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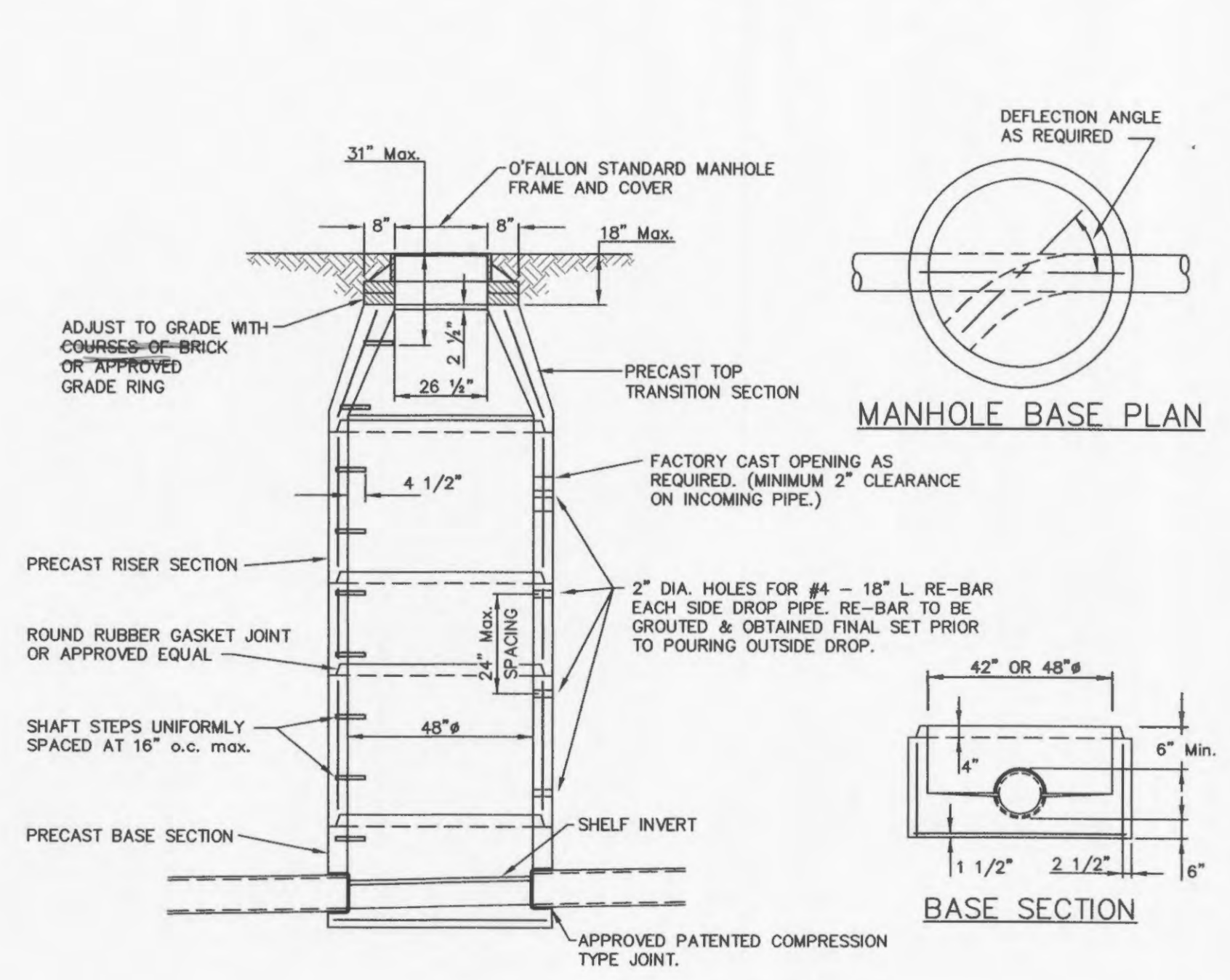
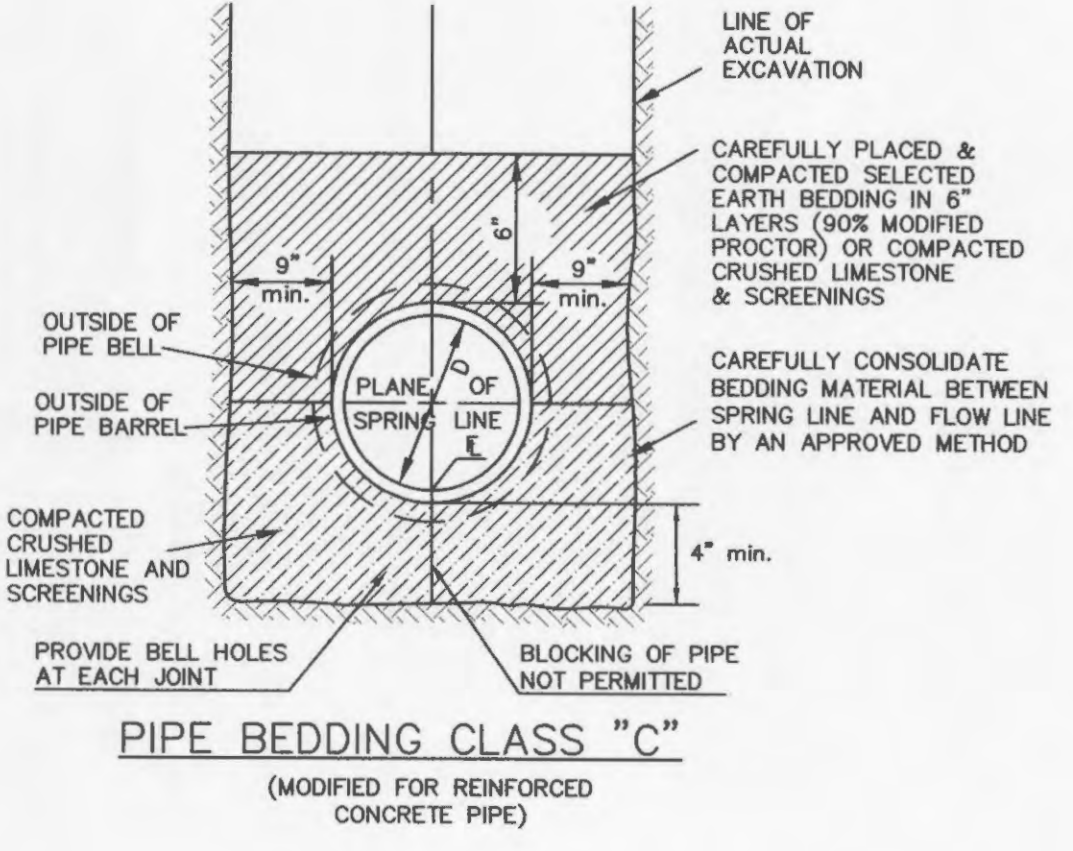
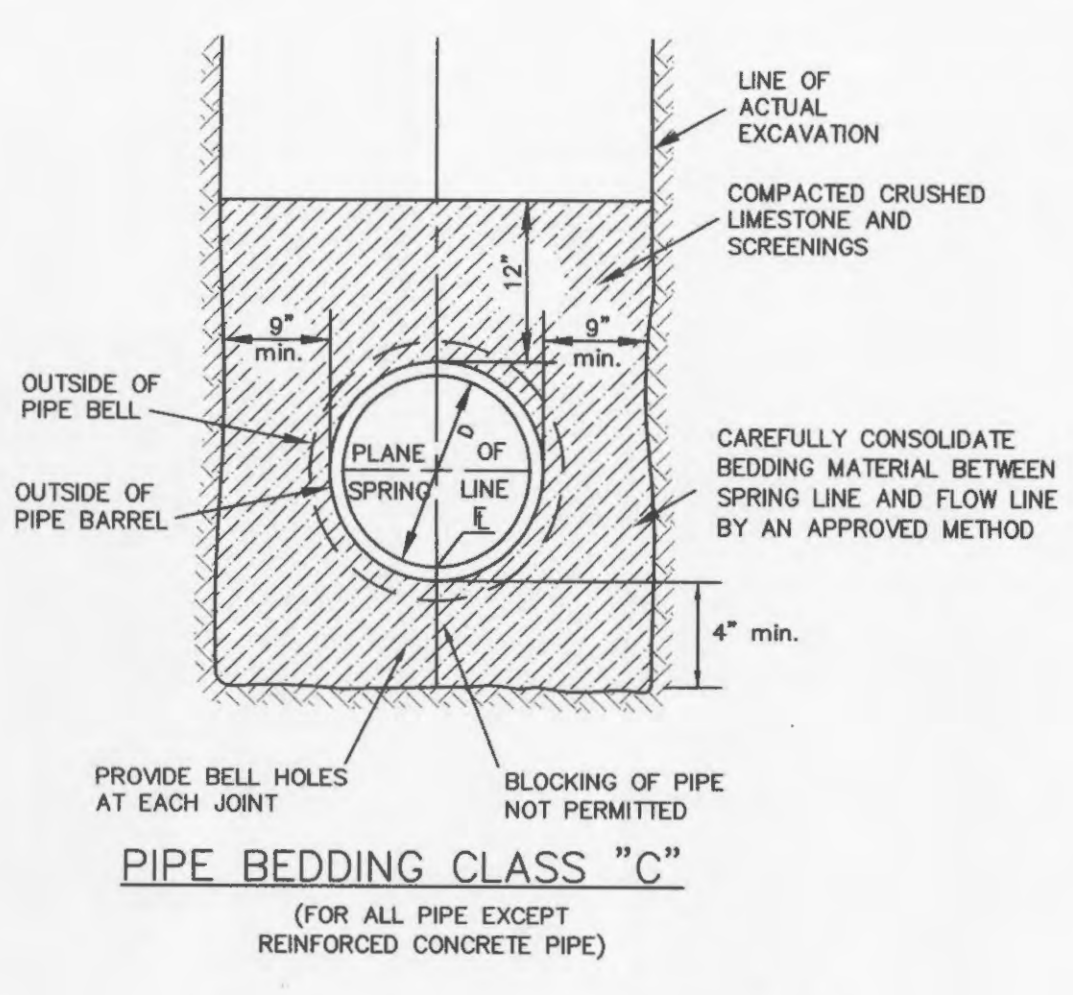
CEDC
CIVIL ENGINEERING
DESIGN CONSULTANTS

Improvement Plans
Wendy's Restaurant
1390 Mexico Loop Road East
O'Fallon, Missouri 63366

Proj. # 0747
No. Description Date
Agency Submittal 04/25/08
Per City 07/15/08
07/30/08

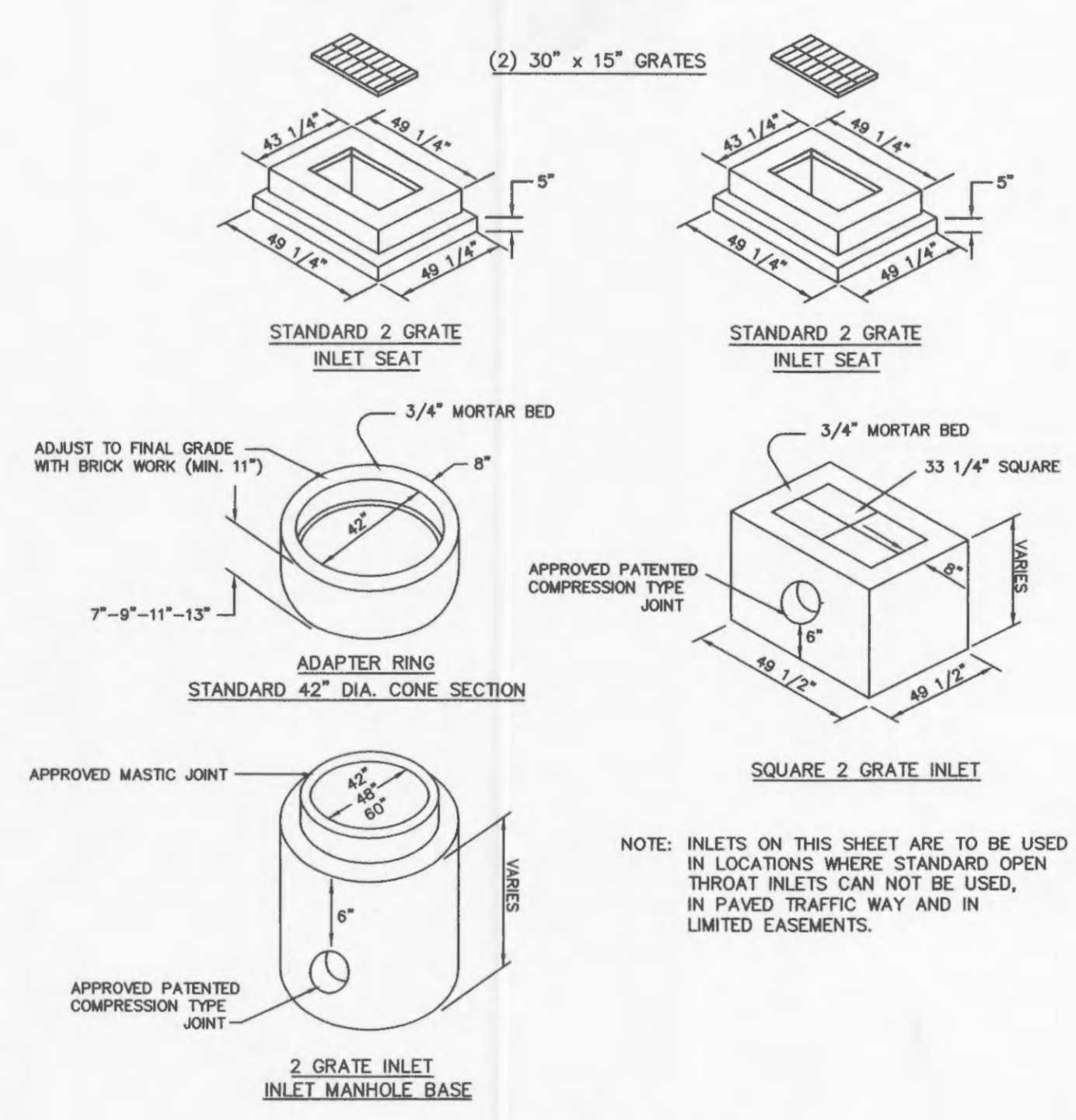
Sewer Profiles,
Details,
& Hydraulic
Calculations

C6
Planning and Development No. 9987.07.01
Planning and Zoning Commission
Approval - March 6, 2008
City Council Approval - March 27, 2008



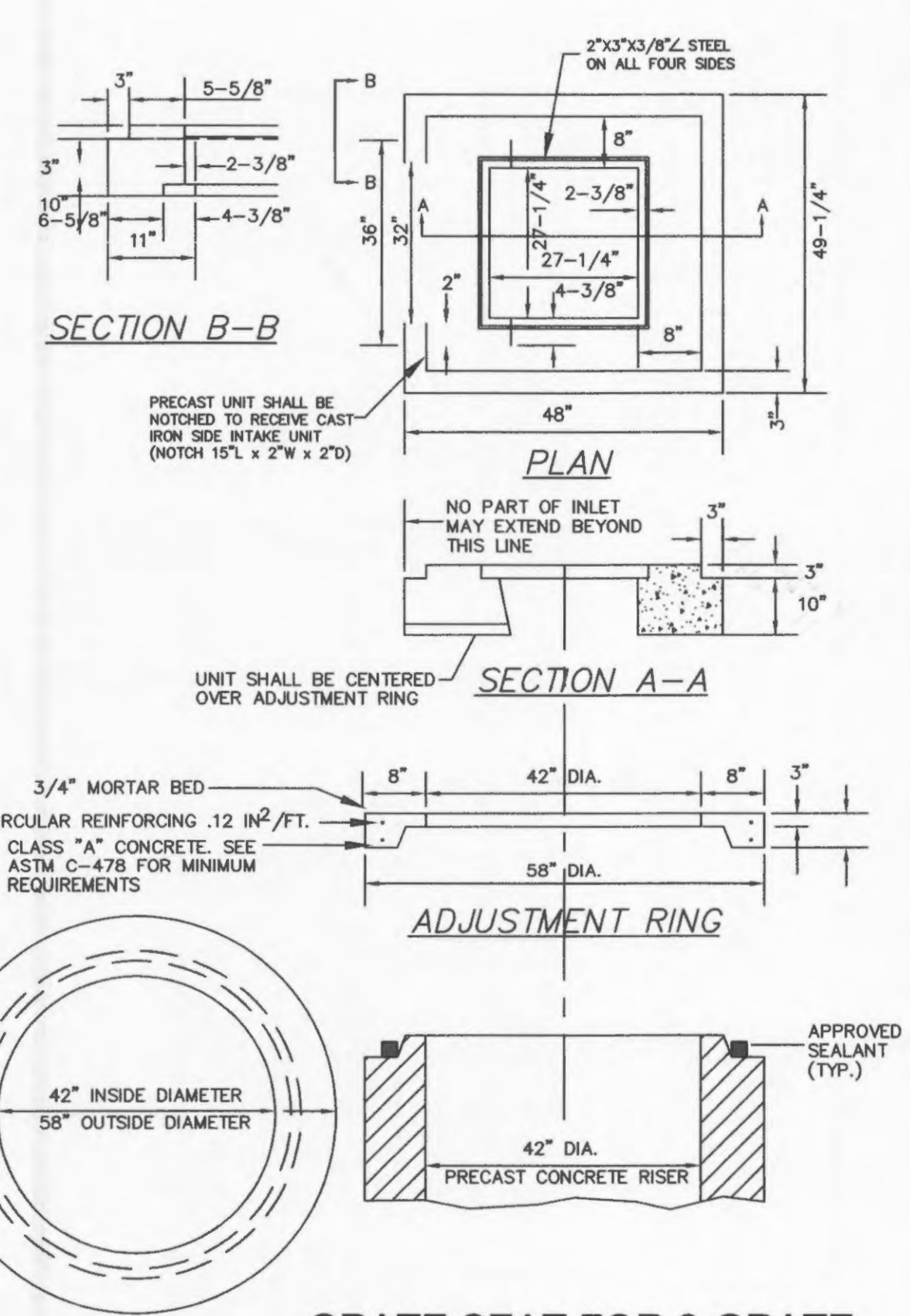
PRECAST MANHOLE

1. PROVIDE 31 ml WATERPROOFING PER CITY REQUIREMENTS.
2. INLETS AND MANHOLES SHALL HAVE A 0.2" DROP THROUGH THE STRUCTURE.

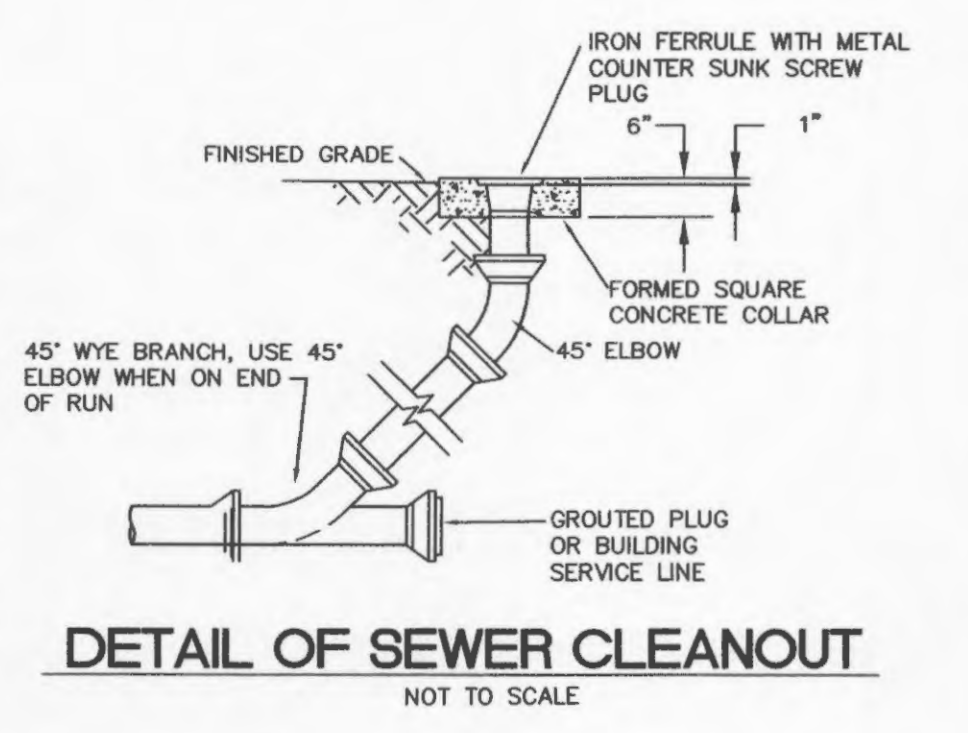


2 GRATE INLET

NOTES:
THE CITY OF O'FALLON REQUIRES MARKERS ON STORM INLETS WITH THE MESSAGE "NO DUMPING DRAINS TO WATERWAYS" OR "NO DUMPING DRAINS TO STREAM" AS MANUFACTURED BY ACP INTERNATIONAL, DAS MANUFACTURING, INC., ALMETEX INDUSTRIES OR APPROVED EQUAL. MARKERS SHALL BE ATTACHED TO STRUCTURE USING EPOXY ADHESIVE. "PEEL AND STICK" ADHESIVE PADS WILL NOT BE ALLOWED. SEE CITY OF O'FALLON SPECIFICATIONS FOR DETAILS.



GRATE SEAT FOR 2-GRATE INLET WITH SIDE INTAKE

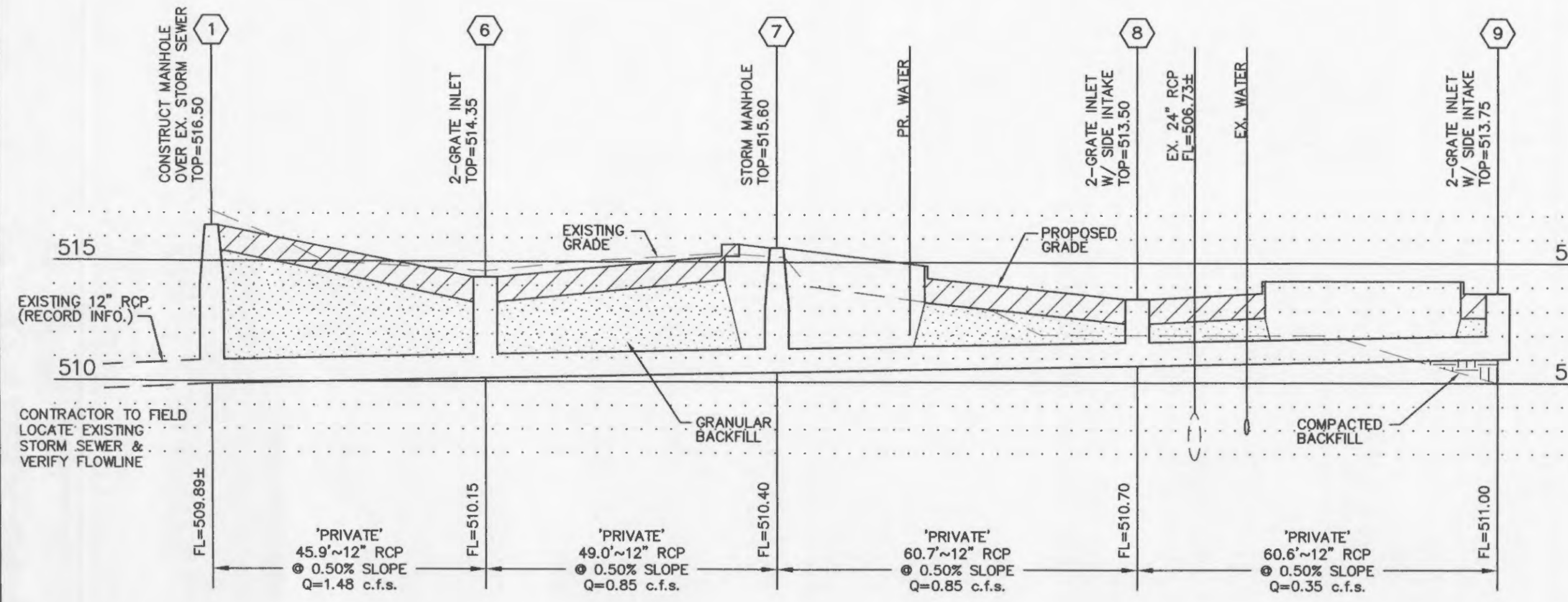


HYDRAULIC CALCULATION SHEET (SEE DRAINAGE AREA MAP SHEET C3 FOR P1 AND Q1 (inflow) FOR EACH STRUCTURE)

Project name: WENDYS
Project Location: 1390 Mexico Loop Road East
Project Number: 0747
Calculated By: RAH
Date: 04/08/08

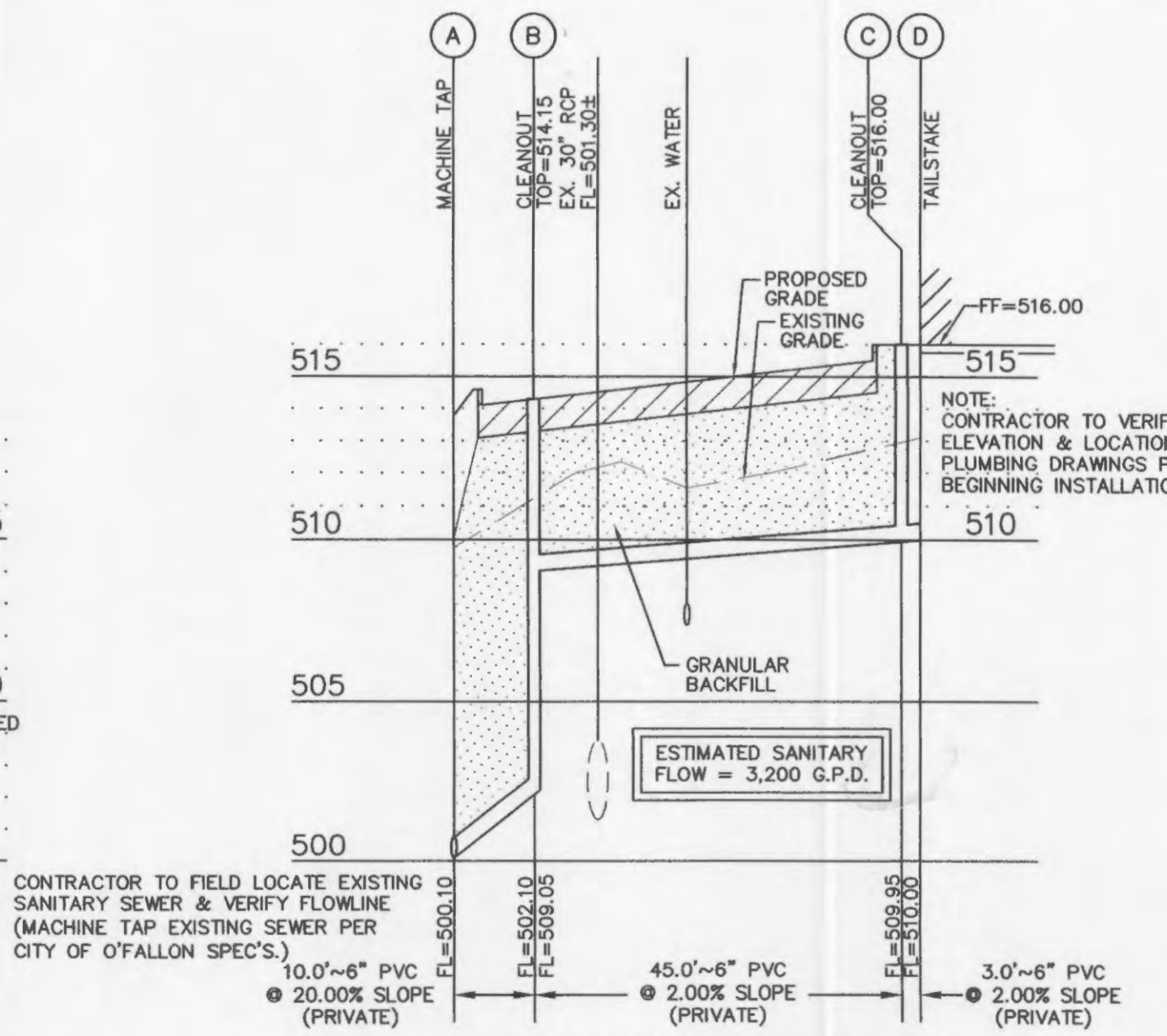
Structure Number	Upper Structure	Lower Structure	Length (ft)	Flowline Grade (ft)	Pipe Size (in)	Full Flow Cap (cfs)	Bend Coefficients										Hydraulic Elevations									
							Total (ft)	Mean Full Flow Vel (ft/s)	Head Loss (ft)	Velocity Head (ft)	Q ₁ (%)	Pipe Coef. (ft)	H ₁ (ft)	Junction (ft)	Head (ft)	Total (ft)	Upper F.L. (ft)	Lower F.L. (ft)	Upper H.E. (ft)	Structure H.E. (ft)	Free Board (ft)	Structure Number				
5	5	4	511.15	510.90	53.70	0.0047	12	2.44	0.25	0.32	0	0.00	0.00	0.013	0.00	0.00	0.00	0.00	0.00	512.15	512.24	512.24	512.24	513.75	1.51	5
4	4	3	510.9	510.50	76.50	0.0052	12	2.58	0.46	0.59	0	0.01	0.00	0.013	0.01	0.01	0.00	0.01	511.90	512.23	512.22	512.24	513.65	1.41	4	
3	3	2	510.5	510.10	82.40	0.0049	12	2.49	0.85	1.08	0	0.02	0.02	0.013	0.05	0.00	0.00	0.00	511.50	512.22	512.17	512.22	513.65	1.43	3	
2	2	1	510.1	509.89	50.10	0.0042	12	2.31	1.27	1.62	0	0.04	0.05	0.013	0.06	0.04	0.00	0.04	511.10	512.13	512.07	512.17	514.35	2.18	2	
9	9	8	511	510.70	60.60	0.0050	12	2.51	0.35	0.45	0	0.00	0.00	0.013	0.01	0.00	0.00	0.00	512.00	512.30	512.29	512.30	513.75	1.45	9	
8	8	7	510.7	510.40	60.70	0.0049	12	2.51	0.85	1.08	0	0.02	0.02	0.013	0.03	0.02	0.00	0.03	511.70	512.27	512.24	512.29	513.5	1.21	8	
7	7	6	510.4	510.15	49.00	0.0051	12	2.55	0.85	1.08	0	0.02	0.02	0.013	0.03	0.00	0.00	0.00	511.40	512.24	512.21	512.24	515.6	3.36	7	
6	6	1	510.15	509.89	45.90	0.0057	12	2.69	1.48	1.88	0	0.06	0.08	0.013	0.08	0.06	0.00	0.06	511.15	512.15	512.07	512.21	514.35	2.14	6	

FORMULAS:
MEAN FULL FLOW VELOCITY = Q_{AC} / A_{PIPE}
FRICTION LOSS (H_f) = $H_f = 2.47 n^2 (L V^{1.49} / D^{4.75})$
VELOCITY HEAD = $V_v = V^2 / 2g$
JUNCTION LOSSES (JUNC.) = $[Q_{in} V_{in} - \sum (Q_{out} V_{out})] \times 1.33 / Q_{in}$
BEND LOSSES (BEND) = $(V^3 / 2g) \times \text{ANGLE COEFFICIENT}$
Note: 1. IF MORE THAN ONE INCOMING LINE, CALCULATE EACH BEND LOSS AND ADD TOGETHER.
2. NO STRUCTURE LOSSES TO BE CALCULATED AT A DROP.
3. IF $Q_{in} > Q_{out}$, NO JUNCTION LOSSES TO BE CALCULATED.



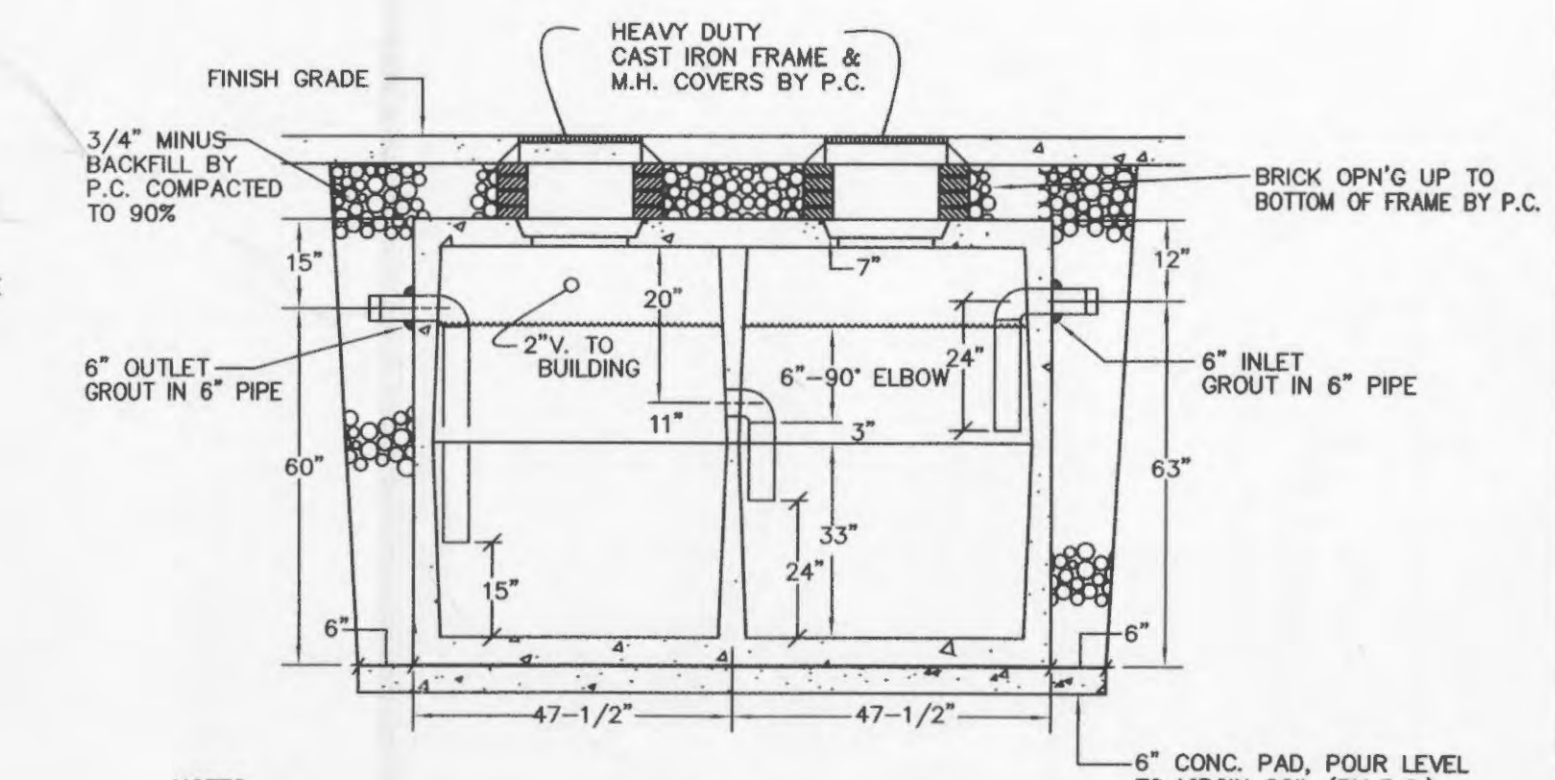
STORM SEWER PROFILE

SCALE:
HORIZONTAL: 1"=20'
VERTICAL: 1"=5'



SANITARY SEWER PROFILE

SCALE:
HORIZONTAL: 1"=20'
VERTICAL: 1"=5'



GREASE INTERCEPTOR DETAIL

NOTES:
1) THE TOTAL NET HOLDING CAPACITY OF THE GREASE INTERCEPTOR (2-COMPARTMENTS) IS NOT LESS THAN 1,200 GALLONS.
2) SETTING/CLARIFICATION COMPARTMENTS HAVE A COMBINED NET HOLDING CAPACITY OF 605 GALLONS.
3) MEET OR EXCEEDS BOCA CODE: 1987 CODE.
4) UNIT SHALL BE AS MANUFACTURED BY F.F. KIRCHNER INC. OR EQUAL.
5) STRUCTURAL DESIGN TO MEET H-20 WHEEL LOADING REQUIREMENTS

Planning and Development No. 9987.07.01
Planning and Zoning Commission
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