

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

DATE:	May 13, 2009
TO:	Riverside County Transportation Commission
FROM:	Plans and Programs Committee Sheldon Peterson, Rail Manager Erik Galloway, Bechtel Project Coordinator
THROUGH:	Anne Mayer, Executive Director
SUBJECT:	Commuter Rail and Multimodal Facility Design Criteria Manual

PLANS AND PROGRAMS COMMITTEE AND STAFF RECOMMENDATION:

This item is for the Commission to review and provide comments on the draft Commuter Rail and Multimodal Facility Design Criteria Manual.

BACKGROUND INFORMATION:

The Commuter Rail and Multimodal Facility Design Criteria Manual (Manual) was developed to establish the design guidelines to be used for future facilities. This manual will provide guidelines for developing commuter rail stations, park and ride facilities, and multimodal transit centers developed by the Commission.

The most immediate projects are the proposed stations along the Perris Valley Line (PVL) commuter rail extension between Riverside and Perris planned to begin service in 2012. As part of the PVL projects ability to qualify for Federal Transit Administration's (FTA) Small Start funding, the project needs to meet strictly defined Cost Effectiveness Index (CEI) scores and maintain the total project cost below a \$250 million cap. The Manual therefore focuses on how to meet the following goals as it relates to the PVL stations and future Commission facilities:

- Safety and Security
- Environmental Sustainability
- Facility Standardization
- Compliance with the Cost Effective Index
- Reduce Construction Costs
- Reduce Operations Costs
- Reduce Maintenance Costs
- Ease of Maintenance
- Ease of Future Expansion (addition of amenities as funding becomes available)

One of the primary concerns is that funding for stations in the PVL project plan is limited to approximately \$6 million per station including parking, yet the last station constructed at North Main Corona in 2002 had a total cost of approximately \$10 million. At start up, the stations need to have relatively minimal amenities and features but should be designed to be expanded as additional funding becomes available. A standardized approach to design simple yet attractive stations will help meet this objective.

A major challenge will be to work through a city's approval process, which has historically added significant costs to the projects for additional aesthetic treatments and off-site improvements. Unfortunately with the constraints placed on this project by the FTA for project costs and the Commission's available resources, the Commission may not be able to meet the all of a local city's requests and still have a cost effective project. One key element of this plan will be to establish a cap of 10% of the facility construction costs that can be allowed for city requested off-site improvements. This will be important for all facilities that the Commission develops as project funding gets more competitive.

Commuter Rail Station Design Criteria Quick Summary

Here is an overview of the many elements of the manual:

- Commuter rail stations will meet Southern California Regional Rail Authority (SCRRA) design requirements. The manual is based on SCRRA's design manual format and addresses the same categories in their document.
- Stations will meet required codes and standards.
- Changes from design criteria will be reviewed by the Capital Projects Manager assigned to rail and Rail Manager prior to any exceptions.
- The goal is to develop cost effective stations that will meet the PVL project budget constraints and minimize unnecessary expenses at the stations.
- There will be an emphasis on Environmental Sustainability and "Going Green".
- The number of parking spaces is defined at a minimum of 500 unless ridership models determine a lower number is acceptable.
- Intermodal access issues are addressed with a preference for separated bus loops that do not conflict with pedestrian traffic. Safe and efficient pedestrian and bicycle access is encouraged.
- The parking lot layouts will be reviewed by the traffic engineer and include specific traffic flow designs for ease of station access. This includes exit lanes for easy departure and extra turn lanes whenever possible. In addition, parking lots will have gates to restrict access after hours.
- Station lighting will be developed to provide a safe environment for passengers. Facility lighting should be standardized between all stations and focus on energy efficiency over aesthetic design.

- Platforms will be designed to be safe, clear, and free of obstruction with all required safety and ADA features. No ornate materials will be used on future platforms.
- There should be one main canopy for ticket machines and passenger waiting. The central area will have conduit for electronic message signs, vending machines, and other amenities. The start up plan for the PVL envisions no canopies on platforms to minimize costs.
- The stations will have fencing and gates for security to better control access and protect the tracks.
- Pedestrian track crossings will be designed to meet SCRRRA's new safer standards. No overcrossings or undercrossings are anticipated at this time on the PVL, but several recommendations are made in this document in case there is a need for them in the future.
- Landscaping will focus on water-wise, drought tolerant plantings that will emphasize reduced overall station water use and maintenance costs. The use of decorative hardscapes will be explored.
- Station artwork may be allowed but must be funded outside of the project costs and have minimal operating maintenance costs.
- Security cameras will be placed at all stations using standardized equipment and monitored at Downtown Riverside station until a future monitoring station can be constructed at South Perris.
- There are minimal plumbing requirements for the stations which include, landscape irrigation, drinking fountains and connections to wash the station platforms. No public restrooms will be provided at the stations to minimize liability and maintenance costs. Restrooms for guards may be added in the future; portable facilities will be made available, as required. (Restroom facilities for multimodal stations will be reviewed on a case by case basis.)
- The electrical requirements for the station will be planned to allow for future expansion. The focus will be to identify opportunities for energy efficiency and reduced lighting when station is closed. The goal is to also explore solar power options at the stations.
- All equipment shall be standardized and designed to minimize maintenance, trash cans with lids will be provided, bike lockers will be provided that allow for users to provide their own locks, newspaper racks, public telephones, vending machines and information kiosks will be provided.
- Alternative power sources will be explored by the station designer.
- The Commission will limit offsite improvements to 10% or less of the project budget costs. If required, street improvements should only be completed on ½ of the adjacent street and traffic signal upgrades should be built only if detailed traffic analysis requires it. In addition, utility relocation, storm drain modifications, and street frontage improvements will be limited to only those specific areas that the facility impacts. Commission action will be needed to approve off site improvements in excess of the 10% of the station costs.

- For the layover facility design the Commission will follow SCRRA's standards for layover facility design.
- Park and Ride and Multimodal Centers will be designed using the elements of the rail station plans that apply as well as incorporate design standards from Riverside Transit Agency and other public transit operators.

The goal of this effort is to provide the best approach to allow the Commission to build, maintain, and operate cost effective and environmentally sustainable facilities that meet the public's transportation needs. The recommendation is for the Committee to review the basic manual elements and provide guidance to staff. Staff will incorporate Commissioners comments and present a final version to the Commission highlighting the proposed changes.

Attachment: Commuter Rail and Multimodal Facility Design Criteria Manual

Riverside County Transportation Commission

Commuter Rail and Multimodal Facility Design Criteria Manual



Riverside County Transportation Commission

April 17, 2009

Table of Contents

SECTION 1 - FORWARD

1.0 FORWARD	1
1.1 PURPOSE	1
1.2 GOALS	2
1.3 CHANGES AND UPDATES	2
1.4 TERMS AND DEFINITIONS	2
(Included in Attachment 1)	
1.5 ACRONYMS	3
(Included in Attachment 2)	

SECTION 2 – RIVERSIDE COUNTY TRANSPORTATION COMMISSION

2.0 RIVERSIDE COUNTY TRANSPORTATION COMMISSION	3
2.1 INTRODUCTION	3
2.2 RCTC METROLINK COMMUTER RAIL STATIONS	5

SECTION 3 – DESIGN STANDARDS

3.0 DESIGN STANDARDS	6
3.1 CODES AND STANDARDS	6
3.2 SITE SELECTION	6
3.2.1 Standard for Track at Station Sites	6
3.2.2 Signal Systems Impacts	6
3.2.3 Approvals	6
3.2.4 Agreements.....	7
3.3 GOING GREEN ENVIRONMENTAL SUSTAINABILITY	7
3.4 PARKING AND SITE CONFIGURATION	7
3.4.1 Minimum Number of Spaces	7
3.4.2 Bus Loops	8
3.4.3 ADA Issues, Platform, Parking Lot and Street Access	8
3.4.4 Intermodal Issues.....	8
3.4.5 Signage.....	9

3.4.6 Parking Lot Layout	10
3.5 PLATFORMS	14
3.5.1 Consideration of Future Track and Platform Length Additions	14
3.5.2 Combination Amtrak/Metrolink Issues.....	14
3.5.3 Clearances.....	15
3.5.4 General Configuration.....	15
3.5.5 Mini-High Platforms	19
3.5.6 Lighting.....	19
3.5.7 Canopies.....	20
3.5.7.1 Paint	21
3.5.7.2 Conduits	21
3.5.7.3 Canopy Amenities	22
3.5.8 Benches and Other Platform Furniture	23
3.5.8.1 Paint	24
3.5.9 TVM Pad.....	24
3.5.10 Ticket Validators	24
3.5.11 Signs	24
3.5.12 Drainage.....	25
3.6 FENCING.....	26
3.6.1 Parking Lot Fence.....	26
3.6.2 Parking Lot Gates.....	26
3.6.3 Removable Inter-Track Fence	27
3.6.4 Right-of-Way Fence	27
3.7 PEDESTRIAN CROSSINGS	28
3.7.1 Baggage Cart Routes.....	28
3.7.2 Overcrossings.....	28
3.7.3 Undercrossings.....	30
3.7.4 Overcrossings and Undercrossings Special Conditions.....	30
3.7.5 At-Grade Crossings.....	31
3.8 LANDSCAPE & IRRIGATION	31
3.8.1 Landscape Clearances	33
3.8.2 Platform Landscape	32

3.8.3 Parking Lot Landscape	33
3.8.4 Hardscaping	34
3.9 ARTWORK	35
3.10 COMMUNICATIONS.....	35
3.10.1 Communication Building.....	35
3.10.2 Security Camera CCTV Provisions	36
3.10.2.1 Security Monitoring Station	38
3.10.3 Passenger Information Call Boxes	39
3.10.4 Public Address/Changeable Message Signs.....	39
3.10.5 EMP Panel	39
3.11 PLUMBING SYSTEMS	39
3.11.1 Platform Wash Down System	39
3.11.2 Drinking Fountain.....	40
3.11.3 Restroom Facilities.....	40
3.12 ELECTRICAL SYSTEMS	40
3.12.1 Electrical Service	41
3.12.2 Power Requirements	41
3.12.3 Conduit System	41
3.12.4 Platform Receptacles	42
3.12.5 Solar Power	42
3.13 OTHER STATION EQUIPMENT	42
3.13.1 Trash Cans.....	42
3.13.2 Bike Lockers	43
3.13.3 Public Telephones.....	44
3.13.4 Vending Machines	44
3.13.5 Newspaper Racks.....	44
3.13.6 Kiosks	44
3.13.7 Alternate Power Sources	45
3.13.8 Bird Nesting.....	45
3.13.9 Canopy Misters	45
3.14 OFF SITE IMPROVEMENTS	46
3.15 SERVICE AND LAYOVER FACILITIES.....	47

3.16 MULTIMODAL AND PARK AND RIDE FACILITIES47

ATTACHMENT 1: TERMS AND DEFINITIONS..... TBD

ATTACHMENT 2: ABBREVIATIONS TBD

APPENDIX A: STATION “KEY HOLE” LAYOUT..... TBD

APPENDIX B: BIKE STORAGE PODS TBD

APPENDIX C: RCTC STANDARDIZED SIGNAGE REQUIREMENTS TBD

APPENDIX D: ELECTRICAL AND LIGHTING SYSTEM RECOMMENDATIONS..... TBD

APPENDIX E: DETECTABLE WARNING STRIP PERFORMANCE CRITERIA..... TBD

APPENDIX F: PAINT SYSTEM RECOMMENDATIONS TBD

APPENDIX G: CANOPY OPTIONS..... TBD

APPENDIX H: SCRRRA ES 4032 STANDARD..... TBD

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1.0 FORWARD

1.1 PURPOSE

This document establishes the design criteria to be used for the design of future Riverside County Transportation Commissions (RCTC) Commuter Rail Stations, Layover Facilities and Multimodal Facilities. The most immediate projects are the stations along the Perris Valley Line (PVL) Commuter Rail extension between Riverside and Perris planned to begin service in 2012.

The design and construction of the Stations along the PVL will be funded with Federal Transit Administration (FTA) Small Starts grant monies. These monies are tied to a Cost Effective Index (CEI) Criteria which if exceeded will result in the reduction or loss of the funding. Therefore, RCTC is limited by this funding as to what can be constructed on opening day of PVL Commuter Rail Service. This Design Criteria Manual will outline the basic Station that can be designed and constructed for PVL on opening day, while remaining within the limits established by the FTA funding. RCTC recognizes that these basic design criteria may not address the various Cities, Agencies, and local organizations expectations for a Commuter Rail Station, including the architectural look, aesthetic features, and amenities. RCTC will work with these groups, the State, and Federal Governments to identify and procure other funding sources to design and construct additional Architectural and Aesthetics Features and expand the Station Amenities after the opening day of the Station and outside of the FTA funding. The current budget estimates the total station costs including parking to average approximately \$6 million, this compares to most recent North Main Corona Station construction costs of \$10 million in 2002.

The design criteria outlined in this document was developed based on the project funding constraints and also from RCTC's experience in designing, building, and managing five (5) Metrolink Commuter Rail Stations over the past 15 years. In 2008 RCTC completed and issued the RCTC Commuter Rail Station Rehabilitation and Maintenance Plan, which identified a number of items that required repair and maintenance at each of the five stations. During the development of this plan and through discussions with RCTC Station Management and Maintenance staff, a number of items were identified which have resulted in excessive maintenance costs. These design criteria will identify those items and will provide alternatives to reduce the short and long term operations and maintenance costs of the Stations. These criteria were developed to reduce the Station's construction operations and maintenance costs and provided environmentally friendly stations, while remaining within the FTA's CEI. These criteria can be readily applied to the future development of Multimodal and Park and Ride facilities.

This document will be updated on an as needed basis. Minor changes to this document shall be reviewed and approved prior to incorporation by both the Rail Capital Projects Manager and the Rail Manager. Substantial changes will be reviewed by the Executive Director and presented to the Commission for adoption. Deviations from this plan will be addressed in the same manner.

1.2 GOALS

The goal of this document is to assist in the development and construction of future Commission Facilities including the new Metrolink Commuter Rail Stations along the PVL. These stations in particular will need to be kept within the program's CEI and reduce long term Operations and Maintenance Costs. RCTC has operated five (5) Commuter Rail stations over the past fifteen (15) years. This experience has indicated that the cost to operate and maintain the stations in a condition acceptable to the patrons is constantly rising. The design engineer when implementing these design criteria should focus on the following overall design requirements/goals:

- Safety and Security
- Environmental Sustainability
- Facility Standardization
- Compliance with the Cost Effective Index
- Reduce Construction Costs
- Reduced Operations Costs
- Reduced Maintenance Costs
- Ease of Maintenance
- Ease of Future Expansion (addition of amenities as funding becomes available)

1.3 CHANGES/DEVIATIONS AND UPDATES

Any proposed changes or deviations from these criteria must be submitted to the Rail Capital Projects Manager and the Rail Manager for consideration. The scope of the change/deviation will be reviewed by the Rail Capital Projects Manager and the Rail Manager for determination if Commission action will be required. If Commission action is determined to not be required, the change/deviation will be reviewed by both managers and will only be implemented upon a consensus vote by the Rail Capital Projects Manager and the Rail Manager.

Commission Action will be required for the following changes/deviations:

- Any change/deviation from Section 3.14: Off Site Improvements
- Any change/deviation which negatively impacts the Project's Cost Effective Index
- Any change/deviation which results in the relocation of a station platform
- Any change/deviation which affects the "Key Hole" bus loop station approach
- Any change/deviation which requires additional funding that cannot be covered by the project, the requesting agency, or is not considered by FTA as a concurrent non-project cost

1.4 TERMS AND DEFINITIONS

Technical terms used in this document are defined in [Attachment 1](#).

1.5 ACRONYMS

Acronyms used in this document are defined in [Attachment 2](#).

2.0 RIVERSIDE COUNTY TRANSPORTATION COMMISSION (RCTC)

2.1 INTRODUCTION

RCTC is Riverside County's primary transportation agency charged by state law with the responsibility of planning and funding transportation improvements.

On November 8, 1988 the Voters of Riverside County approved Measure A authorizing the collection of a one-half percent (1/2 %) retail transactions and use tax (the "Tax") to fund transportation programs and improvements within the County of Riverside, and adopting the Riverside County Transportation Improvement Plan (the "Plan").

Pursuant to Public Utility Code Sections 240000 et seq., the RCTC is authorized to allocate the proceeds of the Tax in furtherance of the Plan.

On November 5, 2002, the voters of Riverside County approved an extension of the Measure A tax for an additional thirty (30) years for the continued funding of transportation and improvements within the County of Riverside.

The original Measure A provided an initial pool of funds necessary to leverage additional state and federal resources to fund substantial right of way acquisitions, capital expenditures and investments in rolling stock. Within two years California voters approved Bond Propositions 108, 111 and 116. Following the lead of Riverside and San Bernardino counties, both Los Angeles and Orange counties concurrently approved their respective measures, establishing the foundation for a regional commuter rail authority.

In June 1990, the California Legislature enacted Senate Bill 1402, Chapter four of Division 12 of the Public Utilities Code. The bill required the transportation commissions of the counties of Los Angeles, Orange, Riverside and San Bernardino establish a Joint Powers Authority (JPA) to develop a plan for regional transit services within the multi-county region.

In August 1991, responding to SB 1402 these four counties with the addition of Ventura formed the Southern California Regional Rail Authority (SCRRA). The purpose of the newly formed JPA was to plan, design, construct and administer the operation of regional passenger rail lines serving the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura.

Soon after its formation, SCRRA adopted the name 'Metrolink' for the commuter rail system it would operate in the five counties. The process of building the new system proceeded in rapid succession. Having already offered right of way, negotiations with Southland railroads quickly concluded for its first 3 lines. Within a year after its formation, Metrolink took delivery of its first passenger cars and began regular rail service on the Ventura, Santa Clarita and San Bernardino Lines in 1992.

Service on the Riverside Line commenced in 1993, connecting downtown Riverside to downtown Los Angeles. Under the direction of SCRRA, Metrolink rapidly evolved into one of the fastest growing and most recognized inter-regional commuter rail systems in the country.

Four years after service began, facing significant and consistent growth in ridership, Metrolink increased its number of passenger cars. This growth necessitated the expansion of the RCTC owned and operated Metrolink Commuter Rail Stations from two in 1993 to four by 1995 and five by 2002.

In 2002, as Metrolink celebrated its first decade of service, it announced the addition of the 91 Line, connecting Riverside and Los Angeles via Orange County. Due to this continued success of the Metrolink Commuter Rail system RCTC has expanded the existing stations to accommodate additional riders and address their needs and concerns.

RCTC, for the most part, has contracted directly with engineers, architects, and contractors to design and build their Commuter Rail Stations. The stations were designed by various architects following the SCRRA Design Criteria Manual and other relevant codes and regulations, including but not limited Burlington Northern Santa Fe Railway (BNSF), Union Pacific Railway (UP), State, City, and County ordinances.



The stations are constantly being expanded to address patron’s needs for additional parking, safe access to the platforms, and additional amenities to address their comments on the services provided. In the original Measure, only the Perris Valley Line (PVL) remains to be completed. As part of its original mandate, RCTC acquired the San Jacinto Branch Line (SJBL) from the Atchison Topeka and Santa Fe Railroad (now BNSF). This 38.3 mile corridor will serve Riverside County residents between Riverside and Perris.

RCTC purchased the SJBL and adjacent properties in 1993 with Western County Measure A and state rail bonds. BNSF retains exclusive freight operating rights, serving its customers along the line, and will continue to maintain the right-of-way until such time as passenger service begins.

RCTC has retained a design engineering consultant and is performing the engineering design of the extension of the Metrolink Service to the City of Perris. This Commuter Rail Station Design Criteria Manual will be used as a basis for the design of the new Stations along the PVL, and any additional stations or Multimodal Facilities in Riverside County.

The Perris Valley Line will serve the cities of Riverside, Moreno Valley, March Air Reserve Base, Perris, Hemet and San Jacinto,

Current RCTC Stations

Riverside Downtown Station



- 4066 Vine St.
Riverside CA 92502
- Station Opened: June 14, 1993
- Rail Lines Served: BNSF & UPRR
- No. of Platforms: 2

The Pedley Station



- 6001 Pedley Rd.
Riverside CA 92509
- Station Opened: June 14, 1993
- Rail Line Served: UPRR
- No. of Platforms: 2

La Sierra Station



- 10901 Indiana
Riverside CA 92502
- Station Opened: October 2, 1995
- Rail Line Served: BNSF
- No. of Platforms: 2

West Corona Station



- 155 S. Auto Center Dr.
Corona CA 92880
- Station Opened: October 2, 1995
- Rail Line Served: BNSF
- No. of Platforms: 2

North Main Corona Station



- 250 E. Blaine St.
Corona CA 92879
- Station Opened: November 2002
- Rail Line Served: BNSF
- No. of Platforms: 2

2.2 RCTC METROLINK COMMUTER RAIL STATIONS

RCTC currently owns, operates, and maintains five (5) Metrolink Commuter Rail Stations, these are:

- Riverside Downtown
- Pedley
- La Sierra
- West Corona
- North Main Corona

These stations were constructed over the past fifteen (15) years during which time RCTC has operated and maintained the stations. This has resulted in RCTC developing extensive experience in constructing and maintaining the stations. This experience provides RCTC with a unique understanding of what station items and amenities are beneficial to the Metrolink Riders and which ones require extensive maintenance and corresponding higher operating costs.

3.0 DESIGN STANDARDS

The intent of this manual is to provide station designers a basis for design of new RCTC Commuter Rail Stations. This Commuter Rail Station Design Criteria Manual will be used in conjunction with SCRRRA Design Criteria Manual and all other relevant codes and requirements. This manual was developed through lessons learned by RCTC over the many years of station operations and maintenance.

3.1 CODES AND STANDARDS

RCTC Commuter Rail Station design shall comply with the codes/design manuals listed below. If a conflict between the codes/design manuals arises, then the most restrictive code shall apply.

- SCRRRA Design Criteria Manual dated 2003
- Americans with Disabilities Act Accessibility Guidelines
- California Title 24
- California Public Utilities Commission
- SCRRRA Engineering Design Standards
- Local Building Codes
- Local Planning and Zoning Codes and Standards
- Other Codes/Agencies

3.2 SITE SELECTION

3.2.1 Standard for Track at Station Sites

All requirements outlined in SCRRRA Design Criteria Manual section 7.3.1 shall be applied to RCTC Rail Station design.

3.2.2 Signal Systems Impacts

All requirements outlined in SCRRRA Design Criteria Manual section 7.3.2 shall be applied to RCTC Station design.

3.2.3 Approvals

The proposed Station Sites will be evaluated on impact to freight and commuter rail operations, track geometry, available right-of-way, ridership analysis, accessibility by other modes of transportation, and other factors which will be analyzed in detail as part of planning phase prior to site selection. All proposed sites are subject to review and approval by RCTC and SCRRRA.

The presence of under and above ground utilities will require close coordination with the utility owners. For the PVL, RCTC has documented most utility encroachments into the SJBL property and this Geographic Information System (GIS) database should be reviewed to determine potential utility impacts to station site selection. This will be performed for future stations as deemed necessary by the particular project.

3.2.4 Agreements

Various agreements will be required prior to the construction of a new station or expansion of an existing one. The types and number of agreements will be dependent upon the individual project, location, and Cities and Agencies impacted.

RCTC also enters into License Agreements for utility encroachments along the rail right-of-way. These agreements are entered into a GIS database and should be reviewed prior to station site selection or modifications to an existing station site.

3.3 “GOING GREEN” Environmental Sustainability

As part of the overall Station Design, RCTC desires for the future Metrolink Stations to be “Green” and to reduce the Station’s carbon foot print and environmental impact. The design engineer should provide recommendations and their associated costs for alternative “Green” design options or building methods. The use of recycled building materials should be encouraged and the design engineer should look for new technologies, i.e. LEDs, Solar Power, Drought tolerant landscaping, runoff collection and reuse systems, etc., that would reduce the station water use, and operations and maintenance costs.

The design engineer should also determine if any potential funding sources to supplement the design, construction, operations, and maintenance of “Green” alternatives exist or if any grants exist that could be used to offset the cost to incorporate these “Green” options.

3.4 PARKING AND SITE CONFIGURATION

3.4.1 Minimum Number of Spaces

The minimum of parking spaces will be determined by three factors:

- 1) Section 7.4.1 of the SCRRRA Design Criteria Manual.
- 2) Ridership and Station Usage studies, which will provide the anticipated number of riders at the station on opening date and also at a future project year.
- 3) RCTC’s discretion to increase the number based on past experience and public comments received about the proposed station.

These criteria will be used to determine the minimum number of spaces for each station, which may also be increased or decreased as funding permits.

SCRRRA requires a minimum of 500 parking spaces on the opening day of the station, if Ridership and Station Usage studies do not justify this number, then discussions will be held with SCRRRA to seek a waiver of this requirement.

Allowances shall be made for accessible spaces, van and carpool spaces, ride share to rail spaces, kiss and ride spaces, and bicycle racks and/or lockers. Loading and unloading areas for buses, minibuses, vanpools, and cars shall be provided as appropriate for the anticipated vehicle population.

3.4.2 Bus Loops

All efforts should be made to separate pedestrian traffic from bus travel ways. RCTC prefers a bus loading/unloading area to be designed as a “Key Hole” layout, similar to the Pedley Metrolink Station. This layout separates the pedestrian traffic from the station parking lot and the bus routes thereby reducing the chance for conflicts between the two.

RCTC prefers, as funding allows, the bus loading/unloading areas to be paved with concrete to reduce future maintenance costs. It has been noted at the other RCTC Riverside Line stations with asphalt paved Bus Loops have developed cracks resulting in water infiltration and subsequent pavement failure requiring extensive and costly repairs, while Pedley’s concrete bus loop has not required any repairs.

See **Appendix A** for how the “Key Hole” approach will be used on the PVL Stations.

3.4.3 ADA Issues, Platform, Parking Lot and Street Access

All requirements outlined in SCRRRA Design Criteria Manual section 7.4.2 shall be applied to RCTC Station design. The stations will also meet required Public Utilities Commission safety standards as appropriate.

3.4.4 Intermodal Issues

RCTC will support all forms of alternative access to the stations and will design the stations to encourage pedestrian and bicycle access and ease of transfers off of connecting busses and shuttles.

All requirements outlined in SCRRRA Design Criteria Manual section 7.4.3 shall be applied to RCTC Station design with the following additional requirements.

RCTC will also look at potential “Park and Ride” opportunities for Stations located near major interstate or highway facilities. This option may provide other funding options and allow for the expansion of the stations or placement of additional amenities. This will be analyzed on a case by case basis and will only be implemented if the parking required for Station patrons is not impacted.

Pedestrian access

All requirements outlined in SCRRA Design Criteria Manual section 7.4.3 shall be applied to RCTC Station design with the following additional requirements.

Pedestrian access will need to be reviewed and approved by Cities, Local Agencies, and other applicable government agencies. The Pedestrian access to the station should be analyzed to determine what would be the most preferred routes into the station.

Pedestrian access should be directed to paved areas and barriers placed around areas where pedestrians should not be walking, i.e. within the railroad right-of-way or through landscaped areas. Pedestrian safety will be a key factor in station design.

Bus access

All requirements outlined in SCRRA Design Criteria Manual section 3.4.2 and 7.4.3 shall be applied to RCTC Station design with the following additional requirements.

RCTC will work with the local Transit Agencies to coordinate the development of the Stations. If additional station amenities are requested, beyond what is provided in the opening day base station, by the Transit Agencies, RCTC will work with them to identify additional funding sources and/or direct funding from those Agencies to purchase, install, and maintain these additional station amenities.

Bicycle access

All requirements outlined in SCRRA Design Criteria Manual section 7.4.3 shall be applied to RCTC Station design with the following additional requirements.

RCTC has placed bike lockers at the existing Riverside County Stations and if the space allows will accept placement of bike lockers at the PVL stations. RCTC does require the bike lockers be designed to allow individuals to place their own locks to secure the locker. RCTC has also researched alternatives for space savings and is now implementing the placement of Bike Racks or Bike Storage Pods see **Appendix B**. Depending on available funding these items may be implemented with the base station design.

The University of Riverside Station is a “Kiss and Ride” lot and will be used extensively by the students, therefore Bike Lockers and Bike Racks will be required on opening day for this station.

As part of the station design RCTC will review the demand for bike routes within the stations. These routes will be reviewed to determine their impact to and conflict with vehicle and bus traffic. In addition, they will be reviewed to determine if they can fit within the constraints of the property, i.e. station entrance widths.

3.4.5 Signage

All requirements outlined in SCRRA Design Criteria Manual section 7.4.3 shall be applied to RCTC Station design with the following additional requirements.

RCTC is developing standardized signage requirements that will be implemented across all RCTC Stations. The Signage requirements will detail the standard signs to be placed at each station, which is intended to reduce the initial station cost and long term signage replacement costs. The standardization of the signs will allow for RCTC to make bulk purchases of replacement signs that can be used at all stations and will eliminate the high cost to manufacture individual signs for each station.

The base station design for PVL shall only incorporate SCRRRA and RCTC standard signage, any additional unique signage will need to be funded by the requesting agency or purchased and installed at a later date when funding becomes available.

RCTC's stations located along BNSF's mainlines will also incorporate signage as required by BNSF and AMTRAK.

The Stations must conform to the SCRRRA and RCTC Signage Standards which upon completion will be included in [Appendix C](#).

3.4.6 Parking Lot Layout

As stated in Section 3.4.2, RCTC's preferred layout for the parking lot / bus loop configuration is a "Key Hole" approach, with the Bus Loop centered to the platform with parking on both side of the "Key Hole". This configuration separates the Bus Traffic from the passenger vehicles and reduces the potential for bus / passenger conflicts. The parking lot layout should also include "Kiss-n-Ride" short term parking and "Rideshare to Rail" long term assigned parking.

The PVL station layouts are included in [Appendix A](#).

Traffic Engineer

The design consultant shall consult with a Traffic Engineer (TE) when designing the layout of the parking lots. The TE will review and determine the best flow and routes for vehicles to enter, exit, and circulate through the station.

- RCTC prefers the number of entrance and exists to the station to be constrained as much as possible, while still remaining compliant with City, County, State and Federal Requirements, Codes and Regulations. The advantage of constraining the number of entrance/exits to the station will allow for controlled exiting from the station, minimal points of conflict with adjacent City/County Streets, better Security Control of the Station, reduced intersection signalization requirements, reduced construction and operations costs.
- Reducing the number of entrance/exists allows RCTC's security consultants to focus their monitoring and better patrol the stations.

- RCTC intends to provide positive security control at the station's during night time non-operational hours. This positive control will consist of gated entrance/exits to the station, which will be secured by the onsite Security personnel.
- The flow of the vehicles through the parking lot can be bi-directional or uni-directional based on the traffic engineer's analysis and recommendations.
- The parking lot layout and flow should be reviewed to identify and reduce conflicts with vehicles traveling up/down the lanes and vehicles backing out.

Exit Lanes

The parking layout should be designed so turning movements from the body of the parking lot are impeded at the neck of the exit lanes, thereby reducing the back up of vehicles into the parking lot. The Exit Lanes should be designed to accommodate as much vehicle stacking as possible, so that it does not back up into the whole parking lot.

The station design engineer and TE should design the parking layout and the exit lanes to provide for controlled exiting and to minimize the back up of cars into the individual parking lot lanes.

Parking Spaces

Parking Space size shall be based on City, County, State, or Federal requirements.

The design engineer should also include the following RCTC required specialty parking spaces.

- Rideshare to Rails – RCTC typically requires 10 parking spaces be identified with this text. The spaces should be located close to the ticket vending canopy.
- Kiss-n-Ride – Some stalls, typically 4 to 6, shall be designated for the short term pick up and drop off parking. These spaces are to supplement the Kiss-n-Ride drop off areas near the platforms. The stalls should be located close to the loading/unloading platform.
- RCTC will review the potential for identifying one or two parking spaces for Electric Vehicle Recharging. This will be determined on case-by-case bases for each station. Specialty reserved parking for security and maintenance will also be identified.
- Place Car Stops to impede vehicles from hitting light standards or from extending over landscape areas or walkways. The use of recycled materials for Car Stops is preferred.

Pavement Section

The parking lot pavement section should be determined through a Geotechnical Investigation of sampling, testing, analysis, and report development with specific recommendations based on the existing soil conditions.

The pavement sections should be sized to provide the longest life span with minimal maintenance and rehabilitation.

The design engineer should include as part of their design, Operations and Maintenance Recommendations for the pavement, i.e. slurry seal every 10 years, pavement review every month/year etc. These recommendations should ensure the longest life possible and reduce future pavement maintenance costs.

The design engineer should review and provide recommendations for the use of “Green Pavement alternatives”. Some examples are rubberized asphalt, recycled or miscellaneous base etc.

Due to drainage issues at the existing stations, the design engineer shall look at pavement capping materials that would provide better drainage, eliminate ponding, and water infiltration.

Parking Lot Drainage

RCTC’s existing Metrolink Stations pavement has started to deteriorate, which is resulting in excessive maintenance and rehabilitation costs. It appears much of this deterioration is resulting from water infiltration, runoff from the planters, and/or ponding.

The station design engineer should review the site drainage and determine the best possible way to route the site runoff to drainage facilities, ensure that the site is graded to provide maximum run off and reduce ponding, and should review and determine if concrete curb and gutter, and/or concrete drainage swales are necessary to minimize run off damage to the pavement.

The design engineer must ensure that the site complies with all Storm Water requirements, including potentially on-site treatment. In addition, the re-use of site drainage for irrigation purposes should be explored to determine the viability of this option, including review the construction costs, maintenance costs, and water savings.

Parking Lot Striping

The materials used for parking lot striping should provide a long term life span and minimal maintenance while also emitting low Volatile Organic Compounds (VOC’s).

RCTC will require specialty pavement markings for some of the parking spaces which are listed below:

- Ride Share to Rails

- Kiss-n-Ride
- Electric Vehicle Recharging Stations
- Security & Maintenance

Conduit Systems

Conduits will be required for electrical, communication, and irrigation systems within the parking lot.

- Conduits wherever possible shall be located in landscaped or under non-paved areas.
- The conduits should be routed as close as possible to one another and if possible within the same trench to minimize pavement damage when repairs are required.
- The location of the conduit routes should be logical i.e. not on skews or angles.
- The conduit routes should be placed so that if the repairs are performed only small sections of asphalt or concrete will need to be removed and the repaired sections will not result in criss-cross pattern of saw cuts across the station.
- Pull boxes should be logically and uniformly placed to allow ease of access to the wires.
- The Design Engineer should also explore the potential and cost effectiveness of conduit chase ways that can be accessed without the need to saw cut and remove pavement.
- The Station design should anticipate the placement of CCTV cameras at each light pole.
 - This will require a minimum of two (2) Power and two (2) Communication conduits to each light pole.

Parking Lot Lighting

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.6 Lighting shall be applied to RCTC Station design with the following additional requirements.

Safety and security will be a critical factor in determining the amount of lighting required in the parking lots. The light poles and light fixtures should be uniform across all the stations, thereby providing an economy of scale when purchasing the poles and fixtures. This will also reduce RCTC's maintenance costs by allowing RCTC to bulk purchase replacement parts and poles and not require unique items for each station. In addition, light standards should not be chosen based on their aesthetic design if it requires additional fixtures to provide the needed lighting requirements.

Light fixtures should be selected based on their energy efficiency to reduce long term operations costs. In addition, they should also be designed to direct the light onto the parking lot and minimize light pollution to surrounding neighborhoods.

Some lighting options that should be explored during the design are – Solar Powered Lights, LED, and any others that will reduce the power usage of the station and reduce operational and maintenance costs.

The light fixtures should be manufactured of materials to provide a long service life and not require extraordinary maintenance.

The parking lot lighting should be designed on multiple circuits to allow for a portion of the station lights to be cycled off during non-operational hours to reduce energy costs.

As of the date of the drafting of this Manual, RCTC is reviewing the existing lighting and electrical systems at the 5 RCTC owned stations. This process will result in recommendations for modification of the systems to reduce operations and maintenance costs. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix D**.

Landscaping

Refer to Section 3.8.2 of this manual – Parking Lot Landscaping.

3.5 PLATFORMS

All platforms will be designed to provide safe and clear access to the trains.

3.5.1 Consideration of Future Track and Platform Length Additions

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.1 Consideration of Future Track and Platform Length Additions shall be applied to RCTC Station design with the following additional requirements.

The base station design must include the construction of SCRRRA's required 680-foot long platform and must be designed to accommodate the future expansion of the platform to 850-feet with minimal impact to items constructed as part of the base design. The base platform should be designed to accommodate the following:

- Ease of future expansion with minimal disturbance and damage to existing conduits and structures.
- Conduits placed within the base platform length should be designed for future extension.
- Construction and expansion joints should be spaced to accommodate the future extension and also provide a uniform look.
- Tactile placed along the platform edge should be spaced to accommodate full sections and maintain a consistent spacing upon expansion of the platform.

- Additional Platform Canopies may be placed in later years after the station becomes operational and the platform should be designed to accommodate them. The platform should be designed for the canopies to be placed equidistant from each other for the future platform length.

3.5.3 Clearances

All requirements outline in SCRRA Design Criteria Manual section 7.5.3 shall be applied to RCTC Station design with the following additional requirements.

Along the PVL all attempts should be made to provide a maintenance road along the track alignment with access points from adjacent City, County Streets, or RCTC owned property.

3.5.4 General Configuration

Dimensions

All requirements outlined in SCRRA Design Criteria Manual section 7.5.4 General Configuration shall be applied to RCTC Station design with the following additional requirements.

- The PVL will be double tracked along some of its alignment and potentially in the future along the full alignment. BNSF will be providing freight service along the PVL with most of their customers located along the west side of the property. Potentially the western most track will be allocated for BNSF freight service, with sporadic Metrolink use, therefore the platform design should anticipate this rail usage and the platform/s should be placed accordingly.
- The track usage may be altered in the future and the platforms should be designed to be easily reconfigured to serve the modified usage. This may include the future design and construction of additional full service or emergency platforms.
- The platform locations will also be dependent upon the property acquired for the project and any potential utility conflicts.

Detectable Warning Strip

All requirements outlined in SCRRA Design Criteria Manual section 7.5.4 General Configuration subsection Detectable Warning Strip shall be applied to RCTC Station design with the following additional requirements.

RCTC also requires the Detectable Warning Strip (Tactile tile) meet the performance criteria detailed in **Appendix E**.

CPUC Platform Edge Warning Stripe

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.4 General Configuration subsection CPUC Stripe shall be applied to RCTC Station design with the following additional requirements.

- The paint used for the CPUC Stripe and the warning text shall be of a quality to resist scratches, scuffs, peeling, cracking, gum, sun damage(fading), water resistant, and provide for a minimum 10 year life.

As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.

CPUC ADA Train Access Ramps

All requirements outline in SCRRRA Design Criteria Manual section 7.5.4 General Configuration subsection CPUC Ramps shall be applied to RCTC Station design with the following additional requirements.

- The ramps should be designed for the future extension of the platforms. Therefore, they should be designed in a way that their removal will not damage the end of the platform or the tactile tile.

Material

All platforms will be constructed out of standard concrete materials. No future station will be designed to include pavers or decorative features on the platform. These pose a significant ongoing maintenance concern.

Conduit Systems

All requirements outline in SCRRRA Design Criteria Manual section 7.5.4 General Configuration subsection Conduit Systems shall be applied to RCTC Station design with the following additional requirements.

- Conduits wherever possible shall be located behind the platform, landscaped or under non-paved areas, with only laterals extending under the concrete platform.
- The Conduit routes should be placed so that if the repairs are performed only small sections of concrete will need to be removed and the repaired sections will not impact the overall aesthetic look of the platform.
- Pull boxes should be logically and uniformly placed to allow ease of access to the wires.

- The Design Engineer should also explore the potential and cost effectiveness of conduit chase ways that can be accessed without the need to saw cut the concrete platform.
- The Station design should anticipate the placement of CCTV cameras at each light pole and within or affixed to the present and future platform canopies.
 - This will require a minimum of two (2) Power and two (2) Communication conduits to each light pole.
- The number of conduits to each base station design (single) main canopy shall be adequate to support the following equipment at the canopy:
 - CCTV Camera/s, minimum one (1) Camera on opening day with the future expansion of one (1) or two (2) additional cameras. The CCTV Cameras will require Power and Communication Connections.
 - Ticket Vending Machine (TVM), minimum one (1) Machine on opening day with the addition of (1) in the future. TVM will require Power and Communications Connections.
 - Ticket Validator, minimum two (2) Machines on opening day. Validator will require Power Connection.
 - Changeable Message Sign (CMS), minimum one (1) CMS on opening day potentially one (1) additional in the future. CMS will require Power and Communication connections.
 - Video Display Monitor (LCD) none anticipated on opening day, minimum two (2) LCDs in the future. Monitors will require Power and Communication Connections.
 - Outdoor rated Heaters for station patrons, none anticipated on opening day, minimum two (2) heating units in the future. Heaters will require Power Connection.
 - Powered Informational Kiosks potentially with LCDs Monitors, one (1) anticipated on opening day pending funding availability, and minimum of one (1) additional Kiosk in the future. Kiosk will require Power and Communication Connection.
 - Vending Machines, snacks or drinks, minimum one (1) vending machine on opening day and minimum two (2) additional ones in the future. Vending Machines will require Power and Communication Connection.
 - Public Telephones, minimum one (1) public telephone on opening day and no additional ones in the future. Public Telephone will require Power and Communication Connection.
 - Wi-Fi Base Station none anticipated on opening day, minimum one (1) Wi-Fi Base Station in the future. Wi-Fi will require Power and Communication Connection.
 - Station Emergency Phone, none anticipated on opening day, minimum one (1) Emergency Phone in the future. Emergency Phone will require Power and Communication Connection.

- Water Mister System, system not anticipated on opening day, system to be placed in the future. Mister System may require Power and water Connection.
 - Electrical Outlets, it should be anticipated to have outdoor rated GFI outlets at the base of each column of the main canopy on opening day.
 - Electrical Outlet, it should be anticipated to have an outdoor rated GFI outlet at top of one of the canopy columns for potential anti-bird roosting devices.
 - Adequate Power Conduits for Canopy lighting.
- The number of conduits to each future station design (multiple) platform canopies shall be adequate to support the following equipment at each canopy:
 - CCTV Camera/s, one (1) Camera in the future. CCTV Camera will require Power and Communication Connections.
 - Changeable Message Sign (CMS), support the potential installation of one (1) CMS on each canopy as necessary. CMS will require Power and Communication connections
 - Video Display Monitor (LCD) none anticipated when the canopies are installed, but need to have the conduits necessary to support the installation of one (1) LCD at each canopy at some time in the future. LCD Monitor will require Power and Communication Connections.
 - Outdoor rated Heater for station patrons; none anticipated when the canopies are installed, but need to have the conduits necessary to support the installation of a minimum of two (2) heating units in the future. Heaters will require Power Connection.
 - Water Mister System, system installation not anticipated when the canopies are installed, but need to have the conduits necessary to support the installation of the mister system in the future. Mister System may require Power Connection and water lines.
 - Electrical Outlets, it should be anticipated to have outdoor rated GFI outlets at the base of each column of the canopy on day of installation.
 - Electrical Outlet, it should be anticipated to have an outdoor rated GFI outlet at top of one of the canopy columns for potential anti-bird roosting devices on day of installation.
 - Adequate Power Conduits for Canopy lighting.
 - The platform design should anticipate the future placement of platform canopies and should include the placement of the necessary conduits on opening day of the station or allow for their placement with minimal demolition of the concrete platform.
 - The platform design should also anticipate the future placement of a single TVM at each end of the platform.

Potential Future Pedestrian Overcrossings

At the time of issuance of this manual it is not anticipated that pedestrian overcrossings will be required at any of the proposed Stations along the PVL. Even though overcrossings are not envisioned at this time, the platforms should be constructed to allow their placement in the future if necessary.

The platforms should be designed for the potential placement of Pedestrian Overcrossings at the mid-point of the platform. Platform Canopies should not be placed in the area where the potential Overcrossing towers would be constructed. The design should not place any conduits within the area where the Pedestrian Tower would be placed to reduce future relocations.

The Station designer should envision how a potential Pedestrian Overcrossing would fit within the station and how it would be constructed and design the station layout accordingly. Overcrossings are discussed in more detail in section 3.7.2 of this manual.

3.5.5 Mini-High Platforms

All requirements outlined in SCRRA Design Criteria Manual section 7.5.5 Mini-High Platforms shall be applied to RCTC Station design with the following additional requirements.

- The Mini-High platforms should be constructed so they can be relocated in the future when the station platforms are extended.
- The removal and relocation of the Mini-High Platforms should not result in damage to the platform or require saw cutting or demolition of the platform.
- The Mini-High Platform should also be designed for the future installation of a canopy, similar to Riverside Downtown Metrolink Station.
- This canopy will also need to be designed to be removed and relocated with the Mini-High Platform.
- The electrical and communication conduits in the Mini-High Platform canopy should be designed to be cut to grade of the station platform, capped and covered with a pull box for future use.

3.5.6 Lighting

All requirements outlined in SCRRA Design Criteria Manual section 7.5.6 Lighting shall be applied to RCTC Station design with the following additional requirements.

Safety and security will be a critical factor in determining the amount of lighting required in the parking lots. The light poles and light fixtures should be uniform across all the stations, thereby providing an economy of scale when purchasing the poles and fixtures. This will also reduce RCTC's maintenance costs by allowing RCTC to bulk purchase replacement parts and poles and not require unique items for each station. In addition, light standards should not be chosen based on their aesthetic design if it requires additional fixtures to provide the needed lighting requirements.

Light fixtures should be selected based on their energy efficiency to reduce long term operations costs. In addition, they should also be designed to direct the light onto the parking lot and minimize light pollution to surrounding neighborhoods.

Some lighting options that should be explored during the design are – Solar Powered Lights, LED, and any others that will reduce the power usage of the station and reduce operational and maintenance costs.

The Light fixtures should be manufactured of materials to provide a long service life and not require extraordinary maintenance.

The parking lot lighting should be designed on multiple circuits to allow for a portion of the station lights to be cycled off during non-operational hours.

As of the date of the drafting of this Manual, RCTC is reviewing the existing lighting and electrical systems at the 5 RCTC owned stations. This process will result in recommendations for modification of the system to reduce operations and maintenance costs. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix D**.

3.5.7 Canopies

The requirements outlined in SCRRRA Design Criteria Manual section 7.5.7 Canopies shall be applied to RCTC Station design with the following exceptions and additions.

Exception:

- For opening day, potentially only one (1) Canopy will be constructed. This canopy will be centrally located along the platform or entrance to the platform and will include the ticket vending machine and ticket validator. This constraint is directly related to the Cost Effective Index Criteria. If additional funding can be located then additional canopies can be designed and placed on opening day. This additional funding and work must be considered “concurrent non-project costs” by FTA for it to be incorporated for opening day. Therefore, Metrolink’s suggestion that the canopies cover approximately 20% of the platform length will not be complied with on opening day. As funding becomes available additional canopies will be placed and the suggested coverage will be met.

Additions to the criteria:

- The Canopies should be designed in a uniform manner to minimize the construction and long term maintenance costs. By having a uniform design it will be easier and cost effective for RCTC to make repairs.
- The use of Translucent Ceiling panels is not recommended. The panels were used at the North Main Corona Station and they do not reflect enough light at night from the upward firing light fixtures.

- The canopies should be designed to allow for ease of cleaning and maintenance. The design should not be complicated or require special cleaning or maintenance materials or equipment. The electrical elements need to be secured enough so the structure can be pressure washed.
- The main central canopy should be designed to allow for future structural expansion as funding becomes available.
- The design engineer should explore the use of “off the shelf” Canopies and Shelters, some examples are shown in **Appendix G**. The “off the shelf” canopies would make it easier for RCTC to add canopies as funding becomes available and would not require specialized design efforts, which would reduce the overall project cost. In addition, these “off the shelf” canopies would make it easier to repair or replace one in the future if they become damaged.
- Benches shall be placed under the canopies to allow for the patrons to sit protected from inclement weather.
- The canopies should be designed to address potential site specific weather conditions, i.e. excessive wind or dust.
- The design engineer should review the option of solar powered canopies to supplement their electrical needs. A cost comparison should be provided between a standard canopy and solar powered canopy.
- The canopies shall be designed to impede the roosting of birds. The structure should be designed or have anti-bird roosting items installed if necessary.

Some examples of the canopies that RCTC would like to have the design engineer review and explore for possible incorporation into the project are included in **Appendix G**.

3.5.7.1 Paint

The paint used for the canopies shall be of a quality to resist scratches, scuffs, peeling, cracking, gum, sun damage (fading), water resistant, chalking, and provide for a minimum 25 year life.

The paint selected should minimize future maintenance costs and reduce the need for repainting in the future.

To reduce RCTC operational and maintenance costs the canopies should be uniform in color at each station and if possible across all the stations along the PVL. Specialty colors shall not be specified only standard colors shall be used. This will reduce the potential of not being able to match the paint color when touch-ups are required or when acquiring additional paint in the future.

The paint should be graffiti resistant or have an anti-graffiti coating.

As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all the stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.

3.5.7.2 Conduits

Please refer to Section 3.5.4 General Configuration Sub Section Conduits for the required Conduits to the Main and Platform Canopies for Power and Communications.

3.5.7.3 Canopy Amenities

The design engineer should plan for the placement of the following items on or within the canopies. Not all the items will be placed on opening day some will be placed as funding becomes available.

Main Canopy

- CCTV Cameras (One (1) on opening day and one (1) or two (2) additional in the future)
- Lights (Opening day)
- Changeable Message Sign (One (1) opening day additional ones in the future)
- Future Solar Powered Lighting (Opening or future depending available funding)
- Heaters (Future)
- LCD TV Displays (Future)
- Mister system (Future)
- Signage (Opening day)
- Site Specific Signage or Artwork (Future)
- Benches (Opening day or with future expansion)
- TVM (One (1) opening day and one (1) additional in the future)
- Ticket Validator (Two (2) opening day)
- Public Telephones (One (1) opening day, no additional ones in the future)
- Station Emergency Phone (One (1) installed in the future)
- Wi-Fi Base Station (One (1) installed in the future)
- Vending Machines (One (1) opening day and one (1) or more in the future)
- Newspaper Rack (Opening day – adjacent to the canopy not inside or covered by the canopy.)
- Information Kiosks (One (1) opening day and one (1) additional in the future)

The main canopy area should have a large concrete paved area to allow for the patrons to gather, purchase tickets, use the Ticket Validator, review train schedules, and wait for their train. On opening day this area should be considered the main gathering and waiting area

and should be designed as such.

As funding becomes available and as other canopies are added, then the patrons should be encouraged to spread out under the platform canopies, but the main canopy will still house the TVM and Validator.

The design engineer should plan for the placement of the following items on or within the future platform canopies. These canopies will not be placed on opening day of the station but will be placed in the future as funding becomes available.

Platform Canopies

- Benches (Adequate number and size to cover the span of the canopy when the canopies are installed)
- CCTV Cameras (Support the placement of one (1) at each canopy, cameras to be placed when the canopies are installed or in the future)
- Lights (When canopy is installed)
- Changeable Message Sign (Support the placement of one (1) at each canopy when the canopies are installed)
- Future Solar Powered Lighting (Installation depending on available funding)
- Heaters (Support the placement at each canopy when the canopies are installed. System installation dependent on available funding)
- Mister system (Support the placement at each canopy when the canopies are installed. System installation dependent on available funding)
- Signage (When canopy is installed)
- Site Specific Signage or Artwork (Installation dependent on available funding)
- Station Emergency Phone (Installation dependent on available funding)

3.5.8 Benches and Other Platform Furniture

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.8 Benches and Other Platform Furniture shall be applied to RCTC Station design with the following additional requirements.

Benches

RCTC requires benches have the following:

- Individual arm rests to impeded people from laying down across the bench
- Have a back to sit against
- Can be metal or have recycled plastic slates

The newer benches used by the Riverside Transit Agency (RTA) are desirable and should be reviewed for incorporation into the project.

The benches should be consistent between the Stations, which will allow RCTC to bulk purchase the benches thereby reducing the cost. Also having consistent Benches between the Stations will allow for ease of maintenance and replacement as needed.

3.5.8.1 Paint

Any painted surfaces on the benches or other platform furniture should be coated with a paint that is durable and of a quality to resist scratches, scuffs, peeling, cracking, gum, sun damage(fading), water resistant, chalking, and provide for a minimum 25 year life.

The paint selected should minimize future maintenance costs and reduce the need for repainting in the future.

To reduce RCTC operational and maintenance costs the furniture should be uniform in color at each station and if possible across all the stations along the PVL. Specialty colors shall not be specified only standard colors shall be used. This will reduce the potential of not being able to match the paint color when touch-ups are required or when acquiring additional paint in the future.

The paint should be graffiti resistant or have an anti-graffiti coating.

As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all the stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.

3.5.9 TVM Pad

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.9 TVM Pad shall be applied to RCTC Station design with the following additional requirements.

The TVMs should be located at the main Canopy area for opening day and in the future. The TVMs shall be protected from adverse weather conditions and protected so that they cannot be removed or tore out by vehicles. The area where the TVMs are located should be protected by removable and fixed concrete bollards. The design engineer should look at the option of using lighted bollards around the TVMs.

3.5.10 Ticket Validiators

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.10 Ticket Validators shall be applied to RCTC Station design with the following additional requirements.

The station should be designed to allow for the placement of additional validators at the ends of the platform.

3.5.11 Signs

Parking Lot

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.11 Signs subsection Parking Lot shall be applied to RCTC Station design with the following additional requirements at the end of this section.

Platform/Right-of-way

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.11 Signs subsection Platform/Right-of-way shall be applied to RCTC Station design with the following additional requirements at the end of this section.

RCTC is developing standardized signage requirements that will be implemented across all RCTC Stations. The signage requirements will detail the standard signs to be placed at each station, which is intended to reduce the initial station cost and long term signage replacement costs. The standardization of the signs will allow for RCTC to make bulk purchases of replacement signs that can be used at all stations and will eliminate the high cost to manufacture individual signs for each station.

The base stations design shall only incorporate SCRRRA and RCTC standard signage, any additional unique signage will need to be funded by the requesting agency or purchased and installed at a later date when funding becomes available.

BNSF specified signage will be required on stations that are located along the BNSF main line tracks.

Trail Blazer Signs

Trail Blazer signs are designed and placed to direct people to the Stations. SCRRRA can supply these signs on a reimbursement basis. These signs will need to be placed on opening day of the stations. Staff will need to coordinate with Caltrans to place signs along the nearby freeways to indicate the new station locations.

The Stations must conform to the SCRRRA and RCTC Signage Standards which upon completion will be included in **Appendix C**.

3.5.12 Drainage

All requirements outlined in SCRRRA Design Criteria Manual section 7.5.12 Drainage shall be applied to RCTC Station design with the following additional requirements.

The design engineer shall review each site to determine the existing drainage paths and how they needed to be modified to accommodate the stations. The design engineer shall ensure the drainage achieves the following:

- Eliminates ponding
- Eliminates water infiltration under the pavement.
- Place curb and gutter where needed.
- Place concrete drainage swales or cross gutters to eliminate damage to the asphalt paving.

- Contain the runoff and detain it on site so as to control its release and not overwhelm the downstream facilities.
- Study the potential for on-site collection of runoff, treatment, and reuse for irrigation purposes.

3.6 FENCING

3.6.1 Parking Lot Fence

The stations should be designed with perimeter fencing as part of the start up design, if financially feasible. If the funding is not available the fencing to be installed as part of the initial construction then it should be designed for future installation.

The fencing should consist of wrought iron coated with water and rust resistant paint. The fence should be located along the station's perimeter thereby directing walking patrons to pedestrian entrances at the station.

Any irrigation heads near the fence should be placed so that the spray does not fall or splash back onto the fencing. Locating the fence and irrigation system should be coordinated between the Station designer and landscape architect. The fence should be designed and located to reduce long term maintenance costs and not be exposed to potential water damage.

The fence should be 6-feet tall and designed to impede people climbing it. The fence should not be designed with razor or barb wire on top and should be aesthetically designed to blend in with the station and surrounding buildings or properties.

The fence should be painted black to remain consistent with other RCTC stations, thereby reducing maintenance costs by not requiring specialty paint for each station.

As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all the stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.

3.6.2 Parking Lot Gates

The stations should be designed with entrance/exit gates connecting to the perimeter fencing as part of the start up design, if financially feasible. If the funding is not available for this to be installed as part of the initial construction then it shall be designed for future installation.

The gates should be placed at vehicle and pedestrian entrance/exists so that the stations can be secured during off hours.

The gates should consist of wrought iron coated with water and rust resistant paint. The gates can either be swinging or sliding, which ever would be easier to operate by the station guards and would fit within the space available. The gates should be lockable with a standard RCTC pad lock.

Any irrigation heads near the gates should be placed so that the spray does not fall or splash back onto the gates. Locating the gates and irrigation system should be coordinated between the Station designer and landscape architect. The gate should be designed and located to reduce long term maintenance costs and not be exposed to potential water damage.

The gates should match the fencing and be aesthetically designed to blend in with the station and surrounding buildings or properties. Swing gates may need to be painted in a more visible color such as yellow to ensure the gates are clearly observed by the drivers.

The gates should be painted black to remain consistent with other RCTC stations, thereby reducing maintenance costs by not requiring specialty paint for each station.

As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all the stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.

The design engineer should look at future electrical operation of the gates by remote or vehicle loop detectors. The station design should not impede the future installation of electrically operated gates.

3.6.3 Removable Inter-Track Fence

All requirements outlined in SCRRRA Design Criteria Manual section 7.6.1 Removable Inter-Track Fence shall be applied to RCTC Station design with the following additional requirements at the end of this section.

The Inter-Track fencing will be required on opening day for the Moreno Valley/March Field Station and the Downtown Perris Station.

The fence style, color and coatings should attempt to match the fencing placed at the station. By standardizing all fencing at the stations it will reduce the initial purchase cost by allowing bulk quantity purchases. In addition, by having similar fencing at all the stations it will allow for easier maintenance, by allowing RCTC to develop standard maintenance procedures for all the stations. Also RCTC will not have to contract with specialized fence manufactures to make any necessary repairs.

3.6.4 Right-of-Way Fencing

All requirements outlined in SCRRRA Design Criteria Manual section 7.6.2 Right-of-Way Fencing shall be applied to RCTC Station design with the following additional requirements at the end of this section.

For additional requirements please refer to RCTC Commuter Rail Station Design Criteria Manual Sections 3.6.1 and 3.6.2.

3.7 PEDESTRIAN CROSSINGS

All requirements outlined in SCRRRA Design Criteria Manual section 7.7 Pedestrian Crossings shall be applied to RCTC Station design with the following additional requirements at the end of this section.

The design engineer should be aware that SCRRRA is currently revising their design criteria manual. SCRRRA has not provided a date when this manual will be available, but has notified RCTC that the Pedestrian Crossing requirements and design has substantially changed. RCTC has obtained a preliminary design layout plan from SCRAA for the new pedestrian crossing requirements and it is included in [Appendix H](#).

3.7.1 Baggage Cart Routes

The requirements outlined in SCRRRA Design Criteria Manual section 7.7.1 Baggage Cart Routes at this time are not applicable to the PVL Stations. RCTC does not anticipate Amtrak Service on the PVL alignment, but the design engineer should ensure that the station could accommodate these routes without much retrofitting or demolition and reconstruction. RCTC will have a need for station security guard carts to have full access to the station, but not necessarily the platform.

SCRRRA's design criteria section 7.7.1 discusses at grade crossing configurations which may change with the revised Section 7.7 Pedestrian Crossing, therefore the design engineer should ensure the design complies with the updated requirements.

3.7.2 Overcrossings

At the time of writing the design criteria manual, it was not anticipated that Pedestrian Overcrossings would be required at the PVL stations on opening day. There is a potential in the future that Pedestrian Overcrossing or Undercrossing will be required, depending on station usage and expansion. At that time all requirements outlined in SCRRRA Design Criteria Manual section 7.7.2 Overcrossings shall be applied to RCTC Station design with any future SCRRRA amendments or changes to their design criteria manual and the following additional RCTC requirements.

RCTC has designed and constructed four (4) Pedestrian Overcrossings at their Riverside stations. From this experience RCTC has developed the following requirement to reduce design, construction, and maintenance costs, these requirements will be expanded as additional maintenance issues or concerns arise.

- The towers and overcrossing should not have a Stucco finish – this is difficult to clean and maintain.
- The towers and overcrossing should be made with or covered with materials that reduce initial costs and future maintenance.
- Colors selected shall be standard and not special order – thereby reducing the cost to obtain the paint in the future.
- As of the date of the drafting of this Manual, RCTC is reviewing, sampling, and testing the paint systems used at the 5 RCTC owned stations. This process will result in paint system recommendations for use at all the stations. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix F**.
- The towers and overcrossing should not have a large color pallet – the number of colors used should be minimal, 2 to 3, thereby reducing the maintenance costs when painting has to be performed.
- The elevator system should be Overhead Cable if possible, if not the system used must have an extensive record of reliable use in outdoor conditions.
- The elevator system should be compatible with the existing elevators at the other RCTC stations.
- The elevator shall not have proprietary hardware or software.
- The elevators system should have an excellent service record and result in minimal maintenance by RCTC.
- The tower stairs should have anti-slip nosing embedded into the concrete stair deck and not be attached after the stair treads are poured.
- The anti-slip floor coating should provide a 15 year life span and not require any maintenance during the period. This issue will also be addressed in RCTC paint and coatings investigation and report in **Appendix F**.
- Windows shall not be provided in the elevator towers.
- Safety Glass or Lexan windows shall not be provided in the Overcrossing bridges.
- In lieu of Glass or Lexan windows, wire mesh or other materials should be used; the design engineer should review Orange County Metrolink Stations with Pedestrian Overcrossings.
- The Overcrossing Roofing should be low to no maintenance.
- The exterior of the Overcrossing and towers should be designed to be cleaned with a pressure washer and not require man lifts or other equipment to lift people over the tracks.
- Any Cameras attached to the overcrossing or towers should be designed so that maintenance can be performed without the need to have a man lift adjacent to the towers or over the tracks.
- Elevator equipment room must have a dedicated thermostat controlled Air Conditioning system, window mounted units are not acceptable.
- The towers should be designed with sump tanks that are located adjacent to the tower and are accessible for a vacuum truck. The tanks should have a level alarm system and the tanks should be of standard design and size. They should be located in areas where surface run off cannot flow into the tanks.

- The concrete around the elevator tower and elevator door area should slope away from the structure so as to not allow water to drain into the elevator pit.
- The area under the stair case should be secured with fencing and a locked gate with access only for RCTC security personnel.
- The Overcrossing Bridge shall have individual lights, not the light strips that are currently used on the existing overcrossings.

The feasibility of constructing a Pedestrian Overcrossing will need to be evaluated at each station. Some special conditions that should be anticipated are listed in section 3.7.4.

3.7.3 Undercrossings

At the time of writing the design criteria manual, it was not anticipated that Pedestrian Undercrossings would be required at the PVL stations on opening day 2011. There is a potential in the future that Pedestrian Overcrossing or Undercrossing will be required, depending on station usage and expansion. At that time all requirements outlined in SCRRA Design Criteria Manual section 7.7.3 Undercrossings shall be applied to RCTC Station design with any future SCRRA amendments or changes to their design criteria manual and the following additional RCTC requirements.

The feasibility of constructing a Pedestrian Overcrossing will need to be evaluated at each station. Some special conditions that should be anticipated are listed in section 3.7.4.

3.7.4 Overcrossings and Undercrossings Special Conditions

Downtown Perris Station

It was determined during Preliminary and Final Engineering design of the Perris Multimodal Transit Facility that the site of the proposed Downtown Perris Station has extensive drainage and flooding issues. Due to these site conditions an Undercrossing at this station location would not be feasible.

The feasibility and need of an Overcrossing will need to be evaluated during future planning and design.

South Perris Station

The Preliminary Engineering for the PVL Project determined that the proposed South Perris Station is located in a 100 year flood plain. During a 100 year storm event it was determined that the station would be under 6 feet of water, therefore an Undercrossing at this station location would not be feasible.

Due to the flooding conditions at this site the construction of a Pedestrian Overcrossing with an elevator would also not be feasible.

The Riverside County Flood Control is planning on constructing improvements to eliminate the flooding conditions. The timing for this project is unknown and based on initial discussions it will not be constructed until some far out future date.

UCR Station

The Preliminary Engineering for the PVL Project determined that the proposed UCR Station would be located on a section of single track, with the loading platform on the street side. The station is located between a City Street, Watkins Drive, and private homes.

The right of way width for this station limits the potential for an Undercrossing, due to the distance required for ADA compliance. Based on the start up conditions, single track, an Undercrossing at this station location would not be necessary. Based on the site conditions, right of way restrictions, and track geometry it would be difficult to construct an Undercrossing, therefore it is unfeasible to anticipate an Undercrossing at this station in the future.

The feasibility and need for an Overcrossing will need to be evaluated during future planning and design. Some restrictions that could be encountered are the close proximity of the homes.

3.7.5 At-Grade Crossings

All requirements outlined in SCRRRA Design Criteria Manual section 7.7.4 At-Grade Crossings shall be applied to RCTC Station design with the following additional requirements.

The design engineer should be aware that SCRRRA is currently revising their design criteria manual. SCRRRA has not provided a date when this manual will be available, but has notified RCTC that the Pedestrian Crossing Requirements and design has substantially changed. RCTC has obtained a preliminary design layout plan from SCRAA and it is included in **Appendix H**.

RCTC was notified during the Preliminary Engineering for the PVL project that one of the major changes to the SCRRRA design criteria section 7.7.4 was the elimination of the requirement to locate the at-grade crossing in the middle of the platform. SCRRRA's new design criteria will require at-grade crossings at the ends of the platforms with pedestrian gates and signals. The design engineer will need to design the stations to the newest SCRRRA design criteria and should obtain a draft copy of the criteria.

Signalized/gated At-grade pedestrian crossings should have the capability to be lowered and locked down at night to prevent access to the platforms. The signals should not be on when the gates are down and locked at night.

3.8 LANDSCAPING & IRRIGATION

RCTC's existing Metrolink Commuter Rail Stations have extensive and unique landscaping. Over the fifteen (15) years of operation, RCTC has seen substantial increase in the landscape and irrigation maintenance costs. RCTC requires that the PVL stations reduce the landscape and irrigation maintenance costs through water conservation, more efficient

irrigation system i.e. drip system, drought tolerant landscape usage, and increase in hardscape placement.

RCTC's general landscape requirements are as follows:

- The stations shall not have extensive landscaping to reduce the operational and long term maintenance costs.
- Plant species used shall be uniform across all PVL stations, thereby allowing bulk purchases and reducing future maintenance costs.
- Unique plant species shall not be used at the stations.
- Hardscape shall be placed to supplement landscaping.
- Plants/trees shall include native drought tolerant species.
- Plants or trees requiring excessive water or maintenance shall not be used.
- No fruit bearing trees will be used.
- Sod shall not be placed at the stations.
- Loose small rock shall not be used for hardscaping due to potential vandalism with the rocks.
- Desertscape should be reviewed as an option for the stations.
- Reduce landscaping barriers between the parking lot and the platform, people walk through the landscaping to the platform which results in higher maintenance costs, therefore this should be minimized or eliminated.
- Landscaping design should stress water conservation and drought tolerant plant materials.
- Irrigation system should be a bubbler or root irrigation system.
- The City of Perris has approved the use of Desertscape at their City Hall. The design engineer shall review and determine how it can be implemented at the PVL stations.
- Western Municipal Water District has also implemented Desertscape at their facility located near the PVL project. This should be reviewed and determined how or if it could also be used as a basis for the new stations.
- Landscaping should be placed so as not to obscure or impede CCTV monitoring of the stations and parking lots.
- During the design of the stations the engineer shall determine if reclaimed water can be used for irrigation. And/or design the stations irrigation systems for future reclaimed water use.
- Design Backflow Preventer cages to meet City standards and to prevent the cage and backflow from being stolen.

As of the date of the drafting of this Manual, RCTC is reviewing the existing landscape and irrigation used at the 5 RCTC owned stations. This process will result in recommendations for use at all the stations to reduce operations and maintenance costs and promote water conservation. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix H**.

3.8.1 Landscape Clearances

All requirements outlined in SCRRRA Design Criteria Manual section 7.8 Landscape Clearances shall be applied to RCTC Station design with the following additional requirements outlined in Section 3.8.2, 3.8.3, and 3.8.4 of this design manual.

3.8.2 Platform Landscaping

Platform Landscaping and/or planters shall not be installed on the platforms for the PVL Stations. This requirement is a result of RCTC's operations of the four (4) Riverside/Corona RCTC Metrolink Stations, where platform landscaping was installed in planters on the platforms. These platform planters required irrigation conduits be placed under the concrete platforms. At some stations these lines have deteriorated and leaked resulting in damage to the platforms. Repairs to these irrigation lines have resulted in portions of the platform having to be removed to make the necessary repairs, resulting in unsightly repairs and extensive maintenance costs. Therefore, due to this experience landscaping/planters shall not be placed on the station platforms.

3.8.3 Parking Lot Landscaping

Parking Lot Landscaping shall be installed with the following requirements:

Parking Lot Diamond Planters

- The number of planters should be minimized to reduce maintenance and operations costs and irrigation impacts. Irrigation of these types of planters at RCTC's other stations has resulted in runoff and damage to the adjacent pavement, resulting in excessive operations and maintenance costs.
- The planters shall not have pop up sprinklers; drip or bubbler irrigation head shall be used.
- The planters shall only include tree planting to provide shade to the parked vehicles and reduce the thermal heating of the pavement.
- Trees placed in the planters shall not impede CCTV camera coverage and guard observations of the parked cars.
- The full tree height shall be no greater than 20 feet.
- The trees should not have low growth branches, which would result in hazards to the patrons walking or parking near the trees.
- Root barriers shall be placed around each tree to eliminate the root damage to the adjacent pavement.
- The landscaping shall be designed with the principles of CPTED.
- Diamond Planters shall be concrete or an environmentally friendly alternative.

End of Parking Row Planters

- The number of planters should be minimized to reduce maintenance and operations costs and irrigation impacts. Irrigation of these types of planters at RCTC's stations has resulted in runoff and damage to the adjacent pavement resulting in excessive operations and maintenance costs.
- The planters can include trees, shrubs, or bushes that do not require frequent trimming.

- Trees placed in the planters shall not impede CCTV camera coverage and guard observations of the parked cars.
- The full tree height shall be no greater than 20 feet.
- The trees should not have low growth branches, which would result in hazards to the patrons walking or parking near the trees.
- Root barriers shall be placed around each tree to eliminate the root damage to the adjacent pavement.
- The landscaping shall be designed with the principles of CPTED.
- The planters shall not have pop up sprinklers; drip or bubbler irrigation head shall be used.
- Hardscape can be placed in lieu of landscaping for additional water conservation.
- Planters shall be concrete or constructed of an environmentally friendly alternative material.

Parking Lot Perimeter Planters

- The amount of landscaping should be minimized to reduce maintenance and operations costs and irrigation impacts. Irrigation of these types of planters at RCTC's other stations has resulted in runoff and damage to the adjacent pavement, resulting in excessive operations and maintenance costs.
- The Station perimeter fence will be placed adjacent to these planters and should be located away from irrigation spray.
- The planters can include trees, shrubs, bushes, or hedges that do not require frequent trimming.
- Trees placed in the planters shall not impede CCTV camera coverage and guard observations of the parked cars.
- The full tree height shall be no greater than 20 feet.
- The trees should not have low growth branches, which would result in hazards to the patrons walking or parking near the trees.
- Root barriers shall be placed around each tree to eliminate the root damage to the adjacent pavement.
- The landscaping shall be designed with the principles of CPTED.
- The planters shall not have pop up sprinklers; drip or bubbler irrigation head shall be used.
- Hardscape can be placed in lieu of landscaping for additional water conservation.
- No SOD shall be placed.

3.8.4 Hardscaping

Decorative hardscaping should be reviewed as an option to landscaping large open areas. The Hardscape requirements and guidelines are as follows:

- Small rocks which can be picked up and thrown shall not be used.
- Colored concrete paving can be used as long as the color is a standard and not a special order color.
- Decorative brick paving shall not be used due to the high cost associated with purchasing, replacing, and maintaining the pavers.

- Concrete paving shall not have intricate designs that would be difficult to maintain or repair if damaged, i.e. decorative etchings.
- Concrete Paving shall be designed to withstand differential settlement.
- Large rocks/boulders may be used for the hardscape layout.
- Very fine sand and gravel, less than ¼” maybe used for the hardscape layout.

3.9 ARTWORK

All requirements outlined in SCRRA Design Criteria Manual section 7.9 Artwork shall be applied to RCTC Station design with the following additional requirements.

The placement of Artwork for opening day, shall not be included as part of the design, unless it is funded outside of the PVL project and is identified as a concurrent non-project cost.

The design engineer should design the stations to accommodate the placement of future Artwork as additional funding becomes available. Areas should be designated in the plan sheets for future Artwork placement. The locations shall be selected for ease of retrofitting and close proximity to existing electrical power. The areas selected should not require demolition of existing station features and should require minimal trenching within paved areas.

The design engineer should anticipate the future placement of artwork at the UCR Station, Moreno/March Field Station, Downtown Riverside Station, and the South Perris Station. The Moreno Valley/March Field Station should have an area that could accommodate an aircraft display without impacting or occupying any parking spaces.

3.10 COMMUNICATIONS

3.10.1 Communication Building

All requirements outlined in SCRRA Design Criteria Manual section 7.10.1 Communication Building shall be applied to RCTC Station design with the following additional requirements.

The Communication Building will be required for opening day service to the stations and should be located on the station layout plan to minimize impact to the station parking and located in an area that will allow for future expansion and placement of other similar structures, including bathroom facilities for security personnel, RCTC staff, and Metrolink Engineers use, a station storage room, future electric security vehicle storage and charging, future Security / CCTV monitoring building, or other future facilities as funding allows.

RCTC has been informed that SCRRA is planning on altering the size of their Communications Building. The new building includes a separate area for other Agency use, which is separated from the SCRRA equipment. Communications and CCTV equipment

can be placed within this separate area. The building will require power and communication connections.

The design engineer will coordinate with SCRRA and RCTC about the size and location of the Communications Building.

3.10.2 Security Camera CCTV Provisions

All requirements outlined in SCRRA Design Criteria Manual section 7.10.2 CCTV Provisions shall be applied to RCTC Station design with the following additional requirements.

On opening day, all of the PVL Stations shall have CCTV cameras installed and operational. In addition, the stations shall be designed, i.e. additional conduits as described in the previous sections, to accommodate the expansion of the CCTV System.

General Design Requirements

- The design engineer and a Security Expert shall recommend the locations and number of CCTV Cameras to be placed.
- The number and locations of the cameras shall be reviewed by RCTC prior to final design.
- The proposed equipment should have a long service life and require little to no maintenance.
- The equipment should be common and not require any unique parts.
- The equipment shall be uniform across the PVL stations.
- The equipment shall easily integrate with the existing monitoring and control equipment at the Riverside Downtown Station.
- Any pole mounted cameras shall have a system to lower the camera for maintenance or repairs, RCTC's maintenance contractor should not have to use a boom truck to service the cameras. This will reduce the maintenance cost to RCTC.
- The equipment should be easily upgradeable.
- The equipment specified should be from a reputable company that will remain in business for the foreseeable future.
- The design engineer should design the system to reduce RCTC operations and maintenance costs.
- New Technology should be investigated and cost estimates provided to RCTC to determine the best equipment to purchase and install.
- The system should be easily expandable, adding cameras, in the future.
- The cameras should be fiber optic connected, not Coaxial Cable.
- Any underground conduits for the system should be water tight, rodent proof, and be easily located by radio detection or other non-intrusive methods.
- The equipment will need to be weather resistant and vandal proof.
- The cable system shall be Fiber Optic, camera to transmission equipment, and if possible, transmission equipment to receiving station.

- The CCTV equipment room or cabinet shall have a warning system similar SENSEA Phone to alert RCTC of any fluctuations in air temperature, moisture, noise, or other environmental conditions.

Non-Fiber Transmission System

The Caltrans I-215 corridor does not have a fiber optic backbone that the PVL stations could connect too, like is done on the State Route 91 alignment. Therefore, the stations should be designed to have the following:

- On site DVR to record video signal.
- On site monitor to review the stored footage.
- On site DVD Burner to burn the videos to DVD.
- Hot swappable hard drives to allow for the information saved on the hard drive to be reviewed off site.
- Internet connection for control and monitoring of the cameras from any off site location.
- T-1 or faster connection to transmit the control and video signals to the Riverside Downtown Metrolink Station.
- Modification to and/or placement of additional equipment at the Riverside Downtown Metrolink Station Security Monitor room (RDMSSMR) to monitor the CCTV cameras at the PVL Stations.
- The design engineer shall develop the plans and specifications for the CCTV system and any future modifications through consultation with RCTC's Station Maintenance Manager and RCTC's CCTV maintenance contractor.
- The design engineer shall review the existing equipment and determine if any items need to be upgraded to incorporate the PVL CCTV video transmission.
- Some of the equipment at the Downtown Station has been upgraded over the past 15 years but some items may need to be replaced to allow for the proper reception and control of the PVL CCTV cameras.
- The RDMSSMR shall have control of the PVL CCTV cameras.

Fiber Transmission System

Discussions have been held about the potential installation of conduit and fiber optic cable along the whole PVL alignment. If this occurs, as part of the 2011 station opening, then the design engineer should design the CCTV cameras to connect to this conduit and allocate 2 fibers for each station, one for video and one for control.

The PVL conduit will either extend back to the Downtown Riverside Station or terminate at the BNSF mainline – PVL junction. If the later is the case, then the fiber should be designed to connect to the Caltrans Fiber Vault at the I-215 and SR-60 Junction. RCTC will negotiate with Caltrans and obtain shared use rights to connect to the Caltrans Fiber System, which will extend back to the east bound Route 91 and Vine Street On/off ramp. The new fiber will then be routed in an existing RCTC conduit from the freeway to the Riverside Downtown Metrolink Station Communication Building.

If the Fiber Optic Conduit extends back to the Downtown Riverside Station, then the fibers can be connected directly to the Communication Building at the station.

RCTC will require the following items be installed with the Fiber Transmission System:

- DVR to record video signal located at the RDMSSMR for the 2011 opening day. This will be relocated to the South Perris Station once the Security Monitoring Station is constructed.
- LCD video monitors to view the camera footage at RDMSSMR.
- DVD Burner to burn the videos to DVD.
- Hot swappable hard drives to allow for the information saved on the hard drive to be reviewed off site.
- Internet connection for control and monitoring of the cameras from any off site location.
- Modification to and/or placement of additional equipment at the RDMSSMR to monitor the CCTV cameras at the PVL Stations.
- The design engineer shall develop the plans and specifications for the CCTV system and any future modifications through consultation with RCTC's Station Maintenance Manager and RCTC's CCTV maintenance contractor.
- The design engineer shall review the existing equipment and determine if any items need to be upgraded to incorporate the PVL CCTV video transmission.
- Some of the equipment at the Downtown Station has been upgraded over the past 15 years but some items may need to be replaced to allow for the proper reception and control of the PVL CCTV cameras.
- The RDMSSMR shall have control of the PVL CCTV cameras until construction of the South Perris Security Monitoring Station.

If funding is available, a Security Monitoring Station should be planned at the South Perris Station so that the monitoring of the CCTV systems can be split between the Riverside 91 route and the Perris I-215 route; this is discussed in more detail in Section 3.10.2.1.

3.10.2.1 Security Monitoring Station

The design engineer should anticipate the construction, in the future, of a Security Monitoring Station (SMS) at the South Perris Station. The station layout should accommodate the placement of the SMS, which will include a CCTV monitoring Room where all the PVL CCTV cameras will be monitored and controlled from. Once the SMS is constructed all PVL CCTV monitoring will be transferred from the Downtown Riverside Station to the South Perris Station.

The SMS shall have an elevated observation area so that the security personnel can visually monitor the South Perris Station and PVL Layover Facility. The SMS will be designed to withstand the 100 year flood.

The SMS will have a storage area for items to be use at the Station including, flyers, earthquake kit, emergency equipment, traffic control devices, blankets, flashlights, etc.

3.10.3 Passenger Information Call Boxes

All requirements outlined in SCRRA Design Criteria Manual section 7.10.3 Passenger Information Call Boxes shall be applied to RCTC Station design with the following additional requirements.

This equipment shall be included in the design for opening day.

3.10.4 Public Address/Changeable Message Signs

All requirements outlined in SCRRA Design Criteria Manual section 7.10.4 PA/CMS shall be applied to RCTC Station design with the following additional requirements.

This equipment shall be included in the design for opening day using the most current SCRRA standard for equipment.

3.10.5 EMP Panel

All requirements outlined in SCRRA Design Criteria Manual section 7.10.5 EMP Panel shall be applied to RCTC Station design with the following additional requirements.

This equipment shall be included in the design for opening day using the most current SCRRA standard for equipment.

3.11 PLUMBING SYSTEMS

3.11.1 Platform Wash Down System

All requirements outlined in SCRRA Design Criteria Manual section 7.11.1 Platform Wash Down System shall be applied to RCTC Station design with the following additional requirements.

The water lines shall be located in a manner that will allow for ease of maintenance in the future. The lines should not be imbedded in the concrete pedestrian platform and they should be constructed in a manner that would allow for ease of locating leaking lines and making necessary repairs. The lines should be located to allow for minimal concrete or asphalt removal.

A comprehensive plan should be developed, which shall locate and route all underground conduits and lines in a manner that will reduce future maintenance costs and reduce damage to concrete, structures, paving, tactile tile when repairs are necessary. The design engineer should make all attempts to locate these quick connect couplers in landscaped or non-paved areas.

This equipment shall be included in the design for the 2011 opening day.

3.11.2 Drinking Fountains

All requirements outlined in SCRRA Design Criteria Manual section 7.11.2 Drinking Fountains shall be applied to RCTC Station design with the following additional requirements.

The water lines should be located in a manner that will allow for ease of maintenance in the future. The lines should not be imbedded in the concrete pedestrian platform and they should be constructed in a manner that would allow for the ease of locating and repairing of leaking lines. The lines should be located to allow for minimal concrete or asphalt removal.

A comprehensive plan should be developed which shall locate and route all underground conduits and lines in a manner that will reduce future maintenance costs and reduce damage to concrete, structures, paving, tactile tile when repairs are necessary. The design engineer should make all attempts to locate the drinking fountain and the water lines feeding it adjacent to or in landscaped or non-paved areas. All drinking fountain water lines will be potable and designed so they do not have backflow issues. Water lines should also be provided for future hot drink vending machines and mister systems.

This equipment shall be included in the design for opening day.

3.11.3 Restroom Facilities

All requirements outlined in SCRRA Design Criteria Manual section 7.11.3 Restroom Facilities shall be applied to RCTC Station design with the following additional requirements.

Restrooms will not be constructed as part of the opening day of the stations, but the station layout should be designed to accommodate the facilities in the future. Unisex restroom facilities will be added as funding allows. These future restroom facilities will only be for use by the station security, Metrolink Crews, and RCTC personnel. Restroom facilities will not be provided for the general public due to potential vandalism and the extensive maintenance and security costs associated with public restroom facilities.

3.12 ELECTRICAL SYSTEMS

General Design Requirements

- The electrical equipment shall be designed for ease of future expansion with enclosures large enough to accommodate additional meters.
- The electrical equipment should be designed to accommodate the future parking lot expansion and platform extension with minimal retrofitting.

- The design shall allow for the electrical system to be easily upgraded to accommodate placement of new equipment for potential future parking garages or pedestrian overcrossings at all stations except for the UCR station.
- The electrical equipment should be placed in an area away from the rail road right-of-way, so that flaggers are not required when maintenance is performed.
- The circuits for the parking lot and station lighting should be separate and the system should be designed to allow for half of the lights, every other one, to be shut off at night.
- Optional or supplemental Solar Power supply should be investigated and costs estimates provided to RCTC to determine if it can be incorporated in the opening day design or at a future date.
- The Design Engineer should review and provide RCTC with information on Electric Grants for installation of “green” equipment.
- As of the date of the drafting of this Manual, RCTC is reviewing the existing lighting and electrical systems at the 5 RCTC owned stations. This process will result in recommendations for modification of the system to reduce operations and maintenance costs. These recommendations will be incorporated into this Manual once they are reviewed and approved by the Commission and will be included in **Appendix D**.
- Automatic controllers shall be installed to allow for the automatic cycling of the lights when the sun is down and when it rises.
- Future expansion of the station should be taken into account when designing the conduit routes and main power feeds.

3.12.1 Electrical Service

All requirements outlined in SCRRRA Design Criteria Manual section 7.12.1 Electrical Service shall be applied to RCTC Station design with the following modifications.

All station, platform and parking lot, electric bills will be paid for by RCTC, therefore one meter can be placed for these components. The electrical service for the Metrolink Communication Building shall have a separate meter with the bills sent to Metrolink for payment. Any electrical supply to track signals or gate crossings should be placed on a separate meter with the bills sent to and paid by RCTC.

3.12.2 Power Requirements

All requirements outlined in SCRRRA Design Criteria Manual section 7.12.2 Power Requirements shall be applied to RCTC Station design with the following modifications.

Modifications to the basic SCRRRA station power requirements shall be reviewed by SCRRRA.

3.12.3 Conduit System

All requirements outlined in SCRRA Design Criteria Manual section 7.12.3 Conduit System shall be applied to RCTC Station design with the following modifications.

Additional RCTC requirements are outlined in:

- Section 3.4.6 Parking Lot layout sub section Conduit Systems of this manual.
- Section 3.5.4 General Configuration sub section Conduit Systems of this manual.

3.12.4 Platform Receptacles

All requirements outlined in SCRRA Design Criteria Manual section 7.12.4 Platform Receptacles shall be applied to RCTC Station design with the following modifications.

Lockable receptacles shall also be placed at strategic locations within the parking lot for use by maintenance personnel and for special events. The preferred locations are at Light Poles, near the signs for the entrance and exits to the station, and adjacent to the Communications building.

Additional RCTC requirements are outlined in:

- Section 3.5.4 General Configuration sub section Conduit Systems of this manual.

3.12.5 Solar Power

The design engineer shall review the potential for installation and use of solar power to supplement or offset station electrical usage. The design engineer shall:

- Review the use of Solar Power and provide cost estimates to RCTC to determine if it can be incorporated in the station opening day or at a future date, depending on funding constraints.
- Design Engineer shall investigate and provide information to RCTC on any Grants or supplemental funds for the installation of “green” or solar powered equipment.
- Solar powered lighting should be reviewed as an option to offset the stations electric usage.
- Solar power irrigation controllers shall be reviewed for incorporation into the stations design.
- The design engineer should investigate the potential for joint development of a solar power project at one or more of the Stations.

3.13 OTHER STATION EQUIPMENT

3.13.1 Trash Cans

All requirements outlined in SCRRA Design Criteria Manual section 7.13.1 Trash Cans shall be applied to RCTC Station design with the following additional requirements.

RCTC Requirements:

- The Trash Cans shall not be concrete.

- The Trash Cans will be the same type and manufacture at all PVL Stations to reduce the initial purchase cost and long term maintenance costs.
- The design engineer should review the attached web link for possible trash cans types to use at the stations.
- RCTC is currently reviewing potential trash can designs and manufactures to address RCTC maintenance concerns.
- RCTC is reviewing the possibility of replacing all the trash cans across all current RCTC Metrolink stations with the final selected trash can. The results of this selection process will be provided to the Design Consultant once it is complete.
- The trash can lids should be secured to the can body so they cannot be stolen. The lids should be secured in a manner to allow for the trash bags to be removed.
- The trash can materials should provide a long service life with little to no maintenance required.
- The trash cans colors should be uniform to allow for ease of maintenance and touch up painting across all PVL stations.
- The station should also be designed to have a standard secured trash dumpster enclosure.
 - This enclosure should be located to allow access by trash trucks.
 - The enclosure and trash dumpster should be located away from the platform and if possible downwind of the platform, so the fumes do not impact the station patrons.
 - The enclosure should be covered to prevent animals, homeless, weather, and rain from entering the enclosure and trash dumpster.
 - The trash enclosure will have to meet ADA requirements.
 - The enclosure should require little to no long term maintenance.
 - The walls should be coated with an anti-graffiti coating to hinder vandalism.
 - The enclosure gates should be easy to operate and secure.

This equipment shall be included in the design for the opening day.

3.13.2 Bike Lockers

All requirements outlined in SCRRA Design Criteria Manual section 7.13.2 Bike Lockers shall be applied to RCTC Station design with the following additional requirements.

RCTC Requirements:

- Bike Lockers / Bike Racks shall be placed near the platform.
- RCTC is currently testing a Bike Pod system at the North Main Corona Station and this may be used at the PVL stations.
- The lockers should be designed to be secured by the user with their own lock and key.
- The Bike lockers / racks should not required RCTC management or monthly rentals.
- The Bike lockers / racks should be designed to require little to no maintenance.
- The Bike lockers / rack should be anticipated to be included as part of the station opening day design.

- Future expansion of Bike lockers/racks should be anticipated in the design and areas identified for their placement.
- The Bike lockers/rack shall be placed so that they do not interfere or impede station patrons walking on the platform.

3.13.3 Public Telephones

All requirements outlined in SCRRA Design Criteria Manual section 7.13.3 Public Telephones shall be applied to RCTC Station design with the following additional requirements.

The design should anticipate placement of one (1) public telephone on opening day of the station.

3.13.4 Vending Machines

All requirements outlined in SCRRA Design Criteria Manual section 7.13.4 Vending Machines shall be applied to RCTC Station design with the following additional requirements.

The design engineer shall anticipate placement of one (1) Vending Machine on opening day and a minimum two (2) additional ones in the future. The location should be within or adjacent to the main station canopy.

3.13.5 Newspaper Racks

All requirements outlined in SCRRA Design Criteria Manual section 7.13.5 Newspaper Racks shall be applied to RCTC Station design with the following additional requirements.

The design engineer shall anticipate the placement of a Newspaper Rack on opening day adjacent to the main canopy, not inside or covered by the canopy. The rack maybe provided by an outside agency or RCTC pending funding availability.

3.13.6 Kiosks

The following are RCTC Kiosk Requirements:

- The design engineer shall anticipate the placement of a single Kiosk on opening day, pending funding availability.
- Additional Kiosk/s will be placed in the future as funding becomes available.
- The Kiosk shall be lighted internally or externally depending on the type selected.
- The Kiosk shall be located adjacent to or within the main canopy.
- The Kiosk will have secured and weather tight panels for posting of announcements.
- The potential for LCD Screened Kiosks should be investigated by the design engineer and cost estimates provided to RCTC.
- The design engineer should investigate the use of solar powered Kiosks.

- The design engineer shall anticipate providing power and communications to the Kiosks.
- The Kiosks shall be located near areas where the station patrons will gather and where they will be most visible.
- The Kiosks shall be vandal proof and secured to the platform so they cannot be easily removed.

3.13.7 Alternate Power Sources

The design engineer shall review the potential for alternative power sources for the station including solar, as outline in Section 3.12.5, wind, geothermal, thermal, or other technologies as they become available.

The design engineer shall design the stations to be “green”, reduce their carbon foot print, reduce green house emissions, and reduce operations and maintenance cost. The design engineer shall review and report to RCTC on the viability of various options to achieve these goals and their associated cost. RCTC will review the recommendations and costs and provide direction on how to proceed.

3.13.8 Bird Nesting

The stations shall be designed to reduce areas available for birds to nest and roost. Bird nesting is an issue at RCTC’s La Sierra Metrolink Station and the future PVL stations shall be designed to eliminate bird nesting and roosting areas.

All options should be reviewed and those that do not endanger the station patrons or create an un-aesthetic look should be implemented with RCTC’s concurrence. The options recommended should not require connection to electrical service, unless they have their own solar power cells, and should only require low to no maintenance.

3.13.9 Canopy Misters

As stated in Section 3.5.4 Canopy Water Misters shall be planned for on the Main and Platform Canopies.

RCTC requires the canopies be designed to accommodate water mister systems in the future. Due to funding constraints these will not be placed on opening day of the stations.

- The canopies should have water conduits routed to the canopy columns and extended to the top of the columns for future connection to a mister system.
- The design engineer shall design the canopies to accommodate this system and shall provide recommendations of systems to be used.
- Locations and placement for any ancillary equipment necessary to operate the misters should be anticipated and allocated for in the station design.

3.14 OFF SITE IMPROVEMENTS

As part of the Station design, RCTC recognizes that off-site street and city improvements will be required. The design engineer should coordinate with the local cities to determine what improvements are required and provide the requests to RCTC for review and determination if they will be incorporated into the station design.

In all of RCTC's stations designs and construction projects, RCTC has worked together with the impacted Cities to address their issues and concerns, by performing street improvements, beautification projects, street landscaping, art work installation, utility undergrounding, signalization of adjacent intersections, utility relocations, and other improvements.

Due to the funding constraints on the PVL project, the amount of these off-site improvements will be severely limited. RCTC will work with the impacted Cities to address their concerns, but due to these funding constraints some of the requested improvements will not be in place upon opening day of the stations. Some improvements will have to be delayed until additional funding becomes available or if the requesting city or agency can provide the funding to offset the deficient funds then the improvements may be implemented.

RCTC has reviewed the previous commuter rail station projects constructed by RCTC and the cost for offsite improvements has varied from 7 % (North Main Corona Station) to 40% (Perris Multimodal Transportation Facility) of the total construction costs. Due to the budget constraints on the PVL project a maximum of **10%** of the total station construction cost can be allocated for offsite improvements.

Due to these constraints the design engineer shall only focus on the typical offsite improvements RCTC has implemented in the past, for example:

- Sidewalk and landscaping improvements limited to the side of the city street where the station is located.
- Improvements only for the width of the RCTC owned property.
- Street improvements only for the ½ of the street width where the station will be built.
- Signalization at entrance/exits to the stations - only if traffic analysis warrants.
- Utility Undergrounding only if the utility poles will need to be relocated to accommodate the station.
- Storm Drain improvements within the station area.
- If the existing downstream storm drain system is undersized, methods should be implemented to contain and control the outflow of storm water from the stations so that they do not over flow the undersized system.
- Since restroom facilities will not be constructed as part of the opening day, no sewer improvements will be constructed.
- Soundwalls will only be placed if noise studies warrant.

Deviations from the list of off-site improvement or an increase in the percentage cap of off-site improvement can only be approved by full Commission Action. The request for

deviations shall be submitted to the Commission at its' monthly meeting, held the second Wednesday of every month.

3.15 SERVICE AND LAYOVER FACILITIES

All requirements outlined in SCRRRA Design Criteria Manual section 13.6 Service and Layover Facilities shall be applied to RCTC Station design with the following additional requirements.

A layover facility will be constructed as part of the opening day service for PVL. The layover facility for the PVL project has been located adjacent to the South Perris Station. The design and construction cost for the layover facility is also tied to the Cost Effective Index, therefore any deviation from SCRRRA's standard will require Commission action.

All requirements outlined in RCTC Design Criteria Manual section 3.14 Off Site Improvements shall be applied to the design and construction of the service and layover facilities.

3.16 MULTIMODAL AND PARK AND RIDE FACILITIES

Multimodal and Park and Ride Facilities will be designed using the elements of the rail station plans that apply as well as incorporate design standards from Riverside Transit Agency and other public transit operators as required.

ATTACHMENT 1
TERMS AND DEFINITIONS

(The terms and definitions are extracted from the 2003 SCRRA Design Criteria Manual)

All Terms and Definitions as outlined in SCRRRA Design Criteria Manual Appendix A shall be applied to RCTC Station design.

DRAFT

ATTACHMENT 2

(The abbreviations are extracted from the 2003 SCRRA Design Criteria Manual)

DRAFT

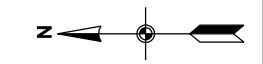
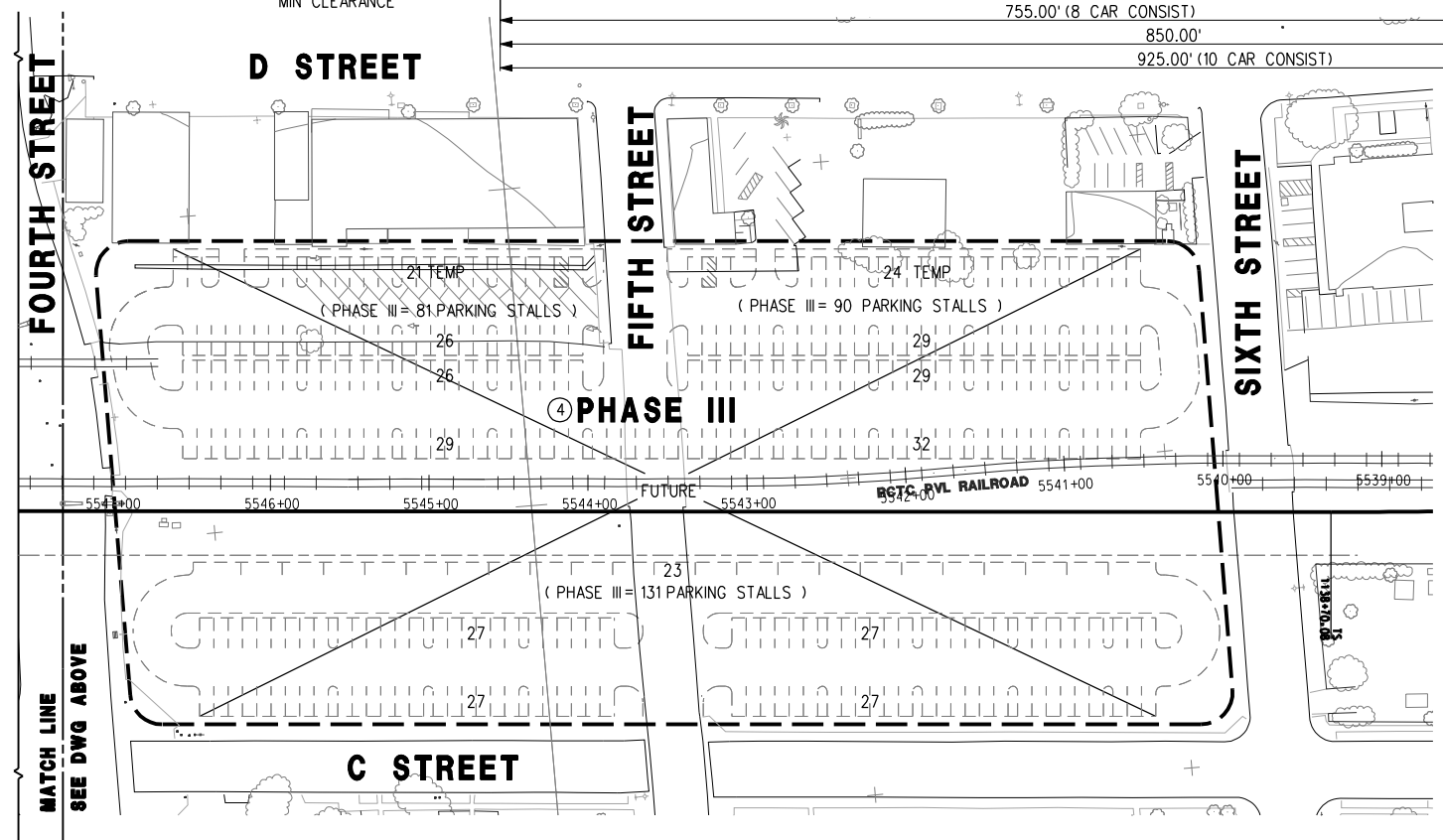
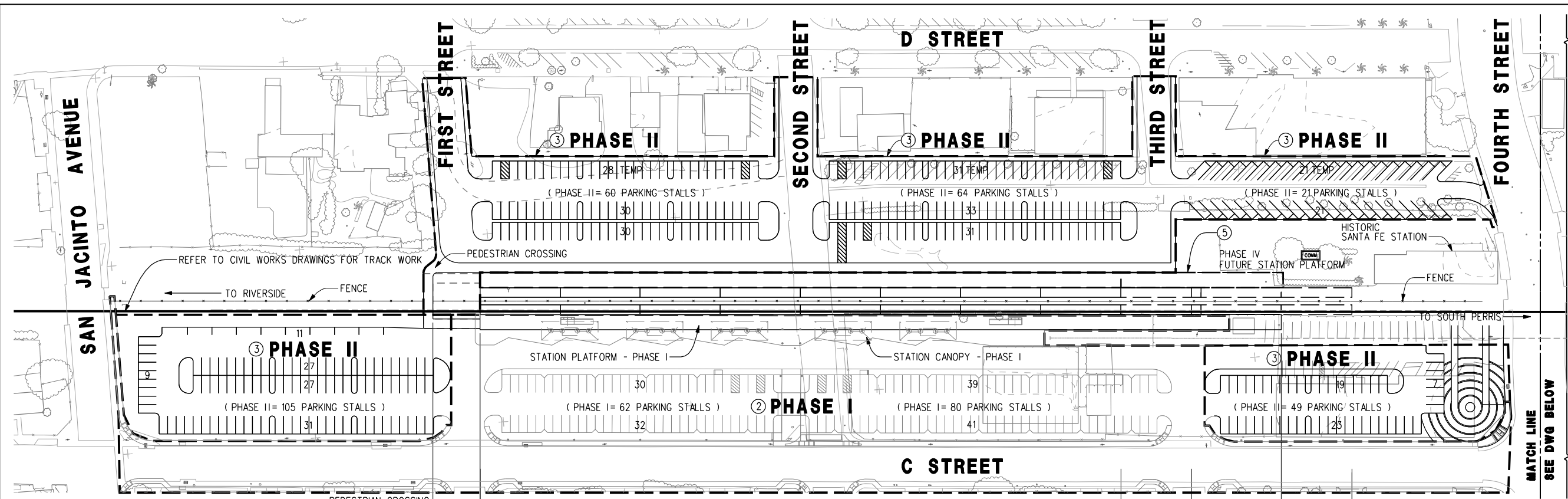
All Abbreviations as outlined in SCRRRA Design Criteria Manual Appendix B shall be applied to RCTC Station design with the following additions.

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DRAFT

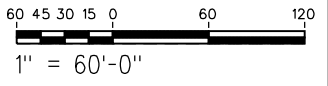
APPENDIX A
Station “Key Hole” Layout

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PARKING	YEAR 2011	YEAR 2030
REQUIRED	352	668
REQUIRED + 20%	423	802
PROVIDED	441	743
SHORT TERM PARKING (TEMP)	80	125

- NOTES:
- ① REFER TO LANDSCAPE DRAWINGS FOR PEDESTRIAN CONNECTIONS AND HARDSCAPE
 - ② PHASE I - BY OTHERS
 - ③ PHASE II - BY STV
 - ④ PHASE III - FUTURE
 - ⑤ PHASE IV - FUTURE



REV.	DATE	DESCRIPTION	BY	SUB.	APP.
5-19-09		30% PRELIMINARY DESIGN			

DESIGNED BY
J. MELCHER

DRAWN BY
D. UNGSON

CHECKED BY
G. JACKSON

APPROVED BY
A. VENTURATO

DATE
5-19-09

RCTC RIVERSIDE COUNTY TRANSPORTATION COMMISSION

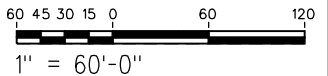
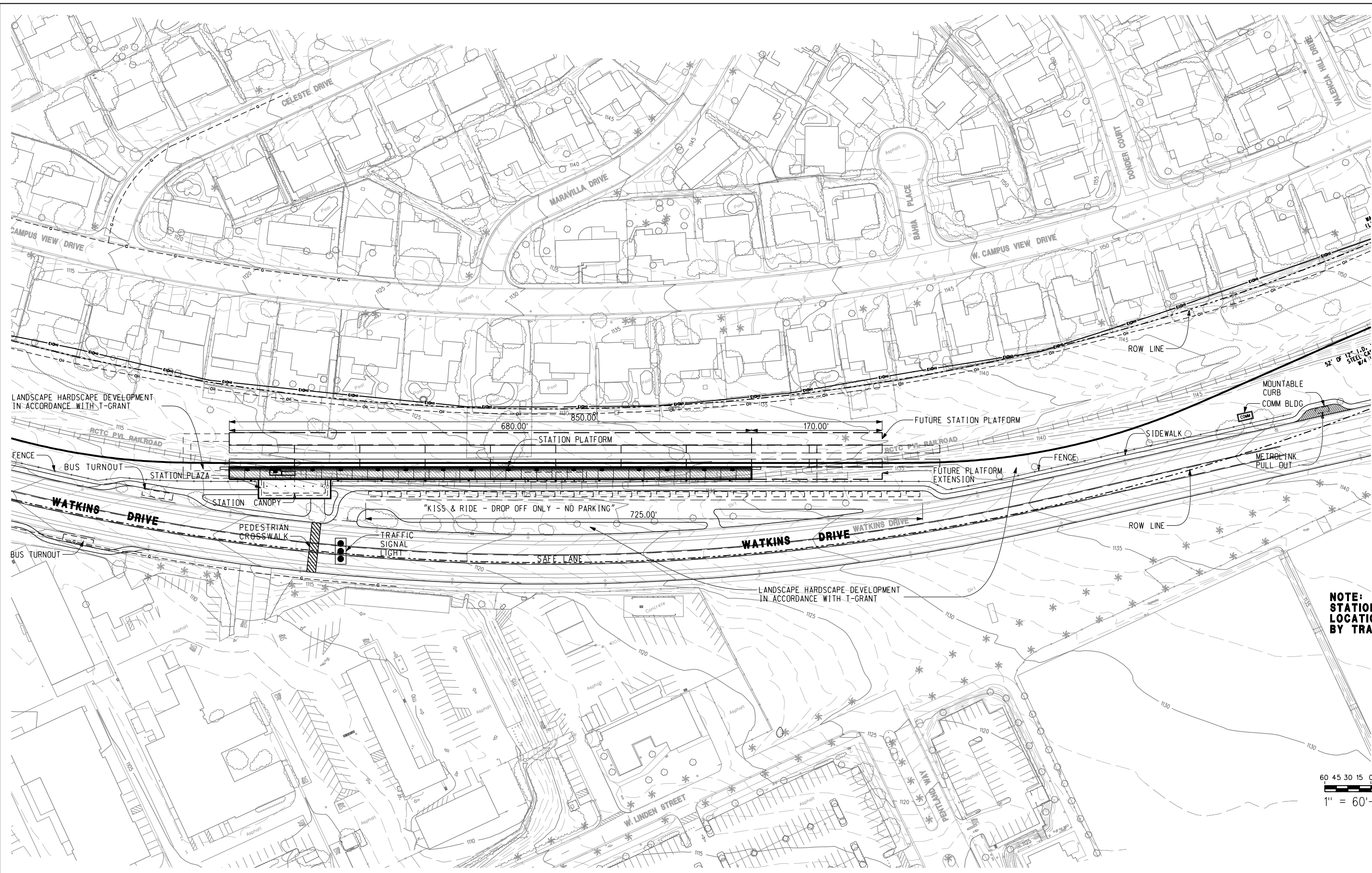
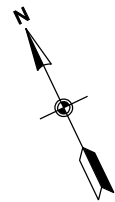
STV Incorporated
 ENGINEERS/ARCHITECTS/PLANNERS/CONSTRUCTION MANAGERS
 9130 ANAHEIM PLACE, SUITE 210
 RANCHO CUCAMONGA, CA. 91730-8540

**RCTC PERRIS VALLEY LINE
 PERRIS STATION E**

SITE PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

CONTRACT NO. C07-33-123-00	STA./SEG. E	DRAWING NO. A-101
REVISION	SHEET NO. 213 OF 680	
SCALE	1" = 60'	





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REV.	DATE	BY	SUB.	APP.
2-24-09				
2-19-09				
12-17-08				
5-19-09				

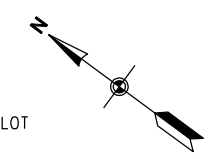
INFORMATION CONFIDENTIAL:
 All plans, drawings, specifications,
 and/or information furnished
 herewith shall remain the property
 of the Riverside County
 Transportation Commission and
 shall not be used for any purpose
 not provided for in agreements with
 the Riverside County Transportation
 Commission.
 CURRENT SCRRA CADD DRAFTING
 STANDARDS, GUIDELINES AND
 CRITERIA WILL BE FOLLOWED
 TO THE GREATEST EXTENT
 PRACTICABLE FOR ENGINEERING
 DESIGN AND PLAN PREPARATION

DESIGNED BY
J. MELCHER
 DRAWN BY
D. UNGSON
 CHECKED BY
G. JACKSON
 APPROVED BY
A. VENTURATO
 DATE
5-19-09


RIVERSIDE COUNTY TRANSPORTATION COMMISSION

STV Incorporated
 ENGINEERS/ARCHITECTS/PLANNERS/CONSTRUCTION MANAGERS
 9130 ANAHEIM PLACE, SUITE 210
 RANCHO CUCAMONGA, CA 91730-8540

CONTRACT NO. C07-33-123-00
 STA./SEG. DRAWING NO.
B A-101
 REVISION SHEET NO.
 . OF 680
 SCALE 1" = 60'

RCTC PERRIS VALLEY LINE
UCR STATION B
SITE PLAN
 PRELIMINARY - NOT FOR COSTRUCTION



LEGEND

- PEDESTRIAN
- CAR
- BUS
- SIGNAL LIGHT
- TRAVEL DISTANCE
- BUS ONLY
- RIGHT TURN ONLY
- ENTRANCE ONLY

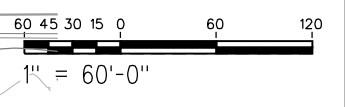
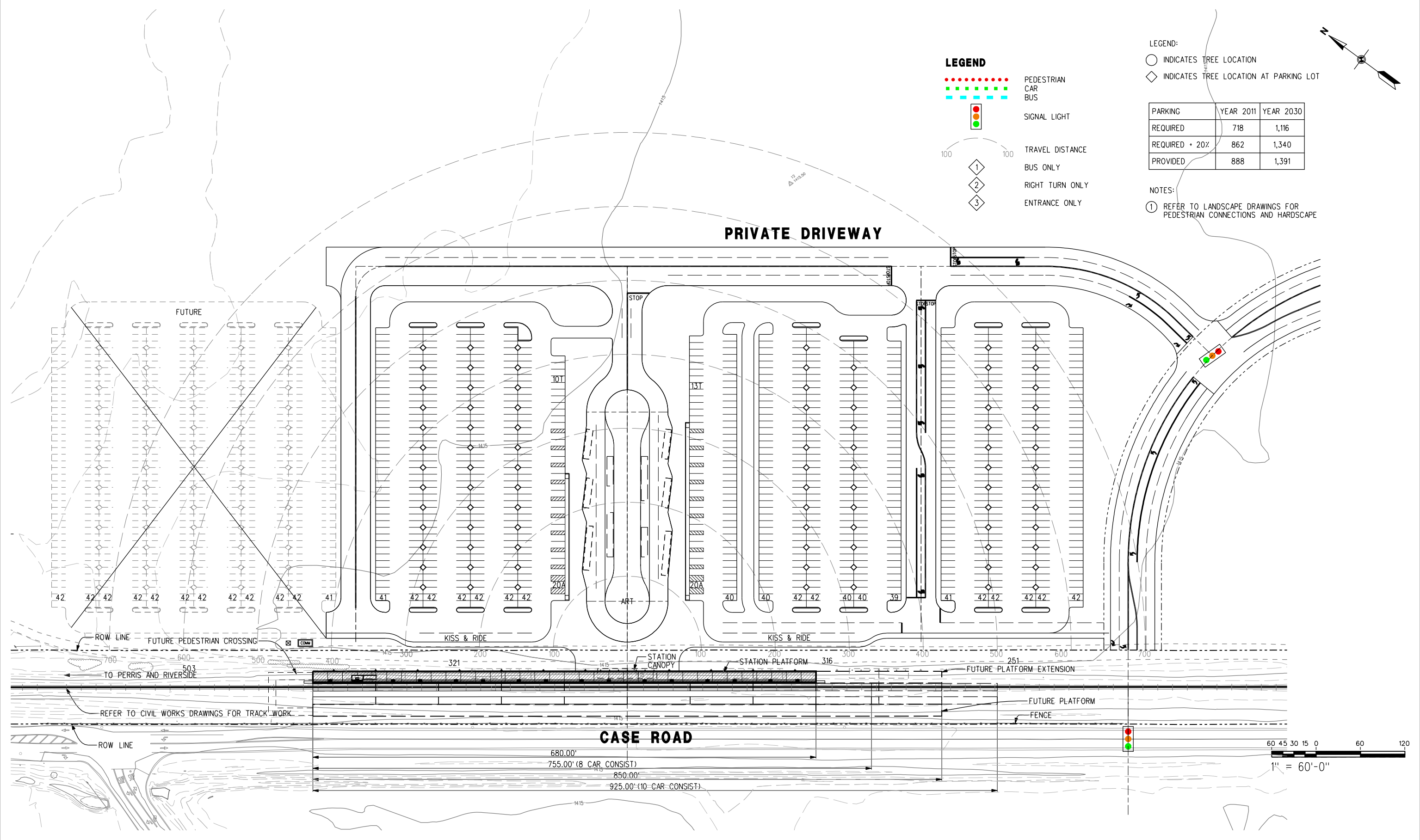
LEGEND:

- INDICATES TREE LOCATION
- INDICATES TREE LOCATION AT PARKING LOT

PARKING	YEAR 2011	YEAR 2030
REQUIRED	718	1,116
REQUIRED + 20%	862	1,340
PROVIDED	888	1,391

NOTES:

- ① REFER TO LANDSCAPE DRAWINGS FOR PEDESTRIAN CONNECTIONS AND HARDSCAPE



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REV.	DATE	BY	SUB.	APP.
10-14-08	SCHEME ALTERNATE			
5-19-09	PRELIMINARY (30%) DESIGN			

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 Transportation Commission and
 shall not be used for any purpose
 not provided for in agreements with
 the Riverside County Transportation
 Commission.
 CURRENT SCRR CADD DRAFTING
 STANDARDS, GUIDELINES AND
 CRITERIA WILL BE FOLLOWED
 TO THE GREATEST EXTENT
 PRACTICABLE FOR ENGINEERING
 DESIGN AND PLAN PREPARATION

DESIGNED BY
J. MELCHER
 DRAWN BY
D. UNGSON
 CHECKED BY
G. JACKSON
 APPROVED BY
A. VENTURATO
 DATE
5-19-09

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

STV Incorporated
 ENGINEERS/ARCHITECTS/PLANNERS/CONSTRUCTION MANAGERS
 9130 ANAHEIM PLACE, SUITE 210
 RANCHO CUCAMONGA, CA. 91730-8540

RCTC PERRIS VALLEY LINE
SOUTH PERRIS STATION F
 SITE PLAN
 PRELIMINARY - NOT FOR CONSTRUCTION

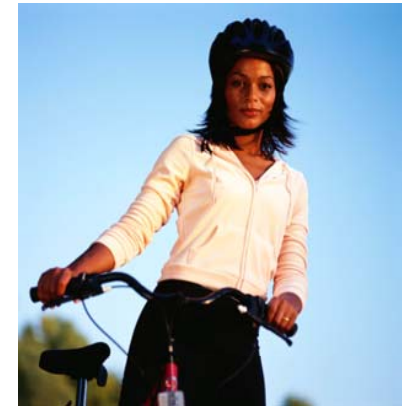
CONTRACT NO. C07-33-123-00	
STA./SEG. F	DRAWING NO. A-101
REVISION	SHEET NO. 214 OF 680
SCALE	1" = 60'

DRAFT

APPENDIX B
Bike Storage Pods



**Ride Your Bike, Park Your Bike, Ride
Your Bike. . . .**



www.bikelid.com

Innovative Design



Portland, OR



Cambridge, MA



Tampa, FL



New York City, NY

BikeLid Systems
The Ultimate in Bicycle Security

www.bikelid.com



Riverside, CA

How Does the Lid Work?



BikeLid[®] Systems
The Ultimate in Bicycle Security

www.bikelid.com

- **Lift**
Lift the shell



- **Roll**
Roll your bike into the guide



- **Lower**
Lower the shell over your bike



- **Lock**
Lock with a U-lock or padlock



Provides High Security



HIDE YOUR RIDE!

- Patented design provides security from vandals and thieves
- Approved and recommended by security and police
- Visibility at bottom of lid is small enough to prevent access while allowing for security monitoring
- Graffiti resistant

**Viewing panel on lid is special order item*

BikeLid® Systems
The Ultimate in Bicycle Security

www.bikelid.com



Customized Programs



BikeLid Programs

Advertising

- Display panel available for ads
- Easy to change message from panel
- Revenue generating or promote your own message

Custom Design

- Logo or custom design available
- Standard or custom colors
- Viewing panel

BikeLid® Systems

The Ultimate in Bicycle Security

www.bikelid.com



Protects from the
Elements



Peace of Mind!

- The Lid offers complete protection from rain, wind, snow and heat

BikeLid® Systems
The Ultimate in Bicycle Security

www.bikelid.com



Saving the Environment



Part of the Solution

BikeLid encourages travel by bicycle instead of vehicle travel lowering emissions and dependence on fossil fuels

Did you know-

- 50% of travel is less than 3 miles
- 40% of travel is less than 2 miles
- 25% of carbon monoxide comes from autos
- 50% more emissions are produced from cold start emissions

Source: FHWA, 2006

Bicycling is perfect for errands, access to recreation and work trips

BikeLid® Systems
The Ultimate in Bicycle Security

www.bikelid.com



Health Benefits for Everyone



Healthier Employees and Students Higher Productivity and Grades!

Employees and students who bike are more productive and less stressed.

And, cycling is good for our air quality, no emissions during the ride!

Get the Benefits-

- Leadership in Energy and Environmental Design (LEED) credits from the Green Building Association for Covered Bicycle Parking
- Commuter Tax Benefit, beginning 2009 receive \$20 per month, pretax
- Best Workplaces for Commuters designation

BikeLid® Systems

The Ultimate in Bicycle Security

www.bikelid.com



Creating a Media Buzz



Create a Positive Image!

- Innovative design creates an immediate and positive media response
- Media exposure is good for business, cyclists and advocacy groups

BikeLid[®] Systems
The Ultimate in Bicycle Security

www.bikelid.com



Our Commitment



Small Carbon Footprint

- Made completely in the USA means less fossil fuels are used for transportation
- Both recycled and “virgin plastic” Lid shells are made of 100% recycled polyethylene
- Steel components are made of recycled materials
- No environmental harmful solvents or heavy metals are used

BikeLid® Systems

The Ultimate in Bicycle Security

www.bikelid.com



Contact Us!

Superior Customer Service Marketing Assistance

For your personal consultation, please call

Julie Bond

Executive Director

212.893.8351 ext. 234

jbond@bikelid.com

www.bikelid.com



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The Ultimate in Bicycle Security

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APPENDIX C

RCTC Standardized Signage Requirements *(To be incorporated upon completion.)*



APPENDIX D

Electrical and Lighting System Recommendations *(To be included upon Commission review and approval)*

DRAFT

DRAFT

APPENDIX E
Detectable Warning Strip Performance Criteria

Performance Specification for Detectable Warnings

1. Detectable Warnings (truncated dome tiles) must adhere to ADA and ADAAG regulations (ADAAG 4.29.5, 1108.1.1, 1108.1.2, 1108.1.3).
2. Truncated dome tiles must be hi-tech concrete materials that are set into fresh concrete with an anchoring system.
3. Truncated dome tiles must perform to the following minimum ASTM-standards for concrete materials:

• Compressive strength	11,000 psi	per ASTM C 39-04
• Tensile strength	2,200 psi	per ASTM C 496
• Flexural ultimate strength	2,700 psi	per ASTM C 947-03
• Slip resistance	FA=0.85	per ASTM C 1028
• Abrasion	0.03 cm ⁽²⁾ /cm ⁽²⁾	per ASTM C 418
• Water absorption	0.50%	per ASTM C 97-05
• Freeze / Thaw	0.00%	per ASTM C 1262
4. Tile edges are to be sized and installed allowing matching edges to be butted together maintaining ADA/ADAAG spacing requirements.
5. Truncated dome tiles must be functional and maintain their shape for a minimum of 10 years.
6. The installation must be without voids that can cause tripping hazards due to breaking or cracking.
7. High slip resistance must be maintained at ASTM C 1028 standards.
8. Truncated dome tiles must be guide-dog friendly. Title III, 36.211, requires that detectable warnings must be "... readily accessible to and usable by persons with disabilities...". Hot surfaces of a detectable warning could injure a guide-dog. If a guide-dog tends to avoid a detectable warning area, it will no longer be usable by someone who is visually impaired.

APPENDIX F

Paint System Recommendations

(To be included upon Commission review and approval)

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APPENDIX G
Canopy Options

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Gullwing Shelter

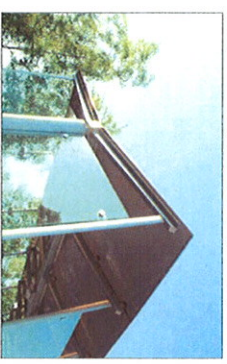
Shelter Details

The Gullwing bus shelter has been developed using the latest 3D computerised design manufacturing technology to provide a stylish, high quality, functional and robust shelter range.

The Gullwing shelter is capable of accepting Real Time Passenger Information (RTPI) systems and can be supplied with a wide range of infrastructure accessories, including solar powered lighting, CCTV and information displays.

Specialist High Grade ITS Compatible Shelter Solution

- Innovative, Future Proofed Design
- Modular, Engineering Grade Construction
- Incorporates the latest in Intelligent, Electronic Transport Hardware
- The Choice of Many Major Cities



Pasadena Trading Estate
Hayes, Middlesex
UB8 3NQ, UK

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F 020 8948 1397

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sales@triform.co.uk
accounts@triform.co.uk

Benefits

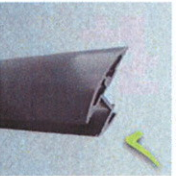
→ **Low Maintenance, Long Lasting Construction**
Designed for low cost operation and low maintenance. Temporary parts are quick and easy to change.

→ **Build, Mounting and Foundation Options**
The shelter can be provided with a wide range of foundation / mounting options to suit individual customer and site conditions, including fully height adjustable surface mounting base plates and Trueform's special 'patented' height adjustable 'socket system' to facilitate rapid, cost effective build with minimum disruption to pedestrians and highway. These systems enable the future removal/replacement of the complete shelter or replacement of individual shelter parts utilising the same foundation.

→ **Sloping and Restricted Depth Site Conditions**
Trueform's range of foundation build and shelter mount solutions enables the shelter to be built on awkward site conditions, including sloping and restricted depth sites and/or underground cables and cables.

→ **Structural Safety**
The shelter has been fully structurally engineered to conform to all required safety standards, including wind, snow, personnel and seismic loadings as required. Fully stamped structural engineer drawings can be provided.

→ **Engineered Component Manufacture - No Exposed Unpainted edges**
All Trueform's shelter parts are specialist fabricated and finished to provide complete environmental protection. Other lower grade shelters have exposed cut edges that are prone to corrosion leading to visual and structural deterioration.



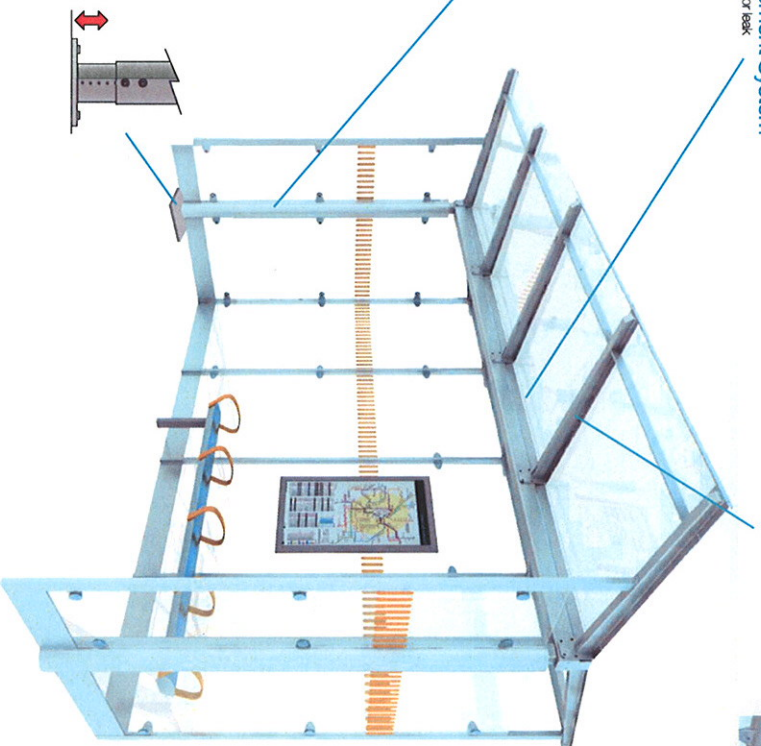
→ **Rainwater Management System**
Maintenance free - will not block or leak

→ **Courtesy Light - 'Magnetic' Test Switch**
Special 'cover' magnetic testing switch on lamp body - enables lighting system to be tested during daylight hours



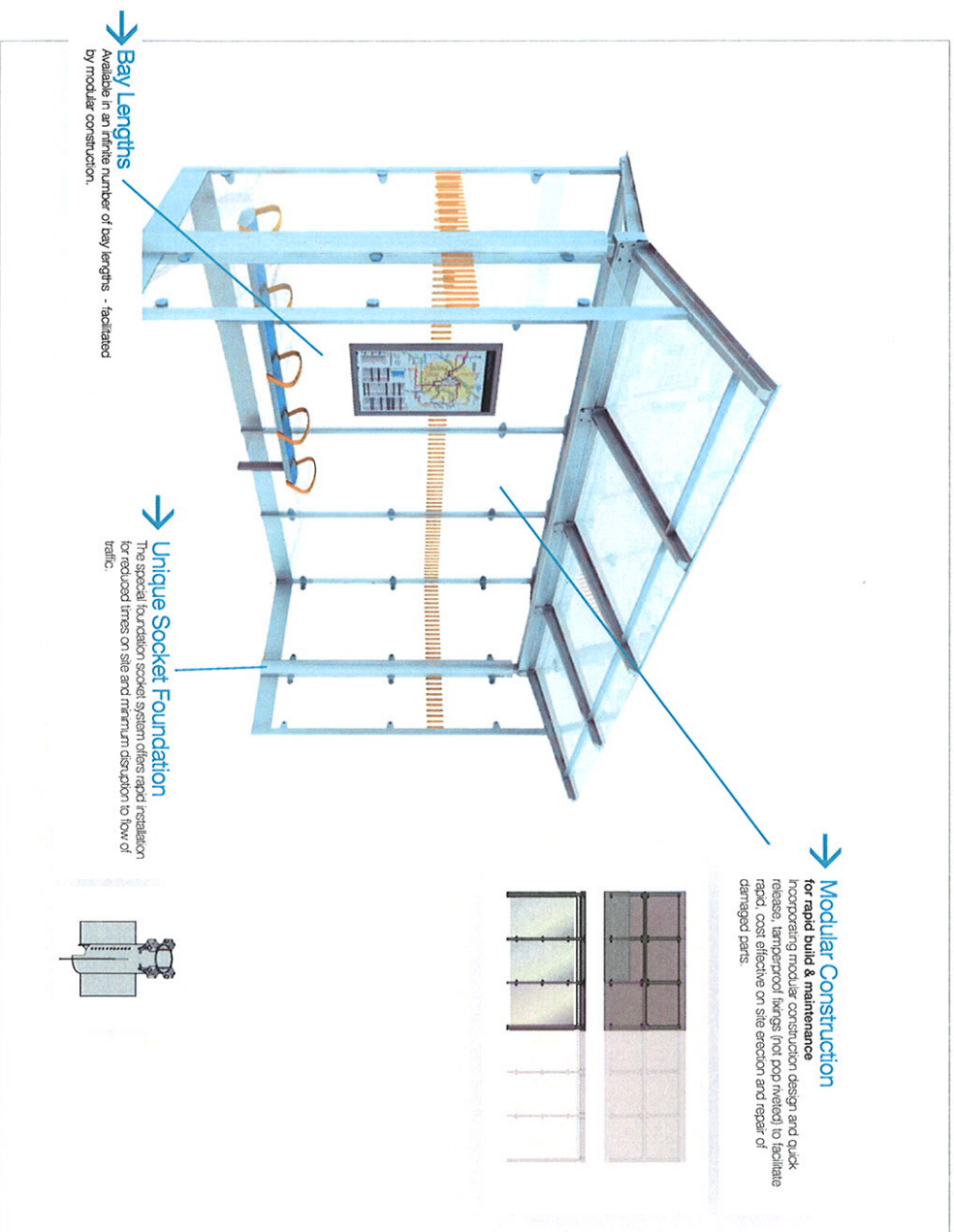
→ **Internal Electrical Enclosure**
Electrical components are housed within shelter 'leg'

→ **Optional Surface Mounting**
Adjustable surface mounted foundation plates



Benefits

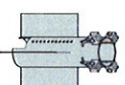
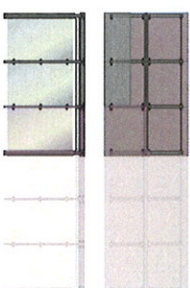
- **Engineered Design, Low Maintenance, Long Lasting Materials & Finishing**
Engineering grade materials and architectural finishes provide long lasting performance and low maintenance whatever the weather. A range of attractive finishes are available in an infinite range of colours to suit any customer requirements. The shelter is also available in brushed finish stainless steel.
- **Attractive 21st Century Contemporary Styling**
Appearance complementing diverse architectural landscapes and enhancing the image of bus travel.
- **Proven Performance, Tried & Tested – Risk Free**
On-street successful operation & performance throughout
- **Premier Marketing & Branding Platform**
Provides a high level platform for the promotion and passenger service information
- **Fully DDA compliant**
Fully inclusive design – accessibility to all
- **Sustainable Design**
Manufactured from a high percent of recyclable materials
- **Future Proofed**
Containing necessary cable runs and pre-designed locations and positions for the fully integrated supply of a comprehensive range of additional intelligent transport IT hardware



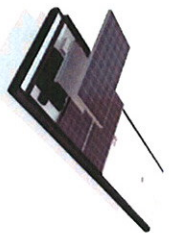
→ **Bay Lengths**
Available in an infinite number of bay lengths - facilitated by modular construction.

→ **Unique Socket Foundation**
The special foundation sockets system offers rapid installation for reduced times on site and minimum disruption to flow of traffic.

→ **Modular Construction**
for rapid build & maintenance
Incorporating modular construction design and quick release, tamperproof fixings (not pop rivets) to facilitate rapid cost effective on site erection and repair of damaged parts.



Optional Accessories



→ Solar Energy Solutions

Comprehensive solar solutions are available for the Gullwing shelter, including mineral coating/lighting using latest energy efficient LED illumination technology. Trueform are leaders in the field of solar energy engineering. Our solar products are robust, with a proven track record of high performance in the transit industry.



→ Totem

Existing solar illumination systems - fully proven in the field. Newer Cameriah & Zeta Solar Solutions also available and extensively tested by Trueform.



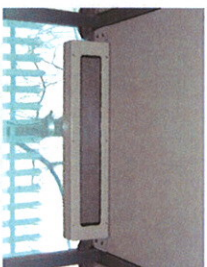
→ Comprehensive Seating Range

Wide range of comfortable seating options available, bench, patch, duo height and with/without armrests.



→ Fare Collection & Ticket Vending

Trueform's future proof shelters can readily accept a wide range of advanced fare payment and ticket vending methods including smart card readers. Trueform can custom adapt its structures to ensure seamless integration.



→ RTM Displays

The Trueform Gullwing shelter has been proven to accept a wide range of RTM displays screens. The entire Gullwing shelter range structurally approved for the addition of RTM displays without compromising the shelters structural integrity.



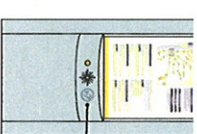
→ CCTV Security System

CCTV security cameras can be securely installed in the shelter structure to record footage of both inside and outside the shelter. The presence of the CCTV cameras can be highlighted to act as a deterrent or hidden to avoid detection.



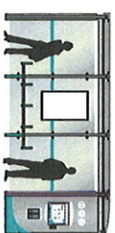
→ Courtesy Lighting

Energy efficient, ultra robust, P rated courtesy lighting module lighting levels tested and approved by the transit industry. Available for both main power and solar power shelter options.



→ Audio Announcement

Trueform's intelligent shelter design enables easy integration of audio announcement and PA systems for audible travel and service information. These systems can be activated by wireless key/fob, particularly useful for the partially seated and provides high level conformance to DDA.



→ Integrated Kiosk Unit

Tourist Screen Journey Planning, Real Time Travel Information, Ticketing & Maps, Street Card Readers, Passenger Assistance, CCTV.



→ Glass, Polycarbonate, GPP & Perforated Mesh Glazing

Supports a wide range of glazing materials to suit all requirements.



→ 6 Sheet Illuminated Displays

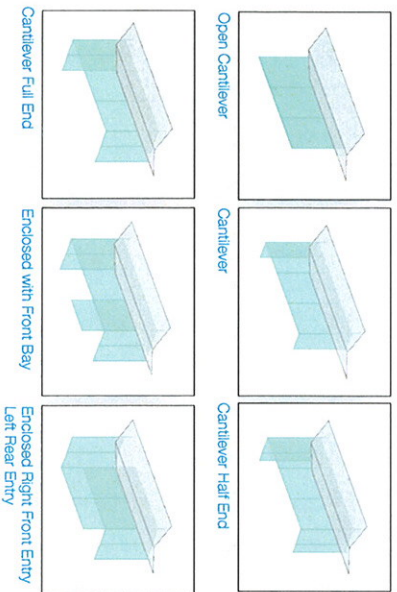
Gullwings illuminated 6 sheet advertising displays have been designed to exclusively fit the Trueform Gullwing shelter.



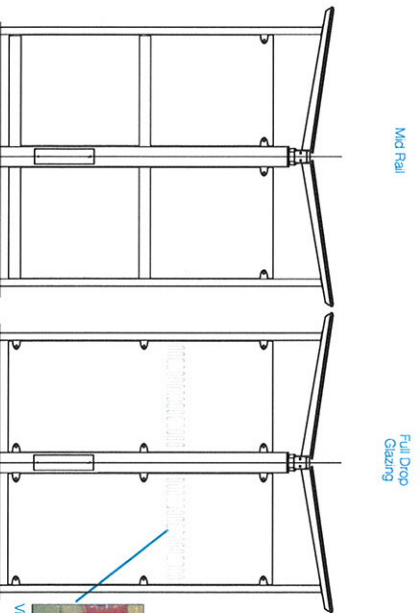
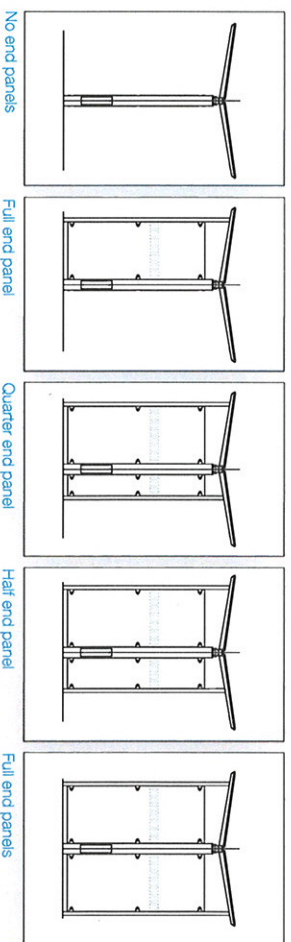
→ Heating & Air Conditioning Options

Trueform can provide climate controlled shelter environments to suit all climate conditions. Trueform's intelligent shelter range has air conditioning and heating options for maximum passenger comfort - many of which can run completely independently from the grid using solar power!

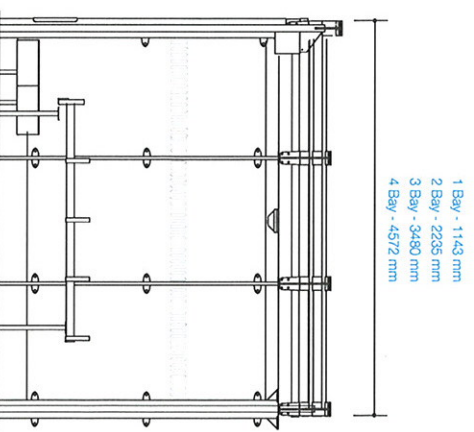
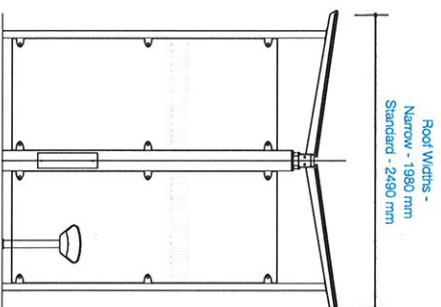
Configurations



End Screen Configurations



Non uniform roof widths also available e.g. 900mm, 1300 mm



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UB3 3NQ, UK

T 020 8561 4939
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www.trueform.co.uk
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Benefits

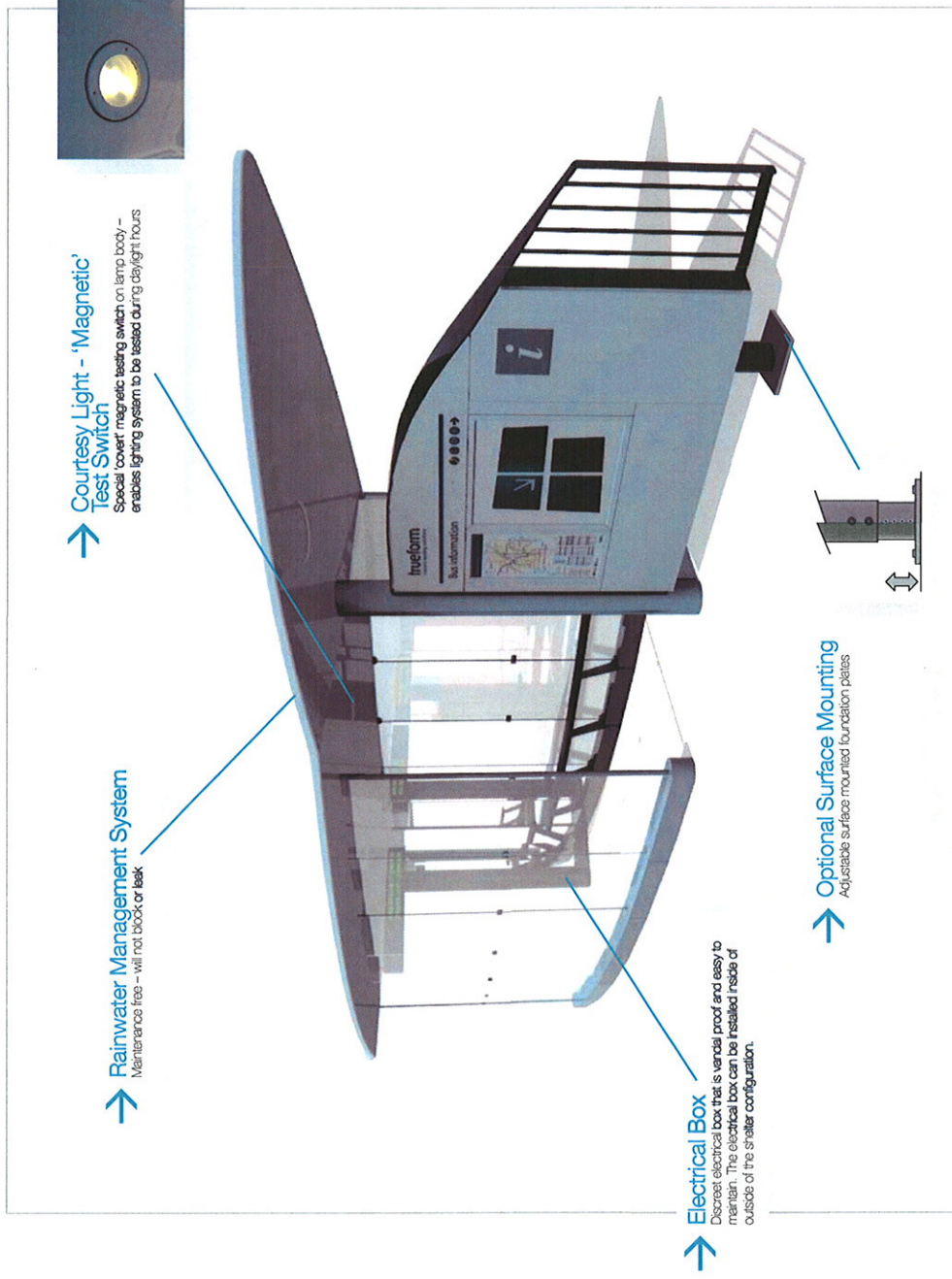
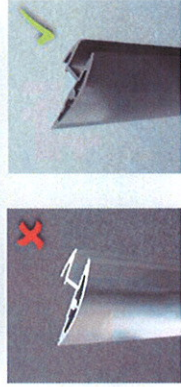
→ **Low Maintenance, Long Lasting Construction**
Designed for low cost operation and low maintenance. Tempered parts are quick and easy to change.

→ **Build, Mounting, and Foundation Options**
The shelter can be provided with a wide range of foundation / mounting options to suit individual customer and site conditions, including fully height adjustable surface mounting base plates and Trueform's special 'patented' height adjustable 'socket' system to facilitate rapid, cost effective build with minimum disruption to pedestrians and highway. These systems enable the future removal/replacement of the complete shelter or replacement of individual shelter parts using the same foundation.

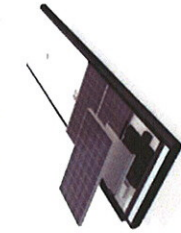
→ **Sloping and Restricted Depth Site Conditions**
Trueform's range of foundation build and shelter mount solutions enables the shelter to be built on awkward site conditions, including sloping and restricted depth sites, avoiding underground cables and others.

→ **Structural Safety**
The shelter has been fully structurally engineered to conform to all required safety standards, including wind, snow, personnel and seismic loadings as required. Fully stamped structural engineer drawings can be provided.

→ **Engineered Component Manufacture - No Exposed Unpainted Edges**
All Trueform's shelter parts are 'specialist fabricated' and finished to provide complete environmental protection. Other lower grade shelters have exposed cut edges that are prone to corrosion leading to visual and structural deterioration.



Optional Accessories



Solar Energy Solutions
Comprehensive solar solutions are available for the Discovery shelter, including internal courtesy lighting utilising latest energy efficient LED illumination technology. Trueform are leaders in the field of solar energy engineering. Our solar products are robust, with a proven track record of **high performance in the transit industry.**



RTI Displays
The Trueform Discovery shelter has been proven to accept a wide range of RTI displays screens. The entire Discovery shelter range is structurally approved for the addition of RTI displays without compromising the shelters structural integrity.



Integrated Kiosk Unit
Touch Screen, Journey Planning, Real Time Travel Information, Ticketing & Maps, Smart Card Readers, Passenger Assistance, CCTV.



Toitem
Existing solar illumination systems - fully proven in the field. Newer Cameriah & Zeta Solar Solutions also available and extensively tested by Trueform.



CCTV Security System
CCTV security cameras can be securely installed in the shelter structure to record footage of both inside and outside the shelter. The presence of the CCTV cameras can be highlighted to act as a deterrent or hidden to avoid detection.



Glass, Polycarbonate, GRP & Perforated Mesh Glazing
Supports a wide range of glazing materials to suit all requirements.



Comprehensive Seating Range
Wide range of comfortable seating options available, bench, perch, 0.90 height and with 'Wit' out armrests.



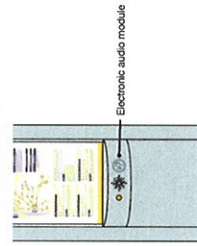
Courtesy Lighting
Energy efficient ultra robust, P rated courtesy lighting module. Lighting levels tested and approved by the transport industry. Available for both mains power and solar power of shelter options.



6 Sheet Illuminated Displays
Discovery's illuminated 6 sheet advertising displays have been designed to exclusively fit the Trueform Discovery shelter.



Fare Collection & Ticket Vending
Trueform's future proof shelters can readily accept a wide range of advanced fare payment and ticket vending machines including smart card readers. Trueform can custom adapt all structures to ensure seamless integration.




Audio Announcement
Trueform's intelligent shelter design enables easy integration of audio announcement and PA systems for audible travel and service information. These systems can be activated by wireless key fob, particularly useful for the partially seated and provides high level conformance to DDA.



Heating & Air Conditioning Options
Trueform can provide climate controlled shelter environments to suit all climatic conditions. Trueform's intelligent shelter range has air conditioning and heating options for maximum passenger comfort - many of which can run completely independently from the grid using solar power!

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SW

Bus Shelters, Bespoke Shelters



Bespoke Shelters

Bespoke Shelters, Canopies & Covered Walkways

In addition to a comprehensive off the shelf range of products and services, Trueforms highly specialised team offer unrivalled expertise in design engineering, manufacture and installation of custom built shelters, display structures, canopies, covered walkways, architectural awnings. Working independently or alongside an existing architectural team, Trueform guarantee a universally professional and value for money service.

Trueform have provided hundreds of custom made structures throughout the UK and welcome the opportunity of sharing our expertise in this area with new and existing clients. Please contact our sales team.



Metro Shelter

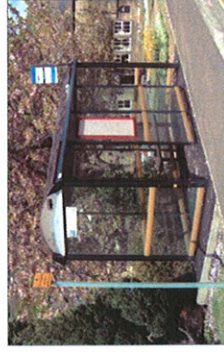
Shelter Details

The Metro bus shelter has been developed using the latest 3D computerised design manufacturing technology to provide a stylish, high quality, functional and robust shelter range.

The Metro shelter is capable of accepting Real Time Passenger Information (RTPI) systems and can be supplied with a wide range of infrastructure accessories, including solar powered lighting, CCTV and information displays.

Specialist High Grade ITS Compatible Shelter Solution

- Innovative, Future Proofed Design
- Modular, Engineering Grade Construction
- Incorporates the latest in Intelligent, Electronic Transport Hardware
- The Choice of Many Major Cities



02/01 - Blast Resistant Safety Shelters

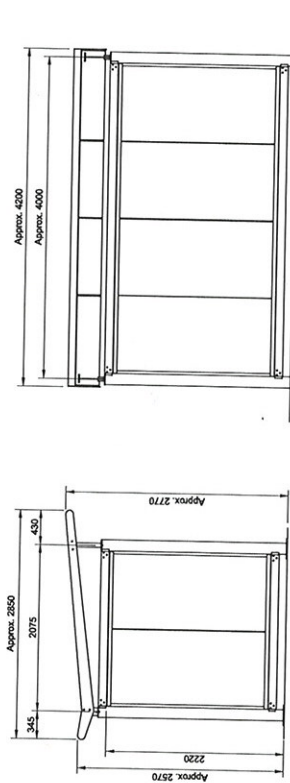
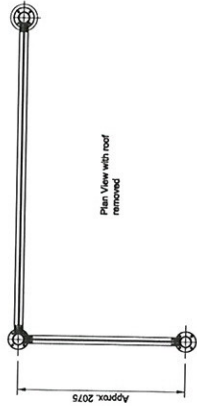


Trueform has design developed a unique range of blast resistant shelters specifically for high risk applications. Using ultra high strength materials, construction techniques, specialist blast glazing and retention system provides maximum safety. A wide range of sizes and configurations are available.

Please contact our sales team for more information

☎ 0208 561 4959

✉ sales@trueform.co.uk



Rail Shelters



Rail Shelters

Robust Stainless Steel Structure

Designed specifically for rail platforms and bus waiting applications, the robust Metroplan anti-vandal stainless steel shelters are capable of resisting the most determined of vandals by the introduction of a stainless steel structure and special stainless steel glazing system. Stainless steel shelters have been proven to significantly reduce maintenance costs, particularly on unmanned rail stations and vandal prone bus shelter sites

Glazing System

The shelter can be supplied with small rubber cushioned toughened glass panels, polycarbonate, GRP or solid embossed stainless panels to suit all requirements. The individual panels are kept to a small size to offer maximum strength and the glazing frames to the edges of the glass panels are sloped to discourage climbing.

Easy Clean Surfaces

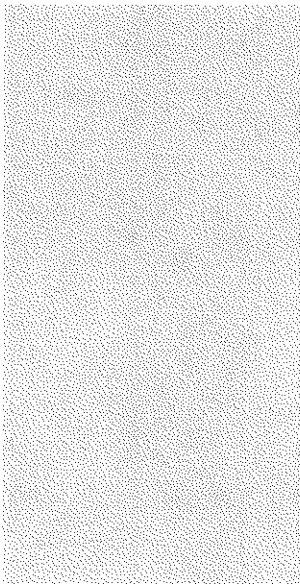
Manufactured from either satin finish or embossed (rigidized) stainless steel to deter marker pen, spray paint graffiti, stickers/fly posting and scratching, the stainless steel surfaces are almost impossible to deface and very easy to clean. Metalwork structure and glass panels can also be supplied with a special graffiti resistant non-stick surface coating making it resistant to weathering, staining and graffiti.

Rapid Erection & Maintenance

Rapid erection and maintenance on site are also key features of the anti vandal shelter range with quick release, tamperproof fixing methods.

Long Lasting High Quality Appearance

In addition to significant maintenance and operational benefits, the anti-vandal shelters provide long term appearance which helps to promote safe welcoming environments for passengers.



CCTV Security

The Metroplan Anti-Vandal shelter range can be supplied with miniaturised CCTV cameras housed covertly within the shelter structure. These CCTV systems have a demonstrable effect on reducing vandalism whilst providing safe environments to congregate.

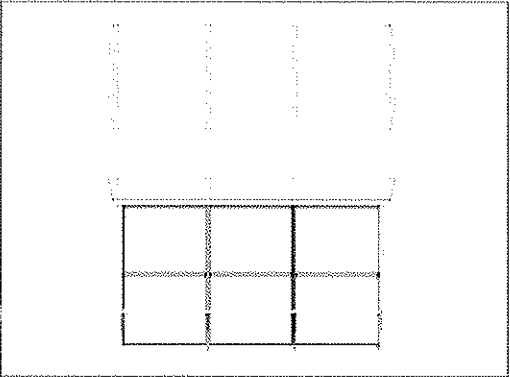
Low Curved Roof

The roof structure can be provided in clear or solid stainless steel.

Additional Features of the Anti-Vandal Shelter

Solar Power Lighting, RTI Displays, Journey Planner, Passenger Help Points

Note:-The anti-vandal stainless steel glazing system is fitted to all shelters within the Trueform shelter range with powder coated coloured legs. Contact our sales team for further details on the FORTRESS shelter range.



Interested in expanding your transport infrastructure system? See our range of Bus Stops [by clicking here.](#)

You can also check our solar options available [by clicking here.](#)

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Discovery Shelter

Shelter Details

Trueform have supplied and installed 17 Discovery Shelters throughout Dundee City for Dundee City Council.

With concept design by Nicholl Russell Studios Architects and engineering design, manufacture and installation by Trueform. These progressive and impressive bus shelters have been engineered, manufactured and erected by Trueform's bespoke bus shelter division.

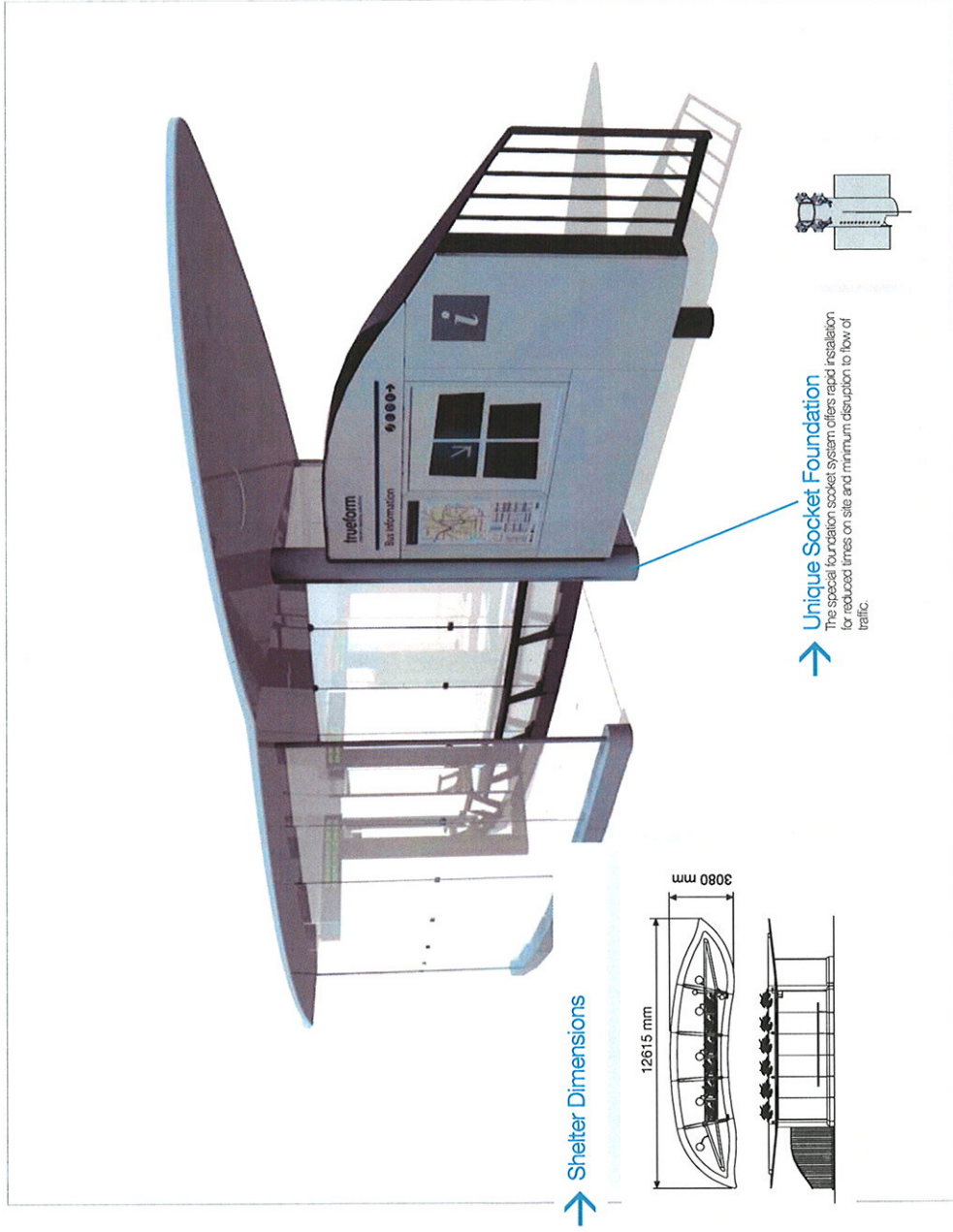
Incorporating the highest quality materials, finishes and advanced passenger information in the form of RTPI and audio information, the bus shelters are truly a benchmark for future bus shelter design.

These bus shelters are a tribute to Dundee City Council in implementing their strategy and vision of providing a World class passenger transportation environment for a World class City.



Benefits

- **Engineered Design, Low Maintenance, Long Lasting Materials & Finishing**
 Engineering grade materials and architectural finishes provide long lasting performance and low maintenance whatever the weather. A range of attractive finishes are available in an infinite range of colours to suit any customer requirements. The shelter is also available in brushed finish stainless steel.
- **Attractive 21st Century Contemporary Styling**
 Appearance complementing diverse architectural landscapes and enhancing the image of bus travel.
- **Proven Performance, Tried & Tested – Risk Free**
 'on-street' successful operation & performance throughout.
- **Premier Marketing & Branding Platform**
 Provides a high level platform for the promotion and passenger service information.
- **Fully DDA compliant**
 Fully inclusive design – accessibility to all.
- **Sustainable Design**
 Manufactured from a high percent of recyclable materials.
- **Future Proofed**
 Containing necessary cable runs and pre-designed locations and positions for the fully integrated supply of a comprehensive range of additional intelligent transport IT hardware.



→ **Shelter Dimensions**

→ **Unique Socket Foundation**
 The special foundation socket system offers rapid installation for reduced times on site and minimum disruption to flow of traffic.

Shelter Series



Shelter lighting can be used to increase the sense of security at transit stops, help drivers to see that passengers are waiting, or increase ridership. Other applications include gazebo lighting, mail box shelter illumination, and lighting around buildings and doorways. SolarOne Systems provide bright even lighting that optimizes comfort and visibility. Choose from a variety of configurations and profiles that provide lighting on demand or on a continuous basis. Panels can be roof mounted or pole mounted to optimize orientation.

All SolarOne Systems feature SO-Bright Technology, making them the Smartest Lights in the World. Only SO-Bright manages brightness and adapts to low power conditions to ensure that you never leave your facility in the dark.



Click Below for More Detail:

[Lamps and Driver](#)
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SolarOne® Benefits

- + All Night Lighting Options
- + No Trenching/No Re-Paving
- + Low Maintenance
- + Offset CO² Emissions
- + Low Voltage/Low Liability
- + Immune to Power Outages

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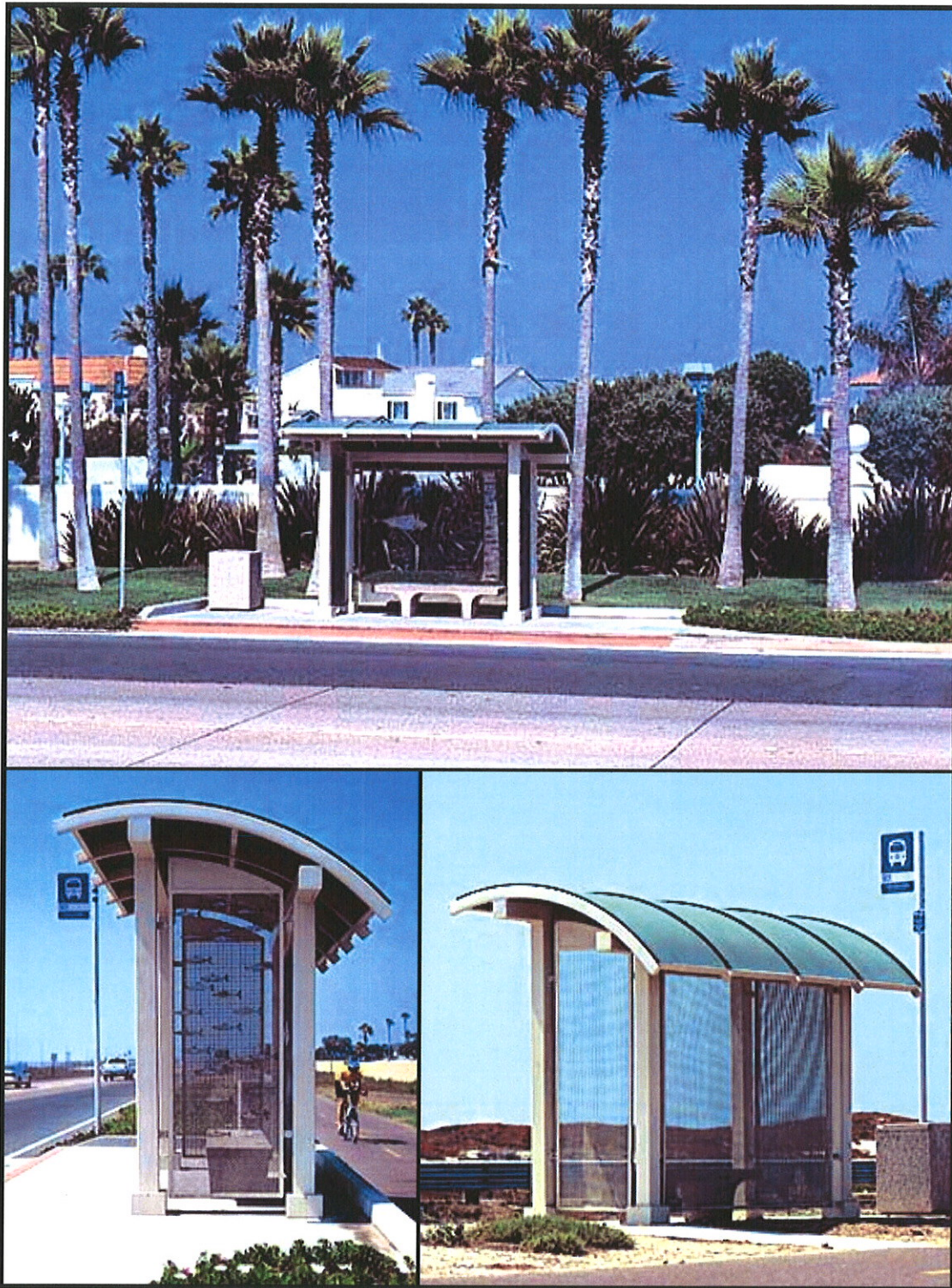
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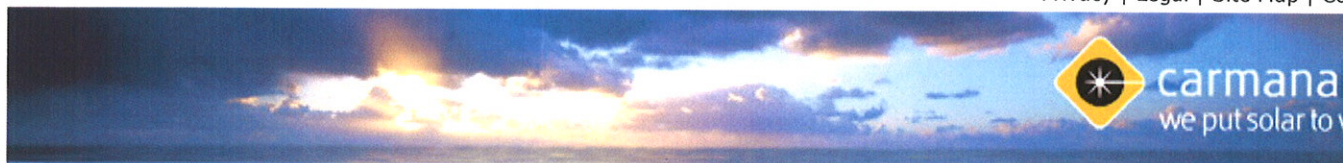


Skylark - Nautilus ST-2 Bus Shelter



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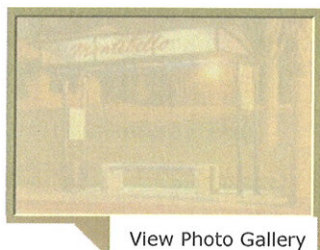
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i-SHELTER™ Solar Shelter Lighting

To help improve the safety, security and convenience of our transportation systems, the transit industry has long embraced effective lighting as a key factor; but in many cases, the costs and logistics of equipping bus routes with adequate lighting has proven challenging. For locations where grid-based power is unavailable or just too costly to access, Carmanah offers the solar-powered i-SHELTER™ bus-shelter light.

The i-SHELTER bus-shelter light is a stand alone, integrated light source, powered solely by the energy of the sun. Using Carmanah's time-tested solar-powered LED technology, the i-SHELTER lighting kit incorporates all the elements of a full solar-powered lighting system within an attractive, reliable and durable package.

Ideal for dark, rural bus routes, busy urban streets or anything in between — the i-SHELTER bus-shelter light provides waiting passengers with a bright, secure night-time environment, illuminated entirely by the free, renewable energy of the sun.

For more product information or to place an order, [contact](#) Carmanah.

[Features](#) [Benefits](#)

Features



- With no trenching, cabling or permits required, any shelter can be equipped with the solar-powered i-SHELTER lighting kit in minutes, at fraction of the cost of a hard-wired connection
- Based on industry-proven solar-powered LED technology
- Stand-alone product is suitable for improving any bus stop — whether the heart of the city or out in the country — anywhere up to 60° north
- Rated for reliable performance in ambient temperatures between -22° and +122°F (-30°C and +50°C)
- Virtually maintenance free for up to 5 years, on a single set of rechargeable batteries

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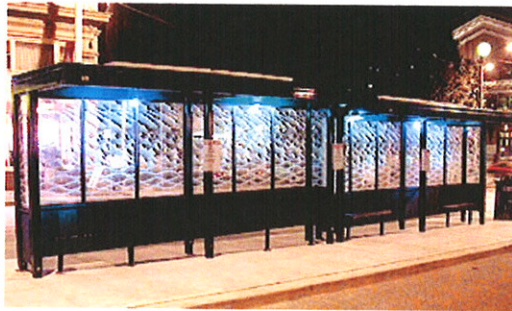
Another
sample of
i-Shelter

Solar-Powered Bus Shelters Light Up

by Justin Thomas, Virginia on 10.25.05

SCIENCE & TECHNOLOGY (alternative energy)

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These bus shelters, called i-SHELTERS, light up with LED light immediately when someone walks inside. They were created by a Canadian cleantech company, [Carmanah Technologies](#). The solar bus shelters we most recently installed in [Edinburgh](#) streets. They also have

installations in [Canada](#), [Chicago](#) and [Seattle](#) and a [contract](#) to provide at least 1,200 solar-LED bus stops in the London area. :: Via [Clean Break](#)

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Anybody know where these are in Chicago? I'd love to see it.

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Kaleidoscope is a suite of parts for creating a sense of place. Basic post and canopy structures work alone or with optional seating and lighting to make handsome gateways, transit stops on city streets, valet parking stations, bike rack shelters, break areas on corporate campuses and covered seating in malls, parks and zoos.



Kaleidoscope has the high-quality design, fit and finish typically associated with custom products. But unlike custom alternatives, it offers complete solutions with no surprises. Kaleidoscope is fully designed, engineered and tested. It comes ready to assemble and install, offering savings in technical and labor costs and time. Kaleidoscope is modular and has replaceable parts. It is assembled, not constructed, and can be removed and relocated. It meets stringent wind force and snow load testing. Footing specifications are supplied. Kaleidoscope is manufactured to Landscape Forms renowned standards of quality and has our durable, weather resistant factory finish. And it is backed by our three-year warranty.

Kaleidoscope curved canopies, walls and custom configurations are available as specials.

Visit landscapeforms.com for additional installation photography. Contact your Landscape Forms representative for details.



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Bus Shelters, Gullwing



Gullwing

The Gullwing bus shelter has been developed using computerised design manufacturing technology to quality, functional and robust shelter range. Available in a number of attractive roof designs, the Gullwing shelter is capable of accepting Real Time Passenger Information (RTPI) systems and can be supplied with a wide range of infrastructure accessories, including solar powered lighting and information displays.



See our range of Display Cases by clicking here
You can also look at our 6 sheet advertising options by clicking here.

Robust and Operational Functionality

Designed in conjunction with UK's Passenger Transport Executive (PTE) Councils and bus operators, the Gullwing range offers the ultimate in robust material specification, finish & operational functionality.

Stylish Contemporary Appearance - The Ultimate Marketing Tool

The Gullwing shelter offers its customers both a 'High Quality Waiting Environment' and a powerful calling card for the promotion of 'Passenger Transport Services'.

Customisation

The Gullwing offers numerous options for seating, lighting, structure style, roofing, materials and finishes. The Gullwing shelter can be supplied in all RAL & BS colours and printed graphics to reflect customer house styles or corporate identities.

Environmental Suitability

The Gullwing is available in a comprehensive range of attractive finishes and complements a wide range of architectural environments: modern, heritage or rural.

Solar Power Lighting

The Gullwing can be supplied in both mains and solar powered illumination. Solar energy is a long term, cost effective method of illuminating bus shelters. Trueform is leading the way in the provision of sustainable design and cleaner green energy on street furniture.

RTPI Display Systems

The Gullwing shelter can readily accept real time electronic display and/or journey planning systems via a discreet internal cable management system.

Rain Water Management

The shelter utilises an integral rainwater displacement system channeling water to ground level, thus offering maximum environmental protection.

A photograph of a park bench under a canopy in a tropical setting. The canopy is made of dark metal poles and a dark, perforated metal roof. The bench is made of dark metal slats. The ground is paved with reddish-brown tiles in a grid pattern. In the background, there are lush green trees, including palm trees and a large tree with a thick, gnarled trunk. The sky is clear and blue. The text "landscapeforms®" is visible in the upper left corner, and "kaleidoscope®" is visible in the lower right corner.

landscapeforms®

kaleidoscope®

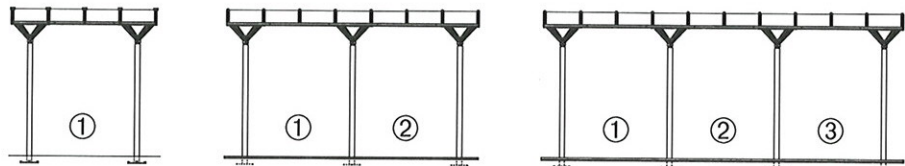
Easy as
one, two,
three

Kaleidoscope is easy to understand and specify. Creating the perfect structure for the particular setting is now as simple as one two three.

one

Select a structure

Specify two, three or four posts to create one, two or three bays
Standard solid panel offset canopies are made to fit



two

Choose a bench (optional)

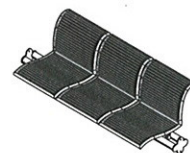
Specify Plexus or Presidio, backed or backless, with or without intermediate arms
Tell us how many you want and in which bays you want them



plexus backed



plexus backless



presidio backed



presidio backless

three

Add lighting (optional)

Specify standard hard-wired or create a Smart Shelter
with state-of-the-art solar powered LED lighting



hard-wired lighting

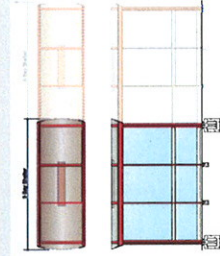


solar-powered lighting

Benefits

Modular Construction
for rapid build & maintenance
Incorporating modular construction design and quick release, tamperproof fixings (not pop riveted) to facilitate rapid, cost effective on site erection and repair of damaged parts.

Bay Lengths
Available in an infinite number of bay lengths - facilitated by modular construction.



Rubber 'shock absorbing' glazing system
Makes glazing more robust and able to better withstand impacts

Engineered Design, Low Maintenance, Long Lasting Materials & Finishing
Engineering grade materials and architectural finishes provide long lasting performance and low maintenance whatever the weather. A range of attractive finishes are available in an infinite range of colours to suit any customer requirements. The shelter is also available in brushed finish stainless steel.

Attractive 21st Century Contemporary Styling
Appearance complementing diverse architectural landscapes and enhancing the image of bus travel.

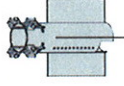
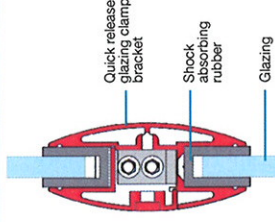
Proven Performance, Tried & Tested - Risk Free
'on-street' successful operation & performance throughout

Premier Marketing & Branding Platform
Provides a high level platform for the promotion and passenger service information

Fully DDA compliant
Fully inclusive design - accessibility to all

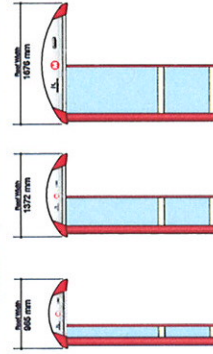
Sustainable Design
Manufactured from a high percent of recyclable materials

Future Proofed
Containing necessary cable runs and pre-designed locations and positions for the fully integrated supply of a comprehensive range of additional intelligent transport IT hardware.

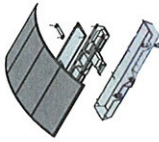


Unique Socket Foundation
The special foundation socket system offers rapid installation for reduced times on site and minimum disruption to flow of traffic.

Variable Roof Widths
Available in 965 mm, 1143 mm, 1372 mm, 1676 mm and 1980 mm roof widths as standard - other sizes available on request.



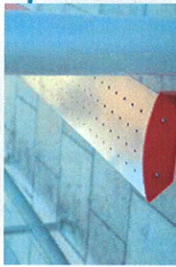
Optional Accessories



Solar Energy Solutions
Comprehensive solar solutions are available for the Metro shelter, including internal courtesy lighting using latest energy efficient LED illumination technology. Trueform are leaders in the field of solar energy engineering. Our solar products are robust, with a proven track record of high performance in the transit industry.



Totem
Existing solar illumination systems - fully proven in the field. Newer Camarrah & Zeia Solar Solutions also available and extensively tested by Trueform



Comprehensive Seating Range
Wide range of comfortable seating options available, bench, perch, duo height and with/without armrests.



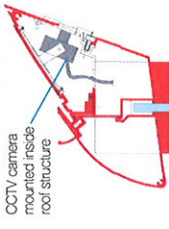
Illuminated 'Half Moon' Information Panels
Solar and mains power LED half moon end panel illumination system already designed and proven on this shelter model - can be made available to Metro on new build or retro fitted to existing shelters.



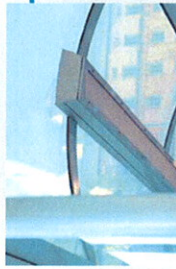
Fare Collection & Ticket Vending
Trueform's future proof shelters can readily accept a wide range of advanced fare payment and ticket vending machines including smart card readers. Trueform can custom adapt all structures to ensure seamless integration



RTI Displays
The Trueform Metro shelter has been proven to accept a wide range of RTPI displays screens. The entire Metro shelter range structurally approved for the addition of RTPI displays without compromising the shelters structural integrity.



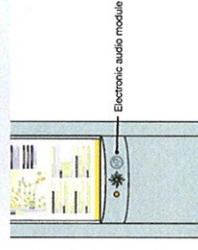
CCTV Security System
CCTV security cameras can be securely installed in the shelter structure to record footage of both inside and outside the shelter. The presence of the CCTV cameras can be highlighted to act as a deterrent or hidden to avoid detection.



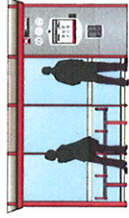
Courtesy Lighting
Energy efficient ultra robust, IP rated courtesy lighting module. Lighting levels tested and approved by the Transport industry. Available for both mains power and solar power shelter options.



Stainless Steel - Super Anti Vandal Glazing
Also available in stainless steel support structure with 'Super Anti-Vandal' innovative glazing configurations.



Audio Announcement
Trueform's intelligent shelter design enables easy integration of audio announcement and PA-Systems for audible travel and service information. These systems can be activated by wireless key fob, particularly useful for the partially sight and provides high level conformance to DDA.



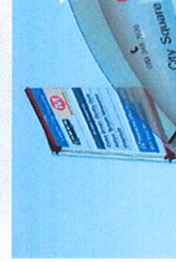
Integrated Kiosk Unit
Touch Screen Journey Planning, Real Time Travel Information, Ticketing & Maps, Smart Card Readers, Passenger Assistance, CCTV.



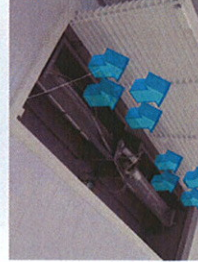
Glass, Polycarbonate, GRP & Perforated Mesh Glazing
Supports a wide range of glazing materials to suit all requirements.



Billboard Illuminated Displays
Metro's illuminated 6 sheet advertising displays have been designed to exclusively fit the Trueform Metro shelter.

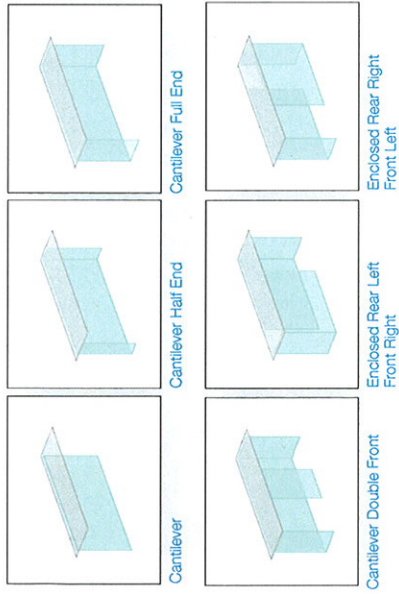


Flag
To reduce roadside clutter and number of pieces of street furniture, the bus stop flag can be fitted directly to the bus shelter.

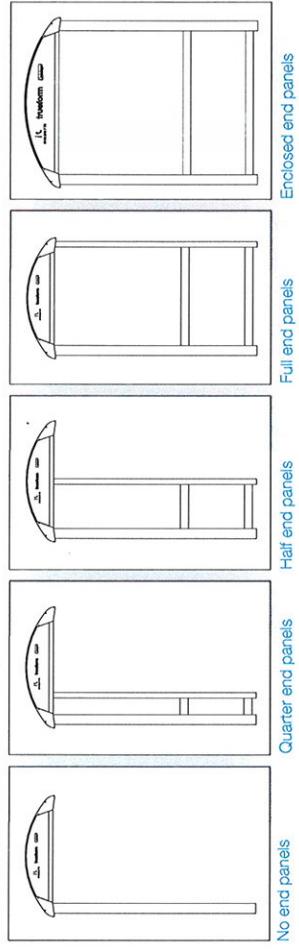


Heating & Air Conditioning Options
Trueform can provide climate controlled shelter environments to suit all climatic conditions. Trueform's intelligent shelter range has air conditioning and heating options for maximum passenger comfort - many of which can run completely independently from the grid using solar power!

Configurations

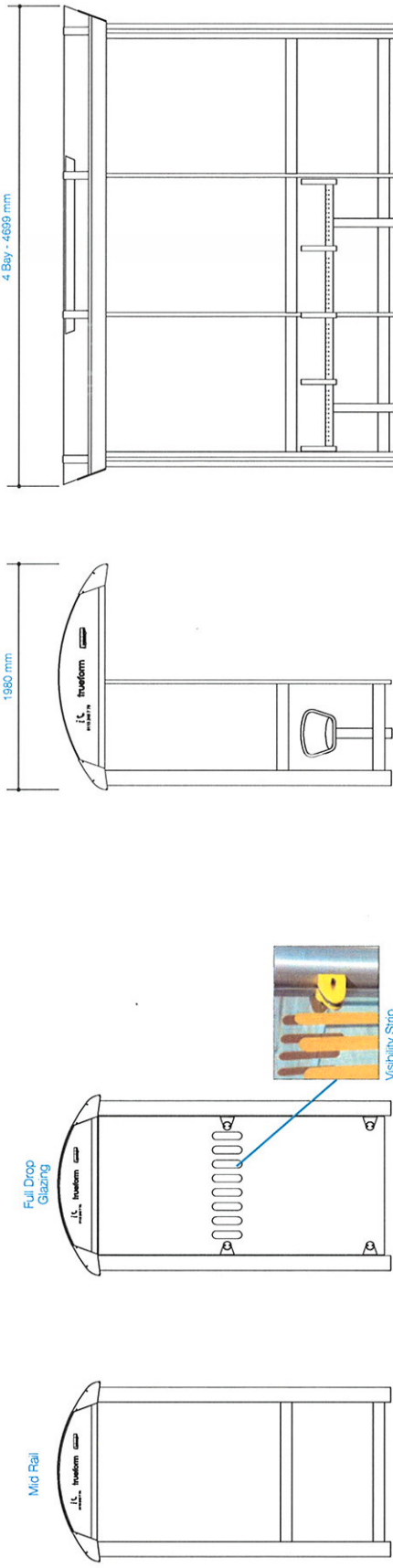


End Screen Configurations



Roof widths -
 965 mm
 1143 mm
 1372 mm
 1676 mm
 1980 mm

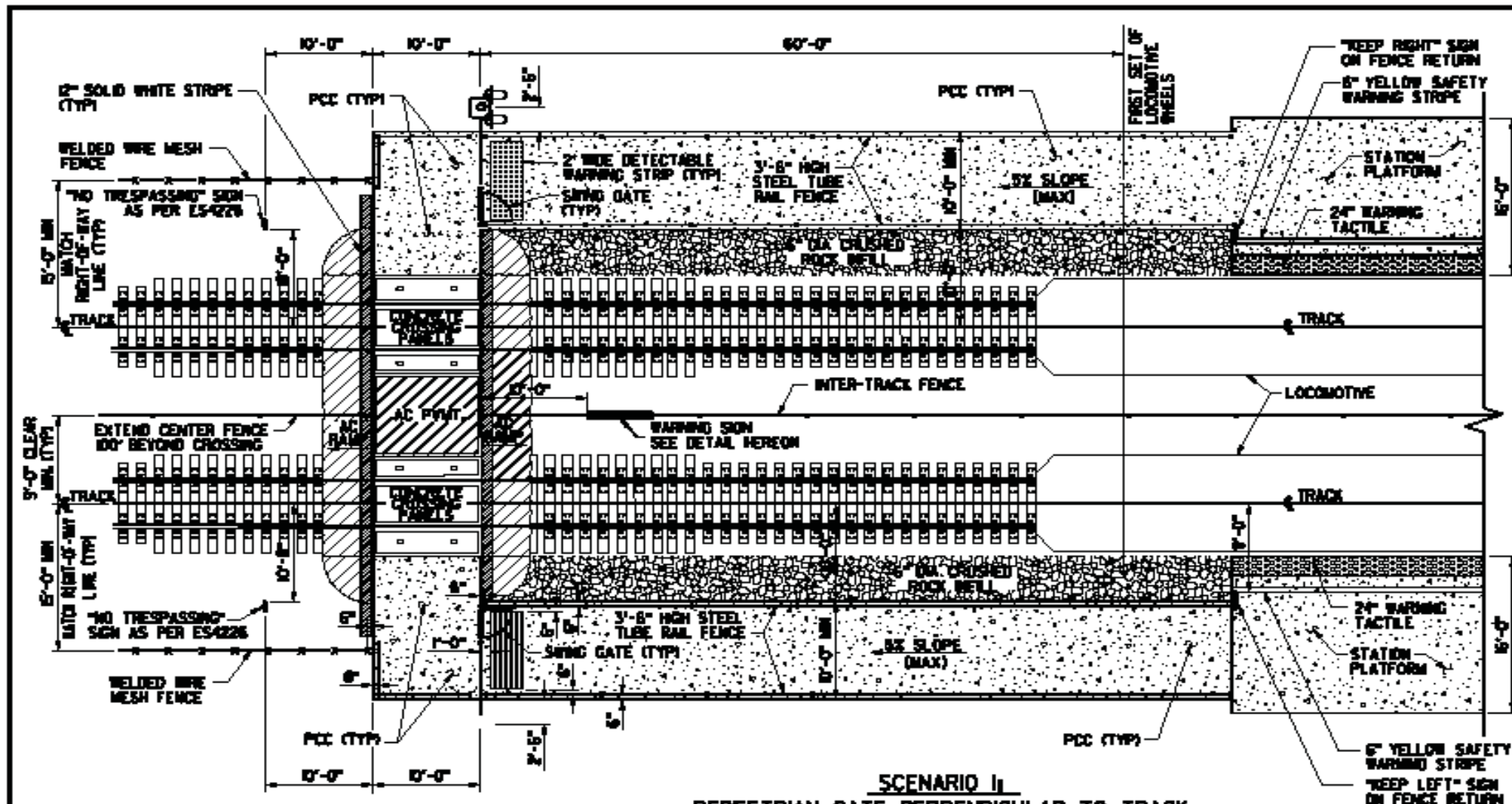
1 Bay - 1524 mm
 2 Bay - 2565 mm
 3 Bay - 3656 mm
 4 Bay - 4699 mm



APPENDIX H

*(Preliminary SCRRA Engineering Standard (ES) 4032
Pedestrian Crossing Adjacent to Station*

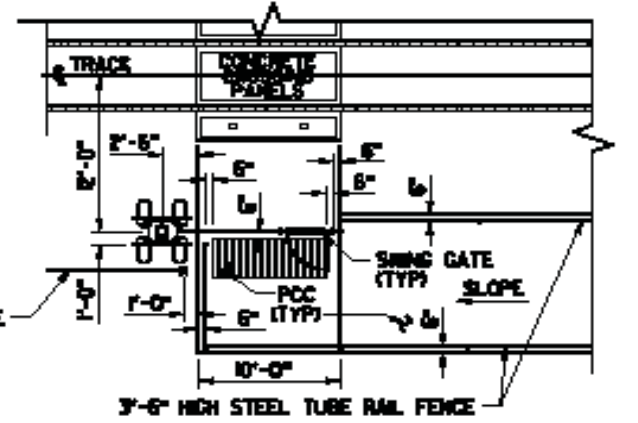
DRAFT



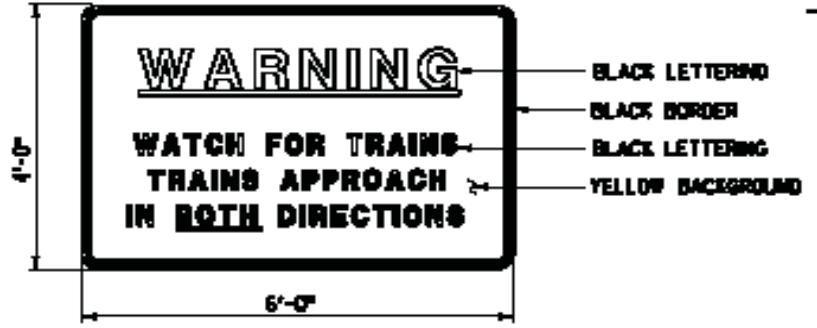
NOTES:

1. THESE STANDARDS ARE NOT INTENDED TO REPLACE EXISTING REGULATORY STANDARDS, NOR TO BE A SUBSTITUTE FOR ENGINEERING KNOWLEDGE, EXPERIENCE AND JUDGMENT, BUT ARE REQUIREMENTS WHICH ARE MOST IMPORTANT FOR SAFE CONSTRUCTION, MAINTENANCE AND OPERATION OF PEDESTRIAN FACILITIES AT HIGHWAY-RAIL GRADE CROSSINGS. SINCE THE ACTUAL DESIGN WILL TYPICALLY BE SITE SPECIFIC, INFORMATION SHOWN ON THIS DRAWING WILL BE MODIFIED AS NECESSARY IN CLOSE COLLABORATION WITH SCRRRA.
2. FOLLOW CALIFORNIA MUTCD FOR STRIPING, SIGNING, AND OTHER TRAFFIC WARNING DEVICES.
3. REFER TO THE FOLLOWING FOR ADDITIONAL DESIGN INFORMATION:
 - a. SCRRRA ENGINEERING STANDARD ES2006 FOR CONCRETE PANELS AND PAVED END RAMP.
 - b. SCRRRA ENGINEERING STANDARD ES2810 FOR INTER-TRACK FENCE.
 - c. SCRRRA ENGINEERING STANDARD 4001 FOR TRACK SECTIONS AND ASPHALT CONCRETE PAYMENT DETAILS.
 - d. SCRRRA ENGINEERING STANDARD ES4002 FOR SWING GATE DETAILS.
 - e. SCRRRA ENGINEERING STANDARD ES8308 AND ES8309 FOR PEDESTRIAN WARNING DEVICES.
 - f. CALTRANS STANDARD PLANS A20A FOR TRAFFIC LINES (STRIPS) AND A88A FOR DETECTABLE WARNING SURFACE (STRIP).
 - g. APWA STANDARD PLAN 606-2, TYPE "B" FOR STEEL TUBE RAIL.
4. FENCING AND STEEL TUBE RAIL LOCATIONS SHALL BE ADJUSTED AS NECESSARY TO PROVIDE SCRRRA MAINTENANCE VEHICLES ACCESS TO RIGHT-OF-WAY AND SIGNAL & TRACK FACILITIES WITH SCRRRA APPROVAL.
5. PREVENTION AND TOTAL WARNING TIME SHALL TAKE INTO CONSIDERATION THE PEDESTRIAN WALKING DISTANCE AND CLEARANCE TIME AND SHALL MEET THE REGULATIONS AND REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT (ADA) AND CA MUTCD.

**SCENARIO 1
PEDESTRIAN GATE PERPENDICULAR TO TRACK**



**SCENARIO 2
PEDESTRIAN GATE PARALLEL TO TRACK**



**WARNING SIGN DETAIL
SCALE: NONE**

		<p>THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THIS PLAN SHEET</p>	<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY 700 SOUTH FLOWER STREET, 26TH FLOOR LOS ANGELES, CALIFORNIA 90017</p>	<p>ENGINEERING STANDARDS</p> <p>PEDESTRIAN CROSSING ADJACENT TO STATION</p>	<p>4922</p> <p>NTS</p> <p>1 OF 1</p> <p>13-0032</p>
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