

**Drain:** SPRINGMILL VILLAGES DRAIN      **Drain #:** 268  
**Improvement/Arm:** THE CROSSINGS - SECTION 3  
**Operator:** JDH      **Date:** 5-17-04  
**Drain Classification:** Urban/Rural      **Year Installed:** 1990

### GIS Drain Input Checklist

- Pull Source Documents for Scanning JA
- Digitize & Attribute Tile Drains N/A
- Digitize & Attribute Storm Drains JA
- Digitize & Attribute SSD JA
- Digitize & Attribute Open Ditch N/A
- Stamp Plans JA
- Sum drain lengths & Validate JA
- Enter Improvements into Posse JA
- Enter Drain Age into Posse JA
- Sum drain length for Watershed in Posse JA
- Check Database entries for errors JA

Gasb 34 Footages for Historical Cost  
Drain Length Log

Drain-Improvement: SPRING HILL VILLAGES DRAIN - THE CROSSINGS - SECTION 3

Drain Type:	Size:	Length SURVEYED FOOTAGE	Length (DB Query)	Length Reconcile	Price:	Cost:
SPO	6"	4,418'	4,418'	Ø	2.00	8,836.00
RCP	15"	1,005'	1,005'	Ø	9.50	9,547.50
	27"	251'	251'	Ø	21.30	5,346.30
	30"	428'	428'	Ø	24.60	10,528.80

Sum: 6102    6102    Ø    \$34,258.60

Final Report: \_\_\_\_\_

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



SURVEYOR'S OFFICE

# Hamilton County

*Kenton C. Ward, Surveyor*

Phone (317) 776-8495

Fax (317) 776-9628

*Suite 146*

*One Hamilton County Square*

*Noblesville, Indiana 46060-2230*

*November 8, 1996*

To: Hamilton County Drainage Board

Re: Springmill Villages Drain, The Crossings, Section 3 Arm

Attached is a petition, non-enforcement request, plans, calculations, quantity summary and assessment roll for The Crossing Section 3 Arm, Springmill Villages Drain. I have reviewed the submittals and petition and have found each to be in proper form.

I have made a personal inspection of the land described in the petition. Upon doing so, I believe that the drain is practicable; will improve the public health; benefit a public highway and be public utility; and that the costs, damages and expenses of the proposed drain will probably be less than the benefits accruing to the owners of land likely to be benefited. The drain will consist of the following:

6" SSD	4418 ft	27" RCP	251 ft
15" RCP	1005 ft	30" RCP	428 ft

The total length of the drain will be 6102 feet.

The retention pond (lake) in Springmill Villages, The Crossing Section 1 located at rear of Lots 134 to 138 is not to be considered part of the regulated drain. Only the inlet and outlet will be maintained as part of the regulated drain. The maintenance of the pond (lake) will be the responsibility of the Homeowners Association. The Board will however, retain jurisdiction for ensuring the storage volume for which the lake was designed will be retained. Thereby, allowing no fill or easement encroachments.

The subsurface drains (SSD) to be part of the regulated drain are those located under the curbs. Only the main SSD lines which are located with the right of way are to be maintained as regulated drain. Laterals for individual lots will not be considered part of the regulated drain.

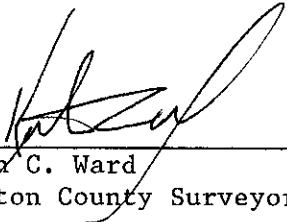
I have reviewed the plans and believe the drain will benefit each lot equally. Therefore, I recommend each lot be assessed equally. I also believe that no damages will result to landowners by the construction of this drain. I recommend a maintenance assessment of \$30.00 per lot, \$5.00 per acre for roadways, with a \$30.00 minimum. With this assessment the total annual assessment for this drain will be \$ 1568.05.

Parcels assessed for this drain may be assessed for the Overman-Harvey and/or Village Farms Drain at sometime in the future.

I believe this proposed drain meets the requirements for Urban Drain Classification as set out in IC 36-9-27-67 to 69. Therefore, this drain shall be designated as an Urban Drain.

I recommend that upon approval of the above proposed drain that the Board also approve the attached non-enforcement request. This request is for the reduction of the regulated drain easement to those easement widths as shown on the secondary plat for Springmill Villages, The Corssing Section 3 as recorded in the office of the Hamilton County Recorder.

I recommend the Board set a hearing for this proposed drain for December 1996.



---

Kenton C. Ward  
Hamilton County Surveyor

KCW/ndw

CERTIFICATE OF COMPLETION AND COMPLIANCE

To: Hamilton County Surveyor

Re: The Crossings at Springmill Villages Section 3

I hereby certify that:

1. I am a Registered Land Surveyor or Engineer in the State of Indiana .
2. I am familiar with the plans and specifications for the above referenced subdivision .
3. I have personally observed and supervised the completion of the drainage facilities for the above referenced subdivision .
4. The drainage facilities within the above referenced subdivision to the best of my knowledge , information and belief have been installed and completed in comformity with all plans and specifications .

Signature: David K. Sexton Date: 8-19-96

Type or Print Name: David K. Sexton, P.E.

Business Address: Schneider Engineering Corp. 3020 N. Post Road  
Indianapolis, IN 46226

Telephone Number: (317) 898-8282

**FILED**

AUG 26 1996

OFFICE OF HAMILTON COUNTY SURVEYOR

SEAL



INDIANA REGISTRATION NUMBER

9500028



SURVEYOR'S OFFICE  
**Hamilton County**

*Kenton C. Ward, Surveyor*

*Phone (317) 776-8495*

*Fax (317) 776-9628*

*Suite 146*

*One Hamilton County Square*

*Noblesville, Indiana 46060-2230*

To: Hamilton County Drainage Board

August 28, 1997

**Re: Springmill Villages Drain - Crossings Sec. 3**

Attached are as-builts, certificate of completion & compliance, and other information for The Crossings Sec. 3. An inspection of the drainage facilities for this section has been made and the facilities were found to be complete and acceptable.

During construction, there were no significant changes made to the drain which will alter the plans submitted with my report for this drain dated Nvember 8, 1996.

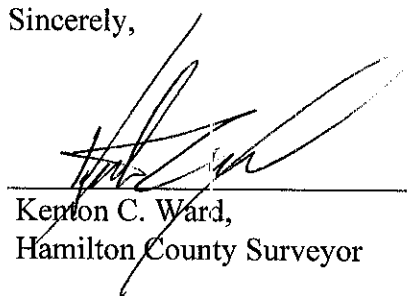
Therefore, the length of the drain remains at **6,102 feet**.

The non-enforcement was approved by the Board at its meeting on December 23, 1996 and recorded under instrument #9609653557.

The bond or letter of credit was not required.

I recommend the Board approve the drains construction as complete and acceptable.

Sincerely,



---

Kenton C. Ward,  
Hamilton County Surveyor

KCW/slm

**Asbuilt Structures**

Project: Springmill Villages - The Crossings Sec. 5

Structure:      T.C.:      I.E.:      Pipe:      Length:      Original Plans:      Difference:

STR 250	895.01	891.23				
STR 249	894.97	891.17	15"	25'	FRM 28'	
STR 249	894.97	891.17				
STR 248	893.36	890.61	15"	163'	FRM 161'	
STR 248	893.36	890.61				
STR 225	891.84	888.36	15"	270'	FRM 272'	
STR 228A	895.05	890.85				
STR 228	894.56	890.26	27"	71'	FRM 70'	
STR 228	894.56	890.26				
STR 227	893.63	889.43	27"	154'	FRM 153'	
STR 227	893.63	889.43				
STR 226	893.65	889.38	27"	26'	FRM 28'	
STR 226	893.65	889.23				
STR 225	891.84	888.36	30"	158'	FRM 156'	
STR 225	891.84	888.36				
STR 224	891.91	887.46	30"	270'	FRM 269'	
STR 253	898.99	896.53				
STR 252	898.98	896.50	15"	25'	FRM 28'	

6" SSD Streets:


Total: \_\_\_\_\_

6" SSD Lots:


Total: \_\_\_\_\_

RCP Pipe Totals:



Other Drain:

Total Length of Drain: \_\_\_\_\_

**Asbuilt Structures**

Project: Spring Mill Villages - The Crossing Sec. 3

Structure: T.C.: I.E.: Pipe: Length: Original Plans: Difference:

STR 253	898.99	896.53				
STR 252	898.98	896.50	15"	25'	FRM 28'	
STR 252	898.98	896.50				
STR 251	—	896.00	15"	144'	FRM 151'	
STR 239	893.84	890.49				
STR 238	894.34	890.04	15"	253'		
STR 238	894.34	890.04				
STR 237	894.28	889.28	15"	125'		

**6" SSD Streets:**

Bloomfield Ln	1567.08
Wisteria Way	1642.28

Total: 2209.36 x 2 = 4418.72

**6" SSD Lots:**


Total: \_\_\_\_\_

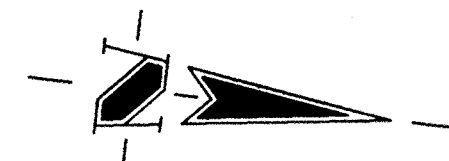
**RCP Pipe Totals:**

15" RCP	1005'
27" RCP	251'
30" RCP	428'

Other Drain:	

Total Length of Drain: 6102'





**CERTIFICATION FOR "RECORD DRAWING"**

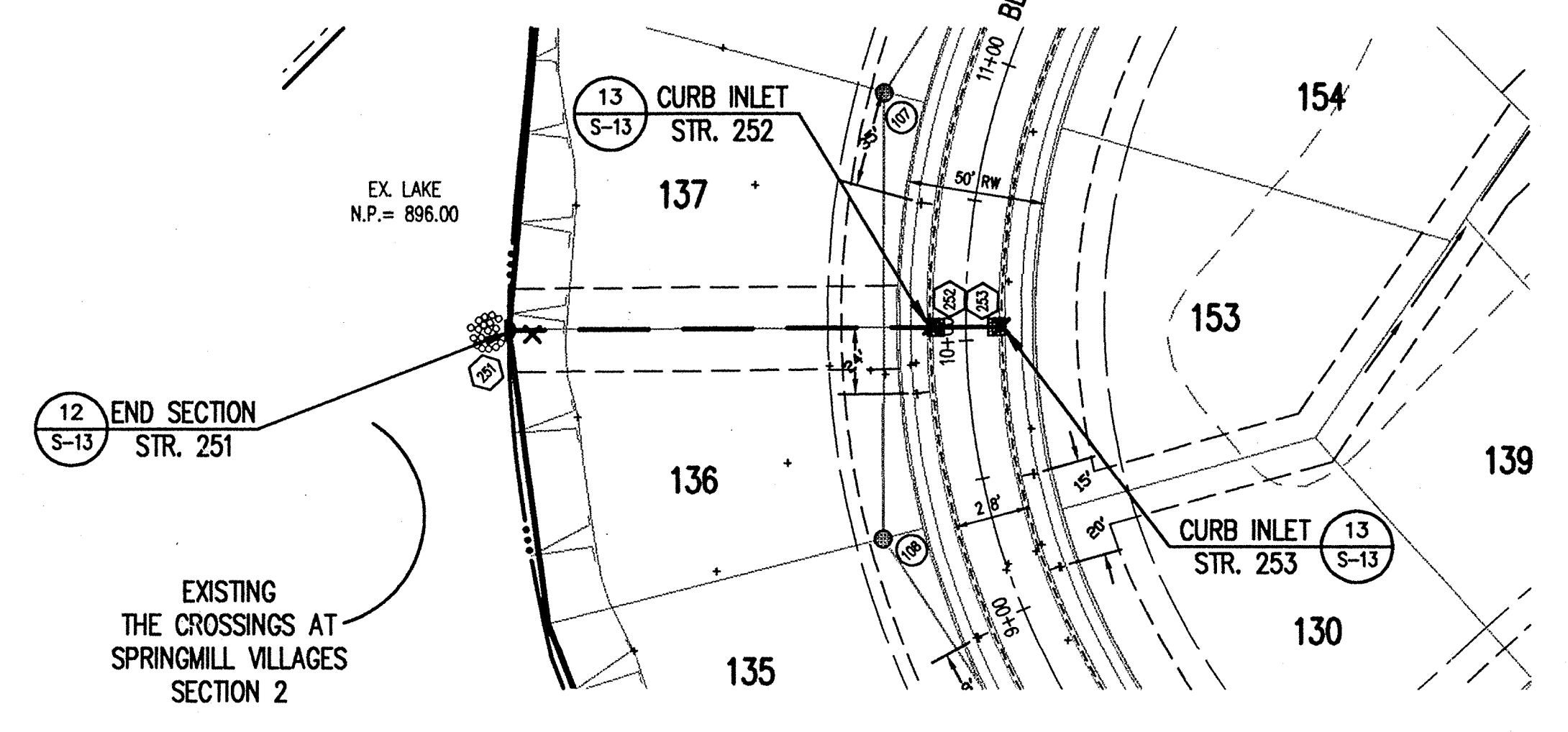
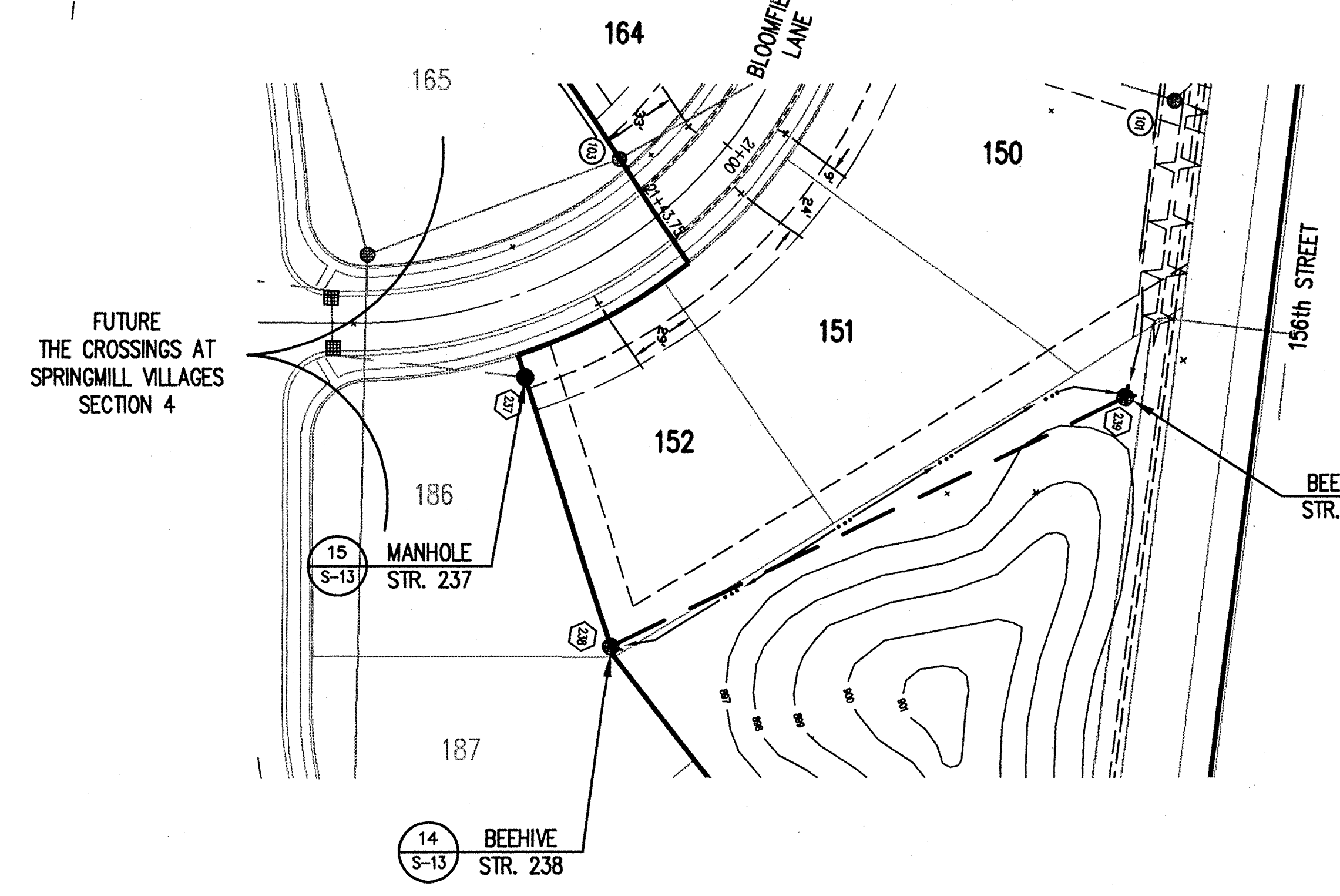
CERTIFIED BY: *David K. Sexton*

SCHNEIDER ENGINEERING CORPORATION  
3020 NORTH POST ROAD  
INDIANAPOLIS, INDIANA 46226  
(317) 898-8282 FAX (317) 899-8010

NOTE:  
Record drawing certification only for top of casing, invert elevations and lengths of pipe. Slope percentage represents a calculated figure and is for general information only.

DAVID K. SEXTON  
REGISTERED  
No. 9500028  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

DATE: 8.6.96



**STORM SEWER RECORD DRAWING**

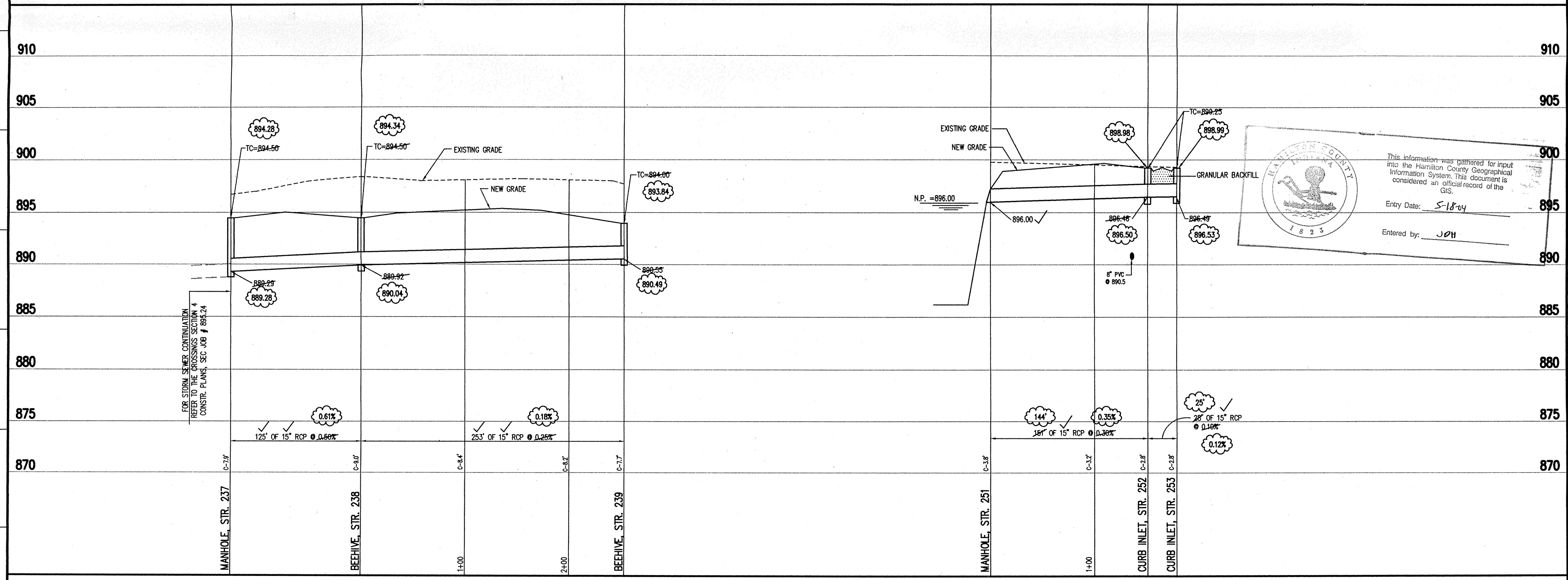
**HOLEY MOLEY SAYS "DON'T DIG BLIND"**

1-800-382-5544  
CALL TOLL FREE  
1-800-428-5200  
FOR CALLS OUTSIDE OF INDIANA  
PER INDIANA STATE LAW IS-69-1991, IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

- GENERAL NOTES:
1. ALL CUTS ARE TAKEN FROM THE EXISTING GRADE TO THE PIPE INVERT.
  2. ALL STATIONING IS TAKEN FROM THE NEAREST DOWNSTREAM STRUCTURE.
  3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.
  4. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
  5. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
  6. CONTRACTOR SHALL MINIMIZE DAMAGE TO EXISTING TREES.

**STORM SEWER PLAN**

SCALE: 1"=50'



**STORM SEWER PROFILE**

SCALE:  $\frac{\text{HORZ.}}{\text{VERT.}} = \frac{1"}{5'}$

Revisions  
8-16-96 D.T.R. STORM SEWER ASBUILT

This information was gathered for input into the Hamilton County Geographical Information System. This document is considered an official record of the GIS.

Entry Date: 5-18-04  
Entered by: JPH

CERTIFIED BY: *[Signature]*  
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**Schneider Engineering Corporation**

3020 North Post Road  
Indianapolis, Indiana 46226-0068  
317-898-8282  
317-899-8010 Fax

Engineering  
Surveying  
GIS • LIS  
Geology

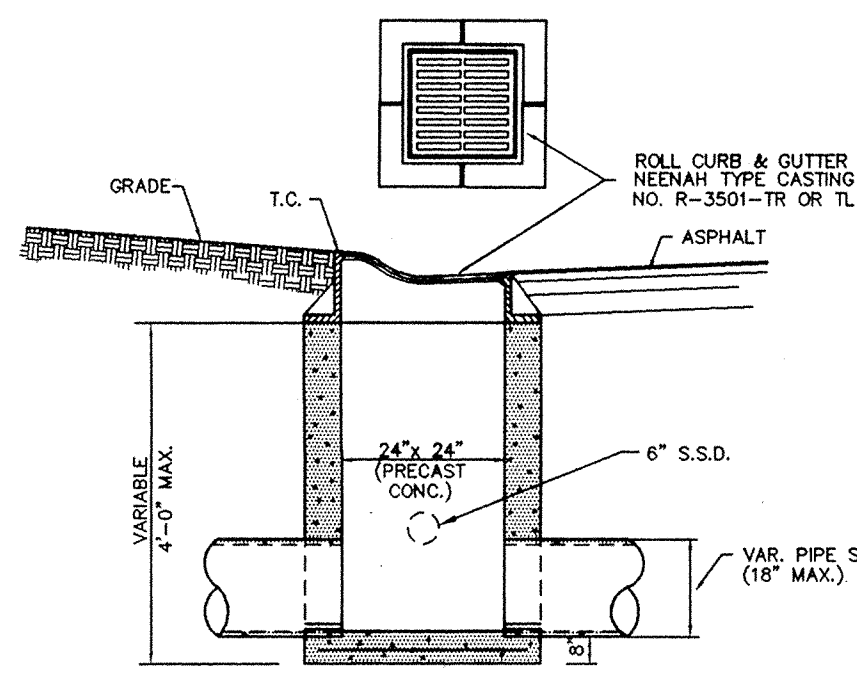
A Partnered Entity with Bohlen, Meyer, Gibson & Associates, Incorporated

BRENNICK DEVELOPMENT CO. INC.  
THE CROSSINGS SECTION 3  
SPRINGMILL VILLAGES

**STORM SEWER PLAN & PROFILE**

Date 1/25/95	Project No. 895.23	Drawn GSD	Approved
Computer Files 89523S12 89523D01		Sheet No. <b>S-10</b> Of 14	

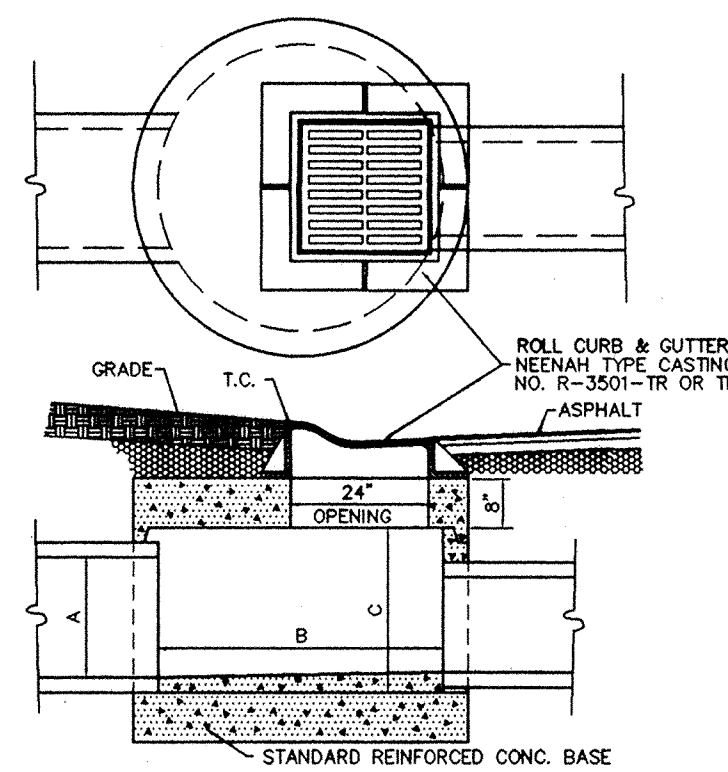




**ROLL CURB INLET** 16  
S-13

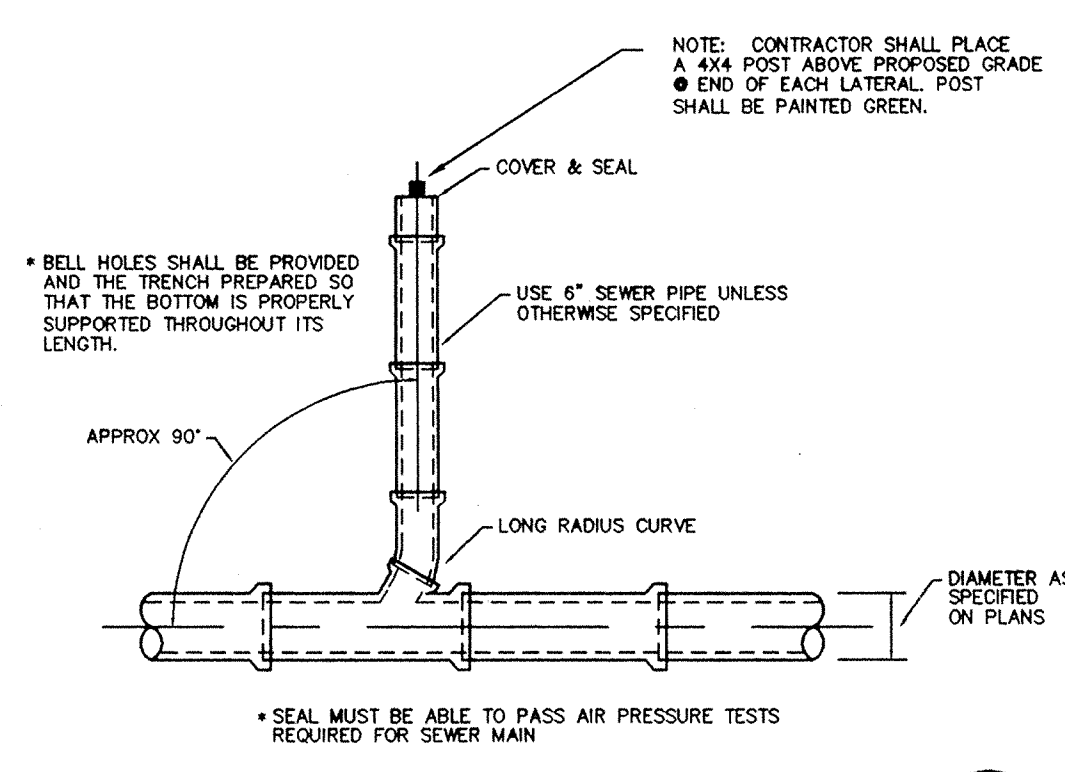
NOTE:

ALL STRUCTURES 3' OF GREATER SHALL BE ACCESSIBLE WITH STEPS. THE FIRST STEP SHALL BE PLACED 18" BELOW THE TOP OF CASTING, FOLLOWED BY 16" THEREAFTER.

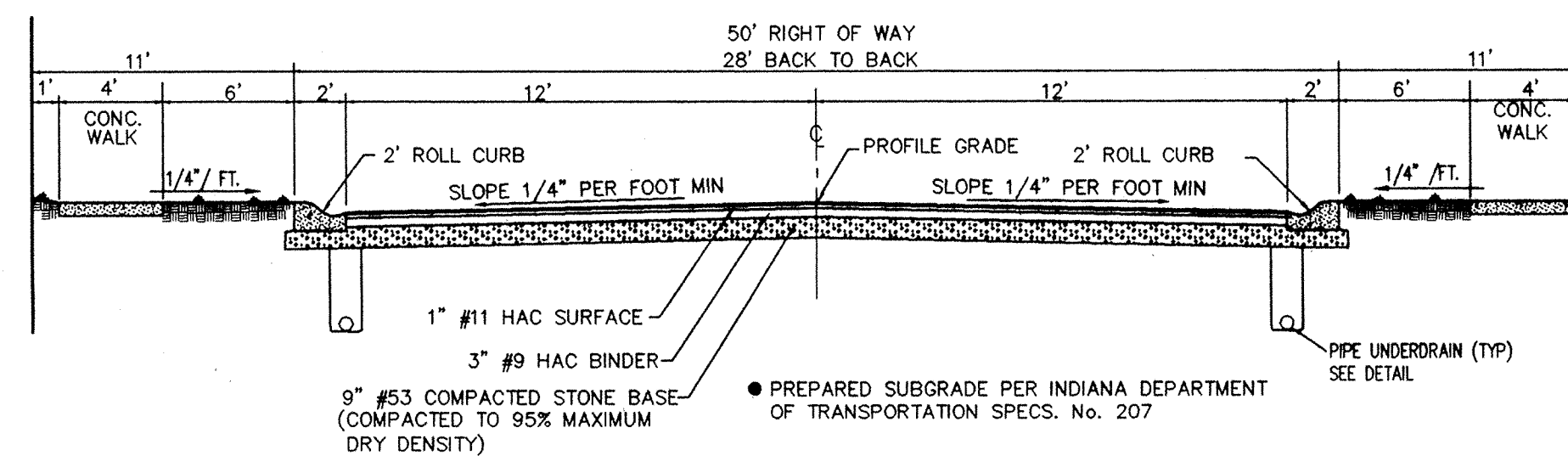


**ROLL CURB INLET** 13  
S-13

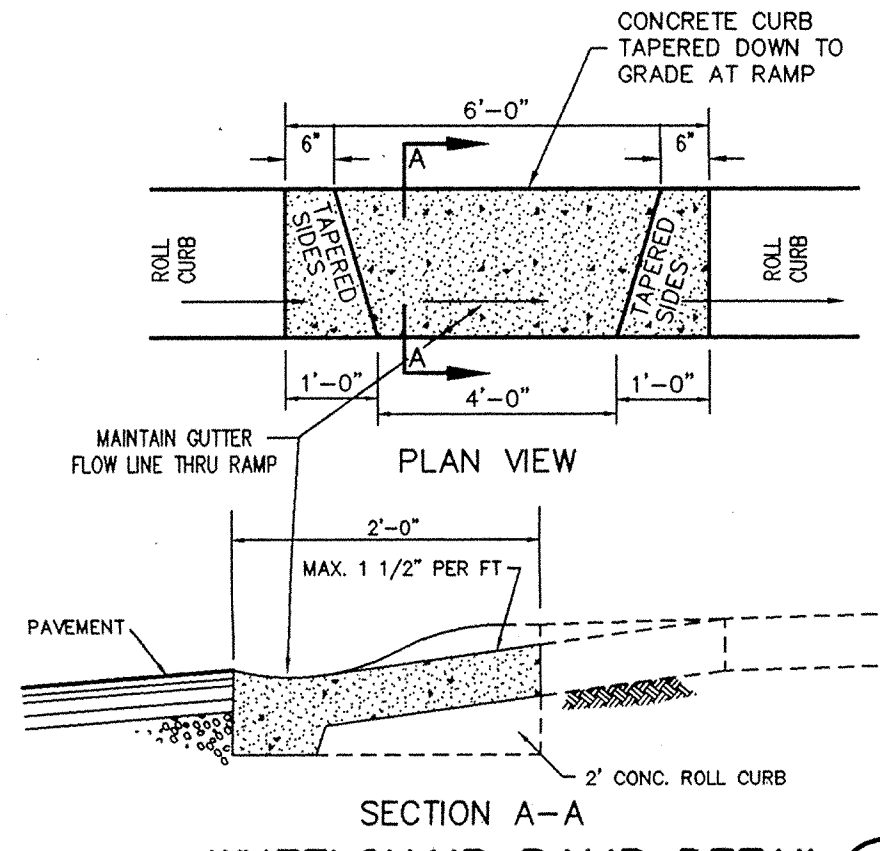
DIMENSIONS (INCHES)			
A	B	C	D
12	36	18	
15	36	21	
18	48	24	
21	48	28	
24	48	31	
27	60	34	
30	60	38	
33	60	41	
36	60	44	
42	60	50	



**WYE & LATERAL CAPPING DETAIL** 9  
S-13



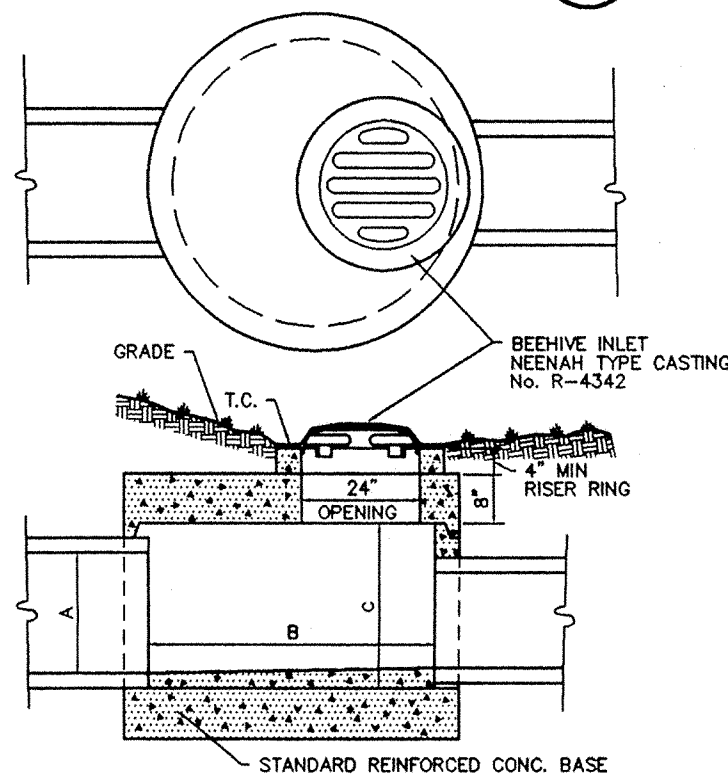
**TYPICAL STREET SECTION** 1  
S-13



**WHEELCHAIR RAMP DETAIL** 19  
S-13

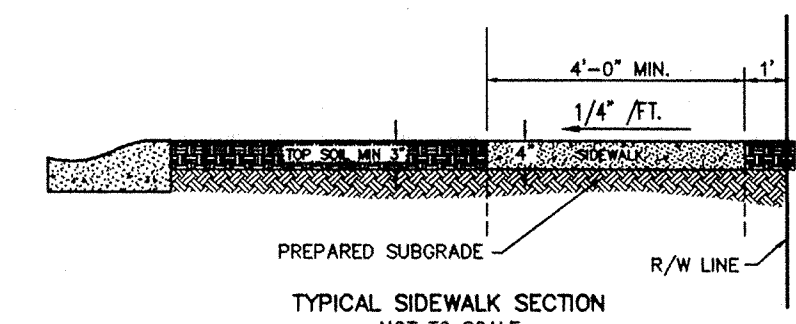
NOTE:

ALL STRUCTURES 3' OF GREATER SHALL BE ACCESSIBLE WITH STEPS. THE FIRST STEP SHALL BE PLACED 18" BELOW THE TOP OF CASTING, FOLLOWED BY 16" THEREAFTER.

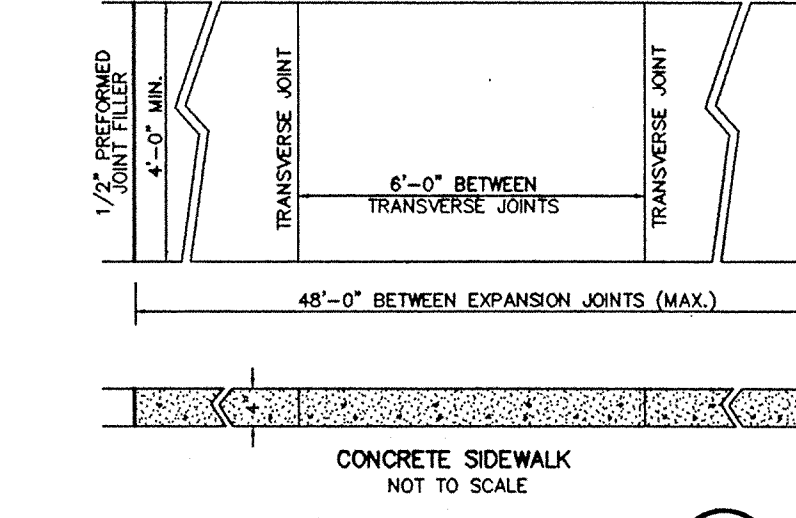


**BEEHIVE INLET DETAIL** 14  
S-13

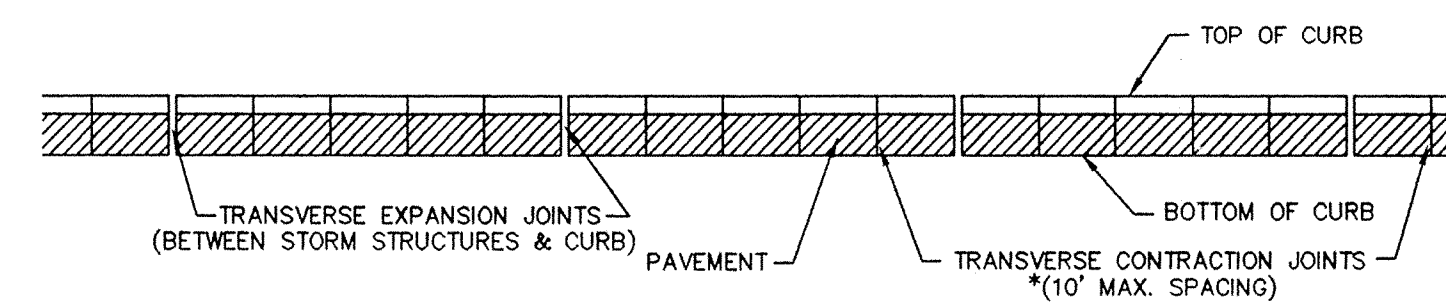
DIMENSIONS (INCHES)			
A	B	C	D
12	36	18	
15	36	21	
18	48	24	
21	48	28	
24	48	31	
27	60	34	
30	60	38	
33	60	41	
36	60	44	
42	60	50	



THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6" IN DEPTH. SUBGRADE UNDER ALL CURB, SIDEWALK, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 207.02 OF THE STANDARD SPECIFICATIONS.

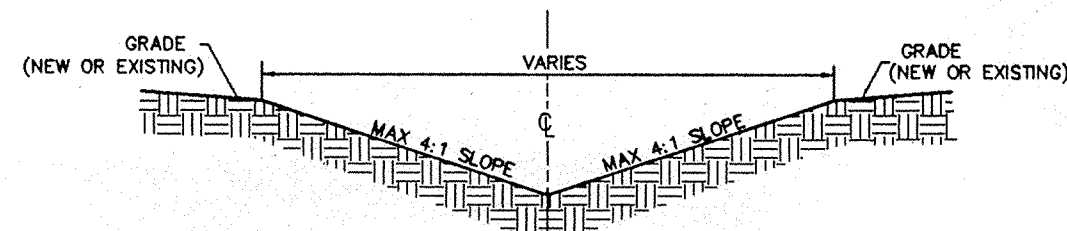


**SIDEWALK DETAIL** 10  
S-13

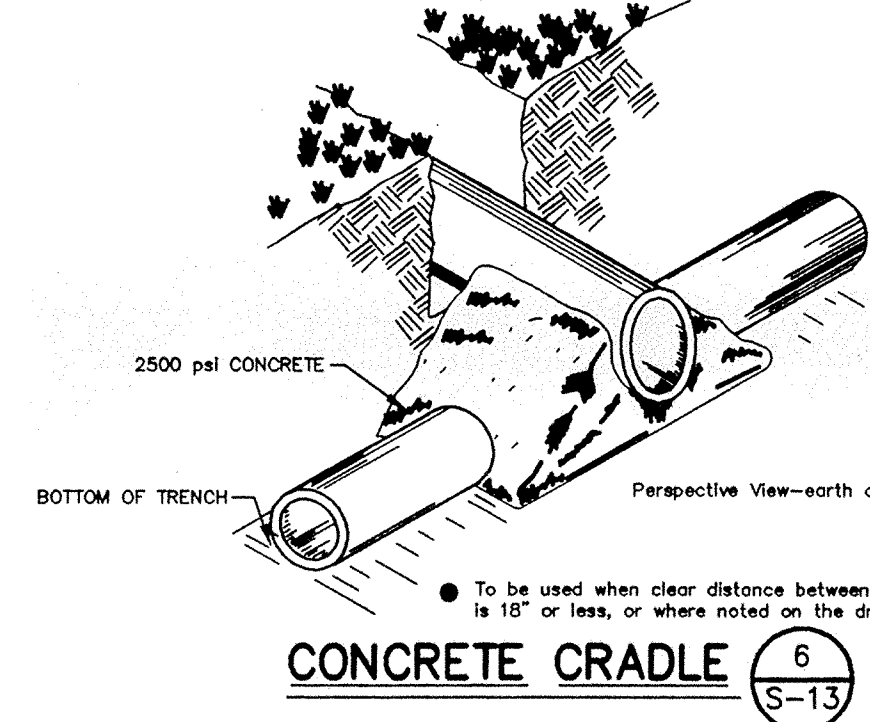


**CURB JOINT DETAIL** 3  
S-13

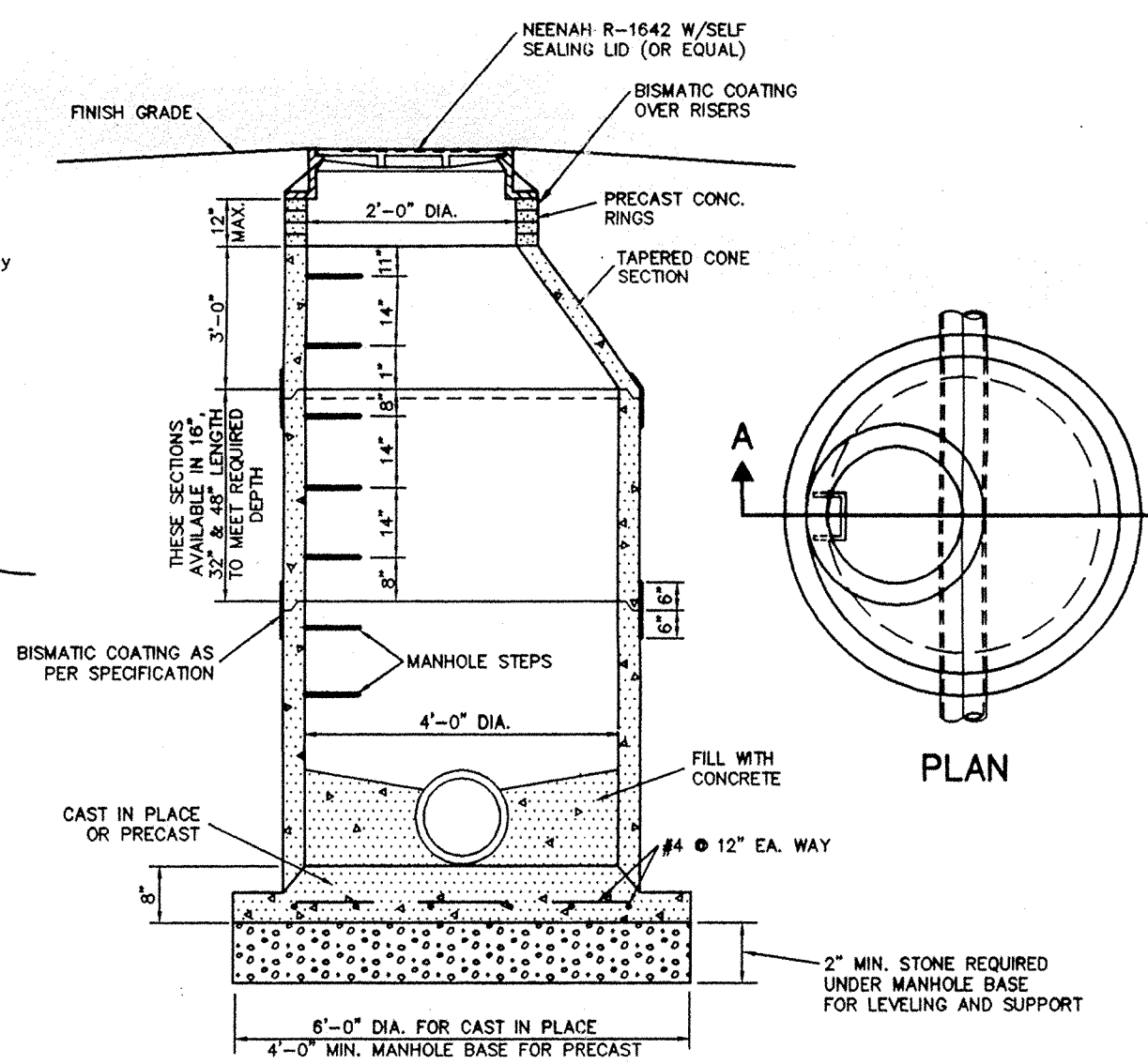
\*TRANSVERSE CONTRACTION JOINTS MAX. 5' SPACING WITHIN RADIUS OF INTERSECTIONS AND ENTRANCES.



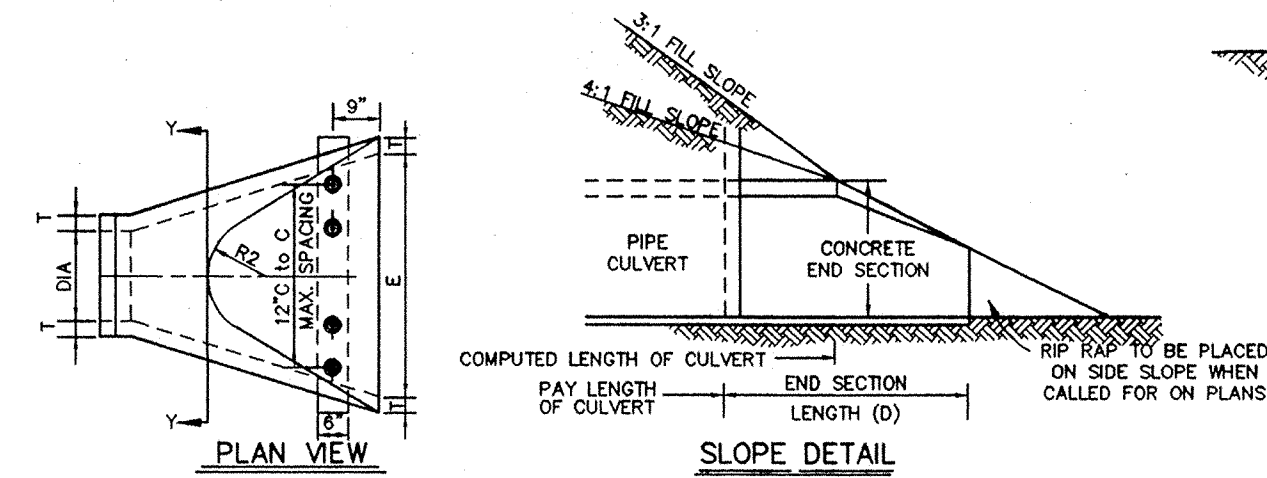
**TYPICAL SWALE SECTION** 11  
S-13



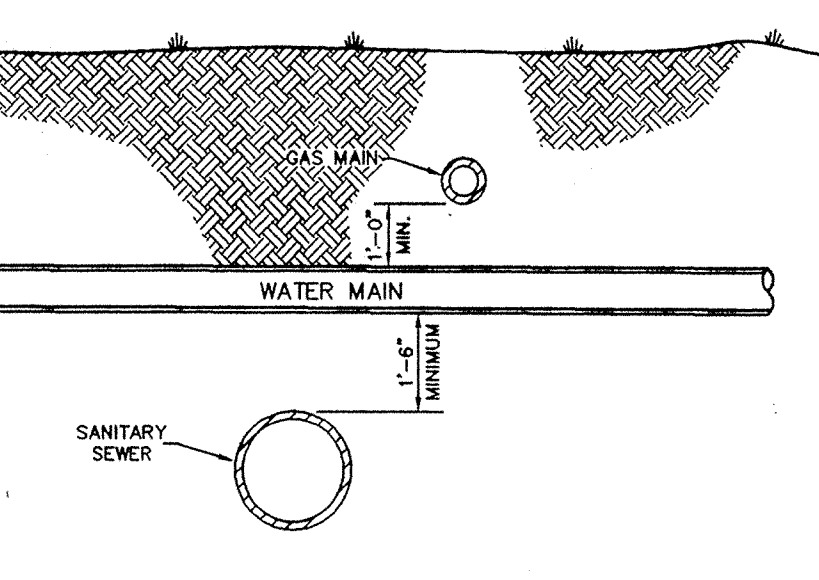
**CONCRETE CRADLE** 6  
S-13



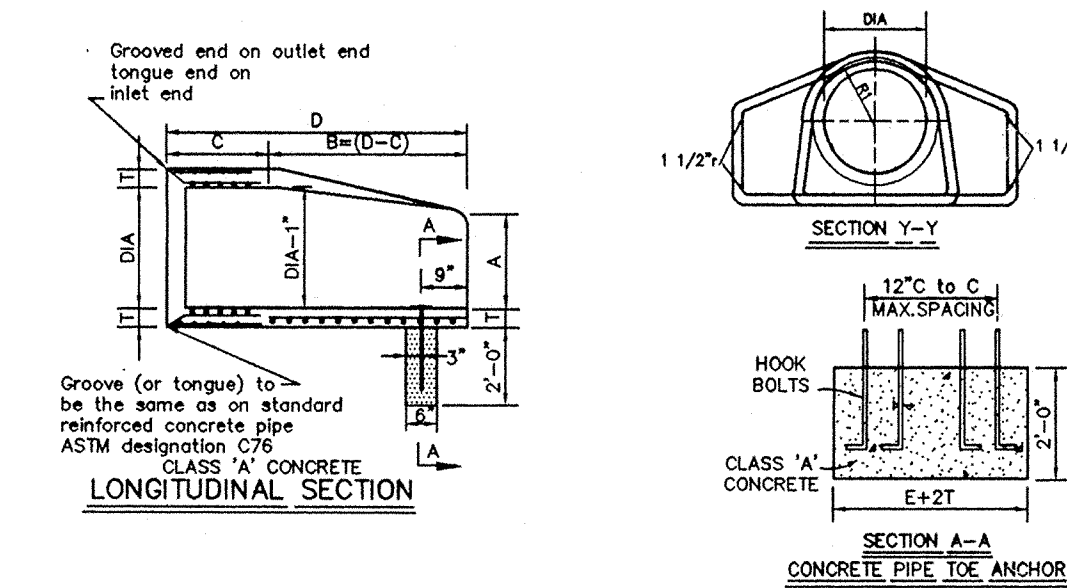
**SECTION A-A SANITARY MANHOLE DETAIL** 4  
S-13



**SLOPE DETAIL**

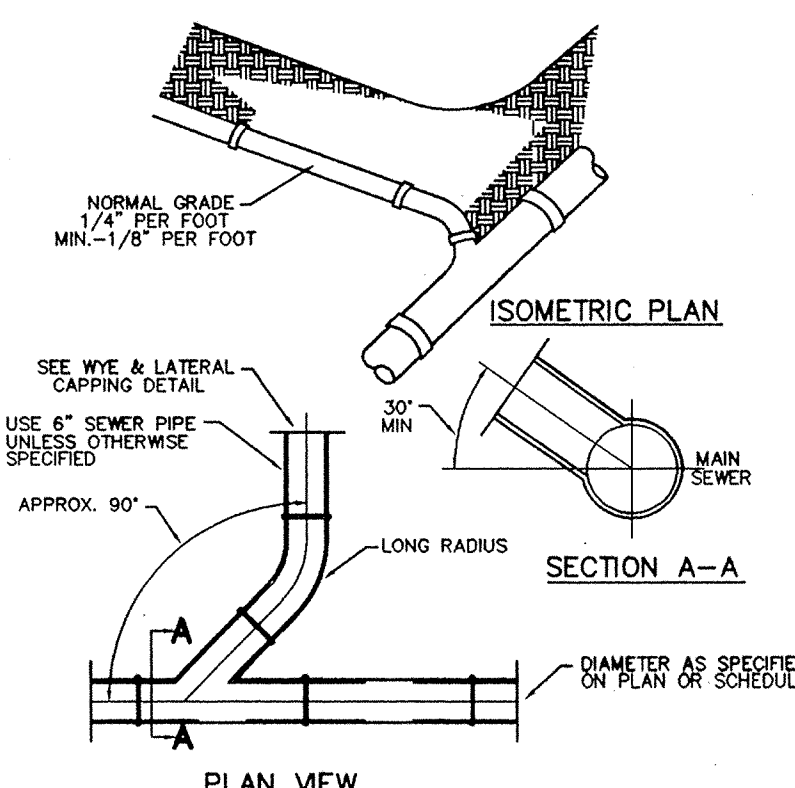


**TYPICAL UTILITY CROSSING** 7  
S-13

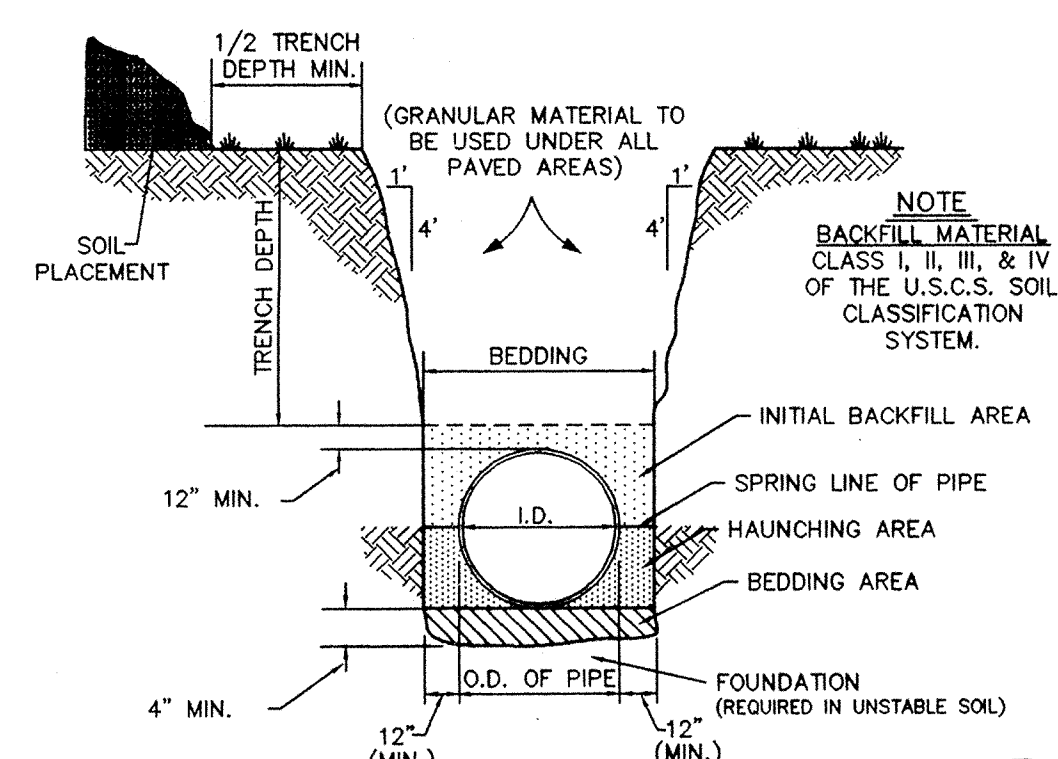


DIMENSIONS OF CONCRETE END SECTIONS FOR ROUND PIPE										
DIA. (MIN)	T	A*	C*	D*	E*	K	R <sub>1</sub>	R <sub>2</sub>	APPROX. WEIGHT	
12"	2"	5"	4'-3"	6'-2"	2'-0"	1.3	10 1/8"	9"	800	
15"	2 1/4"	7"	4'-0"	6'-3"	2'-6"	1.5	12 1/2"	11"	1,100	
18"	2 1/2"	11"	4'-1"	6'-2"	3'-0"	1.8	15 1/2"	12"	1,300	
21"	2 3/4"	11"	3'-6"	6'-3"	3'-6"	2.1	18 1/8"	13"	1,500	
24"	3"	1'-0"	2'-8"	6'-3"	4'-0"	2.3	18 3/16"	14"	1,800	
27"	3 1/4"	1'-1"	2'-5"	6'-3"	4'-6"	2.6	18 1/2"	14 1/2"	2,100	
30"	3 1/2"	1'-2"	1'-10"	6'-3"	5'-0"	2.9	18 5/16"	15"	2,400	
33"	3 3/4"	1'-3"	3'-4"	6'-3"	5'-6"	3.1	18 1/2"	17 1/2"	4,100	
36"	4"	1'-5"	3'-1"	6'-3"	6'-0"	3.4	23 3/4"	20"	4,200	

**PRECAST CONCRETE END SECTION** 12  
S-13

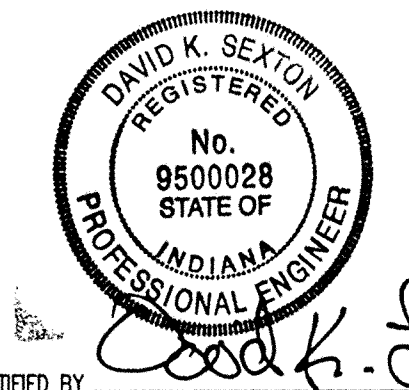


**CONNECTION TO MAIN SEWER** 8  
S-13

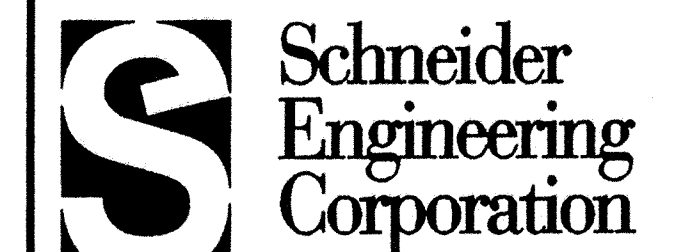


**TRENCH & PIPE EMBEDMENT DETAIL** 5  
S-13

Revisions  
3-23-95 REV. PER TAC COMMENTS



CERTIFIED BY: *David K. Sexton*  
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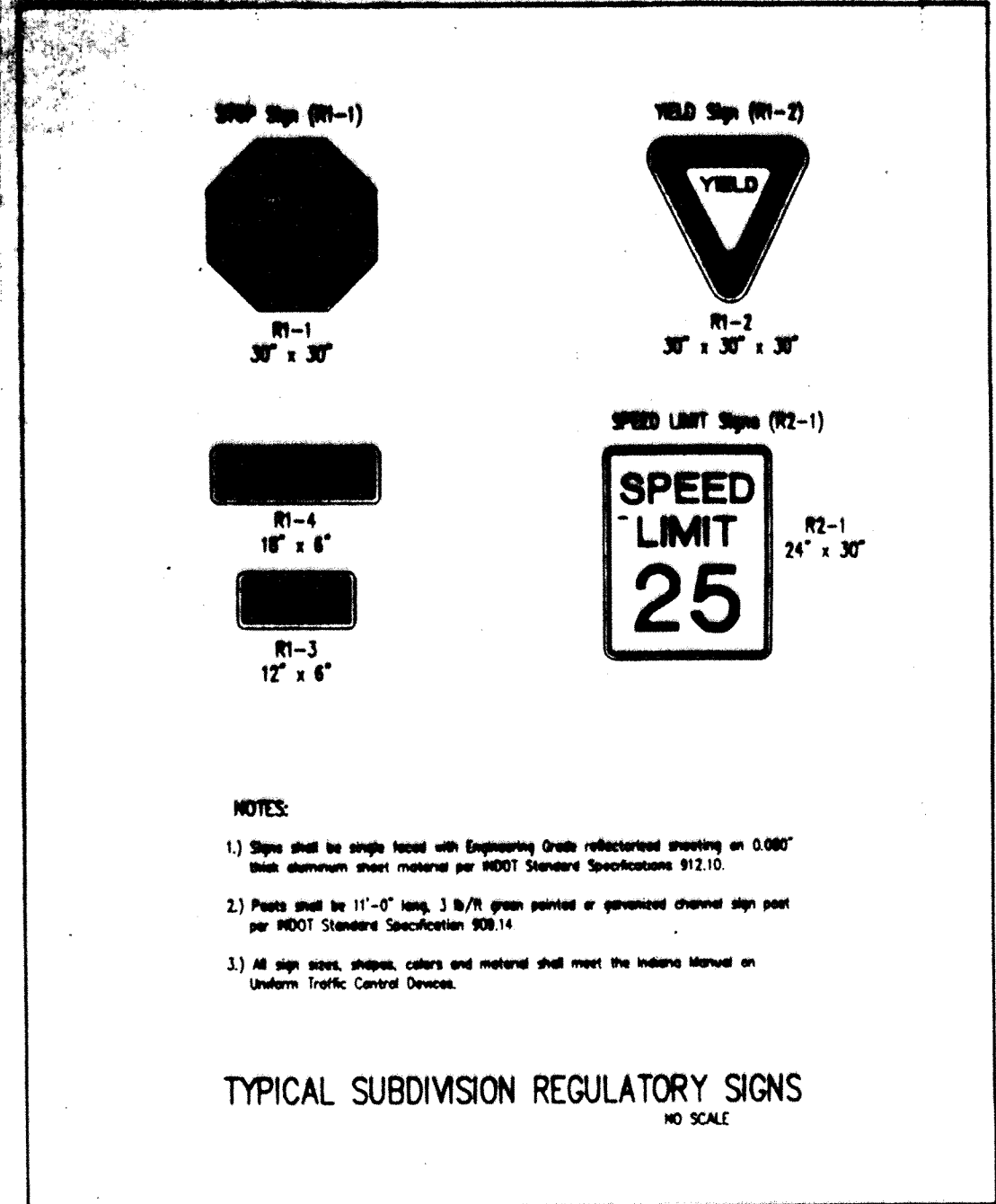
BRENWICK DEVELOPMENT CO. INC.  
THE CROSSINGS SECTION 3  
AT SPRINGMILL VILLAGES

GENERAL DETAILS

Date	Project No.	Drawn	Approv.
1/25/95	895.23	GSD	

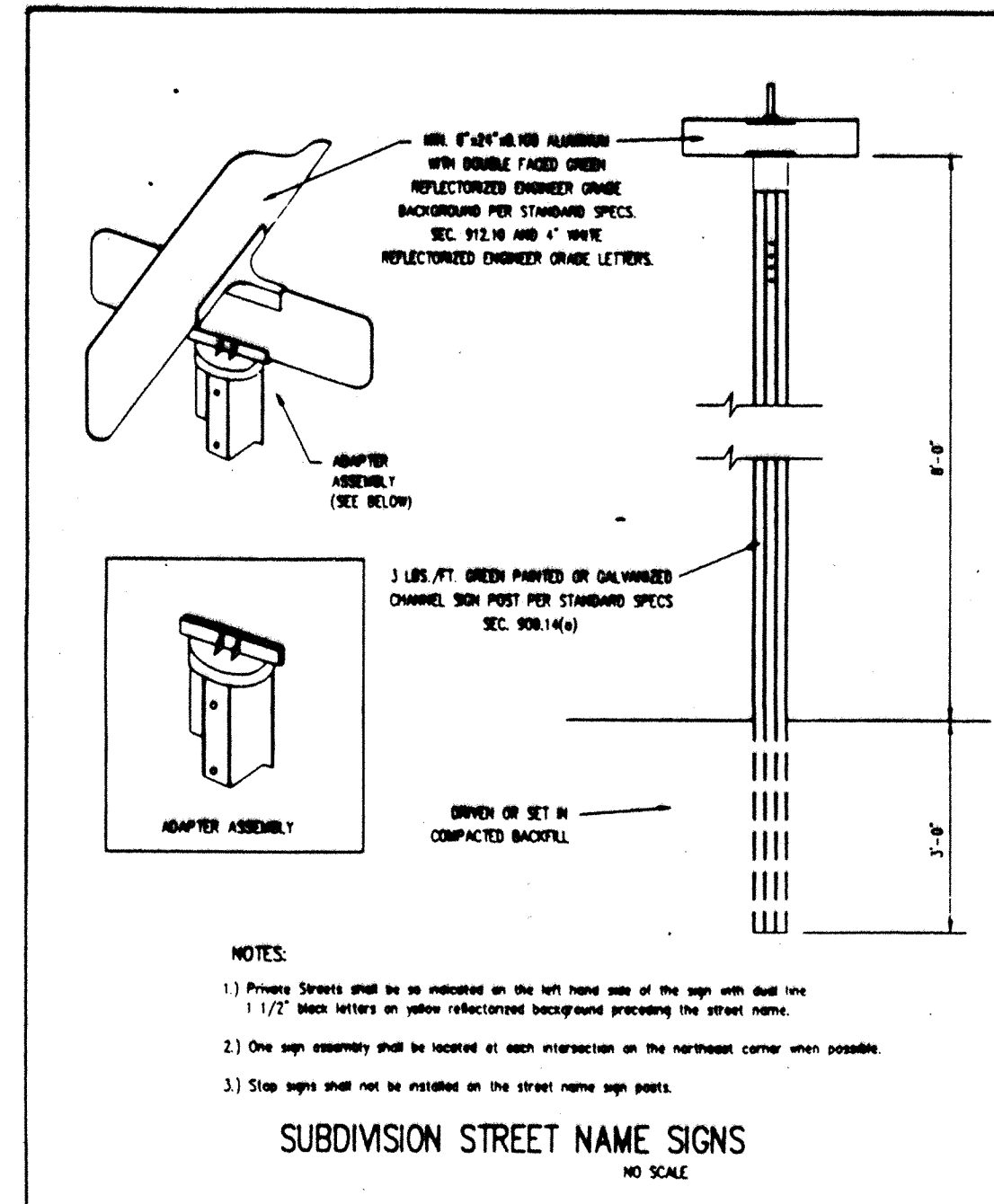
Computer Files	Sheet No.
895230E1	S-13





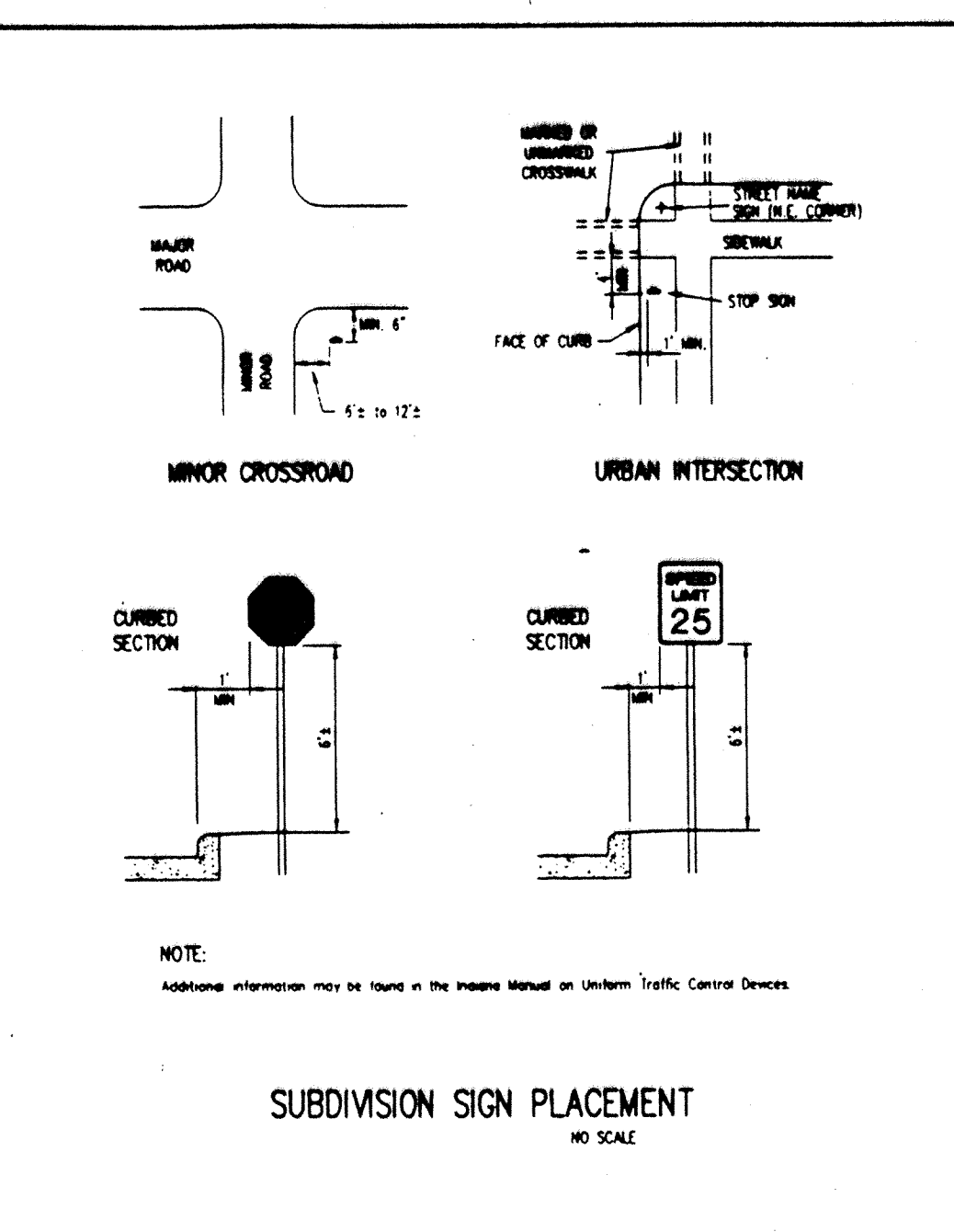
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		S-1



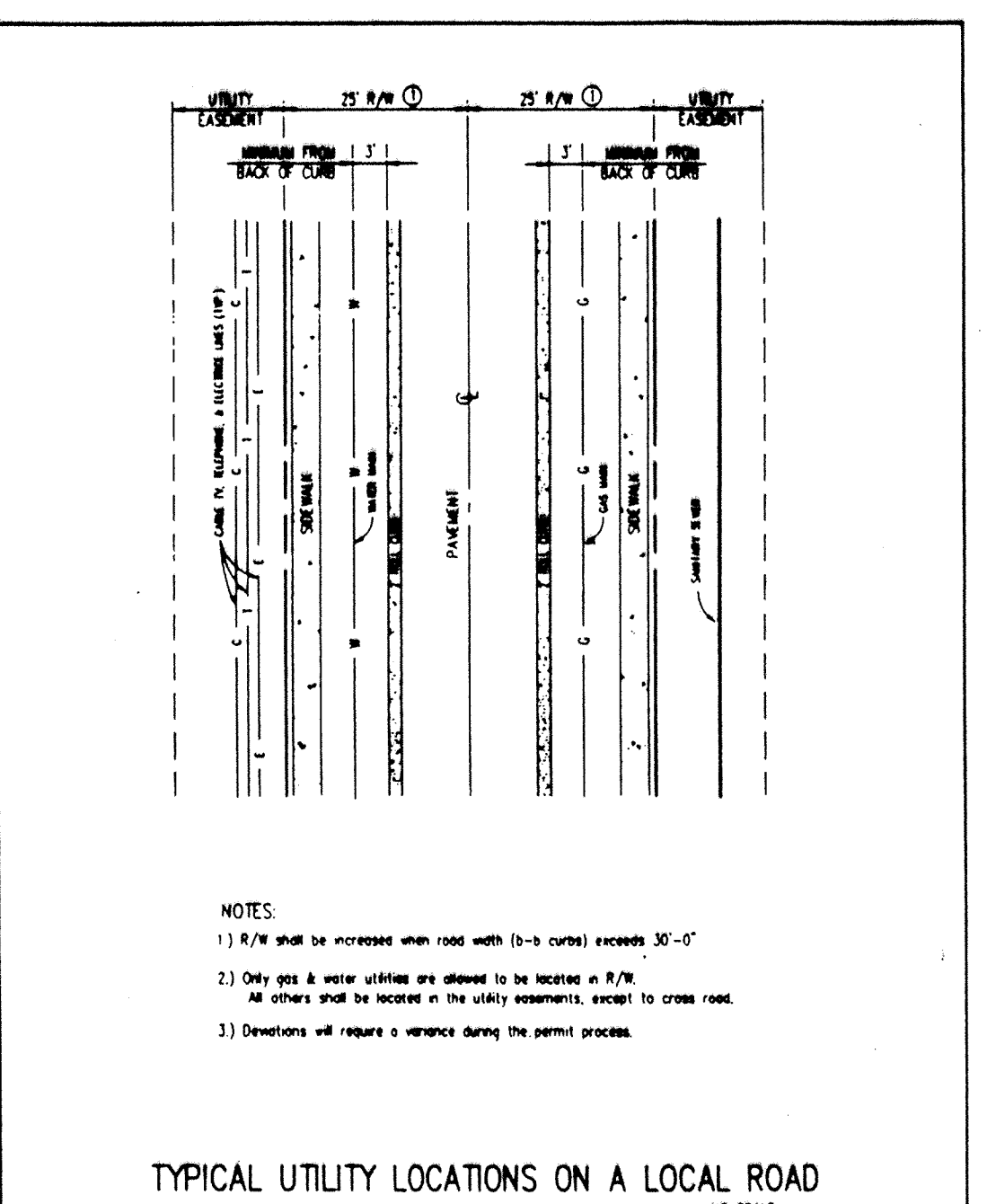
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		S-2



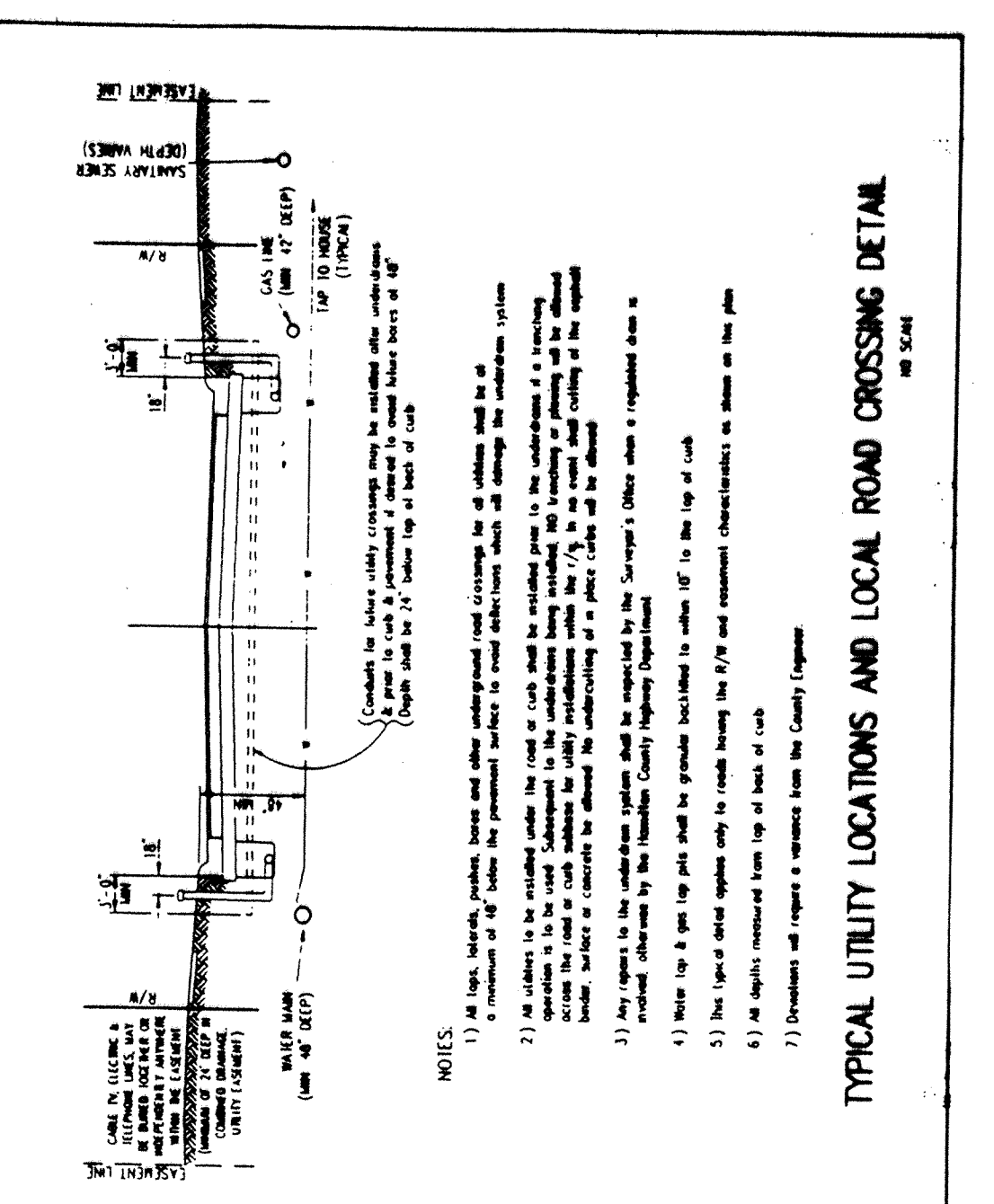
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		S-3



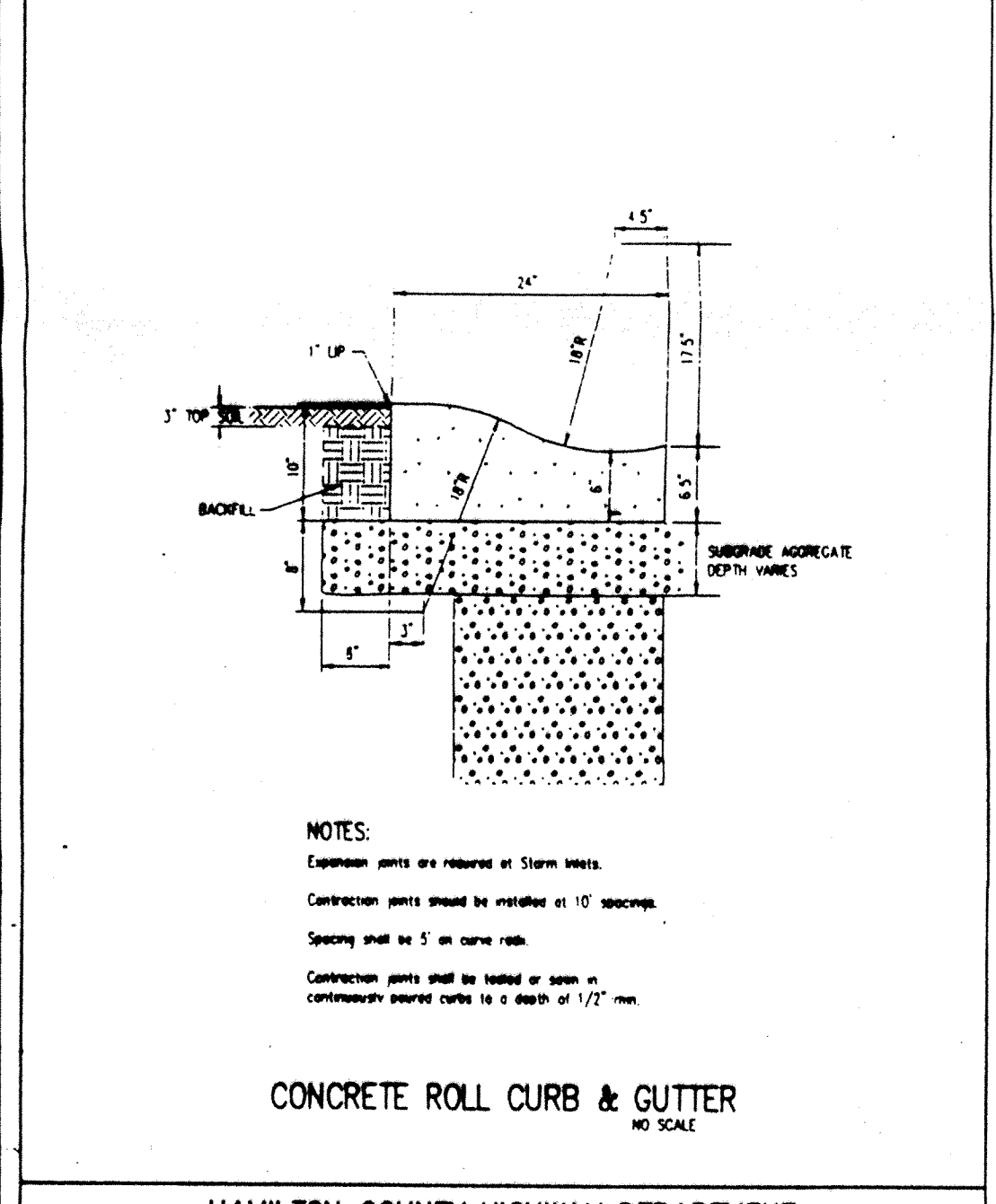
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		U-2



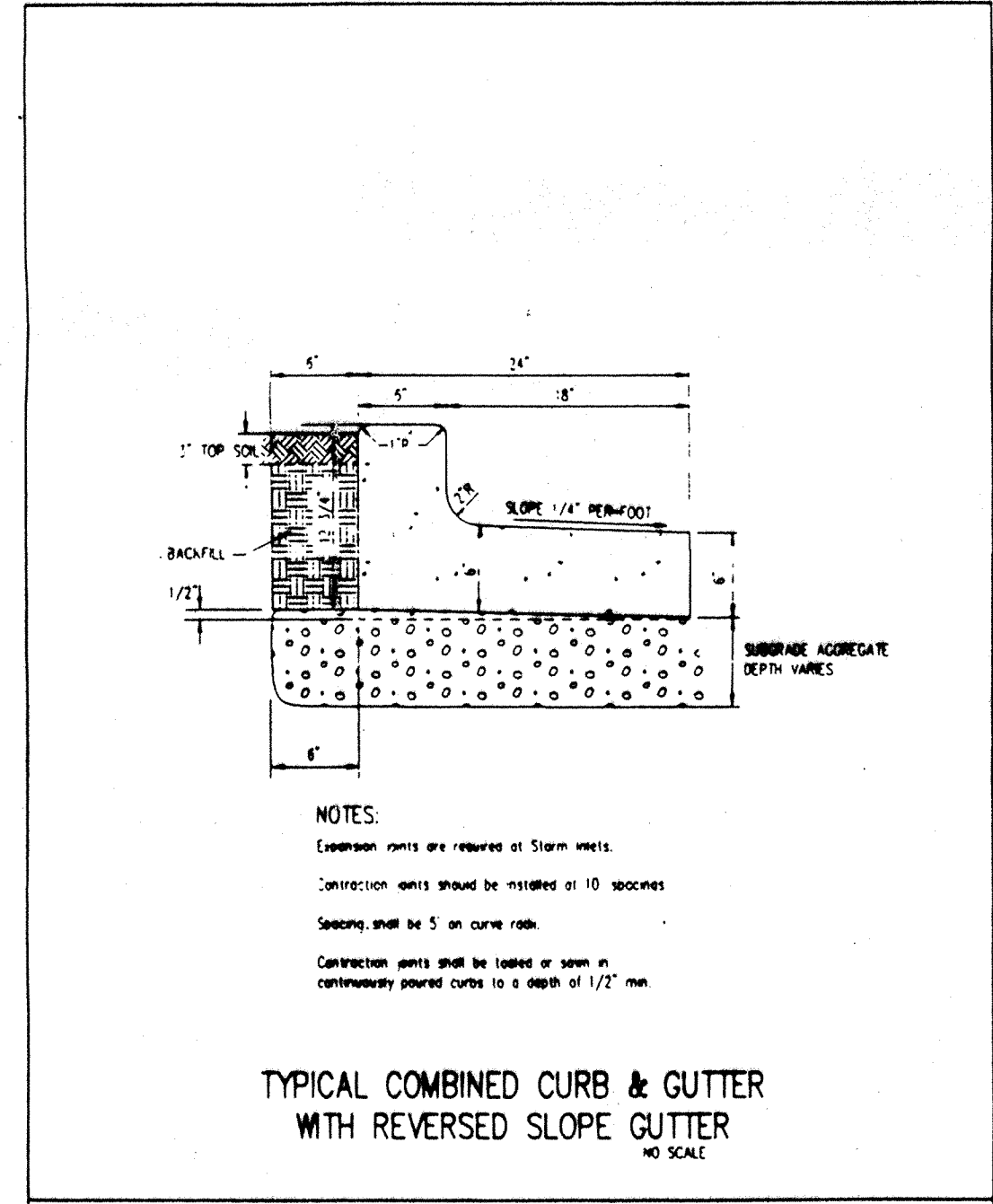
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		U-4



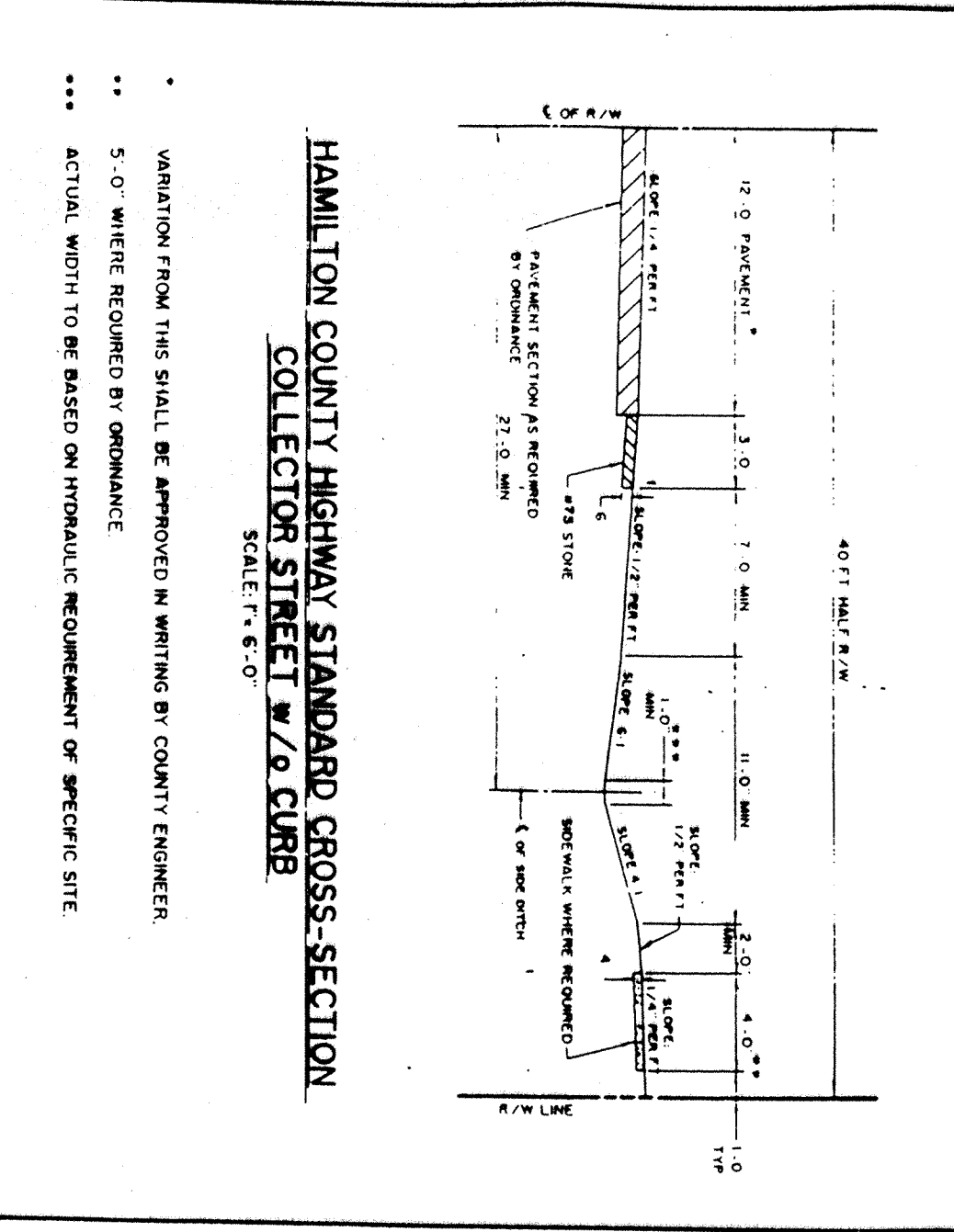
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		C-1



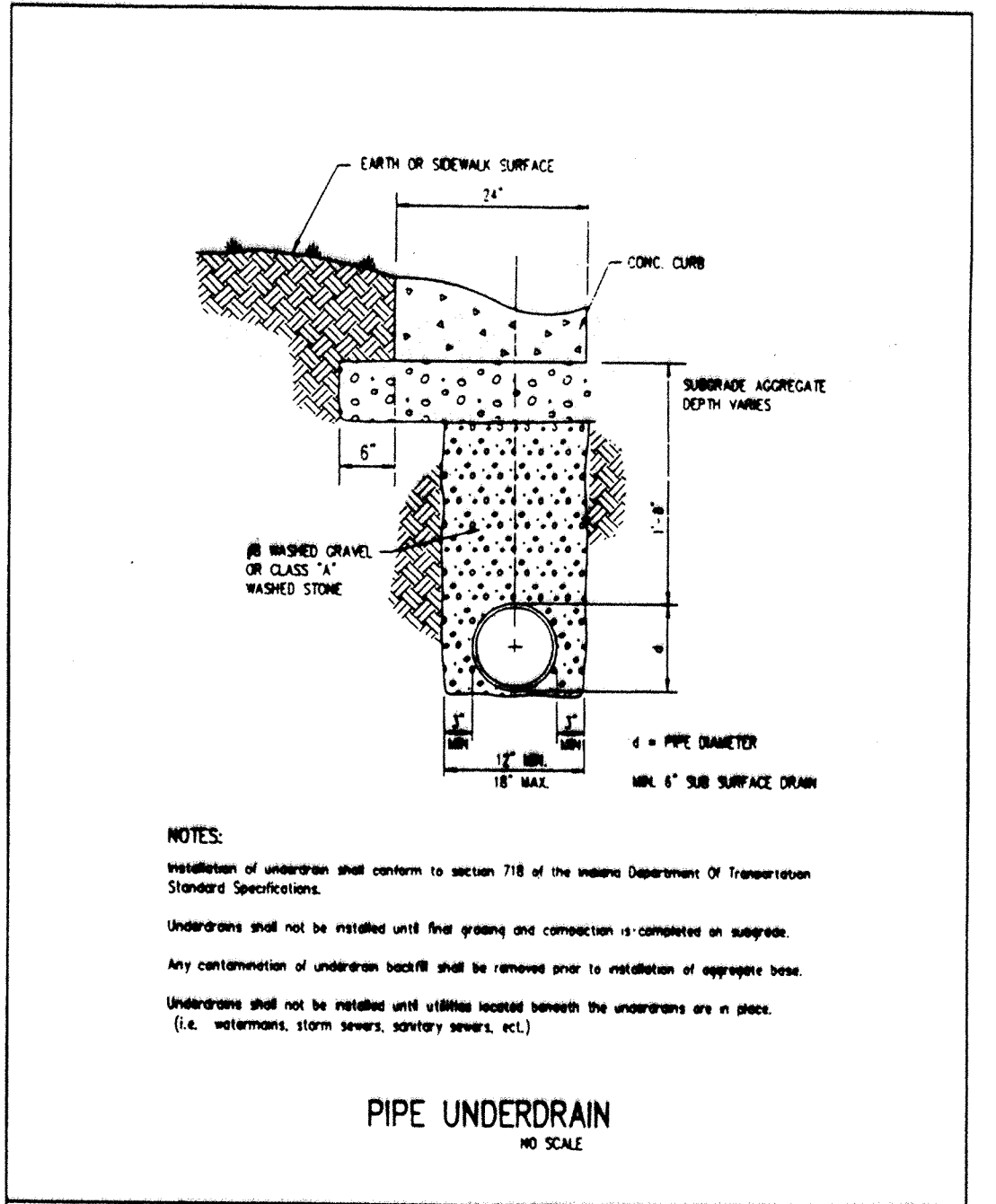
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		C-5



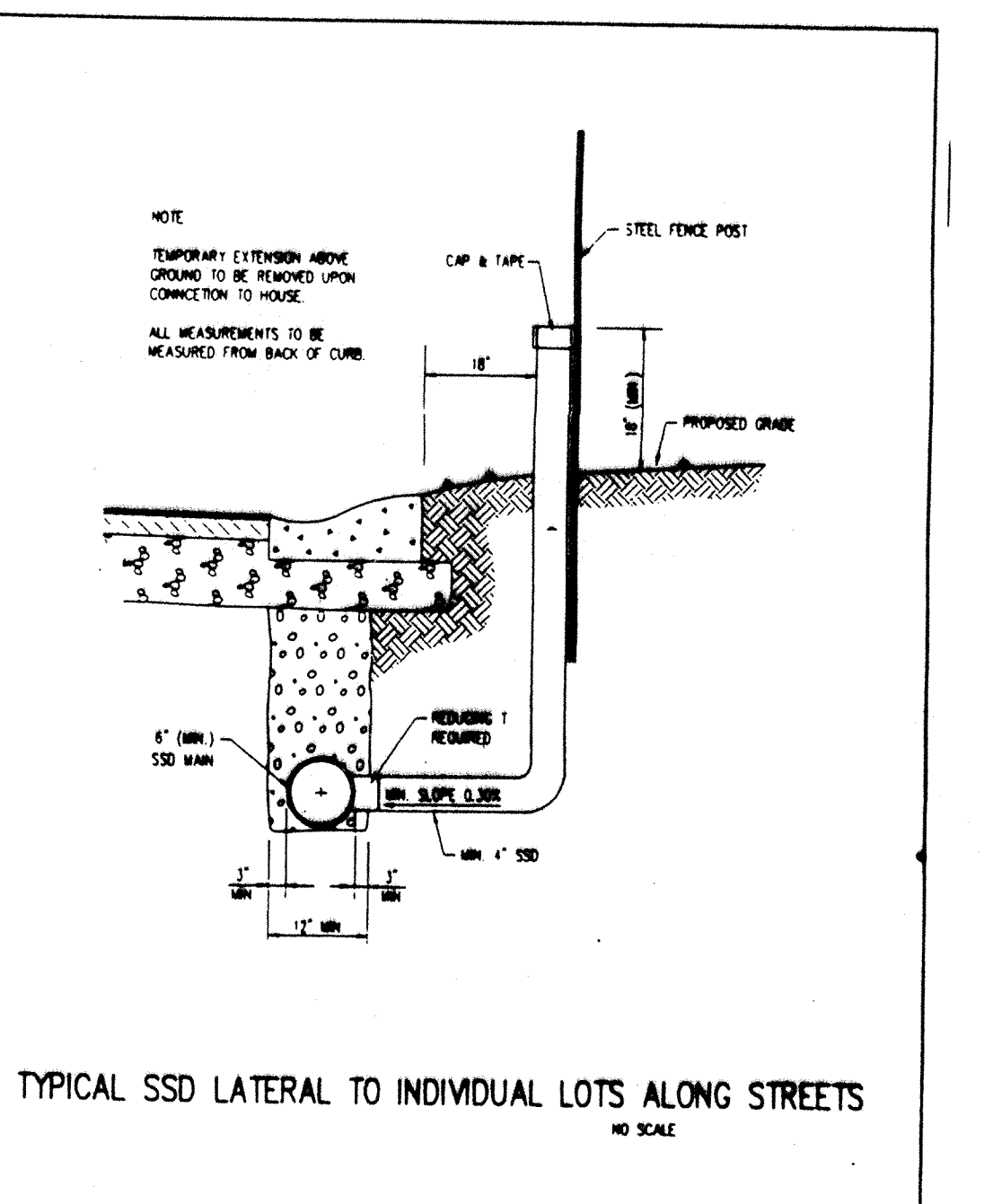
HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		CS-1



HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		P-1



HAMILTON COUNTY SURVEYORS OFFICE

RECOMMENDED:	4-5-93	REVISED:	STANDARD PLAN
APPROVED:	4-5-93		P-1

Revisions

CERTIFIED BY: *David K. Sexton*  
4-5-95

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A Partnered Entity with Bohlen, Meyer, Gibson & Associates, Incorporated

BRENWICK DEVELOPMENT CO. INC.  
THE CROSSINGS SECTION 3  
AT SPRINGMILL VILLAGES

**HAMILTON COUNTY DETAILS**

Date	Project No.	Drawn	Approved
1/25/95	895.23	GSD	
Computer Files	Sheet No.		
89523W01	S-13A		

OF 14



EARTHWORK

1. SCOPE OF WORK

A. Extent: The work required under this section consists of all excavating, filling, rough grading and related items necessary to complete the work indicated on the drawings and described in the specifications. The Contractor shall notify in writing the owners and the Engineer of any changes, errors, or omissions found on the plans or in the field, before work is started or resumed.

1. In general, the items of work to be performed under this section shall include: clearing and grubbing, removal of trees and stumps (where required), protection of trees to remain, stripping and storage of topsoil, fill compaction and rough grading of entire site.

2. Excavated material that is suitable may be used for fills. All unsuitable material and all surplus excavated material not required shall be removed from the site. The location of dump and length of haul shall be the Contractor's responsibility.

3. Provide and place any additional fill material from off the site as may be necessary to produce the grades required. Fill obtained from off site shall be of kind and quality as specified for fills herein and the source approved by the Owner.

4. The Contractor shall accept the site as he finds it and shall remove all trash, rubbish and debris from the site prior to starting excavation.

B. Work not included: The following items of related work are specified and included in other sections of these specifications:

- 1. Excavation, grading and backfilling for utility lines
2. Storm drainage systems
3. Sanitary sewer systems
4. Streets and paving
5. Water supply system

2. BENCH MARKS

Maintain carefully all bench marks, monuments and other reference points; if disturbed or destroyed, contractor shall contact engineer.

3. REMOVAL OF TREES

A. Remove all trees and stumps from area to be occupied by road and surfaced areas. Removal of trees outside these areas shall only be done as noted on drawings or approved by the Owner.

B. All brush, stumps, wood and other refuse from the trees shall be buried onsite or removed to disposal area off of the site. Disposal by burning shall not be permitted unless proper permits are obtained (where applicable). The location of an site bury pits shall be designated by the owner or the Engineer.

4. PROTECTION OF TREES

A. General Protection: The Contractor shall be responsible for the protection of tops, trunks and roots of existing trees on the project site that are to remain. Existing trees subject to construction damage shall be boxed, fenced or otherwise protected before any work is started; do not stockpile within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint.

5. HANDLING OF TOPSOIL

A. Remove all organic material from the areas to be occupied by buildings, roads, walks and parking areas. Pile and store topsoil at a location where it will not interfere with construction operations. Topsoil shall be reasonably free from subsoil, debris, weeds, grass, stones, ect.

B. After completion of site grading and subsurface utility installation, top soil shall be replaced in areas designated on the erosion control plan for seeding and/or sodding. Any remaining top soil shall be used for finished grading around structures and landscaping areas.

6. DISPOSITION OF UTILITIES:

A. Rules and regulations governing the respective utilities shall be observed in executing all work under this section.

B. If active utilities are encountered but not shown on the drawings, the Engineer shall be advised before work is continued.

C. Inactive and abandoned utilities encountered in excavating and grading operations shall be reported to the Engineer. They shall be removed, plugged or capped as directed by the Utility Company and the Engineer.

D. It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractors responsibility to contact the owners of the various utilities before work is started.

7. SITE GRADING:

A. Grades: Contractor shall perform all cutting, filling, compacting of fills and rough grading required to bring entire project area to grade as shown on the drawings.

B. Rough Grading: The tolerance for paved areas shall not exceed 0.10 feet plus or minus above the established subgrade. All other areas shall not exceed 0.10 feet plus or minus the established grade. All banks and other breaks in grade shall be rounded at top and bottom.

C. Compaction Requirements:

- 1. All building pad areas shall be compacted to standards specified by local and/or state building codes.
2. For compaction requirements of paved areas, see street specifications.

8. Earth Work Balance

The Contractor shall confirm all earthwork quantities prior to start of construction. If an excess or shortage of earth is encountered, the Contractor shall confirm with the Owner and Engineer the requirements for stockpiling, removal or importing of earth. Minor adjustments to the grades may be required to earthwork balances when minor excess material or shortages are encountered. It is recognized by the parties hereto that the calculations of the Engineer in determining earthwork quantities shall be completed in accordance with the American Society of Civil Engineers Standards for such calculations. Further, that these calculations are subject to the interpretations of soil borings at the physical limits of the various soil types, also the allowable variation in finish grade and compaction permitted the contractor, and that all of these parameters may cause either an excess or shortage of actual earthwork materials to complete the project. If such an actual minor excess or shortage of materials occurs, the contractor shall contact the engineer to determine if adjustment can be made to correct the imbalance of earth.

SANITARY SEWER SYSTEMS

1. SCOPE OF WORK

The work under this section includes all sanitary sewers, manholes, cleanouts and related items including excavating and backfilling, necessary to complete the work shown in the drawings, starting five feet outside the building walls. The ends of sewers shall be tightly plugged or capped at the terminal points, adjacent to buildings, pending the connecting of all such lines to the building drain as specified in the plumbing specifications and architectural drawings.

2. MATERIALS

A. Sanitary Sewers

- 1. All gravity plastic sewer pipe and fittings shall conform to ASTM D3034, SDR-35 and meet a cell classification of 12454 B in accordance with ASTM 1784.

B. Manholes

- 1. Precast reinforced concrete manhole sections and steps shall conform to ASTM C-478 latest revision.
2. Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortion or other defects. They shall be smooth and well-cleaned by shot-blasting or by some other approved method. They shall be coated with asphalt paint which shall result in a smooth coating, tough and tenacious when cold, not tacky or brittle. They shall be gray iron meeting ASTM A-48 latest revision. Manhole covers for sanitary sewer shall be Neenah Type R-1642 with "I" concealed pickhole.
3. Joints - manhole sections shall be jointed with sealed "o" rings. The "o" rings shall meet ASTM C-443 latest revisions.
4. Blamatic coating shall be applied around each manhole joint from 6 inches above to 6 inches below each joint. Inside joints to be filled with precast plug material.

3. APPLICATION

- A. Permits and Codes - The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing sewers.
B. Local Standards - The term "local standards" as used herein means the standards of design and construction of the respective municipal department of utility company.
C. Existing Improvements - Maintain in operating condition all active utilities, sewers and other drains encountered in the sewer installation. Repair to the satisfaction of the owner any damage to existing active improvements.
D. Workmanship - To conform to all local, state and national codes and be approved by all local and state agencies having jurisdiction.
E. Trenching - Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficiently ahead of pipe-laying to reveal any obstructions. The width of the trench shall be the inside pipe diameter plus 24 inches for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances shall pipe or appurtenances be laid in standing water. Conduct the discharge from trench dewatering to drains or natural drainage channels.
F. Special Supports - Whenever, in the opinion of the Engineer, the soil at or below the pipe grade is unsuitable for supporting sewers and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.
G. Backfilling - for a depth of at least 12 inches above the top of the pipe, backfill with granular material free from large stones, rock fragments, roots or sod. Compact this backfill thoroughly, taking care not to disturb the pipe, for the remaining trench depth, backfill with earth or granular material containing stones or rocks not larger than 4 inches. Backfill under and within 5' of walks, parking areas, driveways and streets shall be granular material only thoroughly compacted, by approved methods.
H. Flow Channels - The flow channels within manholes shall be an integral part of the precast base. The channels shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flow through the manhole. The bench wall shall be formed to the crown of the inlet and outlet pipes to form a "U" shaped channel. The bench wall shall slope back from the crown at 1/2 inch per foot to the manhole wall.
I. Infiltration - The contractor shall furnish necessary equipment to test sewers for infiltration. Infiltration rates shall not exceed the Local Standards. All sanitary sewer lines upon completion will be required to pass a low pressure air test, unless otherwise directed by Hamilton Western Utilities. Said test shall be conducted according to NCP Standard Method, and shall be witnessed by an inspector authorized by Hamilton Western Utilities. Infiltration under test shall not exceed 200 gallons per inch of inside diameter of sewer pipe per mile of sewer 24 hours and inclusive of all appurtenances within the section being tested such as manholes, connections, etc.

J. Flushing Sewers - Flush all sanitary sewers except building sewers with water to obtain free flow through each line. Remove all silt and trash from appurtenances just prior to acceptance of work.

K. Plastic Sewer Pipe Installation - Plastic sewer pipe shall be installed in accordance with ASTM D2321 per latest revision and no plastic pipe shall exceed a deflection of 5%.

L. Storm Water Connections - No roof drains, footing drains and/or surface water drains may be connected to the sanitary sewer systems, including temporary connections during construction.

M. Waterline Crossing - Where water lines and sanitary sewers cross and water lines cannot be placed above the sewer with a minimum of 18 inches vertical clearance, the sewer must be constructed of water works grade ductile iron pipe with mechanical joints within 10 feet of the water line.

N. Utilities - It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractors responsibility to contact the owners of the various utilities before work is started. The contractor shall notify in writing the owners and the engineer of any changes, errors or omissions found on these plans or in the field before work is started or resumed.

O. Service Laterals - Individual lot service lines shall be 6" in diameter and of material equal to that specified in 2A of this section. Service lines shall be connected to the main sewer by a wye at locations shown on plan & profile sheets. Unless otherwise noted, lateral ends shall be extended to edge of easement. Location of laterals shall be marked on curb by stamping curb with "SA" at time of curb placement. Letters shall be 2" in height & painted with green paint after concrete is cured. Ends of lines shall be marked with a wood 4x4 pointed green.

P. New Sanitary Sewer Main Construction - Contractor shall record dimensions of each service line stub from nearest downstream manhole measured along the sanitary sewer main. The locations of manholes and service lines along with any other construction changes are to be incorporated on the original construction drawings and "Record Drawing" prints submitted to the City of Carmel and the engineer as soon after completion of construction as possible.

STORM SEWER SYSTEMS

1. SCOPE OF WORK

The work under this section includes all storm sewers, storm water inlets, and related items, including excavating and backfilling, necessary to complete the work shown on the drawings.

2. MATERIALS

A. Storm Sewers

- 1. Reinforced concrete sewer pipe shall conform to ASTM C-76 latest revision, with joints conforming to ASTM C-443 latest revision. When storm pipe is submerged.

B. Manholes

- 1. Precast reinforced concrete manhole sections and steps shall conform to ASTM C-478 latest revision.
2. Casting shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortion or other defects. They shall be smooth and well cleaned by shot-blasting or by some other approved method. They shall be coated with asphalt paint which shall result in a smooth coating, tough and tenacious when cold, not tacky or brittle. They shall be gray iron meeting ASTM A-48 latest revision.
3. Joints - Manhole sections shall be jointed with rubber type gaskets. The rubber type gaskets shall meet ASTM C-443 latest revision. When manhole and storm pipe are continuously in water.

C. SUBDRAINS

- 1. Perforated plastic pipe subdrains shall conform to ASTM F-405.

3. APPLICATION

- A. Permits and Codes - The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing sewers.
B. Local Standards - The term "Local Standards" as used herein means the standards of design and construction of the respective municipal department or utility company.
C. Existing Improvements - Maintain in operating condition all active utilities, sewers and other drains encountered in the sewer installation. Repair to the satisfaction of the owner any damage to existing active improvements.
D. Workmanship - To conform to all local, state and national codes and to be approved by all local and state agencies having jurisdiction.
E. Trenching - Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficient ahead of pipe-laying to reveal any obstructions. The width of the trench shall be the inside pipe diameter plus 24 inches above for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances shall pipe or appurtenances be laid in standing water. Conduct the discharge from trench dewatering to drains or natural drainage channels.
F. Special Supports - Whenever in the opinion of the Engineer, the soil at or below the pipe grade is unsuitable for supporting sewers and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.

G. Backfilling - for a depth of at least 12 inches above the top of the pipe, backfill with earth or granular material free from large stones, rock fragments, roots or sod. Tamp this backfill thoroughly, taking care not to disturb the pipe. For the remaining trench depth, backfill with earth or granular material containing stones or rocks not larger than 4 inches. Backfill under and within 5' of walks, parking areas, driveways and street shall be granular material only - thoroughly compacted by approved methods.

H. Manhole Inverts - Construct manhole flow channels of concrete sewer pipe or brick, smoothly finished and of semi-circular section conforming to the inside diameter of the connecting sewer. Make changes in size or grade gradually and changes in direction by true curves. Provide such channels for all connecting sewers at each manhole.

I. Subdrains - All subdrains shall be of the size shown on the plans and shall be constructed to the grades shown. All drains constructed as part of the outlet drain will be located as shown.

J. Utilities - It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractors responsibility to contact the owners of the various utilities before work is started. The contractor shall notify in writing the owners or the engineer of any changes, errors or omissions found on these plans or in the field before work is started or resumed.

K. Contractor to grout joints inside storm structures where pipe meets structure and between structure and casting.

STREETS

Note: If a conflict arises between these specs. and the Hamilton County Highway Dept. specs, the Hamilton County Highway Specs. will prevail.

1. SCOPE OF WORK

The work required under this section includes all concrete and bituminous pavements and related items necessary to complete the work indicated on drawings and described in the specifications, including but not limited to:

- All streets, parking areas in contract limits
Curbs and gutters
Sidewalks and concrete slabs, exterior steps

2. MATERIALS

A. Concrete - Concrete shall be ready-mixed concrete and shall be a mix of proportioned fine and coarse aggregates with Portland cement and water. Minimum cement content shall be 6 bags per cubic yard of concrete and maximum water content shall be 5.5 U.S. gallons per sack of cement, including moisture in the aggregate. Slump for normal weight concrete shall be a maximum of 4 inches and a minimum of 2 inches. The slump of machine placed concrete shall be no less than 1-1/4 inches nor more than 3 inches. Standard test ASTM C-143 shall be used to measure slump. Compressive strength of concrete at 28 days shall be 4000 psi. All exterior concrete shall have air entrainment of 5% to 8% by volume per ASTM C-260. Retempering of delivered concrete will not be allowed. Concrete shall be composed of:

- 1. Portland cement - Conforming to ASTM C-150, Type IA or Type IIA.
2. Aggregates: Conforming to ASTM C-33

3. Water - Shall be clear and free from injurious amounts of oils, acids, alkalis, organic materials or other deleterious substances.

B. Welded Steel Wire Fabric - Where required for concrete reinforcement shall conform to ASTM A185.

C. Premolded Joint Filler - Shall be of non-extruding type meeting ASTM D-514 except that premolded joint filler used in concrete walk construction may be either non-extruding or resilient.

D. Bituminous Pavement Materials - All materials proposed for the construction of bituminous pavements shall comply with the Indiana Department of Transportation specifications, per latest revision.

E. Compacted Aggregate Subbase: Shall be crushed stone or gravel. Crushed gravel shall be a minimum of 35% crushed material. Chert shall be limited to a maximum of 8% of the total. Material shall be free from an excess of flat, elongated, thinly laminated, soft or disintegrated pieces; and shall be free from fragments coated with dirt. Compacted aggregate shall be graded as follows:

Table with 2 columns: SIEVE SIZE and % PASSING. Rows include 1-1/2", 1", 3/4", 1/2", #4, #8, #20, #30, #200.

3. APPLICATION

- A. Grading - Do any necessary grading in addition to that performed in accordance with Earthwork Section, to bring subgrades, after final compaction, to the required grades and sections for site improvement.
B. Preparation of Subgrade - Remove spongy and otherwise unsuitable material and replace with stable material. No traffic will be allowed on prepared subgrade prior to paving.
C. Compaction of Subgrade - The first 6 inches below the subgrade shall be compacted to at least 100% of the maximum dry density as determined by the provisions of AASHTO T-99. Water shall be prevented from standing on the compacted subgrade.
D. Utility Structures - Check for correct elevation of all manhole covers, valve boxes and similar structures located within areas to be paved, and make, or have made, any necessary adjustments in such structures.
E. Placing Concrete
1. Subgrade - Place concrete only on a moist, compacted subgrade or base free from loose material. Place no concrete on a muddy or frozen subgrade.
2. Forms - All forms shall be free from warp, tight enough to prevent leakage and substantial enough to maintain their shape and position without springing or settling, when concrete is placed. Forms shall be clean and smooth immediately before concreting.

3. Placing Concrete - Concrete shall be deposited so as to require as little rehandling as practicable. When concrete is to be placed at an atmospheric temperature of 35 degrees F. or less, paragraph 702.10 of the Indiana Department of Transportation Specifications latest revision shall be followed.

F. Concrete Curb

- 1. Expansion Joints - Shall be 1/2 inch thick pre-molded between storm structures & curb.
2. Contraction/Control Joints - Unless otherwise provided, contraction joints shall be sawed or scored joints spaced 10 feet on center, except for intersection radii where joints shall be placed 5' o.c.
3. Finish - Tamp and screed concrete as soon as placed, and fill any honey combed places. Finish square corners to 1/4" radius and other corners to radii shown.

G. Concrete Walks and Exterior Steps

- 1. Slopes - Provide 1/4 inch per foot cross slope. Make adjustments in slopes at walk intersections as necessary to provide proper drainage.
2. Dimensions - Walks and steps shall be one course construction and of widths and details shown on the drawings.
3. Finish - Screed concrete and trowel with a steel trowel to a hard dense surface after surface water has disappeared. Apply medium broom finish and scribe control joints at 5 foot spacing. Provide 1/2" expansion joints where sidewalks intersect, and at a maximum spacing of 48 feet between expansion joints.

H. Curing Concrete - Except as otherwise specified, cure all concrete by one of the methods described in Section 501.17 of the Indiana Department of Transportation Specifications, latest revision.

I. Bituminous Pavement - Hot asphalt concrete pavement shall be as specified in Section 403 of the Indiana Department of Transportation Specifications latest revisions. Paving will not be permitted during unfavorable weather or when the temperature is 40 degrees F. and falling.

J. Compacted Aggregate Subbase - The thickness shown on the drawings is the minimum thickness of the fully compacted subbase. Compaction shall be accomplished by rolling with a smooth wheeled roller weighing 8 to 10 tons. Compact to 90% compaction using Standard Testing Procedures. Along curbs, headers and walls and at or placed not accessible to the roller, the aggregate material shall be tamped with mechanical tampers or with approved hand tampers.

Revisions
3-23-95 REV. PER TAC COMMENTS

Professional Engineer seal for David K. Sexton, No. 950028, State of Indiana. Includes signature and certification text.

Schneider Engineering Corporation logo and contact information. Includes address (3020 North Post Road, Indianapolis, Indiana), phone numbers, and website. Also includes project details: BRENNICK DEVELOPMENT CO. INC., THE CROSSINGS SECTION 3, AT SPRINGMILL VILLAGE. General Specifications table with Date (1/25/95), Project No. (895.23), Drawn (GSD), and Sheet No. (S-14).