GENERAL NOTES PERTINENT TO ALL CONSTRUCTION OPERATIONS

1. Underground utilities shown on these plans have been plotted from available records and information, and their locations shall be considered approximate only. The verification of the actual location of all underground utilities, either shown or not shown on these plans, shall be the responsibility of the contractor(s) and the verification of the actual location shall be performed prior to beginning work.

2. Easements and right-of-ways will be provided for streets, sanitary sewers, storm sewers, water mains and private utilities on the subdivision plat (record plat). See the subdivision plat (record plat) for location and size of easements and rights-of-ways.

3. All construction shall be performed in accordance with the specifications, ordinances, rules, regulations, guidelines and/or policies of the local governing jurisdictional authority.

GRADING NOTES

I. GENERAL

1. No area shall be cleared without authorization from the project engineer.

2. All grading work performed shall be within a 0.2 foot tolerance of the grades shown on the grading plan.

3. A Geotechnical Engineer shall be employed by the owner and be on site during grading operations.

4. The grading contractor shall perform a complete grading and compaction operation as shown on the plans, stated in these notes, or reasonably implied therefrom, all in accordance with the plans and notes as interpreted by the Geotechnical Engineer.

5. Before the grading begins, the contractor shall employ a competent, licensed surveyor to establish all lines and grades.

6. The contractor shall notify the Geotechnical Engineer at least two days in advance of the start of the grading operation.

7. The developer shall supply City construction inspectors with soil reports prior to or during site soil testing.

8. No slope shall be steeper than 3 (horizontal) to 1 (vertical).

9. No graded area is to remain bare for over 2 weeks.

10. All erosion control systems shall be inspected and necessary corrections made within 24 hours of a rainstorm resulting in one-half inch of rain or more.

II. SPECIFICATIONS

1. Site preparation includes the clearing of all stumps, trees, bushes, shrubs, and weeds; the grubbing and removal of roots and other surface obstructions from the site; and the demolition and removal of any man-made structures. The unsuitable material shall be burned (after securing permits) and/or properly disposed of on site. Topsoil and grass in the fill areas shall be thoroughly disced prior to the placement of any fill. The Geotechnical Engineer shall approve the discing operation.

2. Compaction equipment shall consist of tamping rollers, pneumatic-tired rollers, vibratory rollers, or high speed impact type drum rollers acceptable to the Geotechnical Engineer. The roller shall be designed so as to avoid the creation of a layered fill without proper blending of successive fill layers.

3. Observation and Testing: The Geotechnical Engineer shall observe and test the placement of the fill to verify that specifications are met. A series of fill density test will be determined of each lift of fill. Interim reports showing fill quality will be made to the owner at regular intervals.

4. The Geotechnical Engineer shall notify the contractor of rejection of a lift of fill or portion thereof. The contractor shall rework the rejected portion of fill and obtain notification from the Geotechnical Engineer of its acceptance prior to the placement of additional fill.

5. Placing and Compaction of Fill: All areas to recieve fill shall be scarified to a depth of not less than 6 inches and then compacted to at least 90 percent of the maximum dry density as determined from the Modified Proctor Test (ASTM-D-1557). Natural slopes steeper than 1 vertical to 5 horizontal to receive fill will have horizontal benches, with minimum widths of 12 feet and maximum height of 5 feet, cut into the before the placement of any fill. The fill shall be loosely placed in horizontal layers not exceeding 8 inches in thickness and compacted in accordance with the specifications given below. The Geotechnical Engineer shall be responsible for determining the acceptability of the soils placed. Any unacceptable soils placed shall be removed at the contractor's expense.

6. The sequence of operation in the fill areas will be fill, compact, verify acceptable soil density, and repitition of the sequence.

7. The surface of the fill shall be finished so that it will not impound water. If at the end of a day's work, it would appear that there may be rain prior to the next working day, the surface shall be finished smooth. If the surface has been finished smooth for any reason, it shall be scarified before proceeding with the placement of of succeeding lifts. Fill should not be placed on frozen ground, nor shall filling operations continue when the temperature is such as to permit the layer under placement to freeze.

8. All fills shall be compacted to 90% of maximum density as determined by the "Modified AASHTO T-1800 Compaction Test" (ASTM D-1557).

9. All fill placed under proposed storm and sanitary sewer, proposed roads. and/or paved areas shall be compacted to 95% of maximum density as determined by the Modified AASHTO T-180 Compaction Test or 100% of maximum density as determined by the Standard Proctor Test AASHTO T-99. All fill placed in proposed roads shall be compacted from the bottom of the fill up. All tests shall be verified by a soils engineer concurrent with grading and backfilling operations. The moisture content of the soil in the fill areas is to correspond to the compactive effort as defined by the Standard or Modified Proctor Test. Optimum moisture content shall be determined using the same test that was used for compaction. Soil compaction curves shall be submitted to the City of O'Fallon prior to placement of fill. Proof rolling may be required to verify soil stability at the discretion of the City of O'Fallon.

STORM SEWER CONSTRUCTION

I. GENERAL

1. No area shall be cleared without authorization from the project engineer.

2. The storm sewer contractor shall perform a complete installation as shown on the plans, and notes as interpreted by the project engineer, stated in these notes, or reasonably implied

3. Before sewer construction begins, the contractor shall employ a completed, licensed surveyor to establish therefrom, all in accordance with the plans the lines and grades of the storm sewers being constructed. The contractor shall pick up the cut sheets at the office of the surveyor.

4. The contractor shall notify the City of O'Fallon at least two days in advance of the start of construction. Contact the City of O'Fallon, at telephone 636-379-7630 or 636-379-7631.

II. SPECIFICATIONS

1. All materials used shall meet the following specifications:

Concrete Pipe: Concrete pipe shall be precast and shall conform to the requirements of the Specifications for Concrete Sewer Pipe, ASTM C14. The interior surface of the pipe shall be a true cylindrical surface free from undulations or corrugations. Cement shall meet all requirements of the Specifications for Portland Cement, ASTM C150, Type II.

Reinforced Concrete Pipe: Reinforced Concrete Pipe shall be precast and shall conform to the requirements of the Specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, ASTM C76, with shell thickness designated "Wall B" and with Circular Reinforcement in Circular Pipe or to the requirements of Reinforced Concrete Elliptical Culvert Storm Drain and Sewer Pipe, ASTM C507. Strength class or classes shall be as noted on the Project Plans. The interior surfaces of the pipe shall be a smooth true cylindrical surface free from undulations or corrugations. Lifting holes when provided, shall be cast in the wall of the pipe to receive a pre-cast truncated conical concrete plug of such sizes as will allow 1/8 inch cementing material on the side of the joining surfaces of the plug and will fill at least 50% of the lifting hole depth. Cement shall meet all the requirements of the Specifications for Portland Cement, ASTM C150, Type II. Cut pipe for curved alignments shall be of uniform cut and length along the same curve and otherwise meet the same requirements as for straight pipe.

High Density Polyethylene Pipe: High Density Polyethylene shall be allowed following Metropolitan Saint Louis Sewer District (MSD) requirements which include meeting AASHTO M-294 Type S, or ASTM F-2306.

Storm Manholes: Storm Manholes shall be precast reinforced concrete manholes conforming to the standard specifications for precast reinforced concrete manhole sections, ASTM-C478. The Portland cement used shall be Type II. Manhole cones shall be concentric and base sections shall have the base riser section integral with the floor. Manhole steps shall be cast into the full depth of the wall section. Connections for inlet and outlet pipes shall be of an approved patented compression type connection. The inside diameter for riser sections shall be 42 inches for pipes sizes 8 inch through 15 inch and be 48 inches for pipe sizes larger and for inside drop manholes.

Curb Inlets and Area Inlets: Curb Inlets and Area Inlets and the precast top units for same shall conform to the Standard Construction Specifications for Sewers and Drainage Facilities of the Metropolitan St. Louis Sewer District, 1986.

Manhole Frames and Covers: Gray Iron Castings shall conform to the requirements of the specifications for Grey Iron Castings, ASTM A48. All castings shall be clean and free of scale, adhesions or inclusions. They shall be fabricated of Class 30B cast iron. Bearing surfaces between manhole frames and covers shall be such that the cover shall seat in any position onto the frame without rocking.

Joints: For Concrete and Reinforced Concrete Pipe, gasketed water tight O-ring type joints shall be used. For High Density Polyethylene Pipe joints meeting the performance requirements of ASTM D-3212.

Bedding Aggregate: Bedding Aggregate shall conform to the following:

For Pipes 27 inch in diameter and smaller:

	% by Weight Passing	
Sieve	Maximum	Minimum
1 inch	100	100
3/4 inch	100	90
1/2 inch	60	35
# 100	10	0

For Pipes 30 inch in diameter and larger:

	% by Weight Passing	
Sieve	Maximum	Minimum
1-1/2 inch	100	100
1 inch	70	60
3/4 inch	50	35
1/2 inch	35	25
100	10	0

Backfill Aggregate: Backfill Aggregate shall be crushed limestone and screenings and be 3/4 inch minus.

Rip-Rap: Rip-Rap shall conform to the following:

	% by Weight Passing	
Sieve	Maximum	Minimum
12 inch	90	70
6 inch	30	10
1/2 inch	5	0

Grout: All grout used for grouted rip-rap shall be high slump ready-mix concrete.

2. Pipe and appurtenances shall be new and unused. The type of pipe to be installed shall be as shown on the drawings. Pipe and appurtenances shall be handled in such a manner as to insure delivery to the trench in sound undamaged condition. Particular care shall be taken to prevent damage to any pipe coating.

3. The interior of the pipe shall be thoroughly cleaned of foreign material before being lowered into the trench and shall be kept clean during construction operations. When work is not in progress, the open ends of pipe shall be securely closed so that no foreign materials will enter the pipe. Any section of pipe found to be before or after laying shall be replaced with sound pipe or repaired in a sound pipe or repaired in a satisfactory manner.

4. Pipe shall be laid to line and grade as shown on the plans and as staked in the field. When connections are to be made to any existing manhole, pipe, or other improvement, the actual elevation or position of which cannot be determined without excavation, the contractor shall excavate for and expose the existing improvement before laying the connecting pipe or conduit. When existing underground improvements may reasonably be expected to conflict with the line or grade established for the new sewer line, the contractor shall excavate as necessary to expose and locate such potentially conflicting underground improvements prior to laying the new pipe. Any adjustment in line or grade which may be necessary to accomplish the intent of the plans shall be made.

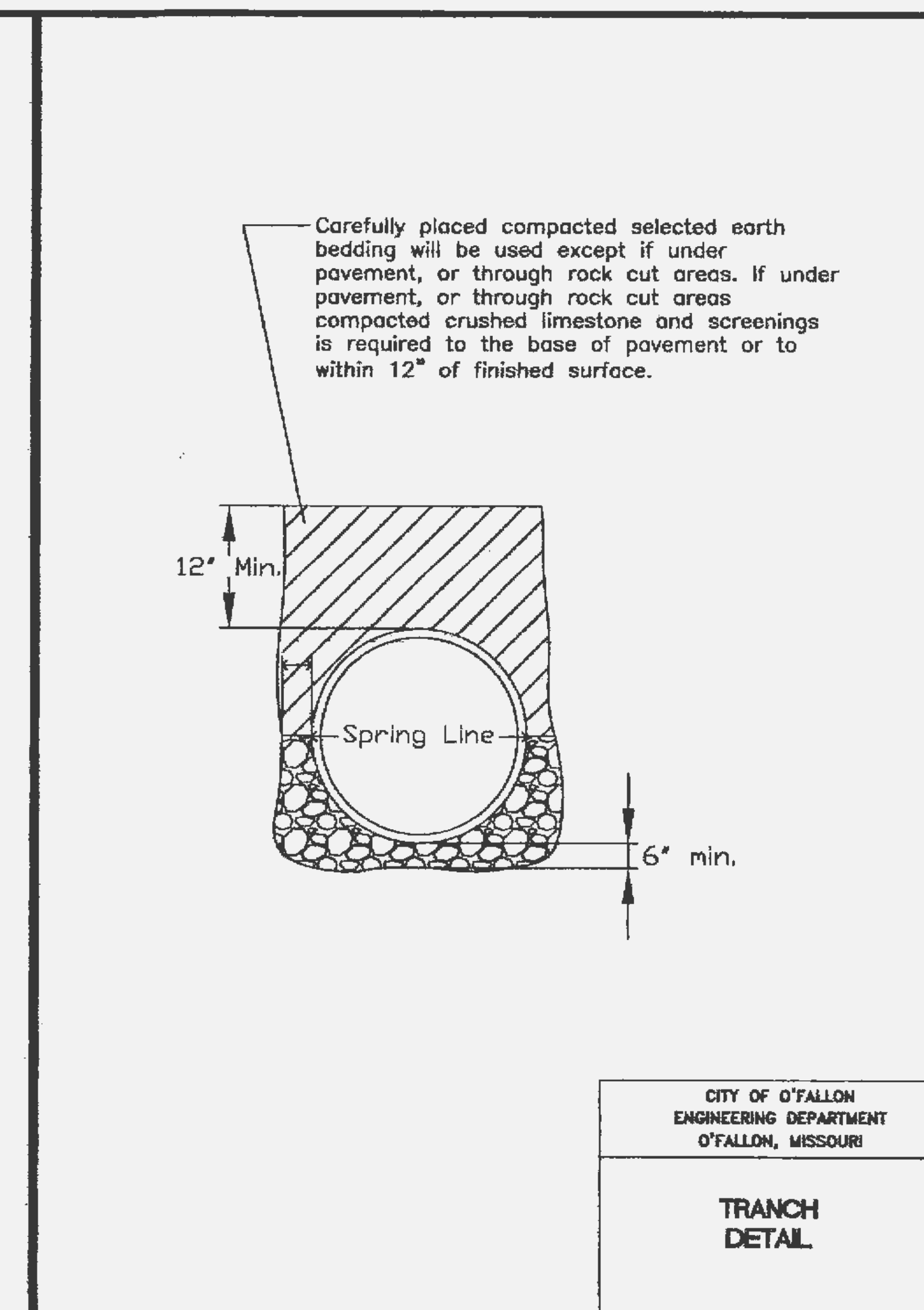
5. Pipe shall be laid upgrade in a continuous operation from structure to structure, with the socket or collar ends of the pipe upgrade.

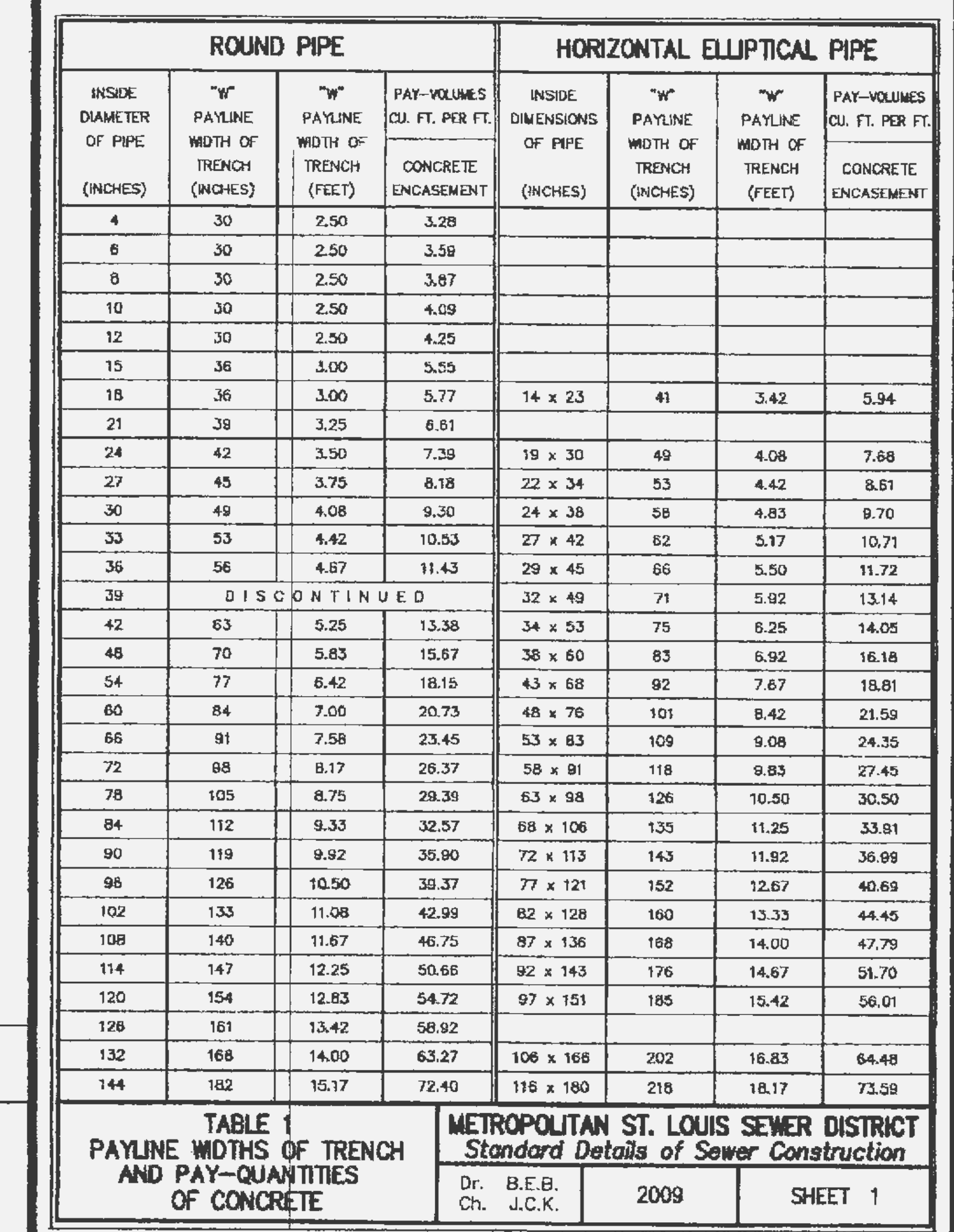
6. All trench backfills under paved areas shall be compacted to 90% of the maximum density as determined by the "Modified AASHTO T-180 Compaction Test", or to 95% of maximum density as determined by the Standard Procter Test AASHTO T-99. All fill placed in proposed roads shall be compacted from the bottom of the fill up. All tests shall be verified by a Soils Engineer concurrent with grading and backfilling operations. The moisture content of the soil in fill areas is to correspond to the compactive effort as defined by the Standard or Modified Proctor Test. Optimum moisture content shall be determined using the same test that was used for compaction. Soil compaction curves shall be submitted to the City of O'Fallon prior to the placement of fill. Proof rolling may be required to verify soil stability at the discretion of the City of O'Fallon. All other trench backfills shall be waterjetted.

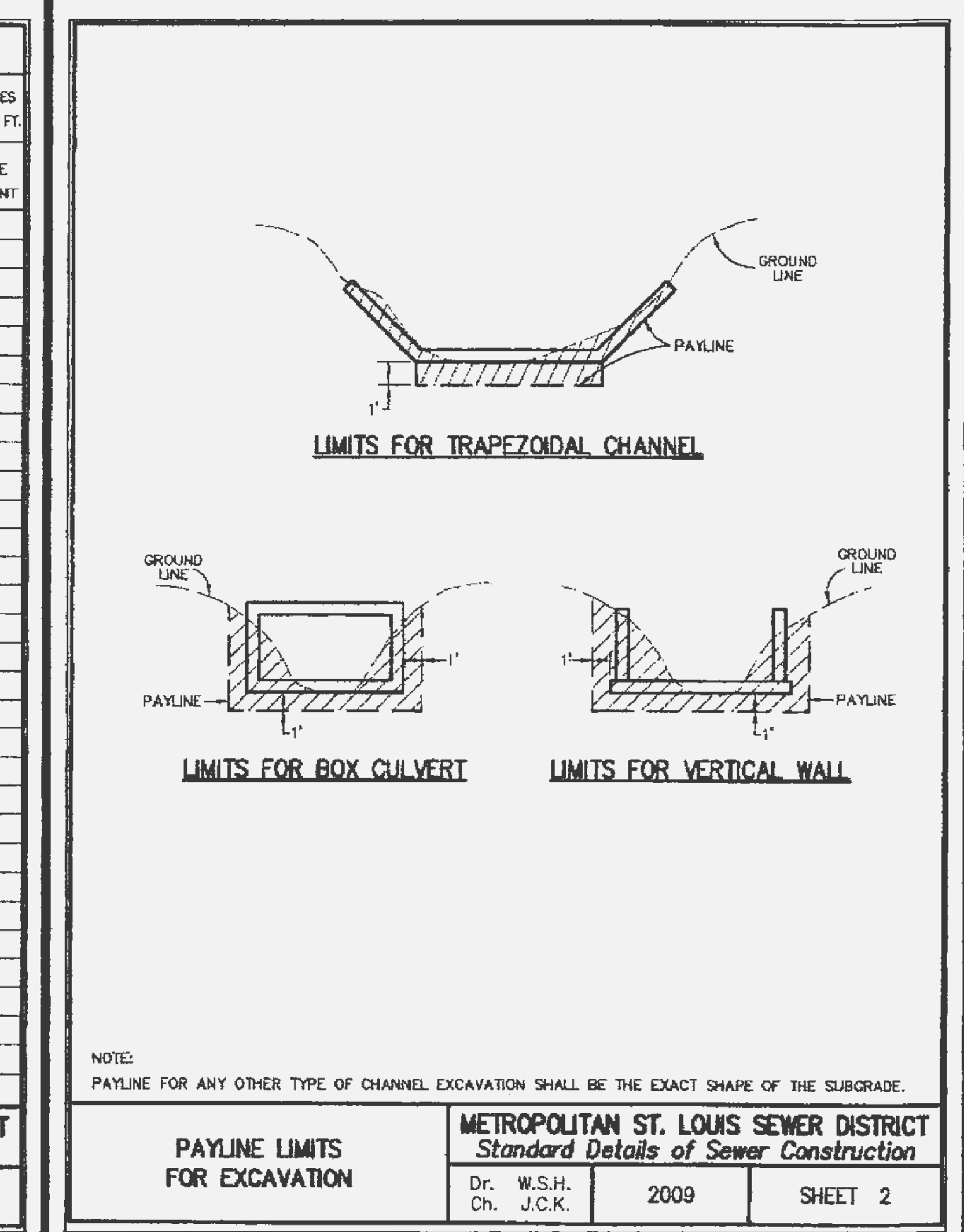
7. All storm sewer pipe shall be bedded with bedding aggregate. The bedding aggregate shall extend from 4 inches below the pipe to the pipe springline.

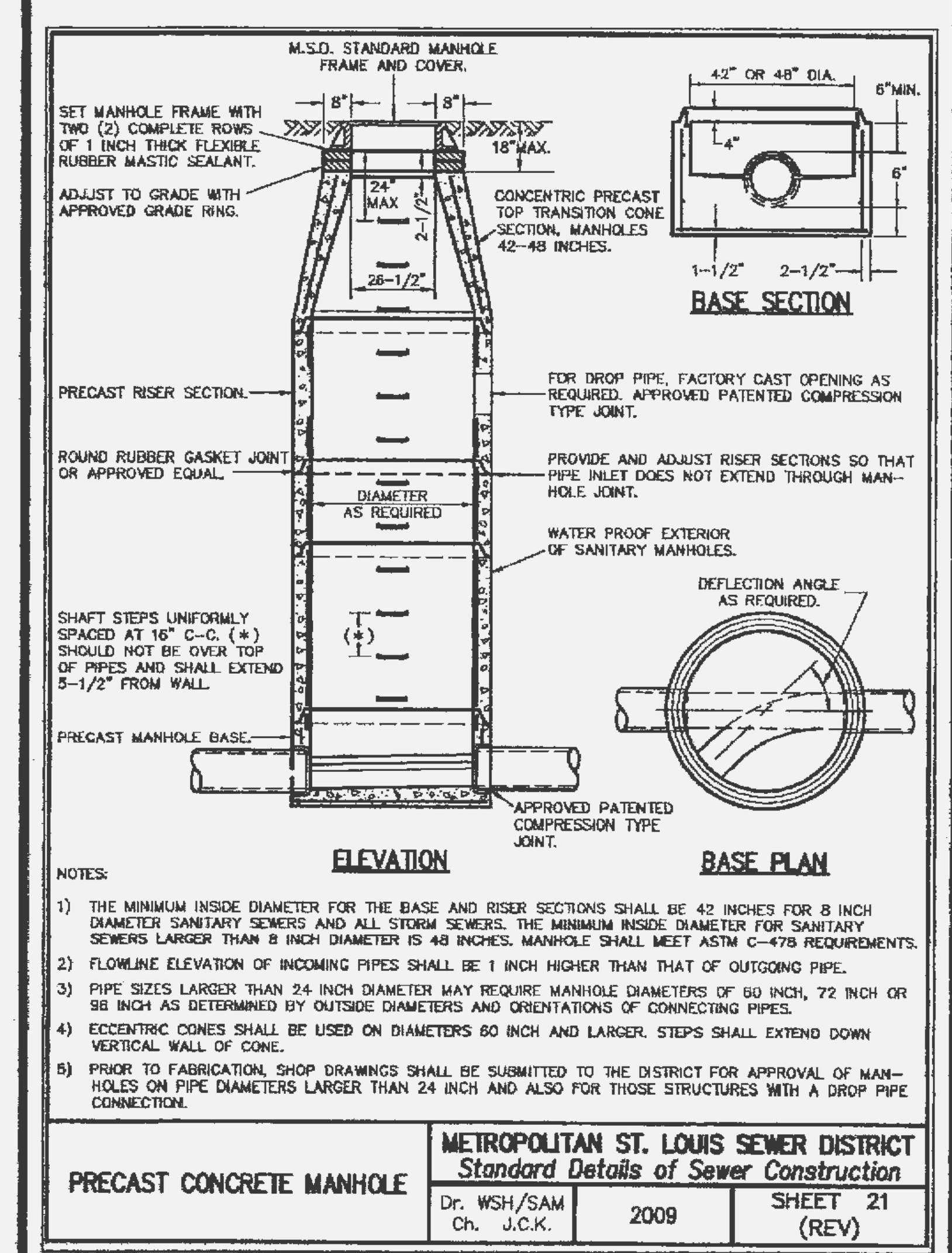
8. All storm sewer construction shall be performed in accordance with the City of O'Fallon specifications. The contractor shall assist City personnel, or representatives in the inspection of the storm sewers.

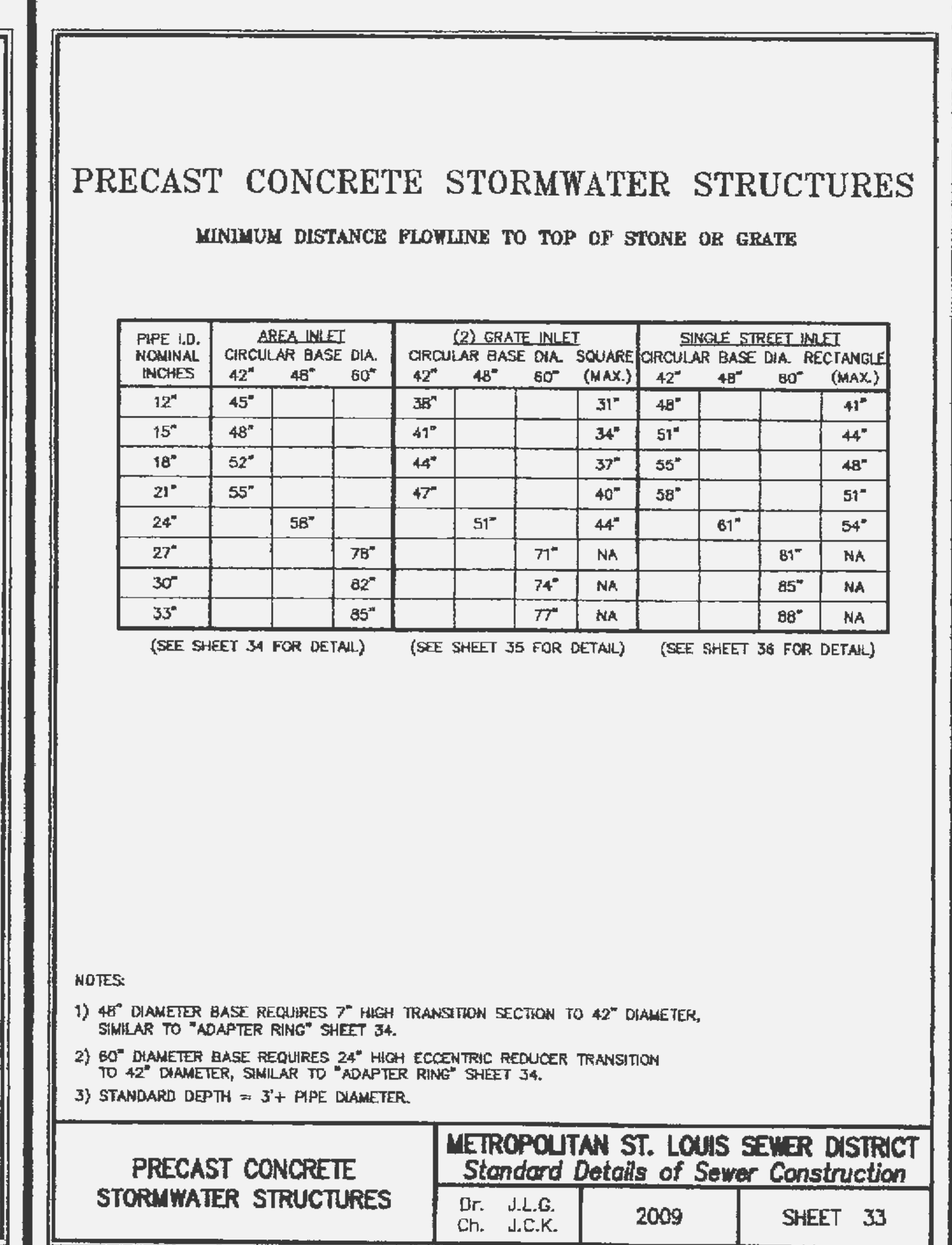
9. All storm manhole, area inlet and curb inlet tops shall be built to the elevations shown on the plans. If no elevation is shown, contact the engineer for such information.

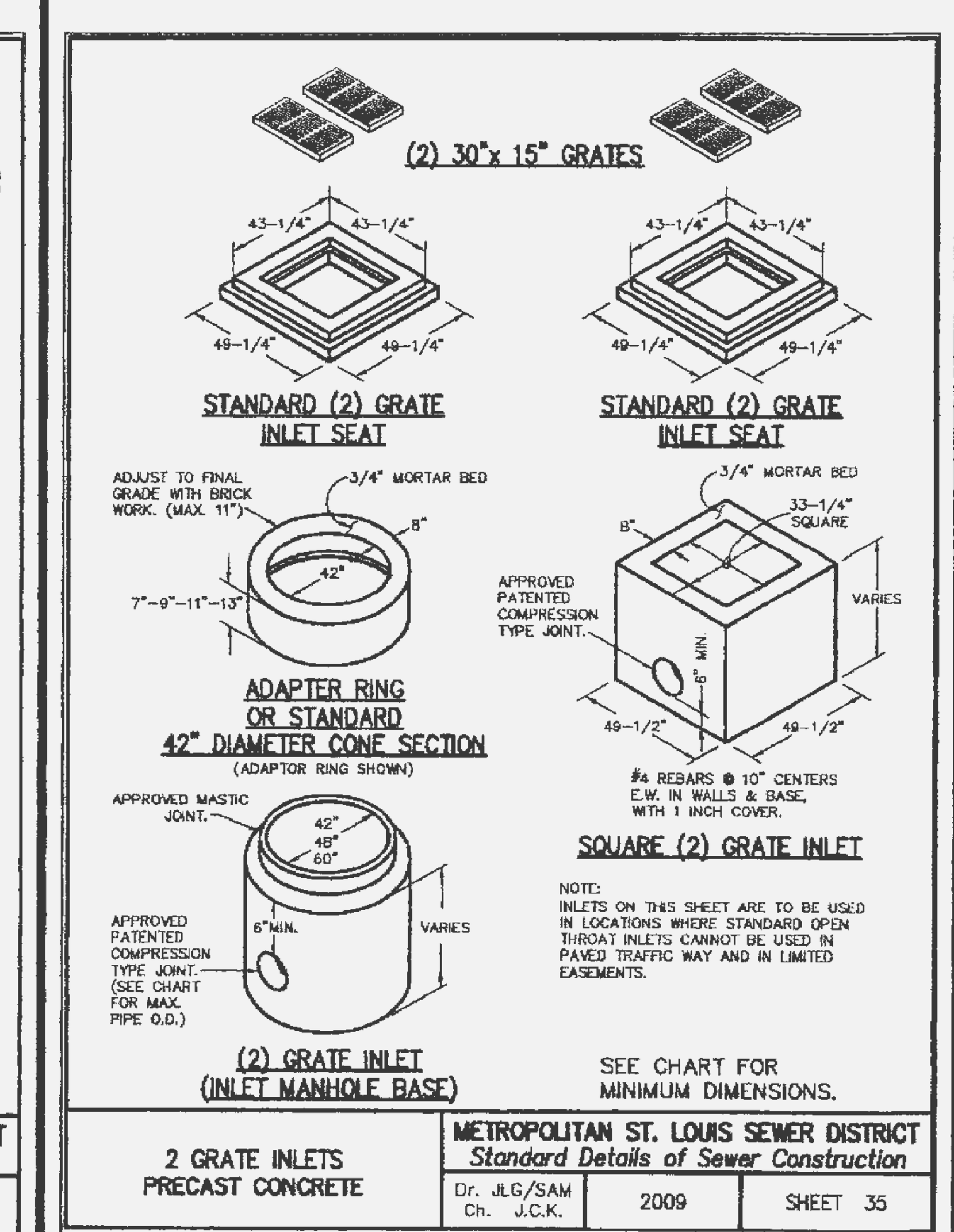


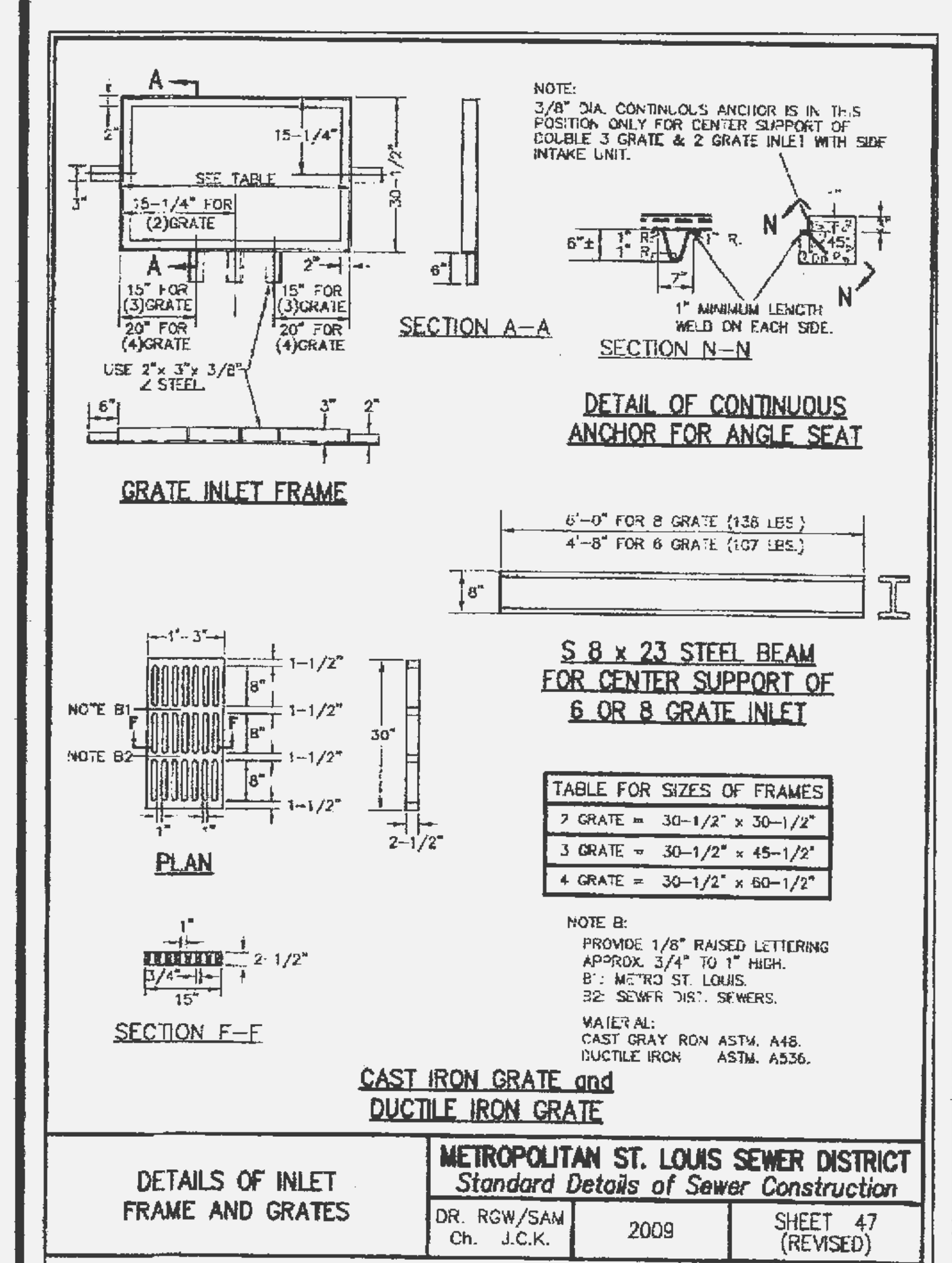


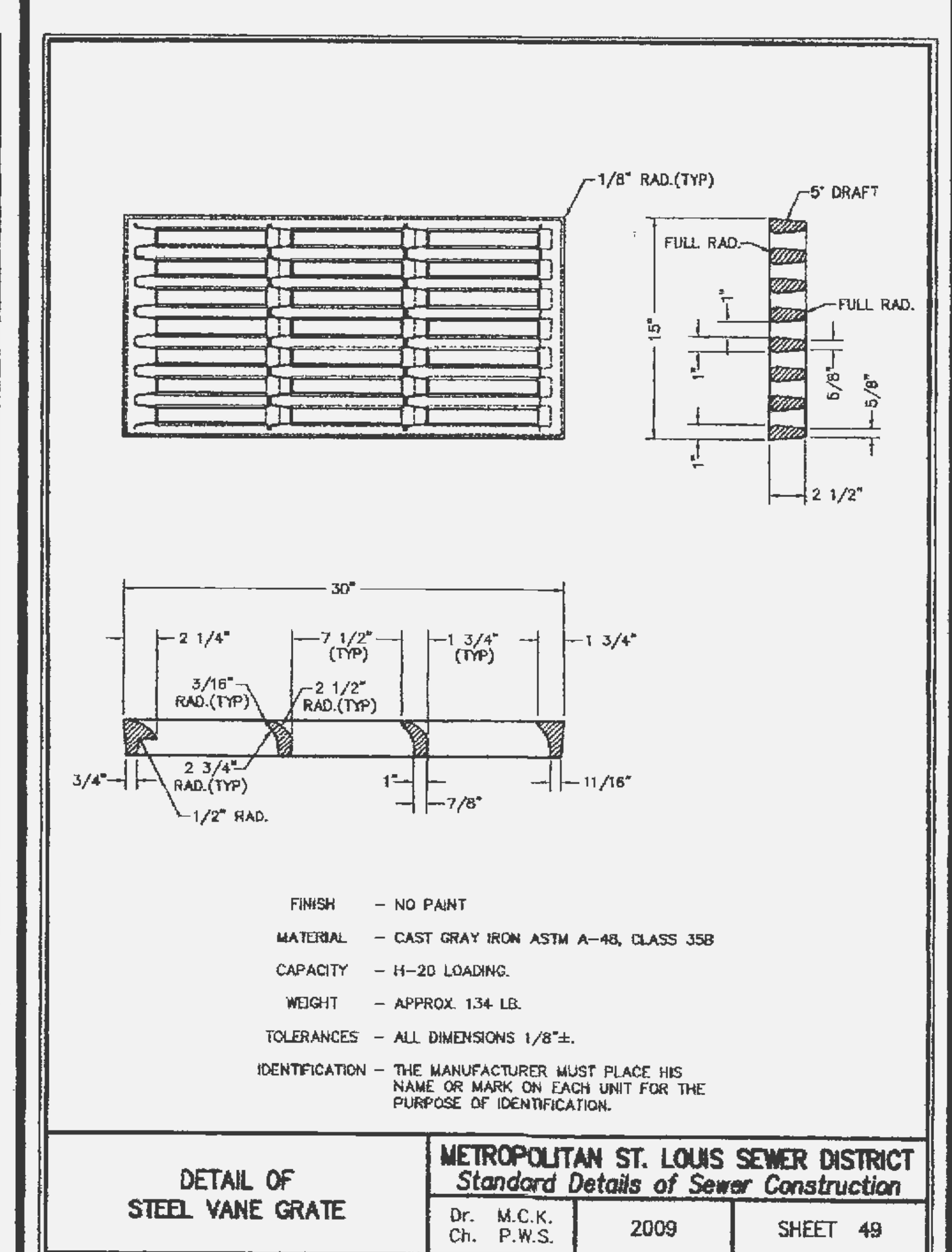


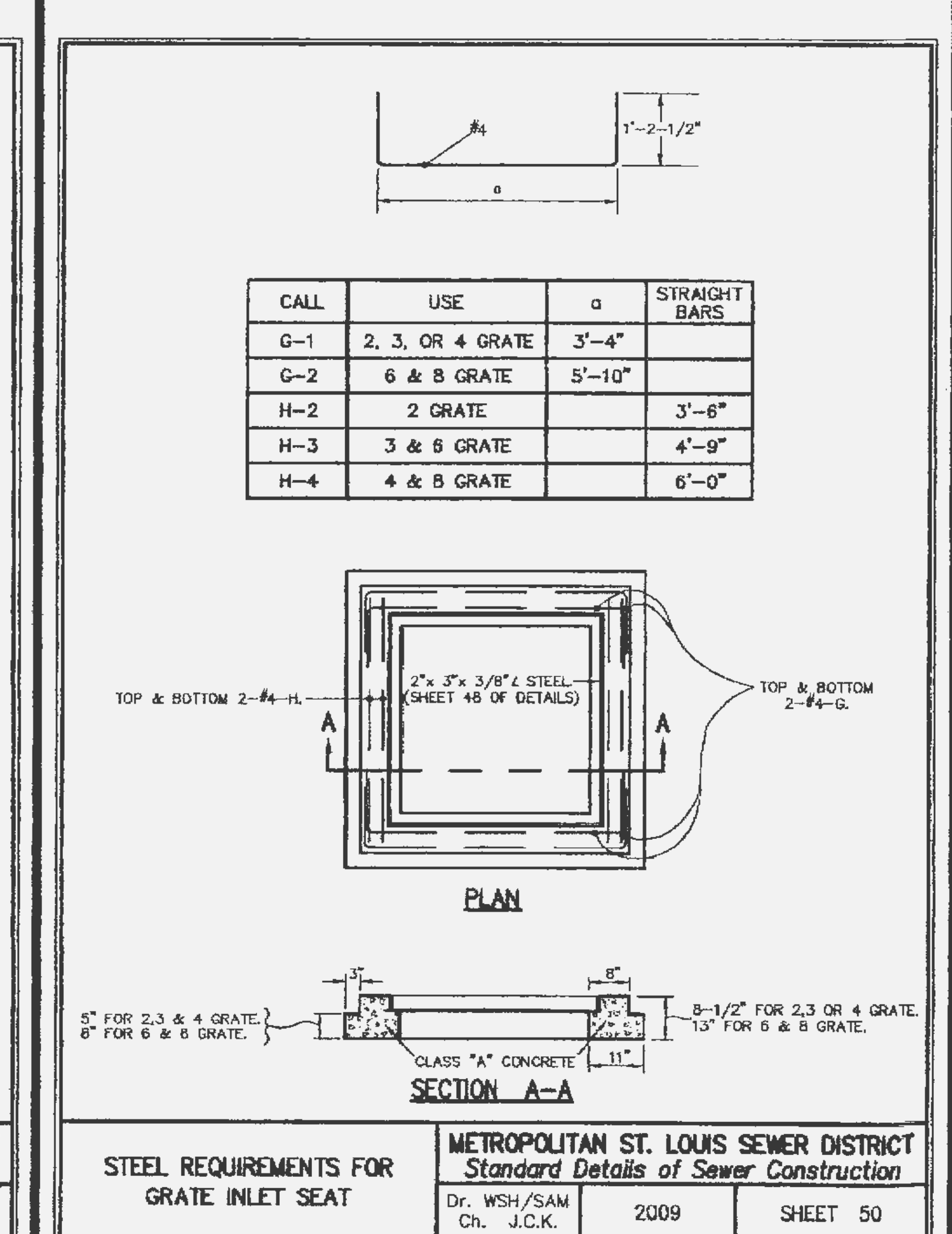












PROJECT TITLE:
S.A.K. HQ PARKING ADDN

PROJECT NOTES & DETAILS

DATE:	NO.:	ENGINEERING COMMENTS	REVISION:
11/29/16	1	ENGINEERING COMMENTS	

MUSLER ENGINEERING COMPANY
CIVIL ENGINEERING - PLANNING - LAND SURVEYING
32 Portwest Court, St. Charles, Missouri 63303
Telephone: (636) 916-0444
Fax: (636) 916-3444
CERTIFICATE OF AUTHORITY: ENGINEERING: E-1230-D, LAND SURVEYING: LS-284-D

DATE:	DRAWN:	CHECKED:	PROJECT NO.:	SHEET NO.:
SEPT. 2016	J.R.S.		11-1230HQ	3 OF 7

DISCLAIMER OF RESPONSIBILTY

I hereby specify that the documents intended to be authenticated by my seal are limited to this sheet, and I hereby disclaim any responsibility for all other Drawings, Specifications, Estimates, Reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

STATE OF MISSOURI PROFESSIONAL ENGINEER

1.11.17

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Page No. 3