



**CITY OF ANAHEIM  
DEPARTMENT OF PUBLIC WORKS  
SUBDIVISION SECTION**

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Phone: 714-765-5176 Fax: 714-765-5225

**STREET IMPROVEMENT PLANS CHECKLIST**

Draft version June 2015

Applicant: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Case Number: \_\_\_\_\_

Date Plan Check Received: 1st(\_\_\_\_\_) 2nd(\_\_\_\_\_) 3rd(\_\_\_\_\_) Subseq(\_\_\_\_\_)

Date Plan Check Completed: 1st(\_\_\_\_\_) 2nd(\_\_\_\_\_) 3rd(\_\_\_\_\_) Subseq(\_\_\_\_\_)

Reviewed By: \_\_\_\_\_

**IMPROVEMENT PLANS**

**I. General**

Plan Check No.			CHECKLIST	Comments
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	
			1. Plans conform to the approved tentative map. (if not, applicant needs to demonstrate substantial conformance).	
			2. Title sheet signed and stamped by a registered Civil Engineer prepared in ink on City of Anaheim standard sheets for title block and other sheets.	
			3. Landscape architect - also signed and stamped on first sheet of the landscape improvement plans.	
			4. Submit Drainage Report and include WDID# on Erosion and Sediment Control Plan Sheet (if applicable), reference Soils Report including pavement section recommendations.	
			5. Submit Final Water Quality Management Plan (1 copy) if applicable. (see OC DAMP [Table 7-1] for applicability: <a href="http://ocwatersheds.com/civicax/filebank/blobdload.aspx?BlobID=9900">http://ocwatersheds.com/civicax/filebank/blobdload.aspx?BlobID=9900</a> )	
			6. Plans drawn to an engineering scale (i.e. 1"=40', 1"=20'), with all lettering 1/10" minimum.	
			7. Engineering Cost Estimate signed and stamped.	
			8. Verify top of curb grades and cross-sections @50' max. intervals along road frontage and extending 150' min. beyond limits of work. Profile TC, centerline & EP.	

			9. Permits required from other agencies (Fish & Game, Caltrans, Army Corps of Engrs, Flood Control, etc.) if applicable.	
			10. Right of entry submitted for review for all off-tract work.	
			11. Include Construction details not covered by City of Anaheim Standard Plans, or Green Book and demonstrate compliance with Title 24/ADA requirements.	

**II. Title Sheet – the title sheet shall include:**

Plan Check No.			CHECKLIST	Comments
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	
			<b>A. Project location on Map</b>	
			<b>B. Index Map showing the following:</b>	
			1. Street configuration within the tract/parcel.	
			2. Lot configuration within tract/parcel.	
			3. Tract /parcel boundaries.	
			4. Street names.	
			5. City boundaries, if contiguous to tract/parcel.	
			6. North Arrow.	
			7. Scale.	
			8. Specify all proposed improvements.	
			(Note: It may be necessary to include a separate sheet, following the title sheet, for the index map, if the information required on the index map cannot be shown on a small map on the title sheet itself).	
			9. Basis of Bearings relative to maps or street center line alignments.	
			10. Benchmark-O.C.S. of City of Anaheim number description, date, and the elevation to the nearest .01 decimal places.	
			11. Engineer firm name, address and telephone number, date plans prepared, signature and number of registered Civil Engineer.	
			12. Soils Engineer (if applicable), including a report number, date of report, name of firm.	
			13. Title block includes tract/parcel number and tentative parcel number, if applicable. If not applicable, includes street name and limits of improvement (measured from closest intersection).	
			14. City District Number at bottom right corner of plans.	
			15. General Notes for Improvement Plans.	
			16. General Notes for Street Improvement Plans.	
			17. General Notes for Storm Drain and Sewer Plans	
			18. City of Anaheim Water / Electrical Notes.	
			19. Abbreviations and Legend.	
			20. Construction Notes and Quantities estimate.	
			21. Scope of plan examination and plan conformance.	

			22. Engineer's Notes to Contractor.	
			23. Traffic Engineering Signing and Striping / Traffic Control Notes.	
			23. Underground Service Alert Notice and Phone No.	
			24. Indicate of the improvements are private or public.	
			25. Water Engineering Approval.	
			26. Electrical Engineering Approval.	
			27. Traffic Engineering Approval.	
			28. Advanced Planning Division Approval.	
			29. PW Operations/Resort Services Approval.	
			30. Development Services Manager Approval.	
			31. City Engineer Approval.	
			32. Plan number for each sheet, RCP case and District number all sheets.	

**III. Road Typical Sections and Details**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. Typical road sections:</b>	
			1. Each geometric street section variation with sufficient information to construct transitional areas.	
			2. Street cross-section shown at 50' intervals maximum (closer intervals may be necessary per the City Engineer). Cross sections slope rates and stationing interval shown.	
			3. Paving, curb and gutter to be constructed, and details of joints to existing pavement included.	
			4. Structural pavement design section recommendations submitted and correspond to plans.	
			5. Note indicating the final R-value test after subgrade grading will determine final pavement section pending City Engineer approval.	
			6. Sidewalk width and location relative to ROW.	
			7. Street sections to conform to City Standard Plan Details or as approved by the City Engineer.	
			8. Centerline to curb face dimension.	
			9. Centerline to existing and to ultimate right-of-way dimension.	
			10. Show separation of Construction centerline and Survey centerline for streets that have both centerlines.	
			11. Level line from centerline crown top of curb with vertical dimension.	
			12. Utility easements and dimensions.	
			13. Show existing and proposed utilities.	
			14. Show bus pads and related street furniture.	
			15. Bike paths shown.	
			16. Applicable construction notes included.	

			17. 1"=10' or 1"=20' details of arterial street intersections showing 0.1 foot design elevations in a grid at 10' on center with contours (to set construction grades and evaluate drainage and rideability).	
			18. Street name sign schedule	
			19. Show proposed location of street signs.	

**IV. Plan View**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A.</b>	
			1. North arrow.	
			2. Existing improvements shown dashed with existing City plan numbers references.	
			3. Show stationing of all BCRs, ECR's, beginning and end of improvements and transitions.	
			4. Horizontal curves and sight distance designed per Caltrans Highway Design Manual.	
			5. Station equations at all intersections included.	
			6. Stations at each 100' and 50' shown.	
			7. Existing and proposed utilities shown.	
			8. Tract/parcel map number, boundary and lot lines for each adjacent parcel shown.	
			9. Pertinent construction notes to each sheet with references to city standard plans and details provided.	
			10. Match lines and references shown.	
			11. Curve data, in table format provided.	
			12. Approved street lighting layout shown.	
			13. Removals shown clearly.	
			14. Transitional areas 150 feet beyond limits of work shown or as approved by plan checker.	
			15. Existing or proposed valves, vaults, poles, meters, etc., with reference to construction note indicating how conflict will be addressed.	
			16. Reference details for transitions at curb returns from one height to another height curb (typically would be 8" curb to 6") when an access ramp is involved.	
			17. Limits of proposed, existing, overlay and removal of pavement appropriate shading to delineate areas.	
			18. Elevations on plan view match elevations on profile view.	
			19. Two foot setbacks between sidewalk and slope for hillside developments.	
			20. Call out centerline stationing and widths for all driveways shown on plans.	
			21. Knuckles will only be allowed in streets when approved by the City Engineer.	
			22. Intersection angles shall be 15 degrees or less.	

			23. The minimum grade for public and private street shall be 0.2%.	
			24. Street grades shall not exceed 5%.	
			25. Grade breaks on streets shall not exceed 0.5%.	
			26. Minimum lengths for vertical curves are met.	
			27. Grade breaks along vertical curves do not exceed 0.5% in a 25 foot length.	
			28. Stopping and passing sight distance in accordance with Caltrans Highway Design Manual.	
			29. Super elevation diagram (if applicable).	
			30. Minimum flowline grades through knuckles and cul-de-sacs shall be 0.32%.	
			31. Structural sections and pavement types generally shall be recommended in the soils report approved by City Engineer.	
			32. The use of cross gutters is not allowed if storm drain is available (slotted cross gutters prohibited). Storm drain systems shall be configured to intercept low flows at street intersections.	
			33. Location and width of commercial and industrial driveway for each individual project shall be approved by Traffic Engineering.	
			34. Driveway shall be constructed in accordance with Standard Plans (114-A residential and 115B commercial), unless prior approval is obtained from the City Engineer.	
			35. The type, size, and location of street name signs shown on City of Anaheim Standard Plan 435-C. Street name sign shall be provided by the developer as approved by the City.	
			36. Striping diagrams shall be included in the improvement plans (if applicable).	
			37. Warning, guide and regulatory signs shall be in conformance with State standards (MUTCD or per Traffic Engineering).	
			38. Construction signing shall be in full conformance with the most current edition of the Work Area Traffic Control Handbook and OSHA standards.	
			39. Barriers shall serve the purpose of protecting the pedestrians, bicyclists and motorist from a hazardous condition. A barrier shall not be used when its use could cause a loss of life, limb or property.	

			40. Contact OCTA and provide information as to whether or not a bus stop exists or will be required adjacent to the project. If a bus stop exists or is proposed, obtain the location from OCTA. This information should be provided with the second plan check submittal. A standard plan for a concrete pad will be provided with second plan check comments, if applicable.	
			41. Verify access ramps meet City Standard Detail 111-3. Plans shall show the case type and detail number.	

**V. Profile View**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. Profile shall be on top half of sheet and include:</b>	
			1. Centerline profile (extending to centerline of intersection or 150 feet into existing pavement).	
			2. Existing ground at centerline (Elevations in parenthesis).	
			3. Top of curb profile including curb returns.	
			4. All grades with negative grades so indicated.	
			5. Elevations at grade breaks, at street intersections and as necessary.	
			6. Scale (horizontal and vertical).	
			7. Vertical curves, including tangent grades, P.I.V.C. station and elevations every 25 feet and at control joints.	
			8. Elevations on curb returns at control points and at 3 delta points on a vertical curve.	
			9. Sewer and storm drain profiles.	
			10. Utility line crossings and substructures which could interfere with road and other underground construction.	
			11. Different curb heights indicated with limits for each type of transaction.	
			12. Profile of existing edge of pavement with elevation at a minimum of 50' intervals.	
			13. Minimum flow line grade of .32% for cul-de-sacs and knuckles.	
			14. Stationing, increasing from left to right.	
			15. All stationing shall refer to centerline of street unless otherwise noted and shall read left to right, and run-up station from south to north or west to east. No negative stationing allowed.	
			16. Right end of one sheet joins left end of the next sheet.	
			17. Stationing has preference over north arrow.	

			18. All streets have continuous stationing.	
			19. When continuing a street with existing stations, use existing stationing rather than starting new stationing.	
			20. Call out low points on profile where streets join.	

**STORM DRAIN IMPROVEMENT PLANS**

**I. Detail Sheet(s) - The detail sheet(s) shall follow the title sheet (and the index map sheet, if required) and shall include:**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. Details of catch basin showing:</b>	
			1. Elevations	
			2. Street stationing	
			3. Catch basin size	
			4. Directions of storm drain flow	
			5. Invert Elevations	
			6. Local Depression details	

**II. Plan and Profile Sheets**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. Profile shall be on top half of sheet and shall include:</b>	
			1. All stationing shall read left to right, and run-up station from south to north or west to east. No negative stationing allowed.	
			2. Right end of one sheet joins left end of next street.	
			3. Stationing has preference over north arrow.	
			4. All storm drains have continuous stationing.	
			5. When continuing an existing storm drain, use existing stationing rather than starting new stationing.	
			6. Show existing ground above storm drain (not required if site has been mass graded).	
			7. Show elevations at grade breaks.	
			8. Scale (horizontal and vertical).	
			9. Show hydraulic grade line (HGL) and include HGL elevations at manholes, junction structures, and catch basins.	
			10. Utility line crossings and substructures which could interfere with storm drain and other underground construction.	
			11. Include all hydraulic elements, including Q's, Vn, slopes, pipe size, flow line elevations with pertinent stationing shown.	
			12. Show all storm drain laterals in profile.	

			13. Show location and elevations of parkway drains in plan and profile.	
			14. The plans shall show the minimum required D-load for RCP pipes.	
			<b>B. Plan View shall include:</b>	
			1. North Arrow	
			2. Existing improvements shown dashed with City plan file number included.	
			3. Improvements to be constructed, including joints.	
			4. Stations equations (if applicable).	
			5. Stations match stationing established by earlier plans.	
			6. Centerline bearings and curve data for all storm drains.	
			7. Show existing and proposed utilities.	
			8. Tract/parcel number, boundary and lot lines for each adjacent parcel.	
			9. Applicable construction notes shown on each sheet with references to City of Anaheim Standard Plans and to details.	
			10. Match lines clearly shown and referenced.	
			11. Curve data for all curves.	
			12. Identification of all storm drains.	
			13. All catch basins shall be shown and shall include:	
			(a) Sizes including L,H, and type	
			(b) Street centerline stationing	
			14. All points of connection field verified.	
			15. The use of grate type catch basins shall not be allowed on public or private streets.	
			16. The use of parkway culverts is discouraged. To be used, they must receive prior approval from the City Engineer.	

**III. Miscellaneous**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. Pipes:</b>	
			1. A bedding detail is required for all types of pipe. The City of Anaheim Standard Plan detail may be referenced for RCP.	
			2. Minimum pipe size of 18" shall be used for all public storm drains and private storm drains within streets.	



			3. Use a factor of $n=0.013$ for RCP and cast-in-place pipe, and 0.010 for P.V.C.	
			4. Concrete collars shall be used as required per City of Anaheim Standard Plan 380-3.	
			5. A minimum radius of 22.5 feet shall be used for any horizontal curve.	
			6. Slope anchors shall be provided at each ten foot change in elevation when the slope exceeds 33%.	
			7. Show D-loads for all RCP storm drain pipes. D-loads shall conform with the Orange County Flood Control Manual.	
			8. Cast-in-place pipe may be used as an alternate with prior approval of the City Engineer.	
			9. Plans to call out special inspection requirements for curved pipe sections in hillside areas.	
			10. Thick wall RCP with 1½ minimum of concrete between the inside wall and reinforcing steel shall be used when velocity exceeds 20 feet per second. Maximum velocity shall not exceed 45 feet per second.	
			11. Minimum slope of a pipe shall be 0.002 (0.2%).	
			12. For placement of utility lines in existing pavement; plans shall indicate whether open cutting or boring is planned. Open cutting of arterials is not allowed without prior permission from the City Engineer.	
			<b>B. Open PCC Lined Channels:</b>	
			1. Open PCC lined channels are not allowed in the street right-of-way unless approved by the City Engineer.	
			2. Structural calculations will not be required.	
			3. Structural details shall be shown on the plans.	
			<b>C. Manholes:</b>	
			1. Manholes are located at the following locations:	
			(a) Beginning or ending of curves.	
			(b) Pipe size changes.	
			(c) Angle points and as required at junctions.	
			(d) Maximum manhole spacing is 300'.	
			(e) As required for maintenance.	
			2. Manholes shall be restricted in order of preference:	
			(a) Parking lane.	
			(b) Parkway.	
			(c) Center of travel lane nearest right curve.	

			(d) Center of travel lane to the left of the travel nearest right curve.	
<b>D. Easements:</b>				
			1. Public drainage devices located entirely within an easement of public right-of-way.	
			2. Easements parallel to lot lines and on one lot only.	
			3. Surface structures shall not surcharge storm drain facilities.	
			4. Easement lines and widths must be shown on improvement plans and must be checked to make sure they conform with easement document and are an adequate width for maintenance.	
			5. Drainage acceptance agreement provided.	
<b>E. Abandonment of Underground Facilities:</b>				
			1. If existing culverts, pipes, or other facilities are removed, provisions must be made for drainage.	
			2. If pipes are abandoned, either remove, crush in place or back fill with sand or cement slurry and seal the end with brick (in that order of preference).	
<b>F. Surface Drainage:</b>				
			1. If it is necessary to grade to drain, the grade on the ditch shall be shown on the plan.	
			2. The length of ditch construction shall be shown on the plan.	
			3. A letter of consent will be required where grading or drainage involves adjacent private property.	
			4. Provide AC swales or aprons to protect improvements (unless protection is not required due to vegetation protect, or minimal flow or flat slopes)	
			5. Provide secondary drainage outlet for catch basins located in sumps.	
<b>G. NPDES Regulations:</b>				
			1. Ensure Notice of Intent (NOI) is filed with the State Water Resources Control Board (if construction disturbs > 1 acre of soil). WDID# shall be listed on Erosion Sediment Control Plan.	
			2. Submit a Water Quality Management Plan (WQMP) in conjunction with grading application for review and approval by the City Engineer or designee.	

**IV. Hydraulics**

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments

			<b>A. General:</b>	
			1. Hydraulic design criteria shall be as stated in the Orange County Flood Control District Design Manual, the Orange County Street Capacity and Inlet Design Aides Manual and the City of Anaheim Street Design Manual.	
			<b>B. Hydraulic Calculations:</b>	
			1. Software used for hydraulic calculations shall be A.E.S. or equal and previously approved by the City of Anaheim. Q100, Q25 and Q10 as appropriate, shall be used for calculations.	

V. Hydrology

Plan Check No.			CHECKLIST	
1	2	3	ITEMS REQUIRED TO BE SUBMITTED	Comments
			<b>A. General:</b>	
			1. Criteria used for Hydrology studies shall be as stated in the Hydrology Manual published by the Hydrology Manual published by the County of Orange Flood Control District, current edition. The 100 year design frequency shall be used for sump conditions and storm drains downstream of sump conditions. Otherwise, the 25 year design storm frequency shall be used, unless otherwise approved by the City Engineer.	
			2. The hydrology map and street plans agree as to the grades and configuration of drainage areas.	
			<b>B. Hydrology Map:</b>	
			1. The hydrology map shall be on a topographic map of sufficient scale to show legible elevations, drainage patterns and quantities of runoff (see attached City of Anaheim Model Hydrologic Map).	
			2. The site must be shown on the hydrology map including on-site and off-site topography showing the entire tributary drainage area.	
			3. Show all Q's (within time of concentration) flowing in the streets. Designate Q25 or Q10 as appropriate. If one side of a street carries more Q than the other side, then show it.	
			4. Show all crossover Q's and where they occur.	
			5. Show all street flow confluences and their calculations.	
			6. Show all Q's approaching, entering and carried over from catch basins.	
			7. Identify all catch basins by numbers or letters.	
			8. Show and verify with legible contours or other adequate means, all Q's entering the project. If previous studies were used, reference them.	
			9. Show all Q's leaving the project.	
			10. Show North arrow and scale.	
			11. Show names or some other designation for all streets in and around the project.	
			12. Show the tract/parcel number (if applicable).	
			13. Show name and telephone number of the engineer who performed the hydrology study.	
			14. Show and identify all storm drains (use same designations as improvement plans), their sizes, Q's and times of concentration.	
			15. If the project contains more than one soil group (A, B, C, or D) delineate each group.	
			16. Indicate type of existing or proposed development for the site.	

