

CHAPTER 9 – CONSTRUCTION PLANS

9.1 GENERAL REQUIREMENTS

1. All construction plans shall be in accordance with City of Surprise requirements in conjunction with the Maricopa Association of Governments' (MAG) Uniform Standard Specifications for Public Works Construction, and Uniform Standard Details for Public Works Construction, Latest Editions, herein after referred to as "MAG Standard Specifications", and "MAG Standard Details", respectively, and shall utilize English units of measurement.
2. Sheet Size – Construction plans shall be prepared on 24 inch by 36 inch sheets, with a minimum one and one-quarter (1.25) inch left border and a minimum one (1) inch border on top and bottom borders and a minimum three-quarter (0.75) inch on the right border (See Details 2-01, 2-02 and 2-03).
3. Scale – The scale of construction plans shall depend on the type of submittal. In general, the scale shall be appropriate to produce legible and easily readable plans; and the chosen scale shall provide full plan and profile layouts with no intermediate break lines per sheet. Plan and profile layouts shall use a horizontal scale of one (1) inch equals twenty (20) feet (1" = 20') and a vertical scale of one (1) inch equals two (2) feet (1" = 2') or use a horizontal scale of one (1) inch equals forty (40) feet (1" = 40') and a vertical scale of one (1) inch equals four (4) feet (1" = 4'). Alternate plan scale may be proposed by the developer and will be considered by the city on a case by case basis. See Section 9.2 for the scale of the final plat.
4. Lettering – Use a minimum lettering and numbering size of three-sixteenths (3/16) inch for manually drafted plans. Use 12-point minimum font size letters, numbers, and symbols for mechanically drafted plans. All lettering, numbering, and line work must be uniform and legible.
5. North Arrow – Drawings shall be prepared with the direction of north shown toward the top of the sheet or toward the right side of the sheet whenever possible. The north arrow shall be prominently located with a notation indicating the scale of the drawing.
6. Notations – Orient all notations to read upward or to the right, except where approved by the city.
7. Vicinity Map – Construction plans shall include a small vicinity map showing the relationship of the proposed development to the nearest arterial and major collector streets. All significant street alignments within the vicinity map are to be identified. The orientation of the vicinity map must agree with the orientation of the map drawing, but the vicinity map does not need to be drawn to any particular scale. The vicinity map shall be up to date and current with existing conditions.
8. Reproducibility – Plans shall be of sufficient quality for microfilming/scanning, i.e. line work, lettering, and numbering shall be easily read when reduced by 50%.

9. Seal/Signature – All typing, signatures, stamps, and seals must be clearly legible, and not smeared. Copies of this information are acceptable only on plans that are still in the review process. All plans shall be prepared, signed, dated, expiration dated, and sealed by professionals actively registered to practice in the State of Arizona, as follows:
 - a. Landscape and irrigation plans sealed by a Professional Landscape Architect actively registered to practice in the State of Arizona.
 - b. Final plat map sealed by a Registered Land Surveyor actively registered to practice in the State of Arizona.
 - c. All other drawings, engineering drawings, and final maps submitted for approval sealed by a Professional Engineer actively registered to practice in the State of Arizona.
10. Construction plans shall include:
 - a. A symbol legend both proposed and existing;
 - b. An abbreviation legend both proposed and existing; and
 - c. An items and quantities table
11. Legal Description – The legal description shall include a development name, the quarter section(s) in which the development is located, and a complete legal description of the development’s boundaries. An example legal description follows:

“A condominium development in part of the SE quarter of Section 18, Township 3 North, Range 1 West of the Gila and Salt River Base and Meridian, Surprise, Arizona”.
12. Plans for Review/Approval - Plans submitted to the City of Surprise for interim and final review shall be blue line or black line prints on bond paper. A digital copy of the plans shall also be submitted to the City of Surprise in AutoCad format.
13. As-Built Drawings – As-built drawings shall be twenty-four (24) inches by thirty-six (36) inches with red ink used to indicate as-built changes to the original plan sheets. After construction is complete, the construction plans shall be updated to reflect as-built conditions. A digital copy of the plans shall be submitted to the City of Surprise in PDF format. Any changes to the original design CAD files must be submitted in AutoCAD format. See Chapter 10 for specific digital as-built requirements.
14. APPENDIX 9–1 contains checklists for preparing type specific uniform plan sets.

9.2 FINAL RECORDED PLAT SUBMITTAL FORMAT

The final recorded plat submittal format shall be in accordance with the Maricopa County Map Recordation Criteria and the following:

- Sheet size of 24" by 36"
- Final plat clearly and legibly drawn in black ink
- Any text at minimum font of 12 point
- Dedication language
- Name of subdivision at top center of each sheet
- General location of subdivision by section, township, range, city, county, and state entered under the name of the subdivision
- Date of preparation
- North arrow
- Vicinity map including area within 1/2 mile of site
- Developer/owner
- Signature block including notarization
- Signed and sealed by a Registered Land Surveyor in the State of Arizona including expiration date
- Engineering Scale
- Margins of 2" on the left hand side and 1/2" margins all other sides
- Notation of the total acreage of the subdivision and total number of lots (in lower right corner of plat)
- Boundaries in heavy solid line including reference to section or quarter section lines and all dimensions for irregularly shaped lots
- Bearing, distances, and curve data of all perimeter boundary lines. Curve data will show a minimum of three elements of the curve
- Curved boundaries have sufficient data to allow re-establishment of curves on the ground all non-tangent curves will show a reference bearing to the center of the curve
- Location and description of point of beginning and its proper reference to monument boundary survey
- Location and a detailed description of all monuments, either found or set
- Monuments set during the survey, including road centerline monuments, will be stamped or tagged with the Registration Number of the Surveyor responsible for their placement.
- Parcels completely or partially surrounded by subdivision indicated at "EXCEPTED" and common boundary identified

- Location and layout of lots, blocks, tracts, streets, alleys, easements, and other public grounds within and adjoining plat including dimensions to one-hundredths of feet, bearings, curve data to include, as minimum, radius, length, and delta angle. In addition, non-tangential curves require the inclusion of radial bearings
- Lot numbers and addresses for each lot
- Minimum lot width and average lot width
- Rights of way and easements clearly labeled and named to specify approved use including the instrument establishing the encumbrance
- Final water and/or sewer and drainage easements and properties dedicated to the city
- Boundaries of any floodplain including "404 areas"
- Source of the Basis of Bearing
- Certificate of Assured Water Supply note (if the plat is subdividing 6 or more lots)

APPENDIX 9-1

**CHECKLISTS
FOR THE
PREPARATION OF UNIFORM PLAN SETS**



CHECKLIST **FOR**

Grading and Drainage Plans

General Requirements

- Plans shall be on twenty-four (24) inch by thirty-six (36) inch sheets. Refer to details 2-01 through 2-03.
- Symbols shall be per MAG Standard Specifications and Details supplemented by City of Surprise details.
- Orientation of each plan sheet shall be shown by a north arrow and scale of drawing. North arrow to up or to the right where possible.
- Scale shall be per City of Surprise Standard 9.1(3).
- A cover sheet is required on plans of more than one (1) sheet.
- Each sheet shall be identified by sheet number and project name in a title block, and match lines where applicable.
- Provide cross section at all streets and at all property lines through all retention facilities.
- All sheets shall have an Arizona Civil Engineer's registration seal with original signature, date, and Engineer's seal expiration date.
- Original plan sheets shall be sufficiently clear to allow legible prints to be reproduced from microfilm. The size of lettering and symbols shall be per City of Surprise Standard 9.1(4).
- Provide Blue Stake logo and phone number on each sheet.
- Provide City of Surprise Engineer's General Notes, Grading Notes, and other notes as applicable, as found within the Supplemental Standard Details of the City of Surprise Engineering Development Standards.
- The plans shall be submitted to other agencies (City of El Mirage, Maricopa County, EPCOR, Maricopa Water District, etc.) for their review if the improvements impact any of their right-of-way or utilities or if the project is within their service area.
- A Geotechnical report, signed and sealed by a Professional Engineer actively registered to practice in the State of Arizona shall be provided for reference.
- Any project with a disturbed soil area of one (1) acre or greater, or is a part of a common plan of development or sale that will ultimately disturb one (1) or more acres, requires a separate Storm Water Pollution Prevention Plan (SWPPP) and all associated documents (see Engineer and Plan Review Permitting and Application Packet).

- Compliance with the Arizona Department of Environmental Quality (ADEQ) requirements for construction sites under the Arizona Pollutant Discharge Elimination System (AZPDES) requirements under the General Permit for Discharge from Construction Activities to Waters of the United States, the “AZPDES Construction General Permit” AZG2008-001. Owners, developers, engineers, and/or contractors are required to prepare all documents required by this regulation, including but not limited to: the Storm Water Pollution Prevention Plan (SWPPP), the Notice of Intent (NOI), and the Notice of Termination (NOT). Copies of all requirements, forms, and guidance are available from ADEQ, 1110 West Washington St., Phoenix, AZ 85007, (www.azdeq.gov), and from the Flood Control District of Maricopa County (FCDMC) “Drainage Design Manual, Erosion Control”, available at FCDMC, 2801 West Durango, Phoenix, AZ 85009, (www.fcd.maricopa.gov).
- Provide a drainage report per City of Surprise guidelines.
- Refer to City of Surprise Underground Retention Guidelines and City of Surprise Drainage Report guidelines for additional information.
- Identify all existing and proposed FEMA floodplain/floodway limits.

Cover Sheet

- Provide a project title block with name and address of project. Include a reference to the project’s location by township, range, and section.
- Provide the Developer’s and Engineer’s name, address, and phone number.
- Provide a City of Surprise Engineer’s approval line as follows:

THIS SET OF PLANS HAS BEEN REVIEWED FOR COMPLIANCE WITH CITY REQUIREMENTS PRIOR TO ISSUANCE OF PERMITS. THE CITY NEITHER ACCEPTS NOR ASSUMES ANY LIABILITY FOR ERRORS OR OMISSIONS. THIS COMPLIANCE APPROVAL SHALL NOT PREVENT THE CITY ENGINEER FROM REQUIRING CORRECTIONS OF ERRORS OR OMISSIONS IN PLANS FOUND TO BE IN VIOLATION OF LAWS OR ORDINANCES.

<i>CITY OF SURPRISE ENGINEER</i>	<i>DATE</i>
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- Provide a key map with street names, lot, tract, and parcel numbers, sheet numbers, and phase limits and numbers if applicable.
- Provide Benchmark – NAVD 88 Datum. Benchmark information in the City of Surprise can be found on www.surpriseaz.gov by clicking on city Departments, then on IT/GIS, then on Geodetic Survey Control Map.
- Provide a vicinity map.
- Provide a legend.
- Provide a project quantities table.
- Provide a Utility conflict coordination table with name of utility company, contact person, and date of response.
- Provide an As-Built certification statement and signature line.
- Provide legal description of the project site.
- Provide current FEMA flood zone designation and Firm Panel reference
- Provide the Basis of Bearing

Plan Sheets

- Show existing and proposed top of curb, gutter, and sidewalk elevations (both sides) and pavement crown elevations along project frontage at extension of lot lines, or every one-hundred (100) feet, (whichever is less).
- Provide a minimum of two (2) monument ties.
- Show and label low curb and high curb elevations.
- Show all existing utilities and drainage facilities, including private or M.W.D. irrigation within and adjacent to the property boundaries. All utilities shall be dimensioned from street monument lines.
- Provide rim and invert elevations on all manholes and catch basins.
- Show all existing and proposed storm drain with pipe length, slope and invert elevations.
- Show all permanent erosion control measures with area of installation.
- Provide finished floor elevations of all proposed buildings.
- Show details at property lines, fences, berms, etc. Also show improvements and finish floor elevations on adjacent property to the proposed development.
- Show all existing and proposed easements, dedications, right-of-way, streets, and alleys with dimensions and offsets. Streets shall be identified by name. Streets, alleys, and easements shall be dimensioned at least once and at all breaks. Monument line of streets shall be shown.
- All abutting lots shall be identified by lot number, tract, and subdivision or shown un-subdivided.
- Dimension all property boundaries, both perimeter and interior lines.
- Provide location of all proposed and existing utilities, structures, paving and other topographic features affected by construction.
- The proposed grading should be designed with slopes and topographic features which match the natural grade and boundary area to minimize erosion and sediment transport on to city streets or neighboring properties.
- Phased developments shall indicate interim slopes and grades to match proposed work to existing conditions.
- Grading Plans showing existing natural washes shall also show existing conditions including the longitudinal section line and grade of the wash flow line (the thalweg) at fifty (50) foot intervals. Show distances between banks and elevations at fifty (50) foot intervals.
- Provide the extreme storm outfall location and elevation.
- Show side slopes, bottom elevation, high water elevation, outfall elevation, location and direction, volume provided, and volume required for all retention/detention basins.
- Provide existing contours or spot elevations, drainage arrows and grade breaks to indicate drainage patterns. Also indicate all one-hundred (100) year flows from contributing offsite drainage areas.
- Provide spot elevations every one-hundred (100) feet on adjacent properties sufficient to depict existing conditions affecting drainage of property to be filled.
- Separate offsite plans with drainage facilities should be submitted with grading and drainage plans unless those details are shown on the grading plan.
- Any retaining wall in excess of forty-eight (48) inches as measured from the finish grade, any six (6) foot nominal height wall where the maximum exposed height is in excess of seven (7) feet, all proposed retaining walls which support a surcharge load, and any combination of screen wall in excess of six (6) feet attached to a retaining wall in excess of forty-eight (48) inches as measured

- above must be reviewed and approved by the Building and Safety staff for conformance with the International Building Code (I.B.C.), Latest Edition.
- Site retaining walls, where the finish grade differential is less than or equal to forty-eight (48) inches, and the combination retaining wall/screen wall where the screen wall is six (6) feet in height or less, and the aggregate height is ten (10) feet or less, require the structural details be placed on the civil plans. Particular attention shall be applied to the structural connection between the retaining wall and the screen wall.
 - Show accessible parking spaces. Provide grade arrows to verify that the slope in parking lot accommodates disabled access requirements, by not exceeding two percent (2%). Show on-site ramps to the building with slope arrows showing the area near accessible parking or on ramps to building.
 - Existing irrigation supply ditches and/or irrigation tailwater ditches on this site, or in the right-of-way adjacent to this site, must be replaced with an underground pipeline, or abandoned subject to the approval of the irrigation company and/or downstream users. Limits of construction and scope of work shall be shown on the plan.
 - Dry well details and specifications including brand, type, material, dimensions (depth and diameter), rim elevations, horizontal distance between chambers and invert elevations of all pipes and outlets.

Revision of Approved Plans

- Plans submitted for revision shall clearly show the revision, by clouding, and a number inside a delta, showing the number of the revision. This number shall be provided in a revision block, with the date of the revision, and a description of the revision. A new City of Surprise Engineer's approval line and text shall be provided, with the delta shown, on the previously approved cover sheet.
- The revision shall bear a new Engineer's seal.



CHECKLIST
FOR

Paving Plans and Water & Sewer Plans

General Requirements

- Plans shall be on twenty-four (24) inch by thirty-six (36) inch sheets. Refer to details 2-01 through 2-03.
- Symbols shall be per MAG Standard Specifications and Details supplemented by City of Surprise details.
- Orientation of each plan sheet shall be shown by a north arrow and scale of drawing. North arrow to up or to the right where possible. Scale shall be per City of Surprise Standard 9.1(3).
- A cover sheet is required on plans of more than one (1) sheet.
- Each sheet shall be identified by sheet number and project name in a title block, and match lines where applicable.
- Provide a typical section for each street showing pavement structure and depth, including all construction in the right of way. Depth of pavement structure shall be a minimum as provided in City of Surprise Standard Table 3.2, or per the Geotechnical Report, whichever is greater.
- All sheets shall have an Arizona Civil Engineer's registration seal with original signature, date, and Engineer's seal expiration date.
- Original plan sheets shall be sufficiently clear to allow legible prints to be reproduced from microfilm. The size of lettering and symbols shall be per City of Surprise Standard 9.1(4).
- Provide Blue Stake logo and phone number on each sheet.
- Provide all applicable City of Surprise Notes as found within the Supplemental Standard Details of the City of Surprise Engineering Development Standards.
- A separate street light plan shall be submitted, under separate cover, to the City of Surprise Public Works Department for review.
- A separate traffic signal plan shall be submitted, under separate cover, to the City of Surprise Public Works Department for review.
- A separate signage and striping plan shall be submitted to the City of Surprise Public Works Department for review.
- The plans shall be submitted to other agencies (City of El Mirage, Maricopa County, EPCOR, Maricopa Water District, etc.) for their review if the improvements impact any of their right-of-way or utilities or if the project is within their service area.

- A Geotechnical report, signed and sealed by a Professional Engineer actively registered to practice in the State of Arizona shall be provided for reference.
- Any project with a disturbed soil area of one (1) acre or greater, or is a part of a common plan of development or sale that will ultimately disturb one (1) or more acres, requires a separate Storm Water Pollution Prevention Plan (SWPPP) and all associated documents (see Engineer and Plan Review Permitting and Application Packet).
- Compliance with the Arizona Department of Environmental Quality (ADEQ) requirements for construction sites under the Arizona Pollutant Discharge Elimination System (AZPDES) requirements under the General Permit for Discharge from Construction Activities to Waters of the United States, the “AZPDES Construction General Permit” AZG2008-001. Owners, developers, engineers, and/or contractors are required to prepare all documents required by this regulation, including but not limited to: the Storm Water Pollution Prevention Plan (SWPPP), the Notice of Intent (NOI), and the Notice of Termination (NOT). Copies of all requirements, forms, and guidance are available from ADEQ, 1110 West Washington St., Phoenix, AZ 85007, (www.azdeq.gov), and from the Flood Control District of Maricopa County (FCDMC) “Drainage Design Manual, Erosion Control”, available at FCDMC, 2801 West Durango, Phoenix, AZ 85009, (www.fcd.maricopa.gov)
- Should the City of Surprise require right-of-ways for streets, tapers, or temporary turn-arounds, right-of-way documents shall be required. If this right-of-way is not included on plat or map of dedication, it will need to be dedicated by a separate instrument. Contact the City of Surprise IT/GIS Department at 623-222-7500 for additional information.

Cover Sheet

- Provide a project title block with name and address of project. Include a reference to the project’s location by township, range, and section.
- Provide the Developer’s and Engineer’s name, address, and phone number.
- Provide a City of Surprise Engineer’s approval line as follows:

THIS SET OF PLANS HAS BEEN REVIEWED FOR COMPLIANCE WITH CITY REQUIREMENTS PRIOR TO ISSUANCE OF PERMITS. THE CITY NEITHER ACCEPTS NOR ASSUMES ANY LIABILITY FOR ERRORS OR OMISSIONS. THIS COMPLIANCE APPROVAL SHALL NOT PREVENT THE CITY ENGINEER FROM REQUIRING CORRECTIONS OF ERRORS OR OMISSIONS IN PLANS FOUND TO BE IN VIOLATION OF LAWS OR ORDINANCES.

CITY OF SURPRISE ENGINEER

DATE

- Provide a key map with street names, lot, tract, and parcel numbers, sheet numbers, and phase limits and numbers if applicable.
- Provide Benchmark – NAVD 88 Datum. Benchmark information in the City of Surprise can be found on www.surpriseaz.gov by clicking on city Departments, then on IT/GIS, then on Geodetic Survey Control Map.
- Provide a vicinity map.
- Provide a legend.
- Provide a project quantities table.

- Provide a Utility coordination table with name of utility company, contact person, and date of response.
- Provide an As-Built certification statement and signature line.
- Provide the Basis of Bearing.
- Provide the amount of impervious surface area in square feet (including roof, parking lot, sidewalks, etc.) for all developed areas (excluding single family residential lots) including apartments, schools, commercial properties, HOA common facilities, etc.
- Provide the amount of total annual estimated water demand for the development, including building and common area landscaping, as established by the adopted Integrated Water Master Plan (in the form of equivalent dwelling units (EDUs)).

Plan and Profile Sheets (Paving)

- Provide profiles of existing and proposed grade at centerline, left and right flow line and top of curb. If there is a median show both sides of the median, top of curb and pavement, in the profile in place of the centerline profile.
- Provide a minimum of two (2) ties for centerline stationing to existing monuments.
- Provide construction notes and callouts for all items depicted on the plan.
- Provide all concrete work: curb and gutter, sidewalk, driveways, ramps etc.
- Provide all sidewalks and ramps per PROWAG and ADA requirements.
- Compaction shall comply with MAG Specifications and City of Surprise supplements to MAG.
- Provide existing washes and flood plains with designations.
- Provide all existing and proposed utilities and drainage facilities in the plan and the profile.
- Provide all existing and proposed easements, dedications, right-of-way, streets and alleys with dimensions and offsets.
- All abutting lots shall be identified by lot number, tract, and subdivision, or shown unsubdivided.
- Phased developments shall indicate interim slopes and grades to match proposed work to existing conditions.
- Provide vertical and horizontal control information, including line and curve data, slope, elevations, designations (PRC, BCR, ECR, PC, PT, etc.) and grade breaks, in the plan and the profile.
- Provide existing contours on plan view.
- Provide pavement cross slopes (see City of Surprise Table 3-2).
- Provide the storm drain system including all structures, valley gutters, and pipes. Include drainage arrows for flow line of street. Provide invert and rim elevations, slope, and profiles of pipes, scuppers, headwalls, manholes and spillways.
- Provide true length, in profile, at back of curb for all horizontal curves.

Plan and Profile Sheets (Water & Sewer)

- All existing and proposed structures, paving, topographic features, and utilities with size and material shall be shown in plan and profile.
- Provide sewer, water main, and irrigation (1 inch or greater) locations, dimensioned from centerline, showing pipe size, length, and material.
- Rim and flow line elevations shall be shown for all manholes and cleanouts.

- Proposed finished grades at centerline of sewer shall be shown in the profile with a solid line. Existing grades at centerline of sewer shall be shown in the profile with a dashed line.
- A profile is required for all sewer lines that are within the city ROW or an easement dedicated to the city.
- Maximum spacing between sewer manholes shall be per City of Surprise Standard Table 7-3.
- Cleanouts shall be per City of Surprise Standard 7.9.2(2).
- Pavement replacement shall be per MAG Detail 200-2.
- Trench backfill shall be per MAG Detail 200-1.
- The minimum separation between water and sewer and protection requirements shall be per MAG Standard Details 404-1, 404-2, and 404-3 and per Section 610.5, 615.4 and 616.3 of the MAG Standard Specifications.
- The minimum easement width for sewer mains is twenty (20) feet.
- The minimum easement width for water lines is twenty (20) feet.
- Water service and sewer service locations shall be per City of Surprise Standards, Chapters 6 and 7.
- Show all streets, alleys, rights-of-way, and easements with names and dimensions.
- Show total lineal feet of sewer pipe between manholes, calculated from center to center of manhole. Show calculated slopes. Velocity shall be between two (2) and nine (9) feet per second (fps). Round pipe lengths to the nearest whole foot.
- Label all connections to sewer lines and taps to water lines with method of connection specified.
- Size of sewer manholes shall be per City of Surprise Standard 7.9.4.
- A profile is required for water pipes that are 12 inches in diameter and larger.
- Provide station and offset from centerline and identify all valves, pipe fittings, fire hydrants, and manholes.
- Provide station for service connections (water and sewer) and specify all water meters as either a domestic or irrigation water meter.
- Locate water valves per City of Surprise Detail 6-01.
- Provide fire hydrant specifications including type, depth of cover to finished grade and elevations of bottom of flange.
- Mechanical restrained joints or blocking shall be per MAG Standard Details.
- When replacing existing sidewalk, curb and gutter, show and label existing and proposed concrete. Construct sidewalk ramps to accommodate access per PROWAG and ADA requirements. One-half (1/2) sack slurry backfill is highly recommended.
- Tunneling under curb and gutter should not be shown on the plans. Plans should indicate removal and replacement of the curb when crossing under the curb. The field inspector will determine if tunneling is acceptable based on the condition of the curb. Tunneling under sidewalks is not acceptable.
- Special detail required for connection to RCP. No new manhole on RCP.
- The minimum cover over any water or reclaimed water line shall be according to City of Surprise Standard 6.9.1.
- Provide spot elevations or contours sufficient to depict existing conditions affecting the placement of the water or sewer line.

Revision of Approved Plans

- Plans submitted for revision shall clearly show the revision, by clouding, and a number inside a delta, showing the number of the revision. This number shall be provided in a revision block, with the date of the revision, and a description of the revision. A new City of Surprise Engineer's approval line and text shall be provided, with the delta shown, on the previously approved cover sheet.
- The revision shall bear a new Engineer's seal.



CHECKLIST FOR

Street Light Plans

General Requirements

- Plans shall be on twenty-four (24) inch by thirty-six (36) inch sheets. Refer to City of Surprise Engineering Standards, Supplemental Standard Details for sheet details.
- Street lighting levels shall be designed according to the Illuminating Engineering Society (IES) of North America's American Standard Practice for Roadway Lighting Manual, Latest Edition.
- Symbols shall be per Arizona Public Service (APS) Standard Specifications and Details supplemented by City of Surprise details.
- Orientation of each plan sheet shall be shown by a north arrow and scale of drawing (graphically represented). North arrow orientated up or to the right where possible. Scale shall be per City of Surprise Standard 9.1(3).
- A cover sheet is required on plans of more than one (1) sheet.
- Each sheet shall be identified by sheet number and project name in a title block, and match lines where applicable.
- All sheets shall have an Arizona Professional Engineer's (Electrical) registration seal with original signature, date, and Engineer's seal expiration date.
- Original plan sheets shall be sufficiently clear to allow legible prints to be reproduced from microfilm. The size of lettering and symbols shall be per City of Surprise Standard 9.1(4).
- Provide all applicable City of Surprise Notes as found within the Supplemental Standard Details of the City of Surprise Engineering Development Standards.
- Provide Blue Stake logo, phone number, and information on each sheet.
- The plans shall be submitted by the applicant to other utilities / agencies (City of El Mirage, Maricopa County, EPCOR, Maricopa Water District, etc.) for their review if the improvements impact any of their right-of-way / easements if the project is within their service area.

Cover Sheet

- Provide a project title block with name and address of project. Include a reference to the project's location by township, range and section.
- Provide the Developer's and Engineer's name, address, and phone number.
- Provide a key map with street names, lot, tract, and parcel numbers, sheet numbers, and phase limits and numbers if applicable.

- Provide a vicinity map.
- Provide a detailed legend.
- Provide a Utility conflict coordination table with name of utility company, contact person, and date of response.
- Include the following general note regarding street light energy and maintenance costs:
 THE ELECTRICAL / MAINTENANCE COSTS OF ALL STREET LIGHTS ON LOCAL AND COLLECTOR STREETS (TYPICALLY THE 100 WATT / 9,500 LUMEN AND THE 150 WATT / 16,000 LUMEN FIXTURES) ARE TO BE PAID BY THE ADJACENT DEVELOPMENT'S STREET LIGHT IMPROVEMENT DISTRICT (SLID). THE ELECTRICAL / MAINTENANCE COSTS OF ALL STREET LIGHTS ON ARTERIAL STREETS (TYPICALLY THE 250 WATT / 30,000 LUMEN FIXTURES) ARE TO BE BILLED TO THE CITY OF SURPRISE'S ENERGY BILL.
- Provide an items / quantities tabulation specifying the quantities / sizes of street lights that are to be paid for by Street Light Improvement District (SLID) and how many are to be added to the City of Surprise's Energy Bill.

Plan Sheets

- Provide centerline stationing at a scale not to exceed one (1) inch equals forty feet (1" = 40').
- Label each proposed street light location by centerline station and horizontal offset.
- Provide a minimum of two (2) ties for centerline stationing to existing monuments.
- Show all existing utilities and drainage facilities, including private or M.W.D. irrigation within and adjacent to the property boundaries. All utilities shall be dimensioned from street monument lines.
- Show all existing and proposed right-of-way / easements / roadway dimensions, curb, gutter, sidewalk, drainage facilities, utilities, fire hydrants, mail box locations, etc. along the project frontage. Streets, alleys, and easements shall be dimensioned at least once and at all breaks. Monument line of streets shall be shown.
- Identify all existing or proposed streets / intersecting streets by name. Also, identify all existing or proposed intersecting driveways.
- Reference each proposed street light location by centerline station and horizontal offset.
- All street light designs are to be according to the Illuminating Engineering Society (IES) of North America's American Standard Practice for Roadway Lighting Manual, Latest Edition. Each project is to be designed according to their individual circumstances taking surrounding land uses (residential, commercial, industrial, schools, parks, entertainment centers, etc.), potential for pedestrian / bicyclist conflicts, vehicular traffic volumes, roadway design / alignment (curved, knuckles, etc.) potential for turning movement conflicts (intersections and driveways), etc. into design consideration.
- Call out the use of APS approved External Back-Light Shields where lights are proposed adjacent to residential rear or side yards.
- Phased construction plans shall clearly define the limits / quantities per phase and any proposed temporary construction required for phased development.

- All abutting lots shall be identified by lot number, tract, and subdivision or shown as being un-subdivided.

Photometric Sheets

- State whether illuminance or luminance method was utilized. Provide veiling luminance calculations as required.
- Provide separate photometric values for each intersection, for average spacing on streets, and for worst case (maximum spacing) on streets.
- All street light designs are to be according to the Illuminating Engineering Society (IES) of North America's American Standard Practice for Roadway Lighting Manual, Latest Edition. Each project is to be designed according to their individual circumstances taking surrounding land uses (residential, commercial, industrial, schools, parks, entertainment centers, etc.), potential for pedestrian / bicyclist conflicts, vehicular traffic volumes, roadway design / alignment (curved, knuckles, etc.) potential for turning movement conflicts (intersections and driveways), etc. into design consideration.
- Design shall include existing and possible future streetlight location information for streets adjacent to and across from proposed project.

Revision of Approved Plans

- Plans submitted for revision shall clearly show the revision, by clouding, and a number inside a delta, showing the number of the revision. This number shall be provided in a revision block, with the date of the revision, and a description of the revision.
- Provide originally approved photometric values and the proposed revision's photometric values.
- The revision shall bear a new Professional Engineer's (Electrical) seal.



**CHECKLIST
FOR
DRY UTILITY PLANS**

- Project title block with name, project number, address/location, date, sheet number.
- Project contact name and phone number.
- Project Scope of work to include but not limited to; total trench length, total directional bore length, overhead vs. underground installation, quantities of known concrete or asphalt repair and replacement, number of poles removed and or installed, and number and location of all utility potholes for depth of existing utilities.
- Vicinity map with north arrow.
- Index of plan sheets if more than one plan sheet.
- Key map if more than one plan sheet.
- Match line if more than one plan sheet.
- Blue Stake symbol on all plan sheets.
- Legend of existing and proposed utility installations and associated infrastructure repairs.
- Engineering scale and north arrow.
- Monument/center line of the street.
- Property/lot lines.
- All Street names within the project scope of work.
- Dimension of existing & proposed Right-Of-Ways (ROW) from monument/center line of the street.
- Dimension of Easements (public & private) – PUE, Drainage easement, AAWC easement, etc. Private easements should have recordation information or property owner approval.
- General Notes for Dry Utility Construction. This can be found on our City web site, under Public Works Department, Engineering Development Services (2012 Engineering Development Standards).
- Proposed dry utility lines are to include size, material type and dimension from ROW or PUE.
- Proposed power poles are to include type and location (station and offset).
- Proposed potholes are to include stations and offsets.
- Trench and bore limits with dimension from ROW or easement line.
- Trench and bore detail shall include depth, width, conduits/pipes.

- Existing/proposed equipment (switching cabinets, transformers, pedestals, utility vaults, manholes, handholes, gas valves, etc.).
- Existing/proposed water/sanitary/storm/irrigation lines are to include size, material type and dimension from monument line.
- Existing/proposed edge of pavement, curb, gutter, sidewalk, ramp, building, drainage structure/channel, street lights, traffic signals.
- Dimension of edge of pavement, back of curb, back of sidewalk from monument/center line of the street.
- Floodplain/Floodway limits.
- Station and offset of street lights (typically from APS plans) must be verified with approved Street Light plans.
- Additional approval from the list below may be required, depending on the scope and limits of work:
 - FCDMC, MCDOT, ADOT, BNSF, MWD, adjacent cities, EPCOR or any private utility companies.