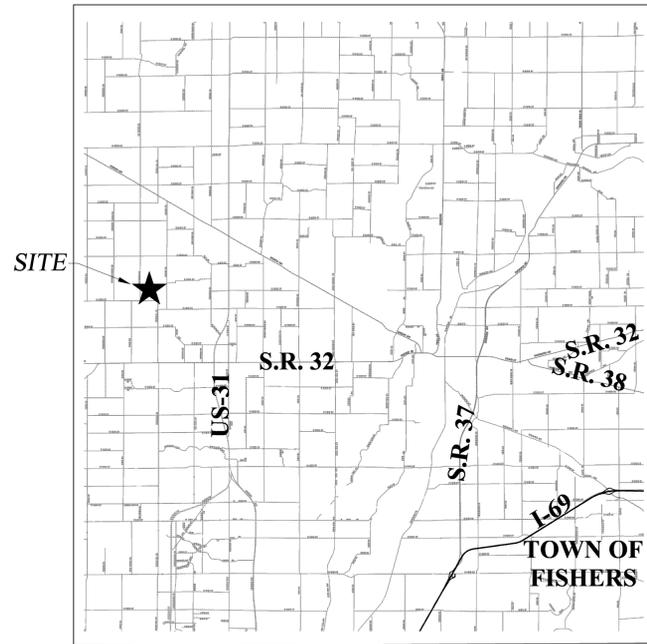


CONSTRUCTION PLANS FOR SUNDOWN GARDENS

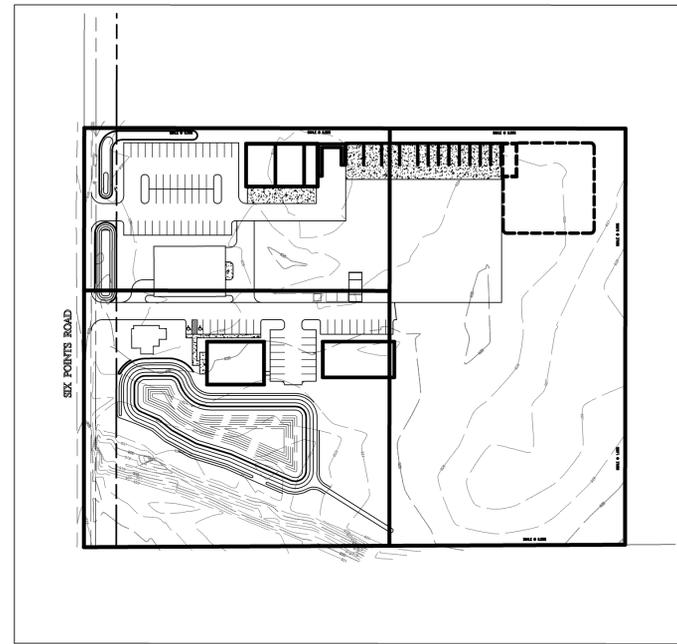
19653 SIX POINTS RD.
WESTFIELD, IN 46032

GENERAL NOTES

- 1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, OR VERIFYING THAT ALL PERMITS AND APPROVALS ARE OBTAINED FROM THE RESPECTIVE CITY, COUNTY, AND STATE AGENCIES PRIOR TO STARTING CONSTRUCTION.
- 2) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES IN THE VICINITY OF THE CONSTRUCTION AREA PRIOR TO STARTING CONSTRUCTION.
- 3) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY AND COORDINATE CONSTRUCTION WITH ALL RESPECTIVE UTILITIES.
- 4) ALL QUANTITIES GIVEN ON THESE PRINTS, VERBALLY OR IN THE SCOPE OF WORK SECTION ARE ESTIMATES AND SHALL BE CONFIRMED BY THE BIDDING CONTRACTORS.
- 5) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29 CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH.
- 6) IN ADDITION, EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRE THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER.
- 7) IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND CONTRACTOR TO MAINTAIN QUALITY CONTROL THROUGHOUT THIS PROJECT.
- 8) TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL STANDARDS.
- 9) THE ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND METHODS ASSOCIATED WITH THE PROJECT AS SET FORTH IN THESE PLANS.
- 10) ANY FIELD TILES ENCOUNTERED DURING EXCAVATION SHALL BE REPAIRED AND CONNECTED TO NEW STORM SEWERS AND POSITIVE DRAINAGE PRESERVED.
- 12) THE SITE DOES NOT LIE IN A SPECIAL FLOOD HAZARD AREA AS ESTABLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY - NATIONAL FLOOD INSURANCE PROGRAM, WHEN PLOTTED BY SCALE ON FLOOD INSURANCE RATE MAP #18057C0110F, DATED FEB 19, 2003.
- 13) BEARINGS, DIMENSIONS AND EASEMENTS ARE SHOWN FOR REFERENCE ONLY. SEE RECORD SURVEYS & PLAT FOR EXACT INFORMATION.
- 14) THE SITE DOES NOT CONTAIN A WETLANDS AS ESTABLISHED BY THE U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE; WESTFIELD, INDIANA, NATIONAL WETLANDS INVENTORY MAP DATED 1989.
- 15) ALL PAVING WITHIN THE EXISTING AND PROPOSED CITY RIGHT OF WAY SHALL CONFORM TO THE REQUIREMENTS OF THE DEPARTMENT OF ENGINEERING. CONTRACTOR SHALL CONTACT THE DEPARTMENT OF ENGINEERING TO SCHEDULE A PER-CONSTRUCTION MEETING TO REVIEW THE DEPARTMENT'S CONSTRUCTION REQUIREMENTS, STAFF NOTIFICATION REQUIREMENTS REQUIRED INSPECTIONS FOR CERTAIN STAGES OF THE WORK AND TO REVIEW THE AUTHORITY OF THE DEPARTMENT AS IT RELATES TO WORK WITHIN THE EXISTING AND PROPOSED CITY RIGHT OF WAY.
- 16.) IF IT WILL BE NECESSARY TO RELOCATE EXISTING UTILITIES, THE EXPENSE OF SUCH RELOCATION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. ALL UTILITY POLES SHALL BE LOCATED WITHIN ONE FOOT OF THE PROPOSED RIGHT-OF-WAY.

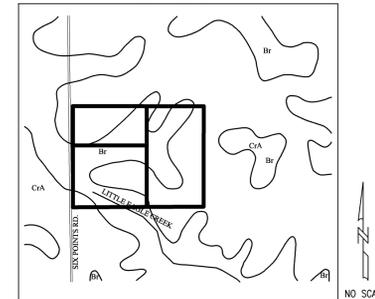


LOCATION MAP



SITE LAYOUT MAP

SOILS MAP



SOILS TYPE LEGEND

Br BROOKSTON SILTY CLAY LOAM, 0-3% SLOPES

CA BROOKSTON SILTY CLAY LOAM, 0-3% SLOPES

CxA BROOKSTON SILTY CLAY LOAM, 0-3% SLOPES

BROOKSTON SILTY CLAY LOAM-

1. THIS SOIL IS DARK GRAYISH BROWN SILTY IN TEXTURE. IT IS DEEP AND VERY POORLY DRAINED WITH MODERATE PERMEABILITY. IT HAS HIGH AVAILABLE WATER FOR PLANT GROWTH AND HIGH ORGANIC MATTER CONTENT. IT HAS COMPACT TILL STARTING AT A DEPTH OF 40 TO 60 INCHES. THE MAIN SOIL FEATURES THAT AFFECT THE URBAN DEVELOPMENT USES ARE SEASONAL HIGH WATER TABLE, HIGH POTENTIAL FROST ACTION, MODERATE SHRINK-SWELL POTENTIAL, MODERATE PERMEABILITY AND PORED SURFACE WATER.

2. BECAUSE OF THESE ENGINEERING LIMITATIONS THIS SITE WILL BE CONSTRUCTED AS FOLLOWS: SUNDOWN GARDENS, BEING AN OPEN INDUSTRIAL DISTRICT WITHIN THE JURISDICTION OF THE TOWN OF WESTFIELD AND HAMILTON COUNTY WILL HAVE TO MAKE BY THE APPLICABLE ORDINANCE. SPECIAL CONSIDERATIONS WILL HAVE TO BE IMPLEMENTED TO REDUCE FAILURE OF CONSTRUCTION. ALL BUILDINGS WILL BE OF LARGE SLAB TYPE CONSTRUCTION. FOUNDATIONS SHOULD BE IMPROVED. IN CASES WHERE A HIGH WATER TABLE IS PRESENT SPECIAL FOOTINGS SHALL BE CONSTRUCTED. ALL ROADS WILL HAVE ADEQUATE SUB-BASE. THE BASE MATERIAL WILL BE REPLACED OR STRENGTHENED WITH SUITABLE MATERIAL. ALL SANITARY SEWERS SHALL BE PUBLIC AND THEREFORE NO SEPTIC SYSTEMS SHALL BE ALLOWED.

CROSBY SILT LOAM, 0-3 PERCENT SLOPES-

1. THIS SOIL IS DARK GRAYISH BROWN SILTY LOAM ABOUT 8" THICK. SILTY IN TEXTURE AND ON LOCATED ON SLIGHT RISES ON BROAD, UNDULATING TILL TERRACE. IT IS DEEP AND SOMEWHAT POORLY DRAINED WITH SLOW PERMEABILITY. IT HAS HIGH AVAILABLE WATER FOR PLANT GROWTH AND MEDIUM ORGANIC MATTER CONTENT. THE SOIL HAS COMPACT TILL STARTING AT A DEPTH BETWEEN 20-40 INCHES. THE MAIN SOIL FEATURE THAT AFFECT URBAN DEVELOPMENT USES ARE SEASONAL HIGH WATER TABLE, MODERATE SHRINK-SWELL POTENTIAL, HIGH POTENTIAL FROST ACTION AND SLOW PERMEABILITY.

2. BECAUSE OF THESE ENGINEERING LIMITATIONS THIS SITE WILL BE CONSTRUCTED AS FOLLOWS: SUNDOWN GARDENS, BEING AN OPEN INDUSTRIAL DISTRICT WITHIN THE JURISDICTION OF THE TOWN OF WESTFIELD AND HAMILTON COUNTY WILL HAVE TO MAKE BY THE APPLICABLE ORDINANCE. SPECIAL CONSIDERATIONS WILL HAVE TO BE IMPLEMENTED TO REDUCE FAILURE OF CONSTRUCTION. ALL BUILDINGS WILL BE OF LARGE SLAB TYPE CONSTRUCTION. FOUNDATIONS SHOULD BE IMPROVED. IN CASES WHERE A HIGH WATER TABLE IS PRESENT SPECIAL FOOTINGS SHALL BE CONSTRUCTED. ALL ROADS WILL HAVE ADEQUATE SUB-BASE. THE BASE MATERIAL WILL BE REPLACED OR STRENGTHENED WITH SUITABLE MATERIAL. ALL SANITARY SEWERS SHALL BE PUBLIC AND THEREFORE NO SEPTIC SYSTEMS SHALL BE ALLOWED.

SHEET INDEX

| SHEET NO. | DESCRIPTION |
|-----------|--------------------------------------|
| C001 | TITLE SHEET |
| C100 | SITE PREPARATION / DEMOLITION PLAN |
| C200-C203 | STORMWATER POLLUTION PREVENTION PLAN |
| C300 | DEVELOPMENT PLAN |
| C400-C401 | STORM SEWER PLAN AND PROFILE SHEET |
| C500 | SEPTIC SEWER DESIGN |
| C600-C602 | DETAIL AND SPECIFICATIONS SHEET |

OPERATING AUTHORITIES:

CITY OF WESTFIELD
COMMUNITY DEVELOPMENT
ATTENTION: KEVIN TODD
2728 EAST 171ST STREET
WESTFIELD, IN 46074
317-804-3172

WESTFIELD DEPT. OF PUBLIC WORKS
ATTENTION: KURT WANNINGER
2706 EAST 171ST STREET
WESTFIELD, IN 46074
317-804-3100

WESTFIELD FIRE DEPARTMENT
ATTENTION: GARY HARLING
17535 DARTOWN ROAD
WESTFIELD IN 46074
317-896-2704

HAMILTON COUNTY HEALTH DEPT.
ATTENTION: LARRY BEARD
18030 FOUNDATION DRIVE, SUITE A
NOBLESVILLE, IN 46060-2229
317-776-8500

BRIGHTHOUSE NETWORKS
ATTENTION: JASON KIRKMAN
3030 ROOSEVELT AVENUE
INDIANAPOLIS, IN 46218
317-776-9627

HAMILTON COUNTY SURVEYOR'S OFFICE
ATTENTION: GREG HOYES
1 HAMILTON COUNTY SQUARE, STE. 146
NOBLESVILLE, IN 46060
317-632-9077

HAMILTON COUNTY HIGHWAY DEPT.
ATTENTION: DAVE LUCAS
1700 SOUTH 10TH STREET
NOBLESVILLE, IN 46060
317-773-7770

AMERITECH (TELEPHONE)
ATTENTION: STEVE ROBINSON
5858 NORTH COLLEGE AVENUE
INDIANAPOLIS, IN 46220
317-265-6801

CITIZENS GAS OF WESTFIELD
ATTENTION: RICHARD MILLER, JR.
2150 DR. MARTIN LUTHER KING DRIVE
INDIANAPOLIS, IN 46202-1162
317-776-4041

FRONTIER
ATTENTION: STEVE COSTLOW
20905 HAGUE RD.
NOBLESVILLE, IN 46062
317-984-9010

TIME WARNER TELECOM
ATTENTION: TANNY TRIPLITT
4625 WEST 86TH STREET, STE 500
INDIANAPOLIS, IN 46268
317-713-8947

DUKE ENERGY (ELECTRIC)
ATTENTION: JASON KEENAN
100 SOUTH MILL CREEK ROAD
NOBLESVILLE, IN 46060
317-776-5335

COMCAST CABLE
ATTENTION: MATT STRINGER
9750 EAST 150TH STREET, STE 1600
NOBLESVILLE, IN 46060
317-774-3384

VECTREN (GAS)
ATTENTION: CHARLES SHUPPERD
16000 ALLISONVILLE ROAD
NOBLESVILLE, IN 46060
317-776-5535

BENCHMARK

HORIZONTAL AND VERTICAL CONTROL:

COORDINATE SYSTEM:
US STATE PLANE 1983 (AT GROUND)

PROJECT DATUM:
WORLD GEODETIC SYSTEM (WGS 1984)

VERTICAL DATUM:
NAVD 88

ZONE:
INDIANA EAST 1301

GEIOD MODEL:
GEIOD03 (CONUS)

TEMPORARY BENCHMARKS

TBM #1003
HARRISON MON
ELEVATION - 926.29'

TBM#5025
REBAR SET
ELEVATION - 926.28'

PLANS PREPARED FOR:

SUNDOWN COMMERCIAL GROUP
13400 OLD MERIDIAN STREET
CARMEL, IN 46032
PHONE: (317)846-0620 FAX:
(317)846-4950
CONTACT PERSON: SCOTT SENEFELD

PLANS PREPARED BY

WEIHE ENGINEERS, INC.
10505 N. COLLEGE AVE.
INDIANAPOLIS, IN 46280
(317) 846-6611 PHONE
(317) 843-0546 FAX
CONTACT PERSON: JAMES E. SHIELDS, JR.



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PER INDIANA STATE LAW IC 8-1-26,
IT IS AGAINST THE LAW TO EXCAVATE
WITHOUT NOTIFYING THE UNDERGROUND
LOCATION SERVICE TWO (2) WORKING
DAYS BEFORE COMMENCING WORK.

CONSTRUCTION PLANS DATED: 8/30/2012

10505 N. College Avenue
Indianapolis, Indiana 46280
weihe.net

317 | 846 - 6611
800 | 452 - 6408
317 | 843 - 0546 fax

ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE
ENGINEERS

Land Surveying | Civil Engineering
Landscape Architecture

PROJECT NO. W12-0055

BY: [Signature]

DATE: 7/24/2012

REVISIONS AND ISSUES

REGISTERED PROFESSIONAL ENGINEER

JAMES E. SHIELDS, JR.
No. PE10261338
STATE OF INDIANA
EXPIRES 12/31/2015

JAMES E. SHIELDS JR. P.E. 10201333

PREPARED FOR:

SUNDOWN COMMERCIAL GROUP

TITLE SHEET

SHEET NO. C001

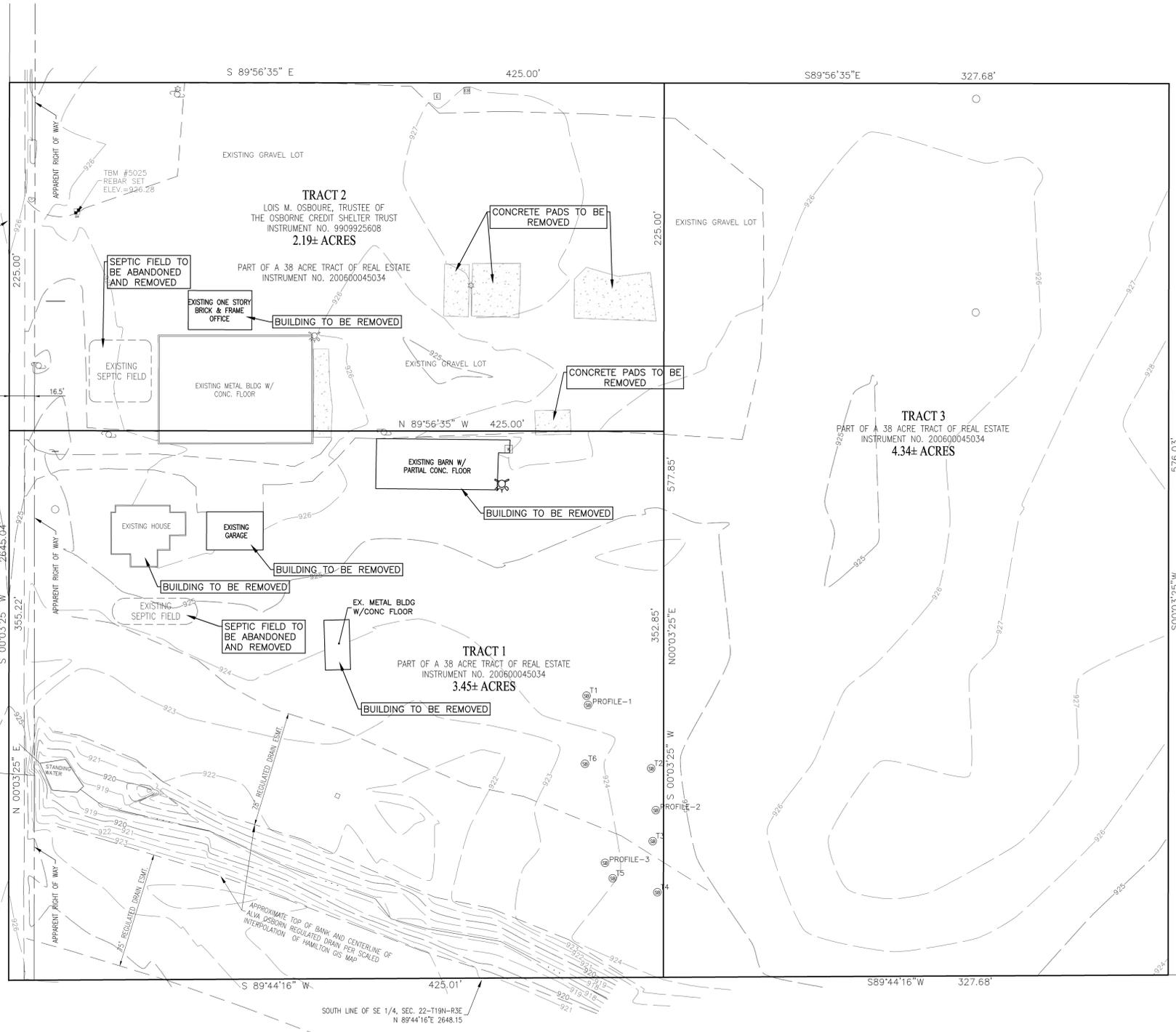
PROJECT NO. W12-0055

LOCATION: H:\2012\W12-0055\Engineering\Design\Concept\C100-1\20055EK.dwg
 DATE/TIME: August 31, 2012 7:50am
 PLOTTED BY: mlare

SIX POINTS ROAD

WEST LINE OF SE 1/4, SEC. 22-119N-R3E
 S 0°03'25" W (ASSUMED BEARING)

APPARENT RIGHT OF WAY



- LEGEND**
- = Aerial Utility Lines
 - = Aerial Traffic Signal Lines
 - = Buried Water Lines (assumed location)
 - = Buried Gas Lines
 - = Buried Gas Lines (assumed location)
 - = Buried Telephone Lines
 - = Power Pole
 - ◆ = Power Pole with Drop
 - ⊕ = Power Pole with Transformer
 - ⊕ = Power Pole with Light
 - ⊕ = Guy Anchor
 - ⊕ = Traffic Signal Manhole
 - ⊕ = Traffic Strain Pole
 - ⊕ = Gas Valve
 - ⊕ = Gas Meter
 - ⊕ = Electric Meter
 - ⊕ = Electric Control Box
 - ⊕ = Telephone Pedestal
 - ⊕ = Telephone Junction Box
 - ⊕ = Telephone Manhole
 - ⊕ = Water Meter
 - ⊕ = Water Valve
 - ⊕ = Fire Hydrant
 - ⊕ = Headwall
 - ⊕ = Mailbox
 - ⊕ = Cleanout
 - MNS = Mag Nail Set
 - IPS = 5/8" Rebar with WEIHE cap set

GENERAL DEMOLITION NOTES:

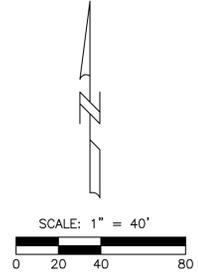
1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY MATERIALS AND/OR STRUCTURES NOT LOCATED ON THIS SURVEY.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING UTILITIES PERTAINING TO THEIR PHASE OF WORK, AND TO VERIFY WHICH UTILITIES WILL BE REMOVED BY UTILITY COMPANY. ANY AND ALL UTILITIES NOT REMOVED BY THE UTILITY COMPANY SHALL BE REMOVED BY THE CONTRACTOR.
3. UTILITIES NOTED TO BE REMOVED ARE APPROXIMATE AND SHALL BE RELOCATED, CAPPED AND/OR ABANDONED PRIOR TO CONSTRUCTION. IF A UTILITY IS OWNED BY ANYONE OTHER THAN THE DEVELOPER, THE CONTRACTOR SHALL COORDINATE ABANDONMENT OR RELOCATION WITH SAID OWNER.
4. ALL DEMOLITION MATERIAL AND SALVAGEABLE MATERIAL IS THE PROPERTY OF THE DEMOLITION CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFFSITE.
5. ALL EXISTING BUILDINGS ON THE PROPERTY ARE TO BE REMOVED AND MAY CONTAIN ASBESTOS MATERIAL TO BE REMOVED BY THE CONTRACTOR.
6. ALL STRUCTURES SHALL BE INVESTIGATED FOR POSSIBLE BASEMENTS, OR CELLARS, AND WALLS TO BE REMOVED COMPLETELY AND TAKEN OFF THE SITE.
7. SLABS ON GRADE MUST BE REMOVED COMPLETELY AND TAKEN OFF SITE.
8. CAP ALL WELLS ON SITE AS SPECIFIED BY THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, HAMILTON COUNTY WELL CAPPING ORDINANCE, ALL WELL TO BE INSPECTED BY WESTFIELD PUBLIC WORKS.
9. ALL EXISTING SEPTIC SYSTEMS ARE TO BE LOCATED BY CONTRACTOR ON SITE AND REMOVED COMPLETELY.
10. ALL EXISTING WALKS AND DRIVEWAYS TO BE COMPLETELY REMOVED BY CONTRACTOR AND HAULED OFFSITE.
11. THE CONTRACTOR SHALL OBTAIN ALL DEMOLITION PERMITS REQUIRED BY THE LOCAL AND STATE AGENCIES.
12. THE CONTRACTOR SHALL REMOVE ALL EXISTING FENCES LOCATED ON SITE.
13. THE OWNER GETS THE FIRST RIGHT OF SALVAGE.
14. POWER POLES TO BE REMOVED & RELOCATED PER UTILITY CO.
15. THE CONTRACTOR SHALL MAINTAIN STREETS FREE AND CLEAR OF SEDIMENT AND DEBRIS.

LAND DESCRIPTION:

Tract #1
 Description of Real Estate:
 Part of the Southeast Quarter of Section 22, Township 19 North, Range 3, East Hamilton County Indiana being described as follows:
 Beginning at the railroad spike at the Southwest corner of the Southeast Quarter of Section 22, Township 19 North, Range 3 East; thence on the West line of said Southeast Quarter North 00 degrees 03 minutes 25 seconds East (assumed bearing) 355.22 feet to the mag nail; thence South 89 degrees 56 minutes 35 seconds East 425.00 feet to a 5/8" steel rebar with a yellow cap stamped "Miller Surveying"; thence South 00 degrees 03 minutes 25 seconds West 352.85 feet to a mag nail on the South line of said Southwest Quarter; thence on said South line South 89 degrees 44 minutes 16 seconds West 425.00 feet to the point of beginning containing 3.45 acres, more or less.

Tract #2
 Description of Real Estate:
 Part of the Southeast Quarter of Section 22, Township 19 North, Range 3 East Hamilton County Indiana being described as follows:
 Commencing at the railroad spike at the Southwest corner of the Southeast Quarter of Section 22, Township 19 North, Range 3 East; thence on the West line of said Southeast Quarter North 00 degrees 03 minutes 25 seconds East (assumed bearing) 355.22 feet to the mag nail and the point of beginning of this description; thence continuing on said West line North 00 degrees 03 minutes 25 seconds East 225.00 feet; thence South 89 degrees 56 minutes 35 seconds East 425.00 feet to a 5/8" steel rebar with a yellow cap stamped "Miller surveying"; thence South 00 degrees 03 minutes 25 seconds West 225.00 feet to a 5/8" steel rebar with a yellow cap stamped "Miller surveying"; thence North 89 degrees 56 minutes 35 seconds West 425.00 feet to the point of beginning containing 2.19 acres, more or less.

Tract #3
 Description of Real Estate:
 Part of the Southeast Quarter Section 22, Township 19 North, Range 3 East Hamilton County Indiana being described as follows:
 Commencing at the railroad spike at the Southwest corner of the Southeast Quarter of Section 22, Township 19 North, Range 3 East; thence on the South line of said Southeast Quarter North 89 degrees 44 minutes 16 seconds East (assumed bearing) 425.01 feet to a 5/8" steel rebar with a yellow cap stamped "Miller Surveying" and the point of beginning of this description; thence parallel with the West line of said Southeast Quarter North 00 degrees 03 minutes 25 seconds East 577.85 feet; thence South 89 degrees 56 minutes 35 seconds East 327.68 feet to a 5/8" steel rebar with a yellow cap stamped "Miller Surveying"; thence parallel with West line of said Southeast Quarter South 00 degrees 03 minutes 25 seconds West 576.03 feet to a 5/8" steel rebar with a yellow cap stamped "Miller Surveying" on the South line of said Southeast Quarter; thence on said South line South 89 degrees 44 minutes 16 seconds West 327.68 feet to the point of beginning, containing 4.34 acres, more or less.



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 IT IS AGAINST THE LAW TO EXCAVATE
 WITHOUT NOTIFYING THE UNDERGROUND
 LOCATION SERVICE TWO (2) WORKING
 DAYS BEFORE COMMENCING WORK.

CONSTRUCTION PLANS DATED: 8/30/2012

10505 N. College Avenue
 Indianapolis, Indiana 46280
 weihe.net
 317 | 846 - 6611
 800 | 452 - 6408
 317 | 843 - 0546 fax
 ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
 Land Surveying / Civil Engineering
 Landscape Architecture

| | |
|--------------|-------------------|
| PROJECT NO.: | W12-0055 |
| DWG. NAME: | C100-1007EX-BHP-1 |
| DESIGNED BY: | ML |
| DRAWN BY: | ML |
| CHECKED BY: | ML |
| DATE: | 7/24/2012 |

REVISIONS AND ISSUES

JAMES E. SHIELDS JR. P.E.
 REGISTERED PROFESSIONAL ENGINEER
 No. PE10261338
 STATE OF INDIANA
 A PROFESSIONAL ENGINEER

JAMES E. SHIELDS JR. P.E. 10201333

PREPARED FOR:
SUNDOWN GARDENS
 SUNDOWN COMMERCIAL GROUP
 SITE PREPARATION / DEMOLITION PLAN
 A part of the Southeast Quarter of Section 22, Township 19 North, Range 3 East, Hamilton County, Indiana.

SHEET NO.
C100

PROJECT NO.
 W12-0055

LEGEND

- BEEHIVE INLET PROTECTION - USE TRASH/DEBRIS GUARDS
- PERMANENT SEEDING
USE PLANTING CHART
- EROSION CONTROL BLANKET - USE S150BN BIO-NET AS SUPPLIED BY NORTH AMERICAN GREEN OR APPROVED EQUAL
- SILT FENCE
- SITE DISCHARGE POINT
- CONSTRUCTION LIMITS

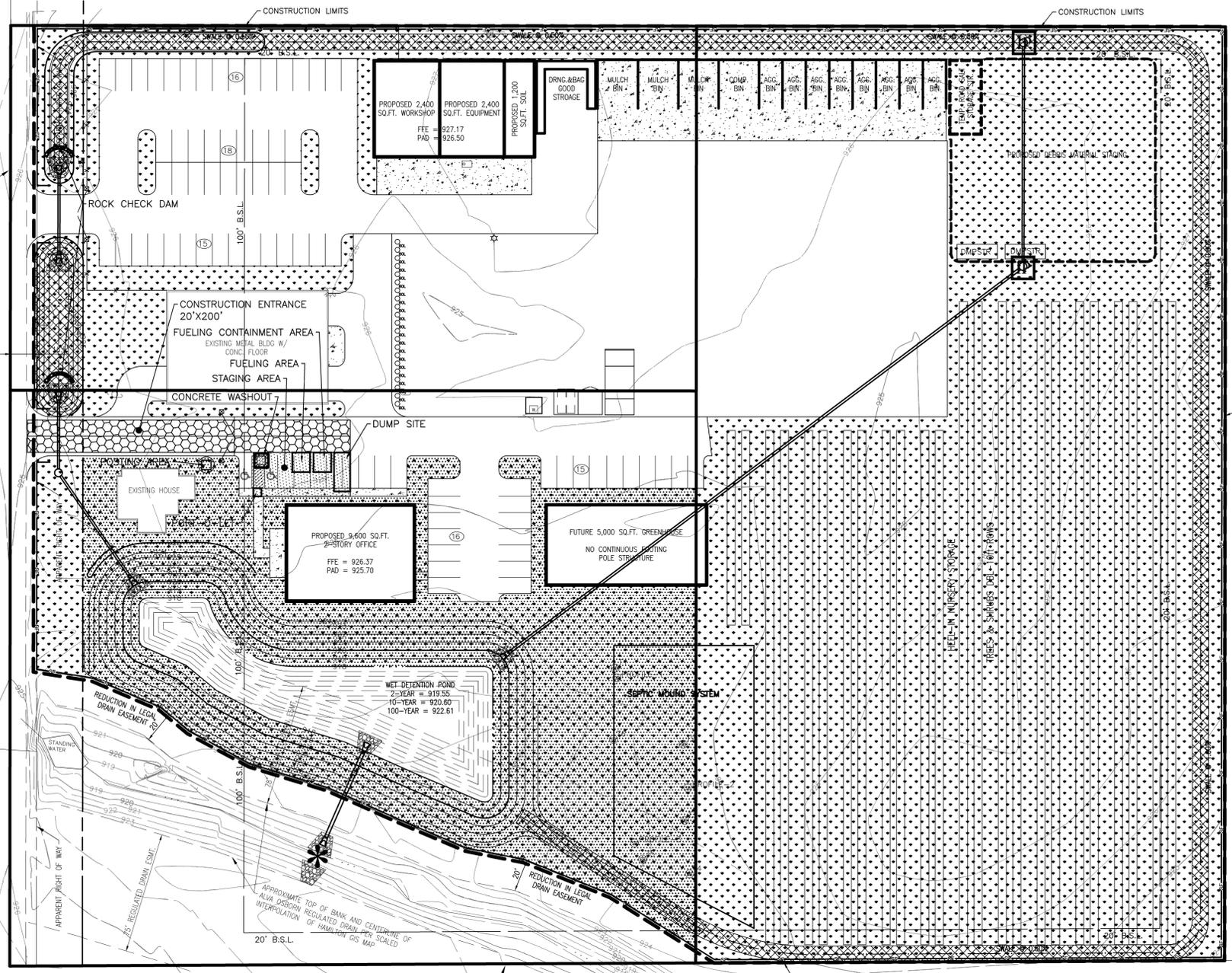
| STABILIZATION PRACTICE | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|------------------------|------|------|------|------|-----|------|------|------|-------|------|------|------|
| PERMANENT SEEDING | A | | | | | | | | | | | |
| DORMANT SEEDING | B | | | | | | | | | | | |
| TEMPORARY SEEDING | C | | | | | | | | | | | |
| SODDING | D | | | | | | | | | | | |
| MULCHING | E | | | | | | | | | | | |

- A = KENTUCKY BLUEGRASS 40 LBS./ACRE, CREEPING RED FESCUE 40 LBS./ACRE, PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS./ACRE.
- B = KENTUCKY BLUEGRASS 60 LBS./ACRE, CREEPING RED FESCUE 60 LBS./ACRE, PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS./ACRE.
- C = SPRING OATS 3 BUSHEL/ACRE.
- D = WHEAT OR RYE 2 BUSHEL/ACRE.
- E = ANNUAL RYEGRASS 40 LBS./ACRE. (1 LB./1000 SQ. FT.)
- F = SOD
- G = STRAW MULCH 2 TONS/ACRE.

SEASONAL SOIL PROTECTION CHART

WEST LINE OF SE 1/4, SEC. 22-119N-R3E
S 09°32'25" W (ASSUMED BEARS OF BEARING)

SIX POINTS ROAD



EROSION CONTROL SPECIFICATIONS:

- 1) THIS PLAN IS DESIGNED AS AN ATTEMPT TO PREVENT ANY AND ALL SEDIMENT FROM LEAVING THE CONSTRUCTION SITE BY WAY OF EROSION. IF EROSION OF SEDIMENT FROM THE SITE IS TAKING PLACE, THE CONTRACTOR AND/OR OWNER SHALL TAKE PREVENTATIVE ACTION IMMEDIATELY. THE ENGINEER SHALL BE CONSULTED IN THE EVENT THIS HAPPENS.
- 2) TEMPORARY SEEDING IS TO BE APPLIED TO ANY DISTURBED AREA THAT WILL REMAIN UNALTERED IN EXCESS OF 15 DAYS.
- 3) PERMANENT SEEDING IS TO BE APPLIED IMMEDIATELY TO AREAS THAT HAVE ACHIEVED FINAL AND FINISHED GRADE.
- 4) PRESERVE EXISTING VEGETATION ON THE SITE WHENEVER AND WHEREVER POSSIBLE TO PREVENT TOPSOIL EROSION.
- 5) ALL SEDIMENT CAPTURING MEASURES SHALL BE IMPLEMENTED PRIOR TO THE DISTURBANCE OF THE CONSTRUCTION AREA THEY ARE INTENDED TO SERVICE. ALL EROSION CONTROL MEASURES PROPOSED ARE TO BE PROPERLY MAINTAINED TO CONTINUE THEIR EFFECTIVENESS.
- 6) IF GRADING OCCURS DURING THE MONTHS OF DECEMBER, JANUARY OR FEBRUARY DORMANT SEEDING PROCEDURES SHALL BE USED.
- 7) DURING DRY WEATHER, KEEP LAWNS WATERED WITH SPRINKLERS OR OTHER APPROVED METHODS. RESEED ANY AREAS NOT GERMINATING OR DAMAGED AT INTERVALS AS MAY BE REQUIRED ACCORDING TO SEASONAL CONDITION AND/OR CONSTRUCTION ACTIVITY. WATER GRASS AND EXECUTE NECESSARY WEEDING UNTIL FULL STAND OF GRASS HAS BEEN OBTAINED.
- 8) THE IMPLEMENTATION AND MAINTENANCE OF THE EROSION CONTROL IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR OWNER.
- 9) IT SHALL BE THE CONTRACTOR'S AND/OR OWNER'S RESPONSIBILITY TO MINIMIZE SEDIMENTATION (FROM ON-SITE CONSTRUCTION ACTIVITIES) FROM BEING DEPOSITED ONTO ADJACENT PROPERTIES AND RECEIVING STREAMS/DITCHES IN STRICT COMPLIANCE WITH "RULE 5" (327 IAC 15-5-5. CONSTRUCTION ACTIVITY STORM WATER RUNOFF CONTROL). IT SHALL ALSO BE THE CONTRACTOR'S AND/OR OWNER'S RESPONSIBILITY TO OBTAIN ANY APPROVALS REQUIRED FROM THE LOCAL AUTHORITY AND TO SUBMIT A COMPLETE NOTICE OF INTENT LETTER TO THE OFFICE OF WATER MANAGEMENT, INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT PRIOR TO ANY CONSTRUCTION ACTIVITY.
- 10) FOR SEASONAL VARIATIONS - SEE SEASONAL SOIL PROTECTION CHART IN THESE PLANS.

EROSION CONTROL NOTES

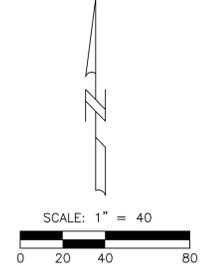
1. ALL DISTURBED AREAS SHALL BE SODDED OR SEEDDED, EXCEPT BUILDING PAD AND LANDSCAPE BEDS. SEE LANDSCAPE PLANS FOR LOCATION OF LANDSCAPE BEDS.
2. INSTALL SILT FENCE ALONG ALL PROPERTY BOUNDARIES ADJACENT TO CONSTRUCTION.
3. THERE SHALL BE NO DIRT, DEBRIS OR STORAGE OF MATERIAL IN THE STREET.
4. EROSION CONTROL PLAN MUST BE EXECUTED BEFORE ANY CONSTRUCTION COMMENCES.
5. ALL EROSION CONTROL MATERIALS NEED TO BE APPROVED BY THE WESTFIELD PUBLIC WORKS INSPECTOR.
6. TEMPORARY OR PERMANENT SEED/MATERIAL WILL BE REQUIRED WITHIN 15 DAYS OF LAND DISTURBANCE, IF THE AREA WILL REMAIN DORMANT.
7. VIKING COMMANDER WAY IS NOT TO BE USED AS A CONSTRUCTION ENTRANCE.
8. EROSION CONTROL PLAN MEASURES MUST BE EXECUTED BEFORE ANY CONSTRUCTION COMMENCES.
9. SILT FENCE TO BE PLACED BEHIND THE CURB AS SOON AS THE CURB HAS BEEN INSTALLED. (AS SHOWN)
10. ALL S.S.D. SHALL BE SMOOTH BORE, DOUBLE WALLED PIPE.

DISTURBED ACREAGE = 8.6 ± AC.

-NOTE-
THIS PLAN INDICATES EROSION CONTROL MEASURES REQUIRED AFTER SOIL STRIPPING AND PAD BUILDING HAS TAKEN PLACE. COORDINATE WITH DEVELOPER FOR MEASURES REQUIRED UNTIL PROPERTY TURNED OVER FOR DEVELOPMENT. COORDINATE WITH SOIL CONSERVATION DISTRICT REPRESENTATIVE FOR ANY OTHER MEASURES REQUIRED DUE TO SITE CONDITIONS.

CONTACT PERSON FOR EROSION CONTROL & SEDIMENT PRACTICES
SUNDOWN COMMERCIAL GROUP
13400 OLD MERIDIAN STREET
CARMEL, IN 46032
PHONE: (317)846-0620 FAX: (317)-846-4950
CONTACT PERSON: SCOTT SENEFELD

-WARNING-
THIS PLAN TO BE USED FOR EROSION CONTROL PURPOSES ONLY. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE WESTFIELD PUBLIC WORKS DEPT. INSPECTOR.



811
Know what's below.
Call before you dig.
Within Indiana Call 811 or 800-382-5544
24 Hours a Day, 7 Days a Week
PER INDIANA STATE LAW IC 8-1-26
IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

10505 N. College Avenue
Indianapolis, Indiana 46280
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317 | 843 - 0546 fax
ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
Land Surveying | Civil Engineering
Landscape Architecture

| | |
|--------------|--------------------|
| PROJECT NO.: | W12-0055 |
| DWG. NAME: | C201-1102000-Med-2 |
| DESIGNED BY: | JES |
| DRAWN BY: | JES |
| CHECKED BY: | JES |
| DATE: | 7/24/2012 |

| | | |
|----------------------|------|----|
| REVISIONS AND ISSUES | DATE | BY |
| | | |
| | | |



JAMES E. SHIELDS JR. P.E. 10201333

PREPARED FOR:
SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
STORMWATER POLLUTUIN PREVENTION PLAN
A part of the Southeast Quarter of Section 22, Township 19 North, Range 3 East, Washington Township, Hamilton County, Indiana.

SHEET NO.
C200
PROJECT NO.
W12-0055

CONSTRUCTION PLANS DATED: 8/30/2012

LOCATION: H:\2012\W120055\Engineering\Design\Comment\C200-110055ER02.dwg
DATE/TIME: August 31, 2012 - 7:50am
PLOT/DWG: mlsare

SECTION 1 - EMERGENCY RESPONSE NUMBERS

Table with 2 columns: Agency Name, Phone Number. Includes Westfield Fire Department, Police Department, Indiana Department of Natural Resources, etc.

SECTION 2 - MATERIAL HANDLING AND SPILL PREVENTION PLAN

Material Handling and Spill Prevention Plan: In order to minimize the release of potential pollutants during construction the Contractors shall implement this material handling and spill prevention plan.

- 1. Construction Equipment
a. Fueling, lubrication and fluids: All operations involving the addition of fluids to equipment should be done in one location, as designated by the general contractor...
b. Equipment repair, especially when fluids must be removed from the equipment or the possibility of fluid spills is high, should always be done offsite at a facility that is more suitable than a construction site to handle spills...

In the event of accidentally contamination all efforts should be made to remove contaminants in an appropriate manner. The Westfield Fire Department should be contacted immediately to determine if further measures are needed.

SECTION A - CONSTRUCTION PLAN ELEMENTS

- A1 PLAN INDEX - SEE BELOW
A2 11"x17" PLAT - (REDUCTION OF STORMWATER POLLUTION PREVENTION PLAN WITH FULL SIZE PLAN)
A3 PROJECT NARRATIVE - THIS IS A GARDEN CENTER DEVELOPMENT IN AN INDUSTRIAL DISTRICT ON APPROXIMATELY 9.98 ACRES. THE CONSTRUCTION SHALL CONSIST OF ASPHALT AND GRAVEL DRIVE, OFFICE BUILDINGS, STORAGE AREAS, DETENTION POND, AND A SEPTIC FIELD.
A4 VICINITY MAP - SEE LEFT OF STORMWATER POLLUTION PREVENTION PLAN, SHEET C200
A5 LEGAL DESCRIPTION - SEE LEFT OF STORMWATER POLLUTION PREVENTION PLAN, C200, LAT: N 40°04'22" LONG: W86°10'27"

SECTION B - STORMWATER POLLUTION PREVENTION PLAN - CONSTRUCTION PHASE

- B1 DESCRIPTION OF POTENTIAL POLLUTANTS FROM CONSTRUCTION ACTIVITY SUCH AS ASPHALT FROM PAVING; CONCRETE FROM CURBING, SIDEWALKS, OIL, GREASE, ANTIFREEZE, GASOLINE AND DIESEL FUEL FROM CONSTRUCTION EQUIPMENT; SOIL EROSION; FERTILIZER AND PESTICIDES FROM LANDSCAPING AND TRASH SHOULD BE PROPERLY ATTENDED TO TO REDUCE THE CONTAMINANTS FROM ENTERING THE STORM SYSTEM. TRASH SHOULD BE CLEANED UP TO REDUCE CLOGGING OF STORM SYSTEMS AND REDUCE POTENTIAL BACTERIA AND/OR OTHER BIOLOGICAL AGENTS FROM ENTERING IN THE STORM SYSTEM.
B2 SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND DISTURBING ACTIVITIES -
1. A PRE-CONSTRUCTION MEETING MUST BE HELD WITH THE CITY OF WESTFIELD PUBLIC WORKS DEPARTMENT BEFORE ANY EARTH DISTURBANCE CAN COMMENCE.
2. POSTING AREA - CONTRACTOR SHALL POST ALL APPROVED SWPPP DOCUMENTS AND PERMITS IN THE LOCATION DESIGNATED ON PLANS.

SECTION C - STORMWATER POLLUTION PREVENTION PLAN - POST-CONSTRUCTION PHASE

- C1 DESCRIPTION OF POLLUTANTS AND THEIR SOURCES ASSOCIATED WITH THE PROPOSED LAND USE - POTENTIAL POLLUTANTS FROM POST-CONSTRUCTION ACTIVITY SUCH AS SANDS AND SALTS FROM SNOW REMOVAL, OIL, GREASE, ANTIFREEZE, ETC. FROM VEHICLES INCLUDING HEAVY METAL FROM BRAKE PAD WEAR SHOULD BE PROPERLY ATTENDED TO TO REDUCE THE CONTAMINANTS FROM ENTERING THE STORM SYSTEM. TRASH SHOULD BE CLEANED UP TO REDUCE CLOGGING OF STORM SYSTEMS AND REDUCE POTENTIAL BACTERIA AND/OR OTHER BIOLOGICAL AGENTS FROM ENTERING IN THE STORM SYSTEM. EXCESS FERTILIZERS AND HERBICIDES SHOULD BE AVOIDED. CLEAN UP IMMEDIATELY IF ANY IS SPILLED.
C2 SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION A SILT FENCE WILL BE INSTALLED BEFORE CONSTRUCTION SHALL BEGIN AND A WET DETENTION BASIN WILL BE INSTALLED FOR POST CONSTRUCTION WATER QUALITY MEASURES
C3 DESCRIPTION OF PROPOSED POST-CONSTRUCTION STORMWATER QUALITY MEASURES - GRASS SWALES AND WET DETENTION BASINS W/ RIPRAP INSTALLED AT OUTLET LOCATIONS.

RULE 6. SPILLS OF OIL AND OTHER OBJECTIONABLE SUBSTANCES; REPORTING, CONTAINMENT AND CLEANUP (235-1864 AARON MCMAHON IDEM) (REPEALED BY WATER POLLUTION CONTROL BOARD; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1734)

RULE 6.1. SPILLS; REPORTING, CONTAINMENT, AND RESPONSE

327 IAC 2-6.1-1 APPLICABILITY
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 1. THIS RULE APPLIES TO THE REPORTING AND CONTAINMENT OF, AND THE RESPONSE TO THOSE SPILLS OF HAZARDOUS SUBSTANCES, EXTREMELY HAZARDOUS SUBSTANCES, PETROLEUM, AND OBJECTIONABLE SUBSTANCES THAT ARE OF A QUANTITY, TYPE, DURATION AND LOCATION AS

327 IAC 2-6.1-2 SPECIAL AREAS
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 2. CERTAIN AREAS OF THE STATE ARE RECOGNIZED AS HAVING UNIQUE GEOLOGY, A LARGE SECTION OF THE MID-SOUTHERN PART OF THE STATE IS A KARST REGION. PORTIONS OF SAINT JOSEPH, ELKHART, KOSCIUSKO, AND LAGRANGE COUNTIES CONTAIN A SOLUBLE SOURCE AQUIFER AS REFERENCED IN 42 U.S.C. 300h-3(e). THE WATERS OF THE STATE ARE PARTICULARLY VULNERABLE TO DAMAGE FROM SPILLS IN THESE AREAS.

327 IAC 2-6.1-3 EXCLUSIONS
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 3. NOTWITHSTANDING ANY OTHER SECTION OF THIS RULE, THE REPORTING REQUIREMENT OF THIS RULE DOES NOT APPLY TO THE FOLLOWING OCCURRENCES:
(1) DISCHARGES OR EXCEEDANCES THAT ARE UNDER THE JURISDICTION OF AN APPLICABLE PERMIT WHEN THE SUBSTANCE IN QUESTION IS COVERED BY THE PERMIT AND DEATH OR ACUTE INJURY OR ILLNESS TO ANIMALS OR HUMANS DOES NOT OCCUR.
(2) LAWFUL APPLICATION OF MATERIALS, INCLUDING, BUT NOT LIMITED TO:
(A) COMMERCIAL OR NATURAL FERTILIZERS AND PESTICIDES ON OR TO LAND OR WATER; OR
(B) DUST SUPPRESSANT MATERIALS.

327 IAC 2-6.1-4 DEFINITIONS
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17; IC 14-8-2-7; IC 14-25-7-13; IC 14-25-7-15

SEC. 4. IN ADDITION TO THE DEFINITIONS CONTAINED IN IC 13-11-2-17(D), IC 13-11-2-35(A), IC 13-11-2-51, IC 13-11-2-158(A), IC 13-11-2-160, IC 13-11-2-265, AND IN 327 IAC 1, THE FOLLOWING DEFINITIONS APPLY THROUGH THIS RULE
(1) "ANIMAL" MEANS ALL MAMMALS, BIRDS, REPTILES, AMPHIBIANS, FISH, CRUSTACEANS, AND MOLLUSKS.
(2) "AQUATIC LIFE" MEANS THOSE PLANTS AND MACROINVERTEBRATES THAT ARE DEPENDENT UPON AN AQUATIC ENVIRONMENT.
(3) "EMERGENCY" MEANS TO TAKE SUCH IMMEDIATE ACTION AS NECESSARY TO DAM, BLOCK, RESTRAIN, OR OTHERWISE ACT TO MOST EFFECTIVELY PREVENT A SPILL FROM ENTERING WATERS OF THE STATE OR MINIMIZE DAMAGE TO THE WATERS OF THE STATE FROM A SPILL.
(4) "DAMAGE" MEANS THE ACTUAL OR IMMINENT ALTERATION OF THE WATERS OF THE STATE SO AS TO RENDER THE WATERS HARMFUL, DETRIMENTAL, OR INJURIOUS TO:
(A) PUBLIC HEALTH, SAFETY, OR WELFARE;
(B) DOMESTIC, COMMERCIAL, INDUSTRIAL, AGRICULTURAL, OR RECREATIONAL USES; OR
(C) ANIMALS OR AQUATIC LIFE.

(5) "DOWNSTREAM WATER USER" MEANS:
(A) A COMMUNITY PUBLIC WATER SUPPLY, AS IDENTIFIED BY THE DEPARTMENT OF NATURAL RESOURCES UNDER IC 14-25-7-13(10).
(B) A SIGNIFICANT WATER WITHDRAWAL FACILITY AS REGISTERED WITH THE DEPARTMENT OF NATURAL RESOURCES UNDER IC 14-25-7-15;
(C) USERS OF RECREATIONAL WATERS; OR
(D) ANY OTHER USER MADE KNOWN TO THE PERSON WHO HAS A SPILL.
(6) "EXTREMELY HAZARDOUS SUBSTANCE" MEANS A SUBSTANCE IDENTIFIED PURSUANT TO 42 U.S.C. 11002 AND 11004. (40 CFR 355 APPENDIX A.)
(7) "FACILITY" MEANS ALL LAND, BUILDINGS, EQUIPMENT, STRUCTURES, AND OTHER STATIONARY ITEMS THAT ARE LOCATED ON A SINGLE SITE OR ON CONTIGUOUS SITES AND THAT ARE OWNED OR OPERATED BY THE SAME PERSON OR BY ANY PERSON WHO CONTROLS, IS CONTROLLED BY, OR IS UNDER COMMON CONTROL WITH, SUCH PERSON.
(8) "FACILITY BOUNDARY" MEANS THE BOUNDARY OF A FACILITY OR AN EASEMENT OR RIGHT-OF-WAY.
(9) "HAZARDOUS SUBSTANCE" HAS THE MEANING SET FORTH IN 42 U.S.C. 9601(14).
(10) "MODE OF TRANSPORTATION" INCLUDES, BUT IS NOT LIMITED TO, CARRIAGE BY:
(A) RAIL AND MOTOR VEHICLES;
(B) AIRCRAFT;
(C) WATERCRAFT;
(D) PIPELINES; OR
(E) BOATING, SWIMMING, FISHING, HUNTING, TRAPPING, OR WILDLIFE VIEWING; OR
(F) PUBLIC ACCESS AREAS THAT ARE OWNED BY THE DEPARTMENT OF NATURAL RESOURCES OR THE FEDERAL GOVERNMENT; AS LISTED BY THE DEPARTMENT.

(11) "OBJECTIONABLE SUBSTANCES" MEANS SUBSTANCES THAT ARE:
(A) OF A QUANTITY AND A TYPE, AND
(B) PRESENT FOR A DURATION AND IN A LOCATION; SO AS TO DAMAGE WATERS OF THE STATE. THIS DEFINITION EXCLUDES HAZARDOUS SUBSTANCES, EXTREMELY HAZARDOUS SUBSTANCES, PETROLEUM, AND MIXTURES DESIGNATED BY THE DEPARTMENT, THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, OR THE UNITED STATES COAST GUARD TO DIRECT AND COORDINATE SPECIAL SPILL RESPONSE ACTIVITIES.
(12) "ON-SCENE COORDINATOR" MEANS A STATE OR FEDERAL OFFICIAL DESIGNATED BY THE DEPARTMENT, THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, OR THE UNITED STATES COAST GUARD TO DIRECT AND COORDINATE SPECIAL SPILL RESPONSE ACTIVITIES.
(13) "RECREATIONAL WATERS" MEANS ANY WATER USED FOR:
(A) BOATING, SWIMMING, FISHING, HUNTING, TRAPPING, OR WILDLIFE VIEWING; OR
(B) PUBLIC ACCESS AREAS THAT ARE OWNED BY THE DEPARTMENT OF NATURAL RESOURCES OR THE FEDERAL GOVERNMENT; AS LISTED BY THE DEPARTMENT.
(14) "REPORTABLE QUANTITY" MEANS THE AMOUNT OF A HAZARDOUS SUBSTANCE OR EXTREMELY HAZARDOUS SUBSTANCE THAT IS REQUIRED TO BE REPORTED UNDER FEDERAL LAW UNDER 42 U.S.C. 9602(A) AND (B) AND 42 U.S.C. 9603(A). (40 CFR 302.4 AND 40 CFR 355 APPENDIX A.)
(15) "SPILL" MEANS ANY UNEXPECTED, UNINTENDED, ABNORMAL, OR UNAPPROVED DUMPING, LEAKAGE, DRAINAGE, SEEPAGE, DISCHARGE OR OTHER LOSS OF PETROLEUM, HAZARDOUS SUBSTANCES, EXTREMELY HAZARDOUS SUBSTANCES, OR OBJECTIONABLE SUBSTANCES. THE TERM DOES NOT INCLUDE RELEASES TO IMPERMEABLE SURFACES WHEN THE SUBSTANCE DOES NOT MIGRATE OFF THE SURFACE OR PENETRATE THE SURFACE AND ENTER THE SOIL.
(16) "SPILL RESPONSE", FOR PURPOSES OF THIS RULE, MEANS THE FOLLOWING:
(A) THE SPILL IS CONTAINED; AND
(B) FREE MATERIAL IS REMOVED OR NEUTRALIZED.
(17) "SPILL REPORT" MEANS AN ORAL REPORT THAT INCLUDES THE FOLLOWING INFORMATION ABOUT A SPILL, TO THE EXTENT THAT THE INFORMATION IS KNOWN AT THE TIME OF THE REPORT:
(A) THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE PERSON MAKING THE SPILL REPORT.
(B) THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A CONTACT PERSON IF DIFFERENT FROM CLAUSE (A).
(C) THE LOCATION OF THE SPILL.
(D) THE TIME OF THE SPILL.
(E) THE IDENTIFICATION OF THE SUBSTANCE SPILLED.
(F) THE APPROXIMATE QUANTITY OF THE SUBSTANCE THAT HAS BEEN OR MAY FURTHER BE SPILLED.
(G) THE DURATION OF THE SPILL.
(H) THE SOURCE OF THE SPILL.
(I) NAME AND LOCATION OF THE WATERS DAMAGED.
(J) THE IDENTITY OF ANY RESPONSE ORGANIZATION RESPONDING TO THE SPILL.
(K) WHAT MEASURES HAVE BEEN OR WILL BE UNDERTAKEN TO PERFORM A SPILL RESPONSE.
(L) ANY OTHER INFORMATION THAT MAY BE SIGNIFICANT TO THE RESPONSE ACTION.

(18) "WATERS", AS DEFINED IN IC 13-11-2-265, MEANS THE ACCUMULATIONS OF WATER, SURFACE AND UNDERGROUND, NATURAL AND ARTIFICIAL, PUBLIC AND PRIVATE, OR PARTS THEREOF, THAT ARE WHOLLY OR PARTIALLY WITHIN, FLOW THROUGH, OR BRIDGE UPON THIS STATE. THE TERM DOES NOT INCLUDE ANY PRIVATE POND OR ANY OFF-STREAM POND, RESERVOIR, OR FACILITY BUILT FOR REDUCTION OR CONTROL OF POLLUTION OR COOLING OF WATER PRIOR TO DISCHARGE UNLESS THE DISCHARGE FROM THE POND, RESERVOIR, OR FACILITY CAUSES OR THREATENS TO CAUSE WATER POLLUTION. (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-4; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1731; ERRATA FILED MAR 7, 1997, 2:25 P.M.; 20 IR 1738; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA)

327 IAC 2-6.1-5 REPORTABLE SPILLS; FACILITY

AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 5. THE FOLLOWING SPILLS FROM A FACILITY MUST BE REPORTED:

- (1) SPILLS THAT DAMAGE THE WATERS OF THE STATE SO AS TO CAUSE DEATH OR ACUTE INJURY OR ILLNESS TO HUMANS OR ANIMALS.
(2) SPILLS FROM A FACILITY THAT HAS BEEN NOTIFIED IN WRITING BY A WATER UTILITY THAT IT IS LOCATED IN A DELINEATED PUBLIC WATER SUPPLY WELLDHE PROTECTION AREA AS APPROVED BY THE DEPARTMENT UNDER 327 IAC 2-6.1-4 THAT ARE:
(A) SPILLS OF HAZARDOUS SUBSTANCES OR EXTREMELY HAZARDOUS SUBSTANCES WHEN THE AMOUNT SPILLED EXCEEDS ONE HUNDRED (100) POUNDS OR THE REPORTABLE QUANTITY, WHICHEVER IS LESS;
(B) SPILLS OF PETROLEUM WHEN THE AMOUNT SPILLED EXCEEDS FIFTY-FIVE (55) GALLONS; OR
(C) SPILLS OF OBJECTIONABLE SUBSTANCES AS DEFINED IN SECTION 4(11) OF THIS RULE.
(3) SPILLS THAT DAMAGE WATERS OF THE STATE AND THAT:
(A) ARE LOCATED WITHIN FIFTY (50) FEET OF A KNOWN PRIVATE DRINKING WATER WELL LOCATED BEYOND THE FACILITY PROPERTY BOUNDARY; OR
(B) ARE LOCATED WITHIN ONE HUNDRED (100) YARDS OF:
(I) ANY HIGH QUALITY WATER DESIGNATED AS AN OUTSTANDING STATE RESOURCE PURSUANT TO 327 IAC 2-1-2(3), EXCLUDING LAKE MICHIGAN;
(II) ANY WATER DESIGNATED AS EXCEPTIONAL USE PURSUANT TO 327 IAC 2-13(A)(6) [SIC.];
(III) ANY WATER DESIGNATED AS CAPABLE OF SUPPORTING A SALMONID FISHERY PURSUANT TO 327 IAC 2-1-3(A)(6) AND 327 IAC 2-1-11(B);
(IV) ANY WATER DESIGNATED AS A FISH HATCHERY, FISH AND WILDLIFE AREA, NATURE PRESERVE, OR RECREATIONAL WATER OWNED BY THE DEPARTMENT OF NATURAL RESOURCES OR THE FEDERAL GOVERNMENT.
(4) FOR ANY SPILL WHICH DOES NOT MEET THE CRITERIA IN SUBDIVISIONS (1) THROUGH (3), THE FOLLOWING MUST BE REPORTED:
(A) SPILLS TO SURFACE WATERS:
(I) SPILLS OF HAZARDOUS SUBSTANCES OR EXTREMELY HAZARDOUS SUBSTANCES WHEN THE AMOUNT SPILLED EXCEEDS ONE HUNDRED (100) POUNDS OR THE REPORTABLE QUANTITY, WHICHEVER IS LESS;
(II) SPILLS OF PETROLEUM OF SUCH QUANTITY AS TO CAUSE A SHEEN UPON THE WATERS; OR
(III) SPILLS OF OBJECTIONABLE SUBSTANCES AS DEFINED IN SECTION 4(11) OF THIS RULE.
(B) SPILLS TO SOIL BEYOND THE FACILITY BOUNDARY:
(I) SPILLS OF HAZARDOUS SUBSTANCES OR EXTREMELY HAZARDOUS SUBSTANCES WHEN THE AMOUNT SPILLED EXCEEDS ONE HUNDRED (100) POUNDS OR THE REPORTABLE QUANTITY, WHICHEVER IS LESS;
(II) SPILLS OF PETROLEUM WHEN THE AMOUNT SPILLED EXCEEDS FIFTY-FIVE (55) GALLONS; OR
(III) SPILLS OF OBJECTIONABLE SUBSTANCES AS DEFINED IN SECTION 4(11) OF THIS RULE.
(C) SPILLS TO SOIL WITHIN THE FACILITY BOUNDARY:
(I) SPILLS OF HAZARDOUS SUBSTANCES OR EXTREMELY HAZARDOUS SUBSTANCES WHEN THE AMOUNT SPILLED EXCEEDS ONE HUNDRED (100) POUNDS OR THE REPORTABLE QUANTITY, WHICHEVER IS LESS;
(II) SPILLS OF PETROLEUM WHEN THE SPILLED AMOUNT EXCEEDS ONE THOUSAND (1,000) GALLONS; OR
(III) SPILLS OF OBJECTIONABLE SUBSTANCES AS DEFINED IN SECTION 4(11) OF THIS RULE.

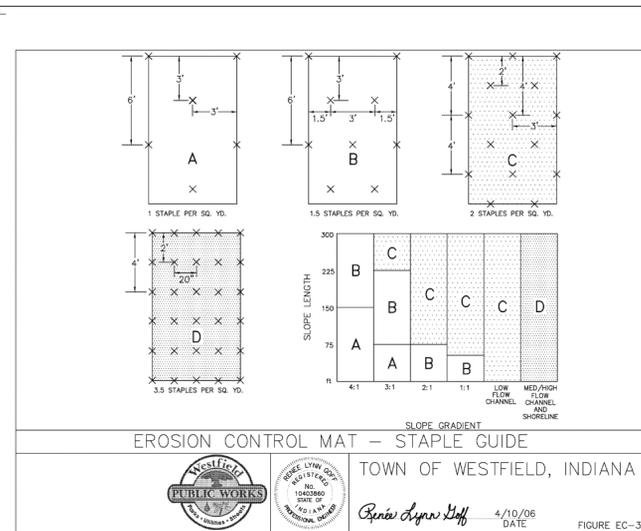
(5) ANY SPILL FOR WHICH A SPILL RESPONSE HAS NOT BEEN DONE (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-5; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1732; ERRATA FILED MAR 7, 1997, 2:25 P.M.; 20 IR 1738; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA)

327 IAC 2-6.1-6 REPORTABLE SPILLS; TRANSPORTATION
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 1. THE FOLLOWING SPILLS FROM A MODE OF TRANSPORTATION MUST BE REPORTED:
(1) SPILLS THAT DAMAGE THE WATERS OF THE STATE SO AS TO CAUSE DEATH OR ACUTE INJURY OR ILLNESS TO HUMANS OR ANIMALS.
(2) SPILLS THAT DAMAGE SURFACE WATERS.
(3) SPILLS TO SOIL:
(A) SPILLS OF HAZARDOUS SUBSTANCES OR EXTREMELY HAZARDOUS SUBSTANCES WHEN THE AMOUNT SPILLED EXCEEDS ONE HUNDRED (100) POUNDS OR THE REPORTABLE QUANTITY, WHICHEVER IS LESS;
(B) SPILLS OF PETROLEUM WHEN THE AMOUNT SPILLED EXCEEDS FIFTY-FIVE (55) GALLONS; OR
(C) SPILLS OF OBJECTIONABLE SUBSTANCES AS DEFINED IN SECTION 4(11) OF THIS RULE.
(4) ANY SPILL FOR WHICH A SPILL RESPONSE HAS NOT BEEN DONE. (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-6; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1733; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA)

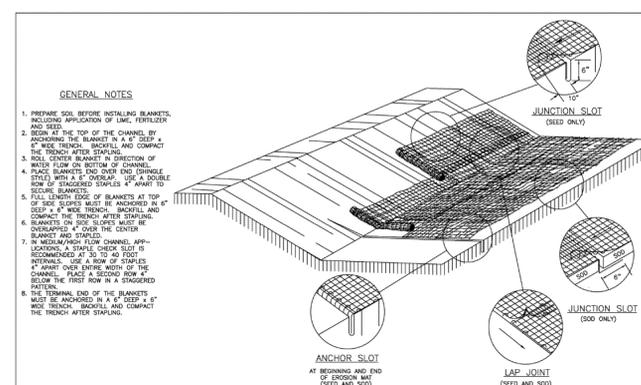
327 IAC 2-6.1-7 REPORTABLE SPILLS; RESPONSIBILITIES
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 2. ANY PERSON WHO OPERATES, CONTROLS, OR MAINTAINS ANY MODE OF TRANSPORTATION OR FACILITY FROM WHICH A SPILL OCCURS SHALL, UPON DISCOVERY OF A REPORTABLE SPILL TO THE SOIL OR SURFACE WATERS OF THE STATE, DO THE FOLLOWING:
(1) CONTAIN THE SPILL, IF POSSIBLE, TO PREVENT ADDITIONAL SPILLED MATERIAL FROM ENTERING THE WATERS OF THE STATE.
(2) UNDERTAKE OR CAUSE OTHERS TO UNDERTAKE ACTIVITIES NEEDED TO ACCOMPLISH A SPILL RESPONSE.
(3) AS SOON AS POSSIBLE, BUT WITHIN TWO (2) HOURS OF DISCOVERY, COMMUNICATE A SPILL REPORT TO THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF LAND QUALITY, EMERGENCY RESPONSE SECTION, AREA CODE 1-888-233-7745 FOR IN-STATE CALLS (TOLL FREE), (317) 233-7745 FOR OUT-OF-STATE CALLS. IF NEW OR UPDATED SPILL REPORT INFORMATION BECOMES KNOWN THAT INDICATES A SIGNIFICANT INCREASE IN THE LIKELIHOOD OF DAMAGE TO THE WATERS OF THE STATE, THE RESPONSIBLE PARTY SHALL NOTIFY THE DEPARTMENT AS SOON AS POSSIBLE BUT WITHIN TWO (2) HOURS OF THE TIME THE NEW OR UPDATED INFORMATION BECOMES KNOWN.
(4) SUBMIT TO THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF LAND QUALITY, EMERGENCY RESPONSE SECTION (MC 66-30), 2525 N. SHADELAND AVE., SUITE 100, INDIANAPOLIS, IN 46219-1787, A WRITTEN COPY OF THE SPILL REPORT IF REQUESTED IN WRITING BY THE DEPARTMENT.
(5) EXCEPT FROM MODES OF TRANSPORTATION OTHER THAN PIPELINES, EXERCISE DUE DILIGENCE AND DOCUMENT ATTEMPTS TO NOTIFY THE FOLLOWING:
(A) FOR SPILLS TO SURFACE WATER THAT CAUSE DAMAGE, THE NEAREST AFFECTED DOWNSTREAM WATER USER LOCATED WITHIN TEN (10) MILES OF THE SPILL AND IN THE STATE OF INDIANA; AND
(B) FOR SPILLS TO SOIL OUTSIDE THE FACILITY BOUNDARY, THE AFFECTED PROPERTY OWNER OR OWNERS, OPERATOR OR OPERATORS, OR OCCUPANT OR OCCUPANTS. (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-7; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1733; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; ERRATA FILED FEB 6, 2006, 11:15 A.M.; 29 IR 1936; ERRATA FILED OCT 20, 2006, 10:08 A.M.; 20061101-IR-327060497AC; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA; ERRATA FILED MAY 27, 2008, 2:06 P.M.; 20080625-IR-327080419AC)

327 IAC 2-6.1-8 EMERGENCY SPILL RESPONSE ACTIONS
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 8. NOTWITHSTANDING ANY OTHER SECTION OF THIS RULE, EMERGENCY SPILL RESPONSE ACTIONS TAKE PRECEDENCE OVER REPORTING REQUIREMENTS, AND WHEN EMERGENCY SPILL RESPONSE ACTIVITIES RENDER SPILL REPORTING INCONSISTENT WITH EFFECTIVE RESPONSE ACTIVITIES, COMMUNICATION OF THE SPILL REPORT TO THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT MAY BE DELAYED IN SITUATIONS WHERE THE SPILL REPORT IS DELAYED. THE BURDEN OF PROVING THE NEED FOR THE DELAY SHALL BE UPON THE RESPONSIBLE PERSON. (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-8; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1734; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA)

327 IAC 2-6.1-9 COMPLIANCE CONFIRMATION
AUTHORITY: IC 13-14-8-7
AFFECTED: IC 13-11-2; IC 13-18-1; IC 13-18-3; IC 13-18-8; IC 13-18-17
SEC. 9. WHEN SPILL REPORTING AND RESPONSE, AS PROVIDED FOR IN THIS RULE, HAS OCCURRED, THE DEPARTMENT SHALL, UPON REQUEST, ISSUE A LETTER CONFIRMING COMPLIANCE WITH THIS RULE AND STATING THAT NO FURTHER ACTION IS REQUIRED UNDER THIS RULE. (WATER POLLUTION CONTROL BOARD; 327 IAC 2-6.1-9; FILED FEB 25, 1997, 1:00 P.M.; 20 IR 1734; REDOPTED FILED JAN 10, 2001, 3:23 P.M.; 24 IR 1518; REDOPTED FILED NOV 21, 2007, 1:16 P.M.; 20071219-IR-327070553BFA)



EROSION CONTROL MAT - STAPLE GUIDE
TOWN OF WESTFIELD, INDIANA
Renis Lynn Hoff 4/10/06 DATE
FIGURE EC-3



EROSION CONTROL MAT - SLOPE DETAIL
TOWN OF WESTFIELD, INDIANA
Renis Lynn Hoff 4/10/06 DATE
FIGURE EC-2

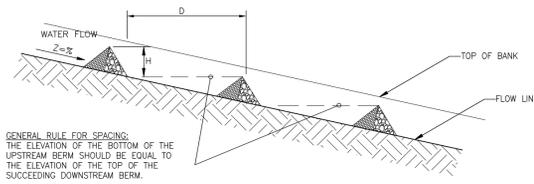
10505 N. College Avenue
Indianapolis, Indiana 46280
weihe.net
317 | 846 - 6611
800 | 452 - 6408
317 | 843 - 0546 fax

WEIHE ENGINEERS
Land Surveying / Civil Engineering
Landscape Architecture

Table with 2 columns: Field Name, Value. Includes Project No. W12-0055, DWG Name: C201-INDOENR-Mat-2, Design By: JES, Drawn By: JES, Checked By: JES, Date: 7/24/2012.

JAMES E. SHIELDS JR. P.E. 10201333
REGISTERED PROFESSIONAL ENGINEER
No. PE10261333
INDIANA
Professional Engineer

PREPARED FOR: SUNDOWN COMMERCIAL GROUP
SUNDOWN GARDENS
STORMWATER POLLUTUIN PREVENTION PLAN
A part of the SUNDOWN Quarter of Section 22, Township 19 North, Range 3 East, Washington Township, Hamilton County, Indiana.
SHEET NO. C201
PROJECT NO. W12-0055

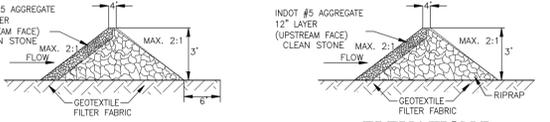


CHECK DAMS IN SWALE
2 ACRES OR LESS OF DRAINAGE AREA



UPSTREAM VIEW

DOWNSTREAM VIEW



ELEVATION A

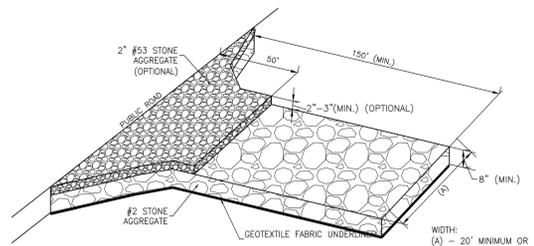
ELEVATION B

NOTE:
1. REFERENCED IN CHAPTER 7 PAGE 97 IN THE INDIANA STORM WATER QUALITY MANUAL.

INSTALLATION
1. LAY OUT THE LOCATION OF THE CHECK DAM.
2. EXCAVATE A CUTOFF TRENCH INTO THE CHANNEL BOTTOM AND DITCH BANKS, EXTENDING AT A MINIMUM OF 18 INCHES BEYOND THE TOP OF THE DITCH BANK.
3. INSTALL AND ANCHOR FILTER FABRIC IN THE CHANNEL AND CUTOFF TRENCH.
4. PLACE RIPRAP IN THE CUTOFF TRENCH AND CHANNEL TO THE LINES AND DIMENSIONS SHOWN IN THE CONSTRUCTION PLANS. THE CENTER OF EACH DAM MUST BE AT LEAST NINE INCHES LOWER THAN THE UPPERMOST POINTS OF CONTACT BETWEEN THE RIPRAP DAM AND CHANNEL BANKS (SEE ROCK CHECK DAM WORKSHEET ON PAGE 101).
5. EXTEND THE RIPRAP AT LEAST 18 INCHES BEYOND THE TOP OF THE CHANNEL BANKS TO KEEP OVERFLOW WATER FROM ERODING AREAS ADJACENT TO THE CHANNEL BANKS BEFORE IT RE-ENTERS THE CHANNEL.
6. PLACE FILTER MEDIUM (INDOT CA NO. 5 AGGREGATE) ON THE UP-SLOPE SIDE OF THE DAM. PLACE FILTER MEDIUM OVER THE ENTIRE FACE OF THE DAM UP TO THE BASE OF OVERFLOW WEIR NOTCH.
7. STABILIZE THE CHANNEL ABOVE THE UPPERMOST DAM.
8. INSTALL AN EROSION-RESISTANT LINING IN THE CHANNEL BELOW THE LOWERMOST DAM. THE LINING SHOULD EXTEND A MINIMUM DISTANCE OF SIX FEET BELOW THE DAM.
9. ADDITIONAL SEDIMENT STORAGE CAN BE PROVIDED BY EXCAVATING A SMALL SEDIMENT TRAP ON THE UPSTREAM SIDE OF THE CHECK DAM.

MAINTENANCE
- INSPECT WITHIN 24 HOURS OF EACH RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
- IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL AN EROSION-RESISTANT LINER IN THAT PORTION OF THE CHANNEL.
- REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF THE HEIGHT OF THE DAM TO MAINTAIN CHANNEL CAPACITY, ALLOW DRAINAGE THROUGH THE DAM, AND PREVENT LARGE FLOW FROM DISPLACING SEDIMENT.
- ADD RIPRAP AND AGGREGATE AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION OF THE DAMS.
- WHEN DAMS ARE NO LONGER NEEDED, REMOVE THE RIPRAP AND AGGREGATE AND STABILIZE THE CHANNEL USING AN EROSION-RESISTANT LINING IF NECESSARY. (RIPRAP AND AGGREGATE FROM THE DAM MAY BE REMOVED OR UTILIZED TO STABILIZE THE CHANNEL.)

ROCK CHECK DAM
FOR SWALES AND DITCHES (NO SCALE)



INSTALLATION:
1. REMOVE ALL VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.
2. GRADE FOUNDATION AND CROWN FOR POSITIVE DRAINAGE. IF THE SLOPE OF THE CONSTRUCTION ENTRANCE IS TOWARD A PUBLIC ROAD AND EXCEEDS TWO PERCENT, CONSTRUCT AN EIGHT INCH HIGH DIVERSION RIDGE WITH A RATIO OF 3:1 TO 1 SIDE SLOPES ACROSS THE FOUNDATION AREA ABOUT 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE ROAD.
3. INSTALL A CULVERT PIPE UNDER THE PAD IF NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.
4. IF WEIR CONDITIONS ARE ANTICIPATED, PLACE GEOTEXTILE FABRIC ON THE GRADED FOUNDATION TO IMPROVE STABILITY.
5. PLACE AGGREGATE (INDOT CA NO. 2) TO THE DIMENSIONS AND GRADE SHOWN IN THE CONSTRUCTION PLANS, LEAVING THE SURFACE SMOOTH AND SLOPED FOR DRAINAGE.
6. TOP-DRESS THE FIRST 50 FEET ADJACENT TO THE PUBLIC ROADWAY WITH TWO TO THREE INCHES OF WASHED AGGREGATE (INDOT CA NO. 53) (OPTIONAL, USED PRIMARILY WHERE THE PURPOSE OF THE PAD IS TO KEEP SOIL FROM ADHERING TO VEHICLE TIRES).
7. WHERE POSSIBLE, DIVERT ALL STORM WATER RUNOFF AND DRAINAGE FROM THE INGRESS/EGRESS PAD TO A SEDIMENT TRAP OR BASIN.

MAINTENANCE:
- INSPECT DAILY.
- RESHAPE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
- TOP DRESS WITH CLEAN AGGREGATE AS NEEDED.
- IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS.
- FLUSHING SHOULD ONLY BE USED IF THE WATER CAN BE CONVEYED INTO A SEDIMENT TRAP OR BASIN.

REFERENCED IN CHAPTER 7 PAGE 17-20 IN INDIANA STORM WATER QUALITY MANUAL.

TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD
LARGE SITES - TWO ACRES OR LARGER (NO SCALE)

TABLE 1. TEMPORARY SEEDING SPECIFICATIONS

| SEED SPECIES | RATE PER ACRE | PLANTING DEPTH | OPTIMUM DATES |
|------------------|---------------|-------------------|-------------------------------------|
| WHEAT OR RYE | 150 LBS. | 1 TO 1 1/2 INCHES | SEPT. 15 - OCT. 30 |
| SPRING OATS | 100 LBS. | 1 INCH | MARCH 1 - APRIL 15 |
| ANNUAL RYEGRASS | 40 LBS. | 1/2 INCH | MARCH 1 - MAY 1 AUG. 1 - SEPT. 1 |
| GERMAN MILLET | 40 LBS. | 1 TO 2 INCHES | MAY 1 - JUNE 1 |
| SUDANGRASS | 35 LBS. | 1 TO 2 INCHES | MAY 1 - JULY 30 |
| BUCKWHEAT | 60 LBS. | 1 TO 2 INCHES | APRIL 15 - JUNE 1 |
| CORN (BROADCAST) | 300 LBS. | 1 TO 2 INCHES | MAY 11 - AUG. 10 |
| SORGHUM | 35 LBS. | 1 TO 2 INCHES | MAY 1 - JULY 15 |

1. PERENNIAL SPECIES MAY BE USED AS A TEMPORARY COVER, ESPECIALLY IF THE AREA TO BE SEEDING WILL REMAIN BARE FOR MORE THAN ONE YEAR.
2. SEEDING DONE OUTSIDE THE OPTIMUM SEEDING DATES INCREASES THE CHANCES OF SEEDING FAILURE. DATES MAY BE EXTENDED OR SHORTENED BASED ON THE LOCATION OF THE PROJECT SITE WITHIN THE STATE.

NOTES:
MULCH ALONE IS AN ACCEPTABLE TEMPORARY COVER AND MAY BE USED IN LIEU OF TEMPORARY SEEDING, PROVIDED THAT IT IS APPROPRIATELY ANCHORED.
A HIGH POTENTIAL FOR FERTILIZER, SEED, AND MULCH TO WASH EXISTS ON STEEP BANKS, CUTS, AND IN CHANNELS AND AREAS OF CONCENTRATED FLOW.

SEEDBED PREPARATION
1. TEST SOIL TO DETERMINE PH AND NUTRIENT LEVELS.
2. APPLY SOIL AMENDMENTS AS RECOMMENDED BY THE SOIL TEST. IF TESTING IS NOT DONE, APPLY 400 TO 600 POUNDS PER ACRE OF 12-12-12 ANALYSIS FERTILIZER, OR EQUIVALENT.
3. WORK THE SOIL AMENDMENTS INTO THE UPPER TWO TO FOUR INCHES OF THE SOIL WITH A DISK OR RAKE OPERATED ACROSS THE SLOPE.

SEEDING
1. SELECT A SEED SPECIES OR AN APPROPRIATE SEED MIXTURE AND APPLICATION RATE FROM TABLE 1.
2. APPLY SEED UNIFORMLY WITH A DRILL OR CULTIPACKER SEEDER OR BY BROADCASTING. PLANT OR COVER SEED TO THE DEPTH SHOWN IN TABLE 1.

NOTES:
1. IF DRILLING OR BROADCASTING THE SEED, ENSURE GOOD SEED-TO-SOIL CONTACT BY FIRMS THE SEEDBED WITH A ROLLER OR CULTIPACKER AFTER COMPLETING SEEDING OPERATIONS.
2. DAILY SEEDING WHEN THE SOIL IS MOSTLY SLURRY MOST EFFECTIVE.
3. IF SEEDING IS DONE WITH A HYDROSEEDER, FERTILIZER AND MULCH CAN BE APPLIED WITH THE SEED IN A SLURRY MIXTURE.
4. APPLY MULCH AND ANCHOR IT IN PLACE.

MAINTENANCE
- INSPECT WITHIN 24 HOURS OF EACH RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
- CHECK FOR EROSION OR MOVEMENT OF MULCH AND REPAIR IMMEDIATELY.
- MONITOR FOR EROSION DAMAGE AND ADEQUATE COVER (80 PERCENT DENSITY); RESEED, FERTILIZE, AND APPLY MULCH WHERE NECESSARY.
- IF NITROGEN DEFICIENCY IS APPARENT, TOP-DRESS FALL SEEDED WHEAT OR RYE SEEDING WITH 50 POUNDS PER ACRE OF NITROGEN IN FEBRUARY OR MARCH.

REFERENCE IN CHAPTER 7 PAGES 31-33 IN THE INDIANA STORM WATER QUALITY MANUAL.

TEMPORARY SEED

OPEN LOW-MAINTENANCE AREAS (REMAINING IDLE MORE THAN SIX MONTHS)

| SEED MIXTURES | RATE PER ACRE PURE LIVE SEED | OPTIMUM SOIL PH |
|--------------------------------------|------------------------------|-----------------|
| 1. PERENNIAL RYEGRASS - WHITE CLOVER | 70 LBS. 2 LBS. | 5.6 TO 7.0 |
| 2. PERENNIAL RYEGRASS - TALL FESCUE | 70 LBS. 50 LBS. | 5.6 TO 7.0 |
| 3. TALL FESCUE - WHITE CLOVER | 70 LBS. 2 LBS. | 5.5 TO 7.5 |

STEEP BANKS AND CUTS, LOW-MAINTENANCE AREAS (NOT MOWED)

| SEED MIXTURES | RATE PER ACRE PURE LIVE SEED | OPTIMUM SOIL PH |
|------------------------------------|------------------------------|-----------------|
| 1. SMOOTH BROME GRASS - RED CLOVER | 35 LBS. 20 LBS. | 5.5 TO 7.0 |
| 2. TALL FESCUE - WHITE CLOVER | 50 LBS. 2 LBS. | 5.5 TO 7.5 |
| 3. TALL FESCUE - RED CLOVER | 50 LBS. 20 LBS. | 5.5 TO 7.5 |
| 4. ORCHARD GRASS - RED CLOVER | 30 LBS. 20 LBS. | 5.6 TO 7.0 |
| 5. CROWNWITCH - TALL FESCUE | 12 LBS. 30 LBS. | 5.6 TO 7.0 |

LAWNS AND HIGH-MAINTENANCE AREAS

| SEED MIXTURES | RATE PER ACRE PURE LIVE SEED | OPTIMUM SOIL PH |
|--|------------------------------|-----------------|
| 1. BLUEGRASS | 140 LBS. | 5.5 TO 7.0 |
| 2. PERENNIAL RYEGRASS (TURF TYPE) | 60 LBS. 90 LBS. | 5.6 TO 7.0 |
| 3. TALL FESCUE (TURF TYPE) - BLUEGRASS | 170 LBS. 30 LBS. | 5.6 TO 7.5 |

CHANNELS AND AREAS OF CONCENTRATED FLOW

| SEED MIXTURES | RATE PER ACRE PURE LIVE SEED | OPTIMUM SOIL PH |
|---|------------------------------|-----------------|
| 1. PERENNIAL RYEGRASS - WHITE | 150 LBS. 2 LBS. | 5.5 TO 7.0 |
| 2. KENTUCKY BLUEGRASS - SMOOTH BROMEGRASS - SWITCHGRASS | 10 LBS. 20 LBS. 3 LBS. | 5.5 TO 7.5 |
| 3. PERENNIAL RYEGRASS - WHITE CLOVER | 150 LBS. 2 LBS. | 5.5 TO 7.5 |
| 4. TALL FESCUE - WHITE CLOVER | 150 LBS. 20 LBS. | 5.5 TO 7.5 |
| 5. PERENNIAL RYEGRASS - KENTUCKY BLUEGRASS | 150 LBS. 20 LBS. | 5.5 TO 7.5 |

NOTES:
1. AN OAT OR WHEAT COMPANION OR NURSE CROP MAY BE USED WITH ANY OF THE ABOVE PERMANENT SEEDING MIXTURES, AT THE FOLLOWING RATES:
(A) SPRING OATS - ONE-FOURTH TO THREE-FOURTHS BUSHEL PER ACRE
(B) WHEAT - NO MORE THAN ONE-HALF BUSHEL PER ACRE
2. A HIGH POTENTIAL FOR FERTILIZER, SEED, AND MULCH TO WASH EXISTS ON STEEP BANKS, CUTS, AND IN CHANNELS AND AREAS OF CONCENTRATED FLOW.

INSTALLATION
1. GRADE THE SITE TO ACHIEVE POSITIVE DRAINAGE.
2. ADD TOPSOIL OR COMPOST MULCH TO ACHIEVE NEEDED DEPTH FOR ESTABLISHMENT OF VEGETATION. (COMPOST MATERIAL MAY BE ADDED TO IMPROVE SOIL MOISTURE HOLDING CAPACITY, SOIL FERTILITY, AND NUTRIENT AVAILABILITY.)

SEEDBED PREPARATION
1. TEST SOIL TO DETERMINE PH AND NUTRIENT LEVELS.
2. APPLY SOIL AMENDMENTS AS RECOMMENDED BY THE SOIL TEST AND WORK INTO THE UPPER TWO TO FOUR INCHES OF SOIL. IF TESTING IS NOT DONE, APPLY 400 TO 600 POUNDS PER ACRE OF 12-12-12 ANALYSIS FERTILIZER, OR EQUIVALENT.
3. TILL THE SOIL TO OBTAIN A UNIFORM SEEDBED. USE A DISK OR RAKE, OPERATED ACROSS THE SLOPE, TO WORK THE SOIL AMENDMENTS INTO THE UPPER TWO TO FOUR INCHES OF THE SOIL.

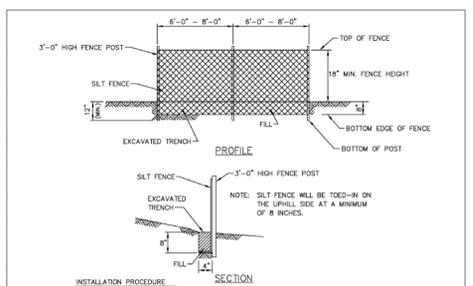
SEEDING
OPTIMUM SEEDING DATES ARE MARCH 1 TO MAY 10 AND AUGUST 10 TO SEPTEMBER 30. PERMANENT SEEDING DONE BETWEEN MAY 10 AND AUGUST 10 MAY NEED TO BE IRRIGATED. SEEDING OUTSIDE OR BEYOND OPTIMUM SEEDING DATES IS STILL POSSIBLE WITH THE UNDERSTANDING THAT RESEEDING OR OVERSEEDING MAY BE REQUIRED IF ADEQUATE SURFACE COVER IS NOT ACHIEVED. RESEEDING OR OVERSEEDING CAN BE EASILY ACCOMPLISHED IF THE SOIL SURFACE REMAINS WELL PROTECTED WITH MULCH.
1. SELECT A SEEDING MIXTURE AND RATE FROM TABLE 1. SELECT SEED MIXTURE BASED ON SITE CONDITIONS, SOIL PH, INTENDED LAND USE, AND EXPECTED LEVEL OF MAINTENANCE.
2. APPLY SEED UNIFORMLY WITH A DRILL OR CULTIPACKER SEEDER OR BY BROADCASTING. PLANT OR COVER THE SEED TO A DEPTH OF ONE-FOURTH TO ONE-HALF INCH. IF DRILLING OR BROADCASTING THE SEED, ENSURE GOOD SEED-TO-SOIL CONTACT BY FIRMS THE SEEDBED WITH A ROLLER OR CULTIPACKER AFTER COMPLETING SEEDING OPERATIONS. (IF SEEDING IS DONE WITH A HYDROSEEDER, FERTILIZER AND MULCH CAN BE APPLIED WITH THE SEED IN A SLURRY MIXTURE.)
3. MULCH ALL SEEDING AREAS AND USE APPROPRIATE METHODS TO ANCHOR THE MULCH IN PLACE. CONSIDER USING EROSION CONTROL BLANKETS ON SLOPING AREAS AND CONVEYANCE CHANNELS.

MAINTENANCE
- INSPECT WITHIN 24 HOURS OF EACH RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS UNTIL THE VEGETATION IS SUCCESSFULLY ESTABLISHED.
- CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE VIGOROUS DARK GREEN OR BLuish-GREEN SEEDLINGS WITH A UNIFORM VEGETATIVE COVER DENSITY OF 90 PERCENT OR MORE.
- CHECK FOR EROSION OR MOVEMENT OF MULCH.
- REPAIR DAMAGED, BARE, GULLED, OR SPARSLEY VEGETATED AREAS AND THEN FERTILIZE, RESEED, AND APPLY AND ANCHOR MULCH.
- IF PLANT COVER IS SPARSE OR PATCHY, EVALUATE THE PLANT MATERIALS CHOSEN, SOIL FERTILITY, MOISTURE CONDITION, AND MULCH APPLICATION; REPAIR AFFECTED AREAS EITHER BY OVERSEEDING OR PREPARING A NEW SEEDBED AND RESEEDING. APPLY AND ANCHOR MULCH ON THE NEWLY SEEDBED AREAS.
- IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE SOIL PH OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SOIL AND WATER CONSERVATION DISTRICT OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)
- IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.
- ADD FERTILIZER THE FOLLOWING GROWING SEASON. FERTILIZE ACCORDING TO SOIL TEST RECOMMENDATIONS.
- FERTILIZE TURF AREAS ANNUALLY. APPLY FERTILIZER IN A SPLIT APPLICATION. FOR COOL-SEASON GRASSES, APPLY ONE-HALF OF THE FERTILIZER IN LATE SPRING AND ONE HALF IN EARLY FALL. FOR WARM-SEASON GRASSES, APPLY ONE-THIRD IN EARLY SPRING, ONE-THIRD IN LATE SPRING, AND THE REMAINING ONE-THIRD IN MIDDLE SUMMER.

TABLE 1. PERMANENT SEEDING RECOMMENDATIONS
THIS TABLE PROVIDES SEVERAL SEED MIXTURE OPTIONS. ADDITIONAL SEED MIXTURES ARE AVAILABLE COMMERCIALY. WHEN SELECTING A MIXTURE, CONSIDER INTENDED LAND USE AND SITE CONDITIONS, INCLUDING SOIL PROPERTIES (E.G., SOIL PH AND DRAINAGE), SLOPE ASPECT, AND THE TOLERANCE OF EACH SPECIES TO SHADE AND DROUGHT.

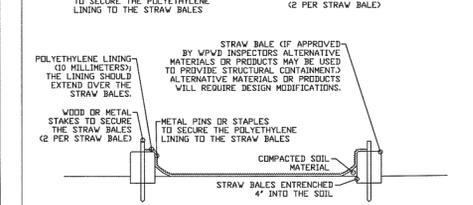
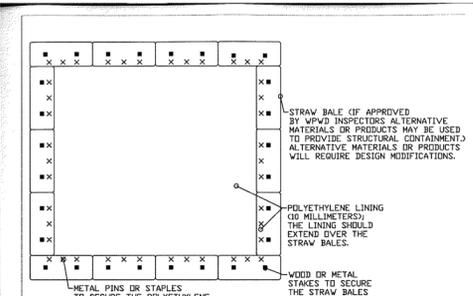
REFERENCE IN CHAPTER 7 PAGES 35-40 IN THE INDIANA STORM WATER QUALITY MANUAL.

PERMANENT SEED

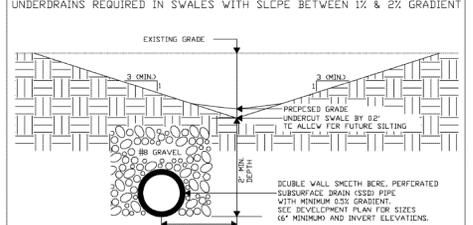
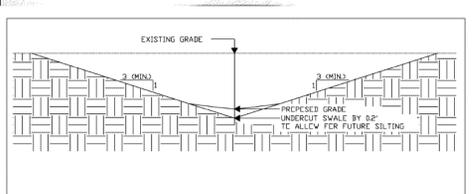


INSTALLATION PROCEDURE
1. 2" x 2" x 36" HARDWOOD OR STEEL FENCE POSTS ARE INSTALLED 6' APART (4" EXTRA STRENGTH FABRIC WITHOUT WIRE BACKING) OR 8' APART (4" WIRE BACKING), ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE.
2. A TRENCH 4" WIDE BY 8" DEEP IS DUG ALONG THE UPSTREAM SIDE OF THE FENCE LINE.
3. THE SILT FENCE IS UNROLLED AND LAID OUT ALONG THE FENCE LINE.
4. A BUILT-IN ATTACHMENT CORD RUNS THROUGHOUT THE FULL LENGTH OF EACH 150' LINEAR FOOT. ONE END OF THE CORD HAS APPROXIMATELY 5' OF CORD. THE OTHER END HAS APPROXIMATELY 20' OF CORD. THE END WITH 5' OF CORD IS WRAPPED AROUND THE FIRST POST AND SECURED.
5. THE FENCE IS PULLED TO THE NEXT POST AND A 1.5" SLIT IS MADE IN THE HEAVY CORD ABOVE THE CORD. THE CORD IS PULLED OUT OF THE HEAVY CORD AND PULLED TAUT FROM THE PRECEDING POST AND WRAPPED TWICE AROUND THE POST.
6. THE SLITTING OF THE HEAVY CORD ON EACH POST IS REPEATED UNTIL THE FINAL POST IS REACHED. AT WHICH TIME THE MATERIAL IS WRAPPED AROUND THE LAST POST AND SECURED WITH THE ENDED CORD.
7. AT THIS TIME THE LOWER 8" OF THE FENCE IS LAD IN THE TRENCH AND CURLED TOWARD THE EROSION SOURCE. THE TRENCH IS THEN BACKFILLED WITH SOIL.

SILT FENCE DETAIL
TOWN OF WESTFIELD, INDIANA
Boris Ayman Staff 4/10/06 DATE
FIGURE EC-4



CONCRETE WASHOUT DETAIL
CITY OF WESTFIELD, INDIANA
DATE 7/26/08
FIGURE EC-5



TYPICAL SWALE DETAIL
TOWN OF WESTFIELD, INDIANA
Boris Ayman Staff 4/10/06 DATE
FIGURE ST-4.3

10505 N. College Avenue
Indianapolis, Indiana 46280
weihe.net
317 | 846 - 6611
800 | 452 - 6408
317 | 843 - 0546 fax
ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
Land Surveying | Civil Engineering
Landscape Architecture

| | |
|--------------|---------------------|
| PROJECT NO.: | W12-0055 |
| DWG. NAME: | C201-INDOTDRM-M09-2 |
| DESIGNED BY: | EEC |
| DRAWN BY: | MEZ |
| CHECKED BY: | JES |
| DATE: | 7/24/2012 |

JAMES E. SHIELDS, P.E.
REGISTERED PROFESSIONAL ENGINEER
No. PE10261338
INDIANA
7/24/2012

JAMES E. SHIELDS JR. P.E. 10201333

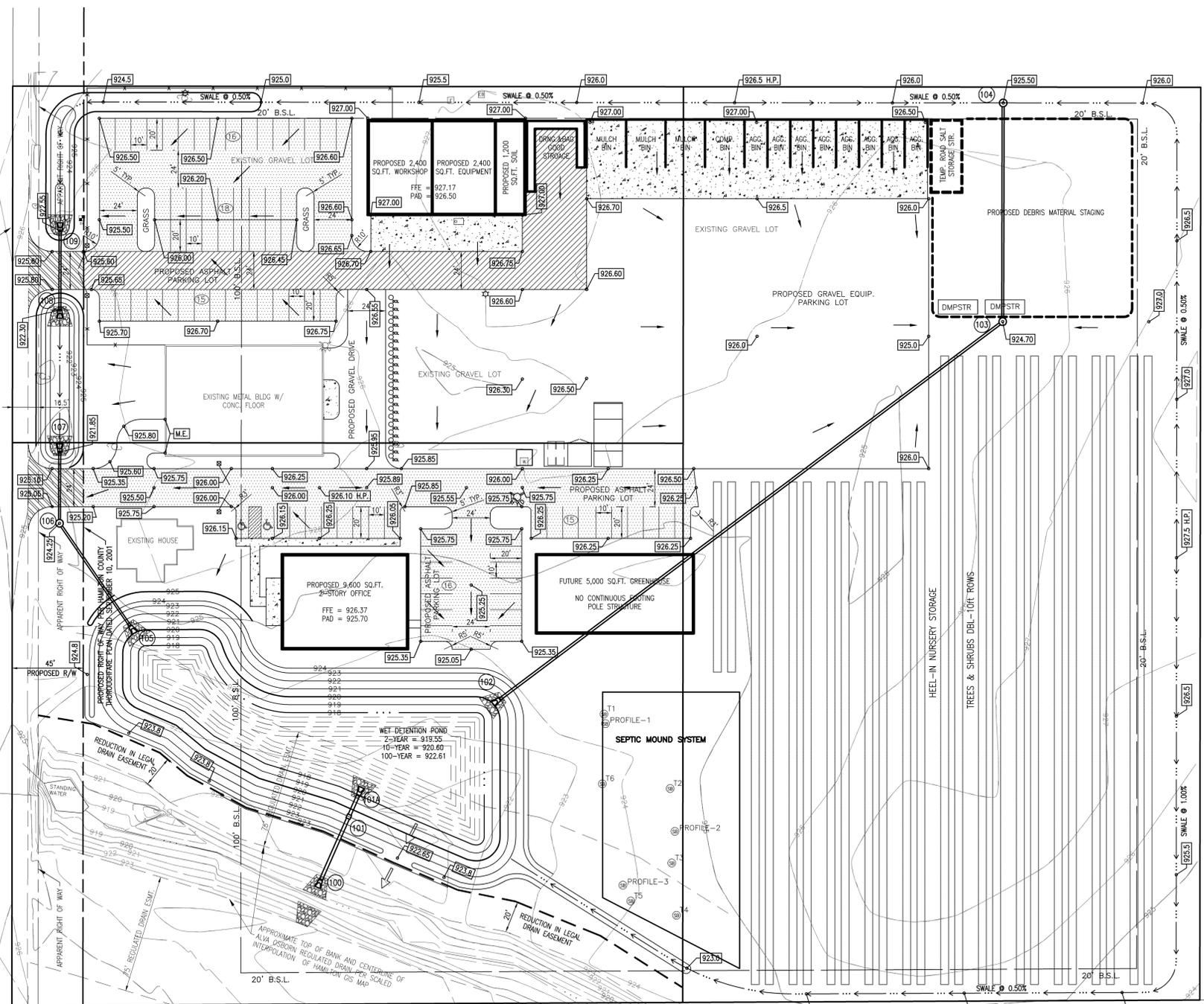
PREPARED FOR:
SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
STORMWATER POLLUTUIN PREVENTION PLAN
A part of the Southeast Quarter of Section 22, Township 19 North, Range 3 East, Washington Township, Hamilton County, Indiana.

SHEET NO.
C202
PROJECT NO.
W12-0055

SIX POINTS ROAD

WEST LINE OF SE 1/4, SEC. 22-T19N-R3E
S 60°12'5" W (ASSUMED BEGINS OF BEGINNING)

10 9 8 7 6 5 4 3 2 1



LEGEND

- RIGHT-OF-WAY LINE
- STORM SEWER LINE
- SWALE
- SANITARY SEWER LINE
- SANITARY SEWER MANHOLE
- SANITARY SEWER LATERAL
- PROPOSED WATER LINE
- FLOW DIRECTION
- EXISTING CONTOURS
- PROPOSED ELEVATION
- STORM BEEHIVE INLET
- STORM INLET
- TOP OF CASTING
- INVERT
- REINFORCED CONCRETE PIPE
- MANHOLE
- STRUCTURE
- D. & U.E. DRAINAGE AND UTILITY EASEMENT
- S.S. & D.U.E. SANITARY SEWER, DRAINAGE AND UTILITY EASEMENT
- H.C. HANDICAP RAMP
- CE CONCRETE END SECTION
- MEG MATCH EXISTING GRADE
- TYP. TYPICAL
- PROP. PROPOSED
- EX. EXISTING
- R. RADIUS
- V.W. VARIABLE WIDTH
- M.F.P.S. MINIMUM EXTERIOR FLOOD PROTECTION GRADE
- ROW RIGHT-OF-WAY
- B-B BACK OF CURB
- 860.4 = PAD ELEV
- = EMERGENCY FLOW ROUTE

GENERAL GRADING NOTES:

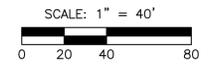
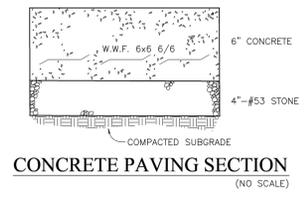
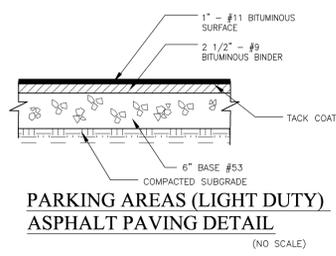
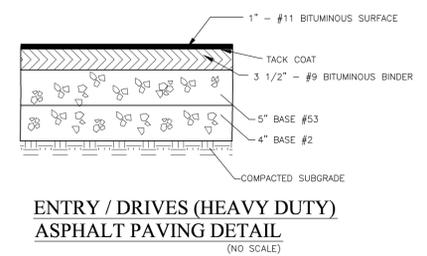
1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT) STANDARD SPECIFICATIONS, 1995 EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTIONS BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT. PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.
2. FILL MATERIAL SHALL CONSIST OF EARTH OBTAINED FROM CUT AREAS, BORROW PITS OR OTHER APPROVED SOURCES. EARTH SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES AND LARGE ROCKS. THE FILL MATERIAL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES FOLLOWING COMPACTION. PROPER MOISTURE CONTENT OF FILL MATERIAL WILL BE SUCH TO ACHIEVE SPECIFIED COMPACTION DENSITY. ALL FILL BENEATH PAVED AREAS, FLOOR SLABS AND FUTURE BUILDINGS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557. FIELD COMPACTION TEST SHALL BE RUN ON EACH LIFT. IN FILL SECTIONS, AND THE REQUIRED COMPACTION ON EACH LIFT SHALL BE IN ACCORDANCE WITH INDOT SECTION 211.
3. MAXIMUM LAWN SLOPE IS 3:1.
4. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES TO LOCATE MAINS, CONDUITS, SERVICE LINES, ETC. IN THE AFFECTED CONSTRUCTION AREA. EXISTING UTILITY STRUCTURES ARE SHOWN HERE IN ACCORDANCE WITH AVAILABLE INFORMATION. THE LOCATION AND PROTECTION OF UTILITY STRUCTURES, THEIR SUPPORT AND MAINTENANCE DURING CONSTRUCTION (IN COOPERATION WITH APPLICABLE UTILITY COMPANY) IS THE EXPRESSED RESPONSIBILITY OF THE CONTRACTOR.
5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE.
6. COMPACTED "B" BORROW BACK FILL RED'D. OVER ALL UTILITIES IN PAVED AREAS.
7. ALL GRADES AT BOUNDARY SHALL MEET EXISTING.
8. ANY PART OF SANITARY OR STORM SEWER TRENCHES RUNNING UNDER OR WITHIN 5' OF PAVEMENT TO BE BACKFILLED WITH GRANULAR MATERIAL.
9. ALL CONSTRUCTION ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH O.S.H.A. STANDARDS FOR WORKER SAFETY.
10. THE CONTRACTOR SHALL CONFIRM ALL EARTHWORK QUANTITIES PRIOR TO THE 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.
11. PROVIDE POSITIVE DRAINAGE WITHOUT PONDING IN ALL AREAS AFTER INSTALLATION. CONTRACTOR TO TEST FOR AND CORRECT ANY PONDING CONDITIONS.
12. VERTICAL CURVES, WITH A MINIMUM LENGTH OF 50', SHALL BE USED WHERE POSSIBLE BETWEEN VERTICAL CHANGES IN DIRECTION (SLOPE) TO ALLOW FOR POSITIVE DRAINAGE AND SMOOTH TRANSITIONS.

NOTES:

1. CONTRACTOR SHALL VERIFY SITE SOIL BALANCE REQUIREMENTS. EXCESS/DEFICIENT MATERIAL QUANTITIES SHALL BE FIELD ADJUSTED. ADJUSTMENTS IN FINAL GRADES AS SHOWN SHALL BE FIELD ENGINEERED AS REQUIRED, AND AS APPROVED BY OWNER AND THE ENGINEER. GRADING INTENT AS SHOWN SHALL BE MAINTAINED. EXCESS SOIL SHALL BE REMOVED FROM THE SITE.
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3. GRANULAR BACKFILL TO BE USED FOR ALL UTILITY AND SEWER - STREET CROSSINGS.
4. PIPE CROSSINGS SHALL BE TYPE "B" BORROW. TYPE "B" BORROW SHALL MEET 1/2" OR GREATER NORMAL SIZE.

LEGEND

- CONCRETE
- HEAVY DUTY ASPHALT
- LIGHT DUTY ASPHALT
- ASPHALT PAVING R/W



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800 | 452 - 6408
317 | 843 - 0546 fax
ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
Land Surveying | Civil Engineering
Landscape Architecture

| | |
|--------------|-------------------|
| PROJECT NO.: | W12-0055 |
| DWG. NAME: | C300-100708/08/09 |
| DESIGNED BY: | ED |
| DRAWN BY: | MEZ |
| CHECKED BY: | JES |
| DATE: | 7/24/2012 |



JAMES E. SHIELDS JR. P.E. 10201333

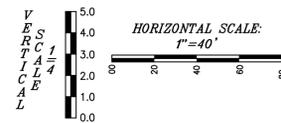
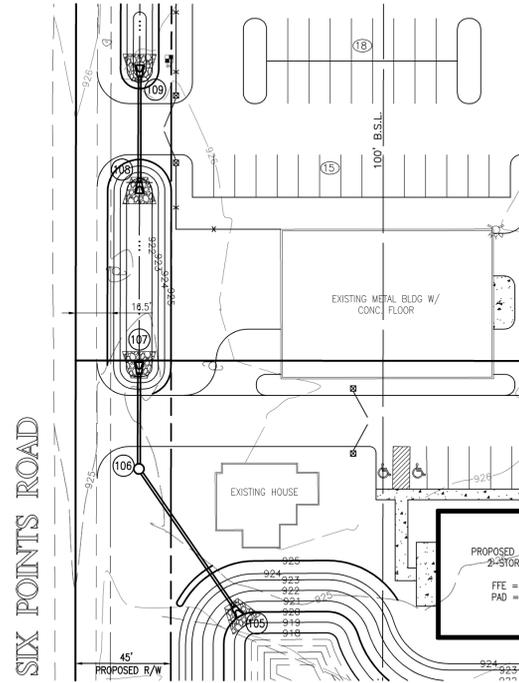
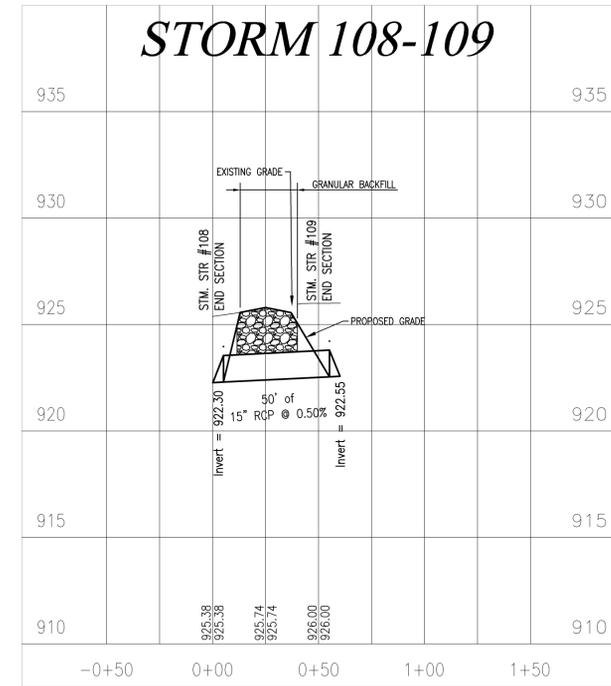
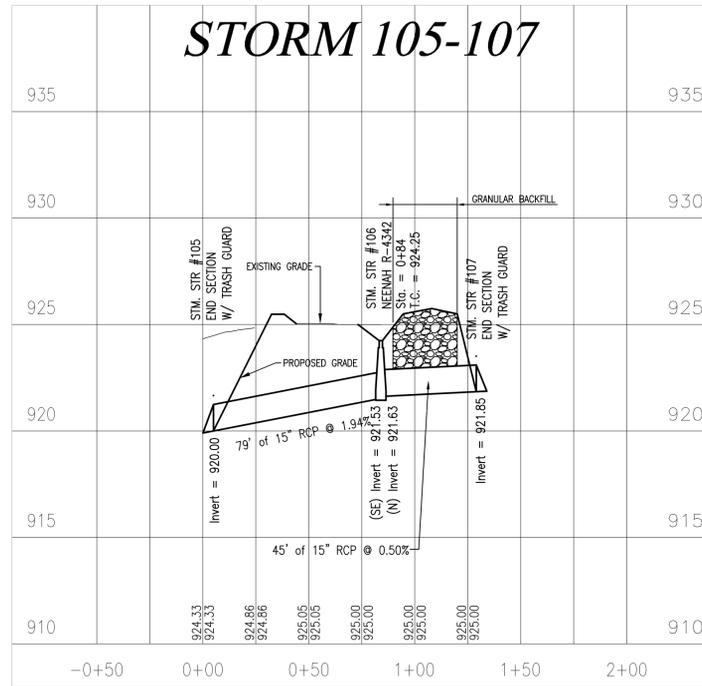
SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
DEVELOPMENT PLAN
A part of the Sundown Quarter of Station 22, Township 19 North, Range 3 East, Washington Township, Hamilton County, Indiana.

SHEET NO. **C300**
PROJECT NO. **W12-0055**

CONSTRUCTION PLANS DATED: 8/30/2012

LOCATION: W12-0055 Engineering\Design\Connect\C300-100708\08/09.dwg
DATE/TIME: August 31, 2012 7:53 am
PLOTTER: HP DesignJet

LOCATION: I:\2012\W120055\Engineering\Design\Sheet\C400-120055STM.dwg
 DATE/TIME: August 31, 2012 7:51 am
 PLOTTED BY: mlare



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 LOCATION SERVICE TWO (2) WORKING
 DAYS BEFORE COMMENCING WORK.

CONSTRUCTION PLANS DATED: 8/30/2012

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 Indianapolis, Indiana 46280
 weihe.net
 317 | 846 - 6611
 800 | 452 - 6408
 317 | 843 - 0546/ax
 ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
 Land Surveying | Civil Engineering
 Landscape Architecture

PROJECT NO.: W12-0055
 DWG NAME: C400-120055NP
 DESIGNER BY: JES
 DRAWN BY: MEZ
 CHECKED BY: JES
 DATE: 7/24/2012

REVISIONS AND ISSUES



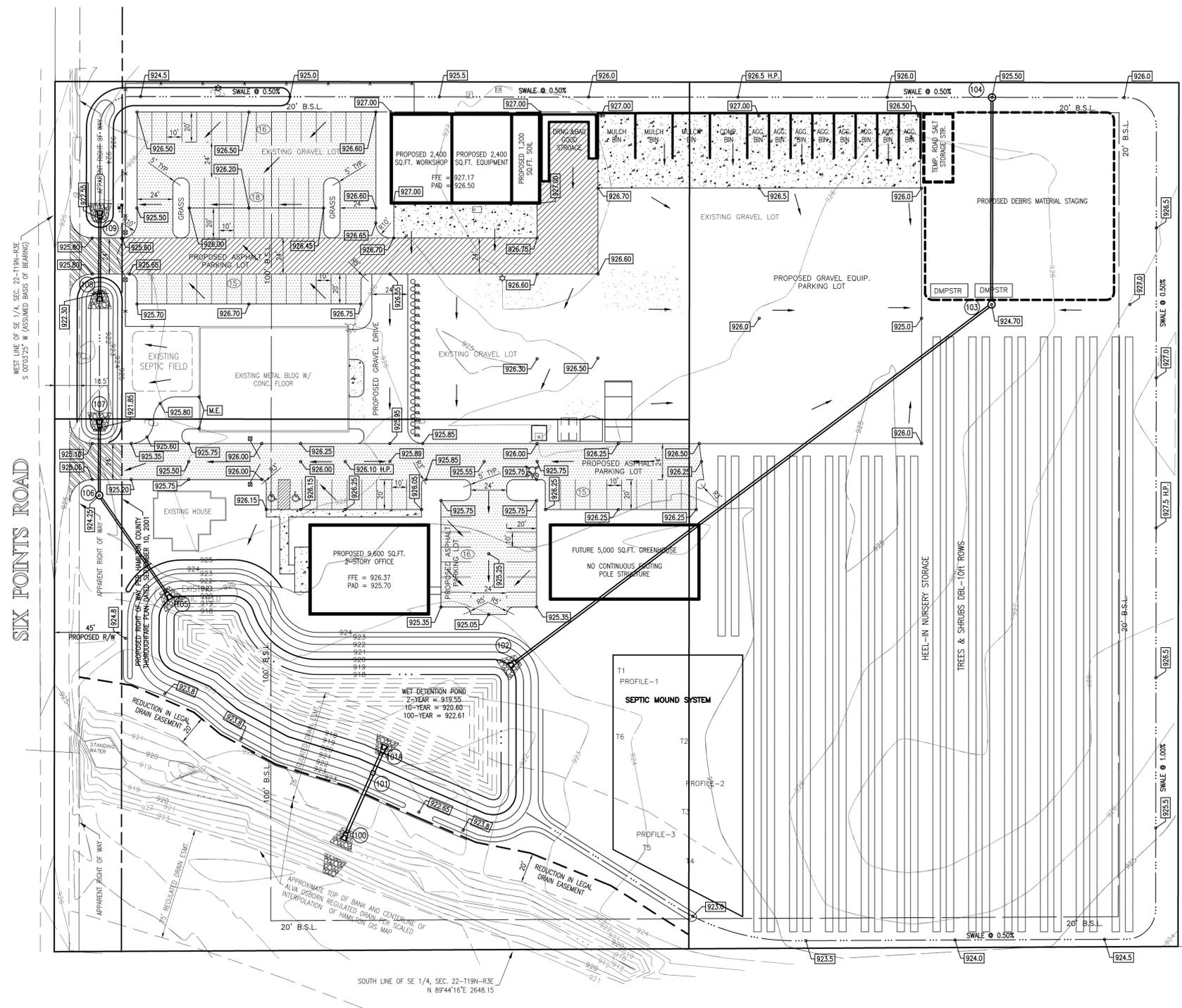
JAMES E. SHIELDS JR. P.E. 10201333

PREPARED FOR:
SUNDOWN GARDENS
 SUNDOWN COMMERCIAL GROUP
 STORM SEWER PLAN AND PROFILE SHEET
 A part of the Sundeast Quarter of Section 22, Township 19 North, Range 3 East, Washington Township, Hamilton County, Indiana.

SHEET NO.
C401

PROJECT NO.
 W12-0055

TO BE DESIGNED WHEN REQUIREMENTS ARE RECEIVED FROM STATE

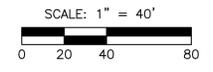


- LEGEND**
- = RIGHT-OF-WAY LINE
 - = STORM SEWER LINE
 - = SWALE
 - = SANITARY SEWER LINE
 - = SANITARY SEWER MANHOLE
 - = SANITARY SEWER LATERAL
 - = PROPOSED WATER LINE
 - = FLOW DIRECTION
 - = EXISTING CONTOURS
 - = PROPOSED ELEVATION
 - = STORM BEEHIVE INLET
 - = STORM INLET
 - = TOP OF CASTING
 - = INVERT
 - = REINFORCED CONCRETE PIPE
 - = MANHOLE
 - = STRUCTURE
 - = D. & U.E.
 - = S.S. & D.U.E.
 - = H.C.
 - = CONCRETE END SECTION
 - = MATCH EXISTING GRADE
 - = TYPICAL
 - = PROPOSED
 - = EXISTING
 - = RADIUS
 - = VARIABLE WIDTH
 - = MINIMUM EXTERIOR FLOOD PROTECTION GRADE
 - = RIGHT-OF-WAY
 - = BACK OF CURB
 - 860.4 = PAD ELEV
 - 860.4 = PAD 40'x55' (UNLESS OTHERWISE NOTED)
 - = EMERGENCY FLOW ROUTE
 - * = DENOTES HAND-CAP RAMPS

- GENERAL GRADING NOTES:**
1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT) STANDARD SPECIFICATIONS, 1995 EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTIONS BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT. PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.
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 7. ALL GRADES AT BOUNDARY SHALL MEET EXISTING.
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 12. VERTICAL CURVES, WITH A MINIMUM LENGTH OF 50', SHALL BE USED WHERE POSSIBLE BETWEEN VERTICAL CHANGES IN DIRECTION (SLOPE) TO ALLOW FOR POSITIVE DRAINAGE AND SMOOTH TRANSITIONS.

- SANITARY SEWER NOTES:**
- 1.) THIS PLAN IS INDICATING SANITARY SEWER LATERALS TO STOP NO CLOSER THAN 5 FEET FROM THE BUILDING LINE AT NO TIME SHALL THE CONTRACTOR EXCAVATE PAST THE BUILDING LINE DURING INSTALLATION OF ANY UTILITIES. IF EXCAVATION IS REQUIRED PAST THE BUILDING LINE, MATERIAL SHALL BE REPLACED AND COMPACTED TO 95% STANDARD PROCTOR. THIS IS INTENDED TO PREVENT ANY STRUCTURAL SETTLING WITHIN THE BUILDABLE AREA OF ALL LOTS. SANITARY LATERALS ARE TO BE INSTALLED AT NO GREATER THAN 45 DEGREE ANGLE COMING FROM THE MAIN.
 - 2.) ALL DROP STRUCTURES MUST BE AN OUTSIDE DROP. INSIDE DROP STRUCTURES ARE NOT ALLOWED.

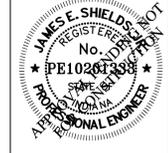
- NOTES:**
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 4. PIPE CROSSINGS SHALL BE TYPE "B" BORROW. TYPE "B" BORROW SHALL MEET 1/2" OR GREATER NORMAL SIZE.
 5. ALL PROPOSED CURB TO BE 6" ROLL CURB. (FOR DETAIL SEE SHT. #C402)
 6. ALL 6" SSD TO BE DOUBLE WALL, GASKETED SMOOTH BORE, DRAIN TILE.



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weihe.net
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800 | 452 - 6408
317 | 843 - 0546 fax

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Landscape Architecture

| | |
|-------------|---------------|
| PROJECT NO. | W12-0055 |
| DWG. NAME | C500-PROPOSED |
| DESIGNED BY | JES |
| DRAWN BY | JES |
| CHECKED BY | JES |
| DATE | 7/24/2012 |



JAMES E. SHIELDS JR. P.E. 10201333

SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
SEPTIC SEWER DESIGN



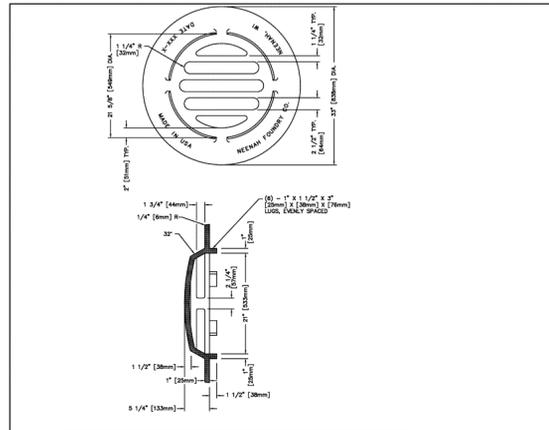
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LOCATION SERVICE TWO (2) WORKING
DAYS BEFORE COMMENCING WORK.

PREPARED FOR:
C500
PROJECT NO.
W12-0055

CONSTRUCTION PLANS DATED: 8/30/2012

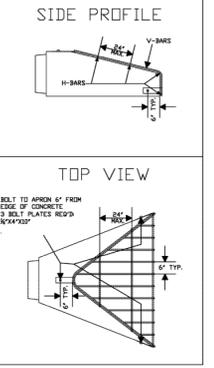
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DATE/TIME: August 31, 2012 7:53 am
PLOTTER: HP DesignJet 5000



NEENAH R-4342
EAST JORDAN 6489

* OR APPROVED BY WESTFIELD PUBLIC WORKS DEPARTMENT
** STORM SEWER CASTINGS MANHOLE COVERS, BEEHIVE INLETS, CURB INLETS OR OTHER APPROVED CASTING SHALL HAVE THE FOLLOWING PHRASES CAST IN RECESSED LETTERS TWO (2) INCHES IN HEIGHT:
A. "STORM SEWER"
B. "DRAINS TO RIVER" OR "DRAINS TO WATERWAY"
C. "DUMP NO WASTE"
D. OTHER PHRASES SHALL REQUIRE APPROVAL OF THE WESTFIELD PUBLIC WORKS DEPARTMENT

BEEHIVE CURB INLET CASTING
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 4/10/06 DATE FIGURE ST-10

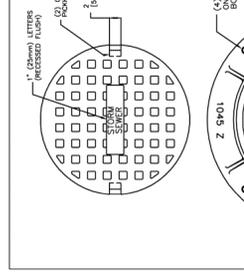
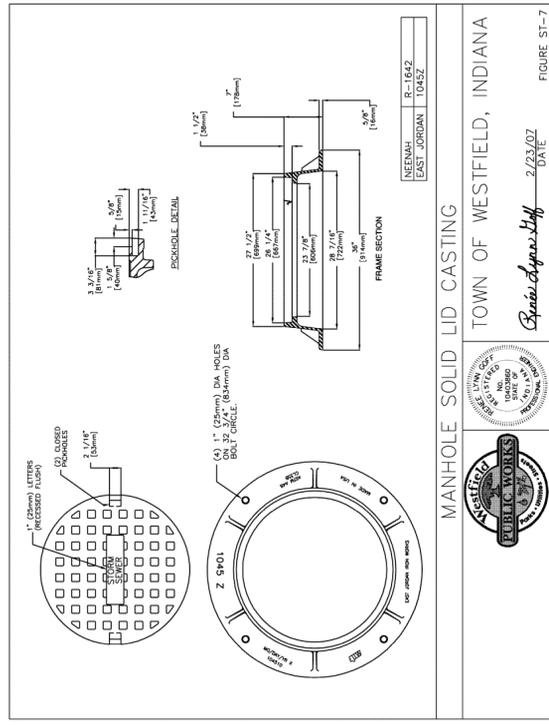


| Apron Size | V-bar Size | No. of H-bars | H-bar Size | Bolt Size | "A" Dim. |
|------------|------------|---------------|------------|-----------|----------|
| 18 | 1/2 | 3 | 5/8 | 1/2 | 4 |
| 24 | 5/8 | 4 | 3/4 | 1/2 | 7 |
| 30 | 5/8 | 4 | 3/4 | 1/2 | 7 1/2 |
| 36 | 3/4 | 4 | 1 | 1/2 | 10 1/2 |
| 42 | 3/4 | 4 | 1 | 3/4 | 11 |
| 48 | 3/4 | 4 | 1 1/2 | 3/4 | 12 |
| 54 | 3/4 | 4 | 1 1/2 | 3/4 | 12 |
| 60 | 3/4 | 5 | 1 1/2 | 3/4 | 14 |
| 72 | 3/4 | 5 | 1 1/2 | 3/4 | 14 |
| 84 | 3/4 | 6 | 1 1/2 | 3/4 | 15 |

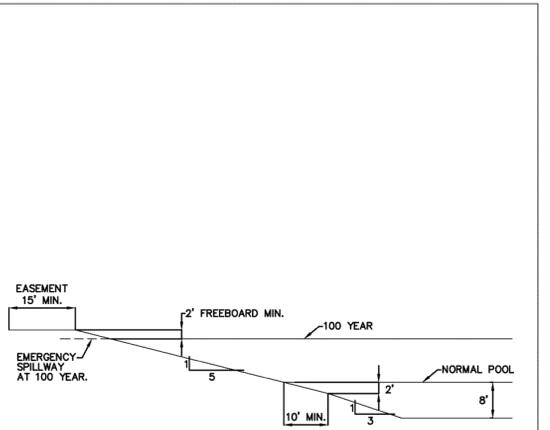
| Round Pipe Options | Apron Pipe Options |
|--------------------|--------------------|
| 12 | 12 |
| 15 | 15 |
| 18 | 18 |
| 21 | 21 |
| 24 | 24 |
| 27 | 27 |
| 30 | 30 |
| 36 | 36 |
| 42 | 42 |
| 48 | 48 |
| 54 | 54 |
| 60 | 60 |
| 66 | 66 |
| 72 | 72 |
| 84 | 84 |
| 90 | 90 |

NOTES:
1. BARS & PLATES ARE HOT-ROLLED STEEL.
2. BARS, PLATES, & PIPE ARE FINISHED WITH 2 COATS OF ALUMINUM PAINT.
3. BOLTS ARE GALVANIZED.
4. NO REBAR THROUGH PIPES WILL BE ALLOWED.
5. DEBRIS GUARD SHALL BE REMOVABLE.

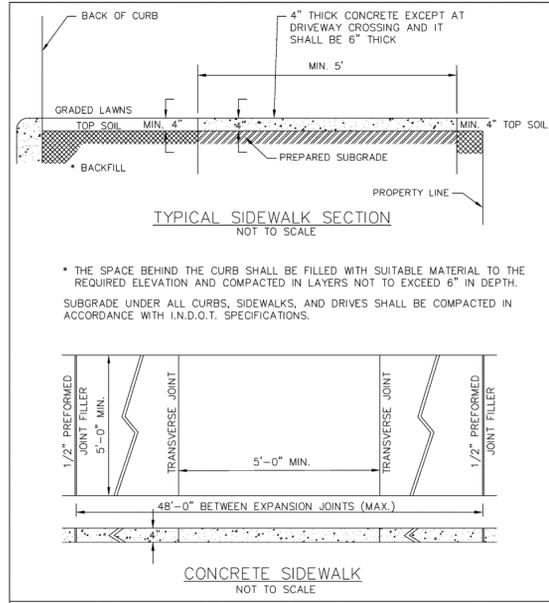
DEBRIS GUARD
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 4/10/06 DATE FIGURE ST-29



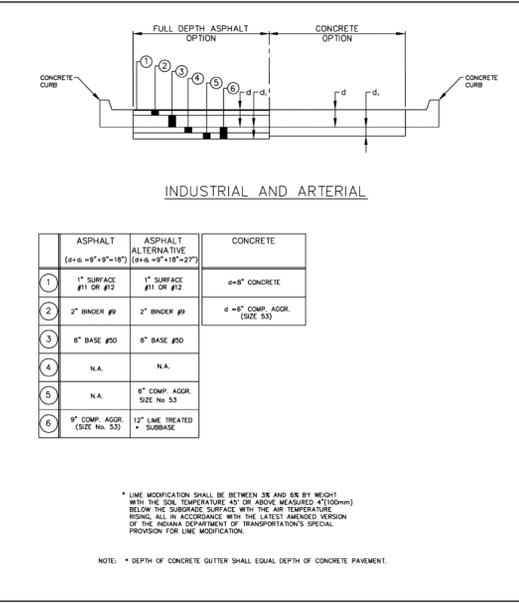
NEENAH R-1642
EAST JORDAN 11295E
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 2/23/07 DATE FIGURE ST-7



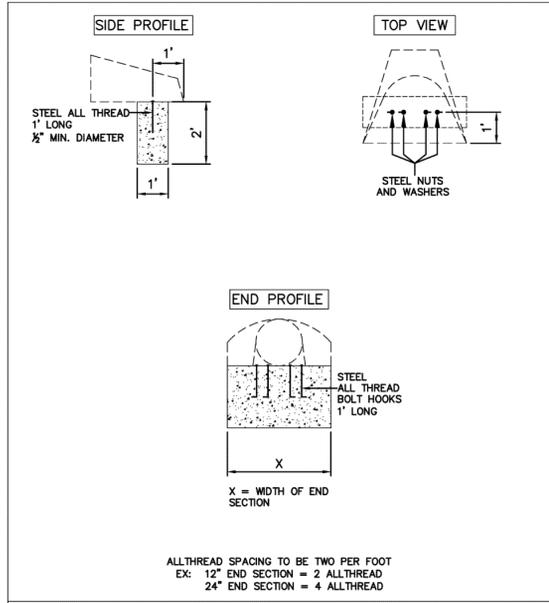
USE OUTLET OPTION 3 (SEE FIGURE ST-28)
LAKE CROSS SECTIONS: OPTION 3
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 4/10/06 DATE FIGURE ST-25



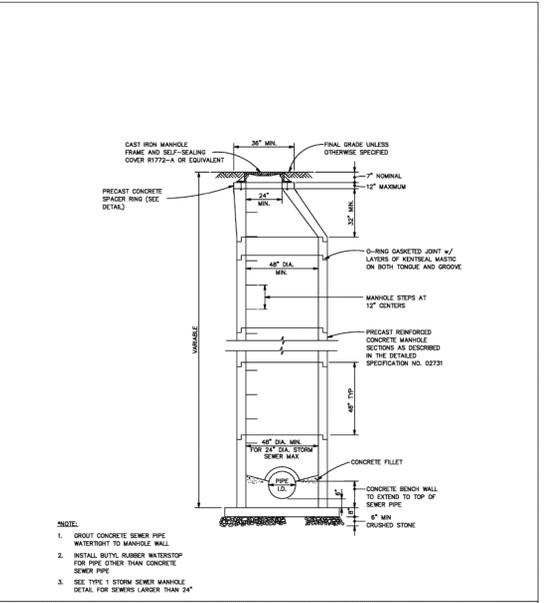
TYPICAL SIDEWALK SECTION
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 10/9/06 DATE FIGURE P-10



TYPICAL PAVEMENT SECTIONS
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 10/9/06 DATE FIGURE P-3



ANCHOR FOR CONCRETE END SECTIONS
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 4/10/06 DATE FIGURE ST-30



STANDARD STORM MANHOLE DETAIL
TOWN OF WESTFIELD, INDIANA
Renée Lynn Hoff 4/10/06 DATE FIGURE ST-1

LOCATION: H:\2012\W120055\Engineering\Design\Connect\6600-1\20050501.dwg
DATE/TIME: August 31, 2012 7:48am
PLOTTED BY: mlare

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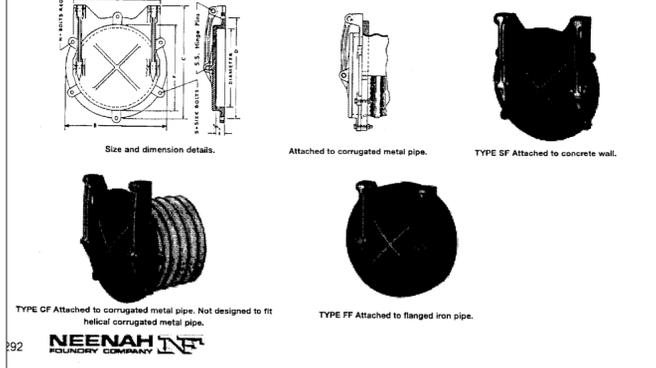
PROJECT NO.: W12-0055
DWG NAME: C600-1/PROSHEET
DESIGNED BY: JES
DRAWN BY: MEZ
CHECKED BY: JES
DATE: 7/24/2012

REVISIONS AND ISSUES
JAMES E. SHIELDS JR. P.E. 10201333
REGISTERED PROFESSIONAL ENGINEER
No. PE10261333
STATE OF INDIANA
EXPIRES 12/31/2015

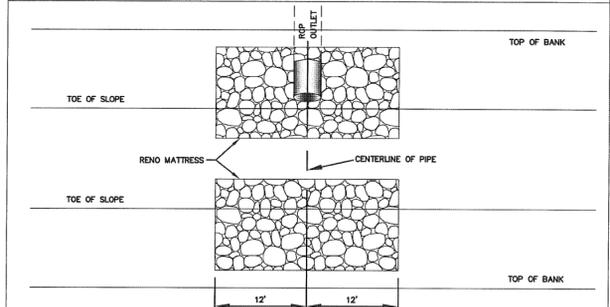
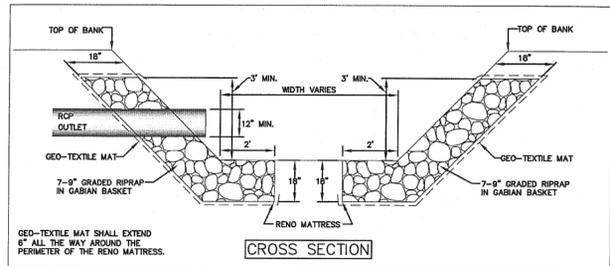
PREPARED FOR:
SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
DETAIL SHEET
SHEET NO. C600
PROJECT NO. W12-0055

| Dimensions in inches | | | | | | | | | | | |
|----------------------|-------------|-------------|----------|--------|--------|--------|--------|-------|--------|---|-----|
| Catalog No. | Catalog No. | Catalog No. | Diameter | A | B | C | D | E | F | N | S |
| R-5050-SF6 | R-5050-CF6 | R-5050-FF6 | 6 | 7 | 11 | 13 | 11 | 3/4 | 7 | 4 | 5/8 |
| R-5050-SF8 | R-5050-CF8 | R-5050-FF8 | 8 | 9 1/4 | 13 | 13 | 11 | 1 1/8 | 8 1/4 | 4 | 5/8 |
| R-5050-SF10 | R-5050-CF10 | R-5050-FF10 | 10 | 11 1/4 | 13 1/2 | 15 1/2 | 13 1/2 | 1 1/8 | 11 1/4 | 4 | 5/8 |
| R-5050-SF12 | R-5050-CF12 | R-5050-FF12 | 12 | 13 1/4 | 15 3/8 | 18 | 15 3/4 | 1 1/8 | 13 1/4 | 4 | 5/8 |
| R-5050-SF15 | R-5050-CF15 | R-5050-FF15 | 15 | 16 1/4 | 19 | 21 | 18 3/4 | 1 1/8 | 16 1/4 | 4 | 5/8 |
| R-5050-SF18 | R-5050-CF18 | R-5050-FF18 | 18 | 19 1/4 | 22 1/8 | 24 1/4 | 22 1/8 | 1 1/4 | 19 1/4 | 4 | 5/8 |
| R-5050-SF20 | R-5050-CF20 | R-5050-FF20 | 20 | 22 1/4 | 25 1/8 | 27 1/4 | 25 1/8 | 1 1/4 | 22 1/4 | 4 | 5/8 |
| R-5050-SF24 | R-5050-CF24 | R-5050-FF24 | 24 | 25 1/4 | 28 1/4 | 30 1/4 | 28 1/4 | 1 1/4 | 25 1/4 | 4 | 5/8 |
| R-5050-SF27 | R-5050-CF27 | R-5050-FF27 | 27 | 28 1/4 | 31 1/4 | 33 1/4 | 31 1/4 | 1 1/4 | 28 1/4 | 6 | 7/8 |
| R-5050-SF30 | R-5050-CF30 | R-5050-FF30 | 30 | 31 1/4 | 34 1/4 | 36 1/4 | 34 1/4 | 1 1/4 | 31 1/4 | 6 | 7/8 |
| R-5050-SF36 | R-5050-CF36 | R-5050-FF36 | 36 | 37 1/2 | 41 1/2 | 43 1/2 | 41 1/2 | 1 3/8 | 37 1/2 | 6 | 7/8 |
| R-5050-SF42 | R-5050-CF42 | R-5050-FF42 | 42 | 43 1/2 | 47 1/2 | 49 1/2 | 47 1/2 | 1 3/8 | 43 1/2 | 6 | 7/8 |
| R-5050-SF48 | R-5050-CF48 | R-5050-FF48 | 48 | 49 1/2 | 54 | 56 1/2 | 54 | 1 1/2 | 49 1/2 | 6 | 1 |

*N and S Dimensions apply to Type SF and CF gates only. Type FF Flange faced and drilled A.W.W.A. class 125 standard.



NEENAH ROUNDRY COMPANY

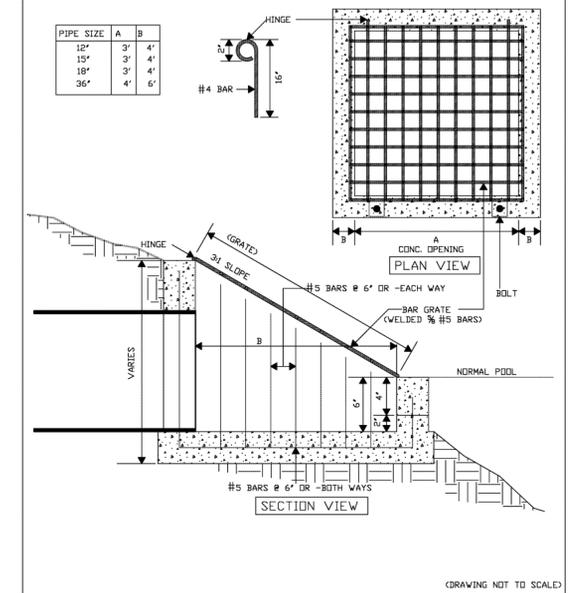


BANK ARMORMENT AT OUTLET PIPE IN OPEN CHANNELS

TOWN OF WESTFIELD, INDIANA

Renée Lynn Hoff 4/10/06 DATE

FIGURE ST-31

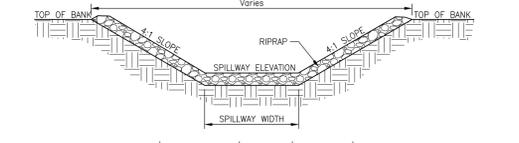


POND OUTFALL STRUCTURE

TOWN OF WESTFIELD, INDIANA

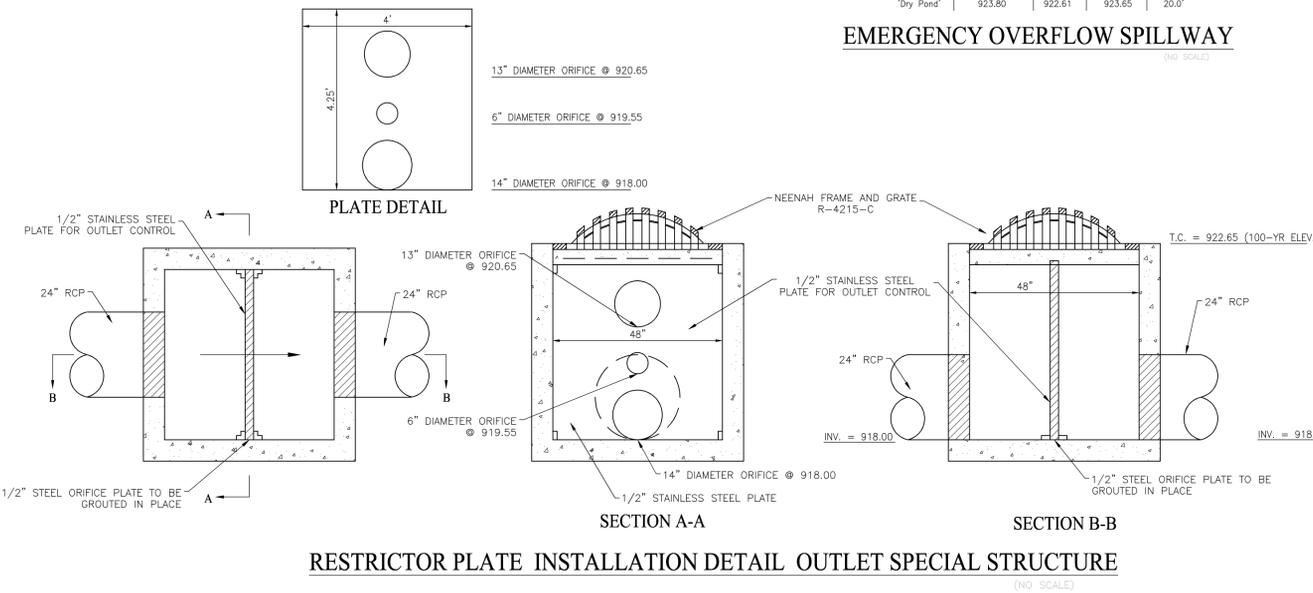
Renée Lynn Hoff 4/10/06 DATE

FIGURE ST-33



EMERGENCY OVERFLOW SPILLWAY (NO SCALE)

| POND DESIGNATION | TOP OF BANK ELEV. | 100YR ELEV. | SPILLWAY ELEV. | SPILLWAY WIDTH |
|------------------|-------------------|-------------|----------------|----------------|
| 'Dry Pond' | 923.80 | 922.61 | 923.65 | 20.0' |



RESTRICTOR PLATE INSTALLATION DETAIL OUTLET SPECIAL STRUCTURE

(NO SCALE)

LOCATION: H:\2012\W120055\Engineering\Design\Connect\6600-120055001.dwg
DATE/TIME: August 31, 2012 - 7:48am
PLOTTER: HP: ml600

10505 N. College Avenue
Indianapolis, Indiana 46280
weihe.net
317 | 846 - 6611
800 | 452 - 6408
317 | 843 - 0546 fax
ALLAN H. WEIHE, P.E., L.S. - FOUNDER

WEIHE ENGINEERS
Land Surveying | Civil Engineering
Landscape Architecture

PROJECT NO.: W12-0055
DWG. NAME: 6600-120055001
DESIGNED BY: JES
DRAWN BY: MEZ
CHECKED BY: JES
DATE: 7/24/2012

JAMES E. SHIELDS JR.
REGISTERED PROFESSIONAL ENGINEER
No. PE10261338
STATE OF INDIANA
EXPIRES 12/31/2015

JAMES E. SHIELDS JR. P.E. 10201333

PREPARED FOR:
SUNDOWN GARDENS
SUNDOWN COMMERCIAL GROUP
DETAIL SHEET

SHEET NO. **C601**
PROJECT NO. W12-0055

CONSTRUCTION PLANS DATED: 8/30/2012

CHAPTER 400 STORM SEWER PIPES AND OPEN CULVERT MATERIALS SECTION 401 GENERAL

401.01 Introduction

This section covers all work necessary for the construction of the storm sewer piping systems and related items complete, including catch basins and inlet drains, manholes, junction chambers, diversion chambers, outfall structures, and miscellaneous structures.

This specification covers the following types of materials for storm sewers, culverts, underdrains, inlet drains, conduits, and miscellaneous applications:

- 1. Reinforced Concrete Pipe and Fittings
2. Polyvinyl Chloride Pipe (PVC)
3. Corrugated Metal Pipe
4. Structural Plate Arches
5. Aluminum or Aluminized Steel Pipe and Structural Plate
6. Multi-Plate Pipe and Pipe Arches
7. PVC Composite Pipe
8. Corrugated Polyethylene Pipe—SSD (Perforated and Non-Perforated)

All lots shall have access to a subsurface or storm drain or open ditch.

Storm sewer systems shall have a minimum of four hundred (400) feet between structures.

This specification requires project plans and construction specifications to be submitted to and approved by all appropriate regulatory agencies prior to beginning any work. Before construction and preferably before fabrication, the Contractor shall submit to the Town of Westfield Public Works Department for approval calculations on the thickness or strength class and drawings showing pipe lengths, joints, and other construction and installation details.

Pipe Marking

Each length of pipe shall bear the name or trademark of the manufacturer, the location of the plant, and the date of manufacture. Each length shall likewise be marked to designate the class or strength of the pipe. The marking shall be made on the exterior or interior of the pipe barrel near the bell or groove end and shall be plainly visible.

401.02 Minimum Size for Storm Sewers

The minimum diameter of all storm sewers shall be 12 inches. When the minimum 12-inch diameter pipe will not limit the rate of release to the required amount, the rate of release for detention storage shall be controlled by an orifice plate or other device, subject to acceptance of the Town of Westfield Public Works Department.

401.03 Materials

Manholes, Inlets, and Other Structures

Storm sewer manholes and inlets shall be constructed of precast reinforced concrete. Material and construction shall conform to the latest edition of the Indiana Department of Transportation (INDOT) "Standard Specifications", Sections 702 and 720.

Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall comply with the following:

- 1. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C150, ACI 301, and ACI 318. Concrete for precast manhole sections shall be 3000 psi concrete. Monolithic manholes shall use 4000 psi concrete. Ready-mix concrete shall conform to ASTM C94, Alternate 2. Maximum size of aggregate shall be 3/4 inch. Slump shall be between 2 and 5 inches.
2. Forms for chamber and structures shall be plywood or other approved material. Steel forms shall be used for the inside face of monolithic concrete manholes.
3. Reinforcing steel shall conform to ASTM A615, Grade 60 deformed bars, or ASTM A616 Grade 60 deformed bars.
4. Mortar Materials:
a. Sand - ASTM Designation C144, passing a No. 8 sieve.
b. Cement - ASTM Designation C150, Type 1.
c. Water - shall be potable.

The manufacturer shall provide openings for sewers entering and leaving the manhole. Any additional openings needed to be made in the field shall be made by drilling holes at least 1/2 inch in diameter with a maximum spacing of 3 inches.

Manhole steps shall be made from a steel reinforcing rod encapsulated in a copolymer polypropylene resin. The manhole steps shall equal or exceed OSHA requirements.

Any other special manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall be constructed as detailed on the drawings.

Manhole bases shall be set on a minimum of six (6) inches of #8 aggregate.

Concrete end sections shall have a minimum of a twenty-four (24) inch toe plate, either poured in place or precast, bolted to the end section per Standard Detail (ST-30). Corrugated end sections with toe plates shall require Westfield Public Works approval.

Catch Basins

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

Catch Basin, for sediment control, locations to be determined by a Professional Engineer, and approved by the Town of Westfield Public Works Department. Catch Basins shall be located within easily accessible dedicated easements or right of way of sufficient size to facilitate the required maintenance of these structures.

Catch basins and curb inlet structures which are two (2) feet by two (2) feet in size shall not have a depth deeper than four (4) feet from the invert of the lowest pipe to the lowest part of the rim elevation of the casting. All structures which do not meet this criteria shall be a manhole type which is forty-eight (48) inches in diameter.

Castings

Cast iron or ductile iron frames and gratings for catch basins and drain inlets shall be as shown on the drawings. Bearing surfaces shall be clean and shall provide uniform contact. Castings shall be tough, close-grained gray iron, sound, smooth, clean, free from blisters, blow holes, shrinkage, cold shuts, and all defects and shall conform to ASTM A48 Class No. 30-B.

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

- The following castings types are required:
1. Manholes - Neenah R 1772 A or equivalent
2. Beehive Inlets - Neenah R 4342 or equivalent
3. "Roll Curb" Inlets - Neenah 3501 - TR or TL or equivalent
4. "Chair Back" Curb Inlet - Neenah 3287 - 10W or equivalent
5. Other types shall require approval of the Westfield Public Works Department.

Curb inlets castings which possess open backs or have grate bars parallel to traffic flow (are not "bicycle safe") will not be accepted by the Westfield Public Works Department.

Storm sewer castings manhole covers, beehive inlets, curb inlets or other approved casting shall have the following phrases cast in recessed letters two (2) inches in height:
1. "Storm Sewer"
2. "Drains to River" or "Drains to Waterway"
3. "Dump No Waste"
4. Other phrases shall require approval of the Westfield Public Works Department.

All castings frames shall have a horizontal bearing surface around the entire perimeter of the frame in order to support the cover or grate.

Bench Walls

Bench walls shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flows through the structure. The bench wall shall form a defined channel, to a minimum height of the spring line of the pipe. Bench walls shall be formed using full depth Class "A" concrete. Solid concrete block stone or sand shall not be permitted as a base or filler for the construction of the bench wall.

Reinforced Concrete Pipe and Fittings

Reinforced concrete pipe and fittings shall conform to ASTM C76, latest revision, for circular pipe and ASTM C507 for elliptical pipe.

Reinforced concrete pipe and fittings for normal conditions shall be reinforced in accordance with ASTM C76, Class III, IV or V, Wall B (minimum). Acceptance shall be on the basis of Subsection 4.1.1 of ASTM C76. Circumferential reinforcing in circular pipe shall be required. Only with approval from the Westfield Public Works Department will elliptical reinforcing or combination of circumferential reinforcing or part circular reinforcing shall be permitted, in circular pipe.

Concrete pipe shall be steam cured and shall not be shipped from point of manufacture for at least five days after having been cast.

Joints shall conform to the requirements of ASTM C443. Gaskets shall be of an oil resistant type having a maximum swell of 90% when tested in accordance with ASTM D471. Lubricant for jointing shall be approved by gasket manufacturer. All rubber gaskets similar to and equal to "Vespa-Seal" or "Tylox" conforming to ASTM Designation C443, latest revision. The gasket shall conform to the spigot of the pipe and shall be the sole element depended upon to make the joint flexible and practically watertight.

Butyl mastic joint sealant in rope or trowel applied form specifically made for permanently sealing joints in tongue and groove concrete sewer pipe. The material shall adhere tightly to the pipe surface and form a tight, flexible joint. The material shall have been in use for at least five years.

Test results and material specifications shall be submitted to the Westfield Public Works Department and shall have been approved prior to use on the project.

Polyvinyl Chloride Pipe and Fittings

Polyvinyl chloride (PVC) pipe and fittings shall comply with ASTM D 3034.

Corrugated Metal Pipe and Pipe Arches

The following specifications shall govern the manufacture of the corrugated steel pipe and pipe arches.

- 1. Specifications for Zinc Coated (galvanized) Steel Sheets (ASTM A444).
2. Manufacture of Corrugated Steel Culverts and Underdrains (ASHTO M-36).
3. Structural Plate for Pipe, Pipe Arches, and Arches (ASHTO M-167).
4. Bituminous Coated Corrugated Steel Pipe and Arches (ASHTO M-190).
5. Sheet Material (ASTM A525).

Bituminous Coated Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36.

Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end. After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating.

Bituminous Coated and Paved Invert Welded Se Corrugated Steel Pipom Helicalcay

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36.

Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end.

After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch. In addition, bituminous material shall be applied to form a smooth pavement in the bottom 25% of pipe and in the bottom 40% of pipe arch as required by AASHTO M-190 for Type C coating.

Smooth Lined Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36.

Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end. Each pipe shall have two lifting lugs welded to the outside of the pipe. After the ends have been rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating. The pipe shall be centrifugally lined on the inside with bituminous material to form a smooth interior which fills the corrugations to a minimum thickness of 1/8 inch above the crests of the corrugations. The bituminous lining material shall meet the requirements of AASHTO M-190.

Bituminous Coated Pipe Couplings

Coupling bands shall be the same base metal and spelter coating as the pipe. Bands shall be 0.064-inch thick and 0-1/2 inches wide. Bands shall be bituminous coated and shall have two corrugations 7-5/8 inches center to center. Bands 12-inch diameter through 30-inch diameter shall be one-piece, and 36-inch diameter through 96-inch diameter shall be two-piece. Band laps 12-inch diameter through 48-inch diameter shall be joined by one galvanized bar, bolt, and strap connector. Band laps 54-inch diameter through 96-inch diameter shall be joined by two galvanized bar, bolt, and strap connectors.

Aluminum Alloy Structural Plate

Aluminum alloy plates and fasteners intended for use in the construction of structural plate pipe and pipe arch for storm sewers shall meet the applicable requirements of AASHTO M-219. The plate shall be fabricated from aluminum alloy 5052 H141. The chemical composition of the plates shall conform to ASTM B209 alloy 5052.

The corrugations shall have a pitch of 9 inches plus or minus 3/8 inch and depth of 2-1/2 inches plus or minus 1/8 inch. The inside crown radius of the corrugations shall be not less than 2 inches.

The structural plate pipe or arches shall be assembled in accordance with the manufacturer's erection instructions and in accordance with the drawings.

Aluminized Steel Pipe and Arches

Aluminized coated corrugated steel pipe and pipe arch intended for use in the construction of storm sewers shall meet the applicable requirements of AASHTO M-36. Sheet material shall meet the latest revision of ASTM A525 and ASHTO M-274. The coils from which the pipe is produced shall be coated with 1.0 ounce per square foot of commercially pure aluminum. The pipe shall be furnished circular or as a pipe-arch pipe as required and shall be fabricated with helical corrugations and a continuous welded seam extending from end to end of each length of pipe.

Each end of each pipe with the welded seam shall have two annular corrugations reformed to permit joining with huffer bands. Coupling bands shall be huffer bands.

Multi-plate Pipe and Pipe Arches

Multi-plate pipe and pipe arch structures shall be in accordance with AASHTO M-167. They shall be made with steel sections with corrugations 6 inches wide by 2 inches deep running at right angles to the section.

Bolts and nuts shall be special heat-treated galvanized 3/4-inch diameter bolts in accordance with ASTM specifications.

Multi-plate pipes and pipe arches shall be designed in accordance with the manufacturer's design criteria and in accordance with the drawings.

Detailed instructions regarding erection shall be furnished by the manufacturer.

PVC Composite Pipe and Fittings

ABS or PVC composite pipe and fittings shall conform to ASTM D 2680, Latest Revision.

Corrugated Polyethylene Pipe and Fittings

Corrugated polyethylene pipe shall comply with the requirements for materials, test methods, dimensions, and marking in accordance with ASHTO M-252 for pipe diameters 6" - 10", ASHTO M-294 for pipe diameters of 12" - 48", and ASHTO M7 for 54" and 60". The resin material shall meet ASTM D3350 class classification 3354A00C.

The pipe lengths shall be connected using a gasketed, bell and spigot joint. This joint shall consist of a factory installed, gasketed double bell polyethylene coupling, a factory welded bell or integral bell. The spigot end of the pipe shall be furnished with a factory installed elastomeric profile "O-ring" rubber gasket that meets ASTM F-477.

The pipe shall be shipped with a removable wrap to protect the gasket.

Provide lubrication to the joint prior to pushing together.

At least two (2) corrugations of the spigot end must insert into the bell end.

All HDPE pipe shall be certified through the Plastic Pipe Institute (PPI) Third Party Certification Program. All HDPE pipe delivered and installed shall bear the Third Party Administered PPI Seal.

Subsurface Drain Tiles

Double wall smooth bore corrugated polyethylene tile, manufactured under specification ASTM F 667, shall be required for all subsurface drain tile installed in swales. Single wall corrugated polyethylene drain tile shall be required for curb sub-grade drainage.

Polyethylene tile shall possess male and female pipe ends, which allow the construction of overlapping, gasket pipe joints, in conformance with the requirements of ASTM D 3212. The gasket material shall conform to all requirements of ASTM F 477. As an alternative, pipe joints utilizing external couplings bands will be accepted, provided the minimum ASHTO requirements for satisfying soil tightness are also achieved.

Storm sewer pipe shall be of the size shown on the drawings and shall meet all requirements of these specifications. Subsurface drains (SSD) shall have a minimum of four hundred (400) feet between structures. Subsurface drains shall have clean-outs installed every 400 feet or at changes in direction.

- 1. Specifications for Zinc Coated (galvanized) Steel Sheets (ASTM A444).
2. Manufacture of Corrugated Steel Culverts and Underdrains (ASHTO M-36).
3. Structural Plate for Pipe, Pipe Arches, and Arches (ASHTO M-167).
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The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36.

Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end. After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating.

Bituminous Coated and Paved Invert Welded Se Corrugated Steel Pipom Helicalcay

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Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end.

After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch. In addition, bituminous material shall be applied to form a smooth pavement in the bottom 25% of pipe and in the bottom 40% of pipe arch as required by AASHTO M-190 for Type C coating.

Smooth Lined Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36.

Corrugations shall be 2-2/3-inch pitch by 1/2-inch depth. Each pipe shall have two annular corrugations rolled in each end. Each pipe shall have two lifting lugs welded to the outside of the pipe. After the ends have been rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating. The pipe shall be centrifugally lined on the inside with bituminous material to form a smooth interior which fills the corrugations to a minimum thickness of 1/8 inch above the crests of the corrugations. The bituminous lining material shall meet the requirements of AASHTO M-190.

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The structural plate pipe or arches shall be assembled in accordance with the manufacturer's erection instructions and in accordance with the drawings.

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Each end of each pipe with the welded seam shall have two annular corrugations reformed to permit joining with huffer bands. Coupling bands shall be huffer bands.

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Multi-plate pipe and pipe arch structures shall be in accordance with AASHTO M-167. They shall be made with steel sections with corrugations 6 inches wide by 2 inches deep running at right angles to the section.

Bolts and nuts shall be special heat-treated galvanized 3/4-inch diameter bolts in accordance with ASTM specifications.

Multi-plate pipes and pipe arches shall be designed in accordance with the manufacturer's design criteria and in accordance with the drawings.

Detailed instructions regarding erection shall be furnished by the manufacturer.

CHAPTER 500 INSTALLATION OF STORMWATER FACILITIES SECTION 501 GENERAL

501.01

Pipe Cover, Grade, and Separation from Sanitary Sewers

Pipe

Pipe grade shall be such that, in general, a minimum of 2.0 feet of cover is maintained over the top of the pipe. If the pipe is to be placed under pavement, then the minimum pipe cover shall be 2.5 feet from top of pavement to top of pipe. Uniform slopes shall be maintained between inlets, manholes and inlets to manholes. Final grade shall be set with full consideration of the capacity required, sedimentation problems, and other design parameters. Minimum and maximum allowable slopes shall be those capable of producing velocities of between 2.5 and 10 feet per second, respectively, when the sewer is flowing full. Maximum permissible velocities for various storm sewer materials are listed in Table 501-1. A minimum of 2.0 feet of vertical separation between storm sewers and sanitary sewers shall be required. When this is not possible, the sanitary sewer must be encased in concrete or ductile iron within 5 feet, each side, of the crossing centerline.

Rear Yard Swales

Rear yard swales shall have a minimum slope of 2% gradient. Swales less than a 2% gradient are required to have double-wall perforated drain tile installed two (2) feet below the invert of the swale. Minimum swale slope shall be greater than 1% gradient. Subsurface drains shall have a minimum slope of .5% gradient.

Proposed road grades will be required to be graded within two (2) inches of the proposed subgrade prior to installation. SSD. Trench width for SSD shall be a minimum of three (3) inches on both sides of the SSD, with a minimum trench width of twelve (12) inches.

501.02 Alignment

Storm sewers shall be straight between manholes and/or inlets.

501.03 Manholes/Inlets

All Manholes and Inlets must be pre-stamped with an appropriate message per the Town of Westfield Public Works Department Standards. Manholes and/or inlets shall be installed to provide human access to continuous underground storm sewers for the purpose of inspection and maintenance. The casting across minimum inside diameter shall be no less than 22 inches or a rectangular opening of no less than 22 inches by 22 inches. Manholes shall be provided at the following locations:

- 1. Where two or more storm sewers converge.
2. Where pipe size or the pipe material changes.
3. Where a change in horizontal alignment occurs.
4. Where a change in pipe slope occurs.
5. At intervals in straight sections of sewer, not to exceed the maximum allowed. The maximum distance between storm sewer manholes shall be as shown in Table 501-2.

In addition to the above requirements, a minimum drop of 0.1 foot through manholes and inlet structures should be provided. Pipe slope should not be so steep that inlets surcharge (i.e. hydraulic grade line should remain below rim elevation).

Manhole/inlet inside sizing shall be according to the Town of Westfield Public Works Department Standards. Note that the Town of Westfield Public Works Department may require the applicant to provide pre-treatment BMPs prior to discharge of the storm sewer line into a pond.

501.04 Installation and Workmanship

Bedding and backfill materials around storm sewer pipes, sub-drains, and the associated structures shall be according to the Town of Westfield Public Works Department Standards. The specifications for the construction of storm sewers and sub-drains, including backfill requirements, shall not be less stringent than those set forth in the latest edition of the "INDOT Standard Specifications". Additionally, ductile iron pipe shall be laid in accordance with American Water Works Association (AWWA) C-600 and clay pipe shall be laid in accordance with either American Society of Testing Materials (ASTM) C-12 or the appropriate American Association of State Highway and Transportation Officials (AASHTO) specifications. Dips/sags on newly installed storm systems will not be allowed. Also infiltration from cracks, missing pieces and joints shall not be allowed. Variations from these standards must be justified and receive written acceptance from the Town of Westfield Public Works Department. All structures shall require inspection prior to backfill.

501.05 Special Hydraulic Structures

Special hydraulic structures required to control the flow of water in storm runoff drainage systems include junction chambers, drop manholes, stilling basins, and other special structures. The use of these structures shall be limited to those locations justified by prudent planning and by careful and thorough hydraulic engineering analysis. Certification of special structures by a certified Structural Engineer may also be required.

The use of stormwater lift stations will not be permitted under any circumstances.

501.06 Connections to Storm Sewer System

Unless otherwise approved, perforated subsurface drain tiles, footer drains, or sump pumps lines shall connect to a storm sewer. Storm sewer connections shall be provided by either precast or drilled holes, which are to be a minimum of two (2) inches larger the O.D. of the connecting tile. Drain tile connections shall be made with either "tee" or "wye" method.

Blind connections to storm sewer pipes shall not be allowed.

Subsurface tile as specified herein may be used to convey water collected in sump pits and footer drains to an acceptable storm sewer outlet, provided these drain tiles are properly sized to accept these flows.

Gutter or building drains shall not be allowed to outlet directly into storm sewer systems.

To allow any connections to the storm sewer system, provisions for the connections shall be shown in the drainage calculations for the system. Specific language shall be provided in the restrictive covenants, on the record plat, or with the parcel deed of record, noting the ability or inability of the system to accommodate any permitted connections, for example, sump pumps and footing drains.

- 1. Sump pumps installed to receive and discharge groundwater or other stormwater shall be connected only into "T" subsurface drain (SSD) lateral connection if provided. When connection to the SSD is not possible, discharge pipe must daylight. Sump pumps installed to receive and discharge floor drain flow or other sanitary sewage shall be connected to the sanitary sewers. A sump pump shall be used for one function only, either the discharge of stormwater or the discharge of sanitary sewage, each being connected to the respective receiving system only.
2. Footing drains and perimeter drains shall be connected only into "T" subsurface drain (SSD) lateral connection if provided. When connection to the SSD is not possible, discharge pipe must daylight.
3. All roof downspouts, roof drains, or roof drainage piping shall discharge onto the ground and shall not be directly connected to the storm drainage system. Variation from this requirement may be requested and granted by the Town of Westfield Public Works Department in special circumstances. No downspouts or roof drains shall be connected to the sanitary sewers.
4. Garage and Basement floor drains and water softener discharge shall not be connected to the storm sewers.
5. Swimming Pool drains shall not be connected to the storm sewers unless the water is dechlorinated prior to being connected to the storm sewer.

501.07 Inspection and Rejection of Pipe

The quality of all materials, the process of manufacture, and the finished pipe shall be subject to inspection and approval by the Westfield Public Works Department or designee. Such inspection may be made at the place of manufacture or on the work after delivery, or at both places; and the pipe shall be subject to rejection at any time on account of failure to meet any of the specifications' requirements even though sample pipes may have been accepted as satisfactory at the place of manufacture.

Prior to being lowered into the trench, each pipe shall be carefully inspected and those not meeting the specifications shall be rejected and at once removed from the work.

The Westfield Public Works Department shall have the right to cut cores from such pieces of the concrete pipe as he desires for such inspection and tests as he may wish to apply. The developer/contractor shall pay for the samples of an Independent Laboratory Testing.

Holes left by the removal of cores shall be filled in an approved manner by and at the expense of the manufacturer of the pipe.

The Westfield Public Works Department shall also have the right to take samples of concrete after it has been mixed, or as it is being placed in the forms or molds, and to make such inspection and tests there as he may wish.

Any pipe which has been damaged after delivery will be rejected and replaced solely at the Contractor's expense.

501.08 Handling Pipe

Each pipe section shall be handled into its position in the trench only in such manner and by such means as the Westfield Public Works Department or designee approves as satisfactory. As for handling the material to grade, use hand or mechanical lapping to compact the bedding material to a minimum 85% Standard Proctor Density.

The rigid pipe, such as concrete or ductile iron, backfill between the bedding material and a plane 12 inches (300 mm) over the top of the pipe shall be hand-placed final divided earth, free from debris and stones, or granular backfill if required.

For flexible pipe, corrugated metal pipe, the placement of embedment material or haunching around the pipe must be done with care. The ability of the pipe to withstand loading in a trench depends a large part on the method employed in its installation. If crushed stone, pea gravel, or graded gravel or sand is used to backfill between the bedding material and a plane 12 inches (300mm) over the top of the pipe, it shall be hand placed. If fine sand, silt, or clayey gravels are used for initial backfilling over the pipe, the material shall be hand placed in 6- to 8-inch layers and hand compacted on both sides of the pipe to an elevation 12 inches (300 mm) over the top of the pipe. Care should be taken so not to compact directly over the pipe.

In yielding subsols, the trench bottom shall be undercut to the depth necessary and backfilled with graded, crushed stone to form a firm foundation. Where excavation occurs in rock or hard shale, the trench bottom shall be undercut and a minimum of 6 inches (150 mm) crushed stone bedding placed prior to pipe installation.

All pipes shall be reinspected for soundness and damage due to handling immediately before being lowered into the trench. Any pipe found to be unround or damaged will be rejected and shall be removed immediately from the site of the work.

No portion of a Storm Sewer pipe, open culvert, manhole, inlet, or subsurface tile system shall be installed directly or indirectly onto frozen ground or with frozen backfill materials.