

CITY OF ESCONDIDO

ENGINEERING SERVICES, TRAFFIC SECTION

TRAFFIC SIGNAL DESIGN / PLAN-CHECK CHECKLIST

I.) BASE DRAWING

- A.) Orientation: Prefer north up or to right.
- B.) Existing & Proposed Improvements
 - 1.) Centerline, curb line, R/W, & median geometry
 - 2.) Curb return, ramp (G-27), back of / adjacent sidewalk, & driveway geometry
 - 3.) Median noses (especially @ 2xLTPs), limit lines, striping
 - 4.) Existing SIGNAL & LIGHTING EQUIPMENT
 - 5.) Location of all underground utilities based on mark-outs and field surveying.

UTILITY INFORMATION

- A.) Based on facility maps from SDG&E, AT&T, & Cox CATV. COPY CITY and record drawings, mark-out of utilities and field surveying.
- B.) Consultant letter to Ali Ghashghaee (public) or Area Planner (private) for SDG&E service point, & call / field meet Bob Kates for AT&T service point, if required (ONLY if hard-wire extremely impractical)

II.) PHASING

- A.) Provide protected lefts UNLESS # lefts / conflicting throughs are low, and there are no visibility obstructions.
- B.) 8-box phase diagram & typical notes (“...time concurrently...”).

III.) SIGNING AND STRIPING PLAN

- A.) Separate sheet(s) justified? For large jobs, consider part of P-drawing.
- B.) Ramps, crosswalks / limit lines, lanes shown correctly (Need Ped. Barr. + R49?)
- C.) Left turn maneuverability, ESPECIALLY 2xLTP; improving ONE left turn path requires pulling back TWO limit lines
- D.) Number / width / assignment of lanes
 - 1.) Double lefts? Provide delineation through intersection
 - 1.) Eliminate offsets, avoid / mitigate substandard radii, provide for bikes
- E.) Transitions to existing; WS or WS2/60
- F.) Lane drops per Figure 3B-12(CA) of California MUTCD
- G.) Caltrans detail designations, call-out removals (Schedule?), Gen. Notes

IV.) PRELIMINARY POLE & SIGNAL FACE LOCATIONS

- A.) Foundation completely within R/W
- B.) Pole centered max. 5 ft. from extended crosswalk line
- C.) Maintain min. 4 ft. path per ADA from **corner** of base plate to back of sidewalk or min. 5 ft. from **corner** of base plate to face of curb

- D.) CONFLICTS: O/H utilities, U/G utilities, existing signal equipment
 - E.) Mast arm length, loading case
 - 1.) If left turn phasing in future, use larger pole & interim-length (custom) SMAs
 - 2.) “T”, “Offset-T” or split-side-street; consider use of 4-sec. (MAS-4B)+3arrow
 - F.) ADVANCE & LIMITLINE SIGNAL VISIBILITY per Sec. 4D-15 of MUTCD & California Supplement; add heads?
 - G.) EVPE detector positioning (vs. approach curvature?)
 - H.) Check ped head visibility vs. vehicle queue
 - I.) Check LIGHTING PATTERN of both streets; new / relocated LS2s?
- V.) CONTROLLER & METER PEDESTAL PLACEMENT
- A.) Minimize vulnerability of controller; prefer minor-street.
 - B.) SDG&E dictates MP location BUT try to adjust /minimize vulnerability
 - C.) Once MP (& TSP?) approved, assign address(es) @ Bldg. Dept.
- VI.) FIELD MARK-OUT & POT-HOLING
- A.) As soon as utility file info and pole /cabinet locations & types are on plan,
 - 1.) Ask call USA / DigAlert for mark-out
 - 2.) Pot-hole potential conflict areas
 - 3.) Adjust pole locations / consider “squat” foundations for Type 1A poles
- VII.) LIMIT LINE DETECTION: - - USE VIDEO DETECTION unless impractical.
- A.) 4 ea. Type E (6’ diameter) loops in each lane, 16’ center-to-center. E’s @ limit line shall have 4 windings.
 - B.) Type Q (3’ x 6’ unless wide lane) for bike lanes; separate DLC
 - C.) Also want separate DLC for; LT pockets, mandatory-right-turn lanes (delay input), multilane advance loops being used as counting detectors
- VIII.) ADVANCE & INTERMEDIATE DETECTION
- A.) Use higher of speed limit or approach 85th. Deceleration = 10 ft./sec.². Increase for downgrade. Use calculation sheet.
 - B.) Intermediate detection for all but the slowest approaches, @ ½ way.
- IX.) CONSTRUCTABILITY REVIEW, PAVEMENT REPAIR
- A.) Once loop locations added, send plans to Field Engineer (Bud Oliveira) for constructability review, including pavement condition in loop areas.
- X.) CONDUIT
- A.) Try to make the wider street the open end of “U”
 - B.) Generally, 2” is minimum. 3” = min. for street crossings.
 - C.) Avoid half-inch sizes. Avoid 4” in street (vs. rock wheel trench width).
 - D.) Telco wants THEIR OWN 1” for TSP to controller. SP to MP 2”, sometimes 3”.
 - E.) Co-trench 2” + pull rope for future hard-wire interconnect if another signal or future candidate is within 1,200’.

- XI.) PULL BOXES
 - A.) If # conduits = 5 or less, use #5. Otherwise, use #6. (DLC only? #3 1/2 OK)
 - B.) HRPB always #6e (with extension).

- XII.) POLE AND EQUIPMENT SCHEDULE
 - A.) Include columns for everything on pole: location, station & offset, type, signal MA (including ultimate?), luminaire MA, luminaire type, vehicle signals (MA vs. SV; list bracket type & phase), ped sigs (phase & hardware), PPB (Phase, side, arrow direction), EVPE (phase), turn-reg. Sign, RSNS, "Remarks" (PEC)
 - B.) Controller Note; location, equipment, BBU
 - C.) Meter Pedestal Note; location, equipment, service address
 - D.) Special notes; custom brackets, high-mount signals, audible ped signals, pole painting, salvaged / relocated equipment (const. notes).

- XIII.) METER PED. WIRING DIAGRAM - - - Add circuits if required for mid-block lighting, irrigation controller power (separate meter), other unusual features.

- XIV.) CONDUIT & CONDUCTOR SCHEDULE
 - A.) Required rows: cables 3-conductor / 12-conductor (typically 2 ea. / 3 ea. per pole), #14 for PEC & future APS clock, #12 only if exist. IISNS, #10 for luminaires, #8 for remote luminaires and/or irrigation controller, #6 MP to controller, BDLC, EV-DLC, video detection? (Power + coax)
 - B.) Try for 26% but be flexible to preserve 3" or 2x3" for crossings. Accommodate future poles, phases, lanes (loops), irrirrollers, RxR pre-empt, etc.

- XV.) GENERAL NOTES; CONSTRUCTION NOTES, NORTH ARROW, SCALE including Bar Scale, DECLARATION OF RESPONSIBLE CHARGE
- XVI.) SPECIAL DWGS (squat 1A footing), SPECIAL PROVISIONS, COST ESTIMATE