9.0 TRAFFIC

Traffic studies shall be prepared in accordance with criteria adopted by the City of Highland. Check with the City Engineer for details before starting any traffic reports.

Traffic signals shall be designed in accordance with the latest edition of the State of California Standard Specifications and Standard Plans, and the latest edition of the California Manual on Traffic Control Devices.

9.1 Traffic Study Parameters

Pursuant to City Council Resolution 93-37 and 96-7, the City of Highland requires a Traffic Report be prepared in accordance with the guidelines of Appendix C of the latest Congestion Management Program for San Bernardino County whenever a project exceeds the CMP thresholds or generates more than 1,000 new two-way daily trips or 100 new two-way peak hour trips.

The City Engineer may require a smaller project to prepare a Traffic Report in accordance with the City Engineer's requirement if there are concerns regarding access, roadway structural impacts or level of service on intersection or roadway segments adjacent to the project.

The following is a summary of parameters for preparation of a traffic impact analysis when such analysis is required by the City of Highland:

1. Provide project general plan or a specific plan description.

2. Analysis Methodology – Provide a general description for the process used to analyze the project in accordance with the latest CMP guidelines.

3. Obtain existing traffic counts and calculate existing levels of service.

4. Traffic Forecasts – Project amount of traffic to be generated from proposed development utilizing ITE trip generation rates or actual study rates for development similar to the type proposed. Another alternative is use of a local model as identified in the latest CMP guidelines. Background traffic forecasts should also be included in accordance with the latest CMP guidelines. Distribute proposed traffic to the existing street system. This should be accomplished in accordance with methods outlined in the latest CMP guidelines. Project traffic volumes to a target year in accordance with the latest CMP guidelines or in the case of projects which do not meet Congestion Management Plan or local thresholds to a target year as specified by the City Engineer. Forecast traffic with and without the project.

5. Analyze future levels of service with and without the project. All key segments and intersections shall be analyzed in accordance with the latest CMP guidelines and the requirements of the City Engineer. Levels of service shall be analyzed based on procedures in the latest version of the Highway Capacity Manual.

6. Describe projected level of service problems in accordance with the latest CMP guidelines. All intersection levels of service below "D" and all segment levels of service below "C" shall be mitigated. Precisely show all recommended mitigation regarding traffic control measures, striping, street widths, etc.

7. Cost Estimate – The costs of said mitigating deficiencies must be estimated and tabulated within the report.

8. Conclusions and Recommendations – The summary of proposed mitigations and costs shall be provided along with any other recommendations that should be brought to the attention of the City Engineer. The cost for mitigating the deficiencies shall be apportioned to the proposed development in accordance with the method outlined in the latest CMP guidelines.

A minimum of three copies of the report shall be signed and stamped by a registered civil or traffic engineer and submitted with the required review fee. Additional copies may be required when the City Engineer determines that other agencies should be afforded an opportunity to review the traffic impact analysis.

It should be noted that additional items may be required depending upon the size and scope of the project involved. These items could include such things as analysis of driveway intersections, traffic progression analyses, signal timing analyses, signal interconnect analyses, sight distance analyses or speed and access analyses. In general, it would be acceptable to analyze for the most severe condition, i.e. peak hours, but in some cases daily traffic volumes or noon time traffic volumes would also need to be analyzed.

This outline, along with previously referenced resolutions and CMP guidelines, is the basic guide for preparation of traffic reports for the City of Highland.

It is recommended that prior to the consultant undertaking a traffic study, he or she first contact the Public Works Director/City Engineer at (909) 864-8732, ext. 212, so the specifics of the individual project may be discussed.

9.2 Traffic Signal Specifications

1. Traffic Signal General Notes

a. Equipment list shall be submitted to the City Engineer for approval.

b. Turn-on of the traffic signal system shall not be made on a Friday or the day preceding a legal holiday, and will be permitted between the hours of 9 a.m. and 2 p.m. only.

c. The City shall be notified at least 48 hours prior to the intended turn-on and the City's signal maintenance company must be present before turn-on is initiated.

2. Materials and Installation

a. Conduit and conduit fittings shall be UL or ETL rigid steel with metallic fittings for traffic signals and street lighting and shall conform to Caltrans Standard Specifications.

b. Pull boxes shall be pre-cast concrete. Grout-in bottom of pull boxes will not be permitted.

c. Electrical pull boxes, unless noted otherwise on the Plans, shall be No. 5 or larger and shall have traffic rated lids.

d. No pull box shall be located in or within 1-foot of any curb ramp.

e. Multiple circuit conductors shall be THW type.

f. Electrical service equipment installation and conduit run detail shall be specified by the serving utility company, and written proof of their approval by the utility shall be submitted to the Engineer prior to installation.

g. Service equipment shall be 120V/240V, type as shown on plans.

h. Materials and equipment furnished by the contractor shall be tested at Siemens, 10775 Business Center Drive, Cypress, CA 90630.

i. Costs for testing and delivery to and from the test site shall be borne by the Developer.

j. Install model 170E controller assembly complete in 332 cabinet. The controller assembly shall include the following equipment:

- Remote IP Antenna/Radio (Commpak BB58INT-Encom includes Radio Power Supply)
- Ethernet Module (to be integrated in the controller)
- Cat 5e Cable from antenna to controller cabinet.
- Dimension Battery Backup System.
- Iteris video detection.
- Opticom emergency vehicle pre-emption.
- Other appurtenant equipment as required for operation.

k. The Battery Backup System shall be installed in a side-mounted cabinet per the manufacturer's specifications.

3. Limited Warranty

a. The supplier shall provide a limited three-year warranty on the video detection camera. See supplier standard warranty included in the Terms and Conditions of Sale documentation.

b. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

4. Maintenance and Support

a. The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection camera. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terns of sale for said parts.

b. The supplier shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on site technical support services.

c. Installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Traffic Signal Technician certified.

d. All product documentation shall be written in the English language.

5. Pedestrian Push Buttons

a. Pedestrian push buttons shall be Type B “Bumble Bee.”

b. Pedestrian push button signs shall conform to the details shown on the plans, except that the message and symbols shall conform to R62D(CA).

6. Lighting

a. LED Luminaires

- Luminaires shall be LEOTEK GC1-80E-MV-NW-3-GY-530.
- Luminaires shall be equipped with photoelectric controls and wiring to a Type III service enclosure for testing.

b. Internally Illuminated Street Name Signs

- New internally illuminated street name signs shall be Type A.
- Details of color, style, borders, and spacing shall conform to the standards established by the City. "Periods" shall not be used on abbreviations. A scale layout for each legend shall be submitted to the Engineer for approval prior to fabrication.
- A 1/2-inch close nipple and LB condulet shall be installed on the mast arm at the coupling point. The cable between sign and condulet shall be 3-conductor AWG No. 16, Type SJO. The green conductor of the cable shall be used for grounding between sign housing and condulet. The cable shall enter the sign housing and condulet through neoprene bushed CGB connectors. The cable shall be dressed in a neat arc between sign and condulet with sufficient slack to facilitate sign swing.

7. Controller Maintenance Manual

a. The Developer shall furnish a maintenance manual for all controller units, auxiliary equipment, and vehicle detector sensor units, control units and amplifiers. The maintenance manual and operation manual may be combined into one manual. The maintenance manual or combined maintenance and operation manual shall be submitted at the time the controllers are delivered for installation or, if ordered by the Engineer, previous to purchase. The maintenance manual shall include, but need not be limited to, the following items:

- Specifications
- Design Characteristics
- General operation theory
- Function of all controls
- Troubleshooting procedure (diagnostic routine)
- Block circuit diagram
- Geographical layout of components
- Schematic diagrams
- List of replaceable component parts with stock numbers

b. The Developer shall arrange to have a representative of the Engineer and a signal technician present at the time of the new controller operation is implemented. The technician shall be fully qualified to work on the controller assemblies, and shall be employed by the controller manufacturer or his authorized representative. The Engineer's representative shall be notified at least 48 hours prior to the turn on.

8. Traffic Signal Faces and Fittings

a. All vehicular indications shall be 12-inch with visors and backplates.

b. All signal heads shall be aluminum alloy. Plastic housings, visors, and backplates will not be permitted.

c. All signal heads and fittings shall be dark green.

d. Top openings of signal heads shall be sealed with neoprene gaskets.

9. Light Emitting Diode Signal Module

a. All new indications (red, green, and yellow) shall be Dialight.

10. Pedestrian Signals

a. Pedestrian signal face type shall be Dialight LED countdown pedestrian heads.

11. Detectors

a. Video detection system shall be Iteris Vantage system with RZ-4AWDR color cameras. Contractor shall provide one extra camera to the City.

12. Installation

a. The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. A BNC plug connector shall be used at the cabinet end. The coaxial video cable shall be stripped and terminated at the camera and cabinet per manufacturer's instructions (no BNC or other connector shall be used at the camera). The coaxial cable, BNC connector used at the cabinet termination, and crimping tool shall be approved by the supplier of the video detection system. The manufacturer's instructions must be followed to ensure proper connection.

b. The power cabling shall be 16 AWG three-conductor cable with a minimum outside diameter of 0.325 inch and a maximum diameter of 0.490 inch. The power cable shall be terminated at the camera per manufacturer's instructions and shall only require standard wire strippers and a screw driver for installation (no special connectors or crimping tools shall be used for installation). The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may acquire power from the luminaire if necessary.

c. The video detection camera shall be installed by factory-certified installers as recommended by the supplier and documented in installation materials provided by the supplier. Proof of installer's factory certification shall be provided.