

Kenton C. Ward, CFM
Surveyor of Hamilton County
Phone (317) 776-8495
Fax (317) 776-9628

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

To: Hamilton County Drainage Board

July 22, 2013

Re: Elwood Wilson Drain, Hare Arm – Terry Lee Crossing Relocation

Attached is a petition and plans for the proposed relocation of the Elwood Wilson Drain, Hare Arm. The relocation is being proposed by Terry Lee Crossing LLC. The proposal is to relocate the drain across parcel 11-11-05-00-00-001.000, owned by Terry Lee Crossing, LLC as part of the Terry Lee Crossing project per plans by American Structurepoint, Job No. 2012.00089, dated July 2, 2013.

Per the plans, a portion of the Hare Arm will be intercepted and rerouted from approximately 30' north of the south property line and drain north to the open ditch of the Elwood Wilson Drain. This relocation will replace the existing 10" tile installed in 1901.

This line will consist of the following:

105' of 15" RCP
176' of open drain
67' of 42" RCP

The total length of the relocated portion of the Hare Arm shall be 348 feet. The 485 feet of existing drain between Sta. 51+80 and 55+28 shall be vacated. This proposal will subtract 137 feet from the drain's total length.

The portion of proposed drain noted above as "open drain" is part of the proposed flood plain compensation area designed for the Terry Lee Crossing development. The variance for this flood plain compensatory area was approved with conditions by the Board on May 28, 2013. For more information see Drainage Board minutes book 15 pages 23 – 25.

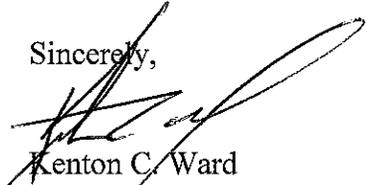
The cost of the relocation is to be paid by Terry Lee Crossing LLC. Upon approval of the relocation, prior to construction, the developer will provide surety in the amount of 120% of the construction costs of the proposed relocation.

The easement for the relocated drain will be the statutory easement of 75' foot per half as measured from the centerline of the pipe and 75' from top of bank of open drain, until such time as a non-enforcement request is approved by the Board. A non-enforcement request is expected to be submitted in the near future by the petitioner as part of the land plan for Terry Lee Crossing. The proposed flood plain compensatory area noted above will be protected in its entirety by dedicated easement per previous Drainage Board approval.

This relocation has been satisfactorily reviewed by the Drainage Board's consultant, Christopher B. Burke Engineering, Ltd., for compliance with the flood study. This relocation plan is a part of the overall master planning and design for the Terry Lee Crossing commercial development.

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. I recommend that the Board approve the petition.

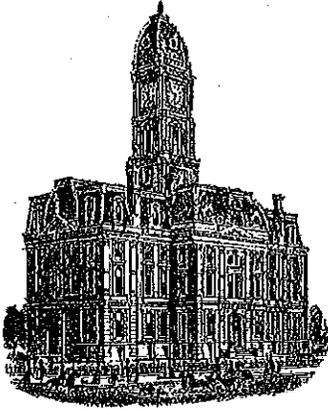
Sincerely,



Kenton C. Ward
Hamilton County Surveyor

KCW/stc

KCW



Kenton C. Ward, CFM
Surveyor of Hamilton County
Phone (317) 776-8495
Fax (317) 776-9628

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

To: Hamilton County Drainage Board

February 11, 2016

Re: Elwood Wilson: Terry Lee Crossing Relocation of Hare Arm

Attached are as-built, certificate of completion & compliance, and other information for Terry Lee Crossing Relocation of Library 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 July 22, 2013. The report was approved by the Board at the hearing held July 22, 2013. (See Drainage Board Minutes Book 15, Pages 97-98) The changes are as follows: The 105 feet of 15" RCP was lengthened to 108 feet. The 67' feet of 42" RCP was changed to 65 feet of 36" RCP. The open ditch was lengthened from 176 feet to 180 feet. The length of the drain due to the changes described above is now **335 feet**. The existing 10" tile was removed from Sta. 51+85 to Sta. 57+67.

Also attached is a letter of memorandum from Kerry Daily of Christopher B. Burke Engineering, LLC. The letter states that CBBEL has reviewed the as-builts for the compensatory floodplain storage construction and has found the flood plain compensation provide by Terry Lee Crossing to be as required. The compensatory area was approved with conditions by the Board on May 28, 2013 (See DRB 15 Pages 23-25).

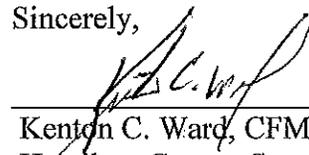
The drainage easement was outlined in the original report mentioned above. The following sureties were guaranteed by Bond Safeguard and was released November 10, 2014. It was replaced by a Cashier's Check which was released by the Board on its January 25, 2016 meeting.

Bond-LC No: 15-801433
Amount: \$2,057,390.00
For: Mass Grading
Issue Date: November 7, 2013

Check No: 11032014
Amount: \$124,166.00
For: Storm Sewers
Issue Date: 11-3-2014

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

Sincerely,

A handwritten signature in black ink, appearing to read 'K.C. Ward', is written over a horizontal line.

Kenton C. Ward, CFM
Hamilton County Surveyor

January 4, 2016

MEMORANDUM

TO: Mr. Kenton C. Ward, CFM – Hamilton County Surveyor
Mr. Steve Cash – Plan Reviewer
Mr. Jerry Liston – Drainage Inspector

FROM: Kerry Daily, E.I., CFM, CPESC, CPSWQ – CBBEL, Indianapolis

PROJECT: **Terry Lee Crossing – Mass Grading/Compensatory Storage
Elwood Wilson Regulated Drain
CBBEL Project No. 05-575 (Z)**

Terry Lee Crossing is a commercial development located on 57.38 acres in the southeast quadrant of the State Road 32/38 (Conner Street) and State Road 37 intersection in Noblesville. Two (2) existing open channel Hamilton County Regulated Drains exist at the site, the Elwood Wilson Regulated Drain and the tributary Library Arm. An additional closed Hamilton County Regulated Drain is located in the south/southwest portion of the site, the Hare and Sons Arm, which is also a tributary to the Elwood Wilson Drain.

The project consists of mass grading at the site to provide compensatory floodplain storage, building pads and future streets. One detention basin located north of the future intersection of West Drive and Presley Drive is provided to provide stormwater detention for these future roads and several lots. The project plans for the development also included about 6,440 cubic yards of new fill within the floodplain of the Elwood Wilson Regulated Drain that was to be mitigated by about 19,320 cubic yards of new compensatory floodplain storage. This storage was to be in addition to about 61,100 cubic yards of compensatory floodplain storage that was required for previous projects at the site, yielding a total of 80,420 cubic yards of compensatory floodplain storage required at the site.

Staff of CBBEL has reviewed the submitted information regarding the completed fill and excavation of compensatory floodplain storage areas along the Elwood Wilson Regulated Drain at the project site. Based on our review, the completed floodplain storage areas have been constructed according to the plans approved for the project and will provide about 97,000 cubic yards of compensatory floodplain storage along the Elwood Wilson Regulated Drain.

No error or omission in the plans, calculations or applications (whether said plans, calculations or applications have been reviewed by the review engineer or not) shall permit or release the applicant and designer from constructing this work in any other manner than that provided for in the local standards.

cc: American Structurepoint
file

M05-575Z4

FILED

JAN 05 2016

OFFICE OF HAMILTON COUNTY SURVEYOR

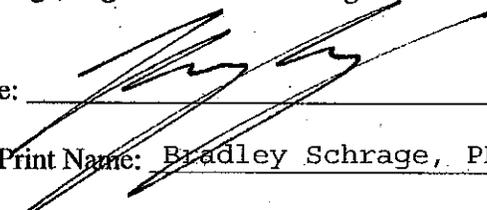
CERTIFICATE OF COMPLETION AND COMPLIANCE

To: Hamilton County Surveyor

Re: Terry Lee Crossing Hare Drain, Library Arm and Compensatory Storage Area As-Builts

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 conformity with all plans and specifications.
5. The drainage facilities within the above referenced subdivision to the best of my knowledge, information and belief have been correctly represented on the Record Drawings, Digital Record Drawings and the Structure Data Spreadsheet.

Signature:  Date: 07-21-2015

Type or Print Name: Bradley Schrage, PE

Business Address: 7260 Shadeland Station

Indianapolis, IN 46256

Telephone Number: 317-547-5580

SEAL



INDIANA REGISTRATION NUMBER

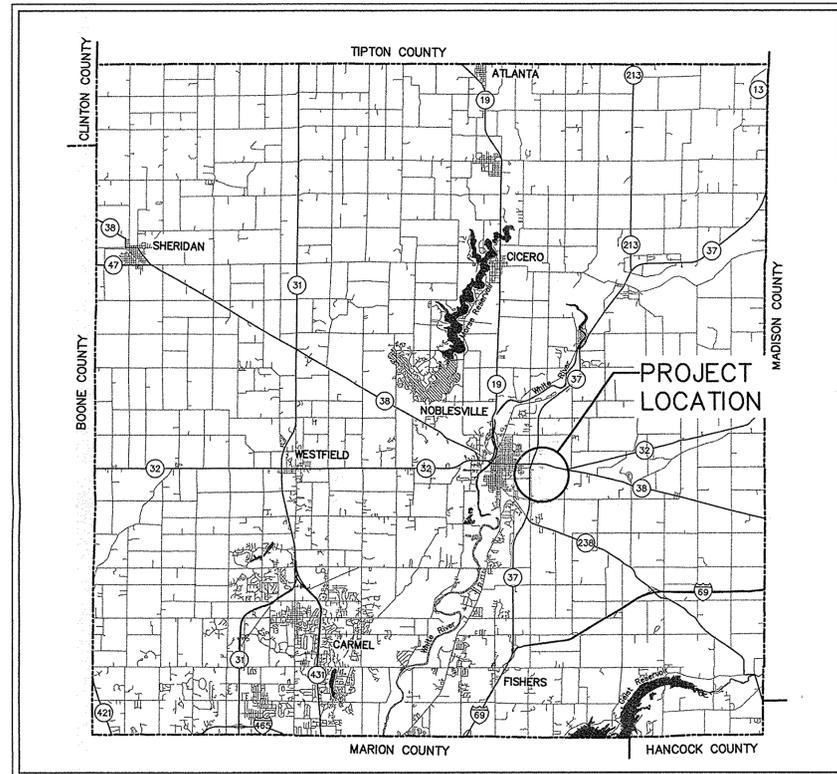
PE 11100062

CONSTRUCTION PLANS

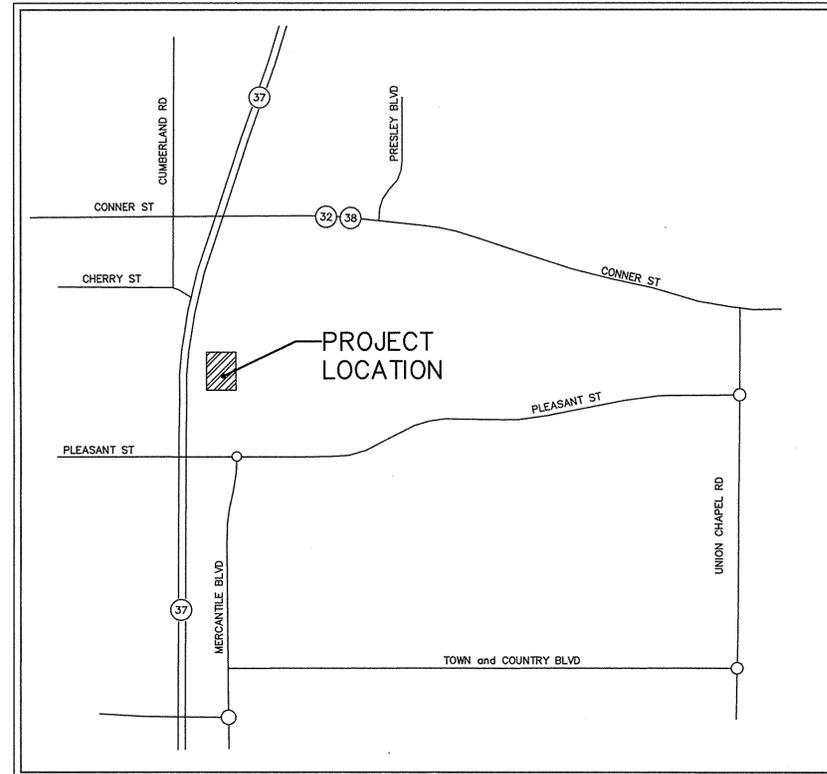
FOR

W. HARE & SONS ARM LEGAL DRAIN RELOCATION

S.R. 37 @ SR. 32/38 NOBLESVILLE, INDIANA



LOCATION MAP
NOT TO SCALE

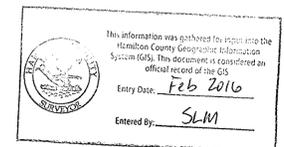


VICINITY MAP
NOT TO SCALE

INDEX	
DESCRIPTION	SHEET No.
TITLE SHEET	C.001
EXISTING TOPOGRAPHY/DEMOLITION PLAN	C.100
STORM SEWER - PLAN & PROFILE	C.200
EROSION CONTROL PLAN	C.300
EROSION CONTROL DETAILS	C.301 - C.302
STORM WATER POLLUTION PREVENTION PLAN	C.303
SITE DETAILS	C.400

PLAN DATE: 2013/06/12

REV	DATE	DESCRIPTION
1	07/02/13	COMMENTS



FILED
JAN 07 2016

OFFICE OF HAMILTON COUNTY SURVEYOR

AS-BUILT

BRADLEY N. SCHRAGE, P.E.

C.001
JOB# 2012.00089

PLANS PREPARED FOR:

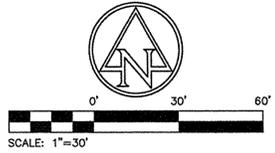
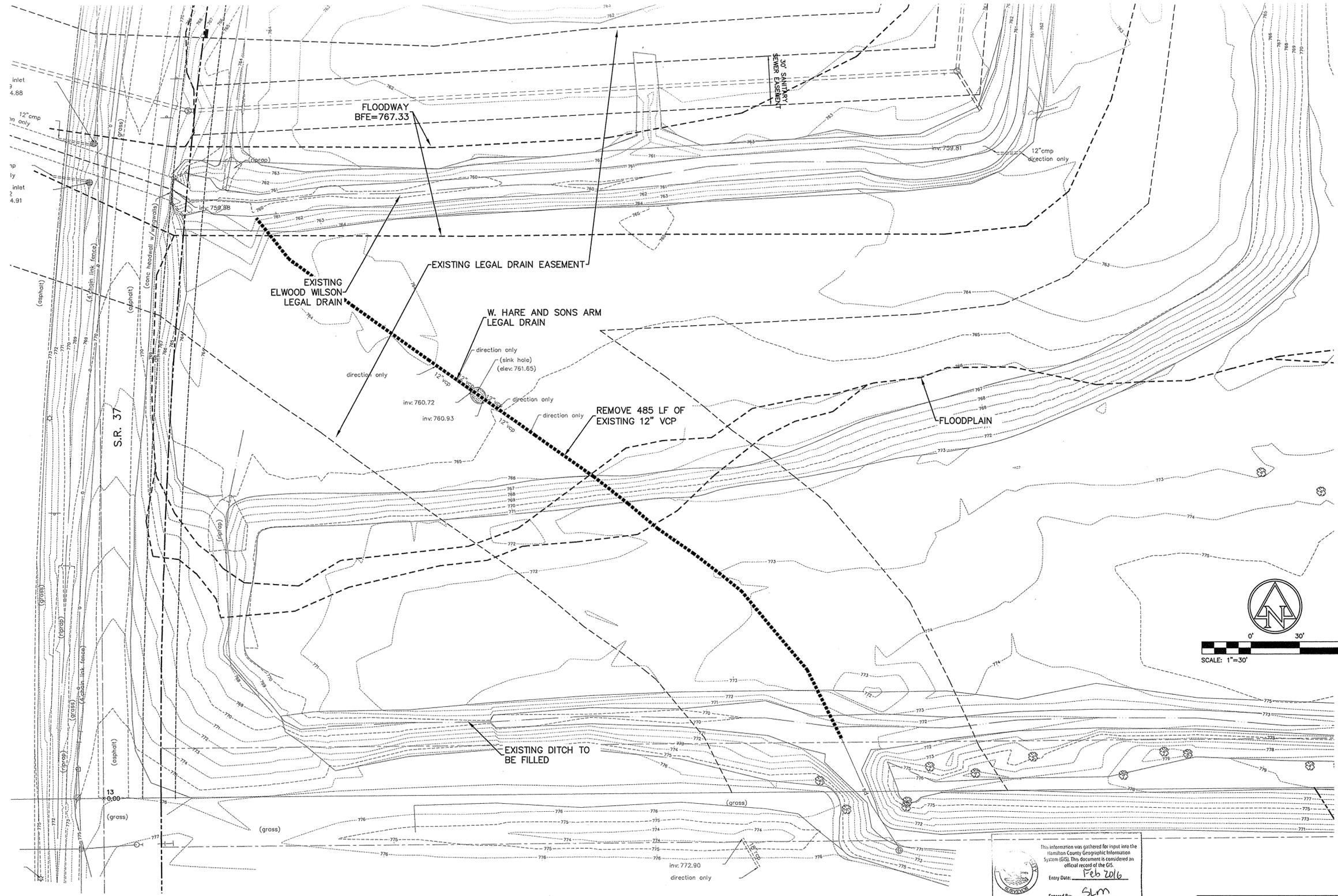
TERRY LEE CROSSING

8693 E. U.S. HIGHWAY 36
AVON, INDIANA

PLANS PREPARED BY:



7260 SHADELAND STATION
INDIANAPOLIS, IN 46256-3957
TEL 317.547.5580 FAX 317.543.0270
www.structurepoint.com



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: Feb 2016
 Entered By: SLM

EXISTING TOPOGRAPHY LEGEND

- | | |
|-----------------------|---|
| ⊕ Drainage Manhole | ⊕ Telephone Manhole |
| ⊕ Drainage Inlet | ⊕ Traffic Manhole |
| — Guy Wire | ⊕ Traffic Pole |
| • Guard Post | • Vent |
| ⊓ Right-of-way Marker | tr Top Of Rim Elevation |
| ⊕ Clean Out | inv Invert Elevation |
| ⊕ Sanitary Manhole | cpc Corrugated Plastic Pipe |
| ⊕ Sign | pvc Plastic Pipe |
| ⊕ Deciduous Tree | cmp Corrugated Metal Pipe |
| ⊕ Electric Handhole | vcp Clay Pipe |
| ⊕ Light Pole | rcp Reinforced Concrete Pipe |
| ⊕ Power Pole | ohe Overhead Electric Line |
| ⊕ Transformer | otr Overhead Traffic Line |
| ⊕ Gas Marker | MES Metal End Section |
| ⊕ Brace Pole | PES Plastic End Section |
| | —sd— Approximate Location Of Field Tile |

BENCH INFORMATION
 NAVD '88
 S 237
 DISK IN CONCRETE: ±50' SOUTH OF C PLEASANT ST. AND ±165' WEST OF 19th ST. AND ±60' WEST OF THE HUMANE SOCIETY'S EAST DRIVE. ELEV - 768.27
 ASI TBM 80
 CHISELED SQUARE ON EAST SIDE LIGHT POLE ON EAST SIDE OF SR 37 AND ±550' NORTH OF PLEASANT ST. ELEV - 775.63
 ASI TBM 81
 CHISELED SQUARE ON EAST SIDE LIGHT POLE AT SOUTHEAST CORNER OF SR 37 AND CHERRY ST. ELEV - 773.65
 ASI TBM 82
 CHISELED "X" ON NW BOLT TRAFFIC POLE AT SOUTHEAST CORNER OF SR 37 AND SR 32/38. ELEV - 776.12
 ASI TBM 83
 CHISELED SQUARE ON NORTH SIDE LIGHT POLE AT SOUTHEAST CORNER OF SR 32/38 AND NOBLESVILLE COMMONS DRIVE. ELEV - 770.08

FLOODWAY AND FLOODPLAIN SHOWN PER PRELIMINARY FIRM 18057 C 01616

- NOTES:**
- CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
 - CONTRACTOR TO VERIFY LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION. CONTACT ENGINEER IF VARIATION EXISTS.

CAUTION !!
 THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED UPON ABOVE GROUND EVIDENCE (including, but not limited to, manholes, inlets, valves, and marks made upon the ground by others) AND ARE SPECULATIVE IN NATURE. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF SAID EXISTING UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY AND ALL CONSTRUCTION.
 1-800-382-5544
 CALL TOLL FREE
 - INDIANA UNDERGROUND -

7680 SHADELAND STATION
 INDIANAPOLIS, IN 46256-9857
 TEL 317.547.5580 FAX 317.543.0270
 www.structurepoint.com

AMERICAN
STRUCTUREPOINT
 INC.

**APPROVAL PENDING
 NOT FOR CONSTRUCTION**

DESIGNED BY

EXISTING TOPOGRAPHY/DEMOLITION PLAN

PREPARED FOR:
TERRY LEE CROSSING
 8693 E. U.S. HIGHWAY 36
 AVON, INDIANA

PROJECT:
**W. HARE & SONS ARM
 LEGAL DRAIN RELOCATION**
 NOBLESVILLE, INDIANA

DATE: 2013.06.28
 DRAWN BY: JCS
 CHK'D BY: BNS
 JOB NO.: 2012.00089

REVISIONS	
COMMENTS	07/02/13

SHEET NO.
C.100
 OF

PRINT DATE: 7/6/15 PLOT SCALE: 1:2,500 EDIT DATE: 5/31/13 - 9:51 AM EDITED BY: LEOHANNON DRAWING FILE: P:\2013\01836\CALCULATIONS\VAULT\RAW SURVEY\TERRY LEE LEGAL DRAIN AS-BUILT\2013.01836.AB.02.C200.STMPP.HARE.DWG

STORM AS-BUILT

STORM SEWER AS-BUILT STATEMENT

As-Built information for storm sewer rims are based upon above ground evidence of the existing storm sewer system. The strike through data shown on the Storm Sewers are the proposed elevations for all the structures to be placed. Said information has been replaced by the as-built information per elevations collected in the field on July 2, 2015.

Nathan D. Harris

Nathan D. Harris
Registered Land Surveyor No. 21200023



BENCH INFORMATION
NAVD '88

S 237
DISK IN CONCRETE, ±50' SOUTH OF C PLEASANT ST. AND ±165' WEST OF 19th ST. AND ±60' WEST OF THE HUMANE SOCIETY'S EAST DRIVE.
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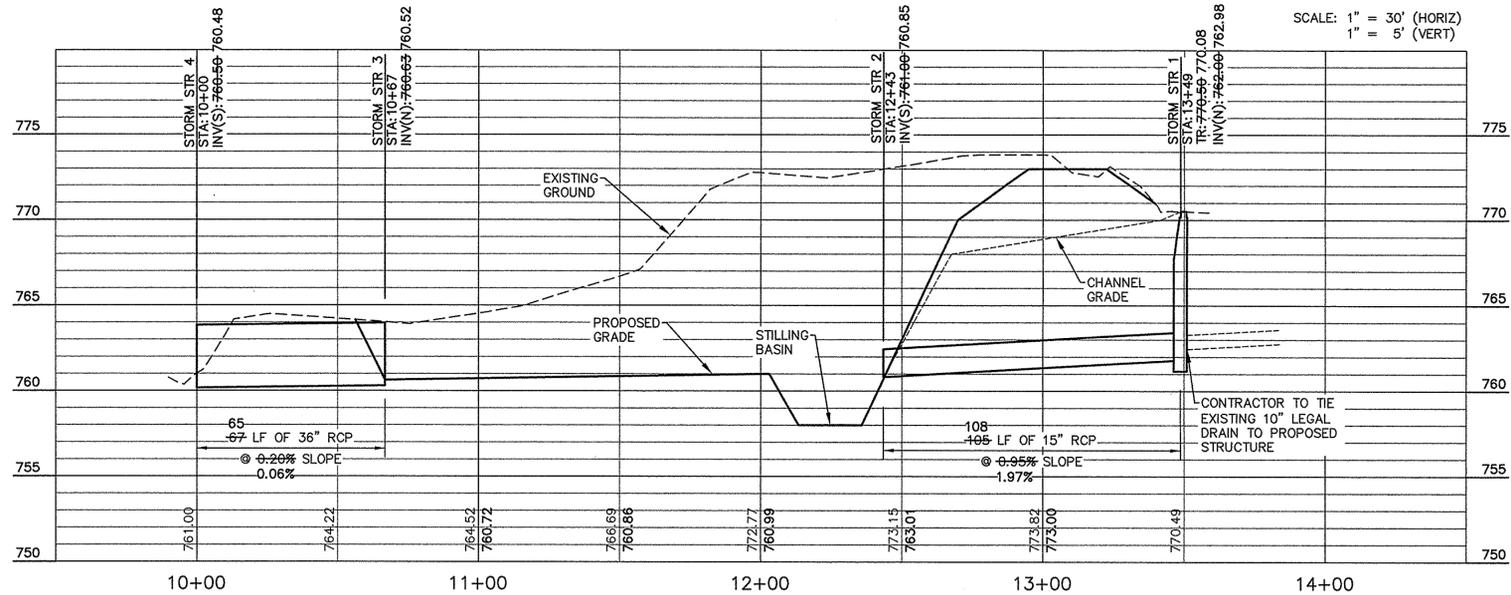
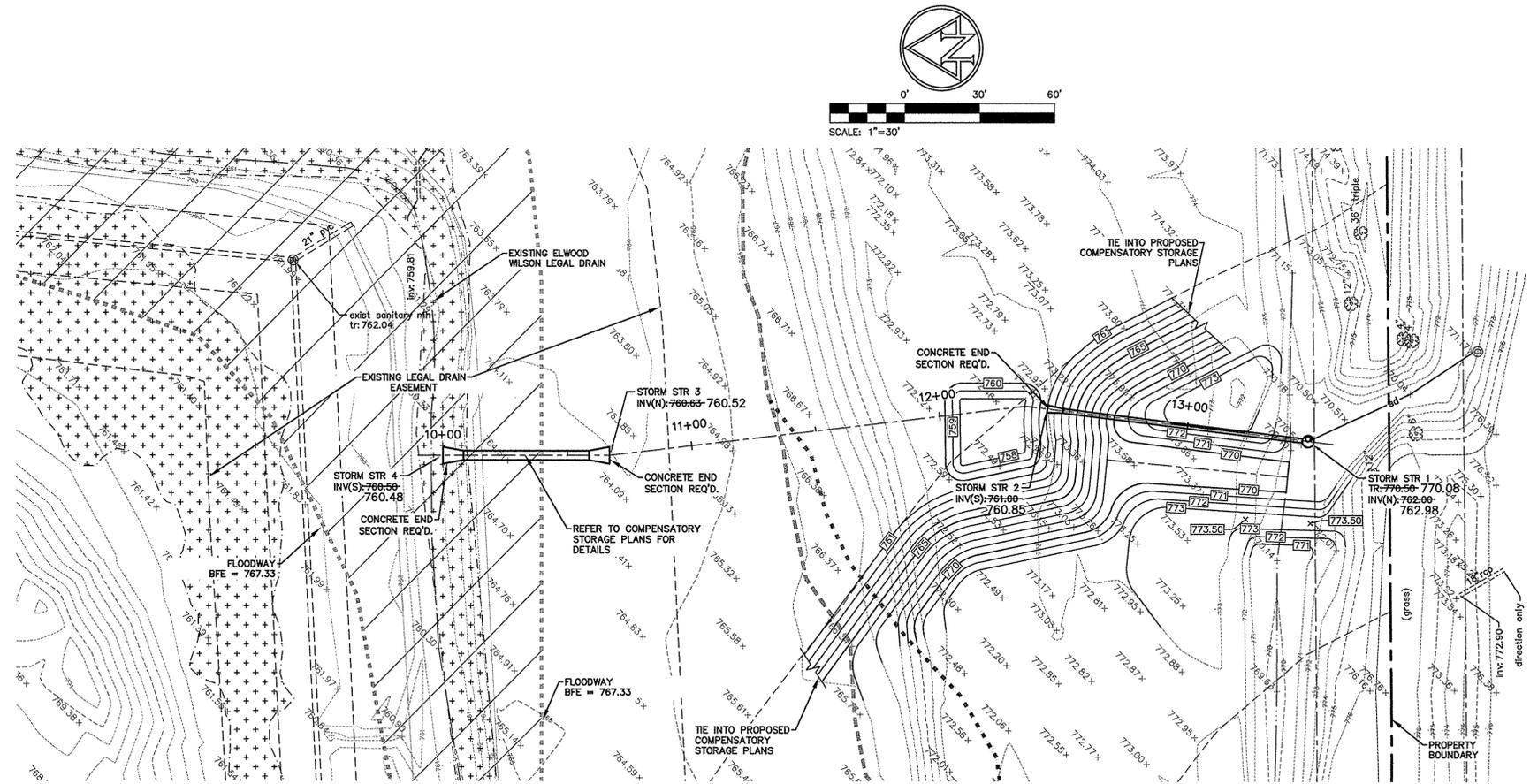
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- | | |
|-----------------------|---|
| ⊙ Drainage Manhole | ⊙ Telephone Manhole |
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| — Guy Wire | ⊙ Traffic Pole |
| • Guard Post | ↑ Vent |
| ⊠ Right-of-way Marker | tr Top Of Rim Elevation |
| ⊙ Clean Out | inv Invert Elevation |
| ⊙ Sanitary Manhole | cnp Corrugated Plastic Pipe |
| ⊙ Sign | pvc Plastic Pipe |
| ⊙ Deciduous Tree | cmp Corrugated Metal Pipe |
| ⊙ Electric Handhole | vap Clay Pipe |
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| ⊙ Power Pole | ohe Overhead Electric Line |
| ⊙ Transformer | otr Overhead Traffic Line |
| ⊙ Gas Marker | MES Metal End Section |
| ⊙ Brace Pole | PES Plastic End Section |
| | —sd— Approximate Location Of Field Tile |



STRUCTURE DATA TABLE			
STR. NO.	STRUCTURE & CASTING TYPE	T.O.R.	REMARKS
1	TYPE C MANHOLE R-1772	770.50	770.08
2	CONCRETE END SECTION		DEBRIS GUARD REQUIRED
3	CONCRETE END SECTION		DEBRIS GUARD REQUIRED
4	CONCRETE END SECTION		DEBRIS GUARD REQUIRED

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1-800-382-5544
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- INDIANA UNDERGROUND -

FLOODWAY AND FLOODPLAIN SHOWN PER PRELIMINARY FIRM 18057 C 0161G

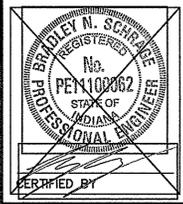
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STORM SEWER PLAN AND PROFILE

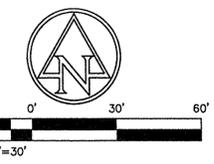
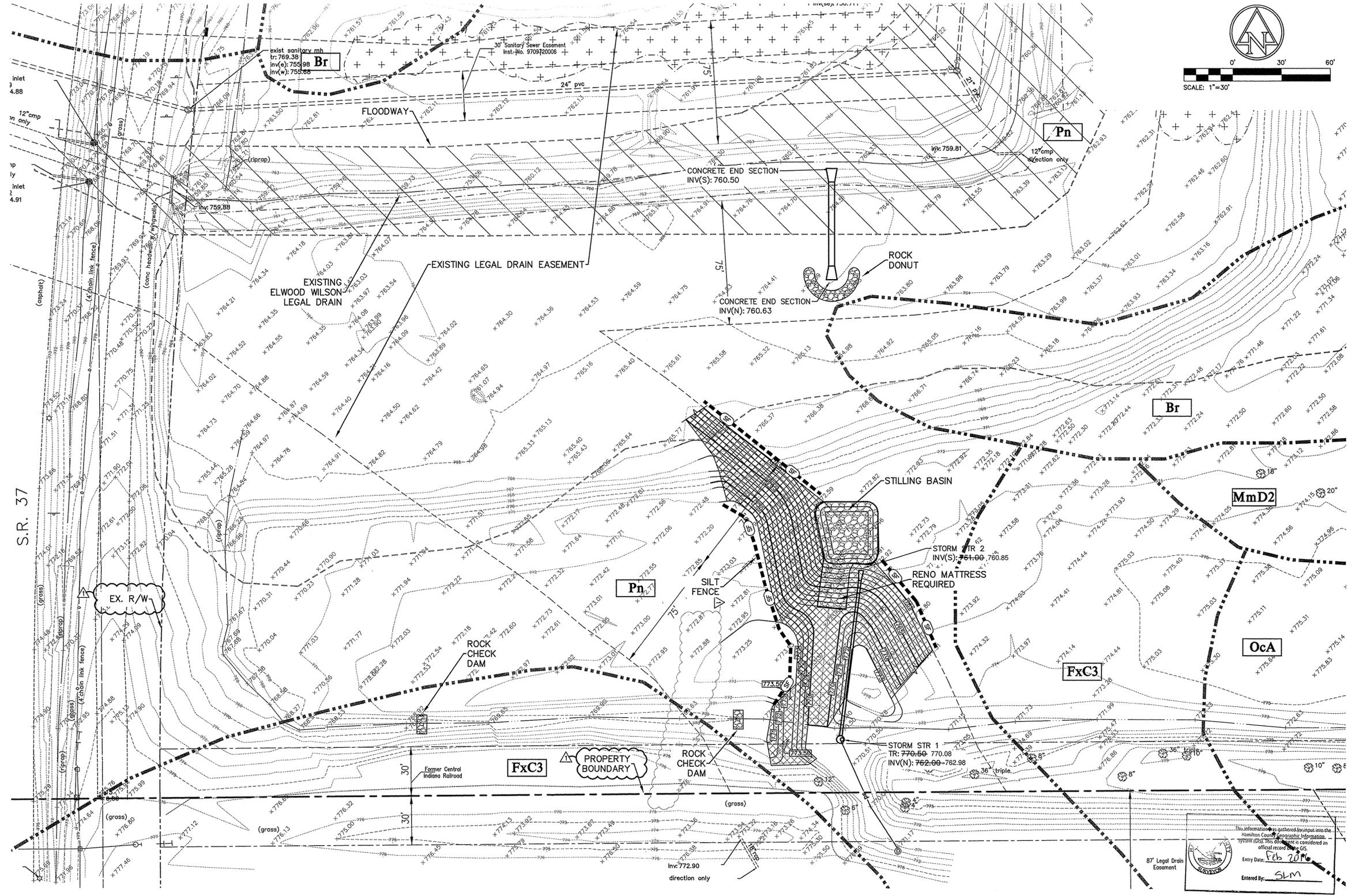
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NOBLESVILLE, INDIANA

DATE: 06/28/2013
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REVISIONS
COMMENTS 07/02/13

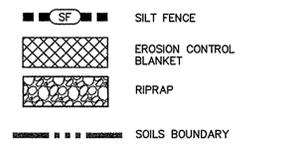
SHEET NO.
C200
OF



EROSION CONTROL NOTES

- LAND ALTERATION WHICH STRIPS THE LAND OF VEGETATION, INCLUDING REGRADING, SHALL BE DONE IN A WAY THAT WILL MINIMIZE EROSION.
- CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
- THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.
- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
- SEDIMENT LADEN WATER SHALL BE DETAINED BY EROSION CONTROL PRACTICES AS NEEDED TO MINIMIZE SEDIMENTATION IN THE RECEIVING STREAM. NO STORM WATER SHALL BE DISCHARGED FROM THE SITE IN A MANNER THAT CAUSES EROSION AT THE POINT OF DISCHARGE.
- WASTE AND UNUSED BUILDING MATERIALS SHALL NOT BE ALLOWED TO BE CARRIED FROM THE SITE BY STORM WATER RUNOFF. PROPER DISPOSAL OF ALL WASTE AND UNUSED BUILDING MATERIALS IS REQUIRED.
- SEDIMENT BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS SHALL BE MINIMIZED. CLEARING OF ACCUMULATED SEDIMENT SHALL NOT INCLUDE FLUSHING WITH WATER. CLEARED SEDIMENT SHALL BE RETURNED TO THE SITE FOR DISPOSAL.
- SOIL WHICH HAS ACCUMULATED NEXT TO EROSION CONTROL DEVICES SHALL BE COLLECTED AND RE-DISTRIBUTED ON SITE AFTER EACH RAINFALL EVENT, AND AT LEAST ONCE A WEEK.
- IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
- ALL EXISTING STRUCTURES, FENCING, TREES AND ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED AND DISPOSED OF OFF SITE. BURNING IS NOT ALLOWED ON SITE.
- THIS LOT LIES WITHIN FLOOD HAZARD ZONE AE AS SCALED FROM THE PRELIMINARY FLOOD INSURANCE RATE MAP (FIRM) FOR HAMILTON COUNTY, INDIANA, PANEL NUMBER 18057 C 0161G.
- SCHEDULE OF EARTHWORK ACTIVITIES:
 - TOPSOIL REPLACEMENT SHALL TAKE PLACE FROM MARCH 1 TO OCTOBER 31. STOCKPILE TOPSOIL AT ALL OTHER TIMES OF THE YEAR. PERMANENT AND FINAL VEGETATION AND STRUCTURAL EROSION CONTROL DEVICES SHALL BE INSTALLED WITHIN SEVEN (7) DAYS AFTER FINAL GRADING OR AS SOON AS POSSIBLE.

PROPOSED EROSION CONTROL LEGEND



SOIL TYPES

- Br BROOKSTON SILTY CLAY LOAM
- FxC3 FOX CLAY LOAM, 8 to 18 PERCENT SLOPES, SEVERELY ERODED
- MmD2 MIAMI SILT LOAM, 12 to 18 PERCENT SLOPES, ERODED
- Oca OCKLEY SILT LOAM, 0 to 2 PERCENT SLOPES, ERODED
- Pn PATTON SILTY CLAY LOAM

EXISTING TOPOGRAPHY LEGEND

- Drainage Manhole
- Drainage Inlet
- Guy Wire
- Guard Post
- Right-of-way Marker
- Clean Out
- Sanitary Manhole
- Sign
- Deciduous Tree
- Electric Handhole
- Light Pole
- Power Pole
- Transformer
- Gas Marker
- Brace Pole
- Telephone Manhole
- Traffic Manhole
- Traffic Pole
- Vent
- Top Of Rim Elevation
- Inv Invert Elevation
- cpp Corrugated Plastic Pipe
- pvc Plastic Pipe
- cmp Corrugated Metal Pipe
- vcp Clay Pipe
- rcp Reinforced Concrete Pipe
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1-800-382-5544
CALL TOLL FREE
INDIANA UNDERGROUND

7580 SHAELEND STATION
INDIANAPOLIS, IN 46256-5857
TEL 317.547.5890 FAX 317.543.0270
www.structurepoint.com

AMERICAN
STRUCTUREPOINT
INC.

**APPROVAL PENDING
NOT FOR CONSTRUCTION**

CHECKED BY _____

EROSION CONTROL PLAN

PREPARED FOR:
TERRY LEE CROSSING
8693 E. U.S. HIGHWAY 36
AVON, INDIANA

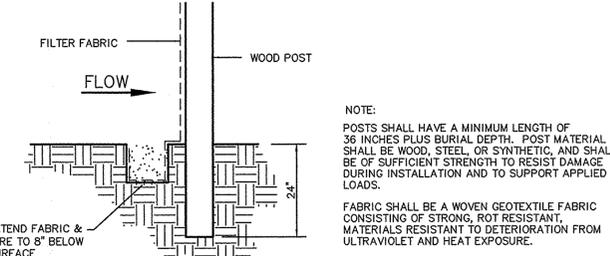
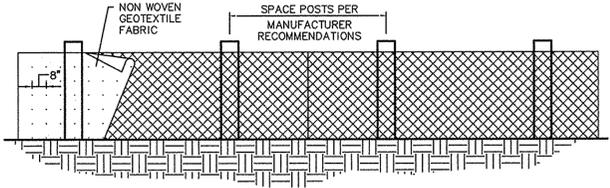
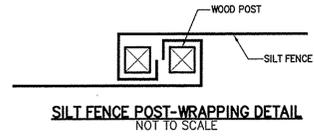
PROJECT:
**W. HARE & SONS ARM
LEGAL DRAIN RELOCATION
NOBLESVILLE, INDIANA**

DATE: 2013.06.28
DRAWN BY: JCS
CHK'D BY: BNS
JOB NO.: 2012.00089

REVISIONS

NO.	DATE	DESCRIPTION
1	07/02/13	COMMENTS

SHEET NO.
C.300
OF



NOTE:
POSTS SHALL HAVE A MINIMUM LENGTH OF 36 INCHES PLUS BURIAL DEPTH. POST MATERIAL SHALL BE WOOD, STEEL, OR SYNTHETIC, AND SHALL BE OF SUFFICIENT STRENGTH TO RESIST DAMAGE DURING INSTALLATION AND TO SUPPORT APPLIED LOADS.
FABRIC SHALL BE A WOVEN GEOTEXTILE FABRIC CONSISTING OF STRONG, ROT RESISTANT, MATERIALS RESISTANT TO DEGRADATION FROM ULTRAVIOLET AND HEAT EXPOSURE.

SILT FENCE CONSTRUCTION
NOT TO SCALE

SILT FENCE INSTALLATION REQUIREMENTS

- SITE PREPARATION**
1. PLAN FOR THE FENCE TO BE AT LEAST 10 FT. FROM THE TOE OF THE SLOPE TO PROVIDE A SEDIMENT STORAGE AREA.
 2. PROVIDE ACCESS TO THE AREA IF SEDIMENT CLEANOUT WILL BE NEEDED.
- OUTLET CONSTRUCTION (OPTIONAL)**
1. DETERMINE THE APPROPRIATE LOCATION FOR A REINFORCED, STABILIZED BYPASS FLOW OUTLET (UNLESS THE FENCE IS DESIGNED TO RETAIN ALL RUNOFF FROM A 2 YEAR FREQUENCY, 24 HR DURATION STORM EVENT)
 2. SET THE OUTLET ELEVATION SO THAT WATER DEPTH CANNOT EXCEED 18/29 FT. AT THE LOWEST POINT ALONG THE FENCE LINE.
 3. LOCATE THE OUTLET WEIR SUPPORT POSTS NO MORE THAN 4 FT. APART, AND INSTALL A HORIZONTAL BRACE BETWEEN THEM. (WEIR HEIGHT SHOULD BE NO MORE THAN 1 FT. DEEP, 5 FT. WIDE, AND 7 FT. LONG ON LEVEL GRADE.)
 4. EXCAVATE THE FOUNDATION FOR THE OUTLET SPLASH PAD TO MINIMUMS OF 1 FT. AND WATER DEPTH NO MORE THAN 10 FT. ANYWHERE ELSE ALONG THE FENCE.)
 5. FILL THE EXCAVATED FOUNDATION WITH INDOT CA NO. 1 STONE, BEING CAREFUL THAT THE FINISHED SURFACE BLENDS WITH THE SURROUNDING AREA, ALLOWING NO OVERFILL.
 6. STABILIZE THE AREA AROUND THE PAD.

FENCE CONSTRUCTION

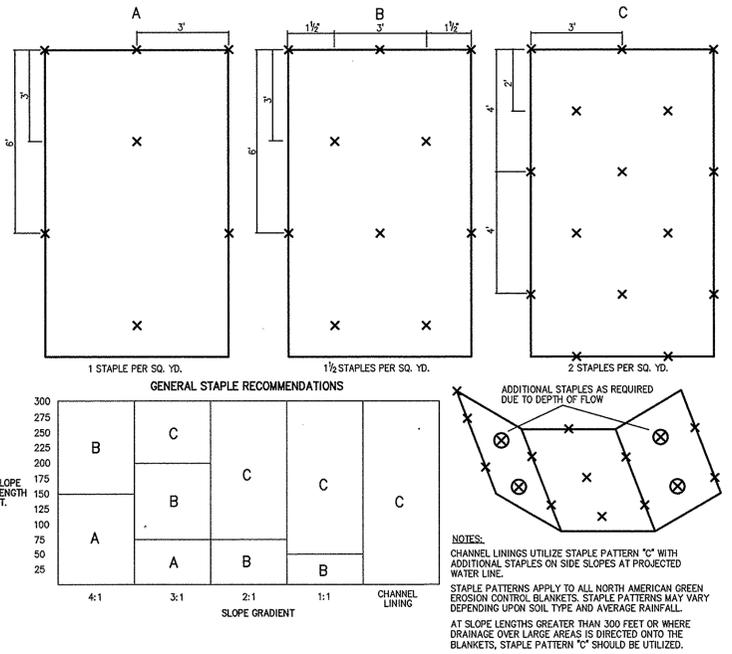
1. ALONG THE ENTIRE INTENDED FENCE LINE, DIG AN 8 IN. DEEP FLAT-BOTTOMED OR V-SHAPED TRENCH.
 2. ON THE DOWNSIDE SLOPE OF THE TRENCH, DRIVE THE WOOD OR STEEL SUPPORT POSTS AT LEAST 1 FT. INTO THE GROUND (THE DEEPER THE BETTER), SPACING THEM NO MORE THAN 8 FT. APART IF THE FENCE IS SUPPORTED BY WIRE OR 6 FT. IF EXTRA-STRENGTH FABRIC IS USED WITHOUT SUPPORT WIRE. ADJUST SPACING, IF NECESSARY, TO ENSURE THAT POSTS ARE SET AT THE LOW POINTS ALONG THE FENCE LINE. (NOTE: IF THE FENCE HAS PRE-ATTACHED POSTS OR STAKES, DRIVE THEM DEEP ENOUGH SO THE FABRIC IS SATISFACTORILY IN THE TRENCH AS DESCRIBED IN STEP 6.)
 3. FASTEN SUPPORT WIRE FENCE (IF THE MANUFACTURER RECOMMENDS ITS USE) TO THE UPSLOPE SIDE OF THE POSTS, EXTENDING IT 8 IN. INTO THE TRENCH.
 4. RUN A CONTINUOUS LENGTH OF GEOTEXTILE FABRIC IN FRONT (UPSLOPE) OF THE SUPPORT WIRE AND POSTS, AVOIDING JOINTS, PARTICULARLY AT LOW POINTS IN THE FENCE LINE.
 5. IF A JOINT IS NECESSARY, NAIL THE OVERLAP TO THE NEAREST POST WITH LATH.
 6. PLACE THE BOTTOM 1 FT. OF FABRIC IN THE 8 IN. DEEP TRENCH, EXTENDING THE REMAINING 4 IN. TOWARD THE UPSLOPE SIDE.
 7. BACKFILL THE TRENCH WITH COMPACTED EARTH OR GRAVEL.
- NOTE: IF USING A PRE-PACKED COMMERCIAL SILT FENCE RATHER THAN CONSTRUCTING ONE, FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

SILT FENCE MAINTENANCE REQUIREMENTS

1. INSPECT THE SILT FENCE PERIODICALLY AND AFTER EACH STORM EVENT.
2. IF FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
3. REMOVE DEPOSITED SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE FENCE AT ITS LOWEST POINT OR IS CAUSING THE FABRIC TO BULGE.
4. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEAN OUT.
5. AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED REMOVE THE FENCE AND SEDIMENT DEPOSITS, BRING THE DISTURBED AREA TO GRADE, AND STABILIZE.

SEASONAL SOIL PROTECTION CHART												
STABILIZATION PRACTICE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
PERMANENT SEEDING		A										
DORMANT SEEDING	B											B
TEMPORARY SEEDING		C					D					

A = KENTUCKY BLUEGRASS 100 LBS./ACRE; CREEPING RED FESCUE 100 LBS./ACRE; HYDROSEEDED
 B = KENTUCKY BLUEGRASS 120 LBS./ACRE; CREEPING RED FESCUE 120 LBS./ACRE; HYDROSEEDED
 C = SPRING OATS 3 BUSHELS/ACRE
 D = WHEAT OR RYE 2 BUSHELS/ACRE
 E = ANNUAL RYEGRASS 40 LBS./ACRE (1 LB/1000 SQ. FT.)
 •/1/• = IRRIGATION NEEDED DURING JUNE, JULY, AUGUST AND/OR SEPTEMBER



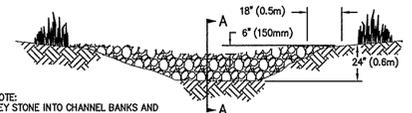
EROSION CONTROL MAT INSTALLATION GUIDE DETAIL
NOT TO SCALE

EROSION CONTROL BLANKET (SURFACE APPLIED) INSTALLATION REQUIREMENTS

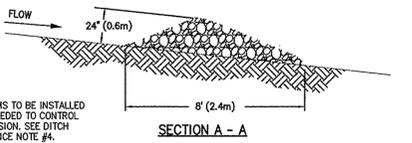
1. SELECT THE TYPE AND WEIGHT OF EROSION CONTROL BLANKET TO FIT THE SITE CONDITIONS (e.g., SLOPE, CHANNEL FLOW VELOCITY).
2. INSTALL ANY PRACTICES NEEDED TO CONTROL EROSION AND RUNOFF, SUCH AS TEMPORARY OR PERMANENT DIVERSION, SEDIMENT BASIN OR TRAP, SILT FENCE, AND STRAW BALE DAM.
3. GRADE THE SITE AS SPECIFIED IN THE CONSTRUCTION PLAN.
4. ADD TOPSOIL WHERE APPROPRIATE.
5. PREPARE THE SEEDBED, FERTILIZE (AND LIME, IF NEEDED), AND SEED THE AREA IMMEDIATELY AFTER GRADING.
6. FOLLOWING MANUFACTURER'S DIRECTIONS, LAY THE BLANKETS ON THE SEEDBED AREA SUCH THAT THEY ARE IN CONTINUOUS CONTACT WITH THE SOIL AND THAT THE UPSLOPE OR UPSTREAM ONES OVERLAP THE LOWER ONES BY AT LEAST 8 IN.
7. TUCK THE UPPERMOST EDGE OF THE UPPER BLANKETS INTO A CHECK SLOT (SILT TRENCH), BACKFILL WITH SOIL, AND TAMP DOWN.
8. ANCHOR THE BLANKETS AS SPECIFIED BY THE MANUFACTURER. THIS TYPICALLY INVOLVES DRIVING 6-8 IN. METAL STAPLES INTO THE GROUND IN A PATTERN DETERMINED BY THE SITE CONDITIONS.

EROSION CONTROL BLANKET (SURFACE APPLIED) MAINTENANCE REQUIREMENTS

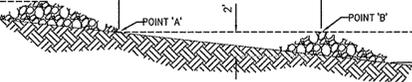
1. DURING VEGETATIVE ESTABLISHMENT INSPECT AFTER STORM EVENTS FOR ANY EROSION BELOW THE BLANKET.
2. IF ANY AREA SHOWS EROSION PULL BACK THAT PORTION OF THE BLANKET COVERING IT, ADD SOIL, RE-SEED THE AREA, AND RE-LAY AND STAPLE THE BLANKET.
3. AFTER VEGETATIVE ESTABLISHMENT CHECK THE TREATED AREA PERIODICALLY.



VIEW LOOKING UPSTREAM



SECTION A-A



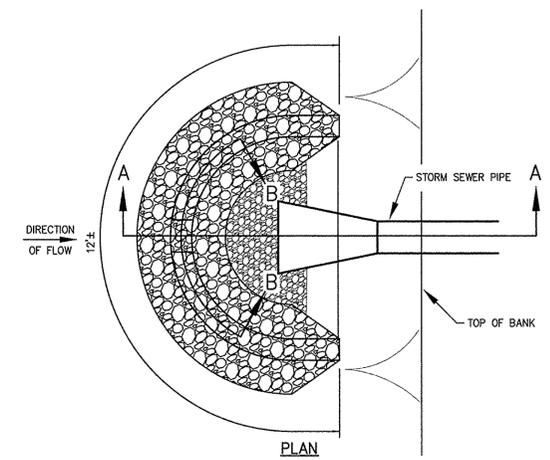
**SPACING BETWEEN CHECK DAMS
ROCK CHECK DAM**
NOT TO SCALE

ROCK CHECK DAM INSTALLATION REQUIREMENTS

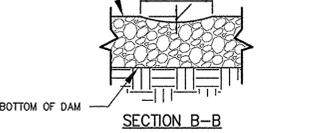
1. EXCAVATE A CUTOFF TRENCH INTO THE DITCH BANKS, AND EXTEND IT A MINIMUM OF 18 IN. BEYOND THE ABUTMENTS.
2. PLACE THE ROCK IN THE CUTOFF TRENCH AND CHANNEL TO THE LINES AND DIMENSIONS SHOWN IN DETAIL, CENTER MAXIMUM OF 2 FT. HIGH YET 9 IN. BELOW WHERE THE DAM ABUTS THE CHANNEL BANKS.
3. EXTEND THE ROCK AT LEAST 18 IN. BEYOND THE CHANNEL BANKS TO KEEP OVERFLOW WATER FROM UNDERCUTTING THE DAM AS IT RE-ENTERS THE CHANNEL.
4. INSTALL AS MANY DAMS AS NECESSARY TO SATISFY THE SPACING REQUIREMENT SHOWN IN DETAIL.
5. STABILIZE THE CHANNEL ABOVE THE UPPERMOST DAM.
6. RECOGNIZING THAT WATER WILL FLOW OVER AND AROUND THE LOWERMOST DAM, PROTECT THE CHANNEL DOWNSTREAM FROM IT WITH AN EROSION-RESISTANT LINING FOR A DISTANCE OF 6 FT. UNLESS THE CHANNEL IS PROTECTED THROUGH OTHER MEANS.

ROCK CHECK DAM MAINTENANCE REQUIREMENTS

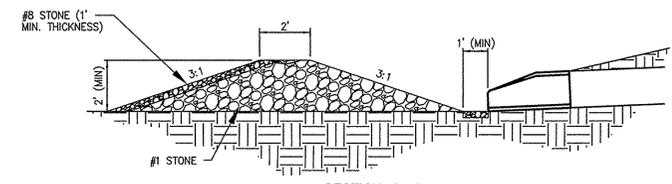
1. INSPECT CHECK DAMS AND THE CHANNEL AFTER EACH STORM EVENT, AND REPAIR ANY DAMAGE IMMEDIATELY.
2. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL A RIPRAP LINER IN THAT PORTION OF THE CHANNEL.
3. REMOVE SEDIMENT ACCUMULATED BEHIND EACH DAM AS NEEDED TO MAINTAIN CHANNEL CAPACITY, TO ALLOW DRAINAGE THROUGH THE DAM, AND TO PREVENT LARGE FLOWS FROM DISPLACING SEDIMENT.
4. ADD ROCK TO THE DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.
5. WHEN THE DAMS ARE NO LONGER NEEDED, REMOVE THE ROCK AND STABILIZE CHANNEL, USING AN EROSION-RESISTANT LINING IF NECESSARY.



PLAN



SECTION B-B



SECTION A-A

ROCK DONUT DETAIL
NOT TO SCALE

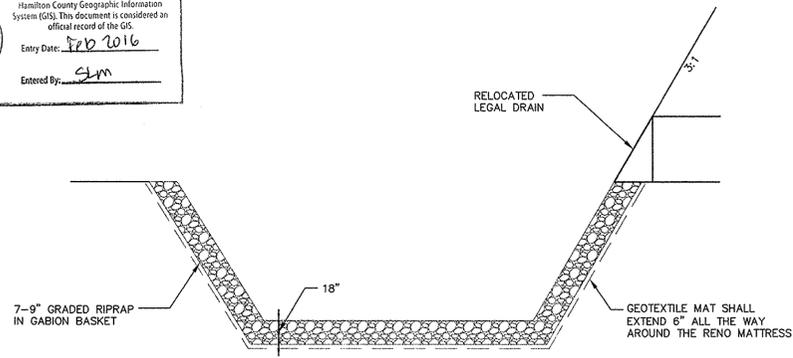
ROCK DAM MAINTENANCE REQUIREMENTS

1. INSPECT DAMS AND THE CHANNEL WEEKLY AND WITHIN 24 HOURS OF ALL 6\"/>

ROCK DAM INSTALLATION REQUIREMENTS

1. EXCAVATE A CUTOFF TRENCH INTO THE DITCH BANKS, AND EXTEND IT A MINIMUM OF 18 IN. BEYOND THE ABUTMENTS.
2. PLACE THE ROCK IN THE CUTOFF TRENCH AND CHANNEL TO THE LINES AND DIMENSIONS SHOWN IN DETAIL, CENTER MAXIMUM OF 2 FT. HIGH YET 9 IN. BELOW WHERE THE DAM ABUTS THE CHANNEL BANKS.
3. EXTEND THE ROCK AT LEAST 18 IN. BEYOND THE CHANNEL BANKS TO KEEP OVERFLOW WATER FROM UNDERCUTTING THE DAM AS IT RE-ENTERS THE CHANNEL.
4. INSTALL AS MANY DAMS AS NECESSARY TO SATISFY THE SPACING REQUIREMENT SHOWN IN DETAIL.
5. STABILIZE THE CHANNEL ABOVE THE UPPERMOST DAM.
6. RECOGNIZING THAT WATER WILL FLOW OVER AND AROUND THE LOWERMOST DAM, PROTECT THE CHANNEL DOWNSTREAM FROM IT WITH AN EROSION-RESISTANT LINING FOR A DISTANCE OF 6 FT. UNLESS THE CHANNEL IS PROTECTED THROUGH OTHER MEANS.

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: Feb 2016
 Entered By: CLM



STILLING BASIN DETAIL
NOT TO SCALE

7280 SHADELAND STATION
 INDIANAPOLIS, IN 46268-3857
 TEL 317.547.5580 FAX 317.543.0270
 www.structurepoint.com

AMERICAN
STRUCTUREPOINT
 INC.

APPROVAL PENDING
 NOT FOR CONSTRUCTION

EROSION CONTROL DETAILS
 PREPARED FOR:
TERRY LEE CROSSING
 8693 E. U.S. HIGHWAY 36
 AVON, INDIANA

PROJECT:
W. HARE & SONS ARM
LEGAL DRAIN RELOCATION
 NOBLESVILLE, INDIANA

DATE:	2013.06.28
DRAWN BY:	DRAWN BY
CHK'D BY:	BMS
JOB NO.:	2012.00089

REVISIONS	
COMMENTS	07/02/13

SHEET NO.
C.301
 OF

RENO MATTRESS

Material Delivery

Reno mattresses are manufactured with all components mechanically connected at the production facility with the exception of the lid, which is produced separately from the base. All Reno mattresses are supplied in a collapsed form, either folded and banded or rolled for shipping. The bundles are banded together at the factory for shipping and handling. Reno mattress bases and lids may be packed in separate bundles. Lacing wire is shipped in coils. Ring fasteners are shipped in boxes. All Reno mattresses are labelled to show their dimensions and the number of pieces per bundle.

Assembly

The folded units shall be taken out from the bundle and placed on a hard flat surface. Reno mattresses shall be opened, unfolded, and pressed out to their original shape. Front, back and end panels shall be lifted to a vertical position to form an open box shape. End flaps shall be folded and overlapped, as appropriate. All edges of the diaphragms and end panels shall be led or fastened to the front and back of the mattress. The mattresses should be assembled individually by erecting the sides, ends and diaphragms, ensuring that all creases are in the correct position and the tops of all sides are level.

Fastening Procedure

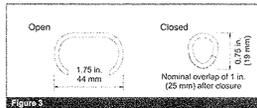
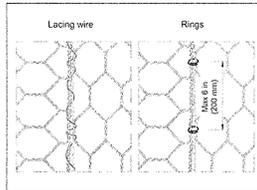
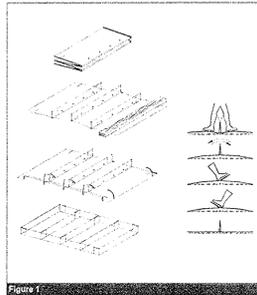
Connect the edges of the mattress by using either lacing wire or ring fasteners. When steel ring fasteners are used, the use of either a mechanical or a pneumatic fastening tool is required. Spacing of the rings shall be in accordance with ASTM A975 Table 2. Panel to Panel connection, Pull-Apart Resistance. In any case, ring fasteners spacing shall not exceed 6 in (150 mm). Rings shall be installed at the top and the bottom connections of the end and center diaphragms and along all edges. Care should be taken to ensure the steel ring fastener is completely closed after installation (Fig. 3). When this is not possible, ring rings must be complemented or replaced with lacing wire.

The procedure for using lacing wire consists of cutting a sufficient length of wire, and first looping and/or twisting the lacing wire to the wire mesh. Proceed to lace with alternating double and single loops through every mesh opening approximately every 6 in (150 mm) pulling each loop tight and finally securing the end of the lacing wire to the wire mesh by looping and/or twisting. The use of pliers to aid assembly and wiring of the units using the lacing wire supplied with the mattresses is normally recommended.

The average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.

Foundation Preparation

The foundation on which the Reno mattresses are to be placed shall be level, and graded to the elevations as shown on the project construction drawing. The foundation for Reno mattresses shall be free of surface irregularities, loose material, and vegetation in accordance with the project specifications. Appropriate measures shall be taken for filtering and drainage of the foundation, as per the project specifications (filter cloth, drain works, etc.). Geotextiles required to be installed behind or



underneath Reno mattress structures shall comply with the requirements for subsurface drainage applications.

Installation and Filling

After assembly, the mattresses are placed in their proper location and securely attached to adjacent units. For structural integrity, all adjoining empty units should be connected by means of lacing wire or ring fasteners along all the edges of their contact surfaces in order to form a monolithic structure. On slopes, the mattress should be laid with the width perpendicular to the slope, except for very small declines. Mattresses should be placed and securely attached while empty. Where mattresses are to be placed on steep slopes, the unit should be secured by hardwood or steel pegs driven into the ground just below the upper end panel, at 5 ft (2 m) centers or as specified in the project requirements.

Mattresses can conform to bends up to a radius of 60-70 ft (18-21 m) without alteration, and placed to the required curvature for filling. Mattresses may be cut to form curves or levels.

Rocks for mattresses may be produced by any suitable quarrying method, and by the use of any device that yields the required sizes within the gradation limits chosen.

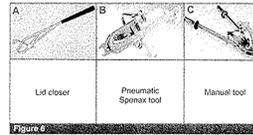
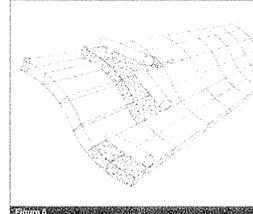
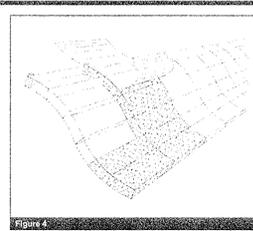
Rocks shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure.

Reno mattress rocks shall range between 3-6 in (75-150 mm). The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the mattress exposed surface. In all cases, any oversize rock for mattresses shall allow for a placement of a minimum two layers of mixed rock sizes, dependent upon the height/thickness of the mattress.

When using PVC coated Reno mattresses, care should be taken when placing the stone to ensure that the PVC coating on the mattress will not be damaged. Some hand placing is necessary to ensure the void ratio is kept to a minimum, if installing on a slope, start at the bottom of the slope. Filling should be done unit by unit, but several units should be ready for filling at any one time. Ensure that the diaphragm tops are accessible for lacing to the mattress lids when required.

Closing

To allow for settlement, level off the fill 1 in (25 mm) above the top of the mesh. In aprons downstream of weirs and similar places where water will fall directly onto the Reno mattresses, install tracing wires vertically between the top and bottom mesh. Make sure the top edges of the diaphragms are exposed. Lay the lid down, pull the edges of the panels to be connected together where necessary using an appropriate tool as a lid closer. The lids shall be tightly laced along all edges, ends and diaphragms in the same manner as described for assembling. Adjacent lids may be securely attached simultaneously. Securely attach the lids to the ends of the mattresses and then securely attach them to the sides, and diaphragms, using alternate double and single loops, or steel wire ring fasteners. Adjacent lids can securely be attached in one operation, in cases where a number of adjacent bases are to be covered at



RENO MATTRESS GALVANIZED

RENO MATTRESS - Galvanized

1.0 Description

This work shall consist of fastening, assembling, and filling woven wire mesh Reno mattresses with rock as specified in the contract to the dimensions, lines and grades shown on the plans, or as determined by the engineer. These specifications are in accordance with ASTM A975 and include Reno mattresses as manufactured by Maccaferri, Inc. or equivalent.

2.0 Materials

2.1 Woven Mesh Reno Mattresses

2.1.1 Wire (Zinc Coated):

- All tests on the wire mesh must be performed prior to manufacturing the mesh.
- Tensile strength: both the wire used for the manufacture of gabions and the lacing wire, shall have a maximum tensile strength of 75,000 psi (515 MPa), in accordance with ASTM A641/A641M.
- Elongation: not less than 12% on a sample at least 12 in. (30 cm) long. Elongation shall not be less than 12%, in accordance with ASTM A370.
- Zinc coating: minimum quantities of zinc according to ASTM A641/A641M, Class III soft temper coating.
- Adhesion of zinc coating: the adhesion of the zinc coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers, in accordance with ASTM A641/A641M.

2.1.2 Galvanized (zinc coated) woven wire mesh Reno mattresses (6 x 8 mesh type):

- Mesh Wire: Diameter - 0.087 in. (2.20 mm)
- Selvedge Wire: Diameter - 0.120 in. (3.00 mm)
- Mesh Opening: Nominal Dimension D 2.5 in. as per Fig. 1.

2.1.3 Galvanized (zinc coated) lacing wire:

Lacing wire: Diameter - 0.087 in. (2.20 mm)

2.1.4 Steel Mesh Properties

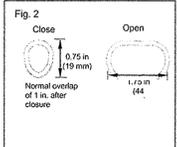
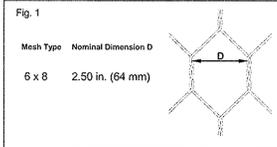
Mesh Tensile Strength shall have a minimum strength of 2300 lbf (33.6 kN/m) when tested in accordance with ASTM A975 section 13.1.1
Furnish Test Resistance shall have a minimum resistance of 4000 lb (17.8 kN) when tested in accordance with ASTM A975 section 13.1.4
Connection to selvedges shall have a minimum resistance of 700 lbf (10.2 kN/m) when tested in accordance with ASTM A975.

2.1.5 Spenax Fasteners (Overlapping Fasteners):

- Overlapping fasteners may be used in lieu of, or to complement, lacing wire for basket assembly and installation.
- High tensile fasteners shall have a nominal spacing of 4 in. (100 mm) not to exceed 6 in (150 mm) for all assembly and installation. This is based on a 1,400 lbf (20.4 kN/m) pull apart resistance for galvanized mesh with this spacing (ASTM A975 section 13.1.2).
- Fasteners used for assembly and installation of the units on the field shall be tested for compliance with the ASTM A975 section 13.1.2 Pull-Apart Resistance. Producer or supplier of the wire mesh shall provide certification no later than 15 days prior to starting construction.
- When tested in accordance with section 13.1.2.1, the average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.
- Galvanized Fasteners: Diameter = 0.120 in. (3.05 mm), according to ASTM A313/A313M, Type 302, Class I.
- Tensile strength: 230,000 to 273,000 psi (1586-1862 MPa) in accordance with ASTM A764(2001).

- Proper installation of rings: A properly formed Spenax fastener shall have a nominal overlap of one (1) in. after closure (Fig. 2).

Tolerances
Wire: Zinc coating, in accordance with ASTM A641/A641M, Class III soft temper coating.
Reno mattress sizes: ± 5% on the length, width, and 10% on the height.
Mesh opening: Tolerances on the hexagonal, double twisted wire mesh opening shall not exceed ± 10% on the nominal dimension D values (see Fig. 1).

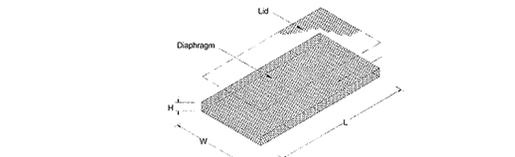


2.3 Standard Unit Size

Length (ft)	Length (m)	Width (ft)	Width (m)	Area (sq ft)	Area (sq m)
9 (2.7)	6 (1.8)	6 (1.8)	6 (1.8)	3	3
12 (3.6)	6 (1.8)	6 (1.8)	6 (1.8)	4	4
9 (2.7)	6 (1.8)	9 (2.7)	9 (2.7)	3	3
12 (3.6)	6 (1.8)	9 (2.7)	9 (2.7)	4	4
12 (3.6)	6 (1.8)	12 (3.6)	12 (3.6)	4	4

2.4 Fabrication

Reno mattresses shall be manufactured with all components mechanically connected at the production facility with the exception of the mattress lid, which is produced separately from the base. The ends and diaphragms shall be formed in conjunction with the base. The lid shall be a separate piece made of the same type mesh as the basket. All perimeter edges of the mesh forming the basket and top, or lid, shall be selvedged with wire having a larger diameter. The Reno mattress is uniformly partitioned into internal cells. The diaphragms shall be secured in position to the base so that no additional bracing is necessary at the jobsite.



2.5 Rock

The rock for Reno mattresses shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure. Mattress rocks shall range between 3 in. (0.08 m) and 5 in. (0.13 m) for units of 9 in. (0.23 m) and 6 in. (0.15 m) and between 4 in. (0.1 m) and 8 in. (0.20 m) for units of 12 in. (0.30 m). The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the gabion exposed surface. The size shall be such that a minimum of two layers of rock must be achieved when filling the mattress.

3.0 Construction Requirements

3.1 Assembly

Reno mattresses are supplied folded flat and packed in bundles. The units shall be assembled individually by erecting the sides, ends, and diaphragms ensuring that all panels are in the correct position. All connections should be accomplished using lacing wire or fasteners as previously described in Section 2.1.3 and Section 2.1.5. The procedure for using lacing wire consists of cutting a sufficient length of wire, and first looping and/or twisting to secure the lacing wire to the wire mesh. Proceed to lace with alternating double and single loops through every mesh opening approximately every 6 in. (150 mm) pulling each loop tight and finally securing the end of the lacing wire to the wire mesh by looping and/or twisting.

3.2 Installation

After assembly, the Reno mattresses are carried to their final position and are securely joined together along the vertical and top edges of their contact surfaces using the same connecting procedure(s) described in Section 3.1.

3.3 Filling

Mattresses shall be filled with rock as specified in Section 2.5. During the filling operation some manual stone placement is required to minimize voids. It is also recommended to slightly overfill the baskets by 1 in. (25 mm) to allow for settlement and so that the rock is tightly confined by the Reno mattress lid, thereby minimizing any movement of the rock under hydraulic loads.

3.4 Lid Closing

Once the Reno mattresses are completely full, the lids will be pulled tight until the lid meets the perimeter edges of the basket. A tool like a lid closer can be used. The lid must then be tightly laced and/or fastened along all edges, ends and top of diaphragms in the same manner as described in Section 3.1.

3.5 Mesh Cutting and Fasting

Where shown on the drawings or otherwise directed by the engineer, the mattress mesh shall be cut, folded and fastened together to suit existing site conditions. The mesh must be clearly cut and the surplus mesh folded back and neatly wired to an adjacent mattress face. The cut edges of the mesh shall be securely fastened together with lacing wire or fasteners in the manner described in Section 3.1. Any reshaped mattress shall be assembled, installed, filled and closed as specified in the previous sections.

4.0 Method of Measurement

- The limits of payment for excavation for Reno mattresses shall be a line coincident with the bottom and non-exposed side of the baskets. Excavation quantities will be determined from the cross sections and paid for under the appropriate classified excavation items.
- The quantity to be paid for "in place Reno mattresses" shall be the number of square meters or square yards of mattresses measured in their final position. Job conditions and availability will determine the actual size baskets or Reno mattresses to be used.
- Excavated material beyond the limits of the baskets shall be backfilled with gravel, crushed rock or other material meeting the approval of the engineer.
- This bid price shall include the cost of furnishing all labor, materials, and equipment including baskets, rock, and backfill material installed in place.
- Basis of Payment**
Accepted Reno mattresses will be paid for at the unit price for each of the pay items included in the contract.

EROSION CONTROL DETAILS

PROJECT: **W. HARE & SONS ARM LEGAL DRAIN RELOCATION NOBLESVILLE, INDIANA**

PREPARED FOR: **TERRY LEE CROSSING 8693 E. U.S. HIGHWAY 36 AVON, INDIANA**

DATE:	2013.06.28
DRAWN BY:	DRAWN BY
CHK'D BY:	BNS
JOB NO.	2012.00089

REVISIONS	
COMMENTS	07/02/13

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: Feb 2016
Entered by: SLM

SITE NAME:

The area scheduled for construction is known as "Elwood Wilson Legal Drain -- W. Hare & Sons Arm" (hereinafter referred to as the "Project").

PROJECT LOCATION:

The property is located at southeast corner of SR 37 and SR 32/38 in Noblesville, IN, at a latitude of 40°02'42" N and a longitude of 85°59'35" W.

OWNER'S INFORMATION:

Name: Terry Lee Crossing
Address: 8693 E. US Highway 36, Avon, IN 46123
Representative: Mike Cooke
Title: CFO
Telephone: (317) 272-1000
Facsimile: NA

OPERATOR'S INFORMATION:

Name: Terry Lee Crossing
Address: 8693 E. US Highway 36, Avon, IN 46123
Representative: Mike Cooke
Title: CFO
Telephone: (317) 272-1000
Facsimile: NA

NOTICE OF INTENT:

All parties defined as owners or operators must submit a Notice of Intent (NOI) at least 48 hours prior to commencement of on-site construction activities. Submittal of late NOI's is not prohibited; however, authorization under the construction general permit is only for discharges that occur after permit coverage is granted. Unpermitted discharges may be subject to enforcement actions by the EPA. For the purposes of this permit, an operator is defined as any party meeting either of the following requirements:

- a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.
- b. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions.

A2 - 11" x 17" PLAN:

Refer to Site Plan

A3 - PROJECT NARRATIVE:

This project consists of the construction a relocated legal drain. The proposed drain will be offset approximately 50' from the existing legal drain ditch. The site will be seeded at the completion of construction.

The drainage plans for the site include a storm sewer designed for conveyance of 10-year flood discharges to the existing Elwood Wilson Legal Drain.

A4 - VICINITY MAP:

Refer to Title Sheet

A5 LEGAL DESCRIPTION OF PROJECT SITE:

Record Description:

(from Inst. No. 2012000698)

A part of the Northwest Quarter of Section 5, Township 18 North, Range 5 East and the West Half of the Southwest Quarter of Section 32, Township 19 North, Range 5 East of the Second Principal Meridian in Noblesville Township of Hamilton County, Indiana.

Commencing at the Southwest corner of the Southwest Quarter of Section 32, Township 19 North, Range 5 East; thence North 89 degrees 36 minutes 03 seconds East (assumed bearing) along the South line of said Quarter Section 193.38 feet to the Northwest corner of the Northwest Quarter of Section 5, Township 18 North, Range 5 East; thence continue North 89 degrees 36 minutes 03 seconds East along said South line 1139.40 feet to the Southeast corner of said West Half and the point of beginning of the following described real estate: Thence continue along said South line North 89 degrees 36 minutes 03 seconds East a distance of 918.42 feet to the Northwest corner of real estate as contained in Instrument No. 96-30844 as found in the Office of the Recorder of Hamilton County, Indiana; thence South 00 degrees 04 minutes 08 seconds East along the West line of said real estate 1005.25 feet to a point in the centerline of abandoned Central Indiana Railroad; thence South 89 degrees 31 minutes 02 seconds West along said centerline a distance of 2,151.28 feet to a point in the centerline of State Road No. 37 per I.S.H.C. plans for Project No. 824(1), dated 1954, Sheet 15 therein, said point being on a non tangent point on a curve concave to the East, having a radius of 3,819.72 feet and a long chord which bears North 08 degrees 57 minutes 28 seconds East 1234.87 feet; thence along said curve to the right an arc distance of 1240.31 feet to the point of tangency thereof; thence North 18 degrees 15 minutes 31 seconds East 473.50 feet to the intersection with State Roads No. 32 & 38 being marked with a brass plug; thence North 88 degrees 50 minutes 58 seconds East along said centerline 612.96 feet to the point of curvature of a curve concave to the South, having a radius of 5694.58 feet and a long chord which bears North 89 degrees 21 minutes 23 seconds East 100.86 feet; thence along said curve to the right an arc distance of 1,00.86 feet to the Northwest corner of real estate as contained in Instrument No. 98-72645 of said Recorder's Office; thence South 00 degrees 05 minutes 39 seconds West 111.97 feet (record), 114.37 feet (measured) to the point of curvature of a curve concave to the West, having a radius of 301.62 feet and a long chord which bears South 08 degrees 31 minutes 11 seconds West 80.39 feet; thence along said curve to the right an arc distance of 88.71 feet to the Southwest corner of real estate thereof; thence South 74 degrees 50 minutes 08 seconds East 85.87 feet to the Southeast corner; thence North 74 degrees 13 minutes 52 seconds East 110.72 feet to the Southeast corner of real estate as contained in Instrument No. 86-04544 and found in said Recorder's Office, said point also being on the East line of the West Half of said Southwest Quarter of Section 32; thence South 00 degrees 08 minutes 19 seconds East along said East line 472.00 feet to the point of beginning. Containing 63.082 acres, more or less (gross) and 57.829 acres (net), less right-of-way.

A6 - LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS:

The site will not be subdivided; therefore, there are no individual lots on the property. The Site Plan shows the proposed site improvements.

A7 - HYDROLOGIC UNIT CODE (HUC):

05120201070070

A8 - STATE AND FEDERAL WATER QUALITY PERMITS:

None are required for this project.

A9 - SPECIFIC POINT WHERE STORMWATER DISCHARGE WILL LEAVE THE SITE:

Stormwater drainage from the site will be conveyed by a the proposed legal drain towards the Elwood Wilson Legal Drain ditch. The ultimate receiving water for the runoff is Stony Creek.

A10 - LOCATION AND NAME OF ALL WETLANDS, LAKES, AND WATERCOURSES ON AND ADJACENT TO THE SITE:

Wetlands are located south and east of the proposed project. No impacts to these wetlands are anticipated.

A11 - IDENTIFICATION OF ALL RECEIVING WATERS:

The ultimate receiving water is Stony Creek.

A12 - IDENTIFICATION OF ALL POTENTIAL DISCHARGES TO GROUND WATER:

There are no locations on site where surface water may be discharged into ground water.

A13 - 100-YEAR FLOODPLAINS, FLOODWAYS, AND FLOODWAY FRINGES:

The site does lie within the floodplain, floodway, or floodway fringe. The information was obtained from Flood Insurance Rate Map Panel 18057C0161G dated preliminary for Hamilton County, Indiana.

A14 - PRE-CONSTRUCTION AND POST-CONSTRUCTION ESTIMATE OF PEAK DISCHARGE:

Pre-construction 10-year discharge: 86.76 cfs
Post-construction 10-year discharge: 86.76 cfs

A15 - ADJACENT LAND USE:

North: Commercial
East: Commercial/Vocant
South: Commercial/Vocant
West: Commercial

A16 - LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS:

Refer to the Erosion Control Plan for the construction limits

A17 - IDENTIFICATION OF EXISTING VEGETATIVE COVER:

At this time, grassy vegetative cover exists.

A18 - SOILS MAP INCLUDING SOIL DESCRIPTION AND LIMITATIONS:

Soil information from the county Soil Survey is on the Erosion Control Plan. This site has Brookston siltly clay loam, Miami silt loam, and Orthen soils.

The suitability of the soils for shallow excavations ranges from somewhat to very limited. The on-site soil will be treated as recommended by the geotechnical engineer if the conditions are unsuitable for the pavement system. Remedial treatments may include, but are not limited to, removal of unsuitable soil and backfilling with engineered material, installation of a geofabric within or under the pavement system, or treatment of the subgrade with lime.

Other suitability or limitations of the soil for the other classifications of use listed in the table are not applicable to this project.

A19 - LOCATIONS, SIZE, AND DIMENSIONS FOR PROPOSED STORMWATER SYSTEMS:

Locations of stormwater systems: See Storm Sewer Plan and Profile

Size of storm sewer: See Storm Sewer Plan and Profile

Details of storm inlets and manholes: See Site Details

A20 - PLANS FOR ANY OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT:

No offsite construction activities are anticipated for this project.

A21 - LOCATIONS OF PROPOSED SOIL STOCKPILES AND/OR BORROW/DISPOSAL:

Excess soil shall be immediately stockpiled and seeded and/or removed from the construction site in accordance with all applicable laws.

A22 - EXISTING SITE TOPOGRAPHY:

Refer to the Existing Topography Plan Sheet.

A23 - PROPOSED FINAL SITE TOPOGRAPHY:

Refer to the Storm sewer plan and profile.

B1 - DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES:

The following potential pollutant sources may be associated with construction activities on site:

1. Material storage areas (more specifically described below).
2. Construction waste material.
3. Fuel storage areas and fueling stations.
4. Exposed soils.
5. Leaking vehicles and equipment.
6. Sanitary waste from temporary toilet facilities.
7. Litter.
8. Windblown dust.
9. Soil tracking off site from construction equipment.

The following construction materials will be staged or stored on site at various points during development of the site:

1. Structural fill.
2. Concrete drainage pipe.
3. Concrete culverts.
4. Precast concrete manholes.
5. Rock rip-rap.

B2 - SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND-DISTURBING ACTIVITIES:

1. Install construction entrance.
2. Utilize the gravel construction entrance for installation of the perimeter silt fence. Add stone if needed. Post the NOI at the entrance.
3. Install staging area, fueling station, material storage area and concrete truck washout.
4. Install check dams for existing legal drain.
5. Begin installation of the legal drain. Install outlet protection prior to installing outlet.
6. Complete installation of legal drain.
7. Fill in existing legal drain channel.
8. Areas left dormant for more than 15 days, must be temporarily seeded.
9. Seed the perimeter of the site.
10. Remove all erosion and sediment control practices when areas have a uniform grass cover.

B3 - STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS:

Refer to the Erosion Control Plan for location and Erosion Control Details for details.

B4 - SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS:

Sheet flow areas will be protected by seed and mulch or hydroseeding. Erosion control blankets will be installed on sloped areas where the slope exceeds 6:1 (horizontal to vertical). Silt Fence will be installed to prevent sedimentation from leaving the site. Because lengths and heights of the slopes are small, more aggressive erosion control measures were not considered.

Refer to Sheet Erosion Control Details for details.

B5 - SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS:

Concentrated flow areas will be controlled by rock check dams.

Straw bales and silt fences will not be allowed as concentrated flow protection measures.

B6 - STORM SEWER INLET PROTECTION MEASURE LOCATIONS AND SPECIFICATIONS:

No proposed inlets to have inlet protection.

Straw bales alone will not be allowed as inlet protection measures.

B7 - RUNOFF CONTROL MEASURES:

Not applicable.

B8 - STORMWATER OUTLET PROTECTION SPECIFICATIONS:

Stormwater outlets will be protected by riprap aprons. Refer to the Erosion Control Plan for locations and the Erosion Control Details for details.

B9 - GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS:

Rip rap aprons at outlets will be utilized to prevent grade destabilization. Refer to Erosion Control Plan for locations and Erosion Control Details for details.

B10 - LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE:

The location of the erosion control measures can be found on the Erosion Control Plan. The details of the proposed stormwater quality measures can be found on the detail sheet.

B11 - TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON:

Refer to the Erosion Control Details, within the Seasonal Soil Protection Chart.

B12 - PERMANENT SURFACE STABILIZATION SPECIFICATIONS:

- A. Loosen lawn area to a minimum depth of 6 inches. Mix soil amendments and fertilizers with topsoil at rates specified. Organic soil amendments such as peat, compost or manure shall be applied at 2" depth evenly over soil and incorporated into the top 6" of topsoil. Provide fertilizer with percentage of nitrogen required to provide not less than 1 pound of actual nitrogen per 1,000 sq. ft. of lawn area and not less than 4 percent phosphoric acid and 2 percent potassium. At least 50 percent of nitrogen to be organic form. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.
- B. Fertilizer for lawns: provide a fast release fertilizer with a composition of 1 lb per 1,000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium by weight.
- C. Slow-release fertilizer for trees and shrubs: granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorous and potassium made up of a composition by weight of 5 percent.
- D. Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Limit fine grading to areas that can be planted within immediate future. Remove trash, debris, stones larger than 1 inch diameter, and other objects that may interfere with planting or maintenance operations.
- E. Sow seed using a spreader or seeding machine. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.
- F. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with a fine spray.
- G. Install erosion control blankets as indicated on the plan.
- H. Protect seeded areas against erosion by spreading clean, seed-free straw mulch after completion of seeding operations. Spread uniformly to form a continuous blanket not less than 1-1/2 inches loose measurements over seeded areas.
- I. Water newly planted lawn areas and keep moist until new grass is established. Immediately repair any lawn areas disturbed by construction activities including tree and shrub installation.
- J. Refer to the Erosion Control Details, within the Seasonal Soil Protection Chart for timing of temporary and permanent seeding and grass seed specifications.

B13 - MATERIAL HANDLING AND SPILL PREVENTION PLAN:

Solid Waste Disposal:

No solid material, including building materials, is permitted to be discharged to surface waters or buried on site. All solid waste materials, including disposable materials incidental to the construction activity, must be collected in containers or closed dumpsters. The collection containers must be emptied periodically and the collected material hauled to a landfill permitted by the State and/or appropriate local municipality to accept the waste for disposal.

A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper solid waste procedures.

Hazardous Waste:

Whenever possible, minimize the use of hazardous materials and generation of hazardous wastes. All hazardous waste materials will be disposed in the manner specified by federal, state, or local regulations or by the manufacturer.

Use containment berms in fueling and maintenance areas and where potential for spills is high.

A foreman or supervisor should be designated in writing to oversee, enforce and instruct construction workers on proper hazardous waste procedures. The location of any hazardous waste storage areas should be indicated on the stormwater pollution prevention plan by the operator following on-site location of the facility.

Dust Control/Off-Site Vehicle Tracking:

During construction, water trucks should be used, as needed, by each contractor or subcontractor to reduce dust. After construction, the site should be stabilized to reduce dust.

Construction traffic should enter and exit the site at a Construction Entrance with a rock pad or equivalent device. The purpose of the rock pad is to minimize the amount of soil and mud that is tracked onto existing streets. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts.

Sanitary/Septic:

Contractors and subcontractors must comply with all state and local sanitary sewer, portable toilet, or septic system offsite impacts.

Sanitary/Septic:

Contractors and subcontractors must comply with all state and local sanitary sewer, portable toilet, or septic system regulations. Sanitary facilities shall be provided at the site by each contractor or subcontractor throughout construction activities. The sanitary facilities should be utilized by all construction personnel and be serviced regularly. All expenses associated with providing sanitary facilities are the responsibility of the contractors and subcontractors. The location of any sanitary facilities should be indicated on the stormwater pollution prevention plan by the operator following on-site location of said facilities.

Water Source:

Water used to establish and maintain grass, to control dust, and for other construction purposes must originate from a public water supply or private well approved by the State or local health department.

Equipment Fueling and Storage Areas:

Equipment fueling, maintenance, and cleaning should only be completed in protected areas (i.e., bermed area). Leaking equipment and maintenance fluids will be collected and not allowed to discharge onto soil where they may be washed away during a rain event.

Equipment wash down (except for wheel washes) should take place within an area surrounded by a berm. The use of detergents is prohibited.

Hazardous Material Storage:

Chemicals, paints, solvents, fertilizers, and other toxic or hazardous materials should be stored in their original containers (if original container is not resealable, store the products in clearly labeled, waterproof containers). Except during application, the containers should be kept in trucks or in bermed areas within covered storage facilities. Runoff containing such materials shall be collected, removed from the site, and disposed of in accordance with the federal, state, and local regulations.

As may be required by federal, state or local regulations, the Contractor should have a Hazardous Materials Management Plan and/or Hazardous Materials Spill and Prevention Program in place. A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper hazardous materials storage and handling procedures. The location of any hazardous material storage areas should be indicated on the stormwater pollution prevention plan by the operator following on-site location of the storage areas.

Material Handling and Spill Prevention:

Discharge of hazardous substances or oil into stormwater is subject to reporting requirements. In the event of a spill of a hazardous substance, the operator is required to notify the National Response Center (1-800-424-8802) to properly report the spill. In addition, the operator shall submit a written description of the release (including the type and amount of material released, the date of the release, the circumstances of the release, and the steps to be taken to prevent future spills) to the local Soil and Water Conservation District. The SWPPP must be revised within 14 calendar days after the release to reflect the release, stating the information above along with modifications to minimize the possibility of future occurrences. Each contractor and subcontractor is responsible for complying with these reporting requirements.

Concrete Washout:

All concrete trucks waste material shall be completely contained and disposed in accordance with all local, state, and federal regulations. A pit or container is required when cleaning concrete chutes.

Spill Response Plan:

Minor - Small spills that typically involve oil gasoline, paint, hydraulic fluid etc. Minor spills can be controlled by the first responder at the discovery of the spill.

- Contain spill to prevent material from entering storm or ground water. Do not flush with water or bury.
- Use absorbent material to clean-up spill material and any subsequently contaminated soil and dispose of properly.

Semi-significant Spills - Approximately ten gallons or less of pollutant with no contamination of ground or surface waters. Minor spills can be generally controlled by the first responder with help from other site personnel. This response may require other operations to stop to make sure the spill is quickly and safely addressed. At the discovery of the spill:

- Contain spill to prevent material from entering storm or ground water. Do not flush with water or bury.
- Use absorbent material to clean-up spills and dispose of properly. Spills on impervious surfaces should be contained with a dry absorbent. Spills on clayey soils should be contained by constructing an earthen dike and should be disposed of as soon as possible to prevent migration deeper into the soil and groundwater. Dispose of contaminated soils or absorbents properly.
- Contact 911 if this spill could be a safety issue.
- Contact supervisors and designated inspectors immediately
- Contaminated solids to be removed to an approved landfill.

Major or Hazardous Spills - More than ten gallons, there is the potential for death, injury or illness to humans or animals or has the potential for surface or groundwater pollution.

- Control or contain the spill without rising bodily harm. Temporarily plug storm drains if possible to prevent migration of the spill into the stormwater system.
- Immediately contact the local Fire Department at 911 to report any hazard material spill.
- Contact supervisors and designated inspectors immediately. Other county or municipal officials (City of Noblesville Engineering Department) responsible for storm water facilities should be contacted as well. The contractor is responsible for having these contact numbers available at the job site. A written report should be submitted to the owner as soon as possible.
- As soon as possible but within 2 hours of discovery, contact the Department of Environmental Management, Office of Emergency Response 317-745, Noblesville Fire and Police Department and City of Noblesville 317-776-6330. The following information should be noted for future reports to IDEM or the National Response Center.

- o Name, address and phone number of person making the spill report
- o The location of the spill
- o The time of the spill
- o Identification of the spilled substance
- o Approximate quantity of the substance that has been spilled or may be further spilled
- o The duration and source of the spill
- o Name and location of the damaged waters
- o Name of spill response organization
- o What measures were taken in the spill response
- o Other information that may be significant

Additional regulation or requirements may be present. A spill response professional should be consulted to make sure all appropriate and required steps have been taken. Contaminated solids should only be removed from the site after approval is given by Emergency Response.

B14 - MONITORING AND MAINTENANCE GUIDELINES FOR EACH PROPOSED STORMWATER QUALITY MEASURE:

Inspection Schedule/Reporting:

All impacted areas, as well as all erosion and sediment control devices, will be inspected every seven (7) calendar days and within 24 hours after a rainfall of 0.5 inch or greater. Where sites have been final or temporarily stabilized or on sites where runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists), such inspections shall be conducted at least once every month.

Inspections shall be conducted and a written report prepared, by a designated and qualified person familiar with the USEPA NPDES Storm Water General Permit, this SWPPP, and the Project.

Inspection reports shall be completed including scope of the inspection, name(s) and qualifications of personnel making the inspection, the date of the inspection, observations relating to the implementation of the SWPPP, and any actions taken as a result of incidents of noncompliance noted during the inspection. The inspection report should state whether the site was in compliance or identify any incidents of noncompliance. The contractor shall keep a copy of the inspection reports on site and permanently for a period of two years following construction. The on-site reports may be requested by inspections conducted by the local Soil and Water Conservation District.

Construction Entrances:

Locations where vehicles exit the site shall be inspected for evidence of off-site sediment tracking. Each contractor and subcontractor shall be responsible for maintaining the Construction Entrance and other controls as described in this SWPPP.

Material Storage Inspections:

Inspectors must evaluate areas used for storage of materials that are exposed to precipitation. The purpose is to ensure that materials are protected and/or impounded so that pollutants cannot discharge from storage areas. Off-site material storage areas used solely by the subject project are considered to be part of the project and must be included in the erosion control plans and the site inspection reports.

Soil Stabilization Inspections:

Seeded areas will be inspected to confirm that a healthy stand of vegetation is maintained. The site has achieved final stabilization once all areas are covered with pavement or have a stand of vegetation with at least 70% of the background vegetation density. The density of 70% or greater must be maintained to be considered as stabilized. The operator or their representative will water, fertilize, and reseed disturbed areas as needed to achieve this goal.

Erosion and Sediment Control Inspections:

All controls should be inspected at least once every seven (7) calendar days and following any storm event of 0.5 inch or greater. The following is a list of inspection/maintenance practices that will be used for specific controls:

1. Geotextiles/Erosion Control Mats: Missing or loose matting must be replaced or re-anchored.
2. Diversion Swales: Clean debris or other obstructions as needed. Damage from storms or normal construction activities (i.e., tire ruts) shall be repaired immediately.
3. Mulching: Inspect for thin or bare spots caused by natural decomposition or weather-related events. Mulch in high traffic areas should be replacing on a regular basis to maintain uniform protection.
4. Silt Fence: Removal of built-up sediment will occur when the sediment reaches one-third the height of the fence.
5. Stabilized Construction Entrance: Periodic regular and top dressing with additional stones.
6. Vegetation: Protect newly seeded areas from excessive runoff and traffic until vegetation is established. Establish a watering and fertilizing schedule.
7. Good Housekeeping: Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges through screening of outfalls and daily pickup of litter.

In the event that sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize adverse impacts. An example of this may be the situation where sediment has washed into the street and could be carried into the storm sewers by the next rainfall and/or pose a safety hazard to users of public streets.

Modifications/Revisions to SWPPP:

Based on inspection results, any necessary modification to this SWPPP shall be implemented within seven calendar days of the inspection. A modification is necessary if a control measure or operational procedure does not provide adequate pollutant control. All revisions shall be recorded on a Record of Revisions within seven calendar days of the inspection.

It is the responsibility of the operator to maintain effective pollutant discharge controls. Physical site conditions or contractor/subcontractor practices could make it necessary to install more controls than were originally planned. For example, localized concentrations of surface runoff or unusually steep areas could require additional silt barrier or other structural controls. Assessing the need for and installing additional controls will be a continuing contractor/subcontractor responsibility until final stabilization is achieved. Contractors and subcontractors implementing this SWPPP must remain alert to the need to periodically refine and update this SWPPP in order to accomplish the intended goals.

Notice of Termination:

Compliance of the site with the General Construction Permit remains the responsibility of all operators that have submitted an NOI until such time as they have submitted a Notice of Termination (NOT). The permittee's authorization to discharge under the General Construction Permit terminates at midnight of the day the NOI is signed.

All permittees must submit an NOT within thirty (30) days after one or more of the following conditions have been met:

1. Final stabilization has been achieved on all portions of the site for which the permittee was responsible.
2. Another operator/permittee has assumed control over all areas of the site that have not been finally stabilized.
3. In residential construction operations, temporary stabilization has been completed and the residence has been transferred to the homeowner.

B15 - EROSION AND SEDIMENT CONTROL SPECIFICATIONS FOR INDIVIDUAL BUILDING LOTS:

Since the entire site is under a single ownership, there are not any individual building lots.

C1 - DESCRIPTION OF POLLUTANTS AND THEIR SOURCES ASSOCIATED WITH THE PROPOSED LAND USE:

No proposed uses are associated with this project at this time. Therefore no post construction water quality BMP's are proposed.

C2 - SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION:

No proposed uses are associated with this project at this time. Therefore no post construction water quality BMP's are proposed.

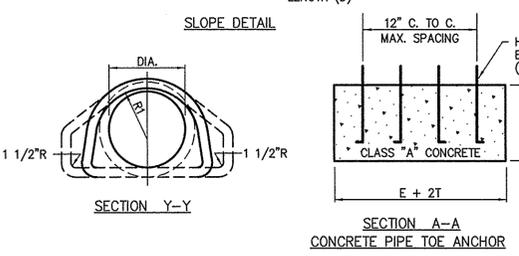
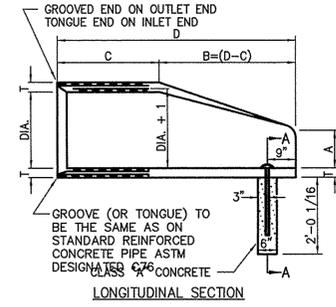
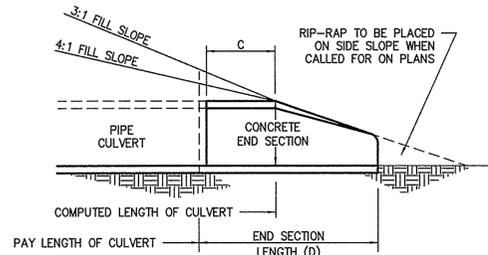
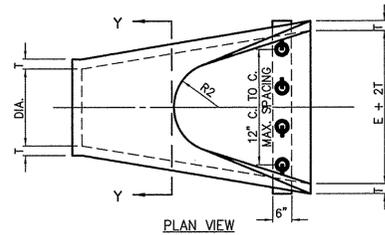
C3 - DESCRIPTION OF PROPOSED POST-CONSTRUCTION STORMWATER QUALITY MEASURES:

Grading and Drainages:

Top soil will be placed in lawn areas and seeded with grass and graded; not to exceed 3:1 slopes. These Bio areas will act as a natural filter strip to help improve storm water quality. The vegetated areas will slow the velocities of storm water runoff, reduce sediment runoff, and reduce problems associated with mud or dust from bare soils.

Good Housekeeping measures:

Good Housekeeping measures such as



CONCRETE IN THESE END SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE, A.S.T.M. DESIGNATION C-76 (as set out in standard specifications.)

REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR REINFORCED CONCRETE, A.S.T.M. DESIGNATION C-76 FOR THE SIZE OF CONNECTING PIPE. (as set out in standard specifications.)

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 OR 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.

WHERE VITRIFIED CLAY CULVERT OR CAST IRON CULVERT PIPE IS USED, A "PIPE END SECTION" COMPARABLE TO THAT AS SHOWN FOR METAL OR CONCRETE SHALL BE FURNISHED AND SHALL BE AS APPROVED BY THE ENGINEER. EXCEPT IN AREAS OF ACID OR MINE WATER, THEN THE USE OF METAL END SECTION IS PROHIBITED.

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

DIA.	T (MIN.)	A*	C*	D*	E*	K	R1	R2	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"	1100
18"	2 1/2"	11"	4'-1"	6'-2"	3'-0"	1.8	15 1/2"	12"	1300
21"	2 3/4"	11"	3'-6"	6'-3"	3'-6"	2.1	16 1/8"	13"	1500
24"	3"	12"	2'-8"	6'-3"	4'-0"	2.3	16 3/16"	14"	1800
27"	3 1/4"	13"	2'-5"	6'-3"	4'-6"	2.6	18 3/16"	14 1/2"	2100
30"	3 1/2"	14"	1'-10"	6'-3"	5'-0"	2.9	18 1/2"	15"	2400
33"	3 3/4"	15"	3'-6"	8'-3"	5'-6"	3.1	23 3/4"	17 1/2"	4100
36"	4"	17"	3'-1"	8'-3"	6'-0"	3.4	24 3/16"	20"	4200

* TOLERANCE ±1"

PRECAST CONCRETE END SECTION
NOT TO SCALE

OFFICE OF THE HAMILTON COUNTY SURVEYOR

NEENAH 1642 or 1772
EAST JORDAN 1045 or 1022

HAMILTON COUNTY SURVEYOR'S OFFICE
MANHOLE SOLID LID CASTING
APPROVED: *Kenton C. Ward* KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE: 2/25/2008
STANDARD PLAN CT-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR

DEBRIS GUARD

Apron Size	V-bar Size	No. of V-bars	H-bar Size	Bolt Size	"A" Dim.
18	1/2	3	5/8	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	1 1/2	3/4	12
54	3/4	4	1 1/2	3/4	12
60	3/4	5	1 1/2	3/4	14
72	3/4	5	1 1/2	3/4	14
84	3/4	6	1 1/2	3/4	14
90	3/4	7	1 1/2	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 GALVANIZED.
4. NO REBAR THROUGH PIPES WILL BE ALLOWED.
5. DEBRIS GUARD SHALL BE REMOVABLE.

HAMILTON COUNTY SURVEYOR'S OFFICE
APPROVED: *Kenton C. Ward* KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE: 1/1 JAN 2000
STANDARD PLAN D-12

OFFICE OF THE HAMILTON COUNTY SURVEYOR

RCP Bedding and Backfill Standard

NOTES:
1. BEDDING AND HAUNCHING FOR ALL RCP INSTALLATIONS SHALL BE #3 STONE MEETING THE MATERIAL REQUIREMENTS OF THE MDOT. 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 5" 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 SOFT OR YIELDING, THE SOIL SHALL BE UNDERCUT TO SUCH A DEPTH THAT WHEN 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 18".

2. FINAL BACKFILL FOR ALL RCP INSTALLATIONS WHERE "L" IS 5' OR LESS SHALL BE #3 BORROW FOR STRUCTURE BACKFILL MEETING THE MATERIAL REQUIREMENTS OF THE MDOT 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 6" OF THE EXCAVATION BELOW THE START OF THE AGGREGATE SUBBASE OF THE PAVEMENT SHALL BE #33 STONE MEETING THE MATERIAL REQUIREMENT OF THE MDOT 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 EXTRANEIOUS 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 PIPE TO THE TOP OF THE PAVEMENT SECTION 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 THAN 2.5 FEET.

4. IF EXISTING SUBGRADE HAS BEEN LIME STABILIZED, BACKFILL WITH #3 BORROW UP TO BOTTOM OF UNTREATED EXISTING SUBGRADE AND FILL TO TOP OF TREATED SUBGRADE WITH LIME STABILIZED 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 WHICH 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
APPROVED: *Kenton C. Ward* KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE: 9/25/2008
STANDARD PLAN D-23

OFFICE OF THE HAMILTON COUNTY SURVEYOR

STANDARD MANHOLE FOR PIPE SIZES 12" THRU 24"

NOTES:
1. STRUCTURES ARE TO BE GROUDED FULLY, TROWELED SMOOTH AND BRUSH FINISHED.
2. REINFORCED BAR #4 @ 36" ON CENTER OR APPROVED ALTERNATIVE.

HAMILTON COUNTY SURVEYOR'S OFFICE
APPROVED: *Kenton C. Ward* KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE: 2/1/02
STANDARD PLAN D-20

AMERICAN STRUCTUREPOINT INC.
 7260 SHADELAND STATION
 INDIANAPOLIS, IN 46256-3957
 TEL: 317.547.5680 FAX: 317.543.0270
 www.structurepoint.com

**APPROVAL PENDING
NOT FOR CONSTRUCTION**

PREPARED FOR:
TERRY LEE CROSSING
 8693 E. U.S. HIGHWAY 36
 AVON, INDIANA

PROJECT:
**W. HARE & SONS ARM
 LEGAL DRAIN RELOCATION
 NOBLESVILLE, INDIANA**

DATE:	2013.06.28
DRAWN BY:	BNS
CHK'D BY:	BNS
JOB NO.:	2012.00089

REVISIONS	
COMMENTS	07/02/13

SHEET NO.
C400
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