

HERITAGE SECTION 5

(CONSTRUCTION PLANS)

JOHNSON COUNTY FRANKLIN, INDIANA

DEVELOPER:

MANN PROPERTIES

6925 E 96th STREET, SUITE 200

INDIANAPOLIS, INDIANA 46250

(317) 849-0452

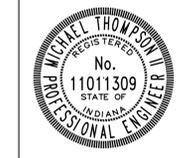
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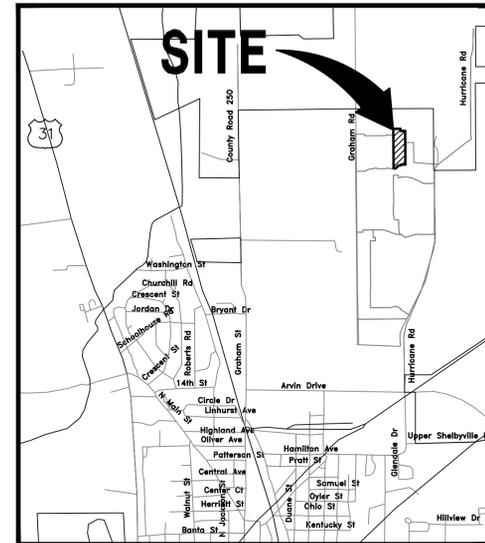
ARCHITECTURE
CIVIL ENGINEERING
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HOME BUILDER SERVICES
INTERIOR DESIGN
LAND SURVEYING
LANDSCAPE ARCHITECTURE
TRANSPORTATION ENGINEERING

THESE DOCUMENTS ARE SUBJECT TO PERIODIC REVISIONS BY THE SCHNEIDER CORPORATION. THE HOLDER IS RESPONSIBLE FOR VERIFYING THAT THESE DOCUMENTS ARE THE MOST CURRENT PRIOR TO USE.



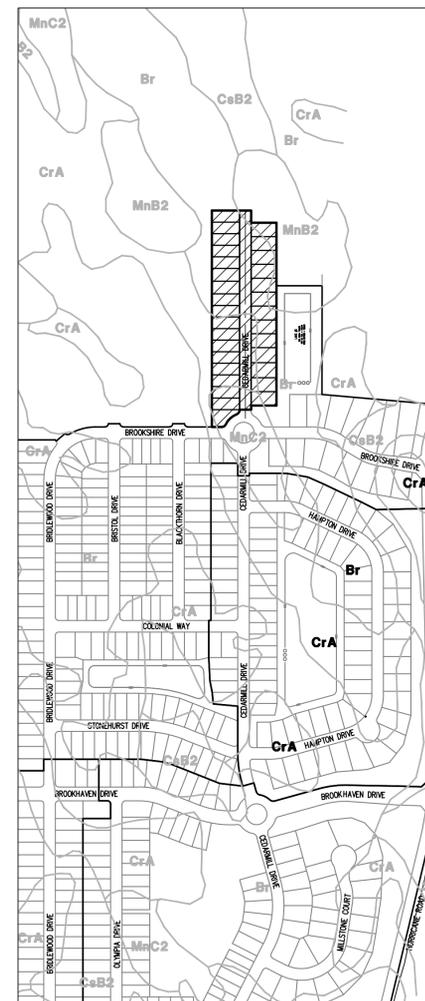
DATE: 04/17/2014

SHEET
C100
OF
17



AREA MAP

SCALE: 1"=2000'



SOILS MAP

NOT TO SCALE

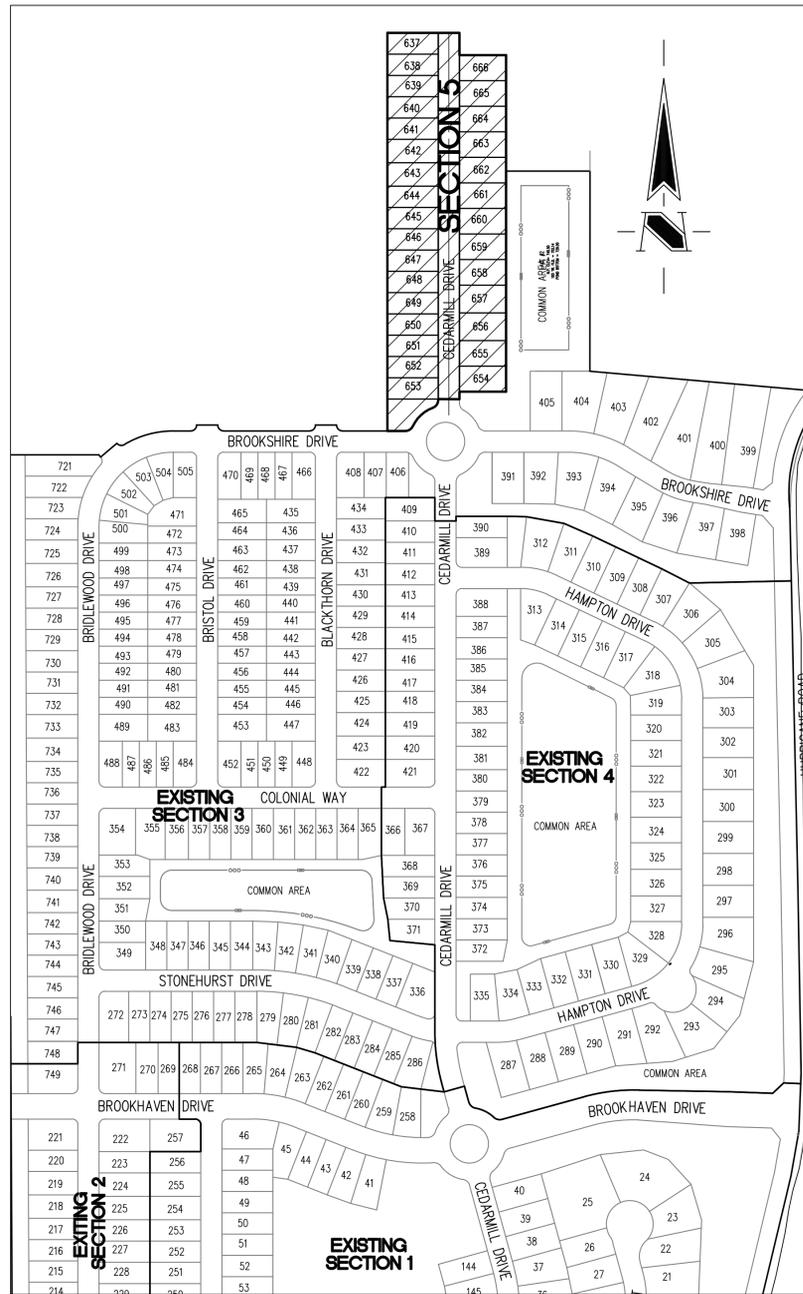
REVISIONS:		
DATE:	BY:	DESCRIPTION:

PROJECT ENGINEER: MT

CHECKED BY: MT DATE CHECKED: 04/16/2014

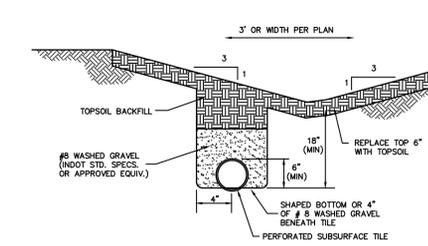
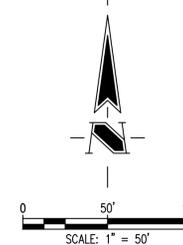
The Schneider Corporation (2014)

JOB No. 4569.105

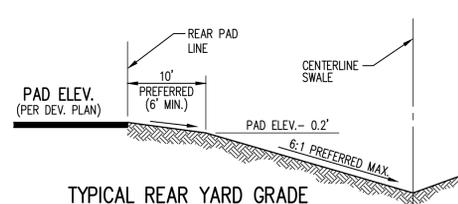


SITE MAP

SCALE: 1" = 200'

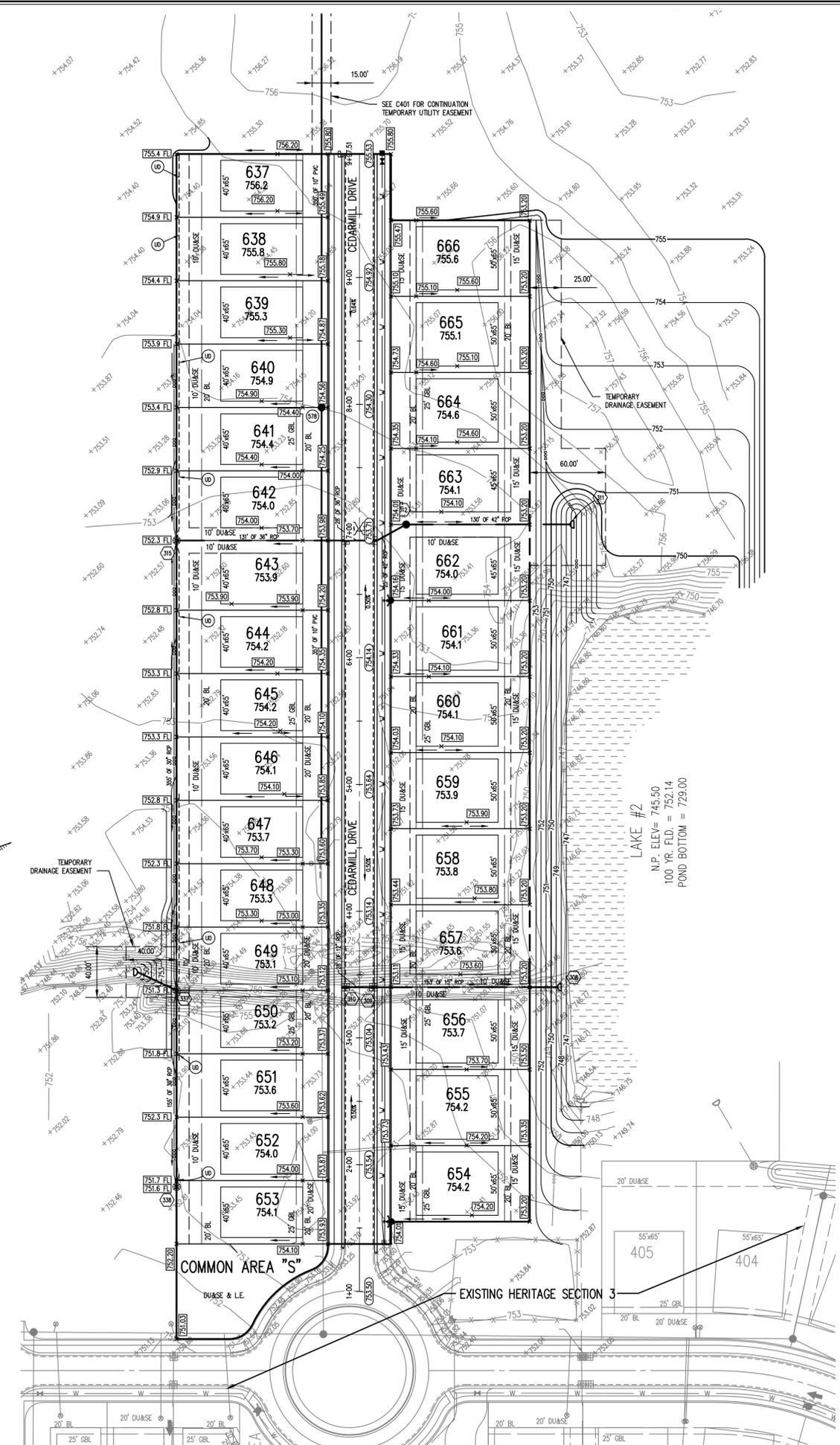


SWALE UNDERDRAIN DETAIL
NO SCALE



TYPICAL REAR YARD GRADE CROSS SECTION
NO SCALE

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 Cedar Mill Drive along the north side of the round-about. Elevation = 753.53



- LEGEND**
- Existing Storm Sewer
 - New Storm Sewer
 - Existing Sanitary Sewer
 - New Sanitary Sewer
 - Existing Contour
 - Existing Elevation
 - New Pavement Grade
 - All Other Finish Grades
 - Match Existing Grades
 - Corrected Grades
 - Storm Structure Number
 - Sanitary Structure Number
 - Denotes Elevation and Approximate Pad Size
 - Flow Arrow
 - 6" Subsurface Drain
 - Swale (S)
 - Swale Underdrain (C101)
 - Water Main
 - * Denotes Pad with 2' or More of Fill After Stripping
 - Existing Trees
 - Existing Gas Main
 - Existing Telephone
 - Existing Water Main
 - Existing Flowline
 - Existing Overhead Utilities
 - Overflow Route

GENERAL NOTES

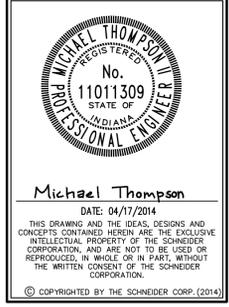
1. ALL GRADES AT BOUNDARY SHALL MEET EXISTING GRADES.
2. IT SHALL BE THE RESPONSIBILITY OF EACH SUBCONTRACTOR TO VERIFY ALL UTILITIES AND CONDITIONS PERTAINING TO THIS PHASE OF WORK. IT SHALL ALSO BE THE SUBCONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES FOR PROPER STAKE LOCATION 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 FOR 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 SIDEWALKS. 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. THE FINISHED FLOOR OF THE HOME IS SIXTEEN (16) INCHES HIGHER THAN THE NOTED PAD ELEVATION.
15. 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.
16. ALL SUBGRADE AND #3 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 plot 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 drainages, 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 subdivision, however, shall take their title subject to the nonexclusive rights of the public utilities and other owners of said lots in this subdivision 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 plot 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 the plot free from obstructions so that the surface water drainage will be unimpeded. The definition of the drainage easement areas on the plot 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 subdivision 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 (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.

REVISIONS:



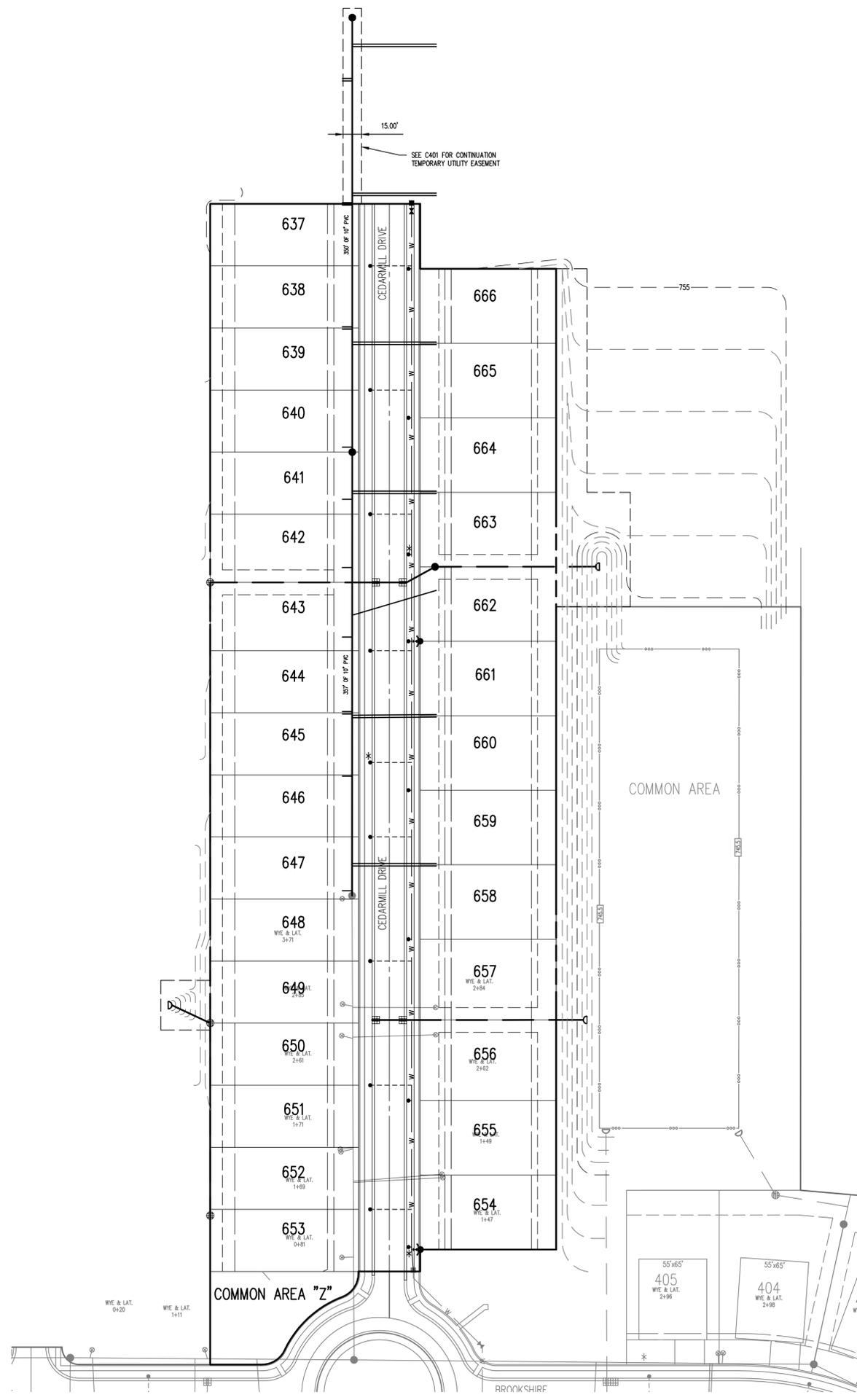
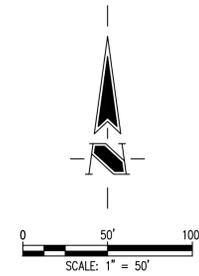
Michael Thompson
DATE: 04/17/2014
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Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO.: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: DEVELOPMENT PLANS
DRAWING FILES:
T:\44\4569\105\dwgs\4569105-C101.dwg
T:\44\4569\105\dwgs\4569105.dwg
T:\44\4569\105\dwgs\4569105B.dwg
T:\44\4569\105\dwgs\4569105S.dwg
SHEET NO.: C101



● --- Water Line lateral with Water Meter Service Pit (Double Service Pit unless noted as single service pit by "✱")

NOTE : WATER SERVICE LATERALS AND WATER METER PITS TO BE INSTALLED BY OTHERS AT TIME OF HOME 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 Cedar Mill Drive along the north side of the round-about. Elevation = 753.53

GENERAL NOTES

1. ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (WH).
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. THE FINISHED FLOOR OF THE HOME IS SIXTEEN (16) INCHES HIGHER THAN THE NOTED PAD ELEVATION.
11. SANITARY SEWER MANHOLE CASTING IN NON-PAVED AREAS MUST BE THREE (3) INCHES ABOVE GRADE.

REVISIONS:



Michael Thompson
 DATE: 04/17/2014
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HERITAGE, SECTION 5
 CITY OF FRANKLIN, JOHNSON COUNTY

MANN PROPERTIES
 6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.:
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: UTILITY LATERAL LOCATION PLAN	
DRAWING FILES: T:\44\4569\105\dwg\4569105-C102.dwg T:\44\4569\105\dwg\4569105S.dwg T:\44\4569\003\dwg\30s.dwg	

SHEET NO.:
C102

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 #2 - Harrison Monument at the intersection Brookshire Drive and Cedar Mill Drive along the north side of the round-about.
Elevation = 753.53

STORMWATER POLLUTION PREVENTION GENERAL NOTES

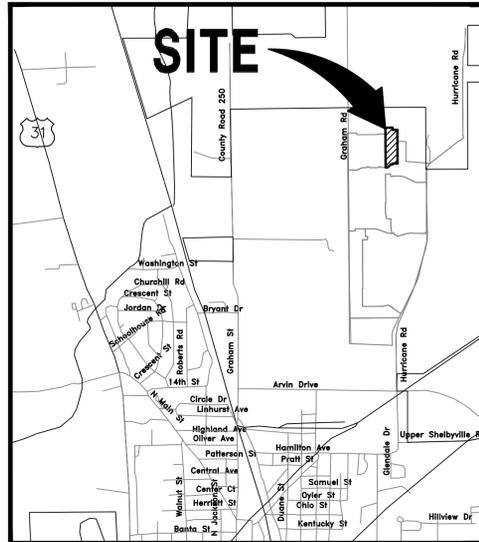
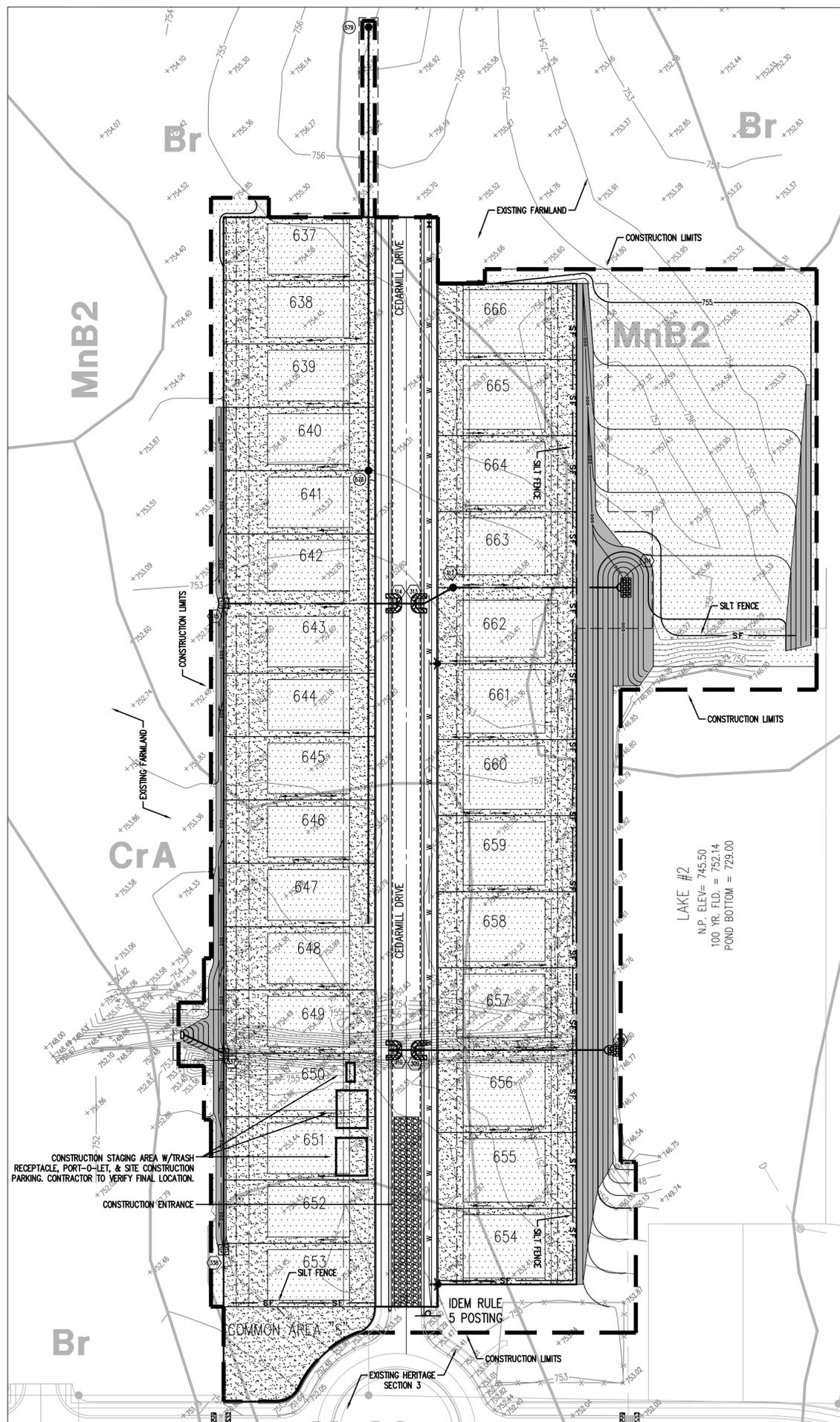
- EARTH MOVING MAY NOT COMMENCE UNTIL "CONSTRUCTION ACTIVITIES" (B2) ON C106 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
- RULE 5 REQUIRES ALL DISTURBED AREAS THAT WILL POTENTIALLY BE IDLE FOR 15 DAYS OR MORE TO BE STABILIZED (SEEDED, MULCHED, ETC.) IMMEDIATELY.
- ADDITIONAL STORMWATER POLLUTION PREVENTION MAY BE REQUIRED IN THE FIELD BY CITY OF FRANKLIN.
- ALL EROSION CONTROL MATERIALS MUST BE APPROVED BY THE CITY OF FRANKLIN INSPECTOR PRIOR TO INSTALLATION.
- THERE SHALL BE NO DIRT, DEBRIS OR STORAGE OF MATERIALS IN THE STREETS.
- APPROXIMATE CONSTRUCTION SCHEDULE:
START DATE: MAY 2014
COMPLETION DATE: MAY 2019
- RECEIVING WATER: HURRICANE CREEK
- LATITUDE 39°30'30" N
LONGITUDE 86°02'32" W
- CONTACT PERSON:
MANN PROPERTIES
6925 E. 96TH STREET, SUITE 200
INDIANAPOLIS, INDIANA 46250
PH: (317) 849-0452
TIM STEVENS
EMAIL: TSTEVENSMANN-PROPERTIES.COM
- WARNING: THIS SHEET TO BE USED FOR STORMWATER POLLUTION PREVENTION PURPOSES ONLY. FOR ANY OTHER INFORMATION SEE SHEET C101.
- SEE SHEETS C104-C106 FOR ALL STORMWATER POLLUTION PREVENTION PLAN DETAILS & NOTES.
- ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH IDEM - INDIANA STORM WATER QUALITY MANUAL.
- ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
- EXISTING EROSION CONTROL MEASURES: ANY PART DAMAGED, DESTROYED OR DISTURBED DURING CONSTRUCTION IS TO BE REPLACED IMMEDIATELY.

STORMWATER POLLUTION PREVENTION SCHEDULE

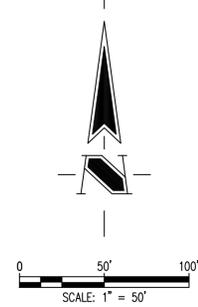
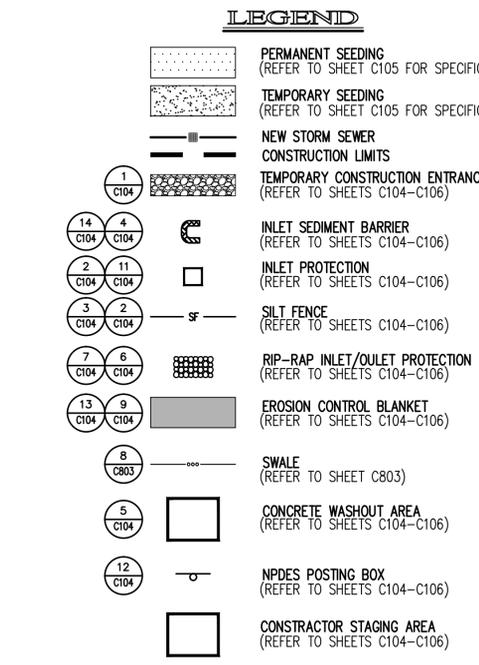
- CONTRACTOR SHALL INSTALL A TEMPORARY STONE CONSTRUCTION ENTRANCE PRIOR TO THE START OF EARTHWORK TO PREVENT SOIL FROM BEING TRACKED OR WASHED ONTO THE EXISTING ROADWAY. PLACE SILT FENCE AS NOTED AROUND PERIMETER OF SITE. INSTALL CONCRETE WASHOUT AREA AND CONTRACTOR STAGING AREA NEAR TEMPORARY CONSTRUCTION ENTRANCE. INSTALL NPDES POSTING BOX AT CONSTRUCTION ENTRANCE. INSTALL INLET PROTECTION MEASURES AROUND EXISTING INLETS ADJACENT TO PROJECT SITE.
- TOPSOIL STRIPPING TO TAKE PLACE AND STOCKPILED. ANY STOCKPILE AREAS CREATED SHALL BE TEMPORARY SEEDED AND ENCOMPASSED BY SILT FENCE.
- DIVERSIONARY SWALES AND PERMANENT SWALES SHALL BE CONSTRUCTED. TEMPORARY SEEDING AND MAINTAINED. PERMANENT VEGETATIVE SWALES AND DETENTION FACILITIES SHALL BE CONSTRUCTED AND PERMANENTLY SEEDED AND EROSION CONTROL BLANKET INSTALLED ALONG THE SIDE SLOPES. CONTRACTOR SHALL GRADE SITE TO ALLOW WATER TO DRAIN TO DIVERSIONARY SWALES AND PERMANENT SWALES TO MINIMIZE ANY EROSION.
- CONSTRUCTION OF STORM SEWER MAY BEGIN. INSTALL CURB INLET SEDIMENT BARRIERS UPON CONSTRUCTION OF INLETS. AN EXCAVATED DROP INLET OR DANDY BAG SHALL BE PLACED UNTIL INLETS HAVE PAVEMENT AROUND THEM AND SEDIMENT BARRIERS CAN BE PLACED.
- CONSTRUCTION OF SANITARY SEWER, WATERLINE, UTILITIES AND ROADWAY MAY BEGIN.
- CONTRACTOR SHALL TEMPORARY SEED ANY DISTURBED AREAS DURING CONSTRUCTION OF SANITARY SEWER, WATERLINE, UTILITIES AND ROADWAYS.
- REMOVE TEMPORARY DIVERSION SWALES AS NEEDED FOLLOWING THE COMPLETION OF THE APPROPRIATE STORM SEWER SYSTEM. CONTRACTOR SHALL STABILIZE ALL AREAS DISTURBED BY PERMANENT SEEDING AS REQUIRED.
- TEMPORARY SEED ALL PAD AREAS. ALL OTHER DISTURBED AREAS SHALL BE PERMANENT SEEDING.
- UPON COMPLETION OF THE PROJECT AND STABILIZATION OF ALL EARTHWORK, SILT FENCE AND SEDIMENT BARRIERS SHALL BE REMOVED.

SOILS LEGEND

SOIL SERIES	DWELLINGS	ROADS	SEPTICS	HYDRIC	PONDS
Br	SEVERE: PONDING, WEINSS, SHRINK-SWELL	SEVERE: LOW STRENGTH, FROST ACTION, PONDING	SEVERE: PONDING, WEINSS, PERCS SLOWLY	Y	MODERATE: SEEPAGE
CrA	SEVERE: WEINSS, PONDING	SEVERE: LOW STRENGTH, FROST ACTION	SEVERE: PERCS SLOWLY, WEINSS	N	MODERATE: SEEPAGE
MnB2	MODERATE: SHRINK-SWELL, WEINSS	SEVERE: LOW STRENGTH, FROST ACTION	SEVERE: WEINSS, PERCS SLOWLY	N	MODERATE: SEEPAGE
MnC2	MODERATE: SHRINK-SWELL	SEVERE: LOW STRENGTH, FROST ACTION	SEVERE: WEINSS, PERCS SLOWLY	N	SEVERE: SLOPE



AREA MAP



REVISIONS:

Michael Thompson
DATE: 04/17/2014
No. 11011309
STATE OF INDIANA
PROFESSIONAL ENGINEER
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Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

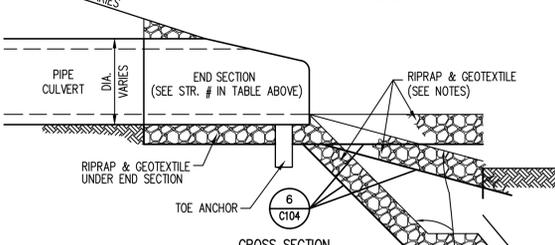
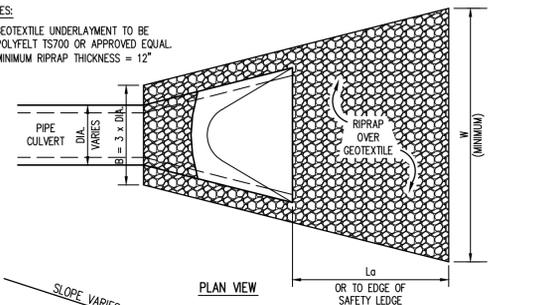
DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN	
DRAWING FILES: T:\44\4569\105\dwg\4569105-C103.dwg T:\44\4569\105\dwg\4569105B.dwg T:\44\4569\105\dwg\4569105C.dwg T:\44\4569\105\dwg\4569105D.dwg T:\44\4569\105\dwg\4569105E.dwg	

SHEET NO.: **C103**

STR #	B	Lo	W	THICKNESS	d ₅₀	SYDS
311	10.50'	22'	32.50'	24"	8"	53
308	3.75'	8'	11.75'	0.75'	6"	7

NOTES:

1. GEOTEXTILE UNDERLAYMENT TO BE POLYFELT T5700 OR APPROVED EQUAL.
2. MINIMUM RIPRAP THICKNESS = 12"



RIP-RAP GRADATION TABLE

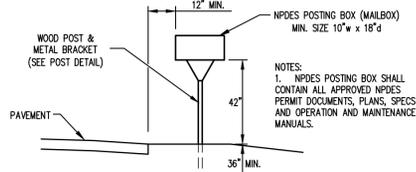
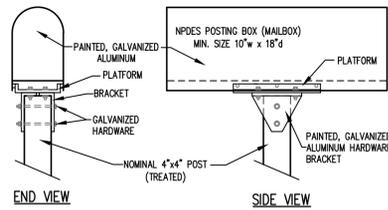
SIZE OF STONE	% OF TOTAL WEIGHT LARGER THAN GIVEN SIZE
3K	0
2K	20
K	50
0.5K	90

WHERE K = d₅₀
NOTE: DEPTH OF RIP RAP SHALL NOT BE LESS THAN 3 x d₅₀

RIPRAP AT END SECTION

NOT TO SCALE

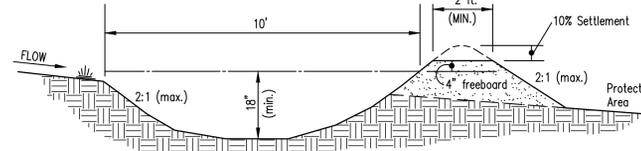
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NPDES SWPPP POSTING BOX

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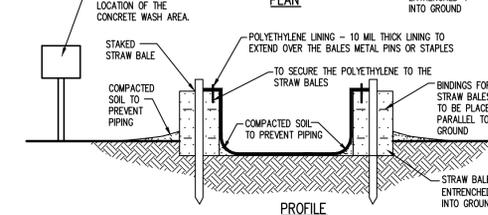
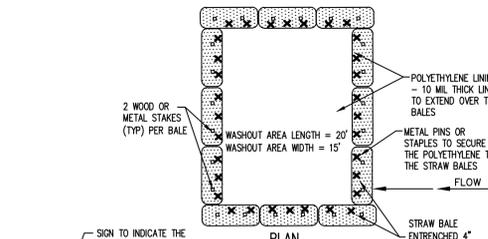
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TEMPORARY DIVERSION DETAIL

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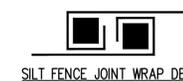
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ABOVE GROUND CONCRETE WASHOUT AREA

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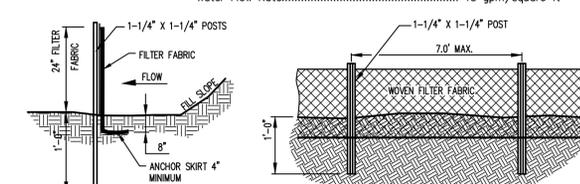
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SILT FENCE JOINT WRAP DETAIL

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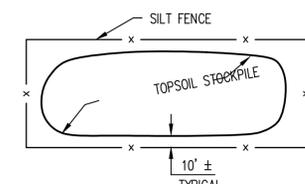
SILT FENCE.
Silt Fence shall be a machine produced, woven geotextile fabric.
All stakes shall be 1 1/4" x 1 1/4" hardwood 36" tall with 24" tall lath stapled to stakes over fabric as reinforcement.
Textile Strength @ 20% elongation..... 30 lbs. per linear inch
UV Resistance > 70 %
Filtering efficiency..... 85%
Slurry Flow Rate..... 0.3 gpm/sq. ft
Water Flow Rate..... 15 gpm/square ft



TEMPORARY SILT FENCE

NOT TO SCALE

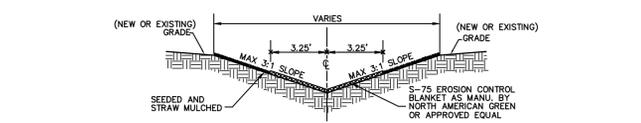
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TYPICAL TOPSOIL STOCKPILE

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C104

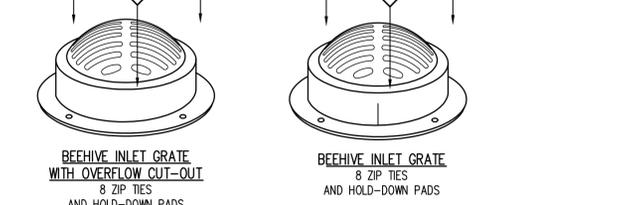
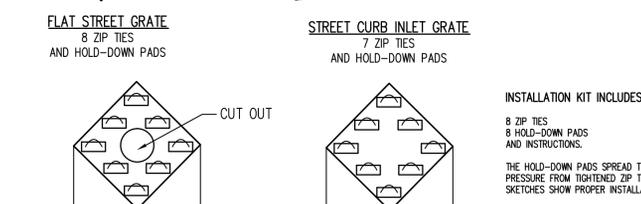
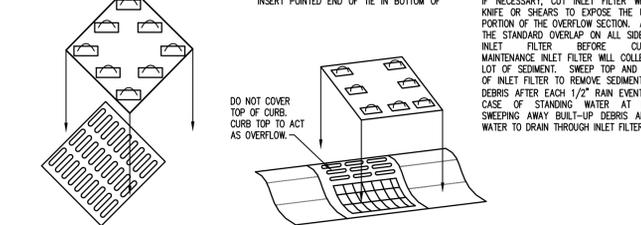


EROSION CONTROL MATTING FOR SWALE

NOT TO SCALE

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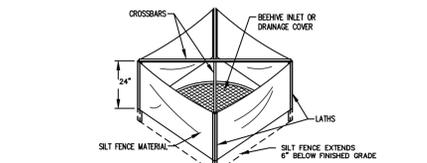
1. REMOVE SEDIMENT, DEBRIS, ICE AND SNOW FROM THE INLET GRATE SURFACE AND SURROUNDING AREA.
2. VERIFY FIT BY PLACING FILTER OVER INLET GRATE TO ENSURE THAT INLET FILTER EXTENDS AT LEAST ONE INCH BEYOND THE FRONT AND BOTH CURB ENDS. THE OVERLAP SLOWS WATER FLOW AND STARTS FILTERING SEDIMENT AND DEBRIS BEFORE WATER DROPS INTO THE INLET. THE USER IS RESPONSIBLE FOR PROPER INSTALLATION.
3. POSITION THE MAT. PLACE INLET FILTER ON GRATE WITH THE NET SIDE DOWN, FLUSH TO THE BACK EDGE AND EXTENDING BEYOND THE GRATE OPENING ON THE FRONT AND BOTH SIDES. THE ZIP TIES ATTACH INLET FILTER TO THE INLET GRATE COVER WITHOUT LIFTING THE GRATE COVER.
4. INSERT ZIP TIES. LIFT INLET FILTER SLIGHTLY TO ENABLE YOU TO SEE THE FIRST GRATE BAR FROM THE EDGE OF THE GRATE COVER. PUSH THE POINTED END OF A SCREWDRIIVER THROUGH INLET FILTER TO CREATE A PILOT HOLE TO THE SIDE OF THE GRATE BAR. PUSH THE POINTED END OF ZIP TIE THROUGH HOLE IN HOLD-DOWN PAD AND THEN THROUGH THE INLET FILTER. BEND ABOUT 3" OF THE END OF THE ZIP TIE BACK ON ITSELF AND STEP ON THE FOLD TO FORM A HOOK SHAPE. THE HOOK SHAPE MAKES IT EASIER TO GRAB THE END AFTER LOOPING UNDER THE GRATE BAR. NOW LOOP THE ZIP TIE UNDER THE GRATE BAR AND PULL UP. INSERT POINTED END OF TIE IN BOTTOM OF BOTH SIDES.
5. TIGHTEN ZIP TIES. AFTER ATTACHING ALL OF THE ZIP TIES, RE-POSITION INLET FILTER TO COMPLETELY COVER AND OVERLAP THE GRATE. PULL FREE END OF ZIP-TIES HAND TIGHT TO ANCHOR INLET FILTER TO THE GRATE. CUT OFF FREE END OF ZIP TIES TO LEAVE A 1" TAIL.
6. EXTREME FLOW INSTALLATION REQUIREMENTS. SOME MUNICIPALITIES REQUIRE EXPOSED OVERFLOW. CHECK LOCAL REGULATIONS. EXPOSING THE EMERGENCY OVERFLOW ALLOWS UNFILTERED FLOW WHEN WATER DEPTH EXCEEDS INLET FILTER HEIGHT. IF NECESSARY, CUT INLET FILTER WITH A KNIFE OR SHEARS TO EXPOSE THE UPPER PORTION OF THE OVERFLOW SECTION. ALLOW THE STANDARD OVERLAP ON ALL SIDES OF INLET FILTER BEFORE CUTTING. MAINTENANCE INLET FILTER WILL COLLECT A LOT OF SEDIMENT. SWEEP TOP AND SIDES OF INLET FILTER TO REMOVE SEDIMENT AND DEBRIS AFTER EACH 1/2" RAIN EVENT. IN CASE OF STANDING WATER AT INLET, SWEEPING AWAY BUILD-UP DEBRIS ALLOWS WATER TO DRAIN THROUGH INLET FILTER.



COI FIBER MAT INLET PROTECTION

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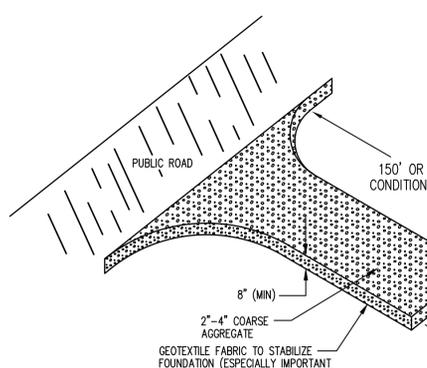
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INLET PROTECTION - SILT FENCE

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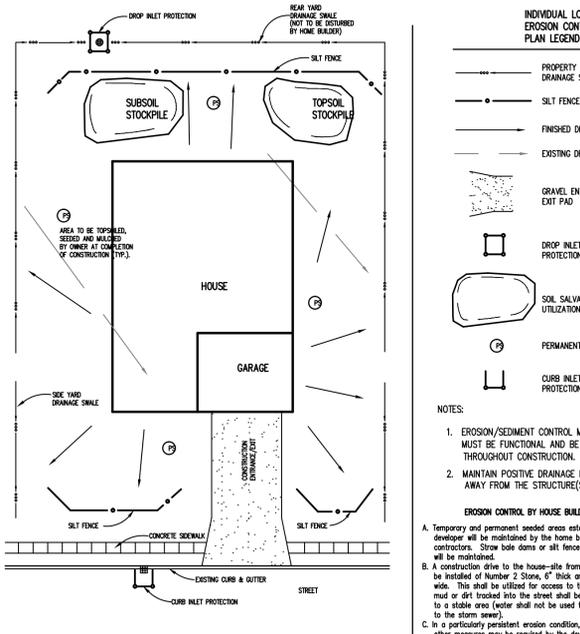
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TEMPORARY CONSTRUCTION ENTRANCE DETAIL

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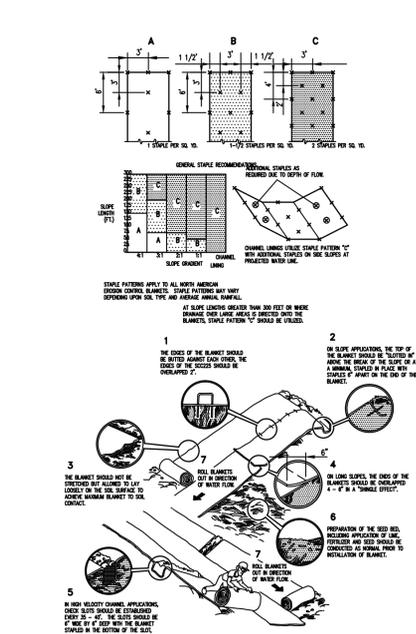
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INDIVIDUAL LOT PLAN

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11
C104



EROSION CONTROL BLANKET

NOT TO SCALE

8
C104

REVISIONS:

Michael Thompson
REGISTERED PROFESSIONAL ENGINEER
No. 11011309
STATE OF INDIANA
DATE: 04/17/2014
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS
DRAWING FILES: T:\4\4569\105\dwg\4569105-C104-C106.dwg
SHEET NO: C104

Temporary Gravel Construction Entrance/Exit Pad

Requirements:
Material: 2–3 in. washed stone (NDOT CA No. 2) over a stable foundation.
Thickness: 8 in. minimum
Width: 30 ft. minimum or full width of entrance/exit roadway, whichever is greater.
Length: 150 ft. minimum. The length can be shorter for small sites such as for an individual

Washing Facility (optional): Level area with 3 in. washed stone minimum or a commercial rock, and waste water diverted to a sediment trap or basin.
Geotextile fabric underliner: May be used under wet conditions or with soils with a high seasonal water table to provide greater bearing strength.

Installation:
1. Avoid locating on steep slopes or at curves in public roads.
2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceeds 2%, construct a 6–8 in. high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road.
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion and sediment control plan, leaving the surface smooth and sloped for drainage.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

Maintenance:
*Inspect entrance pad and sediment disposal area weekly and after storm events or heavy rain.
*Reshape pad as needed for drainage and runoff control.
*Top dress with clean stone as needed.
*Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or outlet.
*Repair any broken road pavement immediately.

Topsoil (Salvage and Utilization)

Requirements:
Material: Normally darker, friable, and loamy surface soil taken from areas that have not been stripped or graded.
Storage Area: Kept free of stumps, rock, and construction debris.
Preferent Site Conditions: Flatter than 2:1 and free of noxious weeds.
Removal/Storage/Re-spreading plan: Needed to assure these operations will be compatible with overall construction activities at the site.

Application:
SALVAGING AND STOCKPILING TOPSOIL
1. Determine depth and suitability of topsoil at the site.
2. Prior to stripping topsoil, install any site specific downslope practices needed to control runoff and sedimentation.
3. Remove the soil material no deeper than what the county soil survey describes as "surface soil".
4. Stockpile the material in accessible locations that neither interfere with other construction activities nor block the natural drainage, and install silt fences, straw bales, or other barriers to trap sediment.
5. If soil is stockpiled for more than 6 months, it should be temporarily seeded or covered with a tarp or surrounded by a sediment barrier.
SPREADING TOPSOIL
1. Prior to applying topsoil, grade the subsoil and roughen the top 3–4 in. by disking. This helps the topsoil bond with the subsoil.
2. Do not apply topsoil when the site is wet, muddy, or frozen, because it makes spreading difficult, inhibits bonding, and can cause compaction problems.
3. Apply topsoil evenly to a depth of at least 4 in. (8–12 in. if the underlying material is bedrock, loose sand, rock fragments gravel, or other unsuitable soil material); then compact slightly to improve contact with subsoil.
4. After spreading, grade and stabilize.

Maintenance:
*Inspect newly topsoiled areas frequently until vegetation is established.
*Repair eroded or damaged areas and revegetate.

Seed Species*	Rate/acre	Planting depth	Optimum date**
Wheat or rye	150 lbs.	1 to 1-1/2 in.	3/15 to 10/30
Spring oats	100 lbs.	1 in.	3/1 to 4/15
Annual ryegrass	40 lbs.	1/4 in.	3/1 to 5/1
German millet	40 lbs.	1 to 2 in.	5/1 to 6/1
Sudangrass	35 lbs.	1 to 2 in.	5/1 to 7/30

*Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than a year (Practice 3.12).
**Seeding done outside the optimum dates increases the chances of seeding failure.

Permanent Seeding Recommendations
Vegetative Establishment
Vegetation will be established on all disturbed areas. Disturbed areas are to be seeded as soon as possible and as described in the construction sequence on Sheet C104.

Seeded Preparation
Contractor shall bring the ground surface back to the proposed finish grade by placing stockpiled subsoils first and then topsoil into the disturbed area. Subsequently, the topsoil will be decomposed to a depth of 6 inches and prepared in order to ensure sufficient planting medium for seed installation. De-compaction may consist of ripping, tilling, disking, or other method.
Apply lime to raise the pH to the level if needed for species being seeded. Apply 9 pounds of 12–0–12 analysis fertilizer (or equivalent) per 1000 sq. ft. (approximately 400 pounds per acre) or fertilizer according to test. If vegetation fails to grow, consider soil testing to determine soil pH or nutrient deficiency problem.
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 the specifications for permanent seed. Seed shall be applied with mechanical spreader at a rate of 258 pounds per acre. Apply seed 1/2 one direction and 1/2 perpendicular to the first. Lightly rake and roll with 200 lb. roller. Apply hydramulch or CRMPED IN straw mulch after seeding.

Mulch
Unless otherwise specified, mulch shall be straw mulch applied at a rate of 2 tons/acre and at least 80 percent of the soil surface shall be covered. Mulch shall be installed within 24 hours of seeding. Mulch shall be punched in 4"–6" or anchored with Synthetic tackifier approved by DEM. If punching in straw, straw strands shall be 6"–8" long on average. Do not apply straw mulch without tacking it down with one of the two methods described above.

Wood Fiber Hydramulcher: Apply wood fiber at rate of 1 ton/acre. Apply with a hydramulcher with tacking agent used according to manufacturer's recommendations.

Species	Seeding Rate lbs/c	Suitable pH	Site Suitability**			
			Well Droughty	Drained Wet		
1. Turf Type Tall Fescue	170	3.9	5.5–7.5	2	1	2
+Virginia Wild Rye	1.0	0.023				
+Kentucky Bluegrass	30	0.75				
+Common Oat	38	0.9				
+Annual Rye	19	0.45				

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

Erosion Control Blanket (Surface–Applied)
Requirements:
Material: Either an organic (straw, excelsior, woven paper, coconut, fiber, etc.) or a synthetic mulch incorporated into a polypropylene or similar netting material. It may be biodegradable, photodegradable or permanent.
Expected Life: 2 yrs. Maximum
Anchoring: Use of staples or stakes to prevent movement or displacement.

Installation:
1. Select the type and weight of erosion control blanket to fit the site conditions (e.g. slope, channel, flow velocity).
2. Install any practices needed to control erosion and runoff, such as temporary or permanent diversion, sediment basin or trap, silt fence, and straw bale dam.
3. Grade the site as specified in the construction plans.
4. Add topsoil where appropriate.
5. Prepare the seedbed, fertilizer (and lime, if needed), and seed the area immediately after grading.
6. Following manufacturer's directions, lay the blankets on the seeded area such that they are in continuous contact with the soil and that the upslope or upstream ones overlap the lower ones by at least 8 in.
7. Tuck the uppermost edge of the upper blankets into a check slot (silt trench), backfill with soil, and tamp down.
8. Anchor the blankets as specified by the manufacturer. This typically involves driving 6–8 in. metal stakes into the ground in a pattern determined by the site conditions.

Maintenance:
*During vegetative establishment, inspect after storm events for any erosion below the blanket.
*If any area shows erosion, pull back that portion of the blanket covering it, add soil, re-seed the area, and re-lay and staple the blanket.
*After vegetative establishment, check the treated area periodically.

Silt Fence (Sediment Fence)
Requirements:
Drainage area: Limited to 1/4 acre per 100 ft. of fence; further restricted by slope steepness (see Exhibit 3.74–B).
Location: Fence nearly level, approximately following the land contour, and at least 10 ft. from toe of slope to provide a broad, shallow sediment pool.
Trench: 8 in. minimum depth, flat-bottom or V-shaped, filled with compacted soil or gravel to bury lower portion of support wire and/or fence fabric.
Support posts: 2 x 2-in. hardwood posts (if used) or steel fence posts set at least 1 ft. deep.* (Steel posts should have projections for fastening fabric).
Spacing of posts: 8 ft. maximum if fence supported by wire, 6 ft. for extra-strength fabric without wire backing.
Fence height: High enough so depth of impounded water does not exceed 1 1/2 ft. at any point along fence line.
Support wire (optional): 14 gauge, 6-in. mesh wire fence (needed if using standard-strength fabric).
Fence fabric: Woven or non-woven geotextile fabric with specified filtering efficiency and tensile strength (see Exhibit 3.74–C) and containing UV inhibitors and stabilizers to ensure 6-mo. minimum life at temperatures 0–120°F.

Specifications Minimums for Silt Fence Fabric.			
Physical property	Woven fabric	Non-woven fabric	
Filtering efficiency	85%	85%	
Tensile strength at 20% elongation:			
Standard strength	30 lbs./linear in.	50 lbs./linear in.	
Extra strength	50 lbs./linear in.	70 lbs./linear in.	
Slurry flow rate	0.3 gal./min./sq.ft.	4.5 gal./min./sq.ft.	
Water flow rate	15 gal./min./sq.ft.	220 gal./min./sq.ft.	
UV resistance	70%	85%	

Outlet (optional): To allow for safe storm flow bypass with-out overlapping fence. Placed along fence line to limit water depth to 1 1/2 ft. maximum; crest-1 ft. high maximum; weir width-4 ft. maximum; splash pad-5 ft. wide, 5 ft. long, 1 ft. thick minimum.

Installation:
SITE PREPARATION:
1. Plan for the fence to be at least 10 ft. from the toe of the slope to provide a sediment storage area.
2. Provide access to the area if sediment cleanout will be needed.

OUTLET CONSTRUCTION (OPTIONAL) (see Exhibit 3.74–D):
1. Determine the appropriate location for a reinforced, stabilized bypass outlet (unless the fence is designed to retain all runoff from a 2-yr. frequency, 24-hr. duration storm event).
2. Set the outlet elevation so that water depth cannot exceed 1 1/2 ft. at the lowest point along the fence line.
3. Locate the outlet weir support posts no more than 4 ft. apart, and install a horizontal brace between them. (Weir height should be no more than 1 ft. and water depth no more than 1 1/2 ft. anywhere else along the fence.)
4. Excavate the foundation for the outlet splash pad to minimums of 1 ft. deep, 5 ft. wide, and 5 ft. long on level grade.
5. Fill the excavated foundation with INDOT CA No. 1 stone, being careful that the finished surface blends with the surrounding area, allowing no overlap.
6. Stabilize the area around the pad.

FENCE CONSTRUCTION (see Exhibit 3.74–E):
1. Along the entire intended fence line, dig an 8-in. deep flat-bottomed or V-shaped trench.
2. On the downslope side of the trench, drive the wood or steel support posts at least 1 ft. into the ground (the deeper the better), spacing them no more than 8 ft. apart if the fence is supported by wire or 6 ft. if extra-strength fabric is used without support wire. Adjust spacing, if necessary, to ensure that posts are set at the low points along the fence line. (NOTE: If the fence has pre-attached posts or stakes, drive them deep enough so the fabric is satisfactory in the trench as described in Step 6.)
3. Fasten support wire fence (if the manufacturer recommends its use) to the upslope side of the posts, extending it 8 in. into the trench.
4. Run a continuous length of geotextile fabric in front (upslope) of the support wire and posts, avoiding joints, particularly at low points in the fence line.
5. If a joint is necessary, nail the overlap to the nearest post with lath (see Exhibit 3.74–F).
6. Place the bottom 1 ft. of fabric in the 8-in. deep trench, extending the remaining 4 in. toward the upslope side.
7. Backfill 1 ft. trench with compacted earth or gravel.

NOTE: If using a pre-pocked commercial silt fence rather than constructing one, follow manufacturer's installation instructions.

Maintenance:
* Inspect the silt fence periodically and after each storm event.
* If fence fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately.
* Remove deposited sediment when it reaches half the height of the fence at its lowest point or is causing the fabric to bulge.
* Take care to avoid undermining the fence during clean out.
* After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade, and stabilize.

Dewatering Structure Recommendations
Requirements:
1. A dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure.
2. Material from any required excavation shall be stored in an area and protected in a manner that will prevent sediments from eroding and moving off-site.
3. A dewatering structure may not be needed if there is a well-stabilized, vegetated area onsite to which water may be discharged. The area must be stabilized so that it can filter sediment and at the same time withstand the velocity of the discharged water without eroding. A minimum filtering length of 75 feet must be available in order for such a method to be feasible.
4. The filtering devices must be inspected frequently and repaired or replaced once the sediment build-up prevents the structure from functioning as designed.
5. The accumulated sediment which is removed from a dewatering device must be spread on-site and stabilized or disposed of at an approved disposal site per approved plan.

Portable Sediment Tank:
– The structure may be constructed with steel drums, sturdy wood or other material suitable for handling the pressure exerted by the volume of water.
– Sediment tanks will have a minimum depth of 2 ft.
– The sediment tank shall be located for easy clean-out and disposal of the trapped sediment and to minimize the interference with construction activities.
– The following formula shall be used to determine the storage volume of the sediment tank: Pump discharge (gallons/min.) x 16 = cubic feet of storage required
– Once the water level nears the top of the tank, the pump must be shut off while the tank drains and additional capacity is made available.
– The tank shall be designed to allow for emergency flow over top of the tank. Clean-out of the tank is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.

Filter Box:
– The box selected should be made of steel, sturdy wood or other materials suitable to handle the pressure requirements imposed by the volume of water. Normally readily available 55 gallon drums welded top to bottom will suffice in most cases.
– Bottom of the box shall be made porous by drilling holes (or some other method).
– Coarse aggregate shall be placed over the holes at a minimum depth of 12 inches, metal "hardware" cloth may need to be placed between the aggregate and the holes if holes are drilled larger than the majority of the stones.
– As a result of the fast rate of flow of sediment-laden water through the aggregate, the effluent must be directed over a well-vegetated strip of at least 50 feet after leaving the base of the filter box.
– The box shall be sized as follows:
Pump discharge (gallons/min.) x 16 = cubic feet of storage require
– Once the water level nears the top of the box, the pump must be shut off while the box drains and additional capacity is made available. The box shall be designed/constructed to allow for emergency flow over the top of this box.
– Clean-out of the box is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.
– If the stone filter does become clogged with sediment so that it no longer adequately performs its function, the stones must be pulled away from the inlet, cleaned and replaced.
– Using a filter box only allows for minimal settling time for sediment particles; therefore, it should only be used when site conditions restrict the use of the other methods.

Concrete Washout
Notes:
1. Concrete washout area shall be installed prior to any concrete placement on site.
2. Signs shall be placed at the construction entrance, at the washout area, and elsewhere as necessary to clearly indicate the location of the concrete washout area to operators of concrete trucks and pump rigs.
3. The concrete washout area shall be repaired and enlarged or cleaned out as necessary to maintain capacity for washed concrete.
4. At the end of construction, all concrete shall be removed from the site and disposed of at an approved waste site.
5. When the concrete washout area is removed, the disturbed area shall be seeded and mulched or otherwise stabilized in a manner approved by the inspector.

Recommendations:
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 amount 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 ON-SITE WASHOUT:
– Locate washout area so that it is most practical for the construction sequence and does not adversely affect the stormwater runoff.
– 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.

Riprap
Requirements:
Rock: Hard, angular, and weather-resistant, having a specific gravity of at least 2.5. Gradation: Well-graded stone, 50% (by weight) larger than the specified d50, and no more than 15% of the pieces (by weight) should be less than 3 in.
Filter: Use geotextile fabric for stabilization and filtration or sand/gravel layer placed under all permanent riprap installations.
Slope: 2:1 or flatter, unless approved in the erosion and sediment control plan.
Minimum Thickness: Two times the specified d50 stone diameter.

Installation:
SUBGRADE PREPARATION:
1. Remove brush, trees, stumps, and other debris.
2. Excavate only deep enough for both filter and riprap: over-excavation increases the amount of spoil considerably.
3. Compact any fill material to the density of the surrounding undisturbed soil.
4. Cut a keyway in stable material at the base of the slope to reinforce the toe; keyway depth should be 1–1/2 times the design thickness of the riprap and should extend a horizontal distance equal to the design thickness.
5. Smooth the graded foundation.
FILTER PLACEMENT:
1. If using geotextile fabric, place it on the smoothed foundation, overlap the edges at least 12 in., and secure with anchor pins spaced every 3 ft. along the overlap.
2. If using a sand/gravel filter, spread the well-graded aggregate to a uniform layer to the required thickness (6 in. minimum); if two or more layers are specified, place the layer of smaller gradation first, and avoid mixing the layers.

RRAPR PLACEMENT:
1. Immediately after installing the filter, add the riprap to full thickness in one operation. (Do not dump through chutes or use any method that causes segregation of rock sizes or that will dislodge or damage the underlying filter material.)
2. If fabric is damaged, remove the riprap and repair by adding another layer of fabric, overlapping the damaged area by 12 in.
3. Place smaller rock in voids to form a dense, uniform, well-graded mass. (Selective loading at the quarry and some hand placement may be needed to ensure an even distribution of rock material.)
4. Blend the rock surface smoothly with the surrounding area to eliminate protrusions or overfalls.

Maintenance:
*Inspect periodically for displaced rock material, slumping, and erosion at edges, especially downstream or downslope. (Properly designed and installed riprap usually requires very little maintenance if promptly repaired.)

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.

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 management 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.

REVISIONS:

REGISTERED PROFESSIONAL ENGINEER
No. 1011309
STATE OF INDIANA
Michael Thompson
DATE: 04/17/2014
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Land Surveying
Landscape Architecture
Transportation Engineering

HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO.: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS
DRAWING FILES: T:\AK\45689\105\dwgs\4569105-C104-C106.dwg

SHEET NO.:
C105

STORMWATER POLLUTION PREVENTION PLAN INDEX

- A1. Plan Index provided below
A2. 11"x17" Plot denoting lot numbers, boundaries and streets is provided separately.
A3. Project Type: 30 lot single family subdivision.
A4. Vicinity Map: Detailed on Sheet C100
A5. Legal Description of Project Site: See attached Secondary Plat.
A6. Location of all lots and easements is improved: See sheet C101.
A7. 14 Digit Hydrologic Unit Code: 0310204050050
A8. State or Federal water quality permit: Rule 5.
A9. Specific points where stormwater discharges will leave the site. Through existing and proposed storm sewer system and existing pond east of the proposed lots. see Site Development Plan Sheet C101 for more detail.
A10. Location of all wetlands, dikes & 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: None.
A13. 100 Year Floodplains, Floodways and Flood Fringe: None
A14. Pre-Construction and Post Construction Peak Discharge
10 year Pre-Construction Peak Discharge = 111.3 CFS
100 Post Construction Peak Discharge = 16.3 CFS
A15. Adjacent Land Use (See Stormwater Pollution Prevention Plan Sheet C103 for more information):
North: Farm Field
South: Residential
East: Farm Field
West: Farm Field/Residential
A16. Locations and approximate boundaries of all disturbed areas: See Sheet C101 for locations.
A17. Identification of existing vegetation cover: See Stormwater Pollution Prevention Plan - Sheet C103.
A18. Soils Map including descriptions and limitations: See sheet C103 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 the project: None.
A21. Locations of Soil Stockpiles: See Stormwater Pollution Prevention Plan Sheet C103 for soil stockpile location(s).
A22. Existing site topography: See Site Development Plan Sheets C101 for existing site topography
A23. Proposed final topography: See Site Development Plan Sheets 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 5 project during construction protecting the adjoining properties and the Hurricane Creek.

PRE-CONSTRUCTION ACTIVITIES:

- 1. Call the Indiana Underground Plant Protection systems, Inc. ("Honey Moley") at 1-800-382-5544 to check the location of any existing utilities. They should be notified two working days before construction takes place.
2. 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 along the perimeter and adjacent to the existing pond.
3. A construction entrance shall be placed per the plan location.
4. Establish construction staging area for equipment and vehicles as far from detention ponds and wetlands as possible.
5. Establish onsite location for owner/operator/contractor placement of approved plans and Rule 5 NOI and Rule 5 Inspection documentation.

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 ungraded 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 rough grading, install and seed pond banks, landscape berms, common areas and swales immediately after grading is completed.
3. Upon completion of more grading, initial sanitary and storm sewers. As storm sewers are located, install inlet protection measures. Initial prep upon completion of end section installation.
4. Upon completion of sewer installation and inlet protection, proceed with street construction.
5. Limiting of streets should be done prior to the installation of storm sewers to prevent the transmission of lime dust to ponds or receiving waters.
6. Once pavement and curbs are in place, install curb inlet sediment barriers.
7. Once inlet protection is in place, final grade all areas. Upon completion of all grading, verify depth of pond per plan requirement, design as needed.
B3. Stable construction entrance location(s) and specifications. See Stormwater Pollution Prevention Plan Sheet C103 for location and Sheet C104 for construction entrance details and specifications.
B4. Sediment control measures for sheet flow areas: See Stormwater Pollution Prevention Plan Sheet C103 for locations of sediment control measures and Sheet C104 construction details and specifications.
B5. Sediment control measures for concentrated flow areas: See Stormwater Pollution Prevention Plan Sheet C103 for locations of sediment control measures and Sheet C104 construction details and specifications.
B6. Storm sewer inlet protection measures, locations and specifications: See Stormwater Pollution Prevention Plan Sheet C103 for locations of inlet protection measures and Sheet C104 and C103 construction details and specifications.
B7. Runoff control measures: See Stormwater Pollution Prevention Plan Sheet C103 for locations of runoff control measures and Sheet C104 construction details and specifications.
B8. Stormwater outlet protection specifications: See Stormwater Pollution Prevention Plan Sheet C103 for locations of stormwater outlet control measures and Sheet C104 construction details and specifications.
B9. Grade stabilization structure locations and specifications: See Stormwater Pollution Prevention Plan Sheet C103 for locations of grade stabilization control measures and Sheet C104 construction details and specifications.
B10. Location, dimensions, specifications and construction details of each stormwater quality measure: See Stormwater Pollution Prevention Plan Sheet C103 for locations of various stormwater quality measures and Sheet C104 construction details and specifications.
B11. Temporary surface stabilization methods appropriate for each season: See Stormwater Pollution Prevention Plan Sheet C103 for locations of temporary surface stabilization measures and Sheet C104 construction details and specifications.
B12. Permanent surface stabilization specifications: See Stormwater Pollution Prevention Plan Sheet C103 for locations of permanent surface stabilization measures and Sheet C104 construction details and specifications.
B13. Material handling and spill prevention plan:
a. 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 silt 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.
b. Definition:
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 residue, or oil mixed with wastes other than dredged soil.
Discharge: includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.
c. 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.]
d. Spill, Release and Discharge:
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.
e. Prediction of Potential Spills:
1. Nearest Navigable Water: Hurricane Creek.
2. Drainage System: "All storm drainage leaves the office site by open ditches and closed storm systems to the east to Hurricane Creek. It then follows the ditch southeast."
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 uses how city sewerage and city water.

Alert Procedures for Spills:

- 1. Any personnel observing a spill will immediately instigate the following procedure:
a) Dialing "911" 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, and provide the following information:
- Name of Emergency Response: calling the appropriate telephone number:
Office 317-233-7745
Toll Free 800-233-7745
Also the National Response Center at 800-424-8002 and provide the following information:
- Time of observation of the spill
- Location of the spill
- Identify if 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 of the scene
- Action Initiated by personnel
c) Notify the City of Franklin Fire Department Phone: 9-1-1
d) Notify the City of Franklin Police Department Phone: 9-1-1
e) Notify waste recovery contractor, maintenance personnel or other personnel considered 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-ODR 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 pumps and other equipment readily accessible for clean-up operations. In addition, a continuously 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:
a. Inspect the silt fence periodically and after each storm event.
b. If fence fabric tears, starts to decompose or in any way becomes ineffective, replace the affected portion immediately.
c. Remove deposited sediment when it reaches half the height of the fence at it's lowest point or is causing the fabric to bulge.
d. Take care to avoid undermining the fence during cleanup.
e. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize it.
Inlet Protection Maintenance Requirements
1. After each storm event remove the sediment and replace the gravel, replace the geotextile fabric if used.
2. Periodically remove sediment and tracked-on soil from the street, without flushing, to reduce the sediment load on the curb inlet protection.
3. Inspect periodically for damage and repair. Keep grates free of debris.
4. After the contributing drainage area has been stabilized, remove the gravel, wire mesh, geotextile fabric and sediment deposits and dispose of them properly.
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 stipe the blanket.
3. After vegetative establishment check the treated area periodically.
Temporary Gravel Construction Entrance Maintenance Requirements
1. Inspect entrance point and sediment disposal area weekly after storm events or heavy use.
2. Refill 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.

Inspection and Maintenance:

- Inspect and verify that actively-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 construction waste area regularly.
Arrange for regular waste collection.

Inspection and Maintenance:

- Inspect and verify that actively-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 construction waste area regularly.
Arrange for regular waste collection.

Inspection and Maintenance:

- Inspect and verify that actively-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 construction waste area regularly.
Arrange for regular waste collection.

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 sites". 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.
Subtable 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 runoff 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 spill protection devices.
Use absorbent 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 solvents, 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.

Property disposal 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.
Property disposal of or recycle used batteries.
Do not bury used tires.

Inspection and Maintenance
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 actively-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 construction waste area regularly.
Arrange for regular waste collection.

Inspection and Maintenance:

- Inspect and verify that actively-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 construction waste area regularly.
Arrange for regular waste collection.

Inspection and Maintenance:

- Inspect and verify that actively-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 construction waste area regularly.
Arrange for regular waste collection.

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. Fueling 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 absorbent 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 area should be protected from stormwater runoff 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 runoff, 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.
Subtable 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 pickups during the demolition phase of construction.
Collect site trash daily, especially during rainy and wind 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 gullies, 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 loaded in watertight dumpsters at least weekly, regardless of whether the litter was generated by the 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 project.
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 runoff 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 actively-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.

EROSION CONTROL SCHEDULE

Table with 3 columns: EROSION CONTROL MEASURE, MAINTENANCE, and INSTALLATION SEQUENCE. Rows include Stone Entrance, Silt Fence, Existing Inlet Protection, Tree Protection, Temporary Diversions, Temporary Seeding, Permanent Seeding, Erosion Control Matting, Straw Bales, Inlet Protection, Seed, Sod, & Landscape Around, Removal of Inlet Protection, and Removal of Silt Fence.

Implement 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: _____ Date of Inspection: _____
Is this Evaluation following a rainfall Yes No If yes, date the rain stopped: _____
Inches

EVALUATION FOR CONSTRUCTION PROJECTS

Table with 4 columns: No., PROBLEM or CONCERN, YES, NO, N/A. Contains 34 numbered items related to erosion control measures like entrance installation, silt fence, sediment basins, etc.

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:
MICHAEL THOMPSON
REGISTERED PROFESSIONAL ENGINEER
No. 1011309
STATE OF INDIANA
CORPORATION
Michael Thompson
DATE: 04/17/2014
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS
DRAWING FILES: T:\4\4569\105\dwg\4569105-C104-C106.dwg

SHEET NO.: C106

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

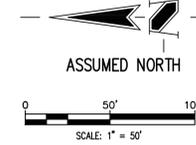
TBM #9 - Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
Elevation = 753.53

Sheet	Detail Number	Description
CB01	3	Street Cross Section Detail
CB01	1	Concrete Sidewalk Detail
CB01	5	Sidewalk Ramp For Handicapped Detail
CB01	4	Curb Details
CB01	6	Curb Underdrain Detail

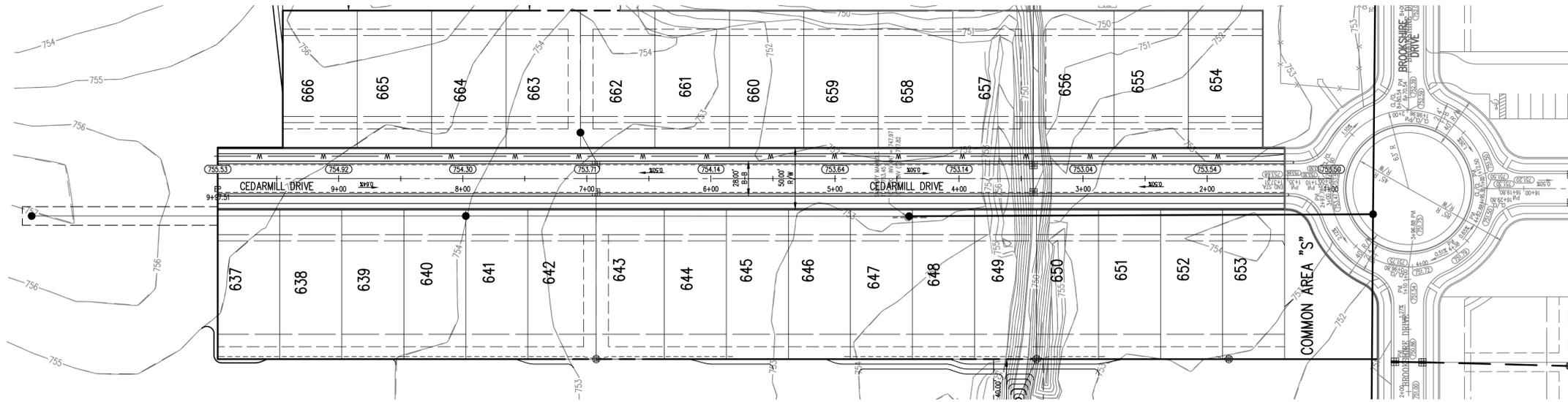
NOTE
All Streets to be 28' in width unless otherwise noted.
All Rights-of-way to be 50' in width unless otherwise noted.
All Pavement Depths of Roadway are Specified on Detail sheet CB01, Detail 3.

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 ELEVATIONS WITHIN VERTICAL CURVES (SHOWN IN PARENTHESES) ARE CORRECTED ELEVATIONS.

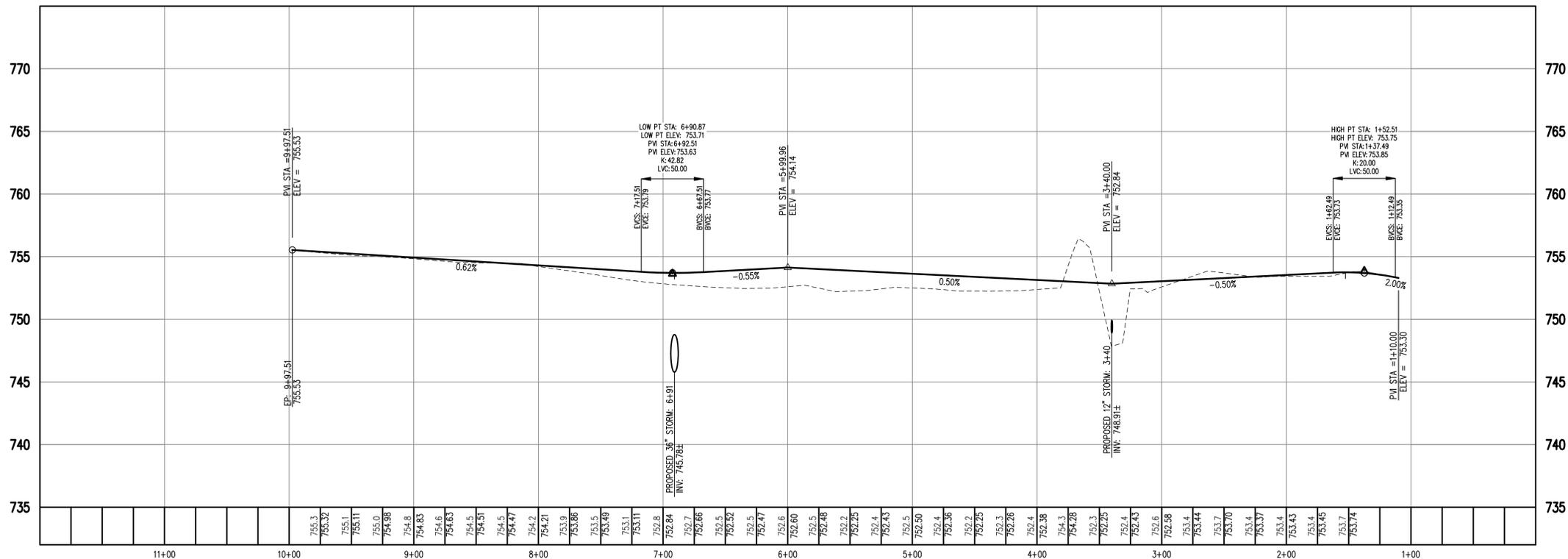


-NOTE-
CONTRACTOR TO COORDINATE WITH UTILITY COMPANIES FOR INSTALLATIONS PRIOR TO THE PLACEMENT OF SIDEWALKS AND ASPHALT.



STREET PLAN

SCALE: 1"=50'



STREET PROFILE

LEGEND

	Existing Grade
	New Grade

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

REVISIONS:



Michael Thompson

DATE:
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY

MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: STREET PLAN AND PROFILE	
DRAWING FILES: T:\44\4569\105\dwg\4569105-C201.dwg T:\44\4569\105\dwg\4569105.dwg T:\44\4569\105\dwg\4569105.dwg T:\44\4569\105\dwg\4569105.dwg	

SHEET NO.:

C201

GENERAL NOTES

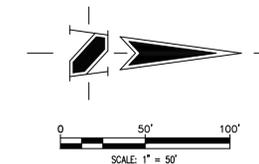
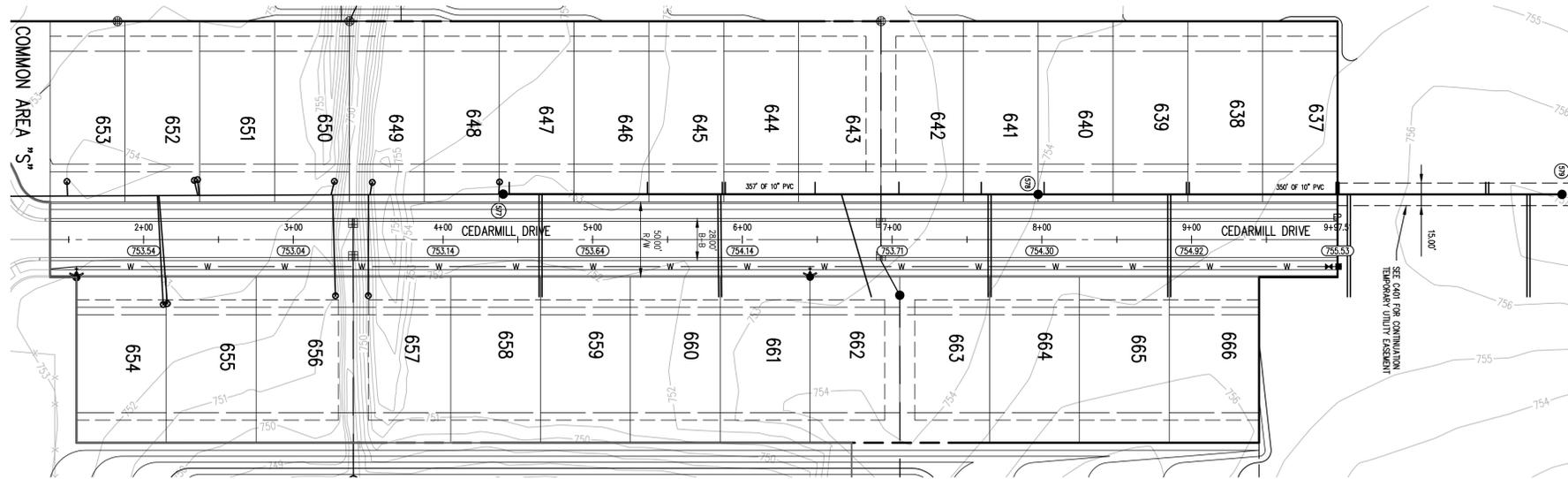
- ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (MH)
- WYES AND LATERALS TO BE 6" PIPE UNLESS OTHERWISE SPECIFIED.
- ALL WYE CONNECTIONS SHALL HAVE A MINIMUM OF FIVE FOOT LATERAL EXTENSION CONNECTED TO THE WYE, OR EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, 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.
- 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.
- IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.
- TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
- ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
- CONTRACTOR SHALL MINIMIZE DAMAGE TO EXISTING TREES.
- 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.
- THE FINISHED FLOOR OF THE HOME IS SIXTEEN (16) INCHES HIGHER THAN THE NOTED PAD ELEVATION.
- SANITARY SEWER MANHOLE CASTING IN NON-PAVED AREAS MUST BE THREE (3) INCHES ABOVE GRADE.

BENCHMARK

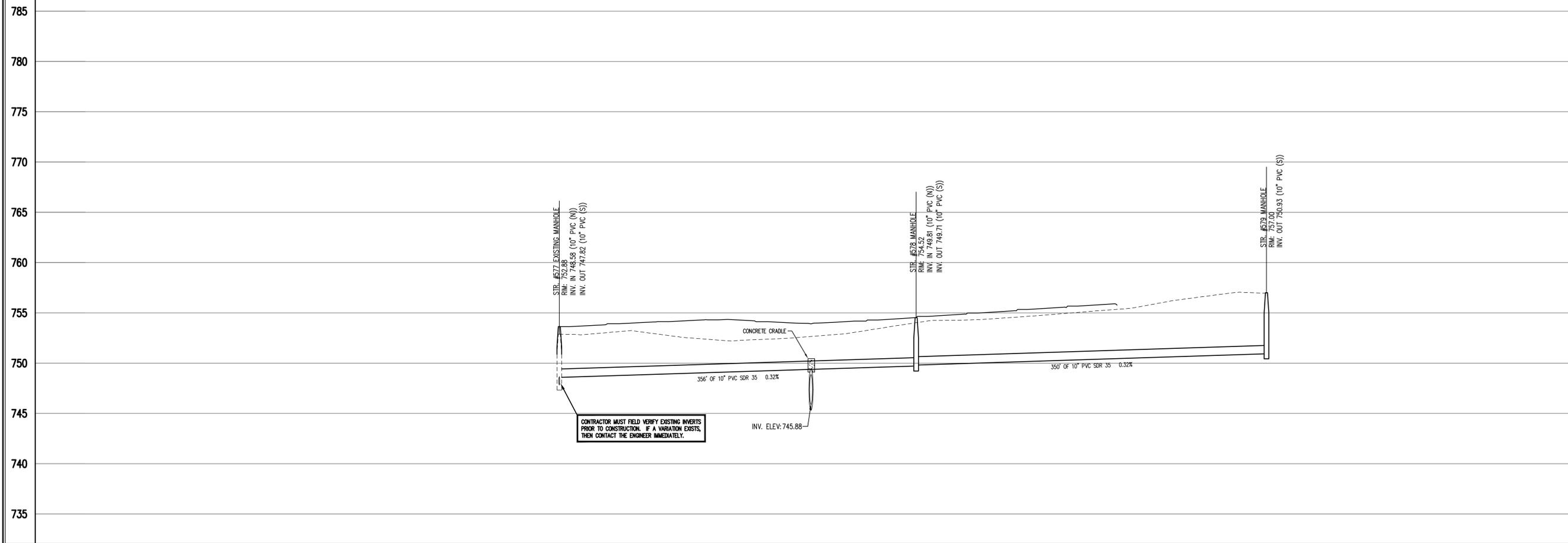
Originating Benchmark - Top of Casting of Sanitary Manhole #576 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
Elevation = 753.89

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

Sheet Number	Detail Number	Description
C802	1	Precast Reinforced Concrete Manhole
C802	3	Sanitary Sewer Bedding Detail
C802	4	Service Connection for Shallow Sewer
C802	5	Wye & Lateral Capping Detail
C802	5	Service Connection for Deep Sewer



SANITARY SEWER PLAN



SANITARY SEWER PROFILE

LEGEND		
	Existing Grade	
	New Grade	
	Granular Backfill	

SCALE: $\frac{\text{HORIZ.: } 1"=50'}{\text{VERT.: } 1"=5'}$

REVISIONS

Michael Thompson
DATE: 04/17/2014
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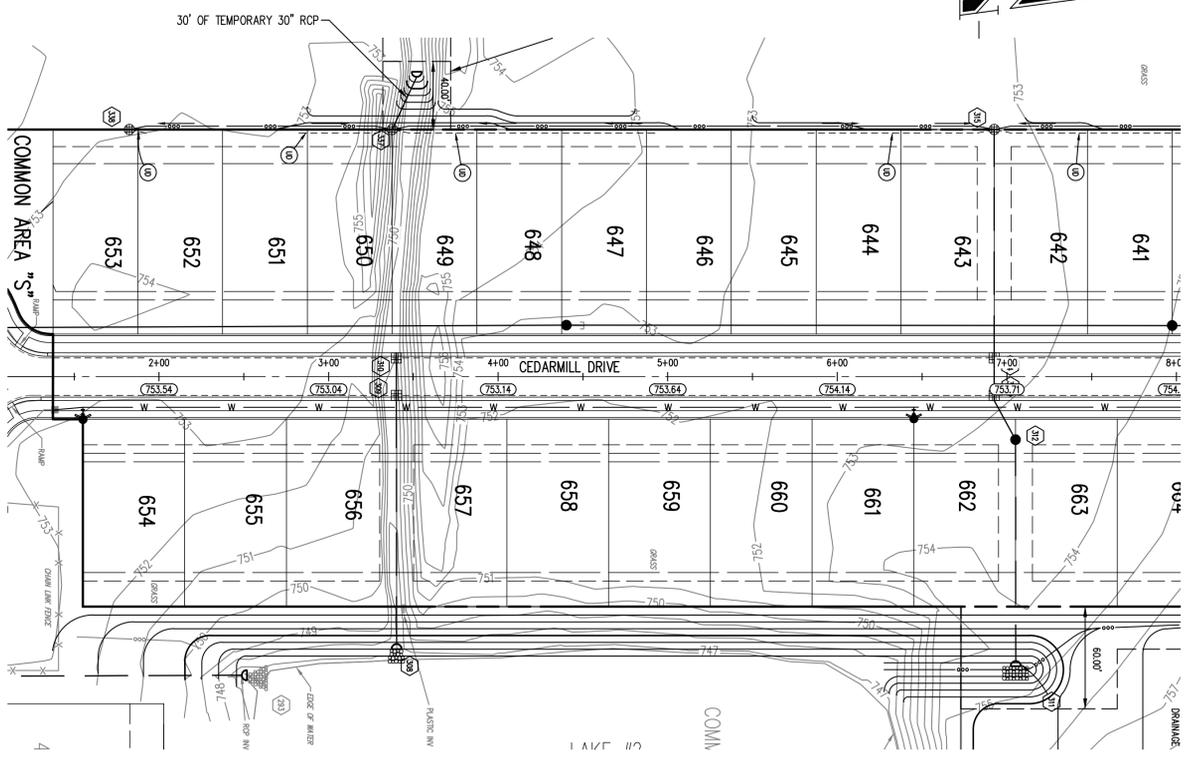
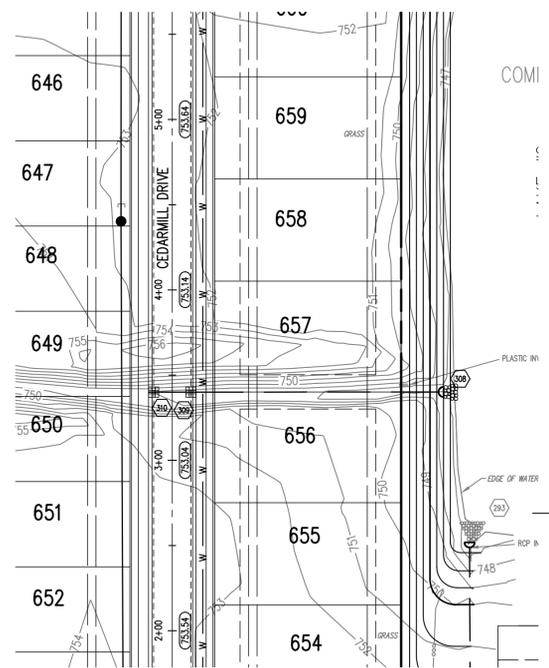
HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: SANITARY PLAN AND PROFILE	
DRAWING FILES: T:\44\4569\105\dwg\4569105-C401.dwg T:\44\4569\105\dwg\4569105S.dwg T:\44\4569\105\dwg\4569105L.dwg	

SHEET NO.: **C401**



Sheet	Detail Number	Description
C803	1.2	Bedding Detail - Reinforced Concrete Pipe (RCP)
C803	4.6	Roll Curb Inlet Detail
C801	6	Pavement Underdrain Detail
C803	5	Beehive Inlet Detail
C803	3	Storm Manhole Detail
C803	7	Precast Concrete End Section
C803		RipRap Detail @ End Section



BENCHMARK
 Originating Benchmark - Top of Casting of Sanitary Manhole #676 according to the record drawing from previous job #4569.003 performed by The Schneider Corporation, dated May 13, 2005.
 Elevation = 753.89
 TBM # - Harrison Monument at the intersection Brookshire Drive and Cedarmill Drive along the north side of the round-about
 Elevation = 753.53

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



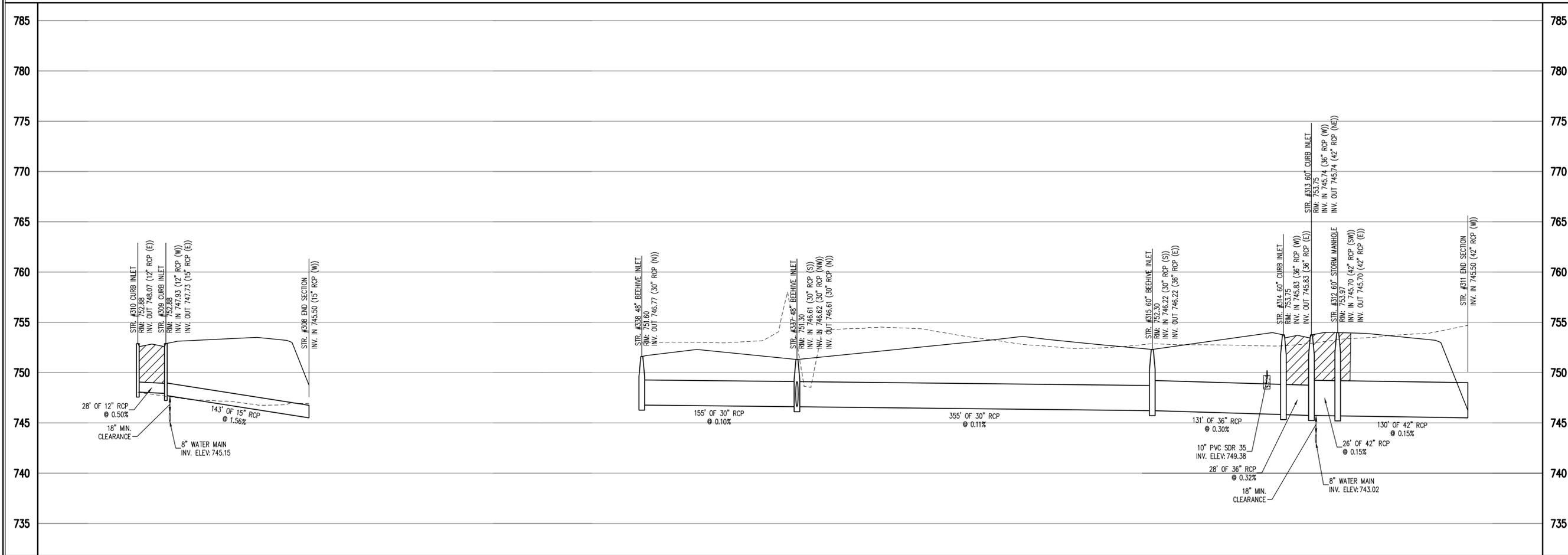
Michael Thompson
 DATE: 04/17/2014
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STORM SEWER PLAN



STORM SEWER PROFILE

LEGEND

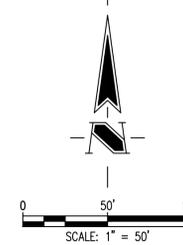
Existing Grade	New Grade	Granular Backfill

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

HERITAGE, SECTION 5
 CITY OF FRANKLIN, JOHNSON COUNTY
 MANN PROPERTIES
 6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: STORM PLAN AND PROFILE	
DRAWING FILES: T:\44\4569\105\dwg\4569105-C601.dwg T:\44\4569\105\dwg\4569105.dwg T:\44\4569\105\dwg\4569105.dwg T:\44\4569\103\dwg\30s.dwg	

SHEET NO.: **C601**



LEGEND

-  Existing Storm Sewer
-  New Storm Sewer
-  Existing Sanitary Sewer
-  New Sanitary Sewer
-  New 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 " ")

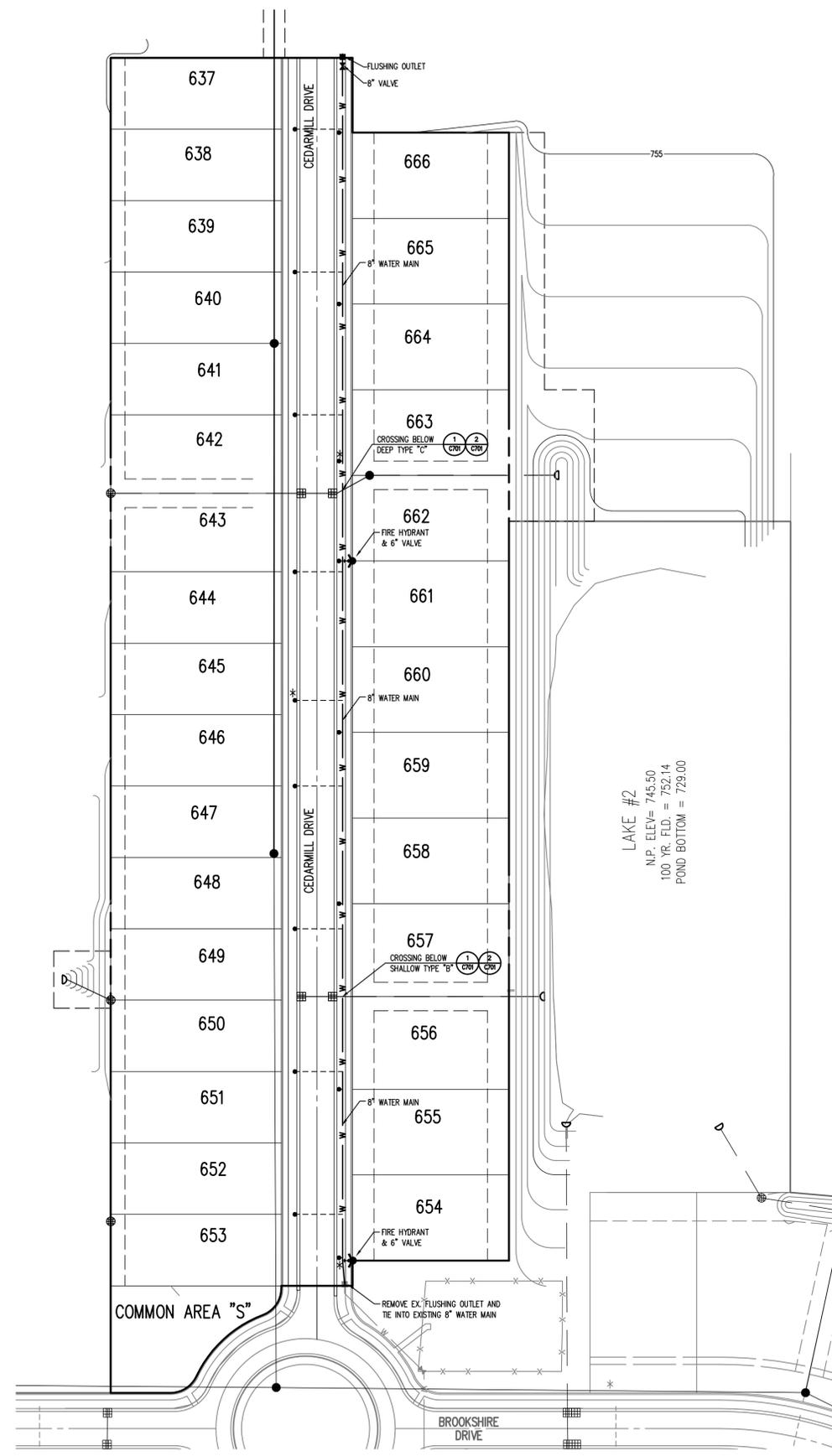
GENERAL NOTES

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 "A" 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 HORIZONTAL PIPE JOINT DEFLECTION (WITHIN THE MANUFACTURE'S RECOMMENDATIONS) AND/OR 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 #2 - Harrison Monument at the intersection Brookshire Drive and Cedar Mill Drive along the north side of the round-about
Elevation = 753.53



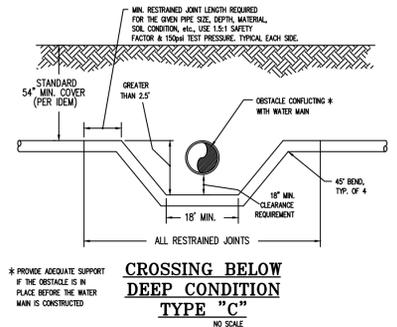
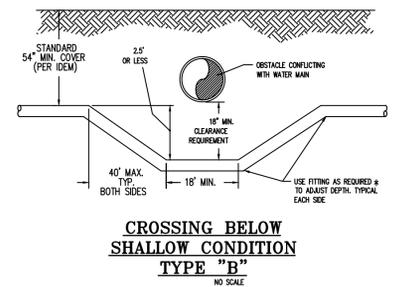
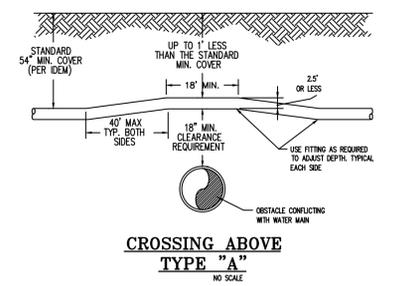
RECORD DRAWINGS REQUIRED
ALL TEES, BENDS, REDUCERS, FITTINGS AND OTHER WATERLINE FEATURES MUST BE LOCATED BY ENGINEER OR SURVEYOR PRIOR TO BACKFILLING. CONTRACTOR SHALL CONTACT ENGINEER OR SURVEYOR 48 HOURS IN ADVANCE OF BACKFILLING OPERATIONS AND VERIFY THAT SURVEYING IS COMPLETE PRIOR TO BACKFILLING.

NOTE:
1. USE FITTINGS AS REQUIRED WHEN THE MAIN IS BEING LOWERED (TO PROVIDE THE MIN. CLEARANCE FROM AN OBSTACLE) BY 30" OR LESS.
2. USE FITTINGS AND RESTRAINED JOINTS (PIPE & FITTINGS) WHEN THE MAIN IS BEING LOWERED BY MORE THAN 30".

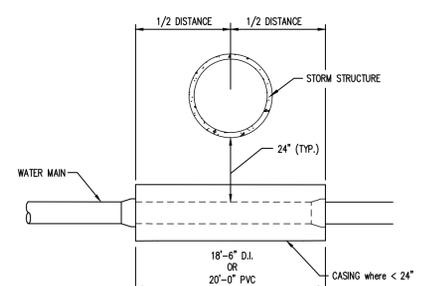
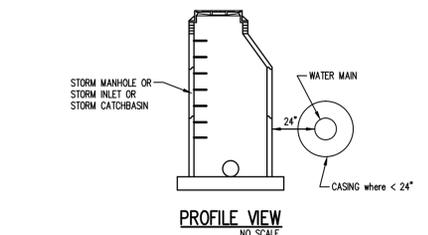
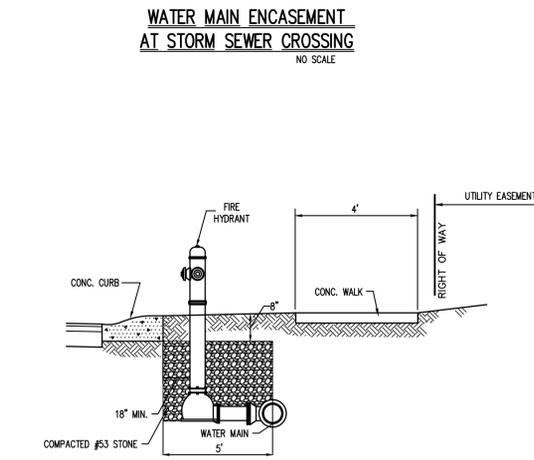
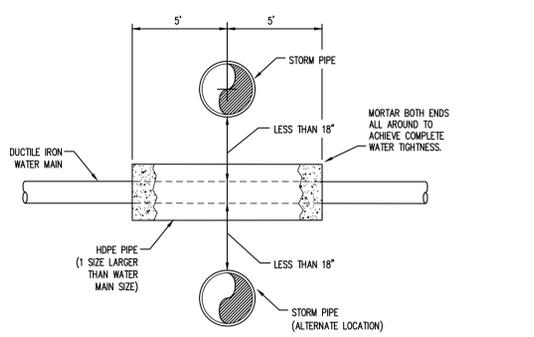
RESTRAINTS:
ALL MECHANICAL JOINT AND PIPE BELL RESTRAINTS SHALL UTILIZE NON-POINT LOADING RETAINING GLANDS WHICH MAINTAIN JOINT FLEXIBILITY. MINIMUM PRESSURE RATING SHALL BE 150 PSI.

ACCEPTABLE MANUFACTURES ARE EBAA IRON & FORD METER BOX COMPANY. PRODUCT LINES ACCEPTABLE TO CORRESPONDING APPLICATIONS ARE AS FOLLOWS:

Pipe Material	EBAA Iron Mega-Lug Series		Ford Meter Box Co.	
	Joint Type	Joint Type	Joint Type	Joint Type
	MJ	Pipe Bell	MJ	Pipe Bell
PVC (Cl O.D.)	2000	1600	1300	1390
DIP	1100	1700	1400	N/A



UTILITY CONFLICTS/CROSSINGS DETAILS



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.

REVISIONS:



Michael Thompson
DATE: 04/17/2014
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
6925 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

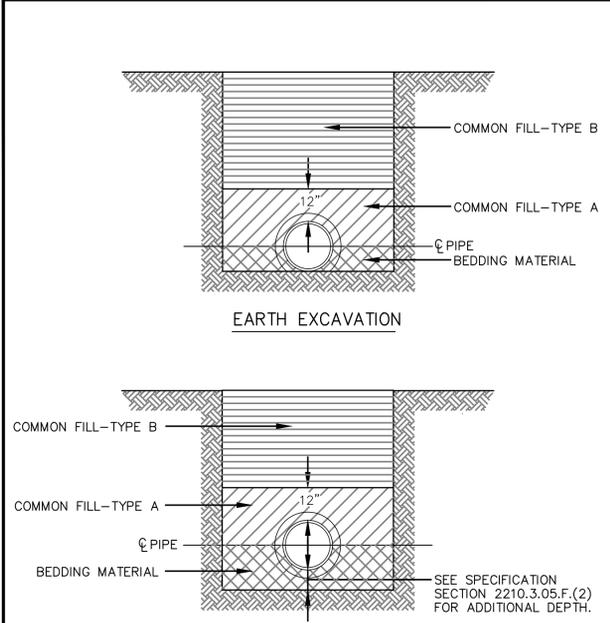
MANN PROPERTIES

DATE: 4/17/2014 PROJECT NO.: 4569.105
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SHEET TITLE: WATER PLAN
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Elevation = 753.89

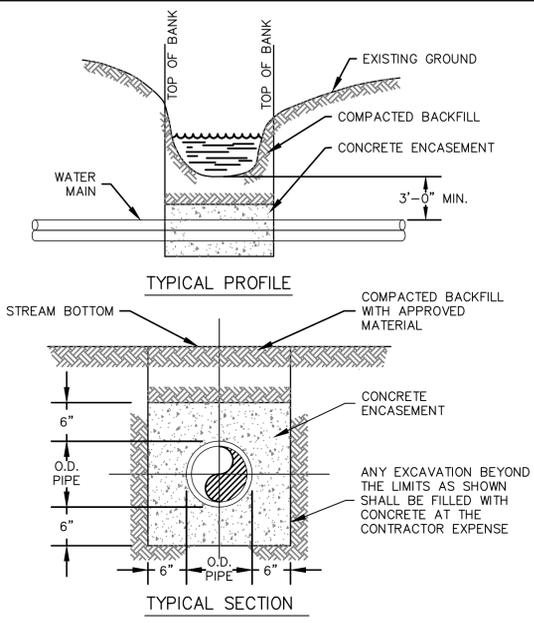
TBM #2 - Harrison Monument at the intersection Brookshire Drive and Cedar Mill Drive along the north side of the round-about
Elevation = 753.53

SHEET NO.: **C701**

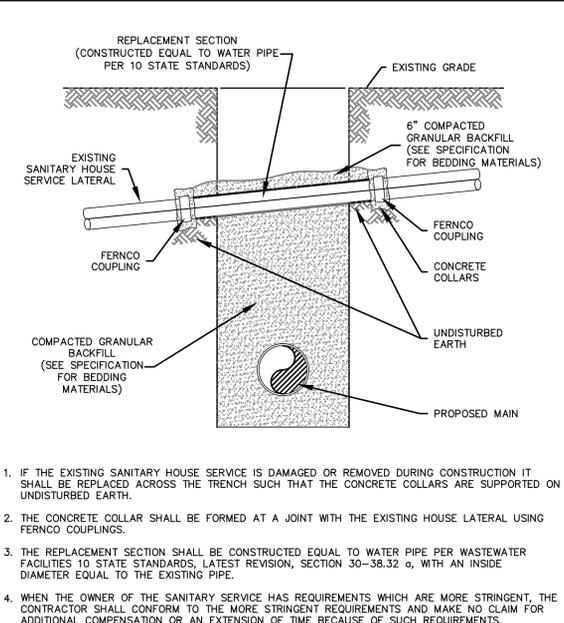
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 Plot Time: 7:25pm
 Plot Date: Apr 16, 2014
 By: Thompsonm



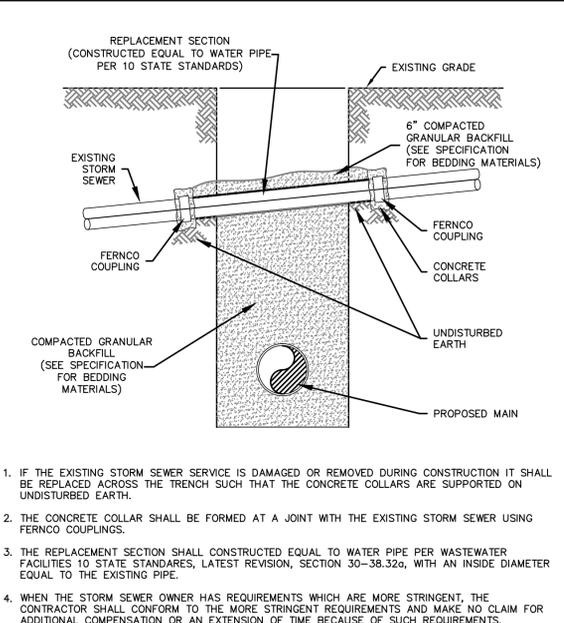
TRENCH BACKFILL MATERIALS
NO SCALE
61-300-3 SK



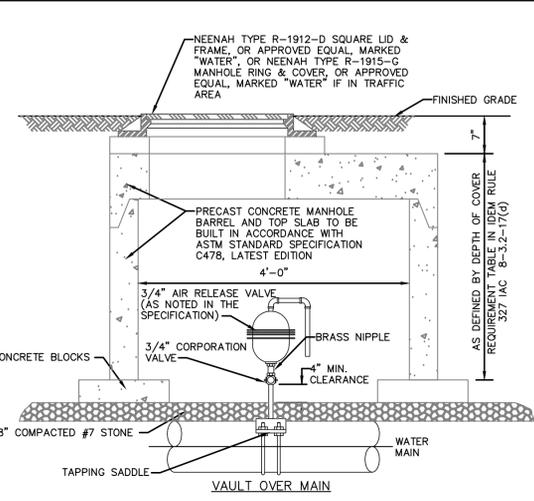
STREAM CROSSING DETAIL
NO SCALE
61-300-5 SK



SANITARY HOUSE SERVICE REPLACEMENT DETAIL
NO SCALE
61-300-1 SK



STORM SEWER REPLACEMENT DETAIL
NO SCALE
61-300-2 SK



SHALLOW BURY AIR RELEASE VALVE DETAIL
NO SCALE
61-300-8A SK

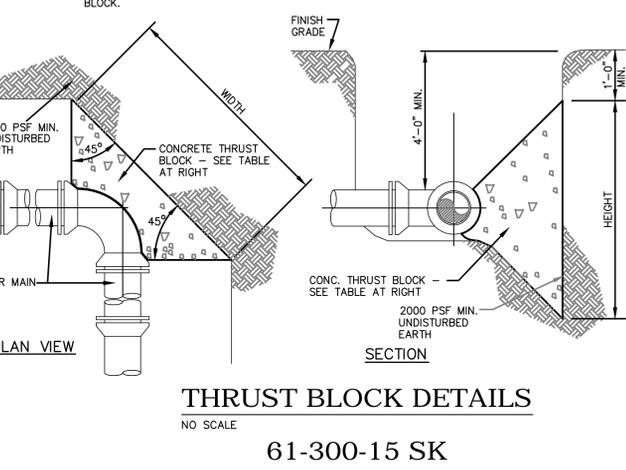
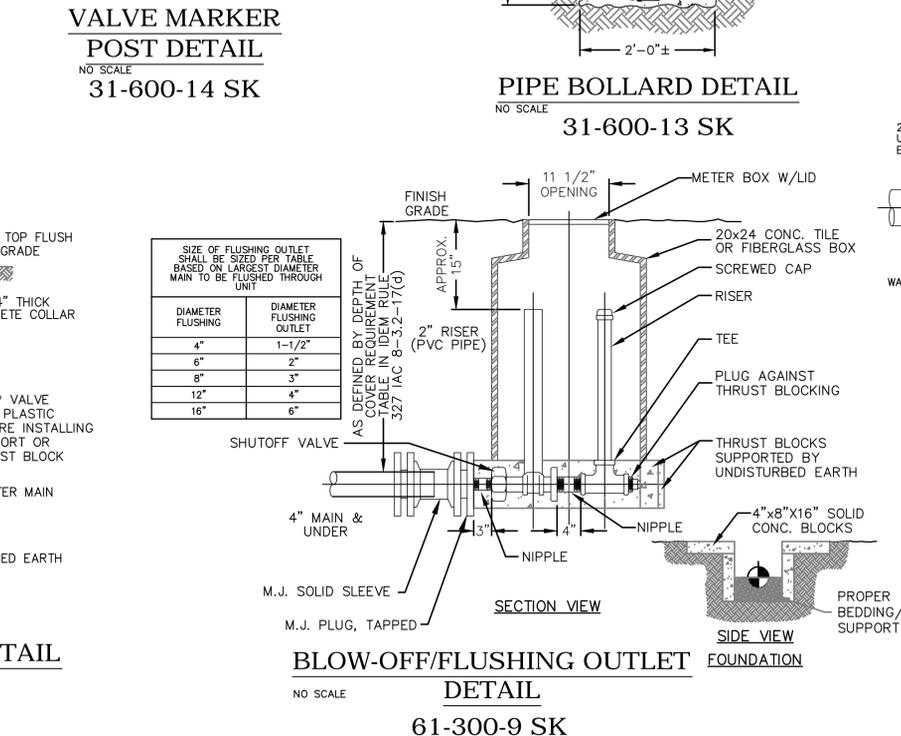
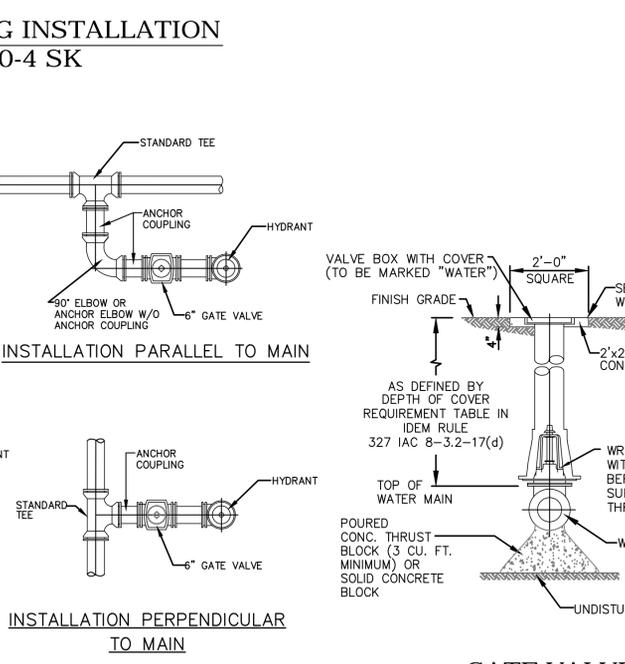
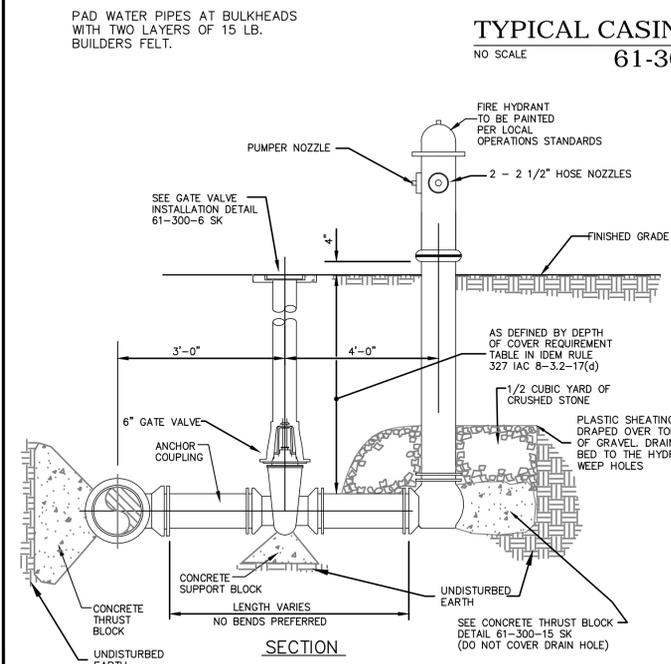
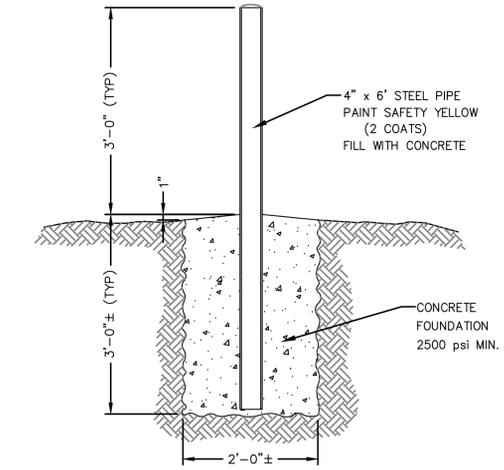
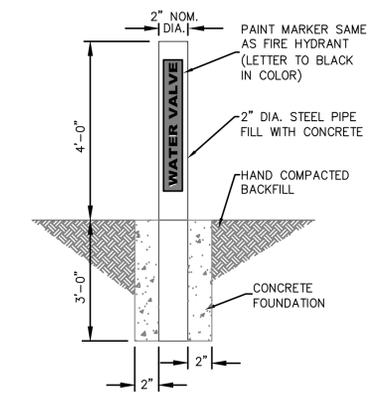
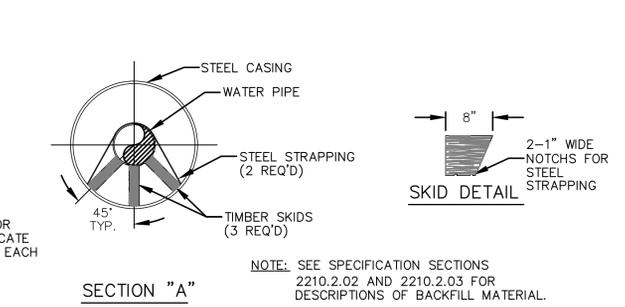
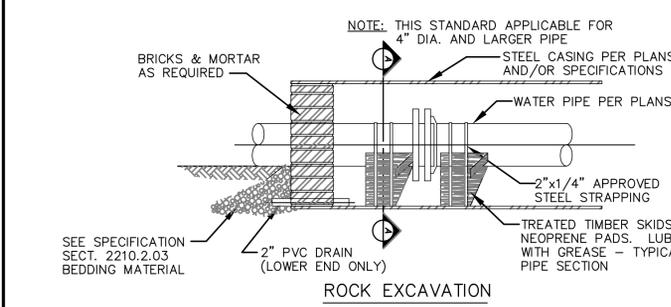
THRUST BLOCK REQUIREMENTS

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:

- PIPE JOINT AND BOLTS MUST BE ACCESSIBLE.
- CONCRETE SHALL BE CURED FOR MINIMUM OF 7 DAYS AND SHALL HAVE A COMPRESSION STRENGTH OF 3000 P.S.I. @ 28 DAYS.
- THRUST BLOCKS SHALL BE POSITIONED TO COUNTERACT THE DIRECTION OF THE RESULTANT THRUST FORCE.
- CONTRACTOR SHALL NOTIFY ENGINEER IF SOIL OF LESS THAN 2000 P.S.F. IS ENCOUNTERED.
- 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



Indiana-American Water Company, Inc.

SCALE: NOT TO SCALE	HERITAGE		
REVISIONS	SECTION 5		
	STANDARD DETAILS		
	INDIANA COUNTY, INDIANA		
DRAWN BY: R.K.B.	DATE: 5/99	CHECKED:	SHEET
AUTOCAD FILE: D:\DETAILS\STD01LS2.DWG	APPROVED:		C702

REVISIONS:



Michael Thompson
DATE: 04/17/2014
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY

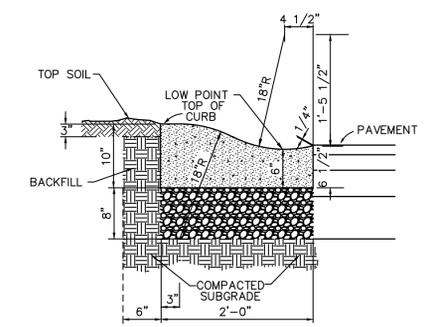
MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO.: 4569105
DRAWN BY: MAP CHECKED BY: MAT

SHEET TITLE: STREET DETAILS

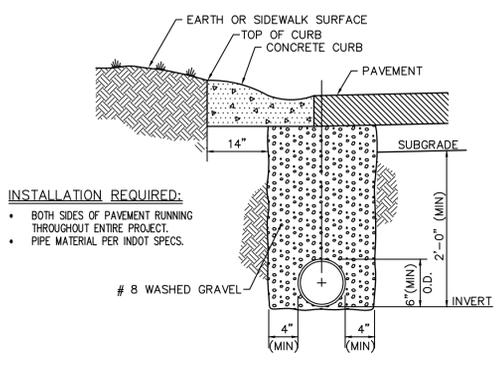
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SHEET NO.: C801



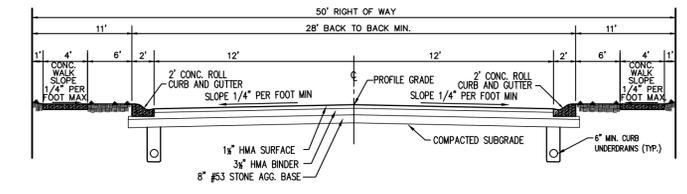
2' CONCRETE ROLL CURB & GUTTER NO SCALE C801

- 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.

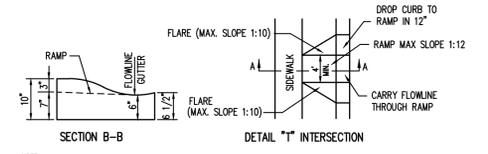
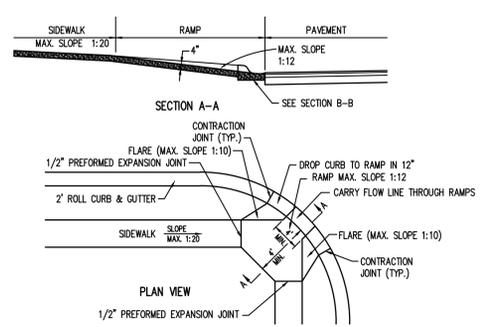


INSTALLATION REQUIRED:
• BOTH SIDES OF PAVEMENT RUNNING THROUGHOUT ENTIRE PROJECT.
• PIPE MATERIAL PER INDOT SPECS.

PIPE UNDERDRAIN NO SCALE C801

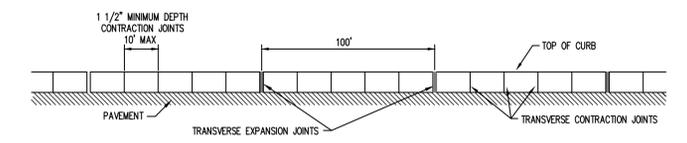


TYPICAL STREET SECTION NO SCALE C801

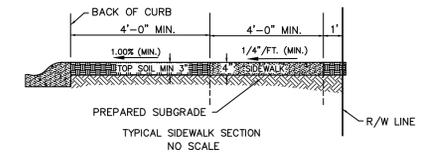


- NOTE:
1. ALL HANDICAP RAMP SHALL MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.
 2. MINIMUM WIDTH OF CURB RAMP SHALL BE 4 FEET NOT INCLUDING FLARES. MAXIMUM SLOPE OF RAMP SHALL BE 1:12.
 3. CURB CUT RAMP ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY CITY ENGINEER.
 4. RAMP SHALL 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 COURSE 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 RAMP WITH NO DEEPS IN GRADE.
 8. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH RAMP, 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.

SIDEWALK RAMP FOR HANDICAPPED NO SCALE C801

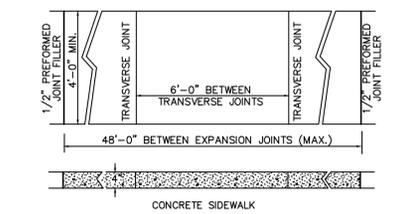


CURB JOINT DETAIL NO SCALE C801

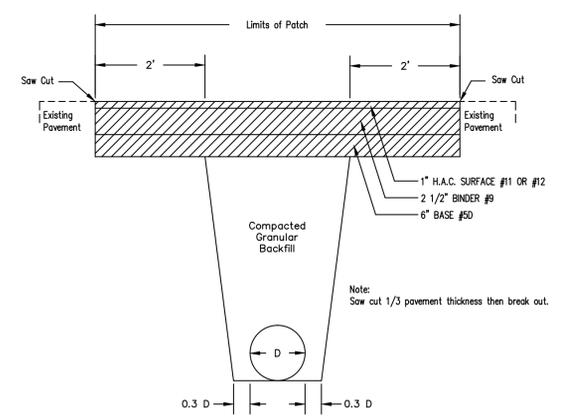


TYPICAL SIDEWALK SECTION NO SCALE

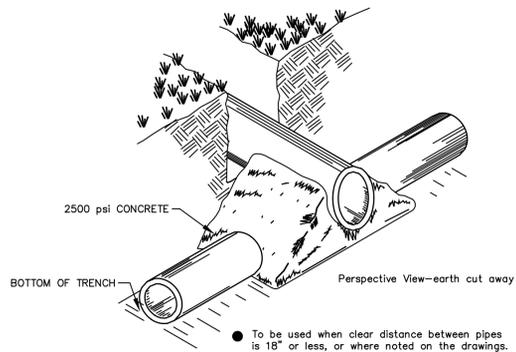
THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6" IN DEPTH. SUBGRADE UNDER ALL CURB, SIDEWALK, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 207.02 OF THE INDOT STANDARD SPECIFICATIONS.



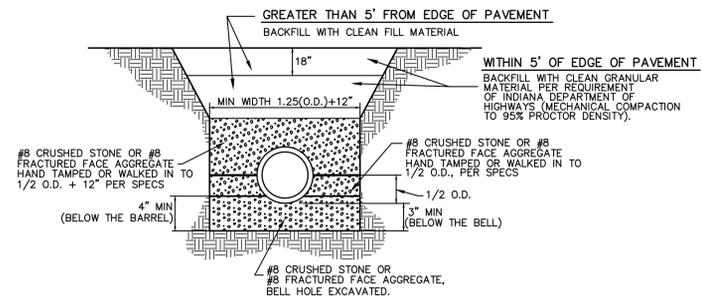
SIDEWALK DETAIL NO SCALE C801



PAVEMENT REPAIR SECTION DETAIL NO SCALE C801

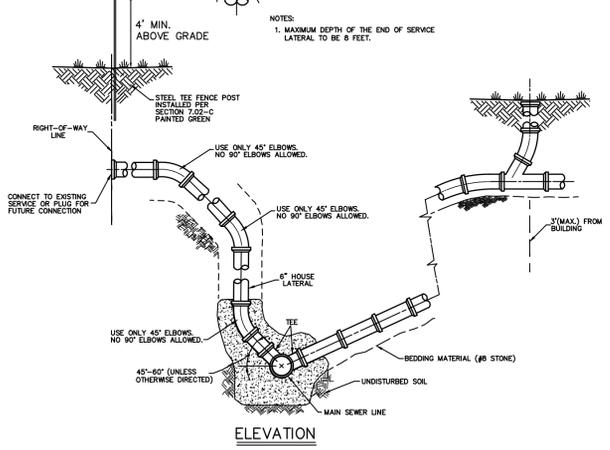
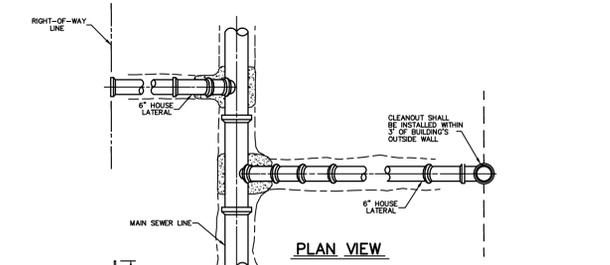


CONCRETE CRADLE
NO SCALE

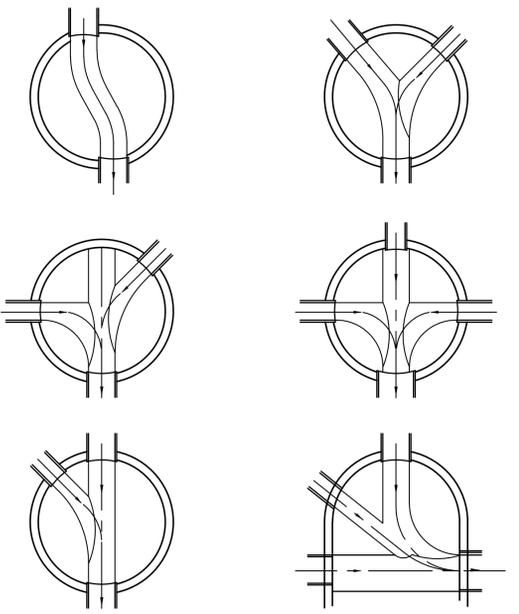


SANITARY SEWER BEDDING DETAIL
PVC & HDPE PIPE NO SCALE

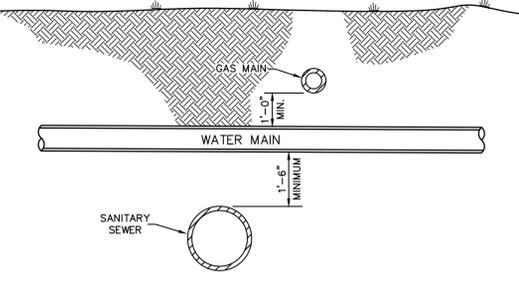
PIPE SIZE	8"-15"	18" & OVER
BEDDING BELOW THE PIPE BARREL	O.D./4 MIN=4"	O.D./4 MAX=8"



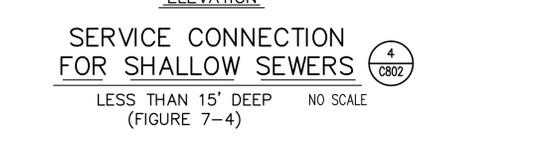
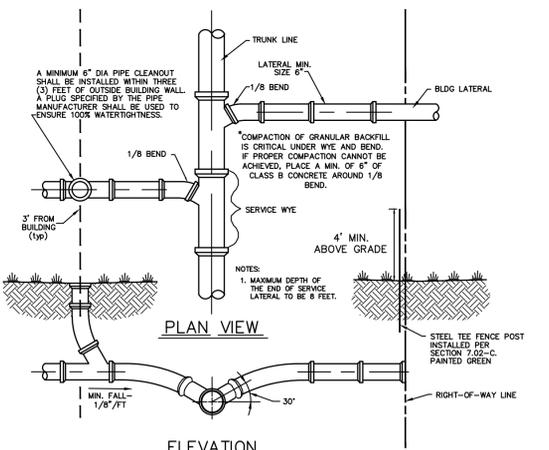
SERVICE CONNECTION FOR DEEP SEWER
15' DEEP AND OVER
(FIGURE 7-5) NO SCALE



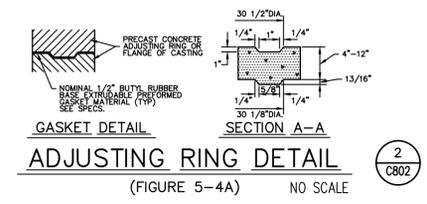
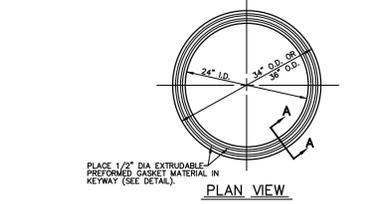
SANITARY SEWER FLOW CHANNEL DETAIL
(FIGURE 5-6) NO SCALE



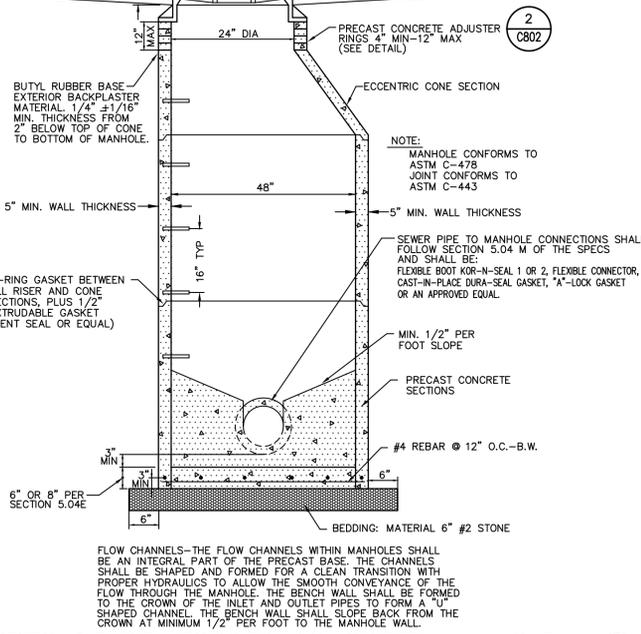
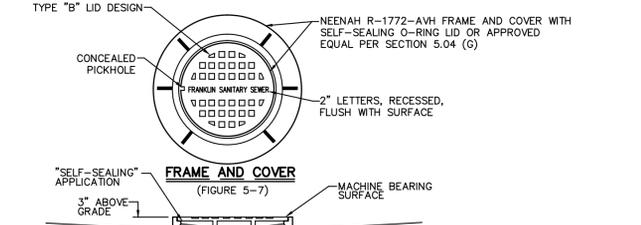
TYPICAL UTILITY CROSSING
NO SCALE



SERVICE CONNECTION FOR SHALLOW SEWERS
LESS THAN 15' DEEP
(FIGURE 7-4) NO SCALE



ADJUSTING RING DETAIL
(FIGURE 5-4A) NO SCALE



PRECAST REINFORCED CONCRETE MANHOLE
(FIGURE 5-1) NO SCALE

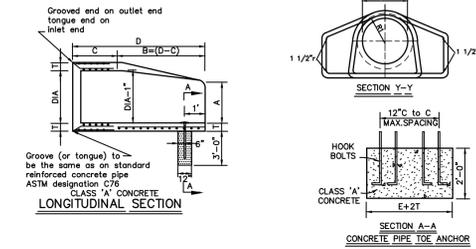
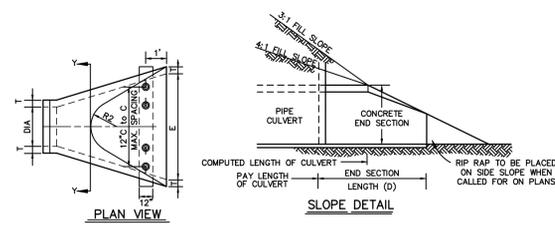
REVISIONS:

MICHAEL THOMPSON
REGISTERED PROFESSIONAL ENGINEER
No. 11011309
STATE OF INDIANA
Michael Thompson
DATE: 04/17/2014
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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: SANITARY SEWER DETAILS
DRAWING FILES: T:\4\4569\105\dwg\4569105-C801-C803.dwg
SHEET NO: 1
C802

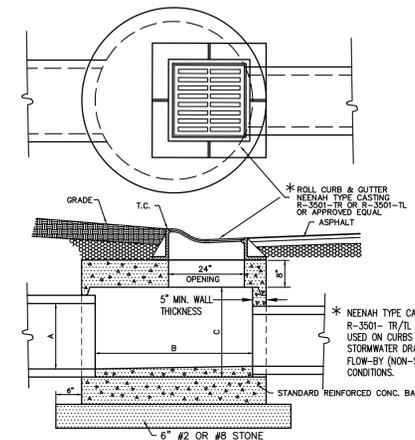


DIMENSIONS OF CONCRETE END SECTIONS FOR ROUND PIPE

DIA	T	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'-8"	6'-3"	3'-2"	2.1	16 1/8"	13"	1,500
24"	3"	1'-0"	2'-8"	6'-3"	4'-0"	2.3	16 3/8"	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"	6'-3"	5'-6"	3.1	18 1/2"	17 1/2"	4,100
36"	4"	1'-5"	3'-1"	6'-3"	6'-0"	3.4	23 3/4"	20"	4,200

* TOLERANCE +/- 1"

PRECAST CONCRETE END SECTION 7
NO SCALE C803

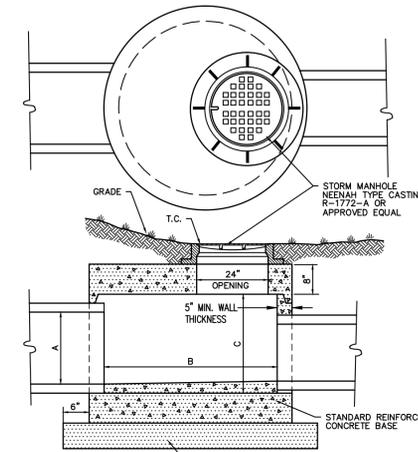


DIMENSIONS (INCHES)

A	B	C
(MAX)	24"	24"
12	48	18
15	48	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
NO SCALE C803

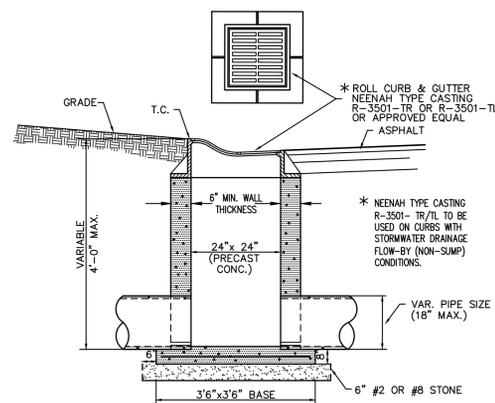


DIMENSIONS (INCHES)

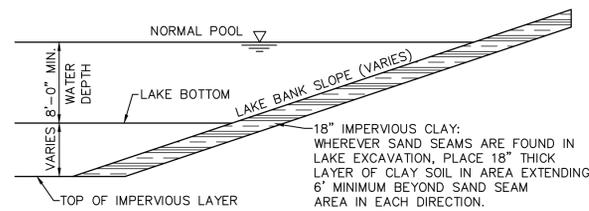
A	B	C
(MAX)	48"	18"
12	48	18
15	48	21
18	48	25
21	48	28
24	48	31
27	60	34
30	60	38
33	60	41
36	60	44
42	60	50

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

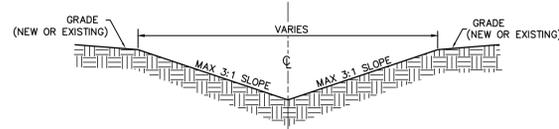
MANHOLE DETAIL 3
NO SCALE C803



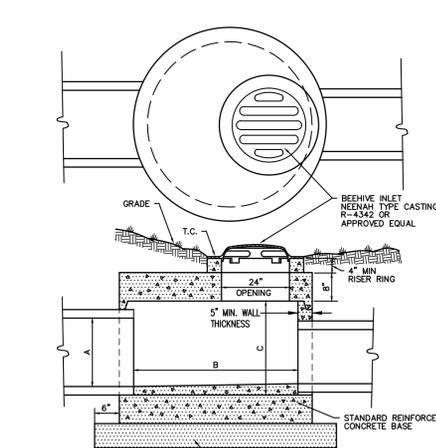
ROLL CURB INLET 6
NO SCALE C803



SPECIAL SLOPE TREATMENT (IN AREAS OF SAND SEAMS) 9
NO SCALE C803



TYPICAL SWALE SECTION 8
NO SCALE C803

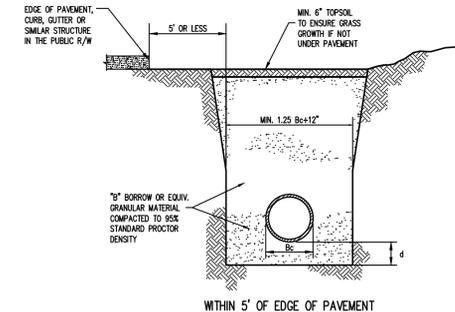


NOTE: STEPS SHALL BE PROVIDED IN ALL STRUCTURES 48" IN DIAMETER OR LARGER.

DIMENSIONS (INCHES)

A	B	C
(MAX)	12"	36"
12	36	18
15	48	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

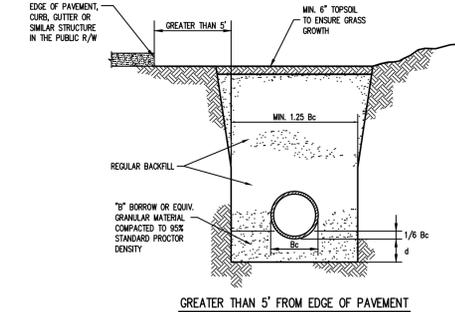
BEEHIVE INLET DETAIL 5
NO SCALE C803



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

TRENCH DETAIL
REINFORCED CONCRETE PIPE (RCP)



NOTE: ALL BEDDING & INITIAL BACKFILL SHALL BE INSTALLED IN 4" TO 12" BALANCED LIFTS. A MINIMUM 9" OF CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE.

TRENCH DETAIL
REINFORCED CONCRETE PIPE (RCP)

NOT USED 2
C803

REVISIONS:

MICHAEL THOMPSON
REGISTERED PROFESSIONAL ENGINEER
No. 11011309
STATE OF INDIANA

Michael Thompson
DATE: 04/17/2014

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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY

MANN PROPERTIES
6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014 PROJECT NO.: 4569.105
DRAWN BY: MAP CHECKED BY: MAT
SHEET TITLE: STORM SEWER DETAILS
DRAWING FILES: T:\4\4569\105\dwg\4569105-C801-C803.dwg

SHEET NO.: **C803**

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 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 contractor's 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 manufacturers' 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 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 contractor's 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:

Michael Thompson
 REGISTERED PROFESSIONAL ENGINEER
 No. 1011309
 STATE OF INDIANA
 DATE: 04/17/2014
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HERITAGE, SECTION 5
 CITY OF FRANKLIN, JOHNSON COUNTY
 MANN PROPERTIES
 6825 E. 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT
SHEET TITLE: SPECIFICATIONS	
DRAWING FILES: T:\44\4569\105\dwgs\4569105-C901.dwg	
SHEET NO.: C901	

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 solitight 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 pipe-laying to reveal any obstructions. The width of the trench shall be the inside pipe diameter plus 24 inches for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances 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 contractor's 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 AASHTO T-99. Water shall be prevented from standing on the compacted subgrade.
- D. Utility Structures - Check for correct elevation of all manhole covers, valve boxes and similar structures located within areas to be paved, and make, or have made, any necessary adjustments in such structures.
- E. Placing Concrete
 1. Subgrade - Place concrete only on a moist, compacted subgrade or base free from loose material. Place no concrete on a muddy or frozen subgrade.
 2. Forms - All forms shall be free from warp, tight enough to prevent leakage and substantial enough to maintain their shape and position without springing or settling, when concrete is placed. Forms shall be clean and smooth immediately before concreting.
 3. Placing Concrete - Concrete shall be deposited so as to require as little rehandling as practicable. When concrete is to be placed at an atmospheric temperature of 35 degrees F. or less, paragraph 702.10 of the Indiana Department of Transportation Specifications latest revision shall be followed.

F. Concrete Curb

1. Expansion Joints - Shall be 1/2 inch thick 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.

REVISIONS:



Michael Thompson
DATE: 04/17/2014

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HERITAGE, SECTION 5
CITY OF FRANKLIN, JOHNSON COUNTY
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DATE: 4/17/2014 PROJECT NO: 4569.105
DRAWN BY: MAP CHECKED BY: MAT

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