	FURNISH, WIRE, AND INSTALL PLUG-IN RELAY	EA	25		
34 42 46.01	FURNISH, TRANSPORT AND INSTALL FACTORY-WIRED 10'X8' MAIN CROSSING HOUSE	EA	2		
34 42 46.02	FURNISH, TRANSPORT AND INSTALL FACTORY-WIRED 6'X6' AUXILIARY CROSSING HOUSE	EA	3		
34 42 46.03	FIELD, HOUSE AND CASE WIRING AND VERIFICATION	LS	1		
34 42 52.01	FURNISH AND INSTALL XB BATTERY CHARGING SYSTEM COMPLETE (XB)	EA	2		
34 42 54.01	FURNISH, INSTALL, AND TEST TRACK CONNECTIONS AND BONDS	EA	4		
34 42 58.01	SIGNAL TESTING	LS	1		
34 42 60.01	FURNISH AND INSTALL SIGNAL SYSTEMS MISCELLANEOUS PRODUCTS	LS	1		
34 42 62.01	CONNECT HOUSE TO METER SERVICE	EA	5		

Bidder: _____

SCHEDULE 2 - SIMI VALLEY GRADE CROSSING IMPROVEMENTS

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
34 42 64.01	TRANSPORT, INSTALL, AND TEST ROADWAY GATES COMPLETE (OWNER FURNISHED)	EA	12		
34 42 64.02	TRANSPORT, INSTALL, AND TEST PEDESTRIAN GATES COMPLETE (OWNER FURNISHED)	EA	12		
34 42 64.03	TRANSPORT, INSTALL, AND TEST CANTILEVER COMPLETE	EA	2		
34 42 64.05	FURNISH AND INSTALL PREFORMED VEHICLE DETECTION LOOPS	EA	24		
34 42 64.06	PROGRAM AND COMISSION EXIT GATE MANAGEMENT SYSTEM (EGMS)	EA	2		
34 42 64.07	PROGRAM AND COMMISSION GCP 4000 UNIT	EA	2		
34 42 64.08	PROGRAM AND COMMISSION CROSSING CONTROLLER	EA	3		
34 42 64.09	PROGRAM AND COMMISSION MDA II RECORDER	EA	3		
34 42 64.10	FURNISH AND INSTALL NBS/WBS/TJC	EA	6		
34 71 50.01	TRAFFIC SIGNAL MODIFICATION	LS	1		
34 80 12.01	CONSTRUCT TYPE 2 PARKWAY DRAIN PER SPWWC STD PLAN NO. 151-2, S=72"	EA	1		
				TRANSPORTATION SUBTOTAL	
				SCHEDULE 2 BID TOTAL PRICE	

Bidder: _____

BF–F LIST OF CURRENT PROJECTS

PROJECT NAME AND LOCATION	DESCRIPTION OF WORK	OWNER'S NAME, ADDRESS, PHONE NO., FAX NO., CONTACT PERSON	ESTIMATED COST OF BIDDER'S WORK	ESTIMATED COMPLETION DATE
	Prime ❑ Sub ❑		$	
	Prime ❑ Sub ❑		$	
	Prime ❑ Sub ❑		$	
	Prime ❑ Sub ❑		$	

Bidder: _____

BF–J BIDDER/OFFEROR INSTRUCTIONS: LIST ALL SUBCONTRACTORS PURSUANT TO PUBLIC CONTRACT CODE, SECTIONS 4100 ET SEQ. WITH PARTICIPATION GREATER THAN 0.5% OF TOTAL PRICE. LIST ALL SUPPLIERS WITH SUPPLY CONTRACTS OVER $100,000. (*USE ADDITIONAL SHEETS IF NECESSARY*).

<table>
<tr><td>Name:</td><td colspan="3">Provide Complete Description of Work to be Performed:
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<tr><td colspan="4">Business Address:</td></tr>
<tr><td colspan="4">Contact Person:</td></tr>
<tr><td>Telephone
( )</td><td colspan="3">Fax:
( )</td></tr>
<tr><td>License Number and Classification:</td><td colspan="3" rowspan="2">Subcontract/Supply Dollar Value or Percentage of Total Bid Amount:
$ _____ _____ %</td></tr>
<tr><td>License Expiration:</td></tr>
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Bidder: _____

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$ _____ _____ %</td></tr>
<tr><td>License Expiration:</td></tr>
</table>

Signature of Bidder Representative Date

Print Name Title

assign to Authority, or any of Authority's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the other provisions of the Contract Documents. Unless otherwise specified, references to industry standards apply only to materials, workmanship, and procedure, and merely supplement terms and conditions of the Contract Documents to the extent the industry standards are not inconsistent with these terms and conditions. Commercial terms and legal responsibilities are not intended to be included in the reference.

GC-7. LIABILITY AND INDEMNIFICATION

- To the fullest extent permitted by law, the Contractor shall, at its sole cost and expense, fully defend, indemnify and hold harmless the Authority, its member agencies, the Engineering Services Consultant (if an agent of the Authority), the Construction Management Consultant (if an agent of the Authority), their subsidiaries, and any of their respective members, directors, officers, employees and agents ("Indemnified Parties"), from and against any and all claims, actions, demands, costs, judgments, liens, penalties, liabilities, damages, losses, and expenses, including, but not limited to any fees of accountants, attorneys or other professionals (cumulatively, a "Loss"), arising out of, in connection with, resulting from or related to, any act, omission, fault or negligence of the Contractor or any of its officers, agents, employees, Subcontractors or Suppliers, or any person or organization directly or indirectly employed by any of them, in connection with or relating to or claimed to be in connection with or relating to the Work, the Contract, or the Project, including but not limited to any costs or liability on account of (1) personal injury to or death of any person (including employees of the Indemnified Parties and Contractor and its agents) or for damage to or loss of use of property (including property of the Indemnified Parties and Contractor and its agents) and (2) the Authority's reliance upon the use of data or other information Provided or delivered by the Contractor pursuant to the Contract.

A2

- The indemnification specified in this Section shall apply even in the event ~~of~~ that a Loss is caused, exacerbated or contributed to by the act, omission, fault or passive negligence, ~~whether active or passive,~~ of the Indemnified Parties, but shall not apply to claims, actions, demands, costs, judgments, liens, penalties, liabilities, damages, losses and expenses arising from the sole negligence or willful misconduct of the Indemnified Parties.

A2

- The indemnification specified in this Section shall survive termination of the Contract or final payment thereunder and is in addition to any other rights or remedies that the

Any deductibles or self-insured retentions must be declared to and approved by the Authority. At the option of the Authority, either the Contractor shall reduce or eliminate such deductibles or self-insured retentions with respect to this Contract to be awarded, or shall procure a bond guaranteeing the amount of the deductible or self-insured retention. If the Authority agrees in writing to a deductible or self-insured retention, then the Contractor shall be responsible for the full cost of such deductible or self-insured retention.

Minimum Limits of Insurances: The Contractor shall maintain limits no less than the following:

Commercial General Liability to include Products/Completed Operations, Independent Contractor, Contractual Liability, and Personal Injury Liability; with at least the following limits of liability:

1. Primary Bodily Injury Liability Limits of $4,000,000 per occurrence, and
2. Primary Property Damage Liability Limits of $4,000,000 per occurrence, or
3. Combined single limits of liability for Primary Bodily Injury and Primary Property Damage of $4,000,000 per occurrence,$8,000,000 annual aggregate.

Automobile liability with the following limits:

1. Primary Bodily Injury with limits of $1,000,000 per occurrence; and
2. Primary Property Damage with limits of $1,000,000 per occurrence; or
3. Combined single limits of Liability for Primary Bodily and Primary Property Damage $2,000,000 per occurrence.

Workers' Compensation Insurance with the limits established and required by the State of California.

Builder's Risk with limits of $2,000,000 per occurrence.

A2

Environmental Liability with limits of $4,000,000 per occurrence.

Course of Construction policies shall contain the following provisions:

1. The Authority and Member Agencies shall be named as loss payees.
2. The insurer shall waive all rights of subrogation against the Authority and Member Agencies.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

VENTURA COUNTY SEALED CORRIDOR PROJECT
IFB PROJECT SPECIFIC SPECIFICATIONS

The following are modifications or supplemental sections to the SCRRA Standard Specifications:

Note: The TYPE column indicates whether the section is a Modification (M) of an existing SCRRA Standard Specification section, or a Supplemental (S) Specification section.

SECTION 01 11 13
WORK COVERED BY THE CONTRACT DOCUMENTS

The following are modifications to the SCRRA Standard Specifications:

PART 1 – GENERAL

Add paragraph 1.5:

1.5 SUMMARY OF WORK

A. The alteration and modification of the at-grade crossings will be part of a Sealed Corridor Program. (Note compass north is used for descriptions.)

The project scope of work for the crossings includes, but is not limited to the following:

1. Roadway widening, curb, curb and gutter, cross gutter, sidewalk and driveway
2. Storm drainage infrastructure - catch basins, pipe, inlets, depressions, couplings, collars, encasements, trenching, and bedding.
3. Street lighting
4. Pedestrian swing gates
5. Pipe gates
6. K-rail
7. Chain link fence
8. Pedestrian channelization
9. Signing, striping, and markers
10. Detectable warning surfaces
11. Metal hand railing
12. HMA pavement, including the paving for exit gate loops with glass grid
13. Curb ramps
14. Paved end ramps

15. Pavement sawcut, cold mill, and AC overlay
16. AC slurry seal
17. Stamped concrete median islands
18. Precast concrete panels
19. Drainage infrastructure
20. Drainage – Include rip rap and sidewalk culvert with steel plate cover
21. Rubberized asphalt paving including the paving for exit gate loops with glass grid.
22. New traffic signal (queue cutter signal) including modifications to the existing traffic signal system
23. Train-activated R3-1 blank out signs
24. Removing K-rail
25. Removing existing pavement and base
26. Removing existing curb and gutter
27. Removing existing sidewalk
28. Removing existing catch basin
29. Removing existing driveway
30. Removing existing storm drain pipe
31. Remove integral curb and concrete box culvert
32. Removal of existing street lights and poles
33. Reinstall existing striping and markings
34. Protect existing striping/pavement marking to remain
35. Remove existing striping, pavement marking, sign, and pole
36. Relocation and protection of existing pull boxes, vaults and manholes
37. Adjust to grade existing utilities
38. Relocation and protection of existing pull boxes
39. Removal of existing pull boxes

40. Protection of existing utilities in place and coordination with the stakeholders

41. Removal of active warning devices CPUC Standard No. 9

B. The following signal and communication installation will be performed by Contractor. Most of the work will be performed during night and weekends to avoid the train traffic:

1. Coordinate with SCRRA forces to remove and construct signal and crossing equipment as required.

2. Maintain continuous protection; install temporary cabling and wiring as required.

3. Trench, furnish and install conduits, wires, cables and backfill.

4. Signal house wiring.

5. Furnish and assemble pull boxes.

6. Furnish, wire and install plug-in relays.

7. Signal testing.

8. Install crossings and foundations as shown.

9. Construct track connections.

A02 10. Install ~~owner furnished~~ crossings, gates and **signal houses**. ~~shelters~~. **A02**

11. Demolition and removal of existing equipment.

12. Signal support track work.

13. Power drop cabinets with associated electrical work.

14. Transport and install gate and flashing lights;

15. Assemble gates;

16. Program GCP 4000 unit;

17. Furnish and install NBS/WBS/TJC;

18. Construct track connections;

19. Install contractor furnished signal houses.

20. Median-mounted CPUC Standard No. 9 gates with flashing light signals.
21. Curb-mounted CPUC Standard No. 9 gates with flashing light signals.
22. Median-mounted CPUC Standard No. 9E gates with flashing light signals (exit gates).
23. Curb-mounted CPUC Standard No. 9E gates with flashing light signals (exit gates).
24. CPUC Standard No. 9 automatic pedestrian gate arm with flashing light signals.
25. Automated pedestrian gate with stub mast.
26. Track circuitry to support advanced preemption time.
27. Pre-emption system to provide interconnection with traffic signal system to monitor crossing operation and safety.
28. Grading for signal house pads, including gravity block retaining walls where indicated on the plans.

PART 4 – MEASUREMENT AND PAYMENT

Replace Part 4 with the following:

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

Measurement and Payment for items of Work in paragraph 1.5 shall be per Part 4 of the Section related to each item of Work.

END OF SECTION

SECTION 01 11 16
WORK BY SCRRA

The following are modifications to the SCRRA Standard Specifications:

PART 4 – MEASUREMENT AND PAYMENT

1.02 PAYMENT

Replace Section 1.02 (A) with the following:

A. The Authority shall provide the Contractor the services of an EIC for up to 10 hours per day for up to 210 days at no cost to the contractor.

A02 **A02**

Replace Section 1.02 (B) with the following:

B. If the Contractor requires additional EIC services beyond that provided under Section 1.02 (A) of Specification Section 01 11 16, the Contractor shall pay for these flagging services. In such a case, the Contractor shall pay for the actual costs of flagging services, which shall not exceed $1,200/day per EIC or Watchman per 8-hour straight time shift.

END OF SECTION

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SECTION 01 14 00
WORK RESTRICTIONS

The following are modifications to the SCRRA Standard Specifications:

PART 1 – GENERAL

Replace Section 1.17:

1.17 HOURS OF OPERATIONS

A02 A. **NOT USED.** ~~Refer to Specifications for allowable Work Windows with the Operating System.~~ A02

B. Contractor shall comply with City of Simi Valley, City of Moorpark and Caltrans requirements for work work-hours restrictions at the project locations where these public jurisdictions are applicable.

C. City of Simi Valley prohibits work within the fourth quarter of the calendar year. Contractor is advised to inquire with the City of Simi Valley to determine its permit restrictions for work within the fourth quarter of the calendar year.

Add Section 1.18:

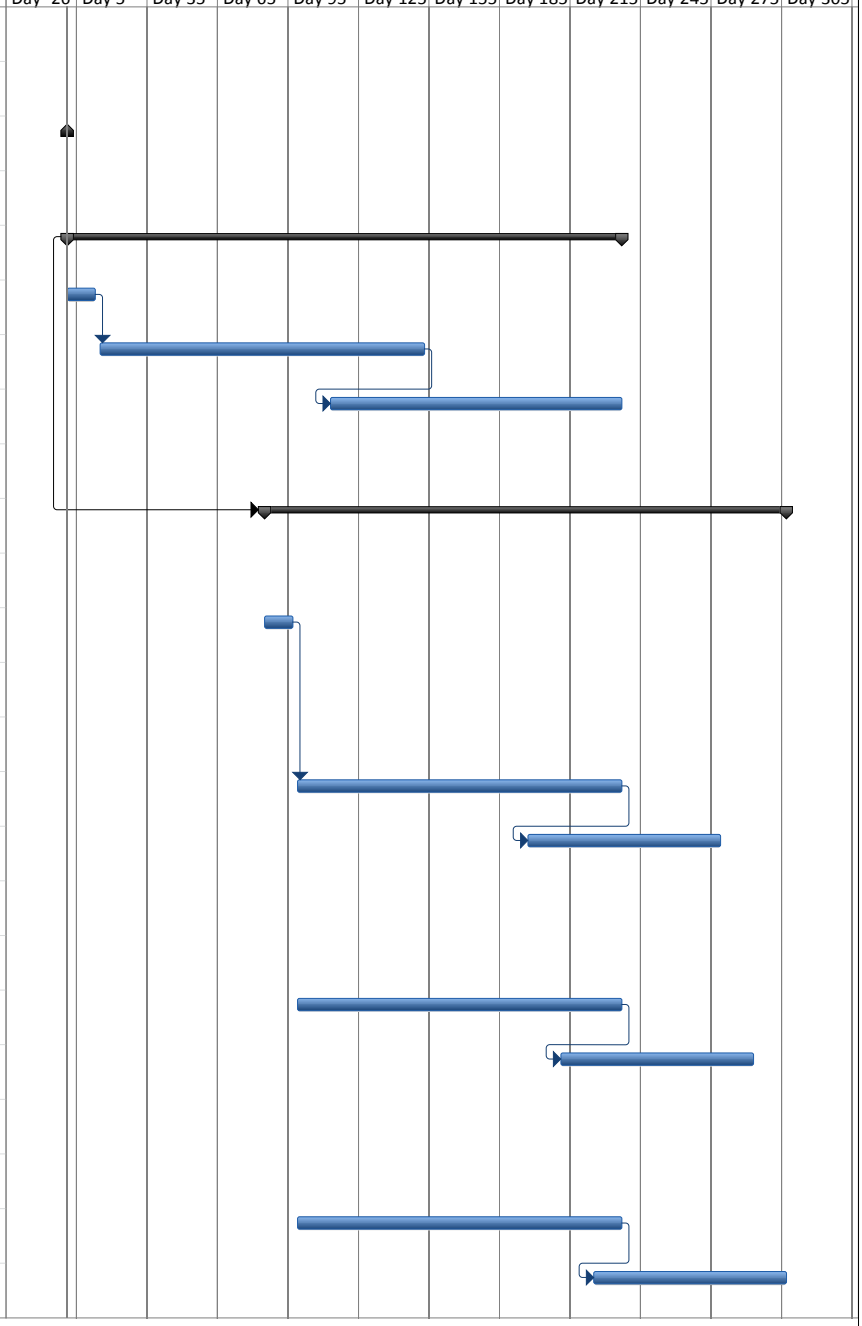
1.18 WORK SEQUENCE RESTRICTIONS

Work sequence priority shall give first priority to work at Moorpark Avenue. See Figure 1 for an example of work sequence phasing to comply with the 300-day maximum work calendar days limitation.

END OF SECTION

FIGURE 1: WORK SEQUENCE EXAMPLE

ID	Task Name	Duration
1	**Maximum Project Duration: 300 Calendar Days**	**300 days**
2		
3	**Notice to Proceed**	0 days
4		
5	**Moorpark Avenue**	**170 days**
6	Mobilization - Moorpark Avenue	10 days
7	Roadway Construction - Moorpark Avenue	100 days
8	Railroad Construction - Moorpark Avenue	90 days
9		
10	**Simi Valley Crossings**	**160 days**
11		
12	Mobilization - Simi Valley Crossings	10 days
13		
14	**First Street**	**110 days**
15	Roadway Construction - First Street	100 days
16	Railroad Construction - First Street	60 days
17		
18	**Erringer Road**	**110 days**
19	Roadway Construction - Erringer Road	100 days
20	Railroad Construction - Erringer Road	60 days
21		
22	**Sycamore Drive**	**110 days**
23	Roadway Construction - Sycamore Drive	100 days
24	Railroad Construction - Sycamore Drive	60 days



Task Milestone Summary

SECTION 01 43 23
CONTRACTOR QUALIFICATIONS AND REQUIREMENTS

The following are modifications to the SCRRA Standard Specifications:

PART 1 - GENERAL

1.6 RAILROAD TRACK CONSTRUCTION MANAGERS

Delete Section 1.6 in its entirety.

1.7 MAINTENANCE CONTRACT MANAGER (MCM)

Delete Section 1.7 in its entirety.

1.8 RAILROAD BRIDGE CONSTRUCTION MANAGER

Delete Section 1.8 in its entirety.

A02 **1.9 RAILROAD BRIDGE REPAIRER** A02

Delete Section 1.9 in its entirety.

1.10 RAILROAD MACHINE OPERATORS

Delete Section 1.10 in its entirety.

1.11 TRACK FOREMAN

Delete Section 1.11 in its entirety.

1.12 RAILROAD TRACK EQUIPMENT REPAIRER

Delete Section 1.12 in its entirety.

1.13 RAILROAD TRACK EQUIPMENT REPAIRER HELPER

Delete Section 1.13 in its entirety.

1.14 RAILROAD TRACK WELDERS

Delete Section 1.14 in its entirety.

1.15 TRACK AND STRUCTURES LABORER/WELDER HELPER

Delete Section 1.15 in its entirety.

A02 **3.2 RAILROAD CONSTRUCTION EQUIPMENT QUALIFICATIONS** A02

Delete Section 3.2 in its entirety.

3.3 RAILROAD CONSTRUCTION EQUIPMENT

Delete Section 3.3 in its entirety.

END OF SECTION

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH SCRRA STANDARD SPECIFICATIONS, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC; APWA) AND CALTRANS STANDARD SPECIFICATIONS LATEST APPLICABLE STANDARD PLANS, AS NOTED ON PLANS.
2. HDR ENGINEERING, INC. ASSUMES NO RESPONSIBILITY TO PROVIDE DESIGN CONSTRUCTION REVIEW SERVICES RELATING TO THE CONTRACTOR'S SAFETY PRECAUTIONS OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED FOR THE CONTRACTOR TO PERFORM HIS WORK.
3. THE LOCATIONS OF AND EXISTENCE OR NON-EXISTENCE OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED TO THE BEST OF THE ENGINEER'S ABILITY. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY/ DETERMINE THE LOCATION OF ANY EXISTING UTILITIES, AND TO TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO ALL UTILITIES NOT SCHEDULED FOR REMOVAL. THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR ANY DAMAGE DONE TO SUCH UTILITIES DURING CONSTRUCTION.
4. THIS DRAWING (OR SPECIFICATIONS), INCLUDING THE DESIGNS INCORPORATED HEREIN, IS (ARE) AN INSTRUMENT OF PROFESSIONAL SERVICE PREPARED FOR USE IN CONSTRUCTION OF THE PROJECT IDENTIFIED HEREON. ANY MODIFICATION WITHOUT WRITTEN AUTHORIZATION OF SCRRA SHALL BE AT THE CONTRACTOR'S SOLE RISK. (1)
5. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THE REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL AND THE CITY OF MOORPARK HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONALS.
6. THE PROJECT GEOTECHNICAL ENGINEER'S RECOMMENDATIONS ARE INCORPORATED HEREIN BY REFERENCE. THE CONTRACTOR SHALL OBTAIN SAID RECOMMENDATIONS FROM THE SCRRA, AND COMPLY WITH THE PROVISIONS THEREIN, OR AS AMENDED IN THE FIELD BY THE PROJECT GEOTECHNICAL ENGINEER.
7. ALL CONSTRUCTION, GRADING, STORAGE AND TRANSPORTATION ACTIVITIES WILL BE CONDUCTED IN A MANNER CONSISTENT WITH THE STORM WATER POLLUTION CONTROL PLAN/ STORM WATER POLLUTION PREVENTION PLAN SUBMITTED FOR THIS PROJECT AND THE VENTURA COUNTYWIDE STORM WATER QUALITY MANAGEMENT PROGRAM. A COPY OF THE STORM WATER POLLUTION CONTROL PLAN AND/ OR THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE ON SITE AND AVAILABLE FOR REVIEW AT ALL TIMES DURING CONSTRUCTION.
8. ALL WORK WITHIN CALTRANS RIGHT OF WAY SHALL CONFORM TO CALTRANS STANDARD PLANS AND SPECIFICATIONS, LATEST EDITIONS.
9. THE MINIMUM WIDTH OF COLD PLANE AND OVERLAY WITH HOT MIX ASPHALT SUPERPAVE TYPE A PAVEMENT SHALL BE AT LEAST 5' TO ACCOMMODATE AUTOMATED COMPACTION EQUIPMENT, AND TO ACHIEVE SUFFICIENT COMPACTION.
10. THE MINIMUM WIDTH OF NEW HOT MIX ASPHALT SUPERPAVE TYPE A PAVEMENT SHALL BE AT LEAST 5' TO ACCOMMODATE AUTOMATED COMPACTION EQUIPMENT, AND TO ACHIEVE COMPACTION.
11. CONTRACTOR MUST MAINTAIN ALL TRAFFIC SIGNS IN ERECT POSITION AND SET SAME FRAME IN PROPER POSITION AT CLOSE OF THE JOB.
12. SANITARY SEWER AND STORM DRAIN MANHOLE FRAME AND COVER SETS SHALL BE ADJUSTED TO THE NEW FINISHED SURFACE GRADE BY THE CONTRACTOR. THE USE OF CAST IRON RAISING RINGS WILL NOT BE ACCEPTED.
13. NO LONGER THAN 48 HOURS SHALL ELAPSE BETWEEN THE TIME, A MANHOLE IS DUG OUT FROM THE NEWLY LAID ASPHALT AND THE TIME THAT THE FINISHED SURFACE OF ASPHALT IS PLACED AROUND THE FRAME SET TO FIT THE NEW STREET SECTION.
14. PREFORMED EXPANSION JOINTS 1/4" THICK SHALL BE PLACED IN CONCRETE CURB, GUTTER & SIDEWALK, AT THE BEGINNING AND END OF ALL CURVES, AT THE TOP OF WHEELCHAIR RAMPS AND AT UNIFORM INTERVALS NO TO EXCEED 25FT. IN AREAS WHERE TREES ARE PLANTED WITHIN OR ADJACENT TO THE SIDEWALK, SIDEWALK SECTIONS SHOULD BE CONNECTED ACROSS EXPANSION JOINTS BY SLIP DOWELS. INSTALL 2 DOWELS PER JOINT FOR 5 FT. WIDE SIDEWALK, 4 DOWELS FOR 9FT. WIDE OR 10FT. WIDE SIDEWALKS. 8" LENGTH OF SCHEDULE 40 PVC SLEEVE, TAPED SHUT AT ONE END CENTERED JOINT IN CONCRETE ON ONE SIDE OF JOINT, PRESSED TIGHTLY AGAINST JOINT MATERIAL .12" #3 REBAR EMBEDDED 6" INTO CONCRETE ON OTHER SIDE OF JOINT, EXTENDING THROUGH JOINT MATERIAL INTO SLEEVE. (1)
15. PLANTED AREAS ADJACENT TO THE PROPOSED WORK WHICH ARE DISTURBED BY THE CONTRACTOR SHALL BE PLANTED WITH SOD OR GROUND COVER TO MATCH EXISTING.
16. EXISTING UTILITIES SHALL BE PROTECTED AND MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED IN PLANS. CONTRACTOR TO NOTIFY THE UTILITY OWNER(S) 72 HOURS PRIOR TO PAVING OR CONCRETE POUR IF UTILITY FACILITIES NEED TO BE RELOCATED OR ADJUSTED TO FINISHED GRADE. (1)
17. THE REMOVAL OF EXISTING PAVEMENT, CURB, GUTTER AND SIDEWALK WHERE SHOWN ON THE PLANS ARE SEPARATE PAY ITEMS AND NOT INCLUDED AS PART OF THE CLEAR AND GRUB ACTIVITIES .

GENERAL NOTES (CONTINUED)

18. THE REMOVAL OF EXISTING PAVEMENT, CURB, GUTTER AND SIDEWALK WHERE SHOWN ON THE PLANS ARE SEPARATE PAY ITEMS AND NOT INCLUDED AS PART OF THE CLEAR AND GRUB ACTIVITIES .
19. UTILITIES TO BE ADJUSTED OR RELOCATED BY THE OWNER EXCEPT AS SHOWN ON THE PLANS. (1)
20. THE CONTRACTOR SHALL REMOVE PORTION OF EXISTING SPRINKLER SYSTEMS IN CONFLICT WITH THE NEW CONSTRUCTION AND PROVIDE FOR THE IMMEDIATE RESTORATION OF A TEMPORARY SYSTEM, BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL RESTORE THE SPRINKLER SYSTEM TO THEIR ORIGINAL COVERAGE LESS THE NEW PAVED AREAS.
21. SURFACE PLANE AREAS AND LOCATIONS ARE SUBJECT TO ADJUSTMENT TO MAXIMIZE REMOVAL OF DETERIORATED A.C. PAVEMENT.
22. PRIOR TO POURING CONCRETE ADJACENT TO EXISTING CURB & GUTTER THE CURB FACE SHALL BE PREPARED BY REMOVING CONCRETE REMNANTS AT FLOW LINE, DIRT, AND ASPHALT, TO ENSURE GOOD CONTACT WITH EXISTING CONCRETE.
23. DRIVEWAY LOCATIONS ARE SUBJECT TO CHANGE AT THE TIME OF CONSTRUCTION, UPON REQUEST OF THE PROPERTY OWNER, PROVIDED THAT NO UTILITY CONFLICT OCCURS AND THE WIDTH IS WITHIN SPECIFICATIONS.
24. CONTRACTOR SHALL NOTIFY RESIDENTIAL PROPERTY OWNERS 72 HOURS AND BUSINESS ESTABLISHMENTS 96 HOURS PRIOR TO ANY CLOSURE OF THEIR EXISTING DRIVEWAY AND MAIN ACCESS.
25. ALL CONCRETE REMOVALS SHALL BE MADE TO A SAW CUT LINE PER SCRRA STANDARD SPECIFICATIONS.
26. ASPHALT CONCRETE PAVEMENT SHALL BE CONSTRUCTED JOINING CURB & GUTTER WITH 1/4" LIP.
27. THE COMPLETED ASPHALT/ASPHALT RUBBER HOT MIX PAVEMENT SHALL BE THOROUGHLY COMPACTED TO BE FREE FROM BUMPS, DEPRESSION OR IRREGULARITIES, AND ANY RIDGES, INDENTATIONS OR OTHER OBJECTIONABLE MARKS LEFT ON THE SURFACE OF THE NEW PAVEMENT SHALL BE ELIMINATED BY ROLLER OR OTHER MEANS.
28. ALL NEW SIDEWALKS SHALL HAVE WEAKENED PLANE JOINTS OR SCORE LINES THAT MATCH EXISTING ADJACENT SIDEWALKS. IN LOCATION WHERE THERE ARE NO SIDEWALKS, THE WEAKENED PLANE JOINTS OR SCORE LINES SHALL BE CONSTRUCTED AT REGULAR 5 FT INTERVAL IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS.
29. EXISTING BOLLARDS, BENCHES AND PLANTERS ALONG THE EXISTING SIDEWALKS SHALL BE REMOVED BY THE CONTRACTOR AS SHOWN IN THE PLANS.
30. ALL GAS VALVE COVERS & APPURTENANCES WILL BE ADJUSTED TO NEW FINISHED GRADE BY THE GAS COMPANY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE REQUIRED WORK.
31. ELECTRICAL VAULTS, MANHOLES, AND PULL BOXES WILL BE ADJUSTED TO FINISHED GRADE OR RELOCATED BY THE UTILITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE REQUIRED WORK. RELOCATION OF TRAFFIC SIGNAL PULL BOXES, TRAFFIC SIGNAL POLES, TRAFFIC SIGNAL UTILITY CONTROL BOXES, AND OTHER MISCELLANEOUS TRAFFIC FACILITIES SHALL BE COMPLETED BY THE CONTRACTOR.
32. LOCATION OF SURVEY WELL MONUMENTS, WHERE APPLICABLE, WILL BE IDENTIFIED IN THE FIELD BY THE ENGINEER; CONTRACTOR TO GIVE 72 HOURS NOTICE TO THE ENGINEER.
33. CONTRACTOR TO INSTALL AND MAINTAIN SCRRA APPROVED TEMPORARY FENCING BETWEEN WORK AREA AND MAIN LINE TRACKS DURING CONSTRUCTION WITHIN METROLINK RIGHT-OF-WAY.
34. ALL WORK IN THE RAILROAD RIGHT OF WAY SHALL BE ACCORDANCE WITH SCRRA STANDARDS AND PROCEDURES.
35. SCRRA IS NOT A MEMBER OF "DIG ALERT". THE CONTRACTOR SHALL CALL SCRRA'S SIGNAL DEPARTMENT AT (909) 592-4152 A MINIMUM OF 72-HOURS PRIOR TO BEGINNING CONSTRUCTION TO MARK SIGNAL AND COMMUNICATION CABLES AND CONDUITS. TO ASSURE CABLES AND CONDUITS HAVE BEEN MARKED, NO WORK MAY PROCEED UNTIL YOU HAVE BEEN APPROVED WITH AN SCRRA DIG NUMBER. (1)
36. BEFORE COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL OBTAIN AN UNDER GROUND SERVICE ALERT INQUIRY I.D. NUMBER BY CALLING 811. THIS I.D. NUMBER SHALL BE REPORTED TO SCRRA UPON RECEIPT.

REV.	DATE		BY	SUB.	APP.
1	10/13/14	ADJUSTED TEXT NOTES 14, 16, 19 AND ADDED NOTES 35, 36	ZM		SC

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY Z.M/L.N.
DRAWN BY W.STEBOK
CHECKED BY V. HAGHDOUST
APPROVED BY L. NGUYEN
DATE 9-22-2014

REGISTERED PROFESSIONAL ENGINEER — LIEM ANH NGUYEN — No. C 70728 — EXP. 6-30-15 — CIVIL — STATE OF CALIFORNIA

METROLINK®

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110
(951) 320-7300

SUBMITTED: Gerard Reminiskey PROJECT MANAGER
APPROVED:

METROLINK COMMUTER RAIL SYSTEM
VENTURA COUNTY SEALED CORRIDOR
GENERAL NOTES AND NOTICES
SHEET 1 OF 2

CONTRACT NO. C3121-14
DRAWING NO. G-03
REVISION | SHEET NO. 3 OF 28
SCALE NO SCALE

CONSTRUCTION NOTES (ROADWAY):

1. SAWCUT EXISTING PAVEMENT
2. NOT USED
3. NOT USED
4. NOT USED
5. NOT USED
6. CONSTRUCT TYPE A2-6 CURB PER CALTRANS 2010 STANDARD PLANS
7. CONSTRUCT TYPE A2-8 CURB PER CALTRANS 2010 STANDARD PLANS
8. CONSTRUCT TYPE A1-8 CURB PER CALTRANS 2010 STANDARD PLANS
9. CONSTRUCT STAMPED CONCRETE PER CITY OF SIMI VALLEY STAMPED CONCRETE DETAIL SV 51-80
10. NOT USED
11. CONSTRUCT SIDEWALK PER DETAILS AND CALTRANS SPECIFICATIONS. FOR DRIVEWAY PCC THICKNESS 0.5'
12. NOT USED
13. NOT USED
14. CONSTRUCT CURB RAMP CASE C PER CALTRANS 2010 STANDARD PLANS
15. NOT USED
16. NOT USED
17. NOT USED
18. CONSTRUCT AC PAVEMENT, THICKNESS PER SCRRA ENGINEERING STANDARD ES4201-02
19. COLD PLANE 0.15' OF EXISTING PAVEMENT AND CONSTRUCT MIN 0.15' OF HMA-SP-A PER CALTRANS 2010 REVISED STANDARD SPECIFICATIONS.
20. NOT USED
21. CONSTRUCT PAVED END RAMP PER SCRRA ENGINEERING STANDARD ES4201-03, DETAIL 7
22. NOT USED
23. INSTALL PEDESTRIAN SWING GATE PER SCRRA ENGINEERING STANDARD ES4002, UNLESS OTHERWISE NOTED ON PLAN
24. INSTALL A.D.A. DETECTABLE WARNING SURFACE (RAISED TRUNCATED DOME) PER SPPWC PLAN NO. 111-4, DIMENSIONS PER PLAN
25. INSTALL METAL HAND RAILING PER SCRRA ENGINEERING STANDARD ES4005, TYPE B
26. NOT USED
27. INSTALL 4' HIGH 1" MESH FABRIC CHAIN LINK FENCE PER SCRRA ENGINEERING STANDARD ES5106
28. INSTALL WELDED WIRE MESH (RIGHT OF WAY FENCE: 8 FT HEIGHT) WITH BARBED WIRE (APWA STD. 600-3)
29. INSTALL R.O.W. SECURITY ACCESS GATE DETAILS PER SCRRA ENGINEERING STANDARDS ES5107, LOCATE PER PLAN
30. NOT USED
31. CONSTRUCT CROSS GUTTER PER SPPWC 122-2
32. NOT USED
33. CONSTRUCT 0.60' HMA-SP-A OVER 0.60' LCB OVER 1.15' CL-3-AB PER CALTRANS 2010 REVISED STANDARD SPECIFICATIONS.
34. NOT USED
35. INSTALL WALK GATE PER DETAIL ON C-11 AND LOCATE PER PLAN
36. NOT USED
37. NOT USED
38. NOT USED

CONSTRUCTION NOTES (CROSSING FEATURES):

40. INSTALL CPUC STANDARD NO. 9 ACTIVE WARNING DEVICE, GATE ARM LENGTH PER PLAN. SEE RAILROAD SIGNAL PLANS.
41. NOT USED
42. NOT USED
43. INSTALL AUTOMATED PEDESTRIAN GATE WITH STUB MAST, LENGTH PER PLAN. SEE RAILROAD SIGNAL PLANS
44. NOT USED
45. INSTALL PRECAST CONCRETE PANELS FOR HIGHWAY-RAIL GRADE CROSSINGS PER SCRRA ENGINEERING STANDARD ES4201-01, NUMBER OF PANELS PER PLAN (BY SCRRA FORCES) ⚠1
46. INSTALL AUTOMATED PEDESTRIAN GATE ASSEMBLY FOR OFF-QUADRANT APPICATIONSWITH FLASHING LIGHTS, LENGTH PER PLAN. SEE RAILROAD SIGNAL PLANS
47. INSTALL K-RAIL
48. INSTALL SIGNAL HOUSE. SEE RAILROAD SIGNAL PLANS

CONSTRUCTION NOTES (UTILITY):

50. REMOVE/RELOCATE EXISTING POWER POLE AND GUY WIRE (BY UTILITY OWNER)
51. RELOCATE GAS VENT/RISER (BY UTILITY OWNER)
52. ADJUST STORM DRAIN MANHOLE TO GRADE
53. NOT USED
54. RELOCATE PULL BOX (PER PLAN) ⚠1
55. ADJUST PULL BOX TO GRADE (PER PLAN) ⚠1
56. NOT USED
57. NOT USED
58. NOT USED
59. RELOCATE FIBER OPTICS MARKER (BY UTILITY OWNER)
60. RELOCATE/ADJUST CABLE TV LINE (BY UTILITY OWNER)
61. RELOCATE UTILITY VAULT (BY UTILITY OWNER)
62. RELOCATE ELECTRICAL METER AND PEDESTAL (BY UTILITY OWNER)

CONSTRUCTION NOTES (STORM DRAIN):

65. INSTALL 12" CMP (12 GAUGE)
66. INSTALL 18" RCP (1750 D)
67. CONSTRUCT TYPE G3 DRAINAGE INLET PER CALTRANS STD PLAN D73
68. CONSTRUCT TYPE G0 DRAINAGE INLET PER CALTRANS STD PLAN D74B
69. CONSTRUCT SAG GUTTER DEPRESSION PER CALTRANS STD PLAN D78A
70. NOT USED
71. CONSTRUCT CONCRETE COLLAR PER SPPWC STD PLAN 380-4
72. CONSTRUCT CONCRETE ENCASEMENT PER DETAIL 4, SHEET G-07
73. TRENCHING AND BEDDING PER COUNTY OF VENTURA ROAD STANDARDS
74. SAWCUT AND REMOVE EXIST VERTICAL CURB FACE AS REQUIRED. CONSTRUCT TYPE A2-8 CURB PER CALTRANS 2010 STD PLAN ADJACENT TO EXIST RCB AND WIDEN GUTTER AS REQUIRED. JOIN EXIST CURB AND GUTTER.
75. CONSTRUCT PARKWAY DRAIN PER SPPWC STD PLAN 151-2

REMOVAL NOTES (ROADWAY)

1. PROTECT IN PLACE (ITEM AS NOTED)
2. REMOVE EXIST AC PAVEMENT
3. NOT USED
4. REMOVE EXIST CURB & GUTTER
5. REMOVE EXIST SIDEWALK
6. REMOVE EXIST CATCH BASIN
7. REMOVE EXIST DRIVEWAY
8. REMOVE EXIST STORM DRAIN PIPE
9. NOT USED
10. NOT USED
11. NOT USED
12. REMOVE PORTION OF ABANDONED BOX AND SEAL OPENING TO EXISTING WITH 8" WALL OF BRICK MORTAR OR 6" CONCRETE WALL
13. NOT USED
14. NOT USED
15. NOT USED
16. NOT USED
17. NOT USED
18. REMOVE EXIST ABANDONED TRACK

REMOVAL NOTES (RAILROAD SIGNALS)

40. NOT USED
41. NOT USED
42. NOT USED
43. REMOVE ACTIVE WARNING DEVICE CPUC STD. NO. 9
44. NOT USED
45. NOT USED
46. NOT USED

CONSTRUCTION NOTES (SIGNING AND PAVEMENT MARKINGS):

101. INSTALL 4" SOLID YELLOW EDGE LINE WITH RPMS PER CALTRANS STD PLAN A20B, DETAIL 25
102. INSTALL 4" SOLID DOUBLE YELLOW STRIPE PER CALTRANS STD PLAN A20A, DETAIL 21
103. INSTALL 4" SOLID WHITE EDGE LINE WITH RPMS SPACED 4' O.C. PER SCRRA ENGINEERING STANDARD ES4012
104. INSTALL 4" DOUBLE YELLOW MEDIAN WITH RPMS SPACED 4' O.C. PER SCRRA ENGINEERING STANDARD ES4014
105. NOT USED
106. INSTALL 4" DASHED WHITE STRIPE PER CALTRANS STD PLAN A20A, DETAIL 9
107. INSTALL 8" WHITE BARRIER LINE PER CALTRANS STD PLAN A20D DETAIL 38A
108. INSTALL 12" SOLID WHITE CROSSWALK LINE OR LIMIT LINE PER CALTRANS STD PLAN A24E
109. INSTALL 24" WHITE LIMIT LINE PER SCRRA ENGINEERING STANDARD ES4012
110. INSTALL TYPE IV ARROW (DIRECTION AS INDICATED) PER CALTRANS STD PLAN A24A
111. INSTALL PAVEMENT MARKING AS SHOWN PER CALTRANS STANDARD PLANS A24D AND A24E
112. INSTALL TYPE VII ARROW (DIRECTION AS INDICATED) PER CALTRANS STD PLAN A24A
113. INSTALL RAILROAD CROSSING SYMBOL PAVEMENT MARKING PER CALTRANS STD PLAN A24B
114. NOT USED
115. NOTE USED
116. INSTALL SIGN AND POST AS INDICATED
117. INSTALL SIGN ON SIGNAL POLE WITH SADDLE BRACKET AS INDICATED
118. NOT USED
119. EXISTING SIGN TO REMAIN
120. REINSTALL EXISTING PAVEMENT MARKING
121. INSTALL ISLAND NOSE YELLOW
122. NOT USED
123. NOT USED
124. NOT USED
125. NOT USED
126. NOT USED
127. NOT USED
128. NOT USED
129. NOT USED
130. NOT USED
131. NOT USED
132. INSTALL R15-1 AND R15-2 SIGNS ON RAIL ROAD CANTILEVER

REMOVAL (SIGNING AND PAVEMENT MARKINGS)

101. REMOVE EXISTING STRIPING
102. REMOVE EXISTING PAVEMENT MARKING
103. REMOVE OR RESET EXISTING SIGN AND POLE
104. REMOVE EXISTING SIGN
105. RELOCATE PRIVATE SIGN (BY OTHERS)

REV.	DATE		BY	SUB.	APP.
⚠1	10/13/14	REVISED CONSTRUCTION NOTE 45, 54 AND 55	ZM		SC

DESIGNED BY	Z.M/L.N.
DRAWN BY	W.STEBOK
CHECKED BY	V. HAGHDOUST
APPROVED BY	L. NGUYEN
DATE	9-22-2014

REGISTERED PROFESSIONAL ENGINEER — LIEM ANH NGUYEN — No. C 70728 — EXP. 6-30-15 — CIVIL — STATE OF CALIFORNIA

METROLINK®

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110
(951) 320-7300

SUBMITTED: Gerard Reminiskey PROJECT MANAGER

APPROVED: _____

METROLINK COMMUTER RAIL SYSTEM
VENTURA COUNTY SEALED CORRIDOR
CONSTRUCTION NOTES

CONTRACT NO.	C3121-14
DRAWING NO.	G-05
REVISION	
SHEET NO.	5 OF 28
SCALE	NO SCALE

NOTES:

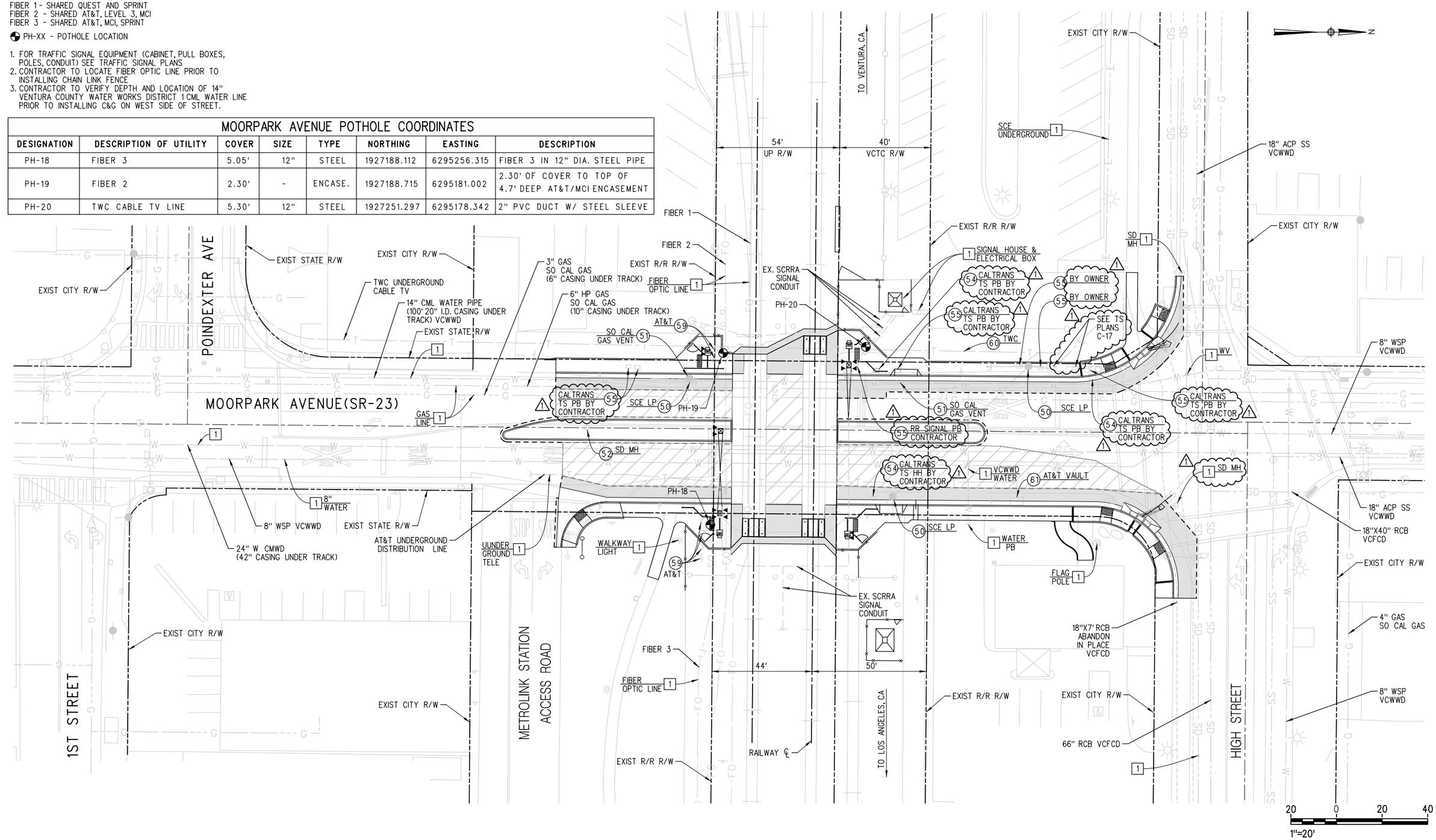
FIBER 1 - SHARED QUEST AND SPRINT
FIBER 2 - SHARED AT&T, LEVEL 3, MCI
FIBER 3 - SHARED AT&T, MCI, SPRINT

PH-XX - POTHOLE LOCATION

1. FOR TRAFFIC SIGNAL EQUIPMENT (CABINET, PULL BOXES, POLES, CONDUIT) SEE TRAFFIC SIGNAL PLANS
2. CONTRACTOR TO LOCATE FIBER OPTIC LINE PRIOR TO INSTALLING CHAIN LINK FENCE
3. CONTRACTOR TO VERIFY DEPTH AND LOCATION OF 14" VENTURA COUNTY WATER WORKS DISTRICT 1 CML WATER LINE PRIOR TO INSTALLING C&G ON WEST SIDE OF STREET.

MOORPARK AVENUE POTHOLE COORDINATES

DESIGNATION	DESCRIPTION OF UTILITY	COVER	SIZE	TYPE	NORTHING	EASTING	DESCRIPTION
PH-18	FIBER 3	5.05'	12"	STEEL	1927188.112	6295256.315	FIBER 3 IN 12" DIA. STEEL PIPE
PH-19	FIBER 2	2.30'	-	ENCASE.	1927188.715	6295181.002	2.30' OF COVER TO TOP OF 4.7' DEEP AT&T/MCI ENCASEMENT
PH-20	TWC CABLE TV LINE	5.30'	12"	STEEL	1927251.297	6295178.342	2" PVC DUCT W/ STEEL SLEEVE



REV.	DATE		BY	SUB.	APP.
1	10/13/14	CLARIFIED RELOCATE/ADJUST RESPONSIBILITY: REMOVE	ZM		SC
		CONSTRUCTION NOTE 52 AND ADDED REMOVAL NOTE 1:			
		ADDED CONSTRUCTION NOTE 54 AND 55:			
		ADDED REFERENCE TO TRAFFIC SIGNAL PLANS			

DESIGNED BY Z.M/L.N.
DRAWN BY W.STEBOK
CHECKED BY V. HAGHDOUST
APPROVED BY L. NGUYEN
DATE 9-22-2014

REGISTERED PROFESSIONAL ENGINEER — LEN KANH NGUYEN — No. C 70728 — EXP. 6-30-15 — CIVIL — STATE OF CALIFORNIA

METROLINK®

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110
(951) 320-7300

SUBMITTED: Gerard Reinmuth PROJECT MANAGER
APPROVED:

METROLINK COMMUTER RAIL SYSTEM
VENTURA COUNTY SEALED CORRIDOR
MOORPARK AVENUE (DOT) 745901G (CPUC) VE-427.00
UTILITY PLAN

CONTRACT NO. C3121-14
DRAWING NO. C-15
REVISION
SHEET NO. 15 OF 28
SCALE 1"=20'

10/9/2014 4:52:23 PM USER = wstebok
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CABLE & CONDUCTOR SCHEDULE

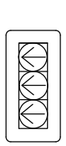
CABLE TYPE	POLE	PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
VEH-PED 12CSC / PPB 3CSC	A	3,6P												1 1	1 1	1 1				1 1	1 1		
	B	2,3,3P										1 1	1 1		1 1	1 1				1 1	1 1		
	C	2,2P	1 1	1 1		1 1	1 1	1 1		1 1	1 1									1 1	1 1		
	D	4,3P			1 1	1 1	1 1	1 1		1 1	1 1									1 1	1 1		
	E	4,4P						1 1	1 1	1 1	1 1									1 1	1 1		
	F	1,2,6,2P							1 1		1 1									1 1	1 1		
	G	1,6,6P																	1 1	1 1	1 1		
	H	3,4P															1 1	1 1	1 1	1 1	1 1		
	TOTAL		1 1	1 1	1 1	2 2	2 2	1 1	1 1	3 3	4 4	1 1	1 1	1 1	2 2	2 2	1 1	1 1	1 1	8 8	8 8		

AWG	CIRCUIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
#6	CONTROLLER																				1	
#10	LUMINAIRE	2	2		2	2	2		4	4			2	2	2			2				8
#14(12)	R.R. PRE-EMPT						1		1	1									1	1		
EVP		1	1		1	1	1		2	2			1	1	1			1	4	4		
DETECTORS																						
TYPE B DLC 2#14	ø2									2									2	2		
	ø3				1	1			1	1									1	1		
	ø4															1			1	1		
	ø6											2		2	2				2	2		
	TOTAL				1	1			1	3		2		2	2		1		6	6		
CONDUIT	SIZE	2"	2"(E)	1½" (E)	2½" (E)	2½"	2"	1½"	3"	3½"	1½" (E)	2"(E)	2"(E)	2½" (E)	2½"	1½"	2"	2"	2–3½"	2–3½"	1½"	1½"

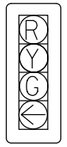
INTERCONNECTION NOTES (THIS SHEET):

The Interconnect for this traffic signal is an supervised circuit. The traffic signal operation software shall operate in a manner to share information with the railroad equipment.

DETAIL"A"



DETAIL"B"



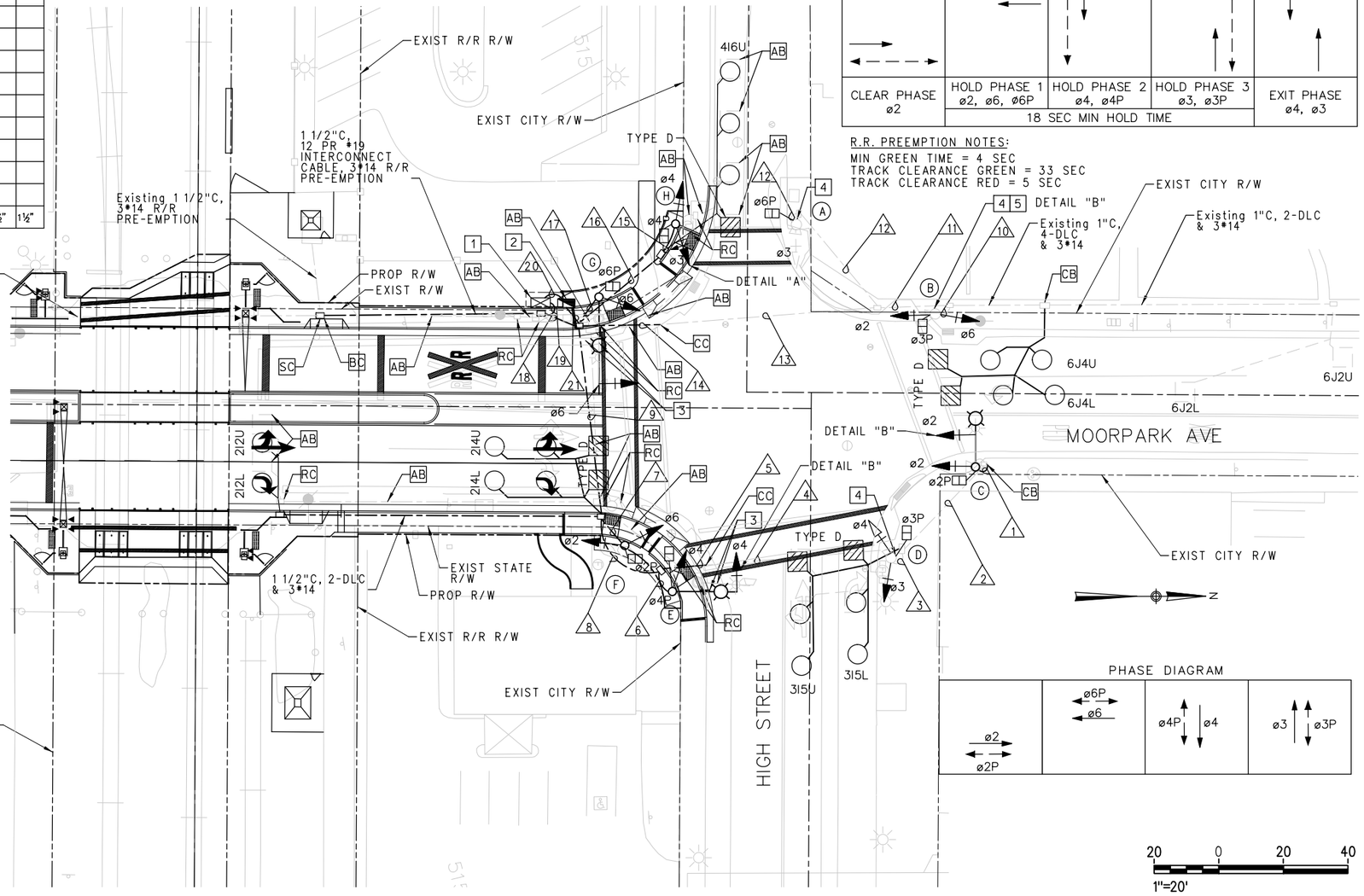
POLE SCHEDULE

NO	TYPE	SMA	LMA	LUMINAIRE LED WATTS	VEHICLE POLE	VEHICLE MAST ARM	PED SIGNAL	PPB ø	PPB ARROW	SPECIAL REQUIREMENTS
A	Exist 15B		12'	136	SV-1-T			6	←	
B	Exist 1-A				TV-2-T		SP-2-T	3	→	ADD SIGNAL HEAD
C	NEW 17-2-100	15'	12'	136	SV-1-T	MAS-4C	SP-1-T	3	←	REMOVE EXISTING TYPE 15TS
D	Exist 1A				TV-2-T		SP-1-T	2	→	ADD SIGNAL HEAD
E	NEW 17-2-100	20'	12'	136	SV-1-T	MAS	SP-1-T	2	←	POLE PLACED DURING STAGE 1
F	NEW 1-A				TV-2-T		SP-1-T	4	→	POLE PLACED DURING STAGE 1
G	NEW 17-2-100	30'	12'	136	SV-1-T	MAS-4C	SP-1-T	4	←	REMOVE EXISTING TYPE 17B-2-70
H	NEW 1-A				TV-2-T		SP-1-T	6	→	REMOVE EXISTING TYPE 1-A

PHASING FOR R.R. PREEMPTION

CLEAR PHASE ø2	HOLD PHASE 1 ø2, ø6, ø6P	HOLD PHASE 2 ø4, ø4P	HOLD PHASE 3 ø3, ø3P	EXIT PHASE ø4, ø3
	18 SEC MIN HOLD TIME			

R.R. PREEMPTION NOTES:
MIN GREEN TIME = 4 SEC
TRACK CLEARANCE GREEN = 33 SEC
TRACK CLEARANCE RED = 5 SEC



NOTES (THIS SHEET):

1. INSTALL STATE FURNISHED TYPE 2070 MODEL CONTROLLER ASSEMBLY IN TYPE 332 CABINET ON NEW FOUNDATION, FRONT DOOR OF CABINET FACES SOUTH.
2. INSTALL 120/240 V TYPE METERED III-CF SERVICE EQUIPMENT ENCLOSURE WITH TYPE V PEC,
   100 A- 2P CB MAIN
   50 A - 1P CB SIGNAL
   30 A - 1P CB LIGHTING (UNMETERED)
   15 A - 1P CB ILLUMINATED SIGN
   ID# XXX-XXX-XXX.XX
3. RL EXISTING INTERNALLY ILLUMINATED STREET NAME SIGN AND ALL ASSOCIATED EQUIPMENT FROM EXISTING MAST ARM TO NEW MAST ARM.
4. REPLACE EXISTING PEDESTRIAN DISPLAY WITH LED COUNTDOWN DISPLAY AND REPLACE EXISTING PUSH BUTTON ASSEMBLY WITH ADA COMPLAINT PUSH BUTTON ASSEMBLY.
5. REPLACE EXISTING ø2 SIGNAL HEAD DISPLAY WITH ø2/ø5 SIGNAL HEAD DISPLAY PER DETAIL "B".
6. UNLESS OTHERWISE SHOWN, INDUCTIVE LOOPS SHALL BE TYPE E, 6' IN DIAMETER WITH 10' SPACING IN THE DIRECTION OF TRAVEL. NECESSARY STRIPING SHALL BE LOCATED PRIOR TO POSITIONING OF DETECTORS. LOOPS SHALL BE CENTERED IN LANES. LOOP DETECTOR SAWCUTS WITHIN 8' OF THE CURB SHALL BE A MINIMUM OF 3" DEEP. ENGINEER SHALL APPROVE DETECTOR LOOP LOCATIONS PRIOR TO INSTALLATION BY THE CONTRACTOR.
7. TRAFFIC SIGNAL AND HIGHWAY LIGHTING CONSTRUCTION SHALL CONFORM TO CALTRANS STANDARD SPECIFICATIONS, STANDARD PLANS AND THE SPECIAL PROVISIONS. SIGNAL HEADS SHALL COMPLY WITH CURRENT MUTCD STANDARDS.
8. CONDUCTOR SCHEDULE IS FURNISHED AS AN INSTALLATION GUIDELINE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE CORRECT CONDUCTORS REQUIRED FOR THE INTENDED OPERATION.
9. NEW PULLBOXES SHALL BE NO. 5, UNLESS OTHERWISE NOTED.
10. EXISTING CONDUIT AND SIC SHALL BE RETAIN AND PROTECT IN PLACE TO BE REUSED, UNLESS OTHERWISE NOTED.
11. RETAIN AND PROTECT EXISTING SIGNAL/PEDESTRIAN POLES A, B, D AND ALL ASSOCIATED EQUIPMENT. ⚠1
12. ALL PROPOSED PEDESTRIAN SIGNALS SHALL BE LED COUNTDOWN DISPLAYS.
13. ALL PROPOSED PEDESTRIAN PUSH BUTTONS SHALL BE ADA COMPLIANT.
14. ALL SIGNAL STANDARDS AND PULLBOXES SHALL NOT BE INSTALL INSIDE WHEEL CHAIR RAMPS.
15. PROVIDE GPRS ASSEMBLY PER CALTRANS STANDARD SPECIFICATIONS. CONTACT JORGE FUENTES AT CALTRANS (213) 897-9915 FOR DETAILS.
16. POLES (E) AND (F) TO PLACED IN STAGE 1. SEE TEMPORARY SIGNAL PLAN AND TRAFFIC HANDLING PLANS.

REV.	DATE		BY	SUB.	APP.
⚠1	10/13/14	REVISED NOTE 11	ZM		CS

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. BUCHANAN
DRAWN BY J. BUCHANAN
CHECKED BY C. STEWART
APPROVED BY C. STEWART
DATE 9-22-2014

REGISTERED PROFESSIONAL ENGINEER — CARY PALMER STEWART — No. C43012 — Exp. 3-31-16 — CIVIL — STATE OF CALIFORNIA

METROLINK®

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110
(951) 320-7300

SUBMITTED: Gerard Reminiskey PROJECT MANAGER
APPROVED:

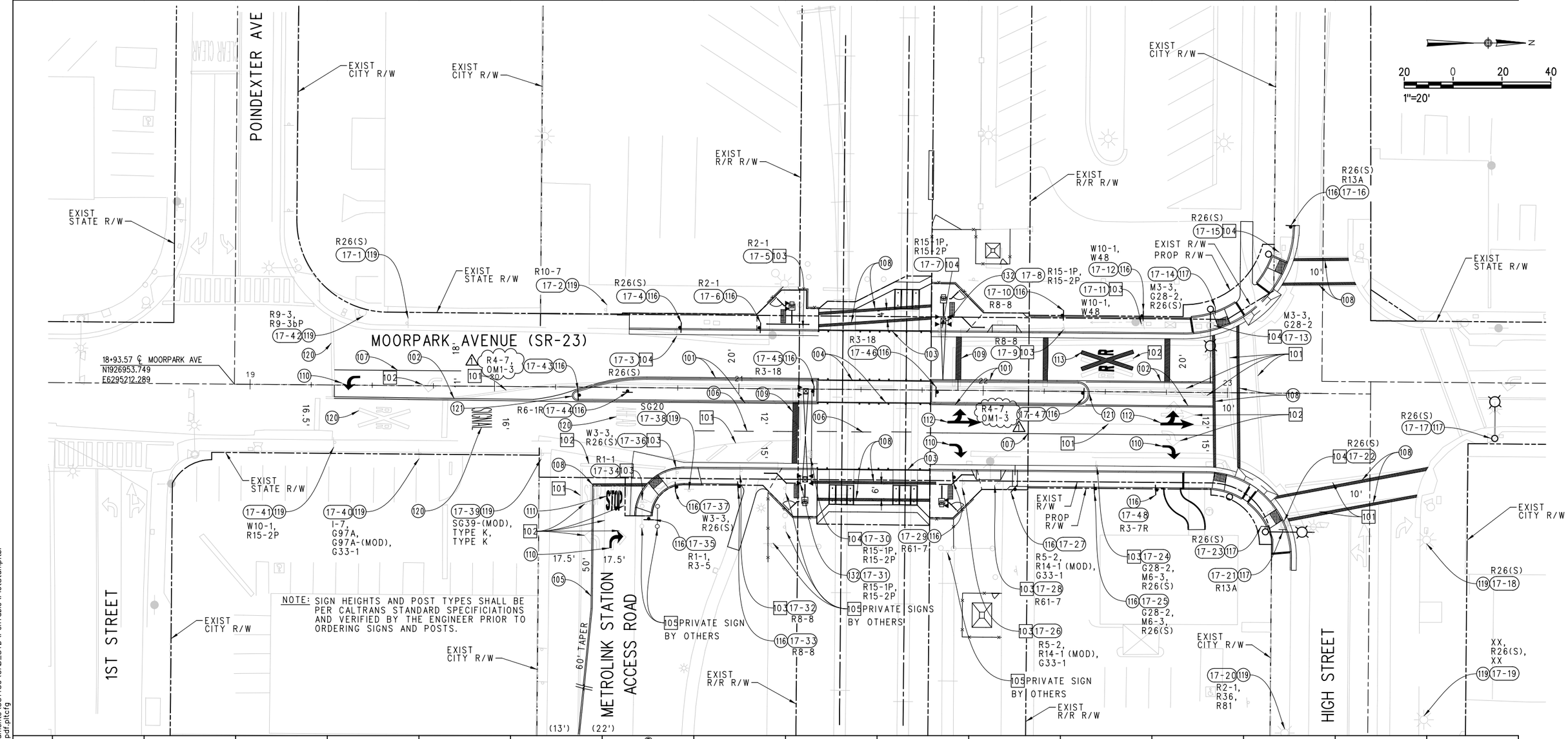
METROLINK COMMUTER RAIL SYSTEM
VENTURA COUNTY SEALED CORRIDOR

MOORPARK AVENUE (DOT) 745901G (CPUC) VE-427.00
SIGNAL PLAN

CONTRACT NO. C3121-14
DRAWING NO. C-17
REVISION
SHEET NO. 17 OF 28
SCALE 1"=20'

STREET SIGN INDEX

	(YELLOW) OM1-3 18"X18"	STOP R1-1 30"X30"	SPEED LIMIT 30 R2-1 30"X24"	ON RED R13A(CA) 18"x30"	R3-18 30"X30"	R4-7 30"X24"	R5-2 24"X24"	ONE WAY R6-1R 36"X12"	DO NOT STOP ON TRACKS R8-8 30"X24"	R9-3 EXISTING	DO NOT BLOCK INTERSECTION R10-7 EXISTING	TRUCK ROUTE ↑ R14-1(MOD) 18"X24"	RAIL ROAD CROSSING R15-1P 48"X48"	2 TRACKS R15-2P 18"X27"	30 STOPPING ANY TIME R26(S) 18"X12"	ONLY R61-7 36"X30"



STREET SIGN INDEX

	CALIFORNIA 23 G28-2 30"X30"	AMTRAK G97A (CA) EXISTING	METROLINK G97A (CA) (MOD) EXISTING	I-7 EXISTING	SOUTH M3-3 12"X24"	M6-3 15"X21"	W3-3 30"X30"	R R W10-1 30"X30"	TYPE K EXISTING	RIGHT LANE MUST TURN RIGHT R3-7R 30"X30"	ONLY R3-5R 30"X30"	G33-1 (CA) EXISTING	MOORPARK CIVIC CENTER SG39 (CA)(MOD) EXISTING	PARK & RIDE INFO CALL (800) 286-RIDE SG20 (CA) EXISTING	COMMERICAL VEHICLES OVER 5 TONS PROHIBITED R36 (CA) 30"X30"	BIKE LANE R81 (CA) 30"X20"

REV.	DATE		BY	SUB.	APP.
1	10/13/14	CHANGED TYPE N TO OM1-3	CPS		CPS

DESIGNED BY J. BUCHANAN
DRAWN BY J. BUCHANAN
CHECKED BY C. STEWART
APPROVED BY C. STEWART
DATE 9-22-2014

REGISTERED PROFESSIONAL ENGINEER — CARY PALMER STEWART — No. C43042 — Exp. 3-31-16 — CIVIL — STATE OF CALIFORNIA

METROLINK®

HDR

HDR Engineering, Inc.
2280 Market Street, Suite 100
Riverside, CA 92501-2110
(951) 320-7300

SUBMITTED: Gerard Reinmuth PROJECT MANAGER

APPROVED: _____

METROLINK COMMUTER RAIL SYSTEM
VENTURA COUNTY SEALED CORRIDOR
MOORPARK AVENUE (DOT) 745901G (CPUC) VE-427.00
PAVEMENT DELINEATION AND SIGNAGE PLAN

CONTRACT NO.	C3121-14
DRAWING NO.	C-20
REVISION	
SHEET NO.	20 OF 28
SCALE	1"=20'

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pw:\\PWAPPSAC01:California_Sacramento\Documents\351439\0000000001763651\3.00_CAD\13.02_Contract_Files\13.02.03_IFB Addendum Revisions\Sheet_Files\MOORPARK\Signing and Striping\176365_C-20.dgn
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APPENDIX B
06 Sample Engineer's Estimate

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
IFB NO. C3108-10 ANTELOPE VALLEY TRACK IMPROVEMENT PRIJECT
ENGINEER'S PROJECT COST ESTIMATE SUMMARY

Project Name: Antelope Valley Track and Station Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

SCHEDULE NO.	DESCRIPTION	ENGINEER'S ESTIMATE
BASE BID		
Schedule 1	Lang Siding Extension and Vincent Grade/Acton Station Siding Realignment	$7,256,599
Total Base Bid	**Sum of Schedules 1 and 2**	**$7,256,599**
OPTIONS		
Schedule 1A	Vincent Grade/Acton Station Track Re-alignment	$882,125
Schedule 1B	Maintenance Road Subballast	$67,905
Schedule 1C	Soil Cement	$725,700
Total Options Bid	**Sum of Schedules 1A, 1B, 1C and 2A**	**$1,675,730**
Total Base + Options	**Sum of Schedules 1, 2, 1A, 1B, 1C and 2A**	**$8,932,329**

PROJECT COST ESTIMATE

Project Name: Antelope Valley Track Improvement Project

Design Level: Camera Ready

Last Updated: June 17, 2010

ITEM	DESCRIPTION			QUANTITY		UNIT COST	TOTAL COST Schedule 1	TOTAL COST Schedule 1A	TOTAL COST Schedule 1B	TOTAL COST Schedule 1C	NOTES
01000	GENERAL REQUIEREMENTS		7%				$474,800	$79,700	$4,500	$47,600	See DPM-16 for details
02000	SITE WORK						$5,126,700	$802,425	$63,405	$678,100	See DPM-16 for details
03000	CONCRETE										See DPM-16 for details
05000	METALS										See DPM-16 for details
06000	WOODS & PLASTICS										See DPM-16 for details
07000	THERMAL & MOISTURE PROTECTION										See DPM-16 for details
08000	DOORS & WINDOWS										See DPM-16 for details
09000	FINISHES										See DPM-16 for details
10000	SPECIALTIES										See DPM-16 for details
15000	PLUMBING										See DPM-16 for details
16000	ELECTRICAL										See DPM-16 for details
18000	RAILROAD SIGNAL						$1,655,099				See DPM-16 for details
SUB-TOTAL: CONSTRUCTION COSTS							$7,256,599	$882,125	$67,905	$725,700	
			%								
	CONSTRUCTION CONTINGENCY	DPM	10%				$725,660	$88,213	$6,791	$72,570	
	CIVIL DESIGN & DESIGN SUPPORT	DPM					$1,296,672				Actual Engineering Cost
	GEOTECHNICAL INVESTIGATION						$149,648				Actual Geotech Cost
	SURVEY / AERIAL MAPPING						$412,555				Actual Surveying Cost
	S&C DESIGN AND DESIGN SUPPORT	DPM	3%				$217,698	$26,464	$2,037	$21,771	
	PROJECT MANAGEMENT	DPM	4%				$290,264	$35,285	$2,716	$29,028	
	CONSTRUCTION MANAGEMENT	DPM	8%				$580,528	$70,570	$5,432	$58,056	
	FLAGGING	DPM	6%				$435,396	$52,928	$4,074	$43,542	
	AGENCY COSTS	DPM	8%				$580,528	$70,570	$5,432	$58,056	
	MAINTENANCE OF WAY										
	TRACK/STRUCT. MAINTENANCE SUPPORT										
	S&C MAINTENANCE SUPPORT										
	MATERIAL PROCUREMENT LIST						$282,829	$45,690			Per Xorail
	RIGHT-OF-WAY ACQUISITION										
	RAILROAD WORK ORDERS										
	OTHERS (PERMITS, FEES, LEGAL)						$10,000				Per Mitigation Assessment
	POWER SERVICE PROVIDED (BY SCE)						$20,000	$25,000			SCE Estimated Costs Only
	FIBER OPTIC LINE RELOCATION (BY SPRINT)			600	LF	$ 100	$60,000				US Sprint Fiber Relocate
SUB-TOTAL: PROJECT RELATED OVERHEAD COSTS							$5,061,778	$414,719	$26,483	$283,023	
			%								
	PROJECT RESERVE/CONTINGENCY	DPM	5%				$615,919	$64,842	$4,719	$50,436	
	INFLATION		Rate:	3.5%	# Years:	2.00	$921,245	$96,986	$7,059	$75,439	
TOTAL PROJECT COST:							**$13,855,542**	**$1,458,672**	**$106,166**	**$1,134,598**	

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ENGINEER'S ESTIMATE

Project Name: Antelope Valley Track Improvement Project

Design Level: Camera Ready

Last Updated: June 17, 2010

Schedule 1 - Base Bid (Lang Siding)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
01000	GENERAL REQUIEREMENTS					
01505	MOBILIZATION AND DEMOBILIZATION					
01505.01	Mobilization 5%	1	LS	$339,090	$339,100	Percent of Construction
01505.02	Demobilization 2%	1	LS	$135,636	$135,700	Percent of Construction
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				**$474,800**	
	GENERAL REQUIEREMENTS SUBTOTAL				**$474,800**	
02000	SITE WORK					
02050	DEMOLITION AND REMOVAL					
02050.01	Demolition and Removal (Lang Siding)	1	LS	$50,000	$50,000	Light debris and riprap
	DEMOLITION AND REMOVAL SUBTOTAL				**$50,000**	
02100	SITE CLEARING					
02100.01	Site Clearing (Lang Siding)	15	AC	$3,500	$52,500	Light brush
	SITE CLEARING SUBTOTAL				**$52,500**	
02271	STONE REVETMENT (RIPRAP)					
02271.01	Furnish and Install Class III Riprap (Lang Siding)	78	CY	$150	$11,700	
	STONE REVETMENT (RIPRAP) SUBTOTAL				**$11,700**	
02300	EARTHWORK					
02300.01	Earthwork Grading for Track Construction (Lang Siding)	78,504	CY	$10	$785,100	Good access / Price from recent bid
	EARTHWORK SUBTOTAL				**$785,100**	
02340	SOIL STABILIZATION					
02340.01	Construct Geogrid Reinforced Embankment (Lang Siding)	33,905	CY	$20	$678,100	
	SOIL STABILIZATION SUBTOTAL				**$678,100**	
02436	CULVERT PIPE					
02436.01	Furnish and Construct 30" CMP Extension at MP 41.61	44	LF	$180	$8,000	Price from recent bid
02436.02	Furnish and Construct 48" CMP Extension at MP 41.87	24	LF	$200	$4,800	Price from recent bid
02436.03	Furnish and Construct 24" CMP Extension at MP 42.17	25	LF	$160	$4,000	Price from recent bid
02436.04	Furnish and Construct 24" CMP Extension at MP 42.41	22	LF	$160	$3,600	Price from recent bid
02436.05	Furnish and Construct 24" CMP Extension at MP 42.46	42	LF	$160	$6,800	Price from recent bid
02436.06	Furnish and Construct 48" CMP Extension at MP 42.56	25	LF	$200	$5,000	Price from recent bid
02436.07	Furnish and Construct 18" CMP Extension at MP 43.15	24	LF	$150	$3,600	Price from recent bid
02436.08	Construct Cast-In-Place Headwalls	10	EA	$10,000	$100,000	Price from recent bid
	CULVERT PIPE SUBTOTAL				**$135,800**	

ENGINEER'S ESTIMATE

Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1 - Base Bid (Lang Siding)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
02450	**TRACKWORK**					
02451.01	Furnish and Install New Track - 136# CWR - including rail, ballast, ties, and OTM (Lang Siding)	9,424	TF	$210	$1,979,100	Price from recent bid
02451.02	Furnish and Install New #20 Caltrain Concrete Power Operated TO (Lang Siding)	1	EA	$300,000	$300,000	Price from recent bid
02451.03	Remove and Salvage Existing No 14 TO and Deliver to SCRRA (Lang Siding)	1	EA	$30,000	$30,000	Price from recent bid
02451.04	Remove and Salvage Mainline Track and Deliver to SCRRA	987	TF	$130	$128,400	
02455.01	Track Shift including ballast, replacement of damaged ties and OTM (Lang Siding)	2,700	TF	$85	$229,500	Price from recent bid
02455.02	Surface and Line Existing Track to proposed horizontal alignment (Lang Siding)	1,186	TF	$30	$35,600	
				TRACKWORK SUBTOTAL	**$2,702,600**	
02461	**SUB-BALLAST AND AGGREGATE BASE**					
02461.01	Furnish, Place and Compact Sub-Ballast (Lang Siding)	4,087	CY	$45	$184,000	Price from recent bid
				SUB-BALLAST SUBTOTAL	**$184,000**	
02830	**MSE RETAINING WALL**					
02830.01	Furnish and Construct Mechanically Stabilized Earth (MSE) Retaining Walls, CalTrans Concrete Gutter and Handrails (Lang Siding)	5,854	SF	$90	$526,900	
				MSE RETAINING WALL SUBTOTAL	**$526,900**	
02930	**SLOPE PROTECTION**					
02930.01	Slope Protection (Hydro Seeding) (Lang Siding)	814,637	SF	$0.13	$102,900	Price from recent similar project
				SLOPE PROTECTION SUBTOTAL	**$102,900**	
				SITE WORK SUBTOTAL	**$5,126,700**	

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ENGINEER'S ESTIMATE

Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1 - Base Bid (Lang Siding)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
18000	RAILROAD SIGNAL					
18000.01	Trenching and filling outside of track and roadway.	1,000	LF	$ 136	$135,750	
18000.02	Trenching and filling under track	200	LF	$ 145	$29,018	
18000.03	House Wiring at CP Lang	1,000	EA	$ 91	$91,213	
18000.04	House Wiring at CP Humphreys	200	EA	$ 91	$18,242	
18000.05	Furnish and Install M-23e RH #20 layout	1	EA	$ 89,402	$89,402	
18000.06	Furnish and Assemble Signal	7	EA	$ 33,989	$237,923	
18000.07	Furnish and assemble 4' x 4' pullbox	3	EA	$ 7,039	$21,118	
18000.08	Furnish and assemble 2' x 3' pullbox	5	EA	$ 1,216	$6,078	
18000.09	Furnish and assemble 3' x 5' pullbox	8	EA	$ 1,354	$10,828	
18000.10	Install Insulated Joint	10	EA	$ 12,119	$121,187	
18000.11	Furnish and Install 2c # 6 Twisted Track Wire	2,100	LF	$ 11	$23,793	
18000.12	Furnish and install 7c # 6 in trench.	1,900	LF	$ 12	$22,639	
18000.13	Install 12c #14 in trench	200	LF	$ 13	$2,596	
18000.14	Furnish and Install 3c # 6 in trench	450	LF	$ 11	$4,941	
18000.15	Furnish and Install Switch Fouling	1	LS	$ 9,476	$9,476	
18000.16	Replace Battery Charger at CP Humphreys	1	EA	$ 626	$626	
18000.17	Signal Testing	1	LS	$ 197,455	$197,455	
18000.18	Track Connections	22	EA	$ 136	$2,992	
18000.19	Transport and Install 10' x 10' Signal Shelter	1	EA	$ 87,556	$87,556	
18000.20	Transport and Install 6' x 6' Signal Shelter	1	EA	$ 73,569	$73,569	
18000.21	Signal Support Track Work	1	LS	$ 174,098	$174,100	
18000.22	Demolition and Removal of Existing Equipment	1	LS	$ 69,565	$69,565	
18000.23	Install "B" Bottom Signal Heads at CP Humphreys	2	EA	$ 17,550	$35,100	
18000.24	Furnish and Install Dragging equipment Detector	1	EA	$ 189,934	$189,934	
				RAILROAD SIGNAL SUBTOTAL	$1,655,099	
TOTAL CONSTRUCTION COST (SCHEDULE 1):					**$7,256,599**	

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Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1A - Vincent Grade/Acton Station Siding Realignment (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
01000	GENERAL REQUIEREMENTS					
01505	MOBILIZATION AND DEMOBILIZATION					
01505.01	Mobilization 5%	1	LS	$56,828	$56,900	Percent of Construction
01505.02	Demobilization 2%	1	LS	$22,731.22	$22,800	Percent of Construction
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				**$79,700**	
	GENERAL REQUIEREMENTS SUBTOTAL				**$79,700**	
02000	SITE WORK					
02050	DEMOLITION AND REMOVAL					
02050.02	Demolition and Removal (Vincent Grade/Acton Station Siding Realignment)	1	LS	$50,000	$50,000	Light debris and riprap
	DEMOLITION AND REMOVAL SUBTOTAL				**$50,000**	
02100	SITE CLEARING					
02100.02	Site Clearing (Vincent Grade/Acton Station Siding Realignment)	4	AC	$3,500	$14,000	Light brush
	SITE CLEARING SUBTOTAL				**$14,000**	
02300	EARTHWORK					
02300.02	Earthwork Grading for Track Construction (Vincent Grade/Acton Station Siding Realignment)	1,000	CY	$15	$15,000	Good access / Price from recent bid
	EARTHWORK SUBTOTAL				**$15,000**	
02450	TRACKWORK					
02451.02	Furnish and Install New Track - 136# CWR - including rail, ballast, wood ties, and OTM (Vincent Grade/Acton Station Siding Realignment)	240	TF	$200	$48,000	Price from recent bid
02451.05	Remove and Dispose of Existing No 10 TO (Vincent Grade/Acton Station Siding Realignment)	2	EA	$30,000	$60,000	Price from recent bid
02451.06	Furnish and Install RH Double Switch Point Derail Per SCRRA ES 2604 (Vincent Grade/Acton Station Siding Realignment)	1	EA	$90,000	$90,000	
02451.07	Relocate Mainline Track from Salvaged Lang Track Removal to Industry Track at existing line and grade (Vincent Grade/Acton Station Siding Realignment)	987	TF	$130	$128,400	
02451.08	Remove and Dispose Existing Set-Out Track (Vincent Grade/Acton Station Siding Realignment)	800	TF	$30	$24,000	
02451.09	Install Steel Bumping Post	1	EA	$5,000	$5,000	
02455.03	Track Shift including ballast, replacement of damaged ties, and OTM (Vincent Grade/Acton Station Siding Realignment)	2,760	TF	$130	$358,800	Price from recent bid
	TRACKWORK SUBTOTAL				**$714,200**	
02461	SUB-BALLAST AND AGGREGATE BASE					
02461.03	Furnish, Place and Compact Sub-Ballast (Vincent Grade/Acton Station Siding Realignment)	205	CY	$45	$9,225	Price from recent bid
	SUB-BALLAST SUBTOTAL				**$9,225**	
	SITE WORK SUBTOTAL				**$802,425**	
18000	RAILROAD SIGNAL					
18000.01	Trenching and filling outside of track and roadway.	300	LF	$ 136	$40,725	
18000.02	Trenching and filling under track	100	LF	$ 145	$14,509	
18000.03	Furnish and assemble 4' x 4' pullbox	1	EA	$ 7,039	$7,039	
18000.04	Furnish and assemble 2' x 3' pullbox	2	EA	$ 1,216	$2,431	

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Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1A - Vincent Grade/Acton Station Siding Realignment (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
18000.05	Furnish and assemble 3' x 5' pullbox	1	EA	$ 1,354	$1,354	
18000.06	Furnish, Wire and Install Plug In Relay	2	EA	$ 1,416	$2,831	
18000.07	Furnish and Install 2c # 6 Twisted Track Wire	100	LF	$ 11	$1,133	
18000.08	Furnish and install 7c # 6 in trench.	100	LF	$ 12	$1,192	
18000.09	Furnish and install 7c # 14 in trench.	200	LF	$ 12	$2,356	
18000.10	Install 12c #14 in trench	125	LF	$ 13	$1,623	
18000.11	Furnish and install 3c #6 in trench.	200	LF	$ 11	$2,196	
18000.12	Furnish and Install Leaving signal	1	EA	$ 14,908	$14,908	
18000.13	Signal Testing	1	LS	$ 73,599	$73,599	
18000.14	Wire and Test Circuit Controller and Derail	1	EA	$ 26,359	$26,359	
18000.15	Track Connections	10	EA	$ 136	$1,360	
18000.16	Wire changes at CP Crest	1	LS	$ 6,555	$6,555	
18000.17	Signal Support Track Work	1	LS	$ 45,093	$45,093	
18000.18	Wiring Changes at Leaving Signal Case	320	EA	$ 91	$29,187	
18000.19	Wiring Changes at Case B	160	EA	$ 91	$14,594	
18000.20	Transport and Install Leaving Signal Case	1	EA	$ 45,093	$45,093	
				RAILROAD SIGNAL SUBTOTAL	**$334,136**	
TOTAL CONSTRUCTION COST (SCHEDULE 1A):					**$1,216,261**	

METROLINK

Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1B - Maintenance Road Sub-Ballast (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
01000	GENERAL REQUIEREMENTS					
01505	MOBILIZATION AND DEMOBILIZATION					
01505.01	Mobilization 5%	1	LS	$3,170	$3,200	Percent of Construction
01505.02	Demobilization 2%	1	LS	$1,268	$1,300	Percent of Construction
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				**$4,500**	
	GENERAL REQUIEREMENTS SUBTOTAL				**$4,500**	
02000	SITE WORK					
02461	SUB-BALLAST AND AGGREGATE BASE					
02461.04	Furnish, Place and Compact Sub-Ballast (Lang Siding)	1,409	CY	$45	$63,405	Price from recent bid
	SUB-BALLAST SUBTOTAL				**$63,405**	
	SITE WORK SUBTOTAL				**$63,405**	
TOTAL CONSTRUCTION COST (SCHEDULE 1B):					**$67,905**	

METROLINK

Project Name: Antelope Valley Track Improvement Project
Design Level: Camera Ready
Last Updated: June 17, 2010

Schedule 1C - Soil Cement (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
01000	GENERAL REQUIEREMENTS					
01505	MOBILIZATION AND DEMOBILIZATION					
01505.01	Mobilization 5%	1	LS	$33,905	$34,000	Percent of Construction
01505.02	Demobilization 2%	1	LS	$13,562	$13,600	Percent of Construction
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				**$47,600**	
	GENERAL REQUIEREMENTS SUBTOTAL				**$47,600**	
02000	SITE WORK					
02340	SOIL STABILIZATION					
02340.01	Deduct of Geogrid Reinforced Embankment from Base Bid Schedule 1 (Lang Siding)	-33,905	CY	$20	($678,100)	
02340.02	Construct Soil Cement Reinforced Embankment (Lang Siding)	33,905	CY	$40	$1,356,200	
	SOIL STABILIZATION SUBTOTAL				**$678,100**	
	SITE WORK SUBTOTAL				**$678,100**	
TOTAL CONSTRUCTION COST (SCHEDULE 1C):					**$725,700**	

APPENDIX B
07 Sample Schedule of Quantities and Prices

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

CONTRACT C3108-10

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	**BASE BID (Lang Siding)**				
	Schedule 1 Complete	1	LS		
1A	**VINCENT GRADE/ACTON STATION SIDING REALIGNMENT (Optional Item)**				
	Schedule 1A Complete	1	LS		
1B	**MAINTENANCE ROAD SUB-BALLAST (Optional Item)**				
	Schedule 1B Complete	1	LS		
1C	**SOIL CEMENT (Optional Item)**				
	Schedule 1C Complete	1	LS		
GRAND TOTAL FOR SCHEDULES 1, 1A, 1B AND 1C					

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

BASE BID (Lang Siding)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
01505	**MOBILIZATION AND DEMOBILIZATION**				
1 - 01505.01	Mobilization	1	LS		
1 - 01505.02	Demobilization	1	LS		
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				
02050	**DEMOLITION AND REMOVAL**				
1 - 02050.01	Demolition and Removal (Lang Siding)	1	LS		
	DEMOLITION AND REMOVAL SUBTOTAL				
02100	**SITE CLEARING**				
1 - 02100.01	Site Clearing (Lang Siding)	15	AC		
	SITE CLEARING SUBTOTAL				
02271	**STONE REVETMENT (RIPRAP)**				
1 - 02271.01	Furnish and Install Class III Riprap (Lang Siding)	78	CY		
	STONE REVETMENT (RIPRAP) SUBTOTAL				
02300	**EARTHWORK**				
1 - 02300.01	Earthwork Grading for Track Construction (Lang Siding)	78,504	CY		
	EARTHWORK SUBTOTAL				
02340	**SOIL STABILIZATION**				
1 - 02340.01	Construct Geogrid Reinforced Embankment (Lang Siding)	33,905	CY		
	SOIL STABILIZATION SUBTOTAL				
02436	**CULVERT PIPE**				
1 - 02436.01	Furnish and Construct 30" CMP Extension at MP 41.61	44	LF		
1 - 02436.02	Furnish and Construct 48" CMP Extension at MP 41.87	24	LF		
1 - 02436.03	Furnish and Construct 24" CMP Extension at MP 42.17	25	LF		
1 - 02436.04	Furnish and Construct 24" CMP Extension at MP 42.41	22	LF		
1 - 02436.05	Furnish and Construct 24" CMP Extension at MP 42.46	42	LF		
1 - 02436.06	Furnish and Construct 48" CMP Extension at MP 42.56	25	LF		
1 - 02436.07	Furnish and Construct 24" CMP Extension at MP 43.15	24	LF		
1 - 02436.08	Construct Cast-In-Place Headwalls	10	EA		
	CULVERT PIPE SUBTOTAL				
02450	**TRACKWORK**				
1 - 02451.01	Furnish and Install New Track - 136# CWR - including rail, ballast, ties, and OTM (Lang Siding)	9,424	TF		
1 - 02451.02	Furnish and Install New #20 Caltrain Concrete Power Operated TO (Lang Siding)	1	EA		
1 - 02451.03	Remove and Salvage Existing No 14 TO and Deliver to SCRRA (Lang Siding)	1	EA		
1 - 02451.04	Remove and Salvage Mainline Track and Deliver to SCRRA	987	TF		
1 - 02455.01	Track Shift including ballast, replacement of damaged ties and OTM (Lang Siding)	2,700	TF		
1 - 02455.02	Surface and Line Existing Track to proposed horizontal alignment (Lang Siding)	1,186	TF		
	TRACKWORK SUBTOTAL				
02461	**SUB-BALLAST AND AGGREGATE BASE**				
1 - 02461.01	Furnish, Place and Compact Sub-Ballast (Lang Siding)	4,087	CY		
	SUB-BALLAST SUBTOTAL				

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

BASE BID (Lang Siding)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
02830	**MSE RETAINING WALL**				
1 - 02830.01	Furnish and Construct Mechanically Stabilized Earth (MSE) Retaining Walls, CalTrans Concrete Gutter and Handrails (Lang Siding)	5,854	SF		
				MSE RETAINING WALL SUBTOTAL	
02930	**SLOPE PROTECTION**				
1 - 02930.01	Slope Protection (Hydro Seeding) (Lang Siding)	814,637	SF		
				SLOPE PROTECTION SUBTOTAL	
18000	**RAILROAD SIGNAL**				
1 - 18000.01	Trenching and filling outside of track and roadway.	1,000	LF		
1 - 18000.02	Trenching and filling under track	200	LF		
1 - 18000.03	House Wiring at CP Lang	1,000	EA		
1 - 18000.04	House Wiring at CP Humphreys	200	EA		
1 - 18000.05	Furnish and Install M-23e RH #20 layout	1	EA		
1 - 18000.06	Furnish and Assemble Signal	7	EA		
1 - 18000.07	Furnish and assemble 4' x 4' pullbox	3	EA		
1 - 18000.08	Furnish and assemble 2' x 3' pullbox	5	EA		
1 - 18000.09	Furnish and assemble 3' x 5' pullbox	8	EA		
1 - 18000.10	Install Insulated Joint	10	EA		
1 - 18000.11	Furnish and Install 2c # 6 Twisted Track Wire	2,100	LF		
1 - 18000.12	Furnish and install 7c # 6 in trench.	1,900	LF		
1 - 18000.13	Install 12c #14 in trench	200	LF		
1 - 18000.14	Furnish and Install 3c # 6 in trench	450	LF		
1 - 18000.15	Furnish and Install Switch Fouling	1	LS		
1 - 18000.16	Replace Battery Charger at CP Humphreys	1	EA		
1 - 18000.17	Signal Testing	1	LS		
1 - 18000.18	Track Connections	22	EA		
1 - 18000.19	Transport and Install 10' x 10' Signal Shelter	1	EA		
1 - 18000.20	Transport and Install 6' x 6' Signal Shelter	1	EA		
1 - 18000.21	Signal Support Track Work	1	LS		
1 - 18000.22	Demolition and Removal of Existing Equipment	1	LS		
1 - 18000.23	Install "B" Bottom Signal Heads at CP Humphreys	2	EA		
1 - 18000.24	Furnish and Install Dragging equipment Detector	1	EA		
				RAILROAD SIGNAL SUBTOTAL	
TOTAL FOR SCHEDULE 1 - BASE BID (Lang Siding):					

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

Vincent Grade/Acton Station Siding Realignment (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
01505	**MOBILIZATION AND DEMOBILIZATION**				
1 - 01505.01	Mobilization (Vincent Grade/Acton Station Siding Realignment)	1	LS		
1 - 01505.02	Demobilization (Vincent Grade/Acton Station Siding Realignment)	1	LS		
	MOBILIZATION AND DEMOBILIZATION SUBTOTAL				
02050	**DEMOLITION AND REMOVAL**				
1 - 02050.01	Demolition and Removal (Vincent Grade/Acton Station Siding Realignment)	1	LS		
	DEMOLITION AND REMOVAL SUBTOTAL				
02100	**SITE CLEARING**				
1 - 02100.01	Site Clearing (Vincent Grade/Acton Station Siding Realignment)	4	AC		
	SITE CLEARING SUBTOTAL				
02300	**EARTHWORK**				
1 - 02300.01	Earthwork Grading for Track Construction (Vincent Grade/Acton Station Siding Realignment)	1,000	CY		
	EARTHWORK SUBTOTAL				
02450	**TRACKWORK**				
1 - 02451.01	Furnish and Install New Track - 136# CWR - including rail, ballast, wood ties, and OTM (Vincent Grade/Acton Station Siding Realignment)	240	TF		
1 - 02451.03	Remove and Dispose of Existing No 10 TO	2	EA		
1 - 02451.04	Furnish and Install RH Double Switch Point Derail Per SCRRA ES 2604 (Vincent Grade/Acton Station Siding Realignment)	1	EA		
1 - 02451.07	Relocate Mainline Track from Salvaged Lang Track Removal to Industry Track at existing line and grade (Vincent Grade/Acton Station Siding Realignment)	987	TF		
1 - 02455.01	Remove and Dispose Existing Set-Out Track (Vincent Grade/Acton Station Siding Realignment)	800	TF		
1 - 02455.02	Install Steel Bumping Post	1	TF		
	Track Shift including ballast, replacement of damaged ties, and OTM (Vincent Grade/Acton Station Siding Realignment)	2,760			
	TRACKWORK SUBTOTAL				
02461	**SUB-BALLAST AND AGGREGATE BASE**				
1 - 02461.01	Furnish, Place and Compact Sub-Ballast (Vincent Grade/Acton Station Siding Realignment)	205	CY		
	SUB-BALLAST SUBTOTAL				
18000	**RAILROAD SIGNAL**				
1 - 18000.01	Trenching and filling outside of track and roadway.	300	LF		
1 - 18000.02	Trenching and filling under track	100	LF		
1 - 18000.03	Furnish and assemble 4' x 4' pullbox	1	EA		
1 - 18000.04	Furnish and assemble 2' x 3' pullbox	2	EA		
1 - 18000.05	Furnish and assemble 3' x 5' pullbox	1	EA		
1 - 18000.06	Furnish, Wire and Install Plug In Relay	2	EA		
1 - 18000.07	Furnish and Install 2c # 6 Twisted Track Wire	100	LF		
1 - 18000.08	Furnish and install 7c # 6 in trench.	100	LF		
1 - 18000.09	Furnish and install 7c # 14 in trench.	200	LF		
1 - 18000.10	Install 12c #14 in trench	125	LF		

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

Vincent Grade/Acton Station Siding Realignment (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1 - 18000.11	Furnish and install 3c #6 in trench.	200	LF		
1 - 18000.12	Furnish and Install Leaving signal	1	EA		
1 - 18000.13	Signal Testing	1	LS		
1 - 18000.14	Wire and Test Circuit Controller and Derail	1	EA		
1 - 18000.15	Track Connections	10	EA		
1 - 18000.16	Wire changes at CP Crest	1	LS		
1 - 18000.17	Signal Support Track Work	1	LS		
1 - 18000.18	Wiring Changes at Leaving Signal Case	320	EA		
1 - 18000.19	Wiring Changes at Case B	160	EA		
1 - 18000.20	Transport and Install Leaving Signal Case	1	EA		
				RAILROAD SIGNAL SUBTOTAL	
TOTAL FOR SCHEDULE 1A - Vincent Grade/Acton Station Siding Realignment (Optional Item):					

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

Maintenance Road Sub-Ballast (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
02461	**SUB-BALLAST AND AGGREGATE BASE**				
1B - 02461.04	Furnish, Place and Compact Sub-Ballast (Lang Siding)	1,000	CY		
				SUB-BALLAST SUBTOTAL	
TOTAL FOR SCHEDULE 1B - Maintenance Road Sub-Ballast (Optional Item)					

SCHEDULE OF QUANTITIES AND PRICES

Bidder _____

Soil Cement (Optional Item)

ITEM NO.	WORK DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
02340	**SOIL STABILIZATION**				
1C - 02340.01	Deduct of Geogrid Reinforced Embankment from Base Bid Schedule 1 (Lang Siding)	-33,905	CY		
1C - 02340.02	Construct Soil Cement Reinforced Embankment (Lang Siding)	-33,905	CY		
				SOIL STABILIZATION SUBTOTAL	
TOTAL FOR SCHEDULE 1C - Soil Cement (Optional Item)					

APPENDIX B
08 Sample Schedule

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
CTO 11 Artic Design Support		235	235	0%	01-Oct-13	28-Aug-14	-704
CTO 11.1 Task 1 - Project Management		235	235	0%	01-Oct-13	28-Aug-14	-704
A0900	Project Management	235	235	0%	01-Oct-13*	28-Aug-14	-704
CTO 11.2 Task 2 - Engineering Support		235	235	0%	01-Oct-13	28-Aug-14	-704
CTO 11.2.1 Request for Information		235	235	0%	01-Oct-13	28-Aug-14	-704
A0950	Request for Information	235	235	0%	01-Oct-13*	28-Aug-14	-704
CTO 11.2.2 Douglass Road Bridge Submittals		19	19	0%	01-Oct-13	25-Oct-13	-488
A1000	Douglass Road Bridge Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
A1010	Douglass Road Bridge Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
A1020	Douglass Road Bridge Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
A1030	Douglass Road Bridge Submittals	11	11	0%	11-Oct-13*	25-Oct-13	-488
CTO 11.2.3 Pedestrian Underpass Submittals		11	11	0%	01-Oct-13	15-Oct-13	-480
A1040	Pedestrian Underpass Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
A1050	Pedestrian Underpass Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
A1060	Pedestrian Underpass Submittals	11	11	0%	01-Oct-13*	15-Oct-13	-480
CTO 11.2.4 Station Platform Submittals		19	19	0%	01-Oct-13	25-Oct-13	-488
A1100	Station Platform Submittals	15	15	0%	01-Oct-13*	21-Oct-13	-484
A1110	Station Platform Submittals	11	11	0%	11-Oct-13*	25-Oct-13	-488

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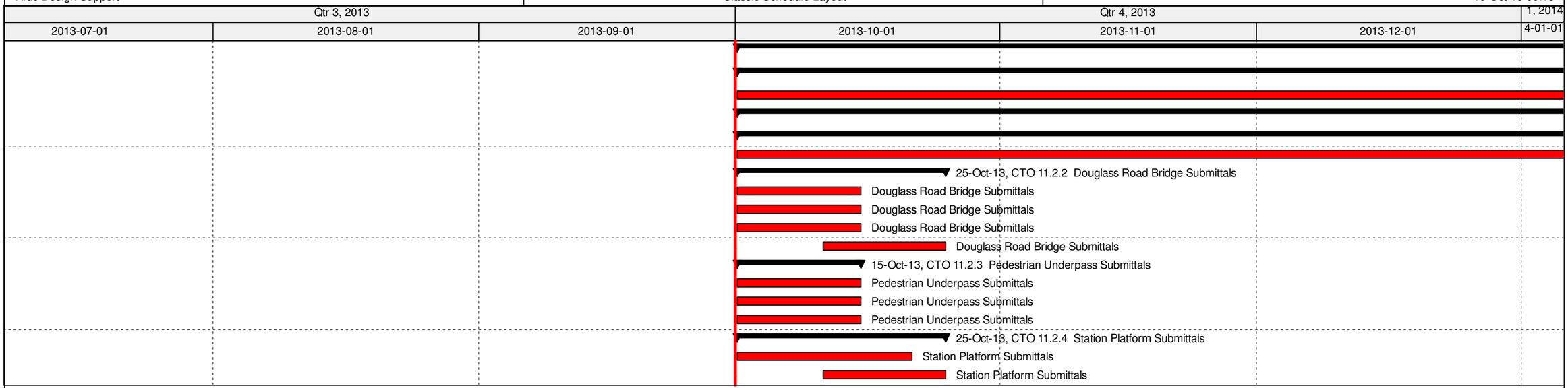
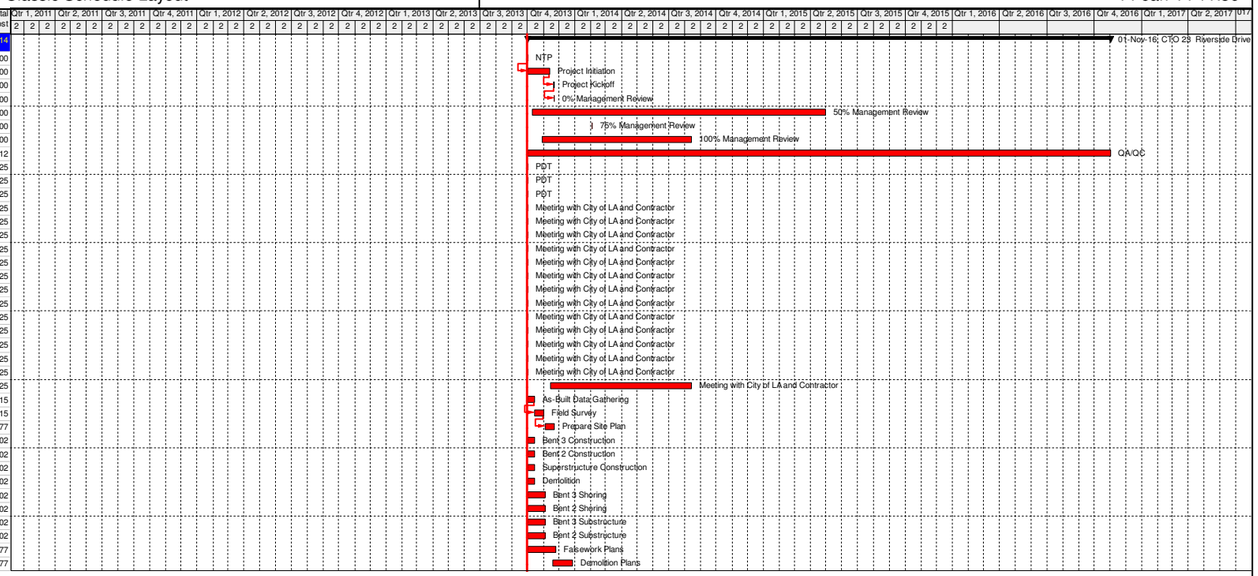
2013-06-01 | 2013-07-01

Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

TASK filter: All Activities



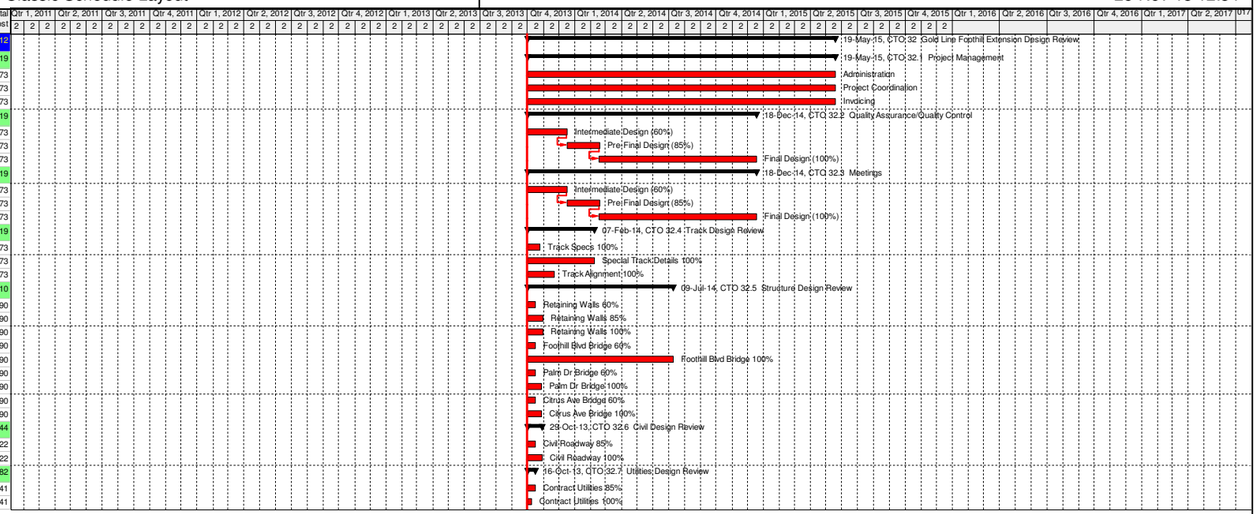
Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Actual Total Cost	Budgeted Total Cost
CTO 23	**Riverside Drive Viaduct Replacement Project**	803	803	0%	01-Oct-13	01-Nov-16	-1085	$57,743.23	$101,962.14
1.02	NTP	1	1	0%	01-Oct-13	01-Oct-13	-321	$3,634.84	$2,621.00
1.03	Project Initiation	30	30	0%	02-Oct-13	12-Nov-13	-321	$3,634.84	$2,621.00
1.04	Project Kickoff	1	1	0%	21-Nov-13*	21-Nov-13	-321	$3,634.84	$2,621.00
1.05	0% Management Review	1	1	0%	22-Nov-13	22-Nov-13	-321	$3,634.84	$2,621.00
1.06	50% Management Review	402	402	0%	11-Oct-13*	30-Apr-15	-692	$3,634.84	$2,621.00
1.065	75% Management Review	1	1	0%	03-Feb-14*	03-Feb-14	-369	$3,634.84	$2,621.00
1.07	100% Management Review	205	205	0%	29-Oct-13*	14-Aug-14	-507	$3,634.84	$2,621.00
2.01	QA/QC	803	803	0%	01-Oct-13*	01-Nov-16	-1085	$814.97	$15,449.12
3.01	PDT	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.03	PDT	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.04	PDT	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.05	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.06	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.07	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.08	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.18	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.28	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.38	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.48	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.58	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.68	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.78	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.88	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.98	Meeting with City of LA and Contractor	1	1	0%	01-Oct-13*	01-Oct-13	-283	$178.78	$809.25
3.99	Meeting with City of LA and Contractor	193	193	0%	14-Nov-13*	14-Aug-14	-507	$178.78	$809.25
4.01	As-Built Data Gathering	10	10	0%	01-Oct-13*	14-Oct-13	-321	$0.00	$5,536.15
4.02	Field Survey	14	14	0%	15-Oct-13*	01-Nov-13	-321	$0.00	$5,536.15
4.03	Prepare Site Plan	15	15	0%	04-Nov-13	22-Nov-13	-321	$0.00	$3,690.77
5.01	Bent 3 Construction	10	10	0%	01-Oct-13*	14-Oct-13	-292	$3,555.64	$4,033.02
5.11	Bent 2 Construction	10	10	0%	01-Oct-13*	14-Oct-13	-292	$3,555.64	$4,033.02
5.21	Superstructure Construction	10	10	0%	01-Oct-13*	14-Oct-13	-292	$3,555.64	$4,033.02
5.31	Demolition	10	10	0%	01-Oct-13*	14-Oct-13	-292	$3,555.64	$4,033.02
6.01	Bent 3 Shoring	25	25	0%	01-Oct-13*	04-Nov-13	-307	$3,555.64	$4,033.02
6.11	Bent 2 Shoring	25	25	0%	01-Oct-13*	04-Nov-13	-307	$3,555.64	$4,033.02
6.21	Bent 3 Substructure	25	25	0%	01-Oct-13*	04-Nov-13	-307	$3,555.64	$4,033.02
6.31	Bent 2 Substructure	25	25	0%	01-Oct-13*	04-Nov-13	-307	$3,555.64	$4,033.02
6.41	Falsework Plans	40	40	0%	01-Oct-13*	25-Nov-13	-322	$0.00	$3,690.77
6.51	Demolition Plans	25	25	0%	19-Nov-13*	26-Dec-13	-342	$0.00	$3,690.77



Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

TASK filter: All Activities

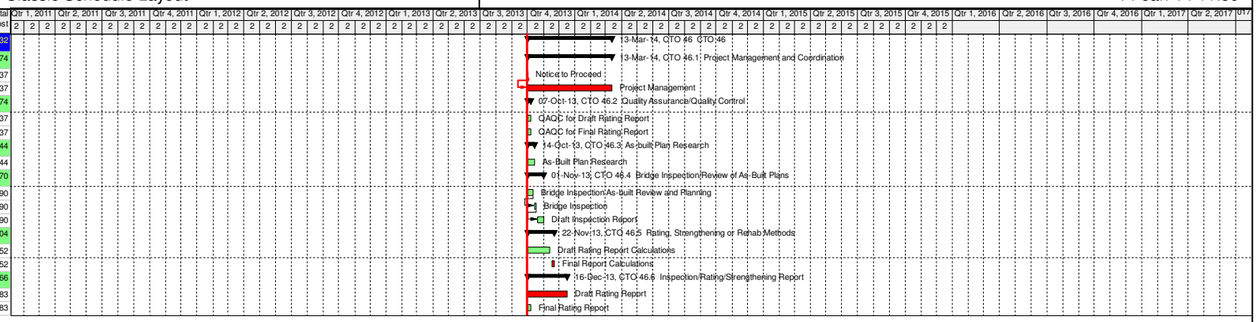
Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Actual Total Cost	Budgeted Total Cost
CTO 32	**Gold Line Foothill Extension Design Review**	423	423	0%	01-Oct-13	19-May-15	-655	$167,790.89	$151,188.12
CTO 32.1	**Project Management**	423	423	0%	01-Oct-13	19-May-15	-655	$17,483.49	$18,728.19
A1000	Administration	423	423	0%	01-Oct-13	19-May-15	-655	$5,827.83	$6,242.73
A1010	Project Coordination	423	423	0%	01-Oct-13	19-May-15	-655	$5,827.83	$6,242.73
A1020	Invoicing	423	423	0%	01-Oct-13	19-May-15	-655	$5,827.83	$6,242.73
CTO 32.2	**Quality Assurance/Quality Control**	315	315	0%	01-Oct-13	18-Dec-14	-547	$17,483.49	$18,728.19
A1030	Intermediate Design (60%)	53	53	0%	01-Oct-13	16-Dec-13	-547	$5,827.83	$6,242.73
A1040	Pre-Final Design (85%)	45	45	0%	16-Dec-13*	17-Feb-14	-547	$5,827.83	$6,242.73
A1050	Final Design (100%)	219	219	0%	17-Feb-14	18-Dec-14	-547	$5,827.83	$6,242.73
CTO 32.3	**Meetings**	315	315	0%	01-Oct-13	18-Dec-14	-547	$17,483.49	$18,728.19
A1060	Intermediate Design (60%)	53	53	0%	01-Oct-13	16-Dec-13	-547	$5,827.83	$6,242.73
A1070	Pre-Final Design (85%)	45	45	0%	16-Dec-13	17-Feb-14	-547	$5,827.83	$6,242.73
A1080	Final Design (100%)	219	219	0%	17-Feb-14	18-Dec-14	-547	$5,827.83	$6,242.73
CTO 32.4	**Track Design Review**	91	91	0%	01-Oct-13	07-Feb-14	-323	$10,124.70	$42,368.19
A1090	Track Specs 100%	19	19	0%	01-Oct-13*	25-Oct-13	-251	$3,374.90	$14,122.73
A1100	Special Track Details 100%	91	91	0%	01-Oct-13*	07-Feb-14	-323	$3,374.90	$14,122.73
A1110	Track Alignment 100%	38	38	0%	01-Oct-13*	21-Nov-13	-270	$3,374.90	$14,122.73
CTO 32.5	**Structure Design Review**	199	199	0%	01-Oct-13	09-Jul-14	-431	$67,045.86	$25,910.10
A1120	Retaining Walls 60%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$7,449.54	$2,878.90
A1130	Retaining Walls 85%	23	23	0%	01-Oct-13*	31-Oct-13	-255	$7,449.54	$2,878.90
A1140	Retaining Walls 100%	23	23	0%	01-Oct-13*	31-Oct-13	-255	$7,449.54	$2,878.90
A1150	Foothill Blvd Bridge 60%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$7,449.54	$2,878.90
A1170	Foothill Blvd Bridge 100%	199	199	0%	01-Oct-13*	09-Jul-14	-431	$7,449.54	$2,878.90
A1180	Palm Dr Bridge 60%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$7,449.54	$2,878.90
A1200	Palm Dr Bridge 100%	20	20	0%	01-Oct-13*	28-Oct-13	-252	$7,449.54	$2,878.90
A1210	Citrus Ave Bridge 60%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$7,449.54	$2,878.90
A1230	Citrus Ave Bridge 100%	20	20	0%	01-Oct-13*	28-Oct-13	-252	$7,449.54	$2,878.90
CTO 32.6	**Civil Design Review**	21	21	0%	01-Oct-13	29-Oct-13	-253	$35,361.66	$21,322.44
A1240	Civil Roadway 85%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$17,680.83	$10,661.22
A1250	Civil Roadway 100%	21	21	0%	01-Oct-13*	29-Oct-13	-253	$17,680.83	$10,661.22
CTO 32.7	**Utilities Design Review**	12	12	0%	01-Oct-13	16-Oct-13	-244	$2,808.20	$5,402.82
A1260	Contract Utilities 85%	12	12	0%	01-Oct-13*	16-Oct-13	-244	$1,404.10	$2,701.41
A1270	Contract Utilities 100%	7	7	0%	01-Oct-13*	09-Oct-13	-239	$1,404.10	$2,701.41



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

TASK filter: All Activities

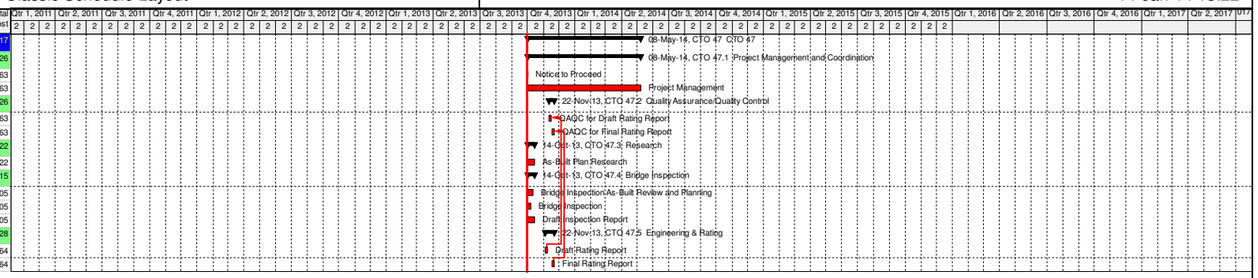
Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Actual Total Cost	Budgeted Total Cost
CTO 46	CTO 46	115	115	0%	01-Oct-13	13-Mar-14	-77	$28,431.01	$28,282.32
CTO 46.1	Project Management and Coordination	115	115	0%	01-Oct-13	13-Mar-14	-77	$5,263.46	$3,104.74
A1000	Notice to Proceed	1	1	0%	01-Oct-13	01-Oct-13	-77	$2,631.73	$1,552.37
A1010	Project Management	115	115	0%	01-Oct-13*	13-Mar-14	-77	$2,631.73	$1,552.37
CTO 46.2	Quality Assurance/Quality Control	5	5	0%	01-Oct-13	07-Oct-13	33	$5,263.46	$3,104.74
A1020	QAQC for Draft Rating Report	5	5	0%	01-Oct-13*	07-Oct-13	33	$2,631.73	$1,552.37
A1030	QAQC for Final Rating Report	5	5	0%	01-Oct-13*	07-Oct-13	33	$2,631.73	$1,552.37
CTO 46.3	As-built Plan Research	10	10	0%	01-Oct-13	14-Oct-13	28	$1,376.80	$870.44
A1040	As-Built Plan Research	10	10	0%	01-Oct-13*	14-Oct-13	28	$1,376.80	$870.44
CTO 46.4	Bridge Inspection/Review of As-Built Plans	24	24	0%	01-Oct-13	01-Nov-13	14	$9,723.21	$4,931.70
A1050	Bridge Inspection As-built Review and Planning	9	9	0%	01-Oct-13*	11-Oct-13	14	$3,241.07	$1,643.90
A1060	Bridge Inspection	5	5	0%	14-Oct-13	18-Oct-13	14	$3,241.07	$1,643.90
A1070	Draft Inspection Report	10	10	0%	21-Oct-13	01-Nov-13	14	$3,241.07	$1,643.90
CTO 46.5	Rating, Strengthening or Rehab Methods	39	39	0%	01-Oct-13	22-Nov-13	-1	$2,525.94	$12,841.04
A1080	Draft Rating Report Calculations	31	31	0%	01-Oct-13*	12-Nov-13	7	$1,262.97	$6,420.52
A1090	Final Report Calculations	5	5	0%	18-Nov-13*	22-Nov-13	-1	$1,262.97	$6,420.52
CTO 46.6	Inspection/Rating/Strengthening Report	53	53	0%	01-Oct-13	16-Dec-13	-15	$4,278.14	$3,429.66
A1100	Draft Rating Report	53	53	0%	01-Oct-13*	16-Dec-13	-15	$2,139.07	$1,714.83
A1110	Final Rating Report	5	5	0%	01-Oct-13*	07-Oct-13	33	$2,139.07	$1,714.83



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

TASK filter: All Activities

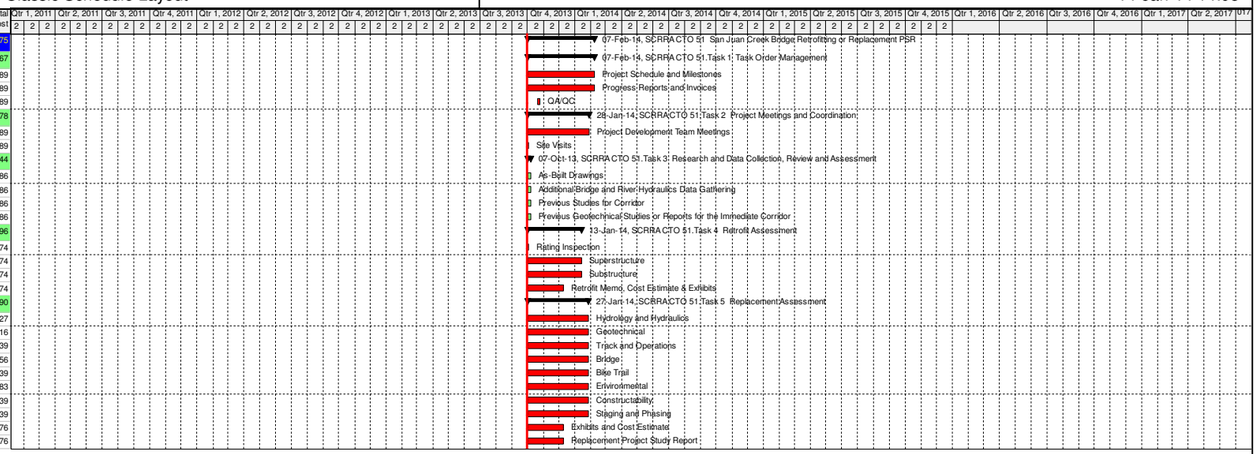
Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Actual Total Cost	Budgeted Total Cost
CTO 47	**CTO 47**	155	155	0%	01-Oct-13	08-May-14	-157	$45,093.56	$44,259.17
CTO 47.1	**Project Management and Coordination**	155	155	0%	01-Oct-13	08-May-14	-157	$6,958.88	$7,263.26
A1000	Notice to Proceed	1	1	0%	01-Oct-13	01-Oct-13	-3	$3,479.44	$3,631.63
A1010	Project Management	155	155	0%	01-Oct-13	08-May-14	-157	$3,479.44	$3,631.63
CTO 47.2	**Quality Assurance/Quality Control**	10	10	0%	11-Nov-13	22-Nov-13	-41	$6,958.88	$7,263.26
A1020	QAQC for Draft Rating Report	5	5	0%	11-Nov-13*	15-Nov-13	-36	$3,479.44	$3,631.63
A1030	QAQC for Final Rating Report	5	5	0%	18-Nov-13*	22-Nov-13	-41	$3,479.44	$3,631.63
CTO 47.3	**Research**	10	10	0%	01-Oct-13	14-Oct-13	-12	$367.77	$580.22
A1040	As-Built Plan Research	10	10	0%	01-Oct-13*	14-Oct-13	-12	$367.77	$580.22
CTO 47.4	**Bridge Inspection**	10	10	0%	01-Oct-13	14-Oct-13	-12	$4,210.83	$6,039.15
A1050	Bridge Inspection As-Built Review and Planning	9	9	0%	01-Oct-13*	11-Oct-13	-11	$1,403.61	$2,013.05
A1060	Bridge Inspection	5	5	0%	01-Oct-13*	07-Oct-13	-7	$1,403.61	$2,013.05
A1070	Draft Inspection Report	10	10	0%	01-Oct-13*	14-Oct-13	-12	$1,403.61	$2,013.05
CTO 47.5	**Engineering & Rating**	15	15	0%	04-Nov-13	22-Nov-13	-41	$26,597.20	$23,113.28
A1080	Draft Rating Report	5	5	0%	04-Nov-13*	08-Nov-13	-31	$13,298.60	$11,556.64
A1090	Final Rating Report	5	5	0%	18-Nov-13*	22-Nov-13	-41	$13,298.60	$11,556.64



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	Actual Total Cost	Budgeted Total Cost
SCRRACTO 51	San Juan Creek Bridge Retrofitting or Replacement PSR	92	92	0%	01-Oct-13	07-Feb-14	-79	$244,356.30	$248,159.75
SCRRACTO 51.Task 1	Task Order Management	92	92	0%	01-Oct-13	07-Feb-14	-79	$25,556.70	$22,352.67
1.1	Project Schedule and Milestones	92	92	0%	01-Oct-13	07-Feb-14	-79	$8,518.90	$7,450.89
1.2	Progress Reports and Invoices	92	92	0%	01-Oct-13	07-Feb-14	-79	$8,518.90	$7,450.89
1.3	QA/QC	5	5	0%	21-Oct-13*	25-Oct-13	-6	$8,518.90	$7,450.89
SCRRACTO 51.Task 2	Project Meetings and Coordination	84	84	0%	01-Oct-13	28-Jan-14	-71	$15,906.84	$14,901.78
2.1	Project Development Team Meetings	84	84	0%	01-Oct-13*	28-Jan-14	-71	$8,518.90	$7,450.89
2.2	Site Visits	3	3	0%	01-Oct-13*	03-Oct-13	10	$7,387.94	$7,450.89
SCRRACTO 51.Task 3	Research and Data Collection, Review and Assessment	5	5	0%	01-Oct-13	07-Oct-13	8	$11,121.64	$10,111.44
3.1	As-Built Drawings	5	5	0%	01-Oct-13*	07-Oct-13	8	$2,780.41	$2,527.86
3.2	Additional Bridge and River Hydraulics Data Gathering	5	5	0%	01-Oct-13*	07-Oct-13	8	$2,780.41	$2,527.86
3.3	Previous Studies for Corridor	5	5	0%	01-Oct-13*	07-Oct-13	8	$2,780.41	$2,527.86
3.4	Previous Geotechnical Studies or Reports for the Immediate Corridor	5	5	0%	01-Oct-13*	07-Oct-13	8	$2,780.41	$2,527.86
SCRRACTO 51.Task 4	Retrofit Assessment	73	73	0%	01-Oct-13	13-Jan-14	-60	$46,172.40	$45,994.96
4.1	Rating Inspection	3	3	0%	01-Oct-13*	03-Oct-13	10	$11,543.10	$11,498.74
4.2	Superstructure	73	73	0%	01-Oct-13*	13-Jan-14	-60	$11,543.10	$11,498.74
4.3	Substructure	73	73	0%	01-Oct-13*	13-Jan-14	-60	$11,543.10	$11,498.74
4.4	Retrofit Memo, Cost Estimate & Exhibits	49	49	0%	01-Oct-13*	09-Dec-13	-36	$11,543.10	$11,498.74
SCRRACTO 51.Task 5	Replacement Assessment	83	83	0%	01-Oct-13	27-Jan-14	-70	$145,598.72	$154,798.90
5.1	Hydrology and Hydraulics	83	83	0%	01-Oct-13*	27-Jan-14	-70	$21,914.63	$14,081.27
5.2	Geotechnical	83	83	0%	01-Oct-13*	27-Jan-14	-70	$10,678.73	$9,795.16
5.3	Track and Operations	83	83	0%	01-Oct-13*	27-Jan-14	-70	$9,133.77	$10,862.39
5.4	Bridge	83	83	0%	01-Oct-13*	27-Jan-14	-70	$49,248.16	$60,118.56
5.5	Bike Trail	83	83	0%	01-Oct-13*	27-Jan-14	-70	$9,133.77	$10,862.39
5.6	Environmental	83	83	0%	01-Oct-13*	27-Jan-14	-70	$12,339.52	$13,994.83
5.7	Constructability	83	83	0%	01-Oct-13*	27-Jan-14	-70	$9,133.77	$10,862.39
5.8	Staging and Phasing	83	83	0%	01-Oct-13*	27-Jan-14	-70	$9,133.77	$10,862.39
5.9	Exhibits and Cost Estimate	49	49	0%	01-Oct-13*	09-Dec-13	-36	$7,441.30	$6,679.76
5.91	Replacement Project Study Report	49	49	0%	01-Oct-13*	09-Dec-13	-36	$7,441.30	$6,679.76



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

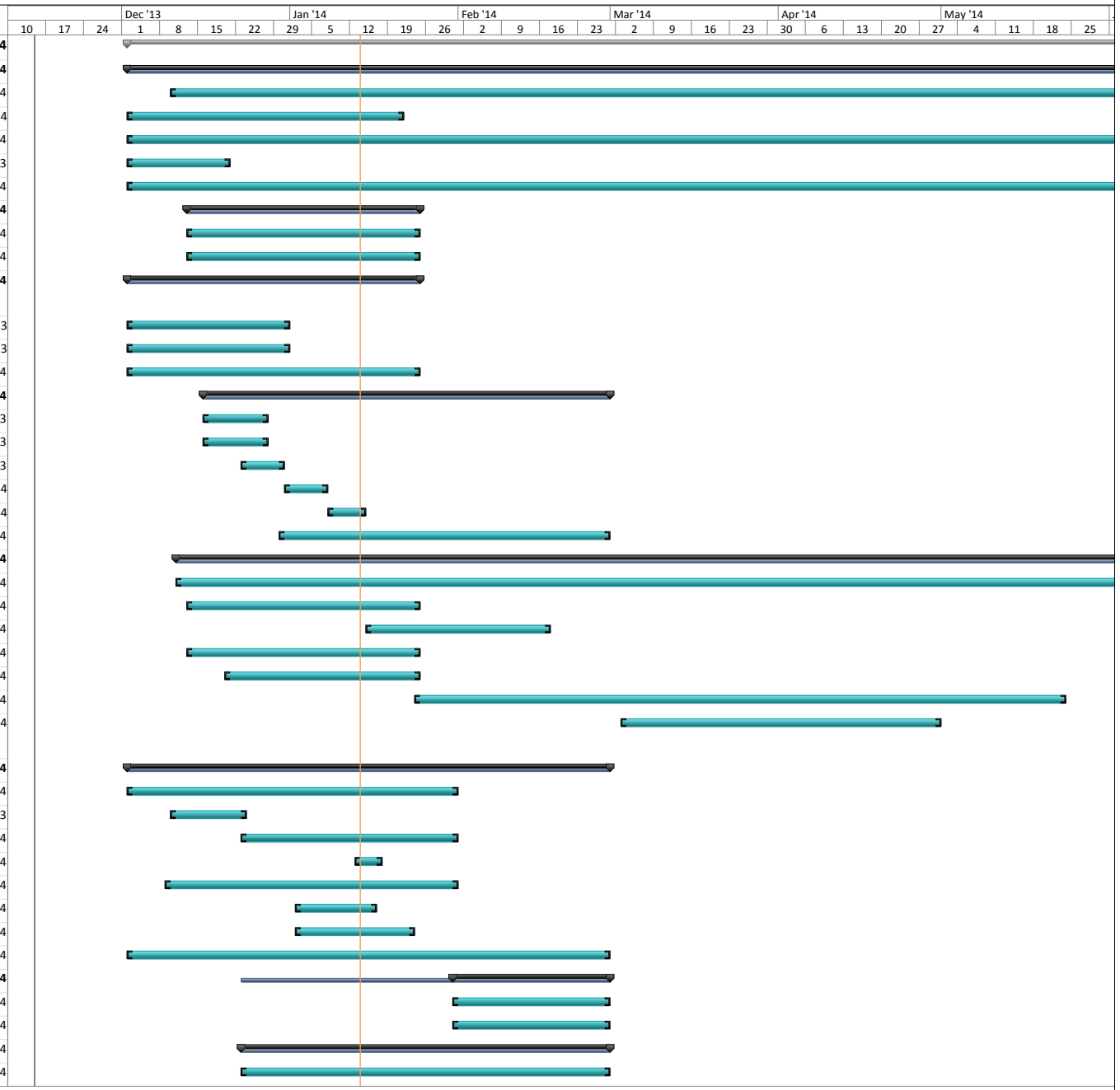
TASK filter: All Activities

METROLINK

CTO54 Quartz Siding & Vincent Grade / Acton Station
Draft Schedule

HDR

ID	Task Name	Duration	Start	Finish
0	**CTO54 Base Schedule ZM Edit**	**135 days**	**Mon 12/2/13**	**Mon 6/16/14**
1	**Project Management, Coordination and QAQC**	**135 days**	**Mon 12/2/13**	**Mon 6/16/14**
2	1.1 Kick-Off Meeting and Biweekly Meetings	127 days	Tue 12/10/13	Thu 6/12/14
3	1.2 Project Guide	35 days	Mon 12/2/13	Tue 1/21/14
4	1.3 Project Document Controls and Invoicing	135 days	Mon 12/2/13	Mon 6/16/14
5	1.4 Baseline and Detailed Schedules	15 days	Mon 12/2/13	Fri 12/20/13
6	1.5 QA/QC	135 days	Mon 12/2/13	Mon 6/16/14
7	**Utility Relocation Coordination**	**29 days**	**Fri 12/13/13**	**Fri 1/24/14**
8	2.1 Utility Coordination	29 days	Fri 12/13/13	Fri 1/24/14
9	2.2 Draft and Final Utilities Matrix	29 days	Fri 12/13/13	Fri 1/24/14
10	**Topographic Mapping, Existing Right of Way Retracement Survey & Potholing**	**38 days**	**Mon 12/2/13**	**Fri 1/24/14**
11	3.1 Field Survey and Topographic Base File	22 days	Mon 12/2/13	Tue 12/31/13
12	3.2 Existing Right of Way Retracement Survey	22 days	Mon 12/2/13	Tue 12/31/13
13	3.3 Potholing	38 days	Mon 12/2/13	Fri 1/24/14
14	**Geotechnical Investigation**	**51 days**	**Mon 12/16/13**	**Fri 2/28/14**
15	4.1 Existing Data Review	10 days	Mon 12/16/13	Fri 12/27/13
16	4.2 Pre-Field Getechnical Activity	10 days	Mon 12/16/13	Fri 12/27/13
17	4.3 Subsurface Investigation	6 days	Mon 12/23/13	Mon 12/30/13
18	4.4 Laboratory Testing	5 days	Tue 12/31/13	Tue 1/7/14
19	4.5 Geotechnical Engineering Analysis	5 days	Wed 1/8/14	Tue 1/14/14
20	4.6 Geotechnical Reports	41 days	Mon 12/30/13	Fri 2/28/14
21	**Environmental**	**118 days**	**Wed 12/11/13**	**Mon 6/2/14**
22	5.1 Environmental Management / Meetings	118 days	Wed 12/11/13	Mon 6/2/14
23	5.2 Project Description	29 days	Fri 12/13/13	Fri 1/24/14
24	5.3 CEQA Statutory Exemption	22 days	Wed 1/15/14	Mon 2/17/14
25	5.4 Biological Resources	29 days	Fri 12/13/13	Fri 1/24/14
26	5.5 Cultural Resources	24 days	Fri 12/20/13	Fri 1/24/14
27	5.6 Regulatory Permits	83 days	Fri 1/24/14	Fri 5/23/14
28	5.7 Post Construction Water Balance Analysis & BMP Selection	42 days	Mon 3/3/14	Wed 4/30/14
29	**Quartz Siding Conceptual Design (5%)**	**61 days**	**Mon 12/2/13**	**Fri 2/28/14**
30	6.1 Meetings - Conceptual Design	43 days	Mon 12/2/13	Fri 1/31/14
31	6.2 Site Visit and Field inspection	10 days	Tue 12/10/13	Mon 12/23/13
32	6.3 Data Collection and Utility Mapping	28 days	Mon 12/23/13	Fri 1/31/14
33	6.4 Identify Operating Impacts	5 days	Mon 1/13/14	Fri 1/17/14
34	6.5 Alternatives Analysis Alignments	38 days	Mon 12/9/13	Fri 1/31/14
35	6.6 Construction Staging	11 days	Thu 1/2/14	Thu 1/16/14
36	6.7 Conceptual Railroad Signal Improvements	15 days	Thu 1/2/14	Thu 1/23/14
37	6.8 Level Boarding Report	61 days	Mon 12/2/13	Fri 2/28/14
38	**Quartz Siding Preliminary Design (30%)**	**19 days**	**Fri 1/31/14**	**Fri 2/28/14**
39	7.1 Meetings - Preliminary Design	19 days	Fri 1/31/14	Fri 2/28/14
40	7.2 Track Design	19 days	Fri 1/31/14	Fri 2/28/14
41	7.3 Drainage Design	46 days	Mon 12/23/13	Fri 2/28/14
42	7.3.1 Drainage Crossings	46 days	Mon 12/23/13	Fri 2/28/14



Project: CTO54 Base Schedule ZM
Date: Tue 1/14/14

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress

ID	Task Name	Duration	Start	Finish
43	7.3.2 Track Drainage	46 days	Mon 12/23/13	Fri 2/28/14
44	7.4 Retaining Wall Design	18 days	Mon 2/3/14	Fri 2/28/14
45	7.5 Track Signals and Communications	18 days	Mon 2/3/14	Fri 2/28/14
46	7.6 Station Improvements	18 days	Mon 2/3/14	Fri 2/28/14
47	7.7 Right-of-Way Impacts and Mitigation	18 days	Mon 2/3/14	Fri 2/28/14
48	7.8 Electrical Lighting and Communications	18 days	Mon 2/3/14	Fri 2/28/14
49	7.9 Customer Information System (CIS)	18 days	Mon 2/3/14	Fri 2/28/14
50	7.10 CCTV Security System	18 days	Mon 2/3/14	Fri 2/28/14
51	7.11 Construction Cost Estimates	18 days	Mon 2/3/14	Fri 2/28/14
52	**Quartz Siding Over the Shoulder Review (60%)**	**11 days**	**Fri 2/28/14**	**Fri 3/14/14**
53	8.1 Meetings - Progress Workshop and Comment Matrix	1 day	Fri 3/14/14	Fri 3/14/14
54	8.2 Quartz Siding Extension Progress Set	11 days	Fri 2/28/14	Fri 3/14/14
55	**Quartz Siding and Vincent Grade/Action Station Pre-Final Design (90%)**	**22 days**	**Fri 2/28/14**	**Mon 3/31/14**
56	8.1 Meetings - Pre-Final Design	17 days	Fri 2/28/14	Mon 3/24/14
57	8.2 Track Design	17 days	Fri 2/28/14	Mon 3/24/14
58	8.3 Retaining Wall Design	17 days	Fri 2/28/14	Mon 3/24/14
59	8.4 Drainage Crossings	17 days	Fri 2/28/14	Mon 3/24/14
60	8.5 Track Signals and Communications	17 days	Fri 2/28/14	Mon 3/24/14
61	8.6 Station Improvements	17 days	Fri 2/28/14	Mon 3/24/14
62	8.7 Electrical Lighting and Communications	17 days	Fri 2/28/14	Mon 3/24/14
63	8.8 Electronic Passenger Information System and PA System	17 days	Fri 2/28/14	Mon 3/24/14
64	8.9 CCTV Security System	17 days	Fri 2/28/14	Mon 3/24/14
65	8.10 Construction Cost Estimates	22 days	Fri 2/28/14	Mon 3/31/14
66	8.11 Project Specific Specifications	22 days	Fri 2/28/14	Mon 3/31/14
67	**Client Pre-Final Review and Comments**	**22 days**	**Tue 4/1/14**	**Wed 4/30/14**
68	Client Comments	22 days	Tue 4/1/14	Wed 4/30/14
69	**Quartz Siding and Vincent Grade/Acton Station Camera Design (100%)**	**21 days**	**Thu 5/1/14**	**Fri 5/30/14**
70	8.1 Meetings - Final Design	17 days	Thu 5/1/14	Fri 5/23/14
71	8.2 Track Design	17 days	Thu 5/1/14	Fri 5/23/14
72	8.3 Retaining Wall Design	7 days	Thu 5/1/14	Fri 5/9/14
73	8.4 Drainage Crossings	17 days	Thu 5/1/14	Fri 5/23/14
74	8.5 Track Signals and Communications	17 days	Thu 5/1/14	Fri 5/23/14
75	8.6 Station Improvements	17 days	Thu 5/1/14	Fri 5/23/14
76	8.7 Electrical Lighting and Communications	17 days	Thu 5/1/14	Fri 5/23/14
77	8.8 Electronic Passenger Information System and PA System	17 days	Thu 5/1/14	Fri 5/23/14
78	8.9 CCTV Security System	17 days	Thu 5/1/14	Fri 5/23/14
79	8.10 Construction Cost Estimates	21 days	Thu 5/1/14	Fri 5/30/14
80	8.11 Project Specific Specifications	21 days	Thu 5/1/14	Fri 5/30/14

Project: CTO54 Base Schedule ZM
Date: Tue 1/14/14

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Progress