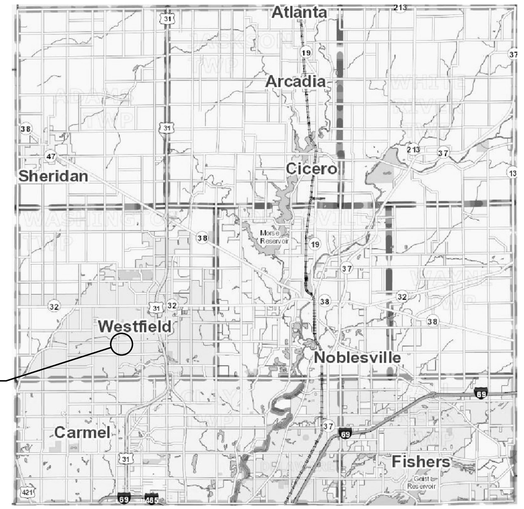
KNIGHT LEGAL DRAIN RECONSTRUCTION

SW 1/4 & SE 1/4, SEC. 11 - T18N-R3E, WESTFIELD, WASHINGTON TOWNSHIP, HAMILTON COUNTY, INDIANA



VICINITY MAP
NO SCALE

PLANS PREPARED FOR:
HAMILTON COUNTY DRAINAGE BOARD
1 HAMILTON COUNTY SQUARE, SUITE 188
NOBLESVILLE, IN 46060
PHONE: 317-776-9626
FAX: 317-776-9628
CONTACT: KENTON WARD

PLANS PREPARED BY:
BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com
CONTACT: JOSEPH MILLER

OPERATING AUTHORITIES

GAS
Vectren
16000 Allisonville Road
Noblesville, IN 46061
317-776-5534

CABLE TELEVISION
Brighthouse Networks
3030 Roosevelt Ave.
Indianapolis, IN 46218
317-632-9077

WATER
Citizens Water
2150 Dr. Martin Luther King Jr. Street
Indianapolis, IN 46202
317-264-7715

ELECTRIC
Duke Energy
390 N. Main Street
Martinsville, IN 46151
765-349-4012

CABLE TELEVISION
Comcast
9750 E. 150 St., Suite 1600
Noblesville, IN 46060
765-646-9113

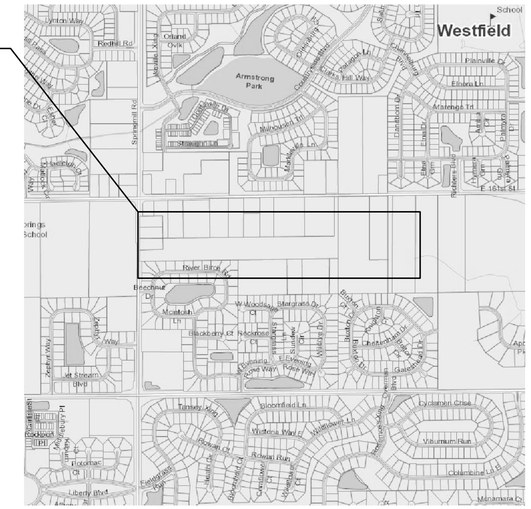
TELEPHONE
AT&T
5858 N. College Ave.
Indianapolis, IN 46220
317-252-4007

SANITARY
Citizens Energy Group
2150 Dr. Martin Luther King Jr. Street
Indianapolis, IN 46202
317-927-6001

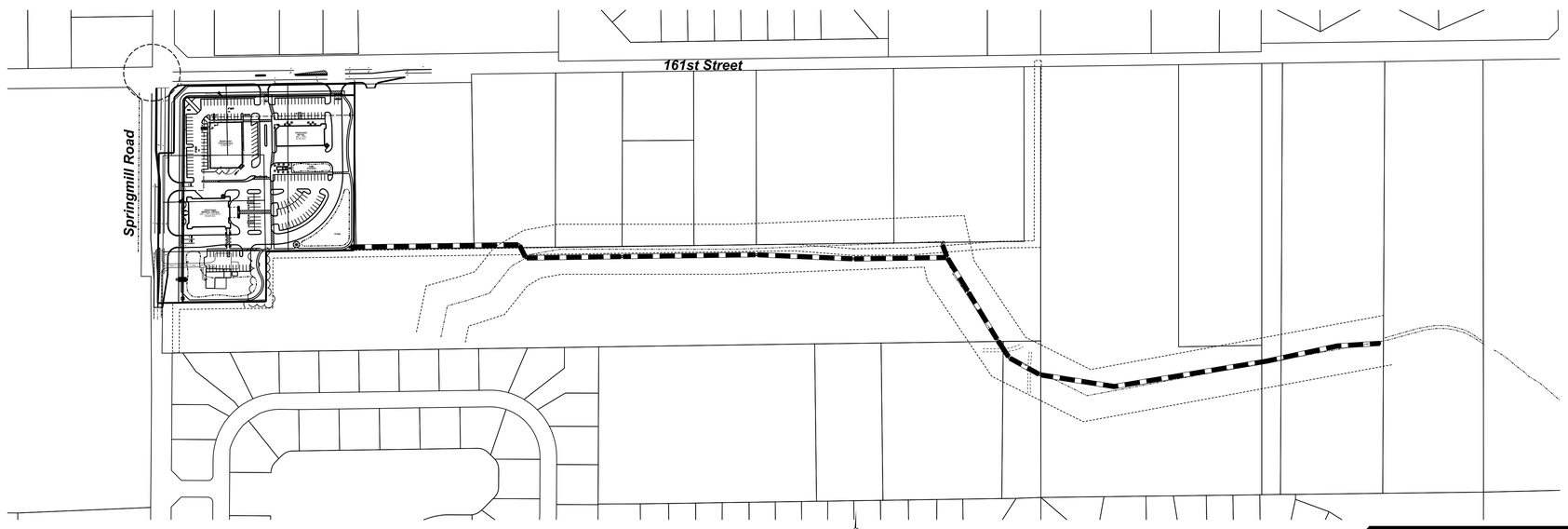
STORM
Hamilton County
1 Hamilton County Square
Suite 188
Noblesville, IN 46060
317-776-8495

FIRE DEPARTMENT
Westfield Fire Department
17535 Dartown Road
Westfield, IN 46074
317-804-3333

SCHOOL DISTRICT
Westfield Washington Schools
322 W. Main Street
Westfield, IN 46074
317-867-8000



LOCATION MAP
NO SCALE



SITE MAP
NO SCALE

CONSTRUCTION DOCUMENTS

PROJECT MANAGER:_____ DATE:_____

THESE PLANS ARE NOT TO BE CONSIDERED FINAL OR TO BE UTILIZED FOR CONSTRUCTION UNLESS SIGNED AND DATED BY THE APPROPRIATE BANNING ENGINEERING PROJECT MANAGER.

THESE PLANS ARE NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY, OR A SURVEYOR LOCATION REPORT.

REVISIONS		
NUMBER	DESCRIPTION	DATE

SHEET INDEX	
SHEET NO	DESCRIPTION
C100	TITLE SHEET
C101-C103	STORM SEWER PLAN AND PROFILES
C500	MISCELLANEOUS DETAILS

JOSEPH L. MILLER
REGISTERED
No. 10403481
STATE OF INDIANA
PROFESSIONAL ENGINEER

CERTIFIED BY: _____

Date: 06-08-15
Project No: 07053
Sheet No: C100

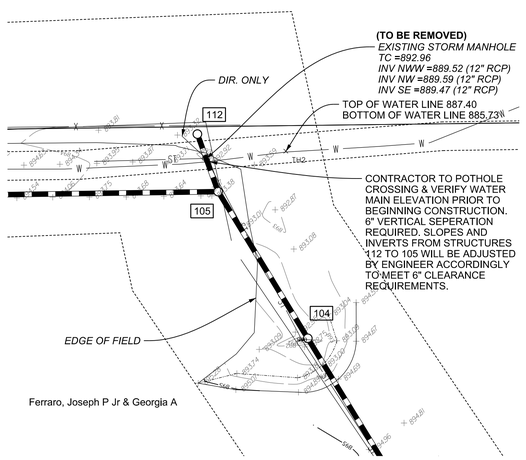
KNIGHT LEGAL DRAIN RECONSTRUCTION

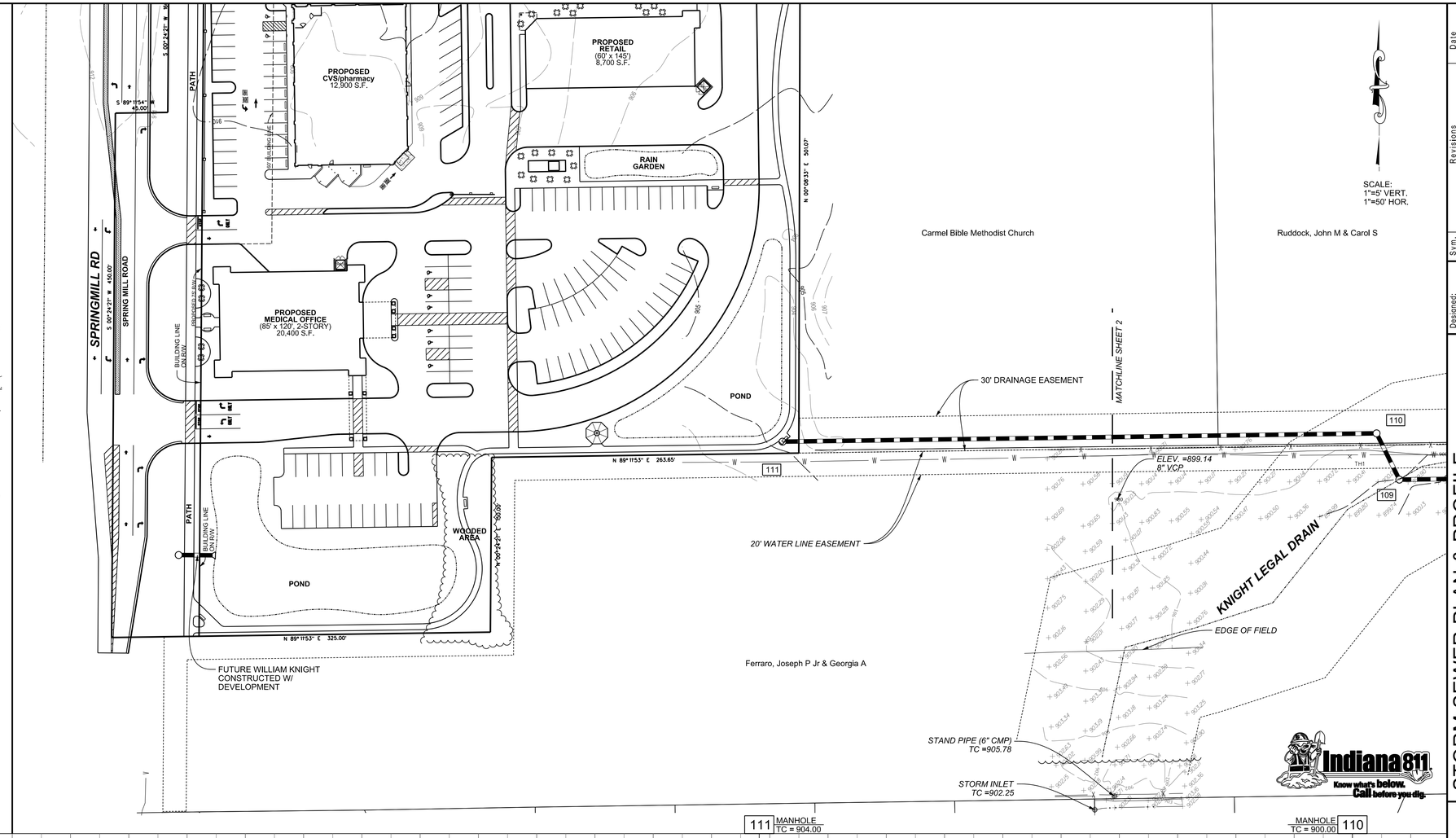
Indiana 811
Know what's below. Call before you dig.

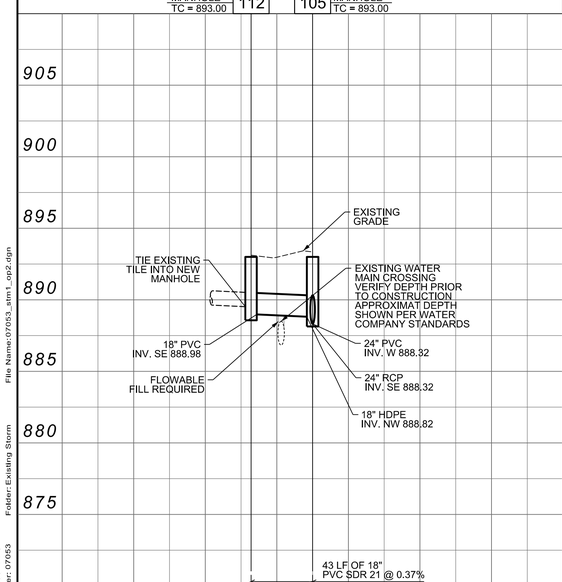
06/08/2015
SCALE: 200.0000 ' / in.

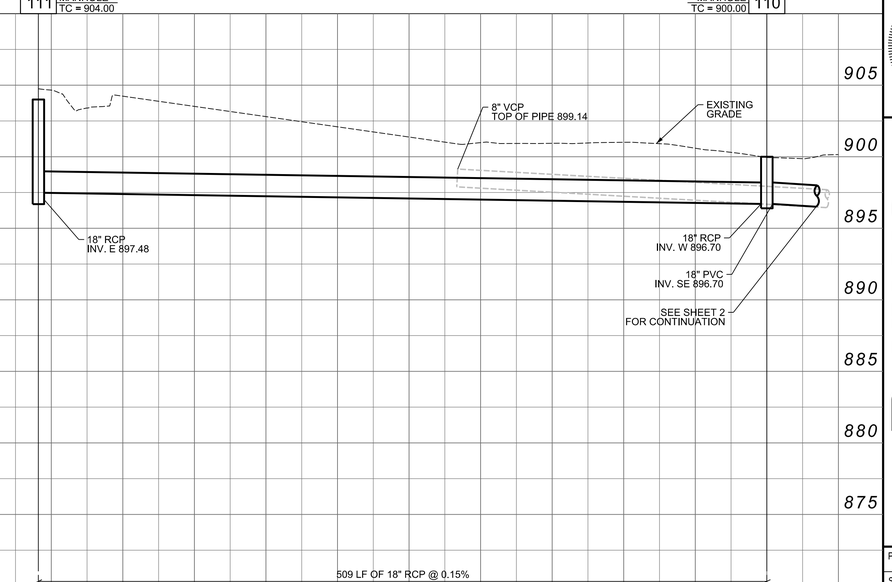
BENCHMARK
B 112
DESCRIBED BY COAST AND GEODETIC SURVEY 1946
2.2 MI W FROM WESTFIELD.
ALONG STATE HIGHWAY 32 ABOUT 2.25 MILES WEST OF WASHINGTON HIGH SCHOOL AT WESTFIELD AND ABOUT 1.0 MILE EAST OF THE CROSS ROAD AT EAGLE TOWN, 0.25 MILE EAST OF THE JUNCTION WITH A ROAD LEADING NORTH, 24 FEET NORTH OF THE CENTER LINE OF THE HIGHWAY, 167 FEET EAST OF THE CENTER LINE OF THE DRIVEWAY LEADING TO H.J. MATTHEWS FARM HOUSE, 75 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A BARN, 4 FEET EAST OF A FENCE CORNER, 1.3 FOOT SOUTH OF A WHITE WOODEN WITNESS POST AND ABOUT LEVEL WITH THE HIGHWAY.
A STANDARD DISK, STAMPED B 112 1946 AND SET IN THE TOP OF A CONCRETE POST PROJECTING 5 INCHES ABOVE GROUND.
ELEVATION = 924.24, NAVD 88

SCALE:
1"=5' VERT.
1"=50' HOR.









PLAN & PROFILE STRUCTURES

Sym.	Revisions	Date

Designed:
Drawn: TMF
Checked:
Scale: AsShown
Date: 06-08-15

STORM SEWER PLAN & PROFILE
KNIGHT LEGAL DRAIN
161st AND SPRINGMILL ROAD
HAMILTON COUNTY

REGISTERED HOSSER L. MILLER No. 10403481 STATE OF INDIANA PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 07053
Sheet No: C101

File Name:07053_stm1_pp2.dgn
Folder:Existing Storm
06/08/2015
SCALE: 1.0000 " / in.
Project Number: 07053

Carmel Bilble Methodist Church

Ruddock, John M & Carol S

Reyna, Mauricio Gonzalez & Cecilia Pelayo

Sandlin, Daniel W & Natalya G Kotelnikova

Sandlin, Daniel W & Natalya G Kotelnikova

Wiegand, Ronald C.

Marcum, James C & Doris M Rev Liv Trust with LE

MATCHLINE SHEET 1

30' DRAINAGE EASEMEMENT

TOP OF WATER LINE 896.63
BOTTOM OF WATER LINE 894.96

CONTRACTOR TO POTHOLE CROSSING & VERIFY WATER MAIN ELEVATION PRIOR TO BEGINNING CONSTRUCTION. 6" VERTICAL SEPERATION REQUIRED. SLOPES AND INVERTS FROM STRUCTURES 111 TO 109 WILL BE ADJUSTED BY ENGINEER ACCORDINGLY TO MEET 6" CLEARANCE REQUIREMENTS.

20' WATER LINE EASEMENT

CRUSH EXISTING TILE IN PLACE, TIE ALL LATERAL TO NEW PIPE, SEE DETAIL 1/C500

SCALE:
1"=5' VERT.
1"=50' HOR.

TIE IN EXISTING TILES TO NEW MANHOLE

MATCHLINE SHEET 3

WILLIAM KNIGHT DRAIN ALIGNMNET FORM GIS

BLOW HOLE NO TILE PROBED

EDGE OF FIELD DIR. ONLY

EDGE OF FIELD

110 109 108 107 106 105 112

75' 75'

KNIGHT LEGAL DRAIN

BLOW HOLE NO TILE PROBED

CONTRACTOR TO POTHOLE CROSSING & VERIFY WATER MAIN ELEVATION PRIOR TO BEGINNING CONSTRUCTION.

(TO BE REMOVED)
EXISTING STORM MANHOLE
TC =892.96
INV NWW =889.52 (12" RCP)
INV NW =889.59 (12" RCP)
INV SE =889.47 (12" RCP)

TIE EXISTING WILLIAM KNIGHT DRAIN UPSTREAM

WILLIAM KNIGHT DRAIN ALIGNMNET FORM GIS

Ferraro, Joseph P Jr & Georgia A

EDGE OF FIELD

END OF WILLIAM KNIGHT DRAIN

STAND PIPE (6" CMP)
TC =905.78

STORM INLET
TC =902.25

ONeal, Christopher S & Tabitha L

Koenig, Jerald L & Patricia J

Vitello, Eric

Drake, Joshua E & Karlene E

Smith, Thomas R

Walters, Todd W & Denise J

Ferraro, Joseph P Jr & Georgia A

WILDERNESS RD

Ferraro, Joseph P Jr

Indiana 811 Know what's below. Call before you dig.

MANHOLE 110 TC = 900.00
MANHOLE 109 TC = 899.70
MANHOLE 108 TC = 898.00
MANHOLE 107 TC = 895.50
MANHOLE 106 TC = 894.50
MANHOLE 105 TC = 893.00

905 900 895 890 885 880 875

8" VCP
TOP OF PIPE 899.14

EXISTING GRADE

SEE SHEET 1 FOR CONTINUATION

18" RCP
INV. W 896.70

18" PVC
INV. SE 896.70

FLOWABLE FILL REQUIRED

18" HDPE
INV. E 893.93

18" PVC
INV. NW 896.63

EXISTING WATER MAIN CROSSING VERIFY DEPTH PRIOR TO CONSTRUCTION APPROXIMAT DEPTH SHOWN PER WATER COMPANY STANDARDS

APPROXIMATE DEPTH OF EXISTING WATER MAIN

18" HDPE
INV. W 891.82

24" HDPE
INV. E 891.32

24" HDPE
INV. W 890.15

24" HDPE
INV. E 890.15

EXISTING GRADE

24" HDPE
INV. W 889.31

24" HDPE
INV. E 889.31

18" HDPE
INV. NW 888.82

24" HDPE
INV. W 888.32

24" RCP
INV. SE 888.32

SEE SHEET 3 FOR CONTINUATION

289 LF OF 18" HDPE (PERFORATED DUAL WALL SMOOTH INTERIOR) @ 0.73%

403 LF OF 24" HDPE (PERFORATED DUAL WALL SMOOTH INTERIOR) @ 0.29%

291 LF OF 24" HDPE (PERFORATED DUAL WALL SMOOTH INTERIOR) @ 0.29%

282 LF OF 24" HDPE (PERFORATED DUAL WALL SMOOTH INTERIOR) @ 0.35%

44 LF OF 18" PVC SDR 21 @ 0.15%

PLAN & PROFILE STRUCTURES

Sym.	Revisions	Date

Designed:
Drawn: TMF
Checked:
Scale: AsShown
Date: 06-08-15

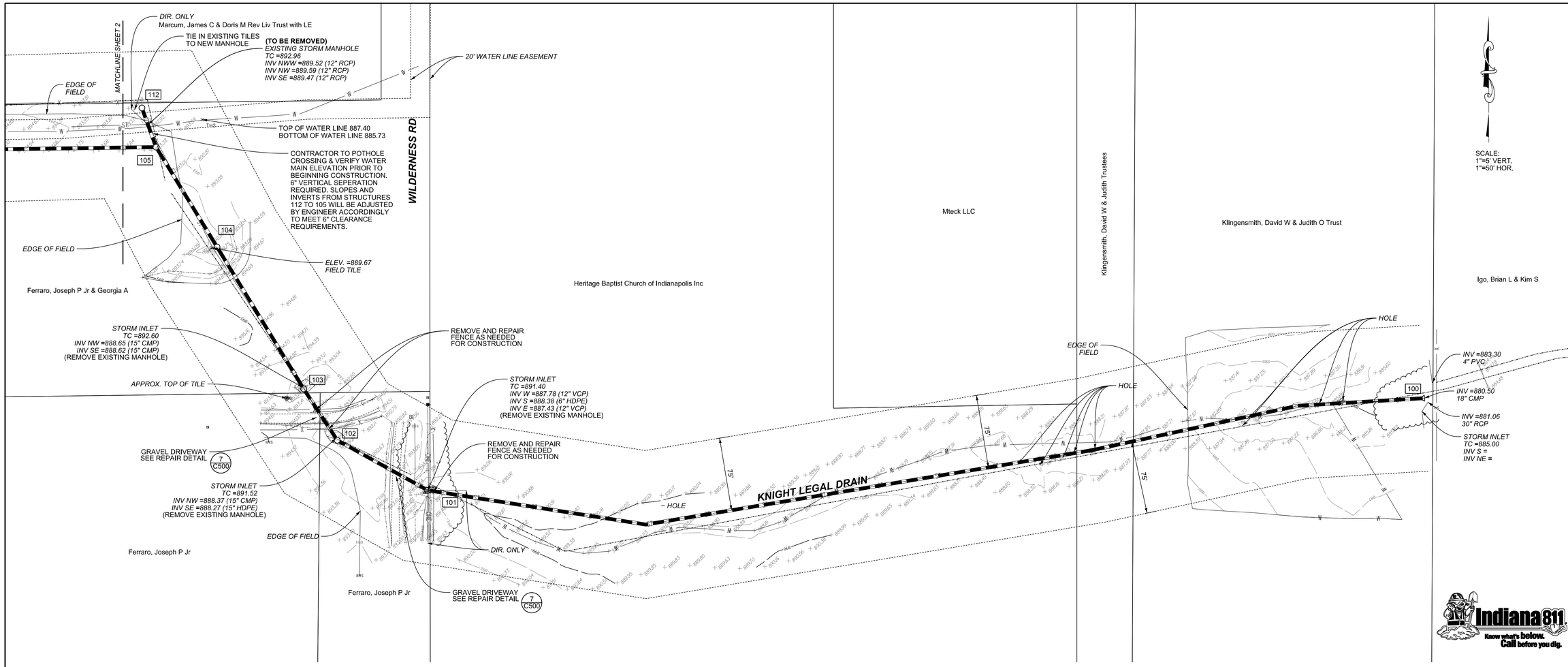
STORM SEWER PLAN & PROFILE
KNIGHT LEGAL DRAIN
161st AND SPRINGMILL ROAD
HAMILTON, COUNTY

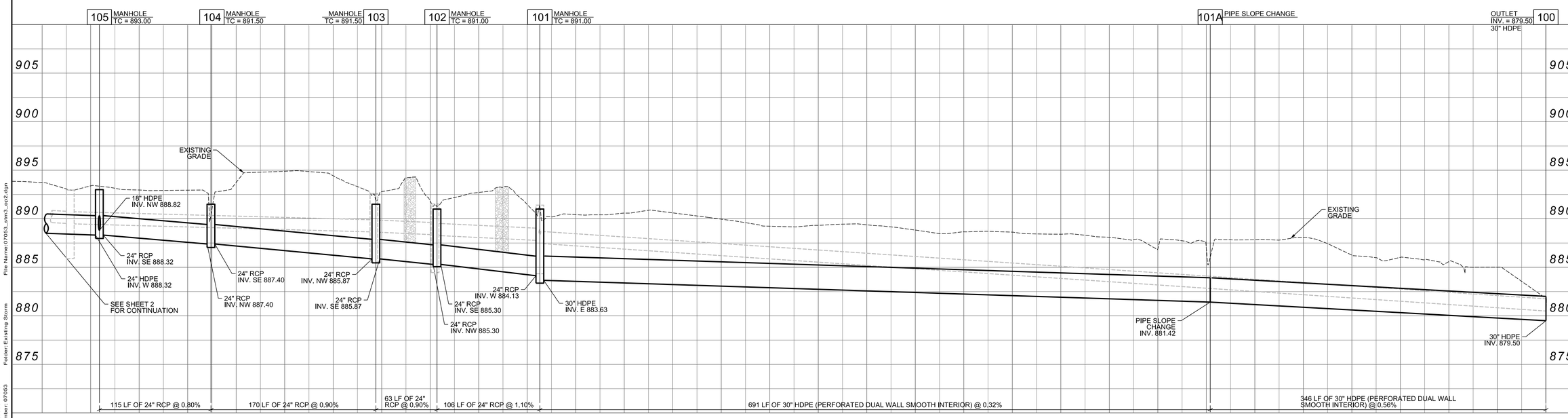
REGISTERED PROFESSIONAL ENGINEER No. 10403481 STATE OF INDIANA JOSEPH L. HILLER

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 07053
Sheet No: C102

06/08/2015
Scale: 1" = 50.0000 ' / in.
Project Number: 07053
File Name:07053_sim2_op2.dgn
Folder:Existing Storm





PLAN & PROFILE STRUCTURES

STORM SEWER PLAN & PROFILE
KNIGHT LEGAL DRAIN
161st AND SPRINGMILL ROAD
HAMILTON, COUNTY

JOSEPH L. MILLER REGISTERED No. 10403481 STATE OF INDIANA PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Designed:
Drawn: TMF
Checked:
Scale: AsShown
Date: 06-08-15

Project No: 07053
Sheet No: C103

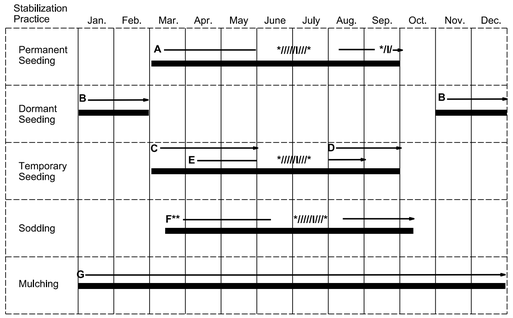
06/08/2015
SCALE: 50.0000 ' / in.
Project Number: 07053
Folder: Existing Storm
File Name: 07053_stm3_op2.dgn

STRUCTURE FROM	STRUCTURE TO	PIPE LENGTH (ft)	PIPE DIA. (in)	PIPE TYPE	PIPE SLOPE %	TOP OF CASTING ELEV	NEENAH CASTING TYPE	STRUCTURE TYPE	UP STREAM INVERT	DOWN STREAM INVERT	NOTES
112	105	43	18	PVC	0.37	893.00	R-4342	48" Ø MANHOLE (D-20)	888.98	888.82	
111	110	509	18	RCP	0.15	904.00	R-4342	48" Ø MANHOLE (D-20)	897.48	896.70	
110	109	44	18	PVC	0.15	900.00	R-4342	48" Ø MANHOLE (D-20)	896.70	896.63	
109	108	289	18	HDPE	0.73	899.70	R-4342	48" Ø MANHOLE (D-20)	893.93	891.82	
108	107	403	24	HDPE	0.29	898.00	R-4342	48" Ø MANHOLE (D-20)	891.32	890.15	
107	106	291	24	HDPE	0.29	895.50	R-4342	48" Ø MANHOLE (D-20)	890.15	889.31	
106	105	282	24	HDPE	0.35	894.50	R-4342	48" Ø MANHOLE (D-20)	889.31	888.32	
105	104	115	24	RCP	0.80	893.00	R-4342	60" Ø MANHOLE (D-21)	888.32	887.40	
104	103	170	24	RCP	0.90	891.50	R-4342	48" Ø MANHOLE (D-20)	887.40	885.87	
103	102	63	24	RCP	0.90	891.50	R-4342	48" Ø MANHOLE (D-20)	885.87	885.30	
102	101	106	24	RCP	1.10	891.00	R-4342	48" Ø MANHOLE (D-20)	885.30	884.13	
101	100A	691	30	HDPE	0.32	891.00	R-4342	60" Ø MANHOLE (D-21)	883.63	881.42	
100A	100	346	30	HDPE	0.56	887.50	R-4342		881.42	879.50	
NOTE: Where any manhole is used in conjunction with a square or rectangular inlet casting, contractor to utilize a precast flat cap with custom cut hole.											

STORM SEWER STRUCTURE DATA TABLE

NO SCALE

10 C500



A = Kentucky Bluegrass 40 lbs/acre; or 40 lbs. tall Fescue; plus 2 tons straw mulch/acre or add Annual Ryegrass 20 lbs/acre.

B = Kentucky Bluegrass 60 lbs/acre; or 40 lbs. tall Fescue; plus 2 tons straw mulch/acre or add Annual Ryegrass 30 lbs/acre.

C = Spring Oats 100 lbs./acre

D = Wheat or Rye 150 lbs./acre.

E = Annual Ryegrass 40 lbs/acre. (1 lb./1000 sq. ft.)

F = Sod

G = Straw Mulch 2 tons/acre.

/I/ Irrigation needed during June, July, and/or September.

** Irrigation needed for 2 to 3 weeks after applying sod.

Lime and fertilize to site specific soils tests or apply fertilizer at a rate of 1000 lbs. per acre or 12-12-12 or equivalent.

All swales shall be seeded with 2 lbs. Adelphi bluegrass and 2 lbs. Perennial Derby rye, or equivalent per 1000 square feet. mulch with one bale of straw per 1000 square feet. Fertilize with 5 lbs. of 20-5-5 per 1000 square feet unless specified otherwise.

MAINTENANCE

Inspect weekly and after each 1/2" rainfall event, until the stand is successfully established. (Characteristics of a successful stand include: vigorous dark green or bluish-green seedlings; uniform density with nurse plants, legumes, and grasses well inter-mixed; green leaves; and the perennials remaining green throughout the summer, at least at the plant base.)

Plan to add fertilizer the following growing season according to soil test recommendations.

Repair damaged, bare, or sparse areas by filling any gullies, re-fertilizing, over- or re-seeding, and mulching.
If plant cover is sparse or patchy, review the plant materials chosen, soil fertility, moisture condition, and mulching; then repair the affected area either by over-seeding or by re-seeding and mulching after re-preparing the seedbed.

If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. (Contact your SWCD or Cooperative Extension office for assistance.)

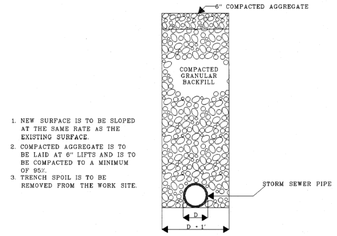
If additional fertilization is needed to get a satisfactory stand, do so according to the soil test recommendations.

SEEDING CHART

NO SCALE

11 C500

OFFICE OF THE HAMILTON COUNTY SURVEYOR



1. NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
2. COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
3. TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.

STONE DRIVE REPAIR

7 C500

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED 1 JAN 2000

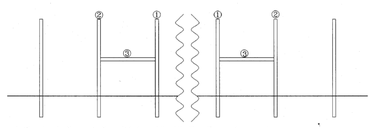
APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 4 JAN 00

STANDARD PLAN M-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

FENCING SPECIFICATIONS

Note: All fence cuts will be repaired, whether new or falling down in the following manner unless specified in the plans or written consent not to repair the fence is given by the landowner.



1. Posts 1, 2 and 3 will be 4"x4"x7' of good wood.
2. Set posts 1 and 2 in the ground on either side of the working area.
3. Set the brace post 3.
4. Double staple the existing fence to posts 1 and 2.
5. Cut the existing fence and bend foot of fence around post 1 and wrap on itself.
6. After construction, a like fence will be reinstalled between number 1 posts using new materials. Use wood or steel posts and 5 barb or woven wire with one barb fence depending how the existing fence is made.
7. If the existing fence is made of wood posts, then post number 1 can be eliminated and the existing fence post can be used for post 1.
8. Brace wire shall be placed from top of post 1 to ground level of post 2 and tightened.

8 C500

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

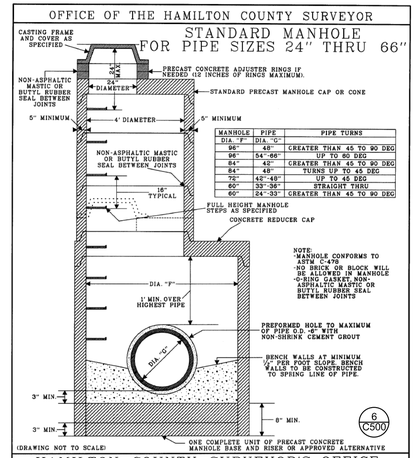
REVISED 1 JAN 2000

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 4 JAN 00

STANDARD PLAN M-6

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

NOTE:
- MANHOLE CONFORMS TO ASTM C-478
- NO BRICK OR BLOCK WILL BE ALLOWED IN MANHOLE
- O-RING GASKET NON-ASPHALTIC MASTIC OR BUTYL RUBBER SEAL BETWEEN JOINTS

(DRAWING NOT TO SCALE)

6 C500

HAMILTON COUNTY SURVEYOR'S OFFICE

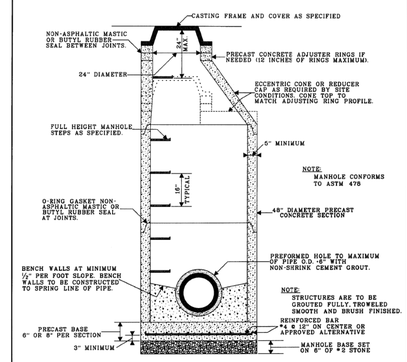
REVISED 1 FEB 2006

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 2/1/06

STANDARD PLAN D-21

OFFICE OF THE HAMILTON COUNTY SURVEYOR

STANDARD MANHOLE FOR PIPE SIZES 12" THRU 24"



NOTE:
STRUCTURES ARE TO BE GROUTED FULLY. TROWELED SMOOTH AND BRUSH FINISHED.

(DRAWING NOT TO SCALE)

5 C500

HAMILTON COUNTY SURVEYOR'S OFFICE

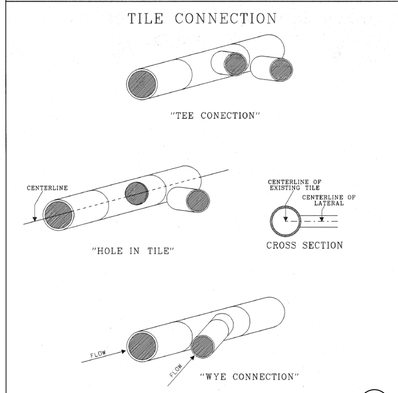
REVISED 1 FEB 2006

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 2/1/06

STANDARD PLAN D-20

OFFICE OF THE HAMILTON COUNTY SURVEYOR

TILE CONNECTION



1 C500

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

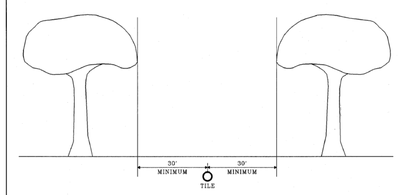
REVISED 1 JAN 2000

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 4 JAN 00

STANDARD PLAN O-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

TILE CLEARING THROUGH WOODS



2 C500

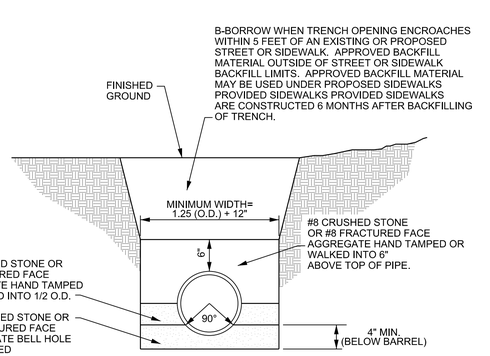
(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED 1 JAN 2000

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 4 JAN 00

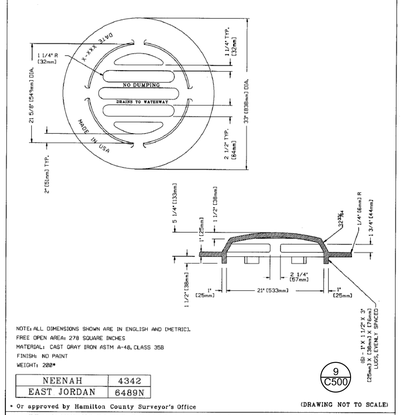
STANDARD PLAN T-2



FLEXIBLE (HDPE) PIPE BEDDING DETAIL

NO SCALE

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND (METRIC).
FREE OPEN AREA: 279 SQUARE INCHES
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 200*

NEENAH	4342
EAST JORDAN	6489N

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

9 C500

HAMILTON COUNTY SURVEYOR'S OFFICE

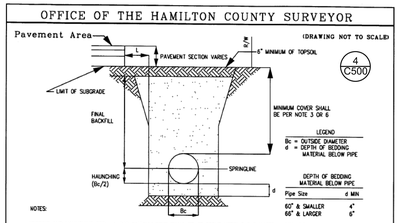
BEEHIVE INLET CASTING

REVISED 31/08/2004

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 4/26/05

STANDARD PLAN CT-10

OFFICE OF THE HAMILTON COUNTY SURVEYOR



4 C500

NOTES:

1. BEDDING AND HAUNCHING FOR ALL RCP INSTALLATIONS SHALL BE #8 STONE MEETING THE MATERIAL REQUIREMENTS OF THE INDOT. BEDDING SHALL BE PLACED IN THE TRENCH BOTTOM SUCH THAT AFTER THE PIPE IS INSTALLED TO GRADE AND LINE, THERE REMAINS A 4" MINIMUM DEPTH OF MATERIAL BELOW THE PIPE BARREL AND A MINIMUM OF 3" BELOW THE BELL. FOR PIPE SIZES 66" AND LARGER, THE MINIMUM DEPTH OF MATERIAL BELOW THE PIPE BARREL SHALL BE 6". BEDDING SHALL BE PLACED TO BE UNIFORM AS POSSIBLE, BUT SHALL BE LOOSELY PLACED UNCOMPACTED MATERIAL UNDER THE MIDDLE THIRD OF THE PIPE PRIOR TO PLACEMENT OF THE PIPE. IF THE UNDERLYING SOILS OF THE TRENCH BOTTOM ARE TOO YIELDING, THE SOIL SHALL BE UNDERCUT TO SUCH A DEPTH THAT WHICH REPAIRED WITH #2 STONE IT WILL PRODUCE A UNIFORM AND STABLE FOUNDATION ALONG THE ENTIRE LENGTH OF THE PIPE. HAUNCHING AND INITIAL BACKFILL SHALL BE COMPACTED IN 6" MAXIMUM LIFTS TO NOT LESS THAN 90% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE MATERIAL PLACED. THE BACKFILL SHALL BE BROUGHT UP EVENLY ON BOTH SIDES OF THE PIPE FOR THE FULL LENGTH OF THE PIPE. HAUNCHING SHALL EXTEND TO THE SPRINGLINE OF THE PIPE. MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 16".
2. FINAL BACKFILL FOR ALL RCP INSTALLATIONS WHERE "L" IS 5' OR LESS SHALL BE B-BORROW FOR STRUCTURE BACKFILL MEETING THE MATERIAL REQUIREMENTS OF THE INDOT AND SHALL BE COMPACTED IN 6" MAXIMUM LIFTS TO NOT LESS THAN 90% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE MATERIAL PLACED. THE BACKFILL FOR THE TOP 4" OF THE EXCAVATION BELOW THE START OF THE AGGREGATE SUBBASE OF THE PAVEMENT SHALL BE #53 STONE MEETING THE MATERIAL REQUIREMENT OF THE INDOT AND SHALL BE COMPACTED TO NOT LESS THAN 90% STANDARD PROCTOR DENSITY. FINAL BACKFILL FOR ALL RCP INSTALLATIONS WHERE "L" IS GREATER THAN 5' SHALL BE CLEAN FILL MATERIAL FREE OF ROCKS LARGER THAN 6" IN DIAMETER, FROZEN LUMPS OF SOIL, WOOD, OR OTHER EXTRANEOUS MATERIAL, COMPACTED IN 12" MAXIMUM LIFTS TO NOT LESS THAN 90% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE EXCAVATION. THE FINAL 6 INCHES OF THE EXCAVATION SHALL CONSIST OF TOPSOIL.
3. THE MINIMUM COVER FROM THE TOP OF THE INSTALLED PAVEMENT TO THE TOP OF THE INSTALLED PIPE SHALL BE THE PAVEMENT SECTION THICKNESS (ALL BITUMINOUS AND AGGREGATE MATERIAL ABOVE THE SUBGRADE) PLUS 1'-0", BUT UNDER NO CIRCUMSTANCES SHALL THE COVER ALONG ANY PART OF THE PIPE FROM THE FINAL PAVEMENT ELEVATION TO THE TOP OF THE PIPE BE LESS THAT 2.5 FEET.
4. 4" EXISTING SUBGRADE HAS BEEN LIME STABILIZED. BACKFILL WITH B-BORROW UP TO BOTTOM OF UNTREATED EXISTING SUBGRADE AND FILL TO TOP OF TREATED SUBGRADE WITH LIME STABALIZED SOIL.
5. THESE STANDARDS SHALL APPLY FOR ALL REGULATED DRAIN STORM SEWERS UNLESS THE ENTITY HAVING CONTROL OVER THE RIGHT OF WAY HAS A MORE STRINGENT STANDARD, IN SUCH CASE THE HIGHER STANDARD SHALL APPLY.
6. THE MINIMUM COVER FROM THE FINAL GRADE TO THE TOP OF THE PIPE SHALL BE NOT LESS THAN 2 FEET OUTSIDE OF PAVEMENT AREAS.

HAMILTON COUNTY SURVEYOR'S OFFICE

RCP Bedding and Backfill Standard

REVISED 18 DEC 2006

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 3-MARC-7

STANDARD PLAN D-23

OFFICE OF THE HAMILTON COUNTY SURVEYOR

PIPE SIZE (INCHES)	STRUCTURES LESS THAN 48" FROM T/C TO INVERT (INCHES)	MAXIMUM NUMBER OF SIDES[3] OF THE BOX WITH PIPES	MINIMUM ANGLE BETWEEN PIPE[4] (NUMBER OF PIPES - ANGLE IN DEGREES)	STRUCTURES GREATER THAN 48" FROM T/C TO INVERT	CURB CASTING PER DETAIL CT-7 OR CT-8
12 TO 15	24 X 24 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES
15 TO 18	30 X 30 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES WITH BOX/MH LID
18 TO 24	24 X 36[1] OR 36 X 36 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES WITH BOX/MH LID
24 TO 66	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	MANHOLE DETAIL D-21 OR NOTE 2	YES WITH BOX/MH LID
66 TO 144	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	MANHOLE DETAIL D-22 OR NOTE 2	YES WITH BOX/MH LID

NOTES

1 - UP TO 15" PIPE CAN BE INSTALLED IN 24" SIDE. ALL OTHER PIPES SHALL BE INSTALLED IN LONG SIDE OF BOX.

2 - A BOX WITH STEPS WITH WRITTEN SPECIAL DESIGN APPROVAL FROM HCSO.

3 - A PIPE INSTALLED IN THE CORNER OF A BOX COUNTS AS USING 2 SIDES OF THE BOX.

4 - STRUCTURES SHALL BE DESIGNED FOR MAXIMUM FLOW THROUGH STRUCTURE.

SPECIAL NOTE: ALL STRUCTURES REQUIRE 0.1' OF DROP ACROSS THE STRUCTURE (LOWEST INLET INVERT TO OUTLET INVERT).

SPECIAL NOTE: ALL MANHOLES SHALL HAVE STEPS TO WITHIN A MAXIMUM OF 1 FOOT FROM BOTTOM OF STRUCTURE. INSPECTOR MAY REQUIRE STEPS TO BE INSTALLED OR MOVED AFTER STRUCTURE IS SET, TO IMPROVE ACCESS.

SPECIAL NOTE: IF CURB INLET STRUCTURE IS TO HAVE 2 FOOT SUMP, THEN THE STRUCTURE SHALL BE A MINIMUM OF A 48" MANHOLE OR A 3 FOOT BY 4 FOOT BOX.

SPECIAL NOTE: DOUBLE INLET BOX STRUCTURES SHALL PROVIDE SUPPORT FOR ALL 4 SIDES OF THE CASTING.

SPECIAL NOTE: ALL CASTINGS SHALL BE PER THE APPROVED CASTING DETAILS OR BY SPECIAL WRITTEN APPROVAL FROM HCSO.

SPECIAL NOTE: NO "DOGHOUSE" STRUCTURES ARE ALLOWED.

3 C500

HAMILTON COUNTY SURVEYOR'S OFFICE

STORM STRUCTURE SIZING TABLE

REVISED 18 DEC 2006

APPROVED: KENTON C. WARD, HAMILTON COUNTY SURVEYOR — DATE 3-MARC-7

STANDARD PLAN D-18

Sym.	Revisions	Date

Designed:
Drawn: SJH
Checked:
Scale: NONE
Date: 06-08-15

MISCELLANEOUS DETAILS
KNIGHT LEGAL DRAIN
161st AND SPRINGMILL ROAD
HAMILTON, COUNTY

JOSEPH L. MILLER REGISTERED No. 10403481 STATE OF INDIANA PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 07053
Sheet No: C500

06/08/2015 9:04:21 AM
Project Number: 07053
Folder: Existing Storm
File Name: 07053_detmsc_opt2.dgn