

City of Seguin

Construction Plan Set and Report Requirements

2022

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1 Introduction

1.1 Purpose

The purpose of this document is to provide construction plan sheet and report requirements for public infrastructure permitted through the City of Seguin including capital improvements and public improvements associated with platting. The requirements provide:

- Clarification of construction plan set and report requirements;
- Consistency in construction plan set and report requirements;
- Efficient construction plan set and report review and approval; and
- An accurate record for future reference.

A consistent and uniform construction plan set also allows for construction inspector and contractor teams to oversee and perform construction efficiently and accurately.

Capital improvements are defined as public infrastructure prepared and constructed by the City of Seguin or other utility providers. Capital improvements may include streets, sidewalks, water systems, wastewater systems, and stormwater projects.

Public improvements mean facilities, infrastructure, and other appurtenances which serve a public purpose in providing a needed service or commodity. Required public improvements may include, but shall not be limited to, street construction, including any necessary median openings and turn lanes on major thoroughfares; water lines and pumping stations; sanitary sewer lines and lift stations; storm drainage structures and stormwater management devices; water quality and erosion controls; and any required public sidewalks, streetlights, and street signs. Construction plans are defined as drawings and technical specifications, providing a graphic and written description of the character and scope of the work to be performed in construction of a subdivision.

All construction plans and reports shall be prepared, signed, and sealed by registered professional engineer in accordance with the Texas Engineering Practice Act and Rules. Construction plans, reports, and specifications shall be prepared in accordance good engineering practice and conform to the standards established by the city. The responsibility for the design is with the engineer of record.

1.2 Applicability

The requirements apply to all projects which require public infrastructure and permitting through the City of Seguin including capital and public improvements associated with development.

2 Construction Plan Set

The following information is intended to assist in the preparation, review, and approval of construction plans for public infrastructure permitted by the City of Seguin. The information listed under each plan sheet is required and should be shown on the respective sheets. Additional sheets may be required by the engineer of record.

2.1 Construction Plan Sheet Sequence

The following plan sheet sequence is required for all construction plans.

1. Cover Sheet

2. General Notes
3. Estimate, Quantity, and Summary Sheets (Capital Improvement and Cost Participation Projects)
4. Subdivision Concept Plan (Public Improvements)
5. Proposed Subdivision Plat Exhibit (Public Improvements)
6. Temporary Traffic Control Plan
 - 6.1. Traffic Control Plan Sheets
 - 6.2. Standards
7. Roadway Section
 - 7.1. Roadway Plan and Profile Sheets
 - 7.2. Roadway Typical Sections
 - 7.3. Intersection Details
 - 7.4. Driveway Details
 - 7.5. Pavement Design Details
 - 7.6. Miscellaneous Details
 - 7.7. Standards
8. Traffic Items
 - 8.1. Signing and Pavement Marking Plan Sheets
 - 8.2. Traffic Signal Sheets
 - 8.3. Standards
9. Drainage Section
 - 9.1. Pre-Development Drainage Area Map
 - 9.2. Post-Development Drainage Area Map
 - 9.3. Drainage Infrastructure Plans
 - 9.4. Detention/Retention Plan
 - 9.5. Drainage Details
 - 9.6. Standards
10. Grading Plan
 - 10.1. Grading Plan
 - 10.2. Compaction Requirements
11. Utility Plans
 - 11.1. Overall Utility Plan
 - 11.2. Water Construction Plan Set
 - 11.3. Wastewater Construction Plan Set
 - 11.4. Electrical Distribution Plan and/or Conduit Plan
 - 11.5. Public Improvement Set for Offsite Utility Extensions
 - 11.6. Standards (for each utility type)
12. Environmental Sheets
 - 12.1. Stormwater Pollution Prevention Plans
 - 12.2. Erosion Control Standards
 - 12.3. Engineer's Sequence of Construction
13. Miscellaneous Items
 - 13.1. Bridge Details and Standards
 - 13.2. Retaining Wall Details and Standards
 - 13.3. Removal/Demolition Sheets

13.4. Landscaping and Irrigation Sheets

2.2 Construction Plan Sheet Contents

The following information shall be shown on all plan sheets:

- North arrow, scale, and legend
- Title block, title, and sheet number
- TBPELS firm registration number and Engineer's seal with signature and date (Engineer must be licensed in the State of Texas for any plans involving public infrastructure)
- Approved street names for all existing and proposed streets
- Existing utilities (e.g., water, wastewater, stormwater, gas, electric, communications, etc.)
- Project or subdivision boundary
- Right-of-way and easements
- Limits of existing and proposed flood hazard areas

The following subsections provide an outline and describe the information that must be provided in the construction plan set. Some of information may not be applicable depending on the project.

2.2.1 Cover Sheet

- Project name, legal description, address or location, and type of plans
- Provide contact information for owner, developer, and engineer
- Location map with north arrow and scale
- Index of sheets in the order provided
- The following notes:
 - ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF SEGUIN MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
 - IF CONSTRUCTION HAS NOT COMMENCED WITHIN TWO-YEARS OF CITY APPROVAL FOR CONSTRUCTION, THAT APPROVAL IS NO LONGER VALID.
 - GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.
- Notes indicating the following:
 - FEMA defined flood hazard area in which the project is located with the effective FIRM panel number and date
- City of Seguin Approval Block for applicable departments
- Contact information for coordination and emergency purposes

2.2.2 General Notes

- Sequence of Construction (include construction phasing, temporary traffic control and installation and removal of stormwater best management practices)
- Notes required by other regulatory agencies
- Project specific notes as deemed necessary by engineer of record

- 2.2.3 Estimate, Quantity, and Summary Sheets (Capital Improvement and Cost Participation)
- 2.2.4 Subdivision Concept Plan (Public Improvements)
 - Copy of approved or current concept plan (for plans associated with platting)
- 2.2.5 Proposed Subdivision Plat Exhibit (Public Improvements)
 - Copy of plat exhibit (for plans associated with platting)
- 2.2.6 Temporary Traffic Control Plan
 - Traffic Control Plan Sheets
 - Channelization device type, locations, and spacing
 - Traffic barricades
 - Detour routes and signing
 - Flagger locations
 - Message boards
 - Phasing plan
 - Standards
- 2.2.7 Roadway Section
 - Roadway Plan and Profile Sheets
 - Plan View
 - Horizontal alignments with stationing, points of curvature, points of tangency, and curve data labeled
 - Existing and proposed contours
 - Right-of-way width
 - Street pavement width
 - Curb radii for curb returns, cul-de-sacs, etc.
 - Spot elevations at critical points including at curb returns, break points, around cul-de-sacs, and along washout crowns
 - Sight triangles at street intersections
 - Sidewalk layout and construction plan
 - Pedestrian curb ramp type
 - Drainage and utility crossing locations
 - End of roadway barricades and header curbs at street stub-outs
 - Profile View
 - Vertical alignment including PVC, PVI, PVT, crest/sag location, curve length, algebraic grade difference, and “K” values
 - Existing and proposed ground profile at centerline, right-of-way, and top of curb
 - Drainage and utility crossing locations and elevations
 - Roadway Typical Sections
 - Right-of-way width
 - Pavement width
 - Pavement cross section
 - Sidewalk location and dimensions
 - Note referencing geotechnical report
 - Intersection Details

- Driveway Details
- Pavement Design Details
- Miscellaneous Details
- Standards
 - Curb and Gutter
 - Driveway
 - Sidewalk
 - ADA Ramp

2.2.8 Traffic Items

- Signing and Pavement Marking Plan Sheets
 - Signs (type, size, TMUTCD code designation, etc.)
 - Pavement markings (type, color, size, etc.)
 - Sign mounting details
 - Sidewalk ramp locations and type
- Traffic Signal Sheets
 - Estimate and quantity sheet
 - Existing traffic control
 - Proposed traffic control
 - Elevation sheets
 - Traffic signal elevation
 - Utility elevation
 - Detail sheets
 - Poles
 - Luminaires
 - Ground boxes
 - Wiring diagrams
 - Conduit and conductor tables
 - Detectors
 - Foundations
 - Down-guys
 - Signal head mounting details
 - Signal phasing
 - Intersection dimensions
 - Specifications
- Standards

2.2.9 Drainage Section

- Pre-Development Drainage Area Map (overall and phased basis)
 - Existing contours
 - Existing drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Drainage easements on and adjacent to site
 - Watershed delineations
 - Off-site areas contributing to site
 - Time of concentration paths

- Flow arrows
- Drainage area calculations summary
- Points of discharge (points where flow exits property)
- Flow summary table at each point of discharge
- Post-Development Drainage Area Map (ultimate development and phased basis)
 - Existing contours
 - Proposed contours
 - Existing drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Proposed drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Drainage easements on and adjacent to site
 - Watershed delineations
 - Off-site areas contributing to site
 - Time of concentration paths
 - Flow arrows
 - Drainage area calculations summary
 - Points of discharge (points where flow exits property)
 - Flow summary table at each point of discharge
 - Comparison of flows to pre-development conditions
- Drainage Infrastructure Plans (storm sewer, channels, culverts)
 - Plan View
 - Existing contours
 - Proposed contours
 - Right-of-way, easements, etc.
 - Horizontal layout of infrastructure
 - Inlet/manhole/headwall locations
 - Access ramps/paths
 - Profile View
 - Utility crossings
 - Hydraulic grade line for 25-yr and 100-yr events
 - Slopes
 - Flow line elevations
 - Profile of existing grade at centerline
 - Profile of proposed grade at centerline
 - Vertical layout of infrastructure including flowlines
 - Cross section or pipe size (indicate depth of channel)
 - Pipe material
 - Energy dissipation
 - Calculations (on plans)
 - Discharge (2-yr, design, and check)
 - Velocity (2-yr, design, and check)
 - Flow depth (2-yr, design, and check)
- Detention/Retention Plan
 - Existing contours
 - Proposed contours

- Maintenance access (minimum 12-ft wide with maximum 6:1 slope)
- 100-yr water surface elevation with:
 - 1-ft freeboard for contributing drainage areas 25-acres or larger
 - 6-in. freeboard for contributing drainage areas between 5- and 25-acres
 - no freeboard required for contributing drainage areas less than 5-acres
- Stage, storage, and discharge summary table (2-yr, 10-yr, 25-yr, 50-yr, and 100-yr events)
- Spillway, weir, and outlet details, size, specifications, and location
- Vegetation requirements
- Concrete pilot channel with a minimum slope of 0.25% to convey runoff from entry points to outlet
- Cross sections indicating side slopes
- Drainage Details
 - Maintenance Schedule for all infrastructure types
- Standards

2.2.10 Grading Plan

- Grading Plan
 - Existing contours
 - Proposed contours
 - Minimum finished floor elevations for buildable lots adjacent to stormwater conveyance systems
 - Survey control information
 - Benchmarks
 - Permanent monuments
 - Control points
 - Flow arrows, high points, low points, etc.
 - Existing and proposed drainage features
 - Retaining walls (additional permits may be necessary)
 - HUD lot grading detail
- Compaction requirements
- Note stating:
STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME.

2.2.11 Utility Plans

All proposed water or wastewater service and electrical distribution plans and specifications shall be prepared in accordance with utility provider requirements. At minimum, the City of Seguin requires the following:

- Overall Utility Plan (minimum scale of 1" = 100')
 - Subdivision or Site layout including:
 - Existing boundaries, right-of-way, easements, existing utility infrastructure
 - Label all existing infrastructure, boundaries, critical infrastructure
 - Proposed rights-of-way, lot lines, easements

- Proposed curb line (face of curb, gutter line/edge of pavement, centerline)
 - Proposed sidewalk limits
 - Proposed water mains, sewer mains, services, meters, appurtenances
 - City of Seguin Water is located in street per Technical Manual requirements
 - Springs Hill Water Supply Corporation/Green Valley SUD/Crystal Clear SUD water mains to be located outside street limits in grass parkway per Technical Manual requirements
 - Fire hydrant locations
 - Wastewater System Improvements
 - Wastewater main location and size
 - Sewer service locations
 - Wastewater manhole structure
 - Flow arrow or symbol indicating direction of system
 - Easements for offsite improvements (include volume/page reference)
 - Storm drain systems (screened to a lighter color)
 - Driveway aprons at critical locations
 - Accessible ramps
 - Street light pole locations
 - Vicinity map
 - Standard City of Seguin or local purveyor utility construction notes
- Water Construction Plan Set (minimum scale of 1" = 50' horizontal, 1" = 5' vertical)
 - Cover sheet
 - Standard construction notes
 - Water plans
 - Depiction of right-of-way, roadway, utility easement, and property lines with labels
 - Roadway names and widths
 - Lot and block numbers
 - Layout of facilities
 - Location of horizontal bends, vertical bends, tees, crossings, and appurtenances
 - Cross-section that includes standard installation depths
 - Elevations at crossings
 - Water plan and profile sheets are required for mains 12-in. or greater in diameter
 - Station numbers (view rotated to have stationing increase on the sheet from left to right)
 - Existing grade
 - Interim grade
 - Proposed final grade
 - Crossing and utility conflict information (minimum cover, minimum clearance)
 - For bored crossings
 - Bore/Receiver pit locations
 - Casing length, size, material, location from edge of pavement/right-of-way

- Joint restraint calculations
 - Location of horizontal bends, vertical bends, tees, crossings, and appurtenances
 - Label bedding requirements when fill is required under public utilities
 - Provide a key map that relates plan sheet to overall development
 - Standards
- Wastewater Construction Plan Set (minimum scale 1" = 50' horizontal, 1" = 5' vertical)
 - Cover Sheet
 - Standard construction notes
 - Wastewater overall utility plan
 - Depiction of right-of-way, roadway, utility easement, and property lines with labels
 - Roadway names and widths
 - Lot and block numbers
 - Layout of facilities
 - Location of appurtenances
 - Cross-section that includes standard burial depths
 - Elevations at crossings
 - For bored crossings
 - Bore/Receiver pit locations
 - Casing length, size, material, location from edge of pavement/right-of-way
 - Wastewater plan and profile sheets
 - Station numbers
 - Existing grade
 - Interim grade
 - Proposed grade
 - Utility crossings shall be shown on profile
 - Flow line elevations at manholes
 - Pipe size, material, and slopes
 - Manhole and cleanout locations
 - Identify drop structures
 - Computation of design flows
 - Pipe capacity and velocity when flowing full for each segment/run of pipe
 - Peak wet weather flow
 - Provide a key map that relates plan sheet to overall development
 - Standards
- Electrical Distribution Plan, if available, and/or Conduit Plan
- Public Improvement Set for Offsite Utility Extensions
- Notes on all utility plan sheets stating:
 - ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
 - NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, DRIVEWAYS, OR ROADWAYS. THE BUILDER AND/OR DEVELOPER WILL BE RESPONSIBLE FOR REPAIR TO ROADWAY AND UTILITY INFRASTRUCTURE IF PUBLIC UTILITIES ARE INSTALLED IMPROPERLY.

- ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF SEGUIN PROJECT INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SEGUIN PROJECT INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF SEGUIN PROJECT INSPECTOR.
- If the project includes trench depths greater than five feet, note stating: THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.

2.2.12 Environmental Sheets

- Storm Water Pollution Prevention Plans
 - Existing and proposed drainage infrastructure
 - Existing and proposed contours
 - Staging, storage, and spoils locations
 - Erosion control measures: silt fence, inlet protection, rock berms, seeding, temporary construction entrances, etc.
 - Limits of disturbed area
 - Adequate erosion control measures provided at all locations where runoff leaves the site, around the staging and storage location, pond spillways, pilot channels, and at upstream side of pond discharge locations
 - Note stating:
PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING AND/OR HYDROMULCH DOES NOT CONSTITUTE STABILIZATION. MINIMUM 70 PERCENT VEGETATIVE COVER OF DISTURBED AREAS IS REQUIRED.
- Erosion Control Standards
 - Maintenance specifications and schedule
 - TxDOT Standard Temporary Erosion Detail Sheets
- Engineer's Sequence of Construction

3 Reports

The following information is intended to assist in the preparation, review and approval of reports required for public infrastructure permitting in the City of Seguin. The information listed under each report is required and should be provided within the report. Additional information may be required by the engineer of record.

3.1 Drainage Report

All drainage and water quality reports are required to include the following:

- Engineer's seal with signature and date
- Name of project and location
- All exhibits within the report shall be sealed by the engineer of record

3.1.1 Description of methodology and assumptions

- Project summary
- Hydrology methodology description
- Reference sources of rainfall data, runoff coefficients, etc.

3.1.2 Hydrology

- Pre-Development Drainage Area Map
 - Existing contours with defined source of topography
 - Existing drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Drainage easements on and adjacent to site
 - Watershed delineations
 - Off-site areas contributing to site
 - Time of concentration paths
 - Flow arrows
 - Drainage area calculations summary
 - Runoff Coefficient "C" Value/Curve Number computations and breakdown
 - Points of discharge (points where flow exits property)
 - Flow summary table (2-yr, 10-yr, 25-yr, 50-yr, 100-yr) at each point of discharge
- Post-Development Drainage Area Map
 - Existing contours with consistent source of topography
 - Proposed contours
 - Existing drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Proposed drainage infrastructure (pipes, channels, ponds, inlets, etc.)
 - Drainage easements on and adjacent to site
 - Watershed delineations
 - Off-site areas contributing to site
 - Flow arrows
 - Time of concentration paths
 - Drainage area calculations summary
 - Runoff Coefficient "C" Value/Curve Number computations and breakdown
 - Points of discharge consistent with pre-development to ensure impact assessment
 - Flow summary table (2-yr, 10-yr, 25-yr, 50-yr, 100-yr) at each point of discharge

- Comparison of flows to pre-development conditions

3.1.3 Hydraulics

- Street design
 - Capacity calculations
 - 100-yr within the right-of-way and maximum depth
 - 10-yr water spread limit
 - Intersection inundation (if applicable)
 - 10-yr water spread width for local streets
 - 25-yr water spread width for any classification higher than a local street
 - 100-yr water surface elevation
- Inlet design
 - Capacity and sizing calculations
 - Carryover flow
 - Intercepted flow
 - Inlet length
 - Ponded width
- Storm sewer design
 - Velocity (25-yr, 100-yr check)
 - Capacity calculations (25-yr design, 100-yr check)
 - Hydraulic grade line for 25-yr and 100-yr event
- Channel design
 - Channel geometry
 - Channel cross sections
 - 25-yr event water surface elevation
 - 100-yr event water surface elevation
 - Required freeboard
 - Velocities (2-yr, 25-yr, 100-yr)
- Culverts and Bridges
 - Velocity (2-yr, 25-yr, and 50-yr design, 100-yr check)
 - Headwater depth (25-yr, 50-yr, 100-yr)

3.1.4 Mitigation

- Description of mitigation
- Detention design
 - Stage-storage-discharge table (2-yr, 10-yr, 25-yr, 50-yr, 100-yr)
 - Water surface elevations (2-yr, 10-yr, 25-yr, 50-yr, 100-yr)
 - Freeboard
 - Hydrographs
 - Outlet, weir, and spillway sizing and velocity
 - Emergency spillway calculations for 25-yr storm with clogged outfall
- Water quality design
 - Water quality site plan with impervious cover assumptions
 - Provided water quality volume

3.2 Geotechnical Report

Geotechnical reports are required for structural pavement design for all streets, public and private, and include the following:

- Engineer's seal with signature and date
- Name of project and location

3.2.1 Exploration Procedures

- Subsurface exploration procedures
- Laboratory testing

3.2.2 Exploration Results

- Site conditions
- Regional geology
- Soil conditions
- Groundwater observations

3.2.3 Analysis and Recommendation

- Pavement design criteria
- Pavement design recommendations
- Limitations
- CBR results
- Boring logs