SURVEYOR'S OFFICE

Hamilton County

Kenton C. Ward, Surveyor
Phone (317) 776-8495
Fax (317) 776-9628

Suite 188
One Hamilton County Square
Noblesville, Indiana 46060-2230

January 3, 2006

To: Hamilton County Drainage Board

Re: Crooked Creek Drain, Mayflower Arm – West Carmel Marketplace Relocation

Attached is a petition and plans for the proposed relocation of the Mayflower Arm of the Crooked Creek Drain. The relocation is being proposed by Duke Construction, L.P. The proposal is to reconstruct the Mayflower Arm, Crooked Creek Drain from a point 27 feet downstream of Str. 6 of the Mayflower Arm and relocate the drain along future 99th Street to Crooked Creek.

The relocated drain shall consist of those lengths of pipes between the following structures as shown on the plans by Woolpert, dated October 20, 2004, and having job number 61287.03: Starting approximately 27 feet downstream of existing Structure 6 is the location for Str. 94, then the drain continues to Str. 93, 8, 7, 6, 5, 4, 97, 3, 2, 1, 85, and 84. Structure 84 is an end section that outlets into Lake B, the drain then continues as 150 feet of open ditch through Lake B to Str. 74 and 73. Structure 73 is an end section that discharges into the Crooked Creek Drain at the approximate location the Mayflower Drain currently discharges.

Also, additional new drain shall be those lengths of pipes between the following structures: 94 to 9, 94 to 10, 7 to 46, 46 to 47, 6 to 42, 42 to 43, 43 to 44, 44 to 45, 45 to 41, 5 to 23, 23 to 24, 24 to 25, 25 to 31, 4 to 20, 20 to 21, 3 to 18, and 18 to 88. Also to be included is Structure 77 to 89, 89 to 86, 86 to 78, 79 to 90, 90 to 80, 81 to 82, and 82 to 83.

The drain in total will consist of the following lengths:

12" RCP – 279 ft	15" RCP – 95 ft	24" RCP – 454 ft
30" RCP – 154 ft	36" RCP – 258 ft	42" RCP – 331 ft
48" RCP – 714 ft	54" RCP – 657 ft	Open Ditch – 150 ft

As part of this reconstruction, Structure 105 of the Crooked Creek Drain, Commerce Drive Extension Arm and the 27 feet of pipe to Str. 106 will be removed.

The total length of new tile shall be 3092 feet. The 1,748 feet of the original Mayflower Arm between 27 feet downstream of Str. 6 and Str. 9A and 135 of open drain between Str. 9A and Crooked Creek, per the original 1974 construction plans, and 27 feet

between Str. 105 and Str. 106 of the Commerce Drive Extension Arm, per my report to the Board dated June 23, 2003 (DB 7 pgs 123-124), shall be vacated. This proposal will add an additional 1344 feet to the Mayflower Arm and remove 27 feet from the Commerce Drive Extension Arm, for a total addition of 1317 feet to the Crooked Creek Drain.

The retention ponds (Ponds B, C, D, and E) located in Common Areas Block D and E are to be considered part of the regulated drain. Pond maintenance shall include the inlets, outlets, sediment removal, and erosion control along the banks as part of the regulated drain. The maintenance of the ponds, such as mowing and aquatic vegetation control will be the responsibility of the association or property owner. The Board will also retain jurisdiction for ensuring the storage volume which the ponds were designed will be retained, thereby, allowing no fill or easement encroachments.

Retention pond A and the storm sewer from Str. 75 to 87 and 87 to 76 shall remain private and will be the maintenance responsibility of the association or property owner per the agreement with the Board and Duke, D.B. 8, pages 176-177, 183-184, and 217.

The cost of the relocation is to be paid by Duke Construction, L.P. Because the project is to be paid by the petitioner and is within the boundaries of the petitioner's property, the project falls under the requirements as set out in IC 36-9-27-52.5. Therefore, a hearing is not required for the petition.

For the relocated drain located within the boundaries of West Carmel Marketplace, I recommend that the Board also approve the attached non-enforcement request. The request is for the reduction of the regulated drain easement to those easement widths as shown on the secondary plat for West Carmel Marketplace as recorded in the office of the Hamilton County Recorder.

The petitioner has provided the Performance Bond as follows:

Name of Bonding Company: Western Surety Company
Bond Number: 929352993
Bond Date: December 13, 2004
Bond Amount: $323,961.00

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 approval by the Board at this time.

Sincerely,

Kenton C. Ward
Hamilton County Surveyor

KCW/grh

Revised June 1997

HAMILTON COUNTY DRAINAGE BOARD
NOBLESVILLE, INDIANA

IN RE: _____)
Hamilton County, Indiana)

PETITION FOR RELOCATION AND RECONSTRUCTION

DUKE CONSTRUCTION, L.P. (hereinafter Petitioner"), hereby petitions the Hamilton County Drainage Board for authority to relocate and improve a section of the MAYFLOWER PARK ARM OF THE CROOKED CREEK REGULATED Drain, and in support of said petition advises the Board that:

1. Petitioner owns real estate through which a portion of the MAYFLOWER PARK ARM OF THE CROOKED CREEK REGULATED Drain runs.

2. Petitioner plans to develop its real estate with roads, buildings, utilities, storm drains, sanitary sewers and other structures.

3. Petitioner's proposed development of its real estate will require relocation and reconstruction of a portion of the MAYFLOWER PARK ARM OF THE CROOKED CREEK REGULATED Drain, as specifically shown on engineering plans and specifications filed with the Hamilton County Surveyor.

4. The work necessary for the proposed relocation and reconstruction will be undertaken at the sole expense of the Petitioner and such work will result in substantial improvement to the MAYFLOWER PARK ARM OF THE CROOKED CREEK REGULATED Drain, without cost to other property owners on the watershed of the _____ Drain.

5. Proposed relocation and reconstruction will not adversely affect other land owners within the drainage shed.

6. Petitioner requests approval of the proposed relocation and reconstruction under IC 36-9-27-52.5.

WHEREFORE, Petitioner requests that an Order issued from the Hamilton County Drainage Board authorizing relocation and reconstruction of the MAYFLOWER PARK ARM OF THE CROOKED CREEK REGULATED Drain, in conformance with applicable law and plans and specifications on file with the Hamilton County Surveyor.

Cynthia J. Schembre
Signed
Cynthia J. Schembre
Printed

SURVEYOR'S OFFICE

Hamilton County

Kenton C. Ward, CFM
Surveyor of Hamilton County
Phone (317) 776-8495
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Suite 188
One Hamilton County Square
Noblesville, Indiana 46060-2230

To: Hamilton County Drainage Board **February 3, 2009**

Re: Crooked Creek Drain: Mayflower Arm- West Carmel Marketplace Relocation

Attached are as-builts, certificate of completion & compliance, and other information for West Carmel Marketplace Relocation of the Mayflower Arm. An inspection of the drainage facilities for this section has been made and the facilities were found to be complete and acceptable.

During construction, changes were made to the drain, which will alter the plans submitted with my report for this drain-dated January 3, 2006. The report was approved by the Board at the hearing held February 27, 2006. (See Drainage Board Minutes Book 9, Pages 84-85)
The changes are as follows:

Structure:	Length:	Size	Material:	Up Invert:	Dn_Invert	Grade:
94-8	59	36	RCP	878.31	879.2	1.51
8-7	195	36	RCP	878.84	877.02	0.93
7-6	95	42	RCP	877.02	876.77	0.26
6-5	328	48	RCP	876.77	876.38	0.12
5-4	265	48	RCP	876.38	876.24	0.05
4-97	86	48	RCP	875.84	875.72	0.14
97-3	31	48	RCP	875.61	875.77	0.51
3-2	159	54	RCP	875.45	875.38	0.04
2-1	192	54	RCP	875.4	875.04	0.19
1-85	192	54	RCP	874.93	874.18	0.39
85-84	114	54	RCP	874.13	874.19	-0.05
74-73	66	24	RCP	873.89	873.61	0.42
10-94	66	12	RCP	883.29	883.65	0.45
9-94	24	12	RCP	883.65	883.08	2.6
47-46	44	12	RCP	885	884.8	0.45
45-44	36	12	RCP	884.76	884.1	1.8
44-43	42	15	RCP	884.1	883.76	0.79
43-42	44	15	RCP	883.76	883.35	0.95
41-45	20	12	RCP	885	884.76	1.2
6-42	9	15	RCP	883.35	882.58	1.11

31-25	32	12	RCP	884.5	884.36	0.45
25-24	39	30	RCP	878.94	877.98	0.53
24-23	44	30	RCP	877.98	877.75	0.52
23-5	9	30	RCP	877.75	876.38	0.53
21-20	46	12	RCP	881.96	881.5	1
20-4	9	12	RCP	881.5		1.9
18-3	9	30	RCP	876.03	875.57	0.5
88-18	53	30	RCP	876.28	876.03	0.47
86-78	59	24	RCP	874.14	874.12	0.14
89-86	55	24	RCP	874.12	874.2	-0.15
77-89	86	24	RCP	874.19	874.14	0.06
80-90	41	24	RCP	874.25	874.07	0.44
90-79	115	24	RCP	874.07	874.12	-0.04
81-82	140	42	RCP	874.01	873.96	-0.07
82-83	79	42	RCP	873.96	873.98	-0.02
7-46	9	12	RCP	884.8	884.72	

RCP Pipe Totals:

12	286
15	95
24	422
30	154
36	254
42	314
48	710
54	657
Total:	2892

Other Drain:	
150-OPEN DITCH	

The length of the drain due to the changes described above is now **3042 feet**. The project removed 1804 feet of the existing Mayflower Arm and 124 feet of the Commerce Drive Arm. The non-enforcement was approved by the Board at its meeting on February 27, 2006 and recorded under instrument #200677172.

The following sureties were guaranteed by Western Surety Company expired on December 13, 2006.

Bond-LC No: 929352993
Insured For: Storm Sewers
Amount: $323,961.00
Issue Date: December 13, 2004

I recommend the Board approve the drain's construction as complete and acceptable.

Sincerely,

Kenton C. Ward, CFM
Hamilton County Surveyor

WEST CARMEL MARKETPLACE
PHASE 1

DOCKET NOS. 04050029-30V, 04050033-36V, 04070008-10V, 04050028DP/ADLS
9901 NORTH MICHIGAN ROAD
CARMEL, INDIANA
OCTOBER 20, 2004

OWNER:

Duke Realty Corporation

600 East 96th Street, Suite 100, Indianapolis, IN 46240 317.808.6000

CONTRACTOR:

Duke Construction Limited Partnership

600 East 96th Street, Suite 100, Indianapolis, IN 46240 317.808.6000

WOOLPERT
WOOLPERT, INC.
7140 Waldemar Drive
Indianapolis, Indiana
46268-4192
317.299.7500
FAX: 317.291.5805

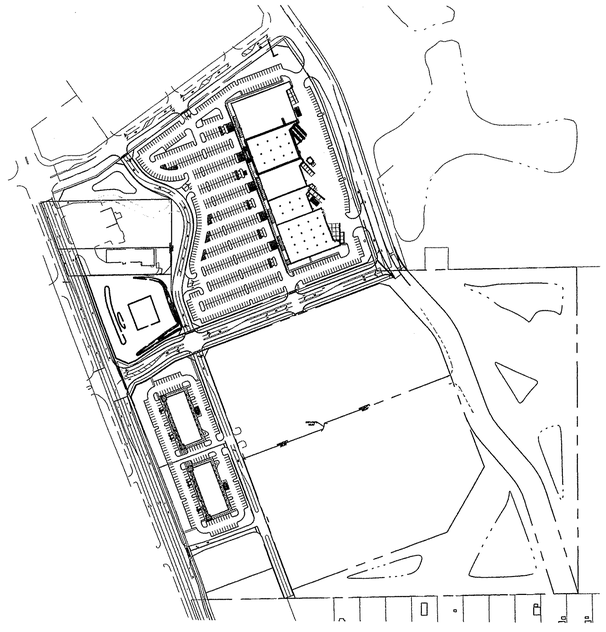
I HEREBY CERTIFY THAT THESE DRAWINGS DEPICT AS-BUILT FIELD DATA AND WERE PREPARED BY WOOLPERT, INC.

JOHN R. HESHELMAN REGISTERED No. S0386 STATE OF INDIANA LAND SURVEYOR

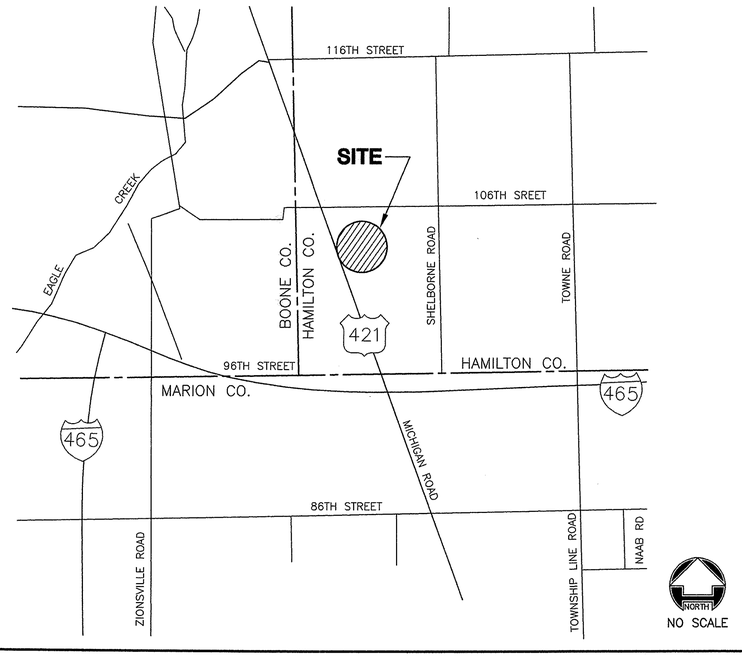
JOHN R. HESHELMAN, L.S.
S0386
DATE: 4/13/07

STORM SEWER AS-BUILT

SITE PLAN

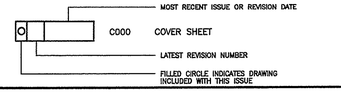


VICINITY MAP



SHEET INDEX

DRAWING INDEX LEGEND



No.	DATE	REVISION
26	10/06/06	PER OWNER FOR HOMEGOODS
25	05/09/06	DRIVE REVISION PER CLIENT
24	04/27/06	DRIVE EXT. & MASS GRADING BLOCK F & H
23	03/14/06	BID PACK #8 – OFFICE MAX
22	12/19/05	PER OWNER FOR B-SHOPS
21	12/06/05	BID PACK #7 FOR PETCO/BESTBUY
20	12/05/05	PER OWNER FOR CTRWD
19	11/07/05	BID PACK #6
18	10/24/05	BID PACK #5 FOR BEST BUY & PETCO
17	09/20/05	PER OWNER
16	08/25/05	PER OWNER AND HCHD

PROJECT No. : 61287.03

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Layer State: , Layout Tab Name: COVER SHEET, Images: , Xrefs:
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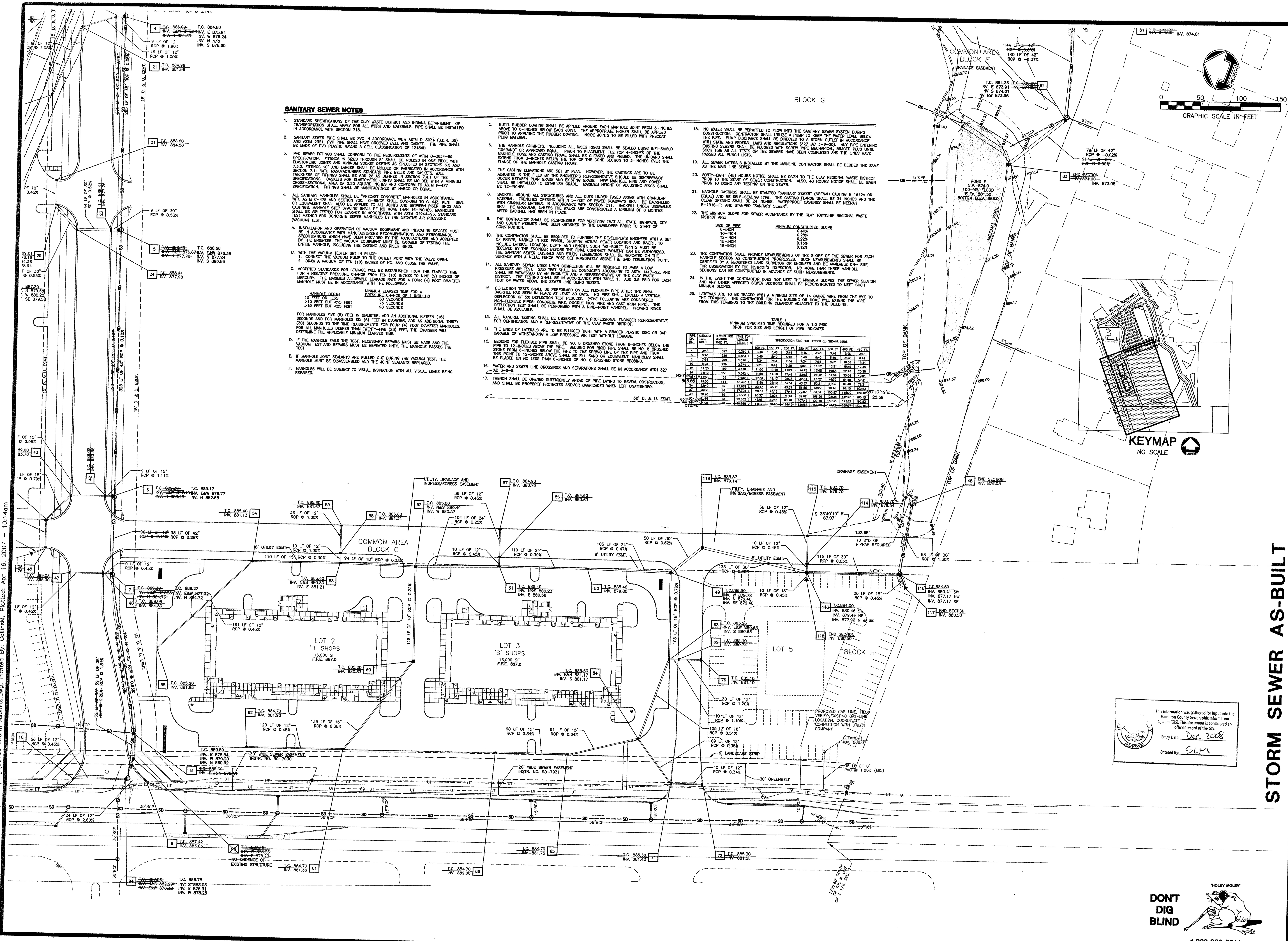

SANITARY SEWER NOTES

1. STANDARD SPECIFICATIONS OF THE CLAY WASTE DISTRICT AND INDIANA DEPARTMENT OF TRANSPORTATION SHALL APPLY FOR ALL WORK AND MATERIALS. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 715.
2. SANITARY SEWER PIPE SHALL BE PVC IN ACCORDANCE WITH ASTM D-3034 (S.D.R. 35) AND ASTM 2321. PVC PIPE SHALL HAVE GROOVED BELL AND GASKET. THE PIPE SHALL BE MADE OF PVC PLASTIC HAVING A CELL CLASSIFICATION OF 12454B.
3. PVC SEWER FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3034-89 SPECIFICATION. FITTINGS IN SIZES THROUGH 8" SHALL BE MOLDED IN ONE PIECE WITH ELASTOMERIC JOINTS AND MINIMUM SOCKET DEPTHS AS SPECIFIED IN SECTIONS 6.2 AND 7.3.2. FITTINGS 10" AND LARGER SHALL BE MOLDED OR FABRICATED IN ACCORDANCE WITH SECTION 7.11 WITH MANUFACTURERS STANDARD PIPE BELLS AND GASKETS. WALL THICKNESS OF FITTINGS SHALL BE SDR 26 AS DEFINED IN SECTION 7.4.1 OF THE SPECIFICATIONS. GASKETS FOR ELASTOMERIC JOINTS SHALL BE MOLDED WITH A MINIMUM CROSS-SECTIONAL AREA OF 0.20 SQUARE INCHES AND CONFORM TO ASTM F-477 SPECIFICATION. FITTINGS SHALL BE MANUFACTURED BY HARCO OR EQUAL.
4. ALL SANITARY MANHOLES SHALL BE "PRECAST CONCRETE" MANHOLES IN ACCORDANCE WITH ASTM C-478 AND SECTION 720. O-RINGS SHALL CONFORM TO C-443. KENT SEAL OR EQUIVALENT SHALL ALSO BE APPLIED TO ALL JOINTS AND BETWEEN RISER RINGS AND CASTINGS. MANHOLE STEP SPACING SHALL BE NO MORE THAN 16-INCHES. MANHOLES SHALL BE AIR TESTED FOR LEAKAGE IN ACCORDANCE WITH ASTM C1244-93, STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE (VACUUM) TEST.
   A. INSTALLATION AND OPERATION OF VACUUM EQUIPMENT AND INDICATING DEVICES MUST BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND PERFORMANCE SPECIFICATIONS WHICH HAVE BEEN PROVIDED BY THE MANUFACTURER AND ACCEPTED BY THE ENGINEER. THE VACUUM EQUIPMENT MUST BE CAPABLE OF TESTING THE ENTIRE MANHOLE, INCLUDING THE CASTING AND RISER RINGS.
   B. WITH THE VACUUM TESTER SET IN PLACE:
      1. CONNECT THE VACUUM PUMP TO THE OUTLET PORT WITH THE VALVE OPEN.
      2. DRAW A VACUUM OF TEN (10) INCHES OF HG. AND CLOSE THE VALVE.
   C. ACCEPTED STANDARDS FOR LEAKAGE WILL BE ESTABLISHED FROM THE ELAPSED TIME FOR A NEGATIVE PRESSURE CHANGE FROM TEN (10) INCHES TO NINE (9) INCHES OF MERCURY. THE MAXIMUM ALLOWABLE LEAKAGE RATE FOR A FOUR (4) FOOT DIAMETER MANHOLE MUST BE IN ACCORDANCE WITH THE FOLLOWING:

MANHOLE DEPTH	MINIMUM ELAPSED TIME FOR A PRESSURE CHANGE OF 1 INCH HG
10 FEET OR LESS	60 SECONDS
>10 FEET BUT <15 FEET	75 SECONDS
>15 FEET BUT <25 FEET	90 SECONDS

   FOR MANHOLES FIVE (5) FEET IN DIAMETER, ADD AN ADDITIONAL FIFTEEN (15) SECONDS AND FOR MANHOLES SIX (6) FEET IN DIAMETER, ADD AN ADDITIONAL THIRTY (30) SECONDS TO THE TIME REQUIREMENTS FOR FOUR (4) FOOT DIAMETER MANHOLES. FOR ALL MANHOLES DEEPER THAN TWENTY-FIVE (25) FEET, THE ENGINEER WILL DETERMINE THE APPLICABLE MINIMUM ELAPSED TIME.
   D. IF THE MANHOLE FAILS THE TEST, NECESSARY REPAIRS MUST BE MADE AND THE VACUUM TEST AND REPAIRS MUST BE REPEATED UNTIL THE MANHOLE PASSES THE TEST.
   E. IF MANHOLE JOINT SEALANTS ARE PULLED OUT DURING THE VACUUM TEST, THE MANHOLE MUST BE DISASSEMBLED AND THE JOINT SEALANTS REPLACED.
   F. MANHOLES WILL BE SUBJECT TO VISUAL INSPECTION WITH ALL VISUAL LEAKS BEING REPAIRED.
5. BUTYL RUBBER COATING SHALL BE APPLIED AROUND EACH MANHOLE JOINT FROM 6-INCHES ABOVE TO 6-INCHES BELOW EACH JOINT. THE APPROPRIATE PRIMER SHALL BE APPLIED PRIOR TO APPLYING THE RUBBER COATING. INSIDE JOINTS TO BE FILLED WITH PRECOAT PLUG MATERIAL.
6. THE MANHOLE CHIMNEYS, INCLUDING ALL RISER RINGS SHALL BE SEALED USING INFI-SHIELD "UNIBAND" OR APPROVED EQUAL. PRIOR TO PLACEMENT, THE TOP 4-INCHES OF THE MANHOLE CONE AND CASTING FRAME SHALL BE CLEANED AND PRIMED. THE UNIBAND SHALL EXTEND FROM 3-INCHES BELOW THE TOP OF THE CONE SECTION TO 2-INCHES OVER THE FLANGE OF THE MANHOLE CASTING FRAME.
7. THE CASTING ELEVATIONS ARE SET BY PLAN. HOWEVER, THE CASTINGS ARE TO BE ADJUSTED IN THE FIELD BY THE ENGINEER'S REPRESENTATIVE SHOULD BE DISCREPANCY OCCUR BETWEEN PLAN GRADE AND EXISTING GRADE. NEW MANHOLE RING AND COVER SHALL BE INSTALLED TO ESTABLISH GRADE. MAXIMUM HEIGHT OF ADJUSTING RINGS SHALL BE 12-INCHES.
8. BACKFILL AROUND ALL STRUCTURES AND ALL CUTS UNDER PAVED AREAS WITH GRANULAR MATERIAL. TRENCHES OPENING WITHIN 5-FEET OF PAVED ROADWAYS SHALL BE BACKFILLED WITH GRANULAR MATERIAL IN ACCORDANCE WITH SECTION 211. BACKFILL UNDER SIDEWALKS SHALL BE GRANULAR, UNLESS THE WALKS ARE CONSTRUCTED A MINIMUM OF 6 MONTHS AFTER BACKFILL HAS BEEN IN PLACE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL STATE HIGHWAYS, CITY AND COUNTY PERMITS HAVE BEEN OBTAINED BY THE DEVELOPER PRIOR TO START OF CONSTRUCTION.
10. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH THE DEVELOPER'S ENGINEER WITH A SET OF PRINTS, MARKED IN RED PENCIL, SHOWING ACTUAL SEWER LOCATION AND INVERT, TO INCLUDE LATERAL LOCATION, DEPTH AND LENGTH. SUCH "AS-BUILT" PRINTS MUST BE RECEIVED BY THE ENGINEER BEFORE THE FINAL CONTRACT PAYMENT CAN BE AUTHORIZED. THE SANITARY SEWER LATERALS AND STUBS TERMINATION SHALL BE INDICATED ON THE SURFACE WITH A METAL FENCE POST SET IMMEDIATELY ABOVE THE SAID TERMINATION POINT.
11. ALL SANITARY SEWER LINES UPON COMPLETION WILL BE REQUIRED TO PASS A LOW PRESSURE AIR TEST. SAID TEST SHALL BE CONDUCTED ACCORDING TO ASTM 1417-92, AND SHALL BE WITNESSED BY AN ENGINEER AND A REPRESENTATIVE OF THE CLAY WASTE DISTRICT. THE TESTING SHALL BE IN ACCORDANCE WITH TABLE 1. ADD 0.5 PSIG FOR EACH FOOT OF WATER ABOVE THE SEWER LINE BEING TESTED.
12. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE* PIPE AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A VERTICAL DEFLECTION OF 5% DEFLECTION TEST RESULTS. (*THE FOLLOWING ARE CONSIDERED NON-FLEXIBLE PIPES: CONCRETE PIPE, DUCTILE IRON PIPE AND CAST IRON PIPE). THE DEFLECTION TEST SHALL BE PERFORMED WITH A NINE-POINT MANDREL. PROVING RINGS SHALL BE AVAILABLE.
13. ALL MANDREL TESTING SHALL BE OBSERVED BY A PROFESSIONAL ENGINEER REPRESENTATIVE FOR CERTIFICATION AND A REPRESENTATIVE OF THE CLAY WASTE DISTRICT.
14. THE ENDS OF LATERALS ARE TO BE PLUGGED TIGHT WITH A BRACED PLASTIC DISC OR CAP CAPABLE OF WITHSTANDING A LOW PRESSURE AIR TEST WITHOUT LEAKAGE.
15. BEDDING FOR FLEXIBLE PIPE SHALL BE NO. 8 CRUSHED STONE FROM 6-INCHES BELOW THE PIPE TO 12-INCHES ABOVE THE PIPE. BEDDING FOR RIGID PIPE SHALL BE NO. 8 CRUSHED STONE FROM 6-INCHES BELOW THE PIPE TO THE SPRING LINE OF THE PIPE AND FROM THIS POINT TO 12-INCHES ABOVE SHALL BE FILL SAND OR EQUIVALENT. MANHOLES SHALL BE PLACED ON NO LESS THAN 6-INCHES OF NO. 8 CRUSHED STONE BEDDING.
16. WATER AND SEWER LINE CROSSINGS AND SEPARATIONS SHALL BE IN ACCORDANCE WITH 327 IAC 3-6-9.
17. TRENCH SHALL BE OPENED SUFFICIENTLY AHEAD OF PIPE LAYING TO REVEAL OBSTRUCTION, AND SHALL BE PROPERLY PROTECTED AND/OR BARRICADED WHEN LEFT UNATTENDED.
18. NO WATER SHALL BE PERMITTED TO FLOW INTO THE SANITARY SEWER SYSTEM DURING CONSTRUCTION. CONTRACTOR SHALL UTILIZE A PUMP TO KEEP THE WATER LEVEL BELOW THE PIPE. PUMP DISCHARGE SHALL BE DIRECTED TO A STORM OUTLET IN ACCORDANCE WITH STATE AND FEDERAL LAWS AND REGULATIONS (327 IAC 3-6-20). ANY PIPE ENTERING EXISTING SEWERS SHALL BE PLUGGED WITH SCREW TYPE MECHANICAL, BRACED PLUG UNTIL SUCH TIME AS ALL TESTS ON THE SEWERS HAVE BEEN COMPLETED AND THE LINES HAVE PASSED ALL PUNCH LISTS.
19. ALL SEWER LATERALS INSTALLED BY THE MAINLINE CONTRACTOR SHALL BE BEDDED THE SAME AS THE MAIN LINE SEWER.
20. FORTY-EIGHT (48) HOURS NOTICE SHALL BE GIVEN TO THE CLAY REGIONAL WASTE DISTRICT PRIOR TO THE START OF SEWER CONSTRUCTION. ALSO, 48 HOURS NOTICE SHALL BE GIVEN PRIOR TO DOING ANY TESTING ON THE SEWER.
21. MANHOLE CASTINGS SHALL BE STAMPED "SANITARY SEWER" (NEENAH CASTING R 1642A OR EQUAL) AND BE SELF-SEALING TYPE. THE CASTING FLANGE SHALL BE 34 INCHES AND THE CLEAR OPENING SHALL BE 24 INCHES. WATERPROOF CASTINGS SHALL BE NEENAH R-1916-F1 AND STAMPED "SANITARY SEWER".
22. THE MINIMUM SLOPE FOR SEWER ACCEPTANCE BY THE CLAY TOWNSHIP REGIONAL WASTE DISTRICT ARE:

SIZE OF PIPE	MINIMUM CONSTRUCTED SLOPE
8-INCH	0.40%
10-INCH	0.28%
12-INCH	0.22%
15-INCH	0.15%
18-INCH	0.12%

23. THE CONTRACTOR SHALL PROVIDE MEASUREMENTS OF THE SLOPE OF THE SEWER FOR EACH MANHOLE SECTION AS CONSTRUCTION PROGRESSES. SUCH MEASUREMENTS SHALL BE CERTIFIED BY A REGISTERED LAND SURVEYOR OR ENGINEER AND BE AVAILABLE ON- SITE FOR OBSERVATION BY THE DISTRICT'S INSPECTOR. NO MORE THAN THREE MANHOLE SECTIONS CAN BE CONSTRUCTED IN ADVANCE OF SUCH MEASUREMENTS.
24. IN THE EVENT THE CONTRACTOR DOES NOT MEET THE MINIMUM SLOPES, THE SEWER SECTION AND ANY OTHER AFFECTED SEWER SECTIONS SHALL BE RECONSTRUCTED TO MEET SUCH MINIMUM SLOPES.
25. LATERALS ARE TO BE TRACED WITH A MINIMUM SIZE OF 14 GAUGE WIRE FROM THE WYE TO THE TERMINUS. THE CONTRACTOR FOR THE BUILDING OR HOME WILL EXTEND THE WIRE FROM THIS TERMINUS TO THE BUILDING CLEANOUT ADJACENT TO THE BUILDING.

TABLE 1
MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG DROP FOR SIZE AND LENGTH OF PIPE INDICATED

PIPE DIA. IN.	MINIMUM TIME, MIN:S	LENGTH FOR MINIMUM TIME, FT.	TIME FOR LONGER LENGTH, S	SPECIFICATION TIME FOR LENGTH (L) SHOWN, MIN:S							
				100 FT.	150 FT.	200 FT.	250 FT.	300 FT.	350 FT.	400 FT.	450 FT.
4	3:48	597	0.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	386	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	8:28	239	2.374 L	9:28	9:28	9:28	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	158	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
[illegible]	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	89	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:26	71:13	89:02	106:50	124:38	142:25	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:49	129:18	150:43	172:21	193:53
36	34:00	68	30.768 L	51:17	76:55	102:12	128:12	153:50	179:29	205:07	230:46

This information was gathered for input into the Hamilton County Geographic Information System (GIS). This document is considered an official record of the GIS.
Entry Date: Dec 2008
Entered By: SLM

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G:\SV\Projects\66163 West Carmel Mktpl LTS\dwg\66163 Storm Asbuilts.dwg, Plotted By: CollinsM, Plotted: Apr 16, 2007 - 10:14am

STORM SEWER AS-BUILT

Duke CONSTRUCTION
600 East 96th Street
Suite 100
Indianapolis, IN 46240
Phone: (317) 808-6000
Fax: (317) 808-6797

WOOLPERT
WOOLPERT, INC.
7140 Waldemar Drive
Indianapolis, Indiana
46268-4192
317.299.7500
FAX: 317.291.5805

Revisions:

5	12/29/04	PER CTRWD, HCSO
6	01/27/05	PER HCSO, OWNER
7	02/15/05	STORM SEWER REV.
12	06/02/05	ROAD ALIGNMENT
13	06/08/05	PER OWNER
18	11/23/05	PER OWNER
22	12/19/05	BID PACK #1 FOR B-SHOPS
24	04/27/06	DRIVE EXT. & MASS GRADING BLK. F & H

Scale: 1"=50'
Date: 10/20/04
Drawn By: PJD
Checked By: DK

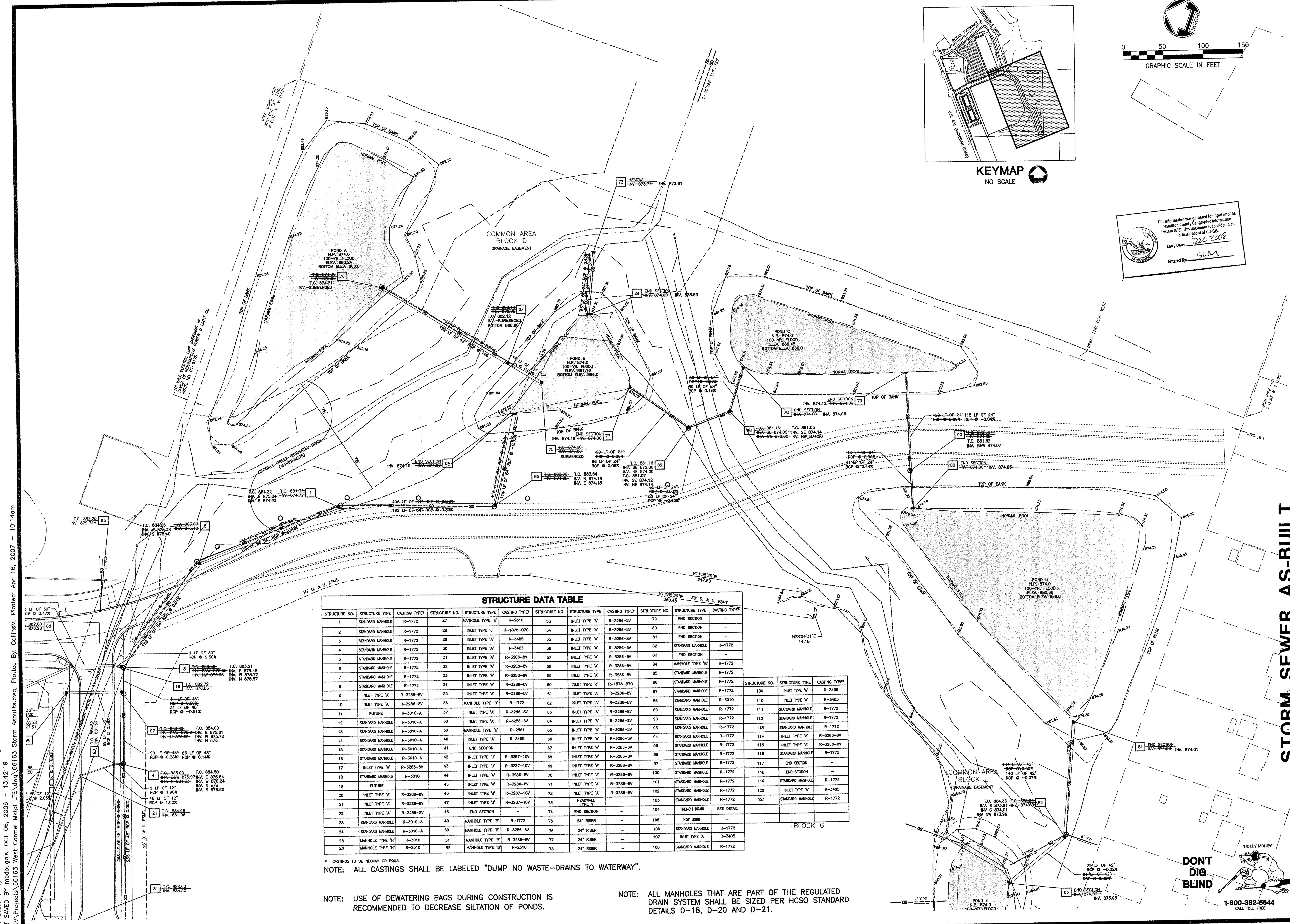
WEST CARMEL MARKETPLACE - PHASE 1

9901 NORTH MICHIGAN ROAD
CARMEL, INDIANA

UTILITY PLAN - 'B' SHOPS AREA

Certified By:

Drawing Number: C402
18 of 40 Sheets
Duke Realty Job Number: WNC301-001
A/E Job Number: 61287.03



STRUCTURE DATA TABLE

STRUCTURE NO.	STRUCTURE TYPE	CASTING TYPE*	STRUCTURE NO.	STRUCTURE TYPE	CASTING TYPE*	STRUCTURE NO.	STRUCTURE TYPE	CASTING TYPE*	STRUCTURE NO.	STRUCTURE TYPE	CASTING TYPE*
1	STANDARD MANHOLE	R-1772	27	MANHOLE TYPE 'H'	R-2510	53	INLET TYPE 'A'	R-3286-8V	79	END SECTION	–
2	STANDARD MANHOLE	R-1772	28	INLET TYPE 'J'	R-1878-B7G	54	INLET TYPE 'A'	R-3286-8V	80	END SECTION	–
3	STANDARD MANHOLE	R-1772	29	INLET TYPE 'A'	R-3405	55	INLET TYPE 'A'	R-3286-8V	81	END SECTION	–
4	STANDARD MANHOLE	R-1772	30	INLET TYPE 'A'	R-3405	56	INLET TYPE 'A'	R-3286-8V	82	STANDARD MANHOLE	R-1772
5	STANDARD MANHOLE	R-1772	31	INLET TYPE 'A'	R-3286-8V	57	INLET TYPE 'A'	R-3286-8V	83	END SECTION	–
6	STANDARD MANHOLE	R-1772	32	INLET TYPE 'A'	R-3286-8V	58	INLET TYPE 'A'	R-3286-8V	84	MANHOLE TYPE 'B'	R-1772
7	STANDARD MANHOLE	R-1772	33	INLET TYPE 'A'	R-3286-8V	59	INLET TYPE 'A'	R-3286-8V	85	STANDARD MANHOLE	R-1772
8	STANDARD MANHOLE	R-1772	34	INLET TYPE 'A'	R-3286-8V	60	INLET TYPE 'J'	R-1878-B7G	86	STANDARD MANHOLE	R-1772
9	INLET TYPE 'A'	R-3286-8V	35	INLET TYPE 'A'	R-3286-8V	61	INLET TYPE 'A'	R-3286-8V	87	STANDARD MANHOLE	R-1772
10	INLET TYPE 'A'	R-3286-8V	36	MANHOLE TYPE 'B'	R-1772	62	INLET TYPE 'A'	R-3286-8V	88	STANDARD MANHOLE	R-3010
11	FUTURE	R-3010-A	37	INLET TYPE 'A'	R-3286-8V	63	INLET TYPE 'A'	R-3286-8V	89	STANDARD MANHOLE	R-1772
12	STANDARD MANHOLE	R-3010-A	38	INLET TYPE 'A'	R-3286-8V	64	INLET TYPE 'A'	R-3286-8V	90	STANDARD MANHOLE	R-1772
13	STANDARD MANHOLE	R-3010-A	39	MANHOLE TYPE 'B'	R-2561	65	INLET TYPE 'A'	R-3286-8V	93	STANDARD MANHOLE	R-1772
14	STANDARD MANHOLE	R-3010-A	40	INLET TYPE 'A'	R-3405	66	INLET TYPE 'A'	R-3286-8V	94	STANDARD MANHOLE	R-1772
15	STANDARD MANHOLE	R-3010-A	41	END SECTION	–	67	INLET TYPE 'A'	R-3286-8V	95	STANDARD MANHOLE	R-1772
16	STANDARD MANHOLE	R-3010-A	42	INLET TYPE 'J'	R-3287-10V	68	INLET TYPE 'A'	R-3286-8V	96	STANDARD MANHOLE	R-1772
17	INLET TYPE 'A'	R-3286-8V	43	INLET TYPE 'J'	R-3287-10V	69	INLET TYPE 'A'	R-3286-8V	97	STANDARD MANHOLE	R-1772
18	STANDARD MANHOLE	R-3010	44	INLET TYPE 'A'	R-3286-8V	70	INLET TYPE 'A'	R-3286-8V	100	STANDARD MANHOLE	R-1772
19	FUTURE		45	INLET TYPE 'A'	R-3286-8V	71	INLET TYPE 'A'	R-3286-8V	101	STANDARD MANHOLE	R-1772
20	INLET TYPE 'A'	R-3286-8V	46	INLET TYPE 'J'	R-3287-10V	72	INLET TYPE 'A'	R-3286-8V	102	STANDARD MANHOLE	R-1772
21	INLET TYPE 'A'	R-3286-8V	47	INLET TYPE 'J'	R-3287-10V	73	HEADWALL TYPE 1	–	103	STANDARD MANHOLE	R-1772
22	INLET TYPE 'A'	R-3286-8V	48	END SECTION	–	74	END SECTION	–	104	TRENCH DRAIN	SEE DETAIL
23	STANDARD MANHOLE	R-3010-A	49	MANHOLE TYPE 'B'	R-1772	75	24" RISER	–	105	NOT USED	–
24	STANDARD MANHOLE	R-3010-A	50	MANHOLE TYPE 'B'	R-3286-8V	76	24" RISER	–	106	STANDARD MANHOLE	R-1772
25	MANHOLE TYPE 'H'	R-3010	51	MANHOLE TYPE 'B'	R-3286-8V	77	24" RISER	–	107	INLET TYPE 'A'	R-3405
26	MANHOLE TYPE 'H'	R-2510	52	MANHOLE TYPE 'B'	R-2510	78	24" RISER	–	108	STANDARD MANHOLE	R-1772

STRUCTURE NO.	STRUCTURE TYPE	CASTING TYPE*
109	INLET TYPE 'A'	R-3405
110	INLET TYPE 'A'	R-3405
111	STANDARD MANHOLE	R-1772
112	STANDARD MANHOLE	R-1772
113	STANDARD MANHOLE	R-1772
114	INLET TYPE 'A'	R-3286-8V
115	INLET TYPE 'A'	R-3286-8V
116	STANDARD MANHOLE	R-1772
117	END SECTION	–
118	END SECTION	–
119	STANDARD MANHOLE	R-1772
120	INLET TYPE 'A'	R-3405
121	STANDARD MANHOLE	R-1772

* CASTINGS TO BE NEENAH OR EQUAL

NOTE: ALL CASTINGS SHALL BE LABELED "DUMP NO WASTE-DRAINS TO WATERWAY".

NOTE: USE OF DEWATERING BAGS DURING CONSTRUCTION IS RECOMMENDED TO DECREASE SILTATION OF PONDS.

NOTE: ALL MANHOLES THAT ARE PART OF THE REGULATED DRAIN SYSTEM SHALL BE SIZED PER HCSO STANDARD DETAILS D-18, D-20 AND D-21.

STORM SEWER AS-BUILT

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Revisions:
18 10/24/05 BID PACK #5 FOR BEST BUY & PETCO
20 12/05/05 PER OWNER
23 03/14/06 BID PACK #8 FOR OFFICE MAX
24 04/27/06 DRIVE EXT. & MASS GRADING BLK. F & H
25 05/09/06 DRIVE REVISION PER CLIENT
26 10/06/06 PER CLIENT FOR HOMEGOODS

Scale: 1"=50'
Date: 10/20/04
Drawn By: PJD
Checked By: DK

WEST CARMEL MARKETPLACE - PHASE 1

9901 NORTH MICHIGAN ROAD
CARMEL, INDIANA

UTILITY PLAN - DETENTION PONDS AREA

Certified By:

Drawing Number: C403
19 of 40 Sheets
Duke Realty Job Number: WNC301-001
A/E Job Number: 61287.03

Layout State: , Layout Tab Name: C403 PONDS AREA, Images: , Xrefs:
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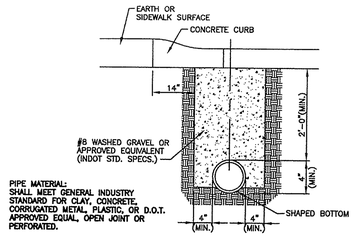
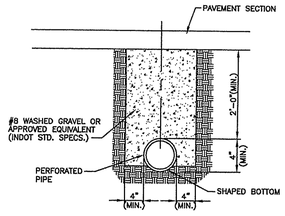


PIPE MATERIAL:
SHALL MEET GENERAL INDUSTRY STANDARD FOR CLAY, CONCRETE, CORRUGATED METAL, PLASTIC, OR D.O.T. APPROVED EQUAL, OPEN JOINT OR PERFORATED.

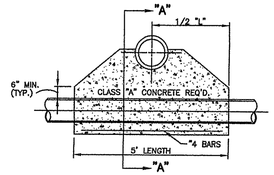
INSTALLATION REQUIRED:
BOTH SIDES OF ALL PAVEMENT, UNLESS WAIVED IN WRITING BY INDIANAPOLIS DEPARTMENT OF TRANSPORTATION.

PIPE UNDERDRAIN
(TYPICAL INSTALLATIONS)
NO SCALE



NOTE:
UNDERDRAIN TO BE PLACED @ 0.5% SLOPE MINIMUM

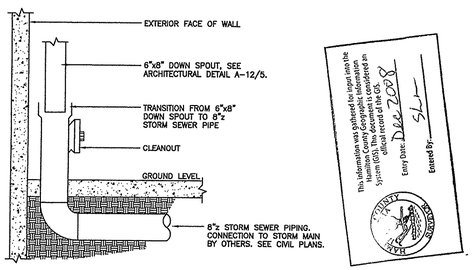
PIPE UNDERDRAIN AT STRUCTURES
(TYPICAL INSTALLATIONS)
NO SCALE



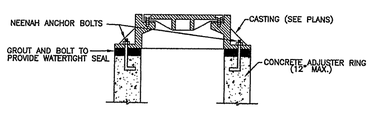
TO BE USED WHEN CLEARANCE BETWEEN PIPES IS 12" OR LESS, OR WHERE NOTED ON DRAWING.

SECTION "A – A"

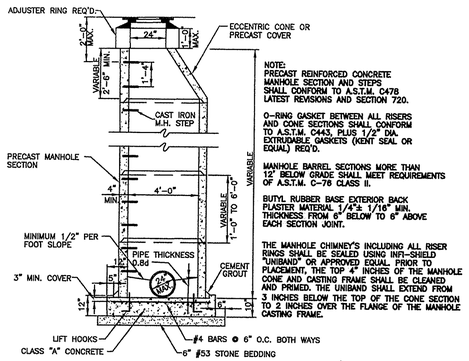
PIPE CROSSING ENCASEMENT DETAIL
NO SCALE



DOWN SPOUT CONNECTION
NO SCALE



CONCRETE ADJUSTER RING
NO SCALE



NOTE:
PRECAST REINFORCED CONCRETE MANHOLE SECTION AND STEPS SHALL CONFORM TO A.S.T.M. C478 LATEST REVISIONS AND SECTION 720.

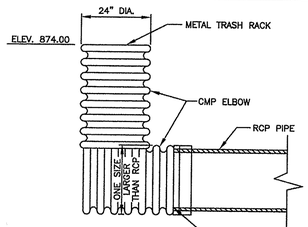
O-RING GASKET BETWEEN ALL RISERS AND CONE SECTIONS SHALL CONFORM TO A.S.T.M. C443, PLUS 1/2" DIA. EXTRUDABLE GASKETS (KENT SEAL OR EQUAL) REQ'D.

MANHOLE BARREL SECTIONS MORE THAN 12" BELOW GRADE SHALL MEET REQUIREMENTS OF A.S.T.M. C-76 CLASS II.

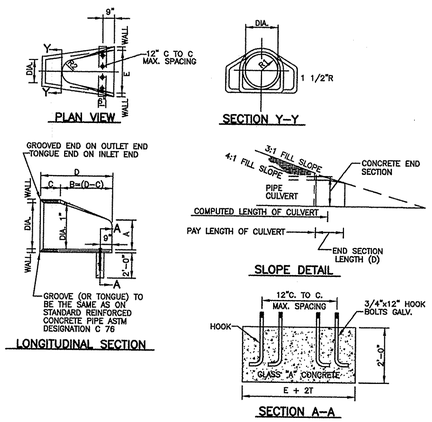
BUTYL RUBBER BASE EXTERIOR BACK PLASTER MATERIAL 1/4"± 1/16" MIN. THICKNESS FROM 6" BELOW TO 6" ABOVE EACH SECTION JOINT.

THE MANHOLE CHIMNEY'S INCLUDING ALL RISER RINGS SHALL BE SEALED USING INFI-SHIELD "UNIBAND" OR APPROVED EQUAL PRIOR TO PLACEMENT, THE TOP 4" INCHES OF THE MANHOLE CONE AND CASTING FRAME SHALL BE CLEANED AND PRIMED. THE UNIBAND SHALL EXTEND FROM 3 INCHES BELOW THE TOP OF THE CONE SECTION TO 2 INCHES OVER THE FLANGE OF THE MANHOLE CASTING FRAME.

MANHOLE TYPE "C"
NO SCALE



24" RISER
NO SCALE



DIA.	WALL	WT. SEC.	A	B	C	D	E	R-1	R-2	SKIRT
12	2	530	4	24	48 7/8	72 7/8	24	10 1/16	9	3 1/2
15	2 1/4	740	6	27	46	73	30	12 1/2	11	3 1/2
18	2 1/2	990	9	27	46	73	36	15 1/2	12	4
21	2 3/4	1280	9	35	38	73	42	16 1/8	13	4
24	3	1520	9 1/2	43 1/2	30	73 1/2	48	16 11/16	14	4 1/2
27	3 1/4	1930	10 1/2	48	25 1/2	73 1/2	54	17 3/4	14 1/2	4 1/2
30	3 1/2	2190	12	54	19 3/4	73 3/4	60	18 5/16	15	5
33	3 3/4	3150	13 1/2	58 1/2	39 1/4	97 3/4	66	23 3/4	17 1/2	5 1/2
36	4	4100	15	63	34 3/4	97 3/4	72	24 1/16	20	5 1/2
42	4 1/2	5380	21	63	35	98	78	27 1/4	22	5 1/2
48	5	6550	24	72	26	98	84	28 1/8	22	5 3/4
54	5 1/2	8040	27	65	35	100	90	32 7/8	24	6 1/4
60	6	8750	30	60	39	99	96	36 3/4	24	6 3/4
66	6 1/2	10630	24	78	21	99	102	35 11/16	24	7 1/4
72	7	12520	34	78	21	99	108	38 5/8	24	7 3/4
78	7 1/2	14430	24	78	21	99	114	41 15/16	24	8 1/2
84	8	16350	24	78	21	99	120	44 13/16	24	9

*TOLERANCE 1±

NOTES:

CONCRETE IN THESE SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE, A.S.T.M. DESIGNATION C-76 CLASS II (AS SET OUT IN STANDARD SPECIFICATIONS).

REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR THE REINFORCED CONCRETE, A.S.T.M. DESIGNATION C-76 CLASS II FOR THE SIZE OF CONNECTING PIPE.

REINFORCEMENT IN THE "B" PORTION SHALL HAVE A CROSS SECTIONAL AREA EQUAL TO THAT OF ONE LAYER OF STEEL IN THE "C" PORTION.

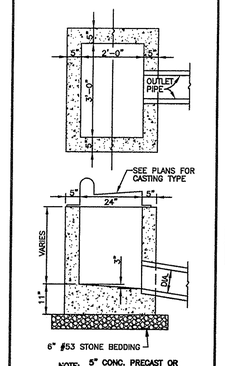
THE END OF THE PIPE CULVERT SHALL BE PLACED IN THE CONCRETE END SECTION SO THAT THE FLOW LINES ARE FLUSH. THE JOINT SHALL BE COMPLETELY FILLED WITH MORTAR.

IN 3:1 OR 4:1 FILL SLOPE, CHANGE TO THE SLOPE OF THE END SECTION IN A SMOOTH, PLEASING TRANSITION APPROXIMATELY 10'-0 IN LENGTH.

VARIATIONS IN DIMENSIONS – THE THICKNESS OF THE CONCRETE, THE POSITION OF STEEL, AND THE INTERNAL DIAMETER OF THE PIPE SHALL CONFORM WITH THE VARIATIONS IN DIMENSIONS AS PROVIDED IN THE SPECIFICATIONS FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE, A.S.T.M. DESIGNATION C-76.

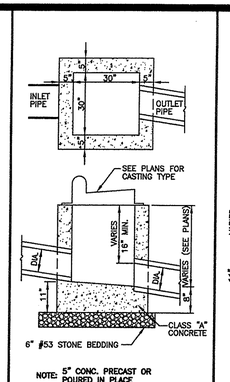
CONCRETE PIPE TOE ANCHORS SHALL BE REQUIRED ON ALL CONCRETE PIPE END SECTIONS.

PRECAST CONCRETE END SECTION
NO SCALE



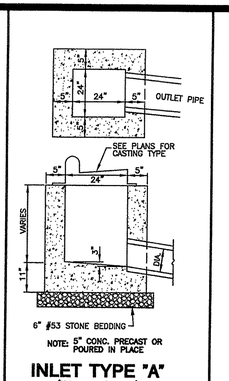
NOTE: 5" CONC. PRECAST OR POURED IN PLACE

INLET TYPE "J"
NO SCALE



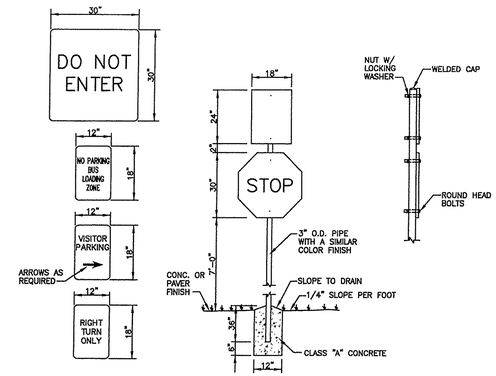
NOTE: 5" CONC. PRECAST OR POURED IN PLACE

INLET TYPE "E"
NO SCALE

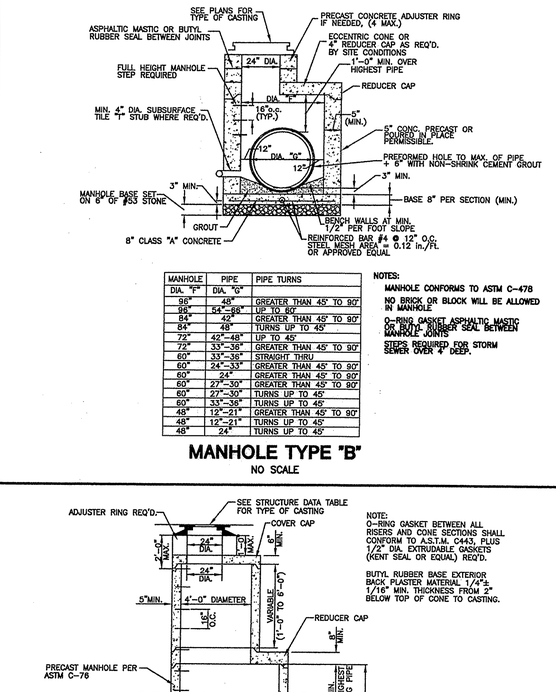


NOTE: 5" CONC. PRECAST OR POURED IN PLACE

INLET TYPE "A" (TYPICAL)
(12" TO 18" PIPES)
NO SCALE



STREET SIGN DETAIL
NO SCALE



MANHOLE DIA. "F"	PIPE DIA. "G"	PIPE TURNS
96"	48"	GREATER THAN 45° TO 90°
96"	54"–66"	UP TO 60°
84"	48"	GREATER THAN 45° TO 90°
84"	48"	TURNS UP TO 45°
72"	42"–48"	UP TO 45°
72"	33"–36"	GREATER THAN 45° TO 90°
60"	33"–36"	STRAIGHT THRU
60"	24"–33"	GREATER THAN 45° TO 90°
60"	24"	GREATER THAN 45° TO 90°
60"	27"–30"	GREATER THAN 45° TO 90°
60"	27"–30"	TURNS UP TO 45°
60"	33"–36"	TURNS UP TO 45°
48"	12"–21"	GREATER THAN 45° TO 90°
48"	12"–21"	TURNS UP TO 45°
48"	24"	TURNS UP TO 45°

NOTES:
MANHOLE CONFORMS TO ASTM C-478

NO BRICK OR BLOCK WILL BE ALLOWED IN MANHOLE

O-RING GASKET ASPHALTIC MASTIC OR BUTYL RUBBER SEAL BETWEEN MANHOLE JOINTS

STEPS REQUIRED FOR STORM SEWER OVER 4' DEEP.

MANHOLE TYPE "B"
NO SCALE

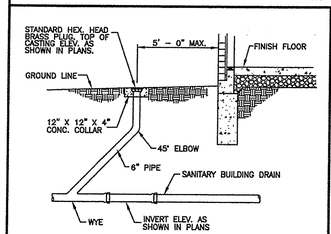
NOTE:
O-RING GASKET BETWEEN ALL RISERS AND CONE SECTIONS SHALL CONFORM TO A.S.T.M. C443, PLUS 1/2" DIA. EXTRUDABLE GASKETS (KENT SEAL OR EQUAL) REQ'D.

BUTYL RUBBER BASE EXTERIOR BACK PLASTER MATERIAL 1/4"± 1/16" MIN. THICKNESS FROM 2" BELOW TOP OF CONE TO CASTING.

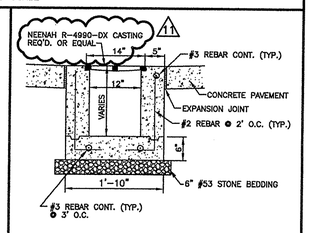
MANHOLE			
TYPE	"G"	"F"	MAX. PIPE SIZE RT. TO MAINLINE
H	24"–36"	54"	30"
J	24"–36"	60"	33"
K	36"–48"	72"	36"
L	48"–54"	96"	48"
M	54"–72"	102"	66"
N	72"–84"	108"	72"

NOTE:
CAST IRON MANHOLE STEPS ARE NOT ACCEPTABLE

MANHOLE TYPE H,J,K,L,M & N
NO SCALE



CLEAN - OUT
NO SCALE



TRENCH DRAIN DETAIL
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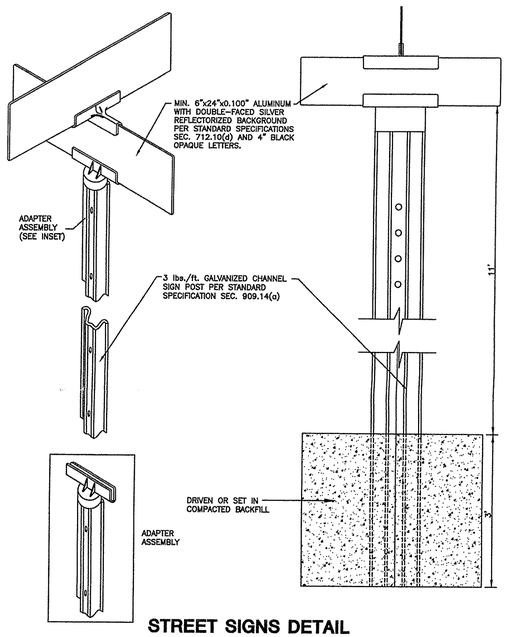
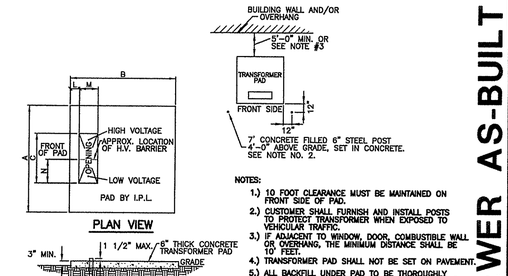


STREET SIGNS DETAIL WITH ADAPTER ASSEMBLY
NO SCALE



NOTES:
1.) 10 FOOT CLEARANCE MUST BE MAINTAINED ON FRONT SIDE OF PAD.
2.) CUSTOMER SHALL FURNISH AND INSTALL POSTS TO PROTECT TRANSFORMER WHEN EXPOSED TO VEHICULAR TRAFFIC.
3.) IF ADJACENT TO WINDOW, DOOR, COMBUSTIBLE WALL OR OVERHANG, THE MINIMUM DISTANCE SHALL BE 10' FEET.
4.) TRANSFORMER PAD SHALL NOT BE SET ON PAVEMENT.
5.) ALL BACKFILL UNDER PAD TO BE THOROUGHLY COMPACTED IN SOLID LAYERS NOT TO EXCEED 6".
6.) METALLIC CONDUITS SHALL NOT BE INSTALLED IN PAD MOUNTED TRANSFORMERS.
7.) NO CUSTOMERS GROUNDING GRIDS OR GROUNDING ELECTRODE CONDUCTORS SHALL BE CONNECTED AT PAD MOUNTED TRANSFORMER LOCATIONS.
8.) MAXIMUM – 9 CONDUITS, ONE CIRCUIT PER CONDUIT.
9.) THE TRANSFORMER SHALL BE READILY ACCESSIBLE TO ELECTRIC UTILITY COMPANY.

STOCK NO.	KVA	WT.	A	B	C	D	L	M	N	KVA
1703–506	150–300	5800	75	80	44	15 1/2	9	15	19 1/2	150–300
1703–507	1703–507	10,100	84	84	44	20	9	15	19 1/2	500–1000
1703–508	1500	12,600	84	84	48	18	9	17	23 1/2	1500

ALL DIMENSIONS ARE IN INCHES

CONCRETE PAD FOR THREE PHASE TRANSFORMER 150-1500 KVA
NO SCALE

STORM SEWER AS-BUILT

Duke REALTY CORPORATION
600 East 96th Street
Suite 100
Indianapolis, IN 46240
Phone: (317) 808-6000
Fax: (317) 805-6797

WOOLPERT, INC.
7140 Waldemar Drive
Indianapolis, Indiana
46268-4192
317.299.7500
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WOOLPERT

Revisions:
11 05/17/05 PER OWNER
18 10/24/05 REISSUE FOR BID PACK #5, BEST BUY/PETCO

Scale: AS SHOWN
Date: 10/20/04
Drawn By: PJD
Checked By: GSS

WEST CARMEL MARKETPLACE - PHASE 1
9901 NORTH MICHIGAN ROAD
CARMEL, INDIANA
DETAILS

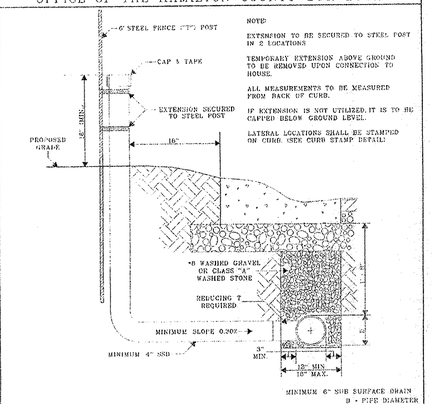
Certified By:

Drawing Number:
C601
31 of 40 Sheets

Duke Realty Job Number:
WNC301-001

A/E Job Number:
61287.03

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE

EXTENSION TO BE SECURED TO STEEL POST IN 2 LOCATIONS

TEMPORARY EXTENSION ABOVE GROUND TO BE REMOVED UPON CONNECTION TO HOUSE.

ALL MEASUREMENTS TO BE MEASURED FROM BACK OF CURB.

IF EXTENSION IS NOT UTILIZED, IT IS TO BE CAPPED BELOW GROUND LEVEL.

LATERAL LOCATIONS SHALL BE STAMPED ON CURB (SEE CURB STAMP DETAIL)

TYPICAL SSD LATERAL
TO INDIVIDUAL LOTS ALONG STREETS

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

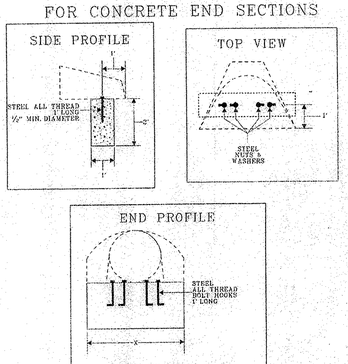
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN SSD-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR

ANCHOR
FOR CONCRETE END SECTIONS



ALLTHREAD SPACING TO BE TWO PER FOOT
EX: 12" END SECTION - 2 ALLTHREAD
24" END SECTION - 4 ALLTHREAD

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

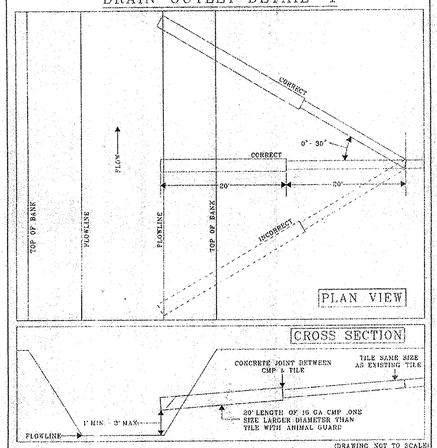
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN O-5

OFFICE OF THE HAMILTON COUNTY SURVEYOR

DRAIN OUTLET DETAIL #1



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

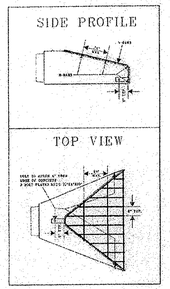
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN O-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR

DEBRIS GUARD



Apron Size	Y-bar Size	No. of H-bars	H-bar Size	Bolt Dia.	"A" Dim.
18	1/2	3	3/8	1/2	5
24	5/8	4	3/4	1/2	7
30	5/8	4	3/4	1/2	7 1/2
36	3/4	4	1	1/2	10 1/2
42	3/4	4	1	3/4	11
48	3/4	4	1½pipe	3/4	12
54	3/4	4	1½pipe	3/4	13
60	3/4	5	1½pipe	3/4	14
72	3/4	5	1½pipe	3/4	14
84	3/4	5	1½pipe	3/4	15

Arch pipe aprons

Skewed pipe aprons					
12	1/2	3	5/8	1/2	6
15	1/2	3	5/8	1/2	4 1/2
18	1/2	4	5/8	1/2	4 1/2
21	1/2	4	5/8	1/2	6
24	5/8	4	3/4	1/2	5
27	5/8	4	3/4	1/2	5 1/2
30	5/8	4	3/4	1/2	5 1/2
36	3/4	4	1	3/4	8
42	3/4	5	1	3/4	8
48	3/4	5	1	3/4	8
54	3/4	5	1½pipe	3/4	8
60	3/4	5	1½pipe	3/4	8
66	3/4	6	1½pipe	3/4	8
72	3/4	6	1½pipe	3/4	9
84	3/4	7	1½pipe	3/4	10
90	3/4	7	1½pipe	3/4	14

NOTES:
1. BARS & PLATES ARE HOT-ROLLED STEEL.
2. BARS, PLATES, & PIPE ARE FINISHED WITH 2 COATS OF ALUMINUM PAINT.
3. BOLTS ARE GALVINISED
4. NO REBAR THROUGH PIPES WILL BE ALLOWED
5. DEBRIS GUARD SHALL BE REMOVABLE

(DRAWING NOT TO SCALE)

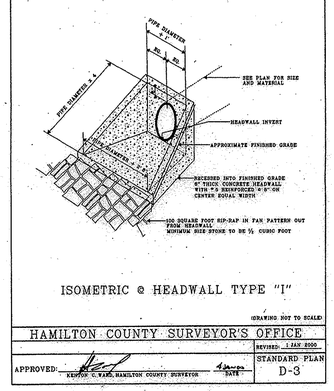
HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN D-12

OFFICE OF THE HAMILTON COUNTY SURVEYOR



ISOMETRIC @ HEADWALL TYPE "I"

(DRAWING NOT TO SCALE)

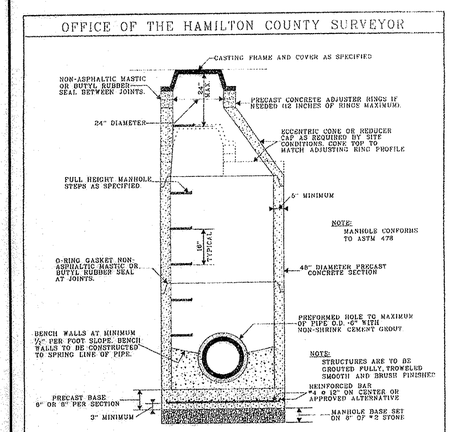
HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN D-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR



STANDARD MANHOLE
FOR PIPE SIZES 12" THRU 24"

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

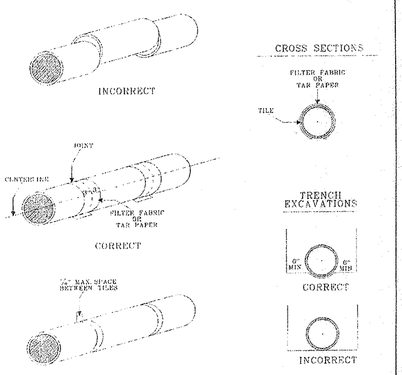
REVISED: 1 FEB 2002

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 2/1/02 DATE

STANDARD PLAN D-20

OFFICE OF THE HAMILTON COUNTY SURVEYOR

BUTT JOINT



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

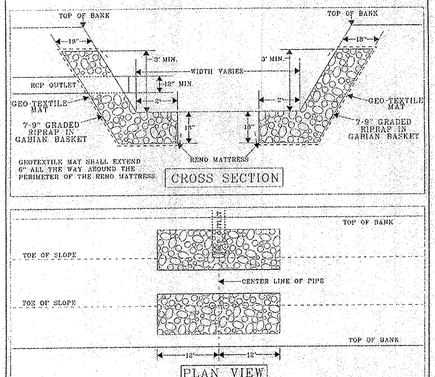
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN T-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

BANK ARMORMENT AT OUTLET PIPE
IN OPEN CHANNELS



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

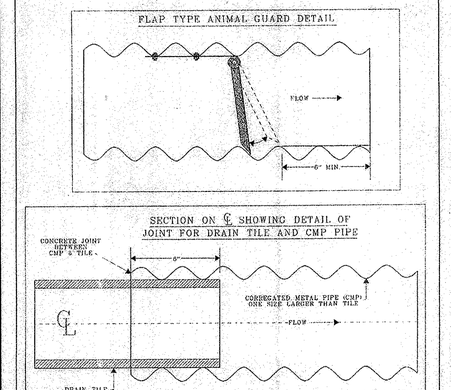
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN O-4

OFFICE OF THE HAMILTON COUNTY SURVEYOR

DRAIN OUTLET DETAIL #2



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

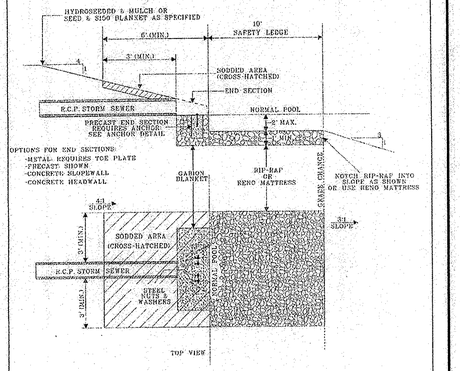
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN O-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR

UNDERWATER DISCHARGE NOT ALLOWED



LAKE OUTLET DETAIL
FOR LAKE CROSS-SECTION OPTION 2

(DRAWING NOT TO SCALED)

HAMILTON COUNTY SURVEYOR'S OFFICE

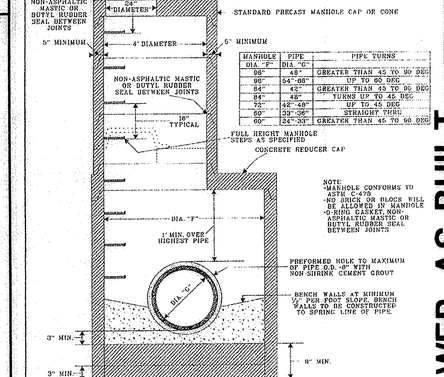
REVISED: 1 JAN 2000

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 4JAN00 DATE

STANDARD PLAN D-10

OFFICE OF THE HAMILTON COUNTY SURVEYOR

STANDARD MANHOLE
FOR PIPE SIZES 24" THRU 66"



MANHOLE DIA. "F"	PIPE DIA. "C"	PIPE TURNS
96"	48"	GREATER THAN 45 TO 90 DEG
96"	54"-66"	UP TO 90 DEG
84"	42"	GREATER THAN 45 TO 90 DEG
84"	48"	TURNS UP TO 45 DEG
72"	42"-48"	UP TO 45 DEG
60"	33"-36"	STRAIGHT THRU
60"	24"-33"	GREATER THAN 45 TO 90 DEG

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 FEB 2002

APPROVED: _____ KENTON C. WARD, HAMILTON COUNTY SURVEYOR — 2/1/02 DATE

STANDARD PLAN D-21

NOTE: THIS SHEET CONTAINS DETAILS FOR WORK WITHIN COMMERCE DRIVE, RETAIL PARKWAY, 99th STREET RIGHT-OF-WAY AND REGULATED DRAIN EASEMENTS.

Duke
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Revisions:
3 12/07/04 PER COUNTY SURVEYOR

Scale: AS SHOWN
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Checked By: GSS

WEST CARMEL MARKETPLACE - PHASE 1

9901 NORTH MICHIGAN ROAD
CARMEL, INDIANA

DETAILS - HAMILTON COUNTY SURVEYOR'S OFFICE

STORM SEWER AS-BUILT

Certified By:

Drawing Number:
C605
35 of 40 Sheets

Duke Realty Job Number:
WNC301-001

A/E Job Number:
61287.03

66163