Supplement

to

Iowa Statewide Urban Standard Specifications for Public Improvements

SUDAS
STATEWIDE URBAN DESIGN AND SPECIFICATIONS

2014 Edition

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DIVISION 1 GENERAL PROVISIONS AND COVENANTS

SECTION 1020 - PROPOSAL REQUIREMENTS AND CONDITIONS

1.08 TAXES

B. All contractors and sub contractors shall submit the following information to the Public Works Department/Engineering Division at the award of the contract to obtain the sales tax exemption certificate. The information required for this is:

- Company name
- Company contact
- Full address
- Phone number
- Fax number
- Tax ID number
- Email address

Materials cannot be purchased until this certificate is supplied to both the prime and sub contractors. The tax exemption certificate will be issued to the prime contractor along with all sub contractors as soon as possible after the City Council approves the contracts, if all the needed information is obtained. This does not apply to IDOT projects or materials bought outside of the state of Iowa.

SECTION 1070 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

PART 2 – RESPONSIBILITIES TO THE PUBLIC

2.01 SANITATION

(add) Portable non-sewered toilets must be of solid construction, easy to clean, provide shelter and provide privacy. The toilet room must be ventilated to the outside and adequately lighted with natural or artificial light. All ventilation openings to the toilet room must be covered with screens or louvers. Internal latches must be provided to assure secure privacy from inadvertent entry. Waste containers must be fabricated from impervious materials, for example, plastic, steel, fiberglass or their equivalent. Containers must be water-tight and capable of containing the waste in a sanitary manner. Containers must be adequate in size to be used by the number of persons according to the schedule for minimum requirements, without filling the container to more than half of its volume before regularly scheduled service. Any defective or inadequate toilet units must be repaired or withdrawn from service by locking or removal.

Service must be performed by a licensed provider at intervals as required to maintain units in a sanitary condition. Employers and event sponsors are responsible for contracting service intervals frequent enough to ensure clean, sanitary facilities. Servicing must include removing waste from containers, recharging containers with an odor controlling solution, cleaning of urinals and seats with a commercial grade antibacterial disinfectant, and installing an adequate supply of toilet tissue. Any

defective or inadequate toilet units must be repaired or withdrawn from service by locking or removal. Removal of waste must be handled in a clean and sanitary manner by means of a vacuum hose and received by a leak-proof tank truck. All ports on the tank shall be valved and capped. Provisions must be made so service trucks have safe and convenient access to the toilets to be served. Disposal of waste from tank trucks must be in accordance with state and local health department requirements. Waste must be disposed of through government approved municipal or district sanitary sewage systems. (Ord. 2005-0577)

2.06 TRAFFIC CONTROL

A. General

3. (add)On a daily basis as the project is constructed, the contractor must perform the following quality control work associated with monitoring traffic control conditions:

a. Review all traffic control operations for compliance with contract documents.

b. Monitor traffic operations and submit proposed Traffic Control Plan changes to the project engineer for approval.

c. Coordinate all changes to the Traffic Control Plan.

d. Coordinate all traffic control operations, including those of subcontractors and suppliers.

4. (add) Traffic control noncompliance notices will be issued if the traffic control devices and signs are not maintained on a daily basis. Price adjustments may be applied for failure to comply with traffic control requirements in the contract documents. Contract price adjustments will be determined by the project engineer, based on magnitude and frequency of violations.

C. (add) **Closing Sidewalks**

When closing sidewalks, Contractor shall follow the ADA requirements in Construction Zones including the following:

The Contractor shall install a Type III barricade for sidewalk closures adjacent to sidewalk construction zones barricade. The barricade shall be installed across the sidewalk extending the entire width of the closed sidewalk. These ADA – Type III barricades must have an additional 4th rail panel, the toe (bottom) rail on the barricade must have a minimum top height of 6 inches and maximum bottom edge height of 1.5 inches above the sidewalk surface. The top rail of the barricade shall be 36 to 42 inches above the sidewalk surface. The top rail is to be parallel to the bottom rail and situated to allow pedestrians to use the rail as a guide for their hands. The barricade shall be continuous, stable and non-flexible. The traffic control signage shall also include sidewalk closed ahead signage (R9-11) at the appropriate locations to designate detour routes for pedestrians.

The Contractor must provide a minimum 10 days advance notification of the sidewalk closure to the Iowa Department of the Blind, the National Federation of Blind of Iowa, and the engineer.

The cost of meeting the ADA requirements in Construction Zones shall be incidental to the Traffic Control bid item.

D. (add) **Restricting Parking**
The Contractor is responsible for installing, maintaining, and removing temporary "No Parking" signage for the project at all locations where on-street parking needs to be restricted. This includes posting the temporary "No Parking" signs prior to beginning work on streets or right-of-ways within the construction zone. It also includes posting signage along all detour routes where on-street parking needs to be removed to allow a two-lane traffic facility. The temporary "No Parking" signage (i.e. 18" x 18" - No Parking/Police Order) shall be picked up at the Traffic Sign Shop at 715 Omaha Street after contacting the Traffic Supervisor, Kurt Frank, at least 24 hours prior to pick up. These temporary "No Parking" signs shall be placed at least 48 hours prior to construction. The Contractor must work with the supervisor to draft proper verbiage on the temporary sign that includes the time and date for the restriction.

The temporary "No Parking" shall be placed on a 4' wood lathe and shall be oriented to be readily visible for on-street parking users. The signage shall be posted at a 100' – 150' spacing along one or both sides of the street where parking will be restricted. The contractor will be responsible for maintaining signage needed along the detour routes and construction zone for the duration of the project. The temporary "No Parking" signs shall be removed, by the contractor, within 48 hours after all construction activities have been completed and equipment has been removed from the site.

The temporary no parking signage shall be included in the general traffic control bid item. This signage shall be posted as needed on side streets during the appropriate construction phase.

DIVISION 2 EARTHWORK

SECTION 2010 – EARTHWORK, SUBGRADE, AND SUBBASE

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

L. Compaction Testing

3. (replace) The owner shall pay for all testing with any retesting charged to the contractor. The independent testing lab will invoice the contractor directly for the cost of the re-tests.

M. (add) **Fly Ash**

1. Measurement: Measurement will be by weight tickets measuring the tonnage of Type C Fly Ash delivered to the site.
2. Payment: Payment will be at the unit price per ton for mineral stabilizing agent.
3. Includes: The Contractor will be paid the contract unit price per ton for mineral stabilizing agent. This payment shall be full compensation for all labor, equipment, and material necessary for furnishing and delivering Type C Fly Ash. Item is for Class C Fly Ash.

N. (add) **C-stone**

1. Measurement: The volume under the proposed pavement under which C-stone is to be placed, plus 2 feet on each side, will be measured in cubic yards.
2. Payment: Payment will be at the unit price per cubic yard.
3. Includes: Work includes, but is not limited to, furnishing, placing, adding moisture needed for compaction, compacting C-Stone, and removing and disposing of the unsuitable soils that the C-stone is replacing.

PART 2 - PRODUCTS

2.03 SUITABLE EMBANKMENT MATERIALS

A – D. (replace) The requirements for all soils provided for the construction of embankments shall be approved by the Engineer.

2.04 FOUNDATION MATERIALS

A. Select Subgrade Materials

1. (a-b) (replace) All soils required for select subgrade materials shall be approved by the Engineer.

C. Subgrade Treatment

3. (replace) **Fly ash**

a. Fly ash shall meet ASTM C 618, Section 4.3 when sampled and tested in accordance with ASTM C 618, Sections 5, 6, and 8, unless otherwise shown on the plans. Note 2 of Section 3.1.2 of ASTM C 618 will not apply.
b. Fly ash shall be Class C
c. The source of the fly ash shall be from an approved IDOT source.

d. Fly ash shall be stored and handled in closed weatherproof containers until immediately before distribution. Fly ash exposed to moisture prior to mixing with soils shall be discarded.

Part 3 - EXECUTION

3.06 SUBGRADE PREPARATION

A. Uniform Composition

5. (add) Fly Ash Treated Subgrade

a. Fly Ash

Fly ash shall be applied per the geotechnical report and as shown on the plans.

b. Tolerances

At final compaction, the fly ash and water content for each course of subgrade treatment shall conform to the following tolerances:

Material	Tolerance
Fly Ash	+2%, -2%
Water	+2%, -3%

F. (add) **Protecting Subgrade From Water:** The contractor shall protect the subgrade through shaping and smoothing of the subgrade prior to forecasted/predicted rainfall events. The contractor shall also pump standing water from the top of the excavated streets within 24 hours of a rain event or once per day during a rain event.

3.07 SUBGRADE TREATMENT

A. Lime, Cement, Fly Ash, or Asphalt: Remove fly ash from this subsection.

C. (add) **C-Stone**

C-stone stabilization should consist of placing a minimum of 12 inches of C-stone in the soft area in two six inch lifts and moisture conditioning the C-stone to within a minus three percent to a plus two percent of optimum moisture content as determined by ASTM D698. The C-stone should be compacted to a minimum density of 95 percent of ASTM D698. The depth of stabilization material needed will depend on the actual subgrade conditions encountered in the field at the time of construction. C-stone stabilization will only be performed where approved by the Geotechnical engineer, City Engineer, or their representatives.

D. (add) **Fly Ash**

1. Weather Limitations

The fly ash-treated subgrade shall not be mixed while the atmospheric temperature is below 40°F or when conditions indicate that temperatures may fall below 40°F within 24 hours, when it is foggy, rainy, or when soil or subgrade is frozen.

2. Equipment

The equipment required shall include all equipment necessary to complete this item such as: grading and scarifying equipment, a spreader for the fly ash, mixing

or pulverizing equipment, sheepsfoot and pneumatic or vibrating rollers, sprinkling equipment, and trucks.

3. Construction Methods

a. **General**

It is the primary requirement of this specification to secure a completed stabilized subgrade containing a uniform fly ash mixture, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth, and with a smooth surface suitable for placing subsequent courses. The Contractor shall regulate the sequence of work, to use the proper amount of fly ash, maintain the work, and rework the courses as necessary to meet the above requirements.

b. **Application**

Fly ash shall be spread only on areas where the mixing and compaction operations can be completed within 2 hours. The amount of fly ash spread shall be determined by the geotechnical report. The fly ash treated subgrade should extend 2 feet beyond the edge of the proposed paving.

The fly ash shall be distributed in such manner that scattering by wind will be minimal. Fly ash shall not be applied when wind conditions, in the opinion of the Engineer, are detrimental to a proper application.

c. **Mixing**

The full depth of each lift of the treated subgrade shall be mixed with the pulvamixer. Fly ash shall not be left exposed for more than 30 minutes after application. The pulvamixer shall make as many passes as necessary to incorporate the fly ash into the soil. Water shall be added through use of a pulvamixer equipped with a spray bar in the mixing drum capable of applying sufficient quantities of water to achieve the required moisture content of the soil-fly ash mixture. The system shall be capable of being regulated to the degree as to maintain moisture contents within the specified range.

Specified moisture contents shall be established based on laboratory tests with the site soils and the specific fly ash to be used for the treatment. Final moisture content of the soil-fly ash mixture , immediately prior to compaction, shall not be more than 3 percent below nor more than 2 percent above the optimum moisture content for maximum density of the soil-fly ash mixture as determined in accordance with ASTM D 698. Lowering moisture contents by aeration following addition of the fly ash will not be permitted.

d. **Compaction**

Compaction of the soil-fly ash mixture shall begin immediately after mixing of the fly ash and be completed within two hours following incorporation of the fly ash. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from

samples taken from the material in place. The specimens shall be compacted and tested in accordance with ASTM D 698.

The in-place density of the fly ash-treated subgrade layer shall be determined in accordance with ASTM D 2922 at intervals so that each test shall represent no more than 300 square yards.

Irregularities, depressions, or weak spots, which develop, shall be corrected immediately by scarifying the area affected, adding or removing material as required, and reshaping and re-compacting. The surface of the course shall be maintained in a smooth condition, free from undulations and ruts, until other work is placed thereon or the work is accepted.

In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, tests will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked to meet these requirements. Throughout this operation, the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and shall conform with the typical section shown on the plans and to the established lines and grades. Should the material lose the required stability, density, and finish before the next course is placed or the work is accepted; it shall be recompacted and refinished at no additional cost to the Contracting Authority.

e. **Finishing and Curing**
After the final layer or course of the fly ash-treated subgrade has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections. The finished surfaces shall not vary more than 3/8 inch when tested with a 16 foot straightedge applied parallel with and at right angles to the pavement centerline. Any variations in excess of this tolerance shall be corrected by the Contractor, at no additional cost to the Contracting Authority, and in a manner satisfactory to the Engineer.

After the fly ash-treated course has been finished as specified herein, the surface shall be protected against rapid drying and maintained in a thorough and continuously moist condition by sprinkling for a period of not less than three days or until the pavement section is placed.

f. **Maintenance**
The Contractor shall maintain the fly ash-treated subgrade in good condition from the start of work until all the work has been completed, cured, and accepted by the Engineer.

4. Testing Requirements

a. ASTM D 698 Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb Rammer and 12 inch Drop
b. ASTM D 1556 Density of Soil in Place by the Sand-Cone Method
c. ASTM D 2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
d. AASHTO T 26 Quality of Water to be Used in Concrete

5. Material Requirements

a. ASTM C 618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

3.09 FIELD QUALITY CONTROL

B. Moisture Content and Density

1. (replace) Ensure that moisture content of cohesive materials falls within a range from 3% below optimum to 2% above optimum as determined in general accordance with ASTM D698. Silt material should be placed at a moisture content of 5% below optimum to 2% above optimum as determined in general accordance with ASTM D698.
2. (add) Fill under turf area shall be filled to 6" below finish grade and compacted to 90% than filled to finish grade with topsoil and compacted to 85%. Fill under roadways, sidewalks or drives shall be compacted to 95%.
3. (add) There is no moisture control for granular material.

DIVISION 3 TRENCH AND TRENCHLESS CONSTRUCTION

SECTION 3010 – TRENCH EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

A. General

2. (replace) Removal of unsuitable backfill material encountered during standard trench excavation. Hauling and disposal of unsuitable material shall be paid for by the "replacement of unsuitable backfill material" bid item.
4. (replace) Pipe bedding shall be bid and paid on a per ton basis.
10. (add) Removal of excess trench backfill material and furnishing and placing additional trench backfill material when needed due to shrinkage of material in compacted state.

D. (replace) **Replacement of Unsuitable Backfill Material**

1. Measurement: Measurement will be in cubic yards for the quantity of backfill material required to replace unsuitable backfill material removed during standard trench excavation. The dimensions of the replacement will be set forth by the Engineer in the special provisions of each project. Measurement will be based on compacted material in place.
2. Payment: Payment will be at the unit price per cubic yard for the quantity of backfill material placed. Any replacement of unsuitable soils outside of the dimensions stated in the special provisions will not be paid for unless directed by the Engineer or their representative.
3. Includes: Unit price includes, but is not limited to, hauling unsuitable material away from job site, disposal of unsuitable material, furnishing, hauling, and placing backfill material.

PART 2 - PRODUCTS

2.02 BEDDING AND BACKFILL MATERIAL

B. Class II Material

1. (add) Sand shall be an acceptable material for bedding under rigid pipes in areas where sand is native or areas with firm soils. The sand shall have less than 12 percent material passing the #200 sieve. See Figure SC 3010.101, for Pipe Embedment Details.

PART 3 - EXECUTION

3.01 TRENCH EXCAVATION

B. (replace) Remove and stockpile top 6" of topsoil for subsequent reuse on new construction projects only.

3.04 DEWATERING

B. (replace) Perform the dewatering operation according to the dewatering plan approved by the Engineer. The dewatering plan may be modified to meet actual field

conditions, with approval of the Engineer. The contractor shall pump standing water from the excavated trench within 24 hours of a rain event or once per day during a rain event.

3.05 PIPE BEDDING AND BACKFILL

A. General

6. (add) Compaction: Unless otherwise specified by contract documents, compaction in trench within street right-of-way should be compacted to a minimum of 92 percent of Standard Proctor Density, except for the top 12 inches within pavement area and 2 feet outside of the paved surface edge shall be compacted to a minimum of 95 percent of Standard Proctor Density. Material shall be compacted to a moisture content as specified below:
   a. Moisture requirements for the top 12 inches of cohesive soils shall be such that proper compaction can be achieved and moisture content falls within a range from 3% below optimum to 2% above optimum as determined in general accordance with ASTM D698. Silt material should be placed at a moisture content of 5% below optimum to 2% above optimum as determined in general accordance with ASTM D698.
   b. There is no moisture control for granular material.
7. (add) Class II material may be specified in the contract documents by Jurisdictional Engineer between pipe embedment zone and top 3 feet of final backfill when trench is under pavement or when sand is native in that area.

B. Pipe Bedding:

1. Granular Material

a. (replace) Class I granular bedding material shall be used on gravity mains and pressure pipes when specified on the plans or in the contract documents.

C. Haunch Support:

2. Suitable Backfill Material:

c. (replace) For Class III and Class IVA backfill materials, compact to at least 90 percent of Standard Proctor Density. Obtain proper compaction within a soil moisture range no greater than 6 percent above optimum.

D. Primary and Secondary Backfill:

3. Suitable Backfill Material:

c. (replace) For Class III and Class IVA backfill materials, compact to at least 92 percent of Standard Proctor Density. Obtain proper compaction within a soil moisture range no greater than 6 percent above optimum.

E. Final Trench Backfill

4. Class III and Class IVA Backfill Material

a. (replace) Compact to at least 92 percent of Standard Proctor Density except for the top 12 inches within pavement area and 2 feet outside of the paved surface edge shall be compacted to a minimum of 95 percent of Standard Proctor Density.
c. Moisture requirements for the top 12 inches of cohesive soils shall be that proper compaction can be achieved and moisture content falls within a range from 3% below optimum to 2% above optimum as determined in general accordance with ASTM D698.

3.06 TRENCH COMPACTION TESTING

It is the intent of the City that this testing frequency will be enforced on every project.

SECTION 3020 – TRENCHLESS CONSTRUCTION (BORING, JACKING, AND TUNNELING)

PART 3 - EXECUTION

3.01 EXCAVATION

B. (replace) Remove and stockpile top 6" of topsoil for subsequent reuse on new construction projects only.

Pipe Embedment Details--Figure SC 3010.101

Revised 3.26.10

			Allowable Depth of Fill above Top of Pipe				
	Material	**Use**	**No Bedding.**	**Class R-1**	**Class R-2**	**Class R-3 & Class R-4**	**Class R-5**
Rigid	RCP; ASTM C 76 Class III; 12"-24"	Storm, Gravity	Up to 10'	Up to 15'	Up to 19'	*	
	RCP; ASTM C 76 Class III; 27"-84"	Storm, Gravity	Up to 10'	Up to 13'	Up to 18'	*	
	RCP; ASTM C 76 Class IV; 12"-24"	Storm, Gravity	Up to 15'	Up to 22'	Up to 28'	*	
	RCP; ASTM C 76 Class IV; 27"-84"	Storm, Gravity	Up to 15'	Up to 21'	Up to 27'	*	
	RCP; ASTM C 76 Class V; 12"-21"	Storm, Gravity	Up to 23'	Up to 34'	Up to 42'	*	
	RCP; ASTM C 76 Class V; 24"-84"	Storm, Gravity	Up to 23'	Up to 32'	Up to 47'	*	
	RCAP; ASTM C506 (Class A III); 18"-84" Equiv.	Storm, Gravity					*
	RCAP; ASTM C506 (Class A IV); 18"-84" Equiv.	Storm, Gravity					*
	Extra Strength, VCP; ASTM C 700 8"-10"	Sanitary, Gravity	Up to 11'	Up to 20'	Up to 26'	*	
	Extra Strength, VCP; ASTM C 700 12"-21"	Sanitary, Gravity	Up to 9'	Up to 16'	Up to 22'	*	
	Extra Strength, VCP; ASTM C 700 24"-42"	Sanitary, Gravity	Up to 13'	Up to 20'	Up to 30'	*	
			No Bedding.		**Class F-1**	**Class F-2**	**Class F-3**
Flexible	Ductile Iron; AWWA C151 (Class 52); 4"-64"	Sanitary, Gravity		Up to 50', No Bedding Required			
	Ductile Iron; AWWA C151 (Class 52); 8"-54"	Sanitary, Gravity		Up to 50', No Bedding Required			
	PVC; ASTM D 3034 (SDR 23.5); 8"-15"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; ASTM D 2680 (Truss); 8"-15"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; AWWA C900 (DR18); 4"-12"	Sanitary, Gravity		Up to 30', No Bedding Required			
	PVC; AWWA C905 (DR18); 14"-24"	Sanitary, Gravity		Up to 30', No Bedding Required			
	PVC; ASTM D 3034 (SDR 26); 8"-15"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; ASTM F 679 (T-1 Wall); 18"-27"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; ASTM F 949; 8"-36"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; ASTM F 1803 (Closed Profile); 21"-36"	Sanitary, Gravity				Up to 30'	Up to 30'
	PVC; ASTM F 949; 12"-36"	Storm, Gravity				Up to 30'	Up to 30'
	HDPE; AASHTO M 294; 12"	Storm, Gravity					Up to 11'
	HDPE; AASHTO M 294; 15"-36"	Storm, Gravity					Up to 11'
			No Bedding.		**Class P-2**	**Class P-3**	
Pressure	Ductile Iron; AWWA C151 (Class 52); 4"-64"	Pressure	Up to 50', No Bedding Required				
	Ductile Iron; AWWA C151 (Class 52); 8"-54"	Pressure	Up to 50', No Bedding Required				
	PVC; AWWA C900 (DR18); 4"-12"	Pressure	Up to 30', No Bedding Required			Up to 40'	
	PVC; AWWA C905 (DR18); 14"-24"	Pressure	Up to 30', No Bedding Required			Up to 40'	

The Fill Height for RCP is based on:

1. A soil weight of 120 lbs/ft^3

2. AASHTO HS20 live load

3. Embankment Installation

The Fill Height for VCP is based on a Factor of Safety of 1.2

*=use SUDAS manual Figure 3010.102

DIVISION 4 SEWERS AND DRAINS

SECTION 4010 – SANITARY SEWERS

PART 2 - PRODUCTS

2.01 SANITARY SEWER (GRAVITY MAINS)

A. Solid Wall Polyvinyl Chloride Pipe (PVC) 8”-15”

1. (replace) Comply with ASTM D 3034, SDR 26. SDR-35 is not an approved construction material in Sioux City.

I. (add) Non-Shear Coupler: Non-shear coupler shall be produced by Mission Rubber Company or an approved equal.

2.04 SANITARY SEWER SERVICE

C. Service Pipe: Products as required by local plumbing code or regulations, if applicable, otherwise use the following:

1. PVC

a. (add) Approved materials also include SDR 26 and Schedule 40 as specified for sanitary sewers (gravity).

3. VCP

a. (add) As Specified for Sanitary Sewers (gravity).

D. **Connection to Existing Service:** (replace) When connecting to existing sewer services and stubs the new pipe shall be connected to the existing with a non-shear coupler.

PART 3 - EXECUTION

3.02 GRAVITY SEWER INSTALLATION

B. Trenched

8. (add) When connecting to existing sanitary sewers, the new pipe shall be connected to the existing with a non-shear coupler.

3.06 SANITARY SEWER SERVICE STUB

C. Install service stub from sewer main

5. (add) The location of the end of the sewer stubs shall also be tied (measured) to the downstream property corner.
6. (add) When connecting new service pipes to existing service pipes a non-shear adjustable repair coupling is required.

3.11 TOLERANCES

A. Gravity Main

4. (add) Sewer should be on line and grade and pass a jurisdiction camera inspection. The sewer will also be inspected at the end of construction to check for debris in the line.

SECTION 4020 – STORM SEWERS

PART 2 – PRODUCTS

2.01 STORM SEWERS

E. Polyvinyl Chloride Pipe (PVC)

1. Use pipe complying with the following
   c. (replace) Minimum pipe stiffness of 115 psi

SECTION 4060 – CLEANING, INSPECTION, AND TESTING OF SEWERS

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

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

PART 3 - EXECUTION

3.03 VIDEO INSPECTION

A. General
   1. (add) Video inspection after paving is completed is also required.

C. Inspection Reporting
   1. (add) Copies shall be provided to City Engineering, Utilities Field Office, and any consulting engineering firm.
   3. Video inspection shall be completed using NASSCO specifications and shall be PACP compliant.

3.04 SANITARY SEWER LEAKAGE TESTING

A. (add) Infiltration testing is not required unless it is specified in the contract documents.

B. (add) Exfiltration testing is not required unless it is specified in the contract documents.

C. (add) Sanitary Sewer Low Pressure Air Testing is only required on new construction.

DIVISION 5 WATER MAINS AND APPURTENANCES

SECTION 5010 – PIPE AND FITTINGS

PART 2 - PRODUCTS

2.01 WATER MAIN

A. Polyvinyl Chloride (PVC) Pipe:

1. Minimum Wall Thickness

a. (replace) 4-inch through 24-inch sizes: C900 - DR 14

B. Ductile Iron Pipe (DIP)

1. Minimum Thickness Class

a. (replace) 4-inch through 24-inch sizes: Pressure Class 350 per ANSI/AWWA C151/A21.51

2.05 PIPELINE ACCESSORIES

B. Tracer System: Comply with Figure 5010.102

5. Tracer Wire Station: (add) Stations shall be Copper Head Industrial Snake Pit Tracer Box or Valvco Tracer Wire Access Box. The stations shall be placed as shown in Figure SC 5020.301.

2.07 WATER SERVICE PIPE AND APPURTENANCES

C. (add) **Corporations and Stop Boxes**

1. Corporation stops shall be Mueller 300 Ball Corporation Valves, ¼ turn open, AWWA taper thread on the inlet side, compression fitting for CTS OD Tubing on the outlet.
2. Curb stops shall be Mueller 300 ball curb valve with ¼ turn check, compression fitting for CTS tubing on each end, no reduced port valves.
3. Valve boxes for curb stops shall be PENTEX Access boxes part #110185-14, 2 ½" curb service box. Material shall be a rigid combination of polyolefin with fibrous inorganic component reinforcing and UV stabilizer additives to assure resistance to material degradation from ultraviolet light. Valve box shall be a telescoping two-piece (Screw style) with polycarbonate ring, pentagon bolt and Superflexon cover that is adjustable to 84". Upper section shall be locatable electronically and magnetically with ring riveted to the top section. Lower section shall be a full threaded shaft 2 11/32" DIA over a Buffalo style arch, 4" wide by 7" high and saddle, 3 1/3" wide by 4" high.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

A. General

12. (add) Intersection Connection: An Intersection Connection shall be used to connect every new water main to the existing mains on side streets, extensions, at each end of the new main. The Intersection Connection shall be constructed as shown in figure SC 5010.201.

3.10 WATER SERVICE STUB

D. (add) City water staff/Utilities Staff will make all taps on all water mains except on projects that are being administered by the City's Public Works Department. All services greater than 1 ½" shall require a tapping saddle. All tapping saddles for 4" and larger taps shall be full wrap stainless steel saddles. Size on size taps are not allowed. Taps must be a minimum of one size smaller than the existing main and consistent with the table on the next page.

Allowable Taps Per Main Size

	Main Size			
	2"	4"	6"	8" and Larger
Tap Size	3/4"	Saddle	Direct	Direct	Direct
	1"	None	Saddle	Direct	Direct
	1 1/4"	None	None	Saddle	Saddle
	1 1/2"	None	None	Saddle	Saddle
	2"	None	None	None	Saddle

E. (add) Stop box: distance to back of curb to be 8.5 feet unless otherwise shown on plans.

SECTION 5020 – VALVES, FIRE HYDRANTS, AND APPURTENANCES

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

C. (replace) **Fire Hydrant Assembly**

1. **Measurement:** Count each fire hydrant assembly installed.
2. **Payment:** Payment will be at the unit price for each fire hydrant assembly.
3. **Includes:** Unit price includes, but is not limited to, the fire hydrant, up to 8 feet of anchoring pipe, fitting (except anchor tee), thrust blocks, pea gravel or porous backfill material, fire hydrant gate valve with box.
   a. The mainline tee shall be bid as a separate bid item from the hydrant assembly. Payment shall be at the unit bid for each size of tee installed.
   b. Fire hydrant extensions shall be bid separately from the hydrant assembly. Payment shall be at the unit bid for each size installed.

PART 2 - PRODUCTS

2.01 VALVES

A. General

2. (replace) Direction of Opening: All valves 4" and larger, including service line valves, must open clockwise.

B. Gate Valves

1. (add) **Standards:** Shall be required for water mains less than or equal to 12 inches.

C. Butterfly Valves

1. Standards: Shall be required for water main larger than 12 inches. Butterfly Valves must have 250 PSI operating pressure.

4. (remove) **For Seat on Disc Valves (a-b):** City of Sioux City does not allow butterfly valves with seat in disc valves.

D. (add) **Tapping Valve Assemblies:** Tap, sleeve, and valve shall be provided by the contractor. If City staff performs the tap, the City shall receive a fee from the contractor for performing the tap.

2.02 FIRE HYDRANT ASSEMBLY

Fire Hydrant shall be constructed as shown in figure SC 5020.301.

B. Manufacturers and Model

1. Mueller Centurion
2. Clow Medallion
3. American Darling B84B or B62B

C. Features

6. (add) Items to be Specified:
   a. Operating nut: 1.5 inch pentagonal
   b. Pumper nozzle: 4 inch with 5 inch Storz quick connect on all new hydrants public and private
   c. Nozzle threads:
      1) Hose thread
         a) Male Dia. – 3.290
         b) Pitch Dia. – 3.146
         c) Root Dia – 3.002
         d) Female OD – 3.340
         e) Pitch Dia. – 3.196
         f) Root Dia. – 3.052
         g) 60 Degree Sharp V Thread
      2) Steamer thread:
         a) 6 threads per inch
         b) ID – 4.180
         c) Male thread OD – 4.860
         d) Pitch Dia. – 4.752
         e) Root Dia. – 4.643
         f) Female thread OD – 4.875
   d. Main valve nominal opening size: 6 inch.

D. Painting

2. Field coating above grade:
   a. Public – safety yellow
   b. Private - red

2.03 APPURTENANCES

B. (add) **Valve Box**

2. Manufacturer: Pentex Roadway Valve Box - Water #111140-03

3. Type: Use in all paved areas

D. (add) **Adjustment Rings and Covers**

1. Adjustment rings and covers shall be those produced at Sioux City Foundry.

PART 3 - EXECUTION

3.01 GENERAL

D. (add) The contractor shall make arrangements with the project observer for the Field Services Office to come out and check the operation of all mainline and service line valves before and after the paving.

F. (add) The Contractor shall contact the City to request authorization to make more than one connection to a live water main. The City will place a valve lock-out on the valve and maintain possession of the key.

SECTION 5030 – TESTING AND DISINFECTION

PART 3 - EXECUTION

3.03 DISINFECTION

A. General

2. (add) Isolation shall include a physical separation from the existing water system, except for one connection that will be used to fill the new line for testing.

3.04 FINAL FLUSHING

C. (add) The contractor shall be responsible to reimburse the City for any financial penalties imposed on the City by state or federal regulatory agencies as a result of such disposal.

3.06 BACTERIA SAMPLING

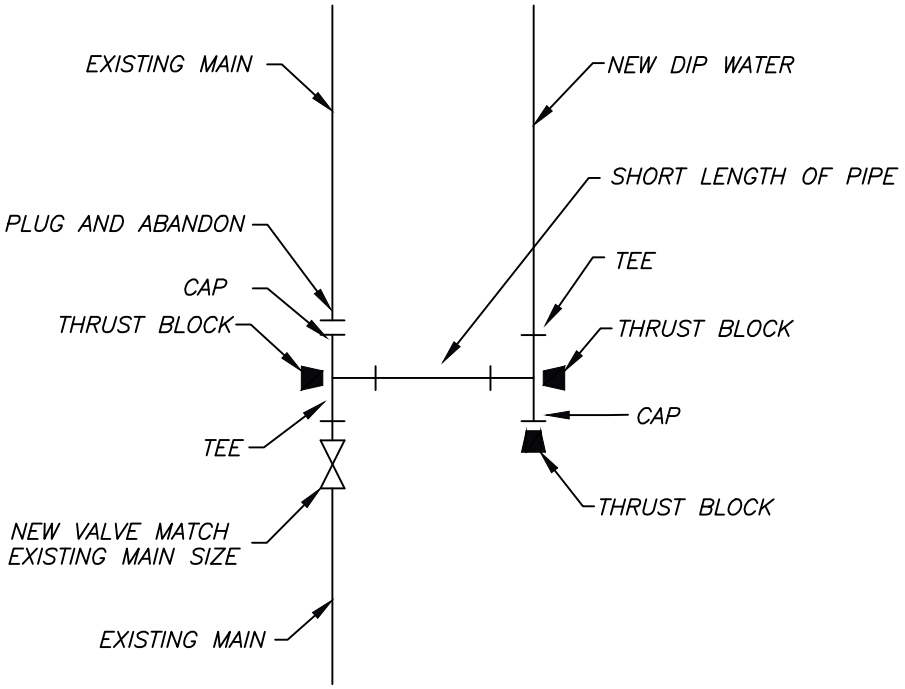
(add): City personal will perform this testing.

After final flushing, two consecutive samples taken 24 Hrs apart shall be collected from the new main after the final flushing water has set in the new main at least 16 Hrs and the chlorine residual is within the allowable levels. One sample must be collected from each hydrant located on the new main. The maximum distance between sample sites is 1200' and samples must also be collected from each end of the line and each branch. Bacteriological samples shall be collected in sterile bottles containing sodium thiosulfate to neutralize the Chlorine in the sample.

Sampling Procedures

Take care to safeguard the sample bottles and the sample from becoming contaminated before, during, and after the time of collection. Keep the sterile sample bottles closed until ready to take the sample. Do not use a hose to take the sample. The water should be allowed to run to waste for at least 2 to 3 minutes before sampling. The sample shall be collected directly into the sample bottle and taken from a flow of water that will allow filling of the bottle without splashing. Replace the cap immediately after sampling and label the sample with the location, time, and date of sample. Samples should be delivered to the laboratory within 1 Hr of sampling or the water sample should be kept in an iced cooler or refrigerated until delivered. The time between collection and examination should never exceed 30 Hrs.

TYPICAL WATER INTERSECTION CONNECTION



NOTE:

1. THIS CONNECTION CAN BE REVERSED DEPENDING ON WHICH SIDE OF THE EXISTING MAIN THE NEW MAIN IS LAID.
2. THIS CONNECTION ALLOWS NEW MAINS TO BE TESTED AND THEN PUT INTO SERVICE BY INSTALLING TWO PLUGS AND ABANDONING THE EXISTING WATER MAIN.
3. THIS CONNECTION INCLUDES CONNECTIONS TO THE EXISTING MAIN BEYOND THE NEW VALVE.
4. THIS CONNECTION WILL BE PAID FOR BY THE APPROPRIATE BID ITEMS FOR VALVES, FITTINGS, AND LENGTH OF PIPE.

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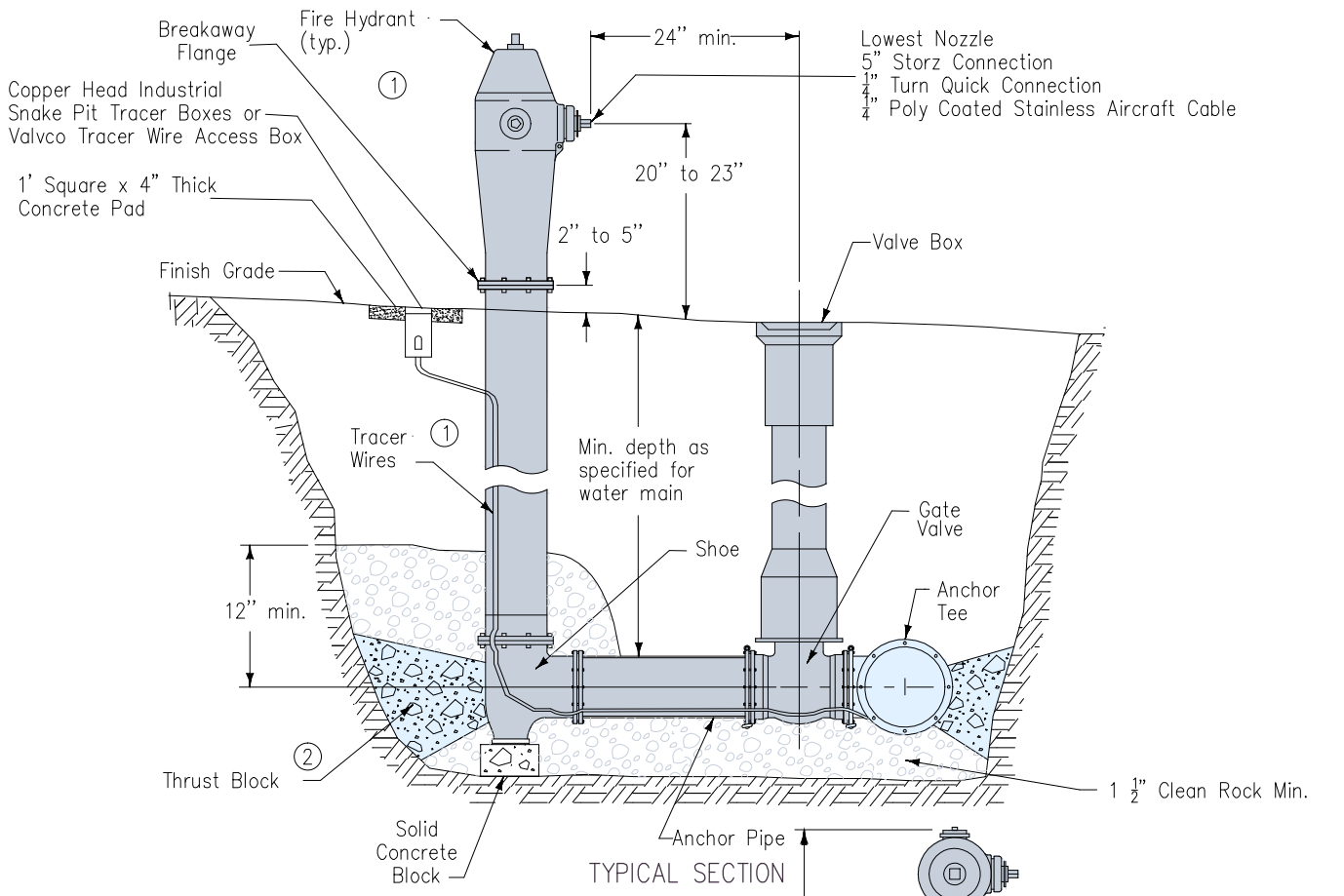
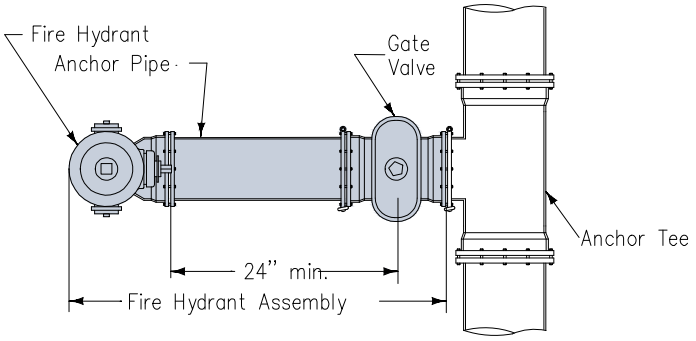
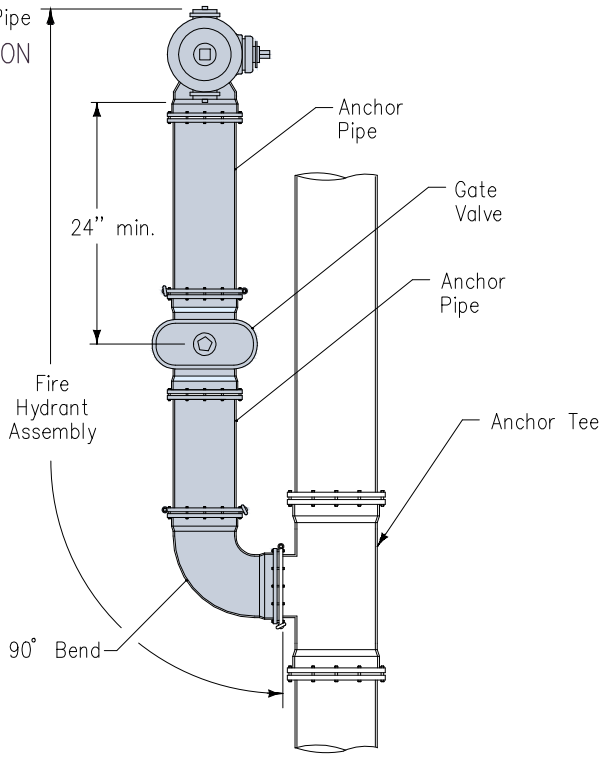
TYPICAL WATER INTERSECTION CONNECTION

FIGURE SC 5010.201





TYPICAL PLAN



ALTERNATE PLAN

Use ductile iron pipe with restrained mechanical joints for fire hydrant assembly and anchor tee.

(1) Refer to WM–102 for details of tracer system.

(2) Do not cover drain holes or tracer wire with Thrust Block.

Hyd. to be Safety Yellow

REVISION DATE: 1/10/2013

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FIRE HYDRANT ASSEMBLY

FIGURE SC 5020.301

DIVISION 6 STRUCTURES FOR SANITARY AND STORM SEWERS

SECTION 6010 – STRUCTURES FOR SANITARY AND STORM SEWERS

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

A. (replace) **Manhole**

1. **Measurement:** Manholes will be measured by each and by the vertical foot.
2. **Payment:** Payment will be at the unit price for each and vertical foot.
3. **Includes:** Unit price per each includes, but is not limited to, bedding material, placing bedding, compaction of bedding, base, reinforcing steel, chimney seals, and casting. The unit price for each vertical foot includes, but is not limited to, structural concrete, adjusting rings, pre-cast units (with or without epoxy liner), excavation, and backfill material.

I. (add) **Manhole/Intake Marker**

1. **Measurement:** Each manholes/intake marker will be counted.
2. **Payment:** Payment will be at the unit price for each manholes/intake marker.
3. **Includes:** Unit price includes, but is not limited to, utility marker with appropriate lettering, 6"-1 ¼" bolt, and concrete footing.

PART 2 - PRODUCTS

2.05 PRECAST RISER JOINTS

B. Joint Sealant:

1. (add) **Sanitary Sewers**
   d. Joint Wrap: Apply a 9 inch Cretex wrap or approved equal to all exterior joints.
2. (add) **Storm Sewers**
   c. Rubber O-ring or Profile Gasket: Flexible joint, complying with ASTM C 443.
   d. Joint Wrap: Apply a 9 inch Cretex wrap or approved equal to all exterior joints.

2.07 BASE

A. Sanitary Sewer Manhole

1. (add) **Circular Manhole**
   a. Precast Manhole: Integral base and riser section or poured base.
   b. Cast-in-place manhole: Base riser section embedded at least 3 inches into poured-in-place base or embedded in concrete.
   c. Cast-in-place base with formed invert.

2.08 PIPE CONNECTIONS

D. (add) **Sanitary Sewer**

1. Install drop connection where required on plans. Drop connection can be constructed with any material that is allowed for sanitary sewer. The drop shall be the same size as the main line sanitary sewer. See detail SC 6010.402.

E. Storm Sewer

1. Precast manholes: Factory fabricated openings.
2. Poured-in-place structures: Structure wall poured around pipe stub.

2.09 MANHOLE OR INTAKE ADJUSTMENT RINGS (GRADE RINGS)

A. Methods

3. (add) Concrete Adjustment
   a. Manholes in resurfacing and patching projects can be adjusted in the manner shown in figure SC 6010.406, Manhole Adjustment Detail. Both storm and sanitary sewer manholes can be adjusted in this manner.
   b. The existing ring and cover should be used unless otherwise specified in the contract documents

C. (add) Adjustment ring stack heights:

1. Minimum: Not to be used for Half Special, SWS-8, and DWS-12.
   a. Install at least two rings per manhole in unpaved areas.
2. Maximum: The maximum for existing manholes shall be 24 inches.

D. (add) Grout the inside of manhole between ring and stack

2.10 CASTINGS (RING, COVER, GRATE, AND EXTENSIONS)

C. Casting Types

1. Manholes: (add) All manhole castings shall be self sealing. Use bolted cover when specified in the plans.
   a. Approved manhole castings:
      1) Neenah R-1642 Type A lid
      2) Neenah R-1673-B (Floating)
      3) East Jordan 1045 Type A lid
      4) East Jordan 1510 (Floating)
      5) Deeter 1247
      6) Deeter 1187 (Floating)

2. Intakes

   a. (add) Casting types
      1) For Half, Single Wing, and Double Wing Special intake shall be:
         a) Neenah R-1695
         b) East Jordan 3124
         c) Deeter 1158
      2) For alley drops
         a) Neenah R-3577
         b) East Jordan 7568
         c) Deeter 2245
      3) SW-603 Type R and Type S grates shall be flat grates with rectangular or square openings. Vane grates shall not be used.
   b. (add) All inlets shall be labeled with "DUMP NO WASTE, DRAINS TO RIVER" or other wording approved by the engineer. For area intakes, alley drop inlets, or curb type inlets the label may be ordered as part of the grate or casting from the manufacturer. For concrete top inlets the label can be either on the manhole cover or by plates embedded into the concrete facing and near the street. Approved plates are:

1) Neenah R-3000-A
2) East Jordan 7001

The cost to label the inlets shall be included in the cost to construct the inlet.

2.11 ADDITIONAL MATERIALS FOR SANITARY SEWER MANHOLES

A. Chimney Seals

1. (replace) **External Rubber Seal:** These are not allowed in the City of Sioux City

2. (add) **Internal Rubber Seal:** Must be installed on all Manholes regardless of sewer type.

B. Riser Section Coating

1. (add) **Interior:** All sanitary manholes are required to have a 2 coat hy-build epoxy liner factory applied. Field installation of hy-build epoxy liner in accordance with the manufacturer's suggested installation is acceptable.

2.12 INVERT

A. (add) **Cast-in-place Base:** Cast-in-place inverts shall be smooth, finished by steel trowel or mag, they shall not be broomed.

2.13 STEPS

A. (add) Steps shall be placed in all manholes regardless of type.

2.17 SIOUX CITY INTAKES

(add)

A. Half Special Intake: Half special intake shall be constructed as shown in figure SC 6010.403 when shown on the plans.

B. SWS-8 Intake: SWS-8 intake shall be constructed as shown in figure SC 6010.404 when shown on the plans. This is the standard intake for the City of Sioux City.

C. DWS-12 Intake: DWS-12 intake shall be constructed as shown in figure SC 6010.405 when shown on the plans.

2.18 MANHOLE/INTAKE MARKER

A. (add) When manholes or intakes are not located in or with-in 10 feet of pavement they shall be marked. The marker shall be constructed as shown in figure SC 6010.407.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS FOR INSTALLATION OF MANHOLES AND INTAKES

H. Top Sections: (replace) Use eccentric cone top except as noted on plans or detailed drawings.

SECTION 6030 CLEANING, INSPECTION, AND TESTING OF STRUCTURES

PART 3 - EXECUTION

3.04 SANITARY SEWER MANHOLE TESTING

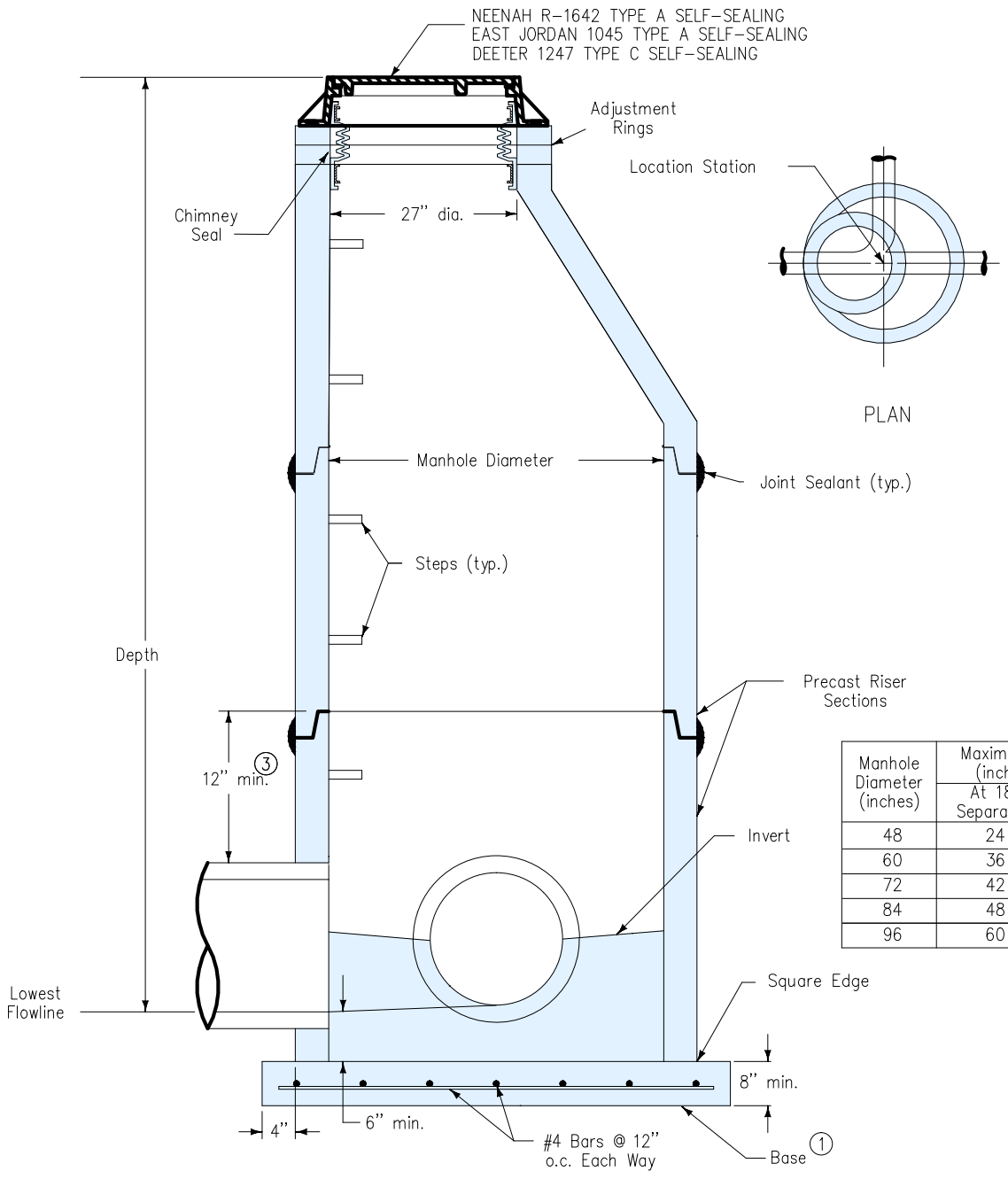
A. General

1. (replace) Vacuum testing shall not be required by the City of Sioux City.

① Cast-in-place base shown. If base is precast integral with bottom riser, the footprint of the base is not required to extend beyond the outer edge of the riser.

② For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.

③ 12 inch minimum riser height above all pipe openings.



TYPICAL SECTION

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes ②	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

REVISION DATE: 1/13/2012

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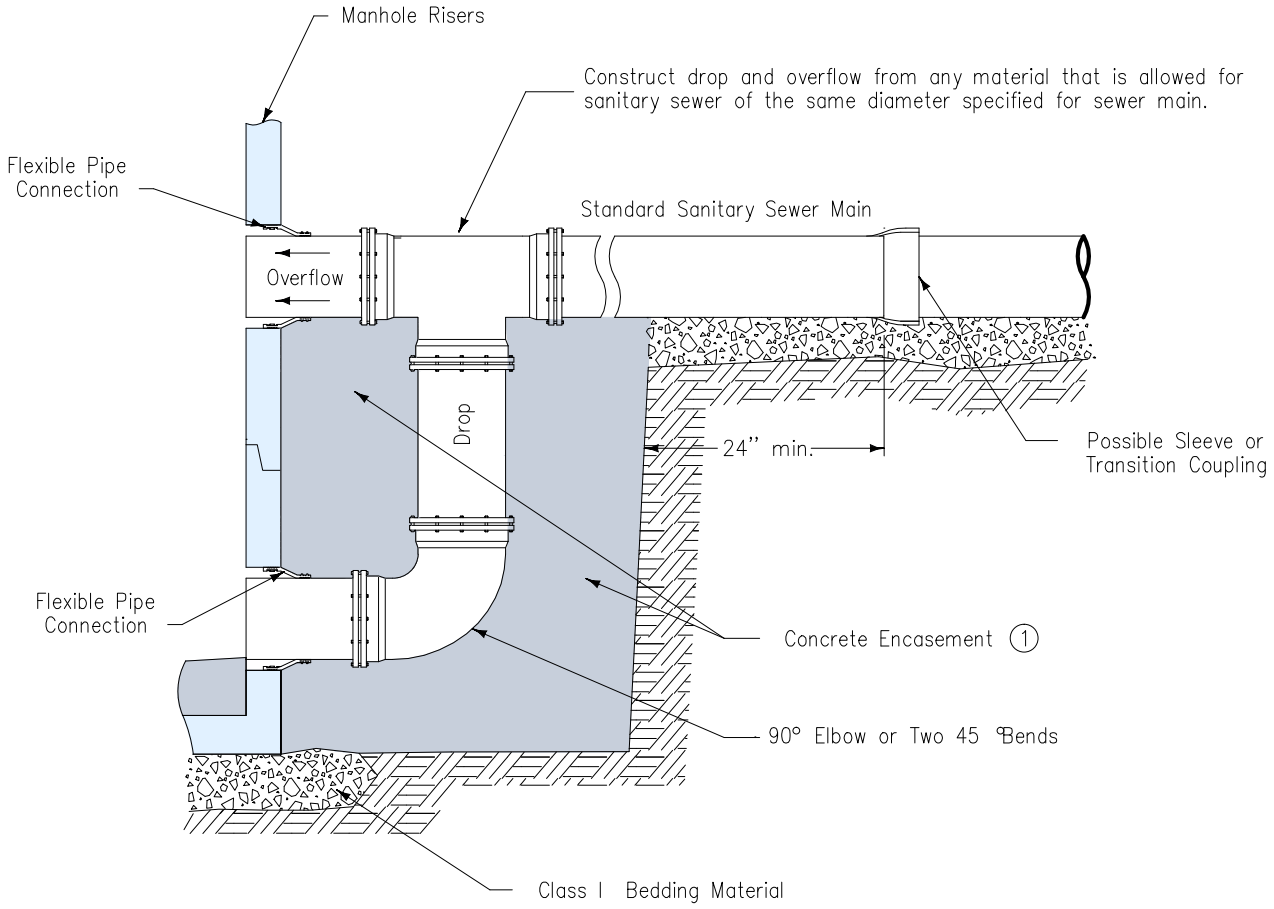
CIRCULAR STORM SEWER MANHOLE

FIGURE SC 6010.401

① Encase elbow in concrete. 12 inches minimum on all sides.



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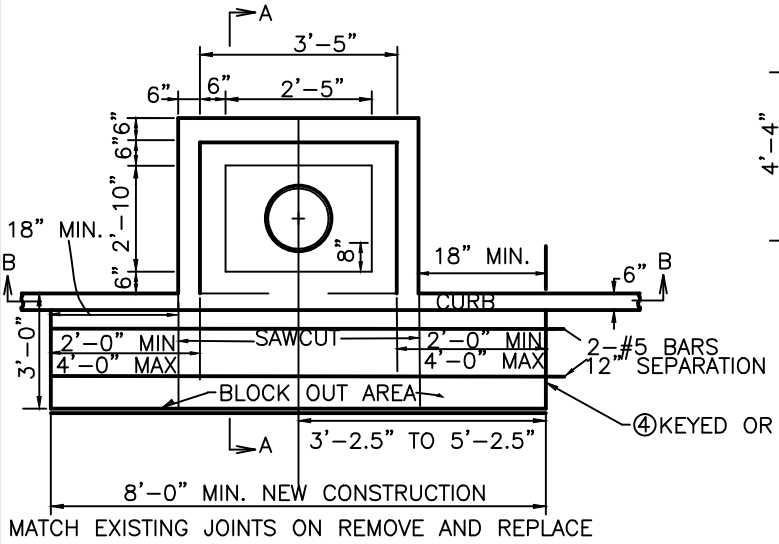
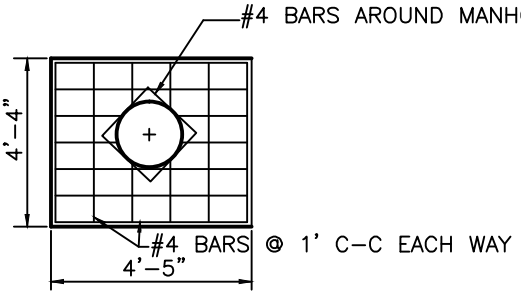
SANITARY EXTERNAL MANHOLE DROP CONNECTION

FIGURE SC 6010.402



LAYOUT



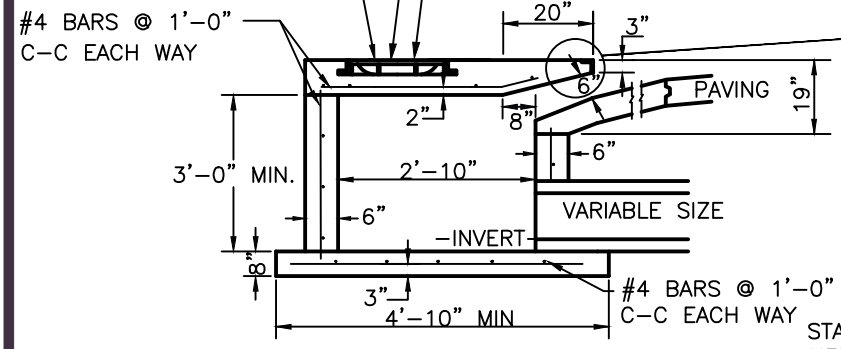
TOP REBAR

④KEYED OR DRILLED TIE BARS IN PAVING

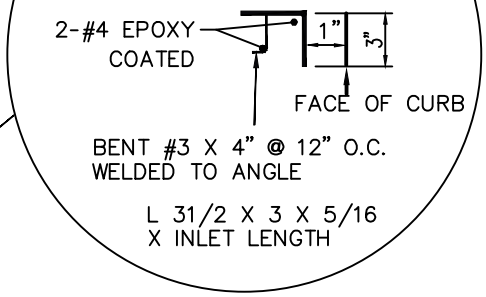
EAST JORDAN IRON WORKS
MODEL 3124,
DEATER FOUNDRY, INC
MODEL 1158,
NEENEH FOUNDRY COMPANY
MODEL R-1695 OR EQUAL

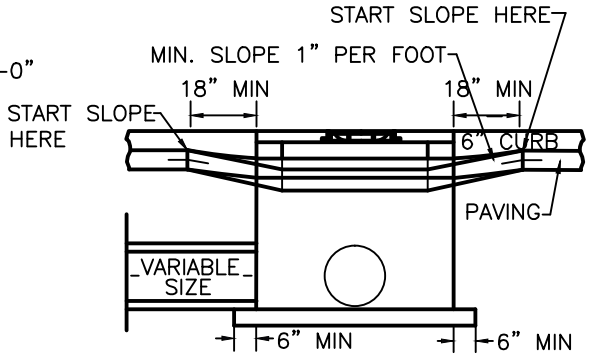
MANHOLE OR DECK SHALL BE LABELED WITH
Dump No Waste-Drains to Fresh Water

MIN. 1/4" RISE PER FT. FROM CURB OR
TO MATCH EXISTING SIDEWALK



SECTION A-A





SECTION B-B

NOTES:

1. OPENING FOR THROAT MUST BE 6" MINIMUM AND BE SLOPED IN BOX OUT TO DIRECT WATER TO INLET. THROAT MUST EXTEND SLOPE INTO BOX OUT AT LEAST 1 FOOT.
2. INSTALL MANHOLE STEPS IF SPECIFIED.
3. ALL REINFORCEMENT SHALL BE EPOXY COATED AND HAVE A MINIMUM OF TWO (2) INCHES OF COVER.
4. TIE BARS FOR BOX OUT SHALL BE #4 EPOXY COATED BARS AT 30" ON CENTER FOR 6" PAVING, #5 EPOXY COATED BARS AT 30" ON CENTER FOR 7" OR THICKER PAVING. TIE BARS SHALL BE 18" LONG-9" INTO THE NEW PAVING. KEYED OR DRILLED INTO PAVING.

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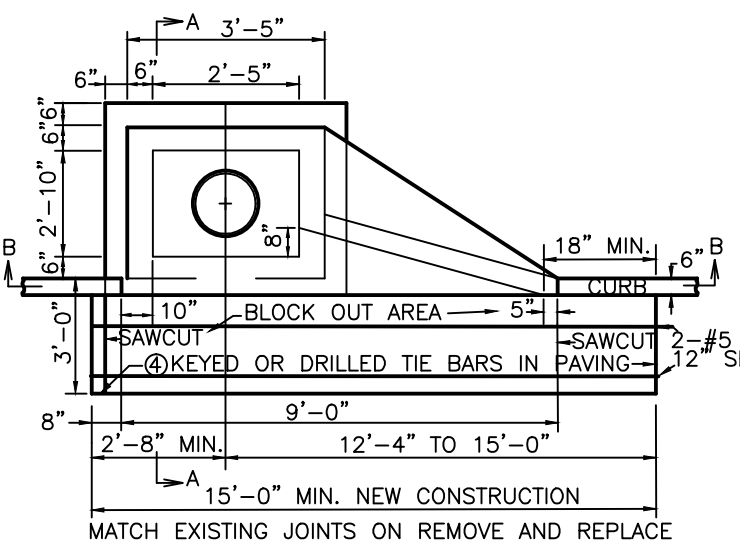
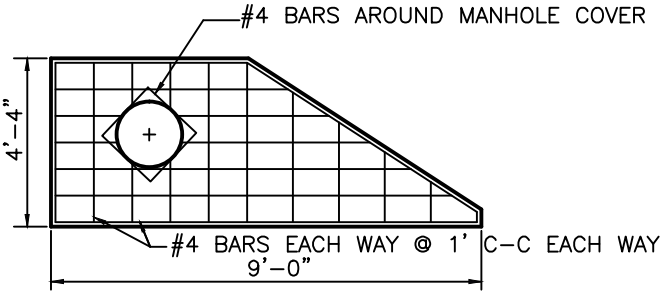
HALF SPECIAL INTAKE

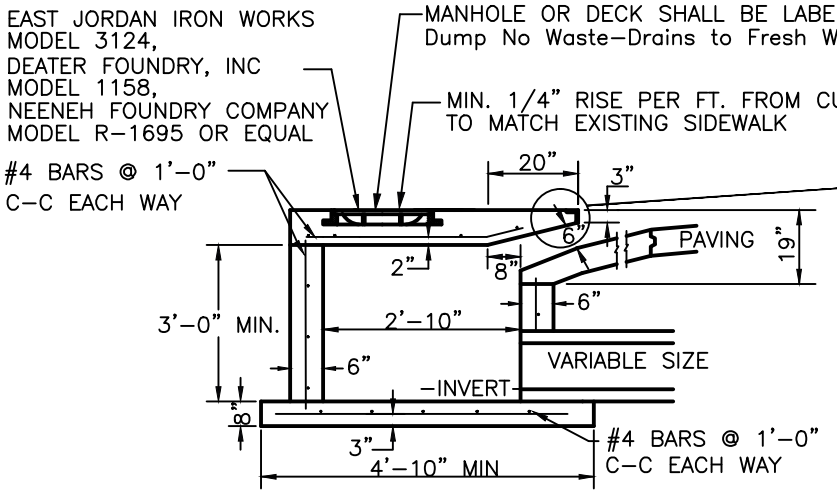
FIGURE *SC 6010.403*



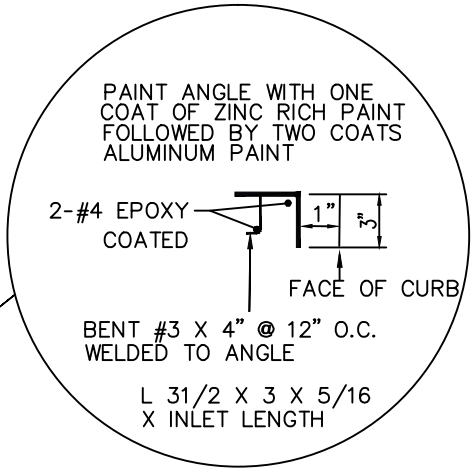
LAYOUT



TOP REBAR



SECTION A-A



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3. ALL REINFORCEMENT SHALL BE EPOXY COATED AND HAVE A MINIMUM OF TWO (2) INCHES OF COVER.
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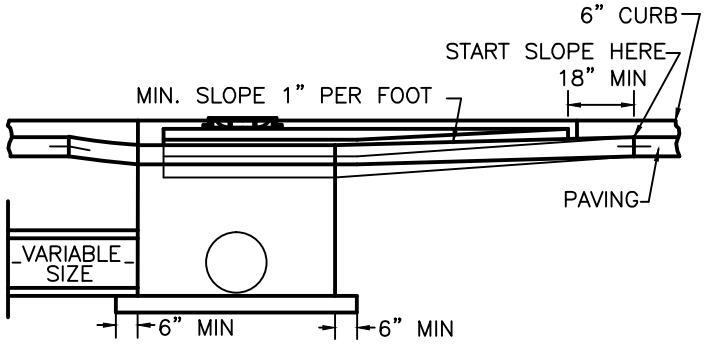

SECTION B-B

REVISION DATE: 1/13/2012

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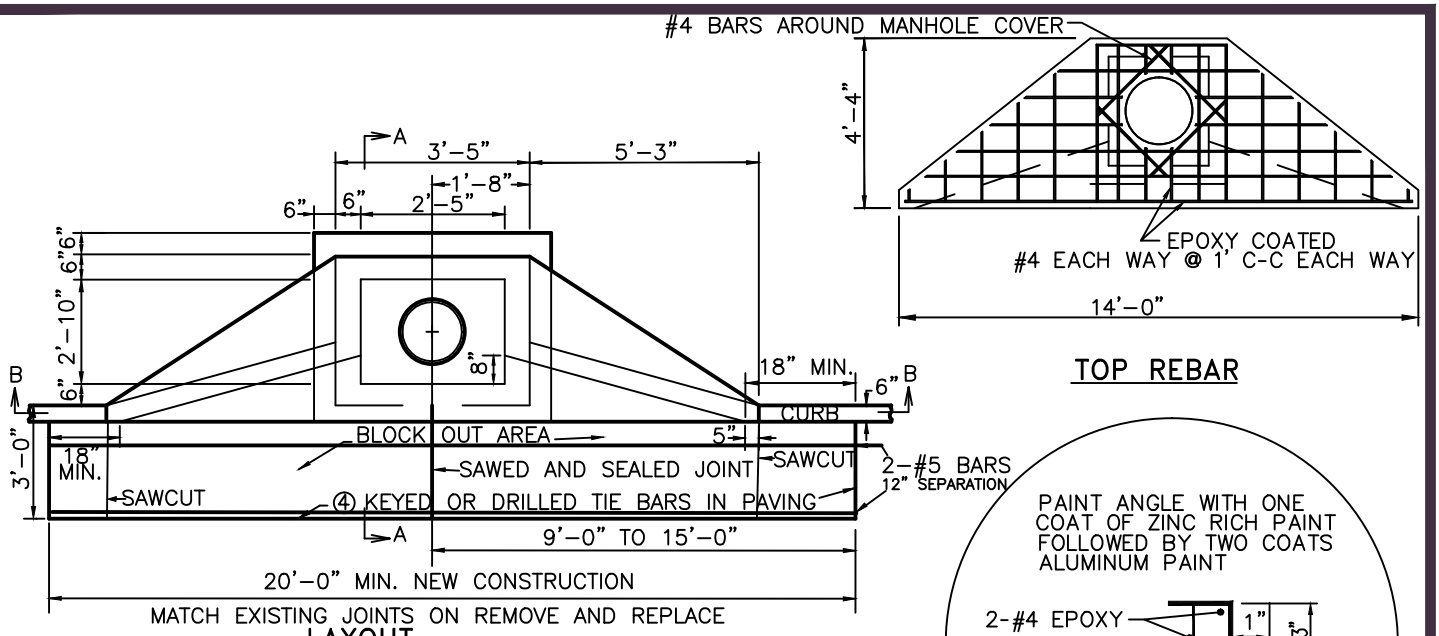
SIOUX CITY

SWS-8 INTAKE

FIGURE *SC 6010.404*



NOTES:

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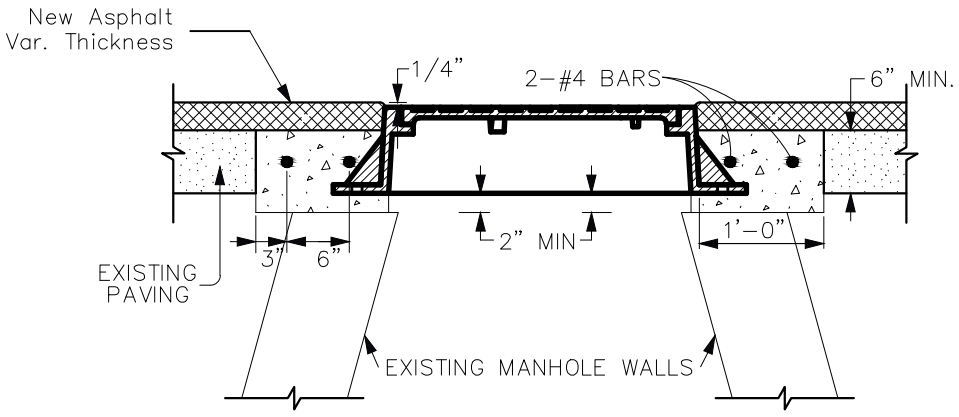
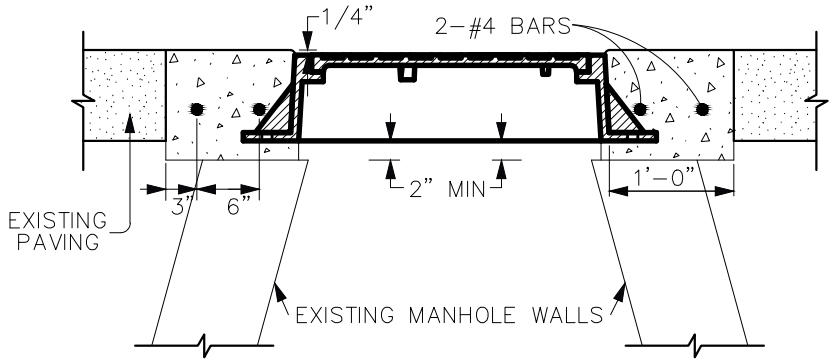
DWS-12 INTAKE

FIGURE *SC 6010.405*



MANHOLE ADJUSTMENT DETAIL (asphalt)
N.T.S.



MANHOLE ADJUSTMENT DETAIL (concrete)
N.T.S.

NOTES FOR DETAIL:

1. *VIBRATE CONCRETE UNDER RING TO ASSURE COMPLETE BEARING.*
2. *REMOVE ALL STAKES.*
3. *BRICK AND MORTAR ARE ALSO ACCEPTABLE FOR ADJUSTMENT.*
4. *MANHOLE RING AND COVER MUST MATCH NEW SURFACE ELEVATION (0.25" BELOW TO 0" ABOVE).*
5. *NO DEBRIS SHALL BE ALLOWED TO ENTER THE MANHOLE OR SEWER.*

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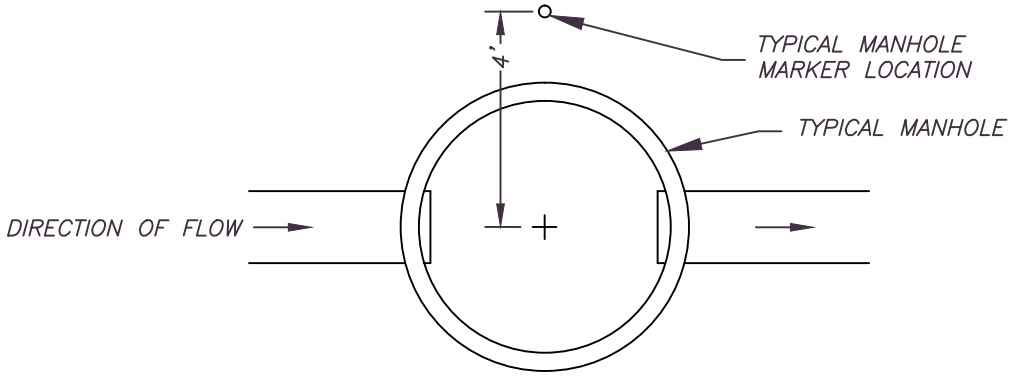
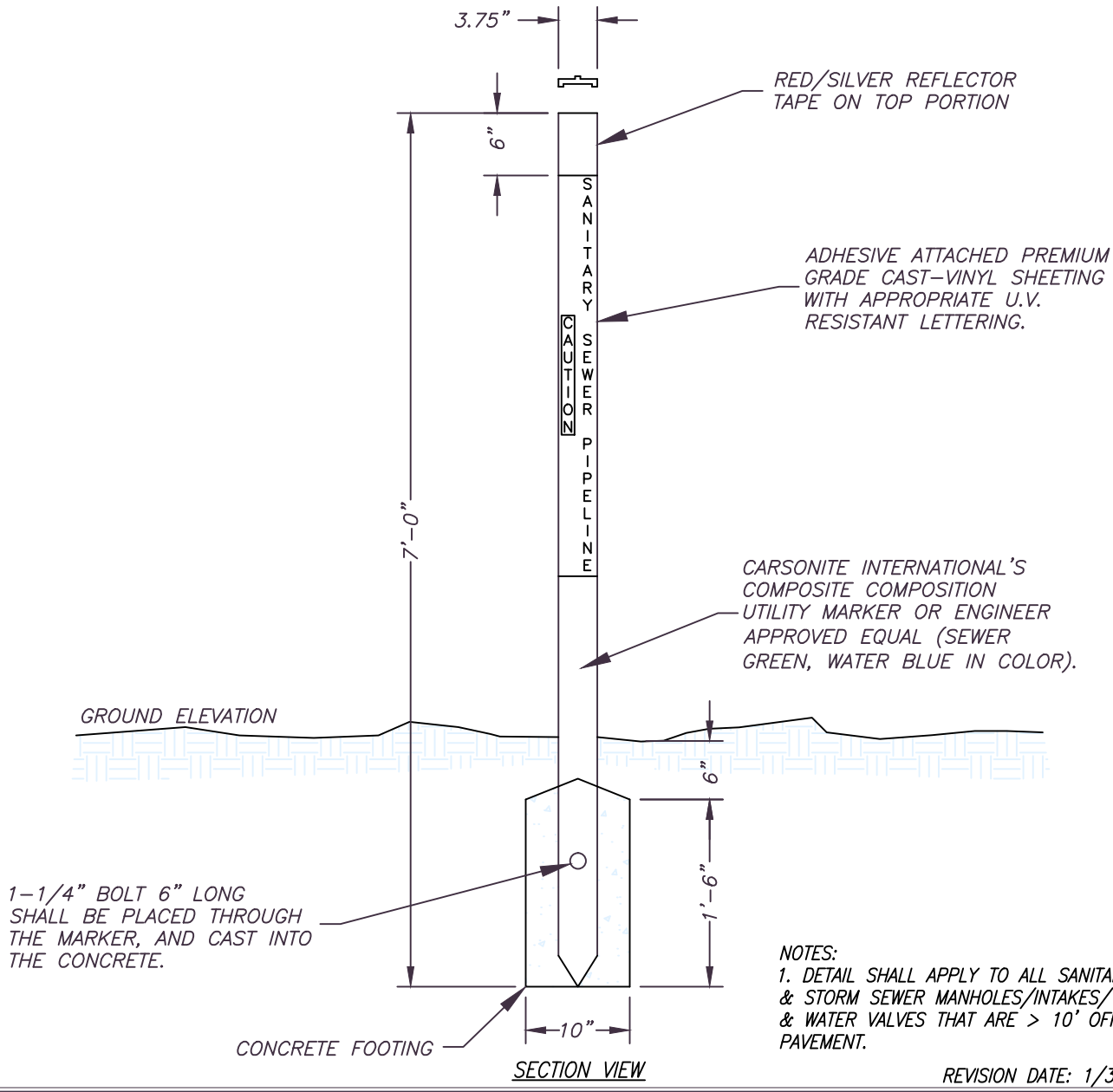
MANHOLE ADJUSTMENT DETAIL

FIGURE *SC 6010.406*



PLAN VIEW

MANHOLE MARKER LOCATIONS WILL VARY
VERIFY LOCATION WITH ENGINEER IN THE FIELD



SECTION VIEW

NOTES:
1. DETAIL SHALL APPLY TO ALL SANITARY & STORM SEWER MANHOLES/INTAKES/VALVES & WATER VALVES THAT ARE > 10' OFF PAVEMENT.

REVISION DATE: 1/3/2012

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TYPICAL MANHOLE/INTAKE/VALVE MARKER

FIGURE SC 6010.407

DIVISION 7 STREETS AND RELATED WORK

SECTION 7010 – PORTLAND CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.06 SCHEDULING AND CONFLICTS

(add) For concrete pours larger than 150 foot in length a pre-pour meeting shall be scheduled. The meeting should be between the City, Contractor (prime contractor is optional if paving is sub-contracted out), independent testing laboratory, and ready-mix company.

Notification to the independent testing laboratory shall be given at least 4 hours in advance for hand paving and at least 24 hours in advance for machine paving. The pre-pour meeting shall be considered notification for paving. Only one pre-pour meeting is required for similar types of paving

PART 2 – PRODUCTS

2.02 CONCRETE MIXES

A. Mix Design

1. (add) Only C-4 limestone mix shall be used. River rock will not be allowed within City of Sioux City unless specified by the Engineer.

PART 3 - EXECUTION

3.02 PAVEMENT CONSTRUCTION

J. Construction of Joints:

1. General

(add) f. 2 lane streets (26' + width) shall have a centerline sawcut with 2 or 4 panels having 2:1 ratio of length to width. SUDAS Standard Specification PCC Pavement Jointing Figure 7010.901 Quarter Point Jointing shall be used.

3.08 QUALITY CONTROL

A. Testing: Provide the following testing requirements in place of the Plastic Concrete tests in Table 7010.02.

TESTING FREQUENCIES FOR PORTLAND CEMENT CONCRETE (Minimum Frequencies)

This table replaces the Plastic Concrete section of the table in Division 7 Section 7010 Sub-section 3.08

MATERIAL OR CONSTRUCTION ITEM	TESTS (as per IDOT requirements)	METHODS OF ACCEPTANCE OF SAMPLING AND TESTING	FIELD SAMPLING AND TESTING		
			FREQUENCY (minimum)	DESIGNATED RESPONSIBLE AGENT	REPORT
Plastic Concrete	Air Content	Field Testing	1/100 CY (2)	Jurisdiction	IDOT Form 830224
	Slump	Field Testing	1/100 CY (2)		
	Cylinders (1) non-primary roads	Field Testing	1 Set/100 CY (2)	Jurisdiction	Field Book/Lab Report

(1) Cylinders may be 4" by 8" or 6" by 12".
(2) For small pours, a minimum of one per week as required by the inspector or engineer.

B. (replace) **Air Content:**

2. When a test result is outside the tolerance for the target air content, the contractor will be notified immediately. Make immediate adjustments to the mix production and placement process to bring the air content back within tolerance. Each subsequent load will be tested until air content is within tolerance for two consecutive loads. For all incorporated, non-complying concrete that is out of tolerance, the Engineer will determine if removal and replacement is required or if a price adjustment, according to Table 7010.03, will be applied.

SECTION 7030 – RECREATIONAL TRAILS, SIDEWALKS, AND DRIVEWAYS

PART 1 - GENERAL

1.08 MEASUREMENT AND PAYMENT

E. (replace) **PCC Sidewalk**

1. **Measurement:** Each thickness of PCC sidewalk will be measured in square foot. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.
2. **Payment:** Payment will be at the unit price for each thickness of PCC sidewalk.
3. **Includes:** Unit price includes, but is not limited to, minor grade adjustments at driveways and other intersections, subgrade preparation, formwork, additional thickness at thickened edges, jointing, sampling, smoothness testing and correction, and testing.

G. (replace) **Detectable Warnings:**

1. **Measurement:** Measurement will be per each size and type or by square foot, as specified in the contract documents, of detectable warnings installed. Paved area beneath detectable warnings will be measured with sidewalk or recreational trail item.
2. **Payment:** Payment will be at the unit price for each size and type or by square foot, as specified, of detectable warning installed.
3. **Includes:** Unit price includes, but is not limited to, steel bar supports, manufactured detectable warning panels, installation of detectable warning panels, and possible cutting of detectable warning panels to fit the designated space.

PART 2 - PRODUCTS

2.07 DETECTABLE WARNINGS

(add)

The truncated domes shall be the sizes called out on the plans, yellow in color and of the cast in place type produced by ADA Solutions, Inc., Armor-Tile by Engineered Plastics, supplied by Traffic Control Corporation, East Jordan Iron Works, or Neenah Foundry.

PART 3 - EXECUTION

3.04 PCC RECREATION TRAILS, SIDEWALKS, AND DRIVEWAYS

B. Concrete Pavement Placement:

3. (replace) **Driveways:** Comply with section 7010, figures SC 7030.501, and SC 7030.502. Driveways shall be shaped in such a way to carry water across the sidewalk and out into the street. Figure SC 7030.503 is a suggested way to do this. The use of a paving machine is not required.

SECTION 7080 - PAVEMENT MARKINGS

1.01 PAVEMENT MARKINGS

(add) All pavement markings, unless specified in the contract documents, shall be epoxy painted.

1.02 MEASUREMENT AND PAYMENT

A. Lane Striping

1. **Measurement:** Each color and size of lane striping placed on the pavement will be measured in linear feet, not including skips.
2. **Payment:** Payment will be made at the unit price per linear foot for each color and size of epoxy striping.
3. **Includes:** Unit price includes, but is not limited to, grinding pavement for stripe, epoxy paint, and placement of striping.

B. Symbols

1. **Measurement:** Each symbol placed will be counted.
2. **Payment:** Payment will be made at the unit price for each symbol.
3. **Includes:** Unit price includes, but is not limited to, grinding pavement for symbol, epoxy paint, and placement of symbol.

1.03 EPOXY MARKING MATERIAL

Epoxy pavement marking material shall be a two component, one hundred percent (100%) solids, material formulated to provide simple volumetric mixing ratio of two volumes of component A and one volume of component B (2A:1B) unless otherwise recommended by the material manufacturer.

A. Composition

The component A of both white and yellow shall be within the following limits:

	White	Yellow
Pigments	Min % by mass: 18% Titanium Dioxide (ASTM D 476/D 476M, Type II)	Min % by mass: 23% Chrome Yellow (ASTM D 211/D 211M, Type III)
Epoxy Resin	75-82%	70-77%

Epoxide Number of the epoxy resin shall be thirty-eight hundredths plus or minus five-hundredths (0.38 ± 0.05) as determined by ASTM D 1652/D 1652M for white and yellow component A on pigment free basis.

Amine Number on the curing agent (component B) shall be four hundred ton plus or minus fifty (410±50) as determined by ASTM D 2071/1) 2071M.

Upon heating to application temperature, the material shall not produce fumes which are toxic or injurious to persons or property.

The mixed epoxy compound, both white and yellow, when applied to seventy-five by one hundred fifty millimeter (75 x 150 mm) aluminum panels at four-tenths plus or minus one one-hundredth millimeter (0.4±0.01mm) of thickness with no glass beads and exposed in the U.V. Environmental Testing Chamber as described in ASTM G53/G 53M, shall conform to the following minimum requirements.

The color of the white epoxy system shall not be darker than Federal Standard No. 595A-17778. The color of the yellow epoxy system shall conform to Federal Standard No. 595A-13538. The gloss values of both samples shall not be less than 70 after the test.

B. Drying Time

The epoxy pavement marking material shall have a setting time to a no-tracking condition of not more than ten (10) minutes at a temperature of twenty-three degrees Celsius (23ºC) and above.

C. Curing

The epoxy material shall be capable of fully curing under the constant surface temperature condition of minus four degrees Celsius (-4ºC) and above.

D. Adhesion to Concrete

The catalyzed epoxy pavement marking material, when tested according to ACI Method 503, shall have such a high degree of adhesion to the specified (twenty megapascals) [20 MPa] minimum) concrete surface that there shall be a one hundred percent (100%) concrete failure in the performance of this test.

E. Hardness

The epoxy pavement marking materials, when tested according to ASTM D 2240/D 2240M, shall have a Shore D Hardness between seventy-five and one hundred (75-100). Samples hall be allowed to cure at room temperature (twenty-four plus or minus one degree Celsius [24º±1ºC]) for a minimum of twelve (12) hours and a maximum of forty-eight (48) hours prior to performing the indicated test.

F. Abrasion Resistance

The abrasion resistance shall be evaluated on Taber Abrader with a one thousand gram (1000 g) load and CS-17 wheels. The duration of the test shall be one thousand (1000) cycles. The wear index shall be calculated based on test method ASTM C 501/C 501/M and the wear index shall be more than seventy (70). The tests shall be run on cured samples of material which have been applied at film thickness of four-tenths plus or minus one one-hundredth millimeters (0.4±0.01mm) to code S-16 stainless steel plates. The samples shall be allowed to

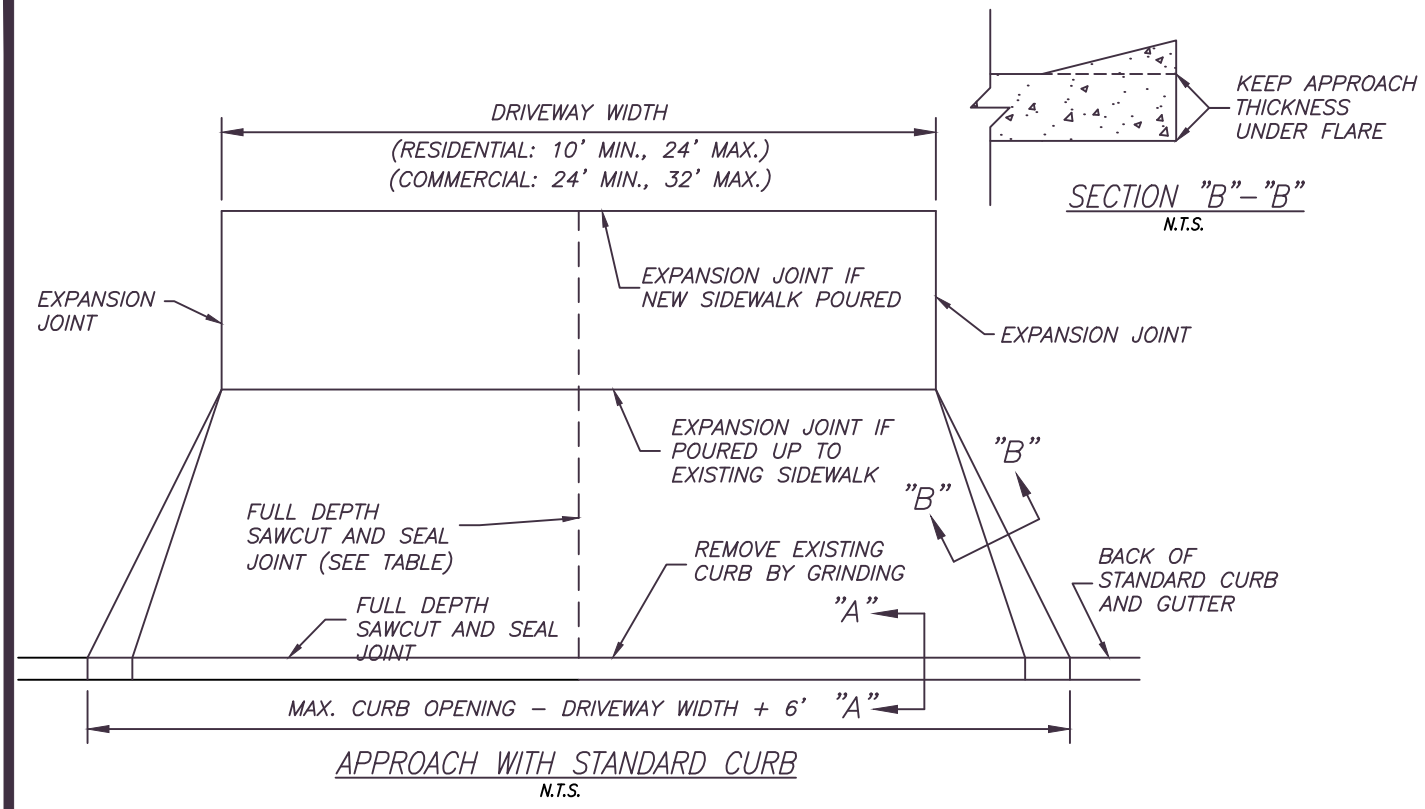
cure at twenty-four plus or minus one degree Celsius (24º±1ºC) for a minimum of forty-eight (48) hours prior to performing the indicated tests.

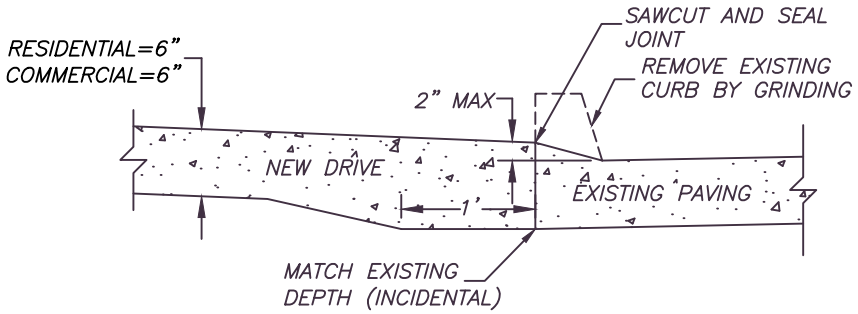
G. Tensile Strength

When tested according to ASTM D 638/D 638/M, the epoxy pavement marking materials shall have a tensile strength of not less than forty-one megapascals (41 MPa). The type IV Specimens shall be cast in a suitable dynamic testing machine. The samples shall be allowed to cure at room temperature (twenty-four plus or minus one degree Celsius [24º±1ºC]) for a minimum of twelve (12) hours and a maximum of forty-eight (48) hours prior to performing the indicated test.

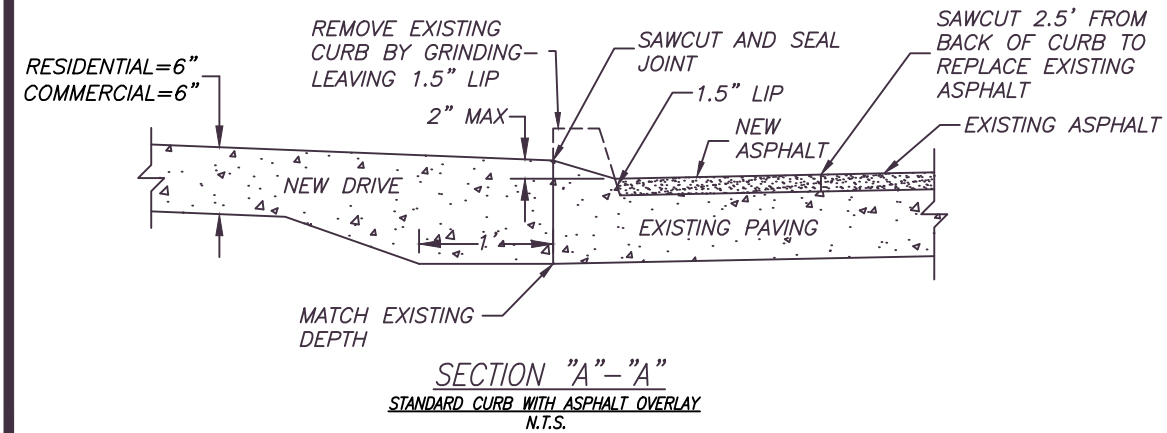
H. Compressive Strength

When tested according to ASTM D 695/D 695M, the catalyzed epoxy pavement marking materials shall have a compressive strength of not less than eight-three megapascals (83 MPa). The test sample shall be conditioned at room temperature (twenty-four plus or minus one degree Celsius [24º±1ºC]) for a minimum of twelve (12) hours and a maximum of forty-eight (48) hours prior to performing the test. The rate of compression of these samples shall be no more than six millimeters (6 mm) per minute.





SAWCUT TABLE		
PAVING THICKNESS	SPACING	DEPTH
RESIDENTIAL–6"	10.5'	2"
COMMERCIAL–6"	10.5'	2"

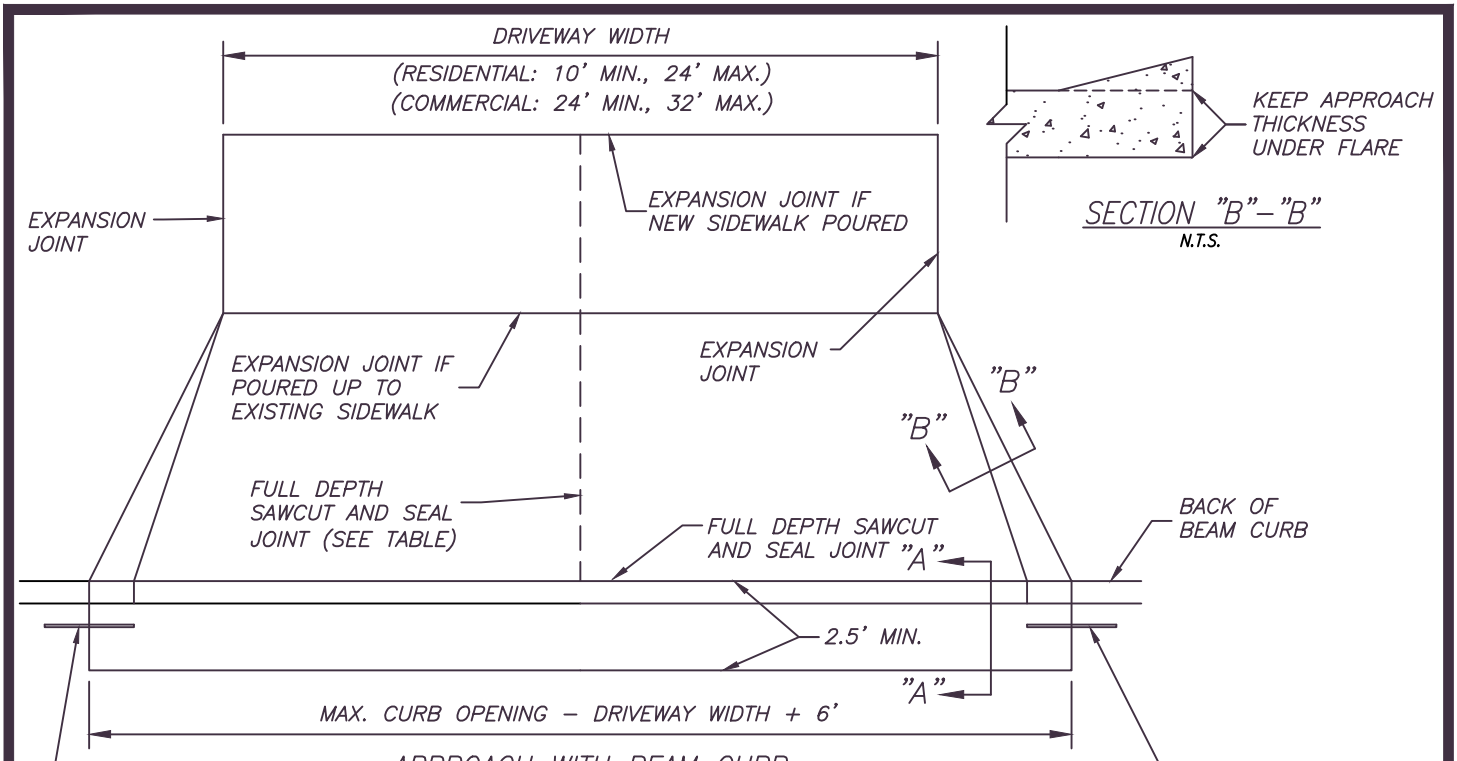


REVISION DATE: 01/13/12

CITY OF SIOUX CITY
IOWA
ENGINEERING DIVISION
PHONE: (712) 279–6324

DRIVEWAY APPROACH WITH STANDARD CURB

FIGURE SC 7030.501

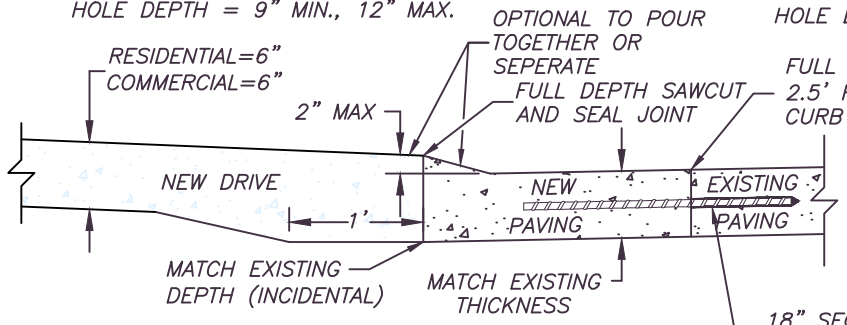


APPROACH WITH BEAM CURB
N.T.S.

SECTION "B"–"B"
N.T.S.

18" SECTION OF 5/8" EPOXY COATED REBAR, 2' CENTERS WITH EPOXY GROUT IN EXISTING PCC BAR HOLE BLOWN CLEAN HOLE DEPTH = 9" MIN., 12" MAX.

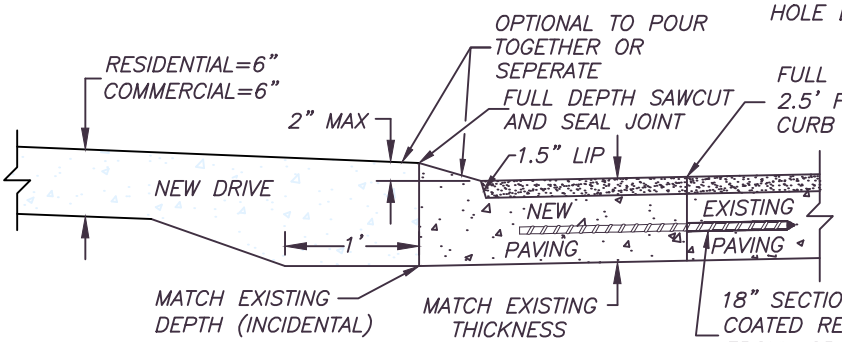
18" SECTION OF 5/8" EPOXY COATED REBAR, 2' CENTERS WITH EPOXY GROUT IN EXISTING PCC BAR HOLE BLOWN CLEAN HOLE DEPTH = 9" MIN., 12" MAX.



SECTION "A"–"A"
STANDARD CURB WITHOUT ASPHALT OVERLAY
N.T.S.

SAWCUT TABLE		
PAVING THICKNESS	SPACING	DEPTH
RESIDENTIAL–6"	10.5'	2"
COMMERCIAL–6"	10.5'	2"

18" SECTION OF 5/8" EPOXY COATED REBAR, 2' CENTERS WITH EPOXY GROUT IN EXISTING PCC BAR HOLE BLOWN CLEAN HOLE DEPTH = 9" MIN., 12" MAX.



SECTION "A"–"A"
STANDARD CURB WITH ASPHALT OVERLAY
N.T.S.

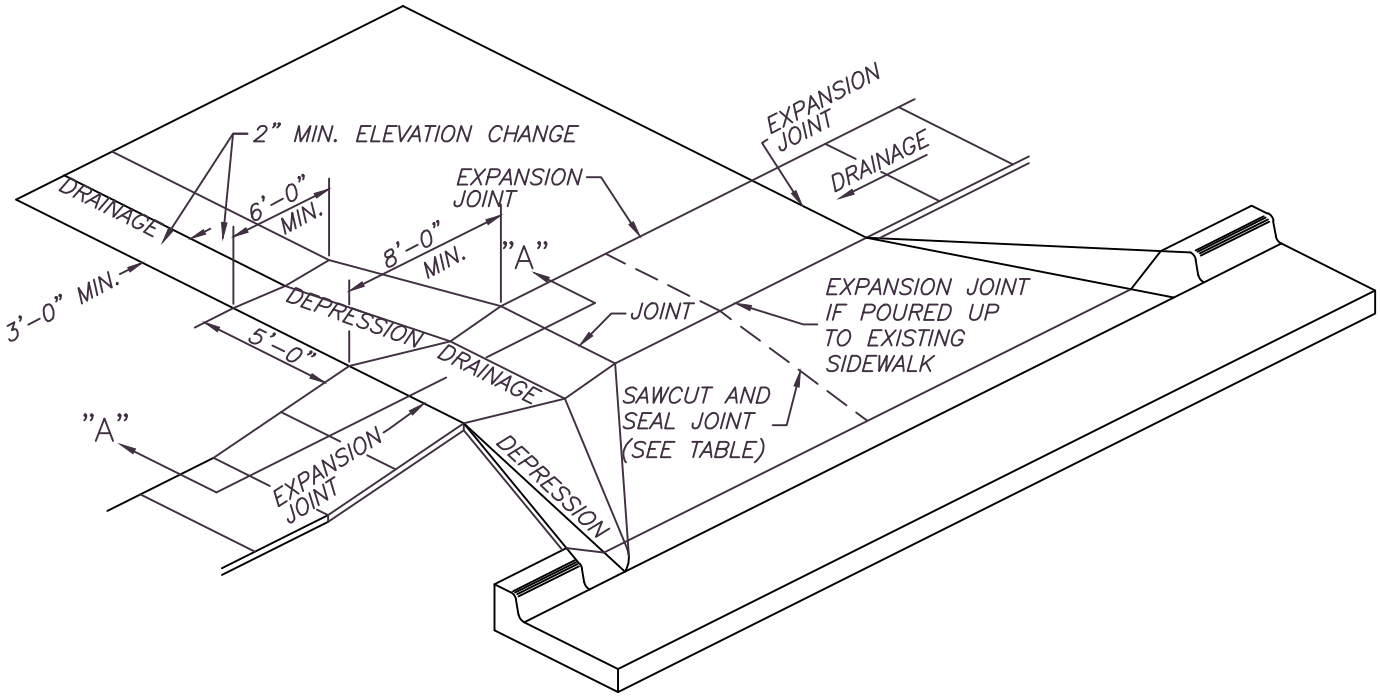
18" SECTION OF 5/8" EPOXY COATED REBAR, 2' CENTERS WITH EPOXY GROUT IN EXISTING PCC BAR HOLE BLOWN CLEAN HOLE DEPTH = 9" MIN., 12" MAX.

REVISION DATE: 01/13/12

CITY OF SIOUX CITY
IOWA
ENGINEERING DIVISION
PHONE: (712) 279–6324

DRIVEWAY APPROACH WITH BEAM CURB

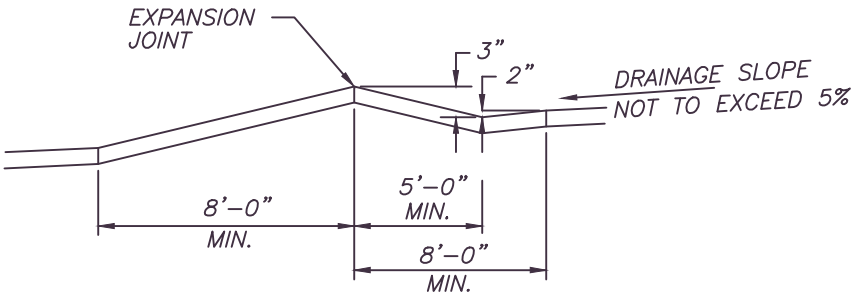
FIGURE SC 7030.502



DRIVEWAY APPROACH

SIDEWALK AND DRIVEWAY CONSTRUCTION TO ACCOMMODATE PROPER DRAINAGE

N.T.S.



SECTION "A"-"A"

N.T.S.

SAWCUT TABLE		
PAVING THICKNESS	SPACING	DEPTH
RESIDENTIAL-6"	10.5'	2"
COMMERCIAL-6"	10.5'	2"

REVISION DATE: 01/13/12

CITY OF SIOUX CITY
IOWA
ENGINEERING DIVISION
PHONE: (712) 279-6324

DRIVEWAY APPROACH WITH PROPER DRAINAGE

FIGURE SC 7030.503

DIVISION 9 SITE WORK AND LANDSCAPING

SECTION 9010 – SEEDING

PART 1 - GENERAL

1.06 SCHEDULING AND CONFLICTS

A. (replace) Coordinate the seeding schedule with all other work on the project. Notify engineer prior to the start of seeding operation for inspection.

PART2 - PRODUCTS

2.01 SEED

C. (add) Seed Quality: The seed provided shall exceed the following minimum requirements of purity and germination stated on a certified tag.

2.02 SEED MIXTURES AND SEEDING DATES

A. (replace) **Type 1 (Permanent Lawn Mixture):** Used for residential and commercial turf site, fertilized, typically mowed.

1. The following mix shall be used on City Projects.

Kind of Seed	Quantity	Purity	Germination
Park Kentucky Bluegrass	29.67%	98%	85%
Kenblue Kentucky Bluegrass	9.34%	98%	90%
Boreal Creeping Red Fescue	27.78%	98%	90%
Brightstar II Perennial Ryegrass	26.66%	95%	90%
VNS Annual Ryegrass	5.12%	95%	90%
Other Crop Seeds	0.01%		
Inert Matter	1.41%		
Weed Seeds	0.01%		

Sioux City Seeding Mix	Application Rate (lb/acre)
Seed mix (Listed above)	300
13-13-13 Fertilizer	300
Wood Fiber Mulch	1,800
Tackifier	40

PART 3 - EXECUTION

3.04 CONVENTIONAL SEEDING

(add) This shall not be done unless otherwise specified on the plans or in the bid documents.

3.05 HYDRAULIC SEEDING

(add) All seeding done within the City limits shall be hydraulically seeded unless otherwise specified on the plans or in the bid documents.

3.06 PNEUMATIC SEEDING

(replace) This shall not be done unless otherwise specified on the plans or in the bid documents.

3.07 WATERING

(replace) Watering is not required unless specified on the plans or in the bid document.

3.09 ACCEPTANCE AND WARRANTY

A. (add) **Acceptance:**

3. Areas seeded shall be given an initial acceptance, prior to warranty period, based upon following criteria:

a) Seeded areas shall be in a live, healthy, growing, and well-established condition without eroded areas, bare spots, free of weeds, undesirable grasses, disease, or insects.

b) Reseeding operations are completed.

4. Final acceptance may be given by Jurisdictional Engineer upon fulfillment of all items completed as required under the warranty.

SECTION 9020 – SODDING

PART 1 - GENERAL

1.06 SCHEDULING AND CONFLICTS

A. (replace) Coordinate the sodding schedule with all other work on the project. Notify engineer prior to the start of sodding operation for inspection.

SECTION 9030 – PLANT MATERIAL AND PLANTING

PART 1 - GENERAL

1.06 SCHEDULING AND CONFLICTS

(replace) Notify the Jurisdictional Engineer at least 24 hours prior to start of installation of plant material

SECTION 9090 - MISCELLANEOUS SITEWORK

1.01 PROJECT SIGN

(add) A project sign shall be included on projects over $500,000 scheduled to last over 30 days. The sign shall conform to figure SC 9090.601 (Dated 08-24-11). Unless otherwise specified in the plans or contract documents the project sign shall be paid for by the bid item “Project Sign”.

1.02 STREET LIGHTING

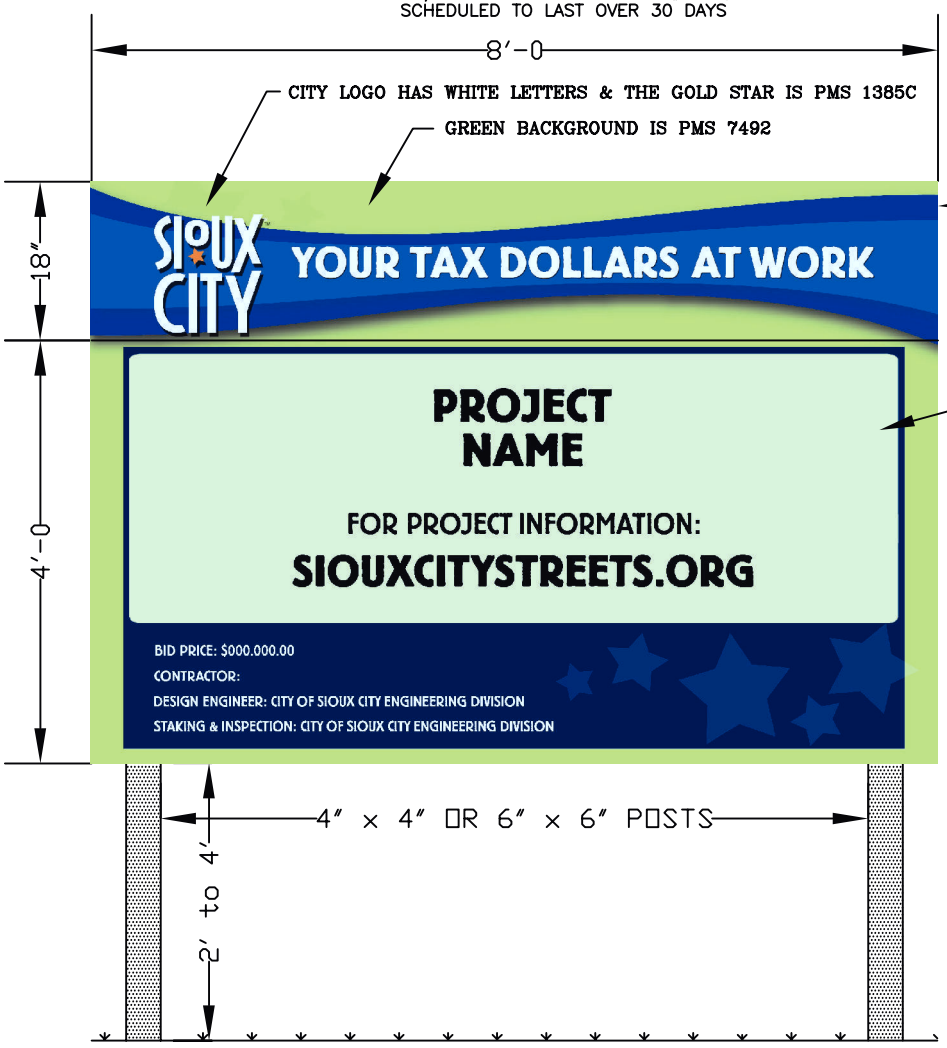
Only lights that are approved and maintained by MidAmerican Energy Co. may be installed on projects/developments in Sioux City. Refer to the SUDAS Design Manual Chapter 11 for street lighting requirements.

1.03 MEASUREMENT AND PAYMENT

A. Project Sign

1. **Measurement:** Measurement will be per each project sign installed and removed.
2. **Payment:** Payment will be at the unit price for each project sign installed and removed.
3. **Includes:** Unit price includes, but is not limited to, the project sign, installation of project sign, and removal of project sign.

CITY OF SIOUX CITY
STANDARD PROJECT SIGN
STREET/ SEWER PROJECTS OVER $ 500,000
SCHEDULED TO LAST OVER 30 DAYS



BLUE IN THE TOP SWOOSH AND BACKGROUND OF THE CONTRACTOR/DESIGN INFO IS PMS 2965 WITH WHITE LETTERS ON TOP

BEIGE AREA BEHIND PROJECT NAME AND WEBSITE IS PMS 5807 WITH BLACK LETTERS

NOTE: ALL TEXT IS "Berliner GroteskBQ"

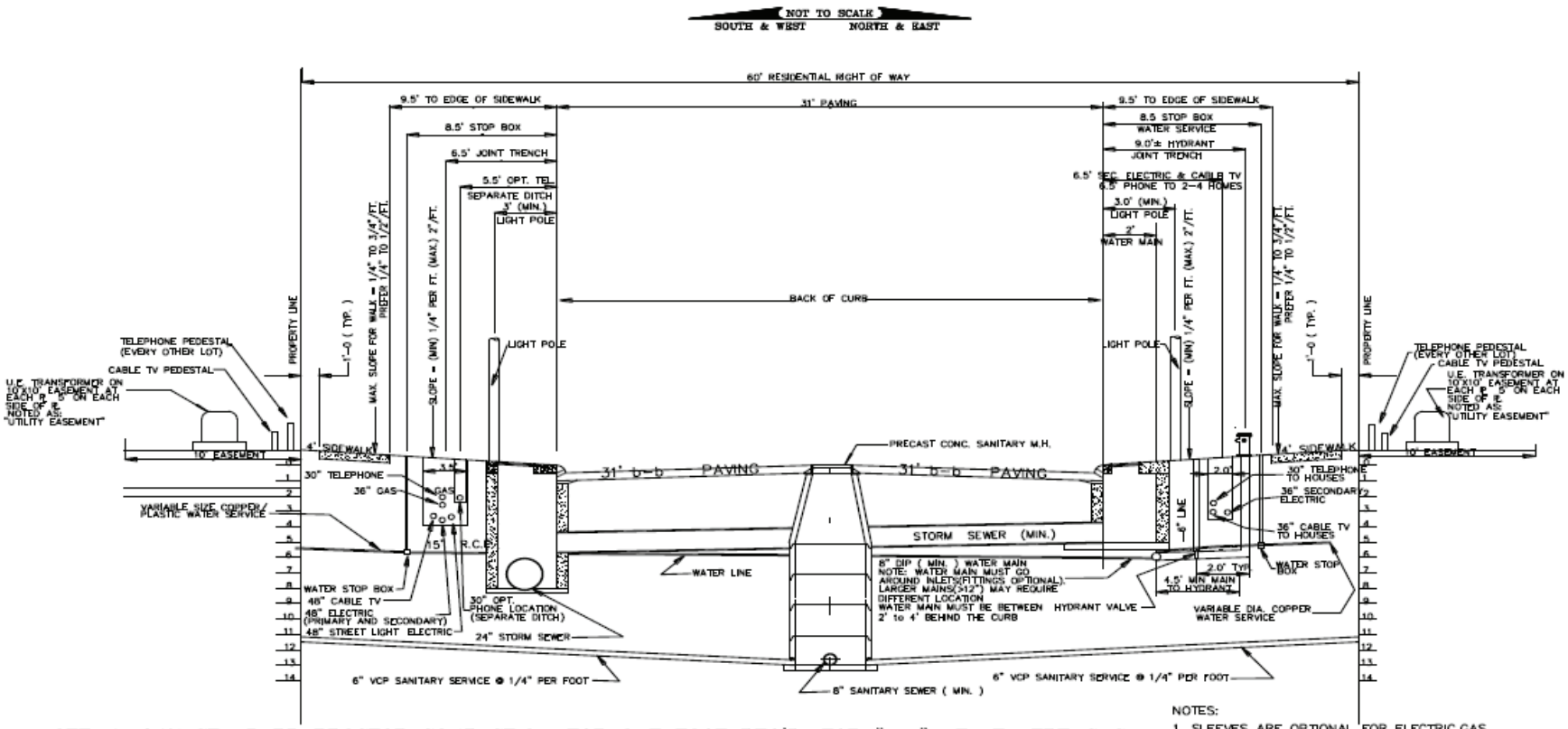
LIST – DESIGNER – ENG. DIVISION – OR
OTHER ENG. FIRM

LIST – RESPONSIBLE DEPT
– ALSO LIST ENG. DIVISION FOR
– INSPEC. AND STAKING

NOTE– 1. LARGE PROJECTS ABOVE $750,000 INCLUDE MAJOR SUBCONTRACTORS

2. LARGE PROJECTS MAY NEED 2 SIGNS

REVISED 12/6/13



NOTE: 1. 95% STANDARD PROCTOR COMPACTION–TOP ONE FOOT REQ'D. FOR "ALL" UTILITY TRENCHS
2. 92% STANDARD PROCTOR COMPACTION–BELOW ONE FOOT REQ'D. FOR "ALL" UTILITY TRENCHS

STANDARD UTILITY LOCATION FOR 60' RESIDENTIAL R.O.W.

DATE 10-19-99

NOTES:

1. SLEEVES ARE OPTIONAL FOR ELECTRIC,GAS, AND PHONE UNDER PAVING. CONSTRUCTION INSTALLATION BY UTILITY COMPANY.(PAID BY DEVELOPER)

2. WATER SERVICES TO THE STOP BOX MUST BE INSTALLED FOR ALL LOTS AROUND THE 70' DIAMETER PAVED CULDESAC.(WHEN CUL-DE-SAC IS BUILT) OR CONSTRUCT MAIN AROUND CUL-DE-SAC WITH FITTINGS OUTSIDE OF PAVING.

HYDRANTS:

3. MUST HAVE 3' CIRCULAR SPACE ALL SIDES OF HYDRANT.

4. MUST BE 18" FROM FACE OF CURB.

5. 18" ℄ STEAMER CONNECTION TO FINISHED GRADE.

6. ALL WATER MAINS TO BE ON THE NORTH & EAST SIDES OF THE STREETS

7. ALL STORM SEWERS TO BE ON THE SOUTH & WEST SIDES OF THE STREETS

Figure SC 10000.701