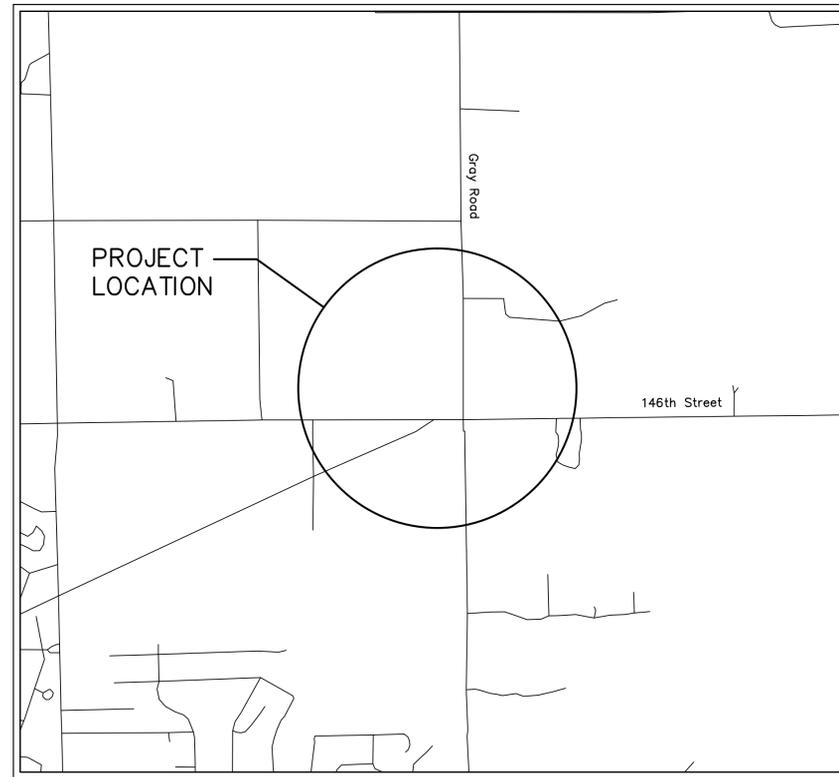
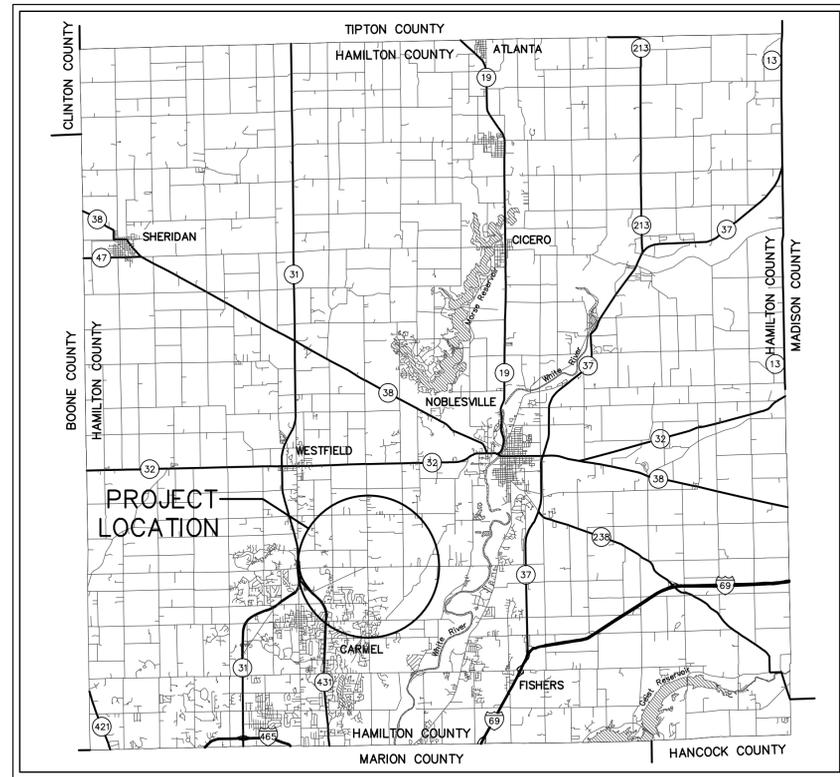


DEVELOPMENT PLANS FOR BRIDGEWATER POINTE SHOPPES

WESTFIELD, INDIANA
S.E. 1/4 SECTION 17, T18N, R4E, WASHINGTON TOWNSHIP, HAMILTON COUNTY

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

DESIGN AND CONSTRUCTION OF THIS PROJECT SHALL COMPLY WITH THE HAMILTON COUNTY SURVEYOR'S OFFICE AND THE CITY OF WESTFIELD CONSTRUCTION SPECIFICATIONS AND STANDARD DETAILS.



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PLAN DATE: 07-31-2015

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CITIZENS WESTFIELD
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- INDIANA GAS / VECTREN**
RESA GLOVER & CHAD MILLER
P.O. BOX 1700
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INDIANAPOLIS, INDIANA 46220
(317) 252-4275

NOTE:
THE PRESENCE OF A CITY OF WESTFIELD REVIEW AND ACCEPTANCE STAMP ON PLANS DOES NOT RELIEVE THE CONTRACTOR OR DEVELOPER FROM COMPLIANCE OF THE CITY OF WESTFIELD CONSTRUCTION STANDARDS LATEST EDITION. THIS REVIEW ONLY DESIGNATES THAT THE GENERAL CONFORMANCE WITH DESIGN AND SPECIFICATIONS HAVE BEEN MET. FIELD CHANGES MAY BECOME NECESSARY IN ORDER TO COMPLY WITH THE DETAILED CITY OF WESTFIELD SPECIFICATIONS.

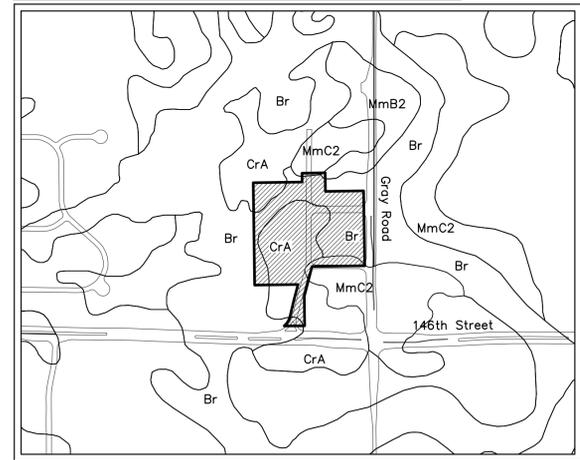
NOTE:
ALL CONTRACTORS SHALL REVIEW CITY OF WESTFIELD STANDARDS AND SPECIFICATIONS PRIOR TO BIDDING ON THIS PROJECT. ADDITIONAL SPECIFICATIONS, NOT INCLUDED IN THIS SET OF PLANS MAY BE REQUIRED.

PLANS PREPARED FOR:
KITE REALTY GROUP
30 S. MERIDIAN ST., SUITE 100,
INDIANAPOLIS, IN 46204
CONTACT: TONY HALSEY
PHONE: (317) 577-5600

PLANS PREPARED BY:

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

SOIL DESCRIPTIONS:
Br - BROOKSTON SILTY CLAY LOAM (0 TO 2 PERCENT SLOPES)
CrA - CROSBY SILT LOAM, FINE LOAMY SUBSOIL (0 TO 2 PERCENT SLOPES)
MmB2 - MIAMI SILT LOAM (2 TO 6 PERCENT SLOPES, ERODED)
MmC2 - MIAMI SILT LOAM (6 TO 12 PERCENT SLOPES, ERODED)



REV	DATE	DESCRIPTION

**APPROVAL PENDING
NOT FOR CONSTRUCTION**
JARED L. WILKERSON, P.E.

C001
JOB# 2015.01267

PRINT DATE: 9/14/15 PLOT SCALE: 1:25000 DRAWING FILE: P:\2015\01267\01.DRAWINGS\CIVIL\CONSTRUCTION DOCUMENTS\2015.01267.CE.C001.TS.DWG EDITOR: RESNAU DRAWING FILE: P:\2015\01267\01.DRAWINGS\CIVIL\CONSTRUCTION DOCUMENTS\2015.01267.CE.C001.TS.DWG EDIT DATE: 9/11/15 11:15 PM

EARTHWORK:

- A. GENERAL
1. EARTHWORK INCLUDES CLEARING, GRUBBING, SUBGRADE PREPARATION, REMOVAL OF TREES AND VEGETATION (INCLUDING STUMPS), PROTECTION OF TREES TO REMAIN, STRIPPING AND STORAGE OF TOPSOIL, FILL COMPACTION AND ROUGH GRADING OF ENTIRE SITE AS INDICATED ON DRAWINGS.
2. THE CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING OF ANY CHANGES, ERRORS, OR OMISSIONS FOUND ON THE PLANS OR IN THE FIELD, BEFORE WORK IS STARTED OR RESUMED.
3. CONTRACTOR SHALL PROVIDE AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFF THE SITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED AS SHOWN ON THE DRAWINGS. FILL OBTAINED FROM OFF SITE MUST BE SUITABLE SOIL AS DEFINED IN THE SPECIFICATIONS OR AS OTHERWISE APPROVED BY OWNER.
4. THE CONTRACTOR SHALL ACCEPT THE SITE IN ITS CURRENT STATE AND SHALL REMOVE ALL TRASH, RUBBISH, AND DEBRIS FROM THE SITE PRIOR TO STARTING EXCAVATION.
5. EXCEPT FOR STRIPPED TOPSOIL AND OTHER MATERIALS INDICATED TO BE STOCKPILED OR OTHERWISE REMAIN OWNER'S PROPERTY, CLEARED MATERIALS SHALL BECOME CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM PROJECT SITE.
6. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, DRIVES, FACILITIES, ETC. WITHOUT OWNER PERMISSION OR AUTHORITY HAVING JURISDICTION.
7. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING EARTHWORK AND CLEARING OPERATIONS. EROSION CONTROL MEASURES SHOULD BE PROTECTED AND MAINTAINED THROUGHOUT CONSTRUCTION.
8. CONTRACTOR SHALL CAREFULLY MAINTAIN ALL BENCHMARKS, MONUMENTS, AND OTHER REFERENCE POINTS. IF DISTURBED, CONTRACTOR SHALL ENGAGE LICENSED LAND SURVEY FOR REPLACEMENT OF REFERENCE POINTS.
9. WHERE THESE SPECIFICATIONS CONFLICT WITH TOWN OF DAYTON STANDARDS, THE STANDARDS OF THE JURISDICTION HAVING AUTHORITY SHALL PREVAIL.
B. MATERIALS
1. CONTRACTOR TO PROVIDE BORROW SOIL MATERIALS WHEN SUFFICIENT SATISFACTORY SOIL MATERIALS ARE NOT AVAILABLE FROM EXCAVATIONS.
2. SATISFACTORY (OR SUITABLE) SOILS: SOIL CLASSIFICATION GROUPS GP, OW, GW, SW, SP, AND SM ACCORDING TO ASTM D2487, OR A COMBINATION OF THESE GROUPS; FREE OF ROCK OR GRAVEL LARGER THAN 3 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER DELETERIOUS MATERIAL.
3. UNSATISFACTORY (OR UNSUITABLE) SOILS: SOIL CLASSIFICATION GROUPS GC, SC, CL, ML, OL, CH, MH, OH, AND PT ACCORDING TO ASTM D 2487, OR A COMBINATION OF THESE GROUPS. UNSATISFACTORY SOILS ALSO INCLUDES SATISFACTORY SOILS NOT MAINTAINED WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT AT TIME OF COMPACTION.
C. EXECUTION
1. CONTRACTOR SHALL LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP UTILITIES INDICATED TO BE REMOVED OR ABANDONED IN PLACE. DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER UNLESS PERMISSION IS GRANTED. NOTIFY OWNER AT LEAST TWO DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
2. REMOVE OBSTRUCTIONS, TREES, SHRUBS, AND OTHER VEGETATION AS REQUIRED FOR NEW CONSTRUCTION. STRIP TOPSOIL TO DEPTH AS REQUIRED IN THE FIELD TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR OTHER WASTE MATERIALS. STOCKPILE TOPSOIL AWAY FROM EXCAVATIONS WITHOUT INTERMINGLING WITH SUBSOIL AND GRADE STOCKPILES TO DRAIN SURFACE WATER.
3. REMOVE EXISTING ABOVE AND BELOW-GRADE IMPROVEMENTS AS INDICATED AND NECESSARY TO FACILITATE NEW CONSTRUCTION.
4. PROTECT SUBGRADES AND FOUNDATION SOILS FROM FREEZING TEMPERATURES, FROST, AND PONDING WATER.
5. EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS FOR ALL STRUCTURES, WALKS, PAVEMENTS, AND UTILITY TRENCHES.
6. CONTRACTOR SHALL FURNISH AND OPERATE ALL Dewatering MEASURES REQUIRED TO FACILITATE NEW CONSTRUCTION AND IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
7. PROOF ROLL SUBGRADE BELOW BUILDING PAVEMENTS WITH A PNEUMATIC-TIRED DUMP TRUCK TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. DO NOT PROOF ROLL WET OR SATURATED SUBGRADES. RECONSTRUCT SUBGRADES DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES AS DIRECTED BY ENGINEER OR OWNER REPRESENTATIVE, WITHOUT ADDITIONAL COMPENSATION.
8. BACKFILL ALL UTILITY TRENCHES BENEATH PAVEMENT (AND WITHIN 5') WITH GRANULAR MATERIAL.
9. SOIL FILL: USE SATISFACTORY SOIL MATERIAL UNDER ALL WALKS, PAVEMENTS, STEPS, RAMPS, BUILDING SLABS, FOOTINGS, AND FOUNDATIONS.
10. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL SOIL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT. DO NOT PLACE BACKFILL OR FILL SOIL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT EXCEEDS OPTIMUM MOISTURE CONTENT BY 2 PERCENT AND IS TOO WET TO COMPACT TO SPECIFIED UNIT WEIGHT.
11. COMPACTION OF SOIL BACKFILLS AND FILLS: COMPACT ALL FILL MATERIALS BELOW STRUCTURES, PAVEMENTS, WALKS, UTILITY TRENCHES, AND STEPS (AND WITHIN 5 FEET OF SAID AREAS) TO 98 PERCENT OF THE MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 698 (STANDARD PROCTOR DENSITY). COMPACT ALL FILL MATERIALS BELOW TYPICAL OR UNPAVED AREAS TO 90 PERCENT OF THE MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 698 (STANDARD PROCTOR DENSITY). ALL FILL MATERIALS TO BE COMPACTED IN MAXIMUM 8-INCH LIFTS.
12. SITE ROUGH GRADING: SLOPE GRADES TO DIRECT WATER AWAY FROM BUILDINGS AND TO PREVENT PONDING. FINISH SUBGRADES TO REQUIRED ELEVATIONS WITHIN THE FOLLOWING TOLERANCES:
I. TURF OR UNPAVED AREAS: PLUS OR MINUS 1/4 INCH
II. WALKS: PLUS OR MINUS 1/2 INCH
III. PAVEMENTS: PLUS OR MINUS 1/2 INCH
IV. INSIDE BUILDING LINES: FINISH SUBGRADE TO A TOLERANCE OF 1/2 INCH WHEN TESTED WITH A 10-FOOT STRAIGHTEDGE.
13. QUALITY CONTROL: QUALIFIED GEOTECHNICAL ENGINEER TO BE ENGAGED AS TESTING AGENCY AS DIRECTED BY OWNER.
14. REPAIR AND REESTABLISH GRADES TO SPECIFIED TOLERANCES WHERE COMPLETED OR PARTIALLY COMPLETED SURFACES BECOME ERODED, RUTTED, SETTLED, OR WHERE THEY LOSE COMPACTION DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS OR WEATHER.

STORM SEWER:

- A. GENERAL
1. STORM SEWER INCLUDES ALL PIPES, FITTINGS, MANHOLES, CLEANOUTS, TRANSITION COUPLINGS, CATCH BASINS, INLETS, END SECTIONS, AND OUTLETS.
2. THE CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING OF ANY CHANGES, ERRORS, OR OMISSIONS FOUND ON THE PLANS OR IN THE FIELD, BEFORE WORK IS STARTED OR RESUMED.
3. CONTRACTOR SHALL LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP UTILITIES INDICATED TO BE REMOVED OR ABANDONED IN PLACE. DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER UNLESS PERMISSION IS GRANTED. NOTIFY OWNER AT LEAST TWO DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
B. PRODUCTS
1. PE PIPE AND FITTINGS: PE DRAINAGE PIPE AND FITTINGS NP 3 TO NPS 10, AASHTO M 252M, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS. PE DRAINAGE PIPE AND FITTINGS NPS 12 TO NPS 60, AASHTO M 294M, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS.
2. PVC PIPE AND FITTINGS: PIPE: ASTM F 949, PVC, CORRUGATED PIPE WITH BELL AND SPIGOT ENDS FOR GASKETED JOINTS. FITTINGS: ASTM 949, PVC MOLDED OR FABRICATED, SOCKET TYPE. GASKETS: ASTM F 477, ELASTOMERIC SEALS.
3. CONCRETE PIPE AND FITTINGS: REINFORCED CONCRETE SEWER PIPE AND FITTINGS MEETING ASTM C 76 WITH BELL AND SPIGOT ENDS AND GASKETED JOINTS WITH ASTM C 443 RUBBER GASKETS. PIPE TO BE CLASS III UNLESS OTHERWISE INDICATED ON PLANS.
4. COMPLY WITH ASTM C 1173, ELASTOMERIC SLEEVE-TYPE REDUCING OR TRANSITION COUPLING, FOR JOINING UNDERGROUND NON-PRESSURE PIPING. INCLUDE ENDS OF SAME SIZES AS PIPING TO BE JOINED, AND CORROSION-RESISTANT METAL TENSION BAND AND TIGHTENING MECHANISM ON EACH END.
5. CLEANOUTS: CAST IRON CLEANOUTS: ASME 1141.36.2M ROUND, GRAY-IRON HOUSING WITH CLAMPING DEVICE AND ROUND, SECURED, SCREATHED, GRAY-IRON COVER. HEAVY DUTY TOP LOADING IS REQUIRED. PLASTIC CLEANOUTS: PVC BODY WITH PVC THREADED PLUG.
6. MANHOLES AND CATCH BASINS: STANDARD REINFORCED PRECAST CONCRETE MANHOLES MEETING ASTM C 478. MINIMUM 48-INCH DIAMETER UNLESS OTHERWISE INDICATED. BASE SECTION TO BE MINIMUM 6-INCH THICKNESS AND 4-INCH THICKNESS FOR WALLS AND END RIGID SECTION. REINFORCED CONCRETE GRADE RINGS, 6-8 INCH TOTAL THICKNESS, TO MATCH DIAMETER OF MANHOLE FRAME AND COVER. MANHOLE FRAMES AND COVERS AS INDICATED ON DRAWINGS. PIPE CONNECTORS SHOULD BE PROVIDED TO MEET ASTM C293, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO THE BASE SECTION.
7. CONCRETE: CAST-IN-PLACE CONCRETE ACCORDING TO ACI 318 AND ACI 350/350R AND IN ACCORDANCE WITH THE FOLLOWING:
I. CEMENT: ASTM C 150, TYPE III
II. FINE AGGREGATE: ASTM C 33, SAND
III. COARSE AGGREGATE: ASTM C 33, CRUSHED GRAVEL
IV. WATER: POTABLE.
8. PORTLAND CEMENT DESIGN MIX: 4000 PSI MINIMUM WITH 0.45 MAXIMUM WATER/CEMENTITIOUS MATERIALS RATIO. REINFORCING FABRIC TO MEET ASTM A 185/A 185M, STEEL, WELDED WIRE FABRIC, PLAIN. REINFORCING BARS TO MEET ASTM A 615/A 615M, GRADE 60 DEFORMED STEEL.
9. MANHOLE CHANNELS TO BE FORMED WITH AN INVERT SLOPE OF 2 PERCENT THROUGH THE MANHOLE AND BENCHES AT A 4 PERCENT, SLOPED TO DRAIN INTO CHANNEL.
10. INLETS: PROVIDE INLETS WITH HEAVY DUTY CASTINGS AS SHOWN ON DRAWINGS.
11. OUTLETS: CONCRETE END SECTION SHOULD BE PROVIDED AT ALL PIPE ENDS AND AS INDICATED ON DRAWINGS. RIP RAP APRONS TO BE INSTALLED AT ALL END SECTIONS TO DIMENSIONS INDICATED. AVERAGE RIP-RAP SIZE TO BE 6-INCHES UNLESS OTHERWISE INDICATED ON DRAWINGS.
C. EXECUTION
1. INSTALL PIPING BEGINNING AT LOW POINT, TRUE TO GRADES AND ALIGNMENT INDICATED WITH UNBROKEN CONTINUITY OF INVERT. PLACE BELL ENDS OF PIPING UPSTREAM. INSTALL GASKETS, SEALS, SLEEVES, AND OTHER COUPLINGS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. WHEN INSTALLING PIPE UNDER STREETS OR OTHER OBSTRUCTIONS THAT CANNOT BE DISTURBED, USE PIPE-JACKING PROCESS OF MICRO-TUNNELING.
3. INSTALL PIPING PITCHED DOWN IN DIRECTION OF FLOW. INSTALL PE CORRUGATED SEWER PIPING IN ACCORDANCE WITH ASTM D 2231. INSTALL PVC PIPING ACCORDING TO ASTM D 2321 AND ASTM F 1668. INSTALL REINFORCED CONCRETE SEWER PIPING IN ACCORDANCE WITH ASTM C 1479 AND ACPA'S "CONCRETE PIPE INSTALLATION MANUAL".
4. PIPE JOINT CONSTRUCTION: JOIN CORRUGATED PE PIPE ACCORDING TO ASTM D 3212 FOR PUSH ON JOINTS. JOIN PVC CORRUGATED SEWER PIPING IN ACCORDANCE WITH ASTM D 2321 FOR ELASTOMERIC-SEAL JOINTS. JOIN REINFORCED CONCRETE PIPE ACCORDING TO ACPA'S "CONCRETE PIPE INSTALLATION MANUAL" FOR RUBBER-GASKETED JOINTS. JOIN DISSIMILAR PIPE MATERIALS WITH NON-PRESSURE TYPE FLEXIBLE COUPLINGS.
5. CONTRACTOR TO INSPECT INTERIOR OF PIPING AND MANHOLES FOR DEFECTS. DEFECTS REQUIRING CORRECTION INCLUDE THE FOLLOWING:
I. ALIGNMENT: LESS THAN FULL DIAMETER OF INSIDE OF PIPE IS VISIBLE BETWEEN STRUCTURES.
II. DEFLECTION: FLEXIBLE PIPING WITH DEFLECTION THAT PREVENTS PASSAGE OF BALL OR CYLINDER OF SIZE NOT LESS THAN 92.5 PERCENT OF PIPING DIAMETER.
III. DAMAGE: CRUSHED, BROKEN, CRACKED, OR OTHERWISE DAMAGED PIPING.
IV. INFILTRATION: WATER LEAKAGE INTO PIPING.
V. EXFILTRATION: WATER LEAKAGE FROM OR AROUND PIPING

STORM SEWER (CONT.):

- REPLACE DEFECTIVE PIPING USING NEW MATERIALS, AND REPEAT INSPECTION UNTIL DEFECTS ARE WITHIN ALLOWANCES SPECIFIED.
6. TEST NEW PIPING SYSTEMS, AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED, REPAIRED, FOR LEAKS AND DEFECTS. FOR GRAVITY FLOW STORM DRAINAGE PIPING: TEST ACCORDING TO REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
I. EXCEPTION: PIPING WITH SOLIGHT JOINTS UNLESS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
II. OPTION: TEST PIPING ACCORDING TO ASTM F 1417.
III. OPTION: TEST CONCRETE PIPING ACCORDING TO ASTM C 924.
7. SUBMIT TESTING REPORTS AS REQUIRED BY OWNER OR AUTHORITY HAVING JURISDICTION.
ASPHALT PAVING:
A. GENERAL
1. THE CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING OF ANY CHANGES, ERRORS, OR OMISSIONS FOUND ON THE PLANS OR IN THE FIELD, BEFORE WORK IS STARTED OR RESUMED.
2. USE MATERIALS AND GRADATIONS THAT HAVE PERFORMED SATISFACTORY IN PREVIOUS INSTALLATIONS.
B. PRODUCTS
1. AGGREGATES
I. COURSE AGGREGATE: ASTM D 692/D92M, SOUND; ANGULAR CRUSHED STONE, CRUSHED GRAVEL, OR CURED, CRUSHED BLAST-FURNACE SLAG.
II. FINE AGGREGATE: ASTM D 1073 OR AASHTO M 29, SHARP-EDGED NATURAL SAND OR SAND PREPARED FROM STONE, GRAVEL, CURED BLAST-FURNACE SLAG, OR COMBINATIONS THEREOF.
a. FOR HOT-MIX ASPHALT, LIMIT NATURAL SAND TO A MAXIMUM OF 20 PERCENT BY WEIGHT OF THE SAND.
III. MINERAL FILLER: ASTM D 242 OR AASHTO M 17, ROCK OR SLAG DUST, HYDRAULIC CEMENT, OR OTHER INERT MATERIAL.
2. ASPHALT MATERIALS
I. ASPHALT BINDER: AASHTO M 320, PG 64-22 (OR AS OTHERWISE RECOMMENDED BY INDOT STANDARDS)
II. ASPHALT CEMENT: PER INDOT STANDARDS
III. OUTBACK PRIME COAT: PER INDOT STANDARDS
IV. EMULSIFIED ASPHALT PRIME COAT: PER INDOT STANDARDS
V. TACK COAT: PER INDOT STANDARDS
VI. WATER: POTABLE.
VII. UNDERSEALING ASPHALT: ASTM D 3141; PUMPING CONSISTENCY.
3. AUXILIARY MATERIALS
I. RECYCLED MATERIALS FOR HOT-MIX ASPHALT MIXES: RECLAIMED ASPHALT PAVEMENT; RECLAIMED, UNBOUND AGGREGATE; BASE HOT-ROCK ASPHALT; RECLAIMED ASPHALT SHINGLES FROM SOURCES AND GRADATIONS THAT HAVE PERFORMED SATISFACTORY IN PREVIOUS INSTALLATIONS, EQUAL TO PERFORMANCE OF REQUIRED HOT-MIX ASPHALT PAVING PRODUCED FROM ALL NEW MATERIALS.
II. HERBICIDE: COMMERCIAL CHEMICAL FOR WEED CONTROL, REGISTERED BY THE EPA, AND NOT CLASSIFIED AS "RESTRICTED USE" FOR LOCATIONS AND CONDITIONS OF APPLICATION. PROVIDE IN GRANULAR, LIQUID, OR WETTABLE POWDER FORM.
III. SAND: ASTM D 1073 OR AASHTO M 29, GRADE NO. 2 OR NO. 3.
4. MIXES
I. RECYCLED CONTENT OF HOT-MIX ASPHALT: PER INDOT STANDARDS
II. HOT-MIX ASPHALT: DENSE-GRADED, HOT-LAD, HOT-MIX ASPHALT PLANT MIXES APPROVED BY INDOT AND COMPLYING WITH THE FOLLOWING REQUIREMENTS:
a. PROVIDE MIXES WITH A HISTORY OF SATISFACTORY PERFORMANCE IN GEOGRAPHICAL AREA WHERE PROJECT IS LOCATED.
b. BASE COURSE: 25.0 MM OR 19.0 MM (AS INDICATED ON DRAWINGS)
c. SURFACE COURSE: 9.5MM
C. EXECUTION
1. EXAMINATION
I. VERIFY THAT SUBGRADE IS DRY AND IN SUITABLE CONDITION TO BEGIN PAVING.
II. PROOF-ROLL SUBGRADE BELOW PAVEMENTS WITH HEAVY PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. DO NOT PROOF-ROLL WET OR SATURATED SUBGRADES. PROOFROLL TO BE PERFORMED BY QUALIFIED GEOTECHNICAL ENGINEER.
a. COMPLETELY PROOF-ROLL SUBGRADE IN ONE DIRECTION UNTIL VEHICLE SPEED TO 3 MPH.
b. PROOF ROLL WITH A LOADED 10-WHEEL TANDEM-AXLE DUMP TRUCK WEIGHING NOT LESS THAN 15 TONS.
c. IDENTIFY SOFT SPOTS, UNSATISFACTORY SOILS, AND AREAS OF EXCESSIVE PUMPING OR RUTTING, AS DETERMINED BY ENGINEER, AND REPLACE WITH COMPACTED BACKFILL OR FILL AS DIRECTED.
d. PROCEED WITH PAVING ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
2. SURFACE PREPARATION
I. GENERAL: IMMEDIATELY BEFORE PLACING ASPHALT MATERIALS, REMOVE LOOSE AND DELETERIOUS MATERIAL FROM SUBSTRATE SURFACES. ENSURE THAT PREPARED SUBGRADE IS READY TO RECEIVE PAVING.
II. HERBICIDE TREATMENT: APPLY HERBICIDE ACCORDING TO MANUFACTURER'S RECOMMENDED RATES AND WRITTEN APPLICATION INSTRUCTIONS. APPLY TO DRY, PREPARED SUBGRADE OR SURFACE OF COMPACTED-AGGREGATE BASE BEFORE APPLYING PAVING MATERIALS.
III. MIX HERBICIDE WITH PRIME COAT IF FORMULATED BY MANUFACTURER FOR THAT PURPOSE.
IV. OUTBACK PRIME COAT: APPLY UNIFORMLY OVER SURFACE OF COMPACTED UNBOUND-AGGREGATE BASE COURSE AT A RATE OF 0.15 TO 0.50 YD. APPLY ENOUGH MATERIAL TO PENETRATE AND SEAL, BUT NOT FLOOD, SURFACE. ALLOW PRIME COAT TO CURE.
a. IF PRIME COAT IS NOT ENTIRELY ABSORBED WITHIN 24 HOURS AFTER APPLICATION, SPREAD SAND OVER SURFACE TO BLOT EXCESS ASPHALT. USE ENOUGH SAND TO PREVENT PICKUP UNDER TRAFFIC. REMOVE LOOSE SAND BY SWEEPING BEFORE PAVEMENT IS PLACED AND AFTER VOLATILES HAVE EVAPORATED.
b. PRIME COAT SUBSTRATE FROM DAMAGE UNTIL READY TO RECEIVE PAVING.
V. TACK COAT: APPLY UNIFORMLY TO SURFACES OF EXISTING PAVEMENT AT A RATE OF 0.05 TO 0.15 GAL./SQ. YD.
a. ALLOW TACK COAT TO CURE UNDISTURBED BEFORE APPLYING HOT-MIX ASPHALT PAVING.
b. AVOID SHEARING OR STAINING ADJOINING SURFACES, APPURTENANCES, AND SURROUNDINGS. REMOVE SPILLAGES AND CLEAN AFFECTED SURFACES.
3. PLACING HOT-MIX ASPHALT
I. MACHINE PLACED HOT-MIX ASPHALT ON PREPARED SURFACE, SPREAD UNIFORMLY, AND STRIKE OFF. PLACE ASPHALT MIX BY HAND IN AREAS INACCESSIBLE TO EQUIPMENT IN A MANNER THAT PREVENTS SEGREGATION OF MIX. PLACE EACH COURSE TO THE REQUIRED GRADE, CROSS SECTION, AND THICKNESS INDICATED.
a. PLACE HOT-MIX ASPHALT BASE COURSE IN NUMBER OF LIFTS AND THICKNESSES INDICATED.
b. PLACE EACH COURSE IN SINGLE LIFT.
c. SPREAD MIX AT A MINIMUM TEMPERATURE OF 250 DEG F.
d. BEGIN APPLYING MIX ALONG CENTERLINE OF CROWN FOR CROWNED SECTIONS AND ON HIGH SIDE OF ONE-WAY SLOPES UNLESS OTHERWISE INDICATED.
e. REGULATE PAVEMENT SPEED TO OBTAIN SMOOTH, CONTINUOUS SURFACE FREE OF PULLS AND TEARS IN ASPHALT-PAVING MAT.
II. PLACE PAVING IN CONSECUTIVE STRIPS NOT LESS THAN 10 FEET WIDE UNLESS INFILL EDGE STRIPS OF A LESSER WIDTH ARE REQUIRED.
a. AFTER FIRST STRIP HAS BEEN PLACED AND ROLLED, PLACE SUCCEEDING STRIPS AND EXTEND ROLLING TO OVERLAP PREVIOUS STRIPS. OVERLAP MIX PLACEMENT ABOUT 1 TO 1-1/2 INCHES FROM STRIP TO STRIP TO ENSURE PROPER COMPACTION OF MIX ALONG LONGITUDINAL JOINTS.
b. COMPLETE A SECTION OF ASPHALT BASE COURSE BEFORE PLACING ASPHALT SURFACE COURSE.
III. PROMPTLY CORRECT SURFACE IRREGULARITIES IN PAVING COURSE BEHIND PAYER. USE SUITABLE HAND TOOLS TO REMOVE EXCESS MATERIAL FORMING HIGH SPOTS. FILL DEPRESSIONS WITH HOT-MIX ASPHALT TO PREVENT SEGREGATION OF MIX. USE SUITABLE HAND TOOLS TO SMOOTH SURFACE.
4. JOINTS
I. CONSTRUCT JOINTS TO ENSURE A CONTINUOUS BOND BETWEEN ADJOINING PAVING SECTIONS. CONSTRUCT JOINTS FREE OF DEPRESSIONS, WITH SAME TEXTURE AND SMOOTHNESS AS OTHER SECTIONS OF HOT-MIX ASPHALT COURSE.
a. CLEAN CONTACT SURFACES AND APPLY TACK COAT TO JOINTS.
b. OFFSET LONGITUDINAL JOINTS, IN SUCCESSIVE COURSES, A MINIMUM OF 6 INCHES
c. OFFSET TRANSVERSE JOINTS, IN SUCCESSIVE COURSES, A MINIMUM OF 24 INCHES
d. CONSTRUCT TRANSVERSE JOINTS AT EACH POINT WHERE PAYER ENDS A DAY'S WORK AND RESUMES WORK AT A SUBSEQUENT TIME. CONSTRUCT THESE JOINTS USING EITHER "BULKHEAD" OR "PAPERED" METHOD ACCORDING TO AI MS-22, FOR BOTH "ENDING A LANE" AND "RESUMPTION OF PAVING OPERATIONS."
e. COMPACT JOINTS AS SOON AS HOT-MIX ASPHALT WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT.
f. COMPACT ASPHALT AT JOINTS TO A DENSITY WITHIN 2 PERCENT OF SPECIFIED COURSE DENSITY.
5. COMPACTION
I. GENERAL: BEGIN COMPACTION AS SOON AS PLACED HOT-MIX PAVING WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT. COMPACT HOT-MIX PAVING WITH HAND TAMPERERS OR WITH VIBRATORY-PLATE COMPACTORS IN AREAS INACCESSIBLE TO ROLLERS.
II. COMPLETE MIX TEMPERATURE COOLS TO 185 DEG F.
III. BREAKDOWN ROLLING: COMPLETE BREAKDOWN OR INITIAL ROLLING IMMEDIATELY AFTER ROLLING JOINTS AND OUTSIDE EDGE. EXAMINE SURFACE IMMEDIATELY AFTER BREAKDOWN ROLLING FOR INDICATED CROWN, GRADE, AND SMOOTHNESS. CORRECT LAYDOWN AND ROLLING OPERATIONS TO COMPLY WITH REQUIREMENTS.
III. INTERMEDIATE ROLLING: BEGIN INTERMEDIATE ROLLING IMMEDIATELY AFTER BREAKDOWN ROLLING WHILE HOT-MIX ASPHALT IS STILL HOT ENOUGH TO ACHIEVE SPECIFIED DENSITY. CONTINUE ROLLING UNTIL HOT-MIX ASPHALT COURSE HAS BEEN UNIFORMLY COMPACTED TO THE FOLLOWING DENSITY:
a. AVERAGE DENSITY: 98 PERCENT OF REFERENCE LABORATORY DENSITY ACCORDING TO ASTM D 6927 AND AASHTO T 246, BUT NOT LESS THAN 94 PERCENT OR GREATER THAN 100 PERCENT.
b. AVERAGE DENSITY: 92 PERCENT OF REFERENCE MAXIMUM THEORETICAL DENSITY ACCORDING TO ASTM D 2041, BUT NOT LESS THAN 90 PERCENT OR GREATER THAN 98 PERCENT.
IV. FINISH ROLLING: FINISH ROLL PAVED SURFACES TO REMOVE ROLLER MARKS WHILE HOT-MIX ASPHALT IS STILL WARM.
V. EDGE SHAPING: WHILE SURFACE IS BEING COMPACTED AND FINISHED, TRIM EDGES OF PAVEMENT TO PROPER ALIGNMENT. BEVEL EDGES WHILE ASPHALT IS STILL HOT. COMPACT THOROUGHLY.
VI. REPAIRS: REMOVE PAVED AREAS THAT ARE DEFECTIVE OR CONTAMINATED WITH FOREIGN MATERIALS AND REPLACE WITH FRESH, HOT-MIX ASPHALT. COMPACT BY ROLLING TO SPECIFIED DENSITY AND SURFACE SMOOTHNESS.
VII. PROTECTION: AFTER FINAL ROLLING, DO NOT PERMIT VEHICULAR TRAFFIC ON PAVEMENT UNTIL IT HAS COOLED AND HARDENED.
VIII. ERECT BARRICADES TO PROTECT PAVING FROM TRAFFIC UNTIL MIXTURE HAS COOLED ENOUGH NOT TO BECOME MARKED.
6. INSTALLATION TOLERANCES
I. PAVEMENT THICKNESS: COMPACT EACH COURSE TO PRODUCE THE THICKNESS INDICATED WITHIN THE FOLLOWING TOLERANCES:
a. BASE COURSE: PLUS OR MINUS 1/2 INCH
b. SURFACE COURSE: PLUS 1/4 INCH NO MINUS.
II. PAVEMENT SURFACE SMOOTHNESS: COMPACT EACH COURSE TO PRODUCE A SURFACE SMOOTHNESS WITHIN THE FOLLOWING TOLERANCES AS DETERMINED BY USING A 10-FOOT STRAIGHTEDGE APPLIED TRANSVERSELY OR LONGITUDINALLY TO PAVED AREAS:
a. BASE COURSE: 1/4 INCH
b. SURFACE COURSE: 1/8 INCH
c. CROWNED SURFACES: TEST WITH CROWNED TEMPLATE CENTERED AND AT RIGHT ANGLE TO CROWN. MAXIMUM ALLOWABLE VARIANCE FROM TEMPLATE IS 1/4 INCH.
7. FIELD QUALITY CONTROL
I. TESTING AGENCY: CONTRACTOR TO ENGAGE A QUALIFIED TESTING AGENCY TO PERFORM TESTS AND INSPECTIONS.
II. THICKNESS: IN-PLACE COMPACTED THICKNESS OF HOT-MIX ASPHALT COURSES WILL BE DETERMINED ACCORDING TO ASTM D 3549.
III. SURFACE SMOOTHNESS: FINISHED SURFACE OF EACH HOT-MIX ASPHALT COURSE WILL BE TESTED FOR COMPLIANCE WITH SMOOTHNESS TOLERANCES.
IV. IN-PLACE DENSITY: TESTING AGENCY WILL TAKE SAMPLES OF UNCOMPACTED PAVING MIXTURES AND COMPACTED PAVEMENT ACCORDING TO ASTM D 679 OR AASHTO T 168.
a. REFERENCE MAXIMUM THEORETICAL DENSITY WILL BE DETERMINED BY AVERAGING RESULTS FROM FOUR SAMPLES OF HOT-MIX ASPHALT-PAVING MIXTURE DELIVERED DAILY TO SITE, PREPARED ACCORDING TO ASTM D 2041, AND COMPACTED ACCORDING TO JOB-MIX SPECIFICATIONS.
b. IN-PLACE DENSITY OF COMPACTED PAVEMENT WILL BE DETERMINED BY TESTING CORE SAMPLES ACCORDING TO ASTM D 1188 OR ASTM D 2728.
V. ONE CORE SAMPLE WILL BE TAKEN FOR EVERY 1000 SQ. YD. OR LESS OF INSTALLED PAVEMENT, WITH NO FEWER THAN THREE CORES TAKEN.
VI. FIELD DENSITY OF IN-PLACE COMPACTED PAVEMENT MAY ALSO BE DETERMINED BY NUCLEAR METHOD ACCORDING TO ASTM D 2950 AND CORRELATED WITH ASTM D 1188 OR ASTM D 2728.
VII. REPLACE ANY COMPACTED HOT-MIX ASPHALT WHERE CORE TESTS WERE TAKEN.
VIII. REMOVE AND REPLACE OR INSTALL ADDITIONAL HOT-MIX ASPHALT WHERE TEST RESULTS OR MEASUREMENTS INDICATE IT DOES NOT COMPLY WITH SPECIFIED REQUIREMENTS.

CONCRETE PAVING:

- A. GENERAL
1. CONCRETE PAVING SECTION INCLUDES DRIVEWAYS, ROADWAYS, PARKING LOTS, CURBS AND GUTTERS, WALKS, AND CONCRETE APRONS.
2. ACTION SUBMITTALS
I. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
II. OTHER ACTION SUBMITTALS
a. DESIGN MIXTURES: FOR EACH CONCRETE PAVING MIXTURE. INCLUDE ALTERNATE DESIGN MIXTURES WHEN CHARACTERISTICS OF MATERIALS PROJECT CONDITIONS, WEATHER, TEST RESULTS, OR OTHER CIRCUMSTANCES WARRANT ADJUSTMENTS.
b. MATERIAL TEST REPORTS: FROM A QUALIFIED TESTING AGENCY IDENTIFYING AND INTERPRETING TEST RESULTS FOR COMPLIANCE OF THE FOLLOWING WITH REQUIREMENTS INDICATED, BASED ON COMPREHENSIVE TESTING OF CURRENT MATERIALS.
3. QUALITY ASSURANCE
I. READY-MIX-CONCRETE MANUFACTURER QUALIFICATIONS: A FIRM EXPERIENCED IN MANUFACTURING READY-MIXED CONCRETE PRODUCTS AND THAT COMPLIES WITH ASTM C 94/C 94M REQUIREMENTS FOR PRODUCTION FACILITIES AND EQUIPMENT.
II. ACI PUBLICATIONS: COMPLY WITH ACI 301 (ACI 301M) UNLESS OTHERWISE INDICATED.
III. HANDICAP STANDARDS: PROVIDE RAMPS INDICATED FOR HANDICAP ACCESS IN ACCORDANCE WITH ANSI A117 AND FEDERAL AMERICANS WITH DISABILITIES ACT (ADA).
B. PRODUCTS
1. STEEL REINFORCEMENT
I. RECYCLED CONTENT: POST CONSUMER RECYCLED CONTENT PLUS ONE-HALF OF PRECONSUMER RECYCLED CONTENT NOT LESS THAN 25 PERCENT.
II. PLAIN-STEEL WELDED WIRE REINFORCEMENT: ASTM A 185/A 185M, FABRICATED FROM AS-DRAWN STEEL WIRE INTO FLAT SHEETS.
III. DEFORMED-STEEL WELDED WIRE REINFORCEMENT: ASTM A 497/A 497M, FLAT SHEET.
IV. REINFORCING BARS: ASTM A 615/A 615M, GRADE 60 (GRADE 420) DEFORMED.
V. PLAIN-STEEL WIRE: ASTM A 82/A 82M, AS DRAWN.
VI. DEFORMED-STEEL WIRE: ASTM A 496/A 496M.
VII. DOWEL BARS: ASTM A 615/A 615M, GRADE 60 (GRADE 420) PLAIN-STEEL BARS, ZINC COATED (GALVANIZED) AFTER FABRICATION ACCORDING TO ASTM A 767/A 767M, CLASS I COATING. CUT BARS TRUE TO LENGTH WITH ENDS SQUARE AND FREE OF BURRS.
VIII. BAR SUPPORTS: CONCRETE CHAIRS, SPACERS, AND OTHER DEVICES FOR SPACING, SUPPORTING, AND FASTENING REINFORCEMENT, AND DOWELS IN PLACE, MANUFACTURE BAR SUPPORTS ACCORDING TO CRSI'S "MANUAL OF STANDARD PRACTICE" FROM STEEL WIRE, PLASTIC, OR PRECAST CONCRETE OF GREATER COMPRESSIVE STRENGTH THAN CONCRETE SPECIFIED.
2. CONCRETE MATERIALS
I. CEMENTITIOUS MATERIAL: USE THE FOLLOWING CEMENTITIOUS MATERIALS, OF SAME TYPE, BRAND, AND SOURCE THROUGHOUT PROJECT:
a. PORTLAND CEMENT: ASTM C 150, PORTLAND CEMENT TYPE I.
b. FLY ASH: ASTM C 618, CLASS C OR CLASS F.
c. GROUND GRANULATED BLAST-FURNACE SLAG: ASTM C 989, GRADE 100 OR 120.
II. NORMAL-WEIGHT AGGREGATES: ASTM C 33/UNIFORMLY GRADED, AND AS FOLLOWS:
a. COMBINED AGGREGATE GRADATION: WELL GRADED FROM COARSEST TO FINEST WITH NOT MORE THAN 18 PERCENT AND NOT LESS THAN 8 PERCENT RETAINED ON AN INDIVIDUAL SIEVE, EXPECT THAT LESS THAN 5 PERCENT MAY BE RETAINED ON THE 75-MICRON SIEVE AND ON NO. 50 SIEVE, AND LESS THAN 8 PERCENT MAY BE RETAINED ON SIEVES FINER THAN NO. 50.
b. USE CRUSHED LIMESTONE COARSE AGGREGATE FOR CONCRETE EXPOSED TO WEATHER.
c. WATER: POTABLE AND COMPLYING WITH ASTM C 94/C 94M.
III. AIR-ENTRAINING ADMIXTURE: ASTM C 260.
IV. CHEMICAL ADMIXTURES: IDENTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER ADMIXTURES AND TO CONTAIN NOT MORE THAN 0.1 PERCENT WATER-SOLUBLE CHLORIDE IONS BY MASS OF CEMENTITIOUS MATERIAL.
V. NOTE: WHERE CLASS A, B, OR C CONCRETE IS REFERENCE IN PLANS OR SPECIFICATIONS, THE CLASS IS AS DEFINED IN ACI 347-04.
3. CURING MATERIALS
I. ABSORPTIVE COVER: AASHTO M 182, CLASS 3, BURLAP CLOTH MADE FROM JUTE OR KENAF, WEIGHING APPROXIMATELY 1/32 TO 1/16 INCH (0.50 TO 0.625 MM) THICK.
II. MOISTURE-RETAINING COVER: ASTM J 71, POLYETHYLENE FILM OR WHITE BURLAP-POLYETHYLENE SHEET.
III. WATER: POTABLE.
IV. EVAPORATION RETARDER: WATERBORNE, MONOMOLECULAR, FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE.
V. CLEAR, WATERBORNE, MEMBRANE-FORMING CURING COMPOUND: ASTM C 309, TYPE I, CLASS B, DISSIPATING.
VI. WHITE, WATERBORNE, MEMBRANE-FORMING CURING COMPOUND: ASTM C 309, TYPE 2, CLASS B, DISSIPATING.
4. FIBER REINFORCEMENT
I. FIBER REINFORCEMENT: 100S VIRGIN HOMOPOLYMER POLYPROPYLENE MULTIFILAMENT FIBERS FOR SECONDARY REINFORCEMENT OF CONCRETE, ASTM C 116, TYPE III. SHALL CONTAIN NO REPROCESSED OLEFIN MATERIALS.
a. PRODUCTS SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
i. FIBERMESH 150; PROPEX CONCRETE SYSTEMS CORP., STEALTH FIBER MICRO REINFORCEMENT; SI CONCRETE SYSTEMS, OR APPROVED EQUAL.
5. RELATED MATERIALS
I. JOINT FILLERS: ASTM D 1751, ASPHALT-SATURATED CELLULOSIC FIBER OR ASTM D 1752, CORK OR SELF-EXPANDING CORK IN PREFORMED STRIPS.
II. PENETRATING ANTI-SPALLING SEALER: THE SEALER SHALL BE A SILANE WATER BEAD FORMING COMPOUND WHICH HAS A RED CHLORIDE-ION SCREEN AND A REPAIR FILLER. IT SHALL BE APPLIED TO SURFACES IN ACCORDANCE WITH NCHRP #244, TEST METHOD. IN ADDITION, THE SEALER-TREATED CONCRETE MUST EXHIBIT NO SCALING EXPOSED TO 120 CYCLES OF FREEZING-AND-THAWING IN ACCORDANCE WITH ASTM C 672.
a. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING: WEATHER WORKER HEAVY-DUTY WB (#-22 WB); DAYTON SUPERIOR CORP., "ENVROSEAL 20"; HYDROZO INCORP., "PENTANE WB"; L & M CONSTRUCTION CHEMICALS, INC.
6. CONCRETE MIXTURES
I. PREPARE DESIGN MIXTURES, PROPORTIONED ACCORDING TO ACI 301 (ACI 301M), WITH THE FOLLOWING PROPERTIES:
a. COMPRESSIVE STRENGTH (28 DAYS): 4000 PSI (27.6 MPa).
b. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO AT POINT OF PLACEMENT: 0.45.
c. SLUMP LIMIT: 5 INCHES (125 MM), PLUS OR MINUS 1 INCH (25 MM).
d. AIR CONTENT: 6.5 PERCENT PLUS OR MINUS 1.5 PERCENT.
II. CHEMICAL ADMIXTURES: USE ADMIXTURES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
7. CONCRETE MIXING
I. READY-MIXED CONCRETE: MEASURE, BATCH, AND MIX CONCRETE MATERIALS AND CONCRETE ACCORDING TO ASTM C 94/C 94M. FURNISH BATCH CERTIFICATES FOR EACH BATCH DISCHARGED AND USED IN THE WORK.
B. EXECUTION
1. EXAMINATION AND PREPARATION
I. PROOF-ROLL PREPARED SUBBASE SURFACE BELOW CONCRETE PAVING TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING.
II. REMOVE LOOSE MATERIAL FROM COMPACTED SUBBASE IMMEDIATELY BEFORE PLACING CONCRETE.
2. EDGE FORMS AND SCREED CONSTRUCTION
I. SET, BRACE, AND SECURE EDGE FORMS, BULKHEADS, AND INTERMEDIATE SCREED GUIDES TO REQUIRED LINES, GRADES, AND ELEVATIONS. INSTALL FORMS TO ALLOW CONTINUOUS PROGRESS OF WORK AND SO FORMS CAN REMAIN IN PLACE AT LEAST 24 HOURS AFTER CONCRETE PLACEMENT.
II. CLEAN FORMS AFTER EACH USE AND COAT WITH FORM-RELEASE AGENT TO ENSURE SEPARATION FROM CONCRETE WITHOUT DAMAGE.
3. STEEL REINFORCEMENT
I. GENERAL: COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATING, PLACING, AND SUPPORTING REINFORCEMENT.
4. JOINTS
I. GENERAL: FORM CONSTRUCTION, ISOLATION, AND CONTRACTION JOINTS AND TOOL EDGES TRUE TO LINE, WITH FACES PERPENDICULAR TO SURFACE PLANE OF CONCRETE. CONSTRUCT TRANSVERSE JOINTS AT RIGHT ANGLES TO CENTERLINE UNLESS OTHERWISE INDICATED.
II. CONSTRUCTION JOINTS: SET CONSTRUCTION JOINTS AT SIDE AND END TERMINATIONS OF PAVING AND AT LOCATIONS WHERE PAVING OPERATIONS ARE STOPPED FOR MORE THAN ONE-HALF HOUR UNLESS PAVING TERMINATES AT ISOLATION JOINTS.
III. ISOLATION JOINTS: FORM ISOLATION JOINTS OF PREFORMED JOINT-FILLER STRIPS ABUTTING CONCRETE CURBS, CATCH BASINS, MANHOLES, INLETS, STRUCTURES, OTHER FIXED OBJECTS, AND WHERE INDICATED.
IV. CONTRACTION JOINTS: FORM WEAKENED-PLANE CONTRACTION JOINTS, SECTIONING CONCRETE INTO AREAS AS INDICATED. CONSTRUCT CONTRACTION JOINTS FOR A DEPTH EQUAL TO AT LEAST ONE-FOURTH OF THE CONCRETE THICKNESS.
V. EDGING: AFTER INITIAL FLOATING, TOOL EDGES OF PAVING, CURBS, AND JOINTS IN CONCRETE WITH AN EDGING TOOL TO A 1/4-INCH (6-MM) RADIUS. REPEAT TOOLING OF EDGES AFTER APPLYING SURFACE FINISHES. ELIMINATE EDGING-TOOL MARKS ON CONCRETE SURFACES.
5. CONCRETE PLACEMENT
I. MOISTEN SUBBASE TO PROVIDE A UNIFORM DAMPENED CONDITION AT TIME CONCRETE IS PLACED. COMPLY WITH ACI 301 (ACI 301M) REQUIREMENTS FOR MEASURING, MIXING, TRANSPORTING, PLACING, AND CONSOLIDATING CONCRETE.
II. DEPOSIT AND SPREAD CONCRETE IN A CONTINUOUS OPERATION BETWEEN TRANSVERSE JOINTS. DO NOT PUSH OR DRAG CONCRETE INTO PLACE OR USE VIBRATORS TO MOVE CONCRETE INTO PLACE.
III. SCREED PAVING SURFACE WITH A STRAIGHTEDGE AND STRIKE OFF.
IV. CONTINUE INITIAL FLOATING OR BARBERS TO IMPART AN OPEN-TEXTURED AND UNIFORM SURFACE PLANE BEFORE EXCESS MOISTURE OR BLEED WATER APPEARS ON THE SURFACE. DO NOT FURTHER DISTURB CONCRETE SURFACES BEFORE BEGINNING FINISHING OPERATIONS OR SPREADING SURFACE TREATMENTS.

- 7. CONCRETE PROTECTION AND CURING
I. GENERAL: PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES.
II. COMPLY WITH ACI 306.1 FOR COLD-WEATHER PROTECTION.
III. EVAPORATION RETARDER: APPLY EVAPORATION RETARDER TO CONCRETE SURFACES IF HOT, DRY, OR WINDY CONDITIONS CAUSE MOISTURE LOSS APPROXING 0.2 LB/SQ. FT. X H (1 KG/SQ. M X H) BEFORE AND DURING FINISHING OPERATIONS. APPLY ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AFTER PLACING, SCREEDING, AND BULL FLOATING OR DRYING CONCRETE BUT BEFORE FLOAT FINISHING.
IV. BEGUN CURING AFTER FINISHING CONCRETE BUT NOT BEFORE FREE WATER HAS DISAPPEARED FROM CONCRETE SURFACE.
V. CURING METHODS: CURE CONCRETE BY MOISTURE CURING, MOISTURE-RETAINING-COVER CURING, CURING COMPOUND, OR A COMBINATION OF THESE METHODS.
VI. PENETRATING, ANTI-SPALLING SEALER TREATMENT: APPLY COMPOUNDS TO CLEAN, DRY CONCRETE SURFACES FREE OF OIL, DIRT, AND OTHER FOREIGN MATERIAL ACCORDING TO MANUFACTURER'S SPECIFICATIONS. SEALER TO BE APPLIED TO ALL EXTERIOR CONCRETE PAVING AND CURBS AFTER CONCRETE HAS CURED 28 DAYS.
8. PAVING TOLERANCES
I. COMPLY WITH TOLERANCES IN ACI 117 AND AS FOLLOWS:
a. ELEVATION: 3/4 INCH (19 MM).
b. THICKNESS: PLUS 3/8 INCH (10 MM), MINUS 1/4 INCH (6 MM).
c. SURFACE: GAP BELOW 10-FOOT- (3-M-) LONG, UNLEVELLED STRAIGHTEDGE NOT TO EXCEED 1/2 INCH (13 MM).
d. JOINT SPACING: 3 INCHES (75 MM).
e. CONTRACTION JOINT DEPTH: PLUS 1/4 INCH (6 MM), NO MINUS.
f. JOINT WIDTH: PLUS 1/8 INCH (3 MM), NO MINUS.
II. APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE MARKINGS OF DIMENSIONS INDICATED WITH UNIFORM, STRAIGHT EDGES. APPLY AT MANUFACTURER'S RECOMMENDED RATES TO PROVIDE A MINIMUM WET FILM THICKNESS OF 15 MILS (0.4 MM).
9. REPAIRS AND PROTECTION
I. REMOVE AND REPLACE CONCRETE PAVING THAT IS BROKEN, DAMAGED, OR DEFECTIVE OR THAT DOES NOT COMPLY WITH REQUIREMENTS FOR THIS SECTION. REMOVE WORK IN FULL SECTION FROM JOINT TO JOINT UNLESS OTHERWISE APPROVED BY ENGINEER.
II. PROTECT CONCRETE PAVING FROM DAMAGE. EXCLUDE TRAFFIC FROM PAVING FOR AT LEAST 14 DAYS AFTER PLACEMENT, WHEN CONSTRUCTION TRAFFIC IS PERMITTED, MAINTAIN PAVING AS CLEAN AS POSSIBLE BY REMOVING SURFACE STAINS AND SPILLAGE OF MATERIALS AS THEY OCCUR. MAINTAIN CONCRETE PAVING FREE OF STAINS, DISCOLORATION, DIRT, AND OTHER FOREIGN MATERIAL. SWEEP PAVING NOT MORE THAN TWO DAYS BEFORE DATE SCHEDULED FOR SUBSTANTIAL COMPLETION INSPECTIONS.



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BRIDGEWATER POINTE SHOPPES

146th Street and Gray Road Westfield, IN



CERTIFIED BY

ISSUANCE INDEX
DATE: 07-31-2015
PROJECT PHASE: ----

REVISION SCHEDULE
NO. DESCRIPTION DATE

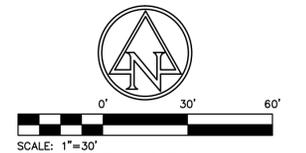
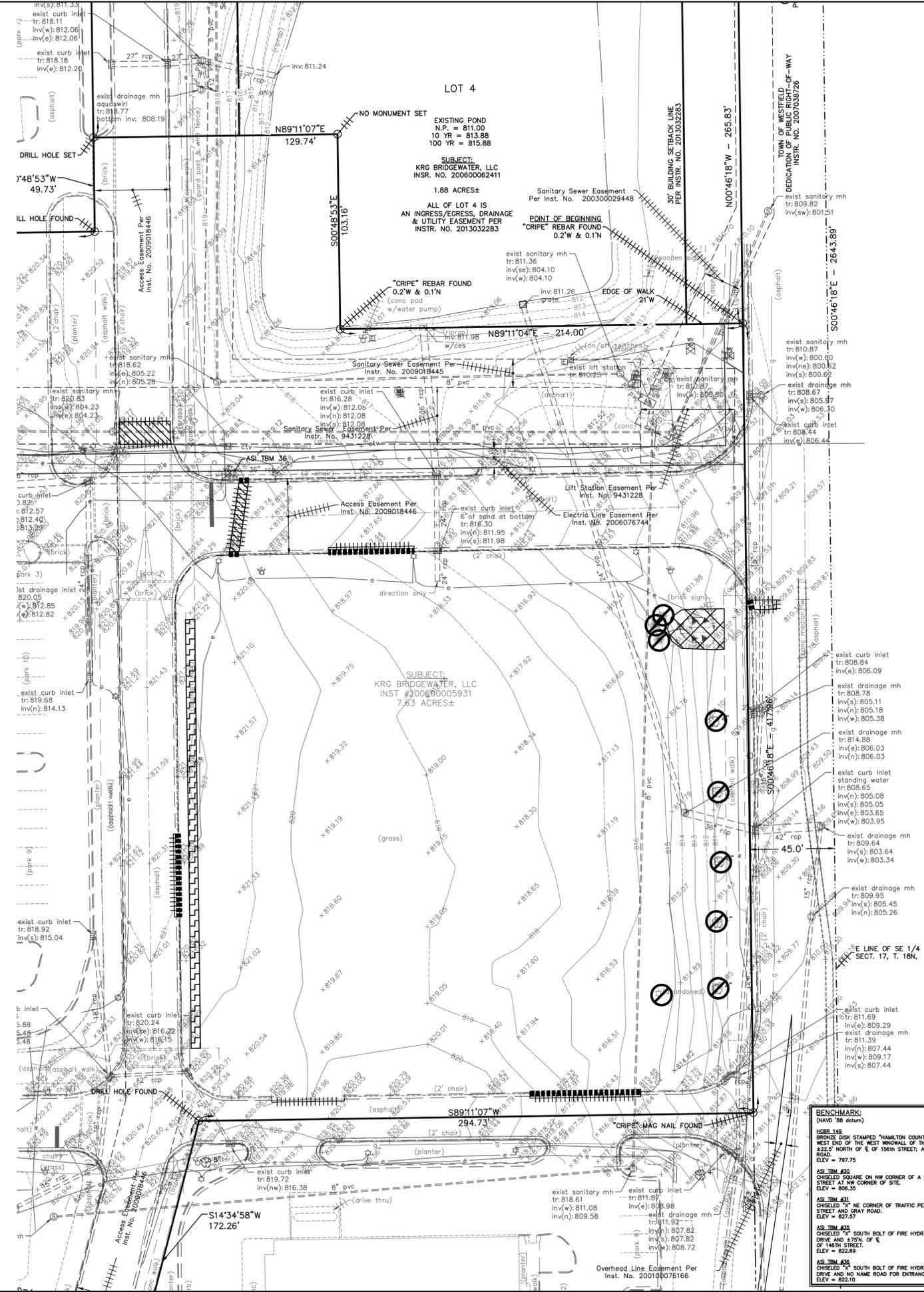
Project Number 2015.01267

SPECIFICATIONS

C003

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EDIT BY: BREAGER

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- EXISTING LEGEND**
- AIR CONDITIONER
 - BEEHIVE INLET
 - CURB INLET
 - CLEAN OUT
 - DRAINAGE MANHOLE
 - ELECTRIC METER BOX
 - ELECTRIC CROSS BOX
 - FLAG POLE
 - FIRE HYDRANT
 - FIRE VALVE SHUT OFF
 - GROUND LIGHT
 - GAS METER
 - GAS MARKER SIGN
 - GUY WIRE
 - HOSE BIB
 - INLET
 - LID
 - LIGHT POLE
 - MAILBOX
 - MANHOLE
 - POST
 - POWER POLE
 - SPRINKLER CONTROL VALVE
 - SIGN
 - SANITARY MANHOLE
 - STAND PIPE
 - TELEPHONE HANDHOLE
 - TELEPHONE MANHOLE
 - TELEPHONE MARKER SIGN
 - TELEPHONE PEDESTAL
 - TRANSFORMER
 - TRAFFIC POLE
 - TELEPHONE CROSS BOX
 - VENT
 - WELL
 - WATER VALVE
 - CONCRETE END SECTION
 - OVERHEAD ELECTRIC LINE
 - OVERHEAD TELEPHONE LINE
 - REINFORCED CONCRETE PIPE
 - REBAR SET = 5/8" DIA. REBAR
 - W/CAP STAMPED
 - STRUCTUREPOINT - 0094" SET

- DEMOLITION LEGEND**
- OBJECTS TO BE ADJUSTED TO PROPOSED GRADE
 - EXISTING CONCRETE TO BE REMOVED
 - EXISTING ASPHALT TO BE REMOVED
 - OBJECT TO BE REMOVED
 - OBJECT TO BE RELOCATED
 - CONCRETE CURB & GUTTER TO BE REMOVED
 - PAVEMENT TO BE SAWCUT

LEGAL DESCRIPTION

Part of the Southeast Quarter of Section 17, Township 18 North, Range 4 East of the Second Principle Meridian, Hamilton County, Indiana, more particularly described as follows:

Commencing at the northeast corner of said Southeast Quarter; thence South 00 degrees 46 minutes 18 seconds East (basis of bearings per Instrument Number 20060005931, on file in the Office of the Recorder of Hamilton County, Indiana) 1,249.15 feet along the east line of said Southeast Quarter to the northeast corner of the 8,000-acre parcel conveyed in Instrument Number 2006062411, on file in the Office of said Recorder; thence South 89 degrees 46 minutes 53 seconds West 45.00 feet along the north line of said 8,000-acre parcel to the west right-of-way line of Gray Road as described in Instrument Number 2007038726, on file in the Office of said Recorder; thence South 00 degrees 46 minutes 18 seconds East 585.64 feet along said west right-of-way line to the southeast corner of Lot 4 in Bridgewater Marketplace, per plat thereof, recorded as Instrument Number 2013032283 in the Office of said Recorder; being the POINT OF BEGINNING, thence continuing South 00 degrees 46 minutes 18 seconds East 417.86 feet along said west right-of-way line to the north line of the parcel conveyed to Gray Road Property LLC in Instrument Number 2006005203, on file in the Office of said Recorder; the following three (3) courses are along the north and west lines thereof; 1)thence South 89 degrees 11 minutes 07 seconds West 294.73 feet; 2)thence South 14 degrees 34 minutes 58 seconds West 172.26 feet; 3)thence South 00 degrees 48 minutes 53 seconds East 163.72 feet to the north right-of-way line of 146th Street as described in said Instrument Number 2007038726; thence South 89 degrees 40 minutes 59 seconds West 113.86 feet along said north right-of-way line to the southeast corner of the parcel conveyed to ACV Livermore, LLC in Instrument Number 2008043004, on file in the Office of said Recorder; the following four (4) courses are along the east and north lines thereof; 1)thence northeasterly 57.84 feet along a non-tangent curve to the left having a radius of 91.50 feet and subtended by a long chord having a bearing of North 32 degrees 37 minutes 55 seconds East and a length of 56.89 feet; 2)thence North 13 degrees 23 minutes 30 seconds East 96.21 feet; 3)thence North 14 degrees 34 minutes 58 seconds East 92.72 feet; 4)thence South 89 degrees 11 minutes 07 seconds West 242.35 feet to the west line of the parcel conveyed to KRG Bridgewater, LLC in Instrument Number 20060005931, on file in the Office of said Recorder; thence North 00 degrees 48 minutes 53 seconds West 570.24 feet along said west line to the southwest corner of the parcel conveyed to BD Schools Real Estate, LLC in Instrument Number 2009018447, the following two (2) courses are along the south and east lines thereof; 1)thence North 89 degrees 11 minutes 11 seconds East 273.77 feet; 2)thence North 00 degrees 48 minutes 53 seconds West 49.73 feet to a southwest corner of said Lot 4, the following three (3) courses are along the south and west lines thereof; 1)thence North 89 degrees 11 minutes 07 seconds East 129.74 feet; 2)thence South 00 degrees 48 minutes 53 seconds East 103.16 feet; 3)thence North 89 degrees 11 minutes 04 seconds East 214.00 feet to the POINT OF BEGINNING. Containing 7.63 acres, more or less.

AND

Lots 1, 2 and 4 of Bridgewater Marketplace, per plat thereof, recorded as Instrument Number 2013032283 in the Office of said Recorder.

- GENERAL NOTES:**
1. CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
 2. CONTRACTOR TO VERIFY LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION. CONTACT ENGINEER IF VARIATION EXISTS.
 3. SEE SHEET C002 GENERAL NOTES FOR MORE INFORMATION.

CAUTION !!

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

CALL TOLL FREE
"811" OR 1-800-382-5544
- INDIANA UNDERGROUND -



**BRIDGEWATER
POINTE SHOPPES**

**146th Street and
Gray Road
Westfield, IN**



CERTIFIED BY

ISSUANCE INDEX

DATE:	07-31-2015
PROJECT PHASE:	----

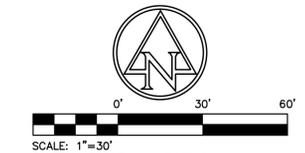
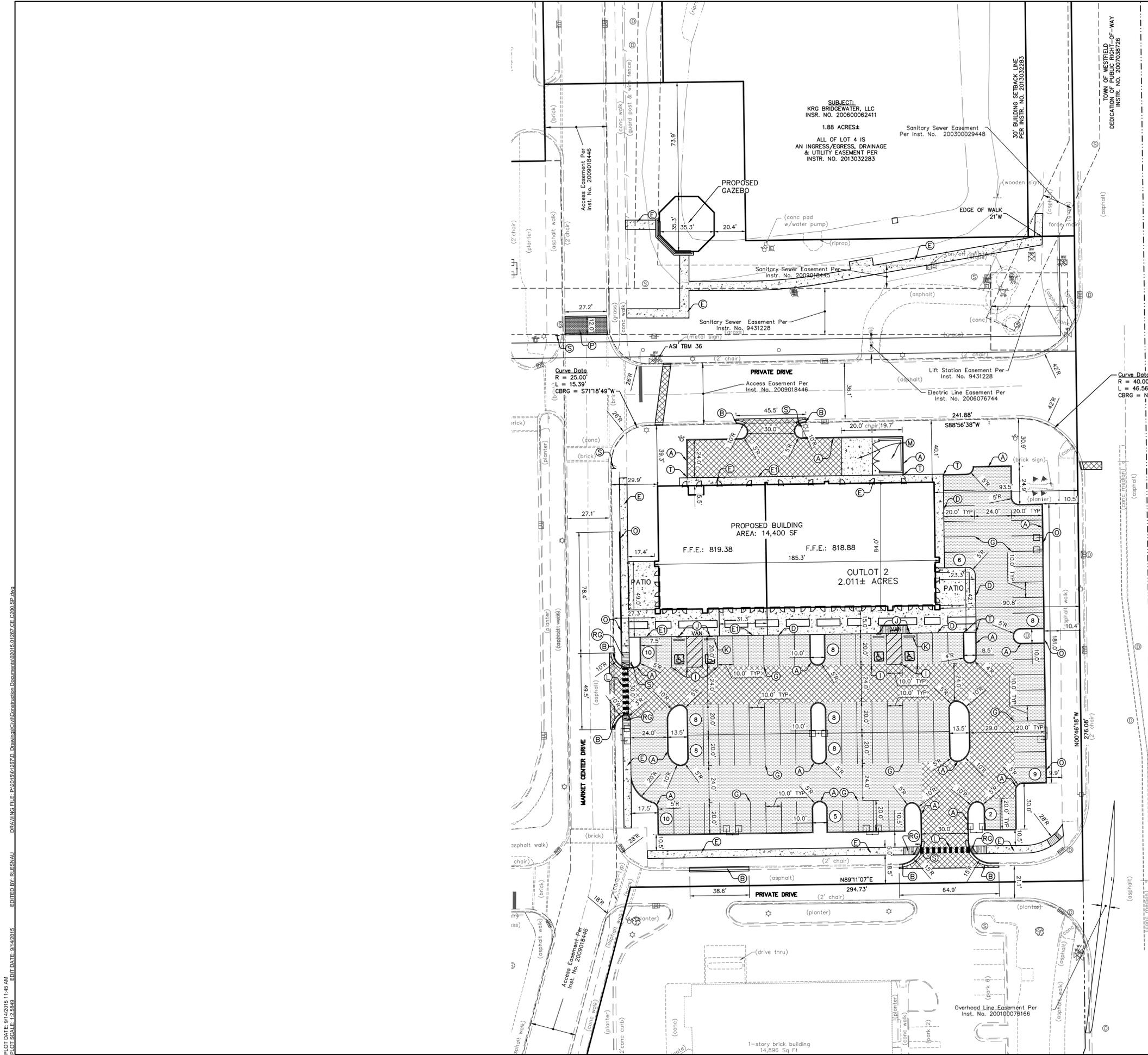
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

Project Number 2015.01267

**EXISTING
TOPOGRAPHY -
DEMOLITION PLAN
C100**

PLOT DATE: 9/14/2015 11:46 AM
 PLOT SCALE: 1/4"=8'-0"
 EDIT DATE: 9/14/2015
 EDITOR: R. ESNAU
 DRAWING FILE: P:\2015\01267\0 - Drawings\Civil\Construction Documents\2015.01267_CE_C200.SP.dwg
 TOWN OF WESTFIELD PUBLIC RIGHT-OF-WAY INSTR. NO. 2007038726



- EXISTING LEGEND**
- AIR CONDITIONER
 - BEEHIVE INLET
 - CURB INLET
 - CLEAN OUT
 - DRAINAGE MANHOLE
 - ELECTRIC METER BOX
 - ELECTRIC CROSS BOX
 - FLAG POLE
 - FIRE HYDRANT
 - FIRE VALVE SHUT OFF
 - GROUND LIGHT
 - GAS METER
 - GAS MARKER SIGN
 - GUY WIRE
 - HOSE BIB
 - INLET
 - LID
 - LIGHT POLE
 - MAILBOX
 - MANHOLE
 - POST
 - POWER POLE
 - SPRINKLER CONTROL VALVE
 - SIGN
 - SANITARY MANHOLE
 - STAND PIPE
 - TELEPHONE HANDHOLE
 - TELEPHONE MANHOLE
 - TELEPHONE MARKER SIGN
 - TELEPHONE PEDESTAL
 - TRANSFORMER
 - TRAFFIC POLE
 - TELEPHONE CROSS BOX
 - VENT
 - WELL
 - WATER METER
 - WATER VALVE
 - CONCRETE END SECTION
 - OVERHEAD ELECTRIC LINE
 - OVERHEAD TELEPHONE LINE
 - REINFORCED CONCRETE PIPE
 - REBAR SET = 5/8" DIA. REBAR
 - W/CAP STAMPED
 - *STRUCTUREPOINT - 0094" SET

- PROPOSED SITE LEGEND**
- LIGHT DUTY PAVEMENT
 - HEAVY DUTY PAVEMENT
 - CONCRETE

- PARKING ROW COUNT
- 6" STRAIGHT CONCRETE CURB
- 2' CONCRETE CURB AND GUTTER
- LIP GUTTER WITH UNDERDRAIN
- COMBINED WALK & CURB
- CONCRETE SIDEWALK
- CONCRETE SIDEWALK FLUSH WITH ASPHALT
- 6" CONCRETE PIPE BOLLARD
- 4" SOLID WHITE, PAINT LINE
- 4" SOLID WHITE, THERMOPLASTIC LINE
- 24" STOP BAR, WHITE, PAINT LINE
- 4" SOLID BLUE, PAINT LINE (A.D.A. SPACE)
- ADA PARKING SIGN (VAN ACCESSIBLE AS NOTED)
- CONCRETE WHEEL STOP
- 24" WHITE, THERMOPLASTIC, PEDESTRIAN CROSSWALK
- DUMPSTER PAD
- BICYCLE RACKS
- CURB WALL
- BRICK PEDESTRIAN CROSSWALK
- RAMP (GENERAL)
- A.D.A. RAMP (TYPE "H")
- A.D.A. RAMP (TYPE "C")
- A.D.A. RAMP (TYPE "G")
- STOP SIGN
- CURB TAPER
- HANDICAP ACCESSIBLE PARKING SPACE
- DIRECTIONAL ARROW, WHITE, THERMOPLASTIC
- LIGHT POLE

RETAIL SITE PARKING ANALYSIS	
TOTAL S.F. =	14,000 SF
REQUIRED RATIO =	3.5 SPACES PER 1,000 SF
TOTAL SPACES REQUIRED =	51
STANDARD PARKING (10'x20')	86
HANDICAP PARKING PROVIDED (INCLUDES 8 VAN ACCESSIBLE)	4
TOTAL PROPOSED PARKING	90

- GENERAL NOTES:**
- CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
 - CONTRACTOR TO VERIFY LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION. CONTACT ENGINEER IF VARIATION EXISTS.
 - SEE SHEET C002 GENERAL NOTES FOR MORE INFORMATION.

CAUTION !!
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CALL TOLL FREE
 "811" OR 1-800-382-5544
 - INDIANA UNDERGROUND -



BRIDGEWATER POINTE SHOPPES

146th Street and Gray Road Westfield, IN



CERTIFIED BY

ISSUANCE INDEX	
DATE:	07-31-2015
PROJECT PHASE:	----

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 2015.01267

SITE PLAN
C200

BRIDGEWATER POINTE SHOPPES

146th Street and Gray Road
 Westfield, IN

**APPROVAL PENDING
 NOT FOR CONSTRUCTION**

CERTIFIED BY

ISSUANCE INDEX

DATE:
 07-31-2015

PROJECT PHASE:

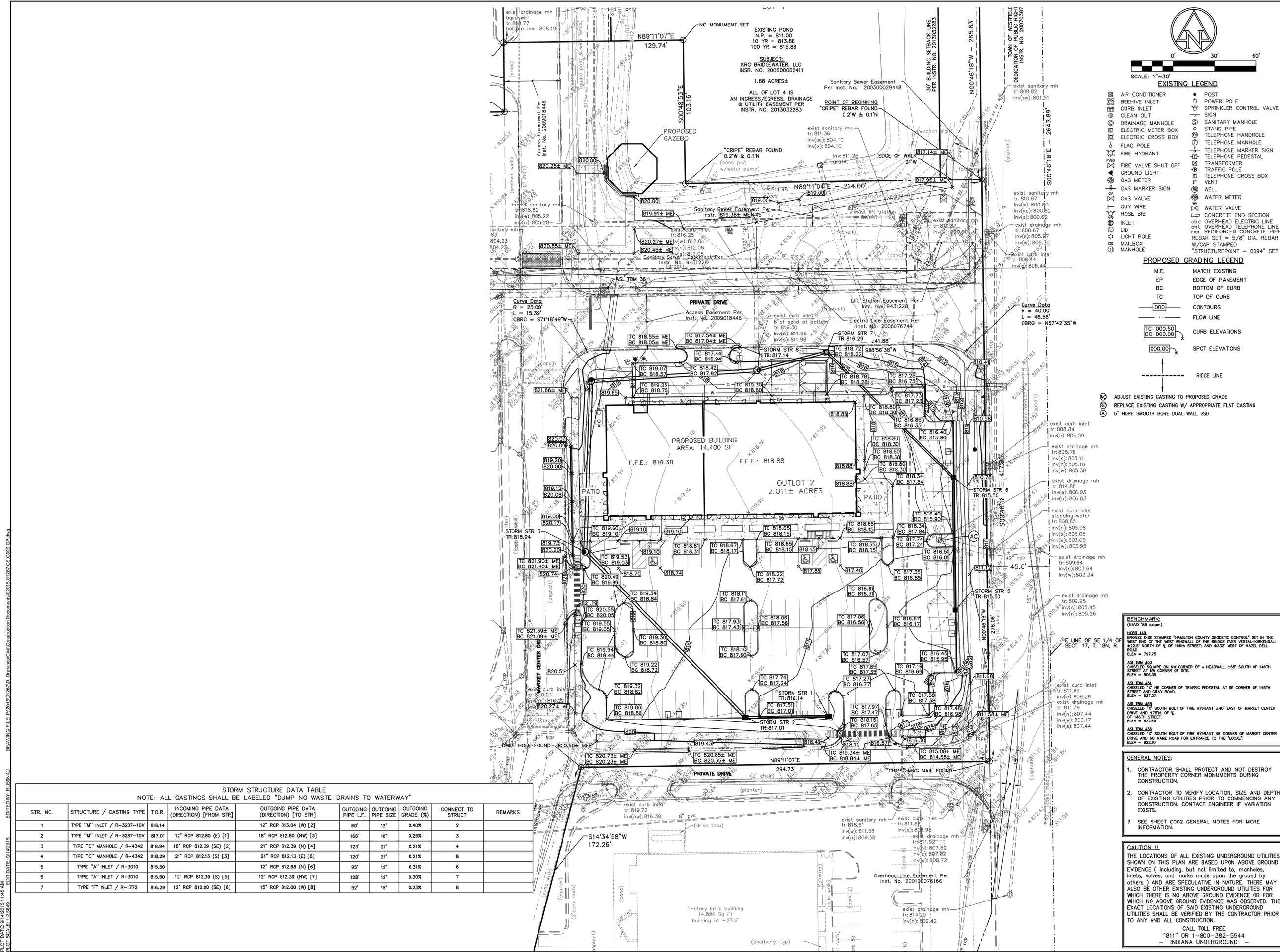
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

Project Number 2015.01267

GRADING PLAN

C300



EXISTING LEGEND

- AIR CONDITIONER
- BEEHIVE INLET
- CURB INLET
- CLEAN OUT
- DRAINAGE MANHOLE
- ELECTRIC METER BOX
- ELECTRIC CROSS BOX
- FLAG POLE
- FIRE HYDRANT
- FIRE VALVE SHUT OFF
- GROUND LIGHT
- GAS METER
- GAS MARKER SIGN
- GAS VALVE
- GUY WIRE
- HOSE BIB
- INLET
- LID
- LIGHT POLE
- MAILBOX
- MANHOLE
- POST
- POWER POLE
- SPRINKLER CONTROL VALVE
- SIGN
- SANITARY MANHOLE
- STAND PIPE
- TELEPHONE HANDHOLE
- TELEPHONE MANHOLE
- TELEPHONE MARKER SIGN
- TELEPHONE PEDESTAL
- TRANSFORMER
- TRAFFIC POLE
- TELEPHONE CROSS BOX
- VENT
- WELL
- WATER METER
- WATER VALVE
- CONCRETE END SECTION
- OVERHEAD ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- REINFORCED CONCRETE PIPE
- REBAR SET = 5/8" DIA. REBAR
- W/CAP STAMPED
- "STRUCTUREPOINT - 0094" SET

PROPOSED GRADING LEGEND

- M.E. MATCH EXISTING
- EP EDGE OF PAVEMENT
- BC BOTTOM OF CURB
- TC TOP OF CURB
- CONTOURS
- FLOW LINE
- CURB ELEVATIONS
- SPOT ELEVATIONS
- RIDGE LINE

ADJUST EXISTING CASTING TO PROPOSED GRADE
 REPLACE EXISTING CASTING W/ APPROPRIATE FLAT CASTING
 6" HDPE SMOOTH BORE DUAL WALL SSD

STORM STRUCTURE DATA TABLE
 NOTE: ALL CASTINGS SHALL BE LABELED "DUMP NO WASTE-DRAINS TO WATERWAY"

STR. NO.	STRUCTURE / CASTING TYPE	T.O.R.	INCOMING PIPE DATA (DIRECTION) [FROM STR]	OUTGOING PIPE DATA (DIRECTION) [TO STR]	OUTGOING PIPE L.F.	OUTGOING PIPE SIZE	OUTGOING GRADE (%)	CONNECT TO STRUCT	REMARKS
1	TYPE "M" INLET / R-3287-10V	816.14	12" RCP 812.80 (E) [1]	12" RCP 813.04 (W) [2]	60'	12"	0.40%	2	
2	TYPE "M" INLET / R-3287-10V	817.01	12" RCP 812.80 (NW) [3]	18" RCP 812.80 (NW) [3]	166'	18"	0.25%	3	
3	TYPE "C" MANHOLE / R-4342	818.94	18" RCP 812.39 (SE) [2]	21" RCP 812.39 (N) [4]	123'	21"	0.21%	4	
4	TYPE "C" MANHOLE / R-4342	818.29	21" RCP 812.13 (S) [3]	21" RCP 812.13 (E) [8]	120'	21"	0.21%	8	
5	TYPE "A" INLET / R-3010	815.50	12" RCP 812.68 (N) [6]	12" RCP 812.68 (N) [6]	95'	12"	0.31%	6	
6	TYPE "A" INLET / R-3010	815.50	12" RCP 812.39 (S) [5]	12" RCP 812.39 (NW) [7]	128'	12"	0.30%	7	
7	TYPE "F" INLET / R-1772	816.29	12" RCP 812.00 (SE) [6]	15" RCP 812.00 (W) [8]	52'	15"	0.23%	8	

BENCHMARK:
 (NAVD 88 datum)
 8289-149
 BRONZE DISK STAMPED "HAMILTON COUNTY GEODETIC CONTROL" SET IN THE WEST END OF THE WEST ENDWALL OF THE BRIDGE OVER WESTAL-HERRINGDALE; 222.5' NORTH OF E OF 156th STREET; AND 8332' WEST OF HAZEL DELL ROAD.
 ELEV = 797.75
 AS-TRM 430
 CHISELED SQUARE ON NW CORNER OF A HEADWALL ±65' SOUTH OF 146TH STREET AT NW CORNER OF SITE.
 ELEV = 806.35
 AS-TRM 431
 CHISELED "X" NE CORNER OF TRAFFIC PEDESTAL AT SE CORNER OF 146TH STREET AND GRAY ROAD.
 ELEV = 807.87
 AS-TRM 435
 CHISELED "X" SOUTH FOOT OF FIRE HYDRANT ±40' EAST OF MARKET CENTER DRIVE AND ±75% OF E OF 146TH STREET.
 ELEV = 822.69
 AS-TRM 436
 CHISELED "X" SOUTH FOOT OF FIRE HYDRANT NE CORNER OF MARKET CENTER DRIVE AND NO NAME ROAD FOR ENTRANCE TO THE "LOCAL".
 ELEV = 822.19

GENERAL NOTES:

- CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
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- SEE SHEET C002 GENERAL NOTES FOR MORE INFORMATION.

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 CALL TOLL FREE
 "811" OR 1-800-382-5544
 - INDIANA UNDERGROUND -

PLOT DATE: 9/4/2015 11:46 AM
 PLOT SCALE: 1:3000
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 EDITED BY: R. ESNAU
 DATE: 9/2/2015

BRIDGEWATER
POINTE SHOPPES

146th Street and
Gray Road
Westfield, IN

APPROVAL PENDING
NOT FOR CONSTRUCTION

CERTIFIED BY

ISSUANCE INDEX

DATE:
07-31-2015
PROJECT PHASE:

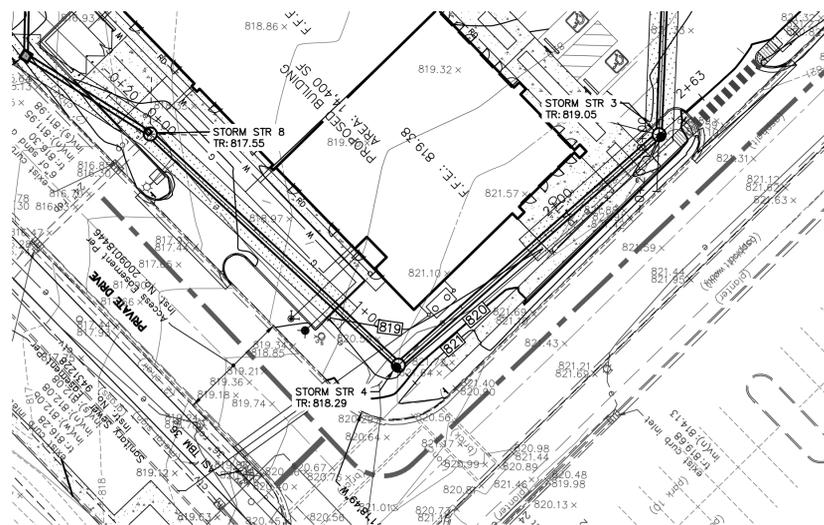
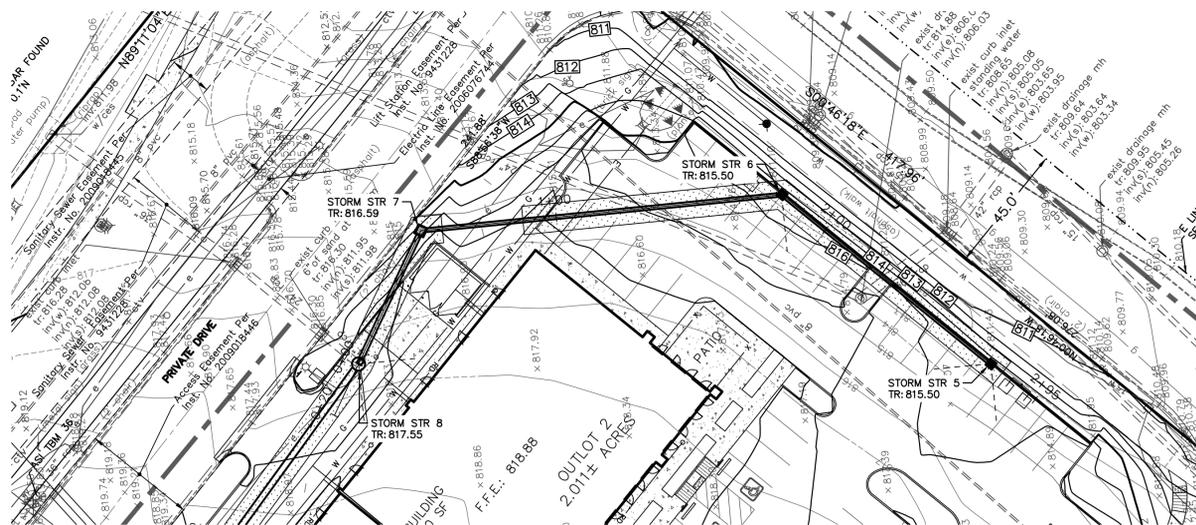
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

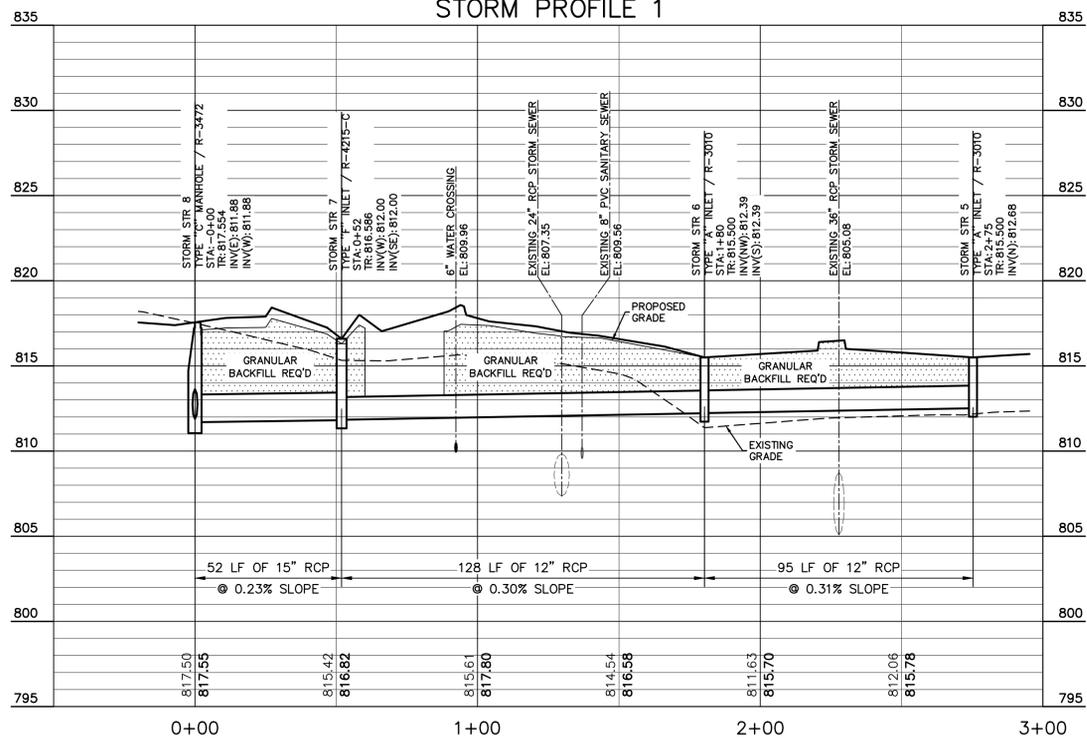
Project Number 2015.01267

STORM SEWER PLAN
AND PROFILES

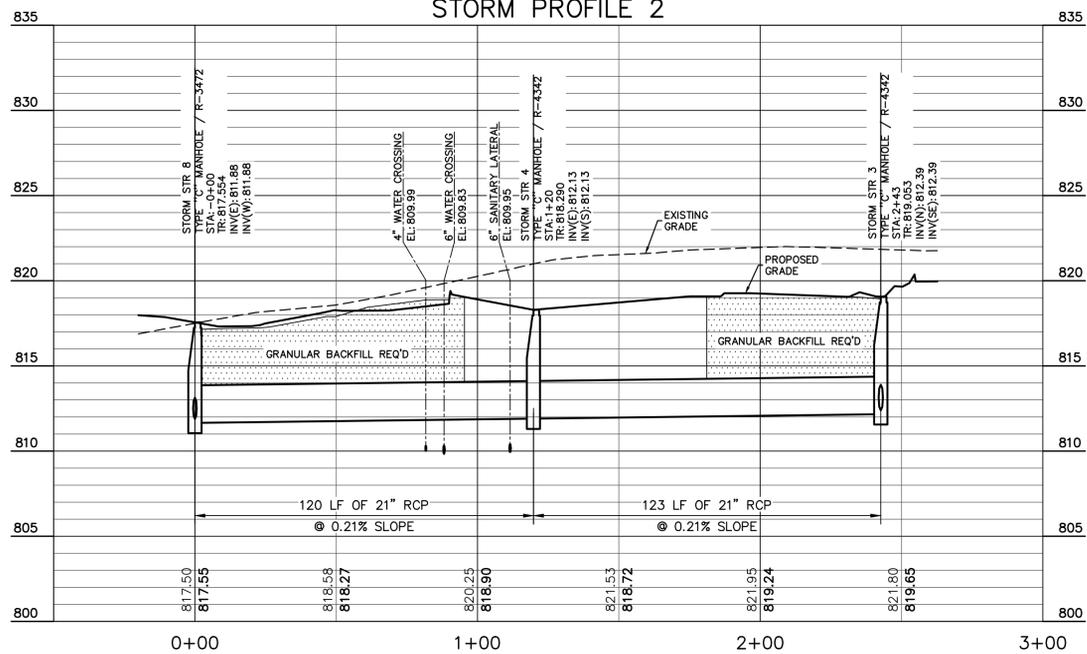
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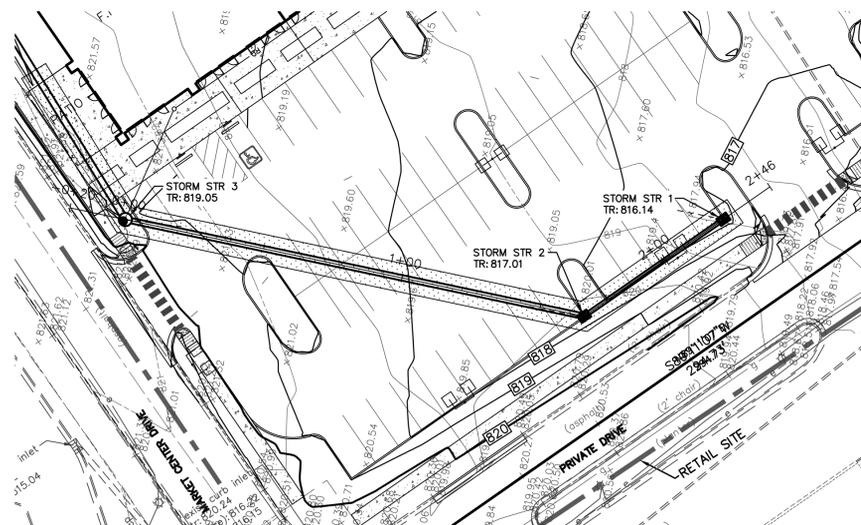
STORM PROFILE 1



STORM PROFILE 2



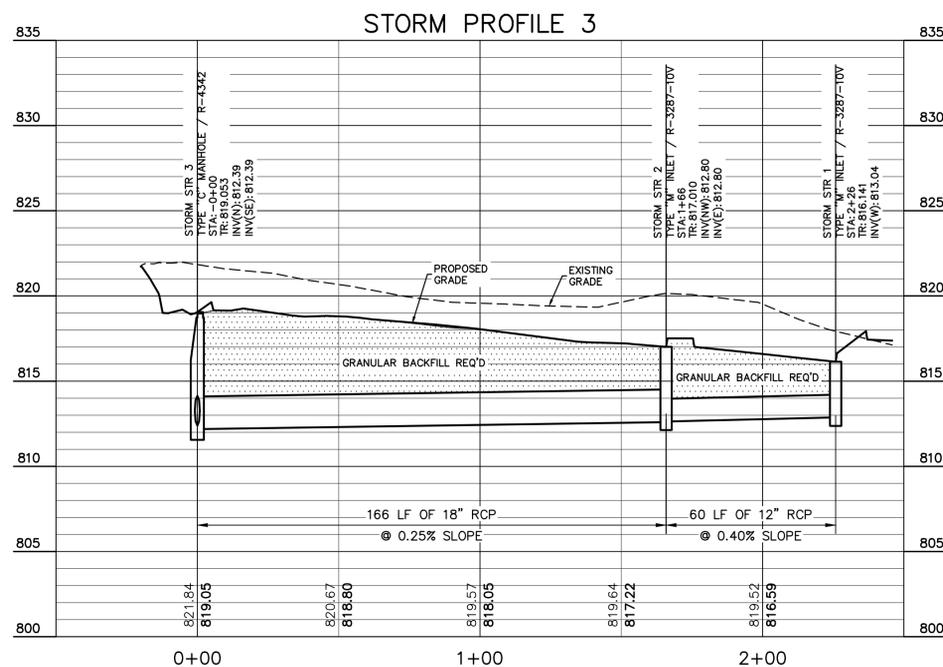
GRANULAR BACKFILL REQUIRED



SCALE: HORIZ. 1"=30'
VERT. 1"=5'

STORM STRUCTURE DATA TABLE
NOTE: ALL CASTINGS SHALL BE LABELED "DUMP NO WASTE-DRAINS TO WATERWAY"

STR. NO.	STRUCTURE / CASTING TYPE	T.O.R.	INCOMING PIPE DATA (DIRECTION) [FROM STR]	OUTGOING PIPE DATA (DIRECTION) [TO STR]	OUTGOING PIPE L.F.	OUTGOING PIPE SIZE	OUTGOING GRADE (%)	CONNECT TO STRUCT	REMARKS
1	TYPE "M" INLET / R-3287-10V	816.14		12" RCP 813.04 (W) [2]	60'	12"	0.40%	2	
2	TYPE "M" INLET / R-3287-10V	817.01	12" RCP 812.80 (E) [1]	18" RCP 812.80 (NW) [3]	166'	18"	0.25%	3	
3	TYPE "C" MANHOLE / R-4342	819.05	18" RCP 812.39 (SE) [2]	21" RCP 812.39 (N) [4]	123'	21"	0.21%	4	
4	TYPE "C" MANHOLE / R-4342	818.29	21" RCP 812.13 (S) [3]	21" RCP 812.13 (E) [8]	120'	21"	0.21%	8	
5	TYPE "A" INLET / R-3010	815.50		12" RCP 812.68 (N) [6]	95'	12"	0.31%	6	
6	TYPE "A" INLET / R-3010	815.50	12" RCP 812.39 (S) [5]	12" RCP 812.39 (NW) [7]	128'	12"	0.30%	7	
7	TYPE "F" INLET / R-1772	816.59	12" RCP 812.00 (SE) [6]					8	
8	TYPE "C" MANHOLE / R-3472	817.55	15" RCP 811.88 (E) [7] 21" RCP 811.88 (W) [4]						



BRIDGEWATER
POINTE SHOPPES

146th Street and
Gray Road
Westfield, IN



CERTIFIED BY

ISSUANCE INDEX

DATE:	07-31-2015
PROJECT PHASE:	----

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

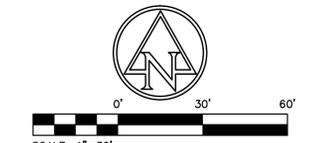
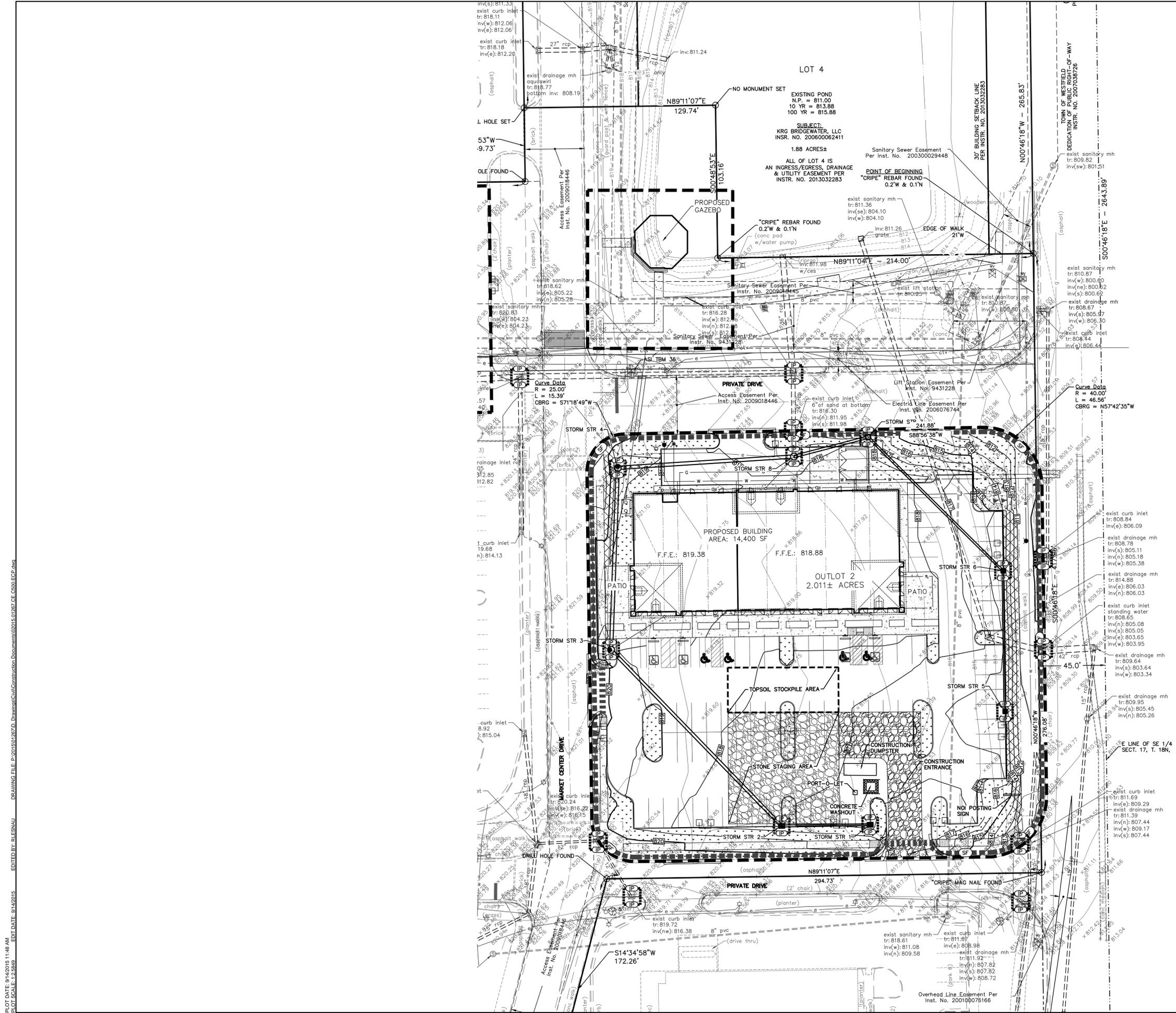
Project Number 2015.01267

STORM SEWER PLAN
AND PROFILES

C411



PLOT DATE: 9/4/2015 11:48 AM
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 EDIT DATE: 9/14/2015
 EDITED BY: R.ESNAU
 DRAWING FILE: P:\2015\01267.D Drawing\Civil\Construction Documents\2015.01267_CE_C500_ECP.dwg
 DOCUMENTS\2015.01267_CE_C500_ECP.dwg



- EXISTING LEGEND**
- AIR CONDITIONER
 - BEEHIVE INLET
 - CURB INLET
 - CLEAN OUT
 - DRAINAGE MANHOLE
 - ELECTRIC METER BOX
 - ELECTRIC CROSS BOX
 - FLAG POLE
 - FIRE HYDRANT
 - FIRE VALVE SHUT OFF
 - GROUND LIGHT
 - GAS METER
 - GAS MARKER SIGN
 - GUY WIRE
 - HOSE BIB
 - INLET
 - LID
 - LIGHT POLE
 - MAILBOX
 - MANHOLE
 - POST
 - POWER POLE
 - SPRINKLER CONTROL VALVE
 - SIGN
 - SANITARY MANHOLE
 - STAND PIPE
 - TELEPHONE HANDHOLE
 - TELEPHONE MANHOLE
 - TELEPHONE MARKER SIGN
 - TRANSFORMER
 - TRAFFIC POLE
 - TELEPHONE CROSS BOX
 - VENT
 - WELL
 - WATER METER
 - WATER VALVE
 - CONCRETE END SECTION
 - OVERHEAD ELECTRIC LINE
 - OVERHEAD TELEPHONE LINE
 - REINFORCED CONCRETE PIPE
 - REBAR SET = 5/8" DIA. REBAR
 - W/CAP STAMPED
 - "STRUCTUREPOINT - 0094" SET

- PROPOSED EROSION CONTROL LEGEND**
- SILT FENCE
 - CONSTRUCTION LIMITS
 - INLET PROTECTION
 - EROSION CONTROL BLANKET
 - SEEDING WITH MULCH
 - GRAVEL CONSTRUCTION ENTRANCE

NOTE:
 ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE WFWD INSPECTOR.

- BENCHMARK:**
 (NAD 83 datum)
 8228.149
 BRONZE DISK STAMPED "HAMILTON COUNTY GEODETIC CONTROL" SET IN THE WEST END OF THE WEST WINDWALL OF THE BRIDGE OVER WESTAL-HERRINGDALE; 222.5' NORTH OF E OF 156TH STREET AND 4332' WEST OF HAZEL DELL ROAD.
 ELEV = 797.75
AS.TM.430
 CHISELED SQUARE ON NW CORNER OF A HEADWALL ±65' SOUTH OF 146TH STREET AT NW CORNER OF SITE.
 ELEV = 806.35
AS.TM.431
 CHISELED "X" NE CORNER OF TRAFFIC PEDESTAL AT SE CORNER OF 146TH STREET AND GRAY ROAD.
 ELEV = 827.57
AS.TM.435
 CHISELED "X" SOUTH BOLT OF FIRE HYDRANT ±40' EAST OF MARKET CENTER DRIVE AND ±75% OF E OF 146TH STREET.
 ELEV = 822.69
AS.TM.436
 CHISELED "X" SOUTH BOLT OF FIRE HYDRANT NE CORNER OF MARKET CENTER DRIVE AND NO NAME ROAD FOR ENTRANCE TO THE "LOCAL".
 ELEV = 822.10

- GENERAL NOTES:**
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 CALL TOLL FREE
 "811" OR 1-800-382-5544
 - INDIANA UNDERGROUND -



BRIDGEWATER POINTE SHOPPES

146th Street and Gray Road Westfield, IN

**APPROVAL PENDING
 NOT FOR CONSTRUCTION**

CERTIFIED BY

ISSUANCE INDEX	
DATE:	07-31-2015
PROJECT PHASE:	----

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 2015.01267

EROSION CONTROL PLAN

C500



CERTIFIED BY

ISSUANCE INDEX

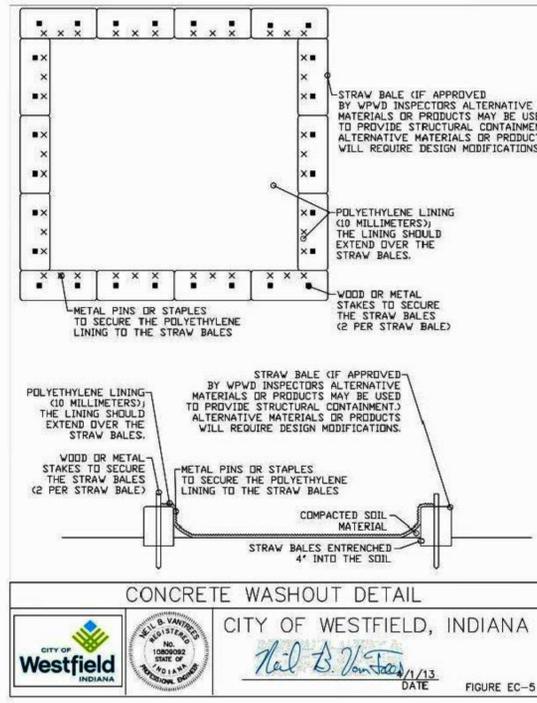
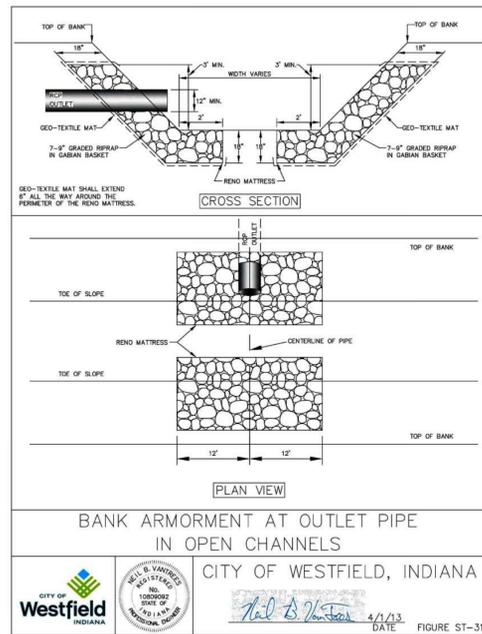
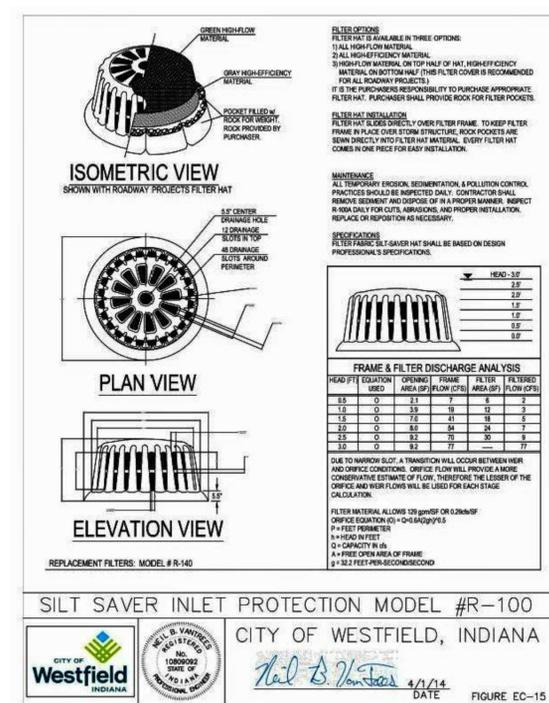
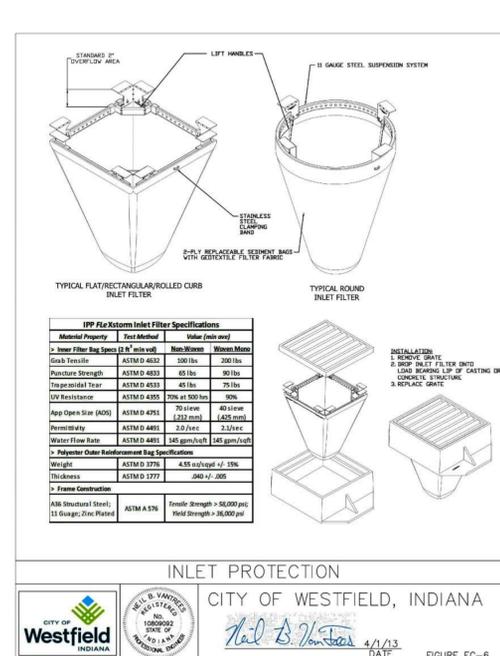
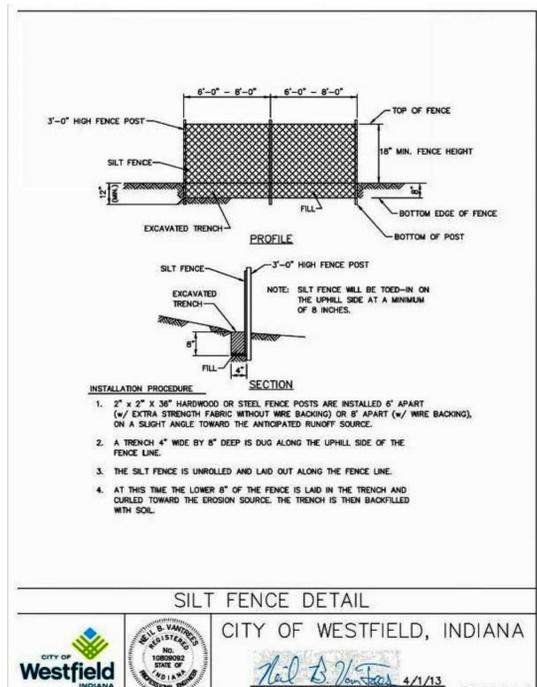
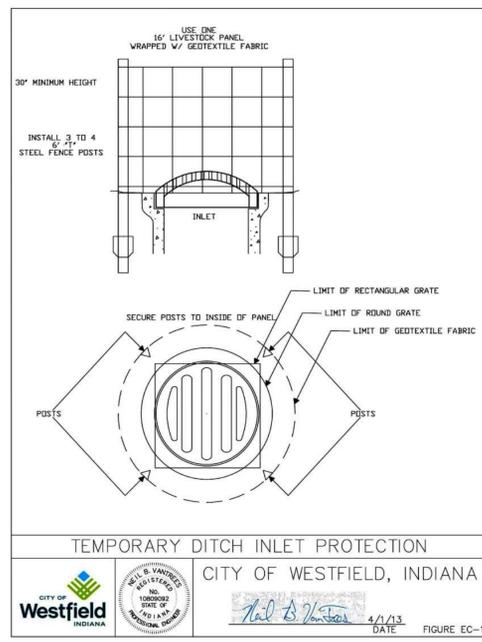
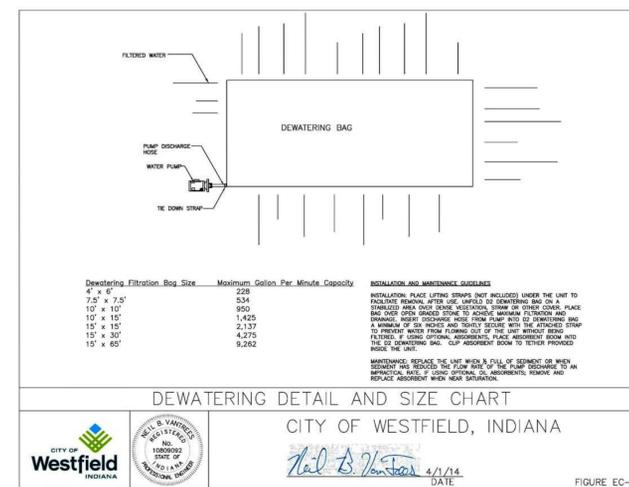
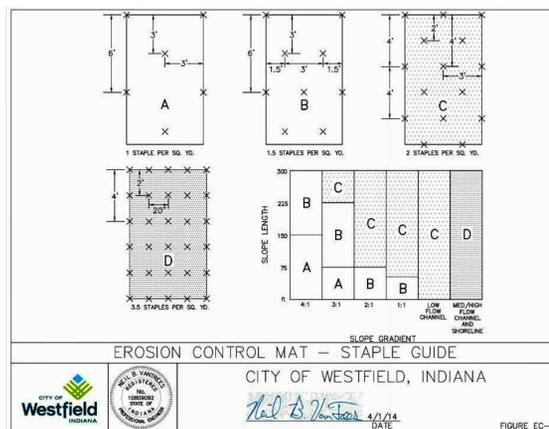
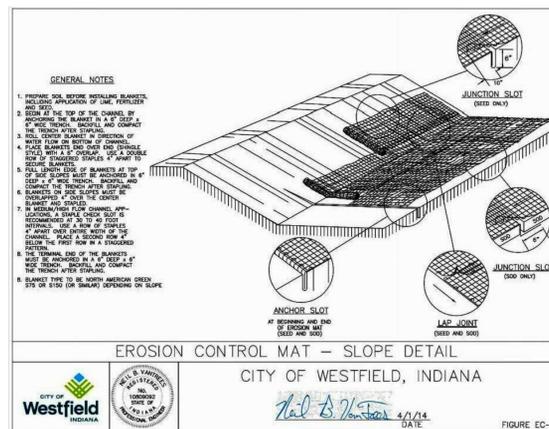
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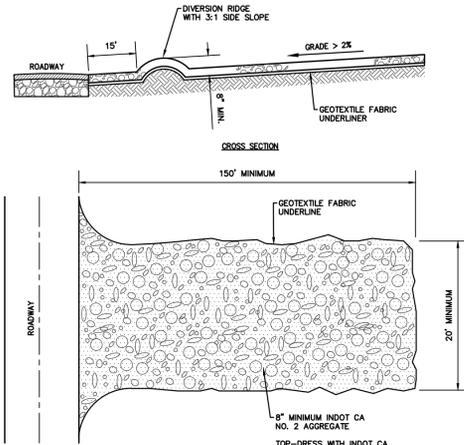
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NO.	DESCRIPTION	DATE

Project Number 2015.01267

**EROSION CONTROL
DETAILS**

C520





SPECIFICATIONS

LOCATION

- AVOID LOCATING ON STEEP SLOPES OR AT CURVES IN PUBLIC ROADS.

DIMENSIONS

- WIDTH: TWENTY (20) FEET MINIMUM OR FULL WIDTH OF ENTRANCE/EXIT ROADWAY, WHICHEVER IS GREATER.
- LENGTH: ONE-HUNDRED FIFTY (150) FEET MINIMUM (LENGTH CAN BE SHORTER FOR SMALLER SITES).
- THICKNESS: EIGHT (8) INCHES MINIMUM.

MATERIALS

- ONE (1) TO TWO AND ONE-HALF (2-1/2) INCH DIAMETER WASHED AGGREGATE (INDOT CA NO. 2).
- ONE-HALF (1/2) TO ONE AND ONE-HALF (1-1/2) INCH WASHED AGGREGATE (INDOT CA NO. 53); OPTIONAL, USED PRIMARILY WHERE THE PURPOSE OF THE PAD IS TO KEEP SOIL FROM ADHERING TO VEHICLE TIRES.
- GEOTEXTILE FABRIC UNDERLAYMENT (USED AS A SEPARATE LAYER TO PREVENT INTERMIXING OF AGGREGATE AND THE UNDERLYING SOIL MATERIAL AND TO PROVIDE GREATER BEARING STRENGTH WHEN ENCOUNTERING WET CONDITIONS OR SOILS WITH SEASONAL HIGH WATER TABLE LIMITATIONS).

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 (2) PERCENT, CONSTRUCT AN EIGHT (8) INCH HIGH DIVERSION RIDGE WITH A RATIO OF 3-TO-1 SIDE SLOPES ACROSS THE FOUNDATION AREA ABOUT 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE ROAD (SEE CROSS-SECTION VIEW ABOVE).
3. INSTALL A CULVERT PIPE UNDER THE PAD IF NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.
4. IF WET 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 TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD TO A SEDIMENT TRAP OR BASIN.

MAINTENANCE

- RESPECT 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 FROM THE CONSTRUCTION DRIVE CAN BE CONVEYED INTO A SEDIMENT TRAP OR BASIN.

**GRAVEL CONSTRUCTION ENTRANCE
(SITES LARGER THAN TWO ACRES)**
NOT TO SCALE (REV. 11/13)

SEEDING SPECIFICATIONS

SEEDBED PREPARATION

- GRADE AND APPLY SOIL AMENDMENTS.

SEEDING FREQUENCY

- SEED FINAL GRADED AREAS DAILY WHILE SOIL IS STILL LOOSE AND MOIST.

DENSITY OF VEGETATIVE COVER

- NINETY PERCENT OR GREATER OVER THE SOIL SURFACE.

MATERIALS

- SOIL AMENDMENTS - SELECT MATERIALS AND RATES AS DETERMINED BY A SOIL TEST (CONTACT YOUR COUNTY SOIL AND WATER CONSERVATION DISTRICT OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE AND SOIL INFORMATION, INCLUDING AVAILABLE SOIL TESTING SERVICES) OR 400 TO 600 POUNDS OF 12-12-12 ANALYSIS FERTILIZER, OR EQUIVALENT, CONSIDER THE USE OF REDUCED PHOSPHOROUS APPLICATION WHERE SOIL TESTS INDICATE ADEQUATE PHOSPHOROUS LEVELS IN THE SOIL PROFILE.
- SEED - SELECT APPROPRIATE PLANT SPECIES SEED OR SEED MIXTURES ON THE BASIS OF SOIL TYPE, SOIL pH, REGION OF THE STATE, TIME OF YEAR, AND INTENDED LAND USE OF THE AREA TO BE SEEDDED (SEE TABLE 1).
- MULCH - STRAW, HAY, WOOD FIBER, ETC. (TO PROTECT SEEDBED, RETAIN MOISTURE, AND ENCOURAGE PLANT GROWTH). ANCHORED TO PREVENT REMOVAL BY WIND OR WATER OR COVERED WITH PREMANUFACTURED EROSION CONTROL BLANKETS.

SEEDING APPLICATIONS

SITE PREPARATION

1. GRADE THE SITE TO ACHIEVE POSITIVE DRAINAGE.
2. ADD TOPSOIL TO ACHIEVE NEEDED DEPTH FOR ESTABLISHMENT OF VEGETATION. (COMPOST MATERIAL MAY BE ADDED TO IMPROVE SOIL MOISTURE HOLDING CAPACITY, SOIL FRIABILITY, 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 FIRING, 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 SEEDED AREAS AND USE APPROPRIATE METHODS TO ANCHOR THE MULCH IN PLACE. CONSIDER USING EROSION CONTROL BLANKETS ON SLOPING AREAS AND CONVEYANCE CHANNELS.

SEEDING 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 SEEDDED 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.

**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. CROWNVEITCH** -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)	80 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 -TIMOTHY -PERENNIAL RYEGRASS -WHITE CLOVER**	20 LBS. 10 LBS. 3 LBS. 4 LBS. 10 LBS. 2 LBS.	5.5 TO 7.5
3. TALL FESCUE** -WHITE CLOVER**	150 LBS. 2 LBS.	5.5 TO 7.5
4. TALL FESCUE** -PERENNIAL RYEGRASS -KENTUCKY BLUEGRASS	150 LBS. 20 LBS. 20 LBS.	5.5 TO 7.5

*FOR BEST RESULTS: (A) LEGUME SEED SHOULD BE INOCULATED; (B) SEEDING MIXTURES CONTAINING LEGUMES SHOULD PREFERABLY BE SPRING-SEEDED, ALTHOUGH THE GRASS MAY BE FALL-SEEDED AND THE LEGUME FROST-SEEDED; AND (C) IF LEGUMES ARE FALL-SEEDED, DO SO IN EARLY FALL.

**TALL FESCUE PROVIDES LITTLE COVER FOR, AND MAY BE TOXIC TO SOME SPECIES OF WILDLIFE. THE INDIANA DEPARTMENT OF NATURAL RESOURCES RECOGNIZES THE NEED FOR ADDITIONAL RESEARCH ON ALTERNATIVES SUCH AS BUFFALOGRASS, ORCHARDGRASS, SMOOTH BROMEGRASS, AND SWITCHGRASS. THIS RESEARCH, IN CONJUNCTION WITH DEMONSTRATION AREAS, SHOULD FOCUS ON EROSION CONTROL CHARACTERISTICS, WILDLIFE TOXICITY, TURF DISABILITY, AND DROUGHT RESISTANCE.

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 EXISTIS ON STEEP BANKS, CUTS, AND IN CHANNELS AND AREAS OF CONCENTRATED FLOW.

PERMANENT SEEDING WITH MULCH
NOT TO SCALE (REV. 11/13)

MULCH SPECIFICATIONS

MATERIALS

MATERIAL*	RATE PER ACRE	COMMENTS
STRAW OR HAY	2 TONS	SHOULD BE DRY, FREE OF UNDESIRABLE SEEDS. SPREAD BY HAND OR MACHINE. MUST BE CRIMPED OR ANCHORED (SEE TABLE 2).
WOOD FIBER OR CELLULOSE	1 TON	APPLY WITH A HYDRAULIC MULCH MACHINE AND USE WITH TACKING AGENT.

*MULCHING IS NOT RECOMMENDED IN CONCENTRATED FLOWS. CONSIDER EROSION CONTROL BLANKETS OR OTHER STABILIZATION METHODS.

COVERAGE
* THE MULCH SHOULD HAVE A UNIFORM DENSITY OF AT LEAST 75 PERCENT OVER THE SOIL SURFACE.

ANCHORING

TABLE 2. MULCH ANCHORING METHODS

ANCHORING METHOD*	HOW TO APPLY
MULCH ANCHORING TOOL OR FARM DISK (DULL, SERRATED, AND BLADES SET STRAIGHT)	CRIMP OR PUNCH THE STRAW OR HAY TWO TO FOUR INCHES INTO THE SOIL. OPERATE MACHINERY ON THE CONTOUR OF THE SLOPE.
CLEATING WITH DOZER TRACKS	OPERATE DOZER UP AND DOWN SLOPE TO PREVENT FORMATION OF RILLS BY DOZER CLEATS.
WOOD HYDROMULCH FIBERS	APPLY ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
SYNTHETIC TACKIFIERS, BINDERS, OR SOIL STABILIZERS	APPLY ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
NETTING (SYNTHETIC OR BIODEGRADABLE MATERIAL)	INSTALL NETTING IMMEDIATELY AFTER APPLYING MULCH. ANCHOR NETTING WITH STAPLES. EDGES OF NETTING STRIPS SHOULD OVERLAP WITH EACH UP-SLOPE STRIP OVERLAPPING FOUR TO SIX INCHES OVER THE ADJACENT DOWN-SLOPE STRIP. BEST SUITED TO SLOPE APPLICATIONS. IN MOST INSTANCES, INSTALLATION DETAILS ARE SITE SPECIFIC. SO MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED.

*ALL FORMS OF MULCH MUST BE ANCHORED TO PREVENT DISPLACEMENT BY WIND AND/OR WATER.

MULCH APPLICATION

1. APPLY MULCH AT THE RECOMMENDED RATE SHOWN IN TABLE 1.
2. SPREAD THE MULCH MATERIAL UNIFORMLY BY HAND, HAYFORK, MULCH BLOWER, OR HYDRAULIC MULCH MACHINE. AFTER SPREADING, NO MORE THAN 25 PERCENT OF THE GROUND SHOULD BE VISIBLE.
3. ANCHOR STRAW OR HAY MULCH IMMEDIATELY AFTER APPLICATION. THE MULCH CAN BE ANCHORED USING ONE OF THE METHODS LISTED BELOW:
 - a. CRIMP WITH A MULCH ANCHORING TOOL. A WEIGHTED FARM DISK WITH DULL SERRATED BLADES SET STRAIGHT, OR TRACK CLEATS OF A BULLDOZER.
 - b. APPLY HYDRAULIC MULCH WITH SHORT CELLULOSE FIBERS.
 - c. APPLY A LIQUID TACKIFIER, OR
 - d. COVER WITH NETTING SECURED BY STAPLES.

MULCH MAINTENANCE

- INSPECT WITHIN 24 HOURS OF EACH RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
- CHECK FOR EROSION OR MOVEMENT OF MULCH; REPAIR DAMAGED AREAS, RESEED, APPLY NEW MULCH AND ANCHOR THE MULCH IN PLACE.
- CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.
- IF EROSION IS SEVERE OR RECURRING, USE EROSION CONTROL BLANKETS OR OTHER MORE SUBSTANTIAL STABILIZATION METHODS TO PROTECT THE AREA.



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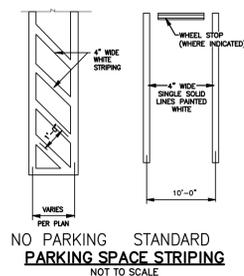
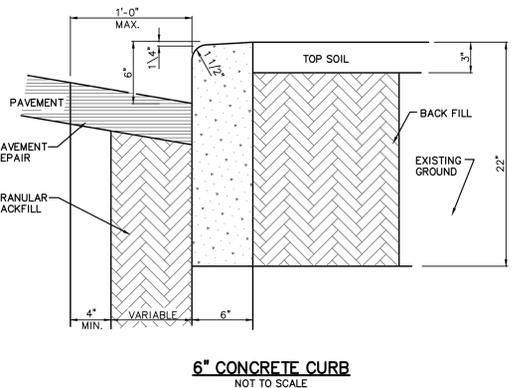
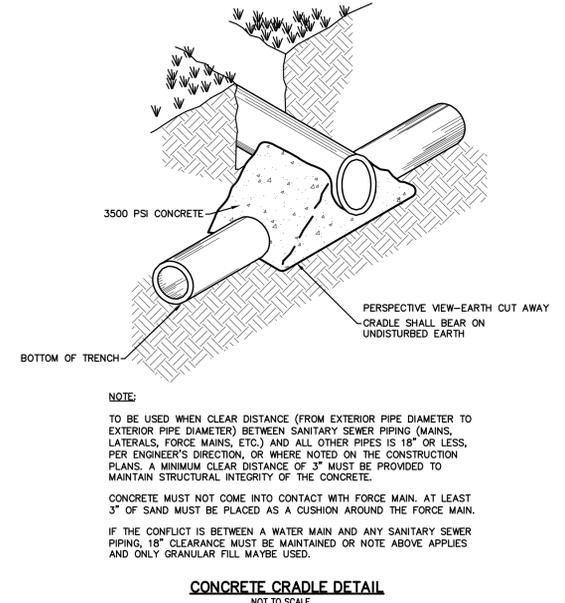
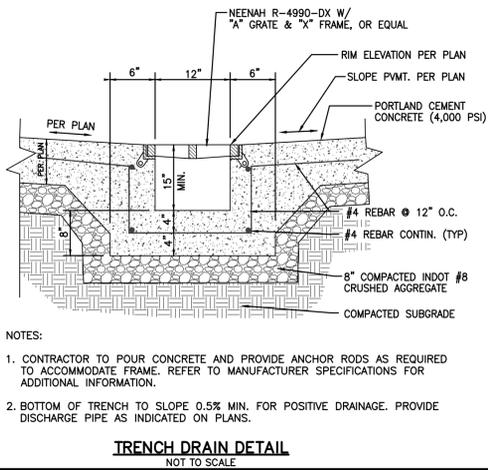
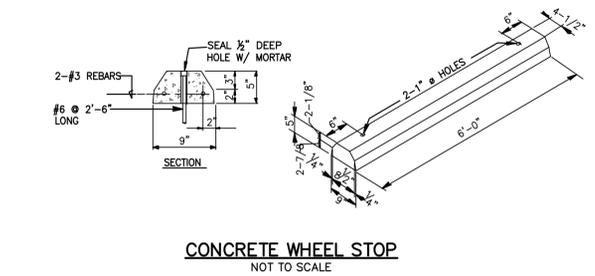
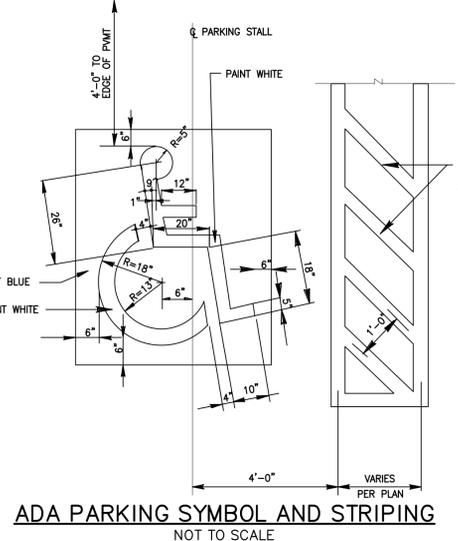
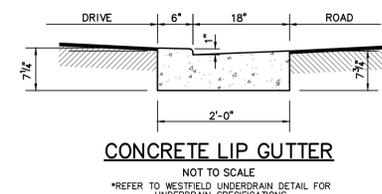
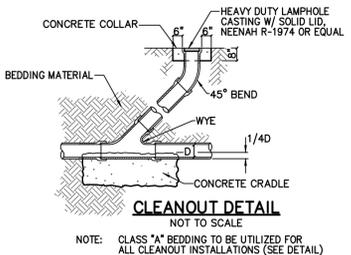
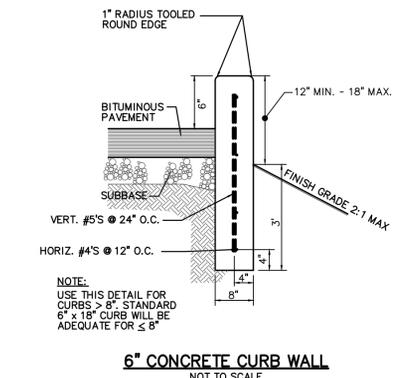
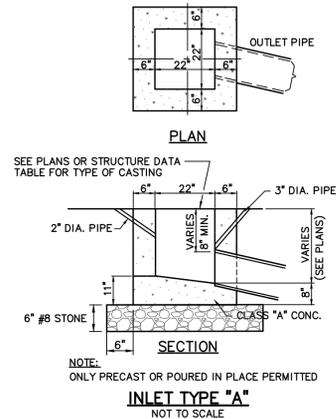
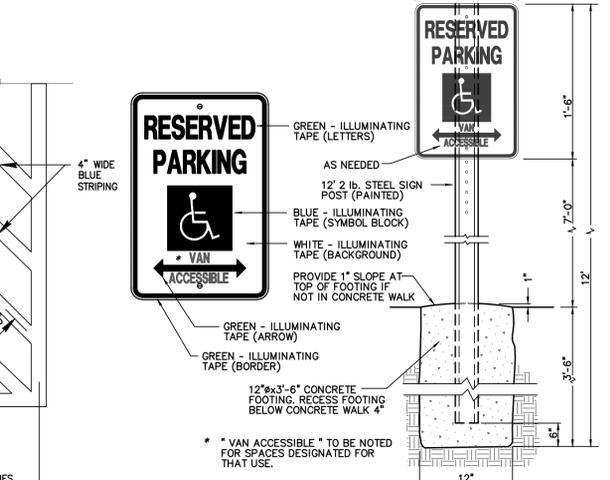
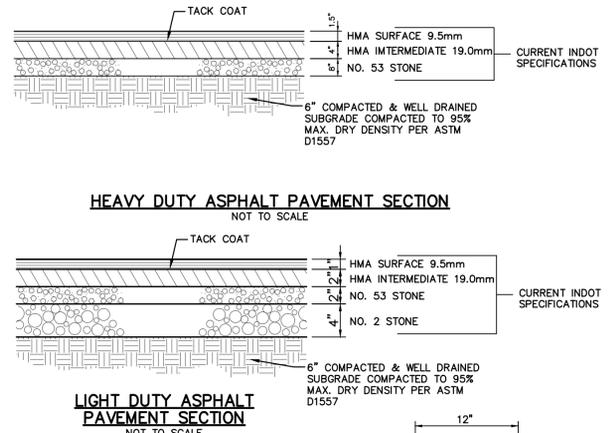
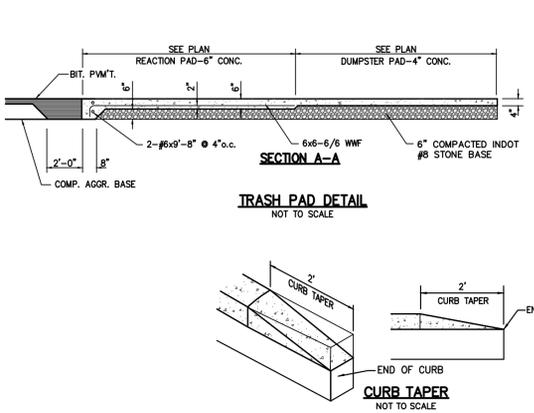
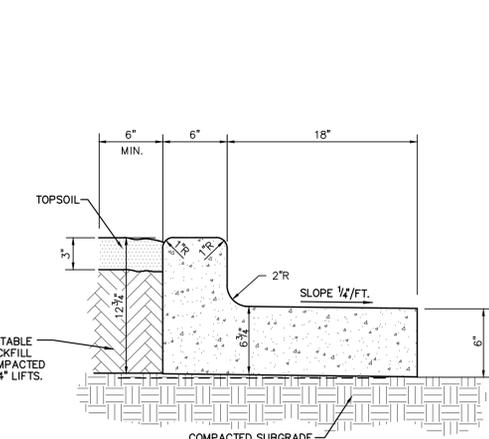
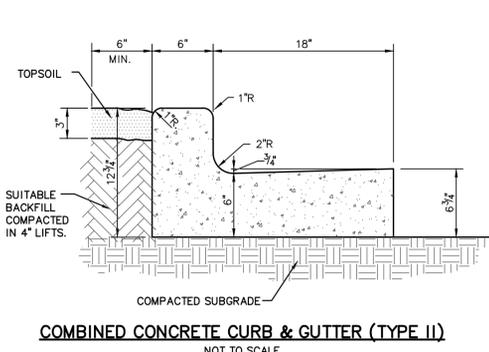
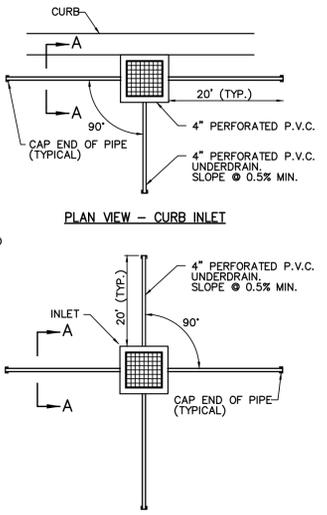
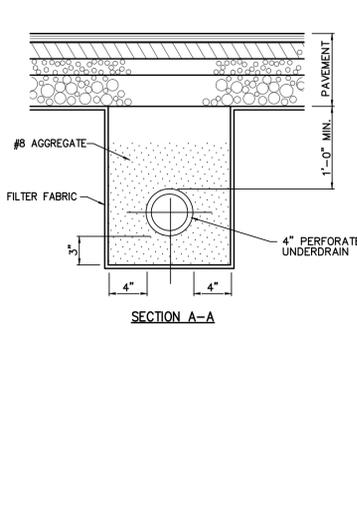
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NO.	DESCRIPTION	DATE

Project Number 2015.01267

**EROSION CONTROL
DETAILS**

C521



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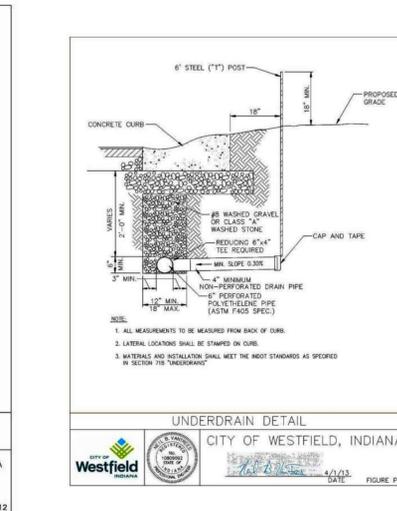
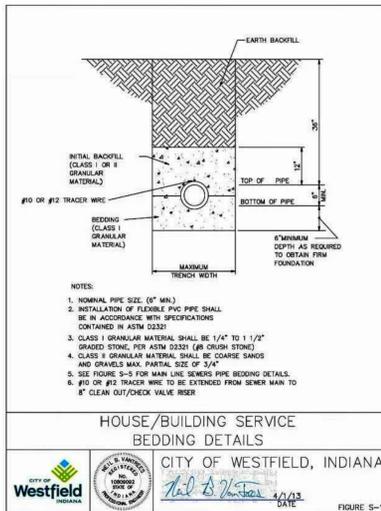
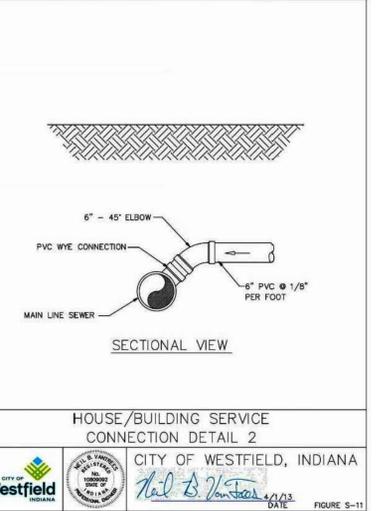
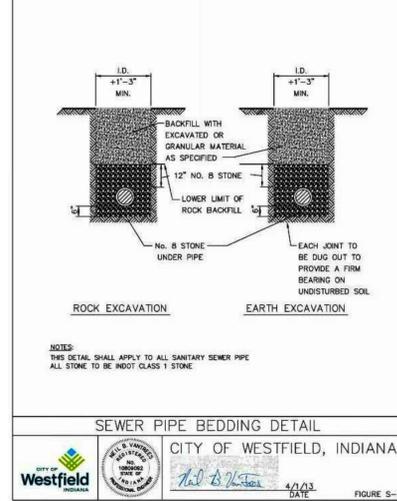
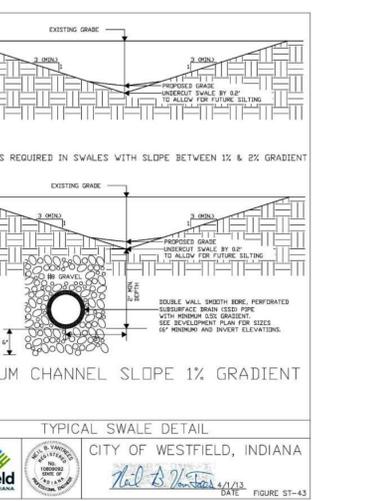
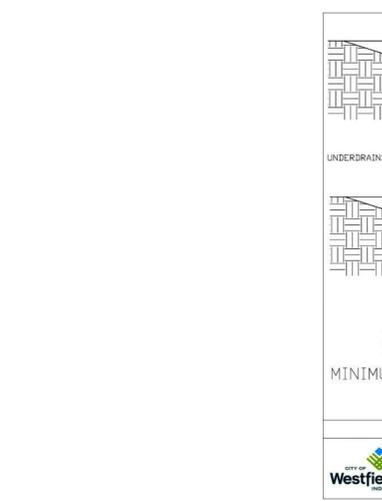
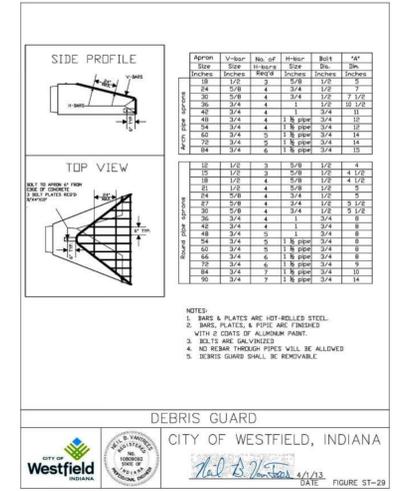
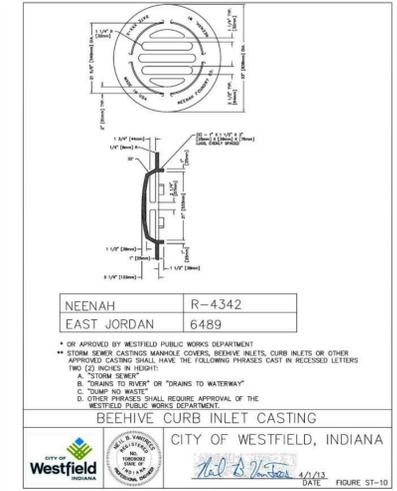
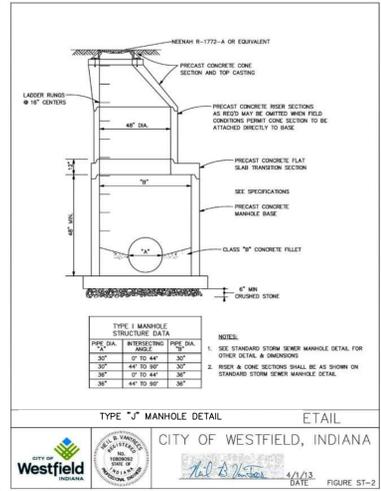
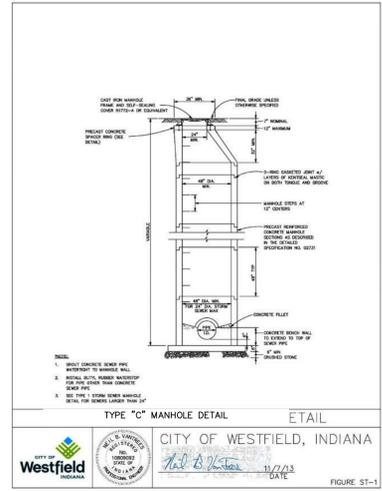
Project Number 2015.01267

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 EDITED BY: R. LESNAU
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 PLOT DATE: 9/14/2015 11:49 AM
 PLOT SCALE: 1/2"=8'-0"



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BRIDGEWATER POINTE SHOPPES
 146th Street and Gray Road
 Westfield, IN

**APPROVAL PENDING
 NOT FOR CONSTRUCTION**

CERTIFIED BY _____

ISSUANCE INDEX

DATE: 07-31-2015

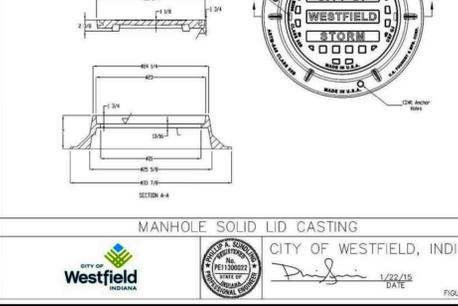
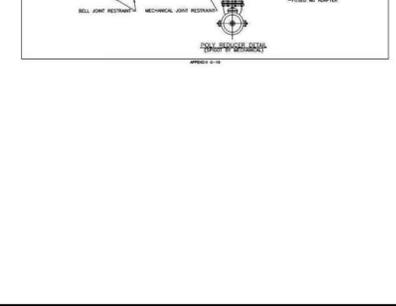
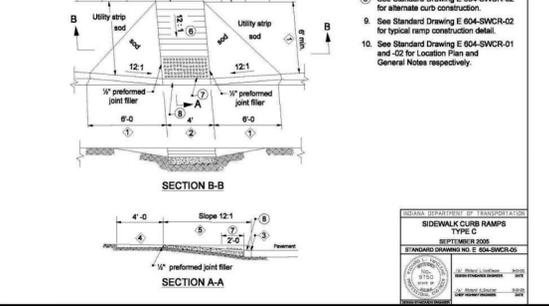
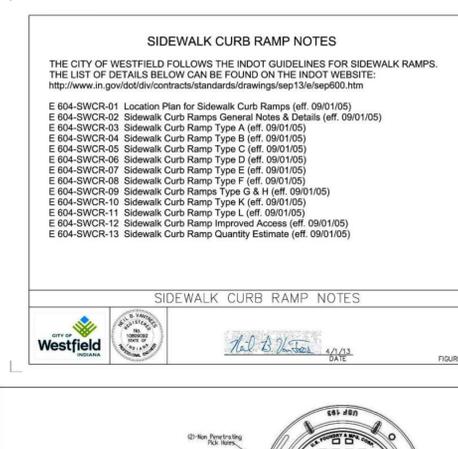
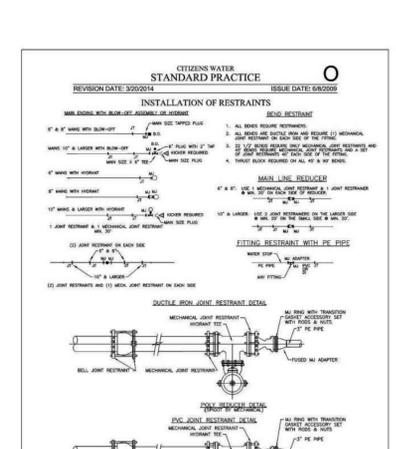
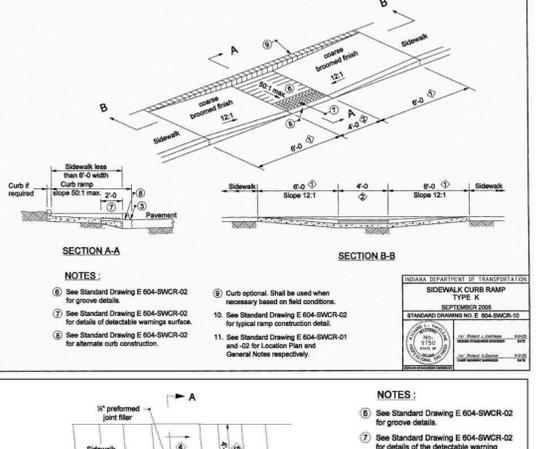
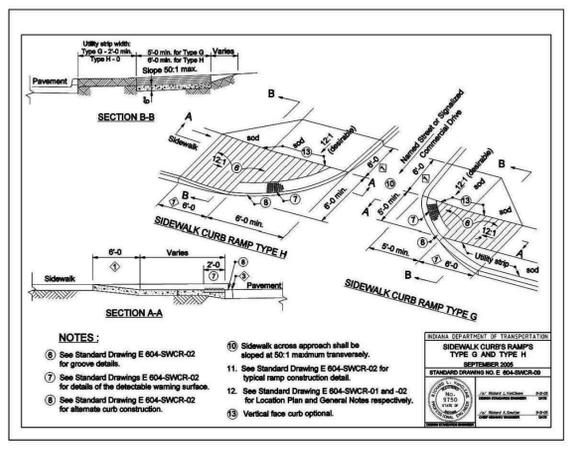
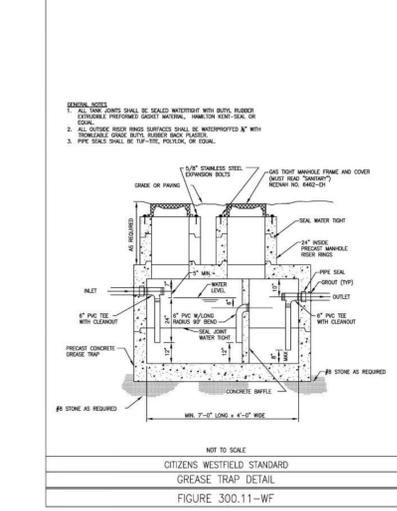
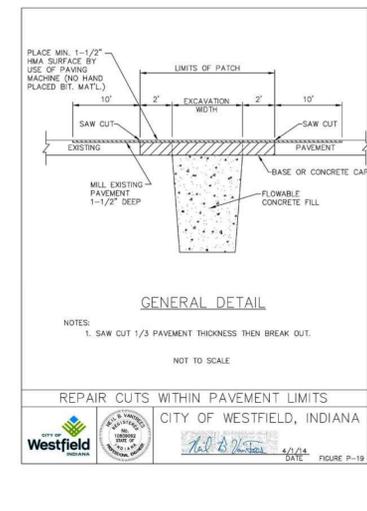
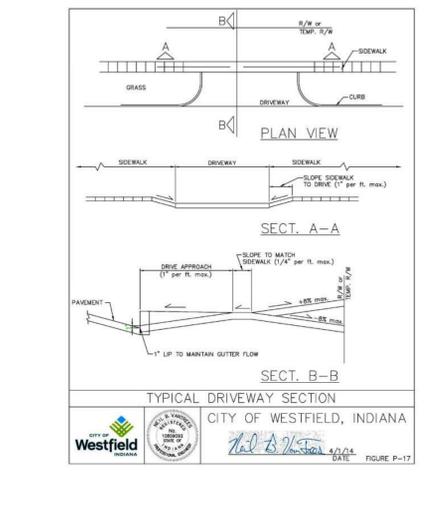
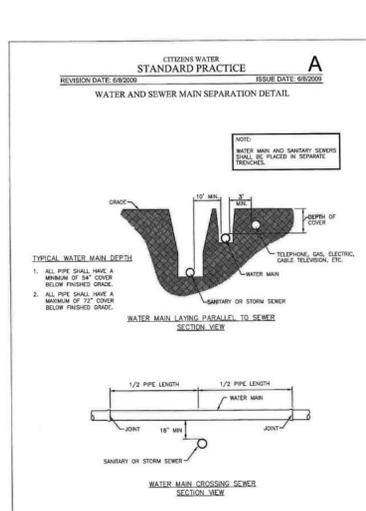
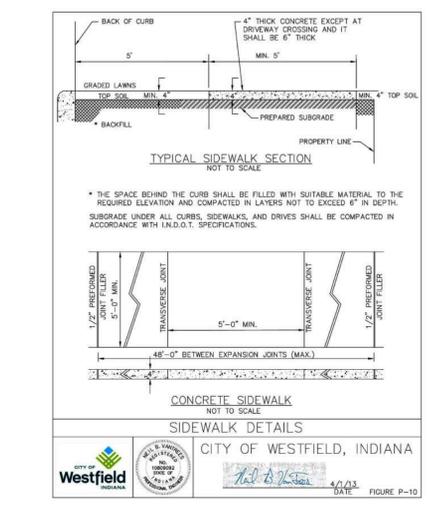
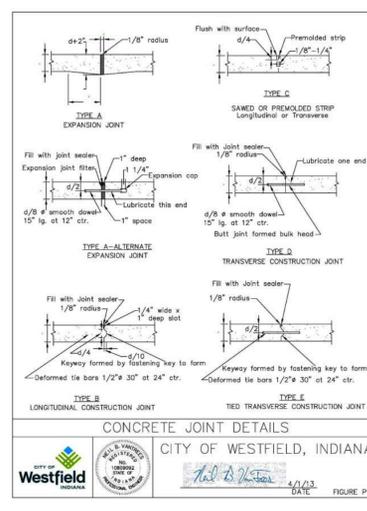
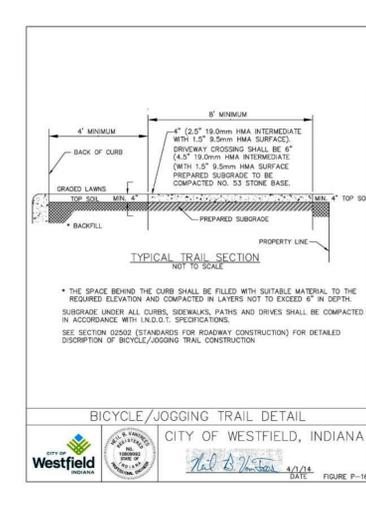
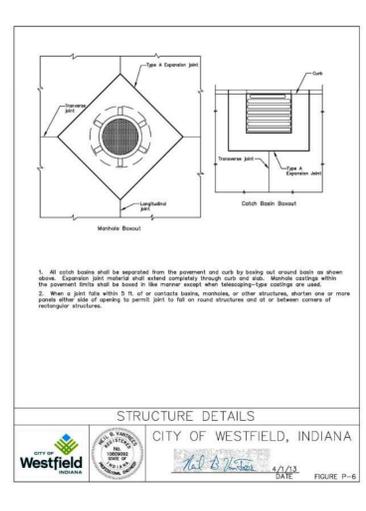
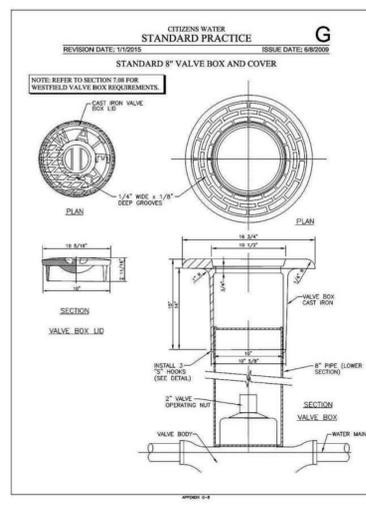
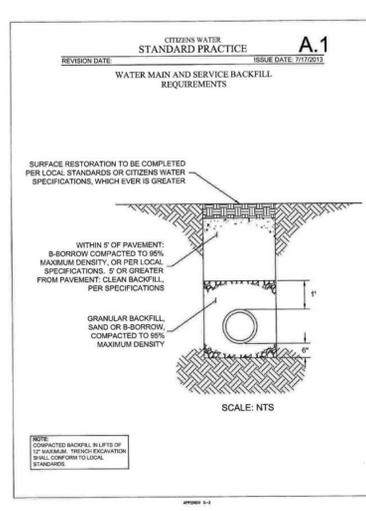
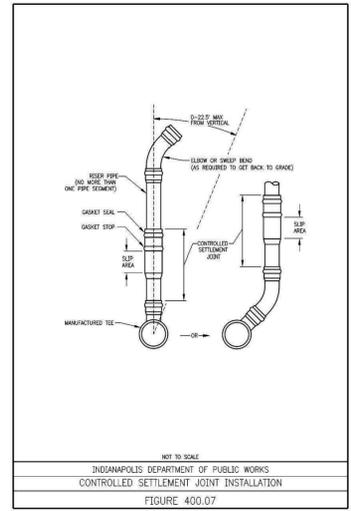
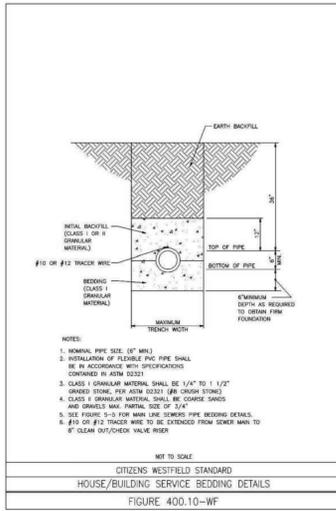
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REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 2015.01267

SITE DETAILS

C601



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ISSUANCE INDEX

DATE: 07-31-2015

PROJECT PHASE:

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

Project Number 2015.01267

SITE DETAILS

C602

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CHAPTER 03400 STORM SEWER PIPES AND OPEN CULVERT MATERIALS

03401.03 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 210.

Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall conform to the following:

- 1. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C150, C1301, and A67318. 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 4 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. Doghouse structures shall be permitted with approval from the WPPWD.
3. Reinforcing steel shall conform to ASTM A615, Grade 60 deformed bars, or ASTM A616 Grade 60 deformed bars.
4. Mortar Materials:
1. Sand - ASTM Designation C144, passing a No. 8 sieve.
2. Cement - ASTM Designation C150, Type 1.
3. Water - shall be potable.

The manufacturer shall provide openings for screens entering and leaving the manhole. Any additional openings needed to be made in the field shall be made by drilling holes no less than 1/2 inch in diameter with a maximum spacing of 3 inches.

Manhole steps shall be made from a steel reinforcing rod encased 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 precast toe plate bolted to the end section per Standard Detail (SD)-30. Corrugated end sections with toe plates shall require WPPWD approval.

Catch Basins

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

Catch basins, for sediment control, locations to be determined by a Professional Engineer, and approved by the WPPWD. Catch Basins shall be located within established bycatcher basins 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 casing. All bedrock castings on a two (2) foot by two (2) foot box shall have a square riser with a round hole. All structures which do not meet these criteria shall be a manhole type, which is forty-eight (48) inches in diameter.

Casings

Cut iron or ductile iron frames and grates 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 chills, 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 detect earth and other materials from entering the drains.

The following castings types are required:

- 1. Manholes - Neneah R 1772 A or equivalent
2. Bedhole Inlets - Neneah R 4942 or equivalent
3. "Roll Curb" - Neneah 3501 - TR or TL or equivalent
4. "Chair Back" Curb Inlet - Neneah 3287 - 10V or equivalent
5. Other types shall require approval of the WPPWD.

Curb inlet castings which possess open backs or have grate bars parallel to traffic flow (are not "bicycles" style) will not be accepted by the WPPWD.

Storm sewer casting manhole covers, bedhole 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 WPPWD.

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

Catch Basins

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

Catch basins, for sediment control, locations to be determined by a Professional Engineer, and approved by the WPPWD. Catch Basins shall be located within established bycatcher basins or right of way of sufficient size to facilitate the required maintenance of these structures.

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, W 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 WPPWD will elliptical reinforcing or combination of elliptical and circumferential reinforcing or concrete pipe shall be permitted, in circular pipe.

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

Joists shall conform to the requirements of ASTM C943. 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 shall be similar to and equal to "Prees-Seal" or "Tylos" conforming to ASTM Designation C943, latest revision. The gasket shall be attached 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 surge 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 WPPWD and shall be approved prior to use on the project.

Polyvinyl Chloride Pipe and Fittings

Polyvinyl chloride (PVC) pipe and fittings shall comply with ASTM D3034.

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 A443).
2. Manufacture of Corrugated Steel Culverts and Underdrains (AASHTO M-30).
3. Structural Plate for Pipe, Pipe Arches, and Arches (AASHTO M-167).
4. Bituminous Coated Corrugated Steel Pipe and Arches (AASHTO M-190).
5. Sheet Material (ASTM A575).

Bituminous Coated Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, speller coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2 1/2 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 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 be the latest revision of ASTM A575 and AASHTO M-274. The coils from which the pipe is produced shall be coated with 1.0 ounce per square foot of commercially pure aluminum.

Bituminous Coated and Pavement Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, speller coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2 1/2 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, speller coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2 1/2 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 surface which fills the corrugations to a minimum thickness of 1/8 inch above the roots 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 speller coating as the pipe. Bands shall be 0.064 inch thick and 10-12 inches wide. Bands shall be bituminous coated and shall have two corrugations 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 ASTM M-219. The plate shall be fabricated from aluminum alloy 5052 H14. 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 be the latest revision of ASTM A575 and AASHTO M-274. The coils from which the pipe is produced shall be coated with 1.0 ounce per square foot of commercially pure aluminum.

03401.01 Introduction

SECTION 03401 GENERAL

This section covers all work necessary for the construction of the storm sewer piping system 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 maximum 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 before fabrication, the Contractor shall submit to the Westfield Public Works Department (WPPWD) 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.

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 pipe or other device, subject to acceptance of the WPPWD.

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Pipe shall be furnished circular or as a pipe-arch shape 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 referred to as jointing joints with lugger bands.

Coupling bands shall be lugger 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 D2680, 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 AASHTO M-252 for pipe diameters 6" - 10".

The resin material shall meet ASTM D3350 cell classification 35400C.

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 elastic profile "O-ring" rubber gasket that meets ASTM F477.

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 deliveries are on accepted shall have the Third Party Administration PPI Seal.

Subsurface Drain Tiles

Double wall, smooth bore perforated, corrugated polyethylene tile, manufactured under specification ASTM F967, shall be required for all subsurface drain tile installed in swales.

Double wall, smooth bore perforated, corrugated polyethylene drain tile shall be required for curb-subgrade 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 D3212. The

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gasket material shall conform to all requirements of ASTM F477. As an alternative, pipe joints utilizing external couplings bands will be accepted provided the minimum AASHTO 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 in swales shall have clean-outs installed every 300 feet, changes in direction, high points, and dead ends.

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.

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the pipe. Mechanical means consisting of a cable placed inside the pipe with a winch, jack, or come-along shall be considered to pull the pipe home where pushing the pipe will not result in a joint opening completely home and staying in place.

The Contractor shall use laser beam equipment, surveying instruments, or other proven techniques to maintain accurate alignment and grade.

Open excavation shall be satisfactorily protected at all times. At the end of each day's work, the open ends of all pipes shall be protected against the entrance of animals, children, earth, or debris by bulkheads or stoppers. The bulkheads or stoppers shall be perforated to allow passage of water into the installed pipe line to prevent flotation of the pipe line. Any earth or other material that may find entrance into the main sewer or into any lateral sewer through any such open end of unplugged branch must be removed at the Contractor's expense. The cost of all such pipes, and the labor connected therewith, must be included in the regular bid for the sewers.

Storm sewer which outlets into a Hamilton County Regulated Drain shall be approved, inspected, and constructed per the latest standards of the Hamilton County Sanitary's Office.

Each pipe section shall be laid in a firm foundation of bedding material and hatched and backfilled with care.

Prior to pipe installation, carefully bring bedding material to grade along the entire length of pipe to be installed. To provide adequate support for the pipe, the following bedding procedures shall be followed:

When angular 1/4 to 1/2 inch (6 to 12 mm) clean graded stone, slag, or crushed stone material is used for bedding, little or no compaction is necessary due to the nature of the angular particles. A depth of 4 to 6 inches is generally sufficient to provide uniform bedding. If Class I material is used for bedding, it must also be utilized for haunching up to a higher than the spring line of the pipe to avoid loss of side support through migration of Class II bedding material into the bedding.

1. Take care with coarse sands and gravels and maximum size 20 mm (3/4 inch) materials, to provide uniformly compacted bedding. Excavate the bedding material or place it to a point above the pipe bottom, depositing such prior to the depth of loose material resulting in the preparation of the bedding and the amount of compaction that will be required to bring the material to grade. The hand or mechanical tamping to compact the bedding material to a minimum 95% Standard Proctor Density.

2. Slightly damp material will generally result in maximum compaction with a minimum of effort. If water is added to improve compaction or if water exists in the trench, take care to avoid saturation of Class I material, which could result in additional stability problems. Check grade of bedding after compaction.

Bedding material shall have a minimum thickness beneath the pipe of 4 inches (100 mm) or one-third of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe one-sixth of the outside diameter of the pipe.

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

For flexible pipe, corrugated metal pipe, the placement of embankment 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 cradled stone, pea gravel, or

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CHAPTER 03500 INSTALLATION OF STORMWATER FACILITIES

SECTION 03501 GENERAL

03501.01

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 10.0 feet per second, respectively, when the water is flowing full. Maximum permissible velocities for various storm sewer materials are listed in Table 03501-1. A minimum of 18 inches of vertical separation between storm sewers, water and sanitary sewers shall be required. When this is not possible, the sanitary sewer must be encased in concrete and extend within 5 feet, each side, of the crossing centerline and in relation to the waterline, water class pipe must be used for the storm and sanitary sewers. Minimum horizontal separation between storm sewers, water and sanitary sewers shall be 10.0 feet and 8.0 feet to the structures.

Rear Yard Swale

Rear yard swales shall have a minimum slope of 2% gradient. Swales less than a 2% gradient are required to have double wall, smooth bore 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 0.5% gradient.

Proposed road grades will be required to be graded within two (2) inches of the proposed sub-grade prior to installation of 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.

03501.02

Alignment

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

03501.03

Manholes/Inlets

All manholes and inlets must be pre-stamped with an appropriate message per the City of Westfield Public Works Department Standards and Specifications. 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 message minimum inlet 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.

03501.11

Pipe Bedding and Haunching

Each pipe section shall be laid in a firm foundation of bedding material and hatched and backfilled with care.

Prior to pipe installation, carefully bring bedding material to grade along the entire length of pipe to be installed. To provide adequate support for the pipe, the following bedding procedures shall be followed:

When angular 1/4 to 1/2 inch (6 to 12 mm) clean graded stone, slag, or crushed stone material is used for bedding, little or no compaction is necessary due to the nature of the angular particles. A depth of 4 to 6 inches is generally sufficient to provide uniform bedding. If Class I material is used for bedding, it must also be utilized for haunching up to a higher than the spring line of the pipe to avoid loss of side support through migration of Class II bedding material into the bedding.

1. Take care with coarse sands and gravels and maximum size 20 mm (3/4 inch) materials, to provide uniformly compacted bedding. Excavate the bedding material or place it to a point above the pipe bottom, depositing such prior to the depth of loose material resulting in the preparation of the bedding and the amount of compaction that will be required to bring the material to grade. The hand or mechanical tamping to compact the bedding material to a minimum 95% Standard Proctor Density.

2. Slightly damp material will generally result in maximum compaction with a minimum of effort. If water is added to improve compaction or if water exists in the trench, take care to avoid saturation of Class I material, which could result in additional stability problems. Check grade of bedding after compaction.

Bedding material shall have a minimum thickness beneath the pipe of 4 inches (100 mm) or one-third of the outside diameter of the pipe, whichever is greater, and shall extend up the sides of the pipe one-sixth of the outside diameter of the pipe.

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

For flexible pipe, corrugated metal pipe, the placement of embankment 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 cradled stone, pea gravel, or

03500-5

03400-4

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 03501-2.

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

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

03501.04

Installation and Workmanship

Bedding and backfill materials around storm sewer pipes, subsurface drains, and the associated structures shall be according to the City of Westfield Public Works Department Standards and Specifications. The specifications for the construction of storm sewers and subsurface 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 city pipe shall be laid in accordance with other American Society of Testing Materials (ASTM) C-12 or the appropriate American Association of State Highway and Transportation Officials (AASHTO) specifications. Dipslags 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 approval from the WPPWD. Notification must be made to WPPWD inspectors at least 48 hours prior to installation. All structures shall require inspection prior to backfill.

03501.05

Special Hydraulic Structures

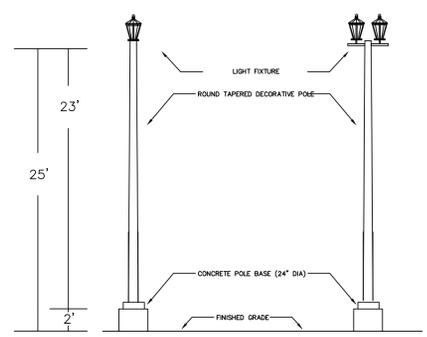
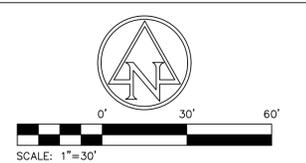
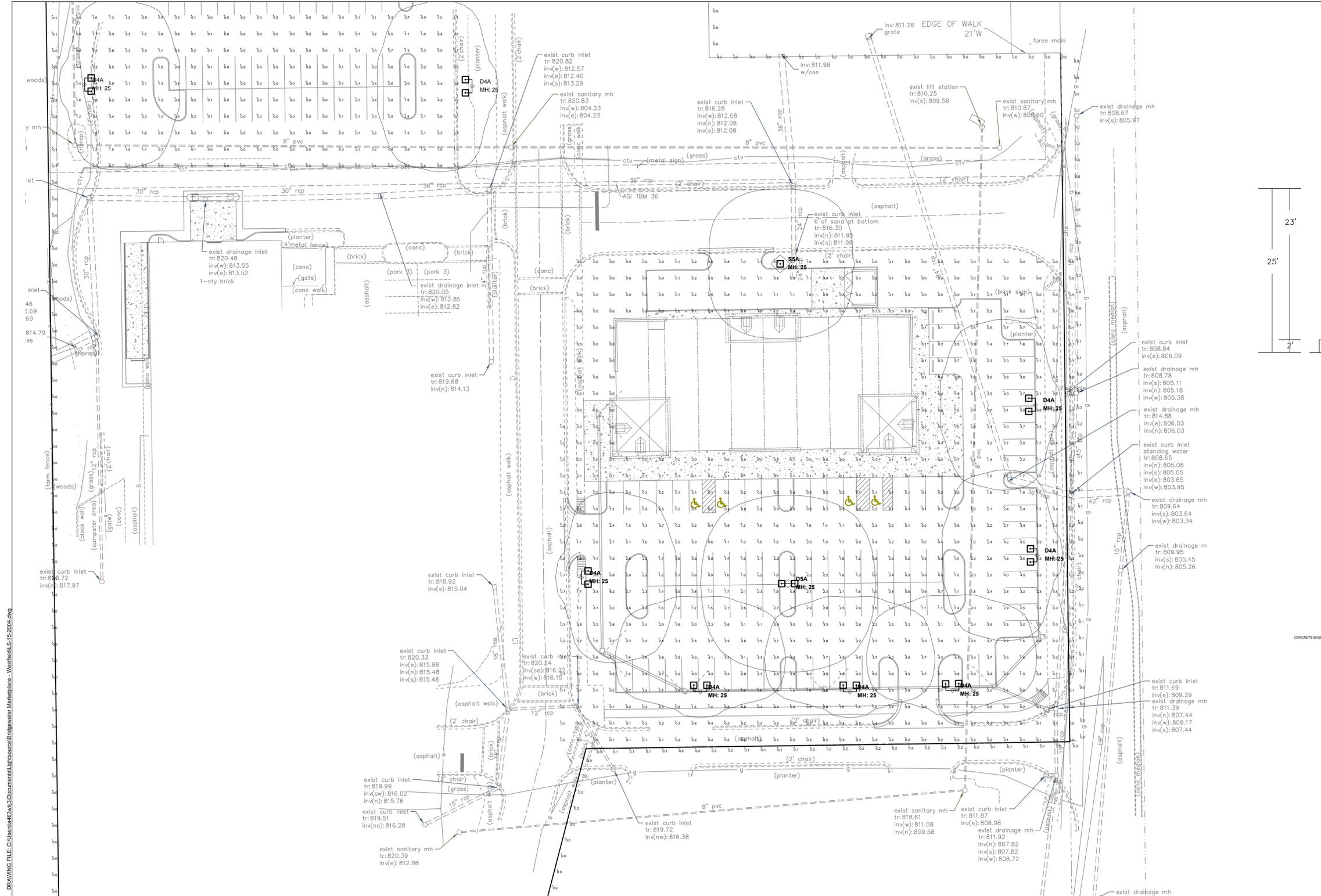
Special hydraulic structures required to control the flow of water in storm runoff drainage systems include junction chambers, drop manholes, siltling basins, and other special structures. The use of these structures shall be limited to those locations justified by gradient planning and by overall and 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.

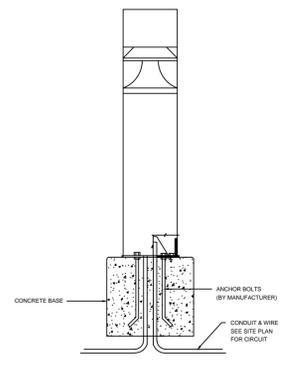
03501.06

Connections to Storm Sewer System

Unless otherwise approved, perforated subsurface drain tiles, footer drains, or stump pumps lines shall connect to a storm structure. Storm sewer connections shall be provided by either precast or drilled holes, which are to be a minimum of two (2) inches larger than the O.D



SITE LIGHTING POLE DETAIL
NTS



POLE BASE DETAIL
NO SCALE

NOTES:
1. VERIFY ANCHOR BOLT LOCATIONS WITH MANUFACTURER'S TEMPLATE PRIOR TO BASE CONSTRUCTION.
2. MINIMUM CONDUIT SIZE AND COVER REQUIREMENT SHALL BE PER THE NEC.

BENCHMARK:

GENERAL NOTES:

- CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
- CONTRACTOR TO VERIFY LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION. CONTACT ENGINEER IF VARIATION EXISTS.
- SEE SHEET C002 GENERAL NOTES FOR MORE INFORMATION.

CAUTION !!

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

CALL TOLL FREE
"811" OR 1-800-382-5544
- INDIANA UNDERGROUND -

Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts
	8	D4A	TWIN	7108	0.920	NZS-L-HTL17A-T4-84LC-3-4K-UNV-PT-FINISH-FN2-PC-VOLT	94
	1	DSA	BACK-BACK	8460	0.920	NZS-L-HTL17A-T5W-84LC-3-4K-UNV-PT-FINISH-FN2-PC-VOLT	94
	1	SSA	SINGLE	8460	0.920	NZS-L-HTL17A-T5W-84LC-3-4K-UNV-PT-FINISH-FN2-PC-VOLT	94

Label	CalcType	Units	Avg	Max	Min	AvgMin	MaxMin
CalcPst_1	Illuminance	Fc	1.15	6.2	0.0	N.A.	N.A.
EXISTING LOT-RECONFIGURATION	Illuminance	Fc	0.75	6.2	0.0	N.A.	N.A.
PROPERTY LINE	Illuminance	Fc	0.03	0.3	0.0	N.A.	N.A.
BACK LOT	Illuminance	Fc	0.64	1.1	0.0	N.A.	N.A.
FRONT PARKING	Illuminance	Fc	1.98	6.2	0.1	19.80	62.00
SIDE PARKING	Illuminance	Fc	1.84	5.1	0.1	18.40	51.00

4014 BRIDGEWATER MARKETPLACE

146th Street and Gray Road
Westfield, IN

APPROVAL PENDING
NOT FOR CONSTRUCTION

CERTIFIED BY

ISSUANCE INDEX

DATE:	07-21-2015
PROJECT PHASE:	----

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

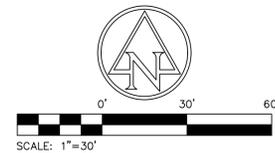
Project Number 2015.01267

SITE PHOTOMETRIC PLAN

E401

PLOT DATE: 7/20/2015 1:30 PM
 PLOT SCALE: 1:2,500
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 EDITED BY: A463WVJ3
 EDIT DATE: 7/20/2015

DRAWING FILE: C:\Users\ed6w\Documents\LightSource\LightSource\Bridgewater Marketplace - Westfield, IN - 2014.dwg
 EDITED BY: A463W4J3
 EDIT DATE: 7/29/2015
 PLOT DATE: 7/29/2015 1:09 PM
 PLOT SCALE: 1:2.5849



KITE
 REALTY GROUP
 30 S. MERIDIAN ST.
 SUITE 100,
 INDIANAPOLIS, IN 46204

AMERICAN
STRUCTUREPOINT
 INC.
 7260 Shadeland Station | Indianapolis, Indiana 46256
 TEL 317.647.5580 | FAX 317.643.0270
 www.structurepoint.com

LIGHT SOURCE
 THE LIGHTING & CONTROL EXPERTS

4014 BRIDGEWATER
MARKETPLACE

146th Street and
Gray Road
Westfield, IN

APPROVAL PENDING
 NOT FOR CONSTRUCTION

CERTIFIED BY

ISSUANCE INDEX

DATE:	07-21-2015
PROJECT PHASE:	----

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

Project Number 2015.01267

SITE PHOTOMETRIC
PLAN SPECS

E402

BENCHMARK:

GENERAL NOTES:

- CONTRACTOR SHALL PROTECT AND NOT DESTROY THE PROPERTY CORNER MONUMENTS DURING CONSTRUCTION.
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 CALL TOLL FREE
 "811" OR 1-800-382-5544
 - INDIANA UNDERGROUND -

New Orleans II - HT LED Project Name: Catalog Number: Type

*N2S-L-HTL3CA
UL LISTED

Dimensional Drawings

Fixture	A	B	C	Max. LEDs	Lbs
HTL1CA	16 1/2"	23 3/4"	16 3/4"	84	41

The **New Orleans II** LED series combines the latest in LED technology with traditional design and ease of maintenance for years of trouble-free operation. Superior LED optics allow for the use of fewer fixtures at less wattage and wider pole spacing to illuminate roadways with excellent uniformity. Eliminate the need for costly yearly maintenance by switching to energy-efficient LED lighting.

Choose New Orleans II Hard-top design. Choose from three different styles of capitals (Leaf, Fluted or smooth) to enhance any local architecture and environment. Type I, II, III, IV, V and V-W optics are available.

All models come with a removable, foot-less, twist-lock lens to provide rapid access to the driver assembly, which can then be removed without the use of tools. A twist-lock photocell receptacle is located on a tool-less access door which is an integral part of the **New Orleans II** capital.

The **New Orleans II** LED series is constructed of cast aluminum and features a high-quality, long lasting, durable powder coat finish in a variety of colors. The hard-top lenses can be ordered in either acrylic or high-strength polycarbonate. An optional decorative filigree band and cage can be ordered with a choice of four different finishes. The **New Orleans II** design complements any street, retail or pathway project. A wide selection of decorative mounting arms and poles are available to complete the systems' overall design.

The **New Orleans II** series is an ideal choice for street and municipal lighting projects, as well as any pedestrian application, such as parks, and city and urban centers.

Capital	Lens	Optics	Source	Milliamps	Kelvin	Voltage	Mounting	Finish	Options
N2L-L Clear Acrylic (HTL1CA) Clear Poly (HTL1CP) Leaf (Textured Acrylic) (HTL1TA)	Hard Top Only	Type I (T1)	42 (42LC)	350 (3)	4000K (4K)	120-277	Post Top (UNV)	Bronze (BZ)	Filials* No. 1 (FIN1) No. 2 (FIN2) No. 3 (FIN3) No. 4 (FIN4) Photo Receptacle (PC120) (PC208) (PC240) (PC277) (PC460) Photo Receptacle (PER) Filigree Band with Cage (FBC) Internal Light Shield (ILS) Globe Hanger (GH) 0-10 V Dimming Driver (DIM)
		Type II (T2)	84 (84LC)	530 (5)	5500K (59K)	480 (5)	347 (8)	White (WH) Forest Green (FG) Grey (GY) Silver Metallic (SL) Vertigris (VG) Weathered Brown (WB) Custom Color (CC)	
N2F-L Fluted	Clear Acrylic (HTL2CA) Clear Poly (HTL2CP)	Type III (T3)							
N2S-L Smooth	Clear Acrylic (HTL3CA) Clear Poly (HTL3CP)	Type IV (T4) Type V (T5) Type V-W (T5W)							

For more detailed information on mounting, wiring or installation instructions, please contact factory. If poles are not ordered with fixtures, please specify mounting requirements. This document contains proprietary information of Visionaire Lighting, LLC. Any use of this information requires the written approval of Visionaire Lighting, LLC. In response with our 1200 policy of continuous improvement, Visionaire reserves the right to change any specifications contained herein without prior notice.

New Orleans II - HT LED

Housing

- The **New Orleans II** LED Series features a cast aluminum capital available in smooth, fluted or leaf pattern with a spun aluminum hard top offered in 3 styles; with an optional internal twistlock photocell receptacle accessible thru an attached windowed door. All external hardware is stainless steel.

Lens Assembly

- The hard top series features a one-piece spun aluminum cap with a clear acrylic or poly acorn shaped lens.
- Fully gasketed with a form-fitting, premium extruded silicone gasket for complete weather and insect protection.

Optical System

- The highest-lumen-output **EvoC LED**s are utilized. Estimated life of the LEDs is 100,000 hours. IES Type I, II, III, IV, V and V-W distributions are standard. Available with up to 84 LEDs.
- CRI values are 70 for 4000K and 75 for 5500K.

Quali-Guard® Finish

- Aluminum fixture components are chemically pre-treated through a multiple stage washer, and finished with an electrostatically-applied, thermoset polyester powder coat textured paint of a minimum of 3 to 5 millimeters thickness. Finish is oven-baked at a temperature of 400 °F to promote maximum adherence and finish hardness. All finishes are available in standard and custom colors.
- Finish is guaranteed for five (5) years.

Mounting

- The **New Orleans II** series is a post-top fixture that mounts over a 3-inch tenon, with a wide selection of decorative and custom mounting arms for both pole and wall mount applications (see Decorative Arms section of catalog).

Electrical Assembly

- The **New Orleans II** LED series is supplied with a high-performance LED driver that accepts 120 V thru 480 V, 50 hz to 60 hz input. Power factor is 90%. Rated for -40 ° F operation.
- 10 kV surge protector supplied as standard.

Options

- Fixtures available with finials, photocell receptacle, filigree band with cage, globe hanger and an internal light shield.
- 0-10 V dimming driver.

Listings

- New Orleans II** LED is UL listed, suitable for wet locations.
- Powder Coated Tough™

EPA Data	
Fixture	EPA
N2L / N2F / N2S	2.4

NEW ORLEANS II - HT LUMEN DATA

# LED's	KELVIN	mA	Type 1	Type 2	Type 3	Type 4	Type 5	Type 5-W	Wattage
42	5,500	350	3,432	2,982	2,594	3,159	4,205	3,760	46
42	5,500	530	4,882	3,443	3,226	4,576	5,932	5,281	68
84	5,500	350	6,864	5,965	5,189	6,318	8,411	7,520	92
84	5,500	530	9,765	8,686	6,453	9,152	11,864	10,562	136

Visit www.VisionaireLighting.com for up-to-the-minute chart information, including types not listed here.
 * For 4000K multiply values by 0.90

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 www.visionairelighting.com

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