Coordination of Freeway Ramp Meters and Arterial Traffic Signals (FOT) – Interface and Traffic Signal Activation

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Outlines

• Interfacing for Dynamic Ramp Metering Rate
• Interfacing for Intersection Traffic Signal Timing
• Discussion
Interfacing for Dynamic Ramp Metering Rate

- Direct Interface with D4 TMC Computer
  - To get real-time data
    - Mainline detector
    - Onramp detector
  - To send ramp metering rate for each onramp
Interfacing for Intersection Traffic Signal Timing

- SR87-Taylor Intersection of Caltrans D4 running TSCP
- Caltrans D4 Controller Running TSCP without a Master
- Caltrans D4 Controller Running TSCP with a Master
- San Jose Intersection 2070 Controller running Fourth Dimension Software
- San Jose Intersection 2070 Controller running SCATS
• According Zhongren meeting with Caltrans HQ engineers:
  – To be able to coordinate using a field master with cycle length and offset fixed
  – If no field master, a PATH computer could be configured to run TSCP as a master
Caltrans D4 Controller Running TSCP without Master
Caltrans D4 Controller Running TSCP with a Master
San Jose Intersection 2070 Controller running Fourth Dimension Software

- Controller at the following Locations will still run Fourth Dimension firmware
  - San Pedros St.
  - First Street
- Discussed with Tod on 11/17/2011
- To send Tod a full set of the parameters we want to set and read;
- Tod will modify the Fourth Dimension firmware to accept a specially formatted Ethernet packet formatted with those parameters and apply them using his software;
- He will send us the firmware and we should load it into a 2070 for testing provided that San Jose Transportation agree to do so.
San Jose Intersection 2070 Controller running Fourth Dimension Software
San Jose Intersection 2070 Controller running Fourth Dimension Software

**City of San Jose**

*Intersection Traffic Control Cabinet*

- 2070 Traffic Controller
  - Offset
  - Cycle length
  - Green time

- Traffic detector or controller

**PATH Computer:**

- Master
  - Traffic signal control algorithm
  - Traffic data processing
  - GPRS modem

**Running ATCS of Fourth Dimension**

**Local RM Cabinet**

- Ramp metering controller

**TMC Ramp Meter Computer**

- Ramp metering rate

- Traffic data server

**PATH Computer**

- Ramp meter algorithm
  - Coordination algorithm
  - Traffic data processing
  - GPRS modem

**Interface**
San Jose Intersection 2070 Controller running SCATS

- SCATS has 2 control levels: *Strategic Level* at TMC and *Tactic Level* at local control cabinet. It is feasible to dynamically assign the Green Distribution for an intersection from the Strategic Level at TMC;

- According to Lily (05/22/12):
  - Implementation of ATCS in San Jose is limited to 52 intersections in the City, not city-wide;
  - I280-Saratoga intersections will run SCATS in this summer;
  - Lily has arranged an engineer to find out how the traffic is controlled at San Pedros and Frist Street (upstream of Taylor)
San Jose Intersection 2070 Controller running SCATS
Discussion