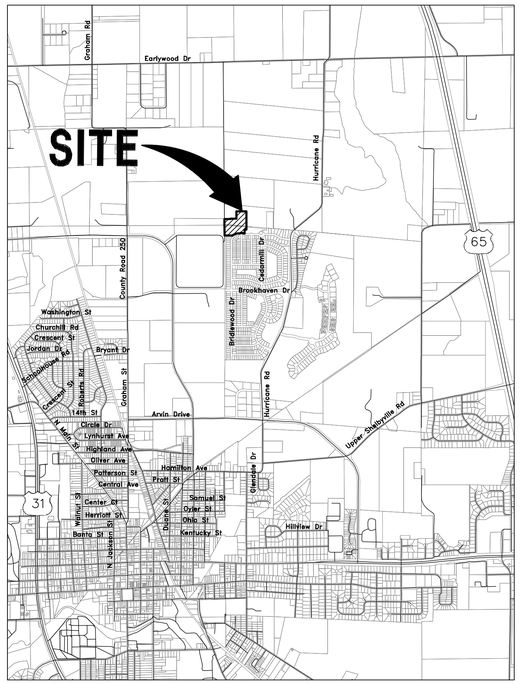
S1 T12N R4E & S12 T12N R4E

HERITAGE SECTION 7

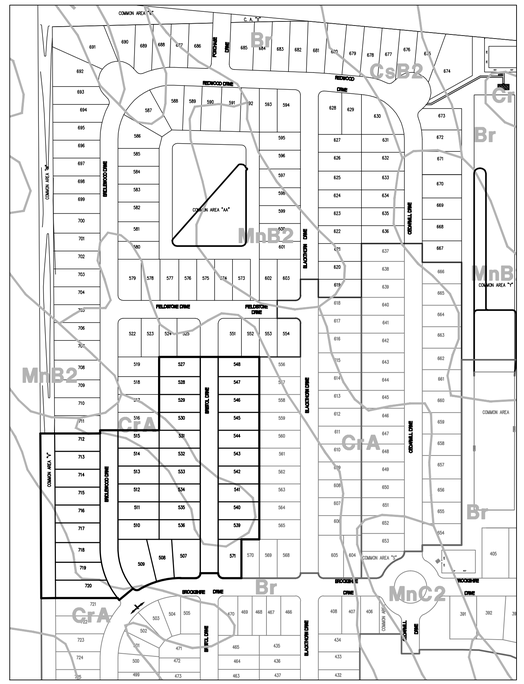
(CONSTRUCTION PLANS)

JOHNSON COUNTY FRANKLIN, INDIANA



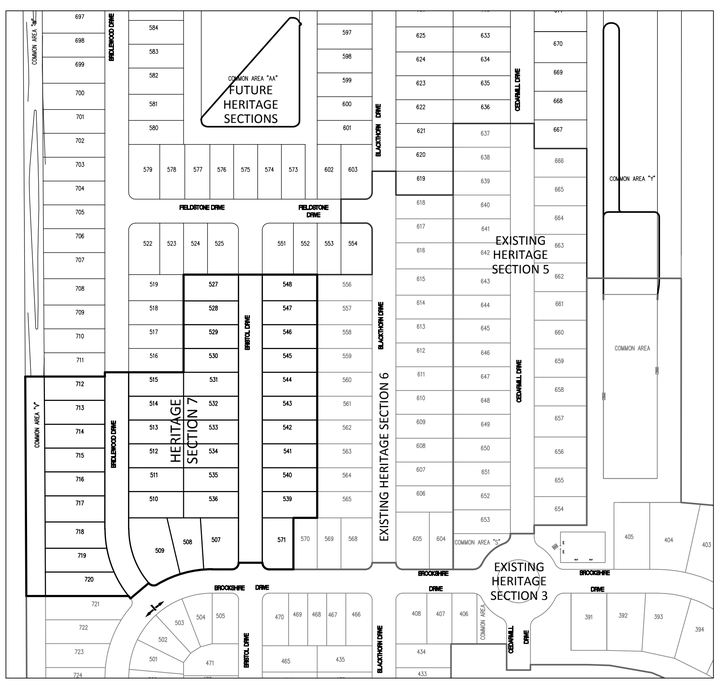
AREA MAP

1" = 2000'



SOILS MAP

1' = 200'



SITE MAP

SCALE: 1" = 150'

LATITUDE:
39° 30' 28"N

LONGITUDE:
86° 02' 40"W

DEVELOPER:

Arbor Investments, LLC
6626 E. 75th St., Suite 400
Indianapolis, In 46250
PHONE: (317) 842-1875
FAX: (317) 842-8268
Lantz McElroy, P.E.

INDEX

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C805	STORM SEWER DETAILS
C901-C902	SPECIFICATIONS

Schneider

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TODD C. WALLACE REGISTERED NO PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

DATE:	BY:	DESCRIPTION:

CERTIFIED BY: TODD C. WALLACE, P.E.

E-MAIL ADDRESS: twallace@schneidercorp.com

DATE: 08/13/15

PROJECT ENGINEER: GMM

CHECKED BY: TCW DATE CHECKED: 08/13/15

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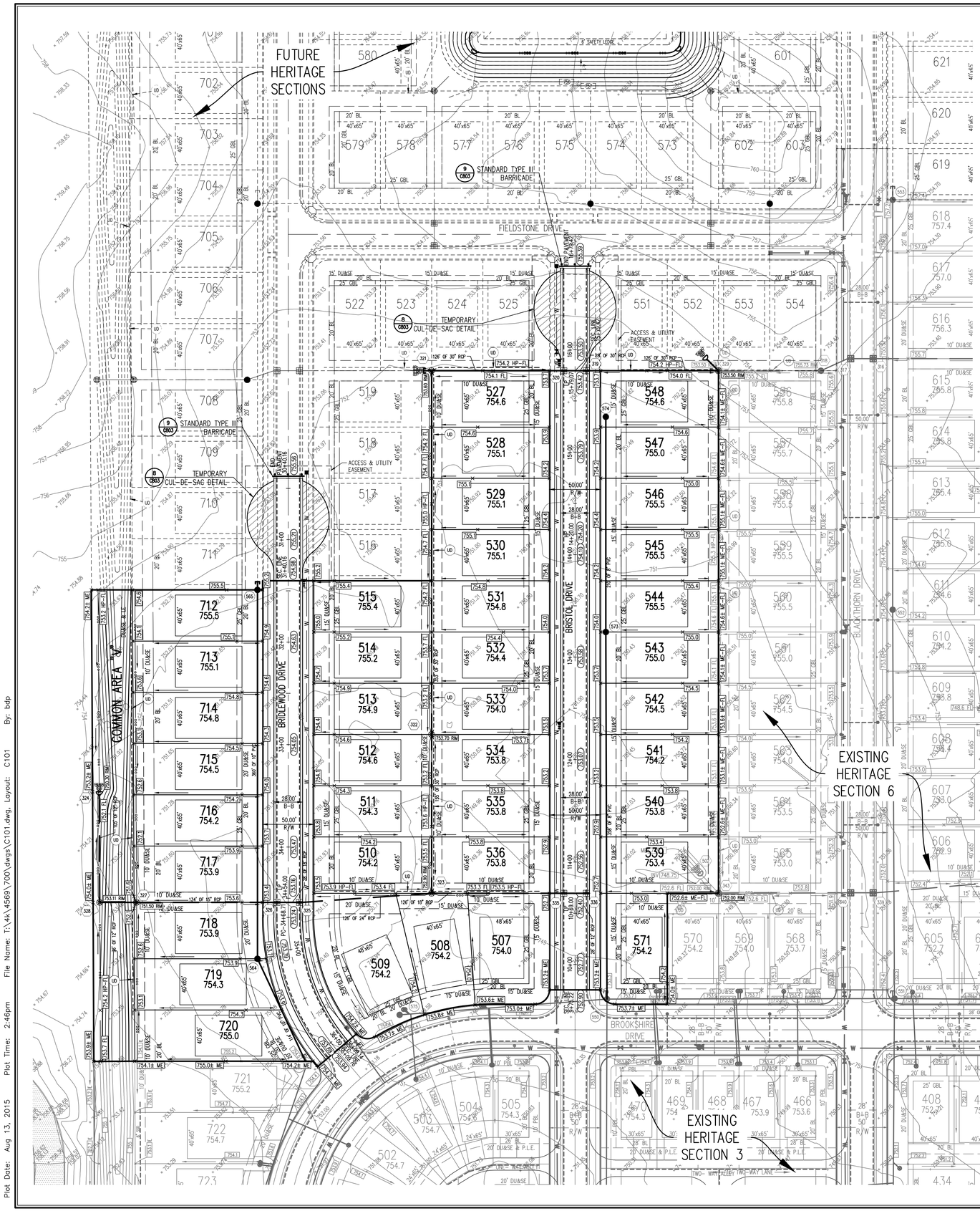
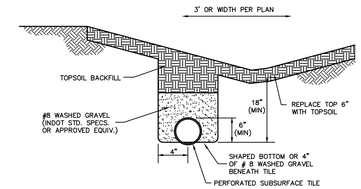
JOB No. 4569.700

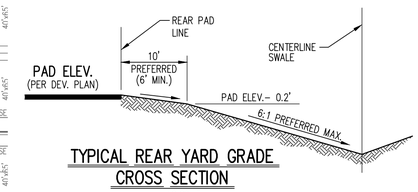
FILE NAME: T:\4K\4569\700\DWGS\C100.DWG

Plot Date: Aug 13, 2015 Plot Time: 2:43pm File Name: T:\4K\4569\700\dwgs\C100.dwg, Layout: C100 By: bdp





SWALE UNDERDRAIN DETAIL (1 / C101)
NO SCALE



TYPICAL REAR YARD GRADE CROSS SECTION
NO SCALE

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

LEGEND

- Existing Storm Sewer
- Existing Sanitary Sewer
- Existing Water Main
- Existing Contour
- Existing Pavement Grade
- Existing Finish Grades
- Existing Storm Structure Number
- Existing Sanitary Structure Number
- Existing Flow Arrow
- Existing 6" Subsurface Drain
- Existing Swale Flow Line
- Existing Swale Underdrain
- Proposed Storm Sewer
- Proposed Sanitary Sewer
- Proposed Water Main
- Proposed Contour
- New Pavement Grade
- All Other Finish Grades
- Match Existing Grades
- Storm Structure Number
- Sanitary Structure Number
- Denotes Elevation and Approximate Pad Size
- Flow Arrow
- 6" Subsurface Drain
- Swale (ft)
- Swale Underdrain (1 / C101)
- Benchmark

0 50' 100'
SCALE: 1" = 50'

GENERAL NOTES

1. ALL GRADES AT BOUNDARY SHALL MEET EXISTING GRADES.
2. IT SHALL BE THE RESPONSIBILITY OF EACH SUBCONTRACTOR TO VERIFY ALL UTILITIES AND CONDITIONS PERTAINING TO THIS PHASE OF WORK. IT SHALL ALSO BE THE SUBCONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES FOR PROPER STAKE LOCATION OF EACH UTILITY BEFORE WORK IS STARTED. THE SUBCONTRACTOR SHALL NOTIFY, IN WRITING, THE OWNER AND THE ENGINEER OF ANY CHANGES, OMISSIONS, OR ERRORS FOUND ON THESE PLANS OR IN THE FIELD BEFORE ANY WORK IS STARTED OR RESUMED.
3. STANDARD SPECIFICATIONS FOR THE CITY OF FRANKLIN, INDIANA SHALL APPLY FOR ALL SANITARY AND STORM SEWERS.
4. ANY PART OF THE SANITARY OR STORM SEWER TRENCHES RUNNING UNDER PAVED AREAS TO BE BACKFILLED WITH GRANULAR MATERIAL.
5. THE SIZE AND LOCATION OF EXISTING UTILITIES SHOWN ARE PER INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES. ALL UTILITY COMPANIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION FOR FIELD LOCATION OF SERVICES.
6. SERVICE WALKS SHALL BE NON-REINFORCED CONCRETE 4" THICK AND 4' IN WIDTH, EXCEPT AT RESIDENTIAL DRIVE CROSSINGS WHERE THE MINIMUM THICKNESS SHALL BE 6".
7. A 4' CONCRETE SERVICE WALK ACROSS FRONTAGE OF LOT TO BE CONSTRUCTED BY OTHERS.
8. EXPANSION JOINTS ARE TO BE PLACED AT ALL WALK INTERSECTIONS AND BETWEEN WALKS AND PLATFORMS. SIDEWALK SCORES ARE TO BE EQUALLY SPACED BETWEEN EXPANSION JOINTS, CONTRACTION JOINTS AND PERPENDICULAR SIDEWALKS AT 5' INTERVALS OR LESS WITH A CONTRACTION JOINT EVERY 20' OR LESS.
9. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
10. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
11. CONTRACTOR SHALL MINIMIZE DAMAGE TO EXISTING TREES.
12. REMOVE AND BACKFILL ALL AREAS WHERE ANY FIELD TILE CROSSES PROPOSED HOUSE PADS. ALL FIELD TILES INTERCEPTED TO BE PERPETUATED INTO STORM SEWER SYSTEM OR LAKE. THE SUBCONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER IN ANY CIRCUMSTANCES WHERE THIS CANNOT BE ACCOMPLISHED.
13. ALL FILL AREAS SHALL BE COMPACTED TO AT LEAST 85 PERCENT OF THE MAXIMUM DRY DENSITY (ASTM D-698). FILL UNDER THE FOOTING, PAD, AND STREETS SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY. (ASTM D-698).
14. IF THE LAKES ARE USED AS A SEDIMENT CONTROL MEASURE DURING ACTIVE CONSTRUCTION, THE PERFORMANCE SURETIES WILL NOT BE RELEASED UNTIL SEDIMENT HAS BEEN CLEANED OUT OF THE LAKES AND ELEVATIONS AND GRADES HAVE BEEN REESTABLISHED AS NOTED ON THESE PLANS.
15. ALL SUBGRADE AND #53 STONE BASE FOR PAVEMENTS MUST PASS A PROOF ROLL TEST AS REQUIRED BY THE CITY ENGINEER.

Drainage, Utility and Sewer Easements:
There are strips of ground as shown on the within plat marked "DU&SE" (drainage utility and sewer easement) which are reserved for the nonexclusive use of public utility companies, including cable television companies but not including transportation companies, for the installation and maintenance of mains, ducts, poles, lines, wires, sewers and drainage, subject at all times to the proper authorities and to the easements herein reserved. No permanent or other structures shall be erected or maintained on said strips except for fences, patios, decks, driveways and walkways. The owners of such lots in this addition, however, shall take their title subject to the nonexclusive rights of the public utilities and other owners of said lots in this addition to said easements herein granted for ingress and egress in, along and through the strips so reserved.

Drainage Easements:
There are areas of ground on the plat marked "drainage easements". The drainage easements are hereby created and reserved: (I) for the use of Developer during the "development period", as such term is defined in the declaration of covenants, conditions and restrictions, for access to and installation, repair or removal of a drainage system, either by surface drainage or appropriate underground installations for the real estate and adjoining property and (II) for the nonexclusive use of the Association (as defined in the declaration), the Department of Public Works or any other applicable governmental authority for access to and maintenance, repair and replacement of such drainage system and common areas; provided, however, the owner of any lot in the subdivision subject to a drainage easement shall be required to keep the portion of said drainage easement on his lot free from obstructions so that the surface water drainage will be unimpeded. The delineation of the drainage easement areas on the plat shall not be deemed a limitation on the right of any entity for whose use any such easement is created and reserved to go on any lot subject to such easement temporarily to the extent reasonably necessary for the exercise of the rights granted to by this paragraph. No permanent or other structures shall be erected or maintained on said drainage easements except for fences, patios, decks, driveways and walkways. The owners of such lots in this subdivision, however, shall take their title subject to the nonexclusive rights of the Department of Public Works and other owners of said lots in this addition to said easements herein granted for ingress and egress in, along and through the strips so reserved.

Drainage Swales:
Drainage swales (ditches) along dedicated roadways and within the right-of-way or on dedicated easements, are not to be altered, dug out, filled in, tiled or otherwise changed without the written permission of the Department of Public Works. Property owners must maintain these swales as sodded grassways or other non-eroding surfaces. Driveways may be constructed over these swales or ditches only when appropriate sized culverts or other approved structures have been permitted by the Department of Public Works. Culverts must be protected especially at the ends by head walls or metal end sections, and, if damaged enough to retard the water flow, must be replaced. Any property owner altering, changing or damaging these drainage swales or ditches will be held responsible for such action and will be given ten (10) days notice by registered mail, after which time, if no action is taken, the Department of Public Works may cause said repairs to be accomplished and the bill for said repairs will be sent to the affected property owner for immediate payment.

BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53

REVISIONS:

TODD C. WALLACE REGISTERED No PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: DEVELOPMENT PLAN

DRAWING FILES:
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SHEET NO.: C101

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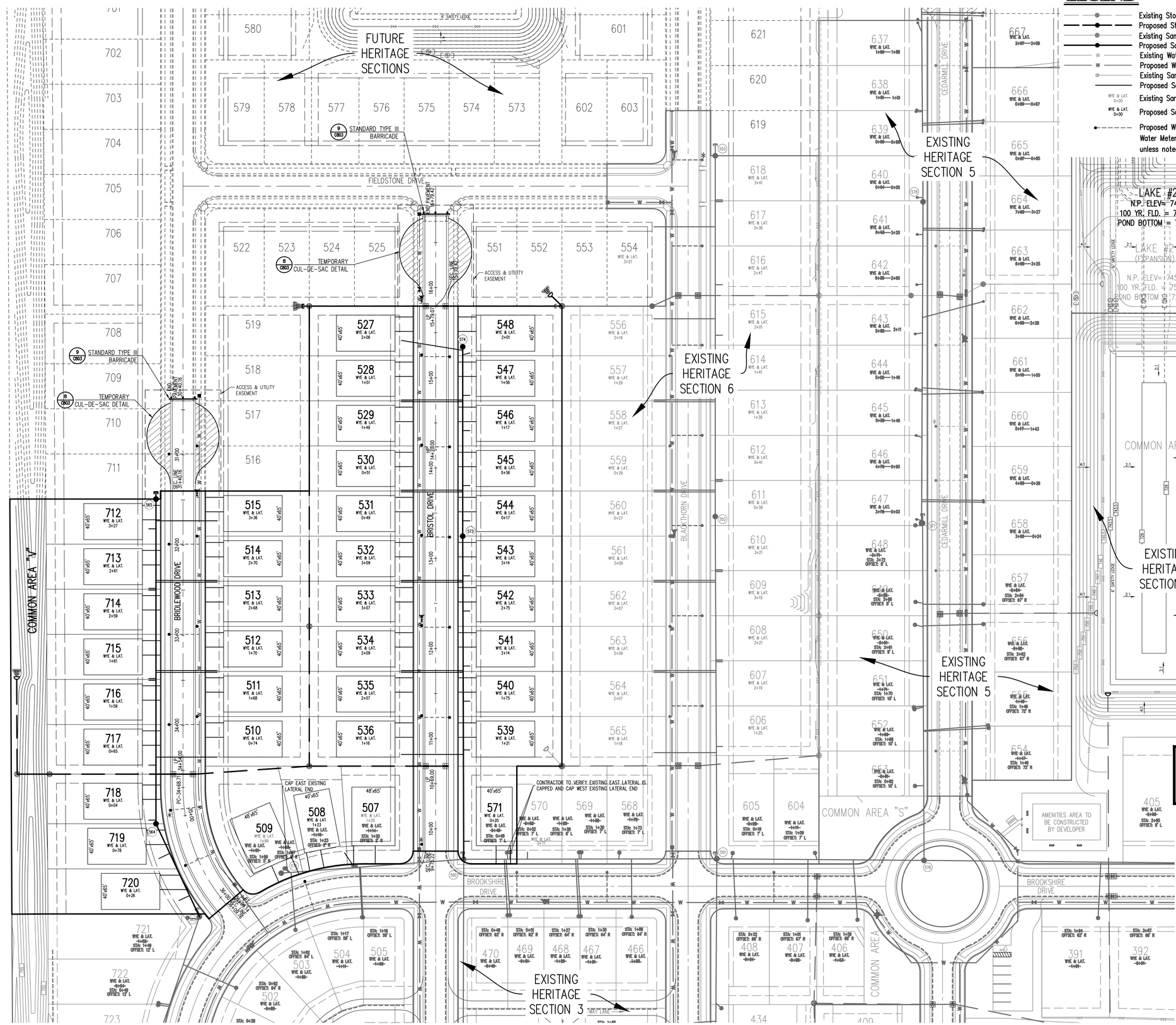

LEGEND

- Existing Storm Sewer
- Proposed Storm Sewer
- Existing Sanitary Sewer
- Proposed Sanitary Sewer
- Existing Water Main
- Proposed Water Main
- Existing Sanitary Lateral
- Proposed Sanitary Lateral
- Existing Sanitary Lateral Station Label (WYE & LAT. 0+00)
- Proposed Sanitary Lateral Station Label (WYE & LAT. 0+00)
- Proposed Water Line lateral with Water Meter Service Pit (Double Service Pit unless noted as single service pit by "*")

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

NOTE : WATER SERVICE LATERALS AND WATER METER PITS TO BE INSTALLED BY OTHERS AT TIME OF HOME CONSTRUCTION.

GENERAL NOTES

1. ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (MH).
2. WYES AND LATERALS TO BE 6" PIPE UNLESS OTHERWISE SPECIFIED.
3. ALL WYE CONNECTIONS SHALL HAVE A MINIMUM OF FIVE FOOT LATERAL EXTENSION CONNECTED TO THE WYE, OR EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, WHICHEVER IS GREATER, BUT IN NO CASE SHOULD BE CLOSER THAN 7' TO THE PAD/BUILDING LINE. THE END OF THE LATERAL SHALL BE PLUGGED OR CAPPED, UNLESS OTHERWISE NOTED.
4. LATERALS RUNNING TO THE OPPOSITE SIDE OF STREET SHALL EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, BUT IN NO CASE SHOULD BE CLOSER THAN 7' TO THE PAD/BUILDING LINE, UNLESS OTHERWISE NOTED.
5. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.
6. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
7. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
8. CONTRACTOR SHALL MINIMIZE DAMAGE TO EXISTING TREES.
9. THE LOWEST FLOOR ELEVATION OF A HOME TO HAVE A GRAVITY SANITARY SEWER CONNECTION MUST BE A MINIMUM OF ONE (1) FOOT ABOVE THE TOP OF CASTING ELEVATION OF EITHER THE FIRST UPSTREAM OR DOWNSTREAM MANHOLE ON THE PUBLIC SEWER TO WHICH THE CONNECTION IS TO BE MADE, OR A GRINDER PUMP SHALL BE REQUIRED.
10. SANITARY SEWER MANHOLE CASTING IN NON-PAVED AREAS MUST BE THREE (3) INCHES ABOVE GRADE.

REVISIONS:

TODD C. WALLACE REGISTERED № PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: UTILITY LATERAL LOCATION PLAN

DRAWING FILES:
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SHEET NO.: C102

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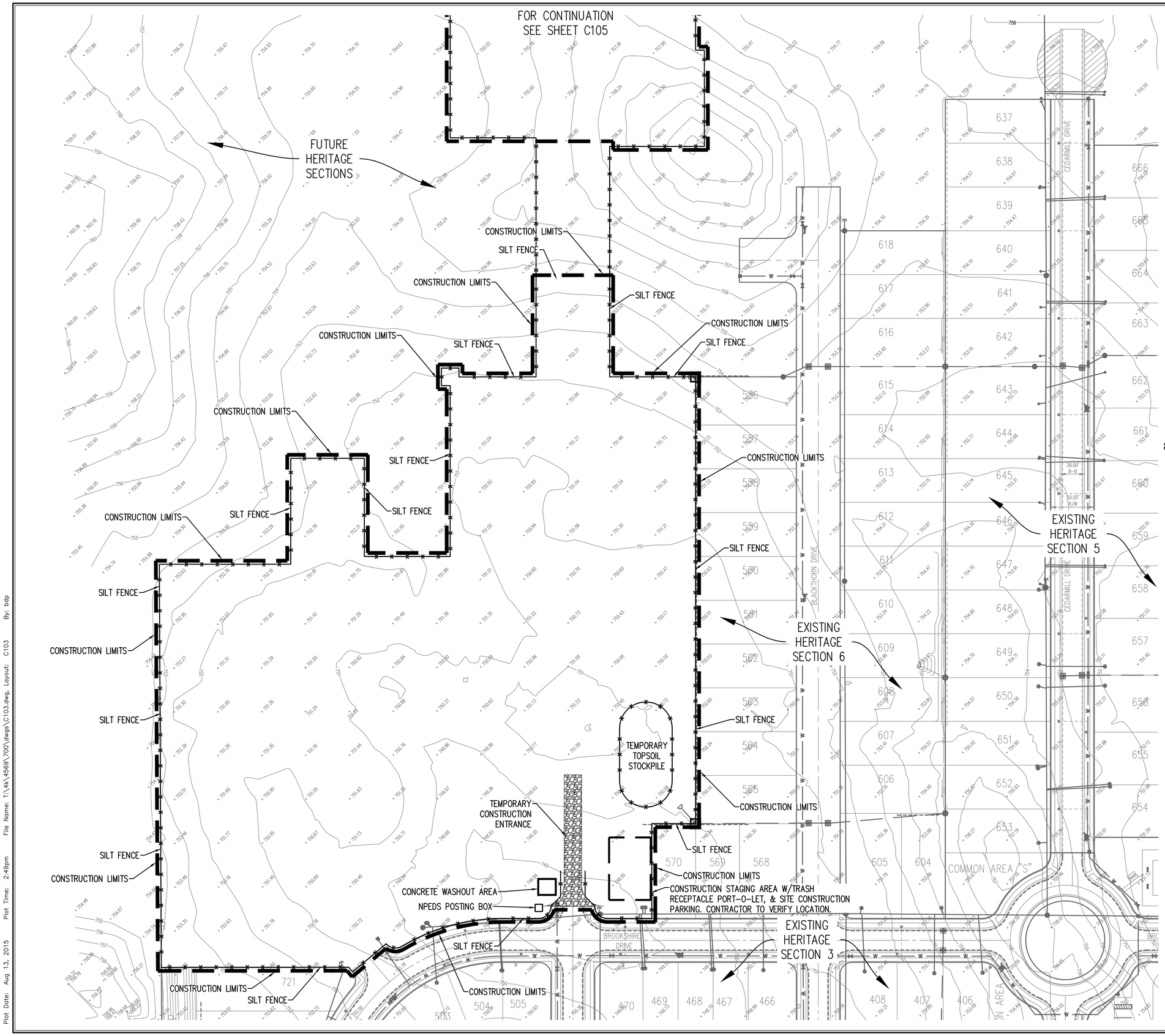

Indiana 811
Know what's below. Call before you dig.

SCALE: 1" = 50'

LEGEND

- Existing Storm Sewer
- Existing Sanitary Sewer
- Existing Contour
- Existing Elevation

HATCH PATTERN DENOTES TEMPORARY CONSTRUCTION ENTRANCE	
BEEHIVE INLET PROTECTION	
CURB INLET PROTECTION	
SILTATION FENCE	
CONSTRUCTION LIMITS	

STORMWATER POLLUTION PREVENTION GENERAL NOTES

1. EARTH MOVING MAY NOT COMMENCE UNTIL ITEMS 1-9 OF "PRECONSTRUCTION ACTIVITIES" (B2) ON C801 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
2. RULE 5 REQUIRES ALL DISTURBED AREAS THAT WILL POTENTIALLY BE IDLE FOR 15 DAYS OR MORE TO BE STABILIZED (SEEDED, MULCHED, ETC.) IMMEDIATELY.
3. ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES MAY BE REQUIRED IN THE FIELD BY THE CITY OF FRANKLIN ENGINEER AS CONDITIONS WARRANT.
4. ALL EROSION CONTROL MATERIALS MUST BE APPROVED BY THE CITY OF FRANKLIN INSPECTOR PRIOR TO INSTALLATION.
5. THERE SHALL BE NO DIRT, DEBRIS OR STORAGE OF MATERIALS IN THE STREETS.
6. APPROXIMATE CONSTRUCTION SCHEDULE:
   START DATE: Oct 1, 2015
   COMPLETION DATE: Sept. 30, 2020
7. RECEIVING WATER = Hurricane Creek
8. LATITUDE 39°30'28" N
   LONGITUDE 86°02'40" W
9. CONTACT PERSON:
   Lantz McElroy
   Arbor Investments, LLC
   6626 E 75th Street, Suite 400
   Indianapolis, IN 46250
   PH: (317) 842-1875 x203
   EMAIL: lantzm@arborhomesllc.com
10. WARNING:
    THIS SHEET TO BE USED FOR STORMWATER POLLUTION PREVENTION PURPOSES ONLY. FOR ANY OTHER INFORMATION SEE SHEET C101.
11. SEE SHEETS C801-C802 FOR ALL STORMWATER POLLUTION PREVENTION PLAN DETAILS & NOTES.
12. ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH IDEM - INDIANA STORM WATER QUALITY MANUAL AND THE SCS "FIELD OFFICE TECHNICAL GUIDE".
13. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
14. EXISTING EROSION CONTROL MEASURES:
    ANY PART DAMAGED, DESTROYED OR DISTURBED DURING CONSTRUCTION IS TO BE REPLACED IMMEDIATELY.
15. ALL CASTINGS SHALL HAVE STANDARD "ENVIRONMENTALLY FRIENDLY LOGOS" EMBOSSED INTO THE INLET.

NOTE:
PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS THE BITUMINOUS BASE AND BINDER LAYERS FOR ALL STREETS, DRIVES AND PARKING LOTS TO BE INSTALLED AND ALL WATER MAINS AND HYDRANTS FOR THE SITE DEVELOPMENT MUST BE INSTALLED PER APPROVED SPECIFICATIONS AND MADE SERVICEABLE.
Revised 12-04

NOTE:
EXISTING TOPOGRAPHY BASED UPON SURVEY DATA COLLECTED 04/15/03. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING DIVERSION SWALE PRIOR TO CONSTRUCTION.

BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53

REVISIONS:

TODD C. WALLACE
REGISTERED
Nº PE11011395
STATE OF INDIANA
PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE:
PRE-CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

DRAWING FILES:
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SHEET NO.: C103

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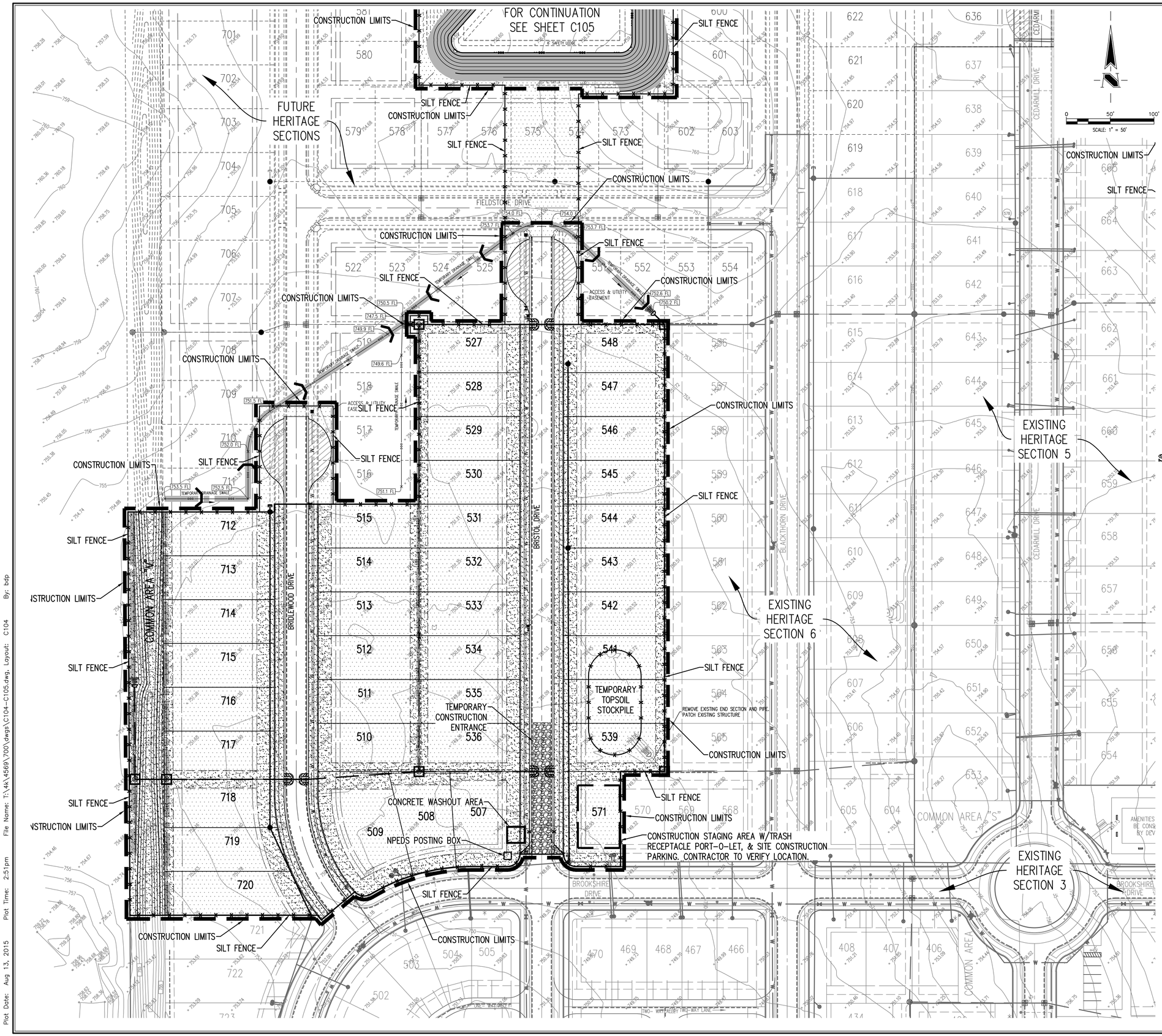

Indiana 811
Know what's below. Call before you dig.

LEGEND

- Existing Storm Sewer
- New Storm Sewer
- Existing Sanitary Sewer
- New Sanitary Sewer
- Existing Contour
- Existing Elevation

	HATCH PATTERN DENOTES TEMPORARY SEEDING
	HATCH PATTERN DENOTES PERMANENT SEEDING
	HATCH PATTERN DENOTES TEMPORARY CONSTRUCTION ENTRANCE
	CURB INLET PROTECTION
	BEEHIVE INLET PROTECTION
	SILTATION FENCE
	CONSTRUCTION LIMITS
	HATCH PATTERN DENOTES EROSION CONTROL BLANKET
	SWALE PROTECTION (EROSION BLANKET)
	ROCK CHECK DAM

STORMWATER POLLUTION PREVENTION GENERAL NOTES

1. EARTH MOVING MAY NOT COMMENCE UNTIL ITEMS 1-9 OF "PRECONSTRUCTION ACTIVITIES" (B2) ON C801 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
2. RULE 5 REQUIRES ALL DISTURBED AREAS THAT WILL POTENTIALLY BE IDLE FOR 15 DAYS OR MORE TO BE STABILIZED (SEEDED, MULCHED, ETC.) IMMEDIATELY.
3. ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES MAY BE REQUIRED IN THE FIELD BY THE CITY OF FRANKLIN ENGINEER AS CONDITIONS WARRANT.
4. ALL EROSION CONTROL MATERIALS MUST BE APPROVED BY THE CITY OF FRANKLIN INSPECTOR PRIOR TO INSTALLATION.
5. THERE SHALL BE NO DIRT, DEBRIS OR STORAGE OF MATERIALS IN THE STREETS.
6. APPROXIMATE CONSTRUCTION SCHEDULE:
   START DATE: Oct 1, 2015
   COMPLETION DATE: Sept. 30, 2020
7. RECEIVING WATER = Hurricane Creek
8. LATITUDE 39°30'28" N
   LONGITUDE 86°02'40" W
9. CONTACT PERSON:
   Lantz McElroy
   Arbor Investments, LLC
   6626 E 75th Street, Suite 400
   Indianapolis, IN 46250
   PH: (317) 842-1875 x203
   EMAIL: lantzm@arborhomesllc.com
10. WARNING:
    THIS SHEET TO BE USED FOR STORMWATER POLLUTION PREVENTION PURPOSES ONLY. FOR ANY OTHER INFORMATION SEE SHEET C101.
11. SEE SHEETS C801-C802 FOR ALL STORMWATER POLLUTION PREVENTION PLAN DETAILS & NOTES.
12. ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH IDEM - INDIANA STORM WATER QUALITY MANUAL AND THE SCS "FIELD OFFICE TECHNICAL GUIDE".
13. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
14. EXISTING EROSION CONTROL MEASURES:
    ANY PART DAMAGED, DESTROYED OR DISTURBED DURING CONSTRUCTION IS TO BE REPLACED IMMEDIATELY.
15. ALL CASTINGS SHALL HAVE STANDARD "ENVIRONMENTALLY FRIENDLY LOGOS" EMBOSSED INTO THE INLET.

NOTE:
PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS THE BITUMINOUS BASE AND BINDER LAYERS FOR ALL STREETS, DRIVES AND PARKING LOTS TO BE INSTALLED AND ALL WATER MAINS AND HYDRANTS FOR THE SITE DEVELOPMENT MUST BE INSTALLED PER APPROVED SPECIFICATIONS AND MADE SERVICEABLE.
Revised 12-04

NOTE:
EXISTING TOPOGRAPHY BASED UPON SURVEY DATA COLLECTED 04/15/03. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING DIVERSION SWALE PRIOR TO CONSTRUCTION.

BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53

REVISIONS:

TODD C. WALLACE REGISTERED No PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE:
POST-CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

DRAWING FILES:
T:\4k\4569\700\dwgs\C104-C105.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg
XREF: T:\4k\4569\600\dwgs\4569600_BS.dwg
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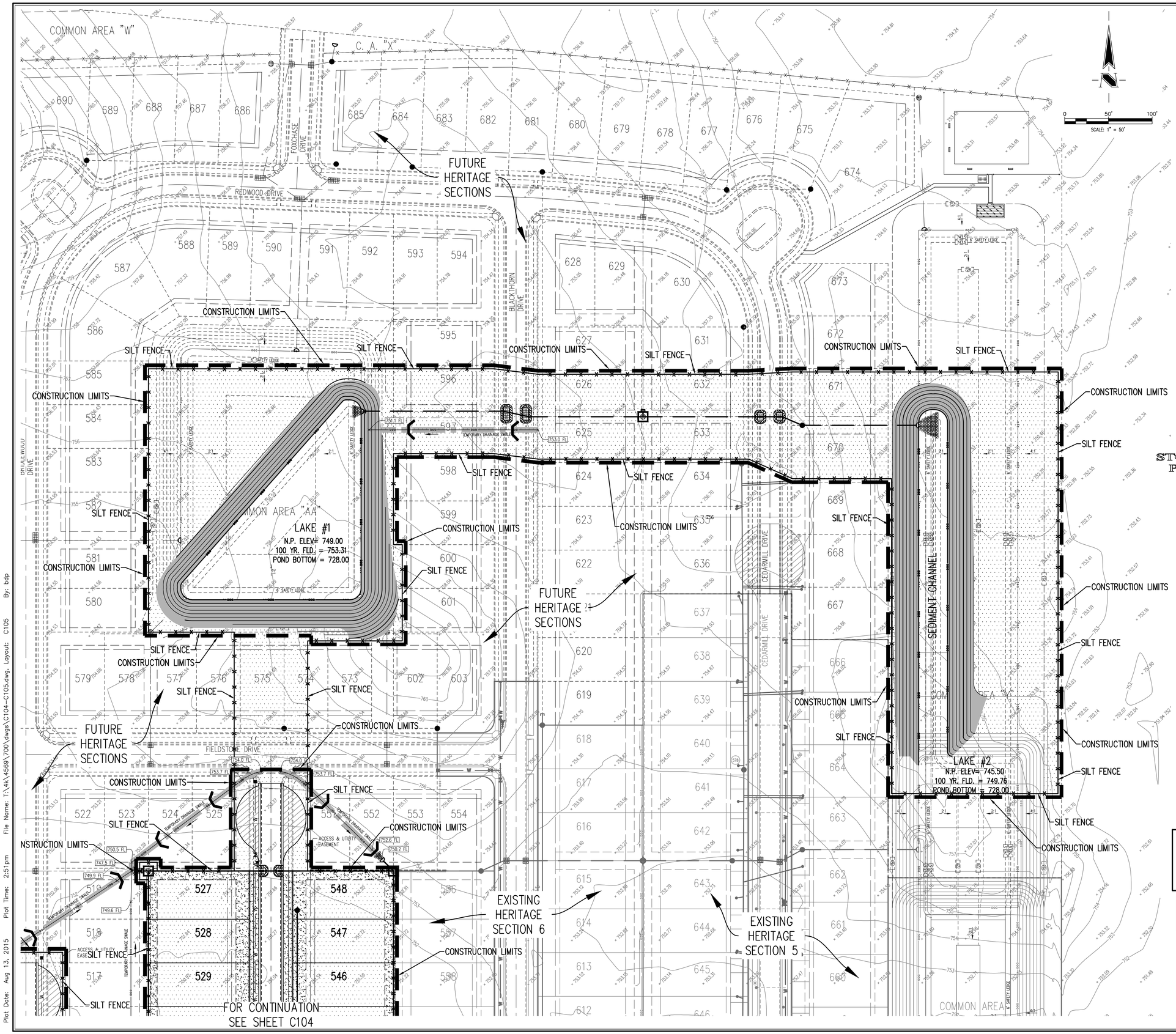
SHEET NO.: C104

Plot Date: Aug 13, 2015 Plot Time: 2:51pm File Name: T:\4k\4569\700\dwgs\C104-C105.dwg, Layout: C104 By: bdp



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

SCALE: 1" = 50'

LEGEND

- Existing Storm Sewer
- New Storm Sewer
- Existing Sanitary Sewer
- New Sanitary Sewer
- Existing Contour
- Existing Elevation

	HATCH PATTERN DENOTES TEMPORARY SEEDING
	HATCH PATTERN DENOTES PERMANENT SEEDING
	HATCH PATTERN DENOTES TEMPORARY CONSTRUCTION ENTRANCE
	CURB INLET PROTECTION
	BEEHIVE INLET PROTECTION
	SILTATION FENCE
	CONSTRUCTION LIMITS
	HATCH PATTERN DENOTES EROSION CONTROL BLANKET
	SWALE PROTECTION (EROSION BLANKET)
	ROCK CHECK DAM

STORMWATER POLLUTION PREVENTION GENERAL NOTES

1. EARTH MOVING MAY NOT COMMENCE UNTIL ITEMS 1-9 OF "PRECONSTRUCTION ACTIVITIES" (B2) ON C801 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
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Revised 12-04

NOTE:
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BENCHMARK

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Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
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REVISIONS:

TODD C. WALLACE REGISTERED № PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE:
POST-CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

DRAWING FILES:
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XREF: T:\4k\4569\700\dwgs\Title700.dwg
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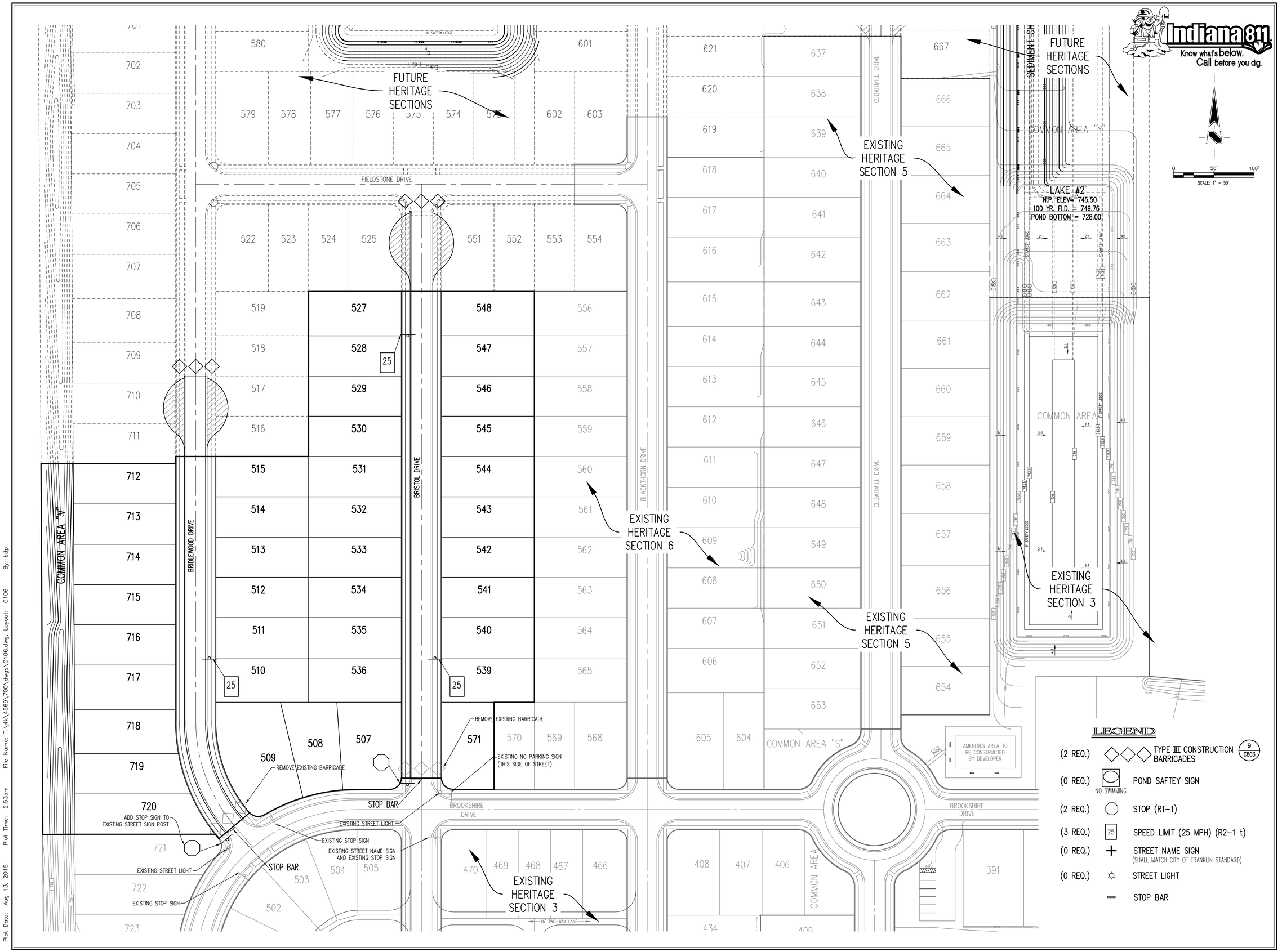
SHEET NO.: C105

Plot Date: Aug 13, 2015 Plot Time: 2:51pm File Name: T:\4k\4569\700\dwgs\C104-C105.dwg, Layout: C105 By: bdp



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

REVISIONS:

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CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: SIGNAGE AND LIGHTING PLAN

DRAWING FILES:
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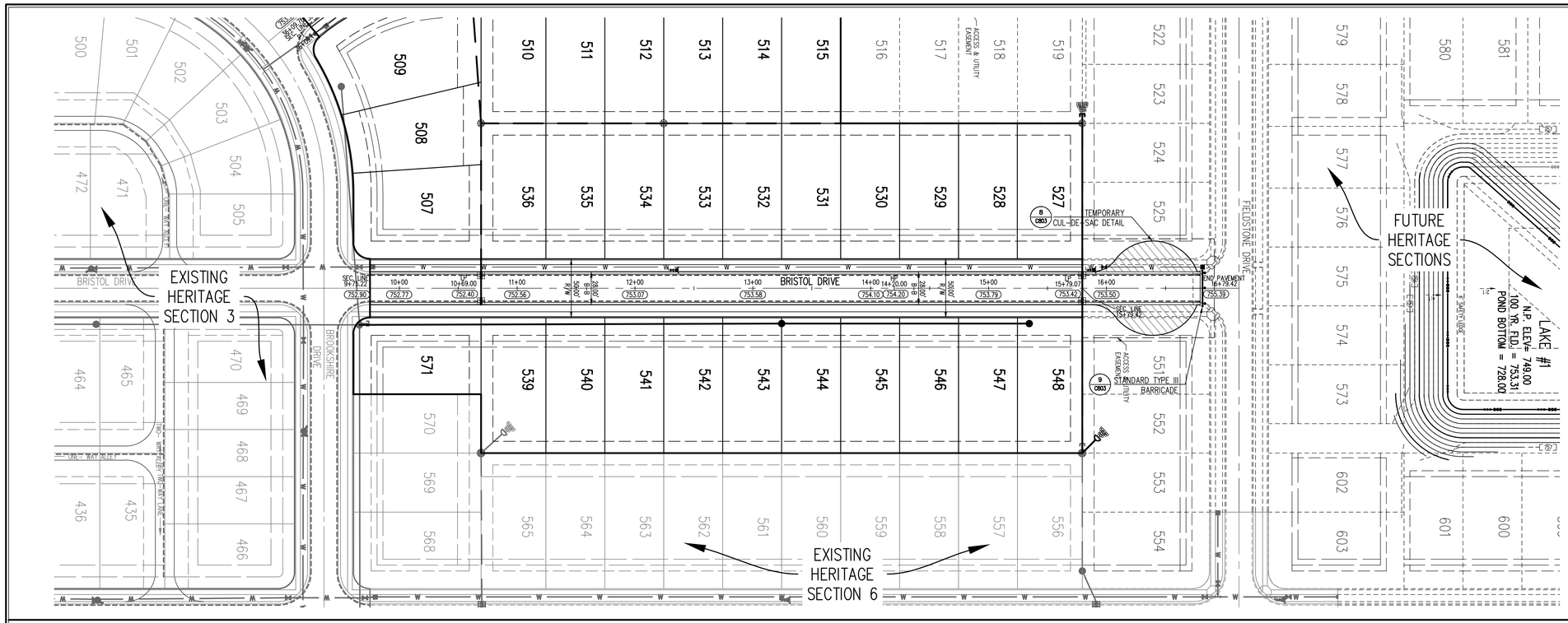
SHEET NO.: C106

Plot Date: Aug 13, 2015 Plot Time: 2:53pm File Name: T:\4k\4569\700\dwgs\C106.dwg, Layout: C106 By: bdp



Indiana 811
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GENERAL NOTES

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BENCHMARK

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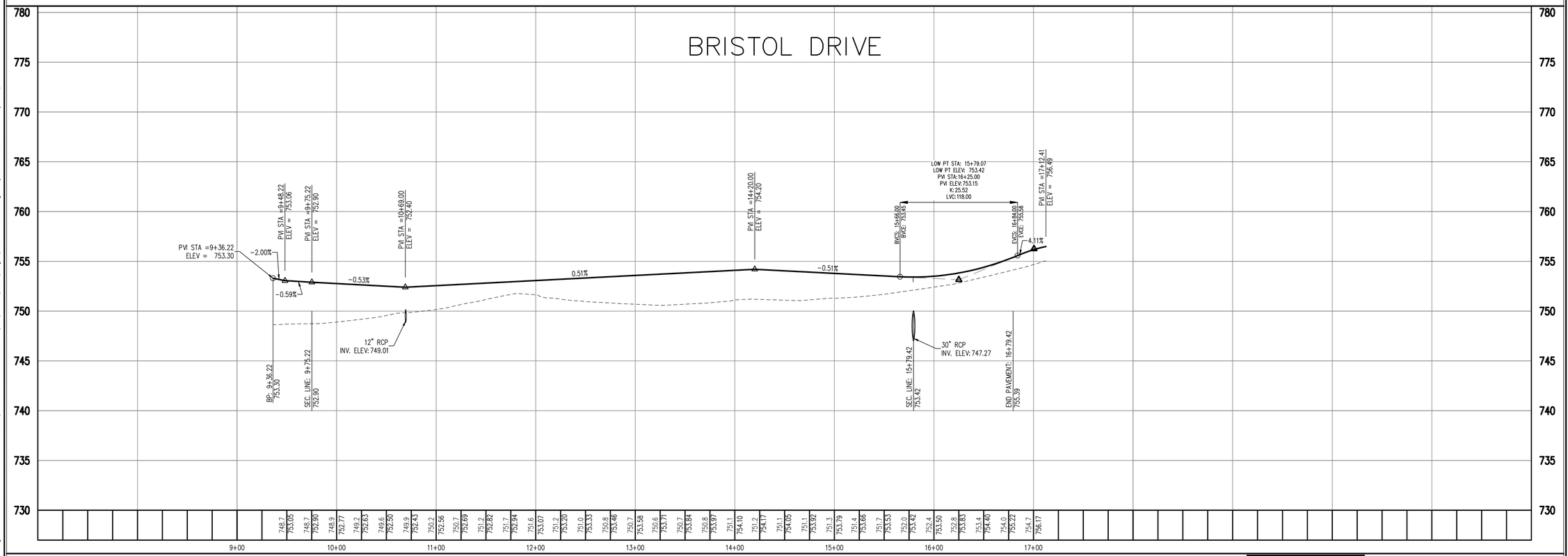
DETAILS	Sheet	Detail Number	Description
	C803	3	Street Cross Section Detail
	C803	1	Concrete Sidewalk Detail
	C803	5	Sidewalk Ramp For Handicapped Detail
	C803	4	Curb Details
	C803	6	Curb Underdrain Detail

NOTE: All Streets to be 28' in width unless otherwise noted.
All Rights-of-way to be 50' in width unless otherwise noted.
All Pavement Depths of Roadway are Specified on Detail sheet C801, Detail 3.

STREET PLAN

0 50' 100'
SCALE: 1"=50'



STREET PROFILE

LEGEND
Existing Grade | New Grade

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

REVISIONS:

TODD C. WALLACE
REGISTERED
Nº PE11011395
STATE OF INDIANA
PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STREET PLAN AND PROFILES

DRAWING FILES:
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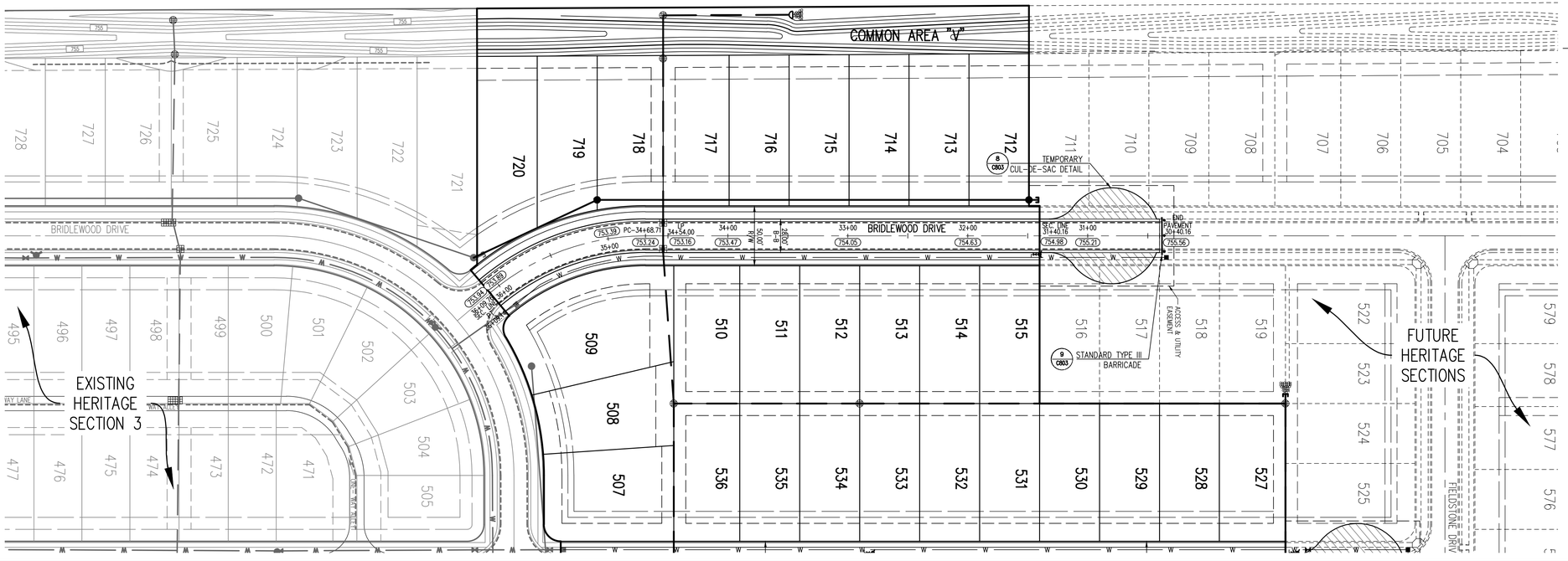
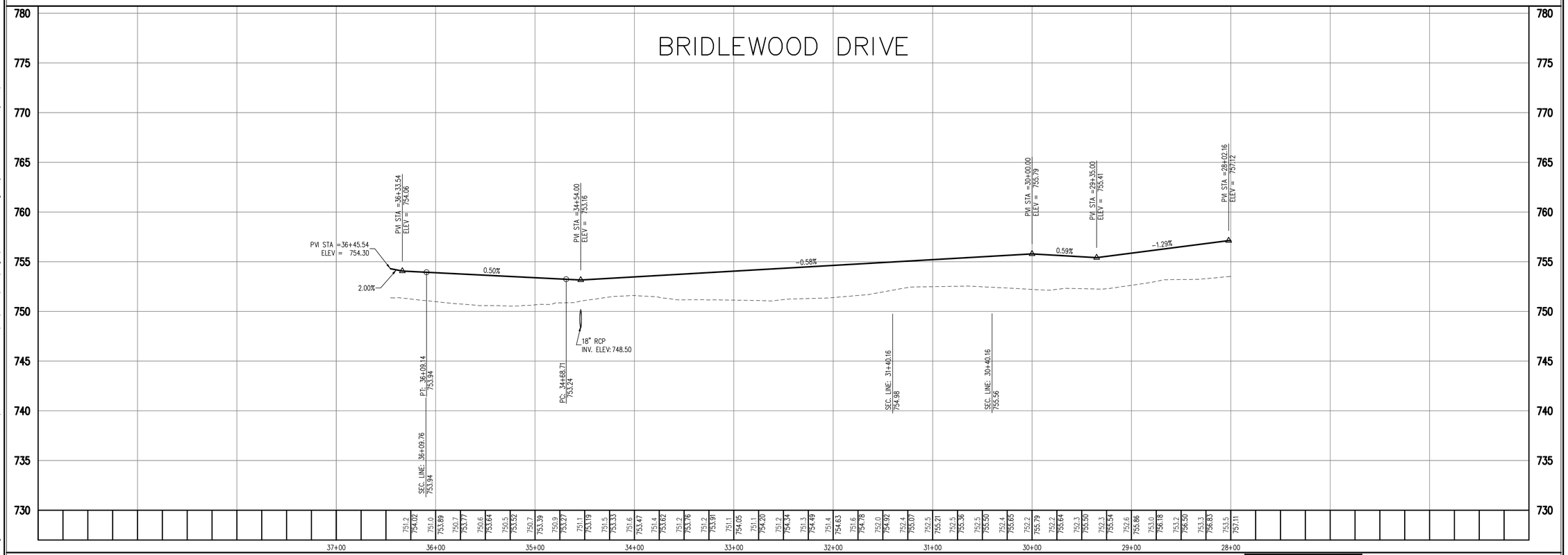
SHEET NO.: C201

Plot Date: Aug 13, 2015 Plot Time: 2:55pm File Name: T:\4k\4569\700\dwgs\C201-C202.dwg, Layout: C201 By: bdp



STREET PLAN

SCALE: 1"=50'



STREET PROFILE

LEGEND: Existing Grade / New Grade

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

GENERAL NOTES

1. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
2. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.
4. CONTRACTORS SHALL MINIMIZE DAMAGE TO EXISTING TREES.

BENCHMARK

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TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
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DETAILS

Sheet	Detail Number	Description
C803	3	Street Cross Section Detail
C803	1	Concrete Sidewalk Detail
C803	5	Sidewalk Ramp For Handicapped Detail
C803	4	Curb Details
C803	6	Curb Underdrain Detail

NOTE
All Streets to be 28' in width unless otherwise noted.
All Rights-of-way to be 50' in width unless otherwise noted.
All Pavement Depths of Roadway are Specified on Detail sheet C801, Detail 3.

REVISIONS:

TODD C. WALLACE REGISTERED Nº PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STREET PLAN AND PROFILES

DRAWING FILES:
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XREF: T:\4k\4569\700\dwgs\Title700.dwg
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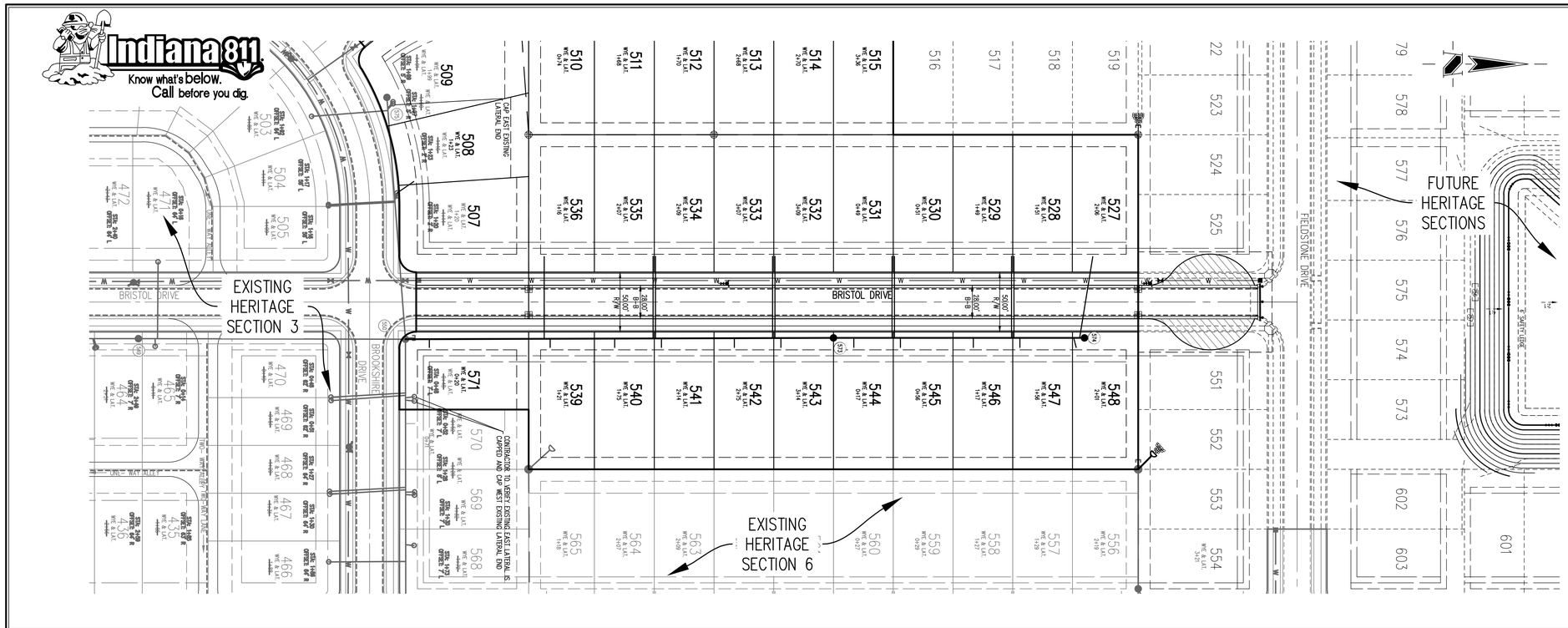
SHEET NO.: C202

Plot Date: Aug 13, 2015 Plot Time: 2:56pm File Name: T:\4k\4569\700\dwgs\C201-C202.dwg, Layout: C202 By: bdp



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4. CONTRACTORS SHALL MINIMIZE DAMAGE TO EXISTING TREES.
5. ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (MH)
6. WYES AND LATERALS TO BE 6" PIPE UNLESS OTHERWISE SPECIFIED.
7. ALL WYE CONNECTIONS SHALL HAVE A MINIMUM OF FIVE (5) FOOT LATERAL EXTENSION CONNECTED TO THE WYE, OR EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, WHICHEVER IS GREATER, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS NOTED OTHERWISE. THE END OF THE LATERAL SHALL BE PLUGGED OR CAPPED, UNLESS OTHERWISE NOTED.
8. LATERALS RUNNING TO THE OPPOSITE SIDE OF THE STREET SHALL EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS OTHERWISE NOTED.
9. ALL SANITARY SEWER MAINS & LATERALS WITHIN 5' OF CURB SHALL BE BACKFILLED WITH COMPACTED #5 STONE.

BENCHMARK

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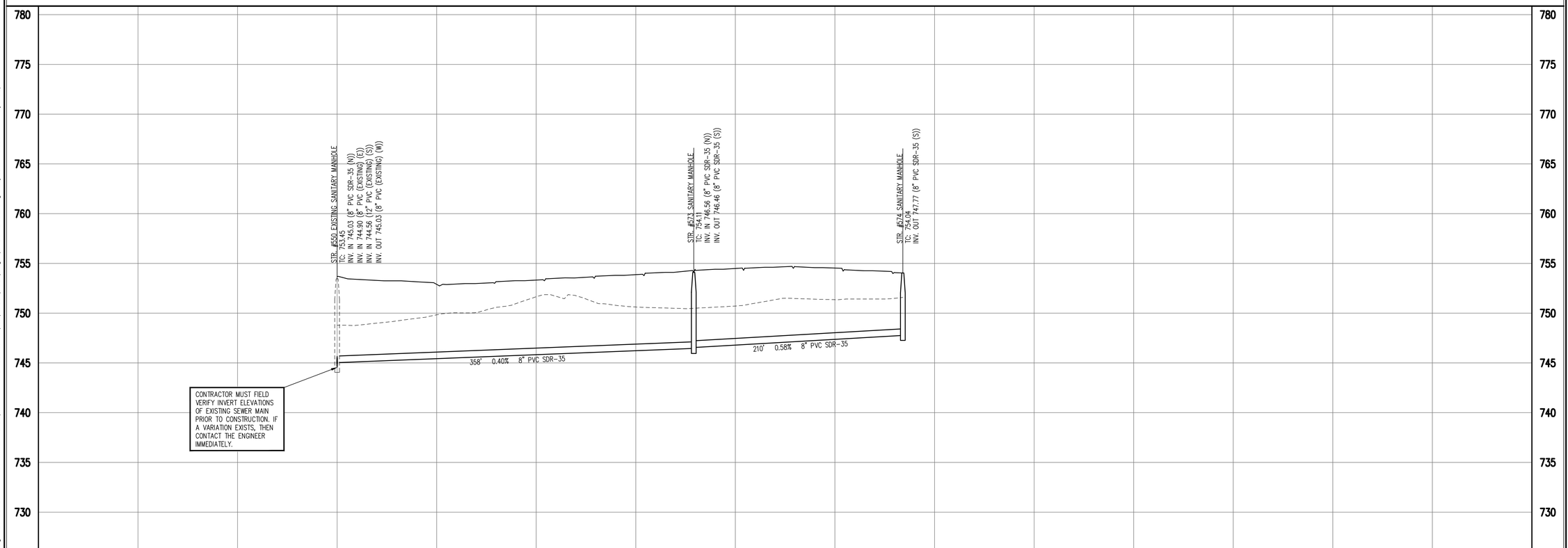
LEGEND/DETAILS

Sheet	Detail Number	Description
C804	1	Precast Reinforced Concrete Manhole
C804	3	Sanitary Sewer Bedding Detail
C804	4	Service Connection for Shallow Sewer
C804	5	Wye & Lateral Capping Detail
C804	5	Service Connection for Deep Sewer

NOTE

SANITARY SEWER PLAN

0 50' 100'
SCALE: 1"=50'



CONTRACTOR MUST FIELD VERIFY INVERT ELEVATIONS OF EXISTING SEWER MAIN PRIOR TO CONSTRUCTION. IF A VARIATION EXISTS, THEN CONTACT THE ENGINEER IMMEDIATELY.

SANITARY SEWER PROFILE

LEGEND
Existing Grade | New Grade | Granular Backfill

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

REVISIONS:

TODD C. WALLACE REGISTERED № PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE:
SANITARY SEWER
PLAN AND PROFILES

DRAWING FILES:
T:\4k\4569\700\dwgs\C401–C402.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg
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XREF: T:\4k\4569\700\dwgs\4569700_BS.dwg
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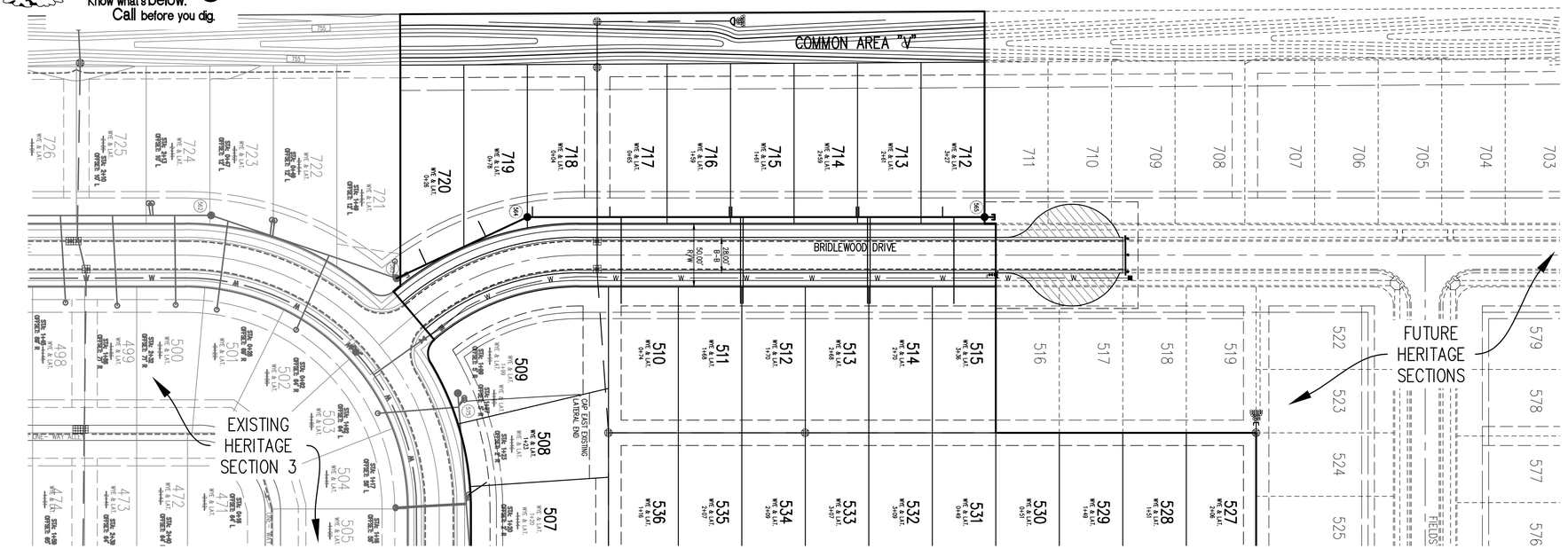
SHEET NO.: C401

Plot Date: Aug 13, 2015 Plot Time: 2:58pm File Name: T:\4k\4569\700\dwgs\C401–C402.dwg, Layout: C401 By: bdp

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



GENERAL NOTES

1. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.

2. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.

3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.

4. CONTRACTORS SHALL MINIMIZE DAMAGE TO EXISTING TREES.

5. ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (MH)

6. WYES AND LATERALS TO BE 6" PIPE UNLESS OTHERWISE SPECIFIED.

7. ALL WYE CONNECTIONS SHALL HAVE A MINIMUM OF FIVE (5) FOOT LATERAL EXTENSION CONNECTED TO THE WYE, OR EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, WHICHEVER IS GREATER, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS NOTED OTHERWISE. THE END OF THE LATERAL SHALL BE PLUGGED OR CAPPED, UNLESS OTHERWISE NOTED.

8. LATERALS RUNNING TO THE OPPOSITE SIDE OF THE STREET SHALL EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS OTHERWISE NOTED.

9. ALL SANITARY SEWER MAINS & LATERALS WITHIN 5' OF CURB SHALL BE BACKFILLED WITH COMPACTED #5 STONE.

BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53

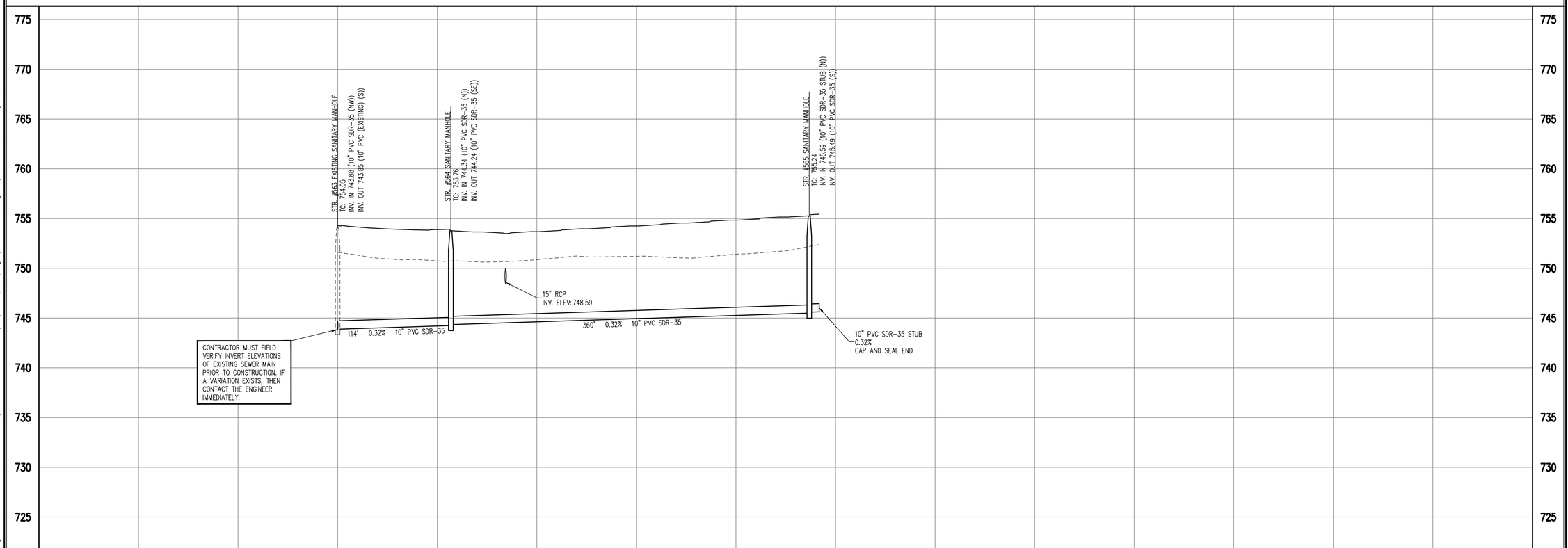
LEGEND/DETAILS

Sheet	Detail Number	Description
C804	1	Precast Reinforced Concrete Manhole
C804	3	Sanitary Sewer Bedding Detail
C804	4	Service Connection for Shallow Sewer
C804	5	Wye & Lateral Capping Detail
C804	5	Service Connection for Deep Sewer

NOTE

SANITARY SEWER PLAN

0 50' 100'
SCALE: 1"=50'



SANITARY SEWER PROFILE

LEGEND
Existing Grade | New Grade | Granular Backfill

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

REVISIONS:

TODD C. WALLACE REGISTERED No PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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SANITARY SEWER
PLAN AND PROFILES

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T:\4k\4569\700\dwgs\C401–C402.dwg
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SHEET NO.:
C402

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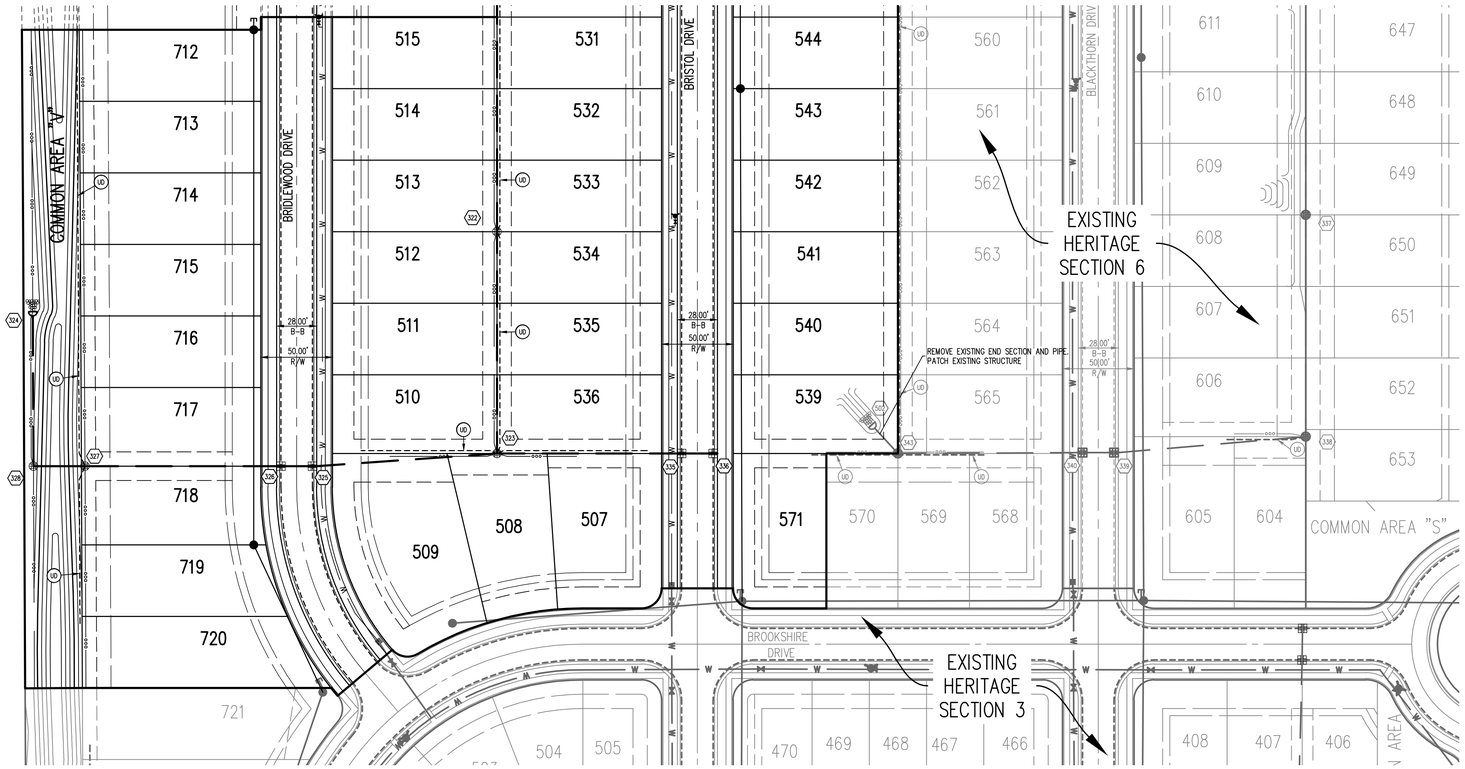

Indiana 811
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GENERAL NOTES

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6. ALL STORM SEWER CASTINGS SHALL BE STAMPED "DUMP NO WASTE, DRAINS TO WATERWAYS".

BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
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TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
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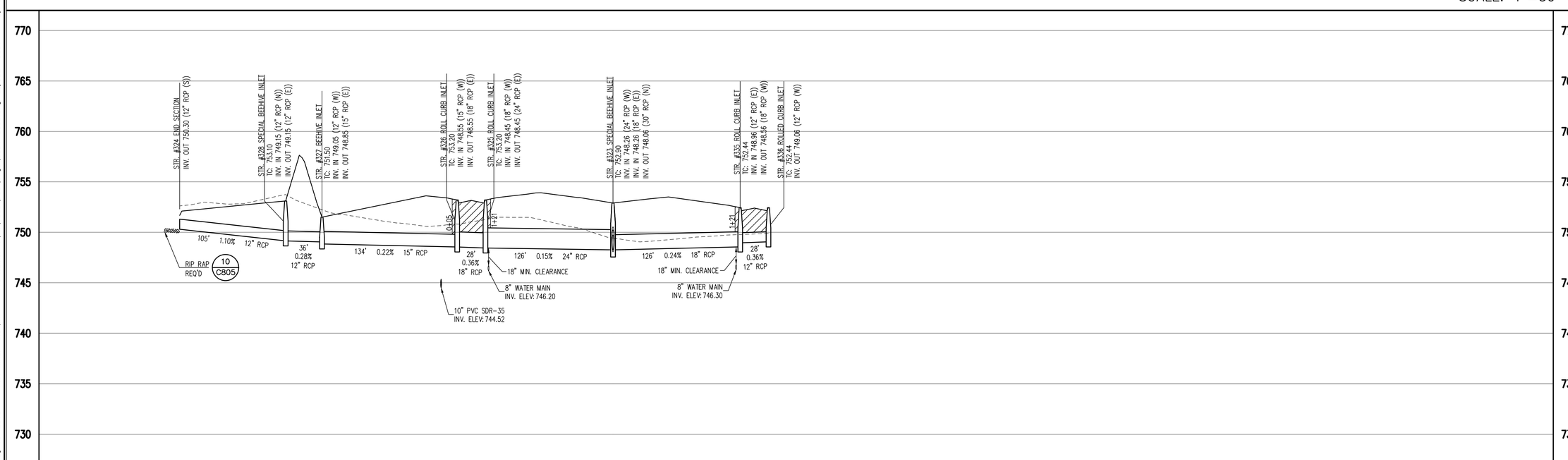
LEGEND/DETAILS

Sheet	Detail Number	Description
C805	1	Bedding Detail – Reinforced Concrete Pipe (RCP)
C805	4,6	Roll Curb Inlet Detail
C803	6	Pavement Underdrain Detail
C805	2,5	Beehive Inlet Detail
C805	3	Storm Manhole Detail
C805	7	Precast Concrete End Section
C805	10	RipRap Detail @ End Section
C101	1	Swale Underdrain Detail

NOTE

STORM SEWER PLAN

0 50' 100'
SCALE: 1"=50'



STORM SEWER PROFILE

SEE GENERAL NOTE #7

LEGEND

Existing Grade	New Grade	Granular Backfill

SCALE: HORZ.: 1"=50' / VERT.: 1"=5'

REVISIONS:

TODD C. WALLACE REGISTERED Nº PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

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DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STORM SEWER PLAN AND PROFILES

DRAWING FILES:
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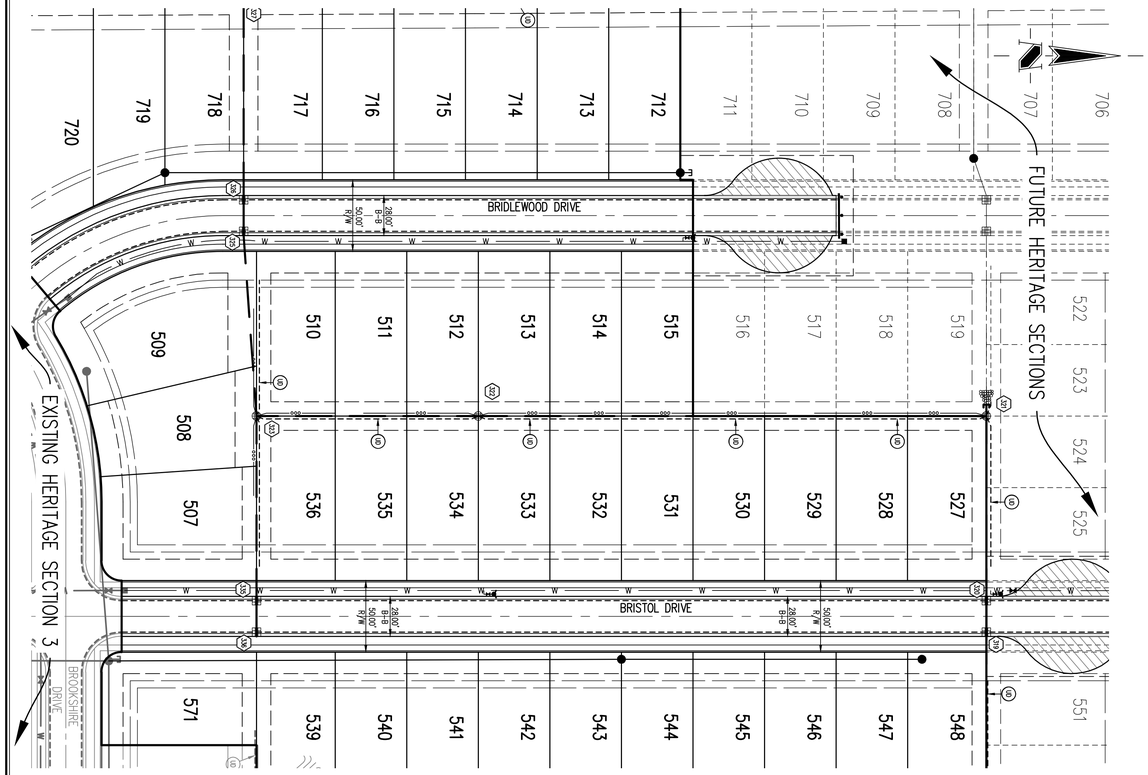
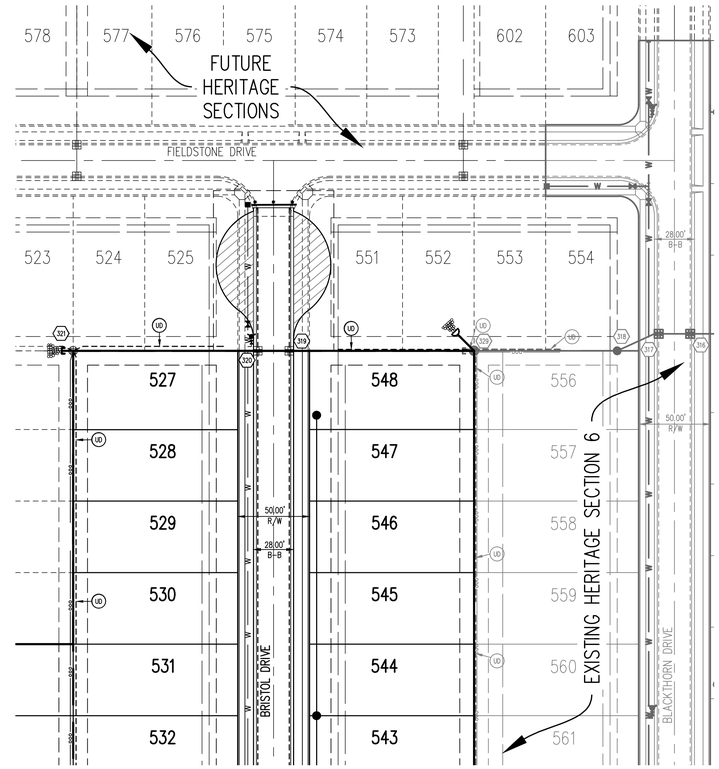
SHEET NO.: C601

Plot Date: Aug 13, 2015 Plot Time: 3:04pm File Name: T:\4k\4569\700\dwgs\C601–C603.dwg, Layout: C601 By: bdp





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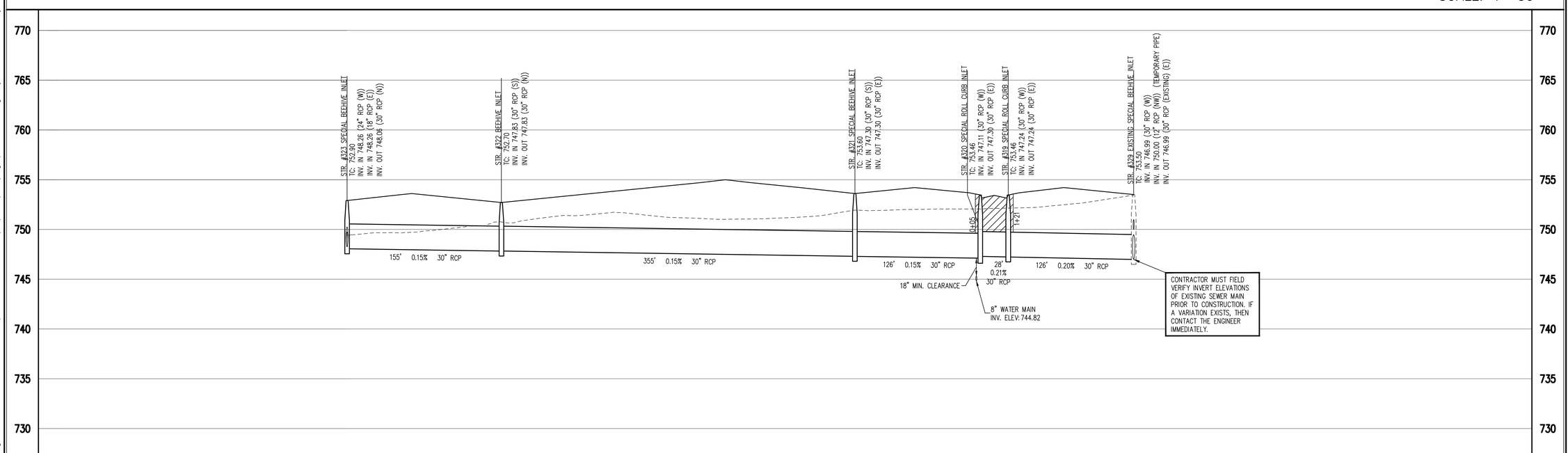
C101	1	Swale Underdrain Detail

NOTE

STORM SEWER PLAN

0 50' 100'
SCALE: 1"=50'



STORM SEWER PROFILE

SEE GENERAL NOTE #7

LEGEND
Existing Grade | New Grade | Granular Backfill

SCALE: HORZ.: 1"=50' / VERT.: 1"=5'

REVISIONS:

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SHEET NO.: C602

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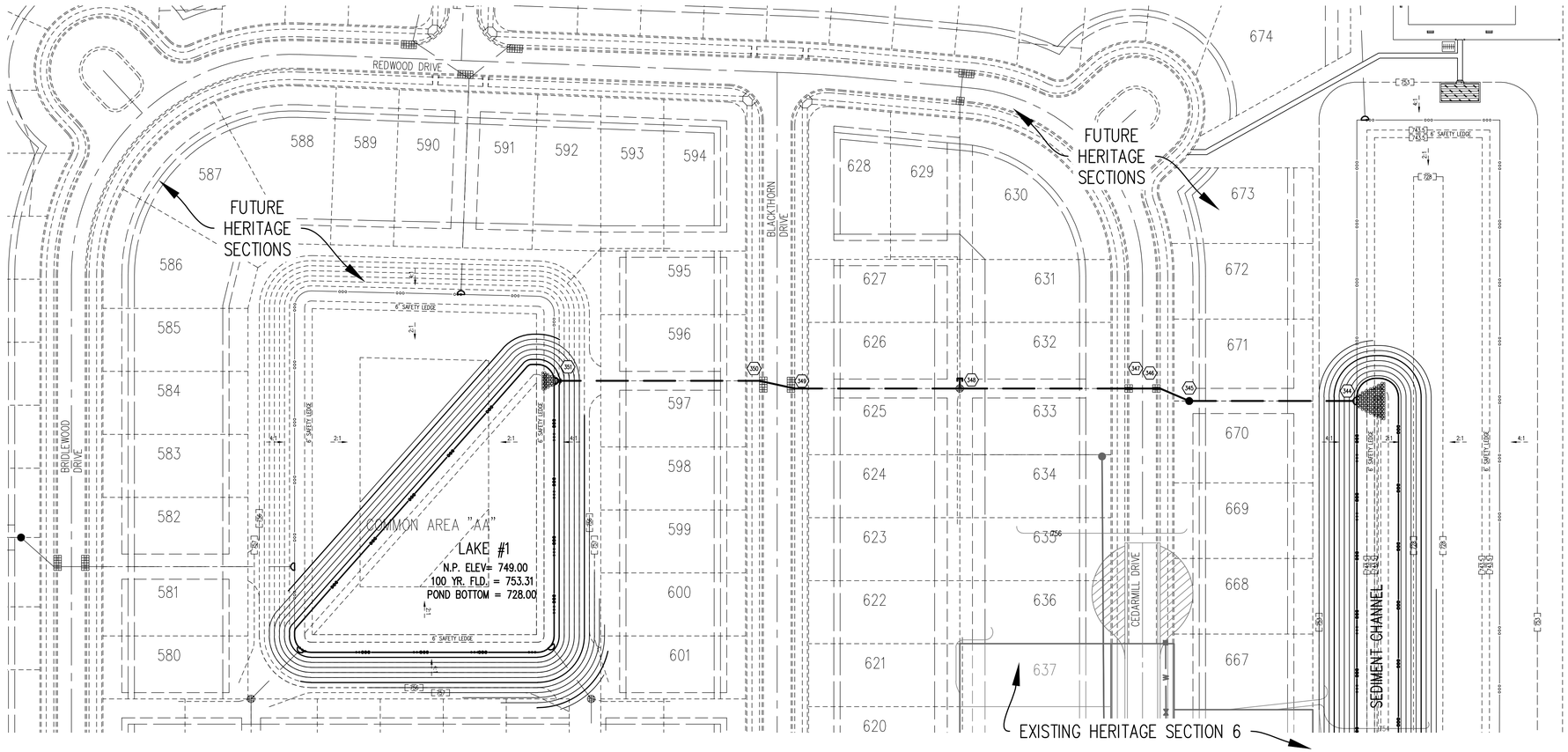

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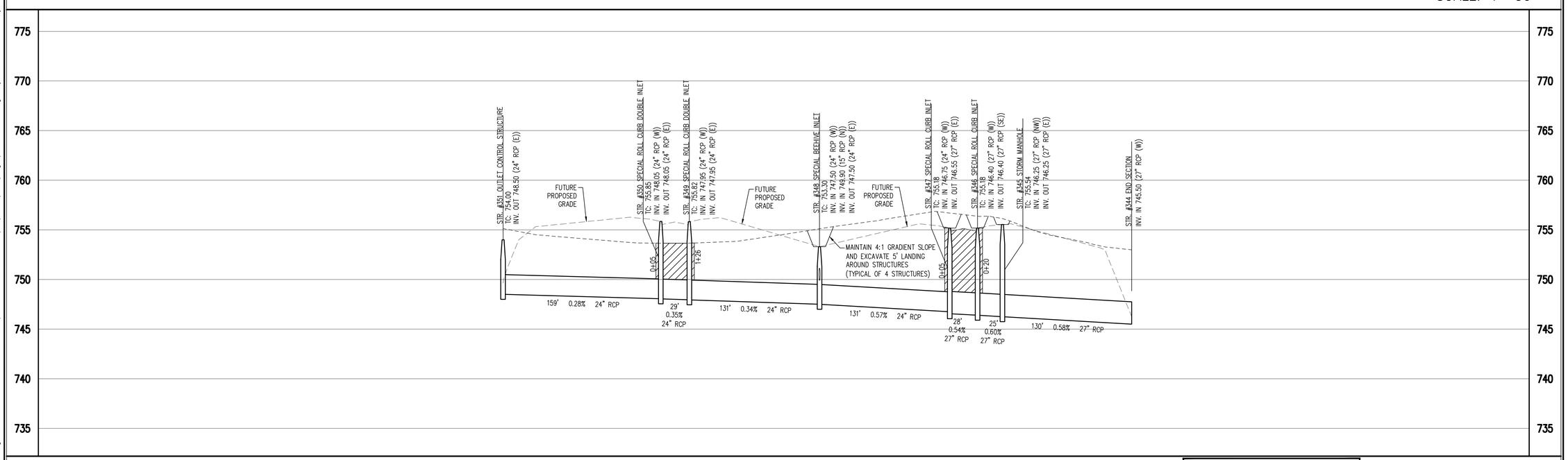
NOTE

STORM SEWER PLAN

0 50' 100'
SCALE: 1"=50'



STORM SEWER PROFILE

SEE GENERAL NOTE #7

LEGEND
Existing Grade | New Grade | Granular Backfill

SCALE: HORZ.: 1"=50' / VERT.: 1"=5'

REVISIONS:

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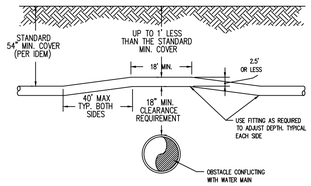
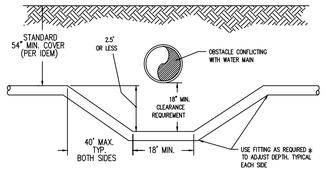
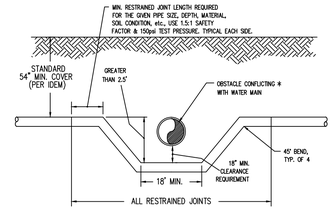


CROSSING ABOVE
TYPE "A"
NO SCALE



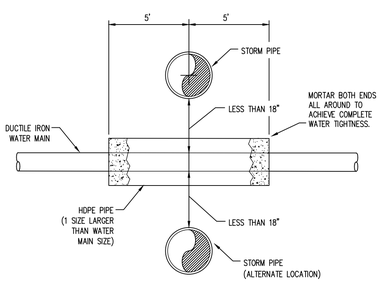
CROSSING BELOW
SHALLOW CONDITION
TYPE "B"
NO SCALE



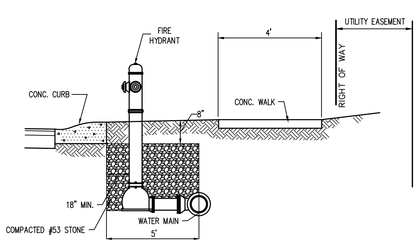
* PROVIDE ADEQUATE SUPPORT IF THE OBSTACLE IS IN PLACE BEFORE THE WATER MAIN IS CONSTRUCTED

CROSSING BELOW
DEEP CONDITION
TYPE "C"
NO SCALE

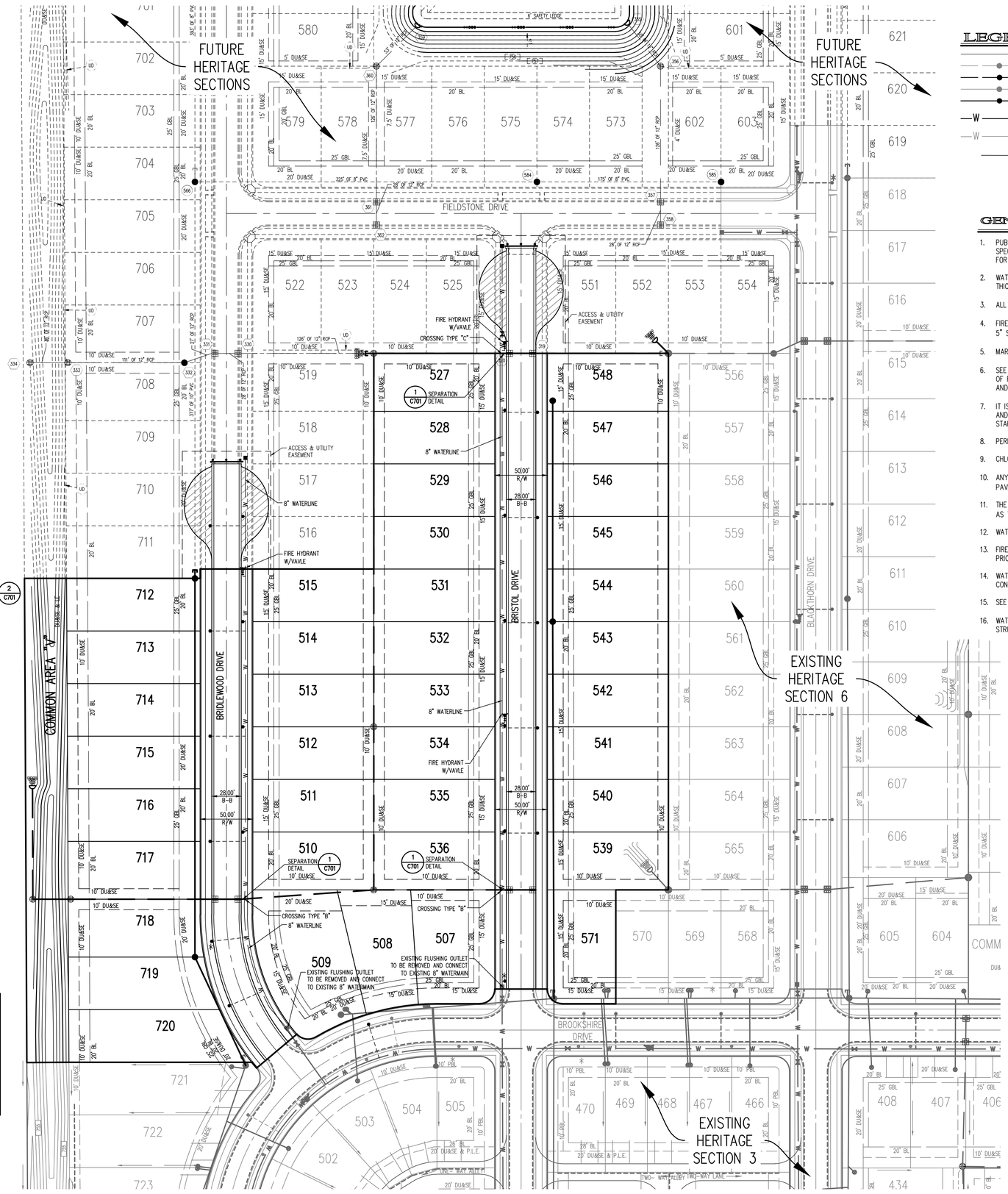
UTILITY CONFLICTS/CROSSINGS DETAILS



WATER MAIN ENCASEMENT
AT STORM SEWER CROSSING
NO SCALE



HYDRANT & MAIN LOCATION



LEGEND

- Proposed Contour
- Existing Storm Sewer
- Proposed Storm Sewer
- Existing Sanitary Sewer
- Proposed Sanitary Sewer
- Proposed Water Line w/ Hydrant & Valve
- Existing Water Line
- Water Line lateral with Water Meter Service Pit (Double Service Pit unless noted as single service pit by " ")

0 50' 100'
SCALE: 1" = 50'

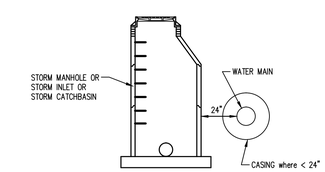
GENERAL NOTES

1. PUBLIC WATER MAINS AND FIRE HYDRANTS TO BE INSTALLED PER INDIANA AMERICAN WATER COMPANY SPECIFICATIONS.
   FOR REQUIRED INSPECTIONS CONTACT INDIANA AMERICAN WATER COMPANY 317-881-0270.
2. WATER MAIN MATERIALS MUST BE EITHER CLASS 350 DUCTILE IRON, OR AWWA C-900 RATED, DR-18 THICKNESS PVC PIPE.
3. ALL WATER MAINS ARE TO BE A MINIMUM OF 12" FROM BACK OF CURBS.
4. FIRE HYDRANTS SHOULD RISE IN FRONT OF THE SIDEWALK A MINIMUM OF 18" FROM BACK OF CURB. THE 5" STORZ CONNECTION SHALL FACE THE STREET.
5. MARK "⋀" IN CURB OPPOSITE ALL VALVES.
6. SEE SHEET C702 FOR WATERLINE NOTES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE CITY OF FRANKLIN ENGINEER AND INDIANA AMERICAN WATER COMPANY FOR ANY UPDATES TO THE DETAILS AND SPECIFICATIONS.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE CITY OF FRANKLIN ENGINEERING DEPARTMENT AND INDIANA AMERICAN WATER COMPANY TO SCHEDULE A PRE-CONSTRUCTION MEETING PRIOR TO STARTING CONSTRUCTION.
8. PERMANENT FLUSH PITS ARE TO BE LOCATED IN PARK STRIP BETWEEN CURB AND WALK.
9. CHLORINATION TAPS AND SAMPLE TAPS ARE TO BE LOCATED ON THE LOT SIDE OF THE WATER MAIN.
10. ANY PART OF THE WATER MAIN TRENCH RUNNING UNDER PAVED AREAS OR WITHIN FIVE (5) FEET OF PAVEMENT/ SIDEWALKS ARE TO BE BACKFILLED WITH GRANULAR MATERIAL.
11. THE CURVATURE OF WATER MAINS SHALL BE OBTAIN USING A COMBINATION OF FITTINGS IN SUCH A WAY AS TO AVOID INSTALLING THE PIPE IN A "BIND" OR IN BENT TENSION.
12. WATER MAINS MAY NOT BE UNDER SIDEWALKS, WALKWAYS, LANDSCAPING, OR MOUNDING.
13. FIRE HYDRANTS SHALL BE INSTALLED, FUNCTIONAL, AND APPROVED BY THE FRANKLIN FIRE DEPARTMENT PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS.
14. WATER SERVICE LATERALS AND WATER METER PITS TO BE INSTALLED BY OTHERS AT TIME OF HOME CONSTRUCTION.
15. SEE SHEET C702 FOR ADDITIONAL WATER DISTRIBUTION NOTES & DETAILS.
16. WATER MAINS MUST MAINTAIN A MIN. 10' SEPERATION FROM SANITARY & STORM SEWER LINES & STRUCTURES PER TEN STATE STANDARD AND INDIANA CODE 327IAC2-9, 327IAC3-6-9, & 327IAC8-3

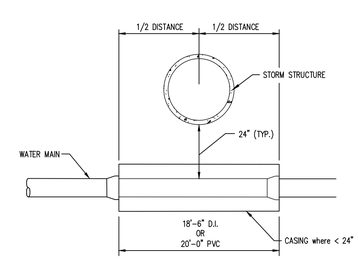
BENCHMARK

Originating Benchmark – Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

TBM #9 – Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53



PROFILE VIEW
NO SCALE



PLAN VIEW
STORM SEWER CONFLICT
NO SCALE

NOTE:
1) AS NECESSARY, PROVIDE APPROPRIATE JOINT RESTRAINT ON A CLOSE PROXIMITY CROSSING OF STORM SEWER STRUCTURES.
2) ALL PIPE WILL FULLY COMPLY WITH INAWC PIPELINE SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO SECTION 15106, SECTION 15121, AND SECTION 02025.

STORM SEWER STRUCTURE
CONFLICT DETAIL (1/C701)
NO SCALE

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

REVISIONS:

TODD C. WALLACE REGISTERED № PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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www.schneidercorp.com

Civil Engineering
GIS * LIS
Land Surveying
Landscape Architecture

HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: WATER DISTRIBUTION PLAN

DRAWING FILES:
T:\4k\4569\700\dwgs\C701.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg
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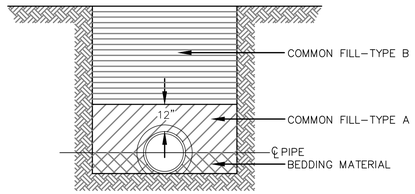
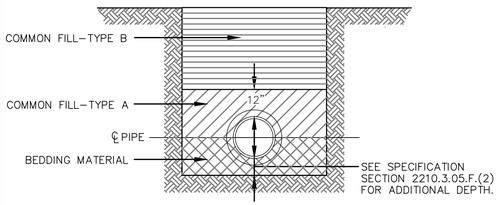
SHEET NO.: C701

Plot Date: Aug 13, 2015 Plot Time: 3:07pm File Name: T:\4k\4569\700\dwgs\C701.dwg, Layout: C701 By: bdp



EARTH EXCAVATION



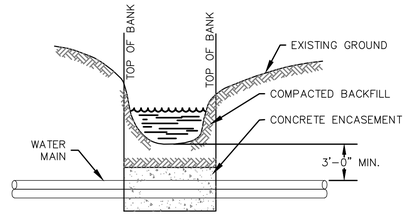
ROCK EXCAVATION

NOTE: SEE SPECIFICATION SECTIONS 2210.2.02 AND 2210.2.03 FOR DESCRIPTIONS OF BACKFILL AND BEDDING MATERIAL.

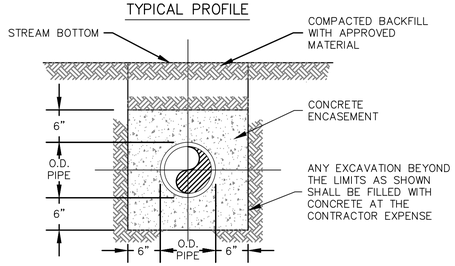
TRENCH BACKFILL MATERIALS

NO SCALE

61-300-3 SK



TYPICAL PROFILE



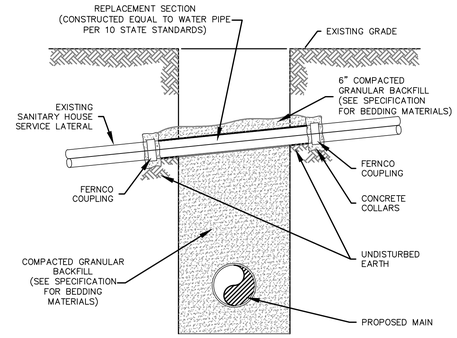
TYPICAL SECTION

NOTE: MINIMUM ENCASEMENT LIMITS ARE SHOWN ON THE DRAWINGS. THE ACTUAL LIMITS SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION SUCH THAT THE ENCASEMENT TERMINATES AT A PIPE JOINT. THE JOINT SHALL BE FREE OF CONCRETE SO AS TO PROVIDE A FLEXIBLE JOINT.

STREAM CROSSING DETAIL

NO SCALE

61-300-5 SK

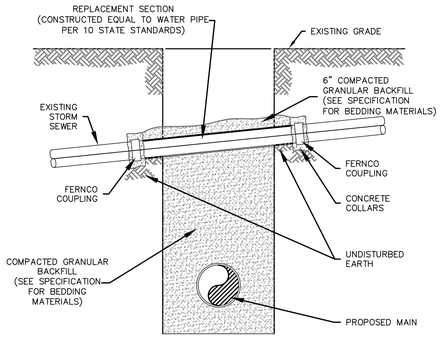


1. IF THE EXISTING SANITARY HOUSE SERVICE IS DAMAGED OR REMOVED DURING CONSTRUCTION IT SHALL BE REPLACED ACROSS THE TRENCH SUCH THAT THE CONCRETE COLLARS ARE SUPPORTED ON UNDISTURBED EARTH.
2. THE CONCRETE COLLAR SHALL BE FORMED AT A JOINT WITH THE EXISTING HOUSE LATERAL USING FERNCO COUPLINGS.
3. THE REPLACEMENT SECTION SHALL BE CONSTRUCTED EQUAL TO WATER PIPE PER WASTEWATER FACILITIES 10 STATE STANDARDS, LATEST REVISION, SECTION 30–38.32 a, WITH AN INSIDE DIAMETER EQUAL TO THE EXISTING PIPE.
4. WHEN THE OWNER OF THE SANITARY SERVICE HAS REQUIREMENTS WHICH ARE MORE STRINGENT, THE CONTRACTOR SHALL CONFORM TO THE MORE STRINGENT REQUIREMENTS AND MAKE NO CLAIM FOR ADDITIONAL COMPENSATION OR AN EXTENSION OF TIME BECAUSE OF SUCH REQUIREMENTS.

SANITARY HOUSE SERVICE REPLACEMENT DETAIL

NO SCALE

61-300-1 SK

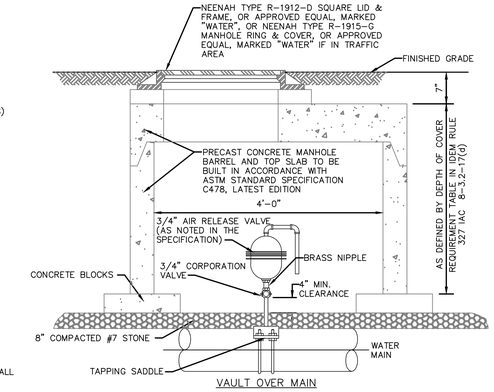


1. IF THE EXISTING STORM SEWER SERVICE IS DAMAGED OR REMOVED DURING CONSTRUCTION IT SHALL BE REPLACED ACROSS THE TRENCH SUCH THAT THE CONCRETE COLLARS ARE SUPPORTED ON UNDISTURBED EARTH.
2. THE CONCRETE COLLAR SHALL BE FORMED AT A JOINT WITH THE EXISTING STORM SEWER USING FERNCO COUPLINGS.
3. THE REPLACEMENT SECTION SHALL CONSTRUCTED EQUAL TO WATER PIPE PER WASTEWATER FACILITIES 10 STATE STANDARES, LATEST REVISION, SECTION 30–38.32a, WITH AN INSIDE DIAMETER EQUAL TO THE EXISTING PIPE.
4. WHEN THE STORM SEWER OWNER HAS REQUIREMENTS WHICH ARE MORE STRINGENT, THE CONTRACTOR SHALL CONFORM TO THE MORE STRINGENT REQUIREMENTS AND MAKE NO CLAIM FOR ADDITIONAL COMPENSATION OR AN EXTENSION OF TIME BECAUSE OF SUCH REQUIREMENTS.

STORM SEWER REPLACEMENT DETAIL

NO SCALE

61-300-2 SK



VAULT OVER MAIN

SHALLOW BURY AIR RELEASE VALVE DETAIL

NO SCALE

61-300-8A SK

THRUST BLOCK REQUIREMENTS				
FITTING	TOTAL POUNDS THRUST	TOTAL BEARING AREA (S.F.)	THRUST BLOCK HEIGHT (FT.)	THRUST BLOCK WIDTH (FT.)
6" 90° BEND	12,000	6	2.5	2.5
6" 45° BEND	6,700	3.5	1.75	2
6" TEE OR PLUG	8,400	4	2	2
8" 90° BEND	19,000	9	3	3
8" 45° BEND	10,500	5	2.5	2
8" TEE OR PLUG	13,500	6.5	2.75	2.5
10" 90° BEND	28,000	14	4	3.5
10" 45° BEND	15,500	8	2.75	3
10" TEE OR PLUG	19,500	10	3.5	3
12" 90° BEND	41,000	20	4	5
12" 45° BEND	23,000	12	3	4
12" TEE OR PLUG	28,000	14	3.5	4
16" 90° BEND	70,000	35	6	6
16" 45° BEND	38,000	19	4	5
16" TEE OR PLUG	50,000	25	5	5

THRUST BLOCK NOTES:

1. PIPE JOINT AND BOLTS MUST BE ACCESSIBLE.
2. CONCRETE SHALL BE CURED FOR MINIMUM OF 7 DAYS AND SHALL HAVE A COMPRESSION STRENGTH OF 3000 P.S.I. @ 28 DAYS.
3. THRUST BLOCKS SHALL BE POSITIONED TO COUNTERACT THE DIRECTION OF THE RESULTANT THRUST FORCE.
4. CONTRACTOR SHALL NOTIFY ENGINEER IF SOIL OF LESS THAN 2000 P.S.F. IS ENCOUNTERED.
5. FIVE (5) MIL POLYETHYLENE PLASTIC SHALL BE USED TO COVER FITTINGS PRIOR TO POURING THE THRUST BLOCK.

THRUST BLOCK DESIGN DATA

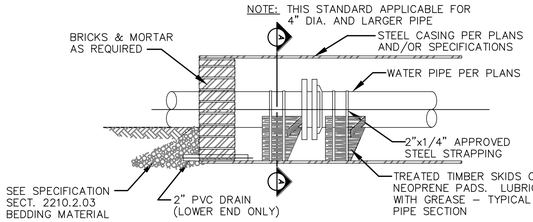
MAXIMUM OPERATING PRESSURE: 85 P.S.I.

SURGE ALLOWANCE: 100 P.S.I.

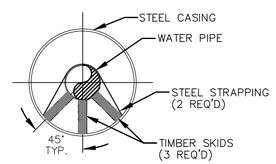
THRUST DESIGN PRESSURE: 185 P.S.I.

BASED ON 2000 P.S.F. SOIL

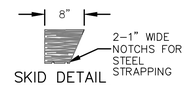
NOTE: THIS STANDARD APPLICABLE FOR 4" DIA. AND LARGER PIPE



ROCK EXCAVATION



SECTION "A"



SKID DETAIL

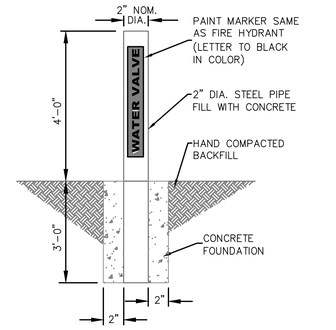
NOTE: SEE SPECIFICATION SECTIONS 2210.2.02 AND 2210.2.03 FOR DESCRIPTIONS OF BACKFILL MATERIAL.

PAD WATER PIPES AT BULKHEADS WITH TWO LAYERS OF 15 LB. BUILDERS FELT.

TYPICAL CASING INSTALLATION

NO SCALE

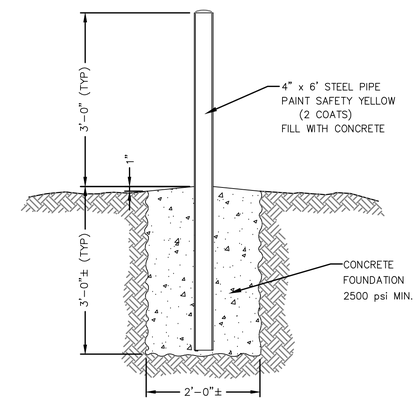
61-300-4 SK



VALVE MARKER POST DETAIL

NO SCALE

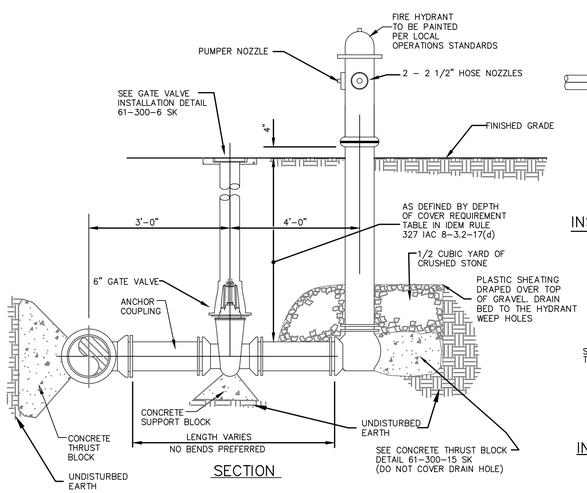
31-600-14 SK



PIPE BOLLARD DETAIL

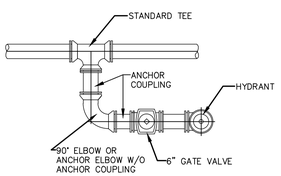
NO SCALE

31-600-13 SK

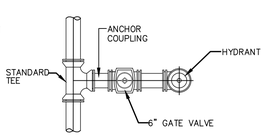


SECTION

NOTE:
THE NOTED THRUST RESTRAINT MECHANISMS ARE A MINIMUM RECOMMENDATION. LOCAL OPERATIONS SHALL OFFER PREFERENCES AND CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS.



INSTALLATION PARALLEL TO MAIN

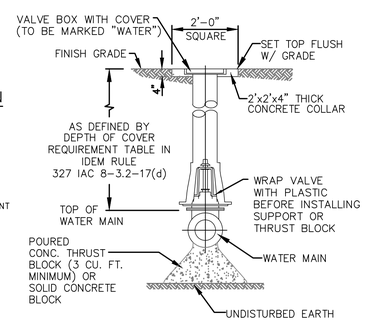


INSTALLATION PERPENDICULAR TO MAIN

FIRE HYDRANT DETAILS

NO SCALE

61-300-7 SK

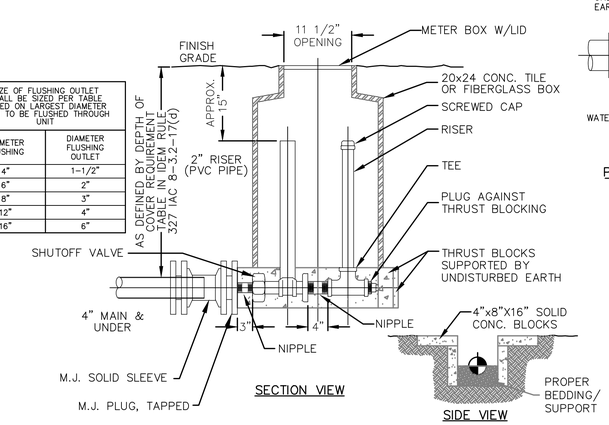


GATE VALVE INSTALLATION DETAIL

NO SCALE

61-300-6 SK

SIZE OF FLUSHING OUTLET SHALL BE SIZED PER TABLE BASED ON LARGEST DIAMETER MAIN TO BE FLUSHED THROUGH UNIT	
DIAMETER FLUSHING	DIAMETER FLUSHING OUTLET
4"	1–1/2"
6"	2"
8"	3"
12"	4"
16"	6"



SECTION VIEW

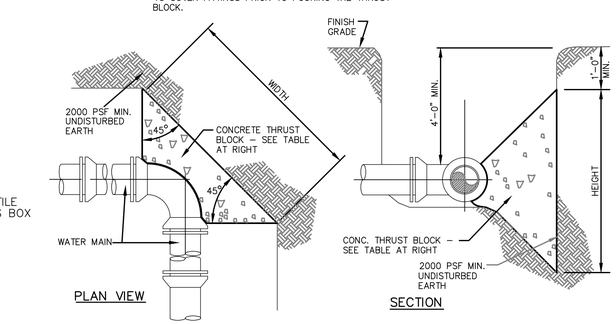
SIDE VIEW

FOUNDATION

BLOW-OFF/FLUSHING OUTLET DETAIL

NO SCALE

61-300-9 SK



PLAN VIEW

SECTION

THRUST BLOCK DETAILS

NO SCALE

61-300-15 SK

Indiana–American Water Company, Inc.

SCALE: NOT TO SCALE	HERITAGE
REVISIONS	SECTION 7 STANDARD DETAILS JOHNSON COUNTY, INDIANA
DRAWN BY: R.K.B. / DATE: 5/99	CHECKED: / SHEET C702
AUTOCAD FILE: D:\DETAILS\STDDTLS2.DWG	APPROVED:

Plot Date: Aug 13, 2015 Plot Time: 3:08pm File Name: T:\44k\4569\700\dwgs\C702.dwg Layout: Model By: bdp

STORMWATER POLLUTION PREVENTION PLAN INDEX

A1 Plan Index provided below
A2 11"x17" Plot denoting lot numbers, boundaries and streets can be provided separately.
A3 Project Type: 39 lot single family subdivision.
A4 Vicinity Map: Denoted on Sheet C100.
A5 Legal Description of Project Site: See PLAT 2 OF 2.
A6 Location of all lots and proposed site improvements: See Sheet C101.
A7 14 Digit Hydrologic Unit Code: 05120204090050
A8 State or Federal water quality permits: Rule 5.
A9 Specific points where stormwater discharge will leave the site: Storm runoff from the Heritage Section 7 will flow east into an existing detention pond in Heritage Section 3 before eventually discharging to Hurricane Creek. See Site Development Plan Sheet C100 for more detail.
A10 Location of all wetlands, lakes & water courses on and adjacent to site: See Site Development Plan Sheet C101 for more detail.
A11 Receiving Waters: Hurricane Creek
A12 Identification of potential discharges to groundwater: Detention ponds are potential sources for discharge in to groundwater supplies.
A13 100 Year Floodplains, Floodways and Flood Fringes: None.
A14 Pre-Construction and Post Construction Peak Discharge:
10year Pre-Construction Peak Discharge = 2.38 CFS
100 Post Construction Peak Discharge = 4.01 CFS
A15 Adjacent Land Use (See Stormwater Pollution Prevention Plan – PreConstruction Plan Sheets C103 for more information):
North: Agricultural
South: Residential
East: Residential
West: Agricultural
A16 Locations and approximate boundaries of all disturbed areas: See Sheets C103 for locations.
A17 Identification of existing vegetative cover: See Stormwater Pollution Prevention Plan – PreConstruction Plan Sheets C103.
A18 Soils Map including descriptions and limitations: See Sheet C802 for soils map, description and limitations.
A19 Locations, size and dimensions of proposed stormwater systems: See Site Development Plan Sheet C101 for proposed storm sewer system.
A20 Locations, size and dimensions of any proposed off-site construction activities associated with this project: (None).
A21 Locations of Soil Stockpiles: See Stormwater Pollution Prevention Plan – PreConstruction Plan Sheets C103 for soil stockpile location(s).
A22 Existing site topography: See Site Development Plan Sheet C101 for existing site topography.
A23 Proposed final topography: See Site Development Plan Sheet C101 for proposed site grading and drainage patterns.

B1 Description of potential pollutants sources associated with the construction activities: Silt and sediment from exposed soils, leaves, mulch, vehicular sources such as leaking fuel or oil, brake fluid, brake dust, trash, debris, biological agents found in trash, fertilizers, herbicides, pesticides, acid rain, lime dust and concrete washout.
B2 Sequencing of stormwater quality implementation relative to land disturbance activities:

This plan has been created in an effort to eliminate sediment from leaving the Heritage Section 6 project during construction protecting the adjoining properties and the Hurricane Creek waters. In its existing condition, the existing project area drains into shallow concentrated flow prior to entering a detention pond then discharging to Hurricane Creek. This condition will be continued during and after construction.

PRECONSTRUCTION ACTIVITIES:

1. Call the Indiana Underground Plant Protection systems, Inc. ("Holey Moley") at 811 to check the locations of any existing utilities. They should be notified at least two working days before start of construction.
2. A construction entrance shall be placed per the plan location.
3. An orange construction fence shall be constructed along the perimeter of the tree preservation areas prior to pre-construction meeting with SWPP inspector.
4. A silt fence shall be installed at the edges of the project site where there is potential for any stormwater runoff. Potential areas are identified based on existing topography in the areas of the frontage along Blackthorn Drive and perimeters of the site. Silt Fence shall be in place prior to pre-construction meeting.
5. Evaluate, mark and protect important trees and associated root zones. Evaluate existing vegetation suitable for use as filter strips along the North, South, East and West boundaries.
6. Establish onsite location for owner/operator/contractor placement of approved plans and Rule 5 NOI and Rule 5 inspection documentation.
7. Establish construction staging area for equipment and vehicles as far from detention ponds and swales as possible. Install trash dumpster and place port-o-let as shown on the plans.
8. Items 1–7 above are to be completed prior to calling for pre-construction meeting and prior to any land alterations.
9. Contractor shall have a preconstruction meeting with the City of Franklin – MS4 at least 48 hours prior to any earthmoving activities.

CONSTRUCTION ACTIVITIES:

1. Once erosion and sediment control measures are in place, begin land clearing followed immediately by rough grading. Do not leave large areas unprotected for more than 15 days. Rule 5 requires that all disturbed areas that potentially will be idle for 15 days or more will be stabilized (seeded, mulched, etc.) immediately.
2. After completion of mass grading, final grade and seed pond banks, landscape berms, common areas and swales immediately after grading is completed.
3. Liming of streets should be done prior to the installation of storm sewers to prevent the transmission of lime dust to ponds or receiving waters.
4. Upon completion of mass grading, install sanitary and storm sewers and subsurface drains. As storm sewers are constructed, install inlet protection measures. Install riprap upon completion of end section installation.
5. Upon completion of storm sewer system, finish grade swales, apply permanent seed and erosion control blanket.
6. Upon completion of storm sewer installation and inlet protection, proceed with street construction.
7. Once pavement and curbs are in place, install curb inlet sediment barriers.
8. Once inlet protection is in place, final grade all areas. Upon completion of all grading, verify depth of pond per plan requirement, dredge as needed.

B3 Stable construction entrance location(s) and specifications. See Stormwater Pollution Prevention Plan Sheets C104 and C105 for location and Sheet C802 for construction entrance details and specifications. See B14 on this sheet for monitoring and maintenance guidelines.
B4 Sediment control measures for sheet flow areas: See Stormwater Pollution Prevention Plan Sheets C104 and C105 for locations of sediment control measures and Sheet C802 for construction details and specifications.
B5 Sediment control measures for concentrated flow areas: See Stormwater Pollution Prevention Plan Sheets C104 and C105 for locations of sediment control measures and Sheet C802 for construction details and specifications.
B6 Storm sewer inlet protection measures, locations and specifications: See Stormwater Pollution Prevention Plan Sheet C104 and C105 for locations of inlet protection measures and Sheet C802 for construction details and specifications.
B9 Grade stabilization structure locations and specifications: None are required.
B10 Location, dimensions, specifications and construction details of each stormwater quality measure: See Stormwater Pollution Prevention Plan Sheets C104 and C105 for locations of various stormwater quality measures and Sheet C802 for construction details and specifications. Also see Sheet C803 for construction details and specifications.
B11 Temporary surface stabilization methods appropriate for each season: See Stormwater Pollution Prevention Plan Sheets C104 and C105 for locations of temporary surface stabilization measures and Sheet C802 for construction details and specifications.
B12 Permanent surface stabilization specifications: See Stormwater Pollution Prevention Plan Sheets C104 and C105 for locations of permanent surface stabilization measures and Sheet C802 for construction details and specifications.

B13 Material handling and spill prevention plan:
Purpose:
The intention of this Spill Prevention, Control and Countermeasures (SPCC) is to establish the procedures and equipment required to prevent the discharge of oil and hazardous substances in quantities that violate applicable water quality standards, cause a sheen upon or discoloration of the surface of navigable waters or adjoining shorelines, or cause sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. The Plan also establishes the activities required to mitigate such discharges (i.e., countermeasures) should they occur.
Definitions:
Pollutant: means pollutant of any kind or in any form, including but not limited to sediment, paint, cleaning agents, concrete washout, pesticides, nutrients, trash, hydraulic fluids, fuel, oil, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged soil.
Discharge:
Includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.
Navigable Waters:
Means all waters of the United States that are connected with a navigable stream, lake, or sea. (Note: This definition is usually interpreted to mean any wastewater (even normally dry wash or storm sewer) that eventually drains into a navigable stream).
Plan Review and Amendements:
This Plan shall be reviewed and/or amended, if necessary, whenever there is a change in the design of the site, construction, operation, or maintenance which materially affects the site's potential for the discharge of regulated material.
Prediction of Potential Spills:
1. Nearest Navigable Water: Hurricane Creek
2. Drainage System: All storm drainage leaves the site by open ditches and closed storm systems to the east to Hurricane Creek.
3. Possible Spill Sources (During and post construction): Vehicular sources such as leaking fuel or oil, brake fluid, grease, antifreeze; construction trash and debris, biological agents found in trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, herbicides and pesticides.
4. Groundwater Contamination:
The facility maintains NO above ground or under ground storage tanks at this site. Therefore, it is felt that there is little or no possibility of post construction groundwater contamination. The facility does have city sanitary sewer and city water.

Alert Procedures for Spills:
1. Any personnel observing a spill will immediately instigate the following procedure:
a.) Dialing "0" from any telephone.
b.) Notify the appropriate emergency personnel.
2. The Emergency Coordinator will then take the following actions:
a.) Barricade the area allowing no vehicles to enter or leave the spill zone.
b.) Notify the Indiana Department of Environmental Management, Office of Emergency Response by calling the appropriate telephone number:
Office 317-233-7745
Toll Free 800-233-7745
Also the National Response Center at 800-424-8802 and provide the following information:
– Time of observation of the spill
– Location of the spill
– Identity of material spilled
– Probable source of the spill
– Probable time of the spill
– Volume of the spill and duration
– Present and anticipated movement of the spill
– Weather conditions
– Personnel at the scene
– Action initiated by personnel
c.) Notify the Franklin Fire Department Phone: 9–1–1
d.) Notify the Franklin Police Department Phone: 9–1–1
e.) Notify waste recovery contractor, maintenance personnel or other contractual personnel as necessary for cleanup.
f.) Coordinate and monitor cleanup until the situation has been stabilized and all spills have been eliminated.
g.) Cooperate with the IDEM-OER on procedures and reports involved with the event.

Cleanup Parameters:
1. The Developer / Homeowners Association shall be continually kept informed, maintain lists of qualified contractors and available Vac-trucks, tank pumpers and other equipment readily accessible for clean-up operations. In addition, a continually updated list of available absorbent materials and clean-up supplies should be kept on site.
2. All maintenance personnel will be made aware of techniques for prevention of spills. They will be informed of the requirements and procedures outlined in this plan. They will be kept abreast of current developments or new information on the prevention of spills and/or necessary alterations to this plan.
3. When spills occur which could endanger human life and this becomes primary concern, the discharge of the life saving protection function will be carried out by the local police and fire departments.
4. Absorbent materials, which are used in cleaning up spilled materials, will be disposed of in a manner subject to the approval of the Indiana Department of Environmental Management.
5. Flushing of spilled material with water will not be permitted unless so authorized by the Indiana Department of Environmental Management.

B14 Monitoring and maintenance guidelines for pollution prevention measures:
Silt Fence Maintenance Requirements
1. Inspect the silt fence periodically and after each storm event.
2. If fence 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 it's lowest point or is causing the fabric to bulge.
4. Take care to avoid undermining the fence during cleanout.
5. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize it.
Temporary Sediment Trap Maintenance Requirements
1. Inspect temporary sediment traps after each storm event and immediately repair any erosion and piping holes.
2. Remove sediment when it has accumulated to one-half the design depth.
3. Replace spillway gravel facing when clogged.
4. Inspect vegetation and re-seed if necessary.
5. Check the spillway depth periodically to insure a minimum of 1.5 ft depth from the lowest point of the settled embankment to highest point of the spillway crest and fill any low areas to maintain desired elevation.
6. Promptly replace any displaced rip-rap, being careful that no stones in the spillway are above design grade.
7. After all disturbed areas have been stabilized, remove the structure and sediment, smooth the site to blend with adjoining areas and stabilize it.
Sandbag Curb Inlet Barrier Maintenance Requirements
1. Inspect frequently for damage by vehicular traffic and repair if necessary.
2. Inspect after each storm event.
3. Remove sediment, without flushing, when it reaches half the height of the barrier.
4. Deposit removed sediment where it will not enter storm sewer drains.
Erosion Control Blanket (Surface Applied) Maintenance Requirements
1. During vegetative establishment, inspect after each storm event for any erosion below the blanket.
2. If any area(s) shows erosion, pull back that portion of the blanket covering it, re-seed the area and relay and staple the blanket.
3. After vegetative establishment check the treated area periodically.
Temporary Construction Entrance Maintenance Requirements
1. Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
2. Reshape as needed for drainage and runoff control.
3. Topdress with clean stone as needed.
4. Immediately remove mud and sediment tracked or washed onto streets by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
5. Repair any broken road pavement immediately.

B15 Erosion & sediment control specifications for individual building lots: See Sheet C802 for Construction details and specifications for erosion & sediment control on individual building lots.

C1 Description of pollutants and their sources associated with the proposed land use: Silt and sediment from exposed soils, leaves, mulch, vehicular sources such as leaking fuel or oil, brake fluid, brake dust, grease, antifreeze, metals, rubber fragments, road grit, salts and sands, construction trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, miscellaneous home improvement materials, toys, clothing and animal waste, elevated storm runoff temperatures, acid rain pesticides and pathogens.
C2 Sequence describing stormwater quality measure implementation:
1. Inspect and maintain all erosion control measures as detailed in the Stormwater Pollution Prevention Measures Maintenance Requirements beginning immediately after installation and continuing until vegetation has been sufficiently established and all construction activity is complete.
2. Remove all individual inlet protection and straw bale dams, silt fences, etc. only after seeding and sufficient vegetative growth has been established in each area to a point where sediment/pollutants will not enter the lake(s) or storm sewer system.
3. It is recommended that any proposed wetland areas and plantings (if any) be constructed/placed after final grading and sufficient vegetative growth has been established to a point where sediment/pollutants will not enter the proposed wetlands.
4. Inspection and maintenance of all common areas and infrastructure improvements is the responsibility of the owner/developer or his designee until improvements are accepted for maintenance by homeowners association or local agencies.
5. Inspection and maintenance of individual lots is the responsibility of the home builder or his designee until the homeowner buys and thereby accepts responsibility for the individual lot.
C3 Description of proposed post construction stormwater quality measures: Site and facility design for stormwater quality protection on this site employs a multi-level strategy consisting of:
1. Reducing or eliminating post-project runoff.
2. Controlling sources of pollutants.
3. And if needed, treating contaminated stormwater runoff before discharging it into the storm sewer system or receiving waters.
Typical stormwater quality measures for reducing, eliminating or controlling pollutants (source controls) include:
a. Reducing Runoff or Direct runoff from impervious areas
b. Vegetated swales
c. Permanent erosion control seeding and plantings
d. Mulching
It is the intent of this plan that the implementation of the above described storm water quality measures be executed in accordance with the enclosed plans and details in order to meet the requirements of Rule 5 storm water quality.

ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES

VEHICLE & EQUIPMENT MAINTENANCE

Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with a Stabilized Construction Entrance/Exit. Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks).

Implementation

If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.

Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.

Place a stockpile of spill cleanup materials where it will be readily accessible.

All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.

Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.

Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.

Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.

Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.

Train employees and subcontractors in proper maintenance and spill cleanup procedures.

Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.

Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.

Do not place used oil in a dumpster or pour into a storm drain or watercourse.

Properly dispose of or recycle used batteries.

Do not bury used tires.

Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Inspection and Maintenance

Inspect and verify that BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly to verify continued BMP implementation.

Keep ample supplies of spill cleanup materials onsite.

Maintain waste fluid containers in leak proof condition.

Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.

Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

VEHICLE AND EQUIPMENT FUELING

Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with a Stabilized Construction Entrance/ Exit.

Implementation

Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.

Discourage "topping-off" of fuel tanks.

Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.

Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.

Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.

Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas.

Train employees and subcontractors in proper fueling and cleanup procedures.

Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.

Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.

Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.

Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Inspection and Maintenance

Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.

Keep ample supplies of spill cleanup materials onsite.

Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

SOLID WASTE MANAGEMENT

Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction

Packaging materials including wood, paper, and plastic

Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products

Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes

Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, nonhazardous equipment parts, styrofoam and other materials send transport and package construction materials

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

Select designated waste collection areas onsite.

Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use.

Inspect dumpsters for leaks and repair any dumpster that is not watertight.

Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.

Plan for additional containers and more frequent pickup during the demolition phase of construction.

Collect site trash daily, especially during rainy and windy conditions.

Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.

Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.

Arrange for regular waste collection before containers overflow.

Clean up immediately if a container does spill.

Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Collection, Storage, and Disposal

Littering on the project site should be prohibited.

To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.

Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.

Litter from work areas within the construction limits of the project site should be collected and laced in watertight dumpsters at least weekly, regardless of whether the litter was generated by he contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.

Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the projects.

Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.

Construction debris and waste should be removed from the site biweekly or more frequently as needed.

Construction material visible to the public should be stored or stacked in an orderly manner.

Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.

Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.

Inspection and Maintenance

Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly to verify continued BMP implementation.

Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur

Inspect construction waste area regularly.

Arrange for regular waste collection.

CONCRETE WASHOUT

The following steps will help reduce stormwater pollution from concrete wastes:

Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.

Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.

Store dry and wet materials under cover, away from drainage areas.

Avoid mixing excess amounts of fresh concrete.

Perform washout of concrete trucks offsite or in designated areas only.

Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.

Do not allow excess concrete to be dumped onsite, except in designated areas.

For onsite washout:
– Locate washout area at least 50 feet from storm drains, open ditches, or water bodies.
– Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
– Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.
– Avoid creating runoff by draining water to a bermed or level area when washing concrete to remove fine particles and expose the aggregate.
– Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.

DEWATERING AND PUMPING OPERATIONS

Description and Purpose

Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation must be removed from a work location so that construction work may be accomplished.

Suitable Applications

These practices are implemented for discharges of nonstormwater from construction sites. Non-stormwaters include, but are not limited to, groundwater, water from cofferdams, water diversions, and waters used during construction activities that must be removed from a work area. Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation(stormwater) from depressed areas at a construction site.

Limitations

Site conditions will dictate design and use of dewatering operations. The controls discussed in this best management practice (BMP) address sediment only. The controls detailed in this BMP only allow for minimal settling time for sediment particles. Use only when site conditions restrict the use of the other control methods. Dewatering operations will require, and must comply with, applicable local permits.

Implementation

Dewatering discharges must not cause erosion at the discharge point. A variety of methods can be used to treat water during dewatering operations. Several devices are presented below and provide options to achieve sediment removal. The size of particles present in the sediment and Permit or receiving water limitations on sediment are key considerations for selecting sediment treatment option(s); in some cases, the use of multiple devices may be appropriate.

Gravity Bag Filter

Description:
A gravity bag filter, also referred to as a dewatering bag, is a square or rectangular bag made of non-woven geotextile fabric that collects sand, silt, and fines.

Appropriate Applications:
Effective for the removal of sediments (gravel, sand, and silt). Some metals are removed with the sediment.

Implementation:
Water is pumped into one side of the bag and seeps through the bottom and sides of the bag.

A secondary barrier, such as a rock filter bed or straw/hay bale barrier, is placed beneath and beyond the edges of the bag to capture sediments that escape the bag.

Maintenance:
Inspection of the flow conditions, bag condition, bag capacity, and the secondary barrier is required.

Replace the bag when it no longer filters sediment or passes water at a reasonable rate.The bag is disposed of offsite.

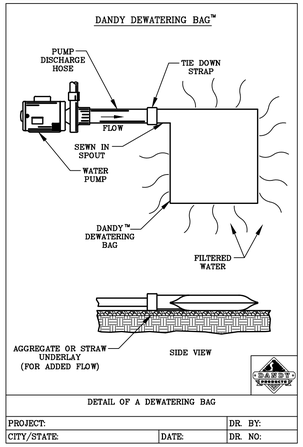
DANDY DEWATERING BAG™
SPECIFICATIONS

NOTE: THE DANDY DEWATERING BAG™ WILL BE MANUFACTURED IN THE U.S.A. FROM A NONWOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

DANDY DEWATERING BAG™

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	0.9 (200) x 0.9 (205)
Grab Tensile Elongation	ASTM D 4632	%	50 x 50
Mullen Burst Strength	ASTM D 3786	kN (lbs)	0.58 (130)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	2818 (2380)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.36 (80) x 0.36 (80)
UV Resistance	ASTM D 4355	%	70
Apparent Opening Size	ASTM D 4751	mm (US Std. Sieve)	0.180 (80)
Flow Rate	ASTM D 4491	l/min/m² (gpm/min/ft²)	3864 (95)
Permittivity	ASTM D 4491	Sec-1	1.2

DANDY DEWATERING BAG™



DETAIL OF A DEWATERING BAG

PROJECT:		DR. BY:
CITY/STATE:	DATE:	DR. NO:

EVALUATION FOR CONSTRUCTION PROJECTS

A trained individual shall perform a written evaluation of the project site.
a. By the end of the next business day following each rainfall that exceeds 0.5"
b. A minimum of one (1) time per week

Project Name: _____

Name of Trained Individual: _____ Date of Inspection: _____

Is this Evaluation following a rainfall ____ Yes ____ No If yes, date the rain stopped: _____ Inches

No.	PROBLEM or CONCERN	YES	NO	N/A
1.	Is the site information posted at the entrance?			
2.	Are all necessary permits attained and special provisions being implemented?			
3.	Is a construction entrance installed? Is it effective? Is it enough			
4.	Public and private streets are clean?			
5.	Are appropriate practices installed where stormwater leaves the site?			
6.	Silt fence is entrenched into the ground?			
7.	Silt fence is upright? Fabric and stakes meet specifications? Fabric is not to torn?			
	Terminated to higher ground? Property joined at ends?			
8.	Sediment basins and traps are installed according to the plan? The pipe or rock spillway is functional?			
9.	The earthwork for erosion and sediment control practices is properly graded, seeded and/or mulched?			
10.	Diversions swales and/or waterbars are installed to plan and protected?			
11.	Perimeter practices have adequate capacity and do not need to be cleaned out?			
12.	Inlet protection is installed on all functional inlets? (not filter fabric under grate)			
13.	Inlet protection is installed so water does not flow under it?			
14.	The frame, cross-bracing and/or stakes are adequate and meet specifications?			
15.	The fabric, straw, mulch and/or stone is intact without holes or tears?			
16.	Catch basin insert protection is installed where required?			
17.	Sediment has been removed from the practice?			
18.	Swales and ditches have been stabilized or protected?			
19.	Stormwater outlets are adequately stabilized?			
20.	Temporary stabilization of distributed ground has been addressed?			
21.	Disturbed areas that will lie dormant for 15 days are planned to be protected?			
22.	All protected dormant areas meet a minimum 70% coverage			
23.	Growing vegetation has sufficient water and/or nutrients to grow?			
24.	Permanent stabilization of disturbed ground is progressing through the project?			
25.	Final grading and stabilization is progressing on completed areas?			
26.	The soil has been properly prepared for seeding?			
27.	Hard or soft armoring is installed where natural vegetation will erode?			
28.	Water pumping operations have a protected outlet and discharge water is clear?			
29.	A designated washout is established for concrete trucks?			
30.	A dumpster is onsite for trash disposal?			
31.	Fuel tanks and other toxic materials are safely stored and protected?			
32.	Smaller construction sites not required to file a separate NOI are complying with the overall plan?			
33.				
34.				

ALL PROBLEMS OR CONCERNS NEED TO BE ADDRESSED WITH A CORRECTIVE ACTION

Identify the problem by number and/or provide additional explanation as needed.

Developer Representative contacted, name and date: _____ Date: _____

Contractor Representative contacted, name and date: _____ Date: _____

Report Submitted by: _____ Date: _____

REVISIONS:

TODD C. WALLACE REGISTERED Nº PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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Civil Engineering
GIS * LIS
Land Surveying
Landscape Architecture

HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE:
STORMWATER POLLUTION PREVENTION SPECIFICATIONS

DRAWING FILES:
T:\4k\4569\700\dwgs\C801-C802.dwg
XREF: T:\4k\4569\700\dwgs\4569700_BS.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.:
C801

Plot Date: Aug 13, 2015 Plot Time: 3:09pm File Name: T:\4k\4569\700\dwgs\C801-C802.dwg Layout: C801 By: bdp

Soils Legend & Descriptions:

Br – Brookston silty clay loam, Soil Description and Characteristics:

The main soil features that adversely affect engineering uses of this soil are a seasonal high water table, high potential frost action, moderate shrink–swell potential and moderate permeability. This soil has severe limitations for building sites. The site needs to be artificially drained and protected from flooding. Dwellings with basements should not be constructed on this soil. This soil has severe limitations for local roads and streets because of seasonal high water table and high potential frost action. The base material for roads and streets should be replaced or strengthened with suitable material.

CrA – Crosby silt loam, Soil Description and Characteristics:

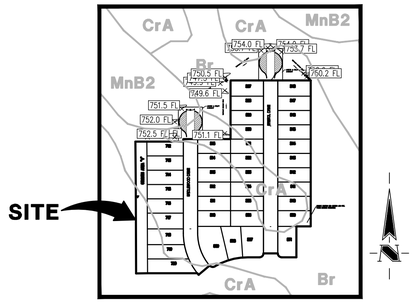
The main soil features that adversely affect engineering uses of this soil are a seasonal high water table, high potential frost action, moderate shrink–swell potential and moderate permeability. This soil has severe limitations for building sites. The site needs to be artificially drained to prevent wetness from becoming a problem. Dwellings with basements should not be constructed on this soil. This soil has severe limitations for local roads and streets because of seasonal high water table and high potential frost action. The base material for roads and streets should be replaced or strengthened with suitable material.

MmB2 – Miami Silt Loam, Soil Description and Characteristics:

The main soil features that adversely affect engineering uses of this soil are moderate potential frost action, moderate shrink–swell potential, moderate permeability and low strength. In addition, erosion is a hazard during construction. This soil is suitable for building sites, but slope, clayey texture, shrinking and swelling, and low strength are moderate limitations that need to be overcome. This soil has severe limitations for local roads and streets because of low strength. The base material for roads and streets should be replaced or strengthened with suitable material.

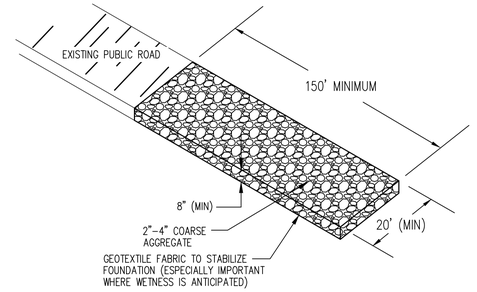
Recommendations and methods to overcome soil limitations:

Limitations for local roads, streets and dwellings because of seasonal high water table and high potential frost action can be overcome by the use of curb underdrains, sub–base strengthening or lime stabilization. Swales which sever the surface drainage can also help. High water tables can be overcome with respect to basement construction with the use of perimeter foundation drains and sump pumps. Refer to the site construction drawings and details for specific information related to the proposed infrastructure improvements on this site.



SOILS MAP

SCALE: 1" = 250'



TEMPORARY CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Seedbed Preparation

Apply lime to raise the pH to the level needed for species being seeded. Apply 23 pounds of 12–12–12 analysis fertilizer (or equivalent) per 1000 sq. ft. (approximately 1000 pounds per acre) or fertilize according to test. Application of 150 lbs. of ammonium nitrate on areas low in organic matter and fertility will greatly enhance vegetative growth.

Work the fertilizer and lime into the soil to a depth of 2–3 inches with a harrow, disk or rake operated across the slope as much as possible.

Seeding

Select a seed mixture based on projected use of the area (Figure 5–2), while considering best seeding dates. See Figure 5–3 this sheet. If toler– ances are a problem, such as salt tolerance of seedings adjacent to streets and highways, see Figure 5–4 this sheet before final selection.

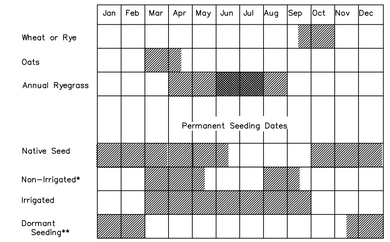
Figure 5–2: Permanent Seed Mixtures

Species	Seeding Rate lbs/acre	Seeding Rate lbs/1000 sq. ft.	Suitable pH	Site Suitability* Droughty	Site Suitability* Well Drained	Site Suitability* Wet
Level and Sloping, Open Areas						
1. Tall Fescue	35	.8	5.5–8.3	2	1	2
2. Tall Fescue Red Clover**	25 5	.6 .12	5.5–8.3		1	
3. Kentucky Bluegrass Creeping Red Fescue	15 15	.4 .4	5.5–7.5	2	1	
Steep Banks and Cuts						
4. Tall Fescue Kentucky Bluegrass	15 25	.4 .6	5.8–7.5	2	1	2
5. Tall Fescue Emerald Crownvetch**	35 10	.8 .25	5.5–8.3	2	1	
Lawns and High Maintenance Areas						
6. Kentucky Bluegrass Creeping Red Fescue	40 40	.9 .9	5.8–7.5	2	1	
7. Perennial Ryegrass (Turf Type)	170	4.0	5.0–7.5		1	
8. Tall Fescue	170	4.0	5.5–8.3	2	1	2

* 1 – Preferred 2 – Will Tolerate ** Inoculate with specific Inoculant.

NOTE: PERMANENT SEEDING TO BE MULCHED WITH STRAW OR HAY AT THE RATE OF 2 TONS/ACRE, SPREAD UNIFORMLY BY HAND OR MACHINE, AND CRIMPED OR PUNCHED 2"–4" INTO THE SOIL. AFTER SPREADING, NO MORE THAN 25% OF THE GROUND SEEDED SHOULD BE VISIBLE.

Temporary Seeding Dates



Irrigation needed during this period. To control erosion at times other than in the shaded areas, use mulch.

* Late summer seeding dates may be extended 5 days if mulch is applied.

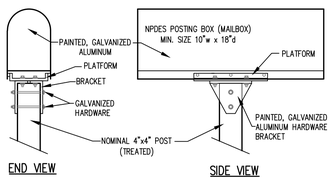
** Note: If temporary stabilization must occur during the winter straw mulch applied at a rate of 2 tons per acre and crimped in will be an acceptable cover.

Temporary Seed Application Rates

Kind of Seed	1000 Sq. Ft.	Acre	Remarks
Wheat or Rye	3.5 lbs.	150 lbs.	Cover seed 1" to 1 1/2" deep
Spring Oats	2.3 lbs.	100 lbs.	Cover seed 1" deep
Annual ryegrass	1.0 lb.	40 lbs.	Cover seed 1/4"deep*

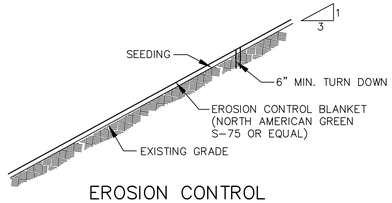
* Not necessary where mulch is applied.

NOTE: TEMPORARY SEEDING TO BE MULCHED WITH STRAW OR HAY AT THE RATE OF 2 TONS/ACRE, SPREAD UNIFORMLY BY HAND OR MACHINE, AND CRIMPED OR PUNCHED 2"–4" INTO THE SOIL. AFTER SPREADING, NO MORE THAN 25% OF THE GROUND SEEDED SHOULD BE VISIBLE.



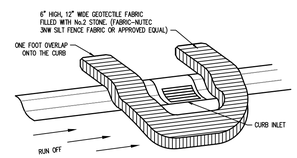
POST DETAIL

NOT TO SCALE



EROSION CONTROL MATTING DETAIL

NO SCALE



CURB INLET PROTECTION

NO SCALE

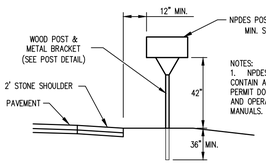
SILT FENCE JOINT WRAP DETAIL

SILT FENCE

Silt Fence shall be a machine produced, woven geotextile fabric.

All stakes shall be 2" X 2" hardwood 36" (MIN.) tall with 24" tall lath stapled to stakes over fabric as reinforcement.

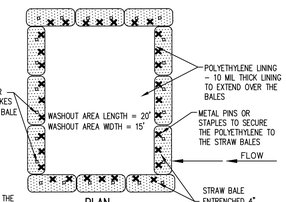
Textile Strength @ 20% elongation..... 30 lbs. per linear inch
UV Resistance ..... > 70 %
Filtering efficiency..... 85%
Slurry Flow Rate..... 0.3 gpm/sq. ft
Water Flow Rate..... 15 gpm/square ft



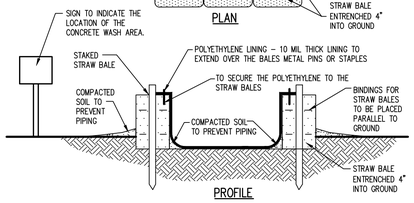
NOTES:
1. NPDES POSTING BOX SHALL CONTAIN ALL APPROVED NPDES PERMIT DOCUMENTS, PLANS, SPECS AND OPERATION AND MAINTENANCE MANUALS.

NPDES SWP3 POSTING DETAIL

NOT TO SCALE



PLAN

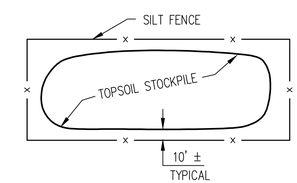


PROFILE

NOTE: CONTRACTOR SHALL PROVIDE ADDITIONAL WASHOUT STRUCTURES OR LARGER STRUCTURES IF REQURIED

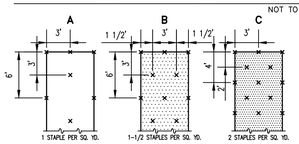
ABOVE GROUND CONCRETE WASHOUT AREA

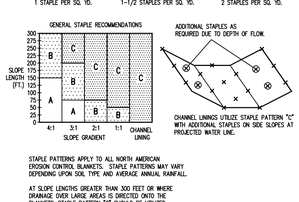
NOT TO SCALE



TYPICAL TOPSOIL STOCKPILE

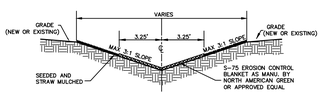
NOT TO SCALE





STAPLE PATTERNS APPLY TO ALL NORTH AMERICAN EROSION CONTROL BLANKETS. STAPLE PATTERNS MAY VARY DEPENDING UPON SOIL TYPE AND AVERAGE ANNUAL RAINFALL.

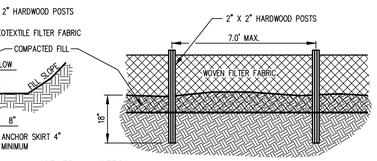
AT SLOPE LENGTHS GREATER THAN 300 FEET OR WHERE DRAINAGE OVER LARGE AREAS IS DIRECTED ONTO THE BLANKETS, STAPLE PATTERN "C" SHOULD BE UTILIZED.



NOTE:
START BLANKET AT TOP OF THE SWALE AND ROLL IN THE DIRECTION OF THE WATER FLOW IN THE SWALE. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR CHANNEL PLACEMENT AND STAPLE PATTERNS.

EROSION CONTROL MATTING DETAIL FOR REAR YARD SWALE

SCALE: NONE

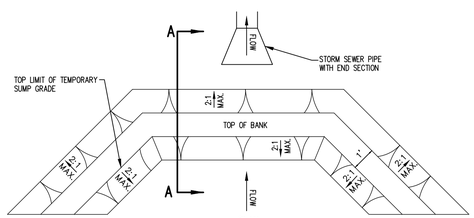


GENERAL NOTES:

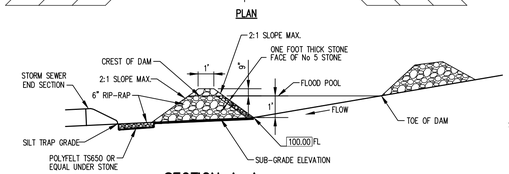
1. FILTER FABRIC FENCE SHALL BE A MINIMUM OF 36" IN WIDTH.
2. TURN SILT FENCE UP SLOPE AT ENDS.

TEMPORARY SILT FENCE

NOT TO SCALE



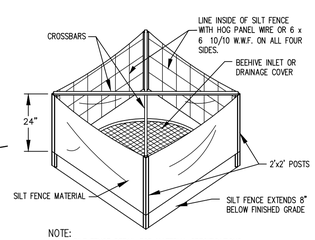
PLAN



SECTION A–A

ROCK CHECK DAM

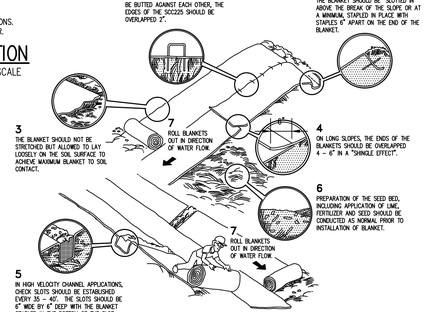
SCALE: NONE



NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

BEEHIVE INLET PROTECTION

NOT TO SCALE

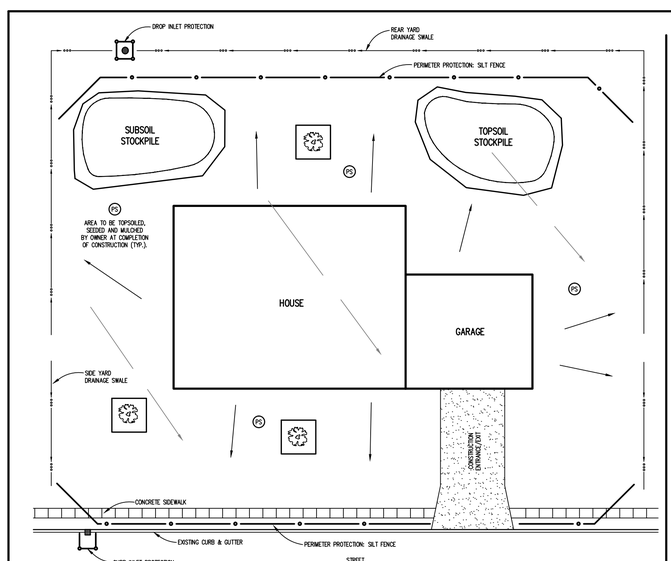


EROSION BLANKET INSTALLATION

NOT TO SCALE

STORMWATER POLLUTION PREVENTION SCHEDULE

EROSION CONTROL MEASURE	MAINTENANCE	INSTALLATION SEQUENCE
TEMP. DIVERSION SWALE & SILT TRAPS	AS NEEDED	PRIOR TO CLEARING AND GRADING
STONE ENTRANCE	AS NEEDED	PRIOR TO CLEARING AND GRADING
SILT FENCE	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
EXISTING INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TREE PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TEMPORARY DIVERSIONS	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	ALONG WITH ROUGH GRADING
TEMPORARY SEEDING WITH MULCH	WATER AS NEEDED	AFTER ROUGH GRADING
PERMANENT SEEDING WITH MULCH	WATER AS NEEDED	AFTER FINISH GRADING
EROSION CONTROL MATTING	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	AFTER FINISH GRADING
INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	AFTER EACH INLET IS PLACED
SEED, SOD & LANDSCAPE AROUND UNITS FINISHED	WATER AS NEEDED	AFTER FINISHED GRADING AROUND FINISHED UNITS
REMOVAL OF INLET PROTECTION	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED
REMOVAL OF SILT FENCE	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED



SAMPLE EROSION/SEDIMENT CONTROL PRACTICE PLAN FOR A TYPICAL ONE– OR TWO–FAMILY DWELLING UNDER CONSTRUCTION

SCALE: NONE

INDIVIDUAL LOT EROSION CONTROL PLAN LEGEND

- PROPERTY LINE/ DRAINAGE SWALE
- SILT FENCE
- FINISHED DRAINAGE
- EXISTING DRAINAGE
- TREE CONSERVATION
- GRAVEL ENTRANCE/ EXIT PAD
- DROP INLET PROTECTION
- SOIL SALVAGE AND UTILIZATION
- PERMANENT SEEDING
- CURB INLET PROTECTION

PROVISIONS FOR EROSION AND SEDIMENT CONTROL ON INDIVIDUAL BUILDING LOTS:

1. The individual lot operator, whether owning the property or acting as the agent of the property owner, shall be responsible for erosion and sediment control requirements associated with activities on individual lots.
2. Temporary seeded areas established by the developer shall be maintained by the homebuilder and his sub–contractors. Silt fences previously installed will be maintained.
3. Installation and maintenance of a stable construction site access drive from the house /site to the street/alley shall be installed, consisting of Number 2 Stone, 6" thick and a minimum of 12' wide. Top dress as needed. This shall be utilized for access to the house and any mud or dirt tracked into the street/alley shall be promptly removed and placed in a stable area. Water shall not be used to flush silt, mud or debris into the storm sewer system.
4. Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance. A silt fence is to be installed along the back of curb at the front property line and along the alley or at the edge of the rear drainage easement. The silt fence shall be maintained until permanent vegetation (grass) is established.
5. Sediment discharge and tracking from each lot must be minimized throughout the land disturbing activities on the lot until permanent stabilization has been achieved.
6. Clean–up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
7. Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
8. When time is appropriate , and as soon as possible, roof down spout extenders of a non–perforated drain tile should be extended to the street or other solid outlet until a lawn is established.
9. For individual residential lots, final stabilization meeting the criteria of Rule 5 will be achieved when the individual lot operator:
   a. Completes final stabilization on the entire lot; or
   b. Individual lots may not be ultimately turned over to the homeowner without permanent stabilization in place.

REVISIONS:

TODD C. WALLACE REGISTERED Nº PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

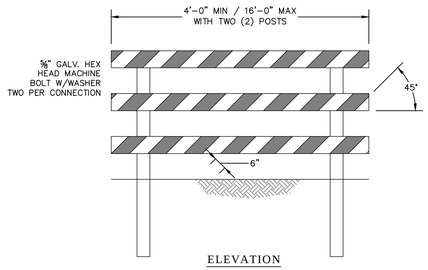
DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS

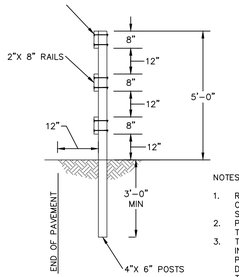
DRAWING FILES:
T:\4k\4569\700\dwgs\C801–C802.dwg
XREF: T:\4k\4569\700\dwgs\4569700_BS.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.: C802

Plot Date: Aug 13, 2015 Plot Time: 3:10pm File Name: T:\4k\4569\700\dwgs\C801–C802.dwg, Layout: C802 By: bdp



ELEVATION



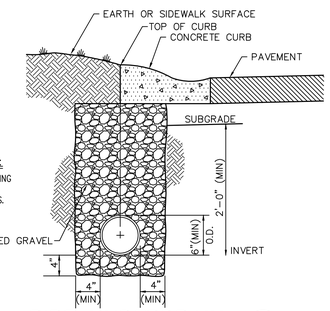
END VIEW

NOTES:

1. RAILS ARE TO BE WHITE AND ORANGE UNCAPSULATED LENS SHEETING.
2. POSTS ARE TO BE PRESSURE TREATED.
3. THE ABOVE BARRICADE INDICATES THAT TRAFFIC IS TO PASS TO THE LEFT OF THE DEVICE. IF TRAFFIC IS TO PASS TO THE RIGHT, THE STRIPE ANGLES MUST BE REVERSED.
4. FOR WIDER APPLICATIONS, MULTIPLE SECTIONS AS SHOWN MAY BE USED.

STANDARD BARRICADE DETAIL TYPE III

NO SCALE (9 / C803)

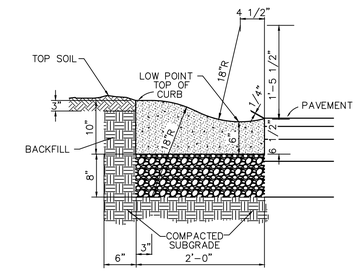


INSTALLATION REQUIRED:

- BOTH SIDES OF PAVEMENT RUNNING THROUGHOUT ENTIRE PROJECT.
- PIPE MATERIAL PER INDOT SPECS.

PIPE UNDERDRAIN

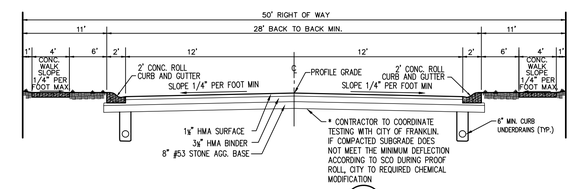
NO SCALE (6 / C803)



2' CONCRETE ROLL CURB & GUTTER

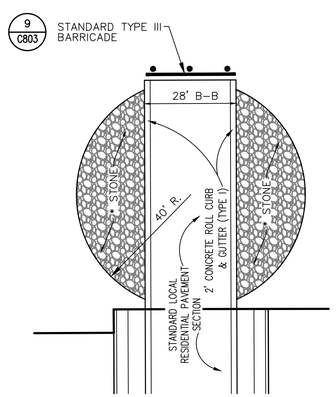
NO SCALE (4 / C803)

- EXPANSION JOINTS ARE REQUIRED AT STORM INLETS
- CONTRACTION JOINTS SHOULD BE INSTALLED EVERY 10'. SPACING SHALL BE 5' ON CURVE RADII.
- CONTRACTION JOINTS SHALL BE TOOLED OR SAWN IN CONTINUOUSLY POURED CURBS TO A DEPTH OF 1 1/2" MIN.



TYPICAL STREET SECTION

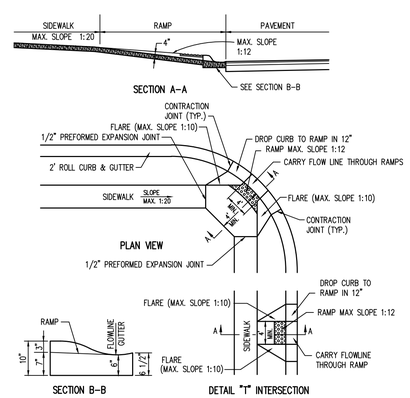
NO SCALE (3 / C803)



* STONE = 2" HMA SURFACE ON 4" COMPACTED INDOT NO. 53 AGGREGATE

TEMPORARY CUL-DE-SAC DETAIL

NO SCALE (8 / C803)

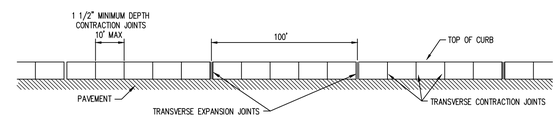


NOTE:

1. ALL HANDICAP RAMPS SHALL MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.
2. MINIMUM WIDTH OF CURB RAMP SHALL BE 4 FEET NOT INCLUDING FLARES. MAXIMUM SLOPE OF RAMPS SHALL BE 1:12.
3. CURB CUT RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY CITY ENGINEER.
4. RAMPS SHALL BE PROVIDED AT ALL CORNERS OF STREET INTERSECTION, WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB INCLUDING "T" INTERSECTIONS.
5. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
6. SIDEWALKS SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.
7. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON ALL RAMPS WITH NO BREAKS IN GRADE.
8. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH RAMPS, EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION, LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.
9. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
10. EXPANSION JOINT FOR THE RAMP SHALL BE A MAXIMUM 1/2" WIDE. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH ADJACENT CONCRETE.
11. CROSSWALK AND STOP LINE MARKING, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSING.
12. SLOPE OF RAMP MAY BE MODIFIED WHEN FIELD CONDITIONS WARRANT AND WHEN APPROVED BY THE CITY ENGINEER.
13. TRUNCATED DOMES SHALL BE USED IN ALL HANDICAP RAMPS PER THE LATEST ADA REQUIREMENTS.

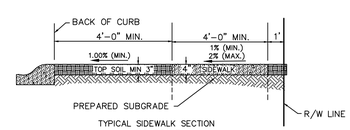
SIDEWALK RAMP FOR HANDICAPPED

NO SCALE (5 / C803)



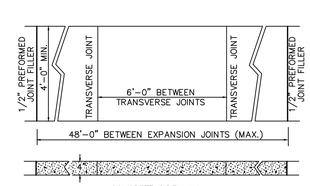
CURB JOINT DETAIL

NO SCALE (2 / C803)



TYPICAL SIDEWALK SECTION
NO SCALE

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



SIDEWALK DETAIL

NO SCALE (1 / C803)

REVISIONS:

TODD C. WALLACE
REGISTERED
Nº PE11011395
STATE OF
INDIANA
PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

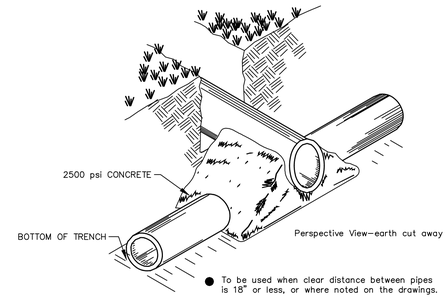
DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STREET DETAILS

DRAWING FILES:
T:\4k\4569\700\dwgs\C803-C805.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.: C803

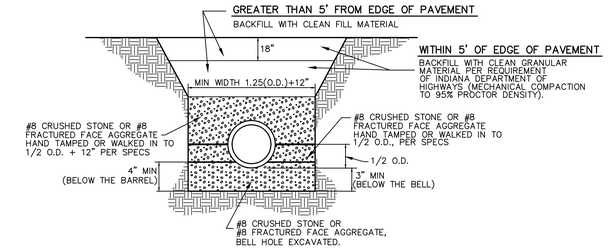
Plot Date: Aug 13, 2015 Plot Time: 3:11pm File Name: T:\4k\4569\700\dwgs\C803-C805.dwg, Layout: C803 By: bdp



CONCRETE CRADLE

NO SCALE

6 / C804



PIPE SIZE	8"–15"	18" & OVER
BEDDING BELOW THE PIPE BARREL	O.D./4 MIN=4"	O.D./4 MAX=8"

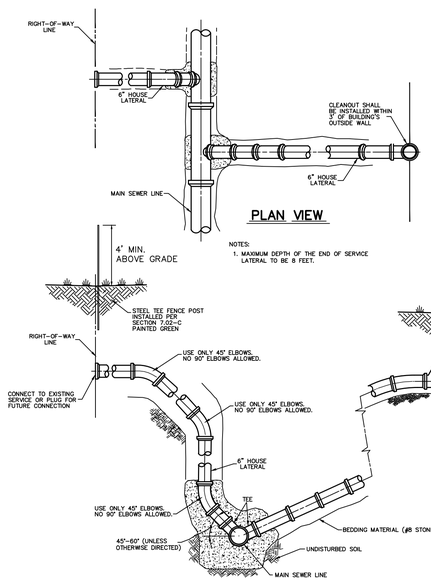
SANITARY SEWER BEDDING DETAIL

PVC & HDPE PIPE

(FIGURE 7–1)

NO SCALE

3 / C804



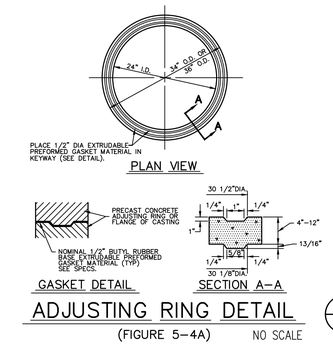
SERVICE CONNECTION FOR DEEP SEWER

15' DEEP AND OVER

(FIGURE 7–5)

NO SCALE

5 / C804

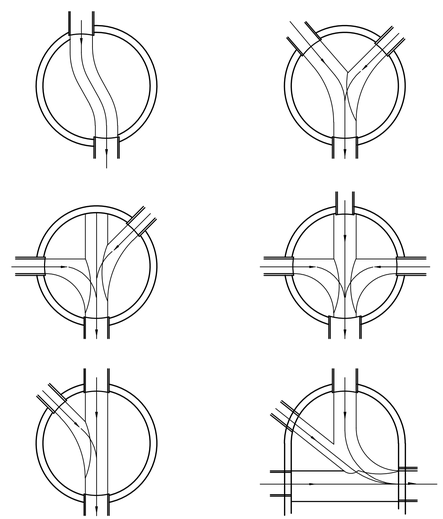


ADJUSTING RING DETAIL

(FIGURE 5–4A)

NO SCALE

2 / C804



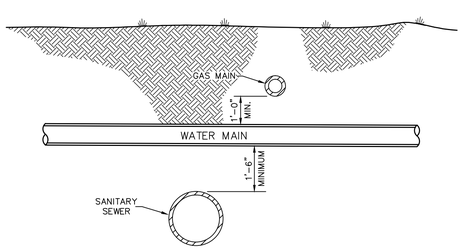
SANITARY SEWER
BENCH SLOPE= 1/2" PER FOOT

FLOW CHANNEL DETAIL

(FIGURE 5–6)

NO SCALE

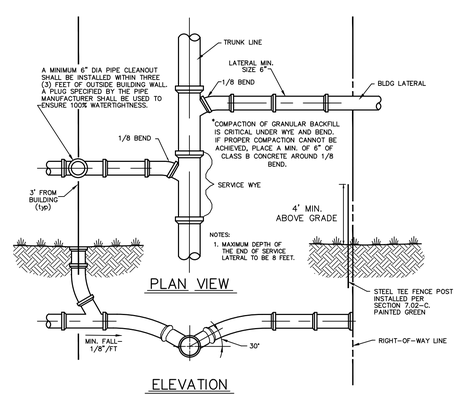
8 / C804



TYPICAL UTILITY CROSSING

NO SCALE

7 / C804



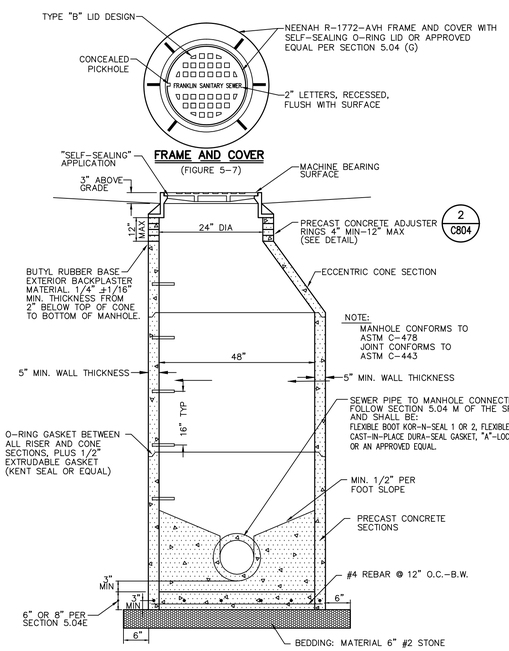
SERVICE CONNECTION FOR SHALLOW SEWERS

LESS THAN 15' DEEP

(FIGURE 7–4)

NO SCALE

4 / C804



FLOW CHANNELS–THE FLOW CHANNELS WITHIN MANHOLES SHALL BE AN INTEGRAL PART OF THE PRECAST BASE. THE CHANNELS SHALL BE SHAPED AND FORMED FOR A CLEAN TRANSITION WITH PROPER HYDRAULICS TO ALLOW THE SMOOTH CONVEYANCE OF THE FLOW THROUGH THE MANHOLE. THE BENCH WALL SHALL BE FORMED TO THE CROWN OF THE INLET AND OUTLET PIPES TO FORM A "U" SHAPED CHANNEL. THE BENCH WALL SHALL SLOPE BACK FROM THE CROWN AT MINIMUM 1/2" PER FOOT TO THE MANHOLE WALL.

PRECAST REINFORCED CONCRETE MANHOLE

(FIGURE 5–1)

NO SCALE

1 / C804

NOTE:
MANHOLE SHALL INCLUDE STEPS. MANHOLE STEPS SHALL BE POLYPROPYLENE, POLYPROPYLENE COATED STEEL REINFORCING OR AN APPROVED NON–CORROSIVE FIBERGLASS MATERIAL. THE COPOLYMER POLYPROPYLENE SHALL MEET THE REQUIREMENTS OF ASTM D–4101 REINFORCED WITH DEFORMED 3/8" MIN. DIAMETER REINFORCING STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A–615, GRADE 60. NON–COATED CAST IRON STEPS ARE NOT ACCEPTABLE. STEPS SHALL BE A MAXIMUM OF 24" FROM TOP, 24" FROM BOTTOM AND 16" SPACING BETWEEN.

REVISIONS:

TODD C. WALLACE
REGISTERED
Nº PE11011395
STATE OF INDIANA
PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: SANITARY SEWER DETAILS

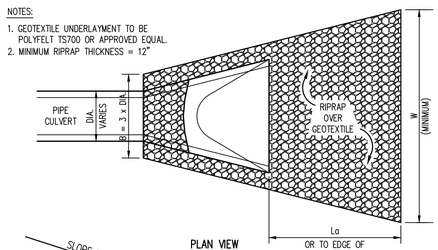
DRAWING FILES:
T:\4k\4569\700\dwgs\C803–C805.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.: C804

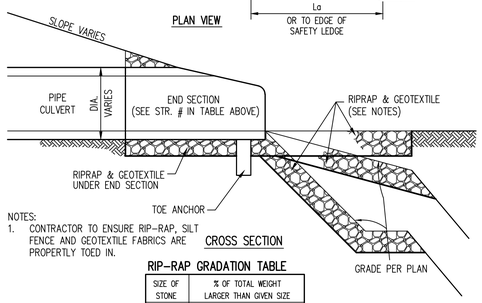
Plot Date: Aug 13, 2015 Plot Time: 3:11pm File Name: T:\4k\4569\700\dwgs\C803–C805.dwg, Layout: C804 By: bdp

STR #	B	La	W	THICKNESS	d_{50}	SYDS
324	3'	8'	11'	9"	3"	2.1
344	6.75'	10'	16.75'	15"	5"	4.4
351	6'	10'	16'	12"	4"	4.1
TEMP-321	3'	8'	11'	9"	3"	2.1
TEMP-329	3'	8'	11'	9"	3"	2.1

NOTES:
1. GEOTEXTILE UNDERLAYMENT TO BE POLYFELT TS700 OR APPROVED EQUAL.
2. MINIMUM RIPRAP THICKNESS = 12"



PLAN VIEW



NOTES:
1. CONTRACTOR TO ENSURE RIP-RAP, SILT FENCE AND GEOTEXTILE FABRICS ARE PROPERTLY TOED IN.

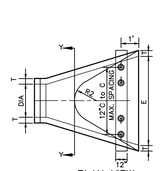
CROSS SECTION

RIP-RAP GRADATION TABLE

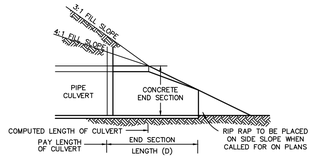
SIZE OF STONE	% OF TOTAL WEIGHT LARGER THAN GIVEN SIZE
3K	0
2K	20
K	50
0.1K	90

WHERE K = d_{50}
NOTE: DEPTH OF RIP RAP SHALL NOT BE LESS THAN 3 x d_{50}

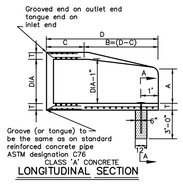
RIPRAP AT END SECTION (10 / C805)
NOT TO SCALE



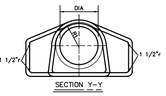
PLAN VIEW



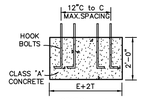
SLOPE DETAIL



LONGITUDINAL SECTION



SECTION Y-Y



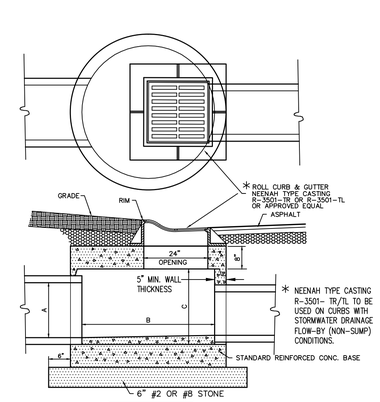
SECTION A-A
CONCRETE PIPE TOE ANCHOR

DIMENSIONS OF CONCRETE END SECTIONS FOR ROUND PIPE

DIA	T (MIN)	A*	C*	D*	E*	K	R_1	R_2	APPROX. WEIGHT
12"	2"	5"	4'-3"	6'-2"	2'-0"	1.3	10 1/8"	9"	800
15"	2 1/4"	7"	4'-0"	6'-3"	2'-6"	1.5	12 1/2"	11"	1,100
18"	2 1/2"	11"	4'-1"	6'-2"	3'-0"	1.8	15 1/2"	12"	1,300
21"	2 3/4"	11"	3'-6"	6'-3"	3'-6"	2.1	16 1/8"	13"	1,500
24"	3"	1'-0"	2'-8"	6'-3"	4'-0"	2.3	16 3/16"	14"	1,800
27"	3 1/4"	1'-1"	2'-5"	6'-3"	4'-6"	2.6	18 1/2"	14 1/2"	2,100
30"	3 1/2"	1'-2"	1'-10"	6'-3"	5'-0"	2.9	18 3/16"	15"	2,400
33"	3 3/4"	1'-3"	3'-6"	8'-3"	5'-6"	3.1	18 1/2"	17 1/2"	4,100
36"	4"	1'-5"	3'-1"	8'-3"	6'-0"	3.4	23 3/4"	20"	4,200

* TOLERANCE +/- 1"

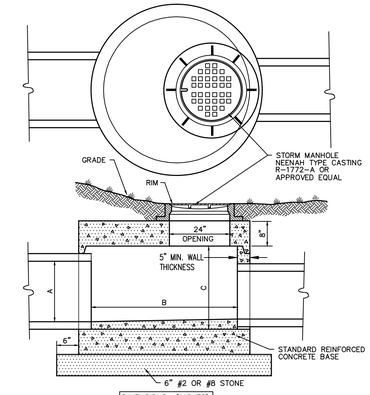
PRECAST CONCRETE END SECTION (7 / C805)
NO SCALE



DIMENSIONS (INCHES)		
A (MAX)	B (O.D.)	C (MIN)
12	48 MIN.	18
15	48 MIN.	21
18	48	25
21	48	28
24	48	31
27	60	34
30	60	38
33	60	41
36	60	44
42	60	50

NOTE :
STEPS SHALL BE PROVIDED IN ALL STRUCTURES 48" IN DIAMETER OR LARGER.

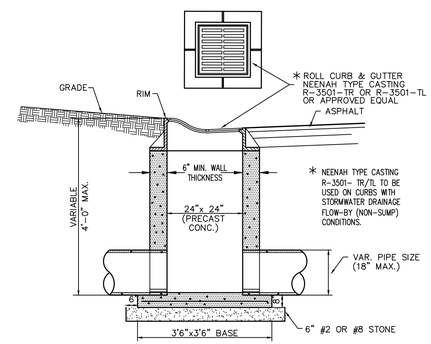
SPECIAL ROLL CURB INLET (4 / C805)
NO SCALE



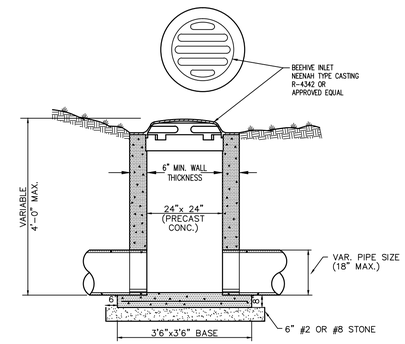
DIMENSIONS (INCHES)		
A (MAX)	B (O.D.)	C (MIN)
12	48 MIN.	18
15	48 MIN.	21
18	48	25
21	48	28
24	48	31
27	60	34
30	60	38
33	60	41
36	60	44
42	60	50

NOTE :
STEPS SHALL BE PROVIDED IN ALL STRUCTURES 48" IN DIAMETER OR LARGER.

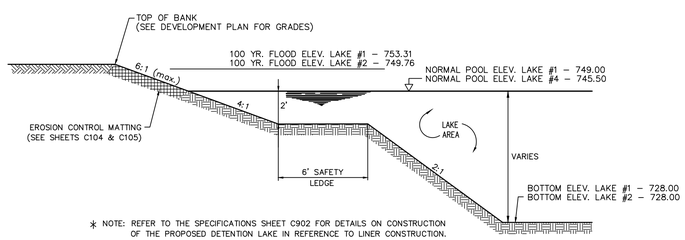
MANHOLE DETAIL (3 / C805)
NO SCALE



ROLL CURB INLET (6 / C805)
NO SCALE

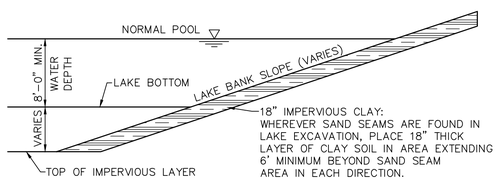


BEEHIVE INLET DETAIL (2 / C805)
NO SCALE

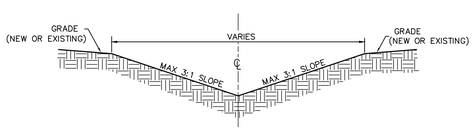


* NOTE: REFER TO THE SPECIFICATIONS SHEET C902 FOR DETAILS ON CONSTRUCTION OF THE PROPOSED DETENTION LAKE IN REFERENCE TO LINER CONSTRUCTION.

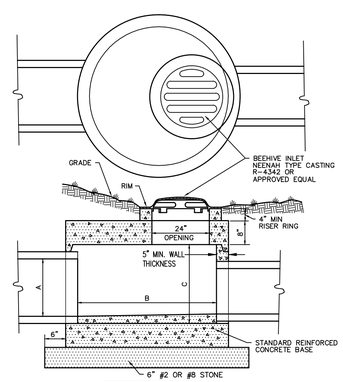
LAKE SECTIONS (11 / C803)
NO SCALE



SPECIAL SLOPE TREATMENT (IN AREAS OF SAND SEAMS) (9 / C805)
NO SCALE



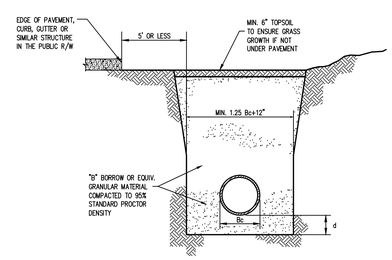
TYPICAL SWALE SECTION (8 / C805)
NO SCALE



NOTE :
STEPS SHALL BE PROVIDED IN ALL STRUCTURES 48" IN DIAMETER OR LARGER.

DIMENSIONS (INCHES)		
A (MAX)	B (O.D.)	C (MIN)
12	36	18
15	36	21
18	48	25
21	48	28
24	48	31
27	60	34
30	60	38
33	60	41
36	60	44
42	60	50

SPECIAL BEEHIVE INLET DETAIL (5 / C805)
NO SCALE



WITHIN 5' OF EDGE OF PAVEMENT
NO SCALE

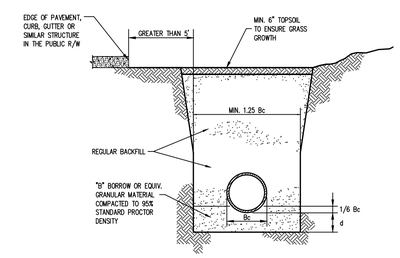
NOTE:
ALL BEDDING & INITIAL BACKFILL SHALL BE INSTALLED IN 6" TO 12" BALANCED LIFTS

A MINIMUM 9" OF CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

LEGEND
Bc = OUTSIDE DIAMETER
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

DEPTH OF BEDDING MATERIAL BELOW PIPE

D	(d) MIN.
27" & SMALLER	3"
30" TO 60"	4"
66" & LARGER	6"



GREATER THAN 5' FROM EDGE OF PAVEMENT
NO SCALE

NOTE:
ALL BEDDING & INITIAL BACKFILL SHALL BE INSTALLED IN 6" TO 12" BALANCED LIFTS

A MINIMUM 9" OF CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

TRENCH DETAIL (1 / C805)
REINFORCED CONCRETE PIPE (RCP)

REVISIONS:

TODD C. WALLACE REGISTERED № PE11011395 STATE OF INDIANA PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: STORM SEWER DETAILS

DRAWING FILES:
T:\4k\4569\700\dwgs\C803-C805.dwg
XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.: C805

Plot Date: Aug 13, 2015 Plot Time: 3:11pm File Name: T:\4k\4569\700\dwgs\C803-C805.dwg, Layout: C805 By: bdp

EARTHWORK

1. SCOPE OF WORK

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

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

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

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

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

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

1. Excavation, grading and backfilling for utility lines

2. Storm drainage systems

3. Sanitary sewer systems

4. Streets and paving

5. Water supply system

2. BENCH MARKS

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

3. REMOVAL OF TREES

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

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

4. PROTECTION OF TREES

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

5. HANDLING OF TOPSOIL

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

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

6. DISPOSITION OF UTILITIES:

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

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

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

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

7. SITE GRADING:

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

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

C. Compaction Requirements:

1. All areas under building pads shall be compacted to 95% of standard proctor density.

2. All areas under pavements shall be compacted to 95% of standard proctor density.

3. All other fill areas shall be compacted to 85% of standard proctor density.

8. Earth Work Balance
The Contractor shall confirm all earthwork quantities prior to start of construction. If an excess or shortage of earth is encountered, the Contractor shall confirm with the Owner and Engineer the requirements for stockpiling, removal or importing of earth.

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

SANITARY SEWER SYSTEMS

1. SCOPE OF WORK

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

2. MATERIALS

A. Sanitary Sewers

1. P.V.C. Pipe diameters of 4 inches through 15 inches shall meet or exceed all the requirements of ASTM D–3034, and shall have a cell classification of 12454–B, 12454–C, 12364–C or 13364–B. Reference should be made to ASTM D–1784 for a summarization of cell class properties. P.V.C. Pipe diameters greater than 15 inches shall meet or exceed all requirements of ASTM F–679, and shall have a minimum cell classification of 12454–C or 12364–C.

2. When the depth of soil cover over the pipe is less than 12 feet, the minimum wall thickness of P.V.C. pipe, 6 inches through 15 inches in diameter, shall conform to SDR–35, Type PSM, as specified in ASTM D–3034 (see note 5 for fittings). When the depth of soil cover over the pipe is 12 feet or greater, the minimum wall thickness 6 inches through 15 inches in diameter, shall conform to SDR–26, Type PSM, as specified in ASTM D–3034. The minimum wall thickness for P.V.C. pipe greater than 15 inches shall conform to T–1 or T–2, as specified in ASTM F–679. P.V.C. SDR–35 pipe shall have a minimum pipe stiffness of 46 pounds per square inch for each diameter when measured at five percent deflection and tested in accordance with ASTM D–2412. P.V.C. SDR–26 pipe shall have a minimum pipe stiffness of 115 pounds per square inch for each diameter when measured at five percent deflection and tested in accordance with ASTM D–2412.

3. The assembly of joints shall be in accordance with pipe manufactures' recommendations and ASTM D–3212. Solvent Cement joints shall not be allowed for mainline pipe.

4. Pipe fittings shall be SDR–26 manufactured fittings made of P.V.C. plastic having a cell classification of 12454–B, 12454–C or 13343–C, as defined in ASTM D–1784. Saddle connections shall not be allowed for new construction. Lateral connections shall occur at SDR–26 Tee–Wyes.

5. In accordance with ASTM D–3034, the outside of each pipe section shall be legibly marked with the date of manufacture, class of pipe, specification designation, name or trademark of manufacturer and identification of plant/location.

6. Installation shall be in accordance with ASTM standard practice D–2321.

7. Ductile iron (DI) pipe must meet ANSI A21.51 and AWWA C151, latest revision and shall be Class 50. Fitting shall comply with ANSI A–21.10, AWWA C–110. Mechanical joints, slip or flanged joints shall be provided. Mechanical joints shall conform to AWWA C–111, ANSI A–21.11. The bolts and nuts shall be corrosion resistant high strength alloy steel. Flanged joints shall conform to AWWA C–115, ANSI A–21.15, Class 125. Slip joints gaskets shall conform to AWWA C–111, ANSI A–21.11.

B. Manholes

1. Precast reinforced concrete manhole sections and steps shall conform to ASTM C–478 latest revision. Exterior of manhole shall be waterproofed with Bismatic material.

2. Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage, distortion or other defects. They shall be smooth and well–cleaned by shot–blasting or by some other approved method. They shall be gray iron meeting ASTM A–48 latest revision. Manhole covers for sanitary sewer shall be Neenah Type R–1772–AVH w/Self–Sealing O–Ring lid.

3. Joints – Manhole sections shall be joined with a nominal 1/2" size butyl rubber rubber base gasket material, conforming to AASHTO M–198 and Federal Specification SS–S–210a. Joint conforms to ASTM C–443.

4. Manholes shall include steps. Manhole steps are to be polypropylene, polypropylene coated steel reinforcing or an approved non–corrosive fiberglass material. The copolymer polypropylene shall meet the requirements of ASTM D–4101 reinforced with deformed 3/8" minimum diameter reinforcing steel conforming to the requirements of ASTM A–615, Grade 60. Steps shall be a maximum of 24" from top, 24" from bottom and 16" spacing between. Non–coated cast iron steps are not acceptable.

5. The proposed manholes shall be air tested in accordance with ASTM C1244–93, Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.

3. APPLICATION

A. Permits and Codes – The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing sewers.

B. Local Standards – The term "local standards" as used herein means the standards of design and construction of the respective municipal department or utility company.

C. Existing Improvements – Maintain in operating condition all active utilities, sewers and other drains encountered in the sewer installation. Repair to the satisfaction of the owner any damage to existing active improvements.

D. Workmanship – To conform to all local, state and national codes and to be approved by all local and state agencies having jurisdiction.

E. Trenching – Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficiently ahead of pipe–laying to reveal any obstructions. The width of the trench shall be 1.25 times the outside pipe diameter plus 12 inches for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances shall pipe or appurtenances be laid in standing water. Conduct the discharge from trench dewatering to drains or natural drainage channels.

F. Special Supports – Whenever, in the opinion of the Engineer, the soil at or below the pipe grade is unsuitable for supporting sewers and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.

G. Backfilling – for a depth of at least 12 inches above the top of the pipe, backfill with 12" of #8 crushed stone or #8 fractured face aggregate. Compact this backfill thoroughly, taking care not to disturb the pipe. For the remaining trench depth, backfill with earth or granular material containing stones or rocks not larger than 4 inches. Backfill under and within 5' of walks, parking areas, driveways and streets shall be granular material only – thoroughly compacted, by approved methods.

H. Flow Channels – The flow channels within manholes shall be an integral part of the precast base. The channels shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flow through the manhole. The bench wall shall be formed to the crown of the inlet and outlet pipes to form a "U" shaped channel. The bench wall shall slope back from the crown at minimum 1/2 inch per foot to the manhole wall.

I. Infiltration – The contractor shall furnish necessary equipment to test sewers for infiltration. All sanitary sewer lines upon completion will be required to pass a low pressure air test, unless otherwise directed by the City of Franklin Department of Public Works. Said test shall be conducted according to ASTM F–1417–92 and per City of Franklin Department of Public Works Standards for Design and Construction of Sanitary Sewers, Section 9.03A. and shall be witnessed by an inspector authorized by the City of Franklin Department of Public Works. Infiltration under test shall not exceed 0 gallons.

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

K. Plastic Sewer Pipe Installation – Plastic sewer pipe shall be installed in a accordance with ASTM D2321 per latest revision and no plastic pipe shall exceed a deflection of 5%. This Mandrel test shall be per City of Franklin Department of Public Works Standards for Design and Construction of Sanitary Sewers, Section 9.03B.

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

M. Waterline Crossing – Waterlines and sanitary sewers shall maintain a minimum of 10 foot horizontal separation and a minimum 18 inches of clearance between pipes at crossings for a distance of 10–feet. Otherwise, sanitary sewer shall meet the requirements for water works grade pipe, PVC SDR 21 pipe can be used.

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

O. Service Laterals – Individual lot service lines shall be 6" in diameter and of material equal to that specified in 2A of this section. Service lines shall be connected to the main sewer by a wye at locations generally shown within these plans. Service lines shall be extended to the Drainage, Utility & Sewer Easement at each lot, but in no case shall be closer than 7' to the pad/building line. Maximum depth of the end of service lines to be 8'. Sewer service lines shall be marked (stamped) on the curb with a "S". A Steel T fence post shall be installed at the end of each lateral a minimum of 4 feet above ground level and painted green.

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

REVISIONS:

TODD C. WALLACE
REGISTERED
Nº PE10011395
STATE OF INDIANA
PROFESSIONAL ENGINEER

DATE: 08/13/15

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HERITAGE, SECTION 7

CITY OF FRANKLIN, JOHNSON COUNTY

ARBOR INVESTMENTS, LLC
6626 E 75TH STREET, SUITE 400, INDIANAPOLIS, IN 46250

DATE: 08/13/2015	PROJECT NO.: 4569.700
DRAWN BY: BDP	CHECKED BY: TCW

SHEET TITLE: SPECIFICATIONS

DRAWING FILES:
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XREF: T:\4k\4569\700\dwgs\Title700.dwg

SHEET NO.: C901

Plot Date: Aug 13, 2015 Plot Time: 3:12pm File Name: T:\4k\4569\700\dwgs\C901–C902.dwg, Layout: C901 By: bdp

STORM SEWER SYSTEMS

1. SCOPE OF WORK

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

2. MATERIALS

A. Storm Sewers

1. Reinforced concrete sewer pipe shall conform to ASTM C–76 latest revision, with joints conforming to ASTM C–443 latest revision.

2. Corrugated High Density Polyethylene Type S (HDPE) pipe shall conform to AASHTO M 294, and shall have a minimum Cell Class of d 324420C in accordance with ASTM D 3350. The flexibility factor of HDPE pipe shall not exceed 0.095. Ribbed Polyethylene pipe shall conform to ASTM F 894, meeting the requirements for RSC 100 or RSC 160, and shall have a minimum Cell Class of 334433C in accordance with ASTM D 3350. Smoothwall Polyethylene pipe shall conform to ASTM F 714, and shall have a minimum Cell Class of 35434C in accordance with ASTM D 3350. All polyethylene pipe and fittings shall be made from high molecular weight high density polyethylene material meeting the applicable Cell Class requirements. All polyethylene material used in storm sewer pipe manufacture shall be virgin resin. Only sizes of 12" to 18" allowed. High Density Polyethylene pipe overlapping, gasketed pipe joints shall conform to ASTM D 3212. The gasket material shall conform to all requirements of ASTM F 477. As an alternative, pipe joints utilizing external coupling bands will be accepted, provided the minimum AASHTO requirements for satisfying soil tightness are also achieved.

3. Polyvinyl Chloride (PVC) profile wall gravity flow storm sewer pipe shall be the integral wall bell and spigot type with elastomeric seal joints and smooth inner walls in accordance with AASHTO M 304. A minimum Cell Class of 12454C or 12364C as set forth by ASTM D 1784 shall be required. Smoothwall PVC pipe shall be in accordance with ASTM F 679 or AASHTO M 278, and shall have a minimum Cell Class of 12364C for pipes meeting specification ASTM F 679, or 12454C for pipes meeting specification AASHTO M 278. Cell Class properties shall be as set forth by ASTM D 1784. Only sizes of 12" to 18" allowed. Flexible, gasketed joints shall be compression type so that when assembled, the gasket inside the bell is compressed radially on the pipe spigot to form a soiltight seal. The assembly of joints shall be in accordance with the pipe manufacturer's recommendations and ASTM D 3212. The gasket shall conform to the requirements of ASTM F 477. All field–cutting of pipe shall be completed in neat, trim manner using a hand or power saw.

B. Manholes

1. Precast reinforced concrete manhole sections and steps shall conform to ASTM C–478 latest revision.

2. Casting shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortion or other defects. They shall be smooth and well cleaned by shot–blasting or by some other approved method. They shall be coated with asphalt paint which shall result in a smooth coating, tough and tenacious when cold, not tacky or brittle. They shall be gray iron meeting ASTM A–48 latest revision.

3. Joints – Manhole sections shall be jointed with rubber type gaskets. The rubber type gaskets shall meet ASTM C–443 latest revision, when manhole and storm pipe are continuously in water.

4. Manhole steps shall be provided in all storm sewer structures 48–inches in diameter or larger. The maximum distance from grade to the first manhole step shall be 24"; the maximum distance between steps shall be 16", and the maximum distance from the last step to the structure benchwall shall be 24". Manhole steps shall be made from a steel reinforcing rod encapsulated in a copolymer polypropylene resin. The manhole steps shall equal or exceed OSHA requirements.

C. SUBDRAINS

1. Perforated plastic pipe subdrains shall conform to ASTM F–405, AASHTO M–252. (4" to 10" pipe)

3. APPLICATION

A. Permits and Codes – The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing sewers.

B. Local Standards – the term "Local Standards" as used herein means the standards of design and construction of the respective municipal department or utility company.

C. Existing Improvements – Maintain in operating condition all active utilities, sewers and other drains encountered in the sewer installation. Repair to the satisfaction of the owner any damage to existing active improvements.

D. Workmanship – To conform to all local, state and national codes and to be approved by all local and state agencies having jurisdiction.

E. Trenching – Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficiently ahead of pipelaying to reveal any obstructions. The width of the trench shall be the inside pipe diameter plus 24 inches for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances lay pipe or appurtenances in standing water. Conduct the discharge from trench dewatering to drains or natural drainage channels.

F. Special Supports – Whenever in the opinion of the Engineer the soil at or below the pipe grade is unsuitable for supporting sewers and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.

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

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

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

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

STREETS

1. SCOPE OF WORK

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

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

2. MATERIALS

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

1. Portland cement – Conforming to ASTM C–150, Type IA or Type IIIA.

2. Aggregates: Conforming to ASTM C–33.

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

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

C. Premoulded Joint Filler – Shall be of non–extruding type meeting ASTM D–544 except that premoulded joint filler used in concrete walk construction may be either non–extruding or resilient.

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

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

SIEVE SIZE	% PASSING
1–1/2"	100
1"	80–100
3/4"	70–90
1/2"	55–80
#4	35–60
#8	25–50
#30	12–30
#200	5–10

3. APPLICATION

A. Grading – Do any necessary grading in addition to that performed in accordance with Earthwork Section, to bring subgrades, after final compaction, to the required grades and sections for site improvement.

B. Preparation of Subgrade – Remove spongy and otherwise unsuitable material and replace with stable material. No traffic will be allowed on prepared subgrade prior to paving.

C. Compaction of Subgrade – The first 6 inches below the subgrade shall be compacted to at least 100% of the maximum dry density as determined by the provisions of AASHO T–99. Water shall be prevented from standing on the compacted subgrade.

D. Utility Structures – Check for correct elevation of all manhole covers, valve boxes and similar structures located within areas to be paved, and make, or have made, any necessary adjustments in such structures.

E. Placing Concrete

1. Subgrade – Place concrete only on a moist, compacted subgrade or base free from loose material. Place no concrete on a muddy or frozen subgrade.

2. Forms – All forms shall be free from warp, tight enough to prevent leakage and substantial enough to maintain their shape and position without springing or settling, when concrete is placed. Forms shall be clean and smooth immediately before concreting.

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

F. Concrete Curb

1. Expansion Joints – Shall be 1/2 inch thick premoulded at ends of all returns and at a maximum spacing of 100 feet.

2. Contraction Joints – Unless otherwise provided, contraction joints shall be sawed joints spaced 10 feet on center and 1 1/2" deep.

3. Finish – Tamp and screed concrete as soon as placed, and fill any honey combed places. Finish square corners to 1/4" radius and other corners to radii shown.

G. Concrete Walks and Exterior Steps

1. Slopes – Provide 1/4 inch per foot cross slope. Make adjustments in slopes at walk intersections as necessary to provide proper drainage.

2. Dimensions – Walks and steps shall be one course construction and of widths and details shown on the drawings.

3. Finish – Screed concrete and trowel with a steel trowel to a hard dense surface after surface water has disappeared. Apply medium broom finish and scribe control joints at 5 foot spacing. Provide 1/2" expansion joints where sidewalks intersect, and at a maximum spacing of 48 feet between expansion joints.

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

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

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

LAKE LINER SPECIFICATION

At the request of the owner (client) no soil borings were performed in the lake area(s). In the absence of subsurface information, the owner must recognize that water level fluctuations of several feet may occur within the lake(s). It may be necessary to construct a liner to seal the more permeable sandy clays and sand seams which may be present at a shallow depth within the side slope or bottom of the excavation. The contractor shall perform soils analysis tests in the lake area(s) to determine if the lake(s) will require a liner. In the event that construction of a liner becomes necessary, Lake Liner specifications have been included below.

Acceptable liners are as follows:

I. Natural Clay Liner
A. Laboratory testing shall be performed on the designated liner material to determine the optimum liner compaction criteria. Subsequent to determining this compaction criteria, permeability testing shall be performed on remolded samples, compacted to this standard. Laboratory testing shall be performed at least one (1) month prior to initiating lining activities.
B. The contractor shall identify and retain the engineer–approved liner material for use on sealing the side slopes and bottom of the lake. The optimum natural liner material shall not be used for other portions of site work prior to verification that adequate resources are available and have been stockpiled. It is important that the stockpiled soils be stored in as small an area as possible to retain natural moisture. The contractor should anticipate that additional soil work may be required to bring the liner material to required uniform moisture level.
C. A representative of the testing engineer shall be present for inspection of the base and side slopes of the lake prior to and during compaction of the liner materials.
D. The clay lining material, approved by the testing engineer, shall be compacted to a minimum of 12 inches thick on the upper two thirds of the side slopes and 18 inches on the lower one third. A compacted minimum of 18 to 24 inches approved lining material shall be placed across the base of the lake.
E. The clay liner material shall be regularly sampled and tested for conformance to the moisture and Atterberg limits established for the approved liner material(s). Field density and moisture testing shall also be performed frequently during construction to establish a correlation between density and field permeability. It is imperative that moisture levels be maintained over optimum as determined in laboratory testing. Only by maintaining this condition will it be possible to approach the zero voids condition and maximize natural liner capabilities. Off–site sources for clay liner material may be used with approval by the Owner's representative and on–site testing engineer.
F. Compaction of the natural liner shall be performed by equipment operating up and down the slope. Engineered natural clay liners shall not be compacted by equipment operating around the slopes on or near the same elevation. It is important that hydration of the clay liners takes place after installation is complete. This is typically accomplished by natural rainfall or by application of fresh water at the rate of one quarter gallon per square foot for at least 72 hours. This recommended rate of hydration will help prevent shrinkage and cracking of the clay liner and maintain its integrity.

II. Bentonite
A. Materials and installation method to be reviewed by the testing engineer and approved by the Engineer.

III. Synthetic Liner
A. Materials and installation method to be reviewed by the testing engineer and approved by the Engineer

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HERITAGE, SECTION 7
CITY OF FRANKLIN, JOHNSON COUNTY

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