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General Conditions

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 public improvement construction plans. Public 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 in the local Jurisdiction system, the improvements are 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 on their own if these types of improvements are to follow the SUDAS Design Manual.

B. 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 public 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 do arise that require special considerations. Therefore, to eliminate hardships or problems, the Jurisdiction may choose to vary the design criteria, procedures, and regulations. Should variances from the SUDAS Design Manual be required, the reason for the variance should be documented and evaluated on a case-by-case basis.

The design standards as described for new public 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 supplemental design standards 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 or comply with the SUDAS Design Manual and fit 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.

C. Organization of the Manual

The SUDAS Design Manual is organized into fourteen chapters: General Provisions, Stormwater, Sanitary Sewers, Water Mains, Roadway Design, Geotechnical, Erosion and Sediment Control, Recreational Trails & Sidewalk, Utilities, Street Tree Criteria, Street Lighting, Parking Lots, Traffic Signals, and Trenchless Construction. 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. The chapters are designed so that revisions can be made by updating the effected sections, as necessary, to reflect up-to-date engineering practices and changes in technology.

D. Jurisdiction and Agencies

The SUDAS Design Manual applies to participating local governments except where superseded by state and federal requirements.

E. Amendment and Revisions

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

F. Enforcement Responsibility

Each jurisdiction is responsible for enforcing the adopted provisions of the SUDAS Design Manual.

G. Interpretation

The Jurisdiction will make the interpretation and application of the SUDAS Design Manual. The following classification of improvements and definitions are provided for a clearer understanding of general policy.

H. 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 prior to implementation. Materials meeting the technical specifications should be allowed unless specifically prohibited by the Jurisdiction.



Classifications of Improvements and Definitions

A. Jurisdictional Engineer

The local Jurisdiction's authorized representative who is appointed to carry out the provisions of the SUDAS Design Manual and the SUDAS Standard Specifications (referred to as the SUDAS Specifications).

B. Project Engineer

The person, firm, or corporation who is legally responsible for the design and/or administration of the project. The local jurisdiction may require designating a specific person as the Project Engineer.

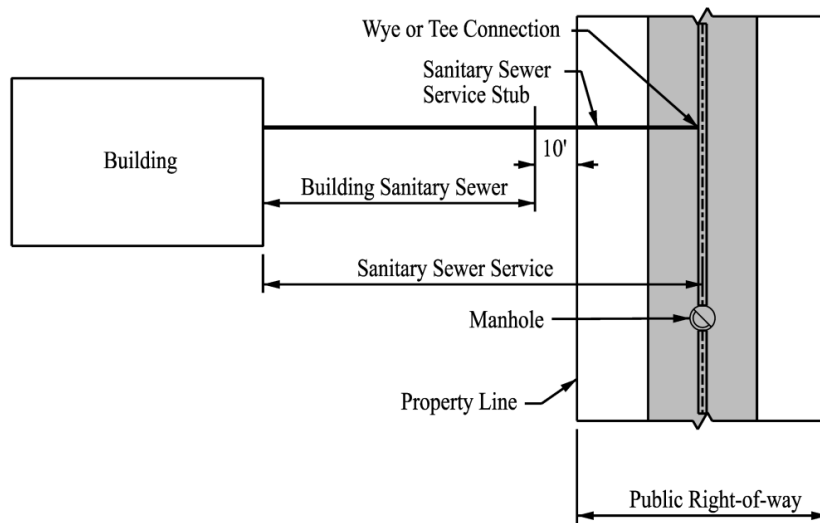
C. Inspector or Construction Observer

The Project Engineer or the Jurisdictional Engineer may appoint inspectors 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 inspectors will not be authorized to revoke, alter, enlarge, or relax the provisions of the specifications. When an inspector is placed on a project, the inspector will keep the Project Engineer or the Jurisdictional Engineer informed as to the progress and quality of the work and the manner in which it is being done.

D. 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 (normally 10 feet) as specified by the Jurisdictional Engineer. The sanitary sewer stub may be constructed in conjunction with the sanitary sewer construction. Check with the local jurisdiction to determine if the sanitary sewer service stub is public or private and the exact permit and construction requirements.

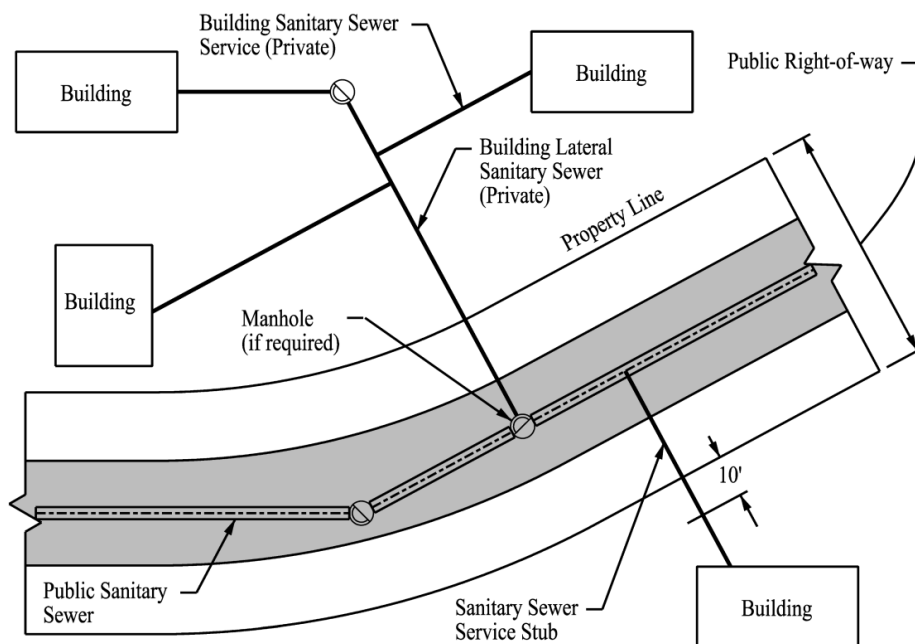
Construction Standard: Jurisdiction plumbing code; Jurisdiction plumbing permit required where applicable; SUDAS Specifications.

Figure 1B-1.01: Example of Sanitary Sewer Service

E. 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. For location of private lateral sanitary sewer, see Figure 1B-1.02.

Construction Standard: SUDAS Specifications; local agency plumbing permit and Iowa DNR permit may be required.

Figure 1B-1.02: Example of Lateral Sanitary Sewer

F. Main (Trunk) Sanitary Sewer

A sewer used to receive and convey sanitary sewage to another 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.

Construction Standard: SUDAS Specifications; Iowa DNR permit required.

G. 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 the public sewer system. This facility is owned and maintained by the Jurisdiction. Warning alarms may be required to automatically communicate to locations designated by the Jurisdiction. This facility is constructed on property deeded to the Jurisdiction or on private property with an easement held by the Jurisdiction.

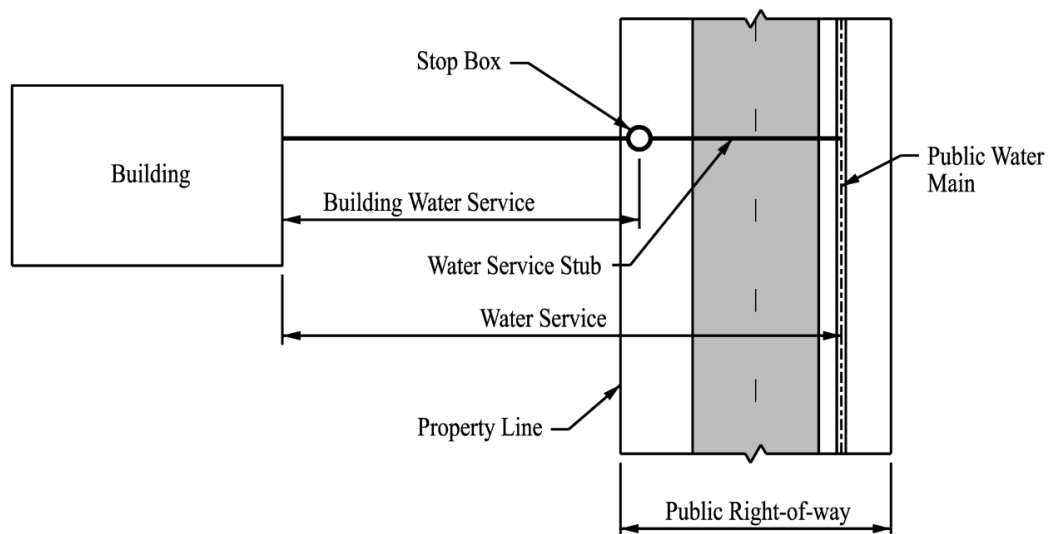
Construction Standard: SUDAS Specifications; Iowa DNR permit required.

H. 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. For location of the water service stub, see Figure 1B-1.03.

Construction Standard: SUDAS Specifications. Jurisdiction plumbing permit required where applicable.

Figure 1B-1.03: Example of Water Service



I. Private Water Main

A private water main is used to distribute water for domestic and fire fighting purposes to only one owner or homeowner's association. This private water main is 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. Metering of water flowing through the private water main will be subject to Jurisdiction's water metering requirements.

Construction Standard: SUDAS Specifications; Jurisdiction Water Works and/or Rural Water Association Standards; Iowa DNR and Jurisdiction plumbing permit where applicable.

J. Water Main

A water main is used to distribute water to consumers for domestic, industrial, and fire fighting purposes. The main is owned by the Jurisdiction, water works, or an approved public/private water utility corporation or association.

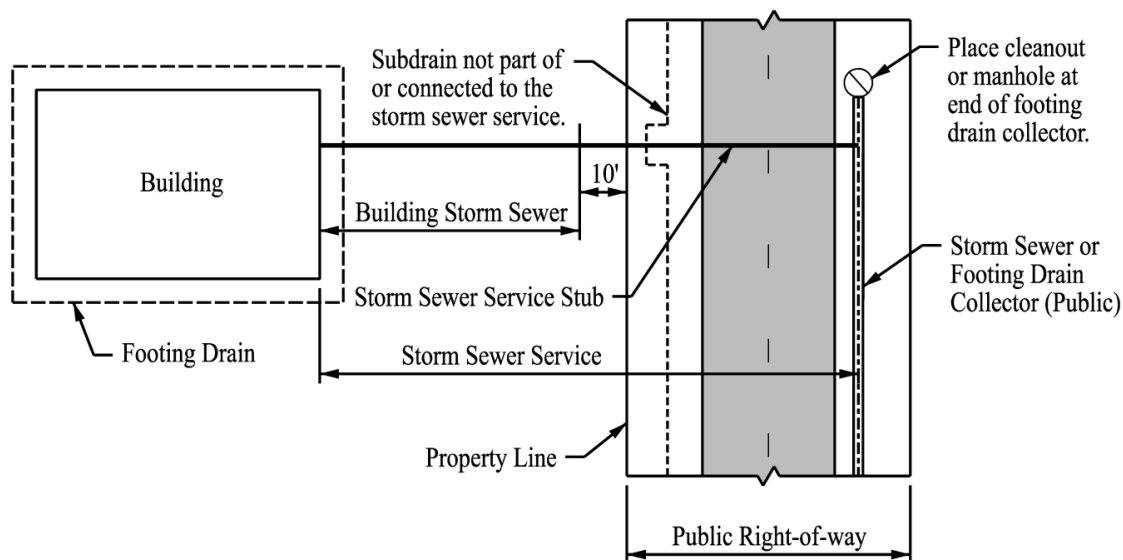
Construction Standard: SUDAS Specifications; Iowa DNR permit required.

K. Storm Sewer Service Stub

The portion of the storm sewer service that is within the public right-of-way to a designated point beyond the right-of-way line (normally 10 feet) as specified by the Jurisdictional Engineer. The storm sewer service stub may be public or private. Verify with the Jurisdiction. The storm sewer service stub may be constructed in conjunction with the footing drain collector or storm sewer construction. For location of the storm sewer service stub, see Figure 1B-1.04.

Construction Standard: SUDAS Specifications; Jurisdiction plumbing code; Jurisdiction plumbing permit may be required where applicable.

Figure 1B-1.04: Example of Storm Sewer Service Stub



L. 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. 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. This sewer is located on private property and maintained by only one party or homeowner's association. For location of private storm sewer, see Figure 1B-1.05.

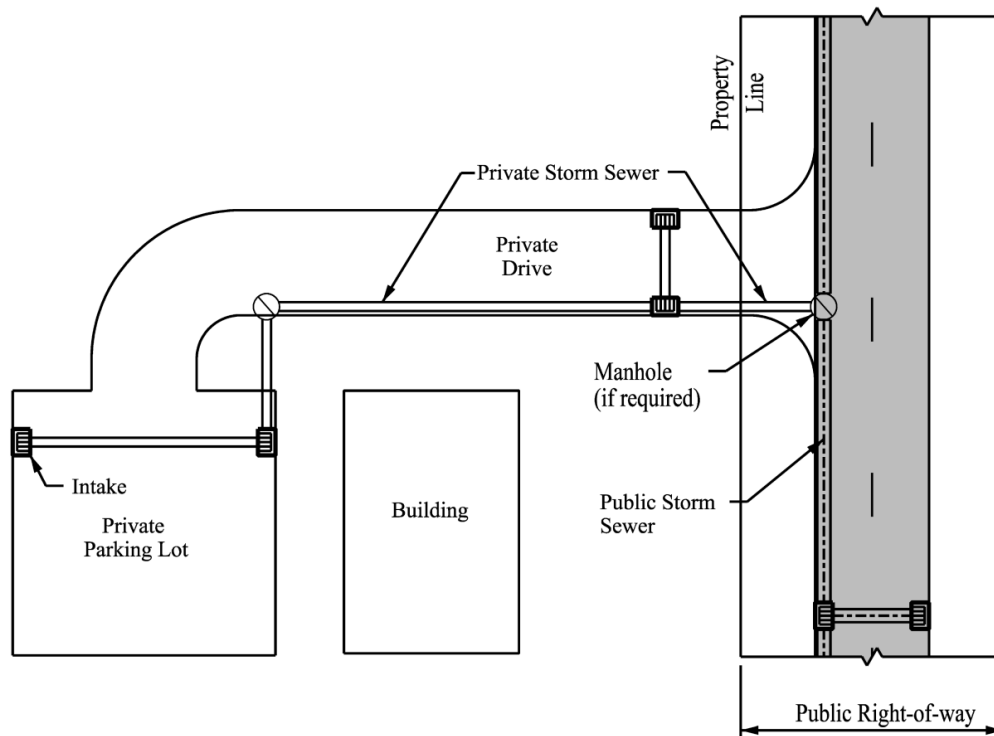
Construction Standard: SUDAS Specifications; Jurisdiction plumbing permit may be required; federal and state permits may be required.

M. 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. For location of storm sewer, see Figure 1B-1.05.

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

Figure 1B-1.05: Example of Public and Private Storm Sewers

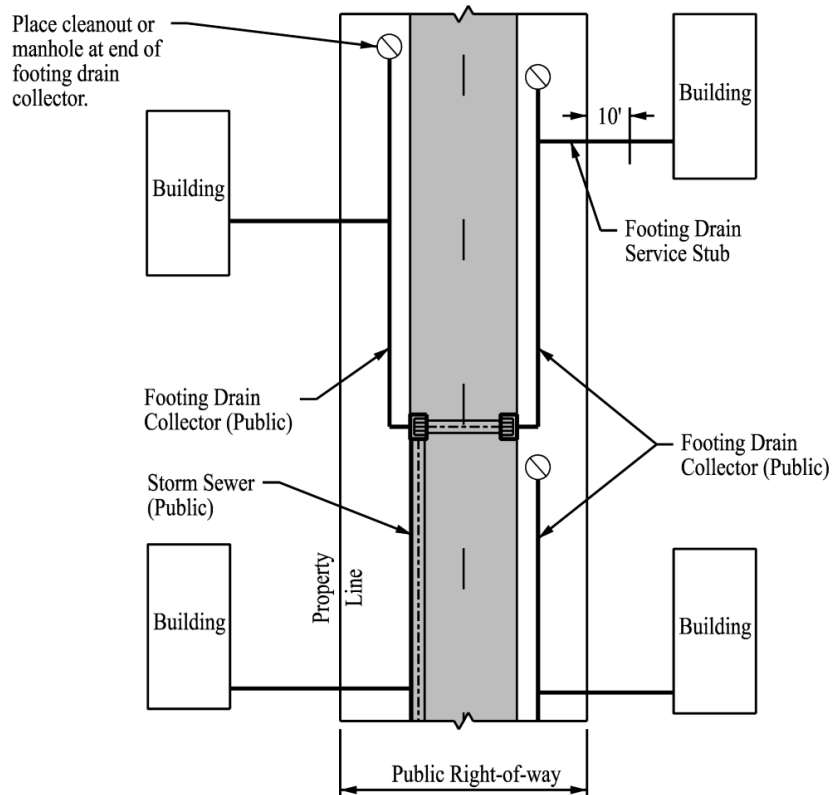


N. Footing Drain Collector

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-1.06.

Construction Standard: SUDAS Specifications.

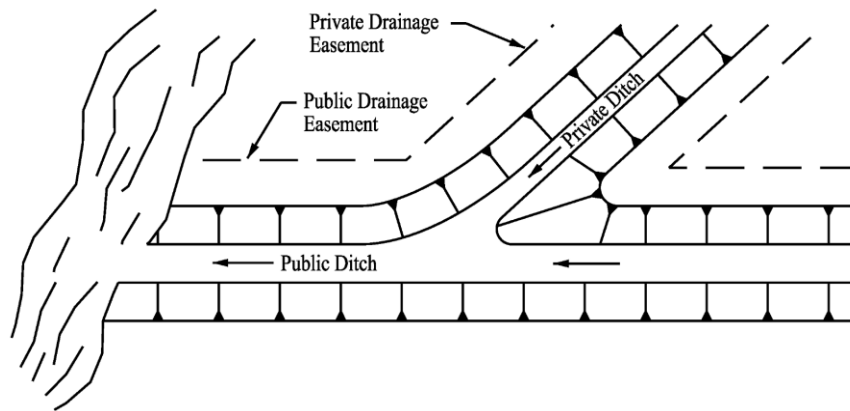
Figure 1B-1.06: Example of Footing Drain Sewer



O. Private Ditch

An open drainage way, swale, or manmade channel used to convey stormwater drainage to the public drainage system. Private ditches 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 party or homeowner's association. Take care to provide good grades to prevent low points, but also do not create erosion. The ditch may discharge directly into a stream or other waterway. For location of private ditch, see Figure 1B-1.07.

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

Figure 1B-1.07: Example of Private Ditch and Public Ditch

P. Ditch

A natural channel improvement or manmade channel required by the Jurisdiction as a component of a planned drainage system that conveys stormwater drainage across public property or public easement. Public ditches should be designed to accommodate the Jurisdiction's overall drainage systems needs. The use of buried storm sewer in or nearby the private ditch that will accommodate low flows of minor storms is encouraged. Public ditches are owned by the Jurisdiction or within an easement held by the Jurisdiction. For location of ditch, see Figure 1B-1.07.

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.

Q. Private Runoff Detention

A basin used for on-site stormwater runoff storage and controlled release. The detention facility should be designed to accommodate the Jurisdiction's overall drainage system needs with the intent to not increase the existing rate of discharge from the site. (See Chapter 2 for details).

Construction Standard: SUDAS Specifications - Jurisdictional Engineer's Approval; Iowa DNR permit may be required.

R. Runoff Detention

A basin used to meet the Jurisdiction's stormwater management plan goals. These facilities should be designed to accommodate the Jurisdiction's overall drainage system needs. This detention basin is located on public or private property (with easements) and is maintained by the Jurisdiction.

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

S. Entrances

Access to private property is the responsibility of the property owner. Any change in existing property use that requires a modification to the entrances will be the responsibility of the owner to obtain an entrance permit.

Construction Standard: SUDAS Specifications; Jurisdiction permit required.

T. 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, but may be deficient in other elements, such as right-of-way width. (See Chapter 5 for details). Approval for the use of private streets must be obtained from the Jurisdiction.

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

U. 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.

V. 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. Location of franchised utilities should take into account the future right-of-way needs based on the ultimate classification of the street. 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.

W. 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.

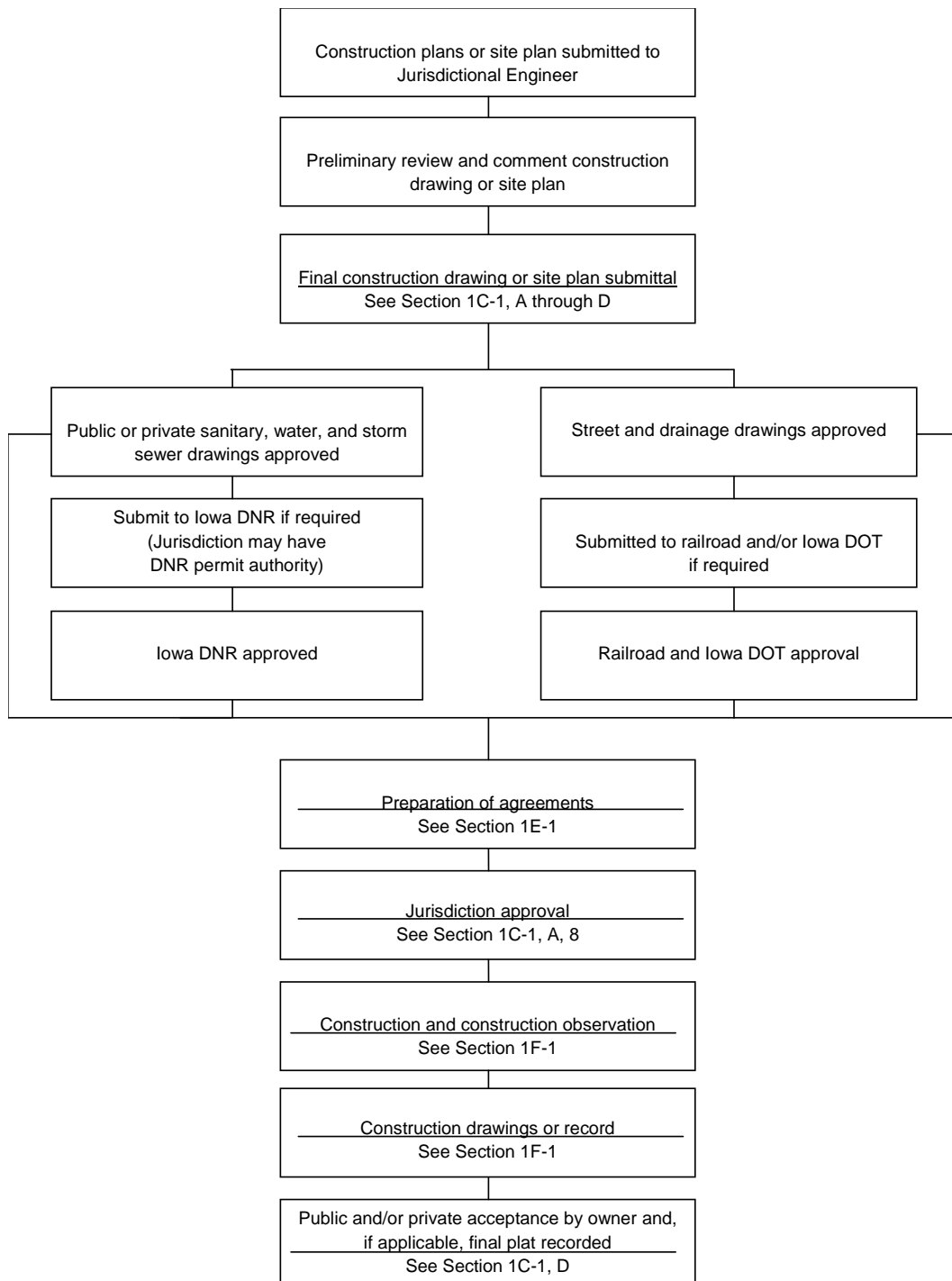
Ensure the installation of such facilities in public right-of-way does not damage or infringe on the usefulness of existing facilities. Upon receipt of a written notice from the Jurisdiction, the owner of a public and non-franchised utility must remove the utility from the Jurisdiction's right-of-way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

X. 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.

Submittal Procedures

Figure 1C-1.01: Submittal Flow Chart



A. Construction Plans and Specifications Submittal Procedure

1. **General:** Consulting 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 and Figure 1C-1.01. 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 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 adequate concept drawings for public improvements including any impact reports.
4. **Engineering Review Objective:** The objective of the Jurisdictional Engineer is to complete the initial review and issue 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. 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. **Approved Plans:** When plans or reports have been conditionally approved by the Jurisdictional Engineer, the designer should submit reproducible copies of original plans on stable plastic film or other media as designated by the Jurisdiction for approval. The reproducible copies should be accompanied by three blue-line or black-line copies for use 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.

9. **Resubmittal of Plans:** The objective of the Jurisdictional Engineer is to complete resubmittal reviews and issue comments/approval 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.
10. **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. Mylars or final media for approval.
 - b. Resubmittal, complete package.
 - c. Initial submittal, complete package.

Complete submittals include all drawings and supporting reports.

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.

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. 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 by the developer.
3. Requests for updates and revisions will be considered only if there are no revisions to the original development plan(s) or drainage report. The Jurisdiction will review the original development plan(s) or drainage report for compliance with current standards under normal review procedures (requests for updates will be considered a resubmittal), and if found in compliance with current standards, the construction plan(s) or drainage report(s) will be approved.

C. Submittal Checklist

1. The following documents should be submitted for review and approval when preparing final construction plans for public subdivision improvements or other public improvements.
 - a. Street plan and profile.
 - b. Storm sewer plan and profile, including details for all structures and material specifications.
 - c. Culvert plan, profile, and construction detail for structures.
 - d. Permanent traffic signing and striping plan.
 - e. Pavement design where required with supporting geotechnical report.
 - f. Grading and erosion control plan.
 - g. Sanitary sewer plan and profile including details for all structures, material specifications and sewer treatment agreement.
 - h. Water construction plans as approved by the governing Jurisdiction or utility with a water supply agreement. If these plans represent lines to be installed with the proposed roadways, the plans must be approved by the Jurisdictional Engineer.
 - i. Plan for traffic control during construction.
 - j. Engineering review and approval fee.
 - k. All appropriate permits from the Jurisdiction, State, and Federal agencies.

D. Final Acceptance

Upon completion of construction of a public project, the improvements will be accepted by the Jurisdiction and/or Water Board into the public system upon submittal of the following, if applicable:

1. Approval final plat.
2. Title opinions.
3. Consent to plat by owner and any persons having an ownership interest in the property to be platted.
4. Easements and deeds dedicated to Jurisdiction (Plat of Acquisition required for any property that is not included in the subject plat or property). Declaration of Value and Groundwater Hazard and/or Restrictive Covenants Statement should accompany any property that is deeded to Jurisdiction.
5. Supplemental agreements as required.
6. Maintenance bonds for improvements.
7. Performance bonds for uncompleted work.

8. Certified statement from the County Treasurer that the taxes are paid in full on the property to be subdivided.
9. Certified statement from the County Clerk and County Recorder stating the property to be subdivided is free from liens and all other encumbrances.
10. Submit required certifications that improvements have been constructed according to the approved plans and specifications as required by the Jurisdiction.
11. Submit a certified "as-built" set of plans.

Certain jurisdictions may require additional fees (i.e. sewer, park, etc.) and may require the submittal of the items listed above before construction commences.

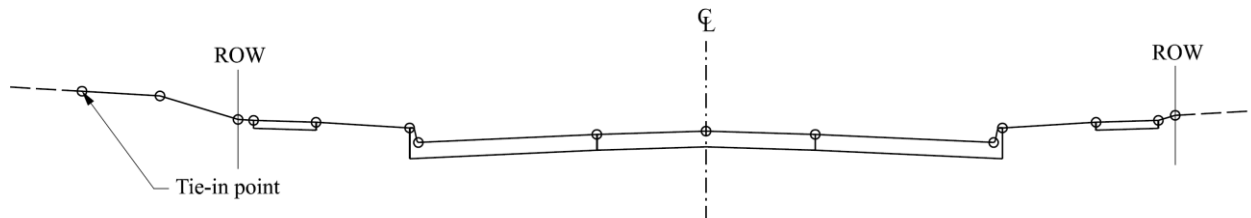
Detailed Plans for Construction of Public Improvements

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 3-D 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 3-D file should indicate all locations within the project limits where there is a change of slope.

The 3-D file should be available to potential bidders at the same time that the paper plans are available to the bidders and filed with the Contracting Authority. 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:** It is important, if for no other reason than uniformity for contractors, that the plan sheets are arranged consistently from one plan set to another. In general, the sheets should be arranged in the following order, which is consistent with Iowa DOT plans, where possible.

Page Number	Description
A.01	Title sheet
A.02	Legend sheet
A.03, A.04, ...	Map sheets (if needed)
A.0*, ... (*whatever number follows the previous A sheets)	Revision sheets (if needed)
B.01, B.02, ...	Typical cross-sections
C.01, C.02, ...	Estimate of quantities, general information, and erosion control and SWPPP sheets
D.01, D.02, ...	Plan and profile sheets - mainline
E.01, E.02, ...	Plan and profile sheets - side road and channel change
F.01, F.02, ...	Plan and profile sheets - detour
G.01, G.02, ...	Reference ties and bench marks
H.01, H.02, ...	Right-of-way sheets (urban)
J.01, J.02, ...	Staging and traffic control sheets
K.01, K.02, ...	Interchange geometric staking, jointing, and edge profiles
L.01, L.02, ...	Intersection geometric staking, jointing, and edge profiles
M.01, M.02, ...	Storm sewer sheets
MIT.1, MIT.2, ...	Wetland sheets
MSA.1, MSA.2, ...	Sanitary sewer sheets
MWM.1, MWM.2, ...	Water main sheets
N.01, N.02, ...	Traffic signal, permanent pavement markings, and permanent signage sheets
P.01, P.02, ...	Lighting layout sheets
Q.01, Q.02, ...	Soils and soils stabilities sheets
R.01, R.02, ...	Removal sheets
S.01, S.02, ...	Sidewalk sheets
T.01, T.02, ...	Tabulation of earthwork quantities
U.01, U.02, ...	500 series, modified standards, and special details
V.01, V.02, ...	Bridge and culvert situation plans
W.01, W.02, ...	Cross-sections - mainline
X.01, X.02, ...	Cross-sections - side roads and channel change
Y.01, Y.02, ...	Cross sections - ramps and loops
Z.01, Z.02, ...	Cross sections - borrows

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 title and 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 (to be filled in 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. Project Engineer's certification, registration number, and date certified. All official plans should be certified according to the requirements set forth by the Iowa Engineering and Land Surveying Examining Board.

A professional engineer or other licensed professional must certify every sheet in a plan. This is done by indicating on the signature block which sheet numbers are covered by the licensee's seal. The engineer's signature and date must be handwritten in ink that contrasts in color with the plan's print.

Parts of the plan that are designed under the direction of other licensed professionals should have separate signature blocks that related to their part of the project. These signature blocks should be placed on the first plan sheet that is covered by their seal.

Each signature block should list the sheet numbers that are covered by the licensed professional's seal. Plan information prepared under the direction of separate licensees should not be placed on the same sheet. In other words, two licensed professionals should not be responsible for the same plan sheet.

In addition to the separate signature blocks, an index of seals should be tabulated on the title sheet if parts of the plan are being certified by other licensed professionals. The tabulation would identify the sheet number where any other signature blocks are located, as well as the licensee's name and area of design.

- j. Note that projects should be constructed according to the SUDAS Standard Specifications.
- k. Listing of standards (if applicable).
- l. Owner/developer.
- 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

	Existing	Proposed		Existing	Proposed
Contour w/ Elevation			Telephone Junction Box		
Board Fence			Gas Valve		
Chain Link Fence			Cable TV Junction Box		
Barbed Wire Fence			Fence Post or Guard Post		
Woven Fence			Underground Storage Tank		
Barbed Wire and Woven Fence			Above Ground Storage Tank		
Tree Line			Satellite Dish		
Tree Stump			Interstate Highway Symbol		
Deciduous Tree			U.S. Highway Symbol		
Coniferous Tree			State Highway Symbol		
Tree To Be Removed			County Road Highway Symbol		
Shrub			Benchmark		
Soil Boring			Concrete Monument		
Underground Telephone			Terrace		
Overhead Telephone			Earth Dam or Dike		
Fiber Optic Telephone			Edge of Water		
Underground Electric			Existing Drainage Channel		
Overhead Electric			Well		
Underground Television			Traffic Signal Pedestal		
Overhead Television			Traffic Signal with Mast Arm		
Gas Main with Size			Traffic Signal Cabinet Controller		
High Pressure Gas Main w/ Size			Flared End Section		
Water Main with Size			Guy Anchor		
Sanitary Sewer with Size			Mailbox		
Septic Tank			Speed Limit Sign		
Storm Sewer with Size			Mile Marker Post		
Manhole			Electric Box		
Storm Sewer Intake			Rail Road Signal Control Box		
Beehive Intake			Top of Embankment		
Fire Hydrant			Drainage Course		
Water Main Valve			Rip Rap		
Water Service Valve			Gabion		
Utility Pole			Concrete Surface		
Street Light			Granular Surface		
Traffic Sign			Concrete Wall		
Traffic Signal Cable			Timber Wall		
			Railroad Track		

- 5. Title Block:** A title block listing the following information.
- The name of the project.
 - Owner and Project Engineer along with sheet title (including address and phone number).
 - Date.
 - Sheet number and total number of sheets.
 - Space that denotes revisions.
 - Place in lower right corner or right edge of each sheet so it can be read from the bottom or right side. Check with the Jurisdiction involved for correct location.
 - Insert page numbers in the lower right-hand corner.
 - All persons designing, detailing, and checking plans should legibly place their names in the title block on the title sheet in a space provided for this purpose.
- 6. Plan Scale:** Vertical scale: 1" = 5'
Minimum horizontal scale: 1" = 50'

or 1" = 20' or larger if details for sanitary sewer, storm sewer, paving, and/or sidewalk are on same plans.

Changes to above scale to be approved by the Jurisdictional Engineer.

A bar scale is required on each drawing.

Prepare drawings and lettering of such a scale as to be reproducible to 1/2 scale.

B. General Information to be Shown on the Construction Plans

- Beginning (B.O.P.) and ending (E.O.P.) of project.
- Street names.
- Right-of-way widths and legal descriptions as required.
- Legend as part of title sheet requirements.
- 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.
- Lot numbers, subdivision names, and project numbers, as applicable.
- Lot dimensions (along right-of-way or easements).
- North arrow up or to the right, when applicable.
- Existing and proposed utilities, including type, size, and location.

10. Proposed improvement locations, dimensions, and stations.
11. Station Bar (all improvements shall be referenced to same stationing). Stationing from left to right or bottom to top.
12. Existing trees, fences, walks, drainage structures, ditches, 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, 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 Standard Specifications.
20. Symbols and abbreviations used on plans if different from those shown in Standard Specifications.
21. Make reference to soils report.
22. Traffic control signs and markings will follow the latest edition of the Manual on Uniform Traffic Control Devices (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.
23. Permanent signing.
24. Stormwater pollution prevention plan; temporary and permanent erosion control measures proposed.
25. 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 Standard Specifications for the type of structure required.
2. Details should be shown for all structures that are not standard in the SUDAS Standard Specifications.
3. Plan and profiles of all sewer lines and ground line above sewer.
4. Size, length, and grade of sewers in profile.
5. Type of pipe materials and strengths, if different from SUDAS Standard 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.
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).

D. Detailed Drainage Ditch and Drainageway Plans

1. Stationing and flow line elevation at beginning and end of ditch construction.
2. Plan and profile of drainage ditch.
3. Size, type, length, and grade of ditch and alignment.
4. Typical sections showing ditch 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 break grade data.
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 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 spacings.
9. Break grade - station and elevation.
10. Intersection details showing drainage and typical joint patterns, if applicable.
11. Location and type of standard sidewalk ramps.
12. Special subgrade or pavement treatment.

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

F. Grading Plans/Erosion Control Plans

1. Survey control data.
2. Cross-sections and/or existing and proposed contours, as required.
3. Bar scale (north arrow).
4. Storm sewer/detention appurtenances.
5. Vicinity map showing haul routes with dates, if any, and borrow areas.
6. Total site area (disturbed area) with construction staging to minimize the area disturbed at any one time.
7. Stationing as it relates to paving plans, sewer, or drainageway plans.
8. Geometric dimensions.
9. Soils data and soil boring location when applicable.
10. 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. Also include the name and 24 hour telephone number of the individual responsible for maintaining erosion control measures.
11. Top soil 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 will 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 Standard Specifications.
3. Plan and profiles of all water lines and the 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 Standard 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 Standard 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. The Contractor must be made aware of any permit 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. LPA 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. Items to be Specified on Plans or in Contract Documents

The SUDAS Standard Specifications specify many items and methods that can be used for the construction of improvements. Following is a list of items in the SUDAS Standard 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 Standard 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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, 3.05, B, 1, a	Specify if granular bedding material is to be used for pressure pipes.
3010, 3.05, B, 3, a, 1)	Specify if concrete, flowable mortar, or CLSM is to be used in lieu of other bedding materials.
3010, 3.05, C, 3, a, 1)	Specify if concrete, flowable mortar, or CLSM is to be used in lieu of other bedding materials.
3010, 3.05, D, 4, a, 1)	Specify if concrete, flowable mortar, or CLSM is to be used in lieu of other bedding materials.
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, C, 8	Specify when to fill the annular space between the carrier and casing pipe with flowable mortar or CLSM.

I. Items to be Specified on Plans or in Contract Documents (Continued)**Section 4010 - Sanitary Sewers**

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 or controlled low strength material (CLSM).
4010, 3.10	Specify where to provide sanitary sewer cleanouts.

Section 4020 - Storm Sewers

4020, 1.08, C, 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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, B, 2	Specify the use of a rubber O-ring or profile gasket.
4020, 3.07, B, 2	Specify when to fill a line to be abandoned with flowable mortar 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

Figure 4040.233 Specify when to use a CMP outlet.

Section 4050 - Pipe Rehabilitation

4050, 1.07, C Specify who will provide water for installation of cured-in-place pipe if not the owner.

4050, 2.01, A, 3 Specify the maximum outside diameter and SDR of polyethylene or polyolefin pipe for sliplining.

4050, 2.06, B, 1 Specify the nominal internal diameter and length of existing pipe.

4050, 2.06, B, 5 Specify the minimum SDR wall thickness for DRP-HDPE.

4050, 2.07, B, 1 Specify the nominal internal diameter and length of existing pipe.

4050, 2.07, B, 5 Specify the minimum SDR wall thickness for FFP-PVC pipe lining.

4050, 2.09, B Specify materials to be used for pipe replacement (spot repairs).

4050, 3.08 Specify the installation process for DRP-HDPE or FFP-PVC, if other than manufacturer's recommendations.

4050, 3.08, C, 1 Specify the material used to replace pipe of the same nominal size as the existing 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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, 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, 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	Specify if steps are to be provided for structures other than circular, precast manholes. Specify if steps are NOT to be provided in circular, precast manholes.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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.

I. Items to be Specified on Plans or in Contract Documents (Continued)**Section 6030 - Cleaning, Inspection, and Testing of Structures**

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

Section 7010 - Portland Cement Concrete Pavement

- | | |
|--------------------------|---|
| 7010, 2.03, A, 2, a | Specify the type of coarse aggregate to be used (crushed limestone or gravel). |
| 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. <i>Note - longitudinal tining is listed as the default.</i> |
| 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, 3.04, A, 1, b, 1) | Specify the depth to scarify existing HMA surface to receive a PCC bonded overlay. |
| 7010, 3.04, B, 1 | Specify the location to trim high spots in the existing asphalt surface prior to constructing unbonded overlays. |
| 7010, 3.04, B, 2, b | Specify when to place an HMA stress relief course over existing PCC pavement. |
| 7010, 3.08, C, 2, a | Specify when the use of a profilograph for pavement smoothness is required. |
| Figure 7010.101, sheet 4 | Specify when to use Detail D-1, D-2, or D-3. |

Section 7020 - Hot Mix Asphalt Pavement

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| 7020, 1.08, A & B | Specify if measurement of HMA pavement or overlay is by ton or square yard. |
| 7020, 1.08, C & D | Specify if measurement of HMA base widening is by ton or square yard. |

I. Items to be Specified on Plans or in Contract Documents (Continued)

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 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 brick pavers are to be used, specify the material requirements.

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, D Specify when curing is required.

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, 3.06, A, 2 Specify the cross-section and patterns to use for brick sidewalks with a sand base.

7030, 3.06, B, 1, b 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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, 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, 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, A, 4	Specify if a vertical face is <u>not</u> desired.
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 <u>not</u> 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.

I. Items to be Specified on Plans or in Contract Documents (Continued)**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 <u>not</u> 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 <u>not</u> allowed.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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| 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

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| 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, 3.09 | Specify the installation pattern of the pavers. |

Section 8010 - Traffic Control

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| 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. |

I. Items to be Specified on Plans or in Contract Documents (Continued)

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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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 9010 - Seeding

9010, 2.01, B	Specify PLS, which shall <u>not</u> 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 <u>not</u> 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 <u>not</u> to provide water and watering equipment.
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I. Items to be Specified on Plans or in Contract Documents (Continued)**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 <u>not</u> 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 <u>not</u> 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 <u>not</u> Class C.
9040, 2.11, B	Specify riser diameter for sediment basin outlet structures.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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 <u>not</u> 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 <u>not</u> 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 <u>not</u> 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, 3.13	Specify the quantity of rip rap (revetment stone or erosion stone).
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 <u>not</u> to be installed along the contour.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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.

I. Items to be Specified on Plans or in Contract Documents (Continued)

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 <u>not</u> 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 <u>not</u> desired.
10,010, 3.08, E	Specify when the removal of all retaining walls is <u>not</u> desired.

I. Items to be Specified on Plans or in Contract Documents (Continued)

10,010, 3.11 Specify what materials are required to be recycled from the demolition site.

Section 11,010 - Construction Survey

11,010, 1.01, I 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.

Section 11,050 - Concrete Washout

11,050, 3.02, A Specify locations of temporary granular sidewalks.

J. 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 Standard 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	<u>Clearing and Grubbing (by units)</u> Placement of backfill in area where roots have been removed, and removal and disposal of all materials.
2010, 1.08, B, 3	<u>Clearing and Grubbing (by area)</u> Removal and disposal of all materials and placement of backfill in area where roots have been removed.
2010, 1.08, D, 2, c	<u>Topsoil, Compost-amended</u> Furnishing and incorporating compost.
2010, 1.08, E, 3	<u>Excavation, Class 10, Class 12, or Class 13</u> <ol style="list-style-type: none"> Site preparation for, and the construction of, embankment, fills, shoulder backfill, and backfill behind curbs. Overhaul. Finishing the soil surface, including roadways, shoulders, behind curbs, side ditches, slopes, and borrow pits. Repair or replacement of any fences that have been unnecessarily damaged or removed. Compaction testing, as specified in the contract documents.
2010, 1.08, F, 3	<u>Below Grade Excavation (Core Out)</u> 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	<u>Subgrade Preparation</u> Excavating, manipulating, replacing, compacting, and trimming to the proper grade.
2010, 1.08, H, 3	<u>Subgrade Treatment</u> Furnishing, placing, and incorporating the subgrade treatment material (cement, asphalt, fly ash, lime, geogrid, or geotextiles).
2010, 1.08, I, 3	<u>Subbase</u> Furnishing, placing, compacting, and trimming to the proper grade.
2010, 1.08, J, 1, c	<u>Removal of Structures</u> Removal and disposal of structures.
2010, 1.08, J, 2, a, 3)	<u>Removal of Known Box Culverts</u> Removal and disposal of known box culverts.

J. Incidental or Included Items (Continued)

- 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.
7. Sheet piling, 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 bedding material, placing 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; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; pipe connections; testing; and inspection.

J. Incidental or Included Items (Continued)

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| 4010, 1.08, B, 1, c | <u>Sanitary Sewer Gravity Main with Casing Pipe, Trenched</u>
Furnishing and installing both carrier pipe and casing pipe, 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 | <u>Sanitary Sewer Gravity Main with Casing Pipe, Trenchless</u>
Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection. |
| 4010, 1.08, C, 1, c | <u>Sanitary Sewer Force Main, Trenched</u>
Trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, wyes and other fittings, pipe joints, testing, and inspection. |
| 4010, 1.08, C, 2, c | <u>Sanitary Sewer Force Main, Trenchless</u>
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; pipe connections; testing; and inspection. |
| 4010, 1.08, D, 1, c | <u>Sanitary Sewer Force Main with Casing Pipe, Trenched</u>
Furnishing and installing both carrier pipe and casing pipe, trench excavation, dewatering, placing bedding and backfill material, furnishing and installing annular space fill material, casing spacers, pipe connections, testing, and inspection. |
| 4010, 1.08, D, 2, c | <u>Sanitary Sewer Force Main with Casing Pipe, Trenchless</u>
Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection. |
| 4010, 1.08, E, 3 | <u>Sanitary Sewer Service Stub</u>
Trench excavation, furnishing bedding material, placing bedding and backfill material, tap, fittings, testing, and inspection. |
| 4010, 1.08, F, 3 | <u>Sanitary Sewer Service Relocation</u>
Removal of existing pipe, trench excavation, furnishing new pipe and bedding material, placing bedding and backfill material, connection back to existing service, compaction, testing, and inspection. |
| 4010, 1.08, G, 3 | <u>Sewage Air Release Valve and Pit</u>
Excavation, furnishing bedding material, placing bedding and backfill material, compaction, and testing. |
| 4010, 1.08, H, 3 | <u>Removal of Sanitary Sewer</u>
Removal, disposal, and capping (if specified) of pipe. |

J. Incidental or Included Items (Continued)

- 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, 1 Plugging sanitary sewers is incidental to other work and will not be paid for separately.

Section 4020 - Storm Sewers

- 4020, 1.08, A, 1, c Storm Sewer, Trenched
Trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, joint wrapping, wyes and other fittings, pipe joints, pipe connections, testing, and inspection. The length of elbows and tees of the pipes installed will be included in the length of pipe measured.
- 4020, 1.08, A, 2, c Storm Sewer, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing 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 bedding material, placing 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, and placing backfill material; casing spacers; furnishing and installing annular space fill material; pipe connections; testing; and inspection.
- 4020, 1.08, C, 3 Removal of Storm Sewer
Removal, disposal, and capping (if specified) of pipe.
- 4020, 1.08, E, 1 Plugging storm sewers is incidental to other work and will not be paid for separately.

Section 4030 - Pipe Culverts

- 4030, 1.08, A, 1, c Pipe Culvert, Trenched
Trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, connectors, testing, and inspection. The length of elbows and tees of the pipes installed will be included in the length of pipe measured.
- 4030, 1.08, A, 2, c Pipe Culvert, Trenchless
Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill materials; pipe connections; testing; and inspection.

J. Incidental or Included Items (Continued)

4030, 1.08, B, 3 Pipe Apron
Trench excavation, furnishing bedding material, placing bedding and backfill material, connectors, and other appurtenances.

4030, 1.08, C, 3 Footings for Concrete Pipe Aprons
Excavation, reinforcing steel, and concrete.

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, 3 Pipe Lining
Removal of internal obstructions, pipe cleaning, inspection, and all costs associated with the public information and notification program.

4050, 1.08, B, 3 Building Sanitary Sewer Service Reconnection
Removal of internal obstructions, pipe cleaning, and all costs associated with the public information and notification program.

4050, 1.08, C, 1, c Spot Repairs (by Pipe Replacement)
Uncovering and removing existing pipe, placing backfill material for replacement pipe, and restoring the surface.

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

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.

J. Incidental or Included Items (Continued)**Section 5010 - Pipe and Fittings**

5010, 1.08, A, 1, c	<u>Water Main, Trenched</u> Trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, tracer system, testing, disinfection, and polyethylene wrap for ductile iron pipe and for fittings.
5010, 1.08, A, 2, c	<u>Water Main, Trenchless</u> Furnishing and installing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; tracer system; testing; and disinfection.
5010, 1.08, B, 1, c	<u>Water Main with Casing Pipe, Trenched</u> Furnishing and installing both carrier pipe and casing pipe, trench excavation, dewatering, furnishing bedding material, placing bedding and backfill material, casing spacers, furnishing and installing annular space fill material, tracer system, testing, and disinfection.
5010, 1.08, B, 2, c	<u>Water Main with Casing Pipe, Trenchless</u> Furnishing and installing both carrier pipe and casing pipe; trenchless installation materials and equipment; pit excavation, dewatering, and placing backfill material; casing spacers; furnishing and installing annular space fill material; tracer system; testing; and disinfection.
5010, 1.08, C, 1, c	<u>Fitting (by count)</u> Restrained joints and thrust blocks.
5010, 1.08, C, 2, c	<u>Fitting (by weight)</u> Restrained joints and thrust blocks.
5010, 1.08, D, 3	<u>Water Service Stub (by each)</u> Water service corporation, service pipe, curb stop, stop box, trench excavation, dewatering, furnishing bedding material, installation of tracer wire system for non-metallic service pipe, and placing bedding and backfill material.
5010, 1.08, E, 1, c	<u>Water Service Stub (by length), Water Service Pipe</u> Trench excavation, dewatering, furnishing bedding material, installation of tracer wire system for non-metallic service pipe, and placing bedding and backfill material.

Section 5020 - Valves, Fire Hydrants, and Appurtenances

5020, 1.08, A, 3	<u>Valve (Butterfly or Gate)</u> 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	<u>Tapping Valve Assembly</u> Tapping sleeve, tapping valve, the tap, valve box and cover, valve box extension, and valve stem extension.

J. Incidental or Included Items (Continued)

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| 5020, 1.08, C, 3 | <u>Fire Hydrant Assembly</u>
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 | <u>Valve Box Replacement</u>
Removal of existing valve box; excavation; furnishing and installing new valve box; backfill; compaction; and all other necessary appurtenances. |
| 5020, 1.08, H, 3 | <u>Fire Hydrant Adjustment</u>
Removal and reinstallation of the existing fire hydrant; furnishing and installing the extension barrel section and stem; and all other necessary appurtenances. |

Section 5030 - Testing and Disinfection

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| 5030, 1.08 | Testing and disinfection of water systems is incidental to the construction of pipe and fittings. |
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Section 6010 - Structures for Sanitary and Storm Sewers

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| 6010, 1.08, A, 3 | <u>Manhole</u>
Excavation, furnishing bedding material, placing bedding and backfill material, compaction, base, structural concrete, reinforcing steel, precast units (if used), infiltration barriers (sanitary sewer manholes only), castings, and adjustment rings. |
| 6010, 1.08, B, 3 | <u>Intake</u>
Excavation, furnishing bedding material, placing bedding and backfill material, compaction, base, structural concrete, reinforcing steel, precast units (if used), inverts, pipe connections, castings, and adjustment rings. |
| 6010, 1.08, C, 3 | <u>Drop Connection</u>
The connection to the manhole and all pipe, fittings, concrete encasement, and bedding and backfill material. |
| 6010, 1.08, E, 3 | <u>Manhole or Intake Adjustment, Minor</u>
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 | <u>Manhole or Intake Adjustment, Major</u>
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. |

J. Incidental or Included Items (Continued)

- 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.

J. Incidental or Included Items (Continued)

7010, 1.08, E, 3	<u>Curb and Gutter</u> Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.
7010, 1.08, F, 3	<u>Beam Curb</u> Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.
7010, 1.08, G, 3	<u>Concrete Median</u> Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.
7010, 1.08, I, 3	<u>PCC Pavement Samples and Testing</u> Certified plant inspection, pavement thickness cores, profilograph pavement smoothness measurement (when required by the contract documents), and maturity testing.
7010, 1.08, K, 3	<u>PCC Pavement Widening</u> 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.
7010, 1.08, L, 1, c	<u>PCC Overlay, Furnish Only</u> Furnishing the concrete mixture and delivery to the project site.
7010, 1.08, L, 2, c	<u>PCC Overlay, Place Only</u> 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, L, 3, c	<u>Surface Preparation for Bonded PCC Overlay</u> Sandblasting, shot blasting, scarification, and surface cleaning.
7010, 1.08, L, 4, c	<u>Surface Preparation for Unbonded PCC Overlay</u> Scarification and surface cleaning.
7010, 1.08, L, 5, c	<u>HMA Stress Relief Course for Unbonded PCC Overlay</u> HMA mix, including binder, and placement.

Section 7020 - Hot Mix Asphalt Pavement

7020, 1.08, A, 3	<u>Pavement or Overlay, HMA (by ton)</u> Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.
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J. Incidental or Included Items (Continued)

7020, 1.08, B, 3	<u>Pavement or Overlay, HMA (by square yard)</u> Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.
7020, 1.08, C, 3	<u>HMA Base Widening (by ton)</u> Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.
7020, 1.08, D, 3	<u>HMA Base Widening (by square yard)</u> Asphalt mix with asphalt binder, tack coats between layers, construction zone protection, and quality control.
7020, 1.08, H, 3	<u>HMA Pavement Samples and Testing</u> Certified plant inspection, pavement thickness cores, density analysis, profilograph pavement smoothness measurement (when required by the contract documents), and air void testing.

Section 7030 - Sidewalks, Shared Use Paths, and Driveways

7030, 1.08, A, 3	<u>Removal of Sidewalk, Shared Use Path, or Driveway</u> Sawing, hauling, and disposal of materials removed.
7030, 1.08, B, 3	<u>Removal of Curb</u> Hauling and disposal of materials removed.
7030, 1.08, C, 3	<u>Shared Use Paths</u> Subgrade preparation, jointing, sampling, smoothness testing and correction, and testing.
7030, 1.08, D, 3	<u>Special Subgrade Preparation for Shared Use Paths</u> Water required to bring subgrade moisture content to within the required limits.
7030, 1.08, E, 3	<u>Sidewalk, PCC</u> 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, 1, c	<u>Brick Sidewalk with Sand Base</u> Subgrade preparation, brick edge restraints, furnishing and placing compacted sand base, and sand/cement joint filler.
7030, 1.08, F, 2, c	<u>Brick Sidewalk with Concrete Base</u> Subgrade preparation, concrete base, HMA setting bed, neoprene asphalt adhesive for asphalt setting bed, and sand/cement joint filler.
7030, 1.08, G, 3	<u>Detectable Warning</u> Steel bar supports and manufactured detectable warning panels.
7030, 1.08, H, 1, c	<u>Driveway, Paved</u> Excavation, subgrade preparation, jointing, sampling, and testing.

J. Incidental or Included Items (Continued)

- 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.

J. Incidental or Included Items (Continued)

- 7040, 1.08, J 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.

J. Incidental or Included Items (Continued)

7080, 1.08, D, 3	<u>Storage Aggregate</u> Furnishing, hauling, placing, and compacting storage aggregate.
7080, 1.08, E, 3	<u>Filter Aggregate</u> Furnishing, hauling, placing filter, and compacting aggregate.
7080, 1.08, F, 3	<u>Permeable Interlocking Pavers</u> Testing, placement of bedding course, installing permeable interlocking pavers, placing joint/opening fill material, refilling joint after 6 months, and pavement protection.
7080, 1.08, G, 3	<u>PCC Edge Restraint</u> Final trimming of subgrade or subbase, bars and reinforcement, joints and sealing, surface curing and pavement protection, safety fencing, and boxouts for fixtures.

Section 8020 - Pavement Markings

8020, 1.08, B, 3	<u>Painted Pavement Markings, Solvent/Waterborne</u> Reflectorizing spheres, layout, surface preparation, and application of marking paint.
8020, 1.08, C, 3	<u>Painted Pavement Markings, Durable</u> Layout, surface preparation, and application of marking paint.
8020, 1.08, D, 3	<u>Painted Pavement Markings, High-Build</u> Layout, surface preparation, and application of marking paint.
8020, 1.08, E, 3	<u>Permanent Tape Markings</u> Layout, surface preparation, and application of marking tape.
8020, 1.08, F, 3	<u>Wet, Retroreflective Removable Tape Markings</u> Layout, surface preparation, application, and removal.
8020, 1.08, G, 3	<u>Painted Symbols and Legends</u> Layout, surface preparation, and application of each symbol and legend.
8020, 1.08, H, 3	<u>Precut Symbols and Legends</u> Layout, surface preparation, and application of each symbol and legend.
8020, 1.08, I, 3	<u>Temporary Delineators</u> Installation and removal of delineators.
8020, 1.08, J, 3	<u>Raised Pavement Markers</u> Installation and removal of pavement markers.
8020, 1.08, K, 3	<u>Pavement Markings Removed</u> Pavement marking removal and waste material collection, removal, and disposal.

J. Incidental or Included Items (Continued)

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| 8020, 1.08, L, 3 | <u>Symbols and Legends Removed</u>
Symbol and legend marking removal and waste material collection, removal, and disposal. |
| 8020, 1.08, M, 3 | <u>Grooves Cut for Pavement Markings</u>
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 | <u>Grooves Cut for Symbols and Legends</u>
Layout, cutting grooves, and collection and disposal of removed material. |

Section 9010 - Seeding

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| 9010, 1.08, A, 1, c | <u>Conventional Seeding, Seeding</u>
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 | <u>Hydraulic Seeding, Seeding, Fertilizing, and Mulching</u>
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 | <u>Pneumatic Seeding, Seeding, Fertilizing, and Mulching</u>
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, E, 3 | <u>Warranty</u>
All work required to correct any defects in the original placement of the seeding for the period of time designated. |

Section 9020 - Sodding

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| 9020, 1.08, A, 3 | <u>Sod</u>
Preparation of sod and sodbed, stakes, fertilizing, watering, maintenance, and clean-up. Also includes any necessary sod replacements during maintenance period. |
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J. Incidental or Included Items (Continued)**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.

J. Incidental or Included Items (Continued)

9040, 1.08, D, 1, c	<u>Filter Socks, Installation</u> Anchoring stakes.
9040, 1.08, D, 2, c	<u>Filter Socks, Removal</u> Restoration of the area to finished grade and off-site disposal of filter socks and accumulated sediment.
9040, 1.08, E, 3	<u>Temporary RECP</u> Excavation, staples, anchoring devices, and material for anchoring slots.
9040, 1.08, F, 1, c	<u>Wattles, Installation</u> Anchoring stakes.
9040, 1.08, F, 2, c	<u>Wattles, Removal</u> Restoration of the area to finished grade and off-site disposal of wattle and accumulated sediment.
9040, 1.08, G, 1, c	<u>Check Dams, Rock</u> Engineering fabric.
9040, 1.08, G, 2, a, 3)	<u>Check Dams, Manufactured, Installation</u> Anchoring stakes.
9040, 1.08, G, 2, b, 3)	<u>Check Dams, Manufactured, Removal</u> Restoration of the area to finished grade and off-site disposal of manufactured check dam and accumulated sediment.
9040, 1.08, H, 3	<u>Temporary Earth Diversion Structures</u> Removal of the structure upon completion of the project.
9040, 1.08, I, 3	<u>Level Spreaders</u> 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	<u>Rip Rap</u> Engineering fabric.
9040, 1.08, K, 3	<u>Temporary Pipe Slope Drains</u> 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	<u>Sediment Basin, Outlet Structure</u> Concrete base, dewatering device, anti-vortex device, outlet pipe, and anti-seep collars (if specified).
9040, 1.08, L, 2, c	<u>Sediment Basin, Removal of Sediment</u> Dewatering and removal and off-site disposal of accumulated sediment.

J. Incidental or Included Items (Continued)

9040, 1.08, L, 3, c	<u>Sediment Basin, Removal of Outlet Structure</u> Dewatering and off-site disposal of the outlet structure, concrete base, emergency spillway, and accumulated sediment.
9040, 1.08, M, 1, c	<u>Sediment Trap Outlet, Installation</u> Engineering fabric.
9040, 1.08, M, 2, c	<u>Sediment Trap Outlet, Removal of Sediment</u> Dewatering and removal and off-site disposal of accumulated sediment.
9040, 1.08, M, 3, c	<u>Sediment Trap Outlet, Removal of Device</u> Dewatering and off-site disposal of sediment trap outlet and accumulated sediment.
9040, 1.08, N, 1, c	<u>Silt Fence or Silt Fence Ditch Check, Installation</u> Anchoring posts.
9040, 1.08, N, 2, c	<u>Silt Fence or Silt Fence Ditch Check, Removal of Sediment</u> Anchoring posts.
9040, 1.08, N, 3, c	<u>Silt Fence or Silt Fence Ditch Check, Removal of Device</u> Restoration of the area to finished grade and off-site disposal of fence, posts, and accumulated sediment.
9040, 1.08, O, 1, c	<u>Stabilized Construction Entrance (by Square Yard)</u> Subgrade stabilization fabric.
9040, 1.08, O, 2, c	<u>Stabilized Construction Entrance (by Ton)</u> Subgrade stabilization fabric.
9040, 1.08, P, 1, c	<u>Dust Control, Water</u> Furnishing, transporting, and distributing water to the haul road.
9040, 1.08, R, 3	<u>Turf Reinforcement Mats (TRM)</u> Excavation, staples, anchoring devices, and material for anchoring slots.
9040, 1.08, T, 1, c	<u>Inlet Protection Device, Installation</u> Removal of the device upon completion of the project.
9040, 1.08, T, 2, c	<u>Inlet Protection Device, Maintenance</u> Removal and off-site disposal of accumulated sediment.
9040, 1.08, U, 3	<u>Flow Transition Mat</u> Anchoring devices.

Section 9050 - Gabions and Revet Mattresses

9050, 1.08, A, 3	<u>Gabions</u> 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.
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J. Incidental or Included Items (Continued)

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.

J. Incidental or Included Items (Continued)

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.

J. Incidental or Included Items (Continued)

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.

K. Bid Items

The following is a list of standard bid items listed in the SUDAS Standard Specifications. The following are suggested bid items. This list may not be all-inclusive. The Engineer may make modifications as necessary.

Item Number	Bid Item	Unit
Section 2010 - Earthwork, Subgrade, and Subbase		
2010-108-A-0	Clearing and Grubbing	UNIT
2010-108-B-0	Clearing and Grubbing	AC
2010-108-C-0	Clearing and Grubbing	LS
2010-108-D-1	Topsoil, On-site	CY
2010-108-D-2	Topsoil, Compost-amended	CY
2010-108-D-3	Topsoil, Off-site	CY
2010-108-E-0	Excavation, Class 10, Class 12, or Class 13	CY
2010-108-G-0	Subgrade Preparation	SY
2010-108-H-0	Subgrade Treatment, ____ (Type)	SY
2010-108-I-0	Subbase, ____ (Type)	SY
2010-108-J-1	Removal of Structure, ____ (Type)	EA
2010-108-J-2-a	Removal of Known Box Culvert, ____ (Type), ____ (Size)	LF
2010-108-J-2-c	Removal of Known Pipe Culvert, ____ (Type), ____ (Size)	LF
2010-108-J-3-a	Removal of Known Pipe and Conduit, ____ (Type), ____ (Size)	LF
2010-108-K-1	Filling and Plugging of Known Pipe Culverts, Pipes, and Conduits, ____ (Type), ____ (Size)	LF
2010-108-L-0	Compaction Testing	LS
Section 3010 - Trench Excavation and Backfill		
3010-108-B-0	Rock Excavation	CY
3010-108-C-0	Trench Foundation	TON
3010-108-D-0	Replacement of Unsuitable Backfill Material	CY
3010-108-E-0	Special Pipe Embedment or Encasement	LF
3010-108-F-0	Trench Compaction Testing	LS
Section 4010 - Sanitary Sewers		
4010-108-A-1	Sanitary Sewer Gravity Main, Trenched, ____ (Type), ____ (Size)	LF
4010-108-A-2	Sanitary Sewer Gravity Main, Trenchless, ____ (Type), ____ (Size)	LF
4010-108-B-1	Sanitary Sewer Gravity Main with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
4010-108-B-2	Sanitary Sewer Gravity Main with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
4010-108-C-1	Sanitary Sewer Force Main, Trenched, ____ (Type), ____ (Size)	LF
4010-108-C-2	Sanitary Sewer Force Main, Trenchless, ____ (Type), ____ (Size)	LF
4010-108-D-1	Sanitary Sewer Force Main with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF

K. Bid Items (Continued)

Item Number	Bid Item	Unit
4010-108-D-2	Sanitary Sewer Force Main with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
4010-108-E-0	Sanitary Sewer Service Stub, ____ (Type), ____ (Size)	LF
4010-108-F-0	Sanitary Sewer Service Relocation	EA
4010-108-G-0	Sewage Air Release Valve and Pit	EA
4010-108-H-0	Removal of Sanitary Sewer, ____ (Type), ____ (Size)	LF
4010-108-I-0	Sanitary Sewer Cleanout	EA
4010-108-K-2	Sanitary Sewer Abandonment, Fill and Plug	LF
	Section 4020 - Storm Sewers	
4020-108-A-1	Storm Sewer, Trenched, ____ (Type), ____ (Size)	LF
4020-108-A-2	Storm Sewer, Trenchless, ____ (Type), ____ (Size)	LF
4020-108-B-1	Storm Sewer with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
4020-108-B-2	Storm Sewer with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
4020-108-C-0	Removal of Storm Sewer, ____ (Type), ____ (Size)	LF
4020-108-E-2	Storm Sewer Abandonment, Fill and Plug	LF
	Section 4030 - Pipe Culverts	
4030-108-A-1	Pipe Culvert, Trenched, ____ (Type), ____ (Size)	LF
4030-108-A-2	Pipe Culvert, Trenchless, ____ (Type), ____ (Size)	LF
4030-108-B-0	Pipe Apron, ____ (Type), ____ (Size)	EA
4030-108-C-0	Footing for Concrete Pipe Apron, ____ (Type), ____ (Size)	EA
4030-108-D-0	Pipe Apron Guard	EA
	Section 4040 - Subdrains and Footing Drain Collectors	
4040-108-A-0	Subdrain, ____ (Type), ____ (Size)	LF
4040-108-B-0	Footing Drain Collector, ____ (Type), ____ (Size)	LF
4040-108-C-0	Subdrain Cleanout, ____ (Type), ____ (Size)	EA
4040-108-C-0	Footing Drain Cleanout, ____ (Type), ____ (Size)	EA
4040-108-D-0	Subdrain Outlets and Connections, ____ (Type), ____ (Size)	EA
4040-108-D-0	Footing Drain Outlets and Connections, ____ (Type), ____ (Size)	EA
4040-108-E-0	Storm Sewer Service Stub, ____ (Type), ____ (Size)	LF
	Section 4050 - Pipe Rehabilitation	
4050-108-A-0	Pipe Lining, ____ (Type), ____ (Size)	LF
4050-108-B-0	Building Sanitary Sewer Service Reconnection	EA
4050-108-C-1	Spot Repairs by Pipe Replacement	EA
4050-108-C-2	Spot Repairs by Pipe Replacement	LF

K. Bid Items (Continued)

Item Number	Bid Item	Unit
	Section 5010 - Pipe and Fittings	
5010-108-A-1	Water Main, Trenched, ____ (Type), ____ (Size)	LF
5010-108-A-2	Water Main, Trenchless, ____ (Type), ____ (Size)	LF
5010-108-B-1	Water Main with Casing Pipe, Trenched, ____ (Type), ____ (Size)	LF
5010-108-B-2	Water Main with Casing Pipe, Trenchless, ____ (Type), ____ (Size)	LF
5010-108-C-1	Fitting, ____ (Type), ____ (Size)	EA
5010-108-C-2	Fitting, ____ (Type), ____ (Size)	LB
5010-108-D-0	Water Service Stub, ____ (Type), ____ (Size)	EA
5010-108-E-1	Water Service Pipe, ____ (Type), ____ (Size)	LF
5010-108-E-2	Water Service Corporation, ____ (Type), ____ (Size)	EA
5010-108-E-3	Water Service Curb Stop and Box, ____ (Type), ____ (Size)	EA
	Section 5020 - Valves, Fire Hydrants, and Appurtenances	
5020-108-A-0	Valve, ____ (Type), ____ (Size)	EA
5020-108-B-0	Tapping Valve Assembly, ____ (Size)	EA
5020-108-C-0	Fire Hydrant Assembly	EA
5020-108-D-0	Flushing Device (Blowoff), ____ (Size)	EA
5020-108-F-0	Valve Box Extension	EA
5020-108-G-0	Valve Box Replacement	EA
5020-108-H-0	Fire Hydrant Adjustment	EA
	Section 6010 - Structures for Sanitary and Storm Sewers	
6010-108-A-0	Manhole, ____ (Type), ____ (Size)	EA
6010-108-B-0	Intake, ____ (Type), ____ (Size)	EA
6010-108-C-0	Drop Connection	EA
6010-108-D-0	Casting Extension Ring	EA
6010-108-E-0	Manhole Adjustment, Minor	EA
6010-108-E-0	Intake Adjustment, Minor	EA
6010-108-F-0	Manhole Adjustment, Major	EA
6010-108-F-0	Intake Adjustment, Major	EA
6010-108-G-0	Connection to Existing Manhole	EA
6010-108-G-0	Connection to Existing Intake	EA
6010-108-H-0	Remove Manhole	EA
6010-108-H-0	Remove Intake	EA
	Section 6020 - Rehabilitation of Existing Manholes	
6020-108-A-0	Infiltration Barrier, ____ (Type)	EA
6020-108-B-0	In-situ Manhole Replacement, Cast-in-place Concrete	VF
6020-108-C-0	In-situ Manhole Replacement, Cast-in-place Concrete with Plastic Liner	VF
6020-108-D-0	Manhole Lining with Centrifugally Cast Cementitious Mortar Liner with Epoxy Seal	VF

K. Bid Items (Continued)

Item Number	Bid Item	Unit
	Section 7010 - Portland Cement Concrete Pavement	
7010-108-A-0	Pavement, PCC, ____ (Thickness)	SY
7010-108-E-0	Curb and Gutter, ____ (Width), ____ (Thickness)	LF
7010-108-F-0	Beam Curb	LF
7010-108-G-0	Concrete Median	SY
7010-108-I-0	PCC Pavement Samples and Testing	LS
7010-108-K-0	PCC Pavement Widening, ____ (Thickness)	SY
7010-108-L-1	PCC Overlay, Furnish Only	CY
7010-108-L-2	PCC Overlay, Place Only	SY
7010-108-L-3	Surface Preparation for Bonded PCC Overlay	SY
7010-108-L-4	Surface Preparation for Unbonded PCC Overlay	SY
7010-108-L-5	HMA Stress Relief Course for Unbonded PCC Overlay	SY
	Section 7020 - Hot Mix Asphalt Pavement	
7020-108-A-0	Pavement or Overlay, HMA	TON
7020-108-B-0	Pavement or Overlay, HMA, ____ (Thickness)	SY
7020-108-C-0	HMA Base Widening	TON
7020-108-D-0	HMA Base Widening, ____ (Thickness)	SY
7020-108-H-0	HMA Pavement Samples and Testing	LS
	Section 7030 - Sidewalks, Shared Use Paths, and Driveways	
7030-108-A-0	Removal of Sidewalk	SY
7030-108-A-0	Removal of Shared Use Path	SY
7030-108-A-0	Removal of Driveway	SY
7030-108-B-0	Removal of Curb	LF
7030-108-C-0	Shared Use Path, ____ (Type), ____ (Thickness)	SY
7030-108-D-0	Special Subgrade Preparation for Shared Use Path	SY
7030-108-E-0	Sidewalk, PCC, ____ (Thickness)	SY
7030-108-F-1	Brick Sidewalk with Sand Base	SY
7030-108-F-2	Brick Sidewalk with Concrete Base	SY
7030-108-G-0	Detectable Warning	SF
7030-108-H-1	Driveway, Paved, ____ (Type), ____ (Thickness)	SY
7030-108-H-2	Driveway, Granular	SY or TON
7030-108-I-0	Sidewalk Assurance Testing	LS
7030-108-I-0	Shared Use Path Assurance Testing	LS
7030-108-I-0	Driveway Assurance Testing	LS

K. Bid Items (Continued)

Item Number	Bid Item	Unit
	Section 7040 - Pavement Rehabilitation	
7040-108-A-0	Full Depth Patches	SY
7040-108-B-0	Subbase Over-excavation	TON
7040-108-C-0	Partial Depth Patches	SF
7040-108-D-0	Crack and Joint Cleaning and Filling, Hot Pour	LF
7040-108-E-1	Crack Cleaning and Filling, Emulsion	LF
7040-108-E-2	Hot Mix Asphalt for Crack Filling	TON
7040-108-F-0	Diamond Grinding	SY
7040-108-G-0	Milling	SY
7040-108-H-0	Pavement Removal	SY
7040-108-I-0	Curb and Gutter Removal	LF
	Section 7050 - Asphalt Stabilization	
7050-108-A-0	Asphalt Stabilization	SY
	Section 7060 - Bituminous Seal Coat	
7060-108-A-0	Bituminous Seal Coat	SY
7060-108-B-1	Cover Aggregate, ____ (Size)	TON
7060-108-B-2	Binder Bitumen	GAL
	Section 7070 - Emulsified Asphalt Slurry Seal	
7070-108-A-0	Emulsified Asphalt Slurry Seal	SY
7070-108-B-1	Aggregate, ____ (Size)	TON
7070-108-B-2	Asphalt Emulsion	GAL
	Section 7080 - Permeable Interlocking Pavers	
7080-108-B-0	Engineering Fabric	SY
7080-108-C-0	Underdrain, ____ (Type), ____ (Size)	LF
7080-108-D-0	Storage Aggregate	TON
7080-108-E-0	Filter Aggregate	TON
7080-108-F-0	Permeable Interlocking Pavers, ____ (Type)	SY
7080-108-G-0	PCC Edge Restraint, ____ (Type), ____ (Size)	LF
	Section 8010 - Traffic Control	
8010-108-A-0	Traffic Signal	LS
8010-108-B-0	Temporary Traffic Signal	LS
	Section 8020 - Pavement Markings	
8020-108-B-0	Painted Pavement Markings, Solvent/Waterborne	STA
8020-108-C-0	Painted Pavement Markings, Durable	STA
8020-108-D-0	Painted Pavement Markings, High-Build	STA

K. Bid Items (Continued)

Item Number	Bid Item	Unit
8020-108-E-0	Permanent Tape Markings	STA
8020-108-F-0	Wet, Retroreflective Removable Tape Markings	STA
8020-108-G-0	Painted Symbols and Legends	EA
8020-108-H-0	Precut Symbols and Legends	EA
8020-108-I-0	Temporary Delineators	EA
8020-108-J-0	Raised Pavement Markers	EA
8020-108-K-0	Pavement Markings Removed	STA
8020-108-L-0	Symbols and Legends Removed	EA
8020-108-M-0	Grooves Cut for Pavement Markings	STA
8020-108-N-0	Grooves Cut for Symbols and Legends	EA
	Section 9010 - Seeding	
9010-108-A-0	Conventional Seeding, Seeding, Fertilizing, and Mulching	AC
9010-108-B-0	Hydraulic Seeding, Seeding, Fertilizing, and Mulching	AC
9010-108-C-0	Pneumatic Seeding, Seeding, Fertilizing, and Mulching	AC
9010-108-D-0	Watering	MGAL
9010-108-E-0	Warranty	LS
	Section 9020 - Sodding	
9020-108-A-0	Sod	SQ
	Section 9030 - Plant Material and Planting	
9030-108-A-0	Plants, ____ (Type)	EA
9030-108-B-0	Plants with Warranty, ____ (Type)	EA
9030-108-C-0	Plants	LS
9030-108-D-0	Plants with Warranty	LS
9030-108-E-0	Tree Drainage Wells	EA
	Section 9040 - Erosion and Sediment Control	
9040-108-A-1	SWPPP Preparation	LS
9040-108-A-2	SWPPP Management	LS
9040-108-B-0	Compost Blanket, ____ (Thickness)	SF
9040-108-C-0	Filter Berm, ____ (Size)	LF
9040-108-D-1	Filter Sock, ____ (Size)	LF
9040-108-D-2	Filter Sock, Removal	LF
9040-108-E-0	Temporary RECP, ____ (Type)	SY
9040-108-F-1	Wattle, ____ (Type), ____ (Size)	LF
9040-108-F-2	Wattle, Removal	LF
9040-108-G-1	Check Dam, Rock	TON
9040-108-G-2-a	Check Dam, Manufactured, ____ (Type), ____ (Size)	LF
9040-108-G-2-b	Check Dam, Manufactured, Removal, ____ (Type)	LF
9040-108-H-0	Temporary Earth Diversion Structure, ____ (Type), ____ (Size)	LF
9040-108-I-0	Level Spreader	LF
9040-108-J-0	Rip Rap, ____ (Type)	TON

K. Bid Items (Continued)

Item Number	Bid Item	Unit
9040-108-K-0	Temporary Pipe Slope Drain, ____ (Type), ____ (Size)	LF
9040-108-L-1	Sediment Basin, Outlet Structure, ____ (Size)	EA
9040-108-L-2	Sediment Basin, Removal of Sediment	EA
9040-108-L-3	Sediment Basin, Removal of Outlet Structure	EA
9040-108-M-1	Sediment Trap Outlet	TON
9040-108-M-2	Sediment Trap Outlet, Removal of Sediment	EA
9040-108-M-3	Sediment Trap Outlet, Removal of Device	EA
9040-108-N-1	Silt Fence or Silt Fence Ditch Check	LF
9040-108-N-2	Silt Fence or Silt Fence Ditch Check, Removal of Sediment	LF
9040-108-N-3	Silt Fence or Silt Fence Ditch Check, Removal of Device	LF
9040-108-O-1	Stabilized Construction Entrance	SY
9040-108-O-2	Stabilized Construction Entrance	TON
9040-108-P-1	Dust Control, Water	MGAL
9040-108-P-2	Dust Control, Product	SY
9040-108-Q-1	Erosion Control Mulching, Conventional	AC
9040-108-Q-2	Erosion Control Mulching, Hydromulching	AC
9040-108-R-0	Turf Reinforcement Mats, ____ (Type)	SQ
9040-108-S-0	Surface Roughening	SF
9040-108-T-1	Inlet Protection Device, ____ (Type)	EA
9040-108-T-2	Inlet Protection Device, Maintenance	EA
9040-108-U-0	Flow Transition Mat	SF
	Section 9050 - Gabions and Revet Mattresses	
9050-108-A-0	Gabions, ____ (Type)	CY
9050-108-B-0	Revet Mattresses, ____ (Type)	CY
	Section 9060 - Chain Link Fence	
9060-108-A-0	Chain Link Fence, ____ (Type), ____ (Size)	LF
9060-108-B-0	Gates, ____ (Type), ____ (Size)	EA
9060-108-C-0	Barbed Wire, ____ (Type of Supporting Arm)	LF
9060-108-D-0	Removal and Reinstallation of Existing Fence, ____ (Type), ____ (Size)	LF
9060-108-E-0	Removal of Fence	LF
9060-108-F-0	Temporary Fence, ____ (Type), ____ (Size)	LF
	Section 9070 - Landscape Retaining Walls	
9070-108-A-0	Modular Block Retaining Wall	SF
9070-108-B-0	Limestone Retaining Wall	SF
9070-108-C-0	Landscape Timbers	SF
	Section 9071 - Segmental Block Retaining Walls	
9071-108-A-0	Segmental Block Retaining Wall	SF
9071-108-C-0	Granular Backfill Material	TON

K. Bid Items (Continued)

Item Number	Bid Item	Unit
	Section 9072 - Combined Concrete Sidewalk and Retaining Wall	
9072-108-A-0	Combined Concrete Sidewalk and Retaining Wall	CY
	Section 9080 - Concrete Steps, Handrails, and Safety Rail	
9080-108-A-0	Concrete Steps, ____ (Type)	SF
9080-108-B-0	Handrail, ____ (Type)	LF
9080-108-C-0	Safety Rail	LF
	Section 10,010 - Demolition	
10,010-108-A	Demolition Work	LS
10,010-108-B	Plug or Abandon Well	EA
	Section 11,010 - Construction Survey	
11,010-108-A	Construction Survey	LS
11,010-108-B	Monument Preservation and Replacement	LS
	Section 11,020 - Mobilization	
11,020-108-A	Mobilization	LS
	Section 11,030 - Temporary Services During Construction	
11,030-108-A-0	Maintenance of Postal Service	LS
11,030-108-B-0	Maintenance of Solid Waste Collection	LS
	Section 11,040 - Temporary Sidewalk Access	
11,040-108-A-0	Temporary Pedestrian Residential Access	SY
11,040-108-B-0	Temporary Granular Sidewalk	SY
11,040-108-C-0	Temporary Longitudinal Channelizing Device	LF
	Section 11,050 - Concrete Washout	
11,050-108-A-0	Concrete Washout	LS

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 (depending on the Jurisdiction's requirements, plans may be held by the Project Engineer or Jurisdiction) 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 to 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

Plans of Record

A. General

Plans of record (as-built) information should be added to the original plan tracing or media. These tracings may be checked out by the Project Engineer and the record information should be clearly shown thereon. No original design data should be removed from these tracings or media. The Project Engineer returns the tracings to the Jurisdiction Engineer for filing as plans of record.

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

2. Paving Plans:

- a. Pavement width and all radii at returns.
- b. Stationing from the beginning to the end of the construction, stationing of intakes, manholes, and centerline of intersecting streets.
- 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 record cross-sections.

3. Sewer Plans:

- a. Invert elevations of all pipes at manholes, structures, inlets, outlets, and rims.
- 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. Manhole number system to be labeled for each manhole.

4. Drainage Ditch Plans:

- a. Invert elevation 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 of all pipes, fittings, and fire hydrants.
- b. Lengths, type, and sizes of all pipes.
- c. Stationing and location and type of all water service stubs.
- d. Fire hydrant number system to be labeled for each hydrant.

- 6. 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

Proprietary Products

A. Proprietary Products

The SUDAS Standard Specifications do not use references to proprietary products. A list of products that may be considered for approval by the engineer to meet the specifications is contained on the SUDAS website (www.iowasudas.org). This list is not intended to be a comprehensive listing of all acceptable products, nor is it intended to exclude any product that meets the specifications requirements. This list of commonly used products is provided simply as a convenience to the designer. No assurance is inferred or made regarding the use of these products. No verification is made for the listed products as to the continued compliance with the specifications. It remains the responsibility of the Project Engineer to verify that the products used meet the needs of the project and the appropriate specifications. Changes to this list will be made at the request of the specifications users and will be approved by the SUDAS Board of Directors on a yearly basis.

