

SANITARY SEWER IMPROVEMENTS

to serve

PINAIRE ADDITION

CITY OF WICHITA, KANSAS

James L. Armour, P.E. Acting City Engineer

Private Project Number

1505 PPS (607861)

GENERAL NOTES:

- Contractor will be required to provide notice to utility companies a minimum of twenty-four (24) hours prior to any excavation, as follows:

Kansas One-Call 687-2470

The Contractor must notify the following in case of an emergency:

Cox Communications 262-4270
 Kansas Gas Service 1-888-422-4950
 Westar Energy 383-2650
 Aquila Energy 1-800-303-0357
 Southwestern Bell 268-2245
 City of Wichita Water Dept. 268-4563
 City of Wichita Sewer Maint. 268-4024
 City of Wichita Storm Sewer Maint. 268-4080
 City of Wichita Traffic Maint. 268-4034
 Conoco Pipeline Co. 1-800-231-2551
 Williams Pipeline Co. 529-6600
 Phillips Pipeline Co. 1-800-766-8230

- Utility service lines, poles, valve boxes, meters, and etcetera are to be adjusted as necessary by others prior to construction unless the plans specifically call for their adjustment by the Contractor or unless the plans specifically identify a utility to be adjusted by its owner during construction. Existing utilities and their location, as shown on the plans, represent the best information obtainable for design. The Contractor will be required to work around existing utilities within the right-of-way which do not conflict with proposed construction.

- Rubble from the removal of miscellaneous structures and excess excavation which is to be wasted shall be disposed of on sites to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance on site location. Locations, in the opinion of the Engineer, will leave an unsightly appearance will not be approved. All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a flood plain would require a Kansas State Board of Agriculture permit. Any material dumped in waters of the United States or wetlands is subject to U.S. Corps of Engineers permitting regulations. Any material buried or stockpiled beyond approved construction limits would require additional archaeological investigations unless buried in a previously approved borrow location.

- Trees and shrubs in public right-of-way which are in direct conflict with proposed new construction shall be removed by the Contractor with the Engineer's approval. Trees and shrubs which are not in direct conflict with proposed new construction shall be saved and protected from damage.

- The Contractor shall give all property owners and/or tenants of developed property adjoining the construction of this project a minimum of ten (10) days advance notice prior to start of construction.

- The Contractor shall be responsible for preserving property irons. The Contractor will be required to re-establish any property irons which are damaged or destroyed by the construction operations. Such irons shall be re-established by a licensed land surveyor in accordance with state laws.

- The Contractor shall be responsible for maintaining continuous flow of sewage through construction. Contractor's proposed method for maintaining sewage flow shall be approved by the Engineer. Cost of maintaining flow of sewage through construction will not be paid directly and the cost shall be considered as subsidiary to the other pay items of work.

- When connecting to existing manhole or stub, the contractor shall reshape manhole bottom or adjust the existing stub's alignment or elevation as necessary. Cost shall be subsidiary to project.

- All areas disturbed during construction within Reserves and Street R/W's shall be seeded, mulched, and fertilized as follows unless otherwise noted (Temporary Seeding):

Seed: Rye Grass: 5 lbs./1000 Sq. Ft.
 Mulch: Prairie Hay: 2 tons/acre

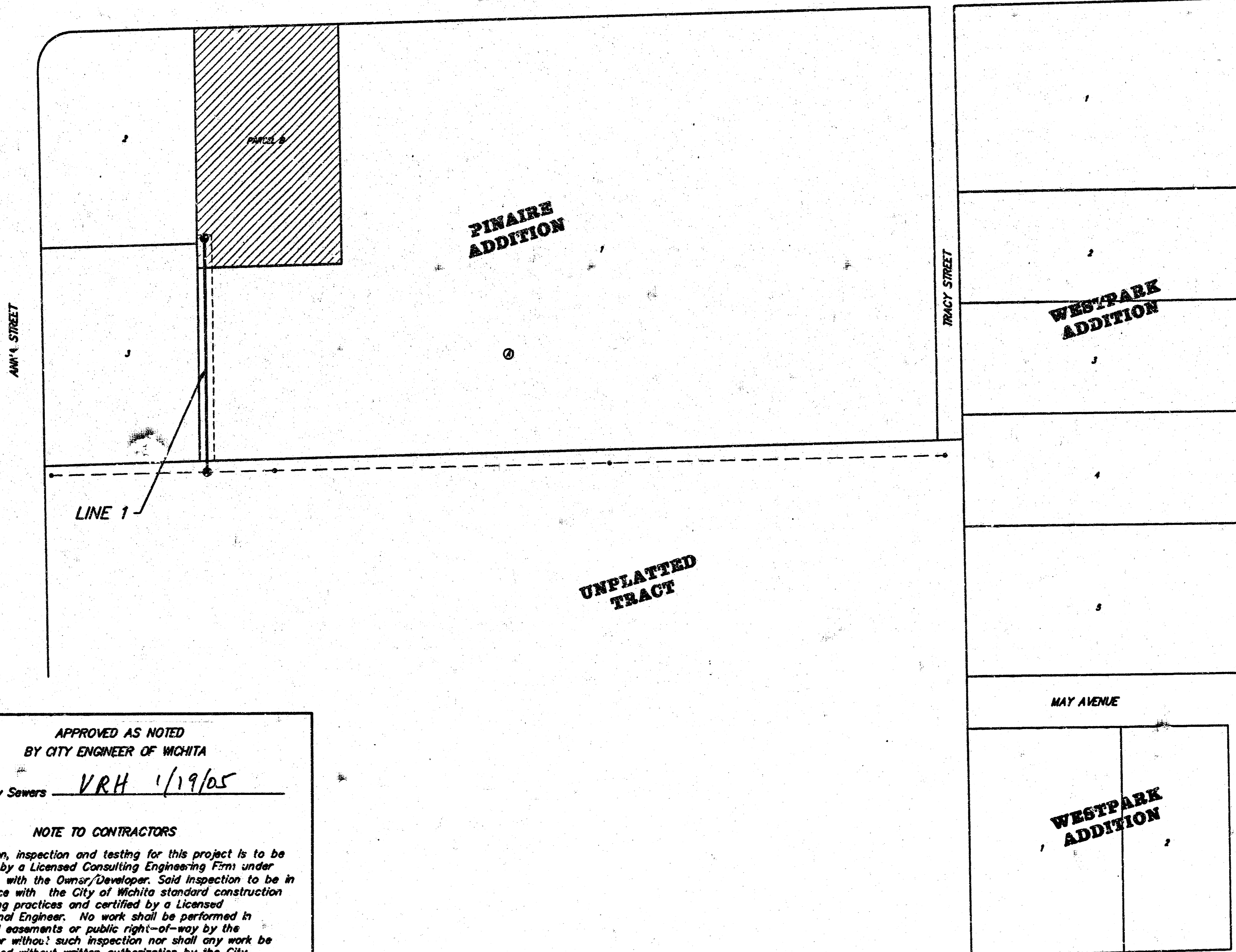
All costs associated with seeding, mulching, and fertilizing shall be incidental to Project. All seeding operations shall conform to City of Wichita Standard Specifications.

- All existing and proposed erosion control measures including silt fencing, erosion control mat, straw bales, inlet barriers, and silt fences shall be maintained throughout construction by the contractor and until project is accepted by the City of Wichita. The on-site engineer shall complete weekly reports on the status of erosion control measures. The contractor shall be required to comply with maintenance and/or replacement of erosion control measures as determined by the on-site engineer until project is accepted by City of Wichita. Maintenance and/or replacement of erosion control measures to be paid by L.S. bid item "Erosion Control BMP's."

APPROVED AS NOTED
 BY CITY ENGINEER OF WICHITA
 Sanitary Sewers VRH 1/19/05

NOTE TO CONTRACTORS
 Installation, inspection and testing for this project is to be provided by a Licensed Consulting Engineering Firm under contract with the Owner/Developer. Said inspection to be in accordance with the City of Wichita standard construction engineering practices and certified by a Licensed Professional Engineer. No work shall be performed in dedicated easements or public right-of-way by the Contractor without such inspection nor shall any work be commenced without written authorization by the City Engineer. All Construction and Materials shall comply with the City of Wichita Specifications and Standards (on file and available in the City Engineer's Office).

ESTHER AVENUE



Scale: 1" = 100'

Benchmark

R.R. Spike in East side of fence corner post. At SW Corner of Parcel B, Pinaire Addition. Elev. = 113.10 (City Datum)

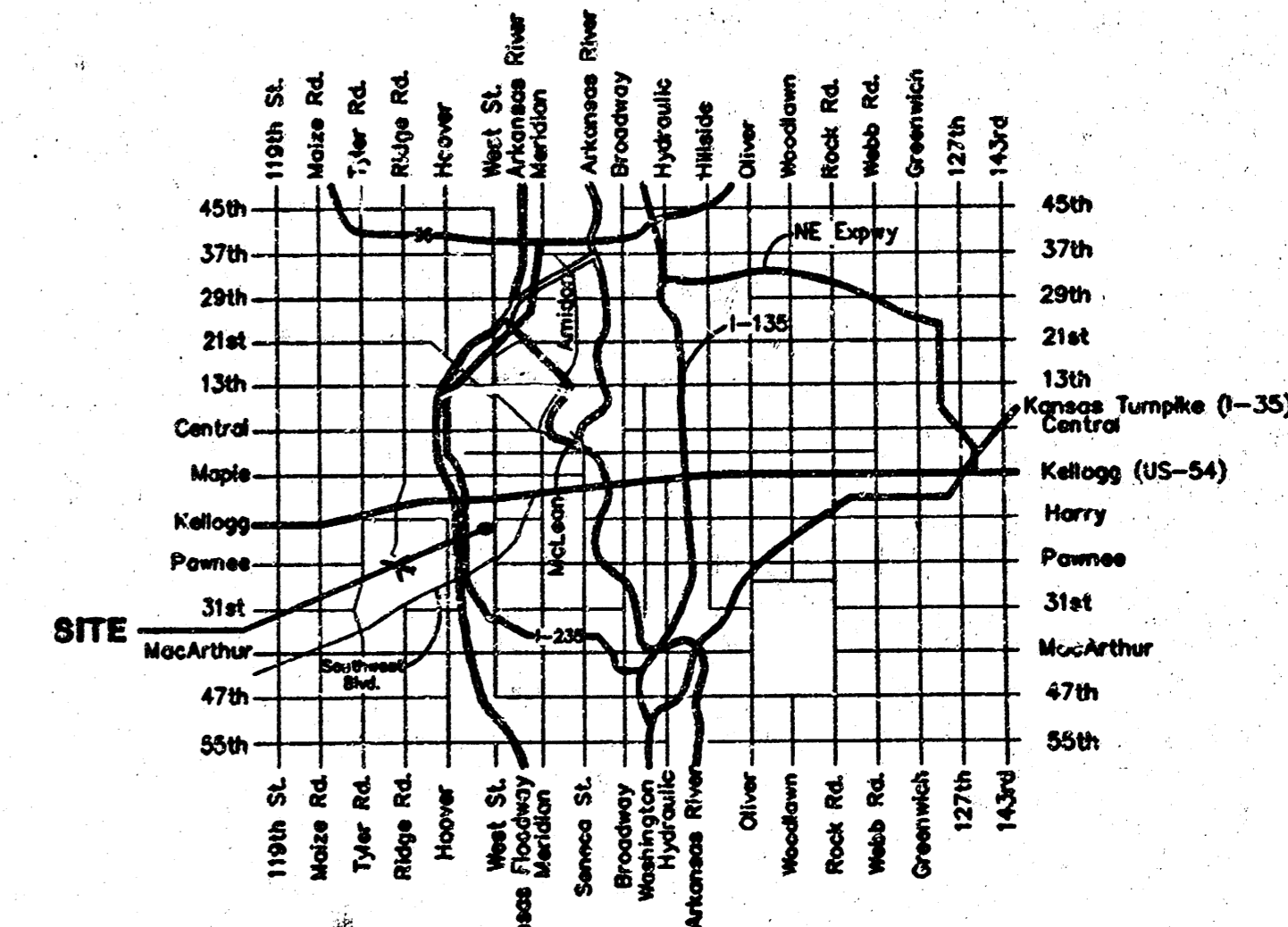
North Rim of Sanitary Sewer Manhole. 355.5' East of CL of Anna St. & 14.8' South of South Line of Pinaire Addition. Elev. = 111.49 (City Datum)

C.O.W. Benchmark - West side of Anna St. & South line of drive into trailer park, 2201 S. Anna; 125' +/- S. of 1/4 corner. Elev. = 110.10 (City Datum)

Sheet Index

Title Sheet	1
Line 1	2
Standard Manhole Detail	3
Ring & Cover Detail	4
Erosion Control Details	5-8
Copy of Lot Exhibit	9

McCullough Excavating, Inc. - Contractor
 Baughman Co. - Inspector
 Released 2/19/05
 Stub
 pdf by JDL 2/22/05



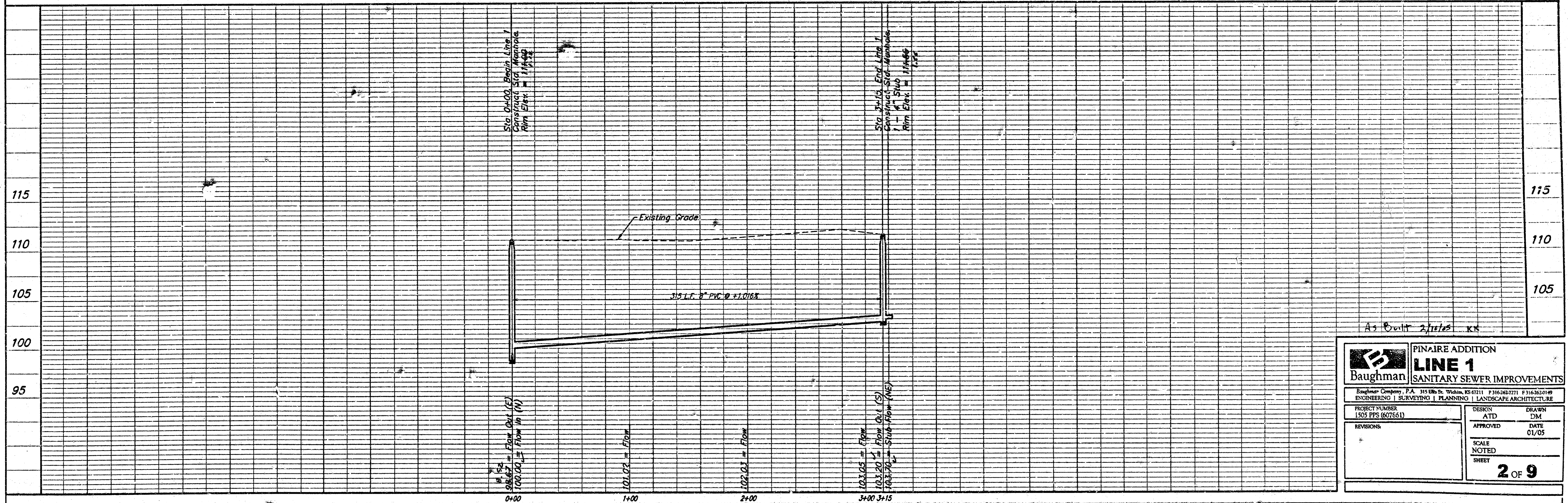
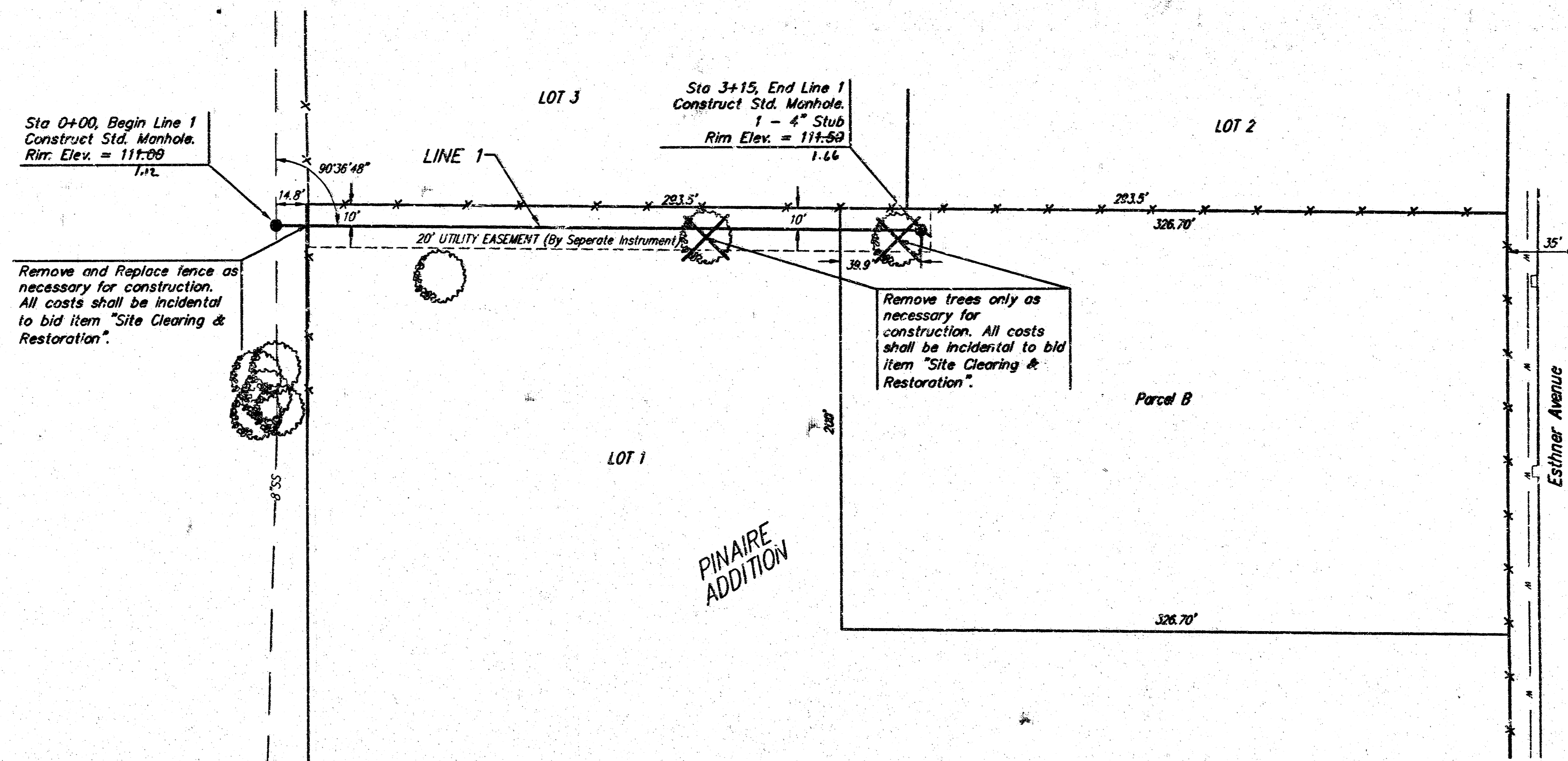
BENCHMARKS:

R.R. Spike in East side of fence corner post. At SW Corner of Parcel B, Pinaire Addition.
Elev. = 113.10 (City Datum)

North Rim of Sanitary Sewer Manhole. 355.5' East of CL of Anna St. & 14.8' South of South Line of Pinaire Addition.
Elev. = 111.49 (City Datum)

C.O.W. Benchmark - West side of Anna St. & South line of drive into trailer park, 2201 S. Anna; 125' +/- S. of 1/4 corner.
Elev. = 110.10 (City Datum)

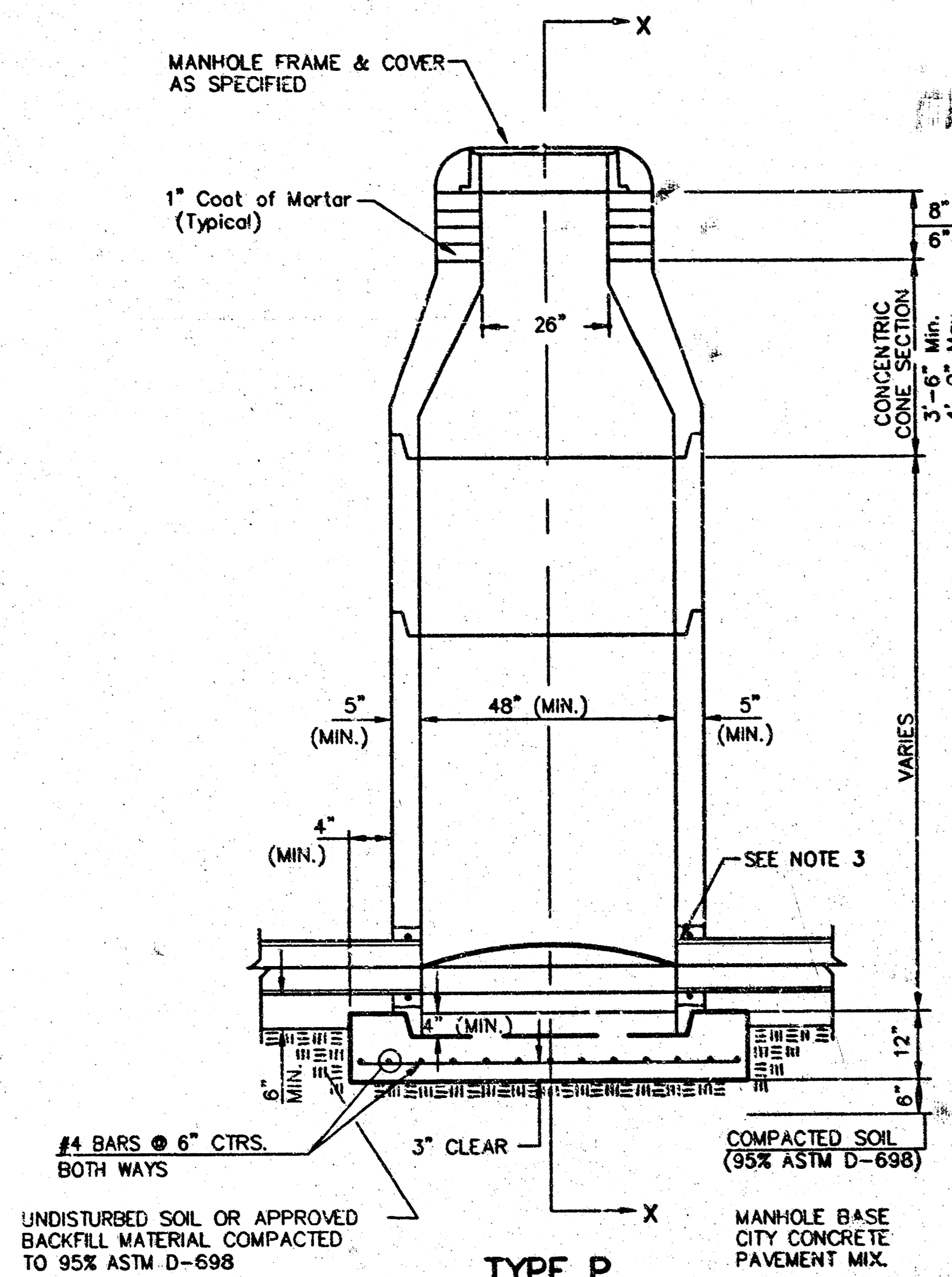
Contractor to verify depth & location of existing sanitary sewer manholes and utilities prior to construction.



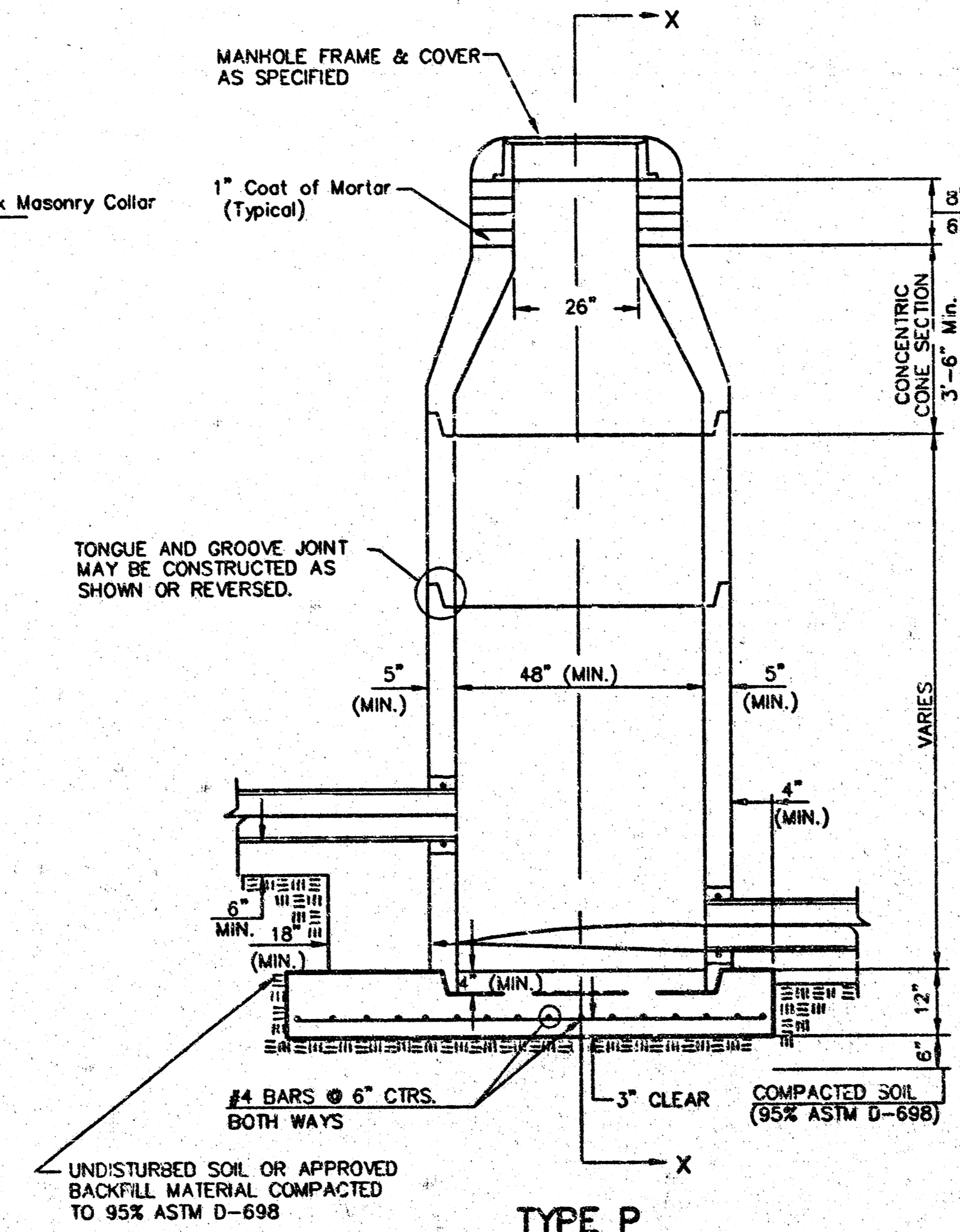
A-1 Cont'd 2/fields KN

LINE 1	
SANITARY SEWER IMPROVEMENTS	
<small>Baughman Engineering, P.A. 315 870 St. William, PA 67111 F 316-282-7771 F 316-282-1149 ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE</small>	
PROJECT NUMBER 1505 PPS (607561)	DESIGN ATD
APPROVED	DRAWN DM
SCALE NOTED	DATE 01/05
SHEET 2 OF 9	

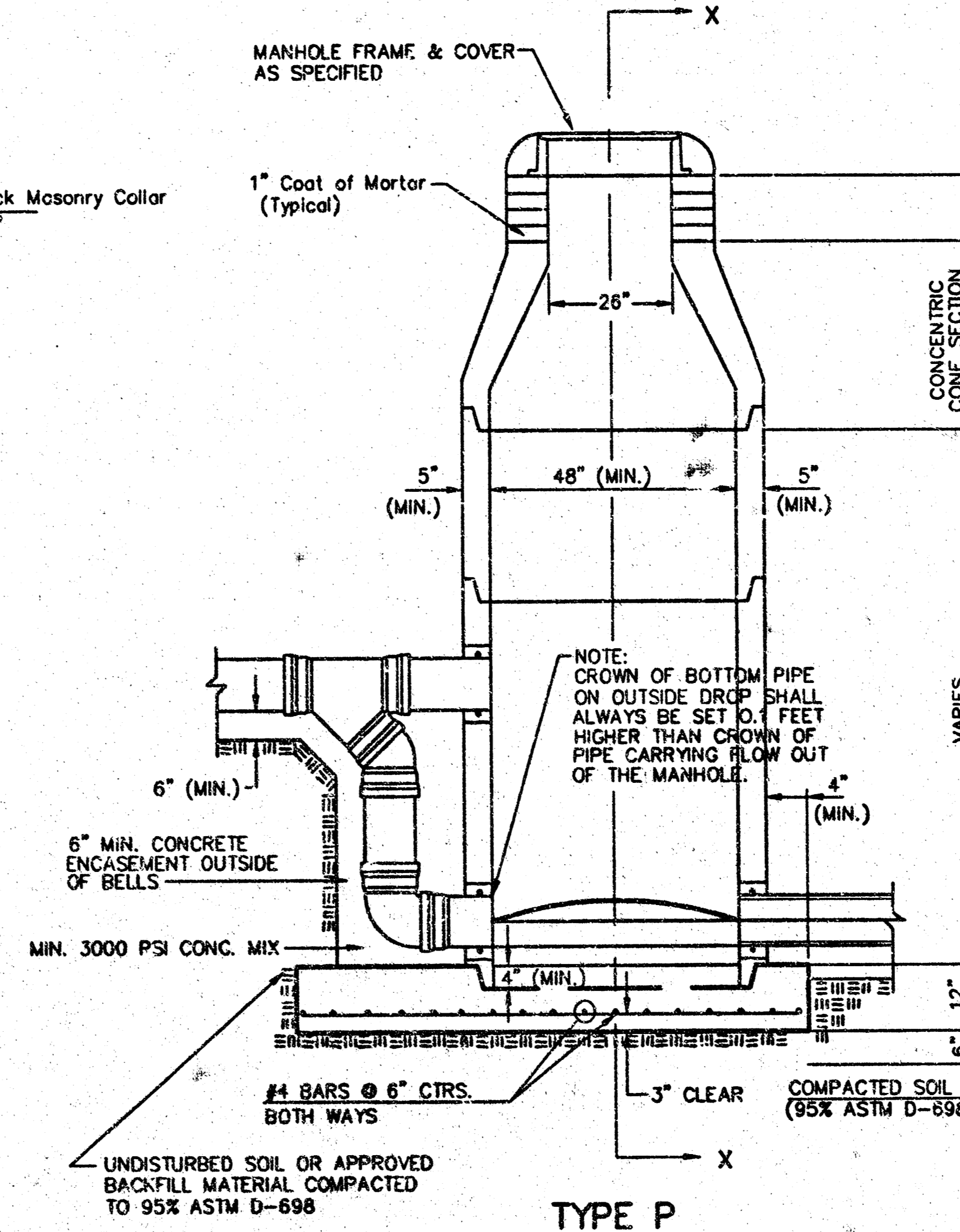
SEWER APPURTENANCES DETAILS



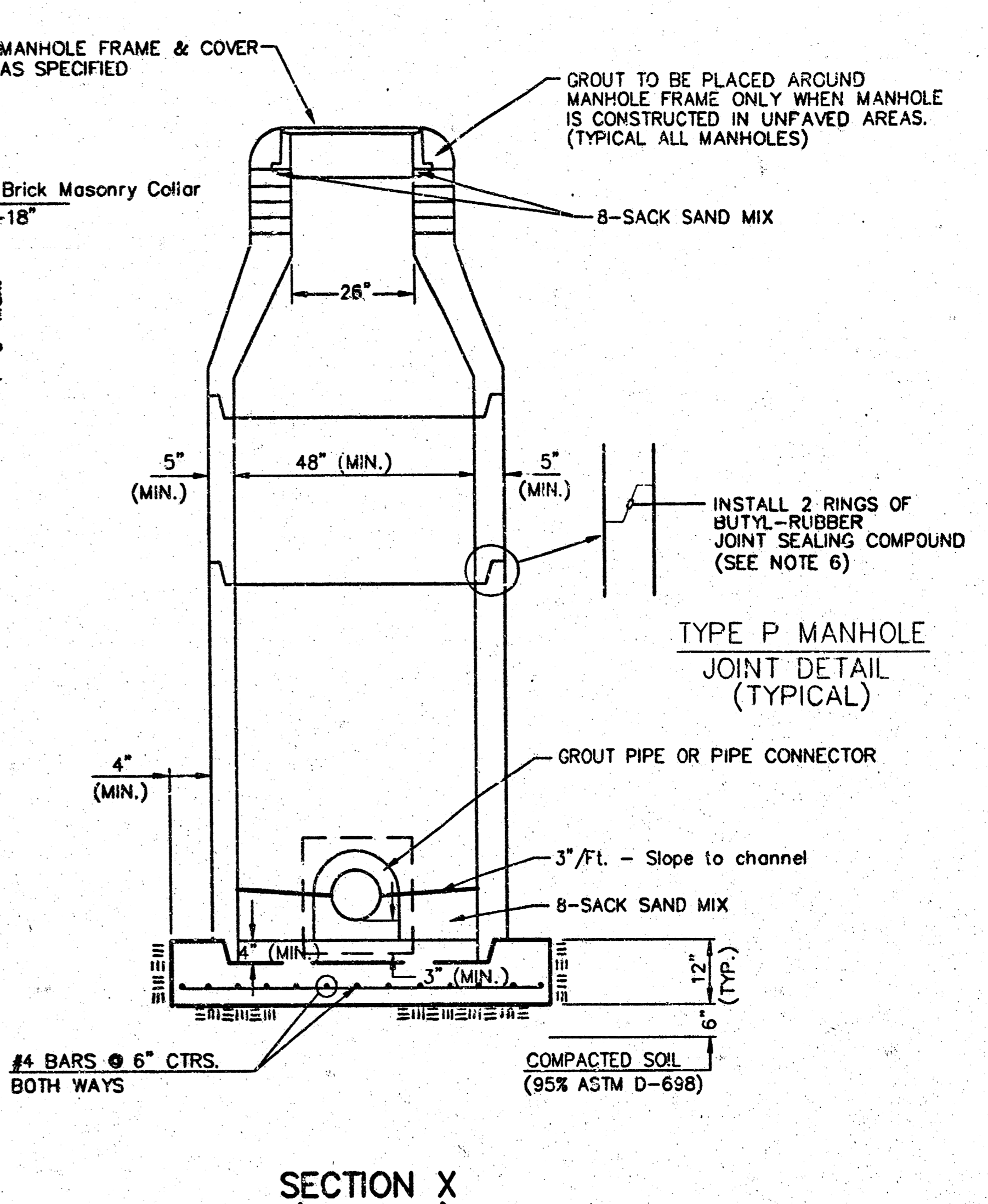
**TYPE P
STANDARD MANHOLE**



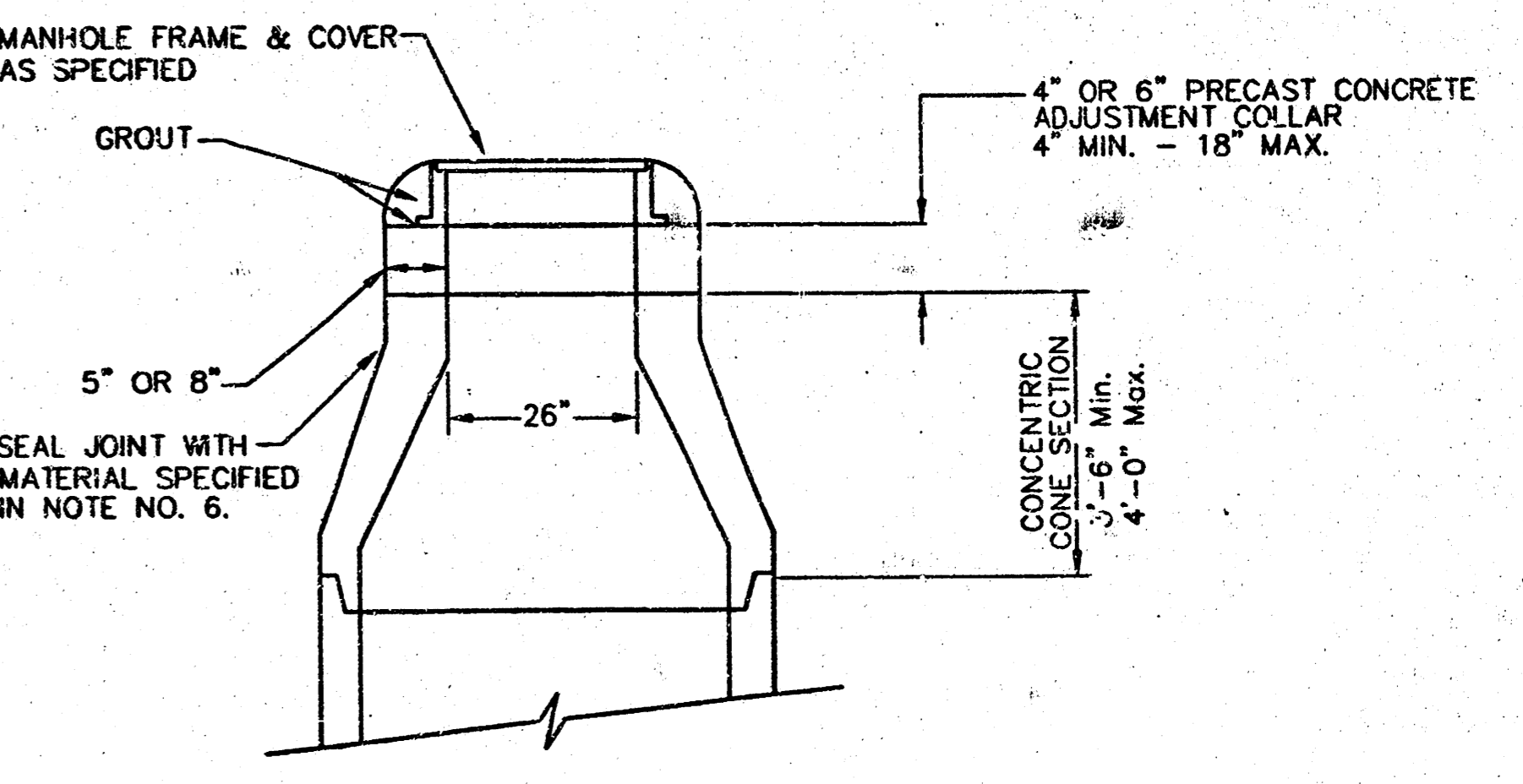
**TYPE P
INSIDE DROP MANHOLE**



**TYPE P
OUTSIDE DROP MANHOLE**



**SECTION X
(TYPICAL)**



**ALTERNATE CONSTRUCTION
IN UNPAVED AREAS**

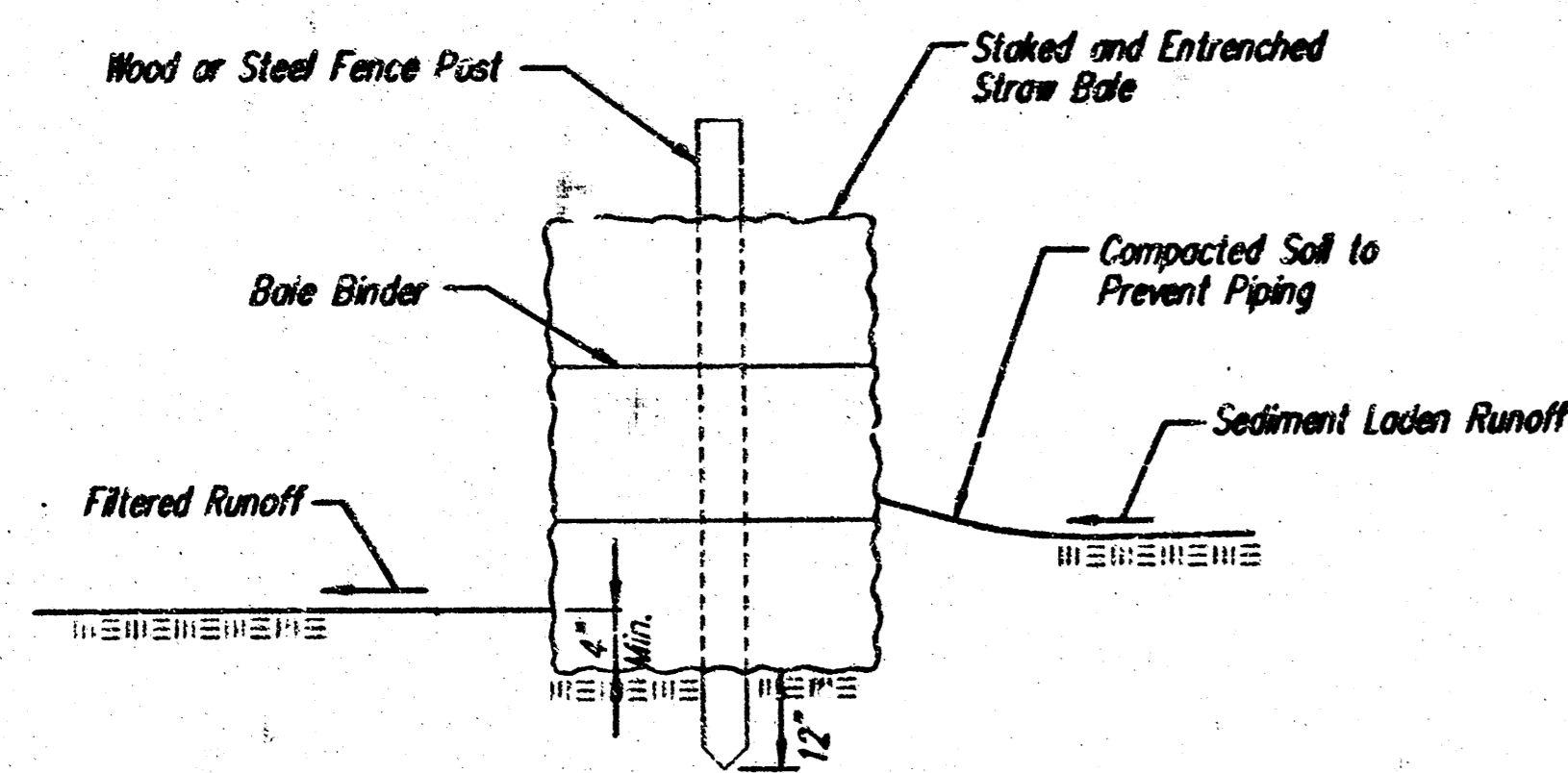
- GENERAL NOTES**
PRECAST MANHOLE NOTES
1. ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISIONS OF A.S.T.M. C478 AS MODIFIED BY THE SPECIFICATIONS.
 2. NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE.
 3. APPROVED FLEXIBLE WATERSTOP GASKETS SHALL BE INSTALLED TO JOIN THE SEWER TO THE MANHOLE WALL WHEN A.B.S. COMPOSITE PIPE OR P.V.C. PIPE IS USED. FOR OTHER TYPES OF PIPE THE SEWER SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT. THE SEWER PIPE SHALL BE SUPPORTED WITH CONCRETE ENCASEMENT A MINIMUM OF 3 FEET FROM THE MANHOLE WALL AND TO THE FIRST JOINT FOR V.C.P. SUCH THAT THE JOINT REMAINS FLEXIBLE.
 4. ALL INSIDE SURFACES OF THE CONCRETE MANHOLE WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE COATED WITH 2 COATS TRENAC SERIES 66 HI-BUILD EPOXYURE, DRY THICKNESS OF 8 MILLS (MIN.).
 5. EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINOUS COATING.
 6. JOINT SEALING COMPOUND SHALL BE KENT SEAL NO. 2 OR APPROVED EQUAL.
 7. PRECAST MANHOLES SHALL BE SET AT LEAST 4 INCHES INTO THE MANHOLE BASE.
 8. TOP OF MANHOLE FLOOR SLAB SHALL BE AT LEAST 3 INCHES BELOW THE FLOW LINE OF THE OUTLET PIPE TO INSURE SUFFICIENT MINIMUM THICKNESS OF SHAPED INVERT.
 9. LIFTING HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AND THE INTERIOR SURFACE COATED AS SPECIFIED.
 10. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 SACKS OF CEMENT PER CUBIC YARD. CONCRETE USED IN MANHOLE BASES SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE FOR CONCRETE PAVING CONSTRUCTION AS SPECIFIED IN THE CITY STANDARD PAVING SPECIFICATIONS USING CITY CONCRETE PAVEMENT MIX WITHOUT AIR ENTRAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE RING AS SHOWN ON THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED IN UNPAVED AREAS. MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE SMALLER THAN 24" SHALL HAVE AN INSIDE DIAMETER OF 4". MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE 24" OR LARGER SHALL HAVE AN INSIDE DIAMETER OF 5". COMPLETED MANHOLE SHALL BE WITHOUT LEAKS AND WATER TIGHT.

11. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASES AND SHALL CONSIST OF NO. 4 BARS PLACED ON 6" CENTERS IN BOTH DIRECTIONS. THE MANHOLE BASE REINFORCEMENT SHALL BE PLACED AT LEAST 3" ABOVE THE BOTTOM OF THE MANHOLE BASE. ALL COSTS FOR FURNISHING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.
12. OPENINGS SHALL BE CUT INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED ON EXISTING MANHOLES. SUCH OPENINGS CUT INTO EXISTING MANHOLES SHALL BE AS SMALL AS PRACTICAL TO FACILITATE INSTALLING AND GROUTING THE NEW PIPE IN PLACE. WATERSTOP GASKETS SHALL BE USED WITH P.V.C. AND A.B.S. COMPOSITE PIPE. THE NEW PIPE SHALL BE GROUTED INTO THE OPENING USING AN APPROVED NON-SHRINK GROUT FOR THE FULL MANHOLE WALL THICKNESS. THE EXTERIOR OF THE COMPLETED CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT. FLOOR OF MANHOLE SHALL BE MODIFIED TO FORM NEW FLOW CHANNEL FOR THE NEW CONNECTION AS INDICATED BY THE DRAWING. THIS WORK, INCLUDING MODIFICATION OF MANHOLE FLOOR, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR OUTSIDE DROP STACK CONSTRUCTED ON EXISTING MANHOLE.
13. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT THE MANHOLES WILL BE SELF CLEANING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWAGE FLOWS THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLOW CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM HALVES OF THE INFLOWING PIPES AND THE OUTFLOWING PIPE AS SHOWN BY THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLOW CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWING. MANHOLE FLOORS SHALL HAVE SLOPES OF 3 INCHES PER FOOT IN THE AREAS OUTSIDE OF THE FLOW CHANNELS SLOPED TOWARD THE FLOW CHANNELS. PIPES LAID THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO NEAT LINES FOR THE FULL INSIDE DIAMETER OF THE MANHOLE. MANHOLE FLOORS SHALL THEN BE SHAPED AROUND THE BOTTOM HALF OF THE PIPE WHICH FORMS THE FLOW CHANNEL.
14. PIPES INSTALLED WITHIN THE EXCAVATION MADE FOR THE MANHOLE SHALL BE CHADDED WITH CONCRETE TO THE LIMITS OF THE MANHOLE EXCAVATION. WHEN CLAY PIPE IS USED, THE CRADLE SHALL EXTEND TO THE FIRST JOINT OUTSIDE THE MANHOLE. THE CRADLE SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE FLEXIBILITY OF THE JOINT. COST OF CRADLE WITHIN MANHOLE EXCAVATION OR TO CLAY PIPE JOINTS ADJACENT TO MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

15. MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.
16. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 2' FOR INFLOWING PIPES SIZED 12" OR SMALLER AND 2' FOR INFLOWING PIPES LARGER THAN 12". THE CROWNS OF INFLOWING PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTFLOWING PIPE.
17. STANDARD MANHOLES AND STANDARD INSIDE DROP MANHOLES SHALL BE BID AS STANDARD MANHOLES FOR THE TYPE AND DIAMETER INDICATED. OUTSIDE DROP MANHOLES SHALL BE BID AS STANDARD OUTSIDE DROP MANHOLES FOR THE TYPE AND DIAMETER INDICATED. ALL MANHOLE DIAMETERS WILL BE 4' UNLESS INDICATED OTHERWISE.
18. A BRICK MASONRY COLLAR SHALL BE INSTALLED BETWEEN THE CAST IRON FRAME AND THE CONCENTRIC CONE. THE COLLAR WILL HAVE 8" WALLS AND A VERTICAL HEIGHT OF 6" MINIMUM AND 18" MAXIMUM. A 1" COAT OF MORTAR WILL BE PLASTERED ON THE OUTSIDE OF THE COLLAR. THE USE OF PRE-CAST CONCRETE SPACERS FOR MANHOLE TOP ADJUSTMENT IS ALSO ALLOWED.

19. GROUT TO BE PLACED AROUND MANHOLE FRAME ONLY WHEN MANHOLE IS CONSTRUCTED IN UNPAVED AREAS. (TYPICAL ALL MANHOLES)
20. 8-SACK SAND MIX
21. INSTALL 2 RINGS OF BUTYL-RUBBER JOINT SEALING COMPOUND (SEE NOTE 6)
22. TYPE P MANHOLE JOINT DETAIL (TYPICAL)
23. GROUT PIPE OR PIPE CONNECTOR
24. 3"/FT. - Slope to channel
25. 8-SACK SAND MIX
26. 4" (MIN.)
27. 3" (MIN.)
28. 5" (MIN.)
29. 48" (MIN.)
30. 5" (MIN.)
31. 26"
32. 1" Coat of Mortar (Typical)
33. 8" Brick Masonry Collar
34. 6"-18"
35. CONCENTRIC CONE SECTION
36. 3"-6" Min. 4"-10" Max.
37. 26"
38. 1" Coat of Mortar (Typical)
39. 8" Brick Masonry Collar
40. 6"-18"
41. CONCENTRIC CONE SECTION
42. 3"-6" Min. 4"-10" Max.
43. 26"
44. 1" Coat of Mortar (Typical)
45. 8" Brick Masonry Collar
46. 6"-18"
47. CONCENTRIC CONE SECTION
48. 3"-6" Min. 4"-10" Max.
49. 26"
50. 1" Coat of Mortar (Typical)
51. 8" Brick Masonry Collar
52. 6"-18"
53. CONCENTRIC CONE SECTION
54. 3"-6" Min. 4"-10" Max.
55. 26"
56. 1" Coat of Mortar (Typical)
57. 8" Brick Masonry Collar
58. 6"-18"
59. CONCENTRIC CONE SECTION
60. 3"-6" Min. 4"-10" Max.
61. 26"
62. 1" Coat of Mortar (Typical)
63. 8" Brick Masonry Collar
64. 6"-18"
65. CONCENTRIC CONE SECTION
66. 3"-6" Min. 4"-10" Max.
67. 26"
68. 1" Coat of Mortar (Typical)
69. 8" Brick Masonry Collar
70. 6"-18"
71. CONCENTRIC CONE SECTION
72. 3"-6" Min. 4"-10" Max.
73. 26"
74. 1" Coat of Mortar (Typical)
75. 8" Brick Masonry Collar
76. 6"-18"
77. CONCENTRIC CONE SECTION
78. 3"-6" Min. 4"-10" Max.
79. 26"
80. 1" Coat of Mortar (Typical)
81. 8" Brick Masonry Collar
82. 6"-18"
83. CONCENTRIC CONE SECTION
84. 3"-6" Min. 4"-10" Max.
85. 26"
86. 1" Coat of Mortar (Typical)
87. 8" Brick Masonry Collar
88. 6"-18"
89. CONCENTRIC CONE SECTION
90. 3"-6" Min. 4"-10" Max.
91. 26"
92. 1" Coat of Mortar (Typical)
93. 8" Brick Masonry Collar
94. 6"-18"
95. CONCENTRIC CONE SECTION
96. 3"-6" Min. 4"-10" Max.
97. 26"
98. 1" Coat of Mortar (Typical)
99. 8" Brick Masonry Collar
100. 6"-18"
101. CONCENTRIC CONE SECTION
102. 3"-6" Min. 4"-10" Max.
103. 26"
104. 1" Coat of Mortar (Typical)
105. 8" Brick Masonry Collar
106. 6"-18"
107. CONCENTRIC CONE SECTION
108. 3"-6" Min. 4"-10" Max.
109. 26"
110. 1" Coat of Mortar (Typical)
111. 8" Brick Masonry Collar
112. 6"-18"
113. CONCENTRIC CONE SECTION
114. 3"-6" Min. 4"-10" Max.
115. 26"
116. 1" Coat of Mortar (Typical)
117. 8" Brick Masonry Collar
118. 6"-18"
119. CONCENTRIC CONE SECTION
120. 3"-6" Min. 4"-10" Max.
121. 26"
122. 1" Coat of Mortar (Typical)
123. 8" Brick Masonry Collar
124. 6"-18"
125. CONCENTRIC CONE SECTION
126. 3"-6" Min. 4"-10" Max.
127. 26"
128. 1" Coat of Mortar (Typical)
129. 8" Brick Masonry Collar
130. 6"-18"
131. CONCENTRIC CONE SECTION
132. 3"-6" Min. 4"-10" Max.
133. 26"
134. 1" Coat of Mortar (Typical)
135. 8" Brick Masonry Collar
136. 6"-18"
137. CONCENTRIC CONE SECTION
138. 3"-6" Min. 4"-10" Max.
139. 26"
140. 1" Coat of Mortar (Typical)
141. 8" Brick Masonry Collar
142. 6"-18"
143. CONCENTRIC CONE SECTION
144. 3"-6" Min. 4"-10" Max.
145. 26"
146. 1" Coat of Mortar (Typical)
147. 8" Brick Masonry Collar
148. 6"-18"
149. CONCENTRIC CONE SECTION
150. 3"-6" Min. 4"-10" Max.
151. 26"
152. 1" Coat of Mortar (Typical)
153. 8" Brick Masonry Collar
154. 6"-18"
155. CONCENTRIC CONE SECTION
156. 3"-6" Min. 4"-10" Max.
157. 26"
158. 1" Coat of Mortar (Typical)
159. 8" Brick Masonry Collar
160. 6"-18"
161. CONCENTRIC CONE SECTION
162. 3"-6" Min. 4"-10" Max.
163. 26"
164. 1" Coat of Mortar (Typical)
165. 8" Brick Masonry Collar
166. 6"-18"
167. CONCENTRIC CONE SECTION
168. 3"-6" Min. 4"-10" Max.
169. 26"
170. 1" Coat of Mortar (Typical)
171. 8" Brick Masonry Collar
172. 6"-18"
173. CONCENTRIC CONE SECTION
174. 3"-6" Min. 4"-10" Max.
175. 26"
176. 1" Coat of Mortar (Typical)
177. 8" Brick Masonry Collar
178. 6"-18"
179. CONCENTRIC CONE SECTION
180. 3"-6" Min. 4"-10" Max.
181. 26"
182. 1" Coat of Mortar (Typical)
183. 8" Brick Masonry Collar
184. 6"-18"
185. CONCENTRIC CONE SECTION
186. 3"-6" Min. 4"-10" Max.
187. 26"
188. 1" Coat of Mortar (Typical)
189. 8" Brick Masonry Collar
190. 6"-18"
191. CONCENTRIC CONE SECTION
192. 3"-6" Min. 4"-10" Max.
193. 26"
194. 1" Coat of Mortar (Typical)
195. 8" Brick Masonry Collar
196. 6"-18"
197. CONCENTRIC CONE SECTION
198. 3"-6" Min. 4"-10" Max.
199. 26"
200. 1" Coat of Mortar (Typical)
201. 8" Brick Masonry Collar
202. 6"-18"
203. CONCENTRIC CONE SECTION
204. 3"-6" Min. 4"-10" Max.
205. 26"
206. 1" Coat of Mortar (Typical)
207. 8" Brick Masonry Collar
208. 6"-18"
209. CONCENTRIC CONE SECTION
210. 3"-6" Min. 4"-10" Max.
211. 26"
212. 1" Coat of Mortar (Typical)
213. 8" Brick Masonry Collar
214. 6"-18"
215. CONCENTRIC CONE SECTION
216. 3"-6" Min. 4"-10" Max.
217. 26"
218. 1" Coat of Mortar (Typical)
219. 8" Brick Masonry Collar
220. 6"-18"
221. CONCENTRIC CONE SECTION
222. 3"-6" Min. 4"-10" Max.
223. 26"
224. 1" Coat of Mortar (Typical)
225. 8" Brick Masonry Collar
226. 6"-18"
227. CONCENTRIC CONE SECTION
228. 3"-6" Min. 4"-10" Max.
229. 26"
230. 1" Coat of Mortar (Typical)
231. 8" Brick Masonry Collar
232. 6"-18"
233. CONCENTRIC CONE SECTION
234. 3"-6" Min. 4"-10" Max.
235. 26"
236. 1" Coat of Mortar (Typical)
237. 8" Brick Masonry Collar
238. 6"-18"
239. CONCENTRIC CONE SECTION
240. 3"-6" Min. 4"-10" Max.
241. 26"
242. 1" Coat of Mortar (Typical)
243. 8" Brick Masonry Collar
244. 6"-18"
245. CONCENTRIC CONE SECTION
246. 3"-6" Min. 4"-10" Max.
247. 26"
248. 1" Coat of Mortar (Typical)
249. 8" Brick Masonry Collar
250. 6"-18"
251. CONCENTRIC CONE SECTION
252. 3"-6" Min. 4"-10" Max.
253. 26"
254. 1" Coat of Mortar (Typical)
255. 8" Brick Masonry Collar
256. 6"-18"
257. CONCENTRIC CONE SECTION
258. 3"-6" Min. 4"-10" Max.
259. 26"
260. 1" Coat of Mortar (Typical)
261. 8" Brick Masonry Collar
262. 6"-18"
263. CONCENTRIC CONE SECTION
264. 3"-6" Min. 4"-10" Max.
265. 26"
266. 1" Coat of Mortar (Typical)
267. 8" Brick Masonry Collar
268. 6"-18"
269. CONCENTRIC CONE SECTION
270. 3"-6" Min. 4"-10" Max.
271. 26"
272. 1" Coat of Mortar (Typical)
273. 8" Brick Masonry Collar
274. 6"-18"
275. CONCENTRIC CONE SECTION
276. 3"-6" Min. 4"-10" Max.
277. 26"
278. 1" Coat of Mortar (Typical)
279. 8" Brick Masonry Collar
280. 6"-18"
281. CONCENTRIC CONE SECTION
282. 3"-6" Min. 4"-10" Max.
283. 26"
284. 1" Coat of Mortar (Typical)
285. 8" Brick Masonry Collar
286. 6"-18"
287. CONCENTRIC CONE SECTION
288. 3"-6" Min. 4"-10" Max.
289. 26"
290. 1" Coat of Mortar (Typical)
291. 8" Brick Masonry Collar
292. 6"-18"
293. CONCENTRIC CONE SECTION
294. 3"-6" Min. 4"-10" Max.
295. 26"
296. 1" Coat of Mortar (Typical)
297. 8" Brick Masonry Collar
298. 6"-18"
299. CONCENTRIC CONE SECTION
300. 3"-6" Min. 4"-10" Max.
301. 26"
302. 1" Coat of Mortar (Typical)
303. 8" Brick Masonry Collar
304. 6"-18"
305. CONCENTRIC CONE SECTION
306. 3"-6" Min. 4"-10" Max.
307. 26"
308. 1" Coat of Mortar (Typical)
309. 8" Brick Masonry Collar
310. 6"-18"
311. CONCENTRIC CONE SECTION
312. 3"-6" Min. 4"-10" Max.
313. 26"
314. 1" Coat of Mortar (Typical)
315. 8" Brick Masonry Collar
316. 6"-18"
317. CONCENTRIC CONE SECTION
318. 3"-6" Min. 4"-10" Max.
319. 26"
320. 1" Coat of Mortar (Typical)
321. 8" Brick Masonry Collar
322. 6"-18"
323. CONCENTRIC CONE SECTION
324. 3"-6" Min. 4"-10" Max.
325. 26"
326. 1" Coat of Mortar (Typical)
327. 8" Brick Masonry Collar
328. 6"-18"
329. CONCENTRIC CONE SECTION
330. 3"-6" Min. 4"-10" Max.
331. 26"
332. 1" Coat of Mortar (Typical)
333. 8" Brick Masonry Collar
334. 6"-18"
335. CONCENTRIC CONE SECTION
336. 3"-6" Min. 4"-10" Max.
337. 26"
338. 1" Coat of Mortar (Typical)
339. 8" Brick Masonry Collar
340. 6"-18"
341. CONCENTRIC CONE SECTION
342. 3"-6" Min. 4"-10" Max.
343. 26"
344. 1" Coat of Mortar (Typical)
345. 8" Brick Masonry Collar
346. 6"-18"
347. CONCENTRIC CONE SECTION
348. 3"-6" Min. 4"-10" Max.
349. 26"
350. 1" Coat of Mortar (Typical)
351. 8" Brick Masonry Collar
352. 6"-18"
353. CONCENTRIC CONE SECTION
354. 3"-6" Min. 4"-10" Max.
355. 26"
356. 1" Coat of Mortar (Typical)
357. 8" Brick Masonry Collar
358. 6"-18"
359. CONCENTRIC CONE SECTION
360. 3"-6" Min. 4"-10" Max.
361. 26"
362. 1" Coat of Mortar (Typical)
363. 8" Brick Masonry Collar
364. 6"-18"
365. CONCENTRIC CONE SECTION
366. 3"-6" Min. 4"-10" Max.
367. 26"
368. 1" Coat of Mortar (Typical)
369. 8" Brick Masonry Collar
370. 6"-18"
371. CONCENTRIC CONE SECTION
372. 3"-6" Min. 4"-10" Max.
373. 26"
374. 1" Coat of Mortar (Typical)
375. 8" Brick Masonry Collar
376. 6"-18"
377. CONCENTRIC CONE SECTION
378. 3"-6" Min. 4"-10" Max.
379. 26"
380. 1" Coat of Mortar (Typical)
381. 8" Brick Masonry Collar
382. 6"-18"
383. CONCENTRIC CONE SECTION
384. 3"-6" Min. 4"-10" Max.
385. 26"
386. 1" Coat of Mortar (Typical)
387. 8" Brick Masonry Collar
388. 6"-18"
389. CONCENTRIC CONE SECTION
390. 3"-6" Min. 4"-10" Max.
391. 26"
392. 1" Coat of Mortar (Typical)
393. 8" Brick Masonry Collar
394. 6"-18"
395. CONCENTRIC CONE SECTION
396. 3"-6" Min. 4"-10" Max.
397. 26"
398. 1" Coat of Mortar (Typical)
399. 8" Brick Masonry Collar
400. 6"-18"

		CITY OF WICHITA, KANSAS	
		STANDARD MANHOLE DETAILS SEWER APPURTENANCES DETAILS	
Baughman Company, P.A. 315 8th St. Wichita, KS 67211 F 316-262-7271 F 316-262-0149 PROJECT NUMBER: 1505 PPS (607861) SURVEYING PLANNING LANDSCAPE ARCHITECTURE		DESIGN STAFF	DRAWN STAFF
REVISIONS:		APPROVED	DATE
		SCALE	NONE
		SHEET	3 OF 9
L:\Drawings\607861\Drawings			



STRAW BALE BARRIERS

Material Specification:

Bale slope barriers may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.

When practicable, bale slope barriers should be placed along contours to avoid a concentration of flow. Bale slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 4" deep and a bale's width wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.

Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upslope side of the check and compact it. The compacted soil should be no more than 3" to 4" deep.

List of common placement/installation mistakes to avoid:

When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the barrier fails.

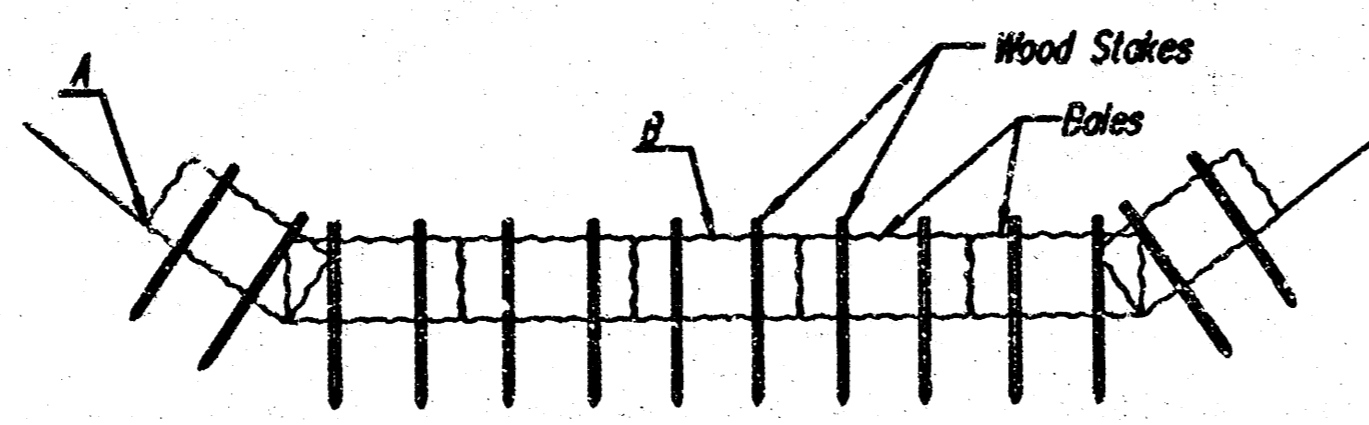
Do not place bale slope barriers in areas with shallow soils underlain by rock. If the barrier is not anchored sufficiently, it will wash out. Bale slope barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:

Bale slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the slope barrier?

NOTE: Point A must be higher than Point B so that water flows over the bales and not around them.



STRAW BALE DITCH CHECKS

Material Specification:

Bale ditch checks may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Optional: The downstream scour apron should be constructed of a double-nitted straw erosion-control blanket at least 6' wide. Optional: The metal landscape staples used to anchor the erosion-control blanket should be at least 8" long.

Placement:

Bale ditch checks should be placed perpendicular to the flowline of the ditch. The ditch check should extend far enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. This prevents water from flowing around the check.

Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead.

Bales should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used. The following table provides check spacing for a given ditch grade:

Ditch Check Spacing (%)	Check Spacing (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

Proper installation method:

Excavate a trench perpendicular to the ditch flowline that is 4" deep and a bale's width wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench—it will be used later.

Optional: On the downstream side of the trench, roll out a length of erosion-control blanket (scour apron) equal to the length of the trench. Place the upstream edge of the erosion-control blanket along the bottom upstream edge of the trench. The erosion control blanket should be anchored in the trench with one row of 8" landscape staples placed on 18" centers. The remainder of the erosion-control blanket (the portion that is not lying in the trench) will serve as the downstream scour apron. This section of the blanket should be anchored to the ground with 8" landscape staples placed around the perimeter of the blanket on 18" centers. The remainder of the blanket should be anchored using two evenly spaced rows of 8" landscape staples on 18" centers placed perpendicular to the flowline of the ditch.

Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upstream side of the check and compact it. The compacted soil should be no more than 3" to 4" deep and extend upstream no more than 24".

List of common placement/installation mistakes to avoid:

Do not place a bale ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow.

Do not place bale ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow.

Follow prescribed ditch-check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks.

Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the check is higher than the top of the lowest center bale.

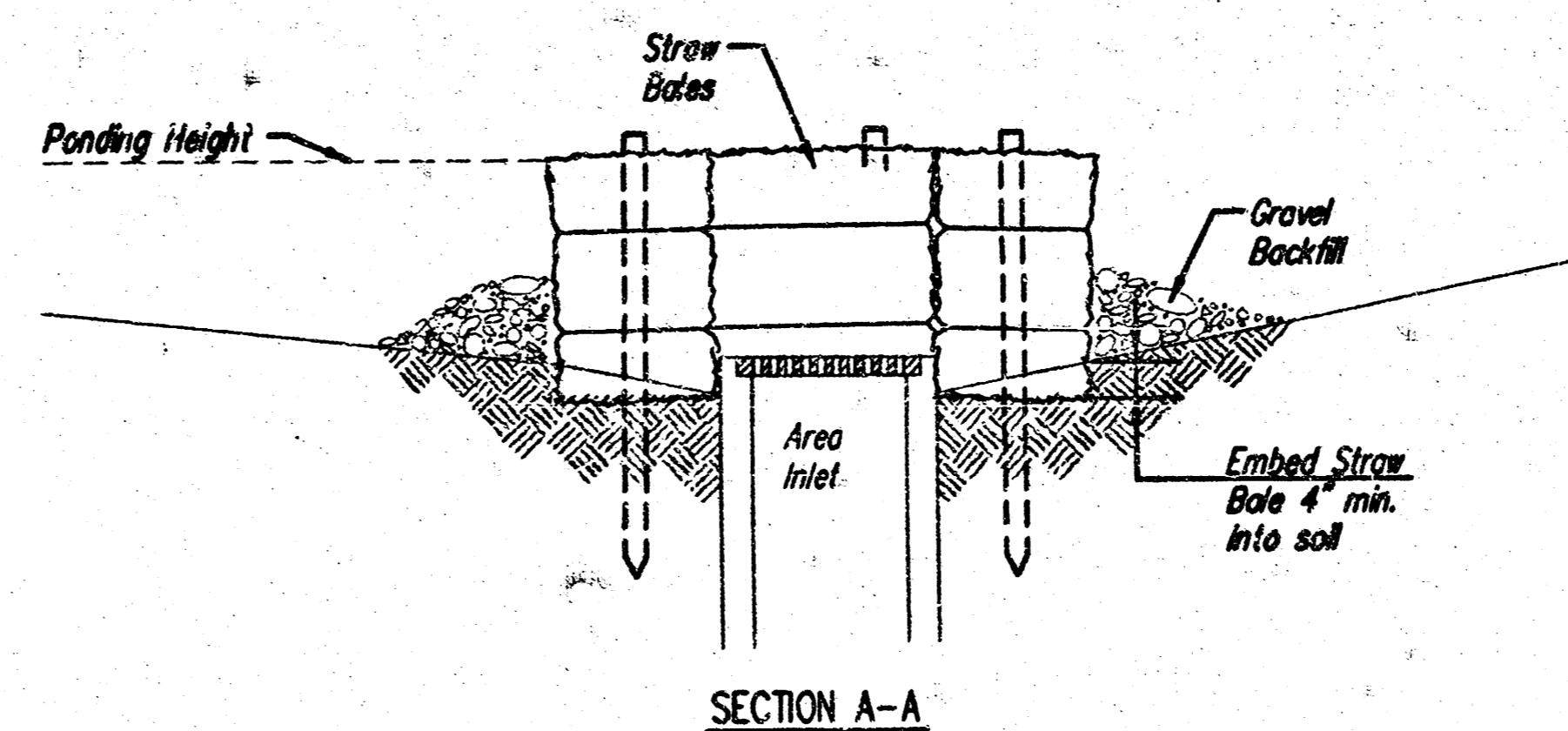
Do not place bale ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.

Bale ditch checks must be dug into the ground. Bales at ground level do not work because they allow water to flow under the check.

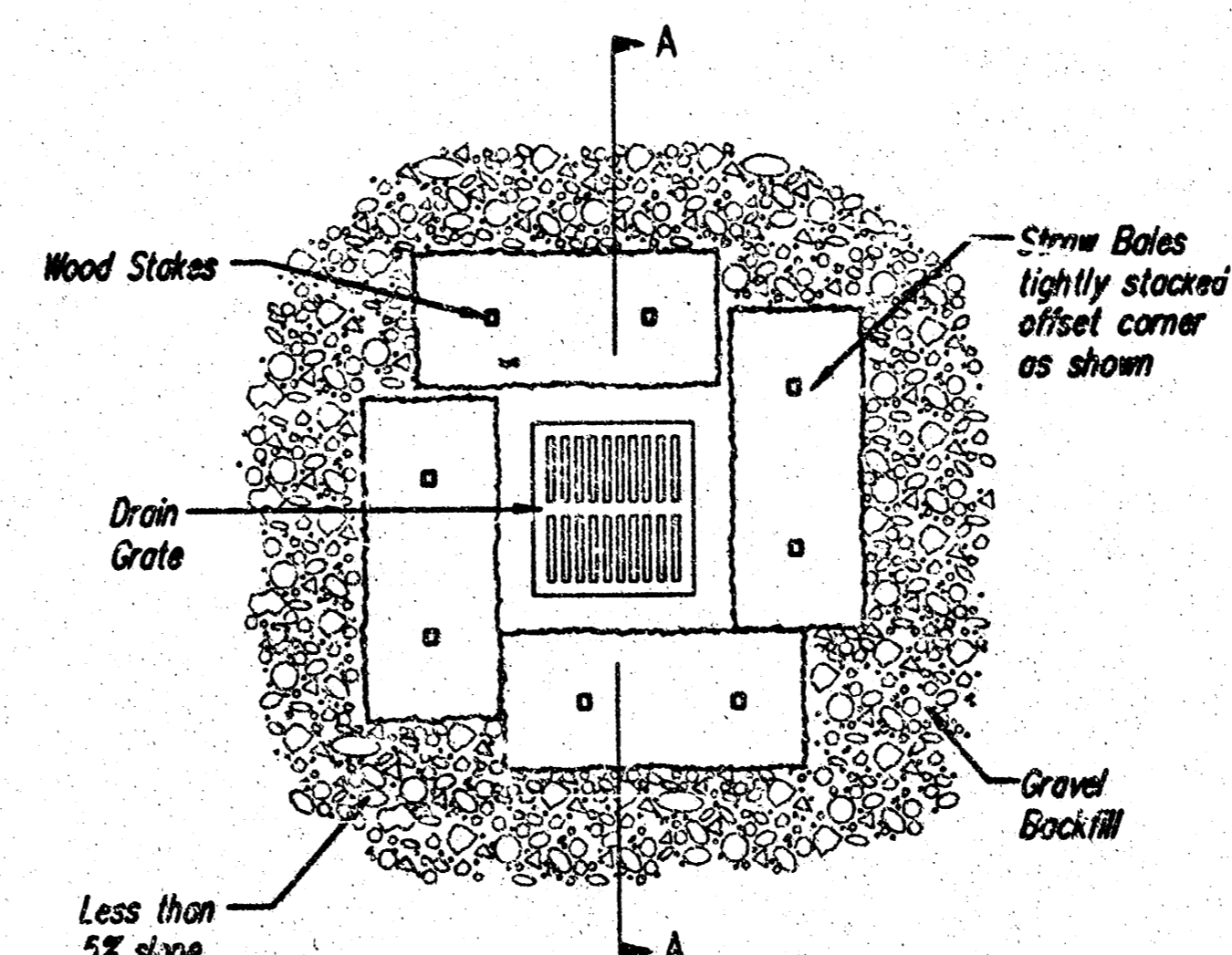
Inspection and Maintenance:

Bale ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does water flow through spaces between abutting bales?
- Are any bales and/or scour aprons (optional) dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the ditch check?



SECTION A-A



STRAW BALE BARRIERS FOR AREA INLETS (INLET PROTECTION)

Material Specification:

Bale area inlet barriers should be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture.

The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

Bale area inlet barriers should be placed directly around the perimeter of a drop inlet. When a bale area inlet barrier is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

Proper Installation Method:

Excavate a trench around the perimeter of the area inlet that is at least 4" deep by a bale's width wide.

Place the bales in the trench, making sure that they are butted tightly. Some bales may need to be shortened to fit into the trench around the area inlet. Two stakes should be driven through each bale, approximately 6" to 8" in from the bale ends.

Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the receiving side of the barrier and compact it. The compacted soil should be no more than 3" to 4" deep.

Note: When a bale area inlet barrier is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

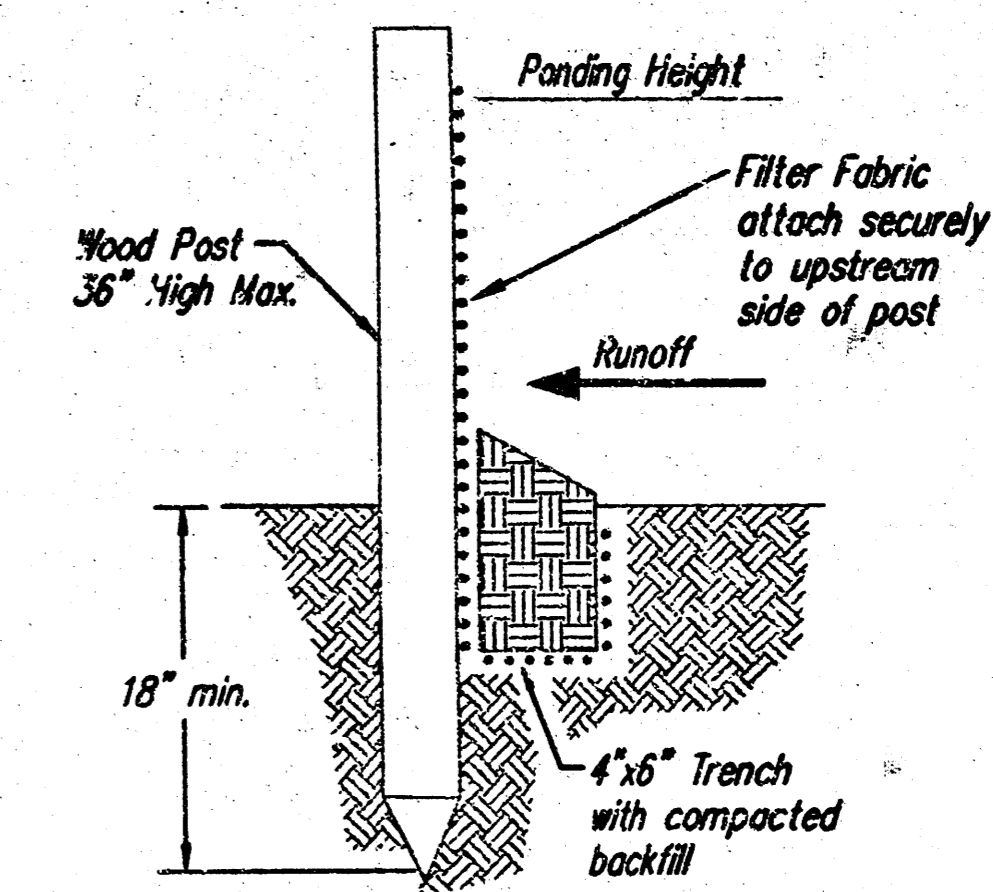
List of common placement/installation mistakes to avoid:

Bales should be placed directly against the perimeter of the area inlet. This allows overtopping water to flow directly into the inlet instead of onto nearby soil causing scour. Bale area inlet barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:

Bale area inlet barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the area inlet barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the area inlet barrier?



SILT FENCE BARRIERS

SILT FENCE BARRIERS

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.

When practicable, silt fence slope barriers should be placed along contours to avoid a concentration of flow.

Silt fence slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 6" deep by 4" wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.

Roll out a continuous length of silt fence fabric on the downslope side of the trench. Place the edge of the fabric in the trench starting at the top upslope edge. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt-fence fabric should remain exposed.

Trim the exposed silt fence upslope of the trench to clear an area for driving in the posts. Just downslope of the trench, drive posts into the ground to a depth of at least 18". Place posts no more than 4' apart.

Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

List of common placement/installation mistakes to avoid:

When practicable, do not place silt fence slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. When the flow concentrates, it overtops the barrier and the silt fence slope barrier quickly deteriorates.

Do not place silt-fence posts on the upslope side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail.

Do not place silt fence slope barriers in areas with shallow soils underlain by rock. If the barrier is not sufficiently anchored, it will wash out. Silt fence slope barriers must be dug into the ground—silt fence at ground level does not work because water will flow underneath.

Inspection and Maintenance:

Silt fence slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Do the silt fences sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the slope barrier?

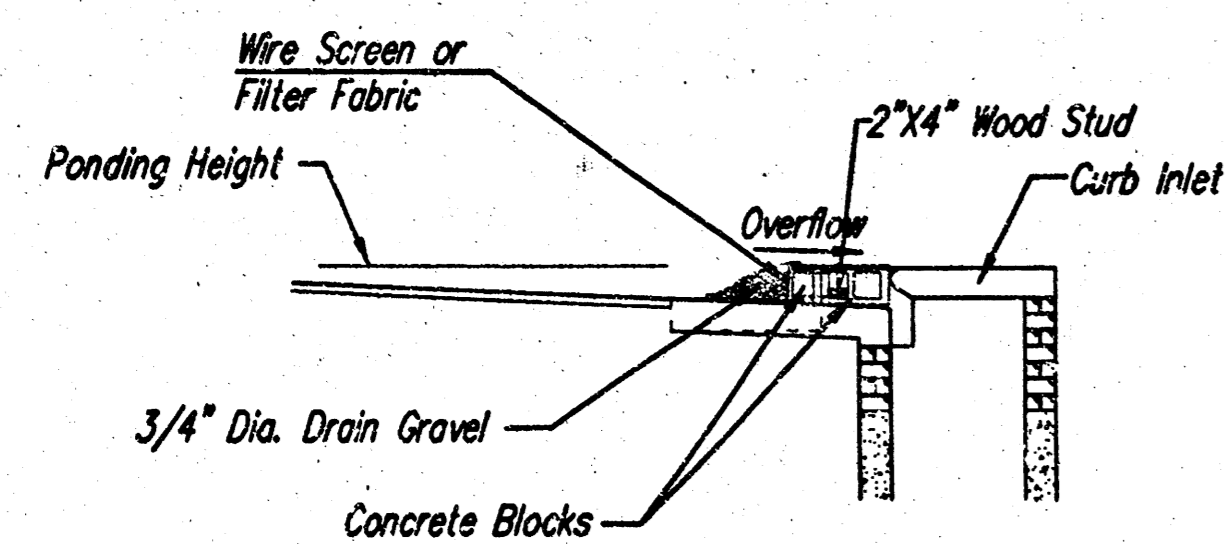
**SOIL EROSION
BMP DETAILS**

CHRISTOPHER M. CARRIER, P.E.
STORM WATER ENGINEER

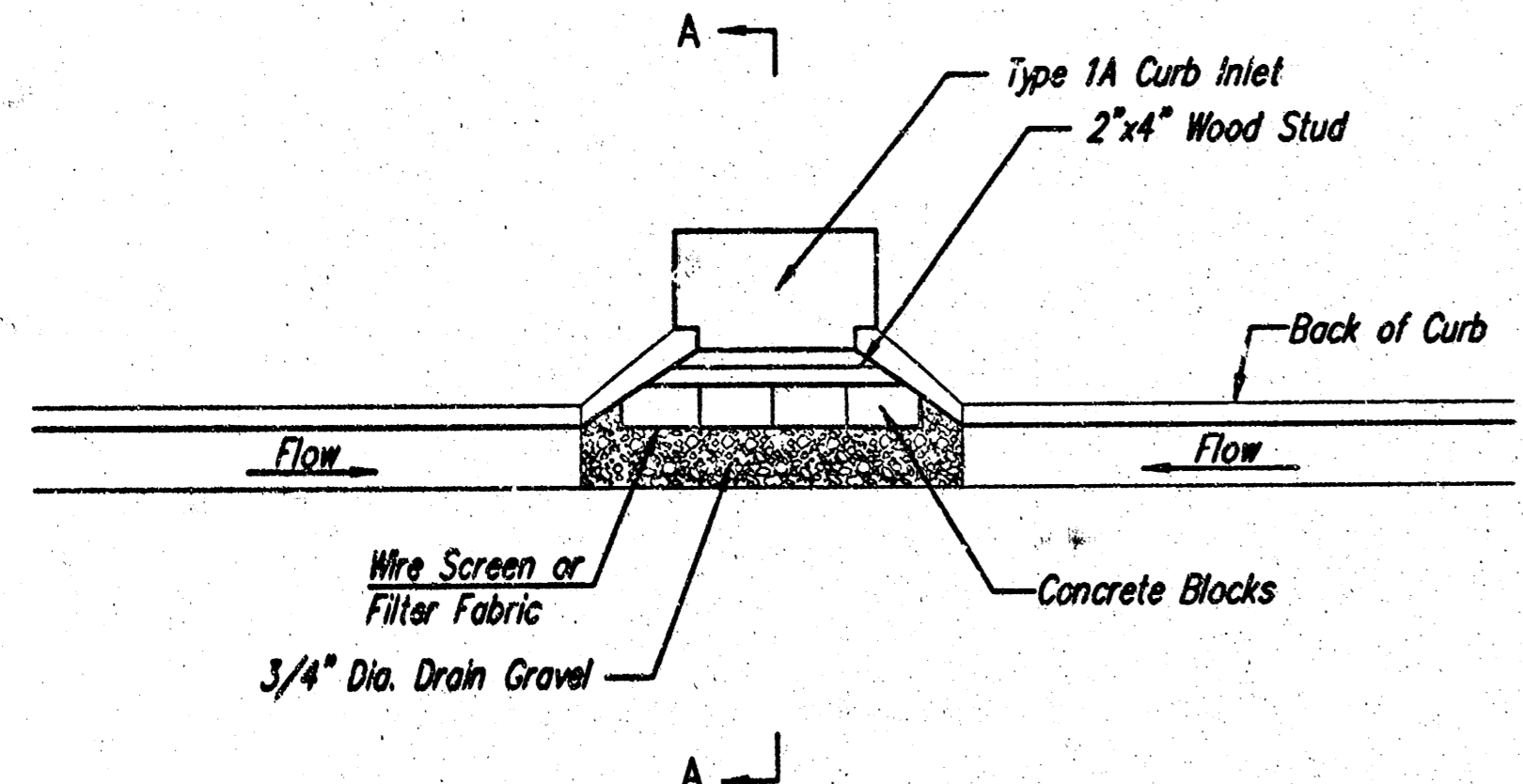
PROJECT NUMBER
1505 PPS (607861)

DATE
JAN 2005

SHEET 5 OF 9



SECTION A-A



CURB INLET GRAVEL FILTERS
(INLET PROTECTION—RESIDENTIAL STREETS ONLY)

NOTE: Other types of curb inlet protection may be approved by the city so long as equal protection is provided.

A gravel inlet filter shall be installed at sump locations on residential streets. This type of protection is not to be used on arterial or collector streets at any time that it would pose an undue traffic hazard.

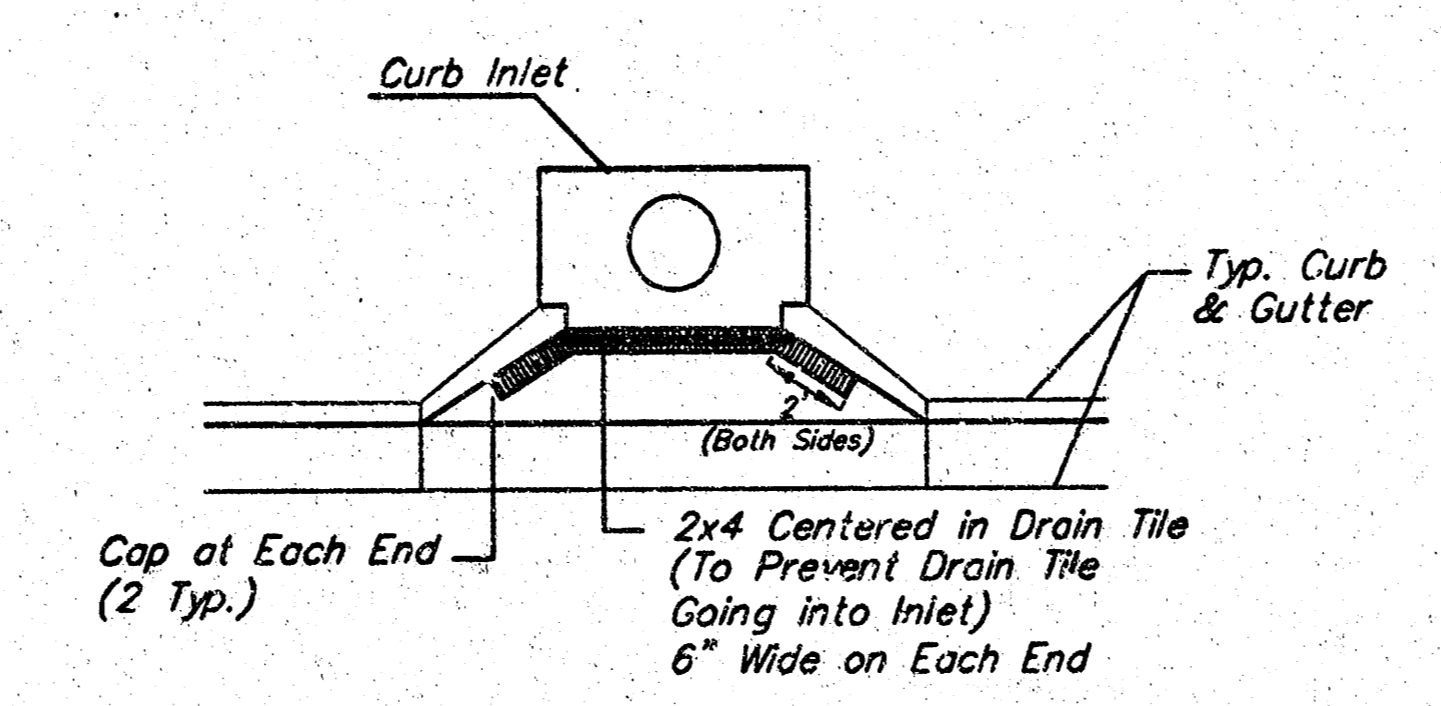
Instructions for Installing:

- STEP 1: Place concrete blocks around the inlet as shown on drawing. Insert 2x4 board as shown.
- STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
- STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
- STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary. An alternative installation is the use of gravel bags supported by a 2"x4" board to prevent collapsing.

Use of rock with diameters smaller than 1" in the bag may result in clogging of pores and reduce the amount of water flowing into an inlet.

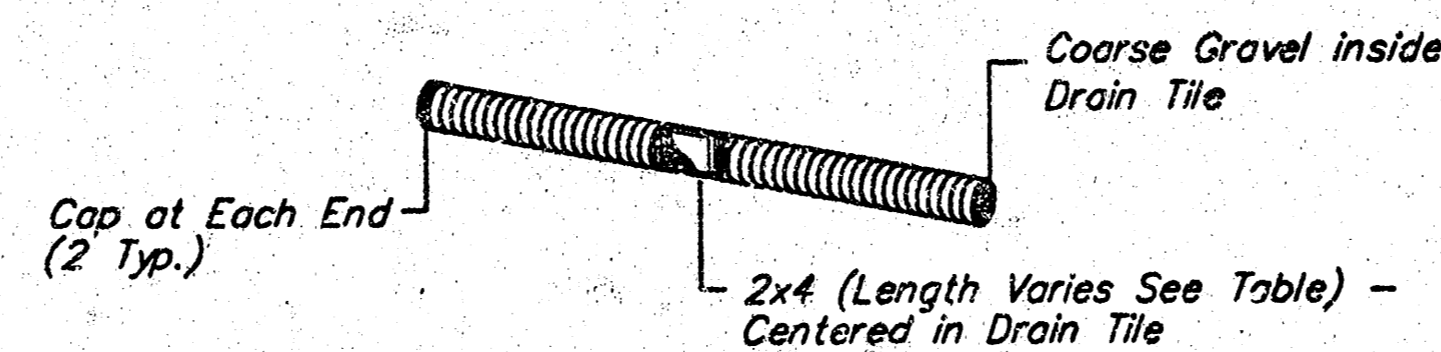
Maintenance:

All curb inlet gravel filters shall be inspected and repaired after each runoff event. Sediment deposits are to be removed once material is within 8 cm (3 inches) of the top of any block. Periodically, the gravel shall be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets.

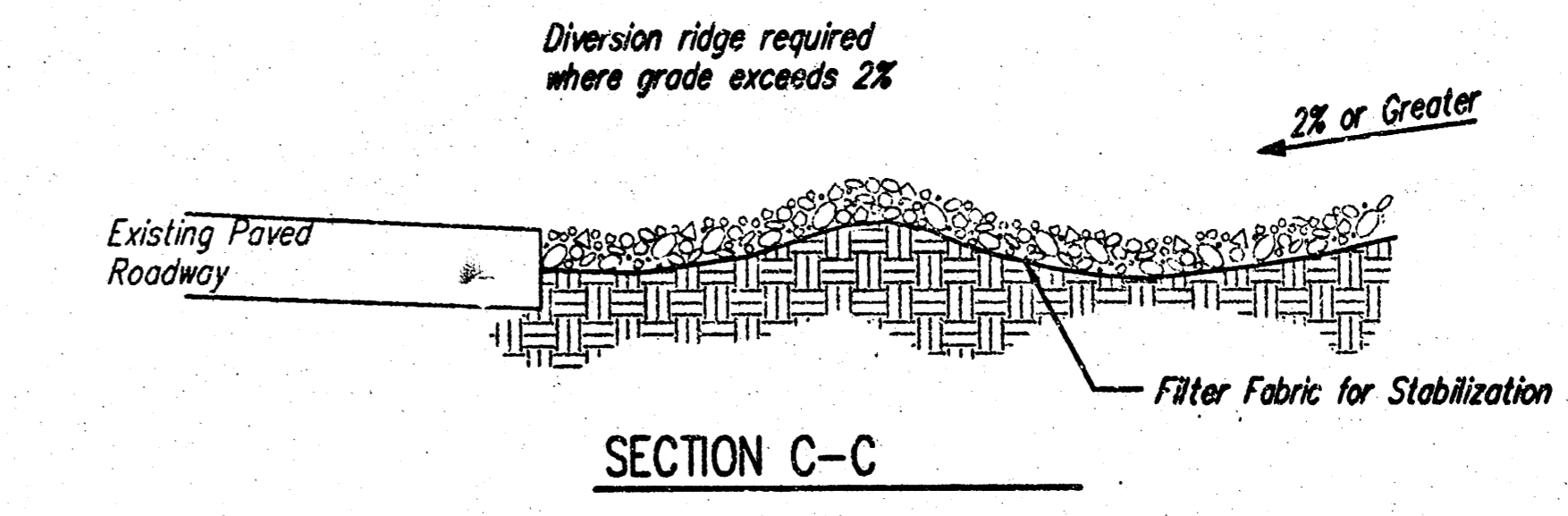


Note: Place 4" perforated PVC pipe filled w/ 1/2"-1" Dia. gravel. Place pipe in front of Curb Inlet as Shown.

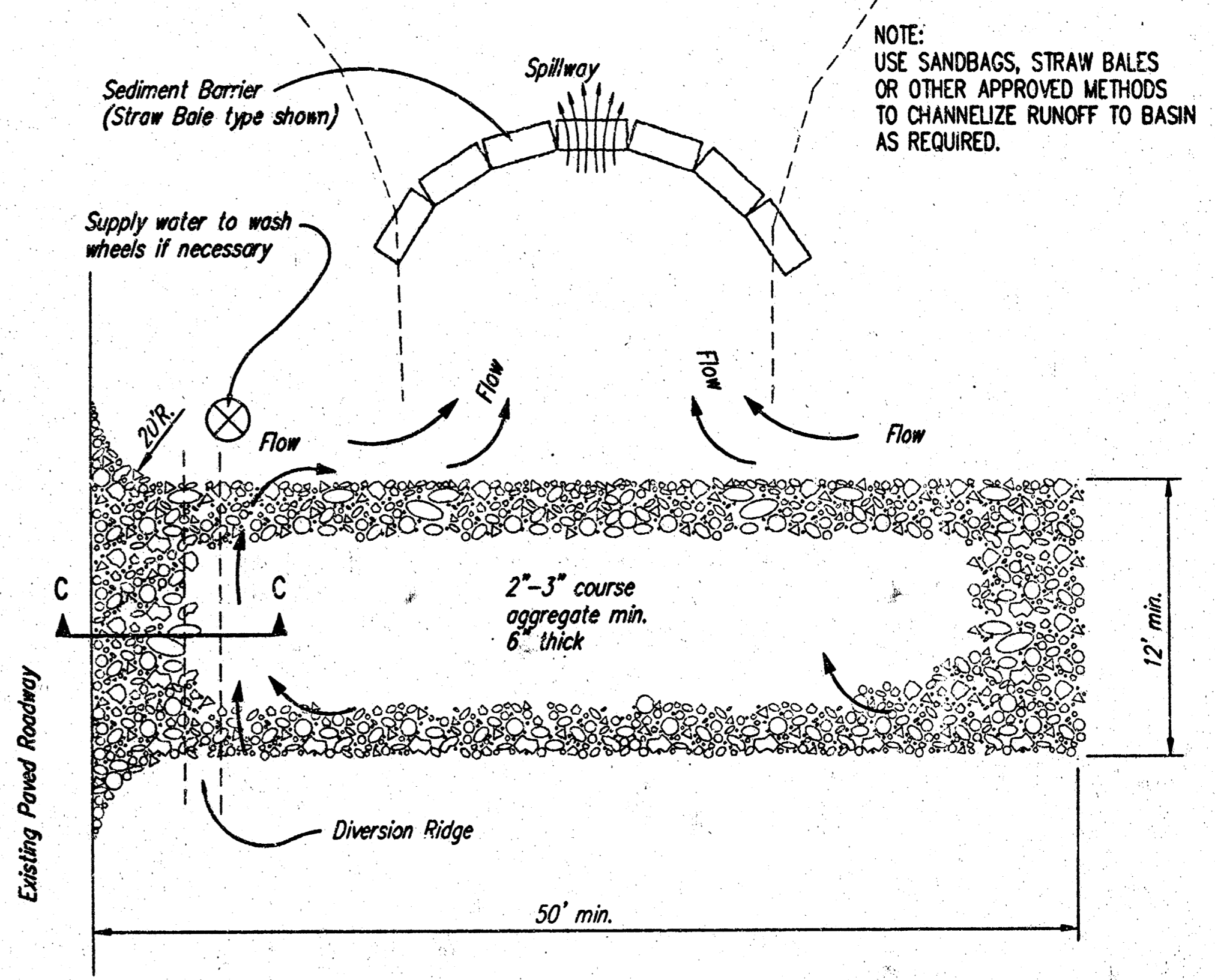
2x4 LENGTH	INLET TYPE	INLET OPENING
5'-6"	1-A	5'-0"
10'-6"	1-A	0'-0"
15'-6"	1-A	15'-0"



CURB INLET PROTECTION
4" Perforated Pipe w/ Gravel



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
4. DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.

CITY OF WICHITA

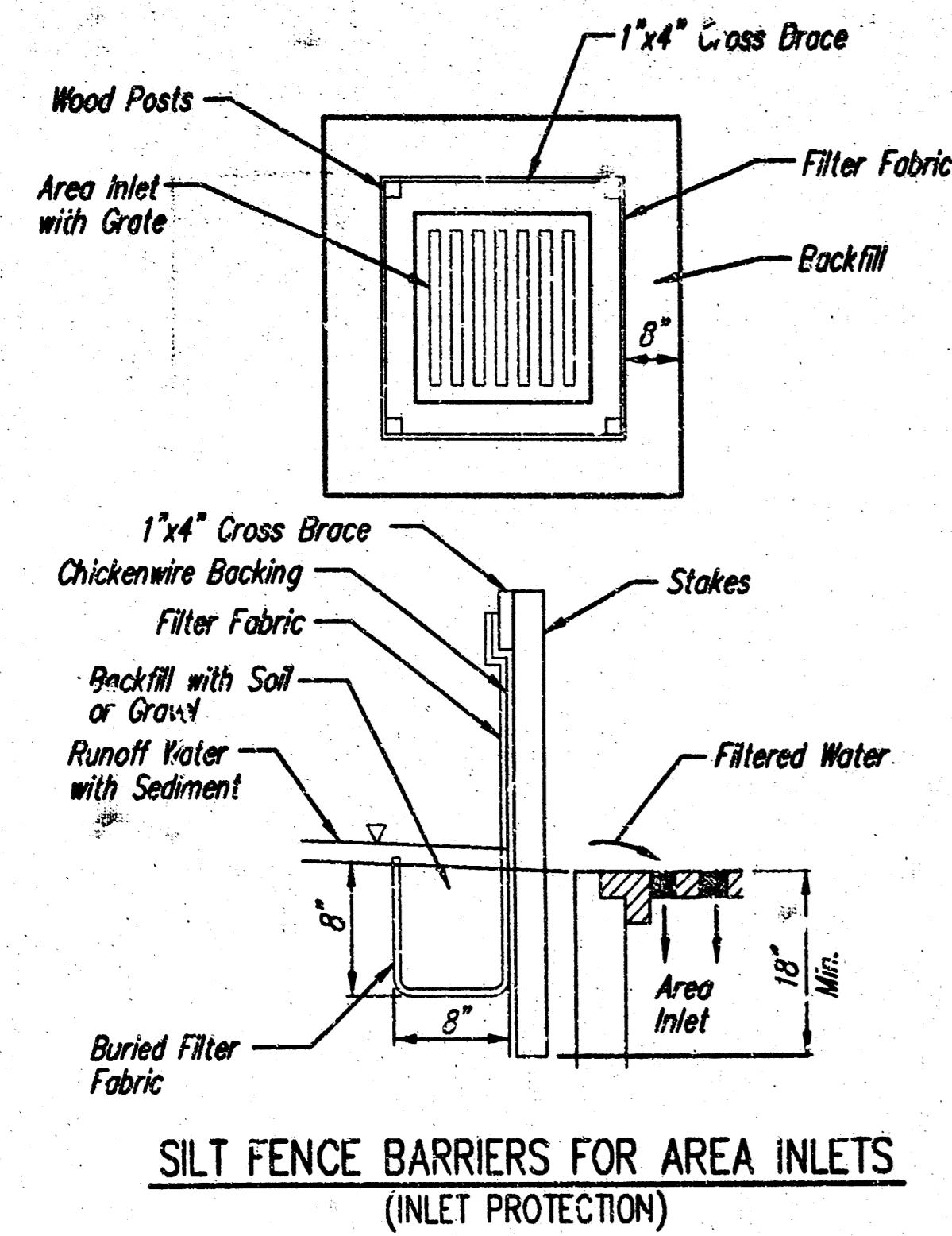
SOIL EROSION BMP DETAILS

CHRISTOPHER M. CARRIER, P.E.
STORM WATER ENGINEER

PROJECT NUMBER
1505 PPS (607861)

DATE
JAN 2005

SHEET 6 OF 9



SILT FENCE BARRIERS FOR AREA INLETS
(INLET PROTECTION)

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The wire or polymeric mesh backing used to help support the silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. The material used to frame the tops of the posts should be 1" by 4" boards. Silt fence fabric and support backing should be attached to the wooden posts and frame with staples, wire, zip ties, or nails.

Placement:

Place a silt fence drop inlet barrier in a location where it is unlikely to be overtopped. Water should flow through silt fence, not over it. Silt fence barriers for area inlets often fail when repeatedly overtopped. When used as a barrier for area inlets, silt fence fabric and posts must be supported at the top by a wooden frame. When a silt fence barrier for area inlets is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

Proper installation method:

Excavate a trench around the perimeter of the area inlet that is at least 8" deep by 8" wide. Drive posts to a depth of at least 18" around the perimeter of the area inlet. The distance between posts should be 4' or less. If the distance between two adjacent corner posts is more than 4', add another post(s) between them. Connect the tops of all the posts with a wooden frame made of 1" by 4" boards. Use nails or screws for fastening. Attach the wire or polymeric-mesh backing to the outside of the post/frame structure with staples, wire, zip ties, or nails. Roll out a continuous length of silt fence fabric long enough to wrap around the perimeter of the area inlet. Add more length for overlapping the fabric joint. Place the edge of the fabric in the trench, starting at the outside edge of the trench. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt fence fabric should remain exposed. Attach the silt fence to the outside of the post/frame structure with staples, wire, zip ties, or nails. The joint should be overlapped to the next post.

Note: When a silt fence barrier for area inlet is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

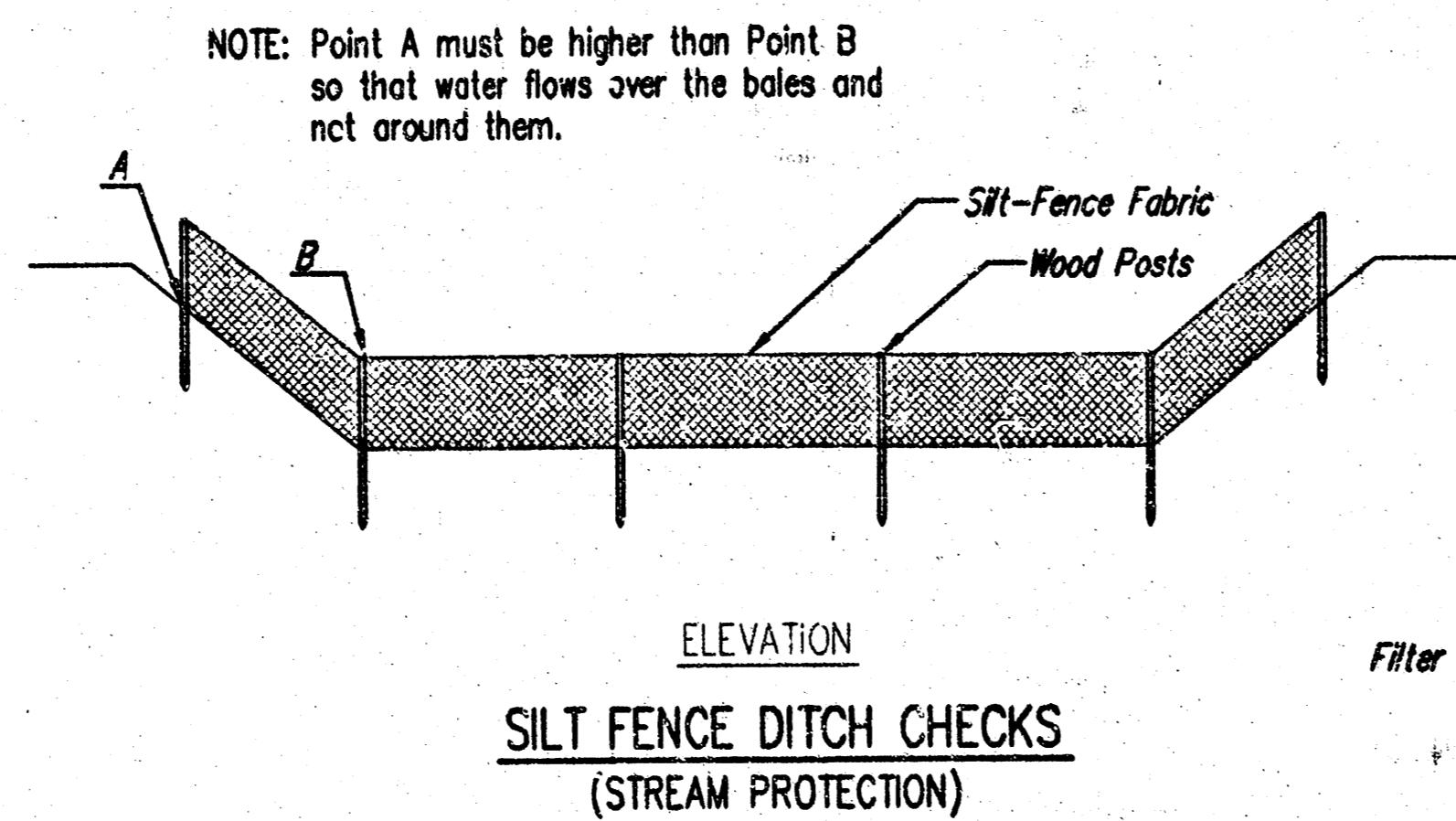
List of common placement/installation mistakes to avoid:

Water should flow through a silt fence barrier for area inlet—not over it. Place a silt fence barrier for area inlet in a location where it is unlikely to be overtopped. Silt fence barrier for area inlets often fail when repeatedly overtopped. Do not place posts on the outside of the silt fence barrier for area inlet. In this configuration, the force of the water is not resisted by the posts, but only by the staples (wire, zip-ties, nails, etc.). The silt fence will rip and fail. Do not install silt fence barrier for area inlets without framing the top of the posts. The corner posts around area inlets are stressed in two directions whereas a normal silt fence is only stressed in one direction. This added stress requires more support.

Inspection and Maintenance:

Silt fence barrier for area inlets should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the silt fence?
- Does the silt fence sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the area inlet barrier?



SILT FENCE DITCH CHECKS
(STREAM PROTECTION)

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

Placement:

Place silt fence in ditches where it is unlikely that it will be overtopped. Water should flow through a silt fence ditch check, not over it. Silt fence ditch checks often fail when overtopped. Silt fence ditch checks should be placed perpendicular to the flowline of the ditch. The silt fence should extend far enough so that the ground level at the ends of the fence is higher than the top of the low point of the fence. This prevents water from flowing around the check. Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead. Silt fence should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used.

The following table provides check spacing for a given ditch grade:

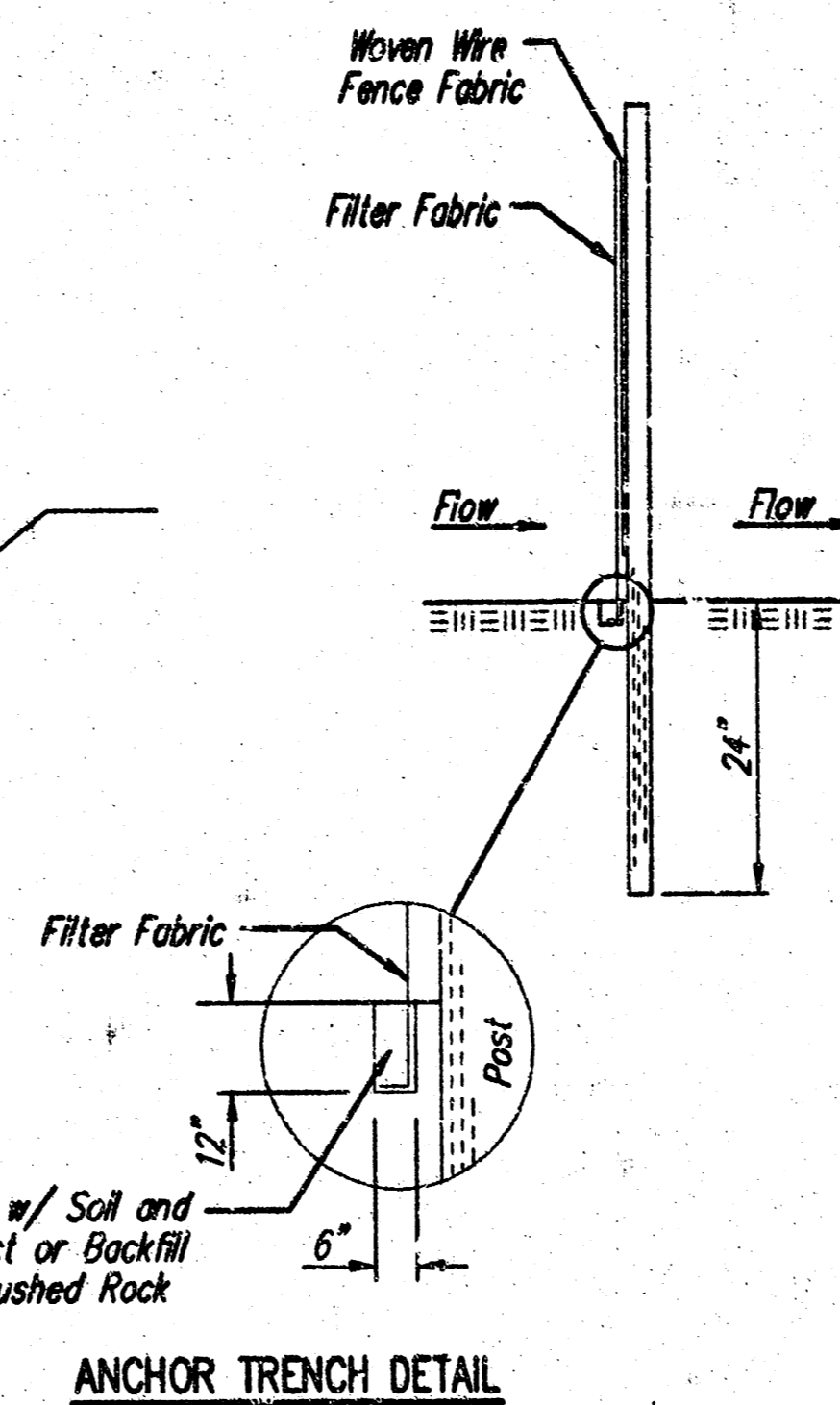
Ditch Check Grade (%)	Spacing Check (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

Proper installation method:

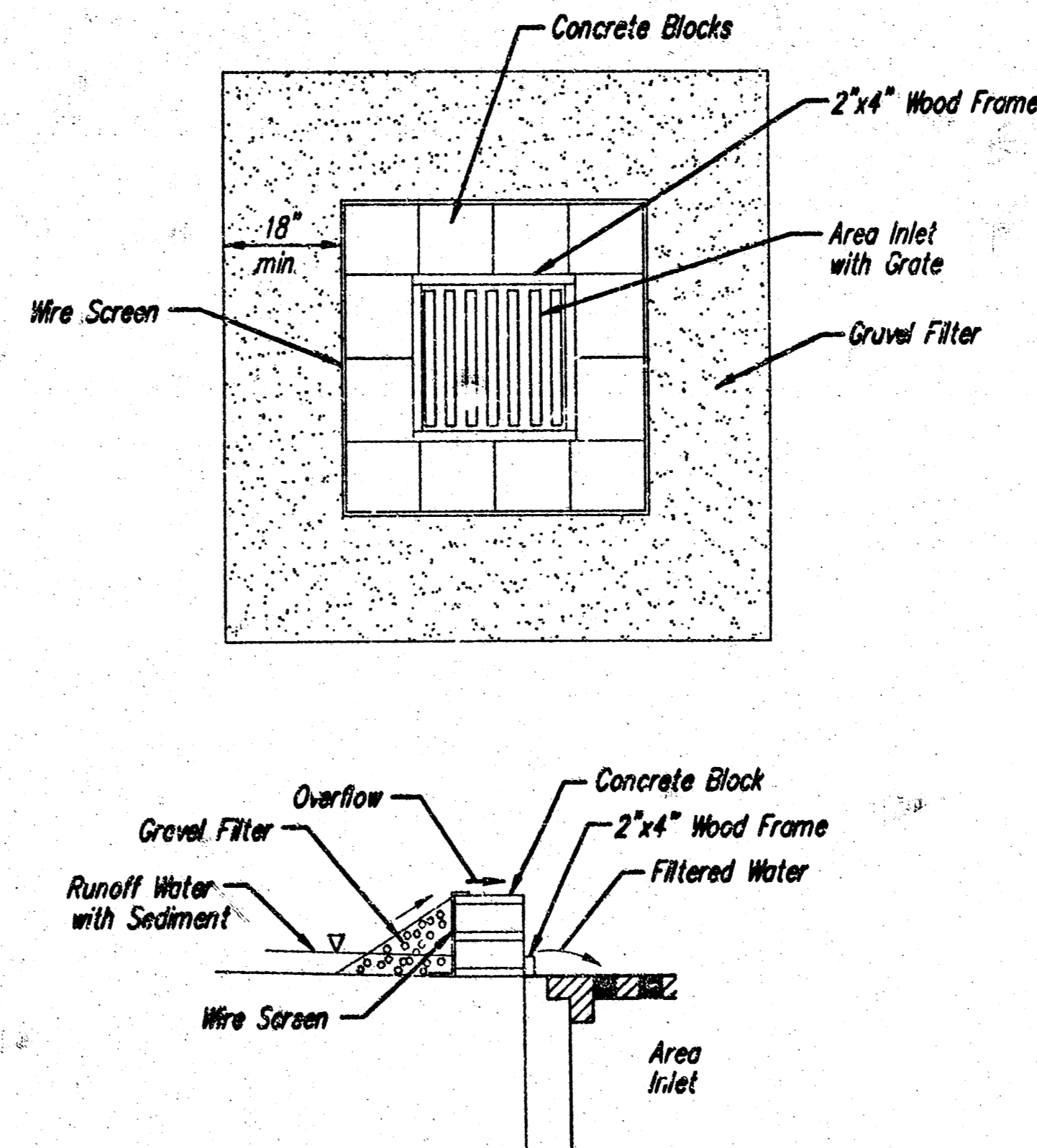
Excavate a trench perpendicular to the ditch flowline that is at least 12" deep by 6" wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench for later use. Roll out a continuous length of silt fence fabric on the downstream side of the trench. Place the edge of the fabric in the trench starting at the top upstream edge of the trench. Line two sides of the trench with the fabric as shown on detail. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt fence fabric should remain exposed. Lay the exposed silt fence on the upstream side of the trench to clear an area for driving in the posts. Just downstream of the trench, drive posts into the ground to a depth of at least 24". Place posts no more than 4' apart. Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

List of common placement/installation mistakes to avoid:

Water should flow through a silt fence ditch check—not over it. Place silt fence in ditches where it is unlikely that it will be overtopped. Silt fence installations quickly deteriorate when water overtops them. Do not place silt fence posts on the upstream side of the silt fence fabric. In this configuration, the force of the water is not resisted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail. Do not place a silt fence ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow. Do not place silt fence ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow. Follow prescribed ditch check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks. Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the fence is higher than the low point on the top of the fence. Do not place silt fence ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.



ANCHOR TRENCH DETAIL



CONCRETE BLOCK FILTER FOR AREA DRAIN
(INLET PROTECTION)

Gravel barriers provide little filtering of large inflow waters. However, when installed correctly and maintained, they can effectively treat low runoff flows.

Placement of gravel filters around area drains must be completed in a manner that will not cause local flooding.

Gravel filters can be used if the immediate and adjacent area to the area drain consists of soil or pavement.

Only gravel filters are to be installed on top of the pavement.

Instructions for installing:

- STEP 1: Place concrete blocks around the grate. The blocks can be stacked one or two high and should be supported by a 2" x 4" board.
- STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
- STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
- STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary.

An alternative method is use of gravel bags that are supported to prevent collapsing.

Use of rock having diameters smaller than 1" may result in clogging of pores and reduce the amount of water flowing into an inlet.

Maintenance:

All gravel filters installed around area drains should be inspected and repaired after each runoff event. Sediment should be removed when material is within 3" of the top of any block. Periodically, the gravel should be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets after every runoff event.

Inspection and Maintenance:

Silt fence ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does the silt fence sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the ditch check?

**SOIL EROSION
BMP DETAILS**

CHRISTOPHER M. CARRIER, P.E.
STORM WATER ENGINEER

PROJECT NUMBER
1505 PPS (607861)

DATE
JAN 2005

SHEET 7 OF 9

