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General Information

A. Purpose

The SUDAS Design Manual has been prepared as a mechanism to implement uniform design standards, procedures, and regulations for the preparation of urban improvement construction plans. These improvements are those that meet any of the following:

1. Are initiated, designed, and constructed by or under the supervision of the jurisdiction as a public improvement and maintained by the jurisdiction.

2. Are initiated, designed, and constructed by the private owner/developer's private engineer and contractor. Upon acceptance of the improvements by the jurisdiction, the improvements are operated and maintained by the jurisdiction.

Those improvements that require review and approval by the jurisdiction, but will remain under private ownership, may be required to follow the SUDAS Design Manual. Each jurisdiction will decide if these types of improvements are to follow the SUDAS Design Manual.

B. Definitions

See the SUDAS Standard Specifications (referred to as SUDAS Specifications) Section 1010 for definitions and a list of abbreviations.

Construction Inspector or Observer: The person or persons appointed by either the project engineer or the jurisdictional engineer to inspect all materials used and all work done. Such inspection may extend to any or all parts of the work and to the preparation or manufacture of the materials to be used. The inspector is not authorized to revoke, alter, enlarge, or relax the provisions of the specifications. The inspector will keep the project engineer and the jurisdictional engineer informed as to the quality and progress of the work and the manner in which it is being done.

Jurisdictional Engineer: The licensed professional engineer designated by the jurisdiction to carry out the provisions of the SUDAS Design Manual and the jurisdiction's design supplement, if applicable.

Project Engineer: The licensed professional engineer who is legally responsible for the design and/or administration of the project.

C. Intent of the SUDAS Design Manual

The values contained herein are considered fundamental concepts of basic design criteria that will serve as a framework for satisfactory design on new improvements. The project engineer is encouraged to develop the design based on this framework and tailored to particular situations that are consistent with the general purpose and intent of the design criteria through the exercise of sound engineering judgment. Situations may arise that require special considerations. Therefore, to eliminate hardships or problems, the jurisdiction may choose to vary the design criteria, procedures, and regulations. Jurisdictions may have a written design supplement that identifies specific modifications from this manual.

Should variances from the SUDAS Design Manual, or the jurisdiction's design supplement, be required, the reason for the variance should be documented by the project engineer and evaluated on a case-by-case basis by the jurisdictional engineer. Documentation could be included on the construction plans or as required by the jurisdiction.

The design standards as described for new improvements may not be attainable for restoration and rehabilitation projects. Each project of this type must be considered individually to determine if these design standards apply.

The SUDAS Design Manual and the jurisdiction's design supplement should be used for the preparation of all design plans for new improvements or major reconstruction submitted by the project engineer for jurisdictional review. The jurisdiction will review all submittals for general compliance with the specific design criteria, procedures, and regulations. Approval by the jurisdiction does not relieve the project engineer from the responsibility of ensuring that the calculations, design, and plans are accurate; complying with the SUDAS Design Manual; applying sound engineering judgement, and fitting the needs of a particular project.

The technical criteria not specifically addressed in the SUDAS Design Manual should follow the provisions of each jurisdiction's own policy or criteria and sound engineering practice. The design standards outlined in this manual are to be considered minimum design standards and a project constructed of entirely minimum standards may not be acceptable to the jurisdiction.

D. Organization of the Manual

The SUDAS Design Manual is organized into chapters. The chapters include general information, report documentation, plan design, and federal and state requirements. The manual provides a compilation of readily available literature relevant to the design of urban facilities.

E. Jurisdiction and Agencies

The SUDAS Design Manual and applicable design supplements apply to participating local governments except where superseded by state and federal requirements.

F. Amendment and Revisions

The standards and criteria will be amended as new technology is developed and/or experience gained in the use of the SUDAS Design Manual indicates a need for revision. The revisions will be adopted and jurisdictional engineers will monitor the performance and effectiveness of the design standards and will recommend changes and/or amendments through the SUDAS program as needed. Updates to individual design supplements will be the responsibility of each jurisdiction, if applicable.

G. Enforcement Responsibility

Each jurisdiction is responsible for enforcing the adopted provisions of the SUDAS Design Manual and their design supplement, if applicable.

H. Interpretation

The jurisdiction will determine the interpretation and application of the SUDAS Design Manual and their design supplement. Section 1B-1 includes classifications of improvements for a clearer understanding of general policy.

I. Innovation

Nothing in the SUDAS Design Manual limits the designer's use of new and innovative technology. Each alternative proposed utilizing new or unproven technology must receive approval from the jurisdiction prior to implementation. Any materials meeting the technical specifications should be allowed unless specifically prohibited by the jurisdiction.

Classifications of Improvements

A. Sanitary Sewer

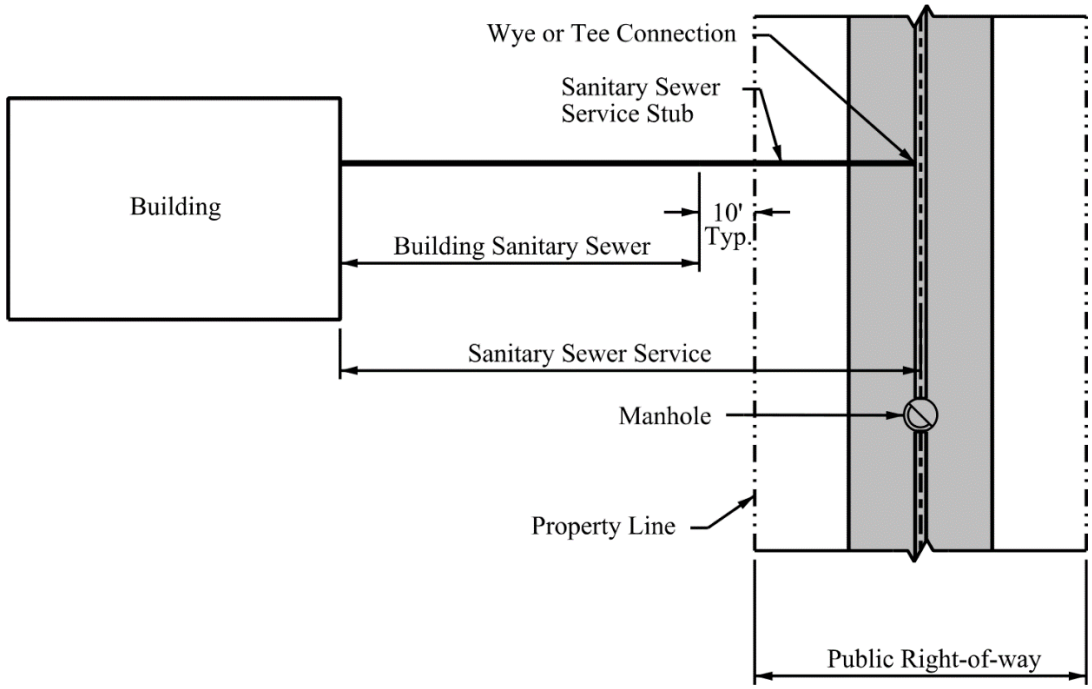
1. **Public Sanitary Sewer:** A sewer used to receive and convey sanitary sewage to another public trunk sewer or a sanitary interceptor sewer. This sewer is owned and maintained by the jurisdiction and is constructed on public property or on private property with an easement held by the jurisdiction. See Chapter 3 for more information.

   Construction Standard: SUDAS Specifications. Iowa DNR permit required.

2. **Sanitary Sewer Service Stub:** The portion of the sanitary sewer service that is within the public right-of-way to a designated point beyond the right-of-way line (typically 10 feet) as specified by the jurisdictional engineer. The sanitary sewer stub may be constructed in conjunction with the sanitary sewer construction and capped until the building sanitary sewer is constructed. Check with the local jurisdiction to determine if the sanitary sewer service stub is public or private and the exact permit and construction requirements. See Section 3C-1 for more information.

   Construction Standard: SUDAS Specifications and the jurisdiction's plumbing code. Jurisdiction plumbing permit may be required.

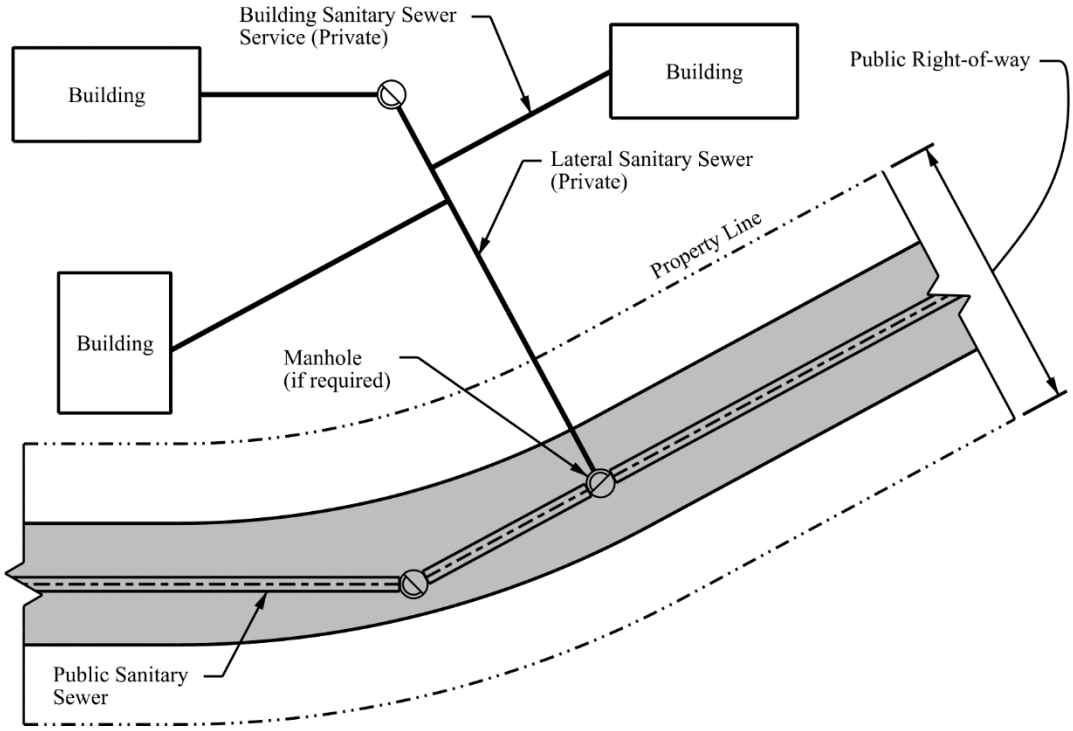
Figure 1B-1.01: Example of Sanitary Sewer Service



3. **Private Lateral Sanitary Sewer:** A sewer used to convey sanitary sewage from one or more sanitary sewer services. This sewer is limited to providing service to one owner or homeowner's association. This sewer is to be owned and maintained by a single person or entity and constructed on private property controlled by the owner or homeowner's association. Approval for the use of a private sanitary sewer should be obtained from the jurisdiction. For location of private lateral sanitary sewer, see Figure 1B-1.02. See Section 3C-1 for more information on sizing the lateral.

   Construction Standard: SUDAS Specifications and the jurisdiction's plumbing code. Jurisdiction plumbing permit and Iowa DNR permit may be required.

Figure 1B-1.02: Example of Lateral Sanitary Sewer



4. **Sanitary Sewer Lift Station:** A facility used to convey sanitary sewage from one or more sanitary sewers that cannot be conveyed by gravity flow to or within the public sewer system. This facility may be owned and maintained privately or by the jurisdiction. If to be maintained by the jurisdiction, this facility is constructed within the right-of-way, on property deeded to the jurisdiction, or on private property with an easement held by the jurisdiction.

   Construction Standard: SUDAS Specifications. Iowa DNR permit required.

B. Water Mains

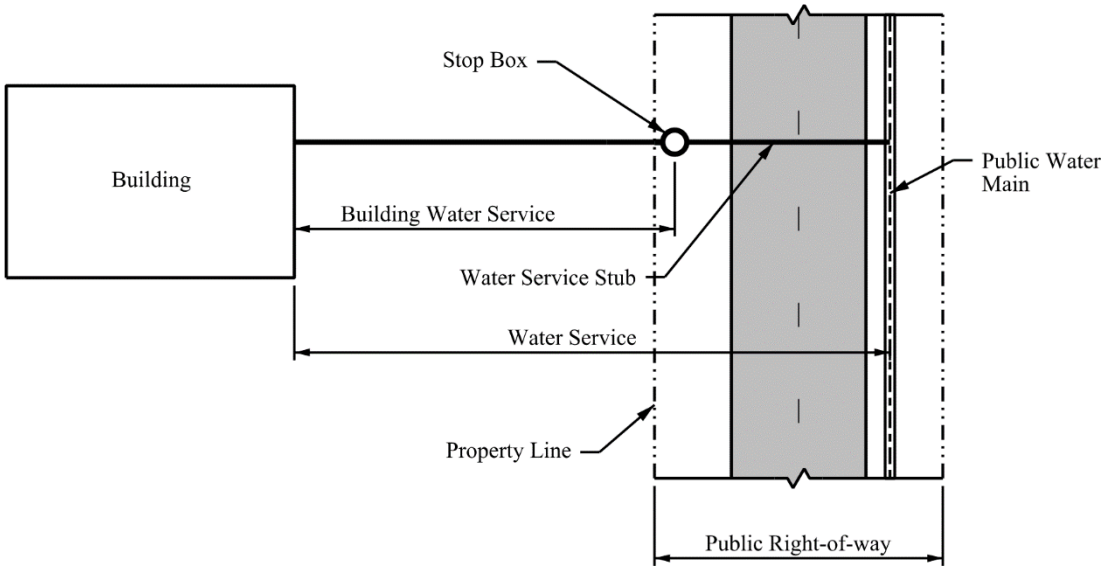
1. **Public Water Main:** A water main is used to distribute water to consumers for domestic, commercial, industrial, and/or firefighting purposes. The main is owned by the jurisdiction, water works, or an approved public/private water utility corporation or association. See Chapter 4 for additional information.

   Construction Standard: SUDAS Specifications. Iowa DNR permit required.

2. **Water Service Stub:** The water service stub is comprised of the piping and related appurtenances including the corporation, installed from the public water main to the stop box or as specified by the jurisdictional engineer. The water service stub may be constructed in conjunction with the water main and capped until the building water service is constructed. Check with the local jurisdiction to determine if the water service stub is public or private and the exact permit and construction requirements. For location of the water service stub, see Figure 1B-1.03. See Section 4C-1 for more information.

   Construction Standard: SUDAS Specifications. Jurisdiction plumbing permit may be required.

Figure 1B-1.03: Example of Water Service



3. **Private Water Main:** A private water main is used to distribute water for domestic and firefighting purposes to only one owner or homeowner's association. This private water main and appurtenances (valves, fire hydrants, etc.) are to be owned and maintained by only one party and constructed on private property controlled by the owner or homeowner's association. Approval for the use of private water mains must be obtained from the jurisdiction. The approval agreement must address the ability of the fire department to access the fire hydrants and stipulate who is to maintain the fire hydrants and valves. If the hydrants and valves are to be privately maintained, an annual log of maintenance activities should be filed with the jurisdiction. Metering of water flowing through the private water main will be subject to the jurisdiction's water metering requirements. See Chapter 4 for additional information.

   Construction Standard: SUDAS Specifications and the jurisdiction's water works and/or rural water association standards. Jurisdiction plumbing permit and Iowa DNR permit may be required.

C. Drainage Facilities

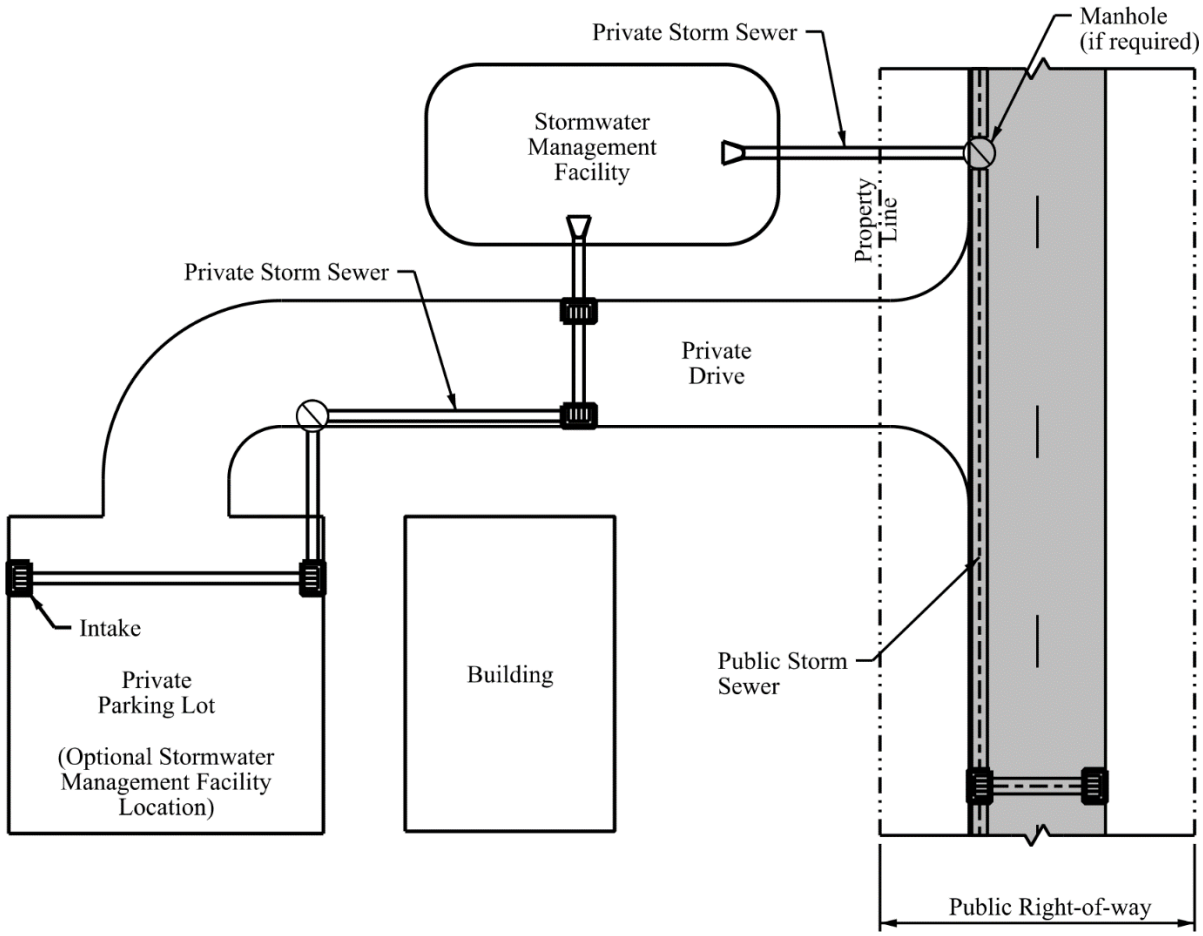
1. **Public Storm Sewer:** A storm sewer is used to convey stormwater runoff to an acceptable outlet. This sewer is owned and maintained by the jurisdiction and constructed on public property or on private property with an easement held by the jurisdiction. See Chapter 2 for additional information.

   Construction Standard: SUDAS Specifications. Federal and state permits may be required.

2. **Private Storm Sewer:** A private storm sewer is used to convey stormwater from private property to a public storm sewer, natural drainage way, or other acceptable outlet. This sewer is located on private property and maintained by only one party or homeowner's association. These sewers should be designed to fit within the jurisdiction's overall drainage system. Easements are to be obtained when crossing other private property. Drainage area limits for private storm sewers of large sites will be examined on a case by case basis by the jurisdiction. Manholes may be required for the connection of the private storm sewer to the public system. For location of private storm sewer, see Figure 1B-1.04. See Chapter 2 for additional information.

   Construction Standard: SUDAS Specifications. Jurisdiction plumbing permit and/or federal and state permits may be required.

Figure 1B-1.04: Example of Public and Private Storm Sewers

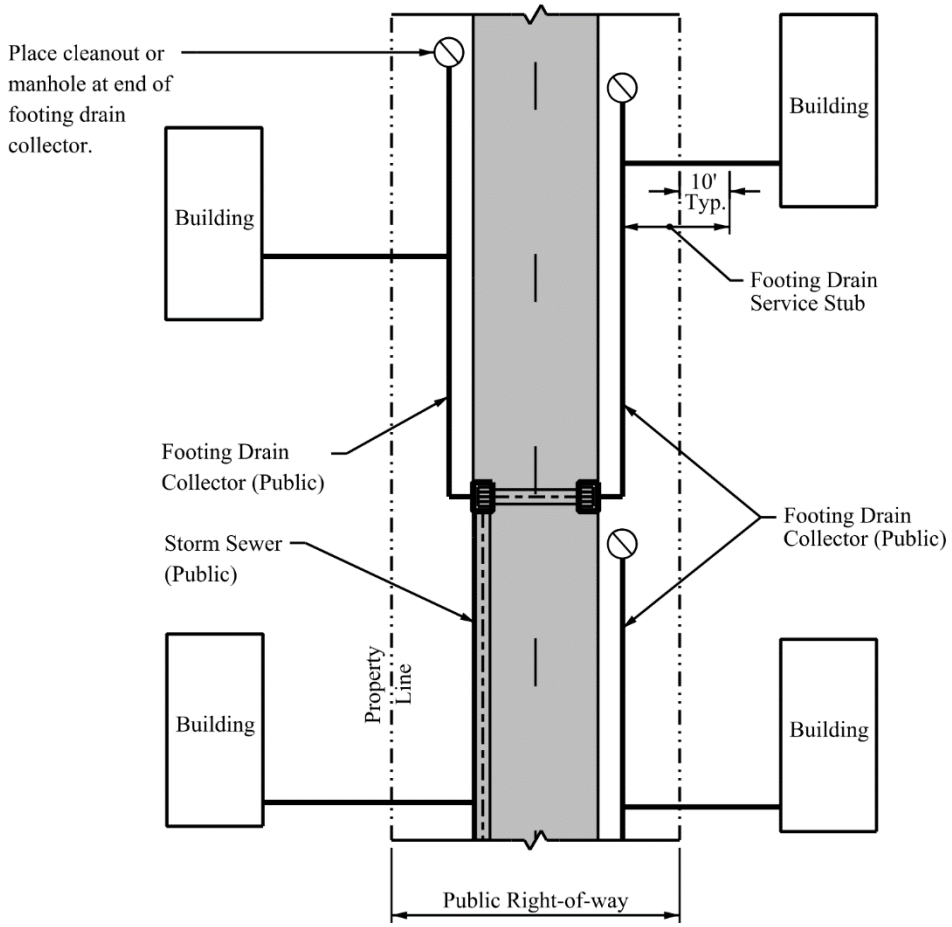


3. **Footing Drains:** A footing drain collector is used to convey ground water from private footing drains to a public storm sewer or drainage way. This footing drain collector is owned and maintained by the jurisdiction and constructed on public property or on private property with an easement held by the jurisdiction. For location of footing drain collector, see Figure 1B-1.05.

4. **Footing Drain Service Stub:** A footing drain service stub extends from the storm sewer or footing drain collector to a designated point beyond the right-of-way line (typically 10 feet) as specified by the jurisdictional engineer. The footing drain service stub may be constructed in conjunction with the storm sewer and capped until the building footing drain is constructed. Check with the local jurisdiction to determine if the footing drain service stub is public or private and the exact permit and construction requirements. For location of footing drain service stubs, see Figure 1B-1.05.

   Construction Standard: SUDAS Specifications.

Figure 1B-1.05: Example of Footing Drain



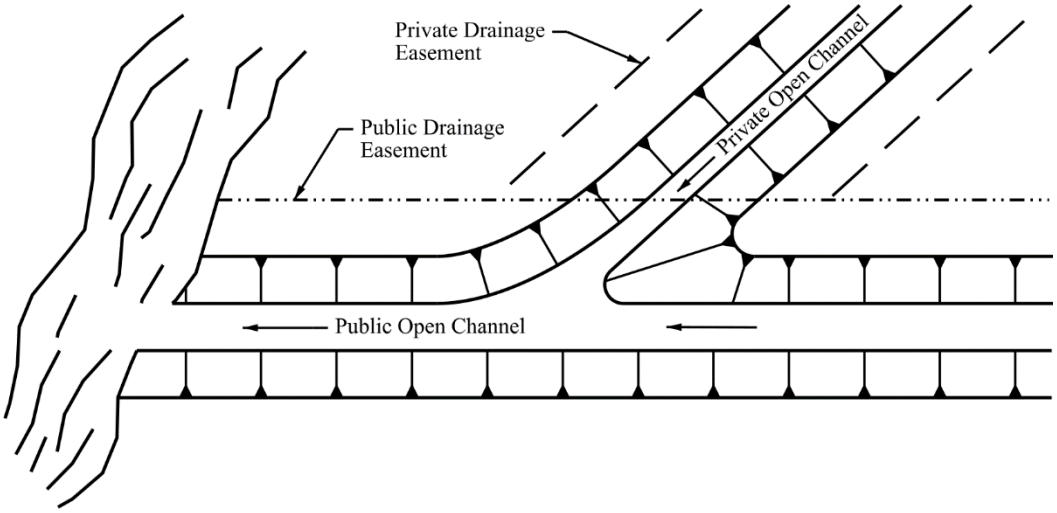
5. **Public Open Channel:** A natural channel improvement or channel required by the jurisdiction as a component of a planned drainage system that conveys stormwater drainage across public property or public easement. Public open channels should be designed to accommodate the jurisdiction's overall drainage system's needs. Public open channels are owned by the jurisdiction or within an easement held by the jurisdiction. For location of open channel, see Figure 1B-1.06.

   Construction Standard: SUDAS Specifications. Contact Iowa DNR for potential 401 Water Quality and NPDES permit requirements; U.S. Army Corps of Engineers for 404 permit.

6. **Private Open Channel:** An open drainage way, swale, or channel used to convey stormwater drainage to the public drainage system or other acceptable outlet. Private open channels may be allowed on a case-by-case basis. The channel should be designed to accommodate the jurisdiction's overall drainage system needs with respective easements that will serve more than one property and will be located on private property and maintained by one or more private entity(ies). Design grades must be established to eliminate low points, prevent erosion, and maintain the design flow of water. The open channel may discharge directly into a stream or other waterway. For location of private open channel, see Figure 1B-1.06.

   Construction Standard: SUDAS Specifications. Federal and state permits may be required.

Figure 1B-1.06: Example of Open Channel



7. **Stormwater Management Facilities:** Stormwater management facilities are installed to mitigate the higher rate of stormwater runoff generated from development activities. In addition, specific requirements for improvement to stormwater quality may be required by the jurisdiction. Design considerations should be given to prevent damages to the development site, streams, drainage ways, streets, storm sewers, and downstream property. The stormwater management facilities should be designed to accommodate the jurisdiction's overall drainage system needs while meeting the jurisdiction's adopted design standards. The stormwater management facility may be developed on public (if approved) or private property. If the facility is on private property but maintained by the jurisdiction, an agreement must be executed that establishes responsibility for general maintenance of the basin as well as the maintenance of the stormwater elements of the basin. If the stormwater facility is to be maintained by a private entity, such as a homeowner's association, an agreement must be developed that addresses required maintenance activities and records of those activities. (See Chapter 2 for details).

   Construction Standard: SUDAS Specifications. Federal and Iowa DNR permit may be required.

D. Erosion and Sediment Control

Construction site erosion and the subsequent sediment deposits are a common problem for off-site drainage systems and can potentially cause damage to adjacent property as well. The Federal Clean Water Act established requirements including the National Pollutant Discharge Elimination System (NPDES) to regulate discharges and reduce pollution of the nation's waterways.

These requirements are being implemented by the Iowa DNR and jurisdictions who have been designated as municipal separate storm sewer systems (MS4) communities. For construction projects, an NPDES General Permit No. 2 from the Iowa DNR is required for any site that disturbs and exposes one acre of land or more. A permit is also required for projects that will disturb one or more acres as part of a common plan of development, even if there will not be one acre of disturbed ground exposed at any given time. The permit requires preparation of a stormwater pollution prevention plan (SWPPP) that must clearly identify all potential sources of stormwater pollution and describe the methods to be used to reduce or remove the contaminants from stormwater runoff. In addition to the Iowa DNR, MS4 agencies may also have a permit process. It is necessary to check with the jurisdictional engineer to determine what, if any, information is needed for the local agency permit. See Chapter 7 for additional information.

Construction Standard: SUDAS Specifications. Iowa DNR permit. Jurisdiction permit may be required.

E. Entrances

Access to private property is the responsibility of the property owner. The owner is responsible for obtaining the appropriate permits for entrance modifications.

Construction Standard: SUDAS Specifications. Jurisdiction permit required.

F. Streets

1. **Public Street:** This classification of street is owned and maintained by the jurisdiction and constructed on dedicated street right-of-way. See Chapter 5 for detailed description of each roadway system element.

   Construction Standard: SUDAS Specifications or Iowa DOT for federal aid routes.

2. **Private Street:** A street that is restricted to use by only one owner or homeowner's association and is available for use by emergency vehicles. This classification of street is located on private property and maintained by only one party or homeowner's association. Private streets should meet all applicable geometric requirements for the given operating speed and pavement thickness requirements for the type of traffic, requirements for fire lanes and emergency services, but may not comply with public standards in other elements, such as right-of-way width. Approval for the use of private streets must be obtained from the jurisdiction.

   Construction Standard: SUDAS Specifications. Jurisdiction permit may be required.

G. Utilities

1. **Franchise Utility:** A jurisdiction may grant a franchise to erect, maintain, and operate underground and overhead plant and systems. These systems could be for electric light and power, heating, telephone, cable television, water works, gas, or other utilities within the jurisdiction. Construction of said facilities could be in the public right-of-way, public easements on private property, or private easements on private property. Location of franchised utilities should take into account the future right-of-way needs based on the ultimate classification of the street. Upon receipt of a written notice from the jurisdiction, the owner of a franchised utility must remove the utility from the jurisdiction's right-of-way or relocate it within the right-of-way in a timely manner as established by the jurisdiction. If easements are obtained for the utilities, it is recommended these easements be obtained in the name of the jurisdiction. All franchise utility installations should abide by the same design and construction requirements as other improvements. See Section 9A-1 for more information. Permits from the jurisdiction may be required.

2. **Public and Non-franchised Utility:** The jurisdiction may allow the installation of public and non-franchised utilities in public right-of-way upon review of the proposed improvements and approval by the jurisdiction. Such improvements may include, but not be limited to, water mains constructed by a water board, electric facilities constructed by an electric board, stormwater facilities, storm sewers, fiber optic lines, communication lines, irrigation systems, and other miscellaneous installations. Permits may be required by the jurisdiction.

   Ensure the installation of such facilities in public right-of-way does not damage or infringe on the usefulness of existing or planned public facilities. Upon receipt of a written notice from the jurisdiction, the owner of a public and non-franchised utility must remove the utility from the jurisdiction's right-of-way or relocate it within the right-of-way in a timely manner as established by the jurisdiction.

3. **Utility Conflicts:** Franchised, public, and non-franchised utilities are expected to cooperate in relocation of facilities that are in conflict. It is critical that the utilities be given as much advance notice as possible. The project engineer should coordinate with each utility agency or company to determine location and elevation of all utilities located within the project area. If any existing utilities conflict with the proposed project, the project engineer should contact the utility company and work to resolve the conflict in order to keep the project on schedule. If the conflicts are unable to be resolved, the project engineer should bring the matter to the attention of the jurisdictional engineer.

H. Accessibility

Where sidewalks and shared use paths are provided, they must be constructed or reconstructed so they are accessible for all users according to the Americans with Disabilities Act. All construction or reconstruction of accessible facilities must comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (also known as the Public Right-of-Way Accessibility Guidelines or PROWAG) and the jurisdiction’s transition plan. Sidewalk and shared use path construction on private property must include an easement to the jurisdiction for use and maintenance or an agreement providing for public use and an acceptable level of maintenance by private parties. See Chapter 12 for additional information.

Construction Standard: SUDAS Specifications.

Preliminary Plan/Information Development

A. General

Prior to initiating design of a project, several elements need to be investigated in order to prevent a redesign after the first submittal to the jurisdiction and the subsequent rejection of that submittal.

One of the first elements to determine is whether the project being designed is a public improvement or a private contract. A public improvement involves construction work under control of a governmental entity that is paid for in whole or part by governmental funds. It may be vertical infrastructure, which includes buildings and all appurtenant structures, utilities, incidental street improvements, sidewalks, site development, trails, and parking facilities. Or it may be horizontal infrastructure, which includes street, bridge, culvert, and utility work not defined as vertical infrastructure. Formal definitions and further information can be found on the Iowa DOT's website.

Further information and requirements related to public contracts may be found in the following Iowa Code sections:

- Publication requirements: 362.3
- General Obligation bonding: 384.23 - 384.36
- Special Assessments: 384.37 - 384.67
- Iowa Bidders Preference: 73.1 - 73.2; 73A.21(4)
- Engineering Documents: 542B.16
- Contract Letting Procedures: 26.1 - 26.15, 314.1, 384.103
- Sales Tax Exemption: 423.3
- Surety Bonds, Retainage, Payment: 573.1 - 573.28

The private contract work can involve facility design that ultimately will be transferred to the jurisdiction and thus must meet the requirements of the jurisdiction, or facility design that must meet the requirements of the jurisdiction but will remain a private facility.

B. Bidding Public Improvements

For public improvement contracts involving estimated construction costs over the bid threshold values, either established according to Chapter 314.1 (2) of the Iowa Code or the jurisdiction's requirements or on those private contracts required by the jurisdiction, a licensed engineer in the State of Iowa must certify the construction plans and specifications. Additional information can be found on the Iowa DOT's website.

If the jurisdiction is going to be the contracting authority and formal bids are required, the plans and specifications must be completed and ready for the jurisdiction to meet specific timing. The jurisdiction's governing body must approve the plans and specifications at a public hearing if the project's estimated costs exceed the bid threshold and advertise the proposed public improvement. The advertisement includes posting a public notice to bidders no less than 13 and not more than 45 days before the date of filing bids in a relevant contractor plan room service with statewide circulation, in a relevant construction lead generating service with statewide circulation, and on an internet site sponsored by either the jurisdiction or a statewide association that represents governmental entities. These timeframes may impact the document submittal and review process if

specific dates must be met. Formal procedures for opening bids should be established in consultation with the city attorney.

In general, the plans and specifications will be developed for a project identifying specific materials and processes to accomplish the work. The SUDAS Specifications allow the contractor to choose some materials unless the jurisdiction has limited that ability. Other contracts include bidding specific alternates. This allows the jurisdiction to select a particular material or process based on a predetermined method of analysis. The elements to be used in the analysis should be identified within the special provisions of the contract as a means of minimizing controversy.

Some contracts may be set up to have a base bid with a series of bid alternates. This is handled in the project by listing the alternates as separate work items. If this process is used, the project special provisions should identify how the bid alternates will be considered for contract award.

C. Specific Jurisdictional Requirements

As a part of initiating a project that will be submitted to a jurisdiction for review/approval, it is important to ascertain if the jurisdiction has special requirements, such as:

- Supplemental information/requirements for the SUDAS Design and Specifications Manuals?
- Any local jurisdiction master plan?
- Who is the jurisdiction's contact for this project?
- Specific design software or a specific version of the software?
- Specific layer designations for the electronic plans?
- Are 3-D plans required and what should the submittals include?
- Specific legend requirements to be used on the construction plans?
- Specific requirements for survey data collection?
- Specific plan sheet designations and plan organization requirements (i.e. colored plans, sheet size, etc.)?
- Specific requirements for vertical and horizontal scale on the construction plans?
- Specific construction plan submittal requirements, such as number of printed sets and media type?
- Submittal and review process?
- Specific products to be used or prohibited?
- Specific review/approval process if a new technology is proposed?
- If not stipulated in the supplemental information, how far should utility services extend beyond the right-of-way line?
- Are manholes required where private storm sewers are connected to the public storm sewer system?
- Minimum width requirements for permanent utility easements or a specific form for the easement?
- Requirements for a permanent easement for access to and maintenance of fire hydrants on a private fire line?
- Permitting authority from the Iowa DNR for sanitary sewer and water main construction projects? If so, do you have special permit forms?
- Specific information/criteria needed on the as-built plan?
- Criteria for changes to plans and submittal of variances to design elements?

Other elements that are specific to the type of project may need to be determined. One method to get the needed information is to schedule a pre-project planning meeting with the jurisdiction staff.

Submittal Procedures

A. Construction Plans and Specifications Submittal Procedure

1. **General:** Project engineers and developers seeking approval and acceptance of civil engineering reports, construction plans, and site plans are required to follow the procedures as established by each jurisdiction. These procedures are generally outlined in this section. The adherence to these procedures will assist in an efficient review of engineering plans and reports. Each jurisdiction reserves the right to modify certain procedures to fit their unique situation.

2. **Pre-submittal Meetings:** Each jurisdiction may conduct pre-submittal meetings at which developers may ask questions and obtain direction and/or information from the jurisdiction's staff. These meetings may be used by the developer to obtain very basic information about procedures, practices, or standards as a basis on which to begin development planning. Alternatively, the applicant may use the meeting as a final check by staff to verify a specific type of application is complete.

3. **Submittal of Public Improvement and Development Plan Application:** The development plan application, site plans, revised site plans, and other public improvements submitted to the jurisdiction for any project, subdivision, or planned unit development, whether residential, retail, commercial, or industrial, should include drawings for public improvements including any impact reports. Initial plan submittals must be marked as "Draft" or "Not for Construction."

4. **Engineering Review Objective:** The primary objective of the jurisdictional engineer is to ensure conformance with the adopted codes, standards, and master plans, as well as to ensure coordination with adjacent projects, developments, and landowners. The jurisdictional engineer also completes the initial review and issues comments according to the schedule prescribed by the jurisdiction to prevent delaying further review by other agencies or impact any other scheduling, such as subdivision platting.

5. **Results of Engineering Review:** After the review is completed, the check prints and comments report will be returned to the project engineer.

6. **Revision of Engineering Plans and Reports:** The project engineer will make all the revisions requested on the original plans/report and re-submit until all comments are sufficiently addressed. Seriously deficient plans may require several reviews prior to approval.

7. **Revision of Plans and Reports:** When submitting revised plans, drawings, or reports to the jurisdictional engineer, the re-submittal must contain the following.

   a. The revised plans for review.

   b. All check prints from previous reviews with copies of the previous plans. Notations should be made after each comment if the correction was made or justification why a comment is not valid.

   c. If fees are applicable, they must accompany the application.

   If all of the above are not submitted, the re-submittal may be returned without further action until such time as the submittal is complete.

8. **Order of Processing:** The following policy regarding order of processing (priority) will be used for all submittals. Applications are normally processed on a first come basis.

   a. Final media for approval.

   b. Resubmittal, complete package.

   c. Initial submittal, complete package.

   When plans are returned to the project engineer for lack of adequate information, or in the event of re-platting or major site plan revisions after the initial review, the re-submittal will be considered a new submittal rather than a return. A thorough technical review will be started by the jurisdiction when adequate information is provided.

9. **Approved Plans:** When plans or reports have been conditionally approved by the jurisdictional engineer, the project engineer should submit a minimum of two 11 by 17 inch copies (or as required by the jurisdiction) of the final plans, certified according to the Iowa Code. Meet the jurisdictional engineer's requirements to ensure all lettering and details are legible. Final construction plans are to be filed as a PDF file on a disk, flash drive, by email, cloud storage, or other form of media as required by the jurisdiction. If the project relates to a development, original engineering plans for public improvements may be approved by the jurisdictional engineer, only after the approval of the preliminary plat, the land dedication, and the subdivision improvements agreement associated with property.

B. Updates to Previously Approved Plans

1. Construction plans, pavement design reports, drainage reports, site plans, and other documents are approved initially for 12 months, or as specified by the jurisdiction. If not constructed during this time period, they automatically become void and must be updated to current criteria before any further permits can be issued. The jurisdictional engineer may grant an extension to the construction plans, pavement design reports, and drainage report validity period; provided a) the development plan, construction plans, or reports have not substantially changed, and b) that other conditions affecting the development site have not substantially changed or do not require a modification to approved plans or specifications.

2. Whenever updates or revisions to previously approved construction plans, specifications, or drainage reports are necessary, the project engineer will submit updates or revisions through the normal document submittal process. After all jurisdictional engineer comments and revisions have been incorporated, the construction plans or reports containing revisions may be submitted for approval.

C. Submittal Checklist

At a minimum, the following documents should be submitted for review and approval when preparing final construction plans for public improvements or private improvements subject to approval by the jurisdiction.

1. Street plan and profile.
2. Storm sewer plan and profile, including details for all structures and material specifications.
3. Culvert plan, profile, and construction detail for structures.
4. Permanent traffic signing and striping plan.
5. Pavement design where required.
6. Grading and erosion control plan.
7. Sanitary sewer plan and profile including details for all structures, material specifications, and sewer treatment agreement with sewer capacity calculations. Completed permit forms.
8. Water construction plans as approved by the governing jurisdiction or utility with a water supply agreement and completed permit forms. If these plans represent lines to be installed with the proposed roadways, the plans must be approved by the jurisdictional engineer.
9. Plan for traffic control during construction.
10. Engineering review and approval fee, if required.
11. All appropriate permits from the jurisdiction and state and federal agencies.
12. Identification of right-of-way and permanent or temporary easements along with any conditions of use.
13. Stormwater management plan and SWPPP.
14. Geotechnical report.
15. Accessible pedestrian facility plans and documentation.
16. Design variance, if applicable.

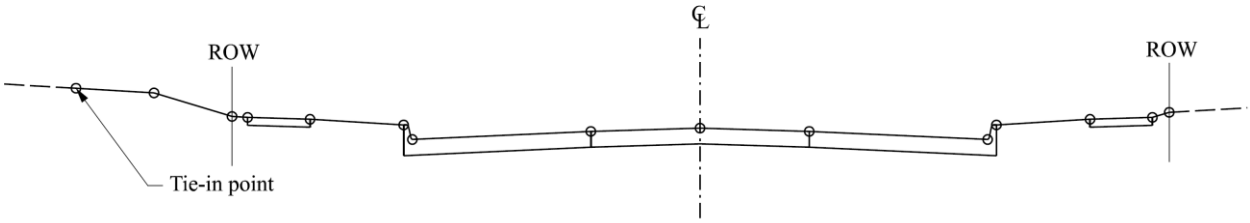
Detailed Plans for Construction of Public Improvements

A. Public Improvement Plan Sheet Requirements

Detailed reproducible plans, certified by a licensed professional engineer in the State of Iowa, should be filed with the jurisdiction for all work involved in public improvement contracts and/or agreements.

When providing computer aided design (CAD) files, ensure they contain all break lines used to develop a 3D file showing coordinates (x,y,z) needed to accurately represent the paper design plans. Break lines should be shown according to the cross-section below. In addition, break lines within the 3D file should indicate all locations within the project limits where there is a change of slope.

The 3D file should be available to potential bidders at the same time that the paper plans are available to the bidders and filed with the jurisdiction. A disclaimer statement should also be included that indicates the paper copy on file with the agency is the official copy and the contractors are responsible for constructing the project to those plans.



Detailed plans should comply with the following general requirements.

1. **Plan Organization:** Plan sheets should be arranged consistently from one plan set to another. In general, the sheets should be arranged according to Table 1D-1.01, which is consistent with Iowa DOT plans, where possible.

   Different plan sheet arrangements may be used to better identify such elements as utility conflicts, temporary pavement markings in conjunction with staging, or others that will provide greater clarity to the contractor. Verify with jurisdiction how to designate plan sheets.

Table 1D-1.01 - Plan Organization

Page Number	SUDAS Description	Iowa DOT Description (Iowa DOT Design Section 1F-1)
A	Title Sheets	Title Sheets
B	Typical Cross-sections and Details (including as-built typical cross-sections)	Typical Cross-sections and Details (including as-built typical cross-sections)
C	Quantities and General Information	Quantities and General Information
CD	*Not typically used*	Drainage Structure Quantities Tabulation
CS	*Not typically used*	Geotechnical Quantities Tabulation
D	Mainline Plan and Profile Sheets	Mainline Plan and Profile Sheets
E	Side Road Plan and Profile Sheets; Open Channel Profile Sheets	Side Road Plan and Profile Sheets
ED	*Not typically used*	Drainage Channel and Dike Plan and Profile Sheets
F	*Not typically used*	Detour Pavement, Temporary Pavement Sheets
G	Survey Sheets (reference ties and bench marks)	Survey Sheets (reference ties and bench marks)
H	Right-of-way Sheets	Right-of-way Sheets
J	Traffic Control and Staging Sheets	Traffic Control and Staging Sheets
K	Landscaping Sheets	Interchange Sheets
L	Geometric, Staking, and Jointing Sheets	Geometric, Staking, and Jointing Sheets
M	Buried Pipe Sheets	Storm Sewer Sheets
MSA	*Use M instead of MSA*	Sanitary Sewer Sheets
MWM	*Use M instead of MWM*	Water Main Sheets
MIT	Wetland Sheets	Wetland Sheets
N	Traffic Signal Sheets	Traffic Signal Sheets
P	Lighting Layout Sheets	Lighting Layout Sheets
Q	Soil Sheets	Soil Sheets
QR	*Not typically used*	Soil Borrow Sheets
R	Erosion and Sediment Control (SWPPP)	Sediment Control Quantities Tabulations
RR	*Not typically used*	Erosion Control Plan Sheets
RU	*Not typically used*	Erosion Control Detail Sheets
S	Sidewalk Sheets	Sidewalk Sheets
SPS	*Not typically used*	Bridge Plan Soils Sheets
T	Earthwork Quantity Sheets	Earthwork Quantity Sheets
U	Design Detail Sheets, Modified Standards, and Detail Sheets	Design Detail Sheets, Modified Standards, and Detail Sheets
V	*Not typically used*	Bridge and Culvert Situation Plans
W	Mainline Cross-sections	Mainline Cross-sections
X	Side Road Cross-sections	Side Road Cross-sections
Y	*Not typically used*	Ramp Cross-sections
Z	*Not typically used*	Detour Cross-sections

All of the above mentioned sheets will not necessarily occur in every plan, but those that do should remain in the same relative order and use the letter designation listed above.

2. **Plan Sheet Material:** Plans filed with the jurisdiction should be on media designated by the jurisdiction.

3. **Plan Sheet Size:** Check with the jurisdiction for appropriate plan sheet sizes.

4. **Title Sheet:** The following information should be shown when applicable.

   a. Project name and vicinity map showing general location.

   b. Jurisdiction's name.

   c. Small scale vicinity map showing project location.

   d. Index (a complete sheet index is to be shown).

   e. File number/project number/contract number (to be provided by the jurisdiction).

   f. Engineer's firm name and address.

   g. Signature line for jurisdiction authority.

   Sample:

   REVIEWED:

   _____

   Jurisdiction Authority Title Date

   h. Sheet number and total number of sheets.

   i. All official plans should be certified according to the requirements set forth by the Iowa Engineering and Land Surveying Examining Board.

   j. Note that projects should be constructed according to the SUDAS Standard Specifications and any applicable supplemental specifications provided by the jurisdiction.

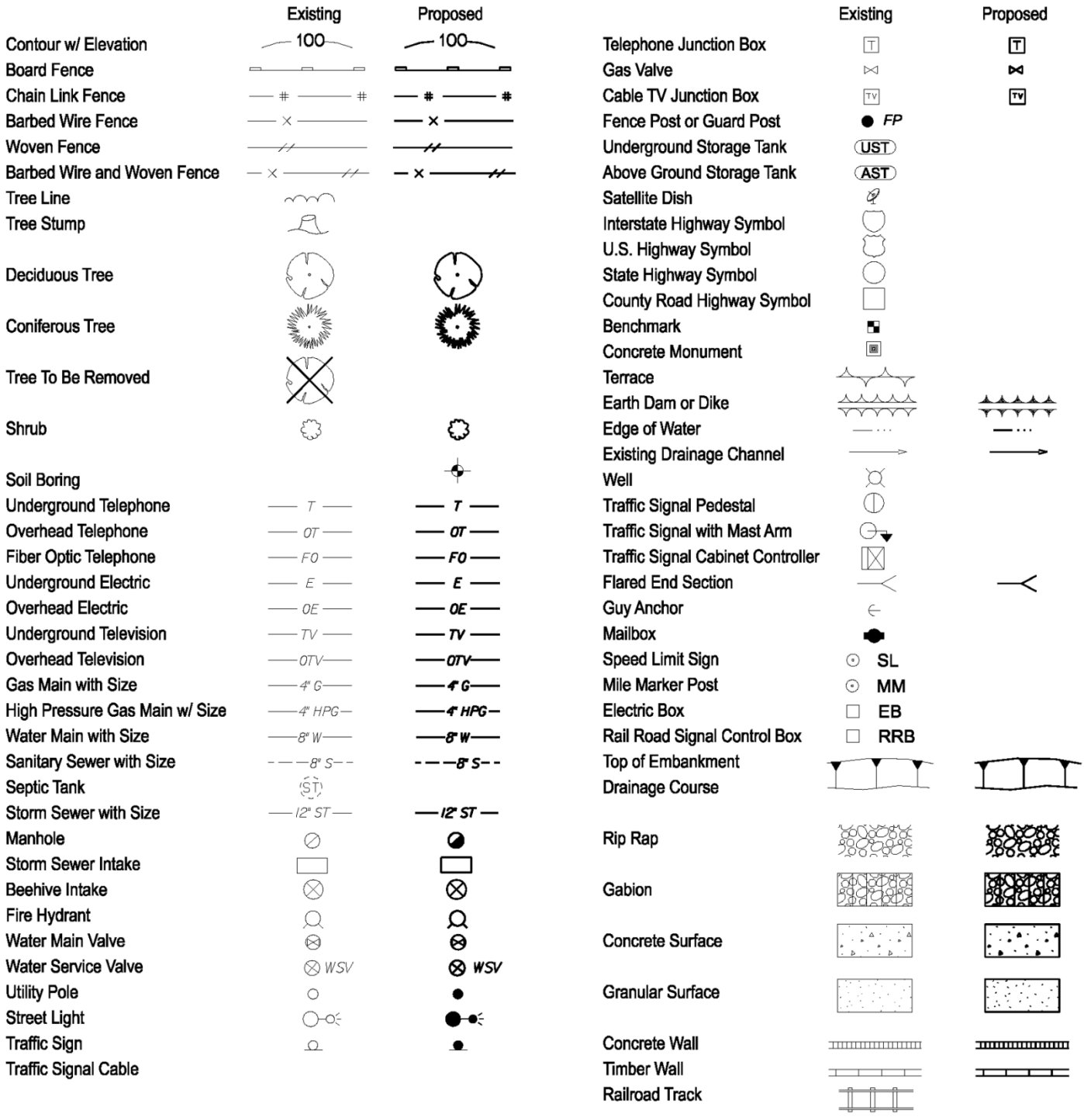
   k. Listing of standards (if applicable).

   l. Owner/developer (if applicable).

   m. Legend (see Figure 1D-1.01 for sample legend).

      The jurisdictional engineer may require different legends depending on the designated design software package. The project engineer should ensure that the completed design plan complies with the jurisdiction's requirements for symbols and the design information to be placed on specific layers within the software program.

Figure 1D-1.01: Sample Legend



5. **Title Block:** Place the following information on the right edge or bottom of the sheet.

    a. The name of the project

    b. Project engineer

    c. Sheet title

    d. Date

    e. Space that denotes revisions

    f. Page numbers

    g. Names or initials of persons designing, detailing, and checking plans

6. **Plan Scale:** Scale to be approved by the jurisdictional engineer. A bar scale is required on each drawing.

B. General Information to be Shown on the Construction Plans

1. Beginning (B.O.P.) and ending (E.O.P.) of project.

2. Street names.

3. Right-of-way widths and legal descriptions as required.

4. Legend and abbreviations as part of title sheet requirements.

5. Adequate witnesses and horizontal and vertical controls so surveyor can lay out project plans. Show all controls at actual locations on the plans. Benchmarks and ties.

6. Lot numbers, subdivision names, and project numbers, as applicable.

7. Lot dimensions (along right-of-way or easements).

8. North arrow up or to the right, when applicable.

9. Existing and proposed utilities, including type, size, and location.

10. Proposed improvement locations, dimensions, and stations.

11. Station Bar (reference all improvements to same stationing). Stationing from left to right or bottom to top.

12. Existing trees, fences, walks, drainage structures, open channels, pavements, buildings, and other obstacles or improvements that could reasonably affect the work area.

13. Survey line or reference line shown on plan view with stations increasing from west to east or south to north, when practical.

14. Quantity estimate - separate sanitary sewer, storm sewer, other utilities, and paving quantities shown if they are detailed on same plan. Include estimate reference information listing any special requirements for each bid item.

15. Easements, both temporary and permanent.

16. Cross-sections - for subdivisions, existing and proposed finished contours may also be used.

17. Special details and special notes when required.

18. Plan view and profile. Profile should line up with plan stations whenever possible.

19. Plans for development work should contain a general note to construct the project according to the SUDAS Specifications and any supplemental specifications of the jurisdiction.

20. Make reference to soils report.

21. Traffic control signs and markings will follow the latest edition of the MUTCD. When it is required by the jurisdiction to maintain traffic during construction, show stage construction and special requirements on the plans. If required, show signing, street closures, and/or detours on traffic control sheet.

22. Permanent signing.

23. SWPPP and temporary and permanent erosion control measures proposed.

24. Other information deemed necessary by the engineer certifying the plans.

C. Detailed Sanitary and Storm Sewer Plans

1. Stationing, location, and type of all manholes, intakes, or other structures.

    a. Show structure designation on the plans.

    b. Show location on the plans and reference survey line or centerline.

    c. Comply with the SUDAS Specifications for the type of structure required.

2. Details should be shown for all structures that are not standard in the SUDAS Specifications.

3. Plan and profiles of all sewer lines and existing and proposed ground line above sewer.

4. Size, length, and grade of sewers in profile.

5. Type of pipe materials and strengths, if different from SUDAS Specifications, or if specific materials are required.

6. Invert elevations at all intakes, manholes, and other structures in profile.

7. Location, size, and type of all sewer stubs, wyes, or tees. Reference stub locations to lot corners. When risers are to be installed, show riser location and size.

8. Estimates should include all length of pipe stubbed out from structures.

9. Rim elevations of manholes, intakes, and other structures.

10. Ensure all castings comply with the jurisdictional requirements on sewers to be maintained by the jurisdiction.

11. Manholes should be identified with a numbering system on plan and profile. Structure sizes and casting sizes to be included by schedule or note on the plans.

12. Class of pipe bedding.

13. Existing utilities or other underground features that could reasonably affect the construction and maintenance of the sewer.

14. Storm sewer design calculations need to be submitted showing drainage area, flow patterns, and flows for design storms. (Hydraulic grade line data).

15. Show storm sewer outlet protection dimensions and locations where apron guards are required.

D. Detailed Open Channel and Drainageway Plans

1. Stationing and flow line elevation at beginning and end of open channel construction.

2. Plan and profile of drainage open channel.

3. Size, type, length, and grade of open channel and alignment.

4. Typical sections showing open channel dimensions, backslopes, and invert and slope treatment.

5. Invert elevations at all structures.

6. All special structures detailed on plans.

7. Criteria for hydraulic design data and elevations.

8. Cross-sections and contour map showing existing ground and finished grade.

9. Permanent and temporary erosion controls.

E. Detailed Paving Plans

1. Minimum 100 feet station intervals and profile elevations at a minimum of 50 feet intervals on tangents and 25 feet intervals at curves. Show station of the centerline of all intersecting streets.

2. Show street profiles and existing ground elevations in the profile view and the curb line in the plan view. The profile should show top of curb tangent grades, vertical curve data, and grade break data. Label any cross slope transitions and special shaping areas.

3. Pavement width (back-to-back).

4. All radii at returns (may be specified in general note if all radii are same).

5. Expansion joint locations, if applicable, on plan view.

6. Horizontal curve data should include centerline PC, PT, PI, delta angle, arc length, degree of curve, tangent length, and radius.

7. Typical cross-section showing baseline, referenced profile, subgrade treatment, pavement thickness, jointing, sidewalk, parking slope, foreslopes, backslopes, cross slopes, any break in ground line or grade, right-of-way line, and dimension of the location of the roadway with the right-of-way line.

8. Vertical curve data should include station and elevation of PI, PC, PT, K-value, low point, and length of curve. Elevations should be given on curves at 25 foot spacing.

9. Intersection details showing drainage and typical joint patterns, if applicable.

10. Location and type of standard sidewalk ramps.

11. Special subgrade or pavement treatment.

12. Location of existing pavement, including elevation and grades.

13. Pavement marking plan, if applicable.

F. Grading Plans/Erosion Control Plans

1. Survey control data.

2. Cross-sections and/or existing and proposed contours and spot elevations, as required.

3. Storm sewer/detention appurtenances.

4. Vicinity map showing haul routes with dates, if any, and borrow areas.

5. Total site area (disturbed area) with construction staging to minimize the area disturbed at any one time.

6. Stationing as it relates to paving plans, sewer, or drainageway plans.

7. Geometric dimensions.

8. Soils data and soil boring location(s) when applicable.

9. Erosion control information and location of any special erosion control measures such as silt fences, silt traps and basins, rip rap or gabions, vegetation and trees to remain, stockpile areas, terraces, contour furrows, temporary diversions, grading phases, etc. See Chapter 7 for a detailed listing of the required contents of Iowa DNR Stormwater Pollution Prevention Plan.

10. Topsoil stockpile and stabilization measures and vegetation areas to be preserved.

G. Water Main Plans

The plans for water mains and appurtenances should show all appropriate physical features adjacent to the proposed water mains along with horizontal and vertical controls and hydrant coverage. Other utilities such as sanitary and storm sewers, manholes, etc. should be shown on the plans with horizontal and vertical separation distances. Design details for other utilities that do not affect the water main should not be shown on water main plans.

1. Stationing, location, and type of all fittings, valves, and fire hydrants.

2. Details should be shown for all items that are not standard in the SUDAS Specifications.

3. Plan and profiles of all water lines and the existing and proposed ground line above the water main.

4. Size, length, and grade of water mains in profile.

5. Type of pipe materials and strengths if different from the SUDAS Specifications or if specific materials and fire hydrants are required.

6. Elevations at all structures in profile.

7. Location, size, and type of all water service stubs. Stub locations should be referenced to lot corners.

8. Estimates should include length of pipe stubbed out from valves.

9. Fire hydrants should be identified with numbering system on plan and profile.

10. Class of pipe bedding if different than the SUDAS Specifications.

11. Existing utilities or other underground features that could reasonably affect the construction and maintenance of the water main.

H. Railroad Crossings

If a railroad crossing is within the project limits, the project engineer should notify the railroad with a copy of the plans and specifications a minimum of 4 months prior to the project letting. If the project limits contain construction of railroad facilities that will be performed by the railroad's forces, the project engineer will state this in the contract documents. The contract documents will state the contractor's limits of responsibility and allow sufficient time in the schedule for the work to be accomplished by the railroad; and that the contractor must coordinate its activities with the railroad or any subcontractors the railroad mandates using during construction. The contractor must be made aware of any permit and insurance requirements imposed by the railroad.

The project engineer should notify the railroad of the following, immediately after awarding the contract:

1. Federal Railroad Administration (FRA) crossing number*

2. Jurisdiction project number

3. Contractor's name, mailing information, and phone number

4. Contractor's contact person

5. Anticipated start date

6. Number of working days

7. Number of days it is believed the contractor will impact the railroad.

8. Date of preconstruction meeting

* For help in identifying the FRA number, see Iowa DOT Office of Rail Transportation's Highway-Railroad Crossing Identifiers webpage.

I. ADA Ramps

1. Ramp design must comply with PROWAG requirements or justification acceptable to the jurisdictional engineer.

2. Delineate all ramp components including ramps, turning spaces, transitions, passing spaces, detectable warning panels, and special shaping areas.

3. Show elevations at top and bottom of ramps, corners of turning spaces and transition areas, and all grade breaks.

4. Show table of slope and distance between all critical points.

Items to be Specified on Plans or in Contract Documents

The SUDAS Specifications specify many items and methods that can be used for the construction of improvements. Following is a list of items in the SUDAS Specifications that are to be noted on the construction drawings and/or in the special provisions whenever there is to be a deviation from the standard requirements of the specifications. This information may include specifying pipe sizes and materials, who is responsible for providing compaction testing, as well as many others.

The project engineer should review the following list and the SUDAS Specifications to make sure all items that are necessary to construct the project are specified on the plans and/or in the special provisions. Please note - this list is not all-inclusive.

Section 2010 - Earthwork, Subgrade, and Subbase

2010, 1.08 D, 1, a	Specify whenever the depth of cut for stripping and salvaging topsoil is other than 8 inches.
2010, 1.08, E	Specify the class of excavation as Class 10, Class 12, or Class 13.
2010, 1.08, E, 1, b, 2)	When the truck count method is to be used for measuring Class 10 or Class 13 excavation, specify if the shrinkage factor is other than 1.35.
2010, 1.08, E, 4	Specify whenever stripping, salvaging, and spreading 8 inches of topsoil is NOT a pay item and is included in the payment of Class 10, Class 12, or Class 13 Excavation.
2010, 1.08, F, 1	Specify whenever below grade excavation (core out) will NOT be measured and paid as extra work.
2010, 1.08, J, 3	Specify whenever removal of pipe and conduits will include capping.
2010, 1.08, L	Specify when the Contractor is responsible for compaction testing.
2010, 2.01	Specify use of compost-amended or off-site topsoil if on-site topsoil is NOT to be used.
2010, 2.02, C, 3	Specify the limits of Class 13 excavation.
2010, 2.04, C, 5	Specify whenever Type 2 geogrid is to be used in lieu of Type 1.
2010, 3.03, F, 1	Specify the desired depth for removal of unsuitable or unstable materials.
2010, 3.04, D	Specify whenever Type A compaction is to be used in lieu of compaction with moisture and density control.

2010, 3.05	Specify whenever and where unsuitable soils will be allowed in the right-of-way.
2010, 3.06, A	Specify if granular stabilization materials or subgrade treatment is to be used in lieu of select subgrade materials.
2010, 3.07	Specify the type of subgrade treatment (lime, cement, fly ash, asphalt, geogrid, or geotextiles) to be used.
2010, 3.07, A, 1	Specify the depth and rate of incorporation of the subgrade treatment material (lime, cement, fly ash, or asphalt).
2010, 3.07, A, 2	Specify the areas requiring subgrade treatment.
2010, 3.08, B	Specify the type and depth of subbase.
2010, 3.09, A	Specify when the Contractor is responsible for compaction testing.
Figure 2010.102	Specify whenever Type A compaction is desired in lieu of compaction with moisture and density control.

Section 3010 - Trench Excavation and Backfill

3010, 1.08, F	Specify when the Contractor is responsible for trench compaction testing.
3010, 2.03, B	Specify whenever Class V material can be used as other than topsoil.
3010, 2.06, D	Specify if foamed cellular concrete may be substituted for flowable mortar.
3010, 3.05, A, 6	Specify if concrete, flowable mortar, CLSM, or foamed cellular concrete is to be used in lieu of other bedding materials.
3010, 3.05, B, 1, a	Specify if granular bedding material is to be used for pressure pipes.
Figure 3010.101	Specify when over-excavation and foundation stone will be required.
Figure 3010.105	Specify when and where to install a waterstop.

Section 3020 - Trenchless Construction

3020, 2.02, A	Specify the wall thickness of casing pipe. See Section 9C-1.
3020, 2.02, C	Specify inside diameter of casing pipe.
3020, 2.05, B	Specify where special fill materials will be used.
3020, 3.04, A, 2, b	Specify the installation deviation tolerances of casing pipe if different than those included.

3020, 3.04, A, 2, b, 2), b) Specify the minimum depth of pressurized pipe.

3020, 3.04, D	Specify when to fill the annular space between the carrier and casing pipe with flowable mortar, CLSM, or foamed cellular concrete.

Section 4010 - Sanitary Sewers

4010, 1.08, A, 1, c	Specify if a pipe lining is to be used.
4010, 1.08, A, 2, c	Specify if a pipe lining is to be used.
4010, 1.08, B, 1, c	Specify if a pipe lining is to be used.
4010, 1.08, B, 2, c	Specify if a pipe lining is to be used.
4010, 1.08, E	Specify the distance beyond the right-of-way line that the sanitary sewer service stub is to extend, if other than 10 feet.
4010, 1.08, H, 3	For removal of sanitary sewer, specify if capping is required.
4010, 2.01, A, 1	For solid wall PVC pipe, 8 inch to 15 inch, specify if SDR 35 may be used.
4010, 2.01, C, 2, a	For corrugated PVC, 8 inch to 10 inch, specify if a minimum pipe stiffness of 46 psi may be used.
4010, 2.02, A	Specify when joint restraints for ductile iron pipe force mains are required.
4010, 2.02, B	Specify when restrained joints are required for PVC force mains.
4010, 2.02, E, 2	Specify the color of plastic post used for tracer wire station.
4010, 3.02, B, 7	Specify the location for installation of wye or tee service fitting.
4010, 3.05, B, 2	Specify the location for any installation of a tracer wire station in addition to each end of the force main.
4010, 3.06, A	Specify the locations for installation of sanitary sewer service stub.
4010, 3.06, C	Specify the distance beyond the right-of-way line that the sanitary sewer service stub is to extend, if other than 10 feet.
4010, 3.06, C, 3	Specify the depth of sanitary sewer service stub at its termination, if other than 10 to 12 feet.
4010, 3.06, C, 5	Specify method of marking the end of the sanitary sewer service line.
4010, 3.08, B, 2	Specify when to fill an abandoned sanitary sewer with flowable mortar, foamed cellular concrete, or CLSM.
4010, 3.10	Specify where to provide sanitary sewer cleanouts.

Section 4020 - Storm Sewers

4020, 1.08, D, 3	Specify if capping is required for removal of storm sewer.
4020, 2.01, A, 3	Specify when to use a rubber O-ring or profile gasket in lieu of a tongue and groove joint wrapped with engineering fabric.

4020, 2.01, B, 3	Specify when to use a rubber O-ring or profile gasket in lieu of a tongue and groove joint wrapped with engineering fabric.
4020, 2.01, C, 3	Specify when to use a rubber O-ring or profile gasket in lieu of a tongue and groove joint wrapped with engineering fabric.
4020, 2.01, G, 1, d	Specify gage of corrugated metal pipe, if other than Iowa DOT Standard Road Plan DR-104.
4020, 2.01, I, 2	Specify gage of coated corrugated metal pipe, if other than Iowa DOT Standard Road Plan DR-104.
4020, 3.04, A	Specify any special linear trench drain installation requirements.
4020, 3.05, B, 2	Specify the use of a rubber O-ring or profile gasket.
4020, 3.06	Specify where to install pipe aprons, apron footings, and apron guards.
4020, 3.09, B, 2	Specify when to fill a line to be abandoned with flowable mortar, foamed cellular concrete, or CLSM.

Section 4030 - Pipe Culverts

4030, 2.01, C, 5	Specify gage of the structural plate culverts, if other than Iowa DOT Standard Road Plan DR-104.
4030, 3.02, A	Specify the locations to install pipe aprons.
4030, 3.02, B	Specify the locations to install apron footings.
4030, 3.02, E	Specify the locations to install apron guards.
Figure 4030.225	Specify when to extend the bottom cross bar through the apron.

Section 4040 - Subdrains and Footing Drains

4040, 1.08, A, 3	Specify the use of engineering fabric.
4040, 1.08, E	Specify the distance beyond the right-of-way that the storm sewer service stub is to extend, if other than 10 feet.
4040, 3.01, A, 1	Excavate trench and provide pipe bedding and backfill as shown on the figures. Install engineering fabric if specified in the contract documents.
4040, 3.02, B	Specify the use of engineering fabric.
4040, 3.03, A	Specify the locations to install footing drain service stubs.
4040, 3.03, C	Specify the distance beyond the right-of-way that the footing drain service stub is to extend, if other than 10 feet.

Figure 4040.231	For Type 1 subdrains, specify Case A, B, or C. For Type 2 subdrains, specify Case D or E and the pipe diameter. When using Case A or Case D, specify the distance from back of curb. For both types, specify when engineering fabric is to be used.
Figure 4040.232	Specify the type of subdrain cleanout to be used.
Figure 4040.233	Specify when to use a CMP outlet.

Section 4050 - Pipe Rehabilitation

4050, 1.07, B	Specify if water will not be provided for cleaning and installation of cured-in-place pipe by the Jurisdiction at no cost.
4050, 1.08	Specify if bypass pumping is not included in the measurement and payment of other bid items. *Applies to C, 1, c; D, 3; E, 1, c; E, 2, c; F, 1, c; F, 2, c; F, 3, c; and F, 4, c.* {Note - 1.08, G is the bid item for bypass pumping}.
4050, 1.08, A, 1, c	Specify if unit price will include disposal and associated costs for all debris removed from sewer.
4050, 1.08, E, 2, a	Specify the length of service pipe to line.
4050, 2.01, C, 2	Specify if the CIPP structural requirements are not fully deteriorated conditions.
4050, 2.01, Table 4050.01	Specify the ovality reduction factor and height of soil above pipe.
4050, 2.02, B	Specify the CIPP point repair liner length.
4050, 2.02, C	Specify if the ovality is a value other than 2%.
4050, 2.03, A, 1	Specify the distance the tube should extend from the sewer main into the service.
4050, 2.03, B, 2	Specify the service liner length.
4050, 2.03, E, 1	Specify if the cured-in-place service liner should be designed following different assumptions than those described in Table 4050.02.
4050, 2.03, Table 4050.02	Specify the depth of cover for each service repair location.
4050, 2.04, C	Specify when to provide a root deterrent chemical to control root regrowth.
4050, 2.07, B	Specify the materials to use for pipe replacement.
4050, 3.01, A, 6	Specify if the Contractor is to pay for disposal fees.
4050, 3.05, B, 1	Specify the length of the CIPP service repair.
4050, 3.06, B, 2	Specify if the length of the service line grouting plug should be a length other than 18 inches.
4050, 3.07, C, 1	Specify the materials to use for the replacement pipe.

Section 4060 - Cleaning, Inspection, and Testing of Sewers

4060, 2.01, B, 3	Specify the type of recording media that will be used to record the inspection.
4060, 3.03, A, 1	Specify whenever video inspection of storm sewers is not desired.

Section 5010 - Pipe and Fittings

5010, 1.08, C	Specify whether measurement of fittings will be made by count or by weight.
5010, 2.01, A, 1, b	Specify the minimum wall thickness for PVC pipe sizes over 24 inches.
5010, 2.01, A, 2	Specify joint type for PVC pipe if other than push-on.
5010, 2.01, B, 1, b	Specify the minimum wall thickness for DIP sizes over 24 inches.
5010, 2.01, B, 4	Specify joint type for DIP if other than push-on.
5010, 2.04, C	Specify when thrust blocks will be used for pipe sizes greater than 16 inches in diameter.
5010, 2.07, B	Specify the materials to use for water service pipe and appurtenances.
5010, 3.01, A, 3	Specify the lines and grades to install pipe with fittings.
5010, 3.01, A, 8	For pipes larger than 16 inches, specify when concrete thrust blocks are required in addition to restrained joints.
5010, 3.06, E	Specify the locations to install ground rods if other than adjacent to connections to existing piping.
5010, 3.07, B	Specify where to construct utility line supports.
5010, 3.08	Specify when the change of piping material is to be on the inside of the structure wall.
Figure 5010.101	Specify when to use the alternate method of thrust blocks at dead ends.

Section 5020 - Valves, Fire Hydrants, and Appurtenances

5020, 1.08, I, 3	Specify if the fire hydrant assembly is to be delivered to the Contracting Authority.
5020, 1.08, J, 3	Specify if the valve is to be delivered to the Contracting Authority.
5020, 1.08, K, 3	Specify if the valve box is to be delivered to the Contracting Authority.
5020, 2.01, A, 2	Specify whenever the opening direction for valves is clockwise.
5020, 2.01, D, 7	Specify the locations to use tapping valve assemblies.
5020, 2.02, B	Specify allowable manufacturer(s) of fire hydrant assemblies.

5020, 2.02, C, 5	Specify whenever the opening direction for fire hydrant assemblies is clockwise.
5020, 2.02, C, 6	For fire hydrant assemblies, specify the operating nut, pumper nozzle, nozzle threads, and main valve nominal opening sizes.
5020, 2.03, A	Specify the type of flushing device (blowoff) to be used.
5020, 2.03, B, 2	Specify the allowable manufacturer(s) for valve boxes.
5020, 3.02	Specify where to install and how to construct flushing device (blowoff).
5020, 3.04, D	Specify if exterior of a new fire hydrant barrel section will be painted a color other than matching the existing fire hydrant.

Section 6010 - Structures for Sanitary and Storm Sewers

6010, 1.08, A, 3	Specify if a manhole lining is to be used.
6010, 2.05, B, 2, b	Specify the use of engineering fabric.
6010, 2.06, B	Specify when to use a concentric cone on sanitary sewer manholes.
6010, 2.11, B, 1	Specify if sanitary sewer manhole exterior is to be coated.
6010, 2.11, B, 2	Specify whenever sanitary sewer manhole lining is required.
6010, 2.13, A, 1	Specify if steps are to be provided in manholes or intakes less than or equal to 20 feet deep.
6010, 3.01, D	Specify if intake lids are NOT to be set to match the longitudinal slope of the adjacent street.
6010, 3.01, J	Specify the type of casting to use for manholes and intakes, except for intakes that have a specific casting type identified on the figures. Specify if casting frame is to be attached to the structure with bolts.
6010, 3.02, B, 2	Specify if reinforcing steel is to lap other than 36 diameters.
6010, 3.04, A, 1	Specify when to install casting extension rings.
6010, 3.04, B, 3	Specify when existing casting may be reinstalled for minor adjustment of existing manhole or intake.
6010, 3.04, C, 4	Specify when existing casting may be reinstalled for major adjustment of existing manhole or intake.
6010, 3.05, C, 1, a	Specify whenever a knockout opening is allowed in lieu of a cored opening.
6010, 3.05, C, 1, b	Specify if sanitary sewer service is NOT required to be maintained at all times when connecting a sanitary sewer to existing manhole or intake.
6010, 3.05, C, 3	Specify whenever a knockout opening is allowed in lieu of a cored opening.

6010, 3.06, A	Specify if removal of manhole or intake is other than to a minimum of 10 feet below top of subgrade in paved areas or 10 feet below finished grade in other areas.
6010, 3.06, B, 3	Specify when to fill abandoned pipe line with flowable mortar or controlled low strength material.
Figure 6010.501	Specify when Type Q grate is to be used in lieu of Type R.
Figure 6010.502	Specify when Type Q grate is to be used in lieu of Type R.
Figure 6010.603	Specify when Type Q grate is to be used in lieu of Type R.

Section 6020 - Rehabilitation of Existing Manholes

6020, 2.02, A	Specify the thickness of the in-situ manhole replacement wall.
6020, 2.02, C	Specify whenever the Contractor is required to provide a PVC or PE plastic liner for in-situ manhole replacement.
6020, 3.01, C	Specify when the use of a urethane chimney seal is allowed.
6020, 3.02, B, 3	Specify whenever a plastic liner is to be installed in an in-situ manhole replacement.

Section 6030 - Cleaning, Inspection, and Testing of Structures

6030, 3.04, A, 1	Specify when exfiltration testing is required for sanitary sewer manholes in lieu of vacuum testing.

Section 7010 - Portland Cement Concrete Pavement

7010, 2.01, E	Specify the use of an intermediate aggregate for concrete.
7010, 2.01, L, 2	Specify the type of performed expansion jointing filler or sealer to use if NOT using a resilient filler.
7010, 2.02, A, 1	Specify the type of Class C or Class M mix to use.
7010, 2.02, C, 2	Specify the type and amount of supplementary cementitious material in the mix.
7010, 3.01, C, 1, c	Specify the use of stringless paving.
7010, 3.02, H, 5, a	Specify when a textured finished surface other than an artificial turf or burlap drag is desired (i.e. surface tining).
7010, 3.02, H, 5, b	Specify when surface tining is required. *Note - longitudinal tining is listed as the default.*
7010, 3.02, I, 1, a	Specify when the use of a linseed oil solution is required.
7010, 3.02, J, 1, a	Specify the type and locations for construction of joints.

7010, 3.02, J, 2, i	Specify when to use wet sawing for dust control.
7010, 3.02, J, 3, a	Specify the location of longitudinal and transverse construction joints.
7010, 3.02, J, 4, a	Specify the location of expansion joints.
7010, 3.07, C, 2, a	Specify when the use of a profilograph for pavement smoothness is required.
Figure 7010.101	Specify when to use Detail D-1, D-2, or D-3.

Section 7011 - Portland Cement Concrete Overlays

7011, 2.01, L, 1	Specify the mass per unit area.
7011, 3.02, E, 3, a	Specify the high spots in the existing asphalt surface to be milled.

Section 7020 - Hot Mix Asphalt Pavement

7020, 1.08, A & B	Specify if measurement of HMA pavement is by ton or square yard.
7020, 1.08, C & D	Specify if measurement of HMA base widening is by ton or square yard.
7020, 3.05, B, 1	Specify when the use of profilograph for pavement smoothness is required.
7020, Table 7020.05	Specify if the field laboratory air voids target value is other than 4%.

Section 7021 - Hot Mix Asphalt Overlays

7021, 2.04, A	Specify the asphalt binder grade.
7021, 3.01, A	Specify the milling depth, cross-section, or profile.

Section 7030 - Sidewalks, Shared Use Paths, and Driveways

7030, 1.08, H, 2	Specify whether granular surfacing for driveways will be computed in square yards or tons.
7030, 1.08, I, 1	Specify whenever the Contractor will be responsible for concrete compression or HMA density testing.
7030, 2.03, A	Specify color and surface texture of clay brick pavers, or select from samples submitted by the Contractor.
7030, 2.03, B	If concrete pavers are to be used, specify the material requirements.
7030, 2.04, B	Specify the use of a pre-mixed high performance cold mix in lieu of an HMA setting bed.
7030, 2.06	Specify the use of colored cement for brick/paver joint filler.
7030, 3.01, A-C	Specify removal limits of sidewalks, shared use paths, driveways, bricks, and curbs.

7030. 3.01, E	Specify the locations to grind or saw existing curbs to install sidewalks, shared use paths, and driveways.
7030, 3.04	Specify the line and running slope to construct sidewalks and shared use paths. Specify the cross slope.
7030, 3.04, F, 2, a, 1)	Specify the spacing for transverse joints in shared use paths, if other than equal to the width of the shared use paths.
7030, 3.05	Specify the cross slope.
7030, 3.06, A, 2	Specify the cross-section and patterns to use for brick sidewalks with a concrete base.
7030, 3.11, A	Specify when testing will be the Contractor's responsibility.
Figure 7030.101	Specify the radius for commercial and industrial driveways. Specify when a 'B' joint is to be provided at the back of curb. Specify the driveway width. Specify when a 5 foot sidewalk is to be constructed through the driveway.
Figure 7030.102	Specify the radius for commercial and industrial driveways. Specify the driveway width. Specify when a 5 foot sidewalk is to be constructed through the driveway.
Figure 7030.104	Specify parking grading slope and property slope if different than 4:1.
Figure 7030.201	If a special grade is required for parking slopes, specify the grade. Specify the width of the sidewalk.
Figure 7030.202	Specify one of the curb details for Class A sidewalk.
Figure 7030.203	Specify the brick sidewalk pattern. Specify the jointing of the concrete base.
Figure 7030.205	Specify the use of a BT-3, KT-2, or expansion joint.

Section 7040 - Pavement Rehabilitation

7040, 1.08, K, 3	Specify the use of waterproof bonding material with pavement core replacement.
7040, 2.01, A, 1	Specify if patches are <u>not</u> constructed as standard patches.
7040, 2.01, A, 2	Specify the use of calcium chloride in high early strength patching.
7040, 2.01, B	Specify if an HMA mixture other than a minimum Low Traffic (LT) mixture is desired.
7040, 2.01, C, 5	Specify the use of soil sterilant for crack and joint filler material.
7040, 2.01, G	Specify if a subbase material other than modified subbase is desired.
7040, 2.01, K	Specify the length and diameter of epoxy coated dowel bars.
7040, 3.01, C	Specify the dimensions of full depth and partial depth patches.
7040, 3.01, F	Specify seeding or sodding the area outside the pavement.

7040, 3.02, A, 1	Specify when a second saw cut is required.
7040, 3.02, C, 6	Specify the locations of joints.
7040, 3.03, B, 2	Specify when to tool the joint.
7040, 3.04, J	Specify when pavement smoothness testing is required.
7040, 3.05, B	Specify the depth to mill the pavement area.
7040, 3.05, D	Specify if materials removed are not the property of the Contractor.
7040, 3.06, B, 3	Specify when to clean wet sawn joints.
7040, 3.06, C, 2	Specify the level to heat, handle, and apply joint filler material.
7040, 3.07, A, 3	Specify when to apply soil sterilant.
7040, 3.07, B, 2	For cracks wider than 1 inch, specify when to utilize additional methods to clean cracks of old crack filler.
7040, 3.07, C, 2	For cracks 1/4 inch to 1 inch in width, specify when to utilize additional methods to clean cracks of old crack filler.
Figure 7040.102	Specify the use of a 'CD' joint.
Figure 7040.105	Specify the use of filter fabric. Specify the type of subbase.

Section 7050 - Asphalt Stabilization

7050, 1.02	Specify the crown of the pavement.
7050, 2.01, B	Specify the type of aggregate required.
7050, 3.03, A	Specify the depth of existing roadway surface to reclaim, if other than 4 inches.
7050, 3.07	Specify the type of surface treatment to apply.

Section 7060 - Bituminous Seal Coat

7060, 1.08 A & B	Specify measurement of bituminous seal coat is in area or units.
7060, 2.01, A	Specify the cover aggregate size.
7060, 2.01, B	Specify bituminous material if different than CRS-2P.
7060, 3.02, A, 1	Specify when to patch and joint fill hard surfaced streets.
7060, 3.04, B	Specify the application rate for spreading binder bitumen, if other than shown in the table.
7060, 3.04, D	Specify the application rate for spreading cover aggregate, if other than shown in the table.

7060, 3.06, B, 2	Specify the rate for spreading binder bitumen for two course seal coats.
7060, 3.06, B, 3	Specify the size of aggregate and the rate for spreading cover aggregate for two course seal coats.
7060, 3.07	Specify if sweeping of rural pavements is not necessary.

Section 7070 - Emulsified Asphalt Slurry Seal

7070, 1.02, B	Specify the application of fine or coarse slurry mixtures.
7070, 2.01, B	Specify when to use crushed aggregates.
7070, 2.02, A	Specify the amount of asphalt emulsion to blend with the aggregate.
7070, 3.01, B, 1, b	Specify the width of slurry mixture application.
7070, 3.02, A	Specify when to complete pavement patches and joint or crack filling for surface preparation.
7070, 3.02, C	Specify if water flushing for surface preparation is not allowed.
7070, 3.03, C	Specify the rate of applying the slurry seal, if other than 10 to 18 pounds per square yard for fine aggregate and 15 to 22 pounds per square yard for coarse aggregate.
7070, 3.03, F	Specify when to apply a burlap drag.
7070, 3.05, E	Specify if strip slurry treatment is to be placed in two separate operations.

Section 7080 - Permeable Interlocking Pavers

7080, 2.02, A	Specify either slotted or perforated underdrain pipes.
7080, 2.02, B	Specify the size of collector pipe if other than 6 inch diameter is desired.
7080, 2.03, C	Specify the size of lateral pipe if other than 4 inch diameter is desired.
7080, 3.02, A	Specify the elevation and grade for the excavation area.
7080, 3.02, B	Specify the use and location of underdrains.
7080, 3.03, A	Specify the use of engineering fabric over completed subgrade.
7080, 3.04, A, 5	Specify cleanout locations.
7080, 3.04, A, 7	Specify the use of underdrain cleanout pipes and observation wells.
7080, 3.04, B, 1	Specify underdrain lateral pipe locations.
7080, 3.05, A	Specify the thickness of storage aggregate.
7080, 3.05, C	Specify the storage aggregate elevation.

7080, 3.06, C	Specify the need to proof roll the filter aggregate.
7080, 3.09	Specify the installation pattern of the pavers.

Section 7090 - Cold-in-Place Pavement Recycling

7090, 2.02	Specify the required strength of the recycled pavement section.
7090, 3.01, B, 1	Specify the width and depth to mill the existing pavement material.
7090, 3.01, B, 2	Specify the use of an asphalt foaming system.
7090, 3.08, C	Specify if the compacted recycled roadway does not have to be within 6 inches of the established centerline.

Section 7091 - Full Depth Reclamation

7091, 2.02	Specify the required strength of the reclaimed pavement section as specified in the contract documents.
7091, 3.01, B, 1	Specify the width and depth to reclaim.
7091, 3.01, B, 2	Specify the use of an asphalt foaming system.
7091, 3.05, A	Specify if multiple passes are required.
7091, 3.09, C	Specify if the compacted, reclaimed roadway does not have to be within 6 inches of the established centerline.
7091, 3.11	Specify when to complete microcracking.
7091, 3.12	Specify the use of an HMA interlayer.

Section 8010 - Traffic Signals

8010, 1.08, B, 3	Specify if pedestrian equipment is required with temporary traffic signal.
8010, 2.01, A, 1, c	Specify if a message besides “TRAFFIC SIGNAL” will be required on the handhole cover.
8010, 2.01, B, 3, a, 2)	Specify solvent welded, socket type fittings for use other than PVC conduit and fittings.
8010, 2.01, C, 6, a	Specify the mode type, size, and number of fibers for fiber optic cable required.
8010, 2.01, C, 6, p	Specify the type of fiber distribution panel if a panel other than one capable of terminating a minimum of 24 fibers is desired.
8010, 2.01, C, 6, t	Specify the use of fusion splice continuous fiber runs or branch circuit connections in splice enclosures.

8010, 2.02, B, 2, c	Specify the voice message to be used for accessible pedestrian signal push button stations.
8010, 2.02, D, 9	Specify the type of mounting for microwave vehicle detectors.
8010, 2.03, A	Specify the use of traffic monitoring systems.
8010, 2.03, B	Specify the use of fiber optic hub cabinet.
8010, 2.03, C, 2, b	Specify the location to mount the antenna for a wireless interconnect network, if other than near the top of the signal pole nearest the controller cabinet.
8010, 2.04, A, 2, b	Specify dimensions and type of aluminum cabinet riser to be used.
8010, 2.04, A, 2, g	Specify accommodations of phasing and expansibility of cabinet back panel positions.
8010, 2.04, C	Specify the use of emergency vehicle preemption system.
8010, 2.05, A, 1, a	Specify the color of vehicle traffic signal head assembly housing.
8010, 2.05, B, 1, a	Specify the color of pedestrian traffic signal head assembly housing.
8010, 2.05, C, 1, a	Specify the mast arm length and vertical pole height.
8010, 2.05, C, 1, f	Specify where to use a combination street lighting/signal pole. Specify if the luminaire arm is to be mounted somewhere other than the same vertical plane as the signal arm.
8010, 2.05, D, 1, a	Specify the vertical pole height of the traffic signal pedestal pole.
8010, 2.05, F, 3	Specify the street name sign dimensions, letter height and font, and sheeting.
8010, 3.01, B, 3, c	Specify if boring pits are allowed to be closer than 2 feet to the back of curb.
8010, 3.01, C, 9, c	Specify if the conduit cables could be pulled through intermediate junction boxes, handholes, pull boxes, pole bases, or any conduit opening.
8010, 3.01, C, 9, g	Specify how much cable slack to provide in each handhole, junction box, and cabinet.
8010, 3.01, C, 9, h	Specify installation of fiber optic accessories.
8010, 3.01, D, 1	Specify the foundation excavation size, shape, and depth.
8010, 3.02, C	Specify the installation of video detection camera system.
8010, 3.03, A	Specify the installation of traffic monitoring system.
8010, 3.03, B	Specify the installation of fiber optic hub cabinet.
8010, 3.04, A, 1	Specify the installation of controller cabinet and auxiliary equipment.

8010, 3.04, B	Specify the installation of controller.
8010, 3.04, C	Specify the installation of UPS battery backup system.
8010, 3.04, D	Specify the installation of emergency vehicle preemption system.
8010, 3.06	Specify construction of temporary traffic signal.
Figure 8010.104	Specify the length of rectangular detector loop.
Figure 8010.105	Specify the number of signals, signs, and spacing.

Section 8020 - Pavement Markings

8020, 3.02, A, 3, c	Specify lane widths.
8020, 3.02, B, 2	Specify if pavement surface will not be cleaned with a rotary broom or street sweeper.
8020, 3.02, D	Specify if pavement is to be grooved prior to placing marking tape.
8020, 3.02, G, 2	Specify when to place pavement markings in a groove cut into the pavement surface.

Section 8030 - Temporary Traffic Control

8030, 1.08, A, 3	Specify when to include portable dynamic message signs, temporary barrier rail, temporary flood lighting, and pilot cars in the traffic control lump sum bid item.
8030, 2.04, B	Specify if something other than precast concrete units are to be used for temporary barrier rail.
8030, 3.01, C	Specify the locations to place temporary barrier rail.
Figure 8030.117	Specify the use of auxiliary lighting or audible information devices.
Figure 8030.118	Specify the use of a crash cushion to separate the temporary sidewalk from vehicular traffic.
Figure 8030.119	Specify the use of auxiliary lighting or audible information devices.

Section 9010 - Seeding

9010, 2.01, B	Specify PLS, which shall not be less than the accumulated total.
9010, 2.02	Specify seed mixture in the contract documents.
9010, 2.03, A, 2	Specify if fertilizer is not to be applied for temporary conventional seeding.
9010, 3.01, A	Specify when aerial application of seed and fertilizer is desired.
9010, 3.01, M	Specify the use of a no-till attachment if desired.

9010, 3.04, E, 4, a	Specify if winter dormant seeding is required.
9010, 3.10, B	Specify when a warranty for seeding is required.

Section 9020 - Sodding

9020, 2.04	Specify when contractor is not to provide water and watering equipment.

Section 9030 - Plant Material and Planting

9030, 1.03, E	Specify when the contractor is to submit a schedule of unit prices for each size and variety of tree, shrub, and ground cover plant.
9030, 2.01, A, 4	Specify whenever plants in rows do not need to be matched in form or size.
9030, 2.01, E, 1	Specify where to use bare root plants.
9030, 3.05	Specify when tree drainage wells are needed.
9030, 3.08, A	Specify when tree wrapping is required.
9030, 3.12, B	Specify when a warranty for plants is required.
Figure 9030.102	Specify when tree wrapping is required.

Section 9040 - Erosion and Sediment Control

9040, 1.08, A, 1	Specify if the Contractor will be responsible for the SWPPP preparation.
9040, 1.08, A, 2	Specify if the Contractor will be responsible for the SWPPP management.
9040, 1.08, B	Specify thickness for compost blankets.
9040, 1.08, E, 1	Specify the width of temporary RECP.
9040, 1.08, I	Specify if level spreaders are not to be removed.
9040, 1.08, L, 1, c	Specify the use of anti-seep collars.
9040, 1.08, O	Specify measurement for stabilized construction entrance in square yards or tons.
9040, 2.02, B	Specify the use of filter berms or compost blankets.
9040, 2.03	Specify the use of filter material in areas other than filter socks and filter berms.
9040, 2.06, A	Specify diameter for open weave, degradable netting if other than 9 inches is required.
9040, 2.07, A, 2	Specify if using RECP for permeable check dam.
9040, 2.08, A	Specify length of pressure-treated timber for level spreaders.

9040, 2.11, A	Specify class of concrete if not Class C.
9040, 2.11, B	Specify riser diameter for sediment basin outlet structures.
9040, 2.11, C, 1	Specify the number, diameter, and elevation of the holes in the riser of the dewatering device in sediment basin outlet structures.
9040, 2.11, D	Specify barrel diameter of the sediment basin outlet structures.
9040, 2.11, E	Specify riser diameter for anti-vortex device.
9040, 3.02, D	Specify if weekly erosion and sediment control site inspections are not required as a part of SWPPP management.
9040, 3.05, B	Specify depth of compost blankets.
9040, 3.06, A	Specify when the filter berm is not to be installed along the contour.
9040, 3.06, C	Specify when a vegetated berm is required.
9040, 3.07, A, 1	Specify the size and length of filter sock.
9040, 3.07, A, 3	Specify when the filter sock is not to be installed along the contour.
9040, 3.07, B	Specify when to remove the filter sock.
9040, 3.08, A, 2	Specify if placement of seed and fertilizer is to be accomplished before installation of temporary rolled erosion control products.
9040, 3.08, A, 3	Specify if placement of seed and fertilizer is to be accomplished on the anchor trench.
9040, 3.08, B, 1	Specify if placement of seed and fertilizer is to be accomplished before installation of temporary rolled erosion control products.
9040, 3.09, B	Specify when to remove the wattle.
9040, 3.10, A, 2	Specify when to provide an RECP under the check dam.
9040, 3.10, D	Specify when to remove check dams.
9040, 3.12, C	Specify the excavated depth behind the level spreader.
9040, 3.12, E	Specify the minimum depth of depression before accumulated sediment is removed.
9040, 3.15, B, 1	Specify the number, diameter, and configuration of holes in the riser section of sediment basin outlet structures.
9040, 3.17	Specify the size and elevations of sediment traps.
9040, 3.18, A, 1	Specify when the silt fence material is not to be installed along the contour.

9040, 3.19, E	Specify when to install subgrade stabilization fabric prior to placing crushed stone.
9040, 3.19, F	Specify the thickness and dimensions of crushed stone for stabilized construction entrance.
Figure 9040.101	Specify if compost blankets are vegetated or unvegetated.
Figure 9040.102	Specify size of berm if slope is steeper than 3:1. Specify berm placement locations in uncompacted windrow perpendicular to the slope. Specify filter sock diameter.
Figure 9040.105	Specify diameter of wattle. Specify space between wattles.
Figure 9040.107	Specify height between engineering fabric and crest on the rock check dam.
Figure 9040.108	Specify total height of diversion.
Figure 9040.109	Specify excavated depression depth.
Figure 9040.110	Specify the rock thickness (T), width (W), and length (L) for rip rap apron for pipe outlet onto flat ground.
Figure 9040.111	Specify the rock thickness (T), width (W), and length (L) for rip rap apron for pipe outlet into channel.
Figure 9040.112	Specify diameter of pipe for temporary pipe slope drain. Specify A, B, and C anchoring options.
Figure 9040.113	Specify barrel length and diameter for sediment basin without emergency spillway. Specify when anti-seep collars are required.
Figure 9040.114	Specify barrel length and diameter for sediment basin with emergency spillway. Specify when anti-seep collars are required.
Figure 9040.115	Specify elevations and dimensions for sediment basin dewatering device. Specify perforation configurations. Specify diameter of discharge pipe barrel.
Figure 9040.116	Specify riser diameter for anti-vortex device.
Figure 9040.117	Specify when anti-seep collars are required.
Figure 9040.118	Specify width of sediment trap.
Figure 9040.119	Specify spacing of post installation for silt fence.

Section 9050 - Gabions and Revet Mattresses

9050, 1.08, A, 3	Specify PVC coating for gabions.
9050, 1.08, B, 3	Specify PVC coating for revet mattresses.
9050, 2.01	Specify when double twisted wire baskets are <u>not</u> required.

9050, 2.02	Specify when to use welded wire baskets.
9050, 2.05	Specify when to use anchor stakes. Specify the length of anchor stakes.
9050, 3.01, A	Specify when to cut and reshape the area behind a proposed gabion wall to allow for placement of the wall.
9050, 3.01, E	Specify the placement, compaction, and dimensions of granular subbase materials.
9050, 3.04, A	Specify special details of gabion wall installation including height, slope of wall, gabion setback, special backfill materials, and tieback requirements.

Section 9060 - Chain Link Fence

9060, 1.08, A, 3	Specify PVC coating for chain link fence.
9060, 1.08, B, 3	Specify the use of barbed wire for gates.
9060, 1.08, C, 3	Specify the type of barbed wire supporting arm.
9060, 2.01, D, 2	Specify the PVC coating color.
9060, 2.02, A, 2	Specify the nominal diameter of fence height for post use, if other than shown in the table.
9060, 2.05, A	Specify the type of arm configuration for barbed wire supporting arms.
9060, 2.07, A	Specify the type, height, and width of gates.
9060, 3.01, A	Specify fence location and height.
9060, 3.01, B, 2, a	Specify post holes dimensions.
9060, 3.01, B, 2, e	Specify the required brace-post assembly.
9060, 3.01, G	Specify when to use barbed wire.
9060, 3.01, G, 1	Specify the installation of barbed wire, if other than 3 parallel wires on each barbed wire supporting arm on the outside of the area being secured.
9060, 3.01, H	Specify the installation requirements for gates.
9060, 3.01, I, 1	Specify the installation of electrical grounds.
9060, 3.02	Specify when all fences, including posts and footings, are <u>not</u> to be removed from within work areas.
9060, 3.03, A	Specify the height of temporary fence.
Figure 9060.101	Specify the fence fabric width. Specify when to install fence on the roadway side of the right-of-way.

Figure 9060.103	Specify the length of the sidewalk.

Section 9070 - Landscape Retaining Walls

9070, 2.01, B	Specify the depth of limestone slabs, if other than 8 inches.
9070, 3.01, B	Specify the excavation line and grade.

Section 9071 - Segmental Block Retaining Walls

9071, 3.01, B	Specify the excavation line and grade.
9071, 3.02, B	Specify leveling pad materials.
9071, 3.02, C	Specify the elevation and orientation.
9071, 3.02, D, 1	Specify the use of subdrains.

Section 9072 - Combined Concrete Sidewalk and Retaining Wall

9072, 2.01, A, 3	Specify the type of expansion joint, if resilient filler is not desired.
9072, 3.01, B	Specify the excavation line and grade.
9072, 3.04	Specify the formation of rustications.

Section 9080 - Concrete Steps, Handrails, and Safety Rail

9080, 2.04, B	Specify when to galvanize handrail and safety rail.
9080, 2.04, C	Specify when to apply powder coat to steel, galvanized steel, or aluminum handrail and safety rail.
9080, 3.02, A, 1	Specify the length of rail.
Figure 9080.103	Specify the field painting of safety rail.

Section 10,010 - Demolition

10,010, 1.07, A	Specify when the use of explosives is allowed.
10,010, 3.08, D	Specify when the removal and disposal of all brush, shrubs, trees, logs, downed timber, and other yard waste on the site is not desired.
10,010, 3.08, E	Specify when the removal of all retaining walls is not desired.
10,010, 3.11	Specify what materials are required to be recycled from the demolition site.

Section 11,010 - Construction Survey

11,010, 1.02	Specify any additional items to be included in construction survey work.
11,010, 3.02, D	Specify if property limits are to be marked.
11,010, 3.04	Specify which land corners, property corners, permanent reference markers, and benchmarks are to be replaced.

Section 11,040 - Temporary Sidewalk Access

11,040, 3.02, A	Specify locations to construct temporary granular sidewalks.
11,040, 3.03, B	Specify locations to locate temporary longitudinal channelizing devices.
Figure 11,040.102	Specify when to install orange construction safety fence between the top of the bottom rail and the bottom of the top rail.

Incidental or Included Items

Items that are necessary to properly complete construction, including work and materials, and are not pay items. The following is a list of items in the SUDAS Specifications that are considered incidental to other work unless specified as a pay item on the plans or in the contract documents. Please note - this list is not all-inclusive.

Section 2010 - Earthwork, Subgrade, and Subbase

2010, 1.08, A, 3 — Clearing and Grubbing (by units)
Placement of backfill in area where roots have been removed, and removal and disposal of all materials.

2010, 1.08, B, 3 — Clearing and Grubbing (by area)
Removal and disposal of all materials and placement of backfill in area where roots have been removed.

2010, 1.08, D, 2, c — Topsoil, Compost-amended
Furnishing and incorporating compost.

2010, 1.08, E, 3 — Excavation, Class 10, Class 12, or Class 13

a. Site preparation for, and the construction of, embankment, fills, shoulder backfill, and backfill behind curbs.
b. Overhaul.
c. Finishing the soil surface, including roadways, shoulders, behind curbs, side ditches, slopes, and borrow pits.
d. Repair or replacement of any fences that have been unnecessarily damaged or removed.
e. Compaction testing, as specified in the contract documents.

2010, 1.08, F, 3 — Below Grade Excavation (Core Out)
Equipment, tools, labor, disposal of unsuitable materials, dewatering, drying, furnishing, and placement of foundation materials as required by the Engineer, compaction and finishing of the excavated area, and all incidental work as may be required.

2010, 1.08, G, 3 — Subgrade Preparation
Excavating, manipulating, replacing, compacting, and trimming to the proper grade.

2010, 1.08, H, 3 — Subgrade Treatment
Furnishing, placing, and incorporating the subgrade treatment material (cement, asphalt, fly ash, lime, geogrid, or geotextiles).

2010, 1.08, I, 3 — Subbase
Furnishing, placing, compacting, and trimming to the proper grade.

2010, 1.08, J, 1, c — Removal of Structures
Removal and disposal of structures.

2010, 1.08, J, 2, a, 3) — Removal of Known Box Culverts
Removal and disposal of known box culverts.

2010, 1.08, J, 2, c, 3) — Removal of Known Pipe Culverts
Removal and disposal of known pipe culverts.

2010, 1.08, J, 3, a, 3) — Removal of Known Pipes and Conduits
Removal, disposal, and plugging, if specified, of pipes and conduits.

Section 3010 - Trench Excavation and Backfill

3010, 1.08, A — General

1. Standard trench excavation.
2. Removal and disposal of unsuitable backfill material encountered during standard trench excavation.
3. Removal of abandoned private utilities encountered during trench excavation.
4. Furnishing and placing granular bedding material.
5. Placing and compacting backfill material.
6. Dewatering including, but not limited to, all equipment such as generators, pumps, rock for sump pits, discharge piping, and any extra excavation needed to facilitate dewatering according to stormwater regulations, as applicable.
7. Sheeting, shoring, and bracing.
8. Adjusting the moisture content of excavated backfill material to the range specified for placement and compaction.

3010, 1.08, C, 3 — Trench Foundation
Removal and disposal of over-excavated material required to stabilize trench foundation; and furnishing, hauling, and placing stabilization material.

3010, 1.08, D, 3 — Replacement of Unsuitable Backfill Material
Furnishing, hauling, and placing backfill material.

3010, 1.08, E, 3 — Special Pipe Embedment or Encasement
Furnishing and placing all required special pipe embedment or encasement materials.

Section 3020 - Trenchless Construction

3020, 1.08 — All items of work contained in this section are incidental to the underground utility pipe being installed and will not be paid for separately.

Section 4010 - Sanitary Sewers

4010, 1.08, A, 1, c — Sanitary Sewer Gravity Main, Trenched
Trench excavation; dewatering; furnishing and installing pipe; pipe lining (if specified); furnishing, placing, and compacting bedding and backfill material; wyes and other fittings; pipe joints; pipe connections; testing; and inspection.

4010, 1.08, A, 2, c — Sanitary Sewer Gravity Main, Trenchless
Furnishing and installing pipe; pipe lining (if specified); trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; pipe connections; testing; and inspection.

4010, 1.08, B, 1, c — Sanitary Sewer Gravity Main with Casing Pipe, Trenched
Furnishing and installing both carrier pipe and casing pipe, pipe lining (if specified); trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, furnishing and installing annular space fill material, casing spacers, pipe connections, testing, and inspection.

4010, 1.08, B, 2, c — Sanitary Sewer Gravity Main with Casing Pipe, Trenchless
Furnishing and installing both carrier pipe and casing pipe; pipe lining (if specified); trenchless installation materials and equipment; pit excavation; dewatering; and placing and compacting backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection.

4010, 1.08, C, 1, c — Sanitary Sewer Force Main, Trenched
Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill; wyes and other fittings; pipe joints; testing; and inspection.

4010, 1.08, C, 2, c — Sanitary Sewer Force Main, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; pipe connections; testing; and inspection.

4010, 1.08, D, 1, c — Sanitary Sewer Force Main with Casing Pipe, Trenched
Furnishing and installing both carrier pipe and casing pipe; trench excavation; dewatering; furnishing, placing, and compacting bedding and backfill material; furnishing and installing annular space fill material; casing spacers; pipe connections; testing; and inspection.

4010, 1.08, D, 2, c — Sanitary Sewer Force Main with Casing Pipe, Trenchless
Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection.

4010, 1.08, E, 3 — Sanitary Sewer Service Stub
Trench excavation; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; tap; fittings; testing; and inspection.

4010, 1.08, F, 3 — Sanitary Sewer Service Relocation
Removal of existing pipe, trench excavation, furnishing new pipe and bedding material, placing and compacting bedding and backfill material, connection back to existing service, compaction, testing, and inspection.

4010, 1.08, G, 3 — Sewage Air Release Valve and Pit
Excavation; furnishing, placing, and compacting bedding and backfill material; and testing.

4010, 1.08, H, 3 — Removal of Sanitary Sewer
Removal, disposal, and capping (if specified) of pipe; and furnishing, placing, and compacting backfill material.

4010, 1.08, I, 3 — Sanitary Sewer Cleanout
Plug at the end of the main, fittings, riser pipe, cap with screw plug, casting, and concrete casting encasement.

4010, 1.08, K, 3 — Sanitary Sewer Abandonment, Plug
Trench excavation (if necessary), cutting pipe (if required), furnishing and placing plug materials, and placing and compacting backfill material.

4010, 1.08, L, 3 — Sanitary Sewer Abandonment, Fill and Plug
Trench excavation (if necessary), cutting pipe (if required), furnishing and placing pipe fill material, furnishing and placing plug materials, and placing and compacting backfill material.

Section 4020 - Storm Sewers

4020, 1.08, A, 1, c — Storm Sewer, Trenched
Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; joint wrapping; wyes and other fittings; pipe joints; pipe connections; testing; and inspection.

4020, 1.08, A, 2, c — Storm Sewer, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; pipe connections; testing; and inspection.

4020, 1.08, B, 1, c — Storm Sewer with Casing Pipe, Trenched
Furnishing and installing both carrier pipe and casing pipe; trench excavation; dewatering; furnishing, placing, and compacting bedding and backfill material; furnishing and installing annular space fill material; casing spacers; pipe connections; testing; and inspection.

4020, 1.08, B, 2, c — Storm Sewer with Casing Pipe, Trenchless
Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection.

4020, 1.08, C, 3 — Linear Trench Drain
Furnishing and installing the linear trench drain including all appurtenances; furnishing and placement of PCC transition; furnishing, excavation, and backfill of discharge pipe; connection to manhole or intake, if required; installation of apron, if required.

4020, 1.08, D, 3 — Removal of Storm Sewer
Removal, disposal, and capping (if specified) of pipe; and furnishing, placing, and compacting backfill material.

4020, 1.08, F, 3 Storm Sewer Abandonment, Plug
Trench excavation (if necessary), cutting pipe (if required), furnishing and placing plug materials, and placing and compacting backfill material.

4020, 1.08, G, 3 Storm Sewer Abandonment, Fill and Plug
Trench excavation (if necessary), cutting pipe (if required), furnishing and placing pipe fill material, furnishing and placing plug materials, and placing and compacting backfill material.

Section 4030 - Pipe Culverts

4030, 1.08, A, 1, c Pipe Culvert, Trenched
Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; connectors; testing; and inspection.

4030, 1.08, A, 2, c Pipe Culvert, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing and compacting backfill material; pipe connections; testing; and inspection.

4030, 1.08, B, 3 Pipe Apron
Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; connectors; and other appurtenances.

4030, 1.08, C, 3 Footings for Concrete Pipe Aprons
Excavation; dewatering; reinforcing steel; concrete; furnishing and installing apron; furnishing, placing and compacting bedding and backfill material.

Section 4040 - Subdrains and Footing Drain Collectors

4040, 1.08, A, 3 Subdrain
Trench excavation, furnishing and placing bedding and backfill material, engineering fabric (when specified), connectors, and elbows and tees. The length of elbows and tees of the pipes installed will be included in the length of pipe measured.

4040, 1.08, B, 3 Footing Drain Collector
Trench excavation, pipe, wyes, tap, fittings, and furnishing and placing bedding and backfill material.

4040, 1.08, D, 3 Subdrain or Footing Drain Outlets and Connections
Pipe, non-shrink grout, coupling bands, and rodent guards for pipes 6 inches or smaller.

4040, 1.08, E, 3 Storm Sewer Service Stub
Trench excavation, furnishing bedding material, placing bedding and backfill material, tap, fittings, and plugs.

Section 4050 - Pipe Rehabilitation

4050, 1.08, A, 1, c — Pre-Rehabilitation Cleaning and Inspection
Pre-cleaning CCTV inspection, light sewer cleaning, debris removal and transport, post cleaning CCTV inspection for Engineer review, and identification and logging of active service taps. If specified in the contract documents, unit price also includes disposal and associated costs for all debris removed from sewer.

4050, 1.08, A, 2, c — Additional Sewer Cleaning
Heavy sewer cleaning; root cutting; deposit cutting; and removing, transporting, disposing, paying associated costs for all debris removed from sewer, and post cleaning CCTV inspection for Engineer review.

4050, 1.08, B, 3 — Remove Protruding Service Connections
Removal of protruding service connections and debris removal.

4050, 1.08, C, 1, c — CIPP Main Lining
Furnishing and installing the liner and appurtenances, CCTV inspection immediately prior to lining, bypass pumping unless otherwise specified, sliding foil, post-lining CCTV inspection, and all costs associated with the public information and notification program.

4050, 1.08, C, 2, c — Building Sanitary Sewer Service Reinstatement
Reinstating sanitary sewer service connections, removal of debris, and coordination with service owners.

4050, 1.08, C, 3, c — CIPP End Seal
End seal and installation.

4050, 1.08, D, 3 — CIPP Point Repair
Furnishing and placing point repair liner, bypass pumping unless otherwise specified, sewer cleaning, removal of obstructions, debris removal, pipe preparation, and pre and post repair CCTV inspection.

4050, 1.08, E, 1, c — CIPP Service Pipe, Connection
Furnishing and placing service connection liner, bypass pumping unless otherwise specified, documentation, and all costs associated with the public information and notification program.

4050, 1.08, E, 2, c — CIPP Service Repair, Partial Pipe
Furnishing and installing service repair liner, bypass pumping unless otherwise specified, documentation, and all costs associated with the public information and notification program.

4050, 1.08, F, 1, c — Pressure Testing of Mainline Sewer Joints
Bypass pumping unless otherwise specified, control testing, and documentation.

4050, 1.08, F, 2, c — Injection Grouting of Mainline Sewer Joints
Bypass pumping unless otherwise specified, material testing, pressure testing after grouting, re-grouting of failed joints, and documentation. Unit price does not include the quantity of chemical grout used.

4050, 1.08, F, 3, c — Pressure Testing of Service Connections
Bypass pumping unless otherwise specified, and documentation.

4050, 1.08, F, 4, c — Injection Grouting of Service Connections
Bypass pumping unless otherwise specified, material testing, pressure testing after grouting, and documentation. Unit price does not include the quantity of chemical grout used.

4050, 1.08, F, 5, c — Chemical Grout
Grout additives; root inhibitor; and supplying, mixing, and measurement of chemical grout.

4050, 1.08, G, 3 — Bypass Pumping
Development and submittal of the bypassing plan, all staffing, equipment, and appurtenances necessary to accomplish the approved bypassing plan, including reserve equipment.

4050, 1.08, H, 1, c — Spot Repairs (by Pipe Replacement)
Uncovering and removing existing pipe and furnishing and placing bedding and backfill material for replacement pipe.

4050, 1.08, H, 2, c — Spot Repairs (by Linear Foot)
Furnishing and installing replacement pipe and connections.

Section 4060 - Cleaning, Inspection, and Testing of Sewers

4060, 1.08 — Cleaning, inspecting, and testing sanitary sewers, storm sewers, pipe culverts, and rehabilitated pipes (including video inspection) are incidental to other project costs and will not be paid for separately.

Section 5010 - Pipe and Fittings

5010, 1.08, A, 1, c — Water Main, Trenched
Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; tracer system; testing; disinfection; and polyethylene wrap for ductile iron pipe and for fittings.

5010, 1.08, A, 2, c — Water Main, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; tracer system; testing; and disinfection.

5010, 1.08, B, 1, c — Water Main with Casing Pipe, Trenched
Furnishing and installing both carrier pipe and casing pipe; trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; casing spacers; furnishing and installing annular space fill material; tracer system; testing; and disinfection.

5010, 1.08, B, 2, c — Water Main with Casing Pipe, Trenchless
Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation; dewatering; placing and compacting backfill material; casing spacers; furnishing and installing annular space fill material; tracer system; testing; and disinfection.

5010, 1.08, C, 1, c	Fitting (by count) Restrained joints and thrust blocks.
5010, 1.08, C, 2, c	Fitting (by weight) Restrained joints and thrust blocks.
5010, 1.08, D, 3	Water Service Stub (by each) Water service corporation; service pipe; curb stop; stop box; trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; and installation of tracer wire system for non-metallic service pipe.
5010, 1.08, E, 1, c	Water Service Stub (by length), Water Service Pipe Trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; and installation of tracer wire system for non-metallic service pipe.

Section 5020 - Valves, Fire Hydrants, and Appurtenances

5020, 1.08, A, 3	Valve (Butterfly or Gate) All components attached to the valve or required for its complete installation, including underground or above ground operator, square valve operating nut, valve box and cover, valve box extension, and valve stem extension.
5020, 1.08, B, 3	Tapping Valve Assembly Tapping sleeve, tapping valve, the tap, valve box and cover, valve box extension, and valve stem extension.
5020, 1.08, C, 3	Fire Hydrant Assembly The fire hydrant, barrel extensions sufficient to achieve proper bury depth of anchoring pipe and height of fire hydrant above finished grade, and components to connect the fire hydrant to the water main, including anchoring pipe, fittings, thrust blocks, pea gravel or porous backfill material, and fire hydrant gate valve and appurtenances, except tapping valve assembly if used.
5020, 1.08, E	Measurement and payment for minor adjustment of an existing valve box by raising or lowering the adjustable valve box is incidental.
5020, 1.08, G, 3	Valve Box Replacement Removal of existing valve box; excavation; furnishing and installing new valve box; backfill; compaction; and all other necessary appurtenances.
5020, 1.08, H, 3	Fire Hydrant Adjustment Removal and reinstallation of the existing fire hydrant; furnishing and installing the extension barrel section and stem; and all other necessary appurtenances.
5020, 1.08, I, 3	Fire Hydrant Assembly Removal Excavation, removal of the fire hydrant, hydrant valve, thrust block, delivery of the fire hydrant assembly to the Contracting Authority (if specified), capping of the pipe, backfill, compaction, and surface restoration to match the surrounding area.

5020, 1.08, J, 3 Valve Removal
Excavation, removal of each valve, replacing the removed valve with pipe and connections if required or capping the former valve connection, delivery of the valve to the Contracting Authority (if specified), backfill, compaction, and surface restoration to match the surrounding area.

5020, 1.08, K, 3 Valve Box Removal
Excavation, removal of each valve box, delivery of the valve box to the Contracting Authority (if specified), backfill, compaction, and surface restoration to match the surrounding area.

Section 5030 - Testing and Disinfection

5030, 1.08 Testing and disinfection of water systems is incidental to the construction of pipe and fittings.

Section 6010 - Structures for Sanitary and Storm Sewers

6010, 1.08, A, 3 Manhole
Excavation; furnishing and installing pipe; lining (if specified); furnishing, placing, and compacting bedding and backfill material; base; structural concrete; reinforcing steel; precast units (if used); concrete fillets; pipe connections; infiltration barriers (sanitary sewer manholes only); castings; and adjustment rings.

6010, 1.08, B, 3 Intake
Excavation; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; base; structural concrete; reinforcing steel; precast units (if used); concrete fillets; pipe connections; castings; and adjustment rings.

6010, 1.08, C, 1, c Internal Drop Connection
Cutting the hole and installing a flexible watertight connector, providing and installing the receiving bowl, flexible coupler between the bowl and the drop pipe, the PVC drop pipe, pipe brackets and bolts, the bottom elbow, repair of fillet if required, and a splash guard if required.

6010, 1.08, C, 2, c External Drop Connection
The connection to the manhole and all pipe; fittings; concrete encasement; and furnishing, placing, and compacting bedding and backfill material.

6010, 1.08, E, 3 Manhole or Intake Adjustment, Minor
Removing existing casting and existing adjustment rings, furnishing and installing adjustment rings, furnishing and installing new casting, and installing new infiltration barrier (sanitary sewer manholes only).

6010, 1.08, F, 3 Manhole or Intake Adjustment, Major
Removal of existing casting, adjustment rings, top sections, and risers; excavation; concrete and reinforcing steel or precast sections; furnishing and installing new casting; installing new infiltration barrier (sanitary sewer manholes only); placing backfill material; and compaction.

6010, 1.08, G, 3 — Connection to Existing Manhole or Intake
Coring or cutting into the existing manhole or intake, pipe connectors, grout, and waterstop (when required).

6010, 1.08, H, 3 — Remove Manhole or Intake
Removal of casting, concrete, and reinforcement; plugging pipes; filling remaining structure with flowable mortar; and placing compacted fill over structure to finished grade.

Section 6020 - Rehabilitation of Existing Manholes

6020, 1.08, A, 1, c — Infiltration Barrier, Rubber Chimney Seal
All necessary compression or expansion bands and extension sleeves as necessary to complete chimney seal.

6020, 1.08, A, 2, c — Infiltration Barrier, Molded Shield
Sealant.

6020, 1.08, B, 3 — In-situ Manhole Replacement, Cast-in-place Concrete
Handling of sewer flows as required to properly complete the installation, invert overlay as recommended by the manufacturer, replacement of existing casting with a new casting, and testing the manhole upon completion.

6020, 1.08, C, 3 — In-situ Manhole Replacement, Cast-in-place Concrete with Plastic Liner
Handling of sewer flows as required to properly complete the installation, invert overlay as recommended by the manufacturer, replacement of existing casting with a new casting, sealing at the frame and cover, sealing pipe penetrations as recommended by the manufacturer, and testing the manhole upon completion.

6020, 1.08, D, 3 — Manhole Lining with Centrifugally Cast Cementitious Mortar Liner with Epoxy Seal
Handling of sewer flows during lining operations as required to properly complete the installation, and replacement of the existing casting with a new casting.

Section 6030 - Cleaning, Inspection, and Testing of Structures

6030, 1.08 — Cleaning, inspection, and testing of structures are incidental to construction of structures and will not be paid for separately.

Section 7010 - Portland Cement Concrete Pavement

7010, 1.08, A, 3 — Pavement, PCC
Final trimming of subgrade or subbase, integral curb, bars and reinforcement, joints and sealing, surface curing and pavement protection, safety fencing, concrete for rigid headers, boxouts for fixtures, and pavement smoothness testing.

7010, 1.08, E, 3 — Curb and Gutter
Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.

7010, 1.08, F, 3 — Beam Curb
Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.

7010, 1.08, G, 3 — Concrete Median
Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.

7010, 1.08, H, 3 — PCC Railroad Crossing Approach
Excavation for modified subbase and subdrain, furnishing and installing subdrain, furnishing and installing subdrain outlet or connection to storm sewer, furnishing and installing porous backfill material, furnishing and installing fiber board barrier, furnishing and placing modified subbase material, furnishing and installing reinforcing steel and tie bars, furnishing and placing concrete, furnishing, placing, and compacting HMA.

7010, 1.08, I, 3 — PCC Pavement Samples and Testing
Certified plant inspection, pavement thickness cores, profilograph pavement smoothness measurement (when required by the contract documents), and maturity testing.

7010, 1.08, K, 3 — PCC Pavement Widening
Final subgrade/subbase preparation, integral curb, bars and reinforcement, joints and sealing, surface curing and pavement protection, safety fencing, concrete for rigid headers, boxouts for fixtures, and pavement smoothness.

Section 7011 - Portland Cement Concrete Overlays

7011, 1.08, A, 1, c — PCC Overlay, Furnish Only
Furnishing the concrete mixture and delivery to the project site.

7011, 1.08, A, 2, c — PCC Overlay, Place Only
Integral curb, bars and reinforcement, joints and sealing, finishing and texturing, surface curing and pavement protection, safety fencing, concrete for rigid headers, boxouts for fixtures, and pavement smoothness testing.

7011, 1.08, A, 3, c — Surface Preparation for Bonded PCC Overlay
Sandblasting, shot blasting, scarification, and surface cleaning.

7011, 1.08, A, 4, c — Surface Preparation for Unbonded PCC Overlay
Scarification and surface cleaning.

7011, 1.08, A, 5, c — HMA Separation Layer for Unbonded PCC Overlay
HMA mix, including asphalt binder.

7011, 1.08, A, 6, c — Geotextile Fabric Separation Layer for Unbonded PCC Overlay
Cleaning surface and furnishing, placing, and securing the geotextile fabric separation layer.

Section 7020 - Hot Mix Asphalt Pavement

7020, 1.08, A, 3 — Pavement, HMA (by ton)
Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.

7020, 1.08, B, 3 — Pavement, HMA (by square yard)
Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.

7020, 1.08, C, 3 — HMA Base Widening (by ton)
Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.

7020, 1.08, D, 3 — HMA Base Widening (by square yard)
Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.

7020, 1.08, E, 3 — HMA Railroad Crossing Approach
Excavation for modified subbase and subdrain, furnishing and installing subdrain, furnishing and installing subdrain outlet, furnishing and installing porous backfill material, furnishing and installing fiber board barrier, furnishing and placing modified subbase material, furnishing and applying tack coat, furnishing, placing, and compacting HMA.

7020, 1.08, I, 3 — HMA Pavement Samples and Testing
Certified plant inspection, pavement thickness cores, density analysis, profilograph pavement smoothness measurement (when required by the contract documents), and air void testing.

Section 7021 - Hot Mix Asphalt Overlays

7021, 1.08, A, 3 — HMA Overlay (by ton)
Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.

7021, 1.08, B, 3 — HMA Overlay (by square yard)
Asphalt mix with asphalt binder, tack coat, construction zone protection, and quality control.

Section 7030 - Sidewalks, Shared Use Paths, and Driveways

7030, 1.08, A, 3 — Removal of Sidewalk, Shared Use Path, or Driveway
Sawing, hauling, and disposal of materials removed.

7030, 1.08, B, 3 — Removal of Curb
Hauling and disposal of materials removed.

7030, 1.08, C, 3 — Shared Use Paths
Subgrade preparation, jointing, sampling, smoothness testing and correction, and testing.

7030, 1.08, D, 3 — Special Subgrade Preparation for Shared Use Paths
Water required to bring subgrade moisture content to within the required limits.

7030, 1.08, E, 3 — Sidewalk, PCC
Minor grade adjustments at driveways and other intersections, subgrade preparation, formwork, additional thickness at thickened edges, jointing, sampling, smoothness testing and correction, and testing.

7030, 1.08, F, 3 — Brick/Paver Sidewalk with Pavement Base
Subgrade preparation, pavement base, setting bed, neoprene asphalt adhesive for asphalt setting bed, setting the bricks/pavers, installing weep holes and associated materials, and sand/cement joint filler.

7030, 1.08, G, 3 — Detectable Warning
Steel bar supports and manufactured detectable warning panels.

7030, 1.08, H, 1, c — Driveway, Paved
Excavation, subgrade preparation, jointing, sampling, and testing.

7030, 1.08, H, 2, c — Driveway, Granular
Excavation and preparation of subgrade.

Section 7040 - Pavement Rehabilitation

7040, 1.08, A, 3 — Full Depth Patches
Sawing, removing, and disposing of existing pavement and reinforcing; restoring the subgrade; furnishing and installing tie bars and dowel bars; furnishing and placing the patch material, including the asphalt binder and tack coat; forming and constructing integral curb; surface curing and pavement protection; joint sawing and filling; and placing backfill and restoring disturbed surfaces.

7040, 1.08, B, 3 — Subbase Over-excavation
Removal of existing subbase or subgrade, disposal of materials removed, furnishing and placing subbase material, and any additional excavation required for subbase placement.

7040, 1.08, C, 3 — Partial Depth Patches
Sawing, removing, and disposing of existing pavement; furnishing tack coat or bonding agent; furnishing and placing the patch material; curing; joint filling (PCC patches only); placing backfill; and restoring disturbed surfaces.

7040, 1.08, D, 3 — Crack and Joint Cleaning and Filling, Hot Pour
Furnishing crack and joint filler material and routing, sawing, cleaning, and filling joints or cracks.

7040, 1.08, E, 1, c — Crack Cleaning and Filling, Emulsion
Furnishing emulsified crack filler material, cleaning cracks, placing soil sterilant, and filling cracks.

7040, 1.08, E, 2, c — Hot Mix Asphalt for Crack Filling
Cleaning, applying tack coat, and furnishing and placing HMA for crack filling.

7040, 1.08, F, 3	Diamond Grinding Diamond grinding pavement, testing for smoothness according to the contract documents, and removal of slurry and residue from the project site.
7040, 1.08, G, 3	Milling Milling pavement; furnishing water; and salvaging, stockpiling, and removing cuttings and debris.
7040, 1.08, H, 3	Pavement Removal Sawing, breaking, removing, and disposing of existing pavement and reinforcing steel.
7040, 1.08, I, 3	Curb and Gutter Removal Sawing, breaking, removing, and disposing of existing curb and gutter.
7040, 1.08, J, 3	Dowel Bar Retrofit Cutting the slots, preparing the slots, placing and grouting the bars, and curing the surface.
7040, 1.08, K	Core Hole Cutting and Replacement Cutting the core hole, vacuum excavation, furnishing and placing backfill material and pavement, or replacing the pavement core using waterproof bonding material, if specified.
7040, 1.08, L	Required sampling and testing for pavement repair and rehabilitation work is incidental to other project costs and will not be paid for separately.

Section 7050 - Asphalt Stabilization

7050, 1.08, A, 3	Asphalt Stabilization Furnishing and spreading imported material, applying and incorporating asphalt stabilization, blending of the materials, grading and compacting the blended materials, and final clean up.

Section 7060 - Bituminous Seal Coat

7060, 1.08, A, 3	Bituminous Seal Coat (by area) Surface preparation including protection of street fixtures; furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts; and final clean up.
7060, 1.08, B, 1, c	Bituminous Seal Coat (by units), Cover Aggregate Surface preparation including protection of street fixtures; furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts; and final clean up.
7060, 1.08, B, 2, c	Bituminous Seal Coat (by units), Binder Bitumen Furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts; and final clean up.

Section 7070 - Emulsified Asphalt Slurry Seal

7070, 1.08, A, 3 — Emulsified Asphalt Slurry Seal (by area)
Surface preparation and furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts.

7070, 1.08, B, 1, c — Emulsified Asphalt Slurry Seal (by units), Aggregate
Surface preparation and furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts.

7070, 1.08, B, 2, c — Emulsified Asphalt Slurry Seal (by units), Asphalt Emulsion
Surface preparation and furnishing and placing of materials, including fillets at intersecting streets, driveways, and turnouts.

Section 7080 - Permeable Interlocking Pavers

7080, 1.08, B, 3 — Engineering Fabric
Placing and securing filter fabric and any overlapped areas.

7080, 1.08, C, 3 — Underdrain
Furnishing and placing pipe, cleanouts, observation wells, and pipe fittings.

7080, 1.08, D, 3 — Storage Aggregate
Furnishing, hauling, placing, and compacting storage aggregate.

7080, 1.08, E, 3 — Filter Aggregate
Furnishing, hauling, placing filter, and compacting aggregate.

7080, 1.08, F, 3 — Permeable Interlocking Pavers
Testing, furnishing and placing bedding course, furnishing and installing permeable interlocking pavers, furnishing and placing joint/opening fill material, refilling joint after 6 months, and pavement protection.

7080, 1.08, G, 3 — PCC Edge Restraint
Final trimming of subgrade or subbase, bars and reinforcement, joints and sealing, surface curing and pavement protection, safety fencing, and boxouts for fixtures.

Section 7090 - Cold-in-Place Pavement Recycling

7090, 1.08, A, 3 — Cold-in-Place Recycling
Milling and sizing of existing asphalt layers; protecting street fixtures; development of a job mix formula; adding and mixing recycling agents and additives, if required; supplying and incorporating water; compacting the reclaimed mix; shaping of the mix; completing secondary compaction, if required; removing any loose or excess material; and final clean up.

7090, 1.08, B, 3 — Bituminous Recycling Agents
Furnishing and placing of materials and mixing the agent into the recycled mix.

7090, 1.08, C, 3 — Chemical Recycling Additives
Furnishing and placing of materials and mixing the agent into the recycled mix.

Section 7091 - Full Depth Reclamation

7091, 1.08, A, 3 — Full Depth Reclamation
Pulverizing and sizing of existing asphalt layers; incorporating and mixing of existing underlying materials; protecting street fixtures; development of a job mix formula; adding and mixing stabilizing agents and additives, if required; compacting the reclaimed mix; shaping of the mix; removing any loose or excess material; curing; and final clean up.

7091, 1.08, B, 3 — Mechanical Stabilization Agents
Furnishing and placing of aggregate and blending of the aggregates.

7091, 1.08, C, 3 — Bituminous Stabilization Agents
Furnishing and placing of materials and mixing the agent into the reclaimed mix.

7091, 1.08, D, 3 — Chemical Stabilization Agents
Furnishing and placing of materials and mixing the agent into the reclaimed mix.

7091, 1.08, F, 3 — Interlayer for Cement Stabilized Base
Surface cleaning, furnishing, and placing of the specified interlayer.

Section 8010 - Traffic Signals

8010, 1.08, B, 3 — Temporary Traffic Signal
Furnishing, installing, maintaining, and removing poles; wiring; traffic signal control equipment including pedestrian equipment if specified; all modifications of signal timing due to changes in construction staging; relocation of trailer mounted temporary traffic signal systems; placement in another physical location to address changes in construction staging; and all appurtenances.

Section 8020 - Pavement Markings

8020, 1.08, B, 3 — Painted Pavement Markings, Solvent/Waterborne
Reflectorizing spheres, layout, surface preparation, and application of marking paint.

8020, 1.08, C, 3 — Painted Pavement Markings, Durable
Layout, surface preparation, and application of marking paint.

8020, 1.08, D, 3 — Painted Pavement Markings, High-Build
Layout, surface preparation, and application of marking paint.

8020, 1.08, E, 3 — Permanent Tape Markings
Layout, surface preparation, and application of marking tape.

8020, 1.08, F, 3 — Wet, Retroreflective Removable Tape Markings
Layout, surface preparation, application, and removal.

8020, 1.08, G, 3 — Painted Symbols and Legends
Layout, surface preparation, and application of each symbol and legend.

8020, 1.08, H, 3 — Precut Symbols and Legends
Layout, surface preparation, and application of each symbol and legend.

8020, 1.08, I, 3 — Temporary Delineators
Installation and removal of delineators.

8020, 1.08, J, 3 — Raised Pavement Markers
Installation and removal of pavement markers.

8020, 1.08, K, 3 — Pavement Markings Removed
Pavement marking removal and waste material collection, removal, and disposal.

8020, 1.08, L, 3 — Symbols and Legends Removed
Symbol and legend marking removal and waste material collection, removal, and disposal.

8020, 1.08, M, 3 — Grooves Cut for Pavement Markings
Layout, cutting grooves, collection and disposal of removed material, and additional groove width and transition length beyond the pavement marking dimensions.

8020, 1.08, N, 3 — Grooves Cut for Symbols and Legends
Layout, cutting grooves, and collection and disposal of removed material.

Section 8030 - Temporary Traffic Control

8030, 1.08, A, 3 — Temporary Traffic Control
Installation, maintenance, and removal of temporary traffic control; total roadway closures with installation and removal of detour signing as shown in the contract documents; removal and reinstallation or covering of permanent traffic control devices that conflict with the temporary traffic control plan; monitoring and documenting traffic control conditions; and flaggers. When required in the contract documents, the following are also included in traffic control unless a separate bid item is provided: portable dynamic message signs, temporary barrier rail, temporary flood lighting, and pilot cars.

Section 9010 - Seeding

9010, 1.08, A, 1, c — Conventional Seeding, Seeding
Removal of rock and other debris from the area; repairing rills and washes; preparing the seedbed; furnishing and placing seed, including any treatment required; furnishing and placing fertilizer and mulch; and furnishing water and other care during the care period, unless these items are bid separately.

9010, 1.08, B, 3 — Hydraulic Seeding, Seeding, Fertilizing, and Mulching
Removal of rock and other debris from the area; repairing rills and washes; preparing the seedbed; furnishing and placing seed, including any treatment required; furnishing and placing fertilizer and mulch; and furnishing water and other care during the care period, unless these items are bid separately.

9010, 1.08, C, 3 Pneumatic Seeding, Seeding, Fertilizing, and Mulching
Removal of rock and other debris from the area; repairing rills and washes; preparing the seedbed; furnishing and placing seed, including any treatment required; furnishing and placing fertilizer and mulch; and furnishing water and other care during the care period, unless these items are bid separately.

9010, 1.08, D, 3 Watering
Water, pumps, meters, equipment, water tanker/container, transportation, hoses, and sprinklers.

9010, 1.08, E, 3 Warranty
All work required to correct any defects in the original placement of the seeding for the period of time designated.

Section 9020 - Sodding

9020, 1.08, A, 3 Sod
Preparation of sod and sodbed, stakes, fertilizing, watering, maintenance, and clean-up. Also includes any necessary sod replacements during maintenance period.

Section 9030 - Plant Material and Planting

9030, 1.08, A, 3 Plants (by count)
Delivery, excavation, installation, watering, placing backfill material, mulching, wrapping, staking or guying, herbicide, maintenance during the establishment period, and replacements.

9030, 1.08, B, 3 Plants (by count), With Warranty
Delivery, excavation, installation, watering, placing backfill material, mulching, wrapping, staking or guying, herbicide, maintenance during the establishment and warranty periods, and replacements.

9030, 1.08, C, 3 Plants (by lump sum)
Delivery, excavation, installation, watering, placing backfill material, mulching, wrapping, staking or guying, herbicide, maintenance during the establishment period, and replacements.

9030, 1.08, D, 3 Plants (by lump sum), With Warranty
Delivery, excavation, installation, watering, placing backfill material, mulching, wrapping, staking or guying, herbicide, maintenance during the establishment and warranty period, and replacements.

9030, 1.08, E, 3 Tree Drainage Wells
Excavation, furnishing and placing rock, engineering fabric, and placing backfill material.

Section 9040 - Erosion and Sediment Control

9040, 1.07, C	When applicable, conduct all operations in compliance with the Iowa DNR NPDES General Permit No. 2. Labor, equipment, or materials not included as a bid item, but necessary to prevent stormwater contamination from construction related sources, are considered incidental. Incidental work related to compliance with the permit may include, but is not limited to: hazardous materials protection, fuel containment, waste disposal, and providing employee sanitary facilities.
9040, 1.08, A, 1, c	SWPPP Preparation Development of a SWPPP by the Contractor meeting local and state agency requirements, filing the required public notices, filing a Notice of Intent for coverage of the project under the Iowa DNR NPDES General Permit No. 2, and payment of associated NPDES permit fees.
9040, 1.08, A, 2, c	SWPPP Management All work required to comply with the administrative provisions of the Iowa DNR NPDES General Permit No. 2; including record keeping, documentation, updating the SWPPP, filing the Notice of Discontinuation, etc. Item also includes weekly inspections required to satisfy the provisions of General Permit No. 2, unless otherwise specified in the contract documents.
9040, 1.08, D, 1, c	Filter Socks, Installation Anchoring stakes.
9040, 1.08, D, 2, c	Filter Socks, Removal Restoration of the area to finished grade and off-site disposal of filter socks and accumulated sediment.
9040, 1.08, E, 3	Temporary RECP Excavation, staples, anchoring devices, and material for anchoring slots.
9040, 1.08, F, 1, c	Wattles, Installation Anchoring stakes.
9040, 1.08, F, 2, c	Wattles, Removal Restoration of the area to finished grade and off-site disposal of wattle and accumulated sediment.
9040, 1.08, G, 1, c	Check Dams, Rock Engineering fabric.
9040, 1.08, G, 2, a, 3)	Check Dams, Manufactured, Installation Anchoring stakes.
9040, 1.08, G, 2, b, 3)	Check Dams, Manufactured, Removal Restoration of the area to finished grade and off-site disposal of manufactured check dam and accumulated sediment.
9040, 1.08, H, 3	Temporary Earth Diversion Structures Removal of the structure upon completion of the project.

9040, 1.08, I, 3	Level Spreaders Maintaining the spreader during the period of construction and removal upon completion of the project, unless otherwise specified in the contract documents.
9040, 1.08, J, 3	Rip Rap Engineering fabric.
9040, 1.08, K, 3	Temporary Pipe Slope Drains Excavation, furnishing and installing pipe and pipe aprons, grading, and removal of the slope drain upon completion of the project.
9040, 1.08, L, 1, c	Sediment Basin, Outlet Structure Concrete base, dewatering device, anti-vortex device, outlet pipe, and anti-seep collars (if specified).
9040, 1.08, L, 2, c	Sediment Basin, Removal of Sediment Dewatering and removal and off-site disposal of accumulated sediment.
9040, 1.08, L, 3, c	Sediment Basin, Removal of Outlet Structure Dewatering and off-site disposal of the outlet structure, concrete base, emergency spillway, and accumulated sediment.
9040, 1.08, M, 1, c	Sediment Trap Outlet, Installation Engineering fabric.
9040, 1.08, M, 2, c	Sediment Trap Outlet, Removal of Sediment Dewatering and removal and off-site disposal of accumulated sediment.
9040, 1.08, M, 3, c	Sediment Trap Outlet, Removal of Device Dewatering and off-site disposal of sediment trap outlet and accumulated sediment.
9040, 1.08, N, 1, c	Silt Fence or Silt Fence Ditch Check, Installation Anchoring posts.
9040, 1.08, N, 2, c	Silt Fence or Silt Fence Ditch Check, Removal of Sediment Anchoring posts.
9040, 1.08, N, 3, c	Silt Fence or Silt Fence Ditch Check, Removal of Device Restoration of the area to finished grade and off-site disposal of fence, posts, and accumulated sediment.
9040, 1.08, O, 1, c	Stabilized Construction Entrance (by Square Yard) Subgrade stabilization fabric.
9040, 1.08, O, 2, c	Stabilized Construction Entrance (by Ton) Subgrade stabilization fabric.
9040, 1.08, P, 1, c	Dust Control, Water Furnishing, transporting, and distributing water to the haul road.
9040, 1.08, R, 3	Turf Reinforcement Mats (TRM) Excavation, staples, anchoring devices, and material for anchoring slots.

9040, 1.08, T, 1, c — Inlet Protection Device, Installation
Removal of the device upon completion of the project.

9040, 1.08, T, 2, c — Inlet Protection Device, Maintenance
Removal and off-site disposal of accumulated sediment.

9040, 1.08, U, 3 — Flow Transition Mat
Anchoring devices.

Section 9050 - Gabions and Revet Mattresses

9050, 1.08, A, 3 — Gabions
Furnishing and assembling wire mesh baskets, PVC coating (if specified in the contract documents), fasteners, furnishing and placing gabion stone, engineering fabric, and anchor stakes.

9050, 1.08, B, 3 — Revet Mattresses
Furnishing and assembling wire mesh baskets, PVC coating (if specified in the contract documents), fasteners, furnishing and placing mattress stone, engineering fabric, and anchor stakes.

Section 9060 - Chain Link Fence

9060, 1.08, A, 3 — Chain Link Fence
Posts, fabric, rails, braces, truss rods, ties, tension wire, tension bands, tension bars, grounds, fittings, PVC coating (if specified in the contract documents), excavation of post holes, and concrete encasement of posts.

9060, 1.08, B, 3 — Gates
Gate rails, fabric, stretcher bars, braces, vertical stay, hinges, latches, keepers, drop bar lock, center gate stop, and barbed wire (if specified).

9060, 1.08, C, 3 — Barbed Wire
Furnishing and installing all necessary strands of barbed wire, anchors, and barbed wire supporting arms.

9060, 1.08, D, 3 — Removal and Reinstallation of Existing Fence
Removing vegetation; removing all fence fabric, appurtenances, posts, and gates; removal of concrete encasement from posts; storage of the removed fencing materials to prevent damage; reinstallation of the posts, gates, and fabric, including all appurtenances; and replacement of any fence parts that are not able to be salvaged and reinstalled. Replace items damaged from Contractor's operations with new materials, at no additional cost to the Contracting Authority.

9060, 1.08, E, 3 — Removal of Fence
Off-site disposal of fence (including posts, concrete encasement of posts, gates, grounds, and barbed wire) and placing and compacting backfill material in post holes.

9060, 1.08, F, 3 — Temporary Fence
Furnishing, installing, and removing posts, fabric, ties, and fittings.

Section 9070 - Landscape Retaining Walls

9070, 1.08, A, 3 — Modular Block Retaining Wall
Excavation, foundation preparation, furnishing and placing wall units, geogrid (if necessary), leveling pad, subdrain, porous backfill material for subdrain, engineering fabric for subdrain, granular backfill material, suitable backfill material, and shoring as necessary.

9070, 1.08, B, 3 — Limestone Retaining Wall
Excavation, foundation preparation, furnishing and placing leveling pad, limestone, subdrain, porous backfill material for subdrain, engineering fabric for subdrain, suitable backfill material, and shoring as necessary.

9070, 1.08, C, 3 — Landscape Timbers
Excavation, foundation preparation, furnishing and placing leveling pad, landscape timbers, spikes, reinforcing bar, subdrain, porous backfill material for subdrain, engineering fabric for subdrain, suitable backfill material, and shoring as necessary.

Section 9071 - Segmental Block Retaining Walls

9071, 1.08, A, 3 — Segmented Block Retaining Wall
Design by a Licensed Professional Engineer in the State of Iowa, excavation, foundation preparation, furnishing and placing wall units, geogrid, leveling pad, subdrain, porous backfill material for subdrain, engineering fabric for subdrain, suitable backfill material, and shoring as necessary.

9071, 1.08, C, 3 — Granular Backfill Material
Furnishing, transporting, placing, and compacting material.

Section 9072 - Combined Concrete Sidewalk and Retaining Walls

9072, 1.08, A, 3 — Combined Concrete Sidewalk and Retaining Wall
Excavation; foundation preparation; furnishing and placing concrete and reinforcing steel; joint material; subdrain; porous backfill material; suitable backfill material; finishing disturbed areas; and shoring as necessary.

Section 9080 - Concrete Steps, Handrails, and Safety Rail

9080, 1.08, A, 3 — Concrete Steps
Reinforcement, expansion joint material, and preparation of subgrade.

9080, 1.08, B, 3 — Handrail
Posts, mounting hardware or concrete grout, and finishing (painted, galvanized, or powder coated).

9080, 1.08, C, 3 — Safety Rail
Posts, pickets, mounting hardware, epoxy grout, and finishing (painted, galvanized, or powder coated).

Section 10,010 - Demolition

10,010, 1.08, A, 3 — Demolition Work
Removal of trees, brush, vegetation, buildings, building materials, contents of buildings, appliances, trash, rubbish, basement walls, foundations, sidewalks, steps, and driveways from the site; disconnection of utilities; furnishing and compaction of backfill material; furnishing and placing topsoil; finish grading of disturbed areas; placing and removing safety fencing; removal of fuel and septic tanks and cisterns; seeding; and payment of any permit or disposal fees.

10,010, 1.08, B, 3 — Plug or Abandon Well
Obtaining all permits; plug or abandon private wells according to local, state, and federal regulations.

Section 11,010 - Construction Survey

11,010, 1.08, A, 3 — Construction Survey
The costs of resetting project control points, re-staking, and any additional staking requested beyond the requirements of this section.

11,010, 1.08, B, 3 — Monument Preservation and Replacement
Property research and documentation, locating monuments prior to construction, replacement of disturbed monuments, and preparation and filing of the monument preservation certificate.

Section 11,020 - Mobilization

11,020, 1.07, B — When the proposal form does not include a bid item for mobilization, all costs incurred by the contractor for mobilization are incidental to other work and no separate payment will be made.

11,020, 1.08, A, 3 — Mobilization
The movement of personnel, equipment, and supplies to the project site; the establishment of offices, buildings, and other facilities necessary for the project; and bonding, permits, and other expenses incurred prior to construction.

Section 11,040 - Temporary Sidewalk Access

11,040, 1.08, A, 3 — Temporary Pedestrian Residential Access
Supplying and placing granular material, continuous maintenance of granular surface, removal of temporary granular sidewalk, and restoring disturbed surfaces to a condition equal to that which existed prior to construction.

11,040, 1.08, B, 3 — Temporary Granular Sidewalk
Excavation, grading, timber edging, supplying and placing granular material, continuous maintenance of granular surface, removal of temporary granular sidewalk, and restoring disturbed surfaces to a condition equal to that which existed prior to construction.

11,040, 1.08, C, 3 — Temporary Longitudinal Channelizing Device
Construction, placement, maintenance, and removal of the device.

Section 11,050 - Concrete Washout

11,050, 1.08, A, 3 Concrete Washout
Providing concrete washwater containment, collection, and disposal.

Bid Items

Below is a list of units of measurements/payment and the abbreviations used in the bid item list.

UNITS	Units of Measurement/Payment	UNITS	Units of Measurement/Payment
ACRE	Acres	SF	Square Feet
CY	Cubic Yards	SQ	Squares
EACH	Each	STA	Stations
LB	Pounds	SY	Square Yards
LF	Linear Feet	TON	Tons
LS	Lump Sum	UNIT	Units
MGAL	1,000 Gallons		

A. Standard Bid Items

The following is a list of suggested standard bid items based on the SUDAS Specifications. The four digits first mentioned in the item number below reference the SUDAS Specifications Section; measurement and payment descriptions are included in subsection 1.08. Please note, some of the items below require additional information, such as type, size, width, thickness, etc.

Item Number	Item Description	Unit
Section 2010 - Earthwork, Subgrade, and Subbase		
2010-A	Clearing and Grubbing	UNIT
2010-B	Clearing and Grubbing	ACRE
2010-C	Clearing and Grubbing	LS
2010-D-1	Topsoil, On-site	CY
2010-D-2	Topsoil, Compost-amended	CY
2010-D-3	Topsoil, Off-site	CY
2010-E	Excavation, Class 10, Class 12, or Class 13	CY
2010-G	Subgrade Preparation	SY
2010-H	Subgrade Treatment, ____ (Type)	SY
2010-I	Subbase, ____ (Type)	SY
2010-J-1	Removal of Structure, ____ (Type)	EA
2010-J-2-a	Removal of Known Box Culvert, ____ (Type), ____ (Size)	LF
2010-J-2-c	Removal of Known Pipe Culvert, ____ (Type), ____ (Size)	LF
2010-J-3-a	Removal of Known Pipe and Conduit, ____ (Type), ____ (Size)	LF
2010-K-1	Filling and Plugging of Known Pipe Culverts, Pipes, and Conduits, ____ (Type), ____ (Size)	LF
2010-L	Compaction Testing	LS

Item Number	Item Description	Unit
Section 3010 - Trench Excavation and Backfill		
3010-B	Rock Excavation	CY
3010-C	Trench Foundation	TON
3010-D	Replacement of Unsuitable Backfill Material	CY
3010-E	Special Pipe Embedment or Encasement	LF
3010-F	Trench Compaction Testing	LS
Section 4010 - Sanitary Sewers		
4010-A-1	Sanitary Sewer Gravity Main, Trenched, ____ (Type), ____ (Size)	LF
4010-A-2	Sanitary Sewer Gravity Main, Trenchless, ____ (Type), ____ (Size)	LF
4010-B-1	Sanitary Sewer Gravity Main with Casing Pipe, Trenched, ___ (Type), ___ (Size)	LF
4010-B-2	Sanitary Sewer Gravity Main with Casing Pipe, Trenchless, ___ (Type), ___ (Size)	LF
4010-C-1	Sanitary Sewer Force Main, Trenched, ____ (Type), ____ (Size)	LF
4010-C-2	Sanitary Sewer Force Main, Trenchless, ____ (Type), ____ (Size)	LF
4010-D-1	Sanitary Sewer Force Main with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
4010-D-2	Sanitary Sewer Force Main with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
4010-E	Sanitary Sewer Service Stub, ____ (Type), ____ (Size)	LF
4010-F	Sanitary Sewer Service Relocation	EA
4010-G	Sewage Air Release Valve and Pit	EA
4010-H	Removal of Sanitary Sewer, ____ (Type), ____ (Size)	LF
4010-I	Sanitary Sewer Cleanout	EA
4010-K	Sanitary Sewer Abandonment, Plug	EA
4010-L	Sanitary Sewer Abandonment, Fill and Plug	LF
Section 4020 - Storm Sewers		
4020-A-1	Storm Sewer, Trenched, ____ (Type), ____ (Size)	LF
4020-A-2	Storm Sewer, Trenchless, ____ (Type), ____ (Size)	LF
4020-B-1	Storm Sewer with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
4020-B-2	Storm Sewer with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
4020-C	Linear Trench Drain	LF
4020-D	Removal of Storm Sewer, ____ (Type), ____ (Size)	LF
4020-F	Storm Sewer Abandonment, Plug	EA
4020-G	Storm Sewer Abandonment, Fill and Plug	LF
Section 4030 - Pipe Culverts		
4030-A-1	Pipe Culvert, Trenched, ____ (Type), ____ (Size)	LF
4030-A-2	Pipe Culvert, Trenchless, ____ (Type), ____ (Size)	LF
4030-B	Pipe Apron, ____ (Type), ____ (Size)	EA
4030-C	Footing for Concrete Pipe Apron, ____ (Type), ____ (Size)	EA
4030-D	Pipe Apron Guard	EA
Section 4040 - Subdrains and Footing Drain Collectors		
4040-A	Subdrain, ____ (Type), ____ (Size)	LF
4040-B	Footing Drain Collector, ____ (Type), ____ (Size)	LF
4040-C	Subdrain Cleanout, ____ (Type), ____ (Size)	EA

Item Number	Item Description	Unit
4040-C	Footing Drain Cleanout, ____ (Type), ____ (Size)	EA
4040-D	Subdrain Outlets and Connections, ____ (Type), ____ (Size)	EA
4040-D	Footing Drain Outlets and Connections, ____ (Type), ____ (Size)	EA
4040-E	Storm Sewer Service Stub, ____ (Type), ____ (Size)	LF
Section 4050 - Pipe Rehabilitation		
4050-A-1	Pre-Rehabilitation Cleaning and Inspection, ____ (Size)	LF
4050-A-2	Additional Sewer Cleaning	HOUR
4050-B	Remove Protruding Service Connections	EA
4050-C-1	CIPP Main Lining	LF
4050-C-2	Building Sanitary Sewer Service Reinstatement	EA
4050-C-3	CIPP End Seal	EA
4050-D	CIPP Point Repair, ____ (Size)	EA
4050-E-1	CIPP Service Pipe, Connection, ____ (Size)	EA
4050-E-2	CIPP Service Repair, Partial Pipe, ____ (Size)	EA
4050-F-1	Pressure Testing of Mainline Sewer Joints, ____ (Size)	EA
4050-F-2	Injection Grouting of Mainline Sewer Joints, ____ (Size)	EA
4050-F-3	Pressure Testing of Service Connections, ____ (Size)	EA
4050-F-4	Injection Grouting of Service Connections, ____ (Size)	EA
4050-F-5	Chemical Grout	EA
4050-G-3	Bypass Pumping	LS
4050-H-1	Spot Repairs by Pipe Replacement	EA
4050-H-2	Spot Repairs by Pipe Replacement	LF
Section 5010 - Pipe and Fittings		
5010-A-1	Water Main, Trenched, ____ (Type), ____ (Size)	LF
5010-A-2	Water Main, Trenchless, ____ (Type), ____ (Size)	LF
5010-B-1	Water Main with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
5010-B-2	Water Main with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
5010-C-1	Fitting, ____ (Type), ____ (Size)	EA
5010-C-2	Fitting, ____ (Type), ____ (Size)	LB
5010-D	Water Service Stub, ____ (Type), ____ (Size)	EA
5010-E-1	Water Service Pipe, ____ (Type), ____ (Size)	LF
5010-E-2	Water Service Corporation, ____ (Type), ____ (Size)	EA
5010-E-3	Water Service Curb Stop and Box, ____ (Type), ____ (Size)	EA
Section 5020 - Valves, Fire Hydrants, and Appurtenances		
5020-A	Valve, ____ (Type), ____ (Size)	EA
5020-B	Tapping Valve Assembly, ____ (Size)	EA
5020-C	Fire Hydrant Assembly	EA
5020-D	Flushing Device (Blowoff), ____ (Size)	EA
5020-F	Valve Box Extension	EA
5020-G	Valve Box Replacement	EA

Item Number	Item Description	Unit
5020-H	Fire Hydrant Adjustment	EA
5020-I	Fire Hydrant Assembly Removal	EA
5020-J	Valve Removal	EA
5020-K	Valve Box Removal	EA
Section 6010 - Structures for Sanitary and Storm Sewers		
6010-A	Manhole, ____ (Type), ____ (Size)	EA
6010-B	Intake, ____ (Type), ____ (Size)	EA
6010-C-1	Internal Drop Connection	EA
6010-C-2	External Drop Connection	EA
6010-D	Casting Extension Ring	EA
6010-E	Manhole Adjustment, Minor	EA
6010-E	Intake Adjustment, Minor	EA
6010-F	Manhole Adjustment, Major	EA
6010-F	Intake Adjustment, Major	EA
6010-G	Connection to Existing Manhole	EA
6010-G	Connection to Existing Intake	EA
6010-H	Remove Manhole	EA
6010-H	Remove Intake	EA
Section 6020 - Rehabilitation of Existing Manholes		
6020-A	Infiltration Barrier, ____ (Type)	EA
6020-B	In-situ Manhole Replacement, Cast-in-place Concrete	VF
6020-C	In-situ Manhole Replacement, Cast-in-place Concrete with Plastic Liner	VF
6020-D	Manhole Lining with Centrifugally Cast Cementitious Mortar Liner with Epoxy Seal	VF
Section 7010 - Portland Cement Concrete Pavement		
7010-A	Pavement, PCC, ____ (Thickness)	SY
7010-E	Curb and Gutter, ____ (Width), ____ (Thickness)	LF
7010-F	Beam Curb	LF
7010-G	Concrete Median	SY
7010-H	PCC Railroad Crossing Approach	SY
7010-I	PCC Pavement Samples and Testing	LS
7010-K	PCC Pavement Widening, ____ (Thickness)	SY
Section 7011 - Portland Cement Concrete Overlays		
7011-A-1	PCC Overlay, Furnish Only	CY
7011-A-2	PCC Overlay, Place Only	SY
7011-A-3	Surface Preparation for Bonded PCC Overlay	SY
7011-A-4	Surface Preparation for Unbonded PCC Overlay	SY
7011-A-5	HMA Separation Layer for Unbonded PCC Overlay	SY
7011-A-6	Geotextile Fabric Separation Layer for Unbonded PCC Overlay	SY

Item Number	Item Description	Unit
Section 7020 - Hot Mix Asphalt Pavement		
7020-A	Pavement, HMA	TON
7020-B	Pavement, HMA, ____ (Thickness)	SY
7020-C	HMA Base Widening	TON
7020-D	HMA Base Widening, ____ (Thickness)	SY
7020-E	HMA Railroad Crossing Approach	SY
7020-I	HMA Pavement Samples and Testing	LS
Section 7021 - Hot Mix Asphalt Overlays		
7021-A	HMA Overlay	TON
7021-B	HMA Overlay, ____ (Thickness)	SY
Section 7030 - Sidewalks, Shared Use Paths, and Driveways		
7030-A	Removal of Sidewalk	SY
7030-A	Removal of Shared Use Path	SY
7030-A	Removal of Driveway	SY
7030-B	Removal of Curb	LF
7030-C	Shared Use Path, ____ (Type), ____ (Thickness)	SY
7030-D	Special Subgrade Preparation for Shared Use Path	SY
7030-E	Sidewalk, PCC, ____ (Thickness)	SY
7030-F	Brick/Paver Sidewalk with Pavement Base	SY
7030-G	Detectable Warnings	SF
7030-H-1	Driveway, Paved, ____ (Type), ____ (Thickness)	SY
7030-H-2	Driveway, Granular	SY or TON
7030-I	Sidewalk Assurance Testing	LS
7030-I	Shared Use Path Assurance Testing	LS
7030-I	Driveway Assurance Testing	LS
Section 7040 - Pavement Rehabilitation		
7040-A	Full Depth Patches	SY
7040-B	Subbase Over-excavation	TON
7040-C	Partial Depth Patches	SF
7040-D	Crack and Joint Cleaning and Filling, Hot Pour	LF
7040-E-1	Crack Cleaning and Filling, Emulsion	LF
7040-E-2	Hot Mix Asphalt for Crack Filling	TON
7040-F	Diamond Grinding	SY
7040-G	Milling	SY
7040-H	Pavement Removal	SY
7040-I	Curb and Gutter Removal	LF
7040-J	Dowel Bar Retrofit	EA
7040-K	Core Hole Cutting and Replacement	EA
Section 7050 - Asphalt Stabilization		
7050-A	Asphalt Stabilization	SY

Item Number	Item Description	Unit
Section 7060 - Bituminous Seal Coat		
7060-A	Bituminous Seal Coat	SY
7060-B-1	Cover Aggregate, ____ (Size)	TON
7060-B-2	Binder Bitumen	GAL
Section 7070 - Emulsified Asphalt Slurry Seal		
7070-A	Emulsified Asphalt Slurry Seal	SY
7070-B-1	Aggregate, ____ (Size)	TON
7070-B-2	Asphalt Emulsion	GAL
Section 7080 - Permeable Interlocking Pavers		
7080-B	Engineering Fabric	SY
7080-C	Underdrain, ____ (Type), ____ (Size)	LF
7080-D	Storage Aggregate	TON
7080-E	Filter Aggregate	TON
7080-F	Permeable Interlocking Pavers, ____ (Type)	SY
7080-G	PCC Edge Restraint, ____ (Type), ____ (Size)	LF
Section 7090 - Cold-in-Place Pavement Recycling		
7090-A	Cold-in-Place Recycling	SY
7090-B	Bituminous Recycling Agents	GAL
7090-C	Chemical Recycling Additives	TON
Section 7091 - Full Depth Reclamation		
7091-A	Full Depth Reclamation	SY
7091-B	Mechanical Stabilization Agents	TON
7091-C	Bituminous Stabilization Agents	GAL
7091-D	Chemical Stabilization Agents	TON
7091-E	Microcracking	SY
7091-F	Interlayer for Cement Stabilized Base, ____ (Type), ____ (Thickness)	SY
Section 8010 - Traffic Control		
8010-A	Traffic Signal	LS
8010-B	Temporary Traffic Signal	LS
Section 8020 - Pavement Markings		
8020-B	Painted Pavement Markings, Solvent/Waterborne	STA
8020-C	Painted Pavement Markings, Durable	STA
8020-D	Painted Pavement Markings, High-Build	STA
8020-E	Permanent Tape Markings	STA
8020-F	Wet, Retroreflective Removable Tape Markings	STA
8020-G	Painted Symbols and Legends	EA
8020-H	Precut Symbols and Legends	EA
8020-I	Temporary Delineators	EA
8020-J	Raised Pavement Markers	EA
8020-K	Pavement Markings Removed	STA

Item Number	Item Description	Unit
8020-L	Symbols and Legends Removed	EA
8020-M	Grooves Cut for Pavement Markings	STA
8020-N	Grooves Cut for Symbols and Legends	EA
Section 8030 - Temporary Traffic Control		
8030-A	Temporary Traffic Control	LS
Section 9010 - Seeding		
9010-A	Conventional Seeding, Seeding, Fertilizing, and Mulching	AC
9010-B	Hydraulic Seeding, Seeding, Fertilizing, and Mulching	AC
9010-C	Pneumatic Seeding, Seeding, Fertilizing, and Mulching	AC
9010-D	Watering	MGAL
9010-E	Warranty	LS
Section 9020 - Sodding		
9020-A	Sod	SQ
Section 9030 - Plant Material and Planting		
9030-A	Plants, ____ (Type)	EA
9030-B	Plants with Warranty, ____ (Type)	EA
9030-C	Plants	LS
9030-D	Plants with Warranty	LS
9030-E	Tree Drainage Wells	EA
Section 9040 - Erosion and Sediment Control		
9040-A-1	SWPPP Preparation	LS
9040-A-2	SWPPP Management	LS
9040-B	Compost Blanket, ____ (Thickness)	SF
9040-C	Filter Berm, ____ (Size)	LF
9040-D-1	Filter Sock, ____ (Size)	LF
9040--D-2	Filter Sock, Removal	LF
9040-E-0	Temporary RECP, ____ (Type)	SY
9040-F-1	Wattle, ____ (Type), ____ (Size)	LF
9040-F-2	Wattle, Removal	LF
9040-G-1	Check Dam, Rock	TON
9040-G-2-a	Check Dam, Manufactured, ____ (Type), ____ (Size)	LF
9040-G-2-b	Check Dam, Manufactured, Removal, ____ (Type)	LF
9040-H-0	Temporary Earth Diversion Structure, ____ (Type), ____ (Size)	LF
9040-I-0	Level Spreader	LF
9040-J-0	Rip Rap, ____ (Type)	TON
9040-K-0	Temporary Pipe Slope Drain, ____ (Type), ____ (Size)	LF
9040-L-1	Sediment Basin, Outlet Structure, ____ (Size)	EA
9040-L-2	Sediment Basin, Removal of Sediment	EA
9040-L-3	Sediment Basin, Removal of Outlet Structure	EA
9040-M-1	Sediment Trap Outlet	TON

Item Number	Item Description	Unit
9040-M-2	Sediment Trap Outlet, Removal of Sediment	EA
9040-M-3	Sediment Trap Outlet, Removal of Device	EA
9040-N-1	Silt Fence or Silt Fence Ditch Check	LF
9040-N-2	Silt Fence or Silt Fence Ditch Check, Removal of Sediment	LF
9040-N-3	Silt Fence or Silt Fence Ditch Check, Removal of Device	LF
9040-O-1	Stabilized Construction Entrance	SY
9040-O-2	Stabilized Construction Entrance	TON
9040-P-1	Dust Control, Water	MGAL
9040-P-2	Dust Control, Product	SY
9040-Q-1	Erosion Control Mulching, Conventional	AC
9040-Q-2	Erosion Control Mulching, Hydromulching	AC
9040-R	Turf Reinforcement Mats, ____ (Type)	SQ
9040-S	Surface Roughening	SF
9040-T-1	Inlet Protection Device, ____ (Type)	EA
9040-T-2	Inlet Protection Device, Maintenance	EA
9040-U	Flow Transition Mat	SF
Section 9050 - Gabions and Revet Mattresses		
9050-A	Gabions, ____ (Type)	CY
9050-B	Revet Mattresses, ____ (Type)	CY
Section 9060 - Chain Link Fence		
9060-A	Chain Link Fence, ____ (Type), ____ (Size)	LF
9060-B	Gates, ____ (Type), ____ (Size)	EA
9060-C	Barbed Wire, ____ (Type of Supporting Arm)	LF
9060-D	Removal and Reinstallation of Existing Fence, ____ (Type), ____ (Size)	LF
9060-E	Removal of Fence	LF
9060-F	Temporary Fence, ____ (Type), ____ (Size)	LF
Section 9070 - Landscape Retaining Walls		
9070-A	Modular Block Retaining Wall	SF
9070-B	Limestone Retaining Wall	SF
9070-C	Landscape Timbers	SF
Section 9071 - Segmental Block Retaining Walls		
9071-A	Segmental Block Retaining Wall	SF
9071-C	Granular Backfill Material	TON
Section 9072 - Combined Concrete Sidewalk and Retaining Wall		
9072-A	Combined Concrete Sidewalk and Retaining Wall	CY
Section 9080 - Concrete Steps, Handrails, and Safety Rail		
9080-A	Concrete Steps, ____ (Type)	SF
9080-B	Handrail, ____ (Type)	LF
9080-C	Safety Rail	LF

Item Number	Item Description	Unit
Section 10,010 - Demolition		
10,010-A	Demolition Work	LS
10,010-B	Plug or Abandon Well	EA
Section 11,010 - Construction Survey		
11,010-A	Construction Survey	LS
11,010-B	Monument Preservation and Replacement	LS
Section 11,020 - Mobilization		
11,020-A	Mobilization	LS
Section 11,030 - Temporary Services During Construction		
11,030-A	Maintenance of Postal Service	LS
11,030-B	Maintenance of Solid Waste Collection	LS
Section 11,040 - Temporary Sidewalk Access		
11,040-A	Temporary Pedestrian Residential Access	SY
11,040-B	Temporary Granular Sidewalk	SY
11,040-C	Temporary Longitudinal Channelizing Device	LF
Section 11,050 - Concrete Washout		
11,050-A	Concrete Washout	LS

B. Supplemental Bid Items

When a new bid item needs to be created, the following format is suggested:

1. If the bid item falls within a SUDAS Specifications Section, but is not identified in SUDAS, use the four digit section number, followed by 999, then a letter. For example, if you want to add a new bid item for sanitary sewers, use 4010-999-A.

2. If the bid item generally falls within a SUDAS Specifications Division (broader category), but is not identified as a particular SUDAS Specifications Section, use the division number, followed by 999, then a letter. For example, if you add pipe bursting and want the bid items organized with the other pipe items, use 4999-A. Or if a supplemental specifications section has been created, the first four digits should match the numbers used in the supplemental. In that instance, it is suggested to use the division number as the first digit, followed by a 9, and then the next numbers as you see fit.

3. If the bid item does not fall within a SUDAS Specifications Division or Section, use 0000, followed by 999, then a letter. For example, 0000-999-A.

4. When making modifications to a standard SUDAS bid item, be sure to address such modifications in the estimate reference notes.

Public Improvement Contracts

A. General

Public improvements contracts should be used to ensure construction of all public improvements to the standards provided by the jurisdiction. These contracts may also be used between the developer, contractor, and the jurisdiction for private subdivision or site developments. After the plans and the contract have been given jurisdictional approval, changes should not be made in the design or scope of work without addenda or a change order approved by the jurisdiction.

If the change involves engineering details shown on the plans, the original plans should be modified by the project engineer and should accompany a change order. Work on portions of the project involved in the change order should not be performed until the change order is approved by the jurisdiction.

B. Contract Documents

The project engineer should use the contract documents required by the jurisdiction. Sample contract document forms are available on the SUDAS website at www.iowasudas.org.

The following items are typically included in the contract documents:

1. Notice to Bidders and Notice of Public Hearing

2. Instructions to Bidders

3. Proposal
   - Part A - Scope of Work
   - Part B - Acknowledgement of Addenda
   - Part C - Bid Items, Quantities, and Prices
   - Part D - General
   - Part E - Additional Requirements
   - Part G - Identity of Bidder
   - Proposal Attachments

4. Bid Bond

5. Contract and Contract Attachment

6. Performance, Payment, and Maintenance Bond

C. Pre-construction Meeting

A coordination meeting regarding the project construction should be held after the award of the contract or selection of the preferred contractor and prior to the work beginning. Either the project engineer or the jurisdictional engineer should conduct the meeting depending on who is responsible for the construction administration. Regardless of who conducts the meeting, the groups invited should include at least the following:

- Funding source representative
- Contractor
- Subcontractors
- Project engineer(s)
- Jurisdictional engineer or representative
- Jurisdictional right-of-way representative
- All utilities potentially impacted by the project
- Railroad representatives, if applicable

At a minimum, the following items should be identified and discussed:

- Funding source requirements
- Who will be subcontractors and what bid items will they be responsible for
- Who are material suppliers and do they have certified products
- Submission of available shop drawings
- Name, address, email address, and phone number for the following:
  - Contractor's project supervisor
  - Subcontractor's project supervisors
  - Project engineer
  - Project construction inspector
  - Jurisdictional engineer or representative
  - 24 hour traffic control contact
  - 24 hour erosion control contact
  - Railroad contact, if applicable
- Project dates and staging schedule, if applicable
- Potential impacts to existing or future utilities
- Review of available right-of-way and any permanent or temporary easements along with any restrictions or special requirements related to adjacent properties
- Review of adjacent property owner needs
- Review construction staking needs if the jurisdiction is responsible for the staking
- Traffic control and detours
- Permitting requirements
- If the work is done under a public contract, discuss payment schedule
- Discuss responsibility for and items to be included on the as-built plans

At the end of the meeting, if all submittals have been made and accepted, the Notice to Proceed could be issued.

D. Materials and Shop Drawings

The project engineer is responsible to review all material submittals and any shop drawings required for the project. The contractor should submit the information as early in the project as possible and the project engineer should complete review of the submittals in an expedited manner so as to not impact the project schedule. Copies of material certifications and approved shop drawings should be included with the as-built plan submittal.

Plans of Record

A. General

As-built plans are required for public improvements that are to be maintained by the jurisdiction, in addition to sidewalk ramps within the public right-of-way and stormwater management facilities.

If the plans of record are not completed by the jurisdiction or the jurisdiction's consultant, specific instructions for completion of the plans of record must be included in the construction contract documents. For non-jurisdictional led projects, such as site developments or subdivisions, the developer must arrange for completion of the plans of record and they must be submitted prior to the work being accepted by the jurisdiction.

Contact the jurisdictional engineer to verify any special requirements beyond this list. Horizontal variations greater than 1 foot must be shown dimensionally or by modified stationing; horizontal variations of 10 feet or greater must be shown graphically.

Submit the as-built plans in the same PDF format as the original plans and use the same legend. Show the date(s) of the as-built survey. Show as-built elevations adjacent to the design elevation, if different.

B. Information to be Shown on Plans of Record

1. General:

a. Final quantities.

b. Plans of record certification or label.

c. Any other information deemed necessary by the jurisdictional engineer.

d. Location and elevation of any drainage tiles or other utilities encountered.

e. Scanned copies of approved material lists and shop drawings.

f. GPS coordinates for all structures, valves, hydrants, fixtures, and any other element identified by the jurisdictional engineer.

2. Paving Plans:

a. Pavement width and all radii at returns, if different from the design.

b. Stationing from the beginning to the end of the construction. Stationing of intakes, manholes, centerline of intersecting streets, and driveways.

c. Cross-sections will generally not be required. However, if the jurisdiction has reason to believe that the plans do not accurately reflect the field conditions, the jurisdiction may require as-built cross-sections.

d. Show any changes in pavement grade or horizontal and vertical curves.

e. Centerline stationing and offset for any lane drops or additions.

3. Sewer Plans:

a. Invert elevations of all pipes at manholes, structures, inlets, outlets, and rim elevations.

b. Lengths, type, and sizes of all pipes.

c. Stationing, location, and type of all structures and begin and end construction.

d. Location of all wyes, tees, or stubs and riser lengths.

e. Structure number system to be labeled for each structure with stationing, location, and type for all structures, cleanouts, and plugs.

4. Drainage Open Channel Plans:

a. Finished grade or flow line profile of open channel and, if required, cross-sections.

b. Invert elevations or flow lines of culverts, drop structure inlets, and outlets.

c. Stationing, location and type of inlets, outlets, structures, and begin and end construction.

5. Water Main Plans:

a. Locations and depths of all pipes, fittings, valves, and fire hydrants.

b. Lengths, type, and sizes of all pipes.

c. Stationing and location and type of all water service stubs. Stub locations should be referenced to lot corners.

d. Fire hydrant number system to be labeled for each hydrant.

e. Length of pipe stubbed out from valves.

f. Existing utilities or other underground features that could reasonably impact the maintenance of the water main.

6. Stormwater Management Facilities:

a. Outlet configuration including location and elevation.

b. Cross-sections and volume of all detention or retention basins.

c. As-built volume vs. design volume of all basins.

d. Elevation of all overflow locations or devices.

7. Sidewalks and Curb Ramps:

a. Elevations at the top and bottom of curb ramps, turning spaces, transition areas, and grade breaks. Smart levels may be used to show finished slopes if approved by the jurisdictional engineer.

b. Table showing as-built slope and distance between all critical points.

c. Table showing cross slope of sidewalk on 25 feet intervals.

d. Location of detectable warning panel with respect to the back of curb or shoulder.

e. Detectable warning width with respect to the width of the pedestrian way.

f. Method or equipment used to determine as-constructed elevations and slopes.

8. Traffic Signals:

a. Location of all underground conduit.

b. Location of all poles and handholes.

c. Mounting heights of mast arms, traffic signal heads, luminaires, if applicable, and pedestrian heads.

d. Location of pavement detector loop type, size, and location, if applicable.

e. All shop drawings, products, and material documentation.

9. Utilities: The project engineer is not required to locate utilities that are not part of or affected by the construction project or private utility lines that were installed by the utility company

Products

The SUDAS Specifications do not reference proprietary products. Specific technical specifications are included as a means of identifying products that will be acceptable for the project requirements.

To verify compliance with the SUDAS Specifications, engineers must work with contractors to identify products that meet the current technical specifications and that meet the project needs. If a new product is proposed for use on a project, the engineer can establish their own special provisions to allow the use of the specific product, whether it meets the SUDAS Specifications or not. If the new product does not meet the current technical specifications and the engineer feels the product has consistent application on similar projects, they can bring it forward to their SUDAS district committee. The engineer must be willing to discuss their use of the product and how they see the product benefiting the urban public works projects being developed around the state.

Once a new product is proposed, the members of the district committees from across the state are asked to give their input as to whether the product has statewide appeal and if standard specifications should be written. If that response is favorable, specifications are drafted and taken around to the next set of district meetings. Compliance with national standards met by other similar products is important to the group's deliberations.

If there is a favorable recommendation from the district committees, the change is brought to the Board of Directors for a vote and possible inclusion in a future edition of the SUDAS Specifications.