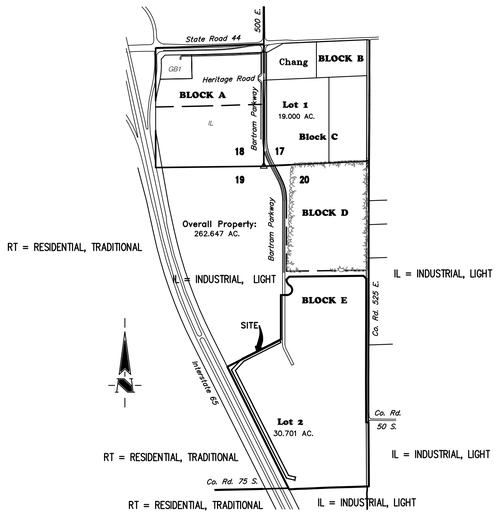
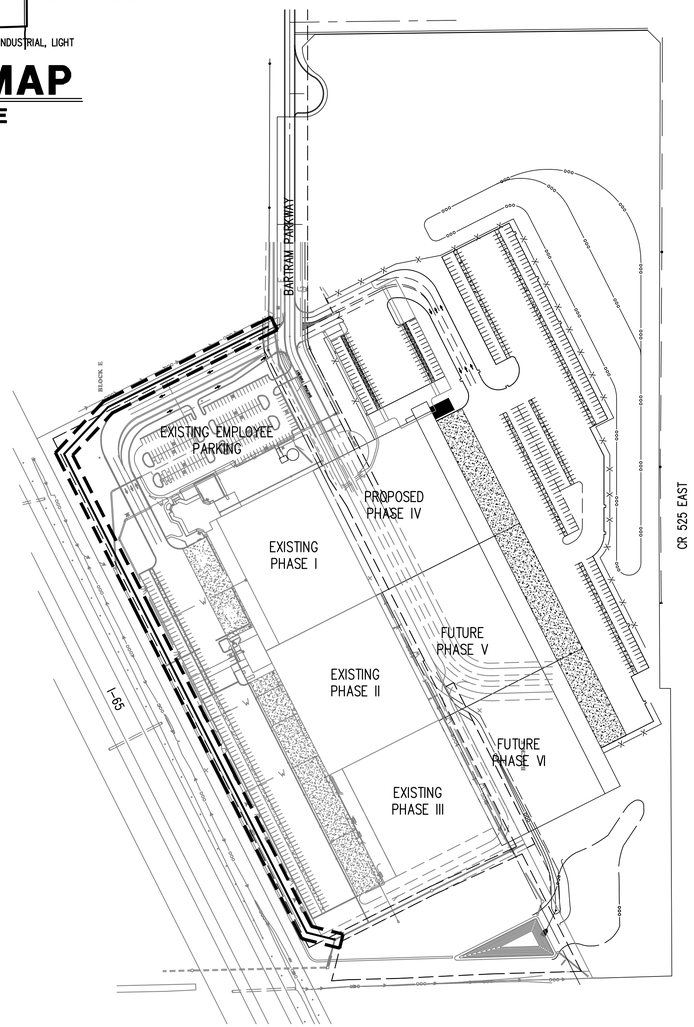



## VICINITY MAP

NOT TO SCALE




## SITE MAP

SCALE: 1"=200'

Sanitary Sewer Boundary Limits

SEC. 20–T12N–R5E

# FRANKLIN TECH PARK SANITARY SEWER RELOCATION

## SOUTH END OF BARTRAM PARKWAY

## FRANKLIN, INDIANA
## JOHNSON COUNTY

**CLIENT:** FRANKLIN DEPARTMENT OF REDEVELOPMENT, BY AND THROUGH ITS REDEVELOPMENT COMMISSION
70 E. MONROE STREET
FRANKLIN, INDIANA 46131
(877) 736-3631 EXT. 1260

**UTILITY CONTACTS:**

SANITARY SEWER
City of Franklin
Department of Public Works
796 South State Street
Franklin, IN 46131
Rick Littleton
(317) 736–3640

GAS
Vectren Energy Delivery
600 Industrial Drive
Franklin, IN 46131
Steve Washburn
(317) 736–2989

WATER
Indiana–American Water Co.
110 South Park Boulevard
P.O. Box 99
Greenwood, IN 46143
Diana Mercer
(317) 881–0270 ext. 227

ELECTRIC
Johnson County REMC
750 International Drive
Franklin, IN 46131
Chuck Bailey
(317) 736–6174

TELEPHONE
Centurylink
1147 Morton Street
Franklin, IN 46131
(317) 736–6630

FIRE DEPARTMENT
City of Franklin
1800 Thornburg Lane
Franklin, IN 46131
Bryne Pursifull
(317) 346–1224

**INDEX**


| SHEET No. | DESCRIPTION |
|---|---|
| C100 | COVER SHEET |
| C101 | DEVELOPMENT PLAN |
| C102 | PRE–CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN |
| C103 | STORMWATER POLLUTION PREVENTION PLAN |
| C401–C402 | SANITARY SEWER PLAN & PROFILE |
| C801–C802 | GENERAL DETAILS |
| C803 | STORMWATER POLLUTION PREVENTION PLAN SPECIFICATIONS |
| C804 | STORMWATER POLLUTION PREVENTION PLAN DETAILS |
| C901–C902 | SPECIFICATIONS |


REVISIONS:

| DATE: | BY: | DESCRIPTION: |
|---|---|---|
| | | |

PROJECT ENGINEER: MLT
CHECKED BY: DAS
DATE CHECKED: 03/06/2012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Indianapolis, Indiana 46123
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317–826–7200 Fax
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CERTIFIED BY: DUANE A. SHARRER
E–MAIL ADDRESS: dsharrer@schneidercorp.com



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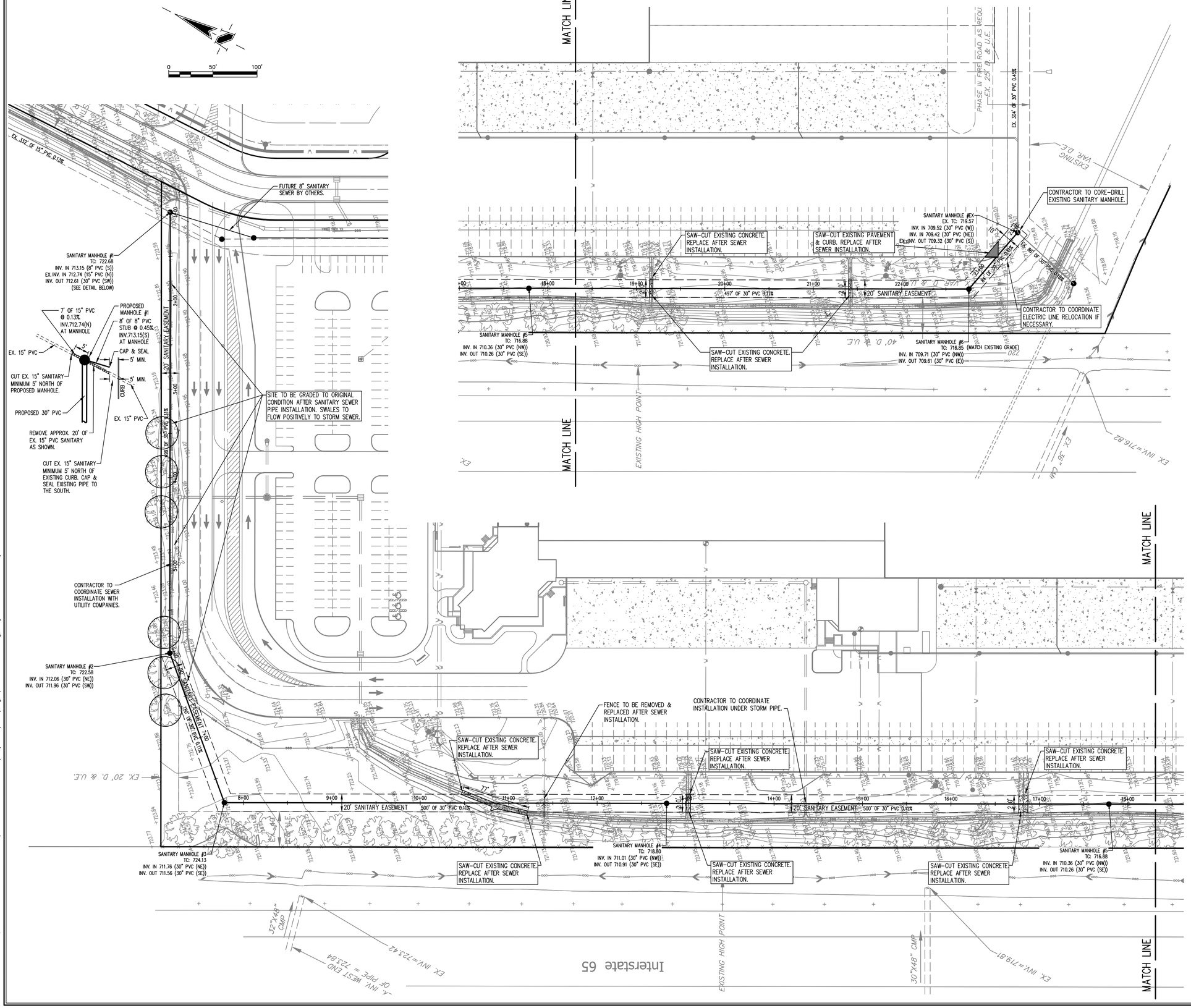
DATE:



JOB No. 7124.003

FILE NAME: T:\7K\7124\003\DWGS\7124003C100.DWG


Plot Date: Mar 07, 2012 Plot Time: 11:34am File Name: T:\7K\7124\003\dwgs\7124003C100.dwg, Layout: C100 By: DTR

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## GENERAL NOTES

1. ALL RADII AND OTHER DIMENSIONS FOR CURBS AND COMBINED CURBS ARE TO FACE OF CURB.
2. IT SHALL BE THE RESPONSIBILITY OF EACH SUBCONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO THE 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 FIELD BEFORE WORK IS STARTED OR RESUMED.
3. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
4. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.

## BENCHMARK

**BASIS OF ELEVATIONS**

**TBM A:** EXISTING CONCRETE FINISHED FLOOR INSIDE THE WEST DOOR IN THE SOUTH WALL OF THE EXISTING PHASE I BUILDING
**ELEV.: 725.99**

**TBM B:** EXISTING CONCRETE FINISHED FLOOR INSIDE THE EAST DOOR IN THE SOUTH WALL OF THE EXISTING PHASE I BUILDING
**ELEV.: 726.01**

**TBM 301:** 5/8" REBAR IN THE CENTERLINE OF BARTRAM PARKWAY
**ELEV.: 723.60**

**TBM 201:** SCHNEIDER REBAR W/CAP STAMPED "SCHNEIDER RANDOM POINT" FLUSH.
**ELEV.: 723.83**

## LEGEND

- Existing Storm Sewer
- Existing 6" Subsurface Drain
- Existing Sanitary Sewer
- New Sanitary Sewer
- Existing Contour (000)
- Existing Elevation (× 000.0)
- New Pavement Grade (000.00)
- All Other Finish Grades (000.0)
- Top of Casting Grade (000.00 TC)
- Swale Grade (000.0 FL)
- Existing Swale Flowline (FL)
- Utility & Drainage Esmt.
- Building Setback Line
- Existing Water Main (W)
- Existing Fire Hydrant
- Existing Water Valve
- Existing Gas Main (G)
- Existing Electric Line (E)
- Existing Telephone Line (T)
- Existing Utility Pole
- Existing Trees
- Existing Fence (X)
- Sanitary Sewer Project Boundary Limits
- Emergency Flood Route
- Trees to be transplanted, watered regularly, and protected while sanitary pipe is installed. Once regrading takes place, trees are to be replanted in original locations.

**NOTE;**
SANITARY SEWER MAIN TO REMAIN FULLY FUNCTIONAL UNTIL NEW SANITARY MAIN HAS BEEN REROUTED AROUND BUILDING. SERVICE IS NOT BE INTERRUPTED EXCEPT FOR PLANNED AND APPROVED CONNECTIONS.

**NOTE:**
BOUNDARY INFORMATION, LOCATIONS OF EXISTING SITE IMPROVEMENTS DENOTED HEREIN WERE PROVIDED BY TIPPMANN CONSTRUCTION INCORPORATED AND IS NOT INCLUDED IN THE CERTIFICATION BY THE SCHNEIDER CORPORATION OR THEIR EMPLOYEES.

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# FRANKLIN TECH PARK
# SANITARY SEWER RELOCATION

SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

| DATE: | PROJECT NO.: |
|---|---|
| 03/07/12 | 7124.003 |
| DRAWN BY: DTR | CHECKED BY: MLT |

SHEET TITLE: DEVELOPMENT PLAN

DRAWING FILES:
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SHEET NO.: C101

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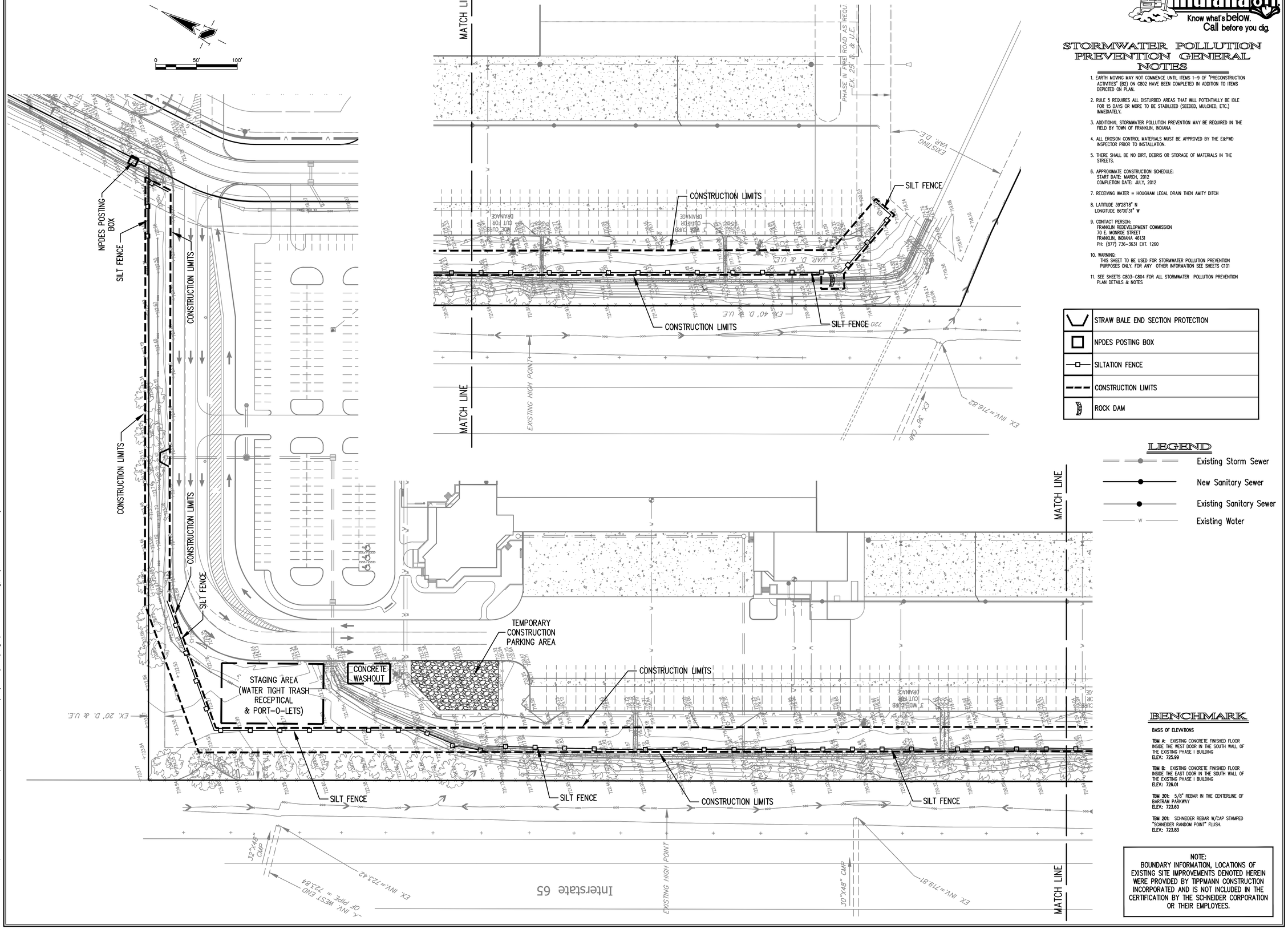


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## STORMWATER POLLUTION PREVENTION GENERAL NOTES

1. EARTH MOVING MAY NOT COMMENCE UNTIL ITEMS 1-9 OF "PRECONSTRUCTION ACTIVITIES" (B2) ON C802 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
2. RULE 5 REQUIRES ALL DISTURBED AREAS THAT WILL POTENTIALLY BE IDLE FOR 15 DAYS OR MORE TO BE STABILIZED (SEEDED, MULCHED, ETC.) IMMEDIATELY.
3. ADDITIONAL STORMWATER POLLUTION PREVENTION MAY BE REQUIRED IN THE FIELD BY TOWN OF FRANKLIN, INDIANA
4. ALL EROSION CONTROL MATERIALS MUST BE APPROVED BY THE E&PWD INSPECTOR PRIOR TO INSTALLATION.
5. THERE SHALL BE NO DIRT, DEBRIS OR STORAGE OF MATERIALS IN THE STREETS.
6. APPROXIMATE CONSTRUCTION SCHEDULE:
   START DATE: MARCH, 2012
   COMPLETION DATE: JULY, 2012
7. RECEIVING WATER = HOUGHAM LEGAL DRAIN THEN AMITY DITCH
8. LATITUDE 39°28'18" N
   LONGITUDE 86°00'31" W
9. CONTACT PERSON:
   FRANKLIN REDEVELOPMENT COMMISSION
   70 E. MONROE STREET
   FRANKLIN, INDIANA 46131
   PH: (877) 736-3631 EXT. 1260
10. WARNING:
    THIS SHEET TO BE USED FOR STORMWATER POLLUTION PREVENTION PURPOSES ONLY. FOR ANY OTHER INFORMATION SEE SHEETS C101
11. SEE SHEETS C803-C804 FOR ALL STORMWATER POLLUTION PREVENTION PLAN DETAILS & NOTES

| | |
|---|---|
| | STRAW BALE END SECTION PROTECTION |
| | NPDES POSTING BOX |
| | SILTATION FENCE |
| | CONSTRUCTION LIMITS |
| | ROCK DAM |

### LEGEND

- Existing Storm Sewer
- New Sanitary Sewer
- Existing Sanitary Sewer
- W — Existing Water

### BENCHMARK

BASIS OF ELEVATIONS

**TBM A:** EXISTING CONCRETE FINISHED FLOOR INSIDE THE WEST DOOR IN THE SOUTH WALL OF THE EXISTING PHASE I BUILDING
**ELEV.: 725.99**

**TBM B:** EXISTING CONCRETE FINISHED FLOOR INSIDE THE EAST DOOR IN THE SOUTH WALL OF THE EXISTING PHASE I BUILDING
**ELEV.: 726.01**

**TBM 301:** 5/8" REBAR IN THE CENTERLINE OF BARTRAM PARKWAY
**ELEV.: 723.60**

**TBM 201:** SCHNEIDER REBAR W/CAP STAMPED "SCHNEIDER RANDOM POINT" FLUSH.
**ELEV.: 723.83**

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# FRANKLIN TECH PARK
## SANITARY SEWER RELOCATION
SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

| | |
|---|---|
| DATE: 03/07/12 | PROJECT NO.: 7124.003 |
| DRAWN BY: DTR | CHECKED BY: |

SHEET TITLE:
PRE-CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

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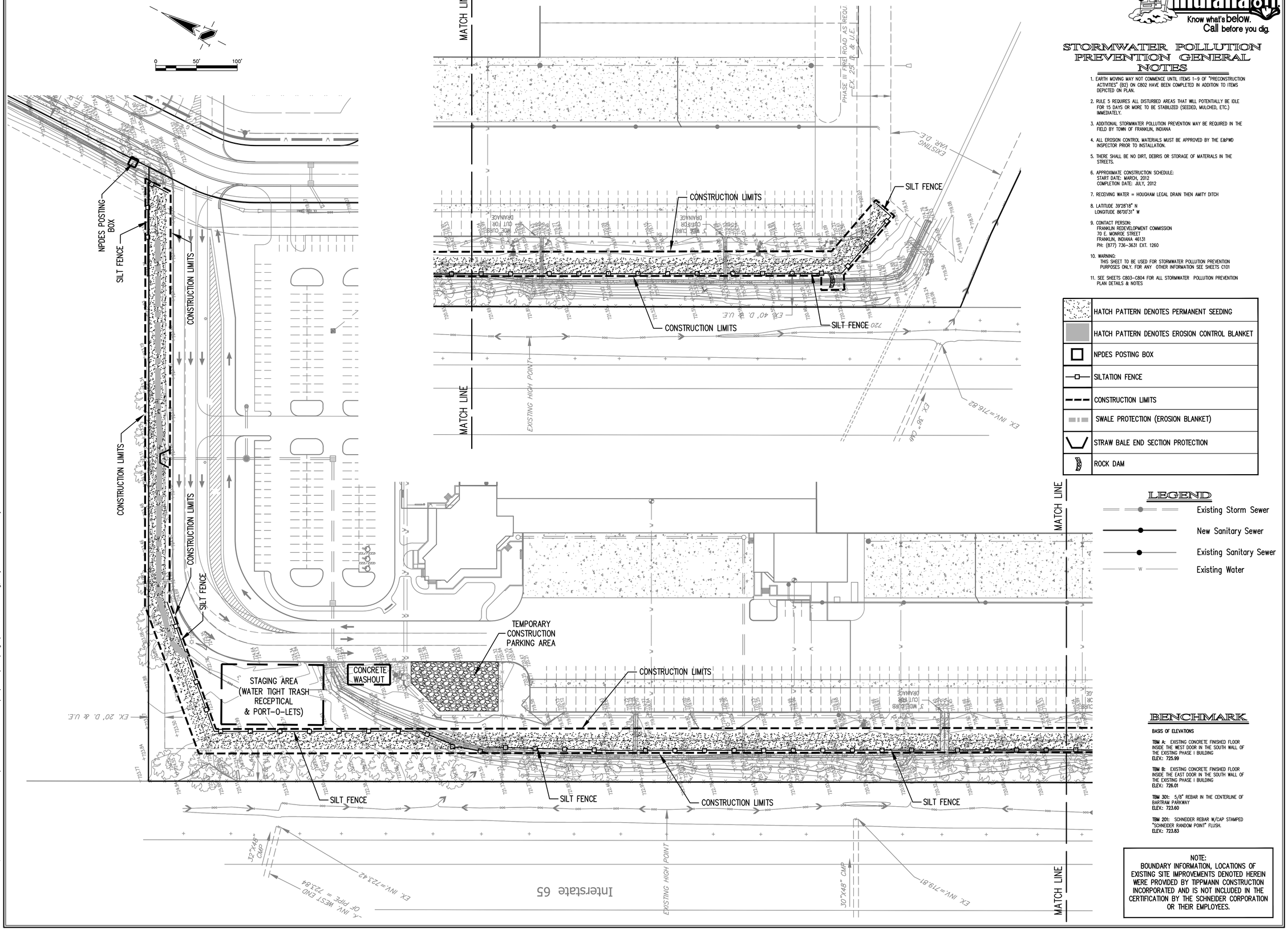


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## STORMWATER POLLUTION PREVENTION GENERAL NOTES

1. EARTH MOVING MAY NOT COMMENCE UNTIL ITEMS 1-9 OF "PRECONSTRUCTION ACTIVITIES" (B2) ON C802 HAVE BEEN COMPLETED IN ADDITION TO ITEMS DEPICTED ON PLAN.
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6. APPROXIMATE CONSTRUCTION SCHEDULE:
   START DATE: MARCH, 2012
   COMPLETION DATE: JULY, 2012
7. RECEIVING WATER = HOUGHAM LEGAL DRAIN THEN AMITY DITCH
8. LATITUDE 39°28'18" N
   LONGITUDE 86°00'31" W
9. CONTACT PERSON:
   FRANKLIN REDEVELOPMENT COMMISSION
   70 E. MONROE STREET
   FRANKLIN, INDIANA 46131
   PH: (877) 736-3631 EXT. 1260
10. WARNING:
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11. SEE SHEETS C803-C804 FOR ALL STORMWATER POLLUTION PREVENTION PLAN DETAILS & NOTES

| | |
|---|---|
| | HATCH PATTERN DENOTES PERMANENT SEEDING |
| | HATCH PATTERN DENOTES EROSION CONTROL BLANKET |
| | NPDES POSTING BOX |
| | SILTATION FENCE |
| | CONSTRUCTION LIMITS |
| | SWALE PROTECTION (EROSION BLANKET) |
| | STRAW BALE END SECTION PROTECTION |
| | ROCK DAM |

### LEGEND

- Existing Storm Sewer
- New Sanitary Sewer
- Existing Sanitary Sewer
- W — Existing Water

### BENCHMARK

BASIS OF ELEVATIONS

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**ELEV.: 723.83**

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SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

| | |
|---|---|
| DATE: 03/07/12 | PROJECT NO.: 7124.003 |
| DRAWN BY: DTR | CHECKED BY: |

SHEET TITLE:
STORMWATER POLLUTION PREVENTION PLAN

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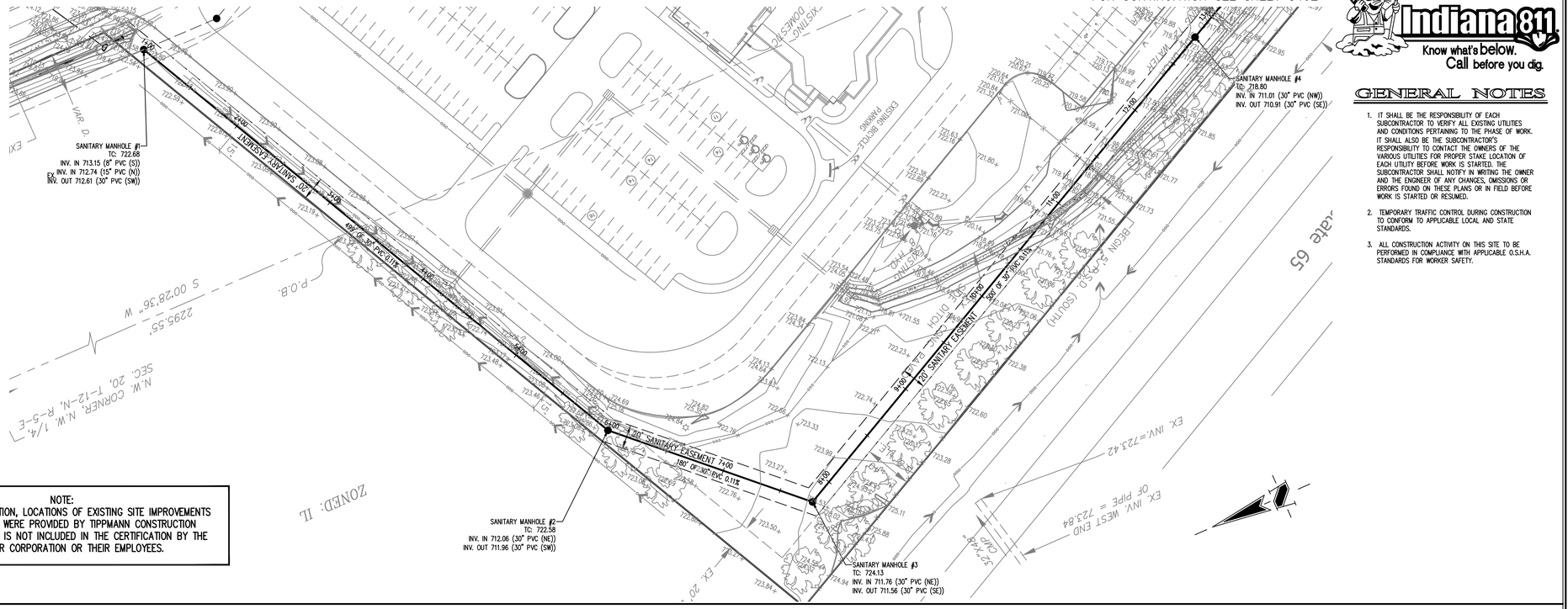


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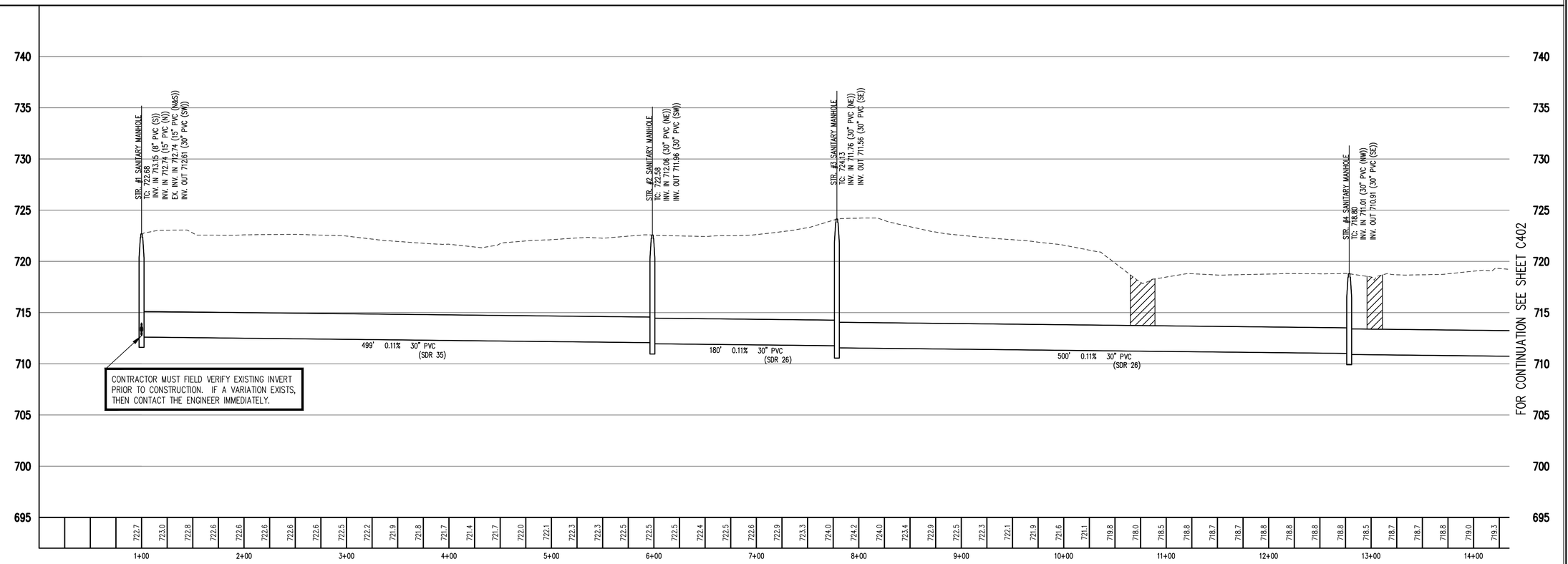
# SANITARY SEWER PLAN




# SANITARY SEWER PROFILE

LEGEND: Existing Grade | New Grade | Granular Backfill

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

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## GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF EACH SUBCONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO THE 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 FIELD BEFORE WORK IS STARTED OR RESUMED.
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SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

DATE: 03/07/12
PROJECT NO.: 7124.003
DRAWN BY: DTR
CHECKED BY:
SHEET TITLE: SANITARY SEWER PLAN & PROFILE

DRAWING FILES:
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SHEET NO.: C401

Plot Date: Mar 08, 2012 Plot Time: 2:14pm File Name: T:\7k\7124\003\dwgs\7124003C401-C402_SANBS.dwg, Layout: C401 By: DTR

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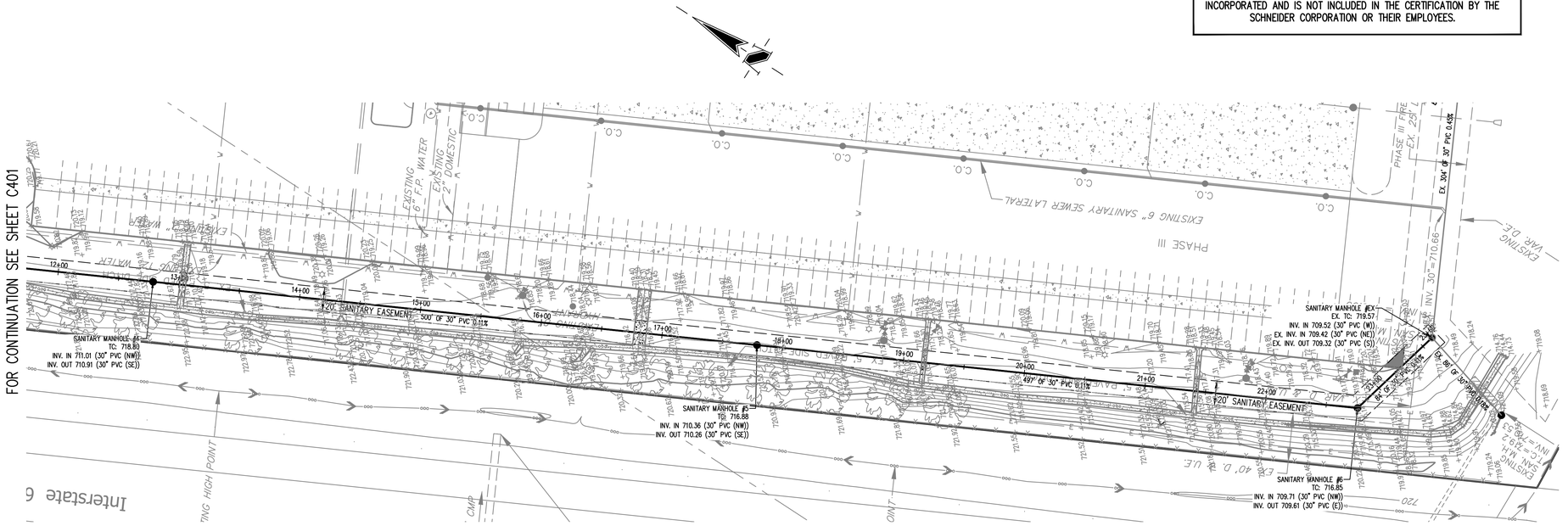
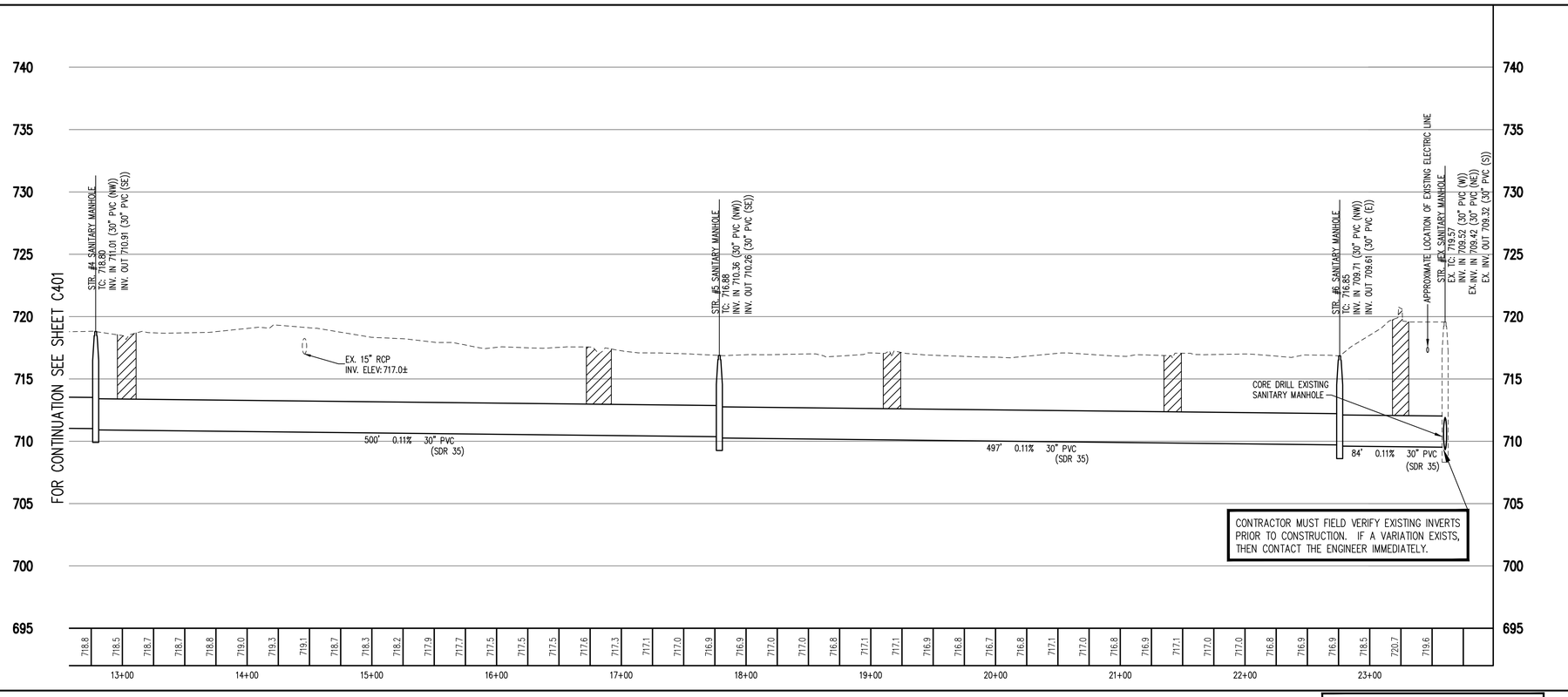



# SANITARY SEWER PLAN

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




CONTRACTOR MUST FIELD VERIFY EXISTING INVERTS PRIOR TO CONSTRUCTION. IF A VARIATION EXISTS, THEN CONTACT THE ENGINEER IMMEDIATELY.

# SANITARY SEWER PROFILE

LEGEND
Existing Grade | New Grade | Granular Backfill

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

REVISIONS:

DATE: 03/07/12

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FRANKLIN TECH PARK
SANITARY SEWER RELOCATION
SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

| DATE: | PROJECT NO.: |
|---|---|
| 03/07/12 | 7124.003 |
| DRAWN BY: | CHECKED BY: |
| DTR | |

SHEET TITLE:
SANITARY SEWER
PLAN & PROFILE

DRAWING FILES:
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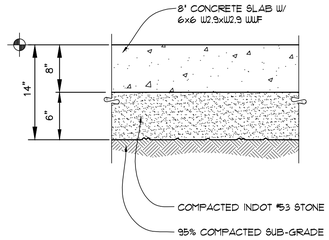
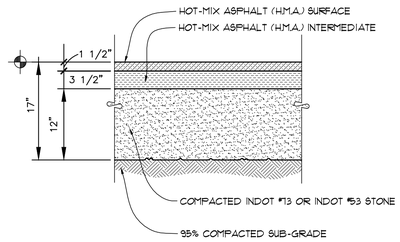
SHEET NO.:
C402

Plot Date: Mar 08, 2012 Plot Time: 2:06pm File Name: T:\7A\7124\003\dwgs\7124003C401-C402_SANBS.dwg Layout: C402 By: DTR



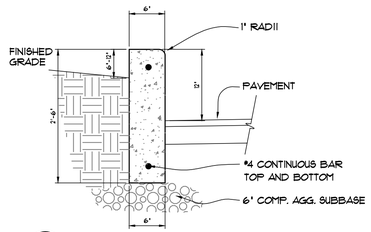

## (A) PAVEMENT TYPE A

AT TRUCK DOCK
SCALE: 1" = 1'-0"



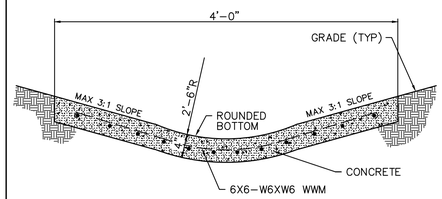

## (B) PAVEMENT TYPE B

AT TRUCK AREAS
SCALE: 1" = 1'-0"



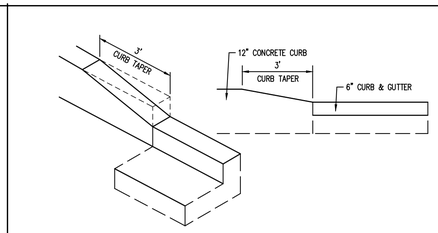

## (C) 12" CONCRETE CURB DETAIL

AT TRAILER STAGING PARKING LOT
SCALE: N.T.S.



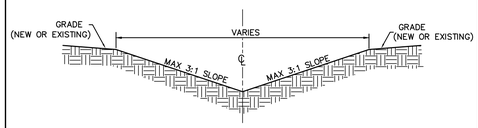

## (E) CONCRETE SWALE DETAIL

SCALE: N.T.S.




## (G) CONCRETE CURB TAPER

(AT ENTRANCE ONLY)
SCALE: N.T.S.




## (K) TYPICAL SWALE SECTION

SCALE: N.T.S.

## BEDDING SPECIFICATIONS

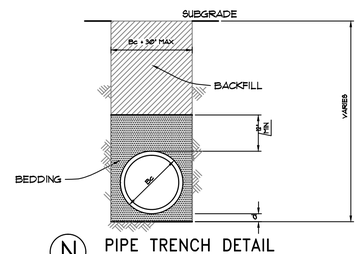
1. BEDDING MATERIAL SHALL BE CLASS I OR CLASS II AS DESCRIBED IN ASTM D2321.
2. FOR ROCK OR OTHER NON-COMPRESSIBLE MATERIAL, THE TRENCH SHALL BE OVER EXCAVATED A MINIMUM OF 6" AND REFILLED WITH BEDDING MATERIAL.
3. 

| DEPTH OF BEDDING MATERIAL BELOW PIPE | |
|---|---|
| D | d(Min.) |
| 21" & SMALLER | 4" |
| 24" TO 60" | 4" |
| 60" & LARGER | 6" |

LEGEND
Bc = OUTSIDE DIA. OF PIPE
D = INSIDE DIA. OF PIPE
d = BEDDING MATERIAL BELOW PIPE BELL

## BACKFILL SPECIFICATIONS

1. BACKFILL WITHIN PUBLIC R.O.W., UNDER PAVED AREAS, AND WITHIN THE INFLUENCE OF BUILDING STRUCTURES SHALL BE BEDDING MATERIAL. COMPACTION SHALL MEET OR EXCEED 95% OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557.
2. BACKFILL WITHIN LAWN AREAS AND OUT OF THE INFLUENCE OF: BUILDING STRUCTURES, PAVED AREAS, AND PUBLIC R.O.W., SHALL BE STANDARD BACKFILL. STANDARD BACKFILL SHALL BE FREE OF: ROCK AND GRAVEL LARGER THAN 3" IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION, AND OTHER DELETERIOUS MATERIAL ACCORDING TO ASTM D 2487. COMPACTION SHALL MEET OR EXCEED 95% OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557.




## (N) PIPE TRENCH DETAIL

N.T.S.

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# FRANKLIN TECH PARK
# SANITARY SEWER RELOCATION

SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

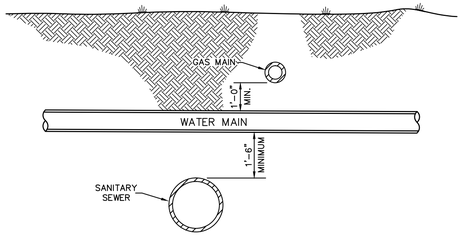
| DATE: | PROJECT NO.: |
|---|---|
| 03/07/12 | 7124.003 |
| DRAWN BY: DTR | CHECKED BY: MLT |

SHEET TITLE: GENERAL DETAILS

DRAWING FILES:
I:\TA\7124\003\dwgs\7124003C801-C802.dwg
XREF: T:\TA\7124\003\dwgs\Title1.dwg

SHEET NO.: C801

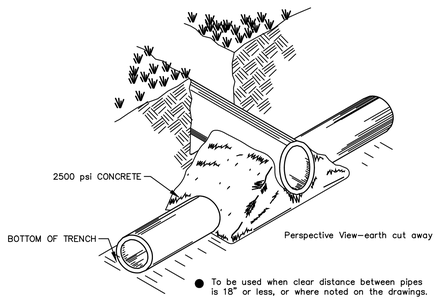
Plot Date: Mar 07, 2012 Plot Time: 11:48am File Name: T:\TA\7124\003\dwgs\7124003C801-C802.dwg, Layout: C801 By: DTR




## TYPICAL UTILITY CROSSING

NO SCALE

7 / C802

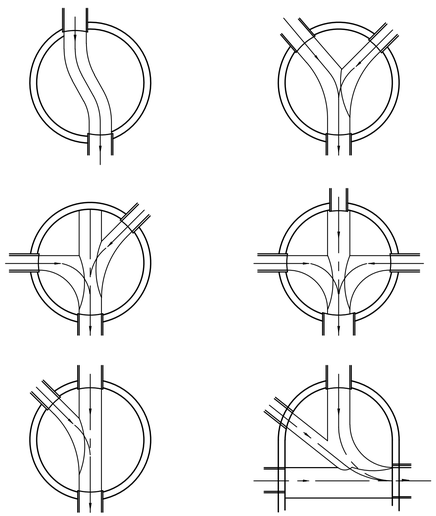



● To be used when clear distance between pipes is 18" or less, or where noted on the drawings.

## CONCRETE CRADLE

NO SCALE

6 / C802

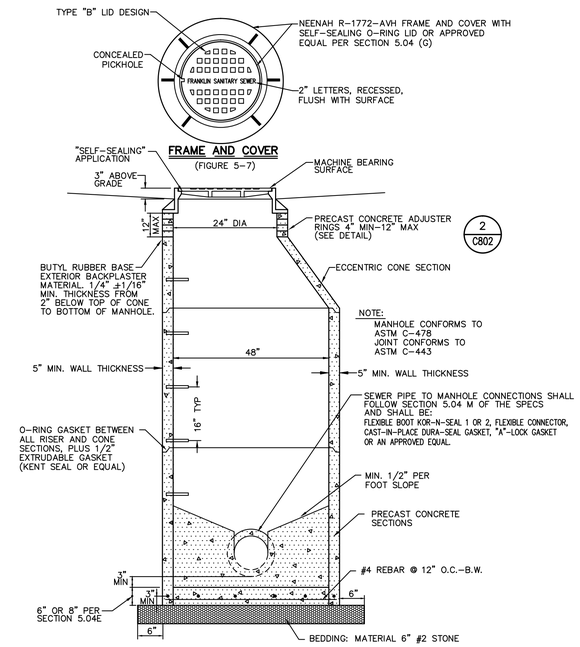


SANITARY SEWER
BENCH SLOPE= 1/2" PER FOOT

## FLOW CHANNEL DETAIL

(FIGURE 5–6) NO SCALE

8 / C802



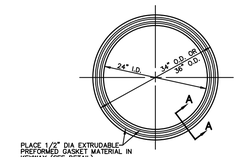

FLOW CHANNELS–THE FLOW CHANNELS WITHIN MANHOLES SHALL BE AN INTEGRAL PART OF THE PRECAST BASE. THE CHANNELS SHALL BE SHAPED AND FORMED FOR A CLEAN TRANSITION WITH PROPER HYDRAULICS TO ALLOW THE SMOOTH CONVEYANCE OF THE FLOW THROUGH THE MANHOLE. THE BENCH WALL SHALL BE FORMED TO THE CROWN OF THE INLET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

## PRECAST REINFORCED CONCRETE MANHOLE

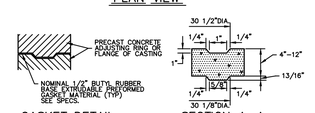
(FIGURE 5–1) NO SCALE

1 / C802

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




PLAN VIEW

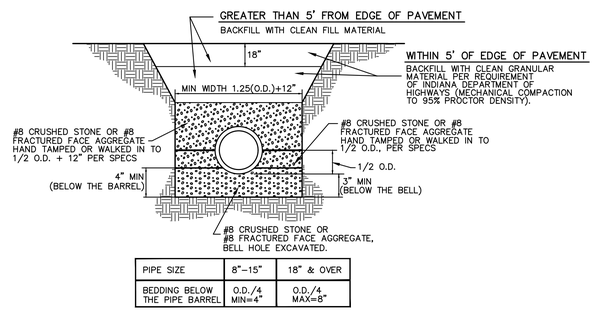



GASKET DETAIL SECTION A–A

## ADJUSTING RING DETAIL

(FIGURE 5–4A) NO SCALE

2 / C802




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

## SANITARY SEWER BEDDING DETAIL

PVC & HDPE PIPE NO SCALE

(FIGURE 7–1)

3 / C802

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# SANITARY SEWER RELOCATION

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| DATE: | PROJECT NO.: |
|---|---|
| 03/07/12 | 7124.003 |
| DRAWN BY: DTR | CHECKED BY: MLT |

SHEET TITLE: GENERAL DETAILS

DRAWING FILES:
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XREF: T:\7k\7124\003\dwgs\Title1.dwg

SHEET NO.:

C802

Plot Date: Mar 07, 2012 Plot Time: 11:48am File Name: T:\7k\7124\003\dwgs\7124003C801–C802.dwg, Layout: C802 By: DTR

# STORMWATER POLLUTION PREVENTION PLAN INDEX

A1 Plan Index provided below
A2 Attached
A3 Project Type: Sanitary Sewer main relocation within the Franklin Tech Park.
A4 Vicinity Map: See Sheet C100
A5 Legal Description of Project Site: N/A
A6 Location of proposed site improvements: See sheets C101, C401–C402.
A7 14 Digit Hydrologic Unit Code: 05120204090070
A8 State or Federal water quality permits: N/A
A9 Specific points where stormwater discharge will leave the site: N/A
A10 There are no known wetlands and water courses on or adjacent to the site.
A11 Receiving Waters: Hougham Legal Drain then the Amity Ditch located about 3500' Southeast of the Franklin Tech Park.
A12 Identification of potential discharges to groundwater: None Known
A13 100 Year Floodplains, Floodways and Flood Fringes: This site is in an area designated as Zone X and is not in a Special Flood Hazard Area, as shown on FIRM, Community Number 180801C0230D, dated August 2, 2007.
A14 Pre-Construction and Post Construction Peak Discharge Per Phase Calculations: N/A
A15 Adjacent Land Use
Sheet C103 for more information):
North: Developed Industrial Building.
South: Developed Industrial Building/Cultivated Farm Field.
East: Developed Industrial Building.
West: I–65 Interstate.
A16 Locations and approximate boundaries of all disturbed areas: See Sheets C102 and C103 for locations.
A17 Identification of existing vegetative cover: See Sheet C101–C103.
A18 Soils Map including descriptions and limitations: See sheet C804 for soils map, description and limitations.
A19 Locations, size and dimensions of proposed stormwater systems: N/A.
A20 Locations, size and dimensions of any proposed off–site construction activities associated with this project: None.
A21 Locations of Soil Stockpiles: Excavated pipe trench spoils will be placed along side pipe trench then used to backfill trench as pipe installation is completed.
A22 Existing site topography: See Sheet C101 for topography.
A23 Proposed final topography: After pipes are installed, the grades will be put back to original condition.
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:

PRECONSTRUCTION ACTIVITIES:
1. Call the Indiana Underground Plant Protection systems, Inc. ("Hoisey Moisey") 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. Notify the City of Franklin 48 hours prior to starting and schedule a pre–construction meeting with the City.
3. A silt fence shall be installed at the edges of the project site where there is potential for any stormwater runoff. See Sheets C102–C103 for locations of silt fence.
4. Storm and section protection shall be installed at existing and section as depicted on plan.
5. Install rock dam on concrete drainage swale.
6. Install temporary construction parking area for equipment and vehicles as far from swales and detention ponds as possible.
7. Establish onsite location for owner/operator/contractor placement of approved plans and Rule 5 NOI and Rule 5 inspection documentation. See Sheet C102 for location.
8. Establish staging area for equipment and vehicles as far from swales and detention pond as possible.
9. Pavement shall be cleaned at the end of each work day.

CONSTRUCTION ACTIVITIES:
1. Install temporary stone construction parking area as shown on plans, see sheets C102–C103.
2. Install silt fencing & inlet control for existing structures, see sheets C102–C103.
3. After all areas are protected establish staging area. See sheets C102–C103 also construct Rule 5 information posting site, install trash receptical, construct concrete washout, & place Port–O–Lets.
4. Once erosion and sediment control measures are in place, begin pipe installation. Do not leave large areas unprotected for more than 15 days. Rule 5 requires that all disturbed areas that potentially will be idle for 15 days or more will be stabilized (seeded, mulched, etc.) immediately.
5. After pipe installation, complete final grading, seed, immediately.
6. Final grade all areas. Re–seed any disturbed areas.

B3 Stable construction entrance location(s) and specifications: See Stormwater Pollution Prevention Plan Sheets C102–C103 for location and Sheet C804 for construction entrance details and specifications.
B4 Sediment control measures for sheet flow areas: See Stormwater Pollution Prevention Plan Sheets C102–C103 for locations of sediment control measures and Sheet C804 for construction details and specifications.
B5 Sediment control measures for concentrated flow areas: See Stormwater Pollution Prevention Plan Sheets C102–C103 for locations of sediment control measures and Sheet C804 for construction details and specifications.
B6 Storm sewer inlet protection measures, locations and specifications: See Stormwater Pollution Prevention Plan Sheets C102–C103 for locations of inlet protection measures and Sheet C804 for construction details and specifications.
B7 Runoff control measures: See Stormwater Pollution Prevention Plan Sheets C102–C103 for locations of temporary surface stabilization.
B8 Stormwater outlet protection specifications: N/A.
B9 Grade stabilization structure locations and specifications: None.
B10 Location, dimensions, specifications and construction details of each stormwater quality measure: N/A.
B11 Temporary surface stabilization methods appropriate for each season: See Sheet C804 for 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 C804 for construction details and specifications.

B13 Material handling and spill prevention plan:

Purpose:
The intention of this Spill Prevention, Control and Countermeasures (SPCC) is to establish the procedures and equipment required to prevent the discharge of oil and hazardous substances in quantities that violate applicable water quality standards, cause a sheen upon or discoloration of the surface of navigable waters or adjoining shorelines, or cause sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. The Plan also establishes the activities required to mitigate such discharges (i.e., countermeasures) should they occur.

Definitions:
Pollutant: means pollutant of any kind or in any form, including but not limited to sediment, paint, cleaning agents, concrete washout, pesticides, nutrients, trash, hydraulic fluids, fuel, oil, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged soil.

Discharge:
Includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

Navigable Waters:
Means all waters of the United States that are connected with a navigable stream, lake, or sea. [Note: This definition is usually interpreted to mean any wastewater (even normally dry wash or storm sewer) that eventually drains into a navigable stream]

Plan Review and Amendements:
This Plan shall be reviewed and/or amended, if necessary, whenever there is a change in the design of the site, construction, operation, or maintenance which materially affects the site's potential for the discharge of regulated material.

Prediction of Potential Spills:
1. Nearest Navigable Water: Driftwood River
2. Drainage System: The majority of the existing watershed sheet flows prior to entering the existing streets and storm sewers in the adjoining sections. The storm sewer systems convey runoff through a pond eventually discharging into a ditch. It then follows the ditch southeast.
3. Possible Spill Sources (during 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, miscellaneous home improvement materials, toys, clothing and animal waste, elevated storm runoff temperatures, acid rain pesticides and pathogens.
4. Groundwater Contamination:
The facility maintains NO above ground or under ground storage tanks at this site. Therefore, it is felt that there is little or no possibility of post construction groundwater contamination. The facility does have city sanitary sewer and city water.

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

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

B14 Monitoring and maintenance guidelines for pollution prevention measures: A self–monitoring program must be implemented by the City of Franklin to ensure the stormwater pollution prevention plan is working effectively. A trained individual, acceptable to the City of Franklin, shall perform a written evaluation of the project site by the end of the next business day following each measurable storm event. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Weekly inspections by the trained individual shall continue until the entire site has been stabilized and the "verified" copy of the Notice of Termination has been issued.

Silt Fence Maintenance Requirements
1. Inspect the silt fence periodically and after each storm event.
2. If fence fabric tears, starts to decompose or in any way becomes ineffective, replace the affected portion immediately.
3. Remove deposited sediment when it reaches half the height of the fence at it's lowest point or is causing the fabric to bulge.
4. Take care to avoid undermining the fence during cleanout.
5. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize it.

Stock and Gravel Curb 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.

Temporary Gravel Construction Entrance Maintenance Requirements
1. Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
2. Reshape as needed for drainage and runoff control.
3. Topdress with clean stone as needed.
4. Immediately remove mud and sediment tracked or washed onto streets by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
5. Repair any broken road pavement immediately.

B15 Erosion & sediment control specifications for individual building lots: Site does not have multiple lots – N/A

C1 Description of pollutants and their sources associated with the proposed land use: Silt and sediment from exposed soils, leaves, mulch, vehicular sources such as leaking fuel or oil, brake fluid, brake dust, grease, antifreeze, metals, rubber fragments, road grit, salts and sands, construction trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, miscellaneous home improvement materials, toys, clothing and animal waste, elevated storm runoff temperatures, acid rain pesticides and pathogens.

C2 Sequence describing stormwater quality measure implementation:
1. Inspect and maintain all temporary erosion control measures as detailed in the Stormwater Pollution Prevention Measures Maintenance Requirements beginning immediately after installation and continuing until site has been stabilized with sufficient vegetation and all construction activity is complete. All disturbed areas shall have 70% vegetated cover to be "sufficiently established."
2. Remove end section protection, check dam, and silt fences, etc. only after seeding and sufficient vegetation growth has been established in each area to a point where sediment/ pollutants will not enter streams, lake(s) or storm sewer system.

C3 Description of proposed post construction stormwater quality measures: Site and facility design for storm water quality protection on this site consist of restoration of all grades to pre–construction grades and sufficient re–establishment of vegetative cover. The re–established vegetative cover will provide erosion and sediment control and thus prevent sediment and other associated pollutants from entering downstream water systems.
It is the intent of this plan that the implementation of the above described stormwater quality measures be executed in accordance with the enclosed plans and details in order to meet the requirements of Rule 5 storm water quality.

C4 Location, dimensions, specifications and construction details of stormwater quality measures: See See Stormwater Pollution Prevention Plan Sheets C102–C103 for locations of permanent stormwater quality measures and Sheet C804 for construction details and specifications.

C5 Description of maintenance guidelines for proposed water quality measures:
See BMP Operations and Maintenance Manual.

# ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES

## VEHICLE & EQUIPMENT MAINTENANCE

### Description and Purpose

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

### Suitable Applications

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

### Limitations

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

### Implementation

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

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

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

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

Use 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 solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.

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

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

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

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

Properly dispose of or recycle used batteries.

Do not bury used tires.

Repair leaks of fluids and oil immediately.

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

### Inspection and Maintenance

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

Keep ample supplies of spill cleanup materials onsite.

Maintain waste fluid containers in leak proof condition.

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

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

## VEHICLE AND EQUIPMENT FUELING

### Description and Purpose

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

### Limitations

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

### Implementation

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

Discourage "topping–off" of fuel tanks.

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

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

Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the 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 areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level–grade areas.

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

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

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

### Inspection and Maintenance

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

Keep ample supplies of spill cleanup materials onsite.

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

## SOLID WASTE MANAGEMENT

### Description and Purpose

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

### Suitable Applications

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

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

Packaging materials including wood, paper, and plastic

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

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

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

### Implementation

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

Select designated waste collection areas onsite.

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

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

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

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

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

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

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

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

Arrange for regular waste collection before containers overflow.

Clean up immediately if a container does spill.

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

### Collection, Storage, and Disposal

Littering on the project site should be prohibited.

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

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

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

Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the 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 runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.

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

### Inspection and Maintenance

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

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

Inspect construction waste area regularly.

Arrange for regular waste collection.

## CONCRETE WASHOUT

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

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

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

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

Avoid mixing excess amounts of fresh concrete.

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

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

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

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

## DEWATERING AND PUMPING OPERATIONS

### Description and Purpose

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

### Suitable Applications

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

### Limitations

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

### Implementation

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

### Sediment Basin

Description:
A sediment basin is a temporary basin with a controlled release structure that is formed by excavation or construction of an embankment to detain sediment–laden runoff and allow sediment to settle out before discharging. Sediment basins are generally larger than Sediment Traps.

Appropriate Applications:
Effective for the removal of gravel, sand, silt, some metals that settle out with the sediment, and trash.

Implementation:
Excavation and construction of related facilities is required.

Temporary sediment basins must be fenced if safety is a concern.

Outlet protection is required to prevent erosion at the outfall location.

Maintenance:
Maintenance is required for safety fencing, vegetation, embankment, inlet nd outfall structures, as well as other features.

Removal of sediment is required when the storage volume is educed by one–half.

### Sediment Trap

Description:
A sediment trap is a temporary basin formed by excavation and/or construction of an earthen embankment across a waterway or low drainage area to detain sediment–laden runoff and allow sediment to settle out before discharging. Sediment traps are generally smaller than Sediment Basins.

Appropriate Applications:
Effective for the removal of large and medium sized particles (sand and gravel) and some metals that settle out with the sediment.

Implementation:
Excavation and construction of related facilities is required.

Trap inlets should be located to maximize the travel distance to the trap outlet.

Use rock or vegetation to protect the trap outlets against erosion.

Maintenance:
Maintenance is required for vegetation, embankment, inlet and outfall structures, as well as other features.

Removal of sediment is required when the storage volume is reduced by one–third.

### 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.

The owner of lot 2 shall maintain all stormwater pollution prevention measures.

## EVALUATION FOR CONSTRUCTION PROJECTS

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

Project Name: _____

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

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

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

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

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

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

Report Submitted by: _____ Date: _____

REVISIONS:

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FRANKLIN TECH PARK
SANITARY SEWER RELOCATION
SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

DATE: 03/07/12
PROJECT NO.: 7124.003
DRAWN BY: DTR
CHECKED BY: MLT
SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN SPECIFICATIONS
DRAWING FILES: I:\7k\7124\003\dwgs\7124003C803–C804.dwg
XREF: I:\7k\7124\003\dwgs\Title1.dwg
SHEET NO.: C803

Plot Date: Mar 07, 2012 Plot Time: 11:48am File Name: I:\7k\7124\003\dwgs\7124003C803–C804.dwg, Layout: C803 By: DTR

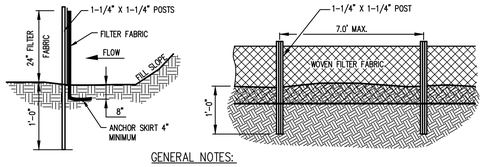
SILT FENCE

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 efficiancy..... 85%
Slurry Flow Rate..... 0.3 gpm/sq. ft
Water Flow Rate..... 15 gpm/square ft

SILT FENCE JOINT WRAP DETAIL



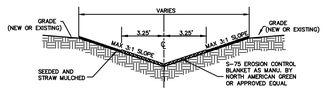

GENERAL NOTES:

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

## TEMPORARY SILT FENCE

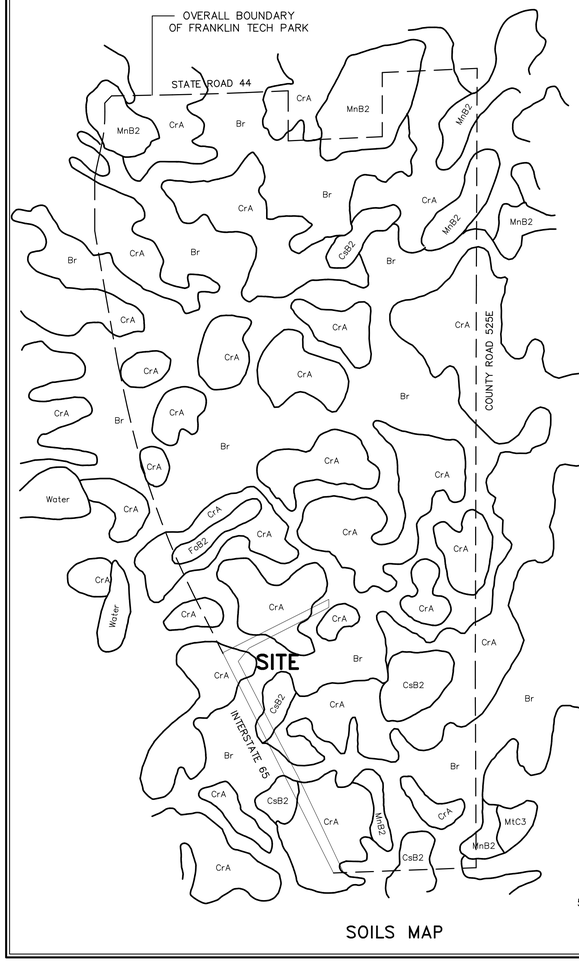
NOT TO SCALE

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




## EROSION CONTROL MATTING DETAIL FOR REAR YARD SWALE

SCALE: NONE

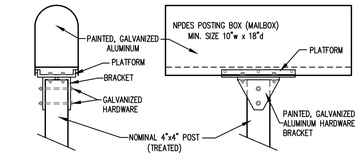



LIMITATIONS OF SOIL TYPES

1. MnB2 (Miami Silt Loam)
   This moderately sloping soil is on irregularly shaped knolls surrounded by gently sloping and nearly level soils, in long narrow bands around ridgetops, on sides of drainageways leading to terraces or bottom land, or on undulated moraines. Runoff is medium. The hazard of erosion is moderate, and erosion control practices are needed. This soil is suited to small grain, grasses and legumes, and an occasional row crop.
2. Br (Brookston Silty Clay Loam)
   This nearly level soil is on broad flats and in depressions and narrow drainageways between better drained soils on broad plains. Runoff is very slow or ponded. Wetness is the main limitation to use of this soil and is a severe limitation for most nonfarm uses.
3. CsB2 (Crosby Miami Silt Loam)
   This gently sloping complex is on broad plains; on low knolls within broad, nearly level plains; and at the heads of drainageways. Runoff is medium. Because of wetness and slow permeability, Crosby soils have severe limitations for most nonfarm uses and Miami soils have moderate limitations for most nonfarm uses.
4. CrA (Crosby Silt Loam)
   This nearly level soil is on broad plains, on ridgetops in rolling areas, and in low drainageways. Runoff is slow. Wetness is the main limitation to use of this soil. Because of wetness and slow permeability, this soil has severe limitations for most nonfarm uses.

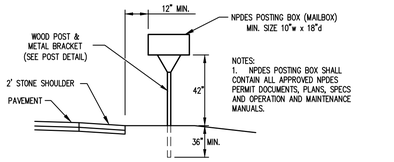
500 0 250 500 1000

SOILS MAP




## POST DETAIL

NOT TO SCALE

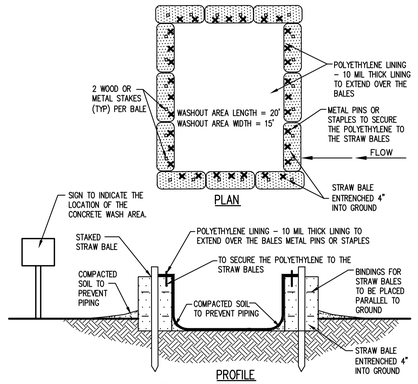



NOTES:
1. NPDES POSTING BOX SHALL CONTAIN ALL APPROVED NPDES PERMIT DOCUMENTS, PLANS, SPECS AND OPERATION AND MAINTENANCE MANUALS.

## NPDES SWP3 POSTING DETAIL

NOT TO SCALE

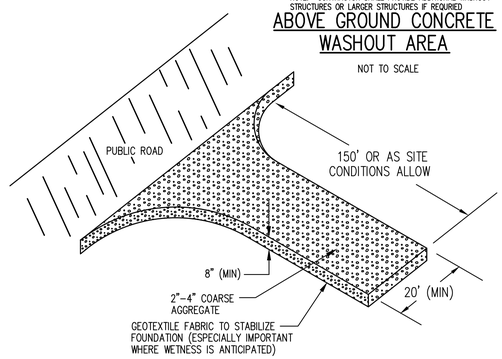
NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
3. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED 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 ARE IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE INSPECTOR.




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

## ABOVE GROUND CONCRETE WASHOUT AREA

NOT TO SCALE




## TEMPORARY CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Seedbed Preparation

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

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

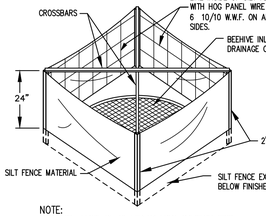
Seeding

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

Figure 5–2: Permanent Seed Mixtures

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

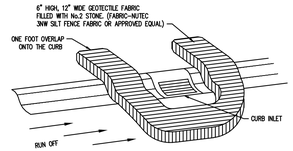
* 1 – Preferred 2 – Will Tolerate ** Inoculate with specific Inoculant.




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

## BEEHIVE INLET PROTECTION

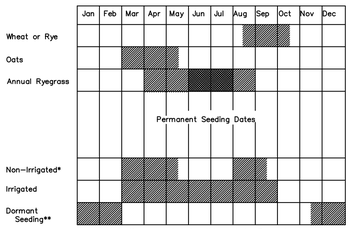
NOT TO SCALE




## CURB INLET SEDIMENT BARRIER

NO SCALE

Temporary Seeding and Stabilization Dates




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

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

** Increase seeding application by 50%.

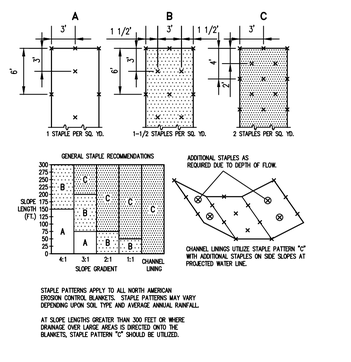
NOTE: MULCHING REQUIRED WHEN ACTUAL CONDITIONS HAMPER THE ESTABLISHMENT OF VEGATATIVE GROUND COVER.

## FIGURE 5–3

Temporary Seedings

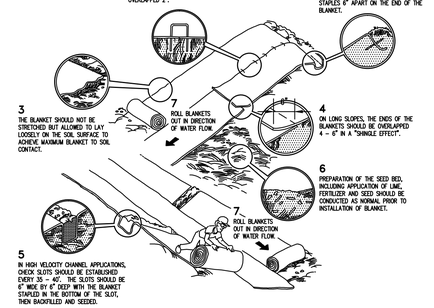
| Kind of Seed | 1000 Sq. Ft. | Acre | Remarks |
|---|---|---|---|
| Wheat or Rye | 3.5 lbs. | 2 bu. | Cover seed 1" to 1 1/2" deep |
| Spring Oats | 2.3 lbs. | 3 bu. | Cover seed 1" deep |
| Annual ryegrass | 1 lb. | 40 lbs. | Cover seed 1/4"deep* |

* Not necessary where mulch is applied.




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

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




## EROSION BLANKET INSTALLATION

Know what's below. Call before you dig.

STORMWATER POLLUTION PREVENTION SCHEDULE

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

REVISIONS:

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FRANKLIN TECH PARK
SANITARY SEWER RELOCATION
SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

| DATE: | PROJECT NO.: |
|---|---|
| 03/07/12 | 7124.003 |
| DRAWN BY: DTR | CHECKED BY: MLT |

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN DETAILS

DRAWING FILES:
I:\JN\7124\003\dwgs\7124003C803–C804.dwg
XREF: I:\JN\7124\003\dwgs\Title1.dwg

SHEET NO.: C804

Plot Date: Mar 07, 2012 Plot Time: 11:49am File Name: I:\JN\7124\003\dwgs\7124003C803–C804.dwg Layout: C804 By: DTR

## PAVEMENT JOINT SEALANTS

1. THIS SECTION INCLUDES COLD APPLIED PAVEMENT JOINT SEALANTS IN THE FOLLOWING LOCATIONS. PORTLAND CEMENT CONCRETE PAVEMENT EXPANSION AND CONTRACTION JOINTS.

2. MATERIALS, GENERAL
A. COMPATIBILITY: PROVIDE JOINT SEALANTS, BACKINGS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY SEALANT MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
1. PRIMERS: PRODUCT RECOMMENDED IN WRITING BY JOINT SEALANT MANUFACTURER FOR ADHESION OF SEALANT TO JOINT SUBSTRATES INDICATED, AS DETERMINED FROM SEALANT COMPATIBILITY AND ADHESION TESTS AND PRIOR EXPERIENCE.
B. JOINT-SEALANT BACKER MATERIALS: NONSTAINING; COMPATIBLE WITH JOINT SUBSTRATES, SEALANTS, PRIMERS, AND OTHER JOINT FILLERS; AND APPROVED FOR APPLICATIONS INDICATED BY JOINT SEALANT MANUFACTURER BASED ON FIELD EXPERIENCE AND LABORATORY TESTING.
1. ROUND BACKER ROD FOR COLD- AND HOT-APPLIED SEALANTS: ASTM D 5249, TYPE 1, OF DIAMETER AND DENSITY REQUIRED TO CONTROL SEALANT DEPTHS AND PREVENT BOTTOM-SIDE ADHESION OF SEALANT.

3. COLD-APPLIED JOINT SEALANTS
A. MULTICOMPONENT TRAFFIC GRADE SEALANT FOR CONCRETE: ASTM C 920, POURABLE, CHEMICALLY CURING ELASTOMERIC FORMULATION.

4. INSTALLATION
A. CLEAN OUT JOINTS IMMEDIATELY BEFORE INSTALLING JOINT SEALANTS.
B. JOINT PRIMING: PRIME JOINT SUBSTRATES WHERE INDICATED OR RECOMMENDED IN WRITING BY JOINT SEALANT MANUFACTURER, BASED ON SEALANT COMPATIBILITY AND ADHESION TESTS AND PRIOR EXPERIENCE. CONFINE PRIMERS TO AREAS OF JOINT-SEALANT BOND; DO NOT SPILL PRIMERS OR ALLOW THEM TO MIGRATE ONTO ADJOINING SURFACES.
C. SEALANT INSTALLATION: COMPLY WITH APPLICABLE RECOMMENDATIONS IN ASTM C 1193.
D. INSTALL BACKER MATERIALS TO SUPPORT SEALANTS DURING APPLICATION AND AT POSITION REQUIRED TO PRODUCE OPTIMUM SEALANT MOVEMENT CAPABILITY.
1. DO NOT LEAVE GAPS BETWEEN ENDS OF BACKER MATERIALS.
2. DO NOT STRETCH, TWIST, PUNCTURE, OR TEAR BACKER MATERIALS.
3. REMOVE ABSORBENT BACKER MATERIALS THAT HAVE BECOME WET BEFORE SEALANT APPLICATION AND REPLACE THEM WITH DRY MATERIALS.
E. INSTALL SEALANTS AT SAME TIME BACKER MATERIALS ARE INSTALLED.
1. PLACE SEALANTS SO THEY DIRECTLY CONTACT AND FULLY WET JOINT SUBSTRATES.
2. COMPLETELY FILL RECESSES PROVIDED FOR EACH JOINT CONFIGURATION.
3. PRODUCE UNIFORM, CROSS-SECTIONAL SHAPES AND DEPTHS OPTIMIZE SEALANT MOVEMENT CAPABILITY.
F. TOOLING OF NONSAG SEALANTS: IMMEDIATELY AFTER SEALANT APPLICATION AND BEFORE SKINNING OR CURING BEGINS, TOOL SEALANTS TO FORM SMOOTH, UNIFORM BEADS OF CONFIGURATION INDICATED; TO ELIMINATE AIR POCKETS; AND TO ENSURE CONTACT AND ADHESION OF SEALANT WITH SIDES OF JOINT.
1. REMOVE EXCESS SEALANTS FROM SURFACES ADJACENT TO JOINT.
2. USE TOOLING AGENTS THAT ARE APPROVED IN WRITING BY JOINT SEALANT MANUFACTURER AND THAT DO NOT DISCOLOR SEALANTS OR ADJACENT SURFACES.
G. CLEAN EXCESS SEALANTS OR SEALANT SMEARS ADJACENT TO JOINTS AS INSTALLATION PROGRESSES BY METHODS AND WITH CLEANING MATERIALS APPROVED BY MANUFACTURERS OF JOINT SEALANTS AND OF PRODUCTS IN WHICH JOINTS OCCUR.

## HOT-MIX ASPHALT PAVING

1. GENERAL:

A. SUBMIT PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE TECHNICAL DATA AND TESTED PHYSICAL AND PERFORMANCE PROPERTIES. PROVIDE JOB-MIX DESIGNS, INCLUDING CERTIFICATION, BY AUTHORITIES HAVING JURISDICTION, OF APPROVAL OF EACH JOB MIX PROPOSED FOR THE WORK.
B. MANUFACTURER SHALL BE REGISTERED WITH AND APPROVED BY AUTHORITIES HAVING JURISDICTION OR THE DOT OF THE STATE IN WHICH PROJECT IS LOCATED.
C. COMPLY WITH THE INDIANA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AS SHOWN ON SITE DRAWINGS FOR ASPHALT PAVING WORK.
D. COMPLY WITH AI MS-22, "CONSTRUCTION OF HOT MIX ASPHALT PAVEMENTS," UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED.

2. PROJECT CONDITIONS: DO NOT APPLY ASPHALT MATERIALS IF SUBGRADE IS WET OR EXCESSIVELY DAMP OR IF THE FOLLOWING CONDITIONS ARE NOT MET:

A. TACK COAT: MINIMUM SURFACE TEMPERATURE OF 60 DEG F.
B. ASPHALT BASE COURSE: MINIMUM SURFACE TEMPERATURE OF 40 DEG F AND RISING AT TIME OF PLACEMENT.
C. ASPHALT SURFACE COURSE: MINIMUM SURFACE TEMPERATURE OF 60 DEG F AT TIME OF PLACEMENT.
D. PAVEMENT-MARKING PAINT: PROCEED WITH PAVEMENT MARKING ONLY ON CLEAN, DRY SURFACES AND AT A MINIMUM AMBIENT OR SURFACE TEMPERATURE OF 40 DEG F FOR OIL-BASED MATERIALS, 50 DEG F FOR WATER-BASED MATERIALS, AND NOT EXCEEDING 95 DEG F.

3. MATERIALS:

A. TACK COAT: ASTM D 977 EMULSIFIED ASPHALT, OR ASTM D 2397 CATIONIC EMULSIFIED ASPHALT, SLOW SETTING, DILUTED IN WATER, OF SUITABLE GRADE AND CONSISTENCY FOR APPLICATION.

B. PAVEMENT-MARKING PAINT: LATEX, WATERBORNE EMULSION, LEAD AND CHROMATE FREE, READY MIXED, COMPLYING WITH FS TT-P-1952, WITH DRYING TIME OF LESS THAN 45 MINUTES.COLOR: YELLOW FOR PARKING STRIPING, BLUE FOR HANDICAP STRIPING.

C. HOT-MIX ASPHALT: DENSE, HOT-LAID, HOT-MIX ASPHALT PLANT MIXES AS SHOWN ON SITE DRAWINGS.

4. SURFACE PREPARATION:

A. PROOF-ROLL SUBBASE USING HEAVY, PNEUMATIC-TIRED ROLLERS TO LOCATE AREAS THAT ARE UNSTABLE OR THAT REQUIRE FURTHER COMPACTION.
B. IMMEDIATELY BEFORE PLACING ASPHALT MATERIALS, REMOVE LOOSE AND DELETERIOUS MATERIAL FROM SUBSTRATE SURFACES. ENSURE THAT PREPARED SUBGRADE IS READY TO RECEIVE PAVING.

C. SWEEP LOOSE GRANULAR PARTICLES FROM SURFACE OF UNBOUND-AGGREGATE BASE COURSE. DO NOT DISLODGE OR DISTURB AGGREGATE EMBEDDED IN COMPACTED SURFACE OF BASE COURSE.

D. TACK COAT: APPLY UNIFORMLY TO SURFACES OF EXISTING PAVEMENT AT A RATE OF 0.05 TO 0.15 GAL./SQ. YD. ALLOW TACK COAT TO CURE UNDISTURBED BEFORE APPLYING HOT-MIX ASPHALT PAVING. AVOID SMEARING OR STAINING ADJOINING SURFACES, APPURTENANCES, AND SURROUNDINGS. REMOVE SPILLAGES AND CLEAN AFFECTED SURFACES.

5. HOT-MIX ASPHALT PLACING:

A. MACHINE PLACE HOT-MIX ASPHALT ON PREPARED SURFACE, SPREAD UNIFORMLY, AND STRIKE OFF. PLACE ASPHALT MIX BY HAND TO AREAS INACCESSIBLE TO EQUIPMENT IN A MANNER THAT PREVENTS SEGREGATION OF MIX. PLACE EACH COURSE TO REQUIRED GRADE, CROSS SECTION, AND THICKNESS WHEN COMPACTED. SPREAD MIX AT MINIMUM TEMPERATURE OF 250 DEG F. REGULATE PAVER MACHINE SPEED TO OBTAIN SMOOTH, CONTINUOUS SURFACE FREE OF PULLS AND TEARS IN ASPHALT-PAVING MAT.

B. PLACE PAVING IN CONSECUTIVE STRIPS NOT LESS THAN 10 FEET WIDE UNLESS INFILL EDGE STRIPS OF A LESSER WIDTH ARE REQUIRED.

C. PROMPTLY CORRECT SURFACE IRREGULARITIES IN PAVING COURSE BEHIND PAVER. USE SUITABLE HAND TOOLS TO REMOVE EXCESS MATERIAL FORMING HIGH SPOTS. FILL DEPRESSIONS WITH HOT-MIX ASPHALT TO PREVENT SEGREGATION OF MIX; USE SUITABLE HAND TOOLS TO SMOOTH SURFACE.

6. COMPACTION

A. BEGIN COMPACTION AS SOON AS PLACED HOT-MIX PAVING WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT. COMPACT HOT-MIX PAVING WITH HOT, HAND TAMPERS OR VIBRATORY-PLATE COMPACTORS IN AREAS INACCESSIBLE TO ROLLERS. COMPLETE COMPACTION BEFORE MIX TEMPERATURE COOLS TO 185 DEG F.

1. GENERAL:
B. COMPLETE BREAKDOWN OR INITIAL ROLLING IMMEDIATELY AFTER ROLLING JOINTS AND OUTSIDE EDGE. EXAMINE SURFACE IMMEDIATELY AFTER BREAKDOWN ROLLING FOR INDICATED CROWN, GRADE, AND SMOOTHNESS. CORRECT LAYDOWN AND ROLLING OPERATIONS TO COMPLY WITH REQUIREMENTS.

C. BEGIN INTERMEDIATE ROLLING IMMEDIATELY AFTER BREAKDOWN ROLLING WHILE HOT-MIX ASPHALT IS STILL HOT ENOUGH TO ACHIEVE SPECIFIED DENSITY. CONTINUE ROLLING UNTIL HOT-MIX ASPHALT COURSE HAS BEEN UNIFORMLY COMPACTED TO AN AVERAGE DENSITY OF 92 PERCENT OF REFERENCE MAXIMUM THEORETICAL DENSITY ACCORDING TO ASTM D 2041, BUT NOT LESS THAN 90 PERCENT NOR GREATER THAN 96 PERCENT.

D. FINISH ROLL PAVED SURFACES TO REMOVE ROLLER MARKS WHILE HOT-MIX ASPHALT IS STILL WARM.

E. AFTER FINAL ROLLING, DO NOT PERMIT VEHICULAR TRAFFIC ON PAVEMENT UNTIL IT HAS COOLED AND HARDENED. ERECT BARRICADES TO PROTECT PAVING FROM TRAFFIC UNTIL MIXTURE HAS COOLED ENOUGH NOT TO BECOME MARKED.

7. INSTALLATION TOLERANCES: COMPACT EACH COURSE TO PRODUCE THE THICKNESS INDICATED WITHIN THE FOLLOWING TOLERANCES:

A. BASE COURSE: PLUS OR MINUS 1/2 INCH.
B. SURFACE COURSE: PLUS 1/4 INCH, NO MINUS.
C. SURFACE SMOOTHNESS: COMPACT EACH COURSE TO PRODUCE A SURFACE SMOOTHNESS WITHIN THE FOLLOWING TOLERANCES AS DETERMINED BY USING A 10-FOOT STRAIGHTEDGE APPLIED TRANSVERSELY OR LONGITUDINALLY TO PAVED AREAS: BASE COURSE 1/4 INCH, SURFACE COURSE, 1/8 INCH,
D. TEST CROWNED SURFACES WITH CROWNED TEMPLATE CENTERED AND AT RIGHT ANGLE TO CROWN. MAXIMUM ALLOWABLE VARIANCE FROM TEMPLATE IS 1/4 INCH.

8. PAVEMENT MARKING:

A. DO NOT APPLY PAVEMENT-MARKING PAINT UNTIL LAYOUT, COLORS, AND PLACEMENT HAVE BEEN VERIFIED WITH OWNER.
B. ALLOW PAVING TO AGE FOR 30 DAYS BEFORE STARTING PAVEMENT MARKING.
C. SWEEP AND CLEAN SURFACE TO ELIMINATE LOOSE MATERIAL AND DUST.
D. APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE PAVEMENT MARKINGS, OF DIMENSIONS INDICATED, WITH UNIFORM, STRAIGHT EDGES. APPLY AT MANUFACTURER'S RECOMMENDED RATES TO PROVIDE A MINIMUM WET FILM THICKNESS OF 15 MILS.

9. FIELD QUALITY CONTROL

A. OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS AND TO PREPARE TEST REPORTS.
B. ADDITIONAL TESTING AND INSPECTING, AT CONTRACTOR'S EXPENSE, WILL BE PERFORMED TO DETERMINE COMPLIANCE OF REPLACED OR ADDITIONAL WORK WITH SPECIFIED REQUIREMENTS.
C. REMOVE AND REPLACE OR INSTALL ADDITIONAL HOT-MIX ASPHALT WHERE TEST RESULTS OR MEASUREMENTS INDICATE THAT IT DOES NOT COMPLY WITH SPECIFIED REQUIREMENTS.
D. EXCEPT FOR MATERIAL INDICATED TO BE RECYCLED, REMOVE EXCAVATED MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN AN EPA-APPROVED LANDFILL.

## CEMENT CONCRETE PAVEMENT

1. GENERAL:

A. THIS SECTION INCLUDES CEMENT CONCRETE PAVEMENT FOR: DRIVEWAYS AND ROADWAYS, PARKING LOTS, CURBS AND GUTTERS, WALKWAYS.

B. SUBMIT PRODUCT DATA FOR EACH MANUFACTURED MATERIAL AND PRODUCT INDICATED, DESIGN MIXES FOR EACH CONCRETE MIX INDICATED, AND MATERIAL CERTIFICATES.

C. MANUFACTURER OF READY-MIXED CONCRETE PRODUCTS SHALL COMPLY WITH ASTM C 94 FOR PRODUCTION FACILITIES AND EQUIPMENT.

D. COMPLY WITH ACI 301 "SPECIFICATION FOR STRUCTURAL CONCRETE," UNLESS OTHERWISE MODIFIED.

2. STEEL REINFORCEMENT:

A. PLAIN-STEEL WELDED WIRE FABRIC: ASTM A 185, FABRICATED FROM AS-DRAWN STEEL WIRE INTO FLAT SHEETS.
B. BAR SUPPORTS: BOLSTERS, CHAIRS, SPACERS, AND OTHER DEVICES FOR SPACING, SUPPORTING, AND FASTENING STEEL REINFORCEMENT. MANUFACTURE BAR SUPPORTS ACCORDING TO CRSI'S "MANUAL OF STANDARD PRACTICE.

3. CONCRETE MATERIALS:

A. PORTLAND CEMENT: ASTM C 150, TYPE I OR II.
B. AGGREGATE: ASTM C 33, UNIFORMLY GRADED, FROM A SINGLE SOURCE.
C. WATER: ASTM C 94.
D. ADMIXTURES: AIR-ENTRAINING ADMIXTURE ASTM C 260, WATER-REDUCING ADMIXTURE ASTM C 494, TYPE A.

4. EVAPORATION RETARDER:

A. ABSORPTIVE COVER: AASHTO M 182, CLASS 2, BURLAP CLOTH MADE FROM JUTE OR KENAF, WEIGHING APPROXIMATELY 9 OZ./SQ. YD. DRY.
B. MOISTURE-RETAINING COVER: ASTM C 171, POLYETHYLENE FILM OR WHITE BURLAP-POLYETHYLENE SHEET.
C. WATER: POTABLE.
D. EVAPORATION RETARDER: WATERBORNE, MONOMOLECULAR FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE.
E. CLEAR SOLVENT-BORNE LIQUID-MEMBRANE-FORMING CURING COMPOUND: ASTM C 309, TYPE 1, CLASS B.
F. EXPANSION AND ISOLATION JOINT FILLER STRIPS: ASTM D 1751, ASPHALT-SATURATED CELLULOSIC FIBER, OR ASTM D 1752, CORK OR SELF-EXPANDING CORK.
G. APPLY TO CONCRETE SURFACES IF HOT, DRY, OR WINDY CONDITIONS CAUSE MOISTURE LOSS APPROACHING 0.2 LB/SQ. FT. X H BEFORE AND DURING FINISHING OPERATIONS. APPLY ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AFTER PLACING, SCREEDING, AND BULL FLOATING OR DARBYING CONCRETE, BUT BEFORE FLOAT FINISHING.

5. CONCRETE MIXES AND MIXING:

A. PREPARE DESIGN MIXES, PROPORTIONED ACCORDING TO ACI 211.1 AND ACI 301
B. COMPRESSIVE STRENGTH (28 DAYS): 4000 PSI
C. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO: 0.50
D. SLUMP LIMIT: 4 INCHES.
E. AIR CONTENT: 4.5 TO 7.5 PERCENT.
F. AIR ENTRAINED

6. READY MIXED CONCRETE:

A. COMPLY WITH REQUIREMENTS AND WITH ASTM C 94 AND ASTM C 1116.
B. PROJECT-SITE MIXING: COMPLY WITH REQUIREMENTS AND MEASURE, BATCH, AND MIX CONCRETE MATERIALS AND CONCRETE ACCORDING TO ASTM C 94. MIX CONCRETE MATERIALS IN APPROPRIATE DRUM-TYPE BATCH MACHINE MIXER.

7. INSTALLATION

A. SURFACE PREPARATION: PROOF-ROLL PREPARED SUBBASE, AND REMOVE LOOSE MATERIAL FROM SURFACE.
B. FORMS: SET, BRACE, AND SECURE EDGE FORMS, BULKHEADS, AND INTERMEDIATE SCREED GUIDES FOR PAVEMENT TO REQUIRED LINES, GRADES, AND ELEVATIONS.
C. REINFORCEMENT: ACCURATELY POSITION AND SUPPORT REINFORCEMENT, AND SECURE AGAINST DISPLACEMENT. SET WIRE TIES WITH ENDS DIRECTED INTO CONCRETE. INSTALL WELDED WIRE FABRIC IN LENGTHS AS LONG AS PRACTICABLE; LAP AT LEAST ONE FULL MESH, AND LACE SPLICES WITH WIRE.
D. JOINTS: LOCATE AND INSTALL CONSTRUCTION, ISOLATION, CONTRACTION, AND EXPANSION JOINTS AS INDICATED.
E. CONCRETE PLACEMENT: COMPLY WITH RECOMMENDATIONS IN ACI 304R FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE. PLACE CONCRETE IN A CONTINUOUS OPERATION WITHIN PLANNED JOINTS OR SECTIONS.
F. MOISTEN SUBBASE TO PROVIDE A UNIFORM DAMPENED CONDITION AT TIME CONCRETE IS PLACED.
G. CONSOLIDATE CONCRETE BY MECHANICAL VIBRATING EQUIPMENT SUPPLEMENTED BY HAND-SPADING, RODDING, OR TAMPING ACCORDING TO RECOMMENDATIONS IN ACI 309R.
H. SCREED AND INITIAL-FLOAT CONCRETE SURFACES WITH DARBY OR BULL FLOAT BEFORE EXCESS MOISTURE OR BLEED WATER APPEARS ON THE SURFACE.
I. PROTECT CONCRETE FROM COLD OR HOT WEATHER DURING MIXING, PLACING, AND CURING.
J. PAVEMENT TOLERANCES: COMPLY WITH TOLERANCES IN ACI 330.1, "SPECIFICATION FOR PLAIN CONCRETE PARKING LOTS."

8. FINISHES AND CURING

A. FLOAT FINISH: BEGIN THE SECOND FLOATING OPERATION WHEN BLEED-WATER SHEEN HAS DISAPPEARED AND THE CONCRETE SURFACE HAS STIFFENED SUFFICIENTLY TO PERMIT OPERATIONS. FLOAT SURFACES TO TRUE PLANES WITH GAPS BELOW 10-FOOT LONG, UNLEVELED STRAIGHTEDGE NOT TO EXCEED 1/4 INCH. CUT DOWN HIGH SPOTS, AND FILL LOW SPOTS. REFLOAT SURFACE IMMEDIATELY TO UNIFORM GRANULAR TEXTURE.

B. BURLAP FINISH: DRAG A SEAMLESS STRIP OF DAMP BURLAP ACROSS FLOAT-FINISHED CONCRETE, PERPENDICULAR TO LINE OF TRAFFIC, TO PROVIDE A UNIFORM, GRITTY TEXTURE.

C. MEDIUM-TO-FINE-TEXTURED BROOM FINISH: DRAW A SOFT BRISTLE BROOM ACROSS FLOAT-FINISHED CONCRETE SURFACE, PERPENDICULAR TO LINE OF TRAFFIC, TO PROVIDE A UNIFORM, FINE-LINE TEXTURE.

D. CURING: BEGIN CURING AFTER FINISHING CONCRETE, BUT NOT BEFORE FREE WATER HAS DISAPPEARED FROM CONCRETE SURFACE. CURE CONCRETE BY ONE OR A COMBINATION OF THE FOLLOWING METHODS:

1. MOISTURE CURE CONCRETE BY WATER, CONTINUOUS FOG SPRAY, CONTINUOUSLY WET ABSORPTIVE COVER, OR BY MOISTURE-RETAINING-COVER CURING. KEEP SURFACES CONTINUOUSLY MOIST FOR NOT LESS THAN SEVEN DAYS.
2. CURING COMPOUND: APPLY UNIFORMLY IN CONTINUOUS OPERATION BY POWER SPRAY OR ROLLER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. RECOAT AREAS SUBJECTED TO HEAVY RAINFALL WITHIN THREE HOURS AFTER INITIAL APPLICATION. MAINTAIN CONTINUITY OF COATING AND REPAIR DAMAGE DURING CURING PERIOD.

9. REPAIRS AND PROTECTION:

A. REMOVE AND REPLACE CONCRETE PAVEMENT THAT IS BROKEN, DAMAGED, OR DEFECTIVE, OR DOES NOT MEET REQUIREMENTS IN THIS SECTION.
B. PROTECT CONCRETE FROM DAMAGE. EXCLUDE TRAFFIC FROM PAVEMENT FOR AT LEAST 14 DAYS AFTER PLACEMENT.
C. MAINTAIN CONCRETE PAVEMENT FREE OF STAINS, DISCOLORATION, DIRT, AND OTHER FOREIGN MATERIAL. SWEEP CONCRETE PAVEMENT NOT MORE THAN TWO DAYS BEFORE DATE SCHEDULED FOR SUBSTANTIAL COMPLETION INSPECTIONS.

## STORM SEWER

1. GENERAL
A. THIS SECTION INCLUDES STORM SEWER OUTSIDE THE BUILDING.
B. SHOP DRAWINGS: INCLUDE PLANS, ELEVATIONS, DETAILS, AND ATTACHMENTS FOR THE FOLLOWING:
1. PRECAST CONCRETE MANHOLES, INCLUDING FRAMES AND COVERS.
C. SITE INFORMATION: SITE SURVEY, PUBLIC UTILITY RECORDS, AND EXISTING UTILITY LOCATIONS.

2. PRODUCTS
A. NORMAL-TRAFFIC PRECAST CONCRETE MANHOLES: ASTM C 478, PRECAST, REINFORCED CONCRETE, OF DEPTH INDICATED, WITH PROVISION FOR RUBBER GASKETED JOINTS.
B. GASKETS: ASTM C 443, RUBBER.
C. GRADE RINGS: INCLUDE TWO OR THREE REINFORCED-CONCRETE RINGS, OF 6- TO 9-INCH TOTAL THICKNESS, THAT MATCH FRAME DIAMETER AND COVER.
D. STEPS: ASTM C 478, INDIVIDUAL STEPS OR LADDER. OMIT STEPS FOR MANHOLES LESS THAN 60 INCHES DEEP.
E. PIPE CONNECTORS: ASTM C 923, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO BASE SECTION.
F. CHANNELS: CONCRETE INVERT, FORMED TO SAME WIDTH AS CONNECTED PIPING, WITH HEIGHT OF VERTICAL SIDES TO THREE-FOURTHS OF PIPE DIAMETER. FORM CURVED CHANNELS WITH SMOOTH, UNIFORM RADIUS AND SLOPE AS SHOWN ON SITE DRAWINGS.
G. BENCHES: CONCRETE, SLOPED TO DRAIN INTO CHANNEL AS SHOWN ON SITE DRAWINGS.

3. EXECUTION

A. EXCAVATING, TRENCHING, AND BACKFILLING ARE SPECIFIED IN DIVISION 2 SECTION "EARTHWORK."
B. PIPING APPLICATIONS: INCLUDE WATERTIGHT JOINTS. 1. NPS 6-12: PVC SEWER PIPE AND FITTINGS, GASKETS, AND GASKETED JOINTS.
C. SLEEVE-TYPE PIPE COUPLINGS: USE WHERE REQUIRED TO JOIN PIPING AND NO OTHER APPROPRIATE METHOD IS SPECIFIED. DO NOT USE INSTEAD OF SPECIFIED JOINING METHODS.
D. INSTALL PIPING BEGINNING AT LOW POINT, TRUE TO GRADES AND ALIGNMENT INDICATED WITH UNBROKEN CONTINUITY OF INVERT. PLACE BELL ENDS OF PIPING FACING UPSTREAM. INSTALL GASKETS, SEALS, SLEEVES, AND COUPLINGS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USING LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB OR DRAG IN LINE, AND PULL PAST EACH JOINT AS IT IS COMPLETED.
E. USE MANHOLES FOR CHANGES IN DIRECTION, UNLESS FITTINGS ARE INDICATED. USE FITTINGS FOR BRANCH CONNECTIONS, UNLESS DIRECT TAP INTO EXISTING SEWER IS INDICATED.
F. USE PROPER SIZE INCREASERS, REDUCERS, AND COUPLINGS WHERE DIFFERENT SIZES OR MATERIALS OF PIPES AND FITTINGS ARE CONNECTED. REDUCING SIZE OF PIPING IN DIRECTION OF FLOW IS PROHIBITED.

1. INSTALL PIPING PITCHED DOWN IN DIRECTION OF FLOW AS SHOWN ON SITE DRAWINGS.

G. PIPE JOINT CONSTRUCTION AND INSTALLATION: JOIN AND INSTALL PIPE AND FITTINGS ACCORDING TO INSTALLATIONS INDICATED.

1. PVC SEWER PIPE AND FITTINGS: AS FOLLOWS:
A. JOIN PIPE AND GASKETED FITTINGS WITH GASKETS ACCORDING TO ASTM D 2321.
B. INSTALL ACCORDING TO ASTM D 2321.
2. JOIN PIPING MADE OF DIFFERENT MATERIALS OR DIMENSIONS WITH COUPLINGS MADE FOR THIS APPLICATION. USE COUPLINGS THAT ARE COMPATIBLE WITH AND THAT FIT BOTH SYSTEMS' MATERIALS AND DIMENSIONS.

H. MANHOLE INSTALLATION: INSTALL COMPLETE WITH APPURTENANCES AND ACCESSORIES INDICATED.

1. FORM CONTINUOUS CONCRETE CHANNELS AND BENCHES BETWEEN INLETS AND OUTLET.
2. SET TOPS OF FRAMES AND COVERS FLUSH WITH FINISHED SURFACE OF MANHOLES THAT OCCUR IN PAVEMENTS. SET TOPS 3 INCHES ABOVE FINISHED SURFACE ELSEWHERE, UNLESS OTHERWISE INDICATED.
3. INSTALL PRECAST CONCRETE MANHOLE SECTIONS WITH GASKETS ACCORDING TO ASTM C 891.

## EARTHWORK 1

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. PAVING
5. WATER SUPPLY SYSTEM

2. BENCH MARKS
MAINTAIN CAREFULLY ALL BENCH MARKS, MONUMENTS AND OTHER REFERENCE POINTS; IF DISTURBED OR DESTROYED, CONTRACTOR SHALL CONTACT ENGINEER.

3. REMOVAL OF TREES
A. REMOVE ALL TREES AND STUMPS FROM AREA TO BE OCCUPIED BY ROAD AND SURFACED AREAS. REMOVAL OF TREES OUTSIDE THESE AREAS SHALL ONLY BE DONE AS NOTED ON DRAWINGS OR APPROVED BY THE OWNER.
B. ALL BRUSH, STUMPS, WOOD AND OTHER REFUSE FROM THE TREES SHALL BE BURIED ONSITE OR REMOVED TO DISPOSAL AREAS OFF OF THE SITE. DISPOSAL BY BURNING SHALL NOT BE PERMITTED UNLESS PROPER PERMITS ARE OBTAINED(WHERE APPLICABLE). THE LOCATION OF ON SITE BURY PITS SHALL BE DESIGNATED BY THE OWNER OR THE ENGINEER.

4. PROTECTION OF TREES
A. GENERAL PROTECTION: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF TOPS, TRUNKS AND ROOTS OF EXISTING TREES ON THE PROJECT SITE THAT ARE TO REMAIN. EXISTING TREES SUBJECT TO CONSTRUCTION DAMAGE SHALL BE BOXED, FENCED OR OTHERWISE PROTECTED BEFORE ANY WORK IS STARTED; DO NOT STOCKPILE WITHIN BRANCH SPREAD. REMOVE INTERFERING BRANCHES WITHOUT INJURY TO TRUNKS AND COVER SCARS WITH TREE PAINT.

5. HANDLING OF TOPSOIL
A. REMOVE ALL ORGANIC MATERIAL FROM THE AREAS TO BE OCCUPIED BY BUILDINGS, ROADS, WALKS AND PARKING AREAS. PILE AND STORE TOPSOIL AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. TOPSOIL SHALL BE REASONABLY FREE FROM SUBSOIL, DEBRIS, WEEDS, GRASS, STONES, ETC.
B. AFTER COMPLETION OF SITE GRADING AND SUBSURFACE UTILITY INSTALLATION, TOP SOIL SHALL BE REPLACED IN AREAS DESIGNATED ON THE EROSION CONTROL PLAN FOR SEEDING AND/OR SODDING. ANY REMAINING TOPSOIL SHALL BE USED FOR FINISHED GRADING AROUND STRUCTURES AND LANDSCAPING AREAS.

6. DISPOSITION OF UTILITIES:
A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION.
B. IF ACTIVE UTILITIES ARE ENCOUNTERED BUT NOT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE ADVISED BEFORE WORK IS CONTINUED.
C. INACTIVE AND ABANDONED UTILITIES ENCOUNTERED IN EXCAVATING AND GRADING OPERATIONS SHALL BE REPORTED TO THE ENGINEER. THEY SHALL BE REMOVED,PLUGGED OR CAPPED AS DIRECTED BY THE UTILITY COMPANY OR THE ENGINEER.
D. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS PHASE OF THE WORK. IT SHALL ALSO BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED.

7. SITE GRADING:
A. GRADES: CONTRACTOR SHALL PERFORM ALL CUTTING, FILLING, COMPACTING OF FILLS AND ROUGH GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO GRADE AS SHOWN ON THE DRAWINGS.
B. ROUGH GRADING: THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS ABOVE THE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS THE ESTABLISHED GRADE. ALL BANKS AND OTHER BREAKS IN GRADE SHALL BE ROUNDED AT TOP AND BOTTOM.
C. COMPACTION REQUIREMENTS: PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. COMPACT SOIL TO BE NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557:
1. UNDER STRUCTURES, BUILDING SLABS, STEPS, AND PAVEMENTS, SCARIFY AND RECOMPACT TOP 12 INCHES OF EXISTING SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
2. UNDER WALKWAYS, SCARIFY AND RECOMPACT TOP 6 INCHES BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL MATERIAL AT RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
3. UNDER LAWN OR UNPAVED AREAS, SCARIFY AND RECOMPACT TOP 6 INCHES BELOW SUBGRADE AND COMPACT EACH LAYER OF BACKFILL OR FILL MATERIAL AT RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

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 AC-COMPLISHED 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.

9. TESTING AGENCY OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS AND TO PREPARE TEST REPORTS. ALLOW TESTING AGENCY TO TEST AND INSPECT SUBGRADES AND EACH FILL OR BACKFILL LAYER. PROCEED WITH SUBSEQUENT EARTHWORK ONLY AFTER TEST RESULTS FOR PREVIOUSLY COMPLETED WORK COMPLY WITH REQUIREMENTS. WHEN TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS HAVE NOT ACHIEVED DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.

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FRANKLIN TECH PARK
SANITARY SEWER RELOCATION
SOUTH END OF BARTRAM PARKWAY, FRANKLIN, IN

CITY OF FRANKLIN REDEVELOPMENT COMMISSION
70 E. MONROE STREET, FRANKLIN, INDIANA 46131

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| DATE: 03/07/12 | PROJECT NO.: 7124.003 |
| DRAWN BY: DTR | CHECKED BY: MLT |
| SHEET TITLE: SPECIFICATIONS | |
| DRAWING FILES: T:\7k\7124\003\dwgs\7124003C901-C902.dwg XREF: T:\7k\7124\003\dwgs\Title1.dwg | |
| SHEET NO.: C901 | |

Plot Date: Mar 07, 2012 Plot Time: 11:49am File Name: T:\7k\7124\003\dwgs\7124003C901-C902.dwg, Layout: C901 By: DTR

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.

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. P.V.C. SDR–26 pipe shall have a minimum pipe stiffness of 115 pounds per square inch for each diameter when measured at five percent deflection and tested in accordance with ASTM D–2412.

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

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

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

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

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

B. Manholes

1. Precast reinforced concrete manhole sections and steps shall conform to ASTM C–478 latest revision. Exterior of manhole shall be waterproofed with Bismatic material.
2. Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage, distortion or other defects. They shall be smooth and well–cleaned by shot–blasting or by some other approved method. They shall be gray iron meeting ASTM A–48 latest revision. Manhole covers for sanitary sewer shall be Neenah Type R–1772–AVH w/Self–Sealing O–Ring lid.
3. Joints – Manhole sections shall be joined with a nominal 1/2" size butyl rubber rubber base gasket material, conforming to AASHTO M–198 and Federal Specification SS–S–210a. Joint conforms to ASTM C–443.
4. Manholes shall include steps. Manhole steps are to be polypropylene, polypropylene coated steel reinforcing or an approved non–corrosive fiberglass material. The copolymer polypropylene shall meet the requirements of ASTM D–4101 reinforced with deformed 3/8" minimum diameter reinforcing steel conforming to the requirements of ASTM A–615, Grade 60. Steps shall be a maximum of 24" from top, 24" from bottom and 16" spacing between. Non–coated cast iron steps are not acceptable.
5. The proposed manholes shall be air tested in accordance with ASTM C1244–93, Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.

3. APPLICATION

A. Permits and Codes – The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing sewers.
B. Local Standards – The term "local standards" as used herein means the standards of design and construction of the respective municipal department or utility company.
C. Existing Improvements – Maintain in operating condition all active utilities, sewers and other drains encountered in the sewer installation. Repair to the satisfaction of the owner any damage to existing active improvements.
D. Workmanship – To conform to all local, state and national codes and to be approved by all local and state agencies having jurisdiction.
E. Trenching – Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficiently ahead of pipe–laying to reveal any obstructions. The width of the trench shall be 1.25 times the outside pipe diameter plus 12 inches for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances shall pipe or appurtenances be laid in standing water. Conduct the discharge from trench dewatering to drains or natural drainage channels.
F. Special Supports – Whenever, in the opinion of the Engineer, the soil at or below the pipe grade is unsuitable for supporting sewers and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.
G. Backfilling – for a depth of at least 12 inches above the top of the pipe, backfill with 12" of #8 crushed stone or #8 fractured face aggregate. Compact this backfill thoroughly, taking care not to disturb the pipe. For the remaining trench depth, backfill with earth or granular material containing stones or rocks not larger than 4 inches. Backfill under and within 5' of walks, parking areas, driveways and streets shall be granular material only – thoroughly compacted, by approved methods.
H. Flow Channels – The flow channels within manholes shall be an integral part of the precast base. The channels shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flow through the manhole. The bench wall shall be formed to the crown of the inlet and outlet pipes to form a "U" shaped channel. The bench wall shall slope back from the crown at minimum 1/2 inch per foot to the manhole wall.
I. Infiltration – The contractor shall furnish necessary equipment to test sewers for infiltration. All sanitary sewer lines upon completion will be required to pass a low pressure air test, unless otherwise directed by the City of Franklin Department of Public Works. Said test shall be conducted according to ASTM F–1417–92 and per City of Franklin Department of Public Works Standards for Design and Construction of Sanitary Sewers, Section 9.03A. and shall be witnessed by an inspector authorized by the City of Franklin Department of Public Works. Infiltration under test shall not exceed 0 gallons.
J. Flushing Sewers – Flush all sanitary sewers except building sewers with water to obtain free flow through each line. Remove all silt and trash from appurtenances just prior to acceptance of work.
K. Plastic Sewer Pipe Installation – Plastic sewer pipe shall be installed in a accordance with ASTM D2321 per latest revision and no plastic pipe shall exceed a deflection of 5%. This Mandrel test shall be per City of Franklin Department of Public Works Standards for Design and Construction of Sanitary Sewers, Section 9.03B.
L. Storm Water Connections – No roof drains, footing drains, sump pumps, and/or surface water drains may be connected to the sanitary sewer systems, including temporary connections during construction.
M. Waterline Crossing – Waterlines and sanitary sewers shall maintain a minimum of 10 foot horizontal separation and a minimum 18 inches of clearance between pipes at crossings. Otherwise, sanitary sewer within 10 feet of waterlines shall be constructed of water works grade Ductile Iron Pipe with mechanical joints and fittings.
N. Utilities – It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractors responsibility to contact the owners of the various utilities before work is started. The contractor shall notify in writing the owners and the engineer of any changes, errors or omissions found on these plans or in the field before work is started or resumed.
O. Service Laterals – Individual lot service lines shall be 6" in diameter and of material equal to that specified in 2A of this section. Service lines shall be connected to the main sewer by a wye at locations generally shown within these plans. Service lines shall be extended to the Drainage, Utility & Sewer Easement at each lot, but in no case shall be closer than 7' to the pad/building line. Maximum depth of the end of service lines to be 8'. Sewer service lines shall be marked (stamped) on the curb with a "S". A Steel T fence post shall be installed at the end of each lateral a minimum of 4 feet above ground level and painted green.
P. New Sanitary Sewer Main Construction – Contractor shall record dimensions of each service line stub from nearest downstream manhole measured along the sanitary sewer main. The locations of manholes and service lines along with any other construction changes are to be incorporated on the original construction drawings and "Record Drawing" prints submitted to the City of Franklin DPW and the Franklin City Engineer as soon after completion of construction as possible.

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SHEET TITLE: SPECIFICATIONS

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Plot Date: Mar 07, 2012 Plot Time: 11:49am File Name: T:\7k\7124\003\dwgs\7124003C901–C902.dwg, Layout: C902 By: DTR