

Chapter 5: Plan Preparation

5.1 Plan Sheet Development Standards

- a. UDOT ATMS plan sets should be developed according to the [UDOT Plan Sheet Development Standards](#).
- b. The objective of the UDOT Plan Sheet Development Standards document is to establish plan sheet development standards for UDOT projects, including local government projects. The Standards give design teams direction on format, styles, organization, and other plan sheet fundamentals needed to create a plan set. Plan Sheet Development Standards are to be incorporated in conjunction with UDOT CADD Standards.
- c. Utilizing these Standards guarantees a consistent plan set on every project. The expected benefits are far reaching and include, but are not limited to:
 1. Improving uniformity
 2. Creating GIS products accurately
 3. Creating consistency between UDOT Region designers, other UDOT designers, and consultants
 4. Creating logical plan set organization for construction crews
 5. Setting the foundation to create a plan set that can be used from project development, passed to contractors at advertising, and returned to UDOT as as-built drawings at the end of construction.
- d. This ATMS DMOI will not duplicate information found in the UDOT Plan Sheet Development Standards, but will add detail to requirements unique to ATMS construction.

5.2 Included Sheets and Examples

- a. Stand alone ATMS project plan sets will generally include the following sheets.
 1. Title Sheet
 2. Index Sheet
 3. Signature Sheet
 4. Survey Control Sheets
 5. Roadway Sheets (if required)
 - i. Typical Sections
 - ii. Detail Sheets
 - iii. Summary Sheets
 - iv. Roadway Sheets
 6. MOT Sheets
 7. Utility Sheets
 8. ATMS Summary
 9. ATMS Details
 10. ATMS Sheets
 11. Structures Sheets (if required)

- b. Plan Sheet Guidelines-- Example sheets can be found in Appendix A: Example Plan Sheets.
1. Title Sheet -- Follow the guidelines in the UDOT Plan Sheet Development Standards.
 2. Index Sheet -- Follow the guidelines in the UDOT Plan Sheet Development Standards. See 1-A in Appendix A.
 3. Signature Sheet -- Follow the guidelines in the UDOT Plan Sheet Development Standards.
 4. Survey Control Sheets -- Use survey control appropriate for the work being completed
 5. Roadway Sheets (if required) -- Use roadway sheets to show all physical features to be constructed to support the ATMS device installation. See RD-01 in Appendix A. This may include:
 - i. Maintenance access accommodations, including maintenance pullouts for vehicles or personnel access such as barrier breaks or pathways and flat work for work areas
 - ii. Grading around poles, foundations, cabinets or box installations
 - iii. Barrier or guardrail for pole or cabinet protection
 - iv. Restoration, seeding, and landscaping
 6. MOT Sheet(s) -- Follow the guidelines in the UDOT Plan Sheet Development Standards
 7. Utility Details -- Follow the guidelines in the UDOT Plan Sheet Development Standards. See UTDT-01 in Appendix A.
 8. ATMS Summary Sheets
 - i. Include two tables on the summary sheet, one for contractor furnished materials and one for State Furnished materials. Do not include blank columns, include only items on the project. See ATMS-S1 in Appendix A.
 9. ATMS Detail Sheets -- Use detail sheets to show details not included on UDOT Standard Drawings. Do not repeat information or details that are included on Standard Drawings. See ATDT-01 in Appendix A. Typical detail sheets often include:
 - i. Details for non-standard or non-state furnished materials
 - ii. Wiring details for power services
 10. ATMS Sheets -- See ATMS-01 and ATMS-02 in Appendix A.
 - i. Plan View -- ATMS sheets should be in plan view at a scale that shows all elements of the device design on the same sheet (except in cases of very long fiber drops or power runs). Use the largest scale possible for maximum clarity. Background topography should be a high resolution, scaled-back, aerial photograph with a minimum of additional details other than in-place utilities. Do not

- combine ATMS sheets with other design features (except an outline of roadway features to show relationship to ATMS infrastructure).
- ii. Blow-ups -- Use a magnified view or “blow-up” to show additional detail around cabinets and device locations. Make sure conduit paths in and out of pole bases and cabinet foundations can be easily seen. Show conduit paths to mimic the actual path in the field. Do not show unnecessary turns or right angles.
 - iii. Roadway Features -- Show a light outline of roadway features to be added as part of the project on the ATMS sheets to show relative location with the device, but do not show details. Specifics of grading, flatwork, maintenance pull outs, barrier, and guardrails should be shown on the Roadway sheets.
 - iv. Cross Sections -- For projects that include significant new grading near ATMS devices and cabinets, and for projects that place cabinets and devices on or near existing slopes, show a cross section of the device’s location to clarify grading or flatwork required for personnel and vehicle access. Include on the ATMS sheets if space allows, or alternatively include on a Roadway Typical Section sheet.
 - v. Utility Information -- Include sufficient utility information on plans to enable locating ATMS devices so as not to conflict with existing utilities. A balance must be struck between cost of obtaining utility information and the accuracy and completeness required. Judgement must be exercised when determining the scope and scale of the necessary utility investigation. In the past, many plan sets included no utility information and simply called for the contractor to “field locate devices to avoid utility conflicts”. This approach is not acceptable. The designer has the responsibility of doing due diligence and identifying all known utilities to minimize the likelihood of change orders due to conflicts. Utilities to Quality Level D should be shown on plans. Refer to CI/ASCE Standard 38-02, “Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data”. Use the following process to identify utilities in the area:
 - a) Obtain list of local utility owners from Bluestakes.org. Physical addresses or latitude/longitude coordinates can be used to specify the location. [Blue Stakes Contacts](#)
 - b) Contact area utilities to ask for mapping and/location information
 - c) Plot utility information received on plans
 - d) Conduct a field visit to confirm locations of identifiable above-ground facilities (manholes, outlets, pedestals, valves, etc.).

- e) Determine if the identified utilities conflict with the proposed design, and adjust the design to avoid as necessary/possible. In most cases the ATMS device location can be adjusted enough to avoid the conflict.
 - f) Further investigation may be required if the utility cannot be avoided. Discuss with the UDOT ATMS Project Manager before additional steps are taken. Additional steps may include more detailed investigations, surveying, and/or potholing.
 - g) Show all identified utilities on the plans for the contractor's information even if not in conflict with the work.
11. Structures Sheets -- Follow the guidelines in the UDOT Plan Sheet Development Standards and the Structures Design and Detailing Manual (SDDM).