Public Infrastructure Design Standards

2024 Edition

City of Sheridan
Public Works Department
Engineering and Utilities Divisions
55 Grinnell Plaza
Sheridan, WY 82801
www.sheridanwy.gov

Acknowledgements

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General Provisions

Short Title
These regulations, together with all future amendments, shall be known as the City of Sheridan Public Infrastructure Design Standards (hereinafter referred to as the "Design Standards"). They are intended to identify the specific design criteria that must be followed and typical design methods to be utilized in designing public infrastructure to the minimum that the City of Sheridan (hereinafter referred to as the "City") will accept. Proven alternative design methods may be accepted to accomplish the same.

Jurisdiction
These Design Standards, along with the City of Sheridan Standard Specifications and Details for Street and Utility Construction (hereinafter referred to as the "Standard Specifications"), shall apply to all public improvements within the incorporated area of the City except where superseded by federal or state requirements.

These Design Standards are developed, in part, in accordance with Appendix B Subdivision Regulations of the Sheridan City Code (hereinafter referred to as the City Code). All studies, reports, plans and specifications produced to satisfy these Design Standards shall be developed in accordance with the same Appendix B Subdivision Regulations of City Code. Where in conflict, requirements within Appendix B of City Code shall prevail.

Amendments and Revisions
These standards and criteria may be amended as new technology is developed or experience is gained in the use of these Design Standards.

Enforcement Responsibility
It shall be the duty of the City Engineer (under the direction of the Public Works Director) and Utilities Director to enforce the provisions of these Design Standards.

Review Process
The City will review all submittals for compliance with the specific Design Standards. Acceptance by the City does not relieve the Owner, Design Professional, or Contractor from responsibility for ensuring that the calculations, plans, specifications, construction, and record drawings are in compliance with the Design Standards.

Prior Approval
These Design Standards shall not abrogate or annul: (a) any permits issued before the effective date of these Design Standards; (b) any construction plans approved before the effective date of these Design Standards; (c) any final plat documents that have been recommended for approval by the City's Planning Commission or previously approved by City Council prior to the effective date of these standards; or (d) any easements or covenants already in effect.

Relationship to Other Standards
If special districts impose more stringent standards, this difference is not considered a conflict and the more stringent standard shall apply. If state or federal government imposes more stringent standards, criteria, or requirements, these more stringent standards shall supersede those contained within these Design Standards.

Variances
Variances from these Design Standards will be considered on a case-by-case basis by the City Engineer or Utilities Director as applicable.

Private Facilities
Private developments within the City that require construction of facilities not under the authority of any particular building code shall meet these Design Standards and the Standard Specifications. The City will waive certain standards on a case-by-case basis, with such waivers not being unreasonably withheld, if the proposed modifications meet the overall intent of these Design Standards and the Standard Specifications.

If an owner of private street or utility facilities wishes to dedicate these facilities for public use and maintenance, the facilities must meet the Design Standards and Standard Specifications set forth herein prior to being accepted by the City.

Section 101
General Pre-Construction Requirements & Procedures

The following “General Pre-Construction Requirements and Procedures” are intended to clarify, augment, and/or further define the water and wastewater application, engineering, and permitting processes and requirements identified within the aforementioned City Code references.

101.1 Water and Wastewater Preliminary Plan Submittal Requirements and Procedures

Engineers seeking review of preliminary plans for water and wastewater systems for subdivisions and other public improvements within the service areas of the City, the Downer Neighborhood Improvement and Service District (DNISD), and the Sheridan Area Water Supply Joint Powers Board (SAWSJPB) shall follow the requirements and submittal procedures outlined in this section. Plans should be labeled "PRELIMINARY PLANS."

101.1.1 Water and Wastewater Preliminary Plan Requirements

101.1.1.1 Preliminary Plat

A copy of the proposed preliminary plat for the proposed subdivision shall be submitted along with the PRELIMINARY WATER AND WASTEWATER PLANS.

101.1.1.2 Utility Plan

The Utility Plan shall include existing and proposed locations of water, sanitary sewer, electric, gas, cable TV, and communication lines. In addition, if a raw water irrigation system is proposed for the area being developed, the facilities associated with this irrigation system shall also be included in the Utility Plan. Existing and proposed easements for each utility shall be identified on this plan. The proposed locations of all fire hydrants, water valves and manholes shall be shown on this plan. The size and type of material for the proposed water mains and sanitary sewer mains shall be shown on this plan. The Utility Plan shall also include the location of all existing utilities and shall indicate the location of the proposed connections to these existing utility systems. The Utility Plan shall be prepared using the following horizontal and vertical datum:

Horizontal: NAD83 (1993), Wyoming State Plane East Central Zone, U.S. Survey Feet

Datum Adjustment Factor for conversion of surface coordinates = 1.000235000 at 0.0.

Vertical: NAVD88, U.S. Survey Feet

101.1.1.3 Street, Drainage and Grading Plans

A copy of the "Preliminary Street, Drainage and Grading Plan" shall be provided to the Utilities Division. If provided in conjunction with a preliminary plat submittal, it shall be done so using the City's cloud-based permitting system known as OpenGov.

101.1.1.4 Offsite Public Improvements

If offsite public improvements are required in order to connect into existing City facilities, the offsite plans shall include the proposed lines and connection locations. They shall also identify the status of the rights-of-way or easements for the offsite improvements.

101.1.1.5 Disposition of Water Rights

When the preliminary plat is submitted, the developer shall declare in writing its intended disposition of any water right which is appurtenant to the land being subdivided by one of the following means listed in order of preference for the developer:

1. To be used on the property being subdivided in accordance with a plan for the distribution of raw water via an irrigation system or other means;
2. To be transferred to the City; or
3. To be addressed in any manner consistent with Wyoming state statutes.

If the developer elects to utilize the water right on the lands being subdivided, it shall submit a plan for the distribution of the raw water via an irrigation system or other means along with the preliminary water and sewer plans.

If the developer elects to transfer the water right to the City, and the City concurs with such transfer, the City shall purchase such right based upon its market value; provided, however, that the cost to transfer ownership, change the point of diversion, change the means of conveyance, change the place of use, and/or change the type of use shall be deducted from the purchase price. This deduction will be made only if the City and the developer agree that the City will be responsible for transferring ownership and changing the point of diversion, means of conveyance, etc. in lieu of the developer. Any cost greater than the purchase price shall be paid by the City. Market value shall be determined as cited in City Code.

If the developer elects to address the water right in any manner consistent with Wyoming state statutes other than utilizing it on the property being subdivided or transferring it to the City, it shall declare the means by which it shall dispose of the water right. The disposition of the water shall be accomplished prior to approval of the final plat.

101.1.2 Preliminary Submittal Procedure

A. The Engineer shall submit a digital copy of the preliminary plans in .pdf format to the Utilities Division for review. The plans shall be submitted so that they can be printed on 11 x 17 paper, and they shall be submitted via the OpenGov electronic permitting system. Submission of the Application for Permit to Construct is not required at the preliminary stage.
B. The preliminary plans shall be submitted to the Utilities Division at the same time that the preliminary plat is submitted to the Planning Division for consideration by the City Planning Commission. The Utilities Division will review the plans and provide any comments to the Applicant via the OpenGov electronic permitting system.
C. The Applicant shall revise and resubmit the plans as Final Water and Wastewater Construction Plans in accordance with Section 101.3.1 – Final Water and Wastewater Submittal Requirements.

101.2 Approval of Minor Subdivision Plat

A. A Minor Subdivision is any subdivision that affects not more than five lots, which does not result in more than five lots, which does not create any new streets or vacate any existing streets, and which does not require the extension of any municipal utilities or the creation of any new public improvements.
B. A preliminary plat is not required for a Minor Subdivision unless there are pre-existing structures on the lands being subdivided. If no such structures exist, the subdivider may proceed directly to the preparation of the final plat for the Minor Subdivision.
C. In order for the Planning Division to obtain the Utilities Division's comments on a Minor Subdivision Plat, any preliminary plans must be submitted to the Utilities Division at least fourteen (14) days prior to the date that the final plat for the Minor Subdivision is scheduled for consideration by the Planning Commission.
D. The preliminary plans shall include only the information from Section 101.1 – Water and Wastewater Preliminary Plan Submittal Requirements and Procedures that would apply to the Minor Subdivision plat.
E. Approval of the Final Plans and issuance of the Permit to Construct for a Minor Subdivision plat, if required, shall follow Section 101.3.1 – Final Water and Wastewater Submittal Requirements.

101.3 Final Submittal Requirements

Applicants/Developers seeking approval of Final Water and Wastewater Plans for construction of any public infrastructure improvements required for new subdivisions, or for construction of any public infrastructure improvements required for the development of property where public infrastructure is not currently present or is insufficient, shall follow the requirements and submittal procedures outlined in this section.

101.3.1 Final Water and Wastewater Submittal Requirements

101.3.1.1 Construction Drawings/Final Plans.

The final plans shall include the following, if applicable:

1. Cover sheet
2. Proposed final plat for the proposed subdivision
3. Utility plan (including all proposed private utilities such as electric, natural gas, telephone, cable TV, and communication lines)
4. Street plan and profile sheets with necessary details
5. Water and wastewater plan and profile sheets with necessary details
6. Raw water irrigation system plan and profile sheets with necessary details (if being installed)
7. Storm sewer plan and profile sheets with necessary details
8. Overlot grading and drainage plan
9. Erosion and sediment control plan for the period of construction of the subdivision and related improvements
10. Temporary traffic control plan for the period of construction of the subdivision and related improvements
11. General notes

101.3.1.2 Overlot Grading and Drainage Plan

The overlot grading and drainage plan shall be developed which includes building envelope areas showing recommended top-of-foundation elevations for each lot within the subdivision. Contour lines shall be shown in accordance with Section 701, and they shall depict the proposed grading on each lot which shall align with the overall grading and drainage plan.

101.3.1.3 Geotechnical Investigation Report

The final submittal shall include a geotechnical investigation report prepared by an Engineer registered to practice in Wyoming. This report shall characterize the subsurface conditions existing within the development and include any special subsurface or geotechnical concerns that could otherwise affect the successful completion of the project. The report shall provide recommendations and solutions on pavement thicknesses, building foundations, drainage and

any other concerns relating to the subsurface and/or geotechnical conditions existing on the lands within the development.

101.3.1.4 Water and Wastewater Design Report

The final submittal shall include a water and wastewater design report, prepared by an Engineer registered to practice in Wyoming. The report shall conform to the requirements of the Wyoming Department of Environmental Quality (DEQ) Water Quality Division Rules & Regulations Chapters 11 and 12.

101.3.1.5 Submittal of Forms

The Application for Permit to Construct and Final Submittal Checklist shall be filled out, signed, and submitted with the final plans.

101.3.1.6 Variances

If the private developer or contractor responsible for public improvements desires to design and construct such improvements in variance to criteria in these standards, such variance(s) should be explained and included in the water and wastewater preliminary plan submittal. The variance request(s) shall consist of:

1. Identification of the criteria provisions to be waived or varied.
2. Identification of the alternative design or construction criteria to be adhered to.
3. A thorough justification of the variance request, including impact on capital and maintenance requirements and cost.

101.3.2 Final Submittal Procedures

A. The Engineer shall submit one (1) paper copy of the GEOTECHNICAL INVESTIGATION REPORT (if required), the WATER AND WASTEWATER DESIGN REPORT, and FINAL PLANS (11 x 17 size) to the Utilities Director for review and approval. A digital copy of these same three submittals shall also be provided to the City via its OpenGov electronic permitting system. The Application for Permit to Construct and the Final Submittal Check List must be submitted with the Final Plans.

B. The Geotechnical Investigation Report (if required), the Water and Wastewater Design Report, the Final Plans for the water and wastewater systems, and the Application for Permit to Construct must be approved by the Utilities Director before the Permit to Construct will be issued. For water/wastewater infrastructure that will be dedicated to the public, the Permit to Construct will be issued upon approval by the appropriate governing body as follows:

    i. Approval of the Final Plans, approval of the final plat, AND acceptance of a "Subdivision Improvement Contract" by the City Council; OR approval of the Final Plans and acceptance of an

"Infrastructure Agreement" by the City Council (for water/wastewater projects that do not require a plat).

-or-

ii. Approval of a FINAL "Contingent Water Service Agreement" by the SAWSJPB, approval of the final plat by the Board of County Commissioners of Sheridan County, and approval of the Final Plans.

C. No water or wastewater construction will begin on a project before the Permit to Construct has been issued.

101.4 Permitting Procedures

The City has been delegated authority from the DEQ Water Quality Division to issue permits to construct water distribution facilities and wastewater collection facilities owned or controlled by the City. No construction for developments or other public improvements on private development contracted projects as deemed necessary by the Utilities Director, and no construction, installation, or modification of public infrastructure (including, but not limited to, a public water supply, sewerage system, treatment works, disposal system, or other facility capable of causing or contributing to pollution) shall be allowed unless a Permit to Construct has been obtained from the Utilities Director.

101.4.1 Application Requirements

A. Any person who proposes to construct, install or modify a facility required to be permitted shall submit a signed copy of a written application for a permit to construct and check list on the attached forms. These submittals shall be made via the City's OpenGov electronic permitting system.
B. The application for a permit to construct, install or modify must be accompanied by electronic copies of the plans (11 x 17 size), specifications, and engineering design report (or other pertinent information covering the project), and any additional information required by the Utilities Director or City Engineer. These submittals shall be made via the City's OpenGov electronic permitting system.
C. All engineering design reports, plans, and specifications submitted shall carry the seal and signature of the responsible engineer, who must be a professional engineer registered in the State of Wyoming.

101.4.2 Application Processing Procedures

All permit applications received will be processed in the following manner:

A. The Utilities Director, City Engineer or designee shall review each complete application to determine if the application and supporting documents:

1. Meet the minimum requirements of these Design Standards and the Standard Specifications, and should therefore be authorized; or

2. Should be authorized with modification.

B. Incomplete applications will be processed in the following manner:

1. Additional information will be requested from the applicant in order to complete the review process.
2. If the application is grossly incomplete, it will be returned to the applicant with a request for completion and re-submittal on a new application.
3. If an application is returned to the applicant because of incompleteness, the applicant shall have a maximum of six (6) months to provide the additional information. If the applicant fails to provide the requested information within that period, the entire incomplete application shall be deemed to be unacceptable, and the application shall be returned to the applicant.
4. If the applicant does not address all comments identified in the City's review of the re-submittal, a charge at a rate of $100.00 per hour may be assessed by the City for review of re-submittals thereafter.

C. The application will be reviewed and final action taken by the Utilities Director within fifteen (15) working days. The review time may be lengthened if the submittal is incomplete and additional information is requested.

D. The Utilities Director, City Engineer or their designees shall promptly notify the applicant in writing of the final action taken on the application. If the conditions of the permit are different from the proposed application submitted by the applicant for review, the notification shall include reasons for the differing conditions.

E. If, upon review of an application, the Utilities Director determines that a permit is not required, the Utilities Director, or his designee, shall notify the applicant of this determination in writing. Such notification shall constitute final action on the application.

101.4.3 Duration, Termination of Permits and Transfer of Permits

A. Permits to Construct shall expire two (2) years after the date of issuance, unless the Utilities Director notifies the applicant otherwise.
B. Permits to Construct will be issued only to the official applicant of record, who must be the owner of the permitted facility, for only the type of construction authorized in the permit. Permits to Construct shall be automatically terminated:
    1. Within sixty (60) days after sale or exchange of the facility by the original applicant (unless transferred);
    2. Upon issuance of a new, renewed or modified permit; or
    3. Upon written request of the permittee.

C. Permits to Construct may be transferred by having the new owner submit new application forms to the Utilities Director. As part of this process, the existing owner shall provide written request for such an ownership transfer. The Utilities Director shall either approve or deny the transfer request within ten (10) working days after receipt of the request.
D. Any conditions in the Permit to Construct shall be automatically transferred to the new owner whenever a transfer of ownership of the facility occurs.

101.4.4 Renewal of A Permit

A Permit to Construct may be renewed upon the following conditions:

A. A written statement is filed with the Utilities Director or City Engineer stating that there will be no changes to the approved application or any of the supporting documents submitted along with the approved application. The written statement should be filed with the Utilities Director prior to the expiration date of the permit; and
B. No modifications to the approved Permit to Construct are required as stated in Section 101.4.6 of these regulations.

101.4.5 Denial of a Permit

A. The Utilities Director may deny issuance of a Permit to Construct for any of the following reasons:

    1. The application is grossly incomplete or does not meet applicable Design Standards;
    2. The project, if constructed, will cause violation of applicable State surface or groundwater standards;
    3. The project does not comply with applicable State and local water quality management plans;
    4. The project, if constructed, would result in hydraulic and/or organic overloading of wastewater facilities;
    5. The project, if constructed, would result in public water supply demand in excess of source, treatment or distribution capabilities; or
    6. Other justifiable reasons necessary, as determined by the Utilities Director, to carry out the provisions of the City's delegation of authority agreement with DEQ.

B. If the Utilities Director denies issuance of a Permit to Construct, the applicant shall be notified by registered or certified mail of the authority reasons for denial.

C. In the case of denial of a permit by the Utilities Director, the applicant, if he so desires, may request a hearing before the DEQ Water Quality Administrator. The request for a hearing shall be made in writing within twenty (20) days of

notification of this denial to the DEQ Water Quality Administrator, and shall state the grounds for the request.

D. In case of denial of a permit by the City Engineer, the applicant may choose to appeal the City Engineer's decision to the Public Works Director and Utilities Director.

101.4.6 Modification of Permit

A. Prior to completion of construction of a facility for which a Permit to Construct has been previously obtained, the Utilities Director may modify a permit for one or more of the following reasons:
   1. Changing site conditions which would result in violations of the City's standards and regulations;
   2. Receipt of additional information that would have been relevant at the time that the Permit to Construct was issued;
   3. Any other reason deemed necessary by the Utilities Director to meet applicable statutes, standards or regulations; or
   4. the permittee requests a permit modification.

B. In cases where the Utilities Director intends to modify a permit, he/she shall notify the permittee by registered or certified mail of his/her intent to do so. Such notification shall include the proposed modification, the reasons for the proposed modification, and the estimated time frame to have the proposed modifications constructed, installed and operational. Modification requirements shall be completed prior to completion of the subject facility's construction, installation, or modification.

   The modification shall become final within twenty (20) days from the date of receipt of such notice, unless within that time the permittee requests a hearing before the appropriate body. Such request for a hearing shall be made in writing to the Utilities Director and shall state the grounds for the request. Any hearing held shall be conducted pursuant to Chapter 29 of the City Code, which deals with appeals procedures.

   A copy of the modified permit shall be forwarded to the permittee as soon as the modification becomes effective.

C. In cases where the permittee requests a permit modification, he/she shall do so by submitting a new application, an amended application, or a request to modify the existing permit. Any request to modify a permit, deviate from the plans submitted with the original permit application, or use alternative materials or procedures, shall be made in writing, and no modification to the existing permit shall be effective until the Utilities Director issues written authorization or a modified permit, except that:
   (i) to prevent construction delays, a permittee may verbally request to use alternative materials or procedures, and the Utilities Director may

verbally approve the request. The Utilities Director may approve the request if the materials or procedures specified in the issued permit cannot be obtain or accomplished, and that alternative materials or procedures meet the minimum design standards; and

(ii) verbal approval to use alternative materials or procedures is immediately effective, provided that the permittee submits a written request within five (5) days of receiving verbal approval.

101.4.7 Suspension or Revocation of a Permit

A. The Utilities Director or City Engineer may suspend or revoke a permit before construction, installation or modification of a facility is completed for the reasons set forth in item C below.

B. Before a permit may be suspended or revoked, the permittee shall be given an opportunity to show his/her compliance with all permit conditions in order to justify retention of the permit.

C. The Utilities Director or City Engineer shall notify the permittee by registered or certified mail of his/her intent to suspend or revoke the permit based upon one or more of the following reasons:

1. non-compliance with the terms of the permit; or
2. unapproved changes in the permitted facility's design or construction; or
3. false information that was submitted with the original or amended application; or
4. conflict with an approved water quality management plan prepared in accordance with Sections 303, 208 and/or 201 of the Federal Clean Water Act, as amended; or
5. any other reasons necessary to meet applicable statutes, standards or regulations.

D. The notification shall include the reasons for suspension or revocation.

E. The suspension or revocation shall become final within twenty (20) days from the date of receipt of such notice, unless within that time the permittee requests a hearing before the appropriate body. Such a request for a hearing shall be made in writing to the Utilities Director and shall state the grounds for the request. Any hearing held shall be conducted pursuant to Chapter 29 of the City Code.

F. The Director of the DEQ may suspend or revoke permits issued by the Utilities Director based upon one or more of the reasons listed in item (C) above. Suspension or revocation shall become effective and final within twenty (20) days from the receipt of such notice, unless within that twenty-day period the permittee or delegated local entity requests a hearing before the

Environmental Quality Council. Such a request shall be made in writing to the Director of the DEQ and shall state the grounds for the request. Any hearing shall be conducted pursuant to the rules and regulations of the DEQ.

101.4.8 Providing Information

The Utilities Director shall return one (1) copy of the approved permit, the final plans and specifications, the engineering design report, and other pertinent information to the permittee and retain one (1) copy as a permanent record. Other copies will be retained by the City as "working copies" during the course of the construction.

101.5 Notice of Change in Engineering Service

If the permittee employs a different construction engineering firm or engineering materials testing firm during the construction phase of the project, the City shall be notified immediately of this change.

101.6 Forms

- Application for Permit to Construct (Form 101-1)
- Final Submittal Checklist – Water/Wastewater Projects (Form 101-2)

101.7 Preconstruction Meeting

The permittee, permittee’s engineer and resident project representative, and the permittee's construction superintendent shall participate in a preconstruction meeting with the Utilities Director and City Engineer, or their representatives, before construction begins. Meeting agenda items shall include, as a minimum, the contractor's schedule, any planned road closures, construction traffic routes, construction traffic control plans, dust prevention, erosion and sediment control plans, locations of fill disposal sites, locations of imported borrow sites and any special conditions cited in the construction contract documents and the Permit to Construct.

CITY OF SHERIDAN – FORM 101-1
APPLICATION FOR PERMIT TO CONSTRUCT

1. **Name of Project** _____ _____
2. **Location of Project** _____1/4, _____1/4, Sec _____, T_____, N_____, R_____W
   General Physical Address _____ ___
3. **Does this project include:**

   A. Public water supply well?_____Yes ___ No
      If yes, list State Engineer permit number(s) _____

   B. Potable water supply pumping station?_____Yes_____No
      If yes, what is the design flow?_____gpm

   C. Potable water storage facility?_____Yes_____No
      If yes, what is the size?_____ Gallons

   D. Potable water mains?_____Yes_____No (____New __ Replacement)
      If yes, what is the additional peak day demand?_____Gallons per day

   E. Sanitary sewage pumping station and force main?
      ____Yes____No (____New____Replacement)
      If yes, what is the design flow?_____gpm
      What are the total lineal feet of force main?_____ L.F.

   F. Sanitary sewage collection lines?_____Yes_____No (____New_____Replacement)
      If yes, what is the additional average daily volume of wastes?
      Gallons per day (WDEQ Criteria)
      What are the total lineal feet? _____ L.F.

   G. Storm sewer lines?_____Yes_____No (____New ____Replacement)
      If yes, what is the total lineal feet?_____ L.F.

   H. Public Streets?_____Yes ____No (____New_____Replacement
      If yes, how many lineal feet of:

Arterial Streets	_____	Total Lanes	_____
Collector Streets	_____	Total Lanes	_____
Local Through Streets	_____	Total Lanes	_____
Local Streets	_____	Total Lanes	_____

A. Earthwork/Overlot Grading_____Yes____No
If yes, how many cubic yards of cut? _____
how many cubic yards of fill? _____
Maximum cut _____ feet; maximum fill _____ feet.

Total area disturbed_____AC
NPDES Permit_____Yes ____No
If yes, provide a copy of the Notice of Intent (NOI) and Erosion and Sediment Control Plan.

B. Drainage Report Completed? ____Yes ____No
Title of Report: _____
Prepared By: _____

C. Water System Design Report Completed? ____Yes ____No
Title of Report: _____
Prepared By: _____

D. Sewer System Design Report Completed? ____Yes ____No
Title of Report: _____
Prepared By: _____

E. Traffic Impact Analysis Report Completed? ____Yes ____No
Title of Report: _____
Prepared By: _____

F. Geotechnical Report Completed ____Yes ____No
Title of Report: _____
Prepared By: _____

I certify that the above described facility has been submitted in accordance with local and state rules and regulations. I have authorized the following engineering and testing firm to act upon my behalf during the design and construction phases of the project. They are authorized on my behalf to receive and release correspondence regarding this project to the City of Sheridan.

Name of Owner of the Project _____
Mailing Address _____
City _____ State _____ Zip _____
Business Phone _____ Home Phone _____

_____
Print Owner Name

_____
Signature of Owner Date

Name of Engineering Firm

Mailing Address

City State Zip

Business Phone

Name of Professional Engineer Engineer's P.E. Number

Name of Quality Control and Testing Firm*

Mailing Address

City State Zip

Business Phone

*If the Engineering Firm is responsible for quality control and testing on the project, write "same" on this line.

Utility Operator of the Project City of Sheridan

Mailing Address 55 Grinnell Plaza

City Sheridan State WY Zip 82801

Utility Operator's Signature

Title Date

CITY OF SHERIDAN - FORM 101-2
FINAL SUBMITTAL CHECKLIST – WATER/WASTEWATER PROJECTS

_____
(Name of Subdivision or Project)

_____ Final Construction Plans _____ Record Drawings

Comp	N/A		For City Use Only: No Exceptions Taken	Revised and Resubmit	Construction Corrected
COVER SHEET					
		Vicinity map with scale			
		Subdivision name			
		Complete index of sheets			
		Identify vertical/horizontal control datum			
PLAT					
		Bearings			
		North Arrow			
		Scale			
		Block and lot dimensions and lot numbers			
		Street names			
		Easements of utility and drainage			
		Complete legend			
OVERALL UTILITY MAP					
WATER					
		Existing and proposed fire hydrant locations and spacing per requirements of the latest Edition IFC			
		Length and size of pipe to be used			
		Valve locations			
		Locate all water service connections on overall maps			
		Identify location of high hazard services requiring pressure principle backflow preventers			
WASTE WATER					
		Existing and proposed manhole locations and spacing			
		Length and size of sanitary sewer lines			
		Grade of proposed line			
		Locate all sanitary sewer service connections			
ELECTRICAL, CABLE TV, TELEPHONE, GAS					
		Existing and proposed locations			

Comp	N/A		For City Use Only: No Exceptions Taken	Revised and Resubmit	Construction Corrected
STREET AND ALLEYS, (IF APPLICABLE) PLANS AND PROFILES					
		Plans and profiles for every street			
		Grade			
		Arrows showing direction of flow on plan sheet			
		Sidewalk width and location			
		Right-of-way and street widths			
		Access to all lots			
		Locations of water meter pits/curb stops			
WATER AND SANITARY SEWER PLANS AND PROFILES FOR EACH STREET AND MAIN					
		All elevations including surface elevations and elevations of inverts in and out on sewer manholes			
		Percent Grade			
		Length, size, and type of Pipe			
		Locations of valves and hydrants			
		Exact locations of all services and invert elevations of sewer stubs			
		Minimum depth of water mains			
OVERLOT GRADING, DRAINAGE AND STORM SEWER PLANS AND PROFILES					
		Foundation elevation buildings envelope area footprint			
		Contour lines existing and proposed			
		Designate controlled fill areas >2’			
		Location of drainage easements			
		Location and elevation of all existing floodplain			
		Location of existing drainage facilities and structures			
		Overall drainage area and sub-area boundaries			
		Proposed type of street flow			
		Location of proposed storm sewer and open channel ways including inlets, manholes, culverts, and other appurtenances including riprap protection and profiles showing existing and proposed sizes, type and grades and hydraulic grade lines for minor and major storms			
		Location of proposed outfall points for runoff from the developed area			
		Location of storm water quality facilities			
DETAILS:					
STREET DETAILS					
		Right-of-Way and street width dimensions			
		Typical Street Cross Section			
		Thickness of base and sub-base courses			
		Curb and walk details			

Comp	N/A		No Exceptions Taken	Revised and Resubmit	Construction Corrected
		Catch basin design locations			
		Catch basin design locations			
		Thickness of sub-surface and surface courses			
		Base/Core information from soil investigation			
		WATER MAIN DETAILS			
		Valve Box detail			
		Fire Hydrant detail			
		Pipe bedding for trench over-width and adverse conditions			
		Trench detail			
		Thrust block detail			
		Air relief and pressure relief valve details			
		Service line detail			
		Cathodic Protection			
		WASTE WATER			
		Manhole and cover details			
		Pipe bedding for trench over-width and adverse conditions			
		Trench detail			
		Service line detail			
		End of line marker detail			
		TRAFFIC CONTROL PLANS			
		Street name sign			
		Stop signs and other regulatory signs			
		Detail on size and shape of signs			
		Legend showing what each sign is			
		Street striping			
		GENERAL NOTES			
		Each sheet must have in **bold** print the title of the streets shown thereon			
		Pages titled in the lower right corner			
		Page number in the lower right corner			
		Page number in the lower right corner			
		Specifications for all materials and construction techniques			
		DESIGN REPORTS			
		Subsurface and Geotechnical Assessments			
		Overlot Grading			
		Water and Sewer Report			
		Soil Boring Report			

Comp	N/A		No Exceptions Taken	Revised and Resubmit	Construction Corrected
FINAL REPORT (See Section 103)					
_____	_____	Compaction Tests	____	____	____
_____	_____	Concrete Tests (thrust blocks & street collars)	____	____	____
_____	_____	Water Pressure Tests	____	____	____
_____	_____	Water Disinfection Tests	____	____	____
_____	_____	Sewer Alignment Tests	____	____	____
_____	_____	Sewer Leakage Tests	____	____	____
	_____	Sewer Deflection Tests			

COMMENTS

_____

_____

_____

_____

_____

_____ _____

(Name of Engineer) (Date)

_____ _____

(Name of Reviewer) (Date)
City of Sheridan Utilities Department

Section 102
General Construction Requirements & Procedures

102.1 General

Construction requirements are defined within Appendix B of the City Code for subdivision development projects.

The following “GENERAL CONSTRUCTION REQUIREMENTS AND PROCEDURES” are intended to clarify, augment, and/or further define the water and wastewater inspection, documentation and field-testing procedures and requirements identified within the aforementioned City Code references. Where in conflict, requirements within Appendix B of the City Code shall prevail over this section.

For any proposed new developments, the Engineer, Contractor and Developer must be separate entities.

102.2 Inspections

102.2.1 Engineer

The Engineer or his project representative shall follow the guidelines set forth in Article 10, ENGINEER’S STATUS DURING CONSTRUCTION, of the Standard General Conditions of the Construction Contract (EJCDC 2018 Edition) contained within the Standard Specifications. The Engineer or his project representative shall be present at the site for a sufficient time during construction activities to assess compliance with the plans and specifications for each element of the construction. Once construction activities commence, the Engineer or his project representative shall visit the project no less than two times per day, even if actual construction is not being performed. Furthermore, the Engineer or his project representative must provide full-time construction observation whenever any of the following activities are occurring:

- Utility main installation;
- Compaction activities, especially around manholes, valve boxes, fire hydrants and mainline trenches;
- Utility connections to existing manholes, valve boxes, fire hydrants, thrust block installations;
- Pressure testing, cleaning and sterilizing waterline systems, with the engineer being onsite during the duration of the tests;
- Pressure testing, pipe deflection testing, and City videoing of sewerline systems, with the engineer being onsite during the duration of the test or video operation;
- Vacuum testing of manholes;
- Installation of concrete and asphalt for all public infrastructure; or

- Any engineering-accepted changes to the original design drawings.

The Engineer or his project representative shall request in writing that the Utilities Director, or his designee, inspect the water and wastewater improvements after they have been completely installed and before any street preparation is begun. All required pressure and disinfection tests shall be performed and have met or exceeded the specifications prior to the City inspecting the improvements.

The approval of the water and wastewater improvements shall be done only to initiate the process of issuing building permits. The approval does not mean that the water and wastewater improvements are being accepted for maintenance.

102.2.2 City

In addition to the above inspections performed by the Engineer, representatives from the Utilities Director's Office shall make periodic inspections during construction of the project.

102.3 Weekly Reports

The Engineer or his project representative shall be responsible for submitting weekly progress reports to the Utilities Director. The weekly progress report shall include the results of all tests taken during that week. The reports shall be submitted by Tuesday of the following week for the previous week's work.

102.4 Testing During Construction

Testing during the construction phase shall be done in accordance with the appropriate sections set forth in the Standard Specifications.

102.5 Safety

The Contractor shall comply with and shall require all subcontractors to comply with all applicable health and safety laws, rules and regulations, including without limitations, the Occupational Safety and Health Act of 1970 and the rules and regulations issued pursuant thereto. **Neither the City nor the Engineer shall be responsible for safety on the project.**

RECORD DRAWINGS - APPROVAL CHECKLIST

☐ Inspection of sewer and water improvements by the Utilities Division and the Utilities Maintenance Division.

☐ Sewer and Water Improvement Record Drawings

- ☐ Water services stationed on drawing; X-Y-Z coordinate information provided for all corporation stops and curb stops.
- ☐ Sewer services stationed on drawing with stub invert elevations; X-Y-Z coordinate information provided for all sanitary sewer wyes and sanitary sewer clean-outs on service lines.
- ☐ Water valves, fire hydrants, flushing hydrants, water main fittings (bends, tees and crosses) and cathodic protection test stations located and stationed on the drawings; X-Y-Z coordinate information provided for all valves, hydrants and test stations.
- ☐ Water and sewer system manhole and vault locations and inverts; X-Y-Z coordinate information provided for the center of all manholes and vaults.

☐ Grade of all sanitary sewer mains.

Test Results

- ☐ Water Pressure Test
- ☐ Water Disinfection Test
- ☐ Sewer Video Inspection Test by City Staff
- ☐ Sewer Deflection Test
- ☐ Sewer Pipes and Manholes Exfiltration Tests
- ☐ Trench Compaction Test

Site

- ☐ Overlot grading per plan submitted?
- ☐ Erosion control per plan submitted?

Comments

_____

_____

_____
(Project Engineer)

_____
(City of Sheridan Utilities Division)

_____
(Date)

Section 103
General Requirements and Procedures for Obtaining City of Sheridan Approval of Project

103.1 General

Engineers and developers seeking City approval of the completed public improvements for private development contracted projects or for City-contracted projects shall follow the requirements and procedures outlined in this section. Construction requirements are further defined within Appendix B of the City Code for "Subdivision Development Projects".

The following "GENERAL REQUIREMENTS AND PROCEDURES FOR OBTAINING FINAL CITY APPROVAL FOR A PROJECT" are intended to clarify, augment, and/or further define the water and wastewater documentation, procedures and requirements identified within the aforementioned City Code references. Where in conflict, requirements within Appendix B of the City Code shall prevail over this section.

103.2 Requirements

103.2.1 Final Inspections

Upon completion of the project, the Engineer shall submit a written request to the Utilities Director for a Final Inspection of the public improvements.

103.2.2 Record Drawings

At the time that the Engineer requests the Final Inspection, he shall submit "Record Drawings" of the project.

A. A digital (*.pdf) file (11 x 17 size) and a CAD (*.dgn or *.dwg) file shall be submitted to the Utilities Director for review. The Record Drawings plans shall include all manhole inverts, the slope of all wastewater lines, the stationing of all wastewater services, inverts on all wastewater service stub-outs, and the stationing of all water services, valves, hydrants, fittings and appurtenances. X,Y,Z coordinate information shall be provided for all corporation stops (water taps), curb stops, sewer clean-outs, sewer wye's (sewer taps), manholes, vaults, fire hydrants, flushing hydrants, water valves, fittings and test stations. Coordinate information should be submitted in a digital format (*.xlsx), with appropriate stationing and center-line offset referenced. Coordinate information shall be submitted using the following horizontal and vertical datum:

Horizontal: NAD 1983 (1993) State Plane Wyoming East Central Feet (U.S. Survey Feet)
Vertical: NAVD 88, Feet (U.S. Survey Feet).

If a GIS geodatabase file is submitted, it shall include features and be formatted to fit the City of Sheridan geodatabase schema. Please reach out to the GIS Specialist for the latest version of the geodatabase schema.

B. The "Record Drawings" shall be certified and submitted with the following statement included on the plans:

"I certify that the construction inspection and "Record Drawings" preparation were performed by me or under my direct control and supervision. The construction details as shown on these "Record Drawings" are accurate and complete to the best of my knowledge and belief."

The Final Submittal Checklist (shown at the end of this section) shall be filled out, signed by the responsible Engineer, and submitted with the "Record Drawings".

103.2.3 Record Drawing Format

1. The *.pdf, and paper size for Record Drawings shall be size B (11X17).
2. The minimum scale ratio shall be 1" = 60'.

103.2.4 Final Report

A Final Report shall be submitted to the Utilities Director upon completion of the project. The Engineer shall compile the Final Report. The report shall include a brief summary of the testing on the project and a statement as to whether the observations and tests indicate that the various materials in place comply with the plans and specifications.

Also Included in the report shall be the following information:

1. A summary of all soil field density and compaction tests of trench backfill, street subgrade, base material, and any fill material;
2. A summary of all water pressure, leakage and disinfection tests and sewer alignment, leakage (vacuum) and deflection tests;
3. A copy of the signed Application for Permit to Construct with any applicable revisions; and
4. Any other information that may add to the integrity of the report.

103.2.5 Certificate of Compliance

The certifying engineer of record shall prepare a Certificate of Compliance and submit it to the Utilities Director upon completion of the project.

103.3 Procedure

103.3.1 Final Inspection

The City and the Engineer shall make the final inspection of all public improvements constructed as part of the project. If there are any items that are not in conformance with the Standard Specifications, the Private Developer and Engineer will be notified. The Private Developer shall be required to bring the items into conformance. On City-contracted projects, the Contractor shall be notified and required to bring the items into conformance.

103.3.2 Record Drawings

The Utilities Division shall review the “Record Drawings”. If these drawings require revision, or if additional information is required, these drawings will be returned to the Engineer. The Engineer shall then revise and resubmit the “Record Drawings”.

103.3.3 One-Year Warranty Statement

Private Development Projects shall provide a one-year warranty statement covering all the public improvements in the project.

103.3.4 Recommendation of Acceptance

Once the public improvements have been approved and accepted by the City, the “Record Drawings” have been stamped, submitted and approved, and the Warranty Statement has been submitted, the Utilities Director shall make a written recommendation to the City Council to accept the public improvements for ownership and maintenance.

103.4 Warranty Period on Public Improvements

The warranty period begins on the day that the City Council approves and accepts the public improvements.

During the warranty period, the Private Developer is responsible for any and all repair work on the public improvements. The Utilities Division will periodically inspect the public improvements and will notify the Private Developer during the warranty period to determine if warranty repair work is required. The Private Developer must complete the warranty repair work prior to the end of the warranty period.

Section 201
Public Water Supplies

The City hereby adopts the most current version of Chapter 12 of the DEQ Water Quality Division's regulations entitled "Design and Construction Standards for Public Water Supplies", to include the following, which amend, supplement, or revise the above-referenced standards as noted.

201.1 DEQ Engineering Design Report – Chapter 12 Section 9 Engineering Design Report

A. Add the following language at the end of Subsection 9(c)(iii) and (iv):

The following gallons per capita per day (GPCD) usage rates shall be incorporated into the design for the water systems belonging to the City, the DNISD and the SAWSJPB:

GPCD Usage Rates for City, DNISD and SAWSJPB
Metered at User

	Average Day (year-round) (gpcd)	**Peak Day (gpcd)**	**Average Day Irrigation Season (gpcd)**
City and DNISD	114	310	233
SAWSJPB	86	232	172
Rural – with Secondary Irrigation	60		65

OTHER DESIGN CRITERIA	
Average Day to Peak Day	2.70
Average Day to Peak Hour	4.20
Persons per Residential Account (City and DNISD)	2.19*
Persons per Residential Account (SAWSJPB)	2.32*
FIRE FLOWS (2 hours, except Industrial = 3 hours)**	
Single Family Residence	1000 gpm
Residential Areas	1500 gpm
Commercial	2500 gpm
Industrial	3500 gpm

** 2018-2022 U.S. Census Bureau data*
*** Unless superseded by the International Fire Code, latest edition, as amended by City Code*

Derived from Table 6.10 – Design Criteria Table – Usage GPD/EDU of the "Sheridan Water System Level I Study Final Report", June 2019 prepared for the Wyoming Water Development Commission, prepared by DOWL, Sheridan, Wyoming, which assumes 1.8 persons per EDU (average).

The system shall provide static pressure ranging from forty (40) psi to one hundred ten (110) psi during average-day conditions. The system shall maintain a twenty (20) psi minimum residual pressure at the finish floor elevation of the highest unit

proposed during peak day plus fire flow demand, and more than thirty-five (35) psi minimum residual pressure during the peak-hour demand. The maximum pressure fluctuation at any location in the distribution system between peak-hour demand and minimum-hour demand should not exceed thirty (30) psi.

201.2 DEQ Distribution Systems – Chapter 12 Section 16 Distribution Systems (Modifications)

A. Add the following language at the end of Subsection 16(e)(i):

The design must be in substantial conformance with the latest water master plan(s) for the City, DNISD, and the SAWSJPB. Twelve-inch mains shall be grid-spaced at approximately one-mile intervals. Eight-inch mains shall be grid-spaced at approximately ¼ mile intervals, subject to the approval of the Utilities Director. Pipes will be designed so the maximum velocity obtained will be less than five (5) feet per second (fps), excluding fire flow.

Fire sprinkler lines shall be installed at right angles to the distribution main or lateral and be extended directly to the property line. Horizontal bends or offsets shall be minimized in the installation of these lines. The size of the fire sprinkler lines shall be determined by the needed fire flow required for the building sprinkler system.

B. Add the following language at the end of Subsection 16(f):

Fire hydrants shall be spaced per Appendix C in the latest edition of the International Fire Code, latest edition, subject to the approval of the City Fire Code Official.

C. Delete subsection 8.2.4 – Dead-ends of the 2018 Ten States Standards (incorporated by reference into the DEQ's Chapter 12 Standards at Subsection 16(a)) and insert the following:

All waterlines shall be looped unless otherwise approved by the Utilities Director. Permanent dead-end lines are prohibited with the exception of lines extending into cul-de-sacs serving no more than twenty (20) single-family residential units or equivalent demand. For those dead-end lines that are allowed as described above, they shall be terminated with a fire hydrant or other flushing device. Flushing devices shall be sized to provide flows which will provide a velocity of at least 3.0 fps. Dead-end lines may be allowed within the SAWSJPB distribution system provided it is justified by hydraulic analysis, meets demand requirements (to include fire flows when required), and terminates with a flushing hydrant or similar flushing device.

D. Add a new subsection16(n):

(viii) (n) Services. The International Plumbing Code, latest adopted edition, shall be generally used as the basis of design for water service lines. There shall be only one tap and water service line from the main to the property line for each lot. Multiple services on one lot may be divided at the property line with each individual service having a meter and a curb stop. Where multiple structures are on one lot which could be subdivided in the future, one tap and water service line from the main to the property line for each main structure will be allowed only upon approval by the Utilities Director. Services larger than 2" must be approved by the Utilities Director and will require a "Permit to Construct." That portion of the service line between the main and the property line shall be one continuous length of pipe which meets the Standard Specifications, installed perpendicular from the main to a meter pit or curb stop and box at the property line. Jointed pipe meeting the Standard Specifications may be used for service lines if they are larger than 2".

In accordance with the International Plumbing Code, latest edition, and per the requirement in the Standard Specifications which states that sewer service piping is to be constructed of Sch. 40 PVC, water and sewer service piping may be installed in the same trench, and there is no minimum horizontal distance requirement between the two pipes.

When serving lots at the end of a cul-de-sac, the length of the service line between the main and the property line shall not exceed seventy (70) feet.

Under no circumstances shall service lines be connected to a fire hydrant lateral line.

Service lines shall be adequate to supply the requirements of the property being served. The minimum size allowed for a water service line is 1 inch with a 3/4-inch meter. For services with meters 1 inch and larger that provide water solely for domestic and irrigation flows, the corporation stop, the meter, and that portion of the service pipe between the meter and the corporation stop on the main, shall all be of the same size. For individual service lines larger than one (1) inch that are used for (a) domestic and/or irrigation flows and (b) fire suppression system supply, the meter(s) used to record domestic and irrigation flows (non-fire suppression supply) may be of a different size than the shared service pipe as long as the meter is sized appropriately for the anticipated flows. The size for a service line from the City water main to any unit being served shall be selected such that the following design criteria are not exceeded during total peak demand flow:

A. 80% percent of the manufacturer's maximum meter capacity;
B. Service line pipe flow velocity does not exceed 15 fps;
C. The pressure drop from the City water main to any unit being served shall not be greater than 30 psi; and

D. the minimum residual pressure at the finish floor elevation to any unit shall be greater than 35 psi under normal operation conditions and greater than 20 psi under peak day plus fire flow conditions.

The water requirements of the property being served shall be defined as “total peak demand flow.” Peak domestic water requirements shall be calculated in accordance with the latest edition of the International Plumbing Code and the American Water Works Association M22 Standard. The irrigation demand flow and continuous load demands (when applicable) shall be added to the peak designed flow to get the total peak demand flow.

Service lines installed that also provide for fire suppression shall be tested in accordance with the requirements stipulated by the National Fire Protection Association’s NFPA-24 standard. These requirements are somewhat different than pressure testing and flushing requirements for water mains as stipulated in the Standard Specifications, as follows:

- Pressure testing: a hydrostatic test shall be conducted that will be for a pressure not less than 200 psi (or 50 psi above the static pressure in excess of 150 psi) for a minimum of two hours.
- Flushing requirements: the service line shall be flushed at a velocity of at least 10 fps until water is verified to be clear of debris.

Allowable leakage for such service lines will be the same as that allowed in the Standard Specifications.

Meter pits are required on all water service connections in areas served by the SAWSJPB and DNISD, unless otherwise approved by the Utilities Director. For areas served by the City, meters will be installed accordingly:

1. All meters shall be installed within a full-depth basement, or in a location within 3 feet of the access if in a crawl space.
2. The service line between the curb stop and the meter shall be a single, continuous (un-spliced) section and will be buried to prevent future connections prior to the meter.
3. If the aforementioned requirements of 1. and 2. cannot be met, a meter pit to be located immediately after the curb stop will be allowed, provided the meter pit conforms to other requirements within the Standard Specifications.
4. For high-hazard backflow installations, any required backflow prevention device must be installed within the mechanical (or similar) room of a new building, which shall include appropriate floor drains to dispense water discharged from the device.

E. Add a new subsection 16(o):

(o) Easements and Right-of-Ways

The minimum width right-of-way or easements for City use in which a water main will be installed is twenty (20) feet. If the final depth as measured from finished grade to the top of the water main exceeds 6.0 feet, the following table shall be used to determine the minimum width of right-of-way or easement required:

Depth of water main measured from finished grade to top of pipe (feet)	Minimum distance (feet from center of proposed water main to edge of building or established R-O-W.
6.0 and less	10.0 (20.0 feet total width)
6.0 to 10.0	15.0 (30.0 feet total width)
Greater than 10.0 feet	At least 20.0 feet (40.0 ft total), and function of soil type.

F. Add a new subsection 16(p):

(p) Fittings. Water mains shall be designed to minimize the number of fittings without sacrificing operational integrity and safety. All fittings shall be in conformance with the Standard Specifications.

G. Delete Section 8.3 - Valves of the 2018 Ten States Standards (incorporated by reference into the DEQ's Chapter 12 Standards at Section 16 Distribution Systems) in its entirety and insert the following:

(c) Valves. Valves shall be provided on water mains so inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located on water mains at not more than 500-foot intervals. Valves will be placed at all pipe junctions so that the total number of valves at the junction is one less than the number of branches, except as otherwise approved by the Utilities Director. Line valves shall also be placed:

- Such that no more than one (1) fire hydrant is isolated at any one time.
- At each end of a line running through an easement on private property.
- On each side of a creek, channel crossing, or arterial street/highway crossing.
- On fire hydrant laterals.

H. Delete Subsections 16(h)i and 16(i) in their entirety and insert the following in their place:

(i) (h) Excavation. Shall be in conformance with the Standard Specifications and O.S.H.A. Regulations.
(ii) (i) Bedding. Shall be in conformance with the Standard Specifications.

I. Add the following language at the end of Subsection 8.7.3 of the 2018 Ten States Standards (incorporated by reference into the DEQ's Chapter 12 Standards at Section 16 Distribution Systems):

Water mains shall have a minimum cover of six (6) feet and a maximum cover of seven (7) feet to top of pipe, except as otherwise approved by the Utilities Director.

J. Delete Subsection 16(m) in its entirety and insert the following:

(m). Cross Connection Control. All water services connected to the public water system shall comply with the City's "Cross Connection Control Program" as described within City Code.

201.3 Transmission Lines 16-Inch and Larger

1. No person shall tap or connect to any 16-inch and larger water transmission pipeline unless the applicant has been granted written permission by the Utilities Director for doing such.

2. No installation of a utility transmission line, conduit, or underground structure should be nearer than 20 feet clear separation from the outside surface of an existing 16-inch or larger transmission pipeline when it is required to run parallel to said pipeline(s). No installation of a utility transmission line, conduit, or underground structure should be nearer than two (2) feet clear separation above or below the outside surface of an existing 16-inch or larger transmission pipeline when it must be crossed.

201.4 DEQ Requirements for Service Connections

Any potable water supply service connection from any public water supply to the building shall require a "Permit to Construct" from the City if any of the following conditions exist:

1. A tee is being installed on the main in order to make the connection, or
2. A fire hydrant is being installed, or
3. A service pipe is being installed that is larger than two (2) inches, or
4. Any appurtenance is being installed that will be connected to a service pipe that will have an adverse impact on the quality or quantity of the supply.

The information to be submitted as an application for "Permit to Construct" shall include plan sketches, valve arrangements, material information, hazard classification for cross-connection control (back-flow) prevention, mechanical room schematics, and hydraulic calculations.

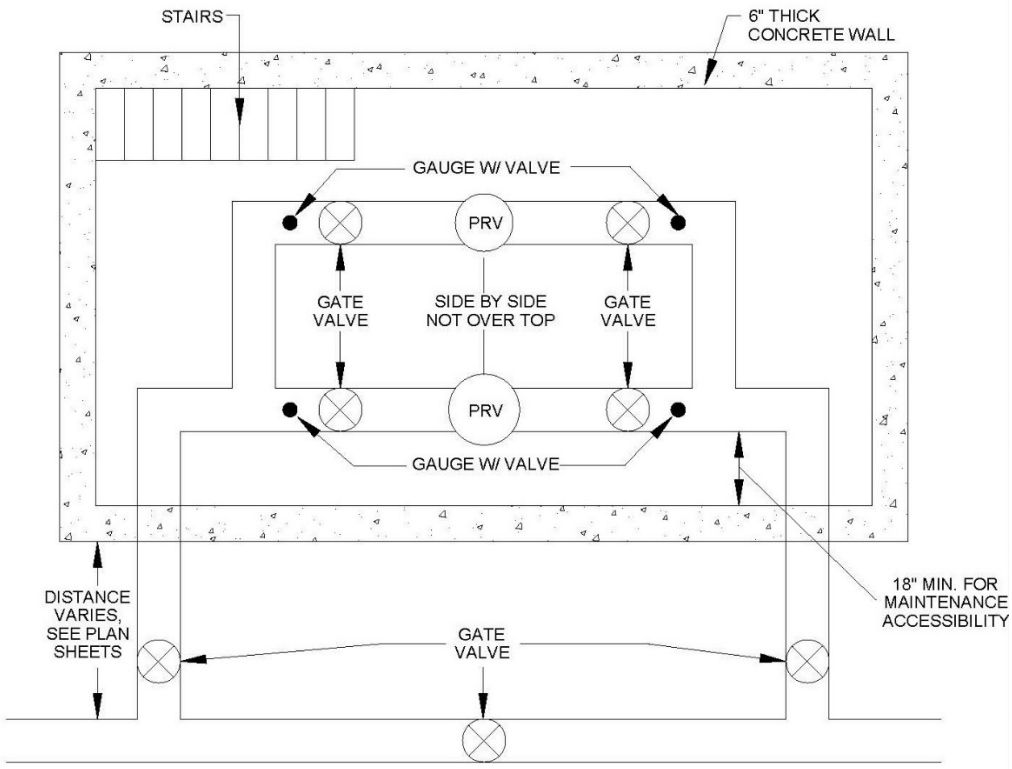
201.5 Pump Stations

Pump stations shall be designed to the current standards of the Wyoming Department of Environmental Quality, Water Quality Division. Pump stations shall include necessary control and telemetry equipment compatible with the City's existing system for remote operations of the facility.

201.6 Pressure-Reducing Valve Stations

Pressure-reducing valve (PRV) stations shall be designed to the current standards of the Wyoming Department of Environmental Quality, Water Quality Division. Although PRV stations may vary due to size and/or location, all PRV stations shall be designed in general accordance with the guidelines shown in Figure 1 of this chapter.

Figure 1: General Guidelines for the Design of Pressure-Reducing Valve Stations



NOTES:

1. PRV VALVES SHALL BE CLA-VAL 90-01, SINGER 106/206-PR OR APPROVED EQUAL.
2. ADJUSTABLE PIPE STAND SUPPORTS SHALL BE 1/4"T X 3"W X 18"H.
3. VAULT SHALL CONTAIN MINIMUM OF TWO 6'X6' (3/4" THICK) INSULATION BLANKETS.
4. VAULT SHALL BE WATER TIGHT. PIPE PENETRATIONS SHALL BE CAST KNOCKOUT WITH LINK-SEAL, OR APPROVED EQUAL.
5. INSTALL AIR/VAC RELIEF VALVES AT APPROPRIATE LOCATIONS.

Section 301
Wastewater Systems

301.1 General

The City hereby adopts the most current version of Chapter 11 of the rules of the DEQ Water Quality Division's regulations entitled "Design and Construction Standards for Sewerage Systems, Treatment Works, Disposal Systems or Other Facilities Capable of Causing or Contributing to Pollution and Mobile Home Park and Campground Sewerage and Public Water Supply Distribution Systems", to include the following, which amend, supplement, or revise the above-referenced standards as noted.

301.1.1 Definitions

Collector Sewer: A collector sewer collects flow from several smaller sewer mains.

Interceptor (or Trunk) Sewer: An interceptor (trunk) sewer carries the collected waste from collector sewers to a point of treatment.

301.1.2 Section 6 ENGINEERING DESIGN REPORT

A. Add the following language and tables at the end of Subsection 6-b-ii:

The design flow will be calculated for the entire area tributary to the outfall point as based on best-projected land use. The average daily per capita flow of sewage (not considering inflow or infiltration for new sewer systems) will generally be 100 gpcd for residential use, and based upon 2.19 persons per residential account (2018-2022 US census data). For estimating design flows other than for residential development, information on the derivation of such design flows shall be submitted based upon the type of land use proposed and sewage flows projected for such type of land use.

.

The maximum day flow rate used shall be 2.20 times the average day flow rate.[1]

The peak-hour factor shall be calculated as follows:

$$Q \text{ Peak Hour}/Q \text{ Average Day} = (18 + P^{0.5})/(4 + P^{0.5})$$

where P = population served in thousands.[2]

[1] *City of Sheridan Wastewater System Master Plan*, July 21, 2023, Tables 3-1, 4-12, and 4-13, Dowl and Stanley Consultants.

[2] *City of Sheridan Wastewater System Master Plan*, July 21, 2023, page 60, Dowl and Stanley Consultants.

The design flow for sewer mains will be calculated by multiplying the anticipated equivalent population for the area served by the average per capita flow, then multiplying by the maximum day flow rate, and then multiplying by 200%.

The wastewater flows presented in this section are minimum criteria. The City reserves the right to modify these criteria at any time for the design of specific projects. Wastewater flows for uses not provided in this section shall be determined during system design.

301.1.3 Design of Sewers

A. Add the following language to Subsection 9-a:

   The design of wastewater mains must be in substantial conformance with the latest City Sewer Master Plan and/or Comprehensive Plan.

B. Delete the following Subsections for 9-b-vi:

   C, D, E, and J.

C. Add the following language to Subsection 9-c-i-A:

   Wastewater mains shall have a minimum of eight (8) feet of cover so that adjacent lots with basements may have service for floor drains. Wastewater mains with less than eight (8) feet of cover will be considered on an individual basis and will be allowed only upon approval by the Utilities Director.

D. Delete Subsection 9-c-i-B in its entirety and insert the following in its place:

   (B) Wastewater mains shall be sized to flow at a maximum rate of at least 200% of the maximum day flow rate, with the minimum size being no less than 8 inches in diameter. All wastewater mains shall be installed in a straight alignment and on a uniform slope between manholes. Curvilinear alignment between manholes will not be allowed.

E. Delete the following Subsections of 9-c-i-F:

   I, II and III in their entirety and insert the following in their place:

   (I) Excavation. Excavation shall conform to the Standard Specifications and O.S.H.A. Regulations
   (II) Bedding. Bedding shall conform to the Standard Specifications.
   (III) Backfill. Backfill shall conform to the Standard Specifications.

F. Delete the first paragraph in section 9- c-iii and insert the following in its place:

(iii) Service connections. Service connections shall be designed and installed in accordance with the International Plumbing Code, latest adopted edition. Piping system materials shall be Schedule 40 PVC. A minimum of one sewer service line, from the tap to the property line, shall be required for each lot, zoned lot or building to be served.

G. Add the following language to Subsection 9-c-iii-A:

Four (4) inch services will be provided for typical residential lots. Commercial and industrial lots sewer services shall be sized according to the International Plumbing Code, latest edition. All services eight (8) inches and larger shall enter the public sewer at a manhole. Manholes will be installed at all changes in pipe size, vertical or horizontal alignment, pipe intersections, and the end of lines in accordance with 9-d-i.

A "Permit to Construct" from the City is required if any of the following conditions exist:

1. the service line connects an industrial facility which discharges sump wastes, solvents, hydrocarbons or other toxic wastes; or
2. the service line originates from two (2) or more separate buildings; or
3. the service line originates at a single building that generates an average daily flow of more than 2,000 gallons per day; or
4. the service line is larger than 6" in diameter.

H. Delete Subsection 9-c-iii-D in its entirety and insert the following in its place:

(D) Connections: All service connections to wastewater collection lines shall be made with a wye for new construction, except as identified above, and in accordance with the Standard Specifications. On vitrified clay mains, tapping saddles shall only be installed by a certified master plumber in accordance with City Code.

The City discourages the connection of four-inch or six-inch sewer services directly into manholes; however, these connections will be considered on an individual basis and will be allowed upon written approval by the Utilities Director.

In general, sewer services will be extended to a point adjacent to the right-of-way in which the main is located on each lot that is ten (10) feet from the lower (elevation) property corner.

I. Delete Subsection 9-d-i in its entirety and insert the following in its place:

Manholes shall be installed at the end of each main and at changes in direction, size, or slope of the main. The maximum spacing of manholes shall be four

hundred (400) feet. Dead-end mains shall terminate in a manhole. Plugged inlets set in the direction of future line expansion shall be provided in the terminating manhole. Upstream-terminating manholes shall be located within ten (10) feet of the most distant property line of the lot or building site being served or the perimeter line of a new development. In general, sewers that are in the street should be designed so that manholes are not located in the wheel path of the driving lane.

Manholes outside the street area must be accessible to City maintenance vehicles. Water and wastewater mains should be spaced horizontally and vertically according to the Standard Specifications. A minimum horizontal spacing of ten (10) feet (clear separation) must be provided from water mains, regardless of vertical separation. Where horizontal clearances cannot be provided, accommodations must be made in accordance with the Standard Specifications.

J. Add the following language to Subsection 9-d-ii:

Manholes of forty-eight (48) inches minimum inside diameter shall be used on eight (8) inch through twenty-four (24) inch mains. Larger mains and crowded intersecting mains shall have oversized manholes.

K. Add the following language to Subsection 9-d-iv:

Flow-through inverts in manholes shall provide a minimum of one-tenth (0.1) foot drop in a “straight-through” manhole or a manhole angled at ninety (90) degrees to two hundred and seventy (270) degrees, and two-tenths (0.2) foot drop in manholes angled less than ninety (90) degrees or greater than two hundred and seventy (270) degrees.

In manholes where the downstream sewer line is larger in diameter than the upstream line, the pipe crown elevations of the two pipes shall match.

In cases where a new manhole is installed on an existing main between two existing manholes, the slope of the pipe through the new manhole shall match the main’s existing slope.

L. Delete Subsection 9-d-vi in its entirety and insert the following:

(vi) Access to manholes (such as steps cast into barrel sections) shall be in accordance with the Standard Specifications. and O.H.S.H.A. confined space entry requirements.

M. Add a new section subsection 9-g

9-g EASEMENTS

The minimum width of an easement or right-of-way for City use in which a sewer will be installed is twenty (20) feet. If the final depth as measured from finished grade to the top of the sewer main exceeds 6.0 feet, the following table shall be used to determine the minimum width of right-of-way or easement required:

Depth of sewer main measured from finished grade to top	Minimum distance (feet) from center of proposed sewer main to edge of building or established R-O-W.
6.0 and less	10.0 (20.0 feet total width)
6.0 to 10.0	15.0 (30.0 feet total width)
Greater than 10.0 feet	At least 20.0 feet (40.0 ft total), and function of soil type.

301.1.4 Lift Stations

Lift stations shall be designed to meet the minimum requirements of Chapter 11 of the rules and regulations for the Wyoming Department of Environmental Quality, Water Quality Division. All lift stations which are to be operated and maintained by the City shall include control and telemetry equipment compatible with the City's existing system. The telemetry equipment shall be housed in permanent, above-grade structures designed for that purpose.

Section 401
Streets, Roadways and Pavement

401.1 Traffic Studies

401.1.1 Responsibilities for Traffic Impact Report (if applicable)

A. Traffic impact reports may be required by the City in order to adequately assess the impact of a proposal on the existing and/or planned street system. The primary responsibility for assessing the traffic impacts associated with a proposed development will rest with the developer, with the City serving in a review capacity.
B. Unless waived by the City Engineer, a written report meeting the City guidelines will be required for a non-residential development proposal when trip generation during the peak hour is expected to exceed 100 vehicles, or any multifamily residential development with 10 or more dwelling units. All major subdivisions, all commercial subdivisions, and all industrial sites shall be held to the same standards.
C. Preparation of the report shall be the responsibility of the developer and must be prepared by a licensed design professional with experience in transportation planning. Upon submission of a draft traffic impact report, the City will review the study data sources, methods, and findings. Comments will be provided in written form. The developer and his engineer will then have an opportunity to incorporate necessary revisions prior to submitting a final report. All reports must be reviewed by the City before acceptance.
D. All previous traffic impact reports relating to the development that are more than two years old may be required to be updated, unless it is determined that conditions have not changed enough to warrant an update. This will be assessed on a case-by-case basis.
E. Traffic impact reports will be required if the trip generation/dwelling unit criteria as noted in Subsection B above are exceeded for the following submittals:

    1. For a rezoning application or Conditional Use Permit.
    2. For a preliminary or final plat or final development plan if the property has already been rezoned for the proposed use and no traffic impact report was required for the rezoning.
    3. Prior to issuance of a building permit, if the property has already been zoned/platted and no previous traffic impact report less than two years old exists.
    4. Additional access from an arterial street to an existing use is being requested.
    5. If, after submitting the original traffic impact report, the land use intensity and traffic generation area increased by more than 15 percent.

F. Where access points are not defined, or a site plan is not available at the time the traffic report is prepared, additional traffic analysis may be required when a site plan becomes available or the access points are defined.
G. The developer will be notified at the conceptual planning stage if a traffic impact report will be required, provided sufficient information is available for the City to determine whether the trip generation/dwelling unit criteria have been met. If insufficient information is available, but the property appears to involve sufficiently-intense land use, a traffic impact report will be required.

401.1.2 Traffic Report Format

Traffic consultants are encouraged to discuss projects with the City prior to starting the report. Topics for possible discussion at such meetings may include directional distribution of traffic, definition of the study area, intersections requiring critical lane analysis, and methods for projecting build-out volume. This should provide a firm basis for cooperation and communication among the City, the owner or developer, and his consultant in creating traffic characteristics that are in the best interest of the total community. Specific requirements will vary depending on the site location. However, all traffic reports shall contain, as a minimum, the following information:

401.1.2.1 General Access

Access to newly developing areas will follow these provisions. In areas being redeveloped, access will be determined as to the best fit based on traffic safety, existing conditions, future street improvements, and property development, along with other considerations as appropriate.

Access to streets or highways within the City limits under the jurisdiction of WYDOT is also governed by the requirements of WYDOT. In addition to obtaining permission from the City Engineer, a permit from WYDOT must be obtained. Access shall be limited as dictated by these Design Standards. For any discrepancy between WYDOT and the City regarding precedence of access design standards, WYDOT standards shall prevail.

Fire department access to all buildings shall be provided and maintained during construction and upon completion of all improvements. Fire department access shall meet all requirements outlined in the International Fire Code, latest edition, Section 503.

401.1.2.2 Definition of Terms for Curb Openings and Driveways

Several terms used within this subsection are defined below and are shown on Figure 1: Curb Opening and Driveway Dimensions. For the purpose of clarity, the definitions of some of these terms are listed below.

A. Width of Curb Opening (W)—The width of curb opening measured at the throat of the driveway from the edge of pavement to the edge of pavement.
B. Property Line Offset (P)—The perpendicular distance measured along the property line from the nearest edge of the driveway to the property line.
C. Corner Clearance (C)—At an intersecting street, the distance measured along the curb line from the end of the corner radius to the nearest edge of the nearest curb opening.
D. Distance Between Double Drives (D)—The distance measured along the curb line between the closest radii between two driveways.
E. Frontage—The distance along the street right-of-way line of a single property or development between the property lines. Corner properties at an intersection would have a separate frontage along each street.
F. Residential—Property used primarily for residential purposes such as single-family, two-family, and multifamily units.
G. Single-Family (SF) Residential—Single, detached family dwelling units or double bungalows or duplexes.
H. Multifamily (MF) Residential—Three or more attached dwelling units including townhouses, condominiums, and apartments.

401.1.2.3 Basic Principles for Curb Openings and Driveways

Arterial Street Access

Private residential access directly to arterial streets and any access to a principal arterial street shall be permitted only when the property in question has no other reasonable access to the general street system, or when denial of direct access to the arterial and alternative access to another roadway would cause traffic operation and safety problems as shown in a Traffic Report. Any access to arterials must adhere to City street standards.

General Access

A. High-Volume Access. In general, when trip generation served by the driveway exceeds 100 vehicles per hour during the peak hour or the driveway accesses an arterial street, returns using a standard street return radius as set forth in Table 1 and Figure 1 of this chapter will be required.
B. Access Points. Access will not be approved for parking or loading areas that require backing maneuvers onto or from a public street right-of-way except for uses on local and minor collector streets or approved by the City Engineer.

Table 1: Driveway Dimensions
(All Dimensions in Feet)

	Dimension Reference (See Fig. 1)	Local			Collector			Arterial		
		Res.	Comm.	Ind.	Res.	Comm.	Ind.	Res.	Comm.	Ind.
Width[1]	W									
Minimum		12	20	20	12	20	20	15	15	20
Maximum		32[2]	40	40	30	40	40	36	40	40
Right-turn Radius	R									
Minimum		0	5	10	0	15	25	0	25	30
Maximum[3]		0	10	20	0	50	50	0	50	50
Minimum Spacing[4]										
From Property Line	P	0	R	R	0	R	R	R	R	R
From Street Corner	C	20	40	40	50	50	50	NA	NA	NA
Between Driveways	D	10[5]	25	25	35	50	50	NA	NA	NA
Angle[6]	A	45˚	70˚	70˚	45˚	70˚	70˚			

[1] The minimum width of commercial driveways is intended to apply to one-way operation. In high pedestrian activity areas, such as in a central business district or in the same block with an auditorium, school, or library, the maximum basic width should be 30 feet. The width shown applies to rural routes and most City streets including neighborhood business, residential, and industrial streets. The width is intended to be measured along the right-of-way line; in most instances, at the inner limit of a curbed radius or between the line of the radius and the near edge of a curbed island at least 50 square feet in area.

[2] Maximum width on bulb of cul-de-sac shall be 24 feet.

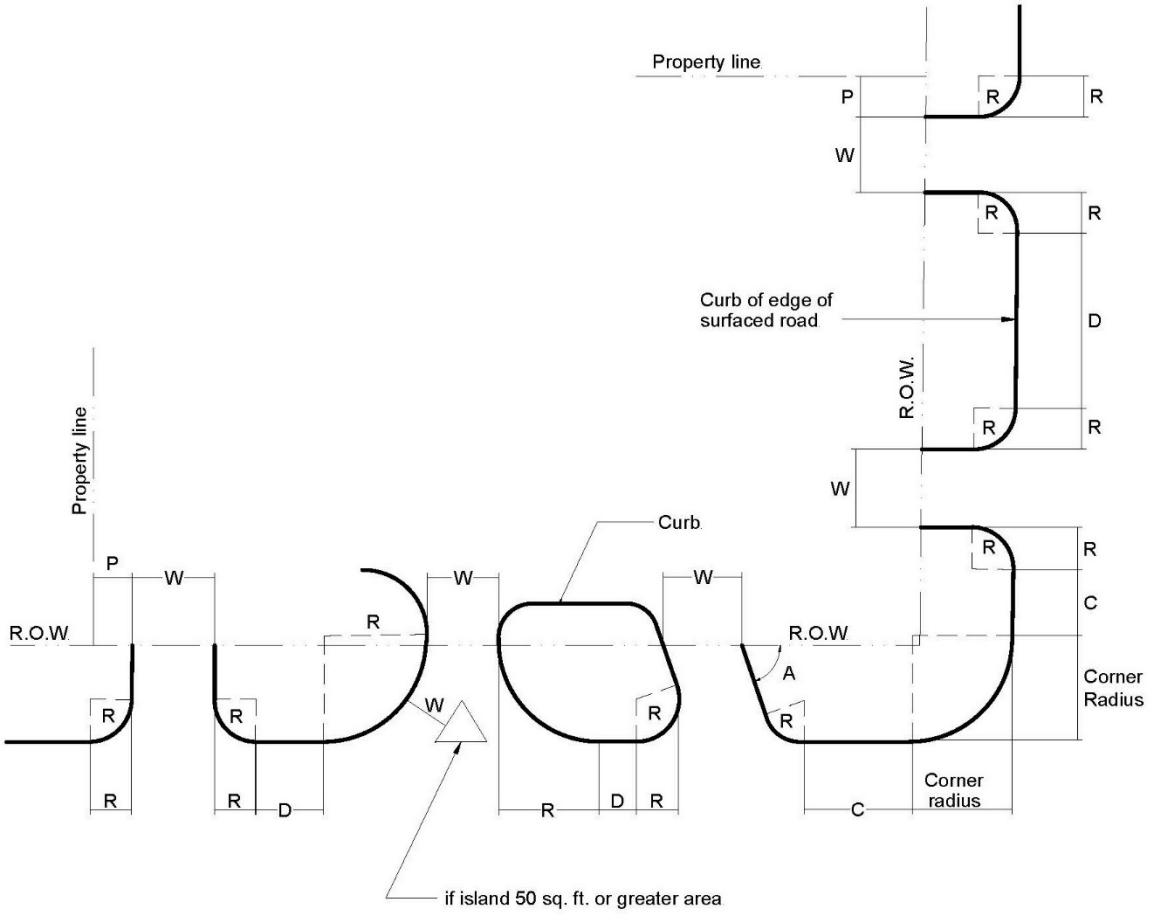
[3] On the side of a driveway exposed to entry or exit by right-turning vehicles. In high pedestrian activity areas, the radii should be half the values shown. The maximum radii for major generator driveways shall be designed in accordance with *A Policy on Geometric Design of Highways and Streets*, published by AASHTO, latest edition.

[4] Measured along the curb or edge of pavement from the roadway end of the curb radius. In high pedestrian activity areas, the minimum spacing between driveways should be 5 feet.

[5] Minimum space between driveways may be reduced to 5 feet on one side on local streets only upon approval of the City Engineer.

[6] Minimum acute angle measured from edge of pavement, and generally based on one-way operation. For two-way driveways, and in high pedestrian activity areas, the minimum angle should be 80 degrees.

Figure 1: Curb Opening and Driveway Dimensions



C. Standards. Every property that accesses the street shall have a driveway. Driveways shall be constructed in accordance with the Standard Specifications.

D. Existing and Future Demands. The opening or driveway width shall be adequate to properly handle the anticipated traffic volume and character of traffic, as well as be within the limits specified for the type of property development. The controls established for curb openings and driveways shall apply to existing streets as well as new streets that may be developed in the future.

E. Utility Conflicts. Any adjustments which must be made to utility poles, street light standards, fire hydrants, catch basins or inlets, traffic signs and signals, or other public improvements or installations which are necessary as the result of the curb openings or driveways, shall be accomplished without any cost to the City.

F. Access Signs. Driveway approaches, for which the driveway is to serve as an entrance or exit only, shall be appropriately signed by and at the expense of the property owner, subject to the approval by the City Engineer. Sign location, height, and legend shall be in accordance with the MUTCD.

G. Abandoned Driveways. Any curb opening or driveway which has been abandoned shall be removed and the street, sidewalk and curb and gutter restored by the property owner according to the current Standard Specifications.

401.1.3 General Requirements

401.1.3.1 Number of Openings.

A. Single-Family Residential - In general, each single-family residential property shall be limited to one access point. However, where houses are located on corner lots or have extra wide frontage, more than one access point may be permitted. Applicable zoning setback requirements must be followed.
B. Multi-Family Residential - In general, access shall be determined by information provided by the owner/developer in a Traffic Impact Report and/or by comments generated during the City's review and acceptance of that report.
C. Commercial/Industrial - In general, access to commercial and industrial property shall be limited to the requirements as set forth in these Design Standards and shall be based on the street classification described by the then-current Master Transportation Plan that is available from the City Engineer. If no such transportation plan is available, the City Engineer shall make the final determination. For commercial/industrial property located on the corner of an arterial street, access may be restricted to a side street only. Access may also be restricted if the use of such access would be precluded by existing left-turn lanes or other traffic control devices.

401.1.4 Access Roadways with No Curb and Gutter

Private drives and alley accesses to local, collector, or arterial streets that are proposed as the emergency access and/or primary access shall be constructed to meet the following requirements:

A. The private driveway or alley shall extend from right-of-way line to the edge of the existing driving surface and shall be constructed to comply with the International Fire Code, latest edition, Section 503 – Fire Apparatus Access Roads, and in accordance with Table 1 and Figure 1 of this chapter. Unless allowed otherwise by the International Fire Code edition cited above, or unless approved otherwise by the City Engineer, the emergency/primary access road, driveway or alley shall be hard-surfaced concrete or asphalt.
B. Access shall be governed by the driveway criteria shown in Table 1 and Figure 1 of this chapter.
C. A culvert properly sized for the ditch flow shall be installed at the established roadside ditch flow line beneath the private drive access.

Minimum size for the culvert shall be 15 inches. Culverts shall have a concrete flared-end section or concrete headwall at its beginning and ending points. If a concrete headwall is used, it shall have a maximum slope of 4:1 on any exposed face.

No vertical headwalls shall be used.

All culverts shall be made up of pipe that is consistent with the then-current Standard Specifications.

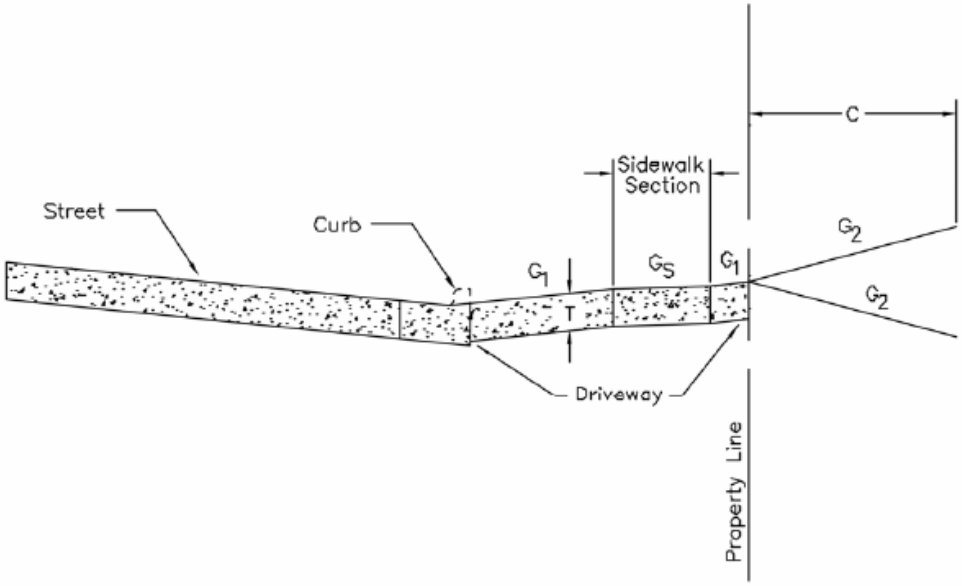
D. A sketch plan of the culvert installation must be submitted. No building permit will be issued until the construction plan or sketch plan for the access road and culvert is approved by the City Engineer.
E. Amount of Curb Opening Permitted. Driveway width shall comply with Table 1 and Figure 1 of this chapter.
F. Mutual Access. On commercial, industrial, and multifamily developments, mutual use of access to streets is encouraged and may be necessary to meet driveway spacing requirements. When used, mutual access will be shown on the plans prior to construction. The City Engineer will approve the minimum access width based on the proposed mutual use.

401.2 Access Design

401.2.1 Driveway Spacing

Requirements for driveway cross-sections are shown in Figure 2 and Table 2 of this chapter.

Figure 2: Driveway Grades



1) All sidewalk cross-slopes (Gs) shall have a maximum slope of 1.5%.

2) For sidewalks adjacent to the curb, a sidewalk bypass around the driveway shall be constructed in accordance with ADA standards.

Table 2: Driveway Grade Criteria

Type of Driveway	T Minimum Thickness	Grade (G1)		Grade (G2)		Min. Control Distance (C)
		Min.	Max.	Min.	Max.	
Low Volume Residential	6”	±0.5%	+8.0%	±0.5%	±15%	20’
Low Volume Commercial/Industrial	6”	±0.5%	±6%	±0.5%	±8%	40’
High Volume	6”	±0.5%	±3%	±0.5%	±5%	40’

401.3 Off-Street Parking

A. General. In accordance with City Code, Appendix A, Section 2 Definitions, the following requirements regarding the design of off-street parking areas shall be followed.

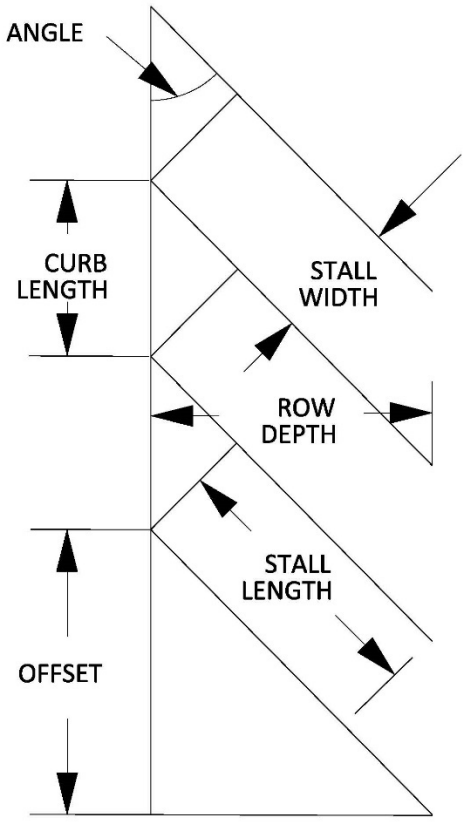
B. Minimum Stall Width. The minimum stall width shall be 10 feet.
C. Minimum Stall Depth. The minimum stall depth shall be 20 feet.
D. Backing Into Street Not Allowed. Parking spaces shall be designed so that no vehicle will be required to be backed into the street in order to exit the lot except for single-family or duplex dwelling units.
E. Backing Over Sidewalk Not Allowed as Designated Parking Area. Parking spaces shall be designed so that no designated parking area will infringe upon the public sidewalk.
F. Drive Aisles. Drive aisles shall be designed for turning movements in and out of the parking spaces and shall comply with the current access requirements in the International Fire Code, latest edition.
G. Angled Parking. Angled parking is allowed in off-street parking areas. Dimensional standards for angled parking are shown in Table 3 and Figure 3.

Table 3: Dimensional Standards for Angled Off-street Parking

Parking Angle (°)	Stall Width (ft)	Stall Length (ft)	ROW Depth (ft)	Offset (ft)[1]	Front Overhang Measured perpendicular to Curb (ft)	Curb Length (ft)	Minimum Aisle Width (ft)
0 (parallel)	10	22	10	None	N/A	22.0	12’ one-way, 24’ two-way
30	10	20	18.7	32.3	None	20.0	12’ one-way, 24’ two-way
45	10	20	21.2	21.2		14.1	13’ one-way, 24’ two-way
60	10	20	22.3	12.9		11.5	18’ one-way, 24’ two-way
90	10	20	20.0	None		10.0	24’

[1] Sight distance requirements may increase needed offset.

Figure 3: Angled Off-street Parking Dimensional Standards



Section 402
Street Lighting

402.1 General

1. This chapter sets forth the design and technical criteria to be used in the preparation of all street lighting plans. Where design information is not provided herein, the following codes and standards (most current edition) shall be used:

    a) National Electrical Code (NEC), latest edition, as amended by the City.
    b) These Design Standards, the Standard Specifications, and Night Sky Ordinance.
    c) City Code – Chapter 23 Streets and Sidewalk, Article IV. Street and Site Lighting.
    d) Requirements and Standards of the State of Wyoming.
    e) Illuminating Engineering Society (IES).
    f) AASHTO Roadway Lighting Design Guide.

2. Where a conflict occurs between the above standards, the most restrictive requirement shall apply.

3. Street lights shall be placed on lot/property lines that are perpendicular to street centerline where applicable.

4. Street lighting on cul-de-sacs must terminate with a street light on the lot line nearest where the turnaround begins.

5. Street lights, junction boxes, meter pedestals, and conduit shall be free and clear of any permanent obstructions that would impair the ability of future maintenance operations by the electrical provider within Sheridan, which is Montana-Dakota Utilities (MDU). Layout of street lighting must also consider vertical and horizontal alignment with respect to other utilities that might conflict with the installation of the street lighting system.

6. Design of street lighting systems will typically consist of installation of street lights in areas that have concrete curb and gutter installed. If concrete curb and gutter has not been installed, a street lighting system will not necessarily be required. MDU will evaluate each project before final design is complete.

7. Where existing street lights are utility owned, removal of street lights shall be coordinated with MDU. All materials removed will become the property of MDU unless otherwise noted.

402.2 Street Light Locations and Spacing

1. Street lights shall not be located closer than five (5) feet horizontally to fire hydrants. Locations where this separation is not possible shall be coordinated with the City on a case-by-case basis.

2. Street lighting shall have a maximum mounting height of 25 feet for residential streets, 50 feet for commercial and arterial streets. Historical District lighting shall be coordinated with the City on a project-by-project basis.

3. Street lights shall be oriented in an opposite, staggered, or one-sided pattern. Type II or type III light distributions shall be utilized.

4. Luminaires shall be provided with a color temperature of 4000 K.

5. Steet lighting illumination shall be calculated utilizing a 0.8 Light Loss Factor (LLF) and in accordance with the recommended illuminance values as outlined in the AASHTO Roadway Lighting Design Guide.

6. Historical District lighting in residential locations within City limits shall be installed with a minimum of four lights per block located at intersections, and with a staggered pattern if possible. Maps of Historical District boundaries are available by contacting the Public Works Director.

7. Special Lighting - Entryway Corridor - coordinate lighting with the City.

8. Contact the City Planning Division to identify special Historical District lighting pedestrian walking or entrance areas. These special locations shall be installed with four to five lights per block located at intersections and with a staggered pattern.

9. Generally, street lights will be located within the public right-of-way two feet from the back-of-curb unless otherwise noted. Street lights shall be located on a lot line whenever possible. Streets that have sidewalks installed behind the curb and gutter will require street lights to be installed behind the sidewalk but still within the public right-of-way. If streetlights cannot be installed within the public right-of-way, a utility easement will be required.

10. When street light locations are being considered, overhead obstructions must be evaluated prior to placement location. In general, street lights shall maintain a minimum clear distance from any overhead electrical power lines. Minimum clear distance from overhead electrical utility lines shall be coordinated with the local utility during design. Other overhead obstructions such as trees, cable television lines, communications lines, etc., shall be evaluated on a case-by-case basis.

402.3 Lighting Controls

Street lights shall be controlled via an astronomical time clock with a lighting contactor. The time clock shall have programmability to control the street lights for dusk to dawn operation or a set schedule as determined by the City. An H-O-A switch shall be provided for testing purposes.

402.4 In-Grade Junction Boxes

1. At-grade junction boxes shall be placed at every light pole location. Locate junction boxes behind the light pole and offset to the side.

2. At-grade junction boxes shall be polymer concrete type box and sized in accordance with the National Electrical Code (NEC).

3. At-grade junction boxes and covers shall be rated with a Tier 22 load rating in accordance with the American National Standards Institute's ANSI/SCTE 77 2013 "Specification for Underground Enclosure Integrity."

402.5 Conductor

1. Street lighting circuits shall utilize copper conductor, type THHN/THWN.

2. Circuit conductor shall be sized to provide no more than a 3% voltage drop as measured from the feed point panelboard to the last street light on the circuit.

402.6 Conduits

1. Below-grade conduit shall be Schedule 80 PVC at street and approach crossings. All other locations shall be Schedule 40 PVC. Provide PVC-coated rigid steel or fiberglass elbows.

2. Minimum underground conduit size shall be 2" between at-grade junction boxes.

3. Empty spare conduits shall be provided with a nylon pull string.

402.7 Concrete Street Light Footings

1. Concrete footings shall be engineered and sized appropriately to support street light poles.

2. Concrete footings shall be provided with a 3/4" x 10'-0" copper-clad ground rod outside of the footing for grounding of street light pole.

3. Anchor bolts shall be provided with double nuts for leveling of the street light pole. Do not grout the void between the street light pole base plate and the footing.

402.8 Direct Bury Street Lights

Use of direct bury street light poles shall be coordinated with the City and considered on a case-by-case basis.

402.9 Electric Utility Meters

Electrical metering requirements shall be coordinated with the local electric utility company.

402.10 Power Supply Feed Point

All street lighting plans shall indicate a designated power supply feed point. The feed point shall be installed in a pad-mounted, NEMA 3R weatherproof enclosure with a green finish as coordinated with the City. The feed point enclosure shall house the electrical panelboard, astronomical time clock, and lighting contactor (as required). The utility electric meter shall be installed on the exterior of the feed point enclosure. A service disconnect switch shall be installed on the exterior of the enclosure next to the utility electric meter.

402.11 Material Specifications

1. Material specifications are included in the Standard Specifications.

2. Materials supplied by the Developer or City should be coordinated with MDU.

3. Homeowner associations with public streets may apply for a different lighting specification if the association will maintain the facilities.

402.12 Manufactured Home Parks and Private Streets

Private streets require private street lighting that will not be operated, maintained, or administered by the City. Street lighting in these locations shall be designed in accordance with these Design Standards.

402.13 Easements

Easements shall be obtained for all lighting and power lines located on private and public property. Easements shall have a minimum width of 10 feet. In addition, temporary easements may be required for construction. Easements shall be accessible for maintenance workers to maintain the lighting and power system. The most current version of the lighting and power easement forms shall be used and obtained from the City Engineer’s Office.

Section 403
Street Design and Pavement Thickness

403.1 General

This chapter sets forth the design and technical criteria to be used in the preparation of all roadway plans. Where design information is not provided herein, "A Policy on Geometric Design of Highways and Streets" as published by AASHTO, latest edition, shall be used.

403.1.1 Corridor Access Management

The Public Works Director or City Engineer may initiate an access management plan or corridor study that would supersede the design standards for access along an arterial or major collector street. Preparation of the study shall be the responsibility of the City, WYDOT, and/or private individuals, or jointly prepared. However, the study must be prepared by a licensed design professional engineer with experience in transportation planning. The access plan or corridor study shall be approved by the Public Works Director or City Engineer and/or WYDOT.

Access planning that has not been identified in any type of study in existing development areas will be considered on a case-by-case basis. Retrofit techniques shall adhere to best access management practices as identified in the Access Management Manual published by the Transportation Research Board, latest edition.

All public streets, rights of ways and alleys shall be dedicated to the City.

403.1.2 Functional Street Classification

403.1.2.1 Regional Arterial

A regional arterial street denotes a roadway designed or operating with the following characteristics:

A. Posted speed limits typically of greater than or equal to 45 miles per hour.
B. Anticipated traffic volumes in excess of 25,000 vehicles per day within the corridor.
C. Direct access intersections with local streets and access from adjacent properties shall not be allowed except for existing lots with no other means of access.

D. The indirect access intersections shall be with arterials or major collectors and shall typically be spaced at one-mile intervals but at one-half mile intervals for commercial areas.
E. Traffic control devices may be provided to enhance through-traffic movements.
F. No on-street parking will be allowed.
G. Detached bicycle and/or pedestrian facilities shall normally be constructed.
H. Other street design criteria for a Regional Arterial are defined in Table 1 under the Arterial Streets street classification.

403.1.2.2 Major Arterial

A major arterial street denotes a roadway designed or operating with the following characteristics:

A. Posted speed limits typically of greater than or equal to 40 miles per hour.
B. Designed to accommodate through traffic, intersecting with Minor Arterial and Collector Streets only. Intersections with local streets and access from adjacent properties shall not be allowed except for existing lots with no other means of access. Intersections shall typically be spaced at distances greater than one-quarter mile. (“T” intersections will be considered an intersection for half-mile spacing purposes.)
C. Continuous for several miles through the urban area.
D. Provides continuity for rural arterials which intercept the urban boundary.
E. Traffic control devices provided to enhance through-traffic primarily by signal control.
F. No on-street parking allowed.
G. Other street design criteria for a Major Arterial are defined in Table 1 under the Arterial Streets street classification.

403.1.2.3 Minor Arterial

A minor arterial street denotes a roadway designed or operating with the following characteristics:

A. Posted speed limit typically greater than or equal to 30 miles per hour.
B. Designed to accommodate through traffic and serve adjacent major developments. Intersections with local streets will not be allowed.
C. Development access will use shared driveways and be encouraged to utilize collector streets. Intersections shall typically be spaced at distances greater than one-quarter mile. (“T” intersections will be considered an intersection for quarter-mile spacing purposes.) Right-in and right-out access may be allowed.
C. Continuous for several miles.
D. Provides continuity for rural arterials which intercept the urban boundary.

E. Traffic control devices provided to enhance through traffic primarily by signal control or other warranted control.
F. No on-street parking will be allowed.

403.1.2.4 Major Collector

A major collector denotes a roadway designed or operating with the following characteristics:

A. Posted speed limit typically of greater than or equal to 30 miles per hour.
B. Continuous for two or more miles.
C. Designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.
D. Traffic control is generally provided by signage.
E. No on-street parking will be allowed.
F. Access locations will not be allowed within 300 feet from the intersection with an arterial street.
G. Individual residential lots should not front on or have direct access to a major residential collector.

403.1.2.5 Minor Collector

A minor collector street denotes a roadway designed or operating with the following characteristics:

A. Posted speed limits typically of greater than or equal to 25 miles per hour.
B. Continuous for less than two miles.
C. Designed to handle traffic volumes loading from and onto local, other collector, and arterial roadways.
D. Traffic control generally provided by signage.
E. Frontage and direct access for individual residences provided.
F. On-street parking permitted.

403.1.2.6 Local Street.

A local street denotes a roadway designed or operating with the following characteristics:

A. Posted speed limit typically not in excess of 30 miles per hour.
B. No criteria for traffic volumes.
C. Limited continuity.
D. Designed for ease of access to adjacent developments.
E. Traffic control generally provided by signage or rules for uncontrolled intersections.
F. On-street parking permitted.
G. Does not intersect with an arterial street.

403.2 Roadway Design and Technical Criteria

Table 1 provides design standards for each of the above-listed street classifications.

Street Classification	Arterial Streets	Minor Arterial Streets	Collector Streets	Minor Collector Streets	Local Streets, Commercial and Industrial Areas	Local Streets, High and Low Density Residential Areas	Marginal Access—Two-way Traffic	Marginal Access—One-way Traffic	Alleys	Pedestrian Ways (a/k/a Pathways)	Cul-de-sac
Developed Street Width BOC-BOC	(1)	(2)	(3)	39′	39′	36′	32′	24′	20′		Min. 50' Curb and 60' ROW radius on turnaround, connected to the adjacent street ROW by a reverse curve of 75' radius.
Right-of-Way Width	100′	100′	80′	60′	60′	60′	50′	50′	20′	10′	
Minimum Centerline Curve Radius	500′	500′	300′	300′	150′	100′	75′	75′	75′	NA	
Minimum Tangent Between Curves	100′	100′	100′	100′	0′	0′	0′	0′	0′	0′	
Maximum Grade	7%	7%	7%	8%	8%	8%	8%	8%	NA	NA	
Estimated ADT	10,000—25,000	5,000—10,000	1,000—10,000	250—1,000	0—500	0—250	Marginal Access—Two-way Traffic	0—125	NA	NA	
Access Spacing Distance (4)	1320	360	250	200	NA	NA	NA	NA	NA	NA	
Sidewalk		5' detached		5' detached	5'-2 req'd	5'					5'
Curb & Gutter		Type A, B or C		Type B	Type B	Type A, B or C					Type A,B or C
Curb Return Radii (ft)											
-Intersect local				25'	15'	15'					15'
-Intersect collector		30'		25'	25'	25'					25'
-Intersect arterial		35'									
Vertical Alignment Control					AASHTO Standards						
Grade at intersection (%)											
-Intersect local					3	3					3
-Intersect collector				2	2	2					2
-Intersect arterial		2		2							

(1) 65 feet or more, or determined during processing of subdivision application if applicable.
(2) 41-53 feet, or determined during processing of subdivision application if applicable.
(3) 41-49 feet, or determined during processing of subdivision application if applicable.
(4) Distance as measured from centerline to centerline.

Table 1: Minimum Street Design Criteria

403.2.1 Traffic Lane Widths

The minimum traffic lane width shall be 12 feet unless approved by the City Engineer.
In the design of local streets, the number of lanes for moving traffic will be a secondary consideration.

403.2.2 Separate Turning Lanes

Separate turning lanes may be constructed on arterial and collector streets but will, as a rule, not be constructed on local streets.

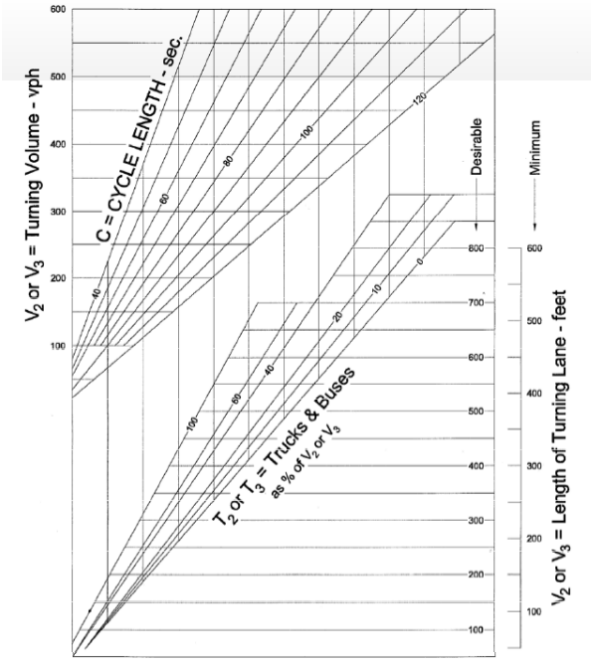
Where separate turn lanes are constructed on the basis of a capacity analysis at the intersection, a width of 12 feet will be used for the turn lane for arterial streets where truck traffic is involved, and 11 feet in width for other streets.

403.2.3 Left-turn Lane Storage Lengths for New Facilities

Left-turn lane storage length design at both signalized and unsignalized intersections for proposed street design plans shall be determined from Figure 1.

Minimum left-turn lane storage design lengths will only be permitted under constraints imposed by geometrics of existing streets. Lengths of dual left-turn lanes shall be independently designed.

Figure 1: Left-Turn Storage Length Volume-Based Nomograph for At- Grade Signalized Intersections



403.2.4 Parking

Parking lanes will not be provided on arterial or major collector streets.

Where on-street parking is provided on minor collector streets, the parallel lane width shall be a minimum of eight (8) feet, which includes the distance from the front lip of the gutter to the flow line.

403.2.5 Medians

Generally, medians will be built only on arterial streets. The width may vary anywhere from a minimum of 16 feet to a maximum of 50 feet. At intersections, medians may be used to provide for separate left-turn storage lanes.

Medians are discouraged on local streets. However, when permitted, the median shall conform to the same design standards as set forth for arterial streets. No bushes or shrubbery may be placed in any median unless approved by the City Engineer.

403.2.6 Design Speed

The highway design speed shall be used to establish features such as superelevation rate, critical length of grade, vertical and horizontal curves, intersections, etc. See Table 1: Minimum Street Design Criteria within this chapter for design speeds.

403.2.7 Traffic Calming

Traffic calming is the process by which vehicular speeds and volumes on local streets are reduced to acceptable levels. This is achieved through the installation of approved devices such as traffic circles, flares, and center islands. Traffic calming serves the purpose of reducing cut- through traffic, truck traffic, excessive speeding, noise, vibration, air pollution, and accidents in an attempt to provide a safer environment for motorists and pedestrians.

Traffic-calming devices may be installed if:

- the traffic volume exceeds, or is projected to exceed, 1,000 vehicles per day; and
- if the 85th percentile speed of traffic exceeds, or is reasonably expected to exceed, 25 mph.

Traffic-calming devices shall be designed to accommodate emergency vehicles that may use the local street. All final construction plans are to be approved by the City Engineer.

Landscaping agreements for the continued care of vegetation within traffic circles and center islands shall be considered with adjacent property owners and determined on a case-by-case basis.

403.2.8 Flares

A flare denotes the reduction of roadway width constructed in order to reduce traffic speed. Flares are usually coupled with sidewalks and serve to make streets more pedestrian-friendly by reducing the length of roadway to which the pedestrian is exposed. They also draw motorists' attention to pedestrians via the use of facilities such as raised peninsulas.

1. Street Characteristics: Flares may be installed on streets that have on-street parking. Flares can be located at street intersections or mid-block.

2. Pedestrian Generators: Flares should be considered on streets adjacent to pedestrian generators such as schools, parks, and bike paths.

3. Width of Flares: Flares shall be constructed so that driving lanes are no less than 11 feet wide.

403.2.9 Center Islands

Center islands denote raised islands located along the centerline of a street that narrows the travel lanes at that location. When used in conjunction with sidewalks, center islands can provide a refuge area for pedestrians to wait while traffic passes. Center islands can be located either near intersections or mid-block.

1. Street Characteristics: Center islands may be used downstream of intersections to reduce the speed of turning vehicles. Center islands may also be used on curves to reduce vehicle speeds and prevent motorists from driving into the path of oncoming vehicles.

2. Length of Center Islands: Center islands should be constructed in short interruptions rather than as a long median that channelizes and separates opposing flows. Island lengths shall be between 25 feet and 75 feet.

3. Pedestrian Characteristics: Center Islands may be required to accommodate pedestrians.

403.3 Sidewalks

403.3.1 Location.

Boulevard sidewalks shall be constructed on both sides of all roadways unless specifically waived by the City Engineer. Generally, the back of the sidewalk shall be located one (1) foot from the property line within the street right-of-way.

403.3.2 Sidewalk Curb Ramps

Curb ramps shall be constructed in accordance with the Standard Specifications. Curb ramps may be shown at all curb returns or called out by a general note on the development plans, but must be constructed at all “T” intersections.

403.4 Pedestrian Ways (a/k/a Pathways)

Pedestrian ways (a/k/a pathways) shall be 10’ in width and shall be constructed using concrete with a minimum thickness of 6”, unless otherwise approved by the City Engineer. Pedestrian ways shall be constructed to ADA standards and in accordance with the AASHTO Guide for the Development of Bicycle Facilities, latest edition.

403.5 Drainage

Drainage systems shall be designed in accordance with the Standard Specifications and Storm Drainage Design Criteria, latest editions. Development plans, including the storm drainage report required as part of the Storm Drainage Design Criteria, shall be considered as part of the street design and will be required for concurrent review with the street construction plans. Safe conveyance of traffic is the major function of streets; the storm drainage function of the street must therefore be designed to the limits set forth in the three above-referenced documents.

403.5.1 Valley Gutters

Valley gutters shall be constructed in accordance with the Standard Specifications. Valley gutters are not permitted across collector or arterial streets, and they are discouraged on streets where storm sewer systems are being installed.

403.5.2 Inlets

Inlets shall be located to intercept the curb flow at the point curb flow capacity is exceeded by the storm runoff as determined by City’s Storm Drainage Design Criteria. Inlets shall also be installed to intercept cross-pavement flows at points of transition in superelevation. Due to the presence of curb ramps and associated use of wheelchairs, inlets are not allowed in the curb return, but shall instead be located at the tangent points of the curb returns. In general, inlets shall be placed on the upstream side of the intersection so as to intercept the water before it reaches the pedestrian crosswalk. Sump inlets shall be placed on the downstream side.

403.5.3 Cross-slope.

Except at intersections or where superelevation is required, roadways shall have no more than one-foot difference in elevation from top-of-curb to top-of-curb (or flowline to flowline). Design for surfaced roadways, such as asphalt or concrete

paving, shall have a minimum of two percent to a maximum of 2.5 percent cross-slope for local and local through streets, and two percent for collector and arterial streets. This cross-slope may be increased to three percent for rehabilitation projects such as milling and overlaying asphalt surfaces for local and local through streets. Within 150 feet of an intersection, the maximum elevation difference between flow lines shall be dictated by the allowable intersection grade and the actual distance between flowlines. Where the crown point of the street is not centered, it can be no further out than the quarter point of the street.

403.5.4 Temporary Erosion Control

Temporary erosion control is required at the ends of all roadways that are not completed due to project phasing, subdivision boundaries, etc., in accordance with the Standard Specifications.

403.5.5 Sidewalk

Storm water from concentrated points of discharge shall not be allowed to flow over sidewalks, but shall drain to the roadway by use of storm sewers. Sidewalk chases will not be allowed unless specifically approved by the City Engineer. If permitted, sidewalk chase sections shall not be located within the driveway.

403.6 Horizontal Alignment

403.6.1 Horizontal Curves

Any angular break in horizontal alignment of more than two (2) degrees shall require a horizontal curve. The radii for the various street classifications are shown in Table 1 of this section.

403.6.2 Curb Return Radius

Minimum curb return radii are shown in Table 1 of this section. Where truck traffic is significant, curb return radii shall be designed in accordance with AASHTO standards, latest edition.

403.6.3 Superelevation

The use of superelevation is discouraged for all streets. However, where superelevation is required for horizontal curves on arterial and collector streets, horizontal curve radii and the corresponding superelevation shall be in accordance with the recommendations of the AASHTO standards, latest edition. Superelevation shall not be used on local streets. All roadway designs utilizing superelevation are subject to review and acceptance by the City Engineer.

403.6.4 Spiral Curves

Spiral curves shall not be used on streets within the City (State highways excluded) except upon written acceptance of the City Engineer.

403.6.5 Cul-de-sacs

The following criteria shall be used for the horizontal geometry of cul-de-sac turnarounds.

(1)	Minimum property line radius.	60 feet
(2)	Minimum back of curb radius.	50 feet
(3)	Maximum length of cul-de-sac measured along centerline between the radius point of the turnaround and the RWW line of the abutting street.	500 feet
(4)	Cul-de-sacs are not allowed in commercial and industrial developments unless approved by the City Engineer.	
(5)	The City Engineer may allow the use of hammerhead designs or other non-standard designs.	

403.6.6 Spacing of Direct and Indirect Access, Angle of Intersection, and Offsets.

403.6.6.1 Spacing

For collectors and local streets, four-legged intersections will normally be spaced at least 300 feet apart.

The minimum spacing requirements for Regional or Major Arterials shall be 500 feet for all property having an approved preliminary subdivision plan after August 1, 2009. For property having an approved preliminary subdivision plan prior to August 1, 2009, the access spacing may be 300 feet. The minimum spacing requirements for Minor Arterials shall be 300 feet.

These standards may be modified based on the findings of a traffic impact study or other analyses as approved by the City Engineer.

403.6.6.2 Angle of Intersection

Proposed streets and driveways must intersect one another at 90° angles or as close to 90° as topography permits. Under no circumstances shall the angle for an intersection be less than 80°.

403.6.6.3 Offsets

When “T” intersections are used, the center lines of the streets not in alignment must normally be offset by a minimum distance of 150 feet on local streets and 300 feet on non-residential local, collector and arterial streets.

403.6.7 Transition Length

If lanes are added, deleted, or adjusted, a transition section for the safe conveyance of traffic shall be constructed. The following formula shall be applied to the taper or lane change necessary for this transition:

$$L=WS^2/60$$

where:
L = Length of transition in feet
W = Width of offset in feet
S = Speed limit or 85th percentile speed

403.7 Vertical Alignment

403.7.1 Changing Grades

Any change in vertical grade (A) shall utilize a vertical curve.

403.7.2 Vertical Curves

Vertical curves shall be designed in accordance with AASHTO standards, latest edition. All vertical curves shall be labeled in the profile sheet with length of curve (L) and K (defined as L/A).

403.7.3 Intersections.

The following criteria shall apply at intersections.

1. The grade of the “through” street shall take precedence at intersections. At intersections of roadways with the same classification, the more important roadway, as determined by the City Engineer, shall have this precedence.

2. The elevation at the end of the curb return on the through street is always set by the grade of the through street in conjunction with normal pavement cross-slope.

3. Carrying the crown of the side street into the through street is not permitted.

4. Dipping the flowline to the extent that the lip of gutter “spills” (vs. “catches”) is not permitted, except as specified by the Standard Specifications

concerning curb opening inlets. Tipping an inlet for the benefit of drainage is also not permitted.

5. A more detailed review shall be performed for arterial-arterial intersections to maximize drivability.

6. Flowline profiles and pavement cross-slopes shall be shown through an intersection until a normal cross-section is obtained. Elevations on a minimum 15-foot grid shall be shown on a plan view drawing. This information shall be submitted using a maximum scale of 1" = 20' horizontally and 1" = 2' vertically.

7. If a street jogs at an intersecting street and does not continue in a straight alignment, the centerline offset of the two parts of the street approaching the intersecting street shall be not less than one hundred fifty feet.

8. No more than two streets shall intersect at one point.

403.7.4 Curb Returns

The minimum slope through the flow line of curb returns shall be one-half of one percent (0.5%).

403.7.5 Connection with Existing Roadways

Existing grade(s) shall be shown for a sufficient distance to assure that horizontal and vertical curve requirements are being or can be met with field-verified record drawings showing stations and elevations at twenty-five (25) foot intervals. In the case of connection with an existing intersection, these record drawings are to be shown within a 100-foot radius of the intersection. This information shall be included in the plan and profile that shows the proposed roadway. Limits and characteristics of the existing improvement are the primary concern in the plan view. Such characteristics include horizontal alignment, offset intersections, limits of the improvements, etc.

403.8 Off-Site Design

The design grade and existing ground at that design grade for all roadways that dead-end due to project phasing, subdivision boundaries, etc., shall be shown in the plan and profile drawings for at least three hundred (300) feet or to the next intersection, whichever is closer. This limit shall be extended to six hundred (600) feet when arterial roadways are being designed. Streets platted as extensions of existing streets shall be designed with the same profile as the existing street.

Dead-end streets are prohibited unless constructed for the reasons stipulated in the previous paragraph. If constructed due to project phasing, temporary turnarounds may be required on the dead-end street until the adjacent property is

developed and the street is extended. All temporary turnarounds shall meet the minimum radius and dimensions of a permanent cul-de-sac.

403.9 Alleys and Frontage Roads

Paved alleys shall be provided in commercial and industrial districts, except that the requirements may be waived where other definite and assured provisions are made for service access to off-street loading and unloading areas and to off-street parking areas, consistent with and adequate for the use proposed. Dead-end alleys shall be avoided wherever possible.

Where a residential subdivision abuts a major highway, a railroad right-of-way or a limited access freeway, a frontage road may be required.

403.10 Street Requirements in New Developments

The arrangement of streets in new subdivisions shall make provision for the continuation of the existing streets and rights-of-ways with adjoining landowners (or their proper projection where adjoining land is not already platted nor being subdivided simultaneously with the new subdivision) insofar as such may be deemed necessary by the Director of Public Works for public requirements. The street arrangement must be such as to cause no unreasonable hardship to owners of adjoining property if they were to plat their own adjoining lands and shall seek to provide for convenient access to it.

The following design standards shall be applied to all street layouts:

1. Each major subdivision shall provide one primary and at least one secondary access route to an approved dedicated public street. Any alternate means of satisfying the secondary access options set forth hereunder shall reasonably satisfy the intent and purpose of the fire code adopted by the City of Sheridan.

   The secondary access route shall provide access to an approved dedicated public street by one of the following methods:

   a. The physical construction of additional roadway within the boundaries of the subdivision or through adjoining property; or
   b. Access by means of a physical connection to a transportation corridor shown in the transportation plan adopted by the City of Sheridan;or
   c. Access route confirmed through the adjoining property with the consent of the adjoining landowner. Said access shall be at a minimum defined by written easement, and plans for the

construction of the connecting roadway shall be provided by a civil engineer licensed in the State of Wyoming; or

d. If a written easement cannot be secured from the adjoining landowner to satisfy alternative (c), above, then the secondary access route requirement may be satisfied only with approval of City Council if the following criteria are satisfied:

1. Evidence that negotiations were attempted with the adjoining landowners to secure a written easement described in alternative (c), above, but such an easement could not be secured;

2. The proposed secondary access point connects to exterior boundary line of the new subdivision in a location which is logical for future road construction/extension through adjoining properties as provided by paragraph (C) above;

3. Written notice was delivered to the landowners owning property adjoining the possible future secondary access point notifying such landowner of (i) the location of the proposed access point and (ii) that approval of the possible secondary access connection to the adjoining landowner's property is being sought by the City Council and the date of the City Council meeting at which the matter will be reviewed. Such notice must be delivered to the adjoining landowner at least forty days prior to City Council's review.

2. Any secondary access proposal shall be approved by the Director of Public Works, subject to final approval by the City Council. The Council shall consider staff recommendations, the adopted transportation plan, and fire code in making their determination.

3. All connecting roadways shall meet the requirements established in this section of these Subdivision Regulations. The Director of Public Works may require any subdivision street, right-of-way or access to be designed to accommodate existing or projected traffic flows as determined in the subdivision traffic plan, adopted city transportation plan, or any other relevant investigation or study.

403.11 Construction Traffic Control

(typically developed and performed by the contractor)

403.11.1 Pedestrian Traffic

1. Every precaution shall be taken to ensure that construction work does not interfere with the movement of pedestrian traffic, which shall be maintained on the sidewalk at all times and flagmen provided for guidance as necessary.

2. Where an excavation interrupts the continuity of the sidewalk, the Contractor shall provide suitable bridge or deck facilities, to be supplemented by the use of such proper devices and measures as prescribed in the MUTCD, latest edition, for the safe and uninterrupted movement of pedestrian traffic. ADA standards shall be followed. The edges or ends of the pedestrian bridge or decking shall be beveled or chamfered to a thin edge to prevent tripping.

3. Temporary diversion walkways shall be hard-surfaced. Temporary electric lighting shall be provided and kept continuously illuminated during hours of darkness, when required by the City Engineer.

4. Unless otherwise authorized by the City Engineer, pedestrians shall not be channeled to walk on the traveled portion of a roadway.

5. Under certain conditions, it may be necessary to divert pedestrians to the sidewalk on the opposite side of the street. Such crossings shall only be made at intersections or marked pedestrian crossovers.

6. Facilities satisfactory to the City Engineer shall be provided for pedestrian crossing at corners, pedestrian crossovers, and public transportation stops.

403.11.2 Vehicular Traffic

1. Construction work zone traffic shall be controlled by signs, barricades, detours, etc., which are designed and installed in accordance with the MUTCD, latest edition. A traffic control plan shall be submitted to and approved by the City prior to the start of any construction.

2. For construction of new facilities, traffic control should strive to keep the motorist from entering the area of construction disturbance. The primary means to accomplish this are by use of temporary barricades, located in advance of the construction area and with appropriate signage. New construction shall not be opened to traffic, and the construction traffic control removed, without the approval of the City.

3. The details of the traffic control plan must be shown on a map. For minor projects or local roadways, a neat sketch of the roadways and the proposed control devices will suffice. For major projects or major roadways, the traffic control plan shall be superimposed on record drawings, construction plan drawings, or other types of detailed maps.

4. The MUTCD, latest edition, shall be the basis upon which the traffic control plan is designed, in concert with proper, prudent, and safe engineering practice. All necessary signage, striping, coning, barricading, flagging, etc., shall be shown on the plan.

5. Any plan for traffic control during construction that indicates a complete closure of an arterial or collector street must show appropriate detour routes and must be approved by the City Engineer and Fire Marshal. Requirements as to rerouting of traffic, signage, time of closure, and length of closure will be determined on a case-by-case basis. When a local street is to be closed to traffic, the City Engineer must be notified at least 24 hours in advance.

6. Directional access on roadways may be restricted (minimum travel lane width in construction area is ten [10] feet), but proper controls including flagging must be indicated. Removal of on-street parking shall be considered and noted where applicable.

403.12 Speed-Change Lanes

The design of the arterial street system depends upon the proper control of access to developments. The location and design of access points must minimize traffic hazards and interference to through-traffic movements. In order to ensure proper access control, the following standards for deceleration lanes have been established.

403.12.1 Where Required

Speed-change lanes may be required along segments of arterial or collector streets if the proposed development constitutes a potential for creating a traffic hazard or unnecessarily impedes through-traffic movements as determined by the Traffic Impact Report or the City Engineer. A high-volume access must be provided with a turning or speed change lane to allow the driver to maneuver out of the main travel lanes before slowing down. Speed-change lanes and left-turn lanes must be provided in the center or median of the road for left-turning traffic at high-volume access. If such lanes cannot be provided, left turns will be restricted.

403.12.1.1 Right-turning movements

Speed-change lane for right-turning movements will be required according to Table 2:

Table 2: Volume Warrants For Speed-Change Lanes for Right Turning

	POSTED SPEED OF STREET IN MPH				
	Less than 25	26 to 40	41 to 50	51 or greater	For
If the design hour volume of the high-way lanes will exceed	500 1400	400 1200	200 800	150 600	2-lane streets 4 or more lanes
and the designated volume of the access approach will exceed	50 70	40 60	20 40	15 25	2-lane streets 4 or more lanes

For streets with four or more through-travel lanes, design-hour volumes shall be measured only in the direction of the access approach.

403.12.1.2 Left-turning movements

For left-turning movements, speed change lanes will be required according to Table 3:

Table 3: Volume Warrants for Speed-Change Lanes for Left-Turning Movements

	POSTED SPEED OF STREET IN MPH				
	Less than 25	26 to 40	41 to 50	51 or greater	For
When design hour volume of the high-way will exceed	500 1000	400 900	200 600	150 400	2-lane streets 4 or more lanes
and the left-turning design hour volume into the access approach will exceed	50 70	40 60	20 40	15 25	2-lane streets 4 or more lanes

For streets with four or more through-travel lanes, design-hour volumes shall be measured only in the direction of the median speed change lane.

A. For both Tables 2 and 3, where the existing street design-hour volume is below the values in the tables, a 20-year prediction shall be made and compared to the table. If 20-year prediction requires a turn lane, additional right-of-way for future turn lanes shall be dedicated.

B. Where public safety so requires, due to specific site conditions such as sight distance, a turn lane may be required even though the

warrants in Tables 2 and 3 are not met. Where the design-hour volume of the street is twice the street design-hour volume in Tables 2 and 3, the City may require a minimum speed change lane for any access approach.

403.12.2 Speed-Change Lane Design

On highway arterial and collector streets in the City, the design of acceleration/deceleration lanes shall meet the minimum requirements as shown in Tables 4 and 5, providing sufficient offsite right-of-way is available. These absolute minimum requirements were developed recognizing the severe limitations that currently exist on right-of-way availability for most of the urban street network. Where grades are significant, modifications to these lengths will be required by the City. If offsite right-of-way is insufficient, lanes will be designed to maximize the use of available right-of-way at the time that construction plans receive final approval.

Table 4: Acceleration Lane and Taper Lengths

(1) SPEED (MPH)	LANE LENGTH		TAPER LENGTH
	Stop Condition	From 15 mph(2)	
30	150'	125'	120'
35	175'	150'	150'
40	250'	200'	180'
45	300'	250'	180'

(1) 85th percentile speed.
(2) Assumes vehicles start at 15 miles per hour.

Table 5: Deceleration Lane and Taper Lengths

SPEED (MPH)	LANE LENGTH		TAPER LENGTH
	15 mph Turn*	Stop Condition	
30	100'	125'	120'
35	125'	150'	150'
40	175'	225'	180'
45	200'	250'	180'

* Assumes vehicle turns at speed of 15 mph at the end of the deceleration lane.

403.12.3 Exemptions

Requests for exemption from the requirements for a deceleration lane shall be based upon a traffic engineering study that presents trip generation data for the proposed development in terms of impacts upon through-traffic flows.

Such requests shall be reviewed by the City Engineer and may be approved, except that such an approval cannot be granted if through traffic would be impeded

more than 3% of the total time or more than 5% of the time during peak traffic flow periods, or if other unique circumstances warrant special design considerations.

403.13 Pavement Thickness

Design of pavement thickness for collector and arterial streets and local streets in industrial and commercial zoned areas shall be based on AASHTO Guide for Design of Pavement Structures, latest edition. Pavement design shall be based on an inherent reliability of 75 percent. For traffic conditions where the equivalent 18 kip/single axle loading is less than 1,000,000, the low-volume road design method may be used. Recommendations and subgrade properties developed by a separate geotechnical report shall be used in the design of the pavement structure.

1. Industrial and Arterial Streets must be designed for pavement thickness on an individual street-by-street basis. However, in no event may the pavement thickness be less than that specified in Table 6. Local Residential Streets need not be designed on an individual basis, but must at a minimum meet the pavement thicknesses as set forth in Table 6.

2. Minimum compressive strength for Portland Cement concrete paving shall be 4800 psi at 28 days.

3. Traffic Data. Where traffic data is available, actual counts shall be used along with projections of traffic growth in determining the pavement design. If traffic data is not available, Table 6 may be used for the pavement design in conjunction with a geotechnical report. Traffic data for all arterial streets will be determined by the City Engineer.

Table 6: Minimum Pavement Thickness Requirements

	Local Residential Streets	Commercial, Industrial & Collector Streets	Arterial Streets
Portland Cement Concrete (Requires Aggregate Base)	6" PCCP 4" Aggregate	8" PCCP 4" Aggregate	8" PCCP 4" Aggregate
Asphaltic Concrete with Aggregate Base	4" AC 6" Aggregate	6" AC 6" Aggregate	6" AC 6" Aggregate

Note: Geotechnical report required to substantiate all proposed roadway sections.

Section 501
Utility Locations and City Utility Easements

501.1 Purpose of Standard Locations

501.1.1 Conflicts

It is necessary to provide adequate space for utilities in a manner that will minimize conflicts between using the public right-of-way for transportation purposes and utility purposes. When street grades, alignments, or widths are changed, utilities are usually required to relocate. Oftentimes, standard locations are inapplicable and unobtainable in street areas where existing utilities are seriously crowded and where it would not be feasible to expect major or dramatic reorientation of the underground. The location criteria must be practical and applicable in new developments, in urban relocation work, and in cases where overhead facilities are being converted into underground structures and plans.

501.1.2 Relocations

Utilities are not expected to revise existing facilities as to location or depth solely or primarily for the purpose of creating uniformity. However, when new or relocation work is undertaken, uniformity should be sought.

501.2 Plans Required

501.2.1 Construction Approval

Any utility or other facility constructed in City right-of-way shall have construction plans submitted and approved in accordance with requirements in these Design Standards and the Standard Specifications. No construction permit shall be issued for construction of new utilities or extension of existing facilities (except service taps or laterals to individual properties) without prior construction plan approval by the City.

501.2.2 Conformance

The applicant's completed facility shall be in conformance with the drawings or sketches referred to above, unless a special variance has been requested and approved by the City.

501.3 Location Requirements

1. All utilities located within the public right-of-way shall be approved by the City or presiding right-of-way owner.

2. Utilities already existing in non-standard locations may be replaced in the same location when approved by the City Engineer.

3. Gravity lines shall take preference as to horizontal and vertical alignment over non-gravity systems and pressure systems.

4. Consideration will be given to the use of utility easements adjacent to the public right-of-way and to the use of alleys and medians.

5. In the event of a conflict, or if a particular utility requires more than one system be installed in the right-of-way, an alternate location may be used when approved by the City Engineer.

6. Utilities shown are primarily for local distribution and collection. Large diameter lines may make it necessary to modify utility locations.

7. Trees, shrubs and other landscaping plantings placed between the curb and street side of sidewalk shall not interfere with underground or overhead utilities.

8. Street lights will normally be placed on the same side of the street as the electric utility.

9. Street lights shall not be located closer than five (5) feet horizontally from fire hydrants.

501.4 Street Closures

All utility permits where work will be done in the street pavement or in the right-of-way and would require a lane closure must be approved by the City Engineer.

501.5 City Utility Easements

Easements for sanitary sewers, storm sewers, drainage, water mains and electrical lines and lighting shall be obtained when the utilities are to be constructed outside of the typical street right-of-way on private property. Sanitary sewer, storm sewer, drainage, water main and electrical lines and lighting easements shall be as per Sections 201, 301 and 402 of these Design Standards and the Storm Drainage Design Criteria, latest edition. Once easements have been recorded and utilities accepted, no grading shall take place within the easement without approval by the Utilities Director or City Engineer.

Easements shall be labeled specifically for which the utility is obtained; e.g., Sanitary Sewer Easement, Storm Sewer Easement, Drainage Easement, Water Main Easement, Electrical Line Easement, or Electrical Lighting Easement:

1. Easements for Sanitary Sewer, Storm Sewer, Drainage, Water Main and/or Electrical Lines or Lighting. The easement form shall be used where the City utility is to be constructed on private property. The most current version of the easement form shall be used and obtained from the Utilities Division.

2. Construction Easements for Sanitary Sewer, Storm Sewer, Drainage, Water Main and/or Electrical Lines or Lighting. The easement form shall be used with the appropriate description inserted when a temporary easement is required during construction.

Section 601
Geotechnical Exploration and Report

601.1 General

The geotechnical evaluation shall indicate whether a project will be subject to any geotechnical hazards, make recommendations for site preparation, grading, foundations, retaining walls, earth-supported slabs, utility trench work, pavement design and drainage as necessary to the project.

The purpose of a geotechnical evaluation is to attempt to determine whether the project will be subject to a geotechnical hazard. Geotechnical hazards include landslide conditions, expansive soils, flooding, high groundwater conditions, and any other conditions that could pose a risk to a planned construction project.

601.2 When Required

For site development, the determination as to when a geotechnical evaluation report will be required will be determined by code or on an individual, case-by-case basis by the City Engineer.

Public projects and subdivisions will be required to provide a geotechnical evaluation report.

601.3 Soil Exploration

601.3.1 General

When geotechnical explorations are required, all sampling and testing of the soil shall be performed in accordance with the appropriate AASHTO and ASTM designations.

601.3.2 Sampling

Representative soil samples shall be obtained by subsurface exploration along the route of the existing or proposed public right-of-way.

1. Explorations shall extend to a minimum depth of 10.0 feet below the proposed foundation subgrades, or 5.0 feet below the flow line elevation of any pipe or conduit. Every fourth exploration, or a minimum of one exploration per four completed, shall be advanced until groundwater is encountered or until sampler refusal is encountered, whichever is less. Sampler refusal is defined as SPT blow counts greater than 50 blows per 6 inches.

2. Explorations will be performed at intervals sufficient to determine the boundaries of each significant soil type present at the discretion of the geotechnical engineer. The table below provides the minimum recommended boring spacing and depths. Actual spacing and location of borings should be at the discretion of the geotechnical engineer.

Type of Proposed Construction	**Minimum Spacing/Frequency of Exploratory Borings**	**Minimum Depth of Exploratory Borings**
Subdivisions (Preliminary Planning)	One boring for every 50,000 square feet of contiguous lots (not including adjacent street right-of-way)	15 feet or 10 feet below foundation subgrade.
Roadways	One boring per 1,000 feet	5 feet
Utility Lines	One boring per 1,000 feet	5 feet below bottom of pipe, lines or manholes.
Commercial Structures (footprint less than 4,000 sf)	Minimum of three.	15 feet or 10 feet per story, whichever is greater
Commercial Structures (footprint greater than 4,000 sf)	Minimum of four borings – one at each building. corner, plus one for each additional 1,000 sf of footprint.	15 feet, or 10 feet per story, whichever is greater
Embankment Bases	One boring per 500 linear feet	10 feet or match height of embankment, whichever is greater
Special Cases (Retaining walls, bridges, etc.)	Site dependent, coordinate with geotechnical and structural engineer	Site dependent; coordinate with geotechnical and structural engineer

3. Sampling locations should be selected by the project geotechnical engineer as the result of a geotechnical reconnaissance.

4. Where drainage areas are crossed or boggy areas are encountered, the spacing of the explorations shall be at closer intervals in order to determine the boundaries of the “soft” area. At these “weak” areas, the depth of the explorations may also have to be increased in order to determine if and to what depth improved subgrade material will be required to provide uniform support for the construction.

5. Representative samples from the explorations shall be collected for submittal to a soils testing laboratory for evaluation at the discretion of the geotechnical engineer.

6. An exploration log shall be maintained for each soil exploration performed. The exploration log shall contain a complete record of the soil material observed.

601.3.3 Testing

1. The tests required are those for identification and classification purposes. These tests include standard sieve analysis (ASTM D422 or AASHTO T-88) and Atterburg Limits (ASTM D4318 or AASHTO T-89 and 90). The test results are used to give a soil a descriptive name and letter symbol (in accordance with the Unified Soils Classification System) indicating its principal characteristics. Based on the test results, similar soil types can be placed into several major groups.

2. These major groups shall be plotted on a profile sheet to determine their limits. The profile sheet is used with the laboratory data in selecting which soil types should be tested further. Additional testing includes the moisture-density relationship (ASTM D698 or AASHTO T-99 or T-180) and California Bearing Ratio (CBR) (MIL STD 621 Method 101 or ASTM D1883). The moisture-density relationship determines the maximum dry density and optimum moisture content for that particular soil.

   The CBR test shall be performed on a remolded sample compacted to 95 to 100 percent of the maximum dry density and at the optimum moisture content as determined ASTM D698 / AASHTO T99 or 90 to 95 percent of the maximum dry density and at the optimum moisture content as determined ASTM D1556 / AASHTO T180. The results of the CBR test determine the relative bearing value of the subgrade and are used in the pavement thickness design. A minimum of a three-point proctor curve will be utilized for the CBR testing, with a five-point proctor curve preferred. If the various soil type areas are not large enough to justify separate pavement designs, a single design shall be made on the soil type exhibiting the lowest CBR value.

3. Swell Consolidation tests (ASTM D 4546) should be conducted on fine-grained soils encountered in exploratory borings that may exhibit volume change due to changes in moisture content.

601.4 Report

601.4.1 General

The geotechnical report and any recommendations based on soil investigations must be prepared by a licensed engineer with experience in geotechnical engineering. The report shall identify any geotechnical hazards and recommendations to mitigate the special conditions along with grading, foundations, and subgrade and pavement requirements. The recommendations may be divided into three parts: geotechnical special conditions, grading and foundation, and subgrade and pavement.

601.4.2 Special Geotechnical Conditions

The special conditions portion of the report shall consider, but not necessarily be limited to, groundwater, frost susceptibility, erosion potential, soils creep, land sliding, expansive soils, soil corrosivity, consolidation and any other special geotechnical conditions the Geotechnical Engineer deems applicable to the project site.

Geotechnical hazards include landslide conditions, expansive soils, flooding, high groundwater conditions, and any other conditions that could pose a risk to a planned construction project.

601.4.3 Grading and Foundation

The grading and foundation portion shall include data regarding the distribution and engineering characteristics of the various soil materials, data about groundwater levels, recommendations about the need for mitigation measures for special geotechnical conditions, grading criteria, foundation design criteria, and any other information the Geotechnical Engineer considers pertinent.

601.4.4 Subgrade and Pavement

The subgrade and pavement portion shall include data regarding the distribution of various subgrade materials and design tests such as CBR, R-value, and/or plate bearing. Where soils are susceptible to erosion, recommendations shall be made for preventing the undermining of pavements. The pavement design may be included in this report or prepared and submitted separately by the licensed Engineer responsible for preparation of the construction plans and contract documents.

Section 701
Grading

701.1 General

A. Grading shall be provided for all new developments where necessary. They shall be graded such that storm water runoff is managed onsite or is conducted away from proposed building sites to swales constructed in drainage easements along lot lines, to public rights-of-way, or to another approved drainage course and complies with the City's Storm Drainage Design Criteria, latest edition.

B. No filling will be allowed in areas of land within a proposed subdivision or other type of development within the flood plain of a river, stream, creek, or lake unless under the terms of any required permits granted by the U.S. Army Corps of Engineers and/or the Federal Emergency Management Agency, and approved by the City where applicable.

701.2 Grading Requirements for Proposed Subdivisions

1. The longitudinal slope along a rear-yard drainage easement shall be at least 1%, but less than a slope that would cause erosion.

2. All grade point elevations shall be shown for each lot at the property corners and at the low and high points along the property lines.

3. The general direction of overland drainage in the rear yard shall be indicated on each lot by an arrow.

4. High and low street grade points, slope direction (by arrow), and the location of all inlets and drainage ditches shall be shown on the grading plan.

5. A maximum slope of 3H:1V shall not be exceeded for all terracing. The toe of the slope shall be located outside of drainage easements and natural drainage ways unless it can be shown that the slope will not be affected by flow within the easement.

6. Grading plans shall be drawn to a scale of 1" = 100' or larger.

7. Grading plans shall include details of typical lot grading and drainage patterns intended to be used.

8. The grading plan shall show contour intervals as follows:
    1. 1 foot for slopes of 1% or less,
    2. 2 feet for slopes between 1.1% and 10%; and
    3. 5 feet for slopes exceeding 10%.

10. Horizontal and vertical control datum shall be as specified in Section 101.

11. Drainage patterns other than those shown in standard details may be used and will be acceptable for review. Details of the typical lot drainage pattern shall be shown on the grading plan with all grade control points identified.

12. In general, for streets with ditches and no curbs, the elevation of the front lot line shall be at least 6 inches above the centerline of the road.

13. All nonconforming lots with drainage patterns other than those in standard details shall be noted on the grading plan.

14. Storm sewers and inlets shall be placed in rear-yard swales at low (sump) points where front-to-rear grading is used.

15. Drainage easements shall be provided for drainage swales.

16. The grading plan shall show the minimum ground elevation adjacent to existing or proposed buildings for each lot. This may be accomplished with a typical section showing the proposed slope to be constructed away from the building.