

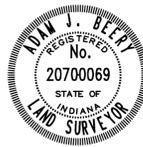
CENTENNIAL SOUTH EXPANSION

SECONDARY PLAT
PART OF THE N.W. 1/4 OF THE S.W. 1/4,
SECTION 15-T18N-R3E
HAMILTON COUNTY, INDIANA

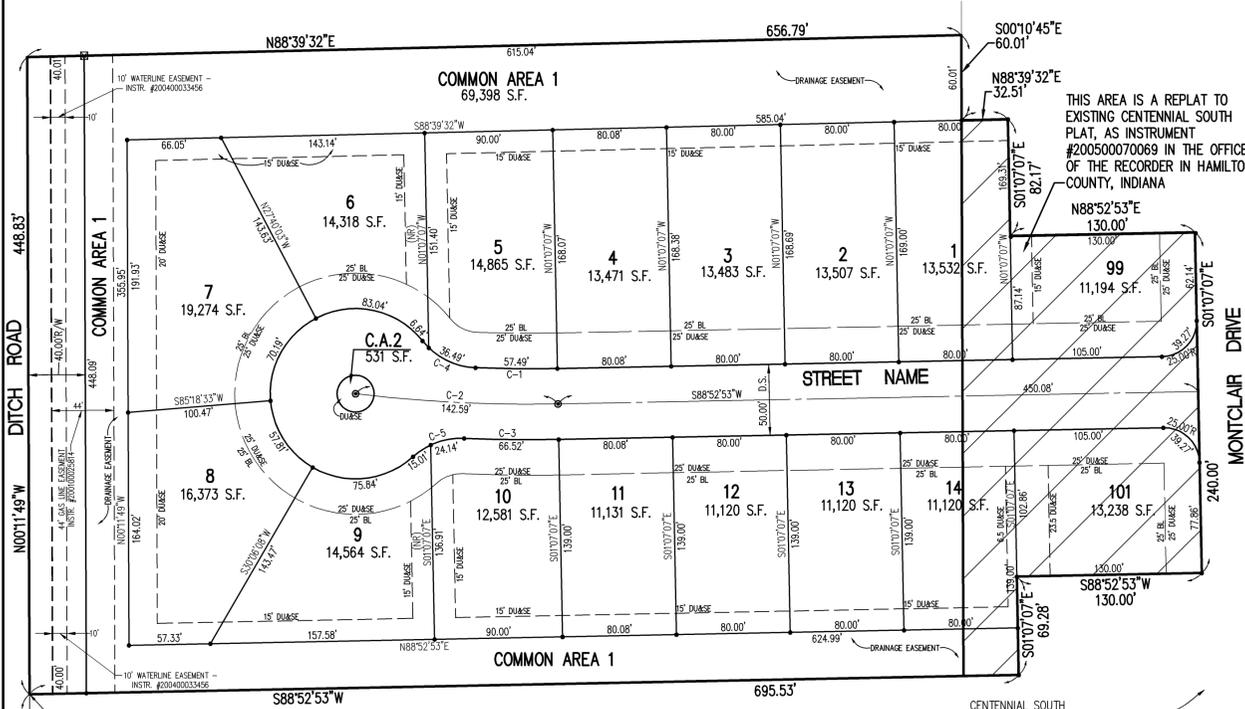
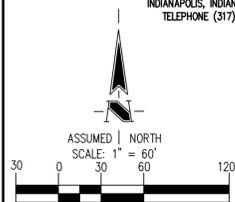


LEGEND
 ○ - INDICATES STREET CENTERLINE MONUMENTATION - SEE NOTE SHEET 9
 □ - INDICATES CONCRETE MONUMENT - SEE NOTE SHEET 9
 ● - INDICATES 5/8" REBAR W/YELLOW CAP STAMPED "SCHNEIDER ENG FIRM #0001" UNLESS NOTED OTHERWISE
 D.E. - DRAINAGE EASEMENT
 D.U. & S.E. - DRAINAGE UTILITY AND SEWER EASEMENT
 B.L. - BUILDING LINE
 S.F. - SQUARE FOOTAGE
 (NR) - NON-RADIAL
 C.A. - COMMON AREA
 D.S. - DEDICATED STREET EASEMENT

PREPARED FOR:
ESTRIDGE DEVELOPMENT CO., INC.
14300 CLAY TERRACE BLVD. SUITE 200
CARMEL, INDIANA 46032



Adam J. Beery Dated: _____
Registered Land Surveyor
Indiana #20700069



CURVE	LENGTH	RADIUS	CHORD	CHORD BEARING	DELTA
C-1	57.49'	990.00'	57.49'	S89°27'17"E	3'19"39"
C-2	142.59'	1015.00'	142.47'	S87°05'39"E	8'02"56"
C-3	66.52'	1040.00'	66.51'	S89°17'11"E	3'39"52"
C-4	43.13'	50.00'	41.80'	S63°04'52"E	49'25"12"
C-5	39.15'	50.00'	38.16'	S70°06'56"W	44'51"40"

SHEET 1 OF 2
CENTENNIAL SOUTH EXPANSION
R:\3\15\004\DWG\004B5
06/27/2008

CENTENNIAL SOUTH EXPANSION

SECONDARY PLAT
PART OF THE N.W. 1/4 OF THE S.W. 1/4,
SECTION 15-T18N-R3E
HAMILTON COUNTY, INDIANA



PREPARED FOR:
ESTRIDGE DEVELOPMENT CO., INC.
14300 CLAY TERRACE BLVD. SUITE 200
CARMEL, INDIANA 46032

Historic Fort Harrison
8901 Otis Avenue
Indianapolis, Indiana
46216-1097
317-826-7100 Fax
317-826-7200 Fax



SURVEYOR'S CERTIFICATE

A part of the Southwest Quarter of Section 15, Township 18 North, Range 3 East, of the Second Principal Meridian, Hamilton County, Indiana, being more particularly described as follows:

Commencing at the Southwest Corner of said Southwest Quarter; thence North 00 degrees 11 minutes 49 seconds West along the west line of said Quarter a distance of 1312.93 feet to the Point of Beginning; thence North 00 degrees 11 minutes 49 seconds West along said west line a distance of 448.83 feet to the southwest corner of a tract of land described in Deed Book 312, Page 796 in the Office of the Recorder in Hamilton County, Indiana; thence North 88 degrees 39 minutes 32 seconds East along the south line of said tract a distance of 656.79 feet to the boundary of Centennial South, a residential subdivision, the plat of which is recorded as Instrument #200500070069 in the Office of the Recorder in Hamilton County, Indiana; thence South 00 degrees 10 minutes 45 seconds East along the boundary of Centennial South a distance of 60.01 feet; thence North 88 degrees 39 minutes 32 seconds East a distance of 32.51 feet; thence South 01 degree 07 minutes 07 seconds East a distance of 82.17 feet; thence North 88 degrees 52 minutes 53 seconds East a distance of 130.00 feet; thence South 01 degree 07 minutes 07 seconds East a distance of 240.00 feet; thence South 88 degrees 52 minutes 53 seconds West a distance of 130.00 feet; thence South 01 degree 07 minutes 07 seconds East a distance of 69.28 feet to the boundary of Centennial South; thence South 88 degrees 52 minutes 53 seconds West along the boundary of Centennial South a distance of 695.53 feet to the Point of Beginning, containing 7.82 acres, more or less.

This subdivision consists of 16 lots, numbered 1 through 14, 99 and 101 together with Common Areas 1 and 2, streets, easements and public ways as shown hereon.

The size of lots and common areas together with the widths of streets and easements are shown in figures denoting feet and decimal parts thereof.

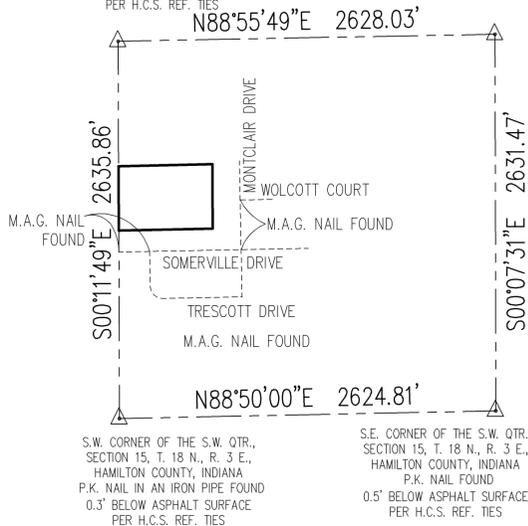
Cross-reference is hereby made to survey plat recorded as Instrument # _____ in the office of the recorder of Hamilton County, Indiana.

I, the undersigned, hereby certify that I am a registered Land Surveyor, licensed in compliance with the laws of the State of Indiana and that the within plat represents a subdivision of lands surveyed within the cross-referenced survey plat, and that to the best of my knowledge and belief, there has been no change from the matters of survey revealed by the cross-referenced survey on any lines that are common with the new subdivision. I further certify that the said subdivision was plotted under my direct supervision and control and is true and correct to the best of my knowledge and belief. Witness my signature this _____ day of _____.

DETAIL OF THE SW 1/4 OF SEC. 15-T18N-R3E

N.W. CORNER OF THE S.W. QTR., SECTION 15, T. 18 N., R. 3 E., HAMILTON COUNTY, INDIANA
COPPERWELD MONUMENT FOUND
0.4' BELOW ASPHALT SURFACE
PER H.C.S. REF. TIES

N.E. CORNER OF THE S.W. QTR., SECTION 15, T. 18 N., R. 3 E., HAMILTON COUNTY, INDIANA
5/8" REBAR FOUND PRIOR SURVEYS



S.W. CORNER OF THE S.W. QTR., SECTION 15, T. 18 N., R. 3 E., HAMILTON COUNTY, INDIANA
P.K. NAIL IN AN IRON PIPE FOUND
0.3' BELOW ASPHALT SURFACE
PER H.C.S. REF. TIES

S.E. CORNER OF THE S.W. QTR., SECTION 15, T. 18 N., R. 3 E., HAMILTON COUNTY, INDIANA
P.K. NAIL FOUND
0.5' BELOW ASPHALT SURFACE
PER H.C.S. REF. TIES

Adam J. Beery
Registered Land Surveyor
Indiana #20700069

STATE OF INDIANA)
COUNTY OF MARION)

BEFORE ME, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, PERSONALLY APPEARED THE ABOVE AND ACKNOWLEDGED THE EXECUTION OF THE FOREGOING INSTRUMENT AS HIS VOLUNTARY ACT AND DEED FOR THE USES AND PURPOSES THEREIN EXPRESSED.

WITNESS MY SIGNATURE AND NOTARIAL SEAL THIS _____ DAY OF _____.

NOTARY PUBLIC _____ (PRINTED NAME) - _____

COUNTY OF RESIDENCE _____

MY COMMISSION EXPIRES _____

NOTE
SUBDIVISION MONUMENTS ARE REQUIRED PER TITLE 865 (STATE BOARD OF REGISTRATION FOR LAND SURVEYORS) IAC 1-12-18.
STREET CENTERLINE MONUMENTS SHALL BE 5/8" DIA. SHAFT METAL ROD W/ 1 1/2" DIA. CAP STAMPED "SCHNEIDER FIRM NO. 0001".
SUBDIVISION BOUNDARY MONUMENTS SHALL BE 4"x4"x36" CONCRETE MONUMENTS WITH CUT CROSS ON TOP.
LOT CORNER MONUMENTS SHALL BE 5/8" X 30" METAL ROD W/CAP STAMPED "SCHNEIDER ENG FIRM 0001".

UNLESS OTHERWISE REQUIRED BY LOCAL ORDINANCE, THE INSTALLATION OF AFOREMENTIONED MONUMENTS MAY BE DELAYED FOR UP TO TWO YEARS FROM RECORDATION OF THE PLAT PER STANDARDS AS SET FORTH IN TITLE 865 IAC 1-12-18 SUBSECTION (b)(1)(2).

DEDICATION CERTIFICATE

THE UNDERSIGNED, OWNERS OF THE REAL ESTATE SHOWN AND DESCRIBED HEREIN AND RECORDED IN THE OFFICE OF THE RECORDER OF HAMILTON COUNTY, INDIANA, DO HEREBY CERTIFY THAT WE HAVE LAD OFF, PLATTED, AND SUBDIVIDED AND DO HEREBY LAYOFF, PLAT AND SUBDIVIDE SAID REAL ESTATE IN ACCORDANCE WITH THE WITHIN PLAT.

THIS SUBDIVISION SHALL BE KNOWN AND DESIGNATED AS CENTENNIAL SOUTH EXPANSION AN ADDITION IN HAMILTON COUNTY, INDIANA.

The real estate described within this plat is hereby platted, subdivided and made subject to these plat covenants, conditions and restrictions and is further subject to the terms, definitions and conditions of a certain declaration of covenants, conditions and restrictions recorded as Instrument Number _____ dated _____ in the Office of the Recorder of Hamilton County, Indiana.

Witness our hands this _____ day of _____.

BCE ASSOCIATES II, LLC ACCESS ENTITY

By: Michael J. Keller, CFO By: Michael J. Keller, Manager

BEFORE ME THE UNDERSIGNED NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, PERSONALLY APPEARED THE ABOVE AND ACKNOWLEDGED EXECUTING THE FOREGOING RECORD PLAT.

WITNESS MY HAND AND NOTARIAL SEAL THIS _____ DAY OF _____.

NOTARY PUBLIC _____ PRINTED NAME _____

MY COMMISSION EXPIRES _____

COUNTY OF RESIDENCE _____

CERTIFICATE OF PLAN COMMISSION

PLAN COMMISSION:
UNDER AUTHORITY PROVIDED BY IC 36-7, ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF INDIANA, AND ALL ACTS AMENDATORY THERETO, AND AN ORDINANCE ADOPTED BY THE TOWN COUNCIL OF THE TOWN OF WESTFIELD AS FOLLOWS:

APPROVED BY THE WESTFIELD-WASHINGTON TOWNSHIP PLAN COMMISSION AT A MEETING HELD _____

WESTFIELD-WASHINGTON TOWNSHIP PLAN COMMISSION

_____, SECRETARY

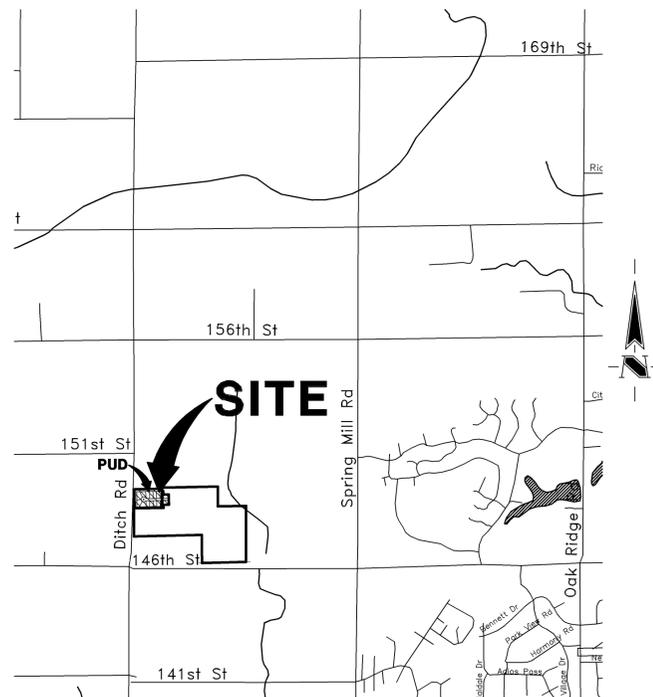
SHEET 2 OF 2
CENTENNIAL SOUTH EXPANSION
R:\3\15\004\DWG\004B5
06/27/2008

CENTENNIAL SOUTH EXPANSION

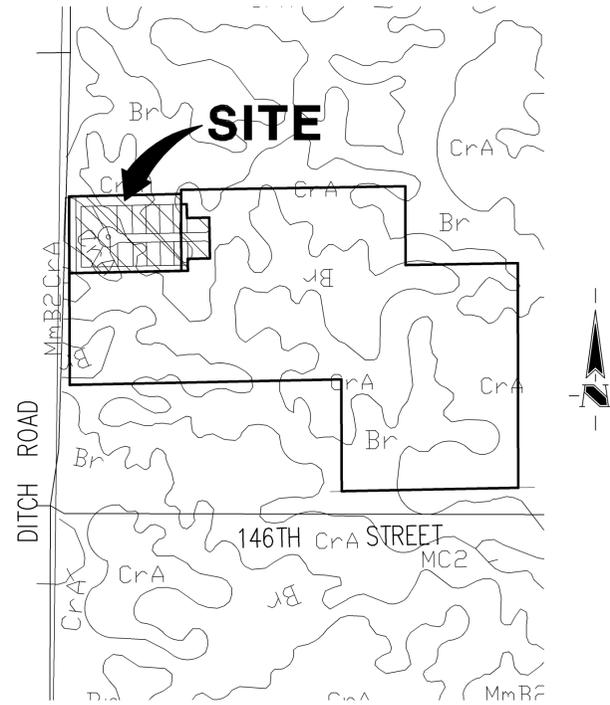
(CONSTRUCTION PLANS) HAMILTON COUNTY WESTFIELD, INDIANA

DEVELOPER:
ESTRIDGE DEVELOPMENT CO., INC.
14300 CLAY TERRACE BLVD. SUITE 200
CARMEL, INDIANA 46032
13171 582-2456

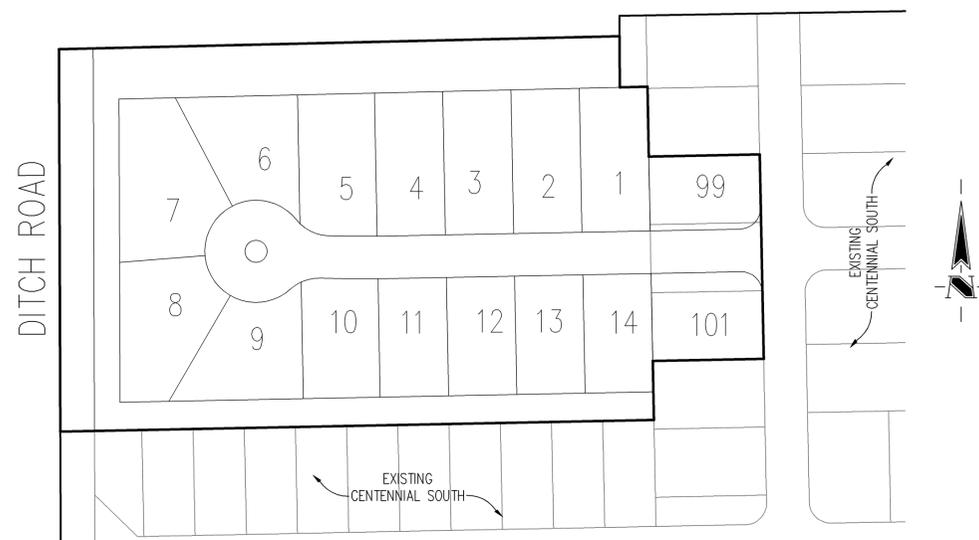
INDEX	
SHEET No.	DESCRIPTION
C100	COVER SHEET
D101	DEMOLITION PLAN
C101	DEVELOPMENT PLAN
C102	STORMWATER POLLUTION PREVENTION PLAN
C201	STREET PLAN & PROFILE
C301	CUL-DE-SAC & INTERSECTION DETAILS
C302	TRAFFIC CONTROL PLAN
C401	SANITARY SEWER PLAN
C601	STORM SEWER PLAN
C701	WATER DISTRIBUTION PLAN
C702	WATER DETAILS
C801, C802	STORMWATER POLLUTION PREVENTION DETAILS
C803-C805	GENERAL DETAILS
C901-C905	SPECIFICATIONS
L101	LANDSCAPE PLAN
L801	LANDSCAPE DETAILS
L901	LANDSCAPE SPECIFICATIONS



AREA MAP
SCALE: 1"=2000'



SOILS MAP
SCALE: 1"=500'



SITE MAP
SCALE: 1"=100'

REVISIONS:		
DATE:	BY:	DESCRIPTION:

PROJECT ENGINEER: JAR
CHECKED BY: JLF DATE CHECKED: 06/25/08

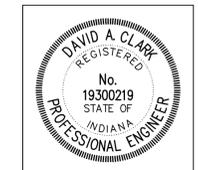


Schneider
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, Indiana
46216-1037
317-826-7100
317-826-7200 Fax
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS * LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

David A. Clark
CERTIFIED BY: DAVID A. CLARK, P.E.
E-MAIL ADDRESS: dclark@schneidercorp.com

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



DATE: 06/27/08

BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

LEGEND

- | | | | | | | | | | | | | | |
|--|--|---|--|---|--|---|---|---|--|---|--|--|--|
| <ul style="list-style-type: none"> ● INLET OR CATCH BASIN ○ SEWER MANHOLE ○ TELEPHONE MANHOLE ○ ACCESS COVER ○ TRAFFIC MANHOLE ○ WATER MANHOLE ○ MANHOLE ○ CLEANOUT ○ AREA LIGHT ○ UTILITY POLE WITH GUY WIRE ○ UTILITY POLE WITH RISER ○ FLAG POLE ○ TRAFFIC POLE ○ UTILITY PEDESTAL ○ ELECTRIC METER ○ ELECTRIC TRANSFORMER ○ CONDITIONING UNIT ○ UTILITY VALVE ○ HYDRANT ○ WELL ○ WATER VALVE ○ WATER METER | <ul style="list-style-type: none"> ○ GAS VALVE ○ GAS METER ○ SIGNS ○ MAILBOX ○ TREE, SHRUB ○ BENCHMARK ○ SOIL BORING | | | | | | | | | | | | |
| <ul style="list-style-type: none"> --- OVERHEAD UTILITY LINES --- T V UNDERGROUND TELEVISION --- E UNDERGROUND ELECTRIC --- T UNDERGROUND TELEPHONE --- FO UNDERGROUND FIBER OPTIC --- F UNDERGROUND FORCE MAIN --- G UNDERGROUND GAS LINE --- W UNDERGROUND WATER LINE --- S SEWER LINE --- UNDERGROUND STORM SEWER --- UNDERGROUND SANITARY SEWER --- EDGE OF WOODS --- FENCE LINE --- FLOW LINE | <p>Utilities</p> <p>Indiana Underground Utility Location Service (1-800-382-5544) was contacted on 29 NOV 04 for marking of utilities on 01 DEC 04 confirmation #0411292053, 0411292042 and 0411292023.</p> <table border="0"> <tr> <td> <p>Sanitary Sewers</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> </td> <td> <p>Water</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> </td> <td> <p>Gas</p> <p>Westfield Gas Corp.
608 West Park Street
Westfield, Indiana 46074
317-896-2581</p> </td> <td> <p>Pipeline</p> <p>Mention Ashland Pipe Line LLC
9322 West 30th Street
Indianapolis, Indiana 46218
317-291-9460</p> </td> </tr> <tr> <td> <p>Cable</p> <p>Insight Cablevision
15229 Stoney Creek Way
Noblesville, Indiana 46060
317-776-0860</p> </td> <td> <p>Telephone</p> <p>A&H
220 North Meridian Street
Indianapolis, Indiana 46204
317-556-4000</p> </td> <td> <p>Gas</p> <p>Vectra Energy Delivery
P.O. Box 1700
Noblesville, Indiana 46061
317-776-5334</p> </td> <td> <p>Electric</p> <p>Cinergy
1000 East Main Street
Plainfield, Indiana 46168
800-521-2232</p> </td> </tr> <tr> <td> <p>Cable</p> <p>Bright House Networks
3030 Roosevelt Avenue
Indianapolis, Indiana 46218
317-632-2288</p> </td> <td> <p>Pipeline</p> <p>Buckeye Pipeline Company LP
9430 West 30th Street
Clermont, Indiana 46229
317-291-3121</p> </td> <td colspan="2"></td> </tr> </table> <p>Utility Hotline: within Indiana 1-800-382-5544 outside Indiana 1-800-428-5200</p> <p>Note
The nature, size and location of utilities are per plans and locations provided by the respective utility companies. The above list constitutes some, if not all, of the utility companies which may provide service in the area of, and adjacent to, the subject project, based upon the information available through such plans and locations, and any incidental visual inspection. All utility companies should be notified prior to any excavation for field location of services and verification of size and nature of services.</p> | <p>Sanitary Sewers</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> | <p>Water</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> | <p>Gas</p> <p>Westfield Gas Corp.
608 West Park Street
Westfield, Indiana 46074
317-896-2581</p> | <p>Pipeline</p> <p>Mention Ashland Pipe Line LLC
9322 West 30th Street
Indianapolis, Indiana 46218
317-291-9460</p> | <p>Cable</p> <p>Insight Cablevision
15229 Stoney Creek Way
Noblesville, Indiana 46060
317-776-0860</p> | <p>Telephone</p> <p>A&H
220 North Meridian Street
Indianapolis, Indiana 46204
317-556-4000</p> | <p>Gas</p> <p>Vectra Energy Delivery
P.O. Box 1700
Noblesville, Indiana 46061
317-776-5334</p> | <p>Electric</p> <p>Cinergy
1000 East Main Street
Plainfield, Indiana 46168
800-521-2232</p> | <p>Cable</p> <p>Bright House Networks
3030 Roosevelt Avenue
Indianapolis, Indiana 46218
317-632-2288</p> | <p>Pipeline</p> <p>Buckeye Pipeline Company LP
9430 West 30th Street
Clermont, Indiana 46229
317-291-3121</p> | | |
| <p>Sanitary Sewers</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> | <p>Water</p> <p>Westfield Utilities
2708 East 171st Street
Westfield, Indiana 46074
317-896-5577</p> | <p>Gas</p> <p>Westfield Gas Corp.
608 West Park Street
Westfield, Indiana 46074
317-896-2581</p> | <p>Pipeline</p> <p>Mention Ashland Pipe Line LLC
9322 West 30th Street
Indianapolis, Indiana 46218
317-291-9460</p> | | | | | | | | | | |
| <p>Cable</p> <p>Insight Cablevision
15229 Stoney Creek Way
Noblesville, Indiana 46060
317-776-0860</p> | <p>Telephone</p> <p>A&H
220 North Meridian Street
Indianapolis, Indiana 46204
317-556-4000</p> | <p>Gas</p> <p>Vectra Energy Delivery
P.O. Box 1700
Noblesville, Indiana 46061
317-776-5334</p> | <p>Electric</p> <p>Cinergy
1000 East Main Street
Plainfield, Indiana 46168
800-521-2232</p> | | | | | | | | | | |
| <p>Cable</p> <p>Bright House Networks
3030 Roosevelt Avenue
Indianapolis, Indiana 46218
317-632-2288</p> | <p>Pipeline</p> <p>Buckeye Pipeline Company LP
9430 West 30th Street
Clermont, Indiana 46229
317-291-3121</p> | | | | | | | | | | | | |

HOLEY MOLEY SAY



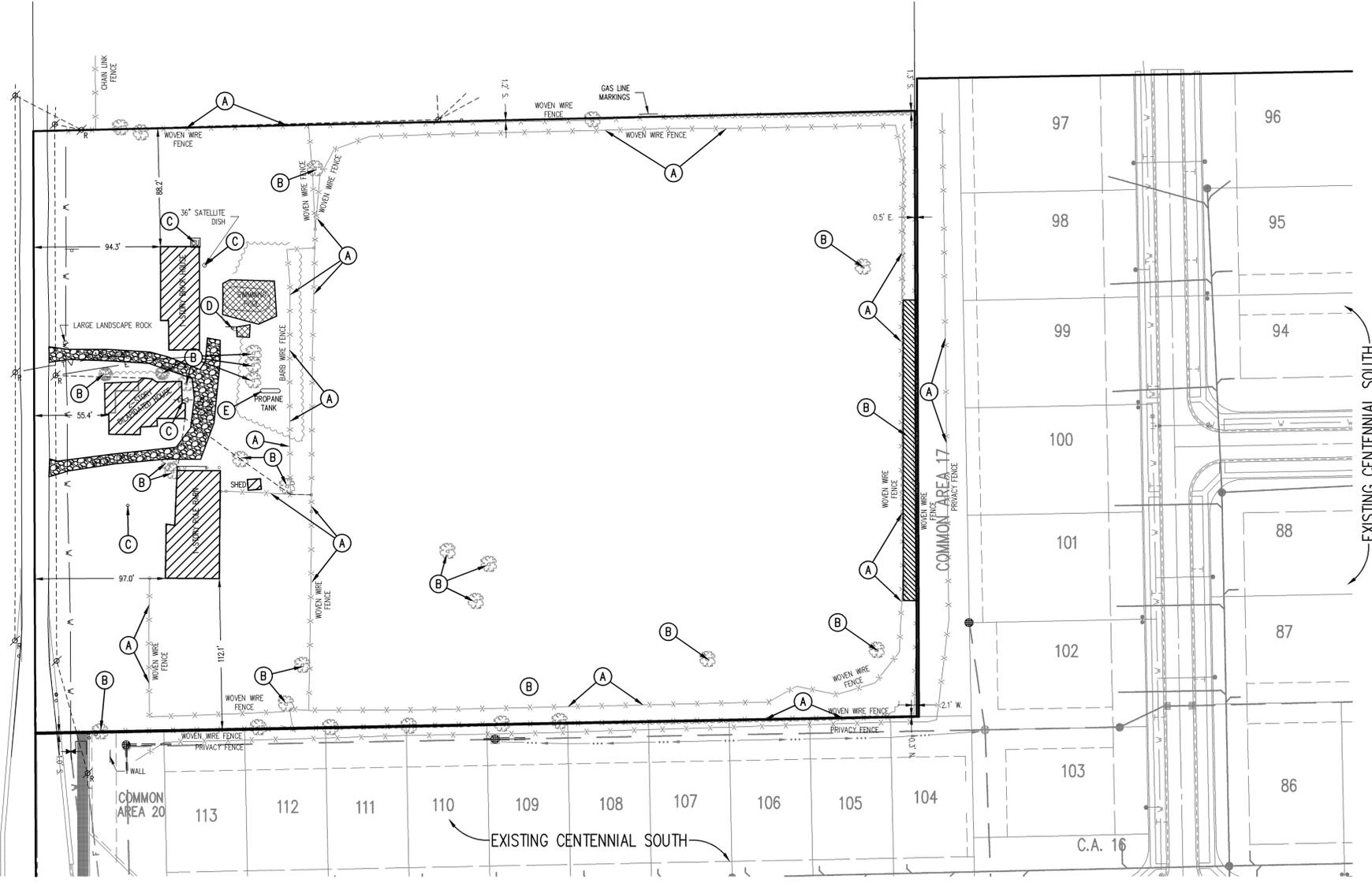
"DON'T DIG BLIND"

"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991, IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

ASSUMED NORTH
SCALE: 1"=50'

GENERAL NOTES

- REMOVAL OF EXISTING IMPROVEMENTS ARE AS NOTED ON THE PLANS. THE MATERIALS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN A PROPER AND LEGAL MANNER PER FEDERAL, STATE, COUNTY, CITY, AND OR LOCAL LAWS AND ORDINANCES.
- PROTECT EXISTING SITE IMPROVEMENTS, APURTENANCES, AND LANDSCAPING TO REMAIN. ERECT A PLAINLY VISIBLE FENCE AROUND DRIP LINE OF INDIVIDUAL TREES AND AROUND PERIMETER OF DRIP LINE OF GROUPS OF TREES TO REMAIN. PROVIDE PROTECTION TO ENSURE SAFE PASSAGE OF PEOPLE AROUND DEMOLITION AREA AND TO AND FROM OCCUPIED PORTIONS OF ADJACENT BUILDINGS & STRUCTURES.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS IN THE FIELD PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND ELEVATIONS DURING THE ENTIRE CONSTRUCTION SCHEDULE. IF ANY DISCREPANCIES ARE FOUND IN THESE ENGINEERING PLANS OR LANDSCAPE PLANS FROM ACTUAL FIELD CONDITIONS, THE CONTRACTOR SHALL CONTACT THE PROJECT MANAGER IMMEDIATELY. IF ANY DISCREPANCIES FOUND ON THE SURVEY PLAN OR ACTUAL FIELD CONDITIONS, THE CONTRACTOR SHALL CONTACT THE PROJECT MANAGER IMMEDIATELY FOR INSTRUCTIONS.
- ALL CONTRACTORS, BUT NOT LIMITED TO THE EXCAVATING CONTRACTOR OR CONTRACTORS, MUST TAKE PARTICULAR CARE WHEN EXCAVATING IN AND AROUND EXISTING UTILITY LINES AND EQUIPMENT. ACTUAL FIELD LOCATIONS OF ALL THE EXISTING UTILITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE LOCATED EITHER BY THE REPRESENTATIVE OF THE LOCAL UTILITY COMPANY OR BY A PRIVATE UNDERGROUND UTILITY LOCATION COMPANY PRIOR TO THE START OF EXCAVATION. VERIFY MINIMUM COVER REQUIREMENTS BY THE UTILITY CONTRACTOR OR CONTRACTORS, OR AGENCIES, WHICHEVER UTILITY COMPANY OR AGENCIES, THAT HAS JURISDICTION, SO NOT TO CAUSE DAMAGE.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ALL THE UTILITY COMPANIES AND FIRE DEPARTMENT 72 HOURS BEFORE CONSTRUCTION IS TO START TO VERIFY ANY UTILITIES THAT MAY BE PRESENT ON THE SITE. ALL VERIFICATIONS, LOCATIONS, SIZE, AND DEPTHS SHALL BE MADE BY THE APPROPRIATE UTILITY COMPANIES OR DEPARTMENTS. WHEN EXCAVATING AROUND OR OVER EXISTING UTILITIES, THE CONTRACTOR MUST NOTIFY THE UTILITY COMPANY SO A REPRESENTATIVE OF THE UTILITY CAN BE PRESENT DURING THE EXCAVATION TO INSTRUCT AND OBSERVE DURING THE EXCAVATION.
- HEAVY CONSTRUCTION EQUIPMENT TRAFFIC MAY CREATE PUMPING AND GENERAL DETERIORATION OF THE SHALLOWER SOILS IF EXCESS SURFACE WATER IS PRESENT. PROPER PRECAUTIONARY STEPS MUST BE TAKEN DURING THE ENTIRE CONSTRUCTION SCHEDULE TO ALLEVIATE SUCH DAMAGE.
- ALL CONSTRUCTION METHODS AND MATERIALS MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE FEDERAL, STATE, COUNTY, CITY, OR LOCAL REQUIREMENTS, WHICHEVER HAS JURISDICTION.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSPECT EACH DAY AND REMOVE ALL MUD, DIRT, GRAVEL, AND LOOSE MATERIALS TRACKED, DUMPED, SPILLED OR WIND BLOWN FROM THE SITE ONTO OTHER SITES, RIGHT OF WAYS, PUBLIC OR PRIVATE STREETS OR ROADS, DRIVEWAYS, YARDS, OR SIDEWALKS. THE CONTRACTOR MUST CLEAN OR PICK UP DAILY IF NECESSARY. THE CONTRACTOR SHALL REDUCE THE AIRBORNE DUST DURING THE ENTIRE CONSTRUCTION SCHEDULE. WATER MAY BE USED AS A REDUCER.
- THE UTILITIES INDICATED ON THESE PLANS AND ON THE SURVEY MAY NOT BE A COMPLETE INVENTORY OF ALL THE EXISTING UTILITIES PRESENT ON AND AROUND THIS SITE. THE LOCATION AND SIZE OF THESE UTILITIES MAY BE APPROXIMATE. THIS INFORMATION WAS GATHERED OR SUPPLIED BY OTHERS AND USED BY THE ENGINEER AND MAY NOT BE ACTUAL. THE ENGINEER SHALL NOT BE HELD LIABLE FOR ANY INCORRECT OR MISLEADING UTILITY INFORMATION INDICATED, IMPLIED, OR NOT INDICATED ON THESE PLANS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BEAR ALL EXPENSES TO REMOVE, RELOCATE AND OR MODIFY ALL UTILITIES, PRIVATE OR PUBLIC, OR OTHERWISE, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WITH EACH UTILITY COMPANY AND OR AGENT WHOM IS RESPONSIBLE TO REMOVE, RELOCATE, AND/OR MODIFY SUCH UTILITY EXISTING OR PROPOSED. IT FURTHER SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY IF ANY FUTURE UTILITIES ARE PLANNED AND HOW IT MAY EFFECT THIS PROJECT AND ITS OWNER AS TO THEIR FUTURE RESPONSIBILITIES.
- CONTRACTOR TO ARRANGE SHUTTING OFF INDICATED UTILITIES PRIOR TO BEGINNING DEMOLITION.
- DISCONNECT PIPE OR CONDUIT A MINIMUM OF 24" BELOW THE FINAL GRADE. CAP, VALVE, OR PLUG AND SEAL REMAINING PORTION OF PIPE OR CONDUIT.
- COMPLETELY FILL BELOW GRADE VOIDS RESULTING FROM BUILDING DEMOLITION OPERATIONS. SEE PROJECT SPECIFICATIONS, EARTHWORK SECTION
- PROMPTLY REPAIR DAMAGE TO ADJACENT PROPERTY CAUSED BY DEMOLITION OPERATIONS
- ERECT AND MAINTAIN TEMPORARY FENCING AROUND TREE PROTECTION ZONES BEFORE STARTING SITE CLEARING. REMOVE FENCE WHEN CONSTRUCTION IS COMPLETE.
- PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFFS OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS. SEE SHEETS C102, C801-C802.
- TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
- ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
- TIE ALL EXISTING DRAINAGE TILES INTO STORM SEWER.
- FIELD LOCATE EXISTING SERVICE CONNECTIONS. CUT AND CAP EXISTING UTILITIES AT LOCATION DIRECTED BY UTILITY CO. RELOCATION OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AS WELL AS COORDINATION WITH RELATIVE UTILITY COMPANIES. CONTRACTOR TO CARRY ALL COSTS RELATED TO UTILITY EXPENSES AND COSTS TO ACCOMPLISH SAID RELOCATION.
- REMOVE BELOW GRADE CONSTRUCTION, INCLUDING BASEMENTS, FOUNDATION WALKS, AND FOOTINGS COMPLETELY
- FILL ABANDONED WELLS WITH "B" BORROW, OR CONCRETE.
- VERIFY LOCATION AND DEPTH OF UTILITIES IN THE EASEMENT ALONG THE WEST PROPERTY LINE.



KEY NOTES

- | | |
|---|---|
| <ul style="list-style-type: none"> (A) REMOVE EXISTING FENCE (B) REMOVE EXISTING TREES. PROTECT EXISTING TREES THAT ARE NOT MARKED AS BEING REMOVED PER GENERAL NOTE 2 & 15. (C) LOCATE, IDENTIFY, DISCONNECT, AND SEAL OFF OR CAP OFF INDICATED UTILITIES SERVING BUILDING AND STRUCTURES TO BE DEMOLISHED (D) REMOVE EXISTING SIGN (E) REMOVE EXISTING PROPANE TANK (F) REMOVE EXISTING SWIMMING POOL | <ul style="list-style-type: none"> EXISTING PAVEMENT TO BE REMOVED SIDEWALK/CONC. PADS TO BE REMOVED GRAVEL DRIVE TO BE REMOVED. REPLACE WITH TOPSOIL. DEMOLISH BUILDING AND FOUNDATION. DISPOSE OF LEGALLY OFFSITE. REMOVE EXISTING TREES AND BRUSH |
|---|---|

REVISIONS:

DATE: 06/27/08
THIS DRAWING AND THE DESIGN AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7200
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS • LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH EXPANSION
WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO.: 3915.004
DRAWN BY: PRC CHECKED BY: JLF
SHEET TITLE: DEMOLITION PLAN
DRAWING FILES: R:\3\3915\004\DWGS\D101
XREF: 00485
XREF: 3915004S
XREF: R:\3\3915\001\DWGS\001B5
SHEET NO.: **D101**

STRUCTURE		L	DIA	SLOPE	RIM		INVERT	
UP	DOWN	(ft)	(in)	%	UP	DOWN	UP	DOWN
614	613	73	12	2.5	907.90	-	904.65	902.83
610	609	49	12	3.45	907.90	904.60	903.40	901.71
609	604	209	12	0.33	904.60	905.00	901.60	900.91
618	617	24	12	0.32	904.87	904.87	901.12	901.04
617	140	116	12	0.57	904.87	902.69	900.94	900.28
606	605	58	12	0.8	907.60	907.10	904.35	903.89
605	604	210	12	0.95	907.10	905.00	903.79	901.79
604	603	168	18	0.2	905.00	905.24	900.81	900.47
603	602	38	18	0.2	905.24	905.24	900.37	900.30
602	601	160	21	0.15	905.24	-	900.20	899.96
600	135	30	12	0.32	902.17	-	899.94	899.84

- Utilities**
Indiana Underground Utility Location Service (1-800-382-5544) was contacted on 29 NOV 04 for marking of utilities on 01 DEC 04 confirmation #0411292033, 0411292042 and 0411292023.
- | | | | |
|--|---|--|--|
| Sanitary Sewers
Westfield Utilities
2706 East 171st Street
Westfield, Indiana 46074
317-896-5577 | Water
Westfield Utilities
2706 East 171st Street
Westfield, Indiana 46074
317-896-5577 | Gas
Westfield Gas Corp.
606 West Park Street
Westfield, Indiana 46074
317-896-2581 | Pipeline
Marathon Ashland Pipe Line LLC
9322 West 30th Street
Indianapolis, Indiana 46218
317-291-9460 |
| Cable
Insight Cablevision
15229 Stony Creek Way
Noblesville, Indiana 46060
317-776-0660 | Telephone
A184
220 North Meridian Street
Indianapolis, Indiana 46204
317-356-4000 | Gas
Westren Energy Delivery
P.O. Box 1700
Noblesville, Indiana 46061
317-776-5334 | |
| Cable
Bright House Networks
3030 Roosevelt Avenue
Indianapolis, Indiana 46218
317-632-2288 | Pipeline
Buckeye Pipeline Company LP
9430 West 30th Street
Clarmont, Indiana 46229
317-291-3121 | Electric
Onergy
1000 East Main Street
Plainfield, Indiana 46168
800-521-2232 | |
- Utility Hotline: within Indiana 1-800-382-5544 outside Indiana 1-800-428-5200
Note
The nature, size and location of utilities are per plans and locations provided by the respective utility companies. The above list constitutes same, if not all, of the utility companies which may provide service in the area of, and adjacent to, the subject project, based upon the information available through such plans and locations, and any incidental visual inspection. All utility companies should be notified prior to any excavation for field location of services and verification of size and nature of services.

HOLEY MOLEY SAYS
"DON'T DIG BLIND"
IT'S THE LAW!
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991,
IT IS AGAINST THE LAW TO EXCAVATE
WITHOUT NOTIFYING THE UNDERGROUND
LOCATION SERVICE TWO (2) WORKING
DAYS BEFORE COMMENCING WORK.

ASSUMED NORTH
SCALE: 1"=50'

BENCHMARK

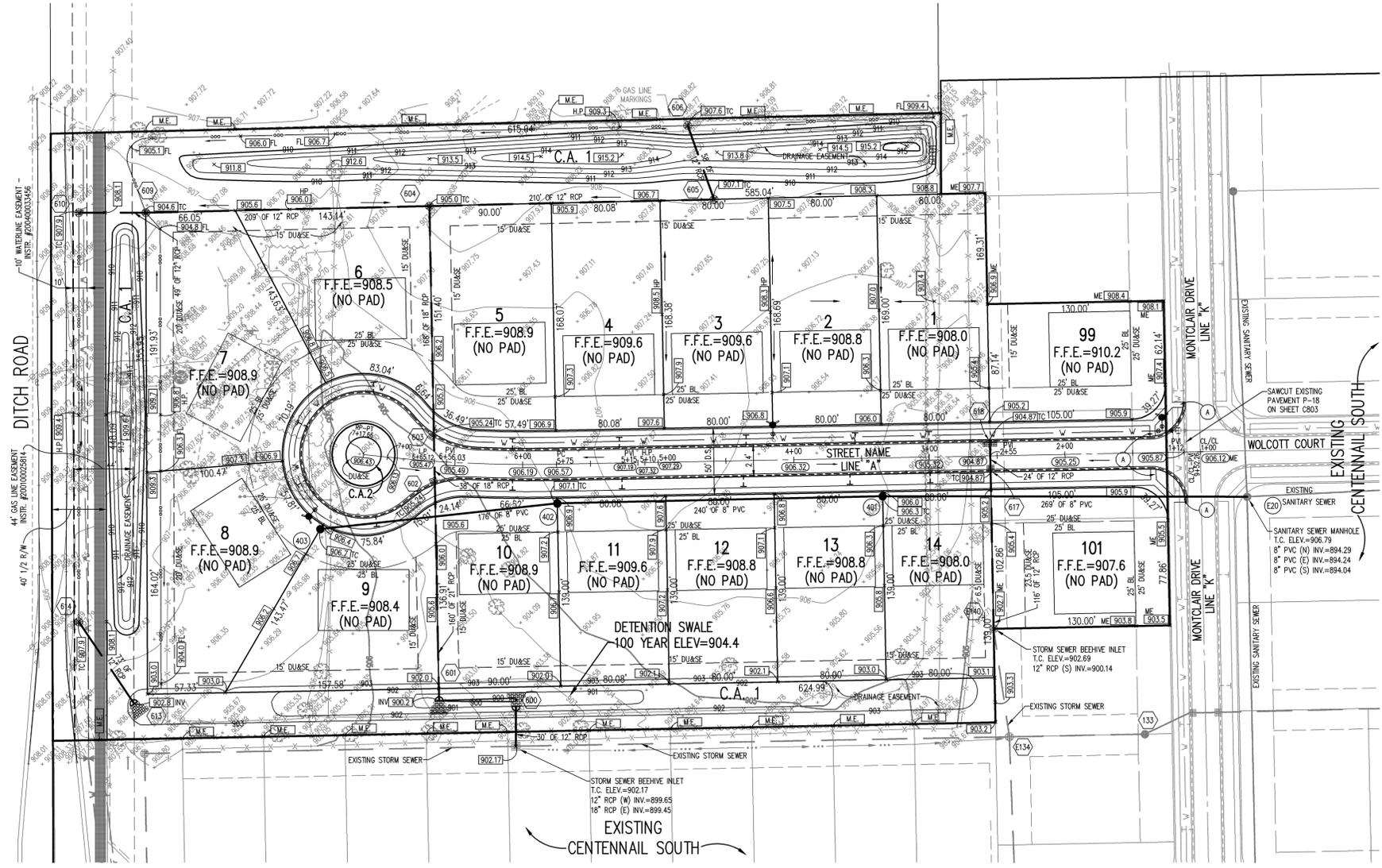
- BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)
- BM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)
- BM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

LEGEND

- Existing Storm Sewer
- New Storm Sewer
- Existing Sanitary Sewer
- New Sanitary Sewer
- Existing Contour
- New Pavement Grade
- All Other Finish Grades
- Storm Structure Number
- Sanitary Structure Number
- Flow Arrow
- Denotes Approximate Home Location and Finished Floor Elevations
- Meat Existing Elevation
- Indicates Flood Routing
- Denotes Minimum Flood Protection Grade
- New Subsurface Drains
- Handicapped Ramp See Fig. P-11 & P11A on Sheet C803

GENERAL NOTES

- ALL RADIUS AND OTHER DIMENSIONS FOR 2" ROLL CURB ARE TO BACK OF CURB
- IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS PHASE OF WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES FOR PROPER STAKE LOCATIONS FOR EACH UTILITY BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER OR THE ENGINEER OF ANY CHANGES, OMISSIONS, OR ERRORS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.
- VERIFY SIGN LOCATIONS AND SIGN REQUIREMENTS WITH LOCAL GOVERNING AUTHORITIES.
- TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
- ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
- THE SIZE AND LOCATION OF EXISTING UTILITIES SHOWN AREA PER INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES. ALL UTILITY COMPANIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION FOR FIELD LOCATION OF SERVICES.
- SERVICE WALKS SHALL BE CONSTRUCTED PER FIG. P-10 ON SHEET C803.
- ROLL CURB SHALL BE DEPRESSED AT SIDEWALK INTERSECTIONS MARKED WITH HANDICAPPED RAMPS PER FIG. P-11 & P11A ON SHEET C803.
- LOCATION OF SERVICE WALKS TO INDIVIDUAL UNITS SHALL ALIGN WITH PORCH STEPS AS CONSTRUCTED WITH BUILDINGS AND SHALL BE CONSTRUCTED AFTER BUILDINGS ARE COMPLETED.
- ALL EXISTING OFF-SITE DRAIN TILES THAT ARE ENCOUNTERED SHALL BE TIED INTO THE PROPOSED STORM SEWER SYSTEM WITH A POSITIVE OUTFLOW.



REVISIONS:

DAVID A. CLARK
REGISTERED
No. 19300219
STATE OF INDIANA
PROFESSIONAL ENGINEER
DATE: 06/27/08
P. J. A. C. B.
THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider

THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7200
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS * LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH
EXPANSION
WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO.: 3915.004
DRAWN BY: PRC CHECKED BY: JLF
SHEET TITLE: DEVELOPMENT PLAN

DRAWING FILES:
R:\3\1915\004\DWGS\C101
REF: 00485
REF: 3915044
REF: R:\3\1915\001\DWGS\00185

SHEET NO.:
C101

BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

LEGEND

- HATCH PATTERN DENOTES TEMPORARY SEEDING
- HATCH PATTERN DENOTES PERMANENT SEEDING
- HATCH PATTERN DENOTES EROSION CONTROL BLANKET
- TEMPORARY SEDIMENT FILTER/BARRIER- SEE DETAILS SHEET C801
- OUTLET PROTECTION- SEE DETAIL SHEET C801
- TEMPORARY SILT FENCE- SEE DETAIL SHEET C801
- TEMPORARY SEDIMENT FILTER- SEE DETAIL SHEET C801
- CONSTRUCTION LIMITS

HOLEY MOLEY SAYS
"DON'T DIG BLIND"

"IT'S THE LAW"
 CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
 CALL TOLL FREE
 PER INDIANA STATE LAW IS-69-1991, IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

ASSUMED NORTH
 SCALE: 1"=50'

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

CONSTRUCTION SEQUENCING

The following sequencing should be followed as much as possible, and any dewatering required during construction of this project shall be done through a "Dandy" dewatering bag or approved equal.

Call the Indiana Underground Protection Systems, Inc. ("Holey Moley") @ 1-800-382-5544 to check to location of any utilities at least two working days before work is to commence.

Establish onsite location for owner/operator/contractor placement of approved plans and Rule 5 NOI inspection documentation.

IDEM & CITY OF WESTFIELD MUST BE NOTIFIED WITHIN 48 HOURS OF WHEN THE CONSTRUCTION IS SCHEDULED TO BEGIN.

PRE-CONSTRUCTION ACTIVITIES (MASS EARTHWORK)

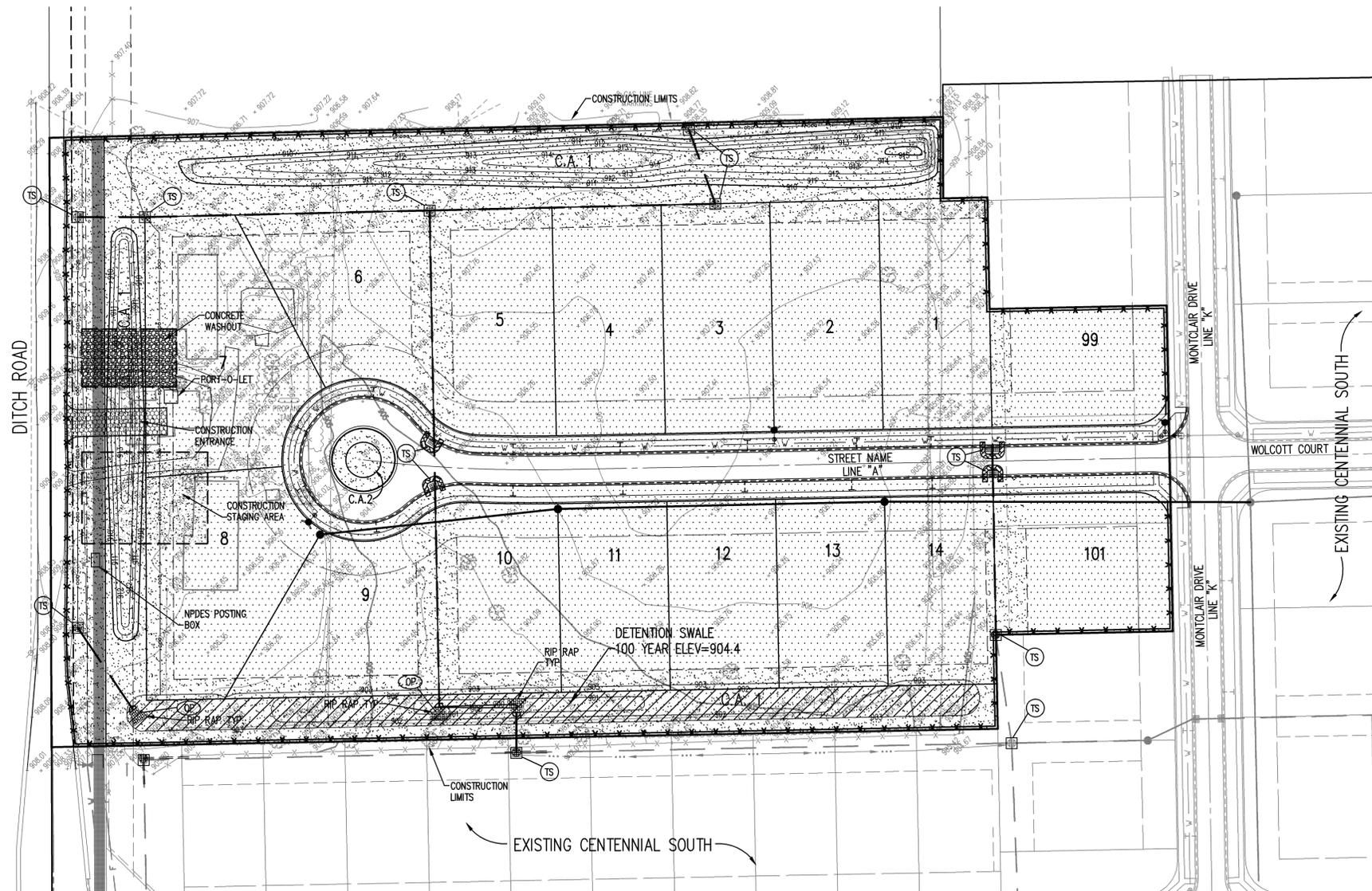
1. Install temporary stone access drive off of Ditch Road.
2. Construct Rule 5 information posting site, install trash dumpster, and place port-o-let.
3. Install silt fencing as shown.
4. Strip topsoil from pad and road areas.
5. Excavate road bed and prepare building pads as shown.
6. Install temporary seed in all disturbed areas.
7. Excavate detention swale. Install outlet structure for water quality pond as shown on sheet C101.
8. Install permanent seed and erosion control blanket on detention swale banks after completion.
9. Maintain all silt fencing by cleaning out every week and after every storm event.

CONSTRUCTION ACTIVITIES

1. Install concrete washout basin as indicated on plans.
2. Install lime in road subgrades as required.
3. Install storm sewer pipe and street underdrain with rip rap at pipe end sections. Immediately install inlet protection after installation of each inlet as completed.
4. Install all remaining utilities including sanitary, electric, water and gas. After completely installing offsite sanitary and water lines, install permanent seed.
5. Complete and/or repair earthwork for building pads and road subgrades.
6. Install perimeter and rear yard swales.
7. Permanently seed perimeter and rear yard swales.
8. Permanently seed all areas disturbed by installation of offsite sanitary and water mains.
9. Fine grade and permanently seed disturbed Common Areas upon completion of streets.
10. Install temporary seed in all remaining disturbed areas as completed.
11. Install silt fence along sidewalks to prevent siltation of new walks and streets if home/lot construction is to begin immediately.
12. Clean and maintain all ditch checks, silt fences, and inlet protection until site is stabilized.

POST CONSTRUCTION ACTIVITIES

1. Distribute Post Construction BMP Operations and Maintenance Manual to BMP owner.
2. Identify and locate the following BMP structures for the owner:
 - Stormwater quality ponds
 - Detention swale banks
 - Vegetated Swales
 - Energy dissipating Rip-Rap at pipe outlets
3. BMP owners must routinely inspect BMPs to verify that all BMP components are functioning as designed and are not in danger of failing.
4. BMP owner is responsible for the maintenance of the BMP and any costs associated with maintaining the BMP.
5. BMP Owner shall keep the BMP free from litter, woody growth, and shall mow the BMP when needed, but average grass blade height not to exceed six (6) inches. Refer to the inspection and maintenance guidelines for further clarification.
6. Sediment that collects in the BMP shall be removed when it adversely affects the ability of the BMP to perform as a water quality control device.



NOTE: EROSION CONTROL PLAN MUST BE EXECUTED BEFORE ANY CONSTRUCTION COMMENCES.

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

REVISIONS:

DAVID A. CLARK
 REGISTERED
 No. 19300219
 STATE OF INDIANA
 PROFESSIONAL ENGINEER
 DATE: 06/27/08
 THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION AND ARE NOT TO BE USED OR REPRODUCED IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
 © COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider
 THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7200
 www.schneidercorp.com
 Architecture
 Civil Engineering
 Environmental Engineering
 Geotechnical Services
 GIS + LIS
 Home Builder Services
 Interior Design
 Land Surveying
 Landscape Architecture
 Transportation Engineering

CENTENNIAL SOUTH
 EXPANSION
 WESTFIELD, INDIANA
 ESTRIDGE DEVELOPMENT CO., INC.
 CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
 DRAWN BY: PRC CHECKED BY: JLF
 SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN
 DRAWING FILES: R:\3\3915\004\DWGS\C102
 XREF: 00485
 XREF: 3915015
 XREF: EROSION
 XREF: R:\3\3915\001\DWGS\001B5
 SHEET NO: C102

BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

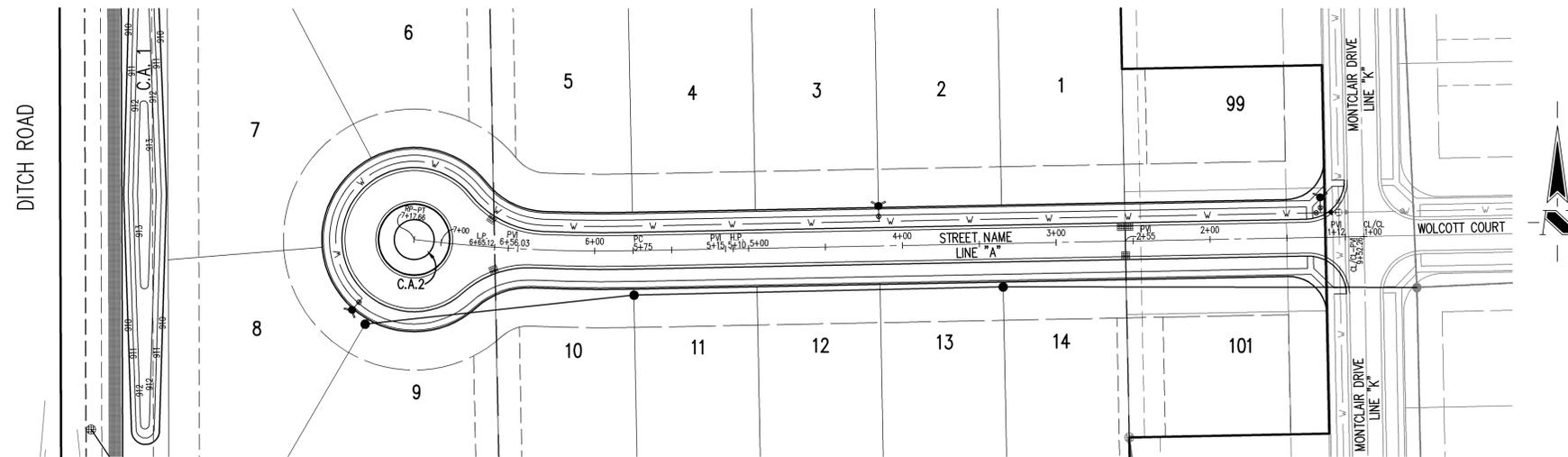
TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

GENERAL NOTES

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

HOLEY MOLEY SAYS
"DON'T DIG BLIND"

"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991. IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

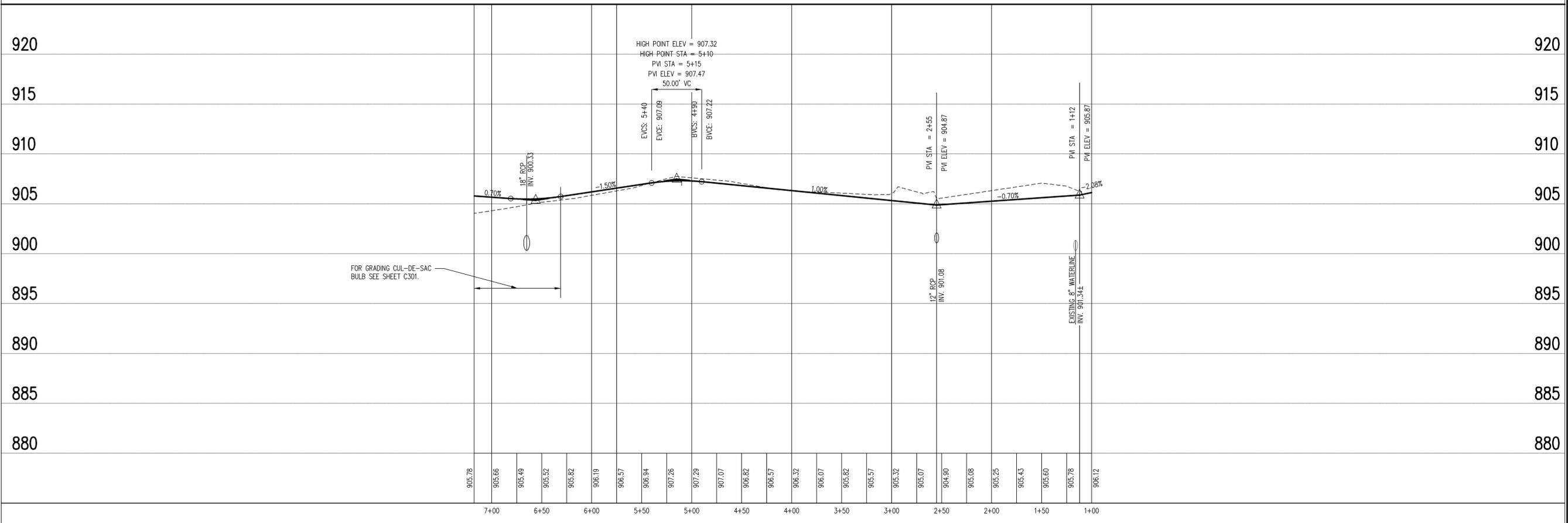


Sheet	Detail Number	Description
C803	1	Street Cross Section Detail
C803	P-10	Concrete Sidewalk Detail
C803	P-11&11A	Sidewalk Ramp For Handicapped Detail
C803	P-8	Curb Detail
C803	P-9	Pipe Underdrain Detail
C301		Intersection Details

NOTE

STREET PLAN

SCALE: 1"=50'



STREET PROFILE

LEGEND	
	Existing Grade
	New Grade

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

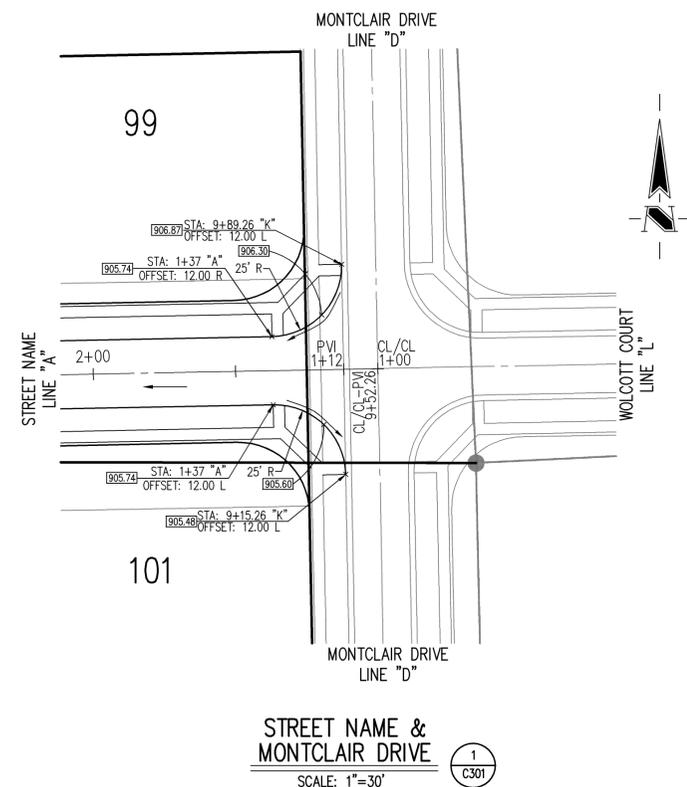
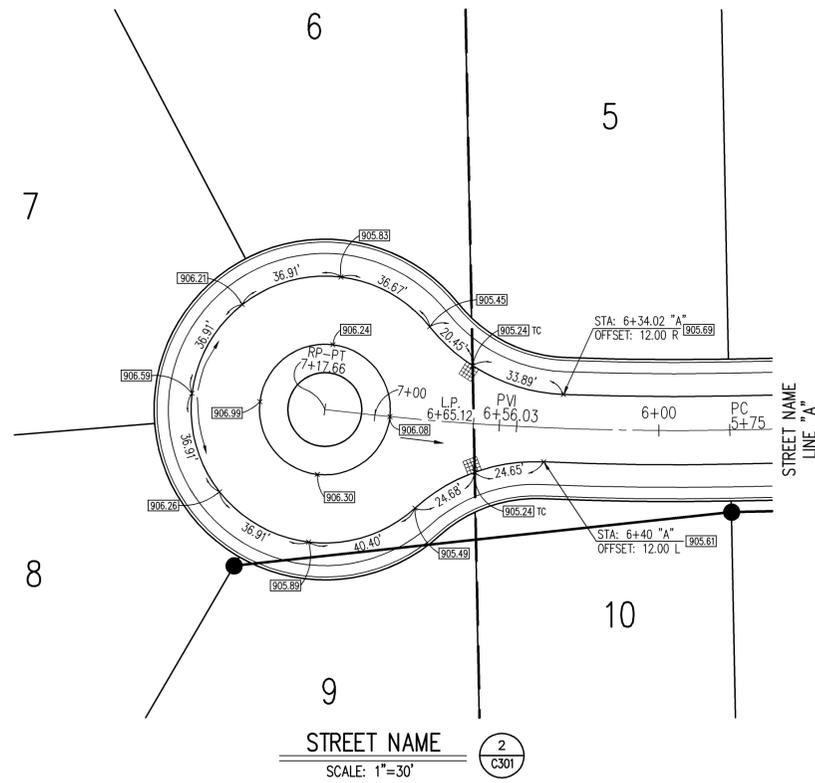
REVISIONS:

DAVID A. CLARK
REGISTERED
No. 19300219
STATE OF INDIANA
PROFESSIONAL ENGINEER
D. A. Clark
DATE: 06/27/08
THIS DRAWING AND THE BEARS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)


Schneider
THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Clus Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com
Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS * LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH
EXPANSION
WESTFIELD, INDIANA
ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08	PROJECT NO.: 3915.004
DRAWN BY: PRC	CHECKED BY: JLF
SHEET TITLE: STREET PLAN	
DRAWING FILES: R:\3K\3915\004\DWGS\C201 XREF: STREET XREF: 004B XREF: 3915004S XREF: R:\3K\3915\001\DWGS\001BS	
SHEET NO.: C201	



GENERAL NOTES

1. ALL STREETS ARE TO BE 24' WIDE AND HAVE A 50' DEDICATED STREET EASEMENT WIDTH, UNLESS OTHERWISE NOTED.

BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320 ± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

REVISIONS:



DATE: 06/27/08
 THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
 © COPYRIGHTED BY THE SCHNEIDER CORP. (2008)



THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7300
 www.schneidercorp.com

- Architecture
- Civil Engineering
- Environmental Engineering
- Geotechnical Services
- GIS * LIS
- Home Builder Services
- Interior Design
- Land Surveying
- Landscape Architecture
- Transportation Engineering

CENTENNIAL SOUTH
 EXPANSION

WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
 CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO.: 3915.004
 DRAWN BY: PRC CHECKED BY: JLF

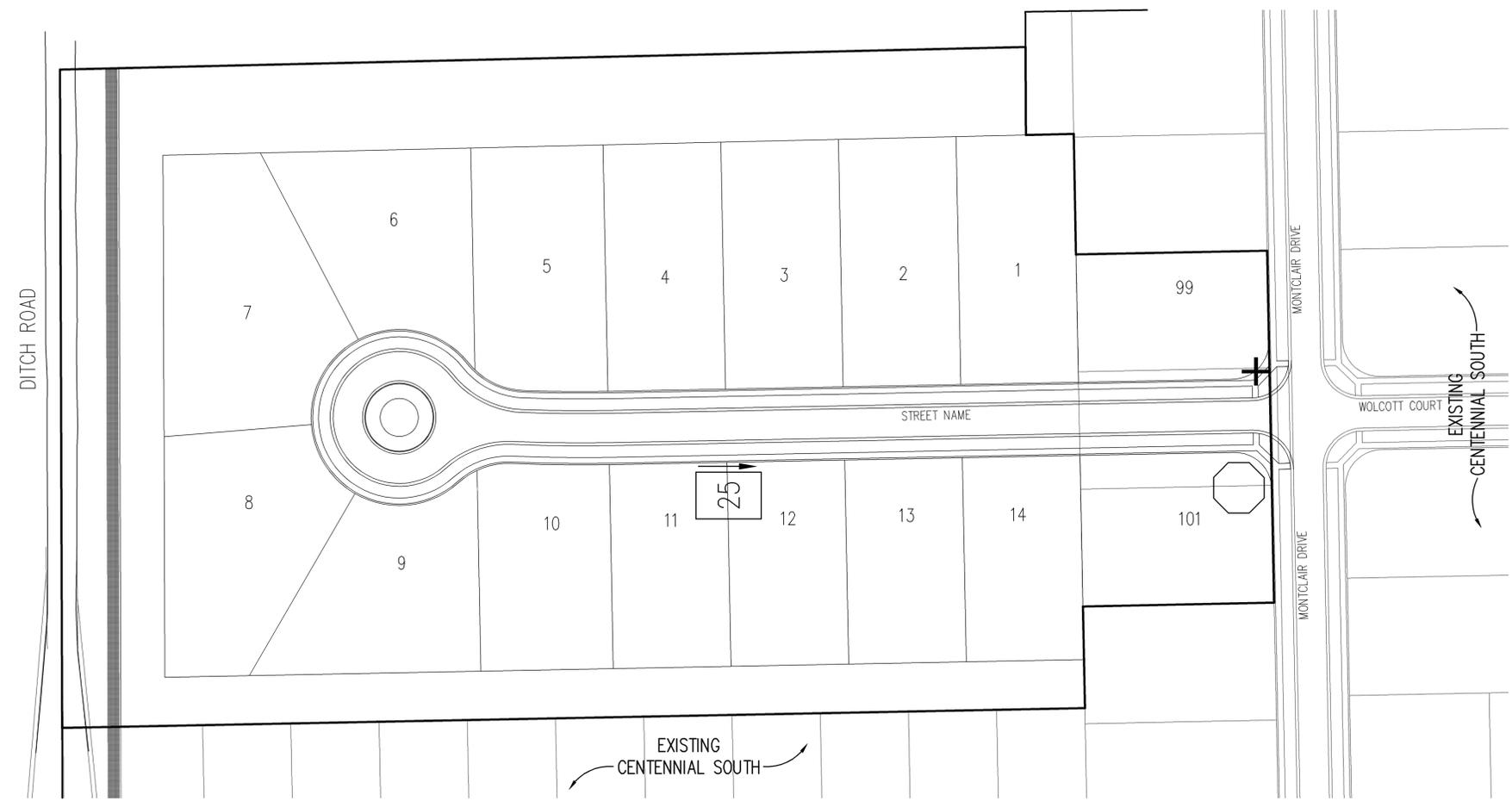
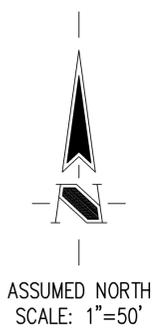
SHEET TITLE:
 CUL-DE-SAC & INTERSECTION
 DETAILS

DRAWING FILES:
 R:\3K\3915\004\DWGS\C301
 XREF: 001B5
 XREF: R:\3K\3915\001\DWGS\001B5

SHEET NO.:
 C301

HOLEY MOLEY SAYS
**"DON'T
 DIG
 BLIND"**

"IT'S THE LAW"
 CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
 CALL TOLL FREE
 PER INDIANA STATE LAW IS-69-1991,
 IT IS AGAINST THE LAW TO EXCAVATE
 WITHOUT NOTIFYING THE UNDERGROUND
 LOCATION SERVICE TWO (2) WORKING
 DAYS BEFORE COMMENCING WORK.



BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

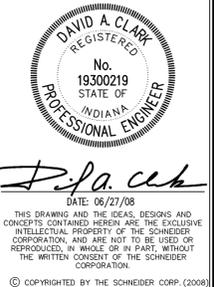
GENERAL NOTES

- TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
- ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
- ALL SIGNS AND PAVEMENT MARKINGS SHALL MEET MUTCD STANDARDS.

LEGEND

- (1 REQ.)  STOP
- (1 REQ.)  SPEED LIMIT (25 MPH)
- (1 REQ.)  STREET NAME SIGN

REVISIONS:



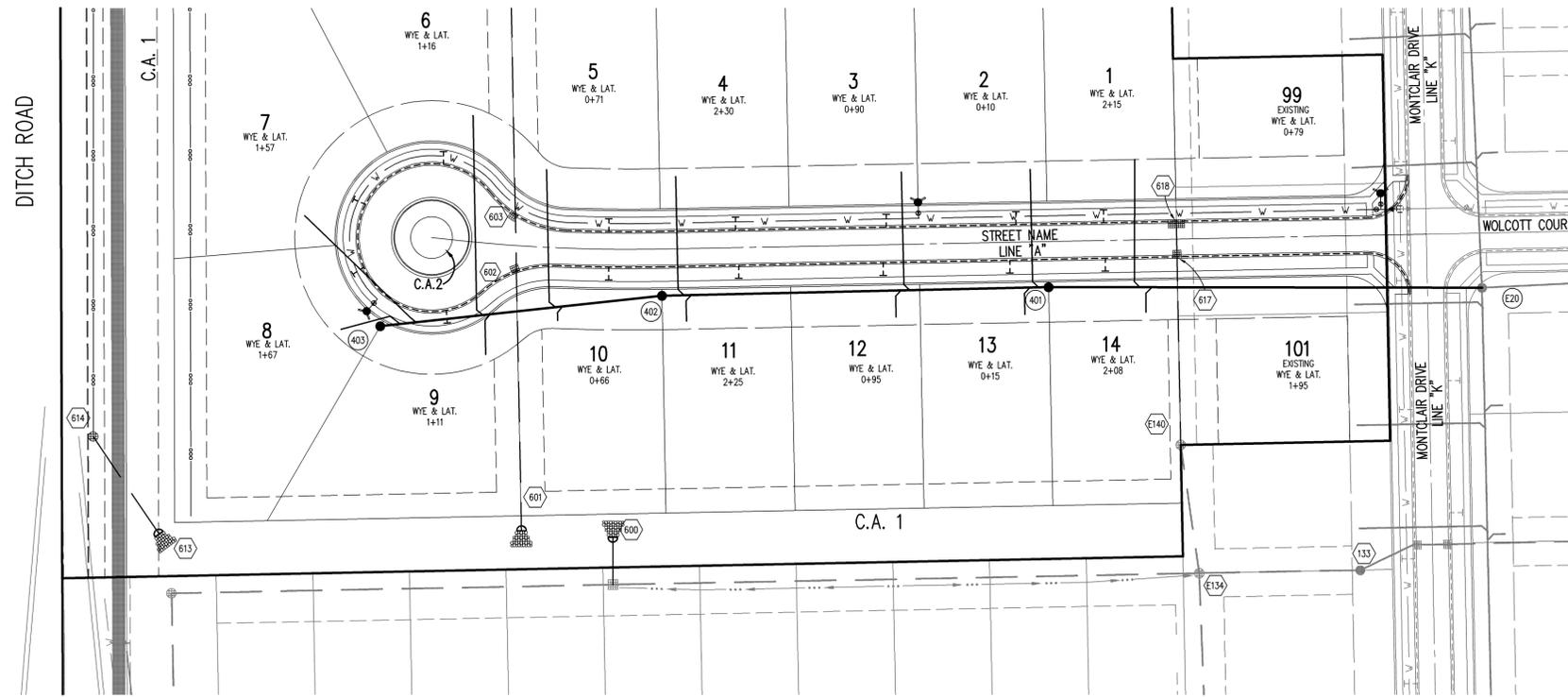

THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7200
 www.schneidercorp.com

Architecture
 Civil Engineering
 Environmental Engineering
 Geotechnical Services
 GIS * LIS
 Home Builder Services
 Interior Design
 Land Surveying
 Landscape Architecture
 Transportation Engineering

**CENTENNIAL SOUTH
 EXPANSION**
 WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
 CARMEL, INDIANA

DATE: 06/27/08	PROJECT NO.: 3915.004
DRAWN BY: PRC	CHECKED BY: JLF
SHEET TITLE: TRAFFIC CONTROL PLAN	
DRAWING FILES: R:\3\3915\004\DWGS\C302 XREF: 00485 XREF: 39150045 XREF: R:\3\3915\001\DWGS\001BS	
SHEET NO.: C302	



HOLEY MOLEY SAYS

"DON'T DIG BLIND"

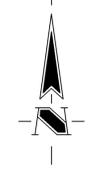


"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544

CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991,
IT IS AGAINST THE LAW TO EXCAVATE
WITHOUT NOTIFYING THE UNDERGROUND
LOCATION SERVICE TWO (2) WORKING
DAYS BEFORE COMMENCING WORK.

GENERAL NOTES

1. TEMPORARY TRAFFIC CONTROL DURING CONSTRUCTION TO CONFORM TO APPLICABLE LOCAL AND STATE STANDARDS.
2. ALL CONSTRUCTION ACTIVITY ON THIS SITE TO BE PERFORMED IN COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS FOR WORKER SAFETY.
3. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL UTILITY LOCATIONS BEFORE CONSTRUCTION BEGINS.
4. CONTRACTORS SHALL MINIMIZE DAMAGE TO EXISTING TREES.
5. ALL WYE, LATERAL AND PROFILE STATIONS ARE FROM THE NEAREST DOWNSTREAM MANHOLE. (MH)
6. WYES AND LATERALS TO BE 6" PIPE UNLESS OTHERWISE SPECIFIED.
7. FOR SINGLE FAMILY LOTS ALL WYE CONNECTIONS SHALL HAVE A MINIMUM OF FIVE (5) FOOT LATERAL EXTENSION CONNECTED TO THE WYE, OR EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, WHICHEVER IS GREATER, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS NOTED OTHERWISE. THE END OF THE LATERAL SHALL BE PLUGGED OR CAPPED, UNLESS OTHERWISE NOTED.
8. FOR SINGLE FAMILY LOTS, LATERALS RUNNING TO THE OPPOSITE SIDE OF THE STREET SHALL EXTEND TO THE UTILITY AND DRAINAGE EASEMENT OF THE LOT, BUT IN NO CASE SHOULD THE END OF THE LATERALS BE CLOSER THAN FIVE (5) FEET TO THE BUILDING LINE, UNLESS OTHERWISE NOTED.



BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

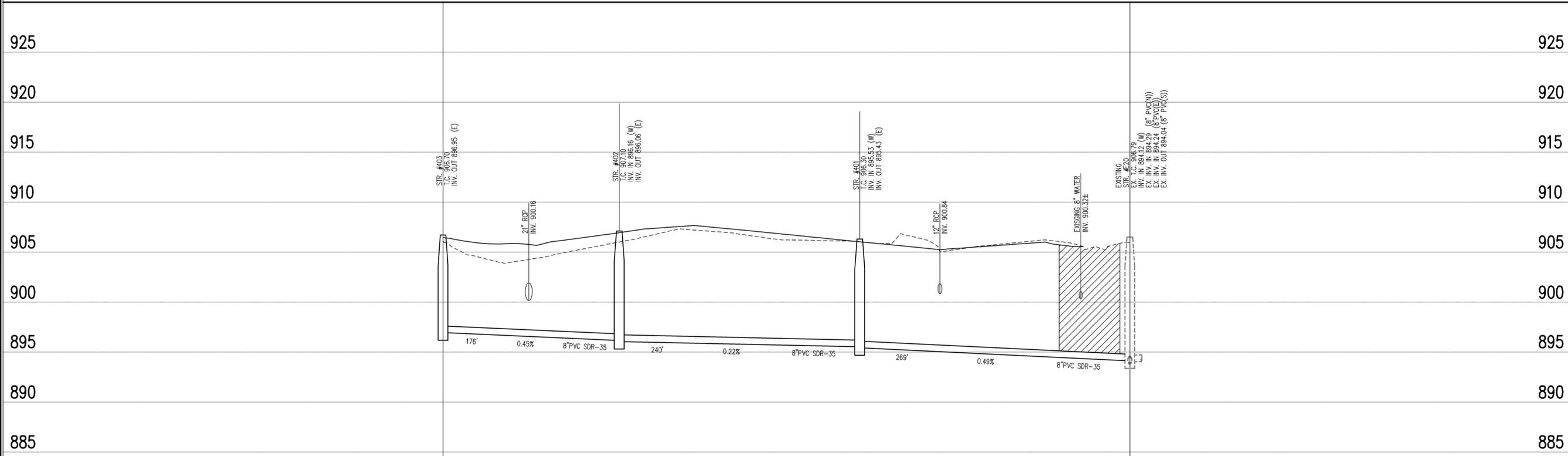
TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'+ SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

Sheet	Detail	Description
C804	S-1	Precast Reinforced Concrete Manhole
C804	S-5	Sanitary Sewer Bedding Detail
C804	S-11	Service Connection
C804	S-10	Wye & Lateral Capping Detail
C804	S-12	Service Connection
C804	S-13	Service Connection

SANITARY SEWER PLAN

SCALE: 1"=50'



SANITARY SEWER PROFILE

LEGEND		
	Existing Grade	
	New Grade	
	Granular Backfill	

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

REVISIONS:

DAVID A. CLARK
REGISTERED
No. 19300219
STATE OF INDIANA
PROFESSIONAL ENGINEER
DATE: 06/27/08
THIS DRAWING AND THE DESIGN AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider

THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com

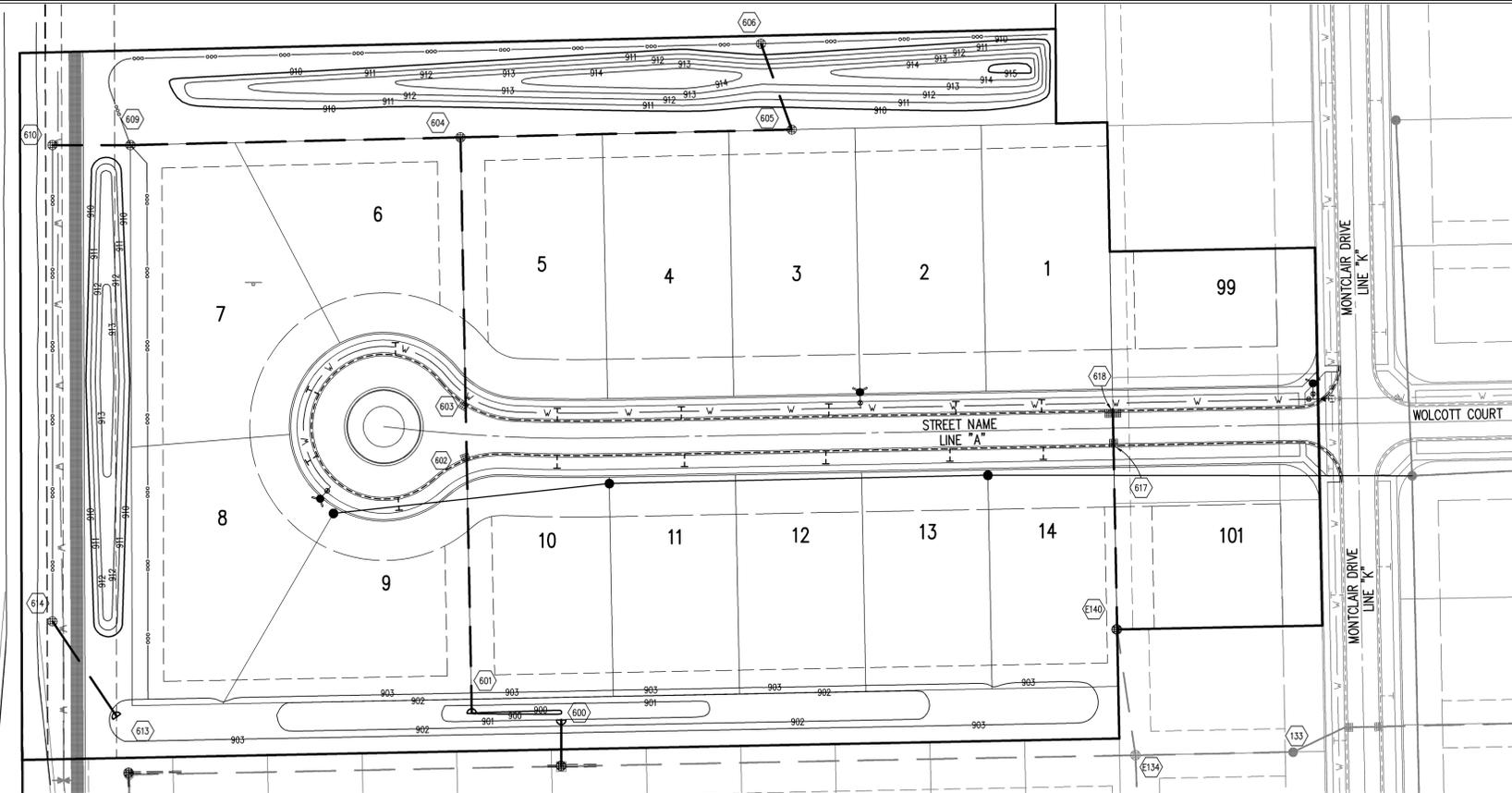
Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS • LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH
EXPANSION
WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO.: 3915.004
DRAWN BY: PRC CHECKED BY: JLF
SHEET TITLE: SANITARY SEWER PLAN
DRAWING FILES:
R:\3\3915\004\DWGS\C401
XREF: SANITARY
XREF: 004BS
XREF: 3915004S
XREF: R:\3\3915\001\DWGS\001BS
SHEET NO.: C401

DITCH ROAD



BENCHMARK

BM - U.S.G.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

HOLEY MOLEY SAYS

"DON'T DIG BLIND"



"IT'S THE LAW" CALL 2 WORKING DAYS BEFORE YOU DIG 1-800-382-5544 CALL TOLL FREE

PER INDIANA STATE LAW IS-69-1991. IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

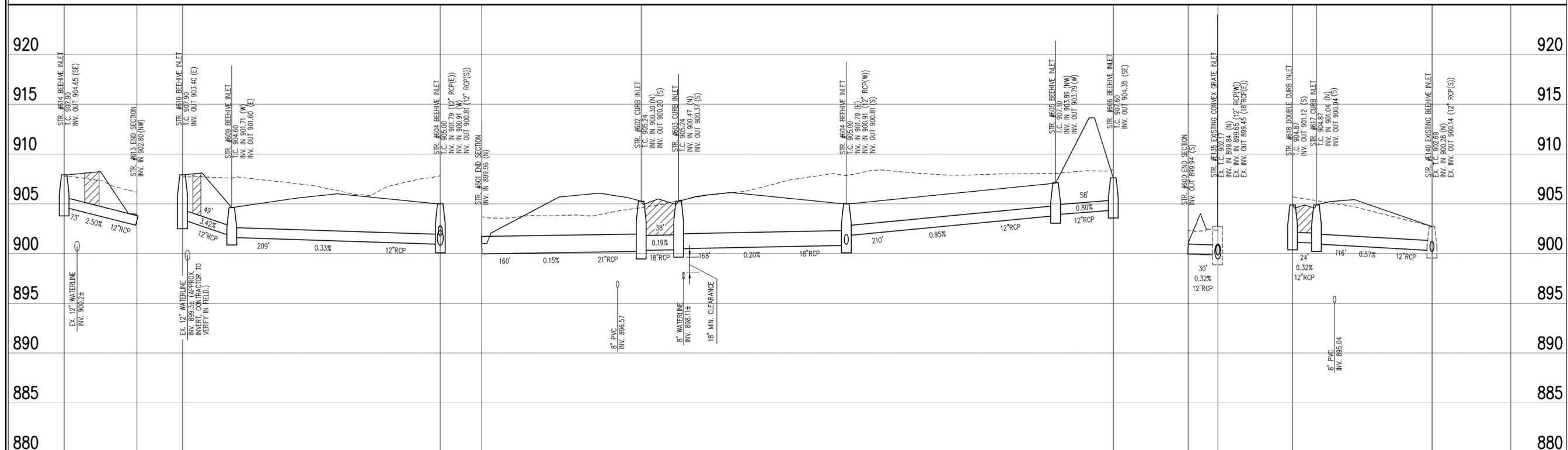
GENERAL NOTES

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

Sheet	Detail Number	Description
CB05	S-5	Bedding Detail Reinforced Concrete Pipe (RCP)
CB05	ST-11&12	Roll Curb Inlet Detail
CB05	ST-11&12	Beehive Inlet Detail
CB05	ST-1	Storm Manhole Detail
CB05	6	Precast Concrete End Section
CB01		RipRap Detail @ End Section

STORM SEWER PLAN

SCALE: 1"=50'



STORM SEWER PROFILE

LEGEND		
	Existing Grade	
	New Grade	
	Granular Backfill	

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

REVISIONS:

DAVID A. CLARK REGISTERED PROFESSIONAL ENGINEER No. 19300219 STATE OF INDIANA

D. A. Clark

DATE: 06/27/08

THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.

© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider

THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Ochs Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS • LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH EXPANSION WESTFIELD, INDIANA

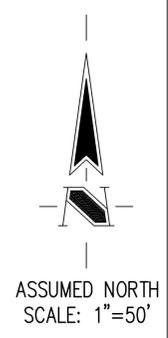
ESTRIDGE DEVELOPMENT CO., INC. CARMEL, INDIANA

DATE: 06/27/08	PROJECT NO.: 3915.004
DRAWN BY: PRC	CHECKED BY: JLF
SHEET TITLE: STORM SEWER PLAN	
DRAWING FILES: R:\3K\3915\004\DWGS\C601 XREF: STORM XREF: 004BS XREF: 3915004S XREF: R:\3K\3915\001\DWGS\001BS	

SHEET NO.: C601

HOLEY MOLEY SAYS
"DON'T DIG BLIND"

"IT'S THE LAW"
 CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
 CALL TOLL FREE
 PER INDIANA STATE LAW IS-69-1991,
 IT IS AGAINST THE LAW TO EXCAVATE
 WITHOUT NOTIFYING THE UNDERGROUND
 LOCATION SERVICE TWO (2) WORKING
 DAYS BEFORE COMMENCING WORK.



BENCHMARK

BM - U.S.C.S. 93 RHP, BRASS DISK IN A CONCRETE POST AT THE SOUTHWEST CORNER OF 146TH STREET AND DITCH ROAD. ELEVATION = 903.373 (NGVD 1929)

TBM2 - CUT SQUARE ON TOP OF CONCRETE BASE AT THE NORTH SIDE OF CONCRETE FENCE POST, WEST SIDE OF DITCH ROAD, 1320'± SOUTH OF 156TH STREET, ESTABLISHED FROM PREVIOUS JOB #753 (CENTENNIAL). ELEVATION = 916.99 (NGVD 1929)

TBM4 - RAILROAD SPIKE SET 1.0' UP IN THE SOUTH SIDE OF A UTILITY POLE ON THE WEST SIDE OF DITCH ROAD, 267' NORTH OF THE SOUTHWEST CORNER AND 180' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT TRACT. ELEVATION = 909.51 (NGVD 1929)

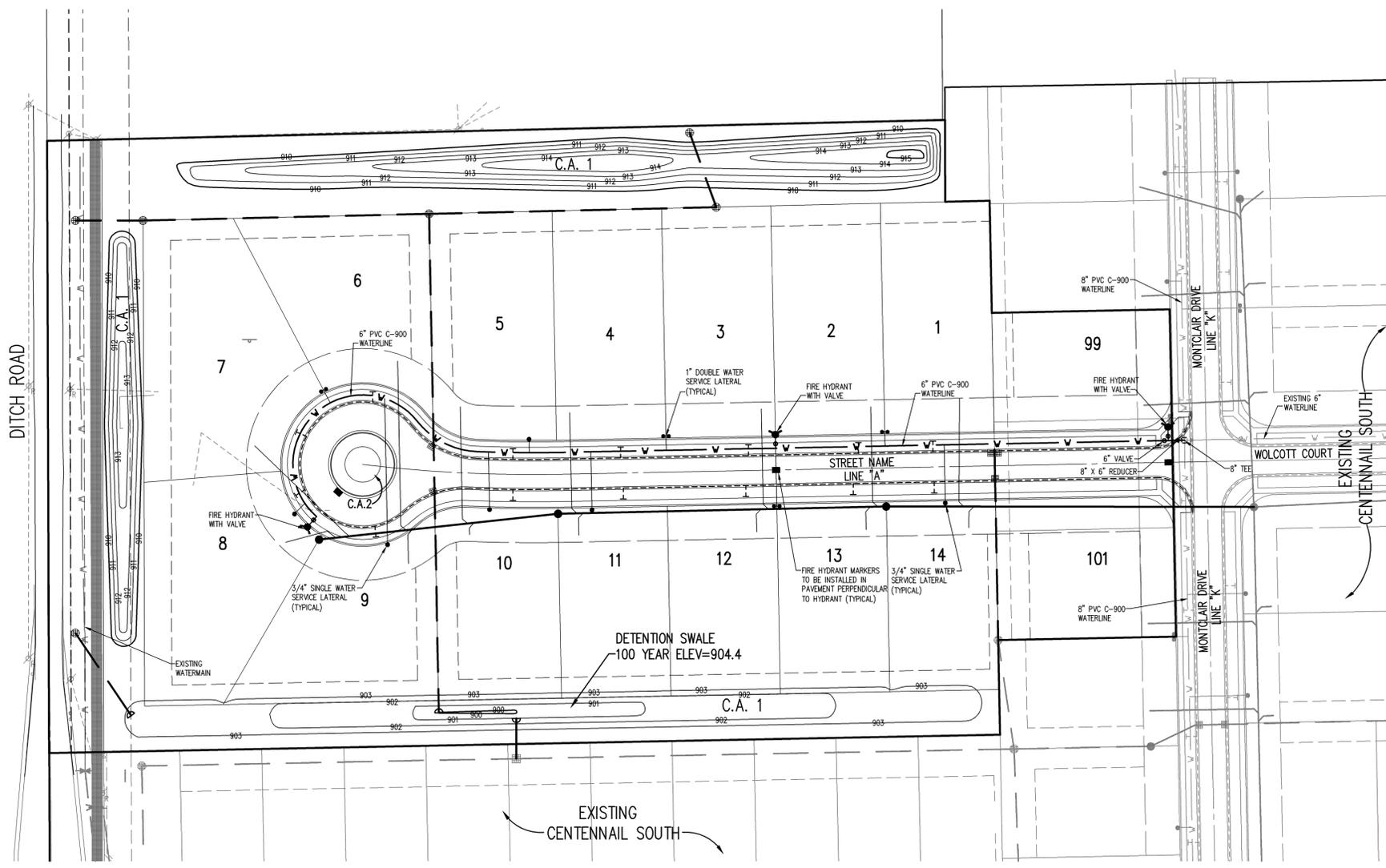
REVISIONS:

DAVID A. CLARK
 REGISTERED
 No. 19300219
 STATE OF INDIANA
 PROFESSIONAL ENGINEER

D.A. Clark
 DATE: 06/27/08

THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.

© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)



LEGEND

- NEW STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- NEW SANITARY SEWER
- EXISTING WATER MAIN
- NEW WATER MAIN WITH VALVE
- NEW FIRE HYDRANT ASSEMBLY
- TEMPORARY FLUSHING HYDRANT
- REDUCER
- SAMPLE TAP
- 3/4" SERVICE LATERAL WITH METER PIT
- 1" SERVICE LATERAL WITH DOUBLE METER PIT
- FIRE HYDRANT MARKER

GENERAL NOTES

1. WATERLINE TO HAVE A MINIMUM COVER OF 57".
2. WATERLINE LATERALS TO HAVE A 10' HORIZONTAL MINIMUM SEPARATION TO SANITARY LATERALS.
3. ALL WATERLINE ARE TO BE 8" PVC C-900 PIPE UNLESS OTHERWISE NOTED.
4. ALL SERVICE LINES SHALL HAVE SADDLE TAPS.
5. ALL VALVES SHALL HAVE POSI CAPS.
6. ALL HYDRANTS SHALL HAVE 5" STORZ CONNECTIONS (MUELLER MODEL 290220 FOR CASTING AND 290221 CAP OR WPMO APPROVED EQUAL).
7. SERVICE LINES SHALL BE STUBBED 2" BEHIND SIDEWALKS.
8. MAINS SHALL BE BEDDED WITH SAND 6" BELOW THE PIPE AND 12" ABOVE THE PIPE.
9. WATER MAINS SHALL HAVE MARKING TAPE INSTALLED 2' FEET DIRECTLY ABOVE ALL MAINS.
10. ALL MAINS SHALL HAVE #12 GAUGE LOCATING WIRE TAPED TO THE TOP OF THE MAIN AND PULLED THROUGH THE VALVE BOXES TO THE SURFACE FOR LOCATING PURPOSES.
11. ALL DUCTILE IRON PIPE SHALL BE POLY WRAPPED.
12. HYDRANTS SHALL BE PAINTED WITH 2 COATS OF M.A.B. "FIRE PROTECTION RED (7068)" AFTER INSTALLATION.
13. ALL SINGLE WATER SERVICES SHALL BE 3/4" INCH COPPER SERVICES.



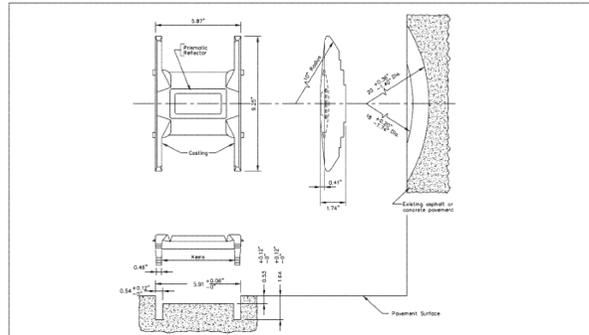
Schneider

THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7200
 www.schneidercorp.com

Architecture
 Civil Engineering
 Environmental Engineering
 Geotechnical Services
 GIS * LIS
 Home Builder Services
 Interior Design
 Land Surveying
 Landscape Architecture
 Transportation Engineering

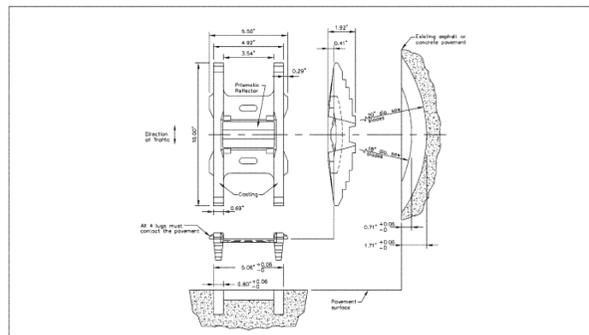
CENTENNIAL SOUTH
 EXPANSION
 WESTFIELD, INDIANA
 ESTRIDGE DEVELOPMENT CO., INC.
 CARMEL, INDIANA

DATE: 06/27/08	PROJECT NO.:
DRAWN BY: PRC	3915.004
CHECKED BY: JLF	
SHEET TITLE: WATER DISTRIBUTION PLAN	
DRAWING FILES: R:\3\3915\004\DWGS\C701 XREF: 001B5 XREF: 3915045 XREF: R:\3\3915\004\DWGS\001B5	
SHEET NO.:	
C701	



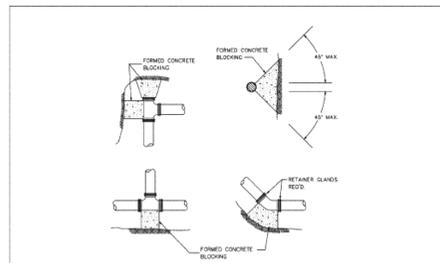
RAISED PAVEMENT MARKERS CAST METAL BASE, TYPE 1

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE P-21



RAISED PAVEMENT MARKERS CAST METAL BASE, TYPE 2

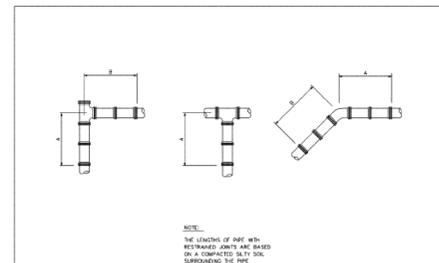
TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE P-22



SIZE	RE. & PILES	80\"/>			
4"	2.5	2.5	1.5	1.0	1.0
6"	4.0	3.5	3.0	1.5	1.0
8"	5.5	5.0	3.5	2.0	1.5
10"	7.0	6.0	4.5	2.5	2.0
12"	8.5	7.5	5.5	3.0	2.5
14"	10.0	9.0	6.5	3.5	3.0
16"	11.5	10.5	7.5	4.0	3.5
18"	13.0	12.0	8.5	4.5	4.0
20"	14.5	13.5	9.5	5.0	4.5
22"	16.0	15.0	10.5	5.5	5.0
24"	17.5	16.5	11.5	6.0	5.5
26"	19.0	18.0	12.5	6.5	6.0
28"	20.5	19.5	13.5	7.0	6.5
30"	22.0	21.0	14.5	7.5	7.0
32"	23.5	22.5	15.5	8.0	7.5
34"	25.0	24.0	16.5	8.5	8.0
36"	26.5	25.5	17.5	9.0	8.5
38"	28.0	27.0	18.5	9.5	9.0
40"	29.5	28.5	19.5	10.0	9.5
42"	31.0	30.0	20.5	10.5	10.0

THRUST BLOCK DETAIL

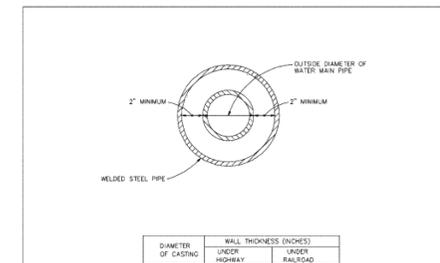
TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-2



SIZE	RE. & PILES	80\"/>			
4"	2.5	2.5	1.5	1.0	1.0
6"	4.0	3.5	3.0	1.5	1.0
8"	5.5	5.0	3.5	2.0	1.5
10"	7.0	6.0	4.5	2.5	2.0
12"	8.5	7.5	5.5	3.0	2.5
14"	10.0	9.0	6.5	3.5	3.0
16"	11.5	10.5	7.5	4.0	3.5
18"	13.0	12.0	8.5	4.5	4.0
20"	14.5	13.5	9.5	5.0	4.5
22"	16.0	15.0	10.5	5.5	5.0
24"	17.5	16.5	11.5	6.0	5.5
26"	19.0	18.0	12.5	6.5	6.0
28"	20.5	19.5	13.5	7.0	6.5
30"	22.0	21.0	14.5	7.5	7.0
32"	23.5	22.5	15.5	8.0	7.5
34"	25.0	24.0	16.5	8.5	8.0
36"	26.5	25.5	17.5	9.0	8.5
38"	28.0	27.0	18.5	9.5	9.0
40"	29.5	28.5	19.5	10.0	9.5
42"	31.0	30.0	20.5	10.5	10.0

RESTRAINED JOINT DETAILS

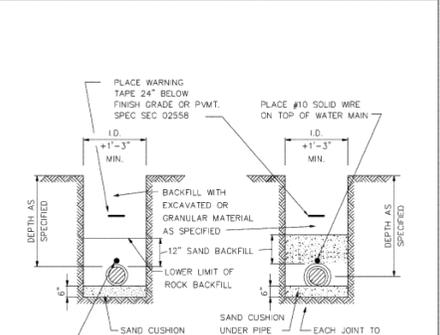
TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-3



DIAMETER OF CASTING	WALL THICKNESS (INCHES)	
	UNDER HIGHWAY	UNDER PAVEMENT
UNDER 14"	0.250	0.188
14"	0.250	0.219
16"	0.250	0.219
18"	0.250	0.250
20"	0.375	0.281
22"	0.375	0.312
24"	0.375	0.344
26"	0.375	0.375
28"	0.500	0.406
30"	0.500	0.438
32"	0.500	0.470
34"	0.500	0.469
36"	0.500	0.469
38"	0.500	0.500
40"	0.500	0.500
42"	0.500	0.500

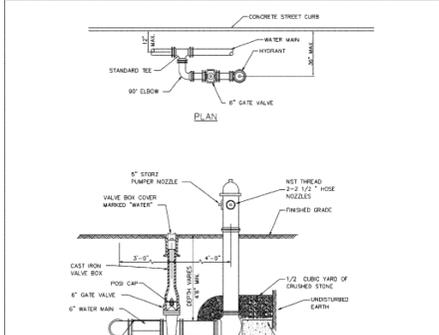
STEEL CASING DETAIL

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-4



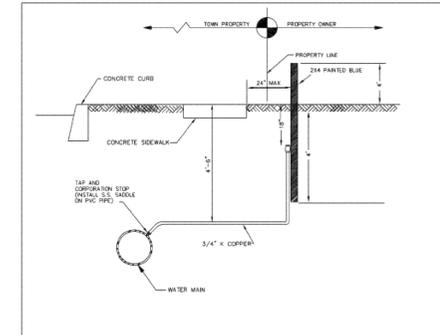
ROCK EXCAVATION

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-1



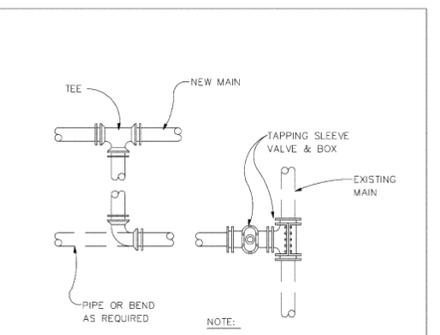
FIRE HYDRANT DETAILS

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-7



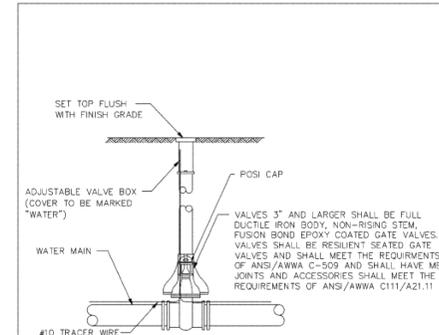
3/4" SINGLE PIT

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-8



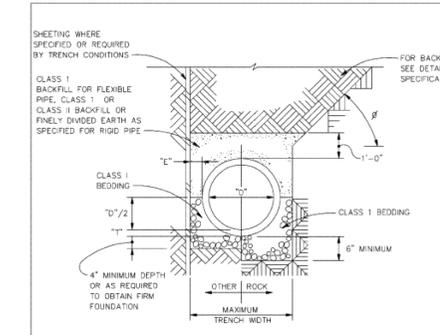
CONNECTION TO EXISTING MAIN

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-5



GATE VALVE AND BOX

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-6



CLASS I BEDDING

TOWN OF WESTFIELD, INDIANA
Benjamin A. Hoff 10/9/06 DATE
 FIGURE W-14

NOTE:
 1. 1" Single Pit K copper laterals will be used instead of 3/4".

- NOTE:
- Water service will be 1" K copper stubbed on the property line for a double meter pit, and 1" K copper for a single pit. Service lines shall be stubbed 2' max but no less than behind sidewalk.
 - Posi caps will be required to be installed on all valves.
 - Fire hydrants shall have five (5) inch Storz connection (Mueller model 290220 for casting and 290221 cap or comparable to and approved by WPWD). Fire hydrants shall be placed a max of three (3) feet behind curb, per direction of the Westfield Fire Department.
 - All public hydrants shall be painted with two (2) coats of M.A.B. "Fire Protection Red (7068)" after installation.
 - Blue Reflectors shall be installed in the centerline of the pavement across from the fire hydrants.

REVISIONS:

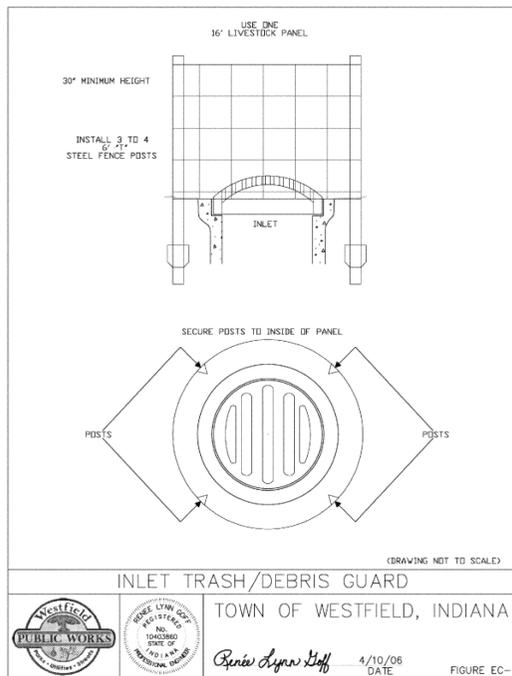
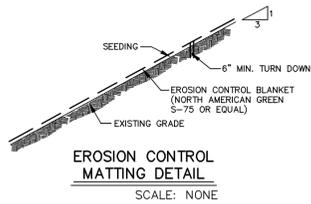
DAVID A. CLARK REGISTERED PROFESSIONAL ENGINEER
 No. 19300219 STATE OF INDIANA
D.A. Clark
 DATE: 06/27/08
 THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
 © COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider
 THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7300
 www.schneidercorp.com
 Architecture
 Civil Engineering
 Environmental Engineering
 Geotechnical Services
 GIS + LIS
 Home Builder Services
 Interior Design
 Land Surveying
 Landscape Architecture
 Transportation Engineering

CENTENNIAL SOUTH EXPANSION WESTFIELD, INDIANA
 ESTRIDGE DEVELOPMENT CO., INC. CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
 DRAWN BY: PRC CHECKED BY: JLF
 SHEET TITLE: WATER DETAILS
 DRAWING FILES: R:\SK\3915\004\DWG5\C702
 SHEET NO:

C702



Seeding Preparation
Apply lime to raise the pH to the level needed for species being seeded. Apply 14 pounds of 12-12-12 analysis fertilizer (or equivalent per 1000 sq. ft., approximately 600 pounds per acre) or fertilizer according to test. Application of 150 lbs. of ammonium nitrate on areas low in organic matter and fertility will greatly enhance vegetative growth.

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

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

Figure 5-2: Permanent Seed Mixtures

Species	Seeding Rate lb./acre	Suitable pH range	Site Suitability*	Drained	Wet
Temp. Seed for Areas Remaining Idle for more than 1 yr.:					
1. Perennial Ryegrass	30	4	5.6-7.0	2	1
Tall Fescue	30	7			
Temp. Seed for Areas Remaining Idle for less than 1 yr. but more than 2 weeks:					
2. Wheat or rye	150	3.5	(if between 8/15 and 10/30)		
3. Spring Oats	100	2.3	(if between 3/1 and 5/15)		
4. Annual Ryegrass	40	1	(if between 4/1 and 9/1)		
Deletion Area Banks					
5. Tall Fescue	281	6.0	5.6-7.0	1	1
Kentucky Bluegrass	50.0	1.2	5.6-7.5		
Perennial ryegrass	50.0	1.2	5.6-7.5		
Low and High Maintenance Areas					
6. Fine Fescue	108	2.5	5.6-7.0	1	
7. Fine Fescue	108	2.5			
8. Kentucky Bluegrass	108	2.5			

Figure 5-3: Seeding Dates

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wheat or Rye												
Oats												
Annual Ryegrass												
Non-irrigated*												
Irrigated												
Dormant Seeding**												

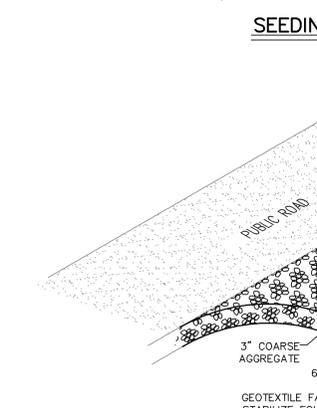
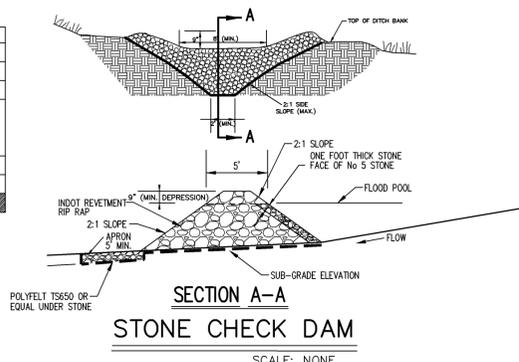
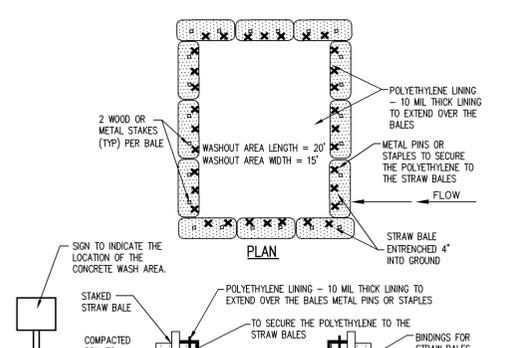


Figure 5-3: Seeding Dates (continued)

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

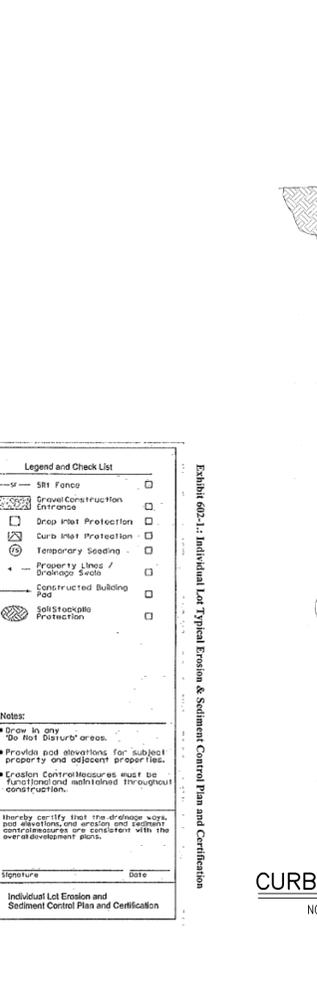
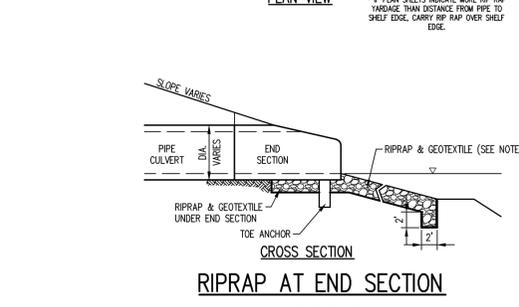
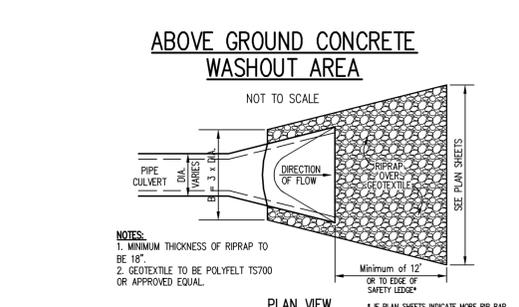
* Not necessary where mulch is applied.

SEEDING MIXTURE
SCALE: NONE

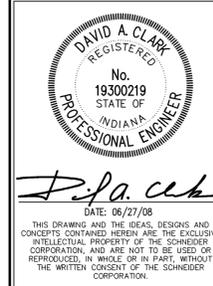
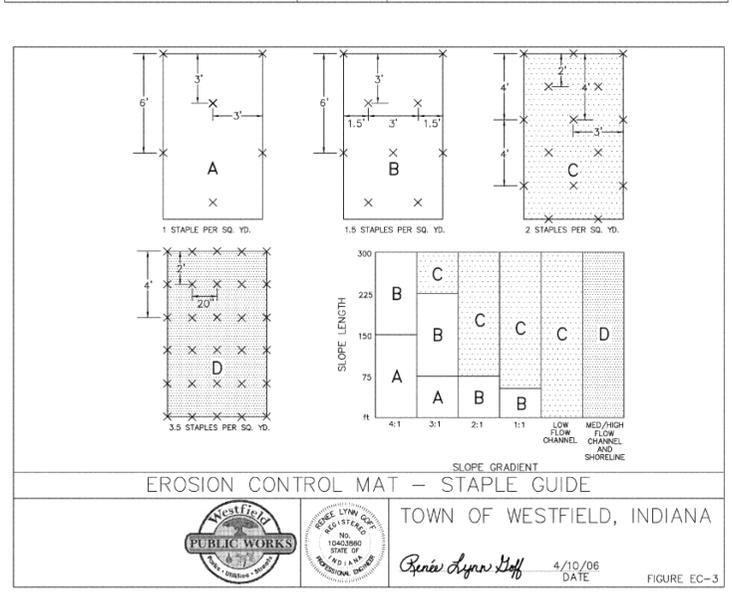
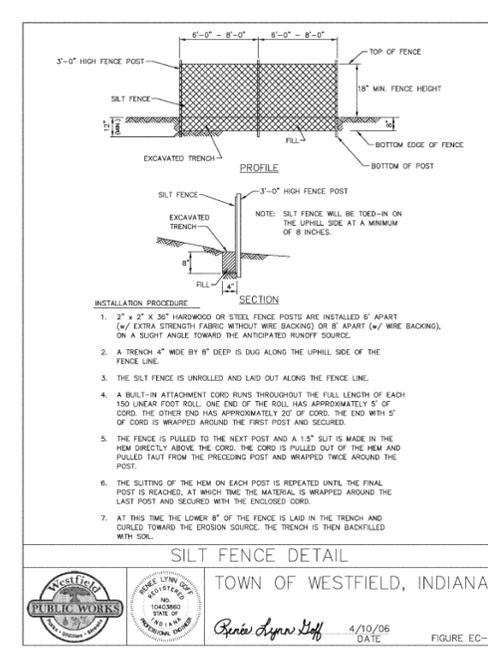
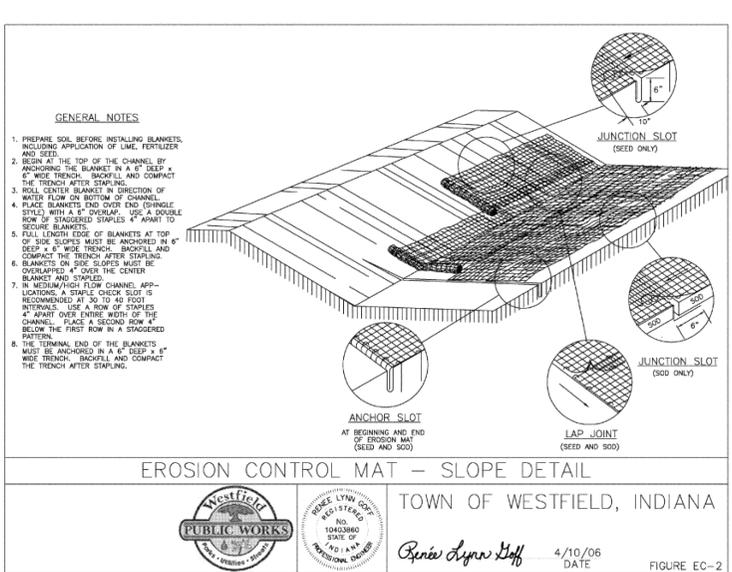


NOTE: CONTRACTOR SHALL PROVIDE ADDITIONAL WASHOUT STRUCTURES OR LARGER STRUCTURES IF REQUIRED

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



- Legend and Check List
- Silt Fence
 - Gravel Construction Entrance
 - Drop Inlet Protection
 - Curb Inlet Protection
 - Temporary Seeding
 - Property Lines / Drainage Swale
 - Constructed Building Pad
 - Silt Straps Protection
- Notes:
- Draw in any "Do Not Disturb" areas.
 - Provide grid elevations for "subject property and adjacent properties."
 - Erosion control measures must be functional and maintained throughout construction.
- Individual Lot Erosion and Sediment Control Plans and Certification



Schneider
THE SCHNEIDER CORPORATION
Historic Fort Harrison
5901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS • LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH EXPANSION
WESTFIELD, INDIANA
ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO.: 3915.004
DRAWN BY: PCJ CHECKED BY: JLF
SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS
DRAWING FILES: R:\3\3915\004\DWG\SC801-C802
SHEET NO.: C801

STORMWATER POLLUTION PREVENTION PLAN INDEX

- A1 Plan books provided below
- A2 11"x17" Plot detailing lot numbers, boundaries and streets is provided separately.
- A3 Project Type: 18 lot single family subdivision.
- A4 Vicinity Map: Detailed on Sheet C100
- A5 Legal Description of Project Site: See attached Secondary Plat.
- A6 Location of all lots and proposed site improvements: See sheet C101.
- A7 14 Day Hydrologic Unit Code: 051202000000.
- A8 State or Federal water quality permits: N/A
- A9 Specific points where stormwater discharge will leave the site: Southern boundary of site into Centennial South Subdivision (See sheet C101-C102 for more detail).
- A10 Location of all wetlands, lakes & water courses on and adjacent to site: None.
- A11 Flowing Water: Hitwash and Holey Drain.
- A12 Identification of potential discharges to groundwater: None
- A13 100 Year Floodplains, Floodways and Flood Fringes: None
- A14 Pre-Construction and Post-Construction Peak Discharge
- A15 10-year Pre-Construction Peak Discharge - South Property Line = 10.3 cfs
- A16 10-year Post-Construction Peak Discharge - South Property Line = 3.6 cfs
- A17 Adjacent Land Use: See Sheet C100.
- A18 North: Industrial
- A19 South: Single Family Residential/Open Space
- A20 East: Single Family Residential Subdivision
- A21 West: Agriculture
- A22 Identification of existing vegetative cover: See Sheet C102.
- A23 Soil Map including descriptions and limitations: See sheet C100 for soils map, description and limitations.
- A24 Locations, size and dimensions of proposed stormwater systems: See Site Development Plan Sheet C101 for proposed storm sewer system.
- A25 Locations, size and dimensions of any proposed off-site construction activities associated with this project: See Site Development Plan Sheet C101 for any proposed off-site construction activities.
- A26 Locations of Soil Stockpiles: See Sheet C102.
- A27 Existing site topography: See Sheet C101 for existing site topography.
- A28 Proposed final topography: See Site Development Plan Sheet C101 for proposed site grading and drainage patterns.
- A29 Description of potential pollutants sources associated with the construction activities: Silt and sediment from exposed soils, loams, muds, vehicular sources such as leaking fuel or oil, brake fluid, brake dust, brake pads, biological agents found in trash, fertilizers, herbicides, pesticides, acid rain, lime dust and concrete washout.
- A30 Separation of stormwater quality implementation relative to land disturbance activities: See Sheet C102-C103.

- PRE-CONSTRUCTION ACTIVITIES:**
1. Call the Indiana Underground Plant Protection systems, Inc. ("Tolley Moley") at 1-800-382-5544 to locate the location of any existing utilities. They should be notified two working days before construction starts.
 2. Review sheet C102 for specific site sequences for Pre-Construction and Mass Earthwork.

- CONSTRUCTION ACTIVITIES:**
- See Sheet C102.
- POST-CONSTRUCTION ACTIVITIES:**
1. See Sheet C102.

- 33** Stable construction entrance location(s) and specifications. See Stormwater Pollution Prevention Plan Sheet C102 for location. See Sheet C801-C802 for construction entrance details and specifications.
- 34** Sediment control measures for sheet flow areas: See Stormwater Pollution Prevention Plan Sheet C102 for location of sediment control measures and Sheet C801-C802 for construction details and specifications.
- 35** Sediment control measures for concentrated flow areas: See Stormwater Pollution Prevention Plan Sheet C102 for location of sediment control measures and Sheet C801-C802 for construction details and specifications.
- 36** Storm sewer inlet protection measures, location and specifications: See Stormwater Pollution Prevention Plan Sheet C102 for location of inlet protection measures and Sheet C801-C802 for construction details and specifications.
- 37** Runoff control measures: See Stormwater Pollution Prevention Plan Sheet C102 for locations of runoff control measures and Sheet C801-C802 for construction details and specifications.
- 38** Stormwater outlet protection specifications: See Stormwater Pollution Prevention Plan Sheet C102 for location of stormwater outlet control measures and Sheet C801-C802 for construction details and specifications.
- 39** Grade stabilization structure location and specifications: N/A
- 40** Location, dimensions, specifications and construction details of each stormwater quality measure: See Stormwater Pollution Prevention Plan Sheet C102 for locations of various stormwater quality measures and Sheet C801-C802 construction details and specifications.
- 41** Temporary surface stabilization methods appropriate for each area: See Stormwater Pollution Prevention Plan Sheet C102 for locations of temporary surface stabilization measures and Sheet C801-C802 for construction details and specifications.
- 42** Permanent surface stabilization specifications: See Stormwater Pollution Prevention Plan Sheet C102 for locations of permanent surface stabilization measures and Sheet C801-C802 construction details and specifications.

- 43** Material handling and spill prevention plan:
- Purpose:**
- The intention of this Spill Prevention, Control and Countermeasures (SPCC) is to establish the procedures and equipment required to prevent the discharge of oil and hazardous substances in quantities that violate applicable water quality standards, cause a sheen upon or discoloration of the surface of navigable waters or adjoining shorelines, or cause sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. The Plan also establishes the activities required to mitigate such discharges (i.e., countermeasures) should they occur.
- Definitions:**
- Pollutant: means pollutant of any kind or in any form, including but not limited to sediment, paint, cleaning agents, concrete washout, pesticides, nutrients, trash, hydraulic fluids, fuel, oil, petroleum, fuel oil, sludge, oil residue, and oil mixed with wastes other than dredged soil.
- Discharge:**
- includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.
- Non-navigable Waters:**
- Means all waters of the United States that are connected with a navigable stream, lake, or sea. (Note: This definition is usually interpreted to mean any wastewater (even normally dry wash or storm sewer) that eventually drains into a navigable stream.)

- Plan Review and Amendments:**
- This Plan shall be reviewed and/or amended, if necessary, whenever there is a change in the design of the site, construction, operation, or maintenance which materially affects the site's potential for the discharge of regulated material.
- Prediction of Potential Spills:**
1. Nearest Navigable Water: Williams Creek
 2. Drainage System: All storm drainage leaves the site by open ditches and closed storm systems to the south and east to the Hitwash and Holey Drain.
 3. Possible Spill Sources (During and post construction): Vehicular sources such as leaking fuel or oil, brake fluid, grease, antifreeze, construction trash and debris, biological agents found in trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, herbicides and pesticides.
 4. Groundwater Contamination: The facility maintains NO above ground or under ground storage tanks at this site. Therefore, it is felt that there is little or no possibility of post construction groundwater contamination. The facility does have city sanitary sewer and city water.

- 44** Monitoring and maintenance guidelines for pollution prevention measures:
- Ditch and Stone Check Point Maintenance Requirements:**
1. Inspect check dams after each storm event and promptly remove any sediment deposits to insure adequate storage volume for the next rain, taking care not to undermine the stone base.
 2. Inspect periodically for deterioration or damage from construction activities and repair/replace immediately.
 3. After the contributing drainage area has been stabilized, remove all check dams and sediment deposits, bring the disturbed area to grade and stabilize it.
- Silt Fence Maintenance Requirements:**
1. Inspect the silt fence periodically and after each storm event.
 2. If fence fabric tears, starts to decompose or in any way becomes ineffective, replace the affected portion immediately.
 3. Remove deposited sediment when it reaches half the height of the fence at it's lowest point or is causing the fabric to bulge.
 4. Take care to avoid undermining the fence during cleanout.
 5. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize it.
- Grassed Catchment Basin Maintenance Requirements:**
1. Inspect frequently for damage by vehicular traffic and repair if necessary.
 2. Inspect after each storm event.
 3. Remove sediment without washing when it reaches half the height of the barrier.
 4. Deposit removed sediment where it will not enter storm sewer drains.
- Erosion Control Blanket (Surface Applied) Maintenance Requirements:**
1. During vegetative establishment, inspect after each storm event for any erosion below the blanket.
 2. If any area(s) shows erosion, pull back that portion of the blanket covering it, re-seed the area and relay and slope the blanket.
 3. After vegetative establishment check the treated area periodically.
- Temporary Crown Construction Entrance Maintenance Requirements:**
1. Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
 2. Reshape as needed for drainage and runoff control.
 3. Topdress with clean stone as needed.
 4. Immediately remove mud and sediment tracked or washed onto streets by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
 5. Repair any broken road pavement immediately.

- 45** Erosion & sediment control specifications for individual building lots: See Sheet C801 for Construction details and specifications for erosion & sediment control on individual building lots.
- 46** Description of pollutants and their sources associated with the proposed land use: Silt and sediment from exposed soils, loams, muds, vehicular sources such as leaking fuel or oil, brake fluid, brake dust, grease, antifreeze, construction trash and debris, biological agents found in trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, herbicides and pesticides.
- 47** Sequence describing stormwater quality measure implementation:
1. Inspect and maintain all erosion control measures as detailed in the Stormwater Pollution Prevention Measures Maintenance Requirements beginning immediately after installation and continuing until vegetation has been sufficiently established and all construction activity is complete.
 2. Remove all individual inlet protection and check dams, silt fences, etc. only after seeding and sufficient vegetative growth has been established in each area to a point where sediment/pollutants will not enter the lot(s) or storm sewer system. (TDS cover)
 3. Inspection and maintenance of all common areas and infrastructure improvements is the responsibility of the owner/developer or his designee until improvements are accepted for maintenance by homeowners association or local agencies.
 4. Inspection and maintenance of individual lots is the responsibility of the home builder or his designee until the homeowner buys and thereby accepts responsibility for the individual lot.
- 48** Description of proposed post construction stormwater quality measures: Site and facility design for stormwater quality protection on this site employs a multi-level strategy including:
1. Reducing or eliminating post-project runoff.
 2. Controlling sources of pollutants.
 3. And treating (in detention ponds) contaminated stormwater runoff before discharging it into the storm sewer system or receiving waters.

- 49** Typical stormwater quality measures for reducing, eliminating or controlling pollutants (source controls) include:
- a. Dention/Retention devices: The first flush will be detained in the post construction phase in permanent detention ponds allowing sediment and pollutants to drop out before runoff leaves the site.
 - b. Reducing Runoff or Direct runoff from impervious areas. Runoff from larger events will be detained by engineered outlets that reduce the maximum outflow in the 100-year frequency storm event.
 - c. Vegetated strips and/or swales: All runoff from rear yards will flow through the lawn and a vegetated swale before it enters the storm sewer system.
 - d. Permanent erosion control seeding and planting: Any vegetation removed from existing wooded areas that will remain will be replaced with seed mixture appropriate for steep banks.
 - e. Outlet protection & velocity dissipation devices: Rip rap at inlet pipes flowing into the detention/retention ponds and at structures leaving the site will reduce runoff velocity.
 - f. Mulching: All permanent seed will be mulched to reduce sedimentation until vegetation is established. It is the intent of this plan that the implementation of the above described storm water quality measures be executed in accordance with the enclosed plans and details in order to meet the requirements of Rule 5 storm water quality.

- 50** Location, dimensions, specifications and construction details of stormwater quality measures: See Stormwater Pollution Prevention Plan Sheet C102 for locations of permanent stormwater quality measures and Sheet C801-C802 construction details and specifications.
- 51** Location, dimensions, specifications and construction details of stormwater quality measures: See Stormwater Pollution Prevention Plan Sheet C102 for locations of permanent stormwater quality measures and Sheet C801-C802 construction details and specifications.
- 52** Description of maintenance guidelines for proposed water quality measures: See attached BMP Operations and Maintenance Manual.

ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES

VEHICLE & EQUIPMENT MAINTENANCE

Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Properly dispose of or recycle used batteries.

Do not bury used tires.

INSPECTION AND MAINTENANCE

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

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

Inspect construction waste area regularly.

Arrange for regular waste collection.

Keep ample supplies of spill cleanup materials onsite.

Maintain waste fluid containers in leak proof condition.

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

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

VEHICLE AND EQUIPMENT FUELING

Description and Purpose

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

Limitations

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

Implementation:

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

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

Discourage "topping-off" of fuel tanks.

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

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

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

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

Train employees and subcontractors in proper fueling and cleanup procedures.

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

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

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

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

Inspection and Maintenance

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

Keep ample supplies of spill cleanup materials onsite.

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

Description and Purpose

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

Suitable Applications

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

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

Packaging materials including wood, paper, and plastic

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

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

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

Implementation

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

Select designated waste collection area onsite.

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

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

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

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

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

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

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

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

Arrange for regular waste collection before containers overflow.

Clean up immediately if a container does spill.

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

Collection, Storage, and Disposal

Littering on the project site should be prohibited.

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

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

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

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

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

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

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

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

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

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

Properly dispose of or recycle used batteries.

Do not bury used tires.

Gravity Bag Filter

Description:

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

Appropriate Applications:

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

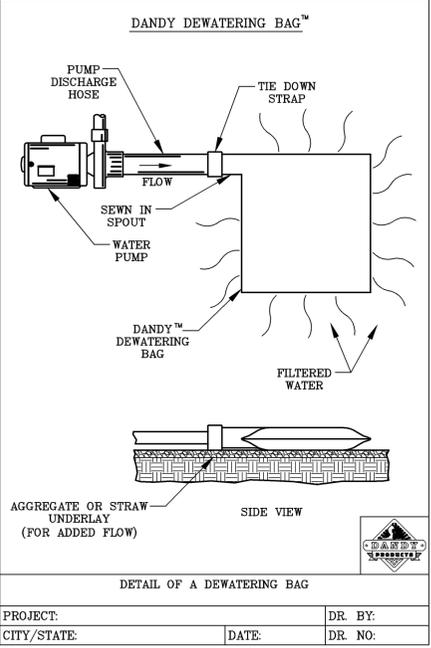
Implementation:

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

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

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

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



DETAIL OF A DEWATERING BAG

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

CONCRETE WASHOUT

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

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

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

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

Avoid mixing excess amounts of fresh concrete.

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

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

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

For onsite washout:

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

DEWATERING AND PUMPING OPERATIONS

Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

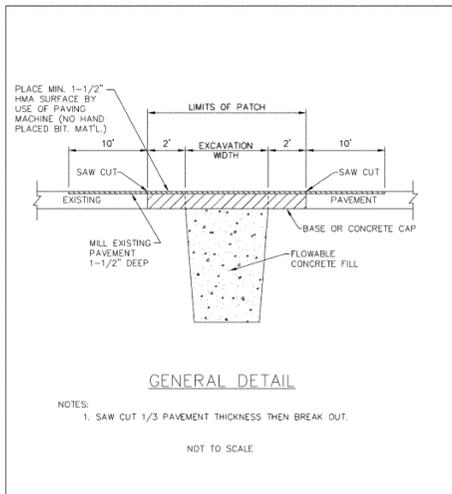
Dewatering discharges must not cause erosion at the discharge point. A variety of methods can be used to treat water during dewatering operations. Several devices are presented below and provide options to achieve sediment removal. The size of particles present in the sediment and Permit or receiving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

DANDY DEWATERING BAG™ SPECIFICATIONS

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

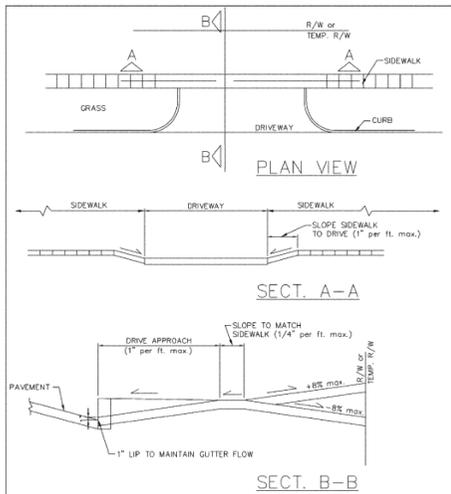
DANDY DEWATERING BAG™

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	KN (lbs)	0.9 (205) x 0.9 (205)
Grab Tensile Elongation	ASTM D 4632	%	50 x 50
Puncture Strength	ASTM D 4633	KN (lbs)	0.58 (130)
Mullen Burst Strength	ASTM D 3766	KN (lbs)	2918 (658)
Trip Strength	ASTM D 4533	KN (lbs)	0.36 (80) x 0.36 (80)
UV Resistance	ASTM D 3359	%	70
Apparent Opening Size	ASTM D 4751	mm (US Std Sieve)	0.180 (60)
Flow Rate	ASTM		



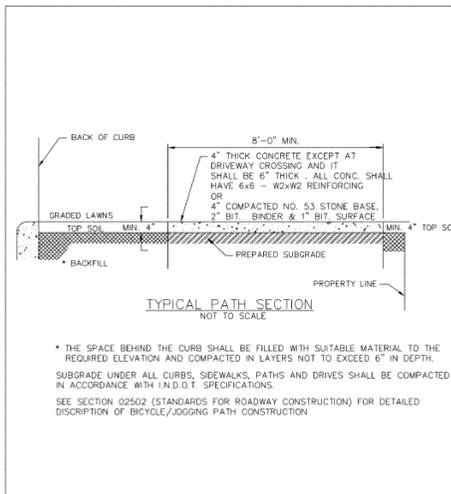
REPAIR CUTS WITHIN PAVEMENT LIMITS
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-18



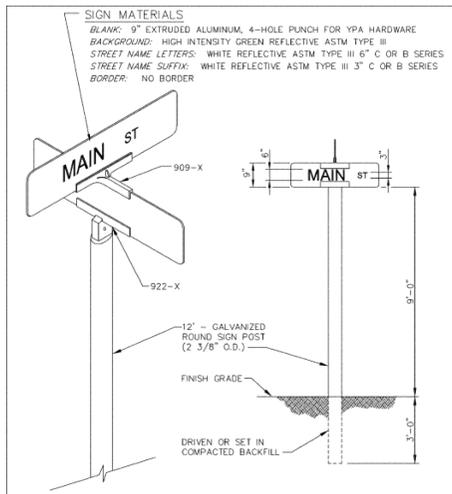
TYPICAL DRIVEWAY SECTION
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-17



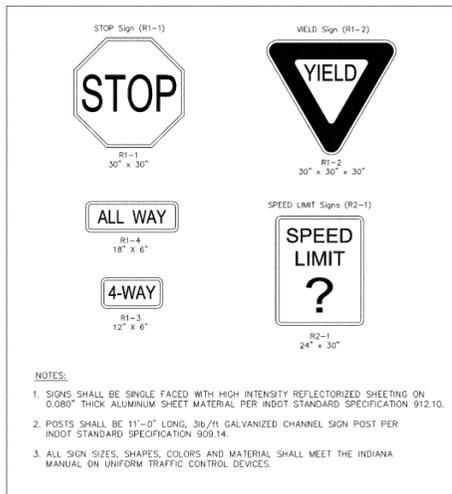
BICYCLE/JOGGING PATH DETAIL
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-16



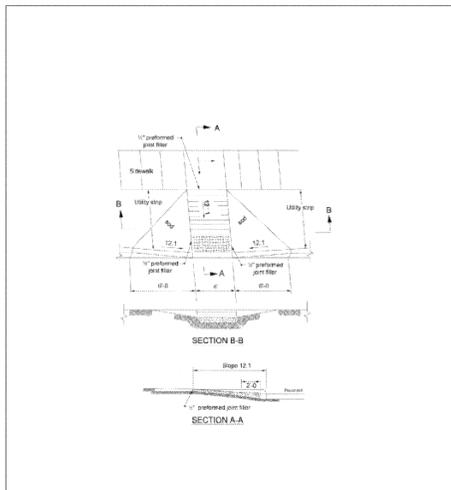
TYPICAL SUBDIVISION REGULATORY SIGNS
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-15



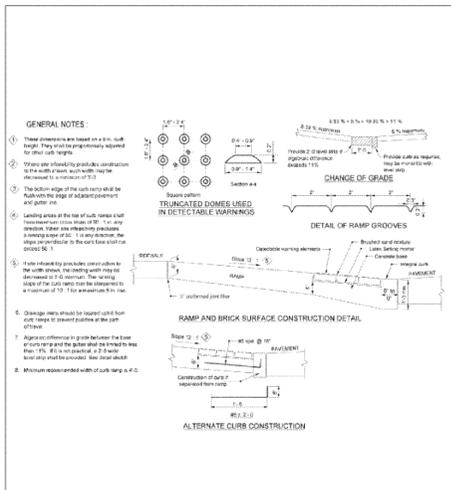
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-15.1



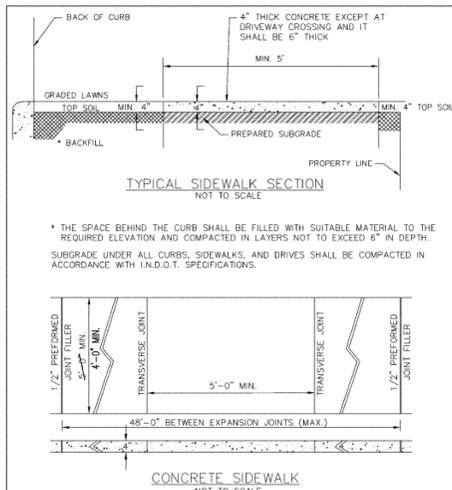
SIDEWALK RAMP FOR HANDICAPPED
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-11A



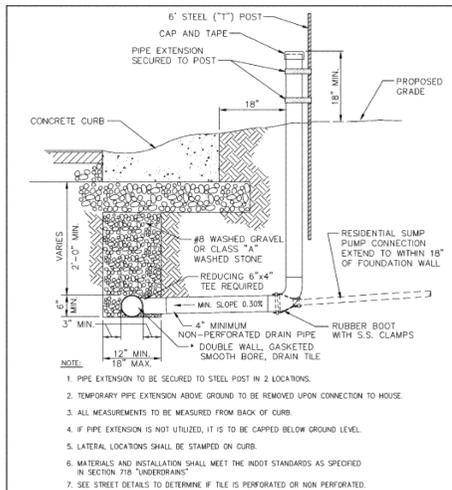
SIDEWALK RAMP FOR HANDICAPPED
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-11



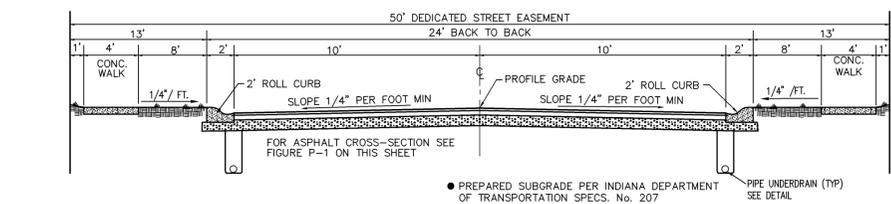
SIDEWALK DETAILS
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-10



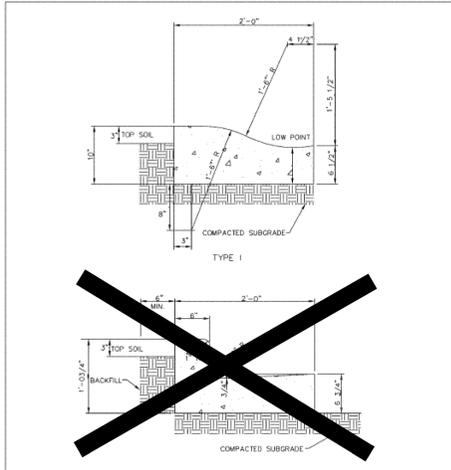
UNDERDRAIN DETAIL
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-9



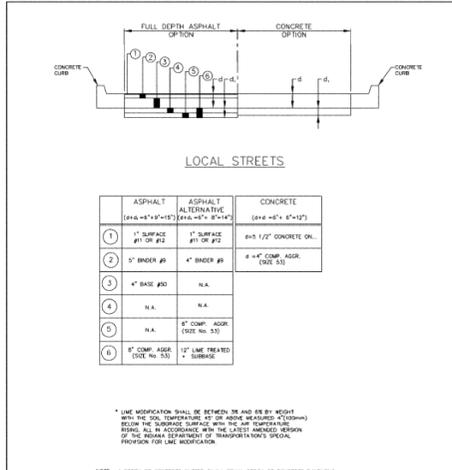
TYPICAL STREET SECTION 24' STREET
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-8



CONCRETE CURB AND GUTTER TYPE I & II
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-8



TYPICAL PAVEMENT SECTIONS
TOWN OF WESTFIELD, INDIANA

Benji Ayers/Staff 10/9/06 DATE FIGURE P-1

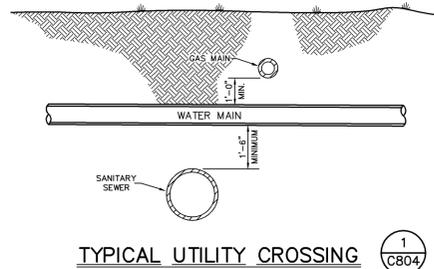
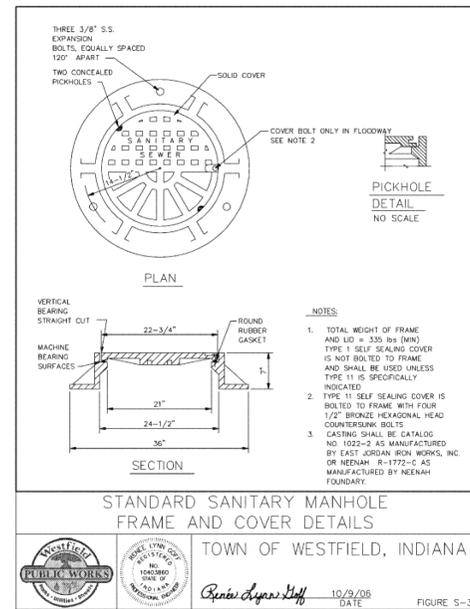
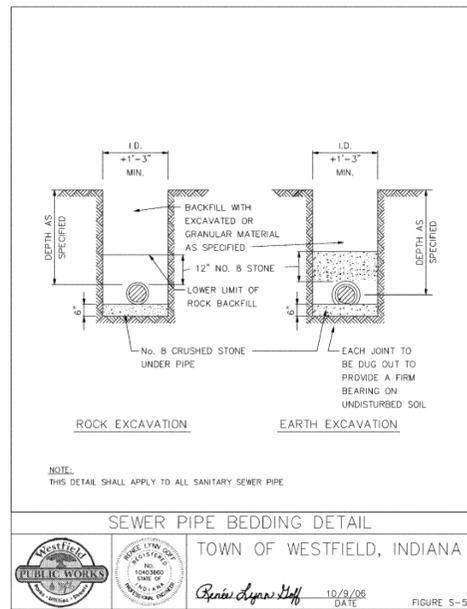
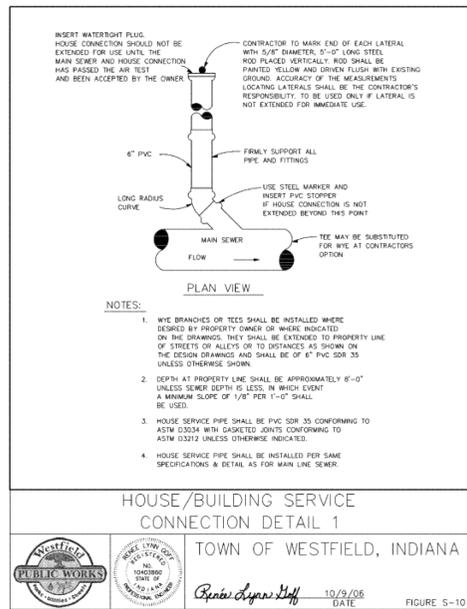
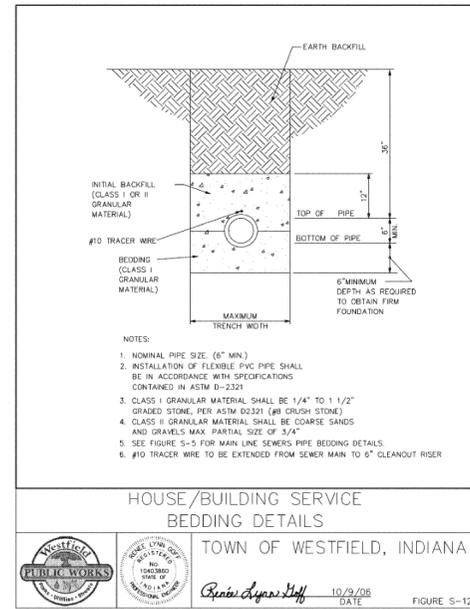
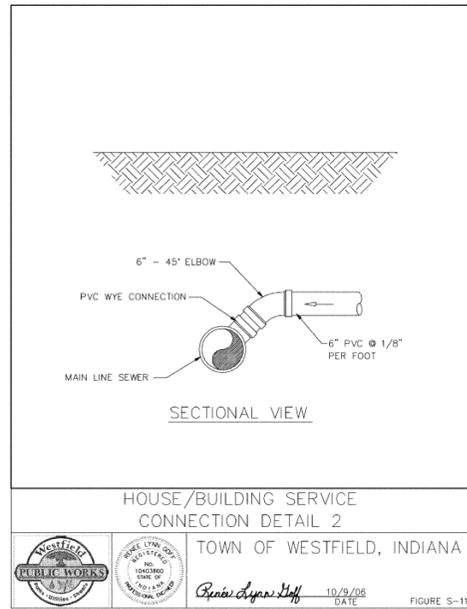
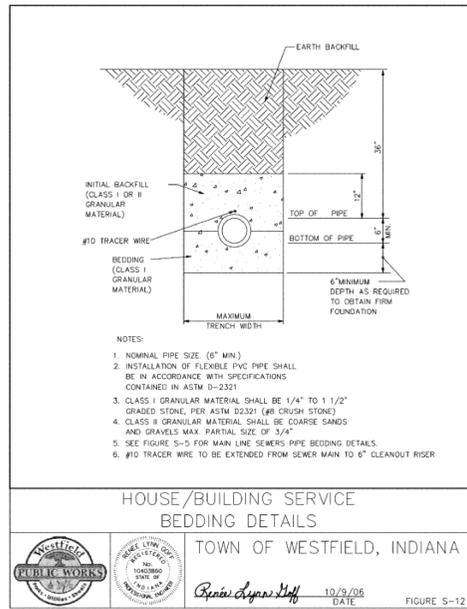
REVISIONS:

DAVID A. CLARK REGISTERED PROFESSIONAL ENGINEER
No. 19300219 STATE OF INDIANA
DATE: 06/27/08
THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREON ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider
THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephones: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com
Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS + LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH EXPANSION WESTFIELD, INDIANA
ESTRIDGE DEVELOPMENT CO., INC. CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
DRAWN BY: PRC CHECKED BY: JLF
SHEET TITLE: GENERAL DETAILS
DRAWING FILE: R:\3\3915\004\DWG\C804-C805
SHEET NO: C803



REVISIONS:

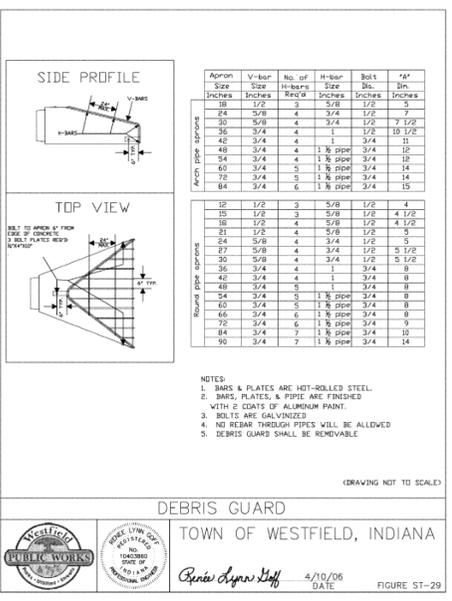
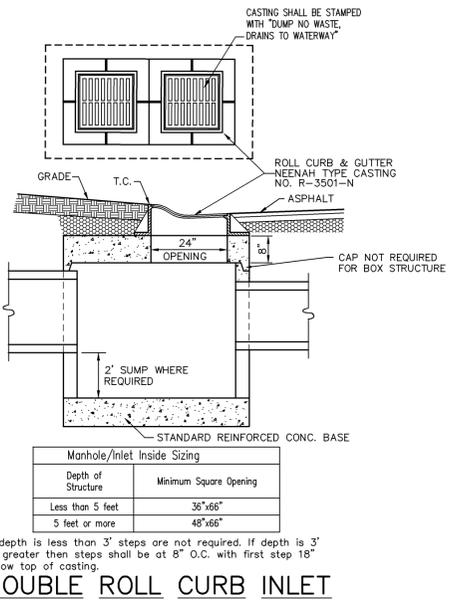
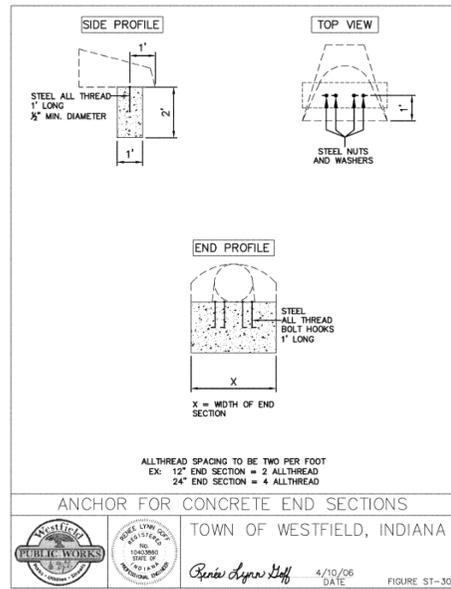
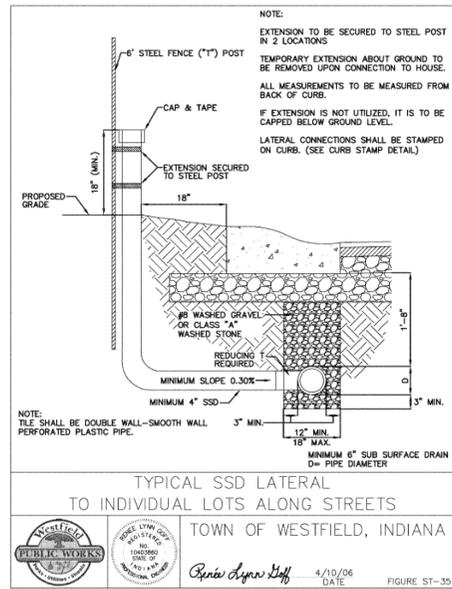
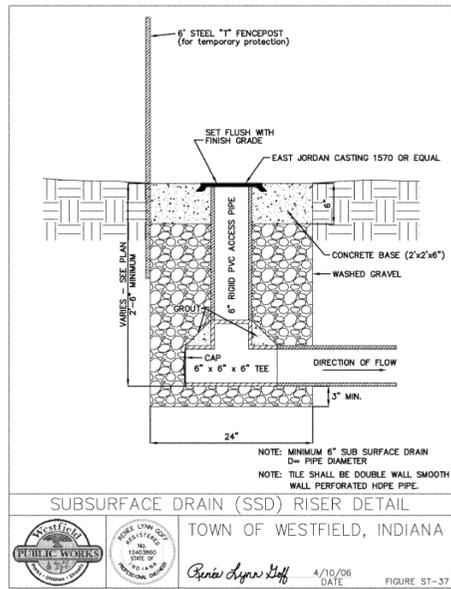
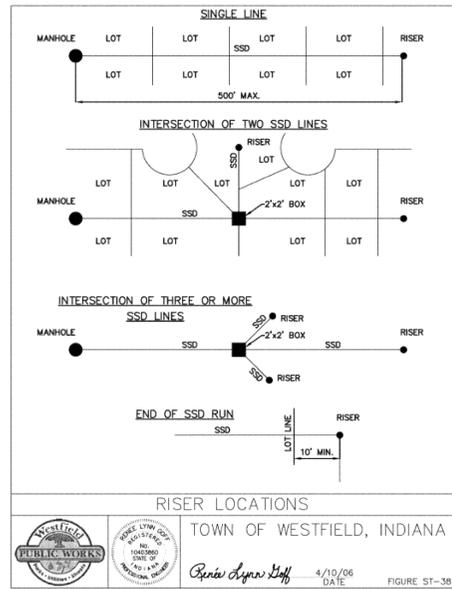
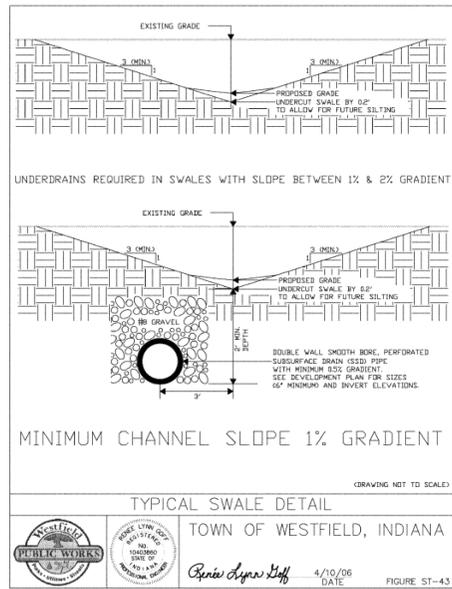


CENTENNIAL SOUTH
EXPANSION
WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

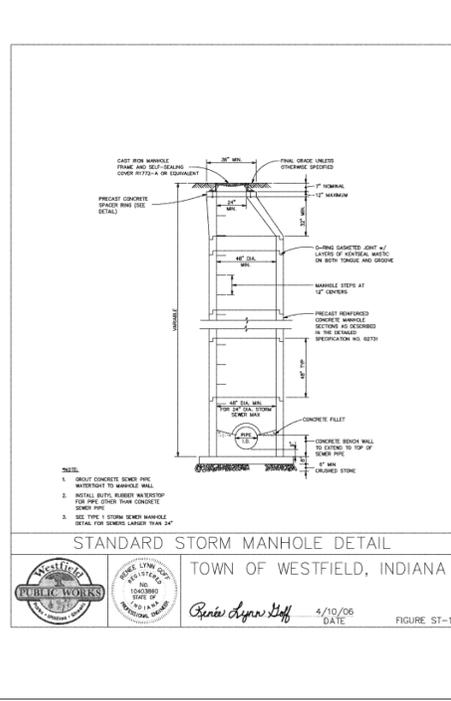
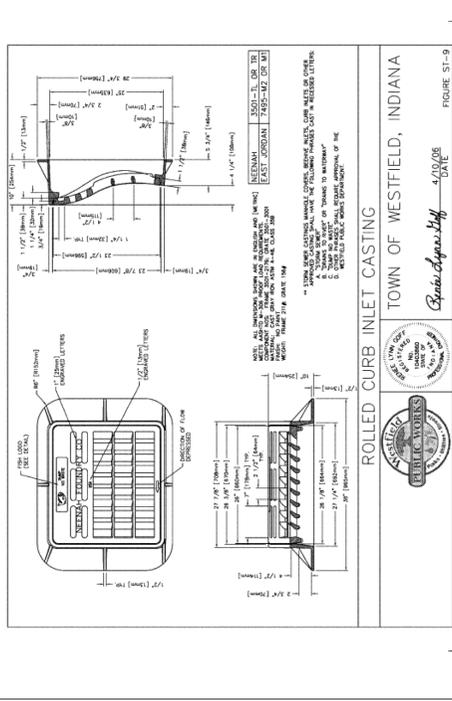
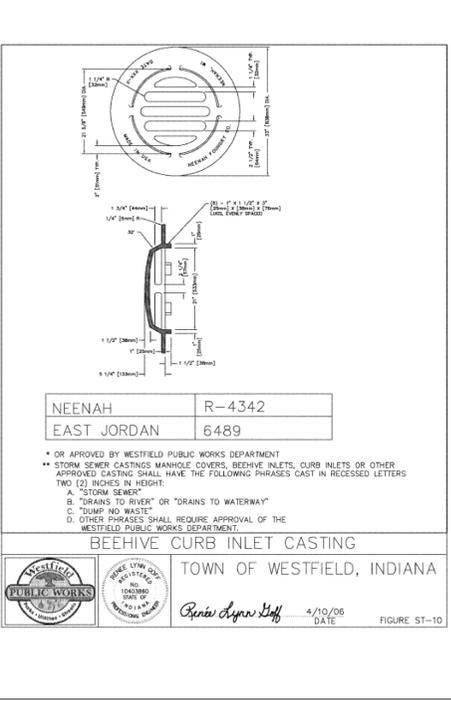
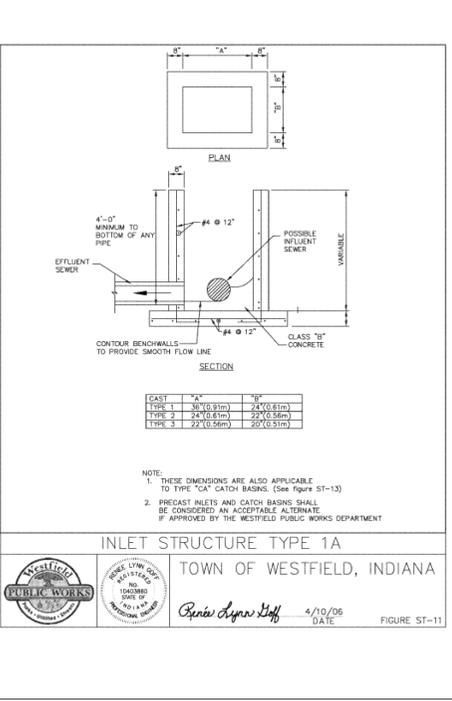
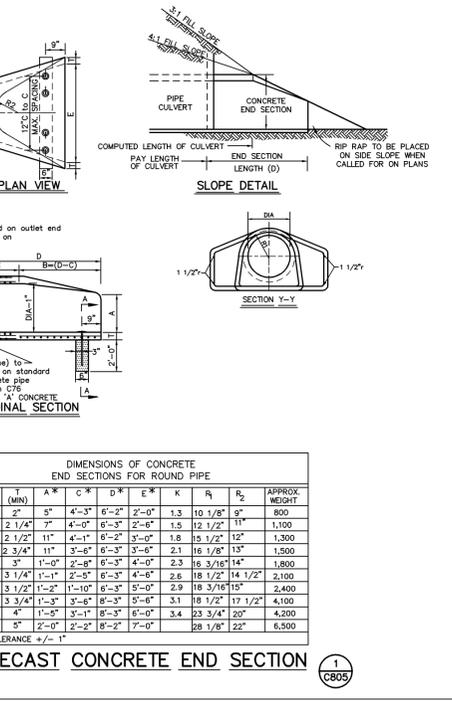
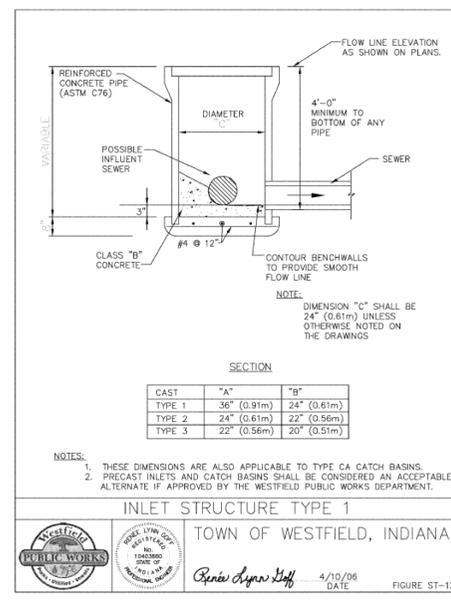
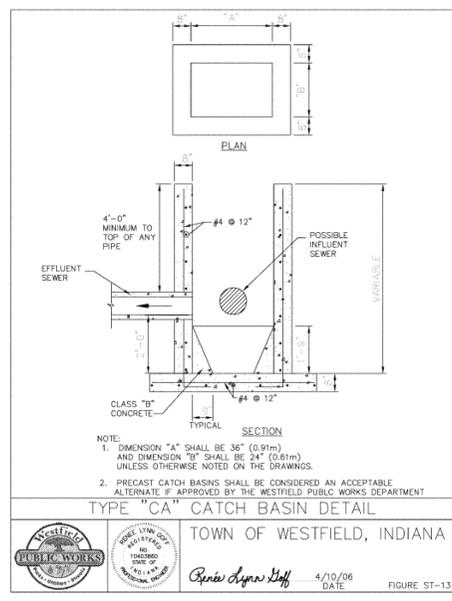
DATE: 06/27/08	PROJECT NO.:
3915.004	
DRAWN BY: PRC	CHECKED BY: JLF
SHEET TITLE: GENERAL DETAILS	
DRAWING FILES: R:\3\3915\004\DWG\CS03-C805	
SHEET NO.:	
1 C804	

C804



STORM STRUCTURE SIZING TABLE
TOWN OF WESTFIELD, INDIANA
Benis Ayres Staff 4/10/06 DATE FIGURE ST-15

PIPE SIZE (INCHES)	STRUCTURES LESS THAN 48" FROM 1/2 TO INVERT (INCHES)	STRUCTURES GREATER THAN 48" FROM 1/2 TO INVERT	ANGLE AND QUALITY OF PIPES WILL REQUIRE SPECIAL DESIGN	STEPS REQUIRED	CURB CASTING #3501	CASTING #3501 TL & TR
12 TO 18	24 x 24	***	DESIGN APPROVAL	NO	YES	YES
12 TO 21	30 x 30	***	DESIGN APPROVAL	NO	YES	YES
18 TO 21	M/7/BOX	DESIGN APPROVAL	DESIGN APPROVAL	YES	YES	YES
21 TO 27	24 x 36 OR 36 x 36	***	DESIGN APPROVAL	NO	NO	YES
12 TO 24	36 x 36	***	DESIGN APPROVAL	NO	YES	YES
24 OR LARGER	DESIGN APPROVAL	***	DESIGN APPROVAL	NO	NO	YES
24 OR LARGER	DESIGN APPROVAL	M/7/BOX	DESIGN APPROVAL	YES*	YES	YES



DAVID A. CLARK REGISTERED PROFESSIONAL ENGINEER
No. 19300219 STATE OF INDIANA
DATE: 06/27/08
THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREON ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
© COPYRIGHTED BY THE SCHNEIDER CORP. (2008)

Schneider
THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephones: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com
Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS + LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH EXPANSION
WESTFIELD, INDIANA
ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
DRAWN BY: PRC CHECKED BY: JLF
SHEET TITLE: GENERAL DETAILS
DRAWING FILES: R:\3\3915\004\DWG\0803-C805
SHEET NO: C805

SECTION 02222 - EARTHWORK FOR UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: Specifications for the stripping of topsoil and vegetation, trenching, bedding, filling, backfilling, compaction, and related work in connection with the installation of water mains, gravity sanitary sewers, storm sewers, and force mains are included in this Section.

B. Definitions

1. Excavation: Removal of earth and rock to form a trench for the installation of a water main, gravity sanitary sewer, storm sewer, or force main.

1. Earth: Unconsolidated material in the crust of the Earth derived by weathering and erosion. Earth includes: Materials of both inorganic and organic origin; Boulders less than 1/3 cubic yard in volume, gravel, sand, silt, and clay; Materials which can be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

3. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes:

- a. Limestone, sandstone, dolomite, granite, marble, and lava;
b. Boulders 1/3 cubic yard or more in volume;
c. Materials which cannot be excavated by equipment which is used to remove earth overburden without the use of explosives, rock rippers, rock hammers, or jack hammers;
d. Materials which cannot be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, high-lift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

1. Undercutting: Excavation of rock and unsuitable earth below the bottom of the pipe or conduit to be installed in the trench.

- 2. Subgrade: Undisturbed bottom of a trench.
3. Bedding: Earth placed in trench to support pipe and conduit.
Backfill and Fill: Earth placed in trench from the top of bedding to finished grade, or to subbase of pavement.
5. Topsoil: Earth containing sufficient organic materials to support the growth of grass.

1. QUALITY ASSURANCE

- 2. The blasting supervisor shall have no less than five (5) years experience in explosive demolition and excavation. The blasting supervisor and crews shall have all appropriate licenses for the handling and use of explosives.
3. A Blasting Monitoring and Control Program shall be developed by the Contractor, and submitted to the Engineer, prior to the commencement of blasting operations.
4. The Blasting Monitoring and Control Program shall indicate the blasting area, the charge locations, number of explosive rounds at each charge location, the maximum charge per delay in pounds, and the maximum charge per round in pounds.

1. SUBMITTALS

- A. Submittals shall be as specified in the General Conditions.
B. Submit the following:
1. Materials test reports.
2. Blasting supervisor's experience record.
3. Blasting Monitoring & Control Program.
4. Storage procedures for explosives.

1.4 SITE CONDITIONS

Existing storm sewers, sanitary sewers, water mains, gas mains, electric ducts, telephone ducts, steam mains and other under-ground structures, lines, and their house connections are to be shown on the plans according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities), is the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 BEDDING

A. Class I bedding shall be angular 6 to 12 mm (1/4 to 1/2 inch) graded stone, coral, slag, cinders, crushed stone or crushed shells.

B. Class II bedding shall be coarse sands and gravels with maximum particle size of 20 mm (3/4 inch). Class II bedding includes variously graded sands and gravels containing small percentage of fine generally granular and non-cohesive, either wet or dry. Soil types GW (well-graded gravel), SW (well-graded sand), and SP (pea gravel and/or crushed stone mixed with sand) are included in this class.

2.2 BACKFILL

A. General: Backfill shall be earth of such gradation and moisture content that the soil will compact to the specified density and remain stable. Unsuitable materials shall not be used.

B. Cover Material: Pipe cover material shall consist of durable particles ranging in size from fine to coarse (No. 200 to 1 inch) in size in a substantially uniform combination. Unwashed bank run sand and crushed bank-run gravel will be considered generally acceptable. Bedding material may be used for cover material.

C. Granular Backfill - Special Backfill: Granular backfill, when indicated on plans or as ordered by the Engineer, shall be used for backfilling providing it meets the following soils classified by the Unified Soils Classification System ASTM D-2487 or the Indiana State Highway Standard Specification Section 211 - Special Fill and Backfill ("B" Borrow).

- Group Symbols Typical Names
GW Well-graded gravels and gravel-sand mixtures, little or no fines
GP Poorly graded gravels and gravel-sand mixtures, little or no fines
SW Well-graded sands and gravelly sands, little or no fines
SP Poorly graded sands and gravelly sands, little or no fines

D. Suitable Excavated Materials as Backfill: Excavated material shall be used when earth backfill is specified on the plans or where granular backfill or flowable fill is not specifically specified, provided that such material consists of loam, clay, or other materials which are suitable for backfilling. Unsuitable backfill or from backfill material shall not be used. Suitable backfill shall be the following soils, classified by the Unified Soil Classification System, ASTM D-2487:

- Group Symbols Typical Names
GW Well-graded gravels and gravel-sand mixtures, little or no fines
GP Poorly graded gravels and gravel-sand mixtures, little or no fines
GM Silty gravels, gravel-sand mixtures
GC Clayey gravels, gravel-sand-clay mixtures
SW Well-graded sands and gravelly sands, little or no fines
SP Poorly graded sands and gravelly sands, little or no fines
SM Silty sands, sand-silt mixtures
SC Clayey sands, sand-clay mixtures
ML Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays

E. Unsuitable Materials: Materials which are unsuitable for backfill include stones greater than 8 inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, and the following soils, classified by the Unified Soil Classification System, ASTM D-2487:

- Group Symbols Typical Names
OL Organic silts and organic silty clays of low plasticity
MH Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
CH Inorganic clays of high plasticity, fat clays
OH Organic clays of medium to high plasticity
PT Peat, muck, and other highly organic soils

F. Concrete Backfill: Concrete used for backfill around sewers, water mains, or other utility piping shall be Class B concrete.

G. Cellular Concrete: Light weight cellular concrete may be used for filling of abandoned sewers as a grouting mixture for filling voids and as a substitute for backfill concrete in tunnels or casing pipes. The cellular concrete shall be produced by blending preformed foam with cement-sand grout slurry to produce a concrete having a fresh weight per cubic foot of not less than 75 pounds.

H. Flowable Fill

1. Flowable fill shall be in accordance with INDOTSS Section 213 and specified herein.
a. Unconfined Compressive Strength (28 day): 50-150 psi max. Flow Test - Diameter of Spread: 8 inches A± 1 inch
2. Design: Mix design shall be required to be submitted and approved by the Town of Westfield Public Works Department or designated engineer. A trial batch demonstration may be required. The mix design shall include a list of all ingredients, the source of all materials, the gradation of all aggregates, the names of all admixtures and dosage rates, and the batch weights. Except for adjustments to compensate for routine moisture fluctuations, minor mix design changes after the trial batch verification shall be documented and justified prior to implementation by the Contractor. A change in the source of materials or addition or deletion of admixtures or cementitious materials will require design to be re-submitted for approval. The Contractor shall be required to provide test data from a laboratory which shows that the proposed mix design is in accordance with the requirements listed in this specification.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES, STRUCTURES, AND PROPERTY

A. All poles, fences, sewer, gas, water or other pipes, wires, conduits and manholes, railroad tracks, buildings, structures and property along the routes of water mains, force mains, and sewers shall be supported and protected from damage by the Contractor.

B. Movable items such as mail boxes may be temporarily relocated during construction. Place movable items in their original location immediately after backfilling is completed, unless otherwise shown on the drawings. Replace movable items which are damaged during construction.

C. The Contractor shall proceed with caution in the excavation and preparation of trenches so that the exact location of underground utilities and structures, both known and unknown, may be determined. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged.

D. Whenever, in the opinion of the Westfield Public Works Department, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose.

E. Wherever sewer, gas, water, or other pipes or conduits cross the trench, the Contractor shall support said pipes and conduits without the approval of the owner of the utility involved.

F. When utility lines that have to be removed or relocated are encountered within the area of operations, the Contractor shall notify the Westfield Public Works Department or the owner of that utility in ample time for the necessary measure to be taken to prevent interruption of the service.

G. The Contractor shall so conduct the work that no vegetation, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless he shall have first obtained the property owner's written consent thereto and shall have shown said written consent to the Town.

H. All excavated material shall be piled in a manner that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept clear or other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.

I. All streets, alleys, pavements, parkways, and private property shall be thoroughly cleaned of all surplus materials, earth, and rubbish placed thereon by the Contractor.

3.2 CLEARING

A. Clear and remove logs, stumps, brush, vegetation, rubbish, and other perishable matter from the project site as required to perform work.

B. Do not remove or damage trees that do not interfere with the work. Completely remove trees required to be removed, including stumps and roots. Properly treat damaged trees which can be saved.

C. Debris from the tree removal, including trunk, branches, leaves, roots and stumps, shall not be buried or burned on the job site, but must be completely hauled away and disposed of at the Developer's or Contractor's expense.

3.3 STRIPPING AND STOCKPILING OF TOPSOIL

A. Strip topsoil and vegetation from the excavated areas. Clean topsoil may be stockpiled for reuse as the upper 6 inches of the areas to be seeded.

B. Do not intermix grass, weeds, roots, root mat, brush, and stones larger than 3 inches with stockpiled topsoil. Dispose of rock contaminated topsoil.

3.4 PAVEMENT AND WALK REMOVAL

A. Remove existing pavement and walks from the excavated areas. Remove excavated asphaltic and concrete materials from the job site as these materials are excavated.

B. The width of pavement removed along the normal trench for the installation of pipe and structures shall not exceed the width of the trench by more than 12 inches on each side of the trench when the amount of pavement removed is less than 75% of the total existing pavement width. Remove all existing pavement when the excavation requires the removal of 75% or more of the total existing pavement width.

C. Remove walks completely when excavation is along the length of a walk and requires the removal of part of the walk. Remove walks to existing joints in the walks when excavation crosses walks. If there are no joints in an existing walk, the width of walk removed shall not exceed the width of the trench by more than 12 inches on each side of the trench.

D. Use methods to remove pavement and walks that will assure the breaking or cutting of pavement and walks along straight lines. The face of the remaining pavement and walk surfaces shall be approximately vertical.

1. EXCAVATING

2. A. General: After stripping of topsoil and vegetation, perform excavations of every description regardless of material encountered within the grading limits of the project to lines and grades as indicated on the drawings or as otherwise specified.

3. 1. Materials removed below the depths indicated shall be replaced to the indicated excavation grade with satisfactory bedding materials placed and compacted.

4. B. Dewatering: Keep excavations free from water until the water mains, force mains, sewers, structures, and appurtenances to be constructed in the excavators are completed and will safely withstand forces from water. Provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment.

5. 1. Operate dewatering equipment ahead of pipe laying and keep the water level below the pipe invert until the pipe is secured by backfill.

6. C. Trenching: Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

1. Do not open more than 100 feet of trench in advance of the installed pipe, unless otherwise directed or permitted by the Westfield Public Works Department or designee. Excavate the trench within 6 inches of full depth for a distance of at least 30 feet in advance of the pipe laying, unless otherwise directed or permitted.

1. Contractor shall be responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Excavate all slopes to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting, or where shoring or trench box is to be used.

2. Sides, slopes, and faces of all excavations shall meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Give special attention to slopes which may be adversely affected by weather or moisture content.

3. Flatten the trench sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.

4. Shoring, sheeting, trench box, or other means shall be used to support sides of trenches in hard or compact soil when the trench is more than 5 feet in depth and 8 feet or more in length. Sides of trenches shall include embankments adjacent to trenches. In the case of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. Provide a bench of 4 feet minimum at the toe of the sloped portion of the trench wall when the outside diameter of the pipe to be installed is greater than 6 feet.

5. Use diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Do not allow water to accumulate in an excavation. If possible, the grade should be away from the excavation.

6. Excavations shall be inspected by a competent Contractor's representative after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased, if necessary.

7. Do not store excavated or other material nearer than 4 feet from the edge of any excavation. Store and retain materials as to prevent materials from falling or sliding back into the excavation. Install substantial stop log or barricades when mobile equipment is utilized or allowed adjacent to excavations.

8. The width of trenches in earth for water main, sewers, basin connections, house connections, and other drains up to and including 30 inches in internal diameter shall provide a clearance of not less than 8 inches or more than 10 inches on each side of the pipe. Trenches for pipe larger than 33 inches in internal diameter shall provide a clearance of not less than 10 inches or more than 14 inches on each side of the pipe.

9. The maximum clear width of trenches in earth for manholes shall be the greatest external width of the structure plus the space necessary for the construction and removal of the forms and construction of masonry work.

10. The design of the water main, force main, and/or sewer pipe and structures is predicated upon the width of trench specified in this Article. The Contractor shall be responsible for the provision and installation, at his own expense, of such remedial measures as may be directed by the Westfield Public Works Department or designee; should the trench width limits specified in this Article be exceeded.

11. Test the air in excavations in locations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases are present. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, and basket stretcher, shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

12. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.

13. Provide ladders where employees are required to be in trenches 4 feet deep or more. Ladders shall extend from the floor of the trench to at least 3 feet above the top of the excavation. Locate ladders to provide means of exit without more than 25 feet of lateral travel.

14. Provide adequate barriers and physically protect all remotely located excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon completion of exploration and similar operations.

15. D. Quicksand: Carry on the work with utmost vigor and proceed with the work expeditiously when running sand, quicksand, or other bad or treacherous ground is encountered. Install bedding to support the pipe as directed.

8. E. Blasting: Removal of rock from the excavation may be facilitated by the use of controlled explosives.

- 1. Blasting supervision and Blasting Monitoring and Control Programs shall meet the requirements of this Section.
2. Storage procedures for explosives shall be developed by the Contractor and submitted to the Engineer before explosives are brought to the job site.

1. SHEETING

A. The Contractor shall be responsible for construction means, methods, techniques, and procedures, and for providing a safe place for the performance of the work by the Contractor, Subcontractors, suppliers and their employees, and for access use, work, or occupancy by all authorized persons.

B. The Contractor shall be solely responsible for all obligations prescribed as Employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction."

C. Adequate supporting systems, such as sheeting, shoring, piling, cribbing, and bracing shall be furnished and installed by the Contractor as required to protect existing buildings, utilities, and property from damage during the progress of the work.

3.7 STORAGE AND REMOVAL OF EXCAVATED MATERIAL

A. Suitable excavated material required for filling and backfilling operations may be stockpiled in on-site locations, at the discretion of the Westfield Public Works Department or designee, until the material is ready to be placed.

B. Remove unsuitable materials from the job site as unsuitable materials are excavated. Remove surplus suitable materials from the job site as trenches are backfilled.

3.8 TEMPORARY PLUGS

Prevent foreign matter from entering pipe while it is being installed. Do not place debris, tools, clothing, or other material in the pipe. Close the open ends of pipe with watertight plugs when pipe laying is not in progress. Remove any earth or other material that enters pipe, lateral pipe, or appurtenances through any open pipe end.

3.9 BACKFILLING WATER MAIN AND FORCE MAIN TRENCHES

A. Backfilling of water main and force main trenches shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section.

B. Do not backfill trenches and excavations until all utilities have been inspected by the Westfield Public Works Department or designee and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings. Required hydrostatic tests may be applied to the line either before or after the trench is backfilled, subject to approval of the Westfield Public Works Department or designee.

C. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.

D. Material from the trench subgrade to the centerline of the pipe shall be Class II bedding. Place bedding by hand or approved mechanical methods in layers of 8 inches loose depth. Compact bedding by hand tamping or with a power operated hand vibrating compactor. Deposit bedding in the trench for its full width on each side of the pipe simultaneously.

E. Place pipe cover material from the centerline of the pipe to 12 inches over the pipe. Compact pipe cover material to the density required to allow backfill over the pipe cover material to be compacted to the density specified in this Article.

F. Do not use the following materials for backfill:
1. Unsuitable materials;
2. Frozen materials;
3. Materials which are too wet or too dry to be compacted to the densities specified in this Article.

G. Where the edge of the trench is within 5 feet of the existing roadway pavement, it shall be backfilled with Flowable Backfill. Where the trench is located within existing pavement or any trench specifically indicated on the drawings shall be backfilled with Flowable Backfill. Where the edge of the trench is within 5 feet or crosses a proposed roadway pavement, it shall be backfilled with Flowable Backfill. Place Flowable Backfill in lifts. In all areas, cuts and trenches shall be backfilled with Flowable backfill to within 1/4 inch of the existing asphalt paved surface. The remainder of the trench is to be filled with crushed stone and compacted in place, prior to opening the street to traffic. The Contractor shall add crushed stone and grade until sufficient finish grade has taken place and final restoration is made.

H. Trenches in Traveled Pavements: All cuts and trenches in paved streets or other paved areas shall be backfilled with flowable fill material unless granular backfill is specifically approved by the Director of Public Works to within 12 inches of the street surface in grass areas or to the bottom of the pavement section.

3.10 BACKFILLING SANITARY SEWER AND STORM SEWER TRENCHES

A. Do not backfill trenches and excavations until all utilities have been inspected by the Westfield Public Works Department or designee and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings.

B. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.

C. Bedding procedures for sanitary sewers and storm sewers shall be as specified in the Section for the applicable pipe material.

D. If bedding does not cover the pipe, place pipe cover material from the top of bedding to 12 inches over the pipe. Compact pipe cover material to the density required to allow backfill over the pipe cover material to be compacted to the density specified in this Article.

E. Do not use the following materials for backfill:
1. Unsuitable materials;
2. Frozen materials;
3. Materials which are too wet or too dry to be compacted to the densities specified in this Article.

F. Where the edge of the trench is within 5 feet of or crosses the existing roadway pavement, it shall be backfilled with Flowable Backfill. Backfill any trench specifically indicated on the drawings with Flowable Backfill.

G. Trenches in State Highway Right-of-Way: Where excavation occurs within the right-of-way of a state highway, all areas within 12 feet of the pavement edge shall be backfilled with Grade "B Borrow" Special Backfill. All areas beyond 12 feet shall be backfilled in the manner specified in the following paragraph.

H. Trenches Not Requiring Special Backfill: Backfill trenches not requiring granular backfill with suitable excavated material. Place and compact backfill to produce an adequate foundation for the applicable paved or unpaved surface treatment. Fill and restore any settlement of the backfill. In paved areas, backfill shall be maintained to subbase elevation. In unpaved areas, backfill shall be mounded above finish grade to allow for settlement. Grade unpaved area to be restored 6 inches below finish grade after settlement of backfill and immediately before restoration of vegetated areas. Place 6 inches of topsoil over area to be restored.

I. Trenches in Traveled Pavements: All cuts and trenches in paved streets or other paved areas shall be backfilled with flowable fill material unless granular backfill is specifically approved by the Director of Public Works to within 12 inches of the street surface in grass areas or to the bottom of the pavement section.

3.11 MAINTAINING TRAFFIC

A. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain a permit or permits from the duly constituted public authority having jurisdiction, state, county, or city, which notice shall be given not less than 72 hours in advance of the time when it may be necessary in the process of construction to close such thoroughfare.

B. The Contractor shall conduct his work in such manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, excavated material and spoil banks shall not be located in such manner as to obstruct traffic; and the traveled way of all streets, roads, and alleys shall be kept clear and unobstructed insofar as is possible and shall not be used for the storage of construction materials, equipment, supplies, or excavated earth, except when and where necessary. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed except when and where necessary, and then only upon due advance notice to the Engineer. The Contractor shall be responsible for the period of time consistent with efficient and expeditious construction. The Contractor shall be liable for any damages to persons or property resulting from his work.

3.12 WALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise, and shall not obstruct the sidewalks, gutters, or streets, nor prevent in any manner the flow of water in the latter, but shall use all proper and necessary means to permit the free passage of surface water along the gutters. The Contractor shall immediately cart away all offensive matter, exercising such precaution as may be directed by Westfield Public Works Department or designee. All material excavated must be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

3.13 WARNING LIGHTS

The Contractor shall place sufficient warning lights on or near the work and keep them illuminated during periods of reduced visibility (from twilight in the evening until sunrise) and will be held responsible for any damages that any party or the Town may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

3.14 CLEANUP AND MAINTENANCE

A. Cleanup the job site as backfilling is completed. Remove excess earth, rock, bedding, materials, and backfill materials. Remove unused piping materials, structure components, and appurtenances. Restore items moved, damaged, or destroyed during construction. Grade area to be restored. Leave backfill mounded over trenches which are not backfilled with Special Backfill. Cleanup and restoration specified in this paragraph shall be completed within 1,000 feet of excavation.

B. Restoration of grass, bushes, trees, and other plants shall be completed by Contractor to original condition.

C. Restoration of pavement and walks shall be specified in Section 02500, Paving and Surfacing. A temporary driving surface, such as crushed stone, shall be compacted in place in the trench area as backfilling is completed. Cold-mix asphalt patching material may be used as a temporary driving surface at the Contractor's option or when specifically called for in the plans or specifications. Temporary pavement shall not be more than 1,000 feet behind the excavation. When no existing pavement remains after excavation, a temporary compacted aggregate surfacing may be provided instead of the permanent pavement or a temporary cold-mix asphalt pavement. When the pavement is asphaltic concrete, placement of the asphaltic concrete surface course may be delayed until all other heavy construction is completed.

D. Maintain the job site until the work has been completed and accepted. Fill trenches which settle when settlement is visible. Restore items damaged by construction or improper restoration. Keep dust conditions to minimum by the use of water, salt, calcium chloride, oil, or other means.

LAKE LINER SPECIFICATION

It may be necessary to construct a liner to seal the more permeable sandy clays and sand seams which may be present at a shallow depth within the side slope or bottom of the excavation. The contractor shall perform soil analysis tests in the lake area(s) to determine if the lake(s) will require a liner. In the event that construction of a liner becomes necessary, Lake Liner specifications have been included below.

Acceptable liners are as follows:

I. Natural Clay Liner
A. Laboratory testing shall be performed on the designated liner material to determine the optimum liner compaction criteria. Subsequent to determining this compaction criteria, permeability testing shall be performed on remolded samples, compacted to this standard. Laboratory testing shall be performed at least one (1) month prior to initiating lining activities.

B. The contractor shall identify and retain the engineer-approved liner material for use on sealing the side slopes and bottom of the lake. The optimum natural liner material shall not be used for other portions of site work prior to verification that adequate resources are available and have been stockpiled. It is important that the stockpiled soils be stored in an small area as possible to retain natural moisture. The contractor should anticipate that additional soil work may be required to bring the liner material to required uniform moisture level.

C. A representative of the testing engineer shall be present for inspection of the base and side slopes of the lake prior to and during compaction of the liner materials.

D. The clay lining material, approved by the testing engineer, shall be compacted to a minimum of 12 inches thick on the upper two thirds of the side slopes and 18 inches on the lower one third. A compacted minimum of 18 to 24 inches approved lining material shall be placed across the base of the lake.

E. The clay liner material shall be regularly sampled and tested for conformance to the moisture and Atterberg limits established for the approved liner material(s). Field density and moisture testing shall also be performed frequently during construction to establish a correlation between density and field permeability. It is imperative that moisture levels be maintained over optimum as determined in laboratory testing. Only by maintaining this condition will it be possible to approach the zero voids condition and maximize natural liner capabilities. Off-site sources for clay liner material may be used with approval by the Owner's representative and on-site testing engineer.

F. Compaction of the natural liner shall be performed by equipment operating up and down the slope. Engineered natural clay liners shall not be compacted by equipment operating around the slopes on or near the same elevation. It is important that hydration of the clay liners takes place after installation is complete. This is typically accomplished by natural rainfall or by application of fresh water at the rate of one quarter gallon per square foot for at least 72 hours. This recommended rate of hydration will help prevent shrinkage and cracking of the clay liner and maintain its integrity.

II. Bentonite

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

III. Synthetic Liner

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

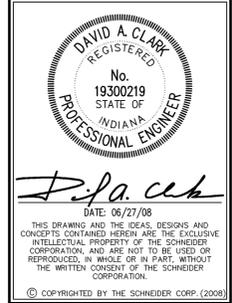
TABLE 1

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 psig

DROP FOR SIZE AND LENGTH OF PIPE INDICATED

Table with columns: Pipe Diameter In., Minimum Time, mins., Length for Minimum Time, ft., Time for Longer Length, S, and Specification Time for Length (L) Shown, mins. (100 ft, 150 ft, 200 ft, 250 ft, 300 ft, 350 ft, 400 ft, 450 ft)

REVISIONS:



THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com

Architecture
Civil Engineering
Environmental Engineering
Geotechnical Services
GIS + LIS
Home Builder Services
Interior Design
Land Surveying
Landscape Architecture
Transportation Engineering

CENTENNIAL SOUTH
EXPANSION
WESTFIELD, INDIANA
ESTRIDGE DEVELOPMENT CO., INC.
CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
DRAWN BY: PCJ CHECKED BY: JLF
SHEET TITLE: EARTHWORK SPECIFICATIONS FOR THE TOWN OF WESTFIELD
DRAWING FILES: R:\3\3915\004\DWGS\0301-C905
SHEET NO: C901

SECTION 02660 - WATER MAINS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish and install pipe, fittings, valves, hydrants and appurtenances necessary to complete work shown or specified.
B. Codes, specifications and standards referred to by title or number in this specification shall be adhered to, and latest revisions shall apply in all cases.
C. Definitions
1. Abbreviations
a. ANSI - American National Standards Institute.
b. ASTMA - American Society for Testing & Materials.
c. AWWA - American Water Works Association.

- 2. All pipe, fitting and valve sizes and references to pipe diameter on the drawings or in the specifications are intended to be nominal size or diameter and shall be interpreted as such.

1.2 QUALITY ASSURANCE

- A. Mark pipe, fittings, valves and hydrants according to the applicable specification or standard.
B. The Contractor shall test and disinfect water mains constructed under this Contract, as specified in this Section.
C. The Town shall collect samples of water from water mains constructed after the piping has been disinfected. The Town will submit the samples to the applicable regulatory agency for bacteriological analysis.

- D. A performance test may be required by the Public Works Director, at any time, for each new installing water mains. The Contractor shall perform these tests at no additional cost to the Owner. When required by the Public Works Director, the Contractor shall test a given section of water main installed by a given crew. The section shall be a continuous section of water main which can be isolated by valves shown on the drawings. The Contractor shall not install water mains in other sections until the first section has been successfully tested.

PART 2 - PRODUCTS

2.1 GENERAL

- All pipe, fittings, valves, hydrants and appurtenances shall be as shown on the drawings or as required by the manufacturer and ANSI/AWWA specifications. All pipe, fittings, valves, hydrants and appurtenances shall be new and unused.

2.2 BURIED WATER MAIN PIPE AND FITTINGS

- A. Ductile Iron Water Mains (3" and Larger)

- 1. Pipe
a. Ductile iron pipe shall meet the requirements of ANSI/AWWA C151/A21.51. Design an additional manufacture pipe for the pressure class listed plus 100 psi surge pressure. Additionally, a safety factor of 2.0 and a depth of cover, indicated on the drawings or as required by the manufacturer's and ANSI/AWWA specifications, shall be included. Minimum thickness class shall be as follows:

Table with 2 columns: Size Range, Pressure Class. Rows: 4" - 12", 150; 14" - 20", 250.

- b. Pipe joints shall be push-on type. Joints shall meet the requirements of ANSI/AWWA C111/A21.11. Restrained joints shall be Lok-Ring, Lok-Fast, Lok-Tyte, or equal.

2. Fittings

- a. Fittings shall be ductile iron. Fittings for standard size pipe shall meet the requirements of ANSI/AWWA C110/A21.10. Compact or short body fittings 3 inches through 16 inches shall meet the requirements of ANSI/AWWA C153/A21.53. Design and manufacture fittings for a pressure rating of at least 150 psi.

- b. Fitting joints shall be mechanical joints or restrained push-on joints. Joints shall meet the requirements of ANSI/AWWA C111/A21.11. Thrust block all mechanical joints as indicated on the drawings or as required by the manufacturer's and ANSI/AWWA specifications. Pipe connecting restrained joint fittings shall be restrained as indicated on the drawings or as required by the manufacturer's and ANSI/AWWA specifications.

3. Adapters

- a. Adapters from ductile iron water mains to flange joint valves or fittings shall be ductile iron. Adapters shall meet the requirements of ANSI/AWWA C110. Design and manufacture adapters for a pressure class rating of 150 psi.

- b. Adapter ends connecting to ductile iron water mains shall be one of the following: plain end, push-on joint, mechanical joint or restrained push-on joint. Adapters with plain ends, push-on joints or mechanical joints may be used where restrained joints are not required. Adapters shall have restrained push-on joints where restrained joint piping is required, as indicated on the drawings. Mechanical joints and restrained push-on joints shall meet the requirements of ANSI/AWWA C111/A21.11. Restrained joints shall be Lok-Ring, Lok-Fast, Lok-Tyte or as approved by the Public Works Director.

- c. Adapter ends connecting to flange joint valves or fittings shall have joints complying with the specifications for the applicable valves or fittings.

- 1. Line the inside surfaces of all pipe, fittings and adapters with a cement mortar lining. Cement mortar lining and seal coating shall meet the requirements of ANSI/AWWA C104. Coat the outside surfaces of all pipe, fittings and adapters with a bituminous coating, complying with ANSI/AWWA C151.

- 2. Gaskets for mechanical joints and push-on joints shall meet the requirements of ANSI/AWWA C111/A21.11.

1. Nuts and Bolts

- 1. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 2. Nuts and bolts for restrained push-on joint shall meet the requirements of the joint manufacturer.

- 3. Polyethylene encasement for ductile iron water mains shall be installed and shall meet the requirements of ANSI/AWWA C105/A21.5. Installation of the polyethylene encasement shall be omitted if written approval is made by the ductile iron pipe manufacturer and/or the Public Works Director.

B. Polyvinyl Chloride Water Mains (3" to 8")

1. Pipe

- a. Polyvinyl chloride pipe shall meet the requirements of ANSI/AWWA C900, Class 150/DR18. Design and manufacture pipe for a working pressure of 150 psi plus 100 psi surge pressure. Additionally, a safety factor of 2.0 and a depth of cover, indicated on the drawings or as required by the manufacturer's and ANSI/AWWA specifications, shall be included.
b. Polyvinyl chloride pipe shall have ductile-iron-pipe-equivalent outside diameter.

2. Fittings

- a. Fittings shall be ductile iron and meet the requirements of ANSI/AWWA C110. Design and manufacture fittings for a pressure rating of 150 psi.

- b. Line the inside surfaces of fittings with cement mortar lining and bituminous seal coating shall meet the requirements of ANSI/AWWA C104/A21.4. Coat outside surfaces of fittings with bituminous coating. Outside coating shall meet the requirements of ANSI/AWWA C110.

- c. Fitting joints shall be mechanical joints. Mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11.

d. Mark each fitting. Marking shall meet the requirements of ANSI/AWWA C110.

3. Adapters

- a. Adapters from polyvinyl chloride water mains to vitaculic, flange joint valves or fittings shall be ductile iron. Adapters shall meet the requirements of ANSI/AWWA C110. Design and manufacture adapters for a pressure rating of 150 psi.

- b. Line the inside surfaces of adapters with a single cement mortar lining. Cement mortar lining and seal coating shall meet the requirements of ANSI/AWWA C104/A21.4. Coat outside surfaces of adapters with bituminous coating, complying with ANSI/AWWA C110.

- c. Adapter ends connecting to polyvinyl chloride water mains shall have plain ends or mechanical joints. Mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11.

- d. Adapter ends connecting to vitaculic, flange joint valves or fittings shall have joints complying with the specifications for the applicable valves or fittings.

4. Gaskets

- a. Gaskets for polyvinyl chloride push-on joints shall meet the requirements of ANSI/AWWA C900.

- b. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

2.3 PIPE AND FITTINGS SMALLER THAN 3-INCH

- A. Pipe shall be Type K drawn copper and shall meet the requirements of ASTM B88.

- B. Fittings and couplings shall be cast bronze and shall meet the requirements of ASTM B16.18. Construct and manufacture fittings and couplings for a pressure rating of 150 psi.

- C. Unions shall be bronze and shall meet the requirements of ASTM B16.18. Design and manufacture unions for a pressure rating of 150 psi.

- D. Flanges for connection of screwed joint pipe to flange joint valves or fittings shall be 125-16 cast iron, screwed companion flanges, complying with both ASTM A126 and ANSI B16.1.

- E. Tape for screwed joints shall be teflon.

- F. Gaskets for flange joints shall be 1/16-inch thick, full face and conform to ANSI/AWWA C111/A21.11. Gaskets shall be rubber or as approved by the Public Works Director.

- G. Bolts for flange joints shall be steel, heavy hexagon head machine bolts. Nuts and bolts shall be steel, semi-finished, heavy hexagon nuts. Nuts and bolts shall meet the requirements of ASTM A307 for Grade B and be zinc-coated alloy steel.

2.4 VALVES

- A. Butterfly Valves
1. Butterfly valves and operators shall meet the requirements of ANSI Standard C504. Valves and operators shall be Class 150B.

- 2. Buried butterfly valves shall have mechanical joints. Mechanical joints shall meet the requirements of AWWA C111. Butterfly valves installed above ground or in structures shall have flange joints as specified in AWWA Standard C504. Nuts, bolts, and gaskets for flange joints shall meet the requirements of ANSI/AWWA C110. Nuts and bolts shall be cadmium plated. Gaskets shall be full face and shall be red rubber, or equal.

- 3. Each buried butterfly valve shall have a manual operator and a 2inch operating nut. Valve opening direction shall be consistent with operation of existing valves in the waterworks in which the valves are installed, unless otherwise directed by the Engineer.

- 4. Each butterfly valve installed above ground or in a structure shall have a manual operator and handwheel.

B. Gate Valves

- 1. Buried gate valves 4-inches and larger shall be full ductile iron body, epoxy fusion bonded inside and out, non-rising stem gate valves. Valves shall meet the requirements of ANSI/AWWA C500 or C509 and have mechanical joint ends. Mechanical joints and joint accessories shall comply with ANSI/AWWA C111/A21.11. Valve opening direction shall be consistent with operation of existing valves in the waterworks where the valves are installed, unless otherwise directed by the Public Works Director.

- 2. Three-inch buried gate valves shall be full ductile iron body, epoxy fusion bonded inside and out, non-rising stem gate valves. Valves shall meet the requirements of ANSI/AWWA C500 or C509, except, ends shall be screwed. Screwed ends shall conform to ANSI B16.3. Valve opening direction shall be consistent with operation of existing valves in the waterworks where the valves are installed, unless otherwise directed by the Public Works Director.

- 3. Gate valves smaller than 4-inch installed above ground or in structures shall be bronze, 125 lb. S.W.P. double disc, screwed-in bonnet, rising stem, inside screw gate valves with screwed ends and malleable iron handwheels. Flange joints and accessories shall be as specified in ANSI/AWWA C110. Nuts and bolts shall be zinc-coated alloy steel. Gaskets shall be full face rubber, or as approved by the Public Works Director.

- 4. Gete valves shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints and push-on joints shall be as follows:

Table with 2 columns: Size Range, Pressure Class. Rows: 4" - 12", 150; 14" - 20", 250.

- 7. Polyethylene encasement for ductile iron water mains shall be installed and shall meet the requirements of ANSI/AWWA C105/A21.5. Installation of the polyethylene encasement shall be omitted if written approval is made by the ductile iron pipe manufacturer and/or the Public Works Director.

C. Curved valves 2-inch and smaller shall be curb stops. Curb stops shall meet the applicable requirements of ANSI/AWWA C500, ASTM B-62 for 85-5-5 composition bronze, and USAS B2.1. Curb stops shall be Mueller H-10283, Ford B11 Series, or as approved by the Public Works Director.

D. Tapping Valves

- 1. Tapping valves shall comply with both ANSI/AWWA C500 or C509 and have flange mechanical joint ends. Double disc gate valves, gate rings and body-seat rings shall be oversized to permit entry and exit of tapping machine cutters.

- 2. Valve end connecting to tapping sleeve shall have a flange for bolting to the sleeve. The flange shall have a tongue which fits a recess in the sleeve. Tongues shall meet the requirements of MSS SP-60. Resilient seated gate valves having a port diameter equal to or exceeding 1/4 inch over nominal diameter shall not require a tongue. Flange dimensions and drilling shall meet the requirements of ANSI B16.1. Nuts, bolts, and gaskets for flange joints shall meet the requirements of ANSI/AWWA C110. Nuts and bolts shall be zinc-coated alloy steel, and gaskets shall be rubber, or as approved by the Public Works Director. Mechanical joints and accessories shall meet the requirements of ANSI/AWWA C111/A21.11. A full nominal diameter cutter shall be used for tapping. Tapping valves 14-inch and smaller shall be installed vertically. Tapping valves 16-inch and larger shall be installed horizontally and shall have bypass valves. Tapping valves installed horizontally shall have rollers and tracks. Valves 16-inch and larger shall have gear operators with enclosed gear cases suitable for buried service. Gear cases shall be extended type or totally enclosed type. Extended type gear cases shall have bolted side plates to cover stem and stuffing box.

- 3. Adapter ends connecting to tapping sleeve shall have a flange for bolting to the sleeve. The flange shall have a tongue which fits a recess in the sleeve. Tongues shall meet the requirements of MSS SP-60. Resilient seated gate valves having a port diameter equal to or exceeding 1/4 inch over nominal diameter shall not require a tongue. Flange dimensions and drilling shall meet the requirements of ANSI B16.1. Nuts, bolts, and gaskets for flange joints shall meet the requirements of ANSI/AWWA C110. Nuts and bolts shall be zinc-coated alloy steel, and gaskets shall be rubber, or as approved by the Public Works Director. Mechanical joints and accessories shall meet the requirements of ANSI/AWWA C111/A21.11. A full nominal diameter cutter shall be used for tapping. Tapping valves 14-inch and smaller shall be installed vertically. Tapping valves 16-inch and larger shall be installed horizontally and shall have bypass valves. Tapping valves installed horizontally shall have rollers and tracks. Valves 16-inch and larger shall have gear operators with enclosed gear cases suitable for buried service. Gear cases shall be extended type or totally enclosed type. Extended type gear cases shall have bolted side plates to cover stem and stuffing box.

- 4. Mark each fitting. Marking shall meet the requirements of ANSI/AWWA C110.

- 5. Adapters
a. Adapters from polyvinyl chloride water mains to vitaculic, flange joint valves or fittings shall be ductile iron. Adapters shall meet the requirements of ANSI/AWWA C110. Design and manufacture adapters for a pressure rating of 150 psi.

- b. Line the inside surfaces of adapters with a single cement mortar lining. Cement mortar lining and seal coating shall meet the requirements of ANSI/AWWA C104/A21.4. Coat outside surfaces of adapters with bituminous coating, complying with ANSI/AWWA C110.

- c. Adapter ends connecting to polyvinyl chloride water mains shall have plain ends or mechanical joints. Mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11.

- d. Adapter ends connecting to vitaculic, flange joint valves or fittings shall have joints complying with the specifications for the applicable valves or fittings.

- 6. Gaskets for polyvinyl chloride push-on joints shall meet the requirements of ANSI/AWWA C900.

- b. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

- 5. Nuts and bolts for mechanical joints shall be high strength, heat treated, alloy steel. Nuts shall be hexagon nuts, and bolts shall be tee head bolts. Nuts and bolts shall meet the requirements of ANSI/AWWA C111/A21.11.

- 6. Gaskets for mechanical joints shall meet the requirements of ANSI/AWWA C111/A21.11 and ASTM F477.

D. Gaskets used to seal joints between saddle bodies and tapped pipes shall be O-ring type, circular in cross section, and made of natural or synthetic rubber with a Durometer Hardness of 70 ± 5.

1. FLANGE-MECHANICAL JOINT ADAPTERS

2. AIR AND VACUUM VALVE CHAMBERS

- Flange-mechanical joint adapters shall be Dresser Style 127, Smith-Blair Type 912 or as approved by the Public Works Director.

- A. Air and vacuum valve chambers shall be 4-foot diameter precast concrete manhole barrels with precast concrete flat slab tops. Precast manhole barrels shall meet the requirements of ASTM C478.

- B. Air and vacuum valve chamber access frames and cover shall be 1915-G, or equal. Cast the word "WATER" in each cover.

2.12 WATER SERVICES

- A. Pipe shall be seamless copper tubing and shall meet the requirements of ASTM B88, Type "K".

- B. Fittings and Couplings: Couplings for copper tubing shall be copper or copper to iron, as required, and shall meet the applicable requirements of AWWA C800, ASTM B-62 for 85-5-5 composition bronze, and ANSI B2.1. Fittings and couplings shall be Ford Products, Pack Type Compression Joints, or equal.

- C. Service connections made to a PVC water main shall be made using a stainless steel saddle with a corporation stop.

PART 3 - EXECUTION

3.1 INSPECTION

- Inspect water main pipe, fittings, valves, hydrants, and appurtenances prior to installation. Promptly remove damaged or unsuitable products from the job site. Replace damaged or unsuitable products with undamaged and suitable products.

3.2 LAYING OF WATER MAINS

- A. Proper tools and facilities shall be provided and used by the Contractor for safe working conditions.

- B. Lay and maintain pipe to the lines and grades shown on the drawings or to the minimum depth specified in this Article. Install fittings, valves and hydrants in the locations shown on the drawings.

- C. When the exact location of buried utilities is unknown and piping is to be constructed parallel and close to said utilities, adjust the alignment of the piping to least interfere with these utilities. This applies unless otherwise shown on the drawings or specified by the Public Works Director.

- D. Water mains shall be laid at least 10 feet horizontally from any existing sanitary sewer or sewage force main. The distance shall be measured from edge to edge of the pipe. Water mains crossing sanitary sewer or sewage force mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer or force main. The 18-inch separation shall apply whether the water main is over or under the sewer or force main. Lay water mains at crossings of sewers and force mains so a full length of water main pipe is centered on the sewer or force main whenever possible. No water main shall pass through or come in contact with any part of a sanitary sewer manhole.

- E. All piping shall be laid at a depth that provides at least 4'-6" of cover. Cover shall be measured as the vertical distance from the top of the pipe to the finish grade elevation.

- F. Laying of water mains shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section.

- G. Shape the bottom of the trench to give uniform circumferential support of the lower quarter of each pipe.

- H. Do not lay pipe in water or when the trench or weather conditions are unsuitable for proper installation.

- I. As each length of pipe is placed in a trench, joint the pipe being laid to the previously laid pipe. Bring the pipe to correct line and grade. Secure the pipe in place with bedding tamped under the pipe. Tamp bedding up to the centerline of the pipe.

- J. Deflection from a straight line or grade shall not exceed the limits specified in this Section. If the alignment requires deflections in excess of the allowable deflection per joint, furnish and install fittings or a sufficient number of shorter lengths of pipe.

- K. Provide thrust restraint at horizontal and vertical deflection fittings and at tees, plumb, tapping sleeves and tapping saddles. Restraint shall be concrete thrust blocking or restrained joint piping.

- L. Where concrete thrust blocking is used, cover the fitting to be blocked with visqueen or a heavy duty grease to prevent adherence of the concrete to the fitting.

- M. Block the open end of the pipe at the close of each day's work to prevent contamination from dirt or rain water and entry of any animal or foreign material.

- N. Lower pipe, fittings, valves and hydrants into the trench by hand, hoists or ropes or other suitable tools or equipment that will not damage products, coatings or linings. Do not drop or dump pipe, fittings, valves, or hydrants into the trench.

- O. Water main designs that require crossing a county legal drain shall be approved and constructed per the latest standards of the Hamilton County Surveyor's Office.

1. SETTING VALVES, VALVE BOXES AND FIRE HYDRANTS

- 2. A. Clean the interiors of valves and hydrants of foreign matter before installation. Tighten stuffing boxes. Ins

SECTION 02500 - PAVING AND SURFACING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: This section covers all work involved in the installation of new pavement, walks, and curbs, and the repair and replacement of existing streets, roads, highways, drives, parking areas, curbs, gutters, sidewalks, and other paved areas damaged or destroyed during construction.

B. Related Work Specified in the following Section
1. Section 02222 Earthwork for Utilities Subgrade Preparation

C. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference herein. Except as specifically modified in this specification, paving and surfacing operations, materials and testing will comply with the most current revisions of applicable sections per the latest version of the Indiana Department of Transportation Standard Specifications.

D. Definitions

1. Abbreviations

- a. INDOTSS Indiana Department of Transportation's Standard Specifications.
b. AASHTO American Association of State Highway & Transportation Officials.
c. ACI American Concrete Institute.
d. ASTM American Society for Testing & Materials.
e. NRMCA National Ready Mix Concrete Association.

1. Rock:

A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes limestone, sandstone, dolomite, granite, marble, and lava.

2. Subgrade:

The prepared and compacted soil immediately below the pavement or walk system and extending to such depth as will affect the structural design.

3. Subbase:

The layer of specified or selected material of designed thickness placed on a subgrade to support a base course and surface course.

4. Base Course:

The layer of specified or selected material of designed thickness placed on a subbase to support a binder or surface course.

5. Binder Course:

The layer of specified or selected material of designed thickness placed on a base course to support a surface course.

6. Surface Course:

The layer of specified or selected material of designed thickness placed on a subbase or base course to support the traffic load.

1.2 QUALITY ASSURANCE

A. The Developer/Contractor shall employ, at the request of the Westfield Public Works Department or designer, and pay for the services of an independent testing laboratory (unless otherwise noted) to perform specific services and necessary field density tests. The Developer/Contractor shall demonstrate to the Town of Westfield Public Works Department or designer that proper compaction has been obtained and proper asphalt and concrete mix designs are in compliance with the specifications.

B. Mixing Plant: Prior to placing any hot asphalt concrete pavement or Portland cement concrete pavement, the Contractor shall provide the Westfield Public Works Department or designer the name and location of the bituminous mixing or concrete mixing plant and the type and composition of mixes the Contractor proposes to use in the work.

C. Paving and Surfacing shall comply with the tolerances specified in Sections 401.15 (Bituminous), 501.15, 501.16 and 501.23 of INDOTSS.

1. Subgrade and subbase shall be within 1/2 inch of dimensions indicated on drawings.

2. Bituminous base shall not vary longitudinally more than 1/4 inch from a 10-foot straightedge. Bituminous and concrete surfaces shall not vary more than 1/8 inch from a 10-foot straightedge.

3. Finished surface shall be within 1/4 inch of dimensions indicated on drawings.

D. Asphalt and concrete pavement shall be installed by a contractor whose prime business is asphalt or concrete paving.

1.3 SUBMITTALS

A. Submittals shall be as specified in the General Conditions and Section 01001, General Requirements.

B. Submit the following:

1. Name and location of bituminous mixing plant or concrete ready-mix plant. Mixing plants and equipment shall meet the requirements of INDOTSS, Sections 401 and 501.

2. Type and composition of proposed materials and mixes. Job mix formulas shall be prepared and submitted for approval to the Engineer in accordance with INDOTSS 402 and 501. It shall include standard bituminous information including, but not limited to, aggregate gradation, binder content, maximum specific gravity, and air voids.

3. Certified copies of reports of tests specified in this Section and required by the referenced standards.

1.4 JOB CONDITIONS

A. Do not place paving and surfacing materials on a wet surface, pumping subbase or when weather conditions would prevent the proper construction of paving and surfacing.

B. Do not place aggregates on frozen subgrade. Do not place aggregates when air temperature is below 35°F.

C. Bituminous materials are to be placed in accordance with INDOTSS 402.10, 405.04, and 406.05.

D. When air temperatures are at or below 35 degrees F, an admixture is required to be added to the concrete to prevent freezing.

E. Do not place paving and surfacing materials when natural light is not sufficient to properly observe work or operations.

1.5 GRADE ADJUSTMENT OF EXISTING STRUCTURES

A. When grade adjustment of existing structures is required, the manhole frames, covers and gratings, and the gas and water valve boxes and covers, shall be removed and reconstructed to grade as required.

B. On resurfacing work, the castings and boxes shall be adjusted before doing the last binder course has been laid and before placing the surface course.

C. All castings, frames and valve boxes adjusted to grade shall be done in advance of the final paving and shall be paid for by the Contractor as part of the project, unless specifically identified as an item for payment in unit price contracts.

1.6 CONTRACTOR'S ORGANIZATION

A. The Contractor shall be a firm whose prime business is asphalt or concrete paving. The Contractor shall have a competent supervisor on the site during the progress of the work, acting for the Contractor in all matters concerning the work. He shall have the authority to receive directions and act upon them for the Town through the Westfield Public Works Department or designer.

B. The Contractor shall keep a set of Plans and Specifications available on the site and in good condition.

1.7 TRAFFIC CONTROL

The Contractor shall plan construction operations so that existing local traffic access can be maintained. During the construction, he will also maintain appropriate use of barricades, lights, flagmen and other protective devices, whether specified in the project or required by the local governing authority. Traffic control devices used for maintenance of traffic shall comply with the Indiana Manual on Uniform Traffic Control Devices.

PART 2 - PRODUCTS

2.1 AGGREGATE

A. Fine aggregates shall consist of natural sand or manufactured sand produced by crushing rock, shells, air-cooled blast furnace slag, or wetbottom boiler slag.

1. Fine aggregates used in Portland cement concrete and bituminous pavements shall be free from injurious amounts of organic impurities. When subjected to the colorimetric test for organic impurities and a color darker than the standard is produced, it shall be tested for effect of organic impurities on strength of mortar in accordance with AASHTO T 71. If the relative strength at 7 and 28 days, calculated in accordance with section 10 of T 71, is less than 95%, it shall be rejected.

B. Coarse aggregates shall consist of clean, tough, durable fragments of crushed rock, crushed or uncrushed gravel or shells, or crushed and processed air-cooled blast furnace slag. These materials shall not contain more than 15% flat or elongated pieces and shall not contain particles with an adherent coating. Flat or elongated pieces will be described as pieces having a length in excess of four times its width.

C. Coarse aggregates shall comply with INDOTSS, Section 904.02. Fine aggregates shall comply with INDOTSS, Section 904.01.

2.2 BITUMINOUS MATERIALS

A. Petroleum asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347°F.

1. Petroleum asphalt cement shall be PG Binder, grade PG 64-22.

2. Petroleum asphalt emulsion shall be AE-60.

B. Bituminous materials for prime coat shall consist of:
1. Cut-back asphalt - MC-70; or
2. Asphalt emulsion - AE-P.
Materials shall conform to INDOTSS Sections 902.03 and 902.04.

C. Bituminous materials for tack coat shall consist of:
1. Asphalt emulsion - AE-T.
2. Materials shall conform to INDOTSS 902.04.

D. Bituminous materials for seal coat shall consist of:
1. Asphalt emulsion - RS-2, AE-90, AE-150, HFRS-2.
2. Materials shall conform to INDOTSS Sections 902.03.

E. Cover aggregate shall consist of:
1. Coarse aggregates, Class A or B, size no. 8, 9, 11 or 12.
2. Fine aggregate (natural sand only), size no. 23 or 24.
3. Materials shall conform to INDOTSS Sections 904.02 and 904.01, respectively.

2.3 HOT MIX ASPHALT (HMA)

A. Hot mix asphalt (HMA) shall consist of an intimate mixture of coarse aggregate, fine aggregate (including mineral filler if required), and asphalt cement or emulsion combined in proportions specified in INDOTSS Section 402.04.

B. When the use of one type or source of aggregate or binder is started, the use of that same type or source shall be continued for the entire lift being constructed, unless otherwise directed by the Engineer.

C. The use of recycled materials, RAP or ARS, shall not be permitted unless otherwise directed and approved by Engineer.

D. Preparation of HMA mixtures shall comply with the requirements of INDOTSS Section 402.04.

2.4 PORTLAND CEMENT CONCRETE

A. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C 150, ACI 301, and ACI 318. Cement shall be Type 1 for normal use, Type 1A where air entrainment is desired, or Type III or Type IIIA where high early strength is desired and authorized by the Engineer. Blended hydraulic cements which meet the requirements of ASTM Specification C 595 Type 1P Portland pozzolan cement may be used where a more watertight concrete is required. Fly ash may also be used as a partial cement replacement for Types 1 or 1A. Cement shall meet requirements specified in INDOTSS Section 901.

B. Regular fine and coarse aggregates shall meet the requirements of ASTM Specification C 33. Aggregate shall be crushed limestone with a maximum size of 3/4 inch, except in mass concrete the maximum size may be 1 1/2 inches.

1. Lightweight fine and coarse aggregates shall meet the requirements of ASTM Specification C 330.

2. Insulating fine and coarse aggregates shall meet the requirements of ASTM Specification C 332.

C. Water shall be potable, clean, and free from injurious amounts of oils, acids, alkalis, organic materials, or other substances that may be deleterious to concrete or steel. A maximum of 500 mg/L of chloride ion may be present in the water.

D. Air entraining admixtures shall meet the requirements of ASTM Specification C 260.

1. Water reducing and retarding admixtures shall meet the requirements of ASTM C494, Type A or Type D; however, they shall contain no chlorides, be non-toxic after 30 days and compatible with the air entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's requirements. Furnish a compliance statement that the admixture used satisfies all requirements of this specification. Evidence that the admixture is included in the approved list of the INDOTSS Division of Materials and Tests, in accordance with

2. INDOTSS Section 912.03, will satisfy the requirement for a compliance statement.

3. Fly ash shall meet the chemical and physical requirements of ASTM C 618 for mineral admixture Class F, except less on unit price shall not exceed 6%.

Fly ash shall be sampled and tested in accordance with ASTM C 311 prior to use.

E. Reinforcing steel shall meet the requirements of ASTM Specification A 615, Grade 60.

1. Welded wire fabric or wire mesh shall meet the requirements of ASTM A 185.

2. Reinforcing steel and appurtenances shall follow INDOTSS Section 910.01.

F. Preformed expansion joint filler shall meet the requirements of ASTM Specification D 1752, Type III.

1. Hot-poured elastic joint filler shall meet the requirements of ASTM Specification D 1190.

2. Waterproof expansion joint filler shall meet the requirements of ASTM Specification D 1850.

3. Joint materials specified in INDOTSS Section 906 may be used, approved by the Engineer.

G. Concrete pavement shall be wet cured by using burlap, waterproof blankets, or ponding, or by using a membrane compound. If the membrane method is used, the compound shall be Type 2, complying with AASHTO M148 for white pigmented compound. A pressure sprayer capable of applying a continuous uniform film to the pavement surfaces will be required.

H. Dowel bars shall be smooth, round bars of plain bilsteel conforming to ASTM A615, Grade 40, and free of any deformation or foreign material that would restrict slippage in concrete. Dowel bars shall be coated as required by INDOTSS. For expansion joints, each bar shall be provided with a metal cap, or approved plastic cap, on one end that will provide for ample movement of the slabs.

1. Dowel bars and assemblies shall conform to the requirements of INDOTSS Section 501.14 (f).

I. Concrete base shall meet the requirements of INDOTSS Section 307.

J. Reinforced concrete pavement shall meet the requirements of INDOTSS Section 501.

K. Reinforced concrete for sidewalks and steps shall meet the requirements of INDOTSS Section 604.

L. Reinforced concrete for curbing shall meet the requirements of INDOTSS Section 605.

1. UNDERDRAINS Underdrain material shall be 6-inch polyethylene perforated pipe.

2. PART 3 - EXECUTION

A. GENERAL

1. The Contractor is responsible to provide equipment, workmanship and materials required to achieve a finished product that meets these specifications.

2. Use compaction equipment suitable to the material being placed. Compacting equipment shall include at least one piece of equipment capable of providing a smooth even surface on the pavement surface course.

3. Prior to placing paving and surfacing materials, shape subgrade as required to produce finished pavement grades and cross-sections shown on drawings.

4. Do not place paving and surfacing material before subgrade is reviewed (proof roll) and accepted by the Westfield Public Works Department or designer. Do not place paving and surfacing materials on a frozen or muddy subgrade.

5. Compact subgrade to not less than 100% of its maximum density as determined in accordance with AASHTO T99.

6. Provide adequate drainage at all times to prevent water from standing on subgrade, pavement or walks.

3.2 SUBGRADE

The subgrade material and testing shall comply with INDOTSS Section 207, before placement of subbase.

3.3 SUBBASE PREPARATION

Provide 8 inches of subbase in locations where pavement is to be placed on a material other than Special Backfill. Subbase shall meet the requirements of INDOTSS Section 304.

3.4 AGGREGATE BASE, SURFACE, OR SHOULDERS

A. Aggregate base, surface, or shoulders shall consist of crushed rock or gravel. The aggregate type shall be suitable for the area in which the project is located. The aggregate thickness shall be as shown on the drawings and as specified herein.

B. Aggregate shall be Type "O" mix, unless otherwise specified by the Westfield Public Works Department or designer.

C. Compacted aggregate materials and construction shall conform to INDOTSS Section 303.

D. If the required thickness of the aggregate (Type O) exceeds 4 inches, the material shall be placed and compacted in separate lifts no less than 2 inches nor more than 4 inches of compacted depth. If Type P aggregate is used, it may be placed in individual lifts with a thickness of up to 6 inches.

E. If spreading devices are used which will ensure proper depth and alignment, forms will not be required; otherwise, forms shall be required. Forms shall be of wood or steel, adequate in depth, straight, of uniform dimensions, and equipped with positive means for holding the form ends rigidly together and in line. Segregation of material shall be avoided by any spreading method used. No payment will be made for aggregate placed beyond the dimensions shown on the drawings.

F. Compact material in each lift after material is spread and shaped. Compact material to not less than 100% of maximum dry density as determined by AASHTO T99. Use construction procedures, including sufficient wetting and number of passes, to ensure specified density is attained.

G. The Contractor shall employ an independent testing laboratory to perform field density tests to demonstrate proper compaction of aggregate surface pavement, if requested by the Westfield Public Works Department or designer.

H. In a brick surfaced street, unless specifically excepted and pending the structural adequacy of any remaining brick, the Contractor may remove all brick and enough base material to allow full width repaving using either a bituminous or concrete pavement; or of providing a HMA base and HMA intermediate for the full depth of the brick across the trench and then replace the entire street with 1 inch of HAC surface.

I. Unless otherwise shown on the drawings, the minimum section (excluding subgrade) of retained concrete shall be 6 inches of compacted #53, Type "O" aggregate base and 6 inches of 4,000 psi reinforced concrete.

J. Unless otherwise shown on the drawings, for a street with a brick base and an asphalt surface, the replacement section shall be full depth asphalt from the bottom of the brick base to the top of the asphalt surface. The top 1 inch shall be #11 HMA surface.

3.5 HOT MIX ASPHALT

A. This work shall consist of constructing one or more courses of HMA base, intermediate, and wedge leveling or surface mixtures on a prepared foundation in accordance with these specifications and in reasonably close conformance with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

1. If the required finished depth of any course is to exceed three times the top size of the aggregate used as shown by actual screen analysis, the course shall be constructed in two or more lifts, as directed.

2. Mix type shall be as indicated on the drawings, without exception, unless otherwise approved in writing by the Engineer.

a. Job mix formulas shall be prepared and submitted for approval in accordance with INDOTSS 402. The job mix formula shall include standard bituminous mixture information including, but not limited to, aggregate gradation, binder content, maximum specific gravity, and air voids.

3. Materials and construction requirements shall comply with the requirements of INDOTSS Section 402.

B. If the previously constructed course is granular, a prime coat will be required.

1. Apply prime coat uniformly at a rate of 0.25 to 0.80 gallon per square yard depending on condition of surface and amount of loose aggregate.

2. Apply prime coat with a pressure distributor. Temperature of prime coat shall not exceed 150°F.

3. Squeegee excess prime coat from the subbase surface. Correct deficient or skipped area.

4. Prime coat shall be placed in accordance with INDOTSS Section 405.07.

C. Place and spread bituminous base mixture with a bituminous paver. In areas inaccessible to a paving machine, place and spread bituminous base mixture by other acceptable mechanical or hand methods.

D. Tack coat shall be placed on existing bituminous or concrete surfaces before a new lift of bituminous material is added. Apply tack coat uniformly at a rate of 0.06 gallon per square yard (0.00052 ton per square yard).

1. Patch and clean existing surface. The surface shall be free of irregularities and provide a reasonably smooth and uniform surface to receive the tack coat. Remove and replace unstable corrugated areas with suitable patching materials.

2. Tack coat shall be placed in accordance with INDOTSS Sections 406.03 through 406.05.

E. Placement and compaction of hot mix asphalt (HMA) shall conform to INDOTSS Sections 402.08 through 402.11.

F. Place binder used for wedging or leveling, approaches and feathering by mechanical methods or acceptable hand methods for placing and spreading in accordance with INDOTSS Section 400.

3.6 SEAL COAT AND COVERING AGGREGATE (CHIP AND SEAL)

A. Application shall be as follows

Cover Rate of Application Per Square Yard Aggregate Aggregate Bituminous Material Seal Type Size Number Pounds Gallons at 60°F

1-Single Application 23, 24 12-15 0.12-0.16 (only AE-90 or AE-150) 2-Single Application 12 14-17 0.29-0.33

5-First Application 11 16-20 0.36-0.40 5-Second Application 12 16-19 0.33-0.37

B. Seal coat and covering aggregate shall be placed in accordance with INDOTSS Sections 404.04 through 404.08.

3.7 PORTLAND CEMENT CONCRETE PAVEMENT

A. Portland cement concrete pavement shall consist of a coarse aggregate base (if required) and a reinforced or unreinforced Portland cement concrete surface, as shown on the drawings

1. Use No. 53, Type "O" coarse aggregate for subbase, unless otherwise shown or specified.

2. Pavement cross-section shall be as shown on drawings.

B. Where an aggregate base course is shown or specified, it shall be constructed in accordance with Article 3.3 of this specification.

C. Portland cement concrete pavement operations and materials shall comply with INDOTSS Section 501 unless otherwise specified by the Engineer.

1. Alternate equipment to that specified in INDOTSS, Section 501 shall be allowed provided that line, grade, surface, smoothness and other requirements of the specifications are met. The equipment used shall be subject to the approval of a Professional Engineer licensed in the State of Indiana.

2. Expansion and contraction joints shall be installed as indicated on the drawings or as required by INDOT standards. Expansion joints shall be required wherever new concrete abuts fixed objects or existing concrete surfaces, whether or not shown on the drawings.

3. Keyway construction, load transfer devices, tie bars and slab and ear reinforcement shall be installed as indicated on the drawings.

4. Unless otherwise shown on the drawings, the final finish of concrete pavement shall be by brooming, as set out as Method 1 in INDOTSS Section 501.15 (d), to form a transverse skid-resistant finish.

5. The Contractor shall always have materials available to protect the surface of concrete against rain. These materials shall consist of burlap, curing paper or plastic sheeting.

6. New concrete pavement shall be protected by the Contractor until opening to traffic is approved by a Professional Engineer licensed in the State of Indiana. It shall not be opened to traffic until the field-cured concrete has attained a flexural strength of 550 psi, or a compressive strength of 3,500 psi. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Before opening to traffic, the pavement shall be cleaned and permanent lane markings applied to the pavement.

3.8 WALKS

A. Walks shall consist of a coarse aggregate subbase and a reinforced concrete surface. Use No. 24 fine aggregate for subbase, unless otherwise shown. Concrete shall be Class "A", 4,000 psi concrete.

B. Subbase shall be 2 inches thick, and concrete shall be 4 inches thick, unless otherwise shown.

C. Compact subbase to not less than 95% of maximum dry density, as determined in accordance with AASHTO T99.

D. Proportion, mix, and place concrete as specified in INDOTSS Sections 604 and 702. Walks shall have a broom surface finish. Edge all outside edges of walk and all joints with a 1/4-inch radius edging tool.

E. Unless otherwise shown on the drawings, walks shall be divided into sections not more than five feet in length by dummy joints formed by a jointing tool with a 1/4-inch radius.

F. Form construction joints around all abutting structures and appurtenances such as manhole, utility poles, hatches, and hydrants. Install 1/2inch thick pre-molded expansion joint filler in construction joints. Expansion joint material shall extend for the full depth of the walk.

G. If existing sidewalk is to be removed and replaced with new sidewalk or new sidewalk extended from existing sidewalk, the existing sidewalk shall be removed to the nearest joint of suitable quality or as directed by the Westfield Public Works Department.

3.9 CURBS

A. The construction of curbs, combination curb and gutter, and integral curb and gutter shall be in accordance with these specifications and as shown on the plans and shall be in reasonably close conformance with the lines and grades shown on the plans or as directed by a Professional Engineer licensed in the State of Indiana.

B. Excavation for curbs shall be made to the required depth, and the subgrade or base upon which the curb is constructed shall be compacted to a firm, even surface to not less than 95% of maximum dry density as determined in accordance with AASHTO T99.

C. Concrete for curbs shall be Class A, 4,000 psi, as specified previously for Concrete Pavement.

D. The curbs shall be constructed by the use of wood or metal forms; or, if approved by a Professional Engineer licensed in the State of Indiana, the curb may be constructed using a curb slipform machine. Forms, if used, shall be straight, free from warped or bent sections, and shall extend for the entire depth of the curb and shall be securely held in place so that no deviation from alignment and grade will occur during placement of concrete. The concrete shall be consolidated by vibration or other acceptable methods. The top of the curb shall be floated smooth and the top outer corner rounded to a 1/4inch radius.

E. The face, top, and gutter of curbs shall not have deviations or irregularities of more than 1/4inch when checked with a 10-foot straightedge.

F. Construction joints shall be placed at 10-foot intervals, unless otherwise shown or directed by a Professional Engineer licensed in the State of Indiana. The joint shall be uniform, of 1/8 to 1/4 inch in width, and to a depth of approximately 2-1/2 inches. The joint may be formed using concrete tools, saw cut or formed by approved removable strips providing a straight joint at right angles to the length of curb. Joints shall be filled with specified bituminous joint filler material. Construction joints shall be formed around all abutting structures such as inlets and shall be as specified previously.

G. As soon as possible after placing and finishing of concrete, the curbing shall be moistened and kept moist for three days, or cured with the use of a specified membrane compound.

H. If existing curb is to be removed and replaced with new curb or new curb extended from existing curb, the existing curb shall be removed to the nearest joint of suitable existing curb or as directed by the Westfield Public Works Department.

I. During the placement of new concrete curb, utility marking shall be embossed into the top of the curb. The marking shall be a 2" high letter stamped into the concrete before the concrete sets up. The letters shall be located perpendicular to the utility feature that is being marked.

The letters shall be as follows:

G = Gas
C = Conduit
SS = Sewer Sewer Lateral
MH = Sanitary Manhole
W = Water
V = Water Valve
D = Subsurface Drain
S = Storm

3.10 LANE STRIPING

A. Lane striping is to be in accordance with all applicable standards of INDOTSS 808 and the construction plans.

B. Parking lots are to be striped with standard white road paint. Spaces to be striped shall be 10 feet 0 inches wide by 20 feet 0 inches long with 4 inch wide stripes.

C. Contractor will not permit traffic on any new pavement surface prior to striping.

D. Contractor will clean the new pavement surface to remove all dust, dirt, mud and debris prior to striping.

3.11 TESTING FOR HOT MIX ASPHALT (HMA)

A. At the discretion of the Westfield Public Works Department the Developer/Contractor shall employ and pay for the services of a competent independent testing laboratory to take cores at selected locations and perform described tests. Compaction requirements for HMA mixtures placed in accordance with INDOTSS Section 402 shall be controlled by in place density determined from cores cut from the compacted pavement. A minimum of two cores per section shall be cut for each course of each material or as directed by the Westfield Public Works Department. Sections are defined as a maximum of 1000 Mg (1041 ton) of HMA base or intermediate or 600 Mg (624 ton

SECTION 02731 - GRAVITY SANITARY SEWERS

PART 2 - PRODUCTS

PART 1 - GENERAL

2.1 MATERIALS

1.1 GENERAL

A. Sewers 15 Inches or Smaller

- A. This section covers all work necessary for the installation of gravity sanitary sewers and related items complete, including manholes, junction chambers, diversion chambers, house services, and miscellaneous concrete structures.
B. Sewer pipe shall be the size shown on the drawings and shall meet all requirements of these specifications.
C. If a material type is shown on the drawings, that material shall be used in the installation unless otherwise noted in the specifications.

- 1. Sewers 15 inches in diameter or smaller shall be PVC composite pipe, polyvinyl chloride pipe or ductile iron pipe.
2. PVC Composite Sewer Pipe and Fittings: PVC composite sewer pipe and fittings shall conform to ASTM D2680, latest revision.
3. Polyvinyl Chloride Pipe and Fittings
a. Polyvinyl chloride pipe and fittings shall conform to ASTM D3034 SDR 35, Type PSM, latest revision.
4. Ductile Iron Pipe and Fittings: Ductile iron pipe and fittings shall conform to the requirements of ANSI/ASTM A746, Ductile Iron Gravity Sewer Pipe.

1.2 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.

- a. Thickness class requirements of ductile iron pipe to be used in conveyance of sanitary sewage by gravity shall be minimum thickness of Class 350 unless otherwise noted for standard length pipe.
b. Outside surfaces of the pipe and fittings shall be bituminous coated and complying with ANS/AWWA A21.51/C151 and ANS/AWWA A21.10/C110.
c. Inside surfaces of all pipe, fittings and adapters shall be lined with cement mortar and a bituminous seal coat. Cement mortar lining and bituminous seal coat shall meet the requirements of ANS/AWWA A21.4/C104.
d. Ductile iron pipe and fittings shall be push-on type conforming to ANSI A21.11 (AWWA C111), latest revision. Fittings shall be ductile iron and shall comply with ANSI Specification A21.10, latest revision, with mechanical joints for 150 psi working pressure.

1.3 SUBMITTALS

Before construction and preferably before fabrication, the Contractor shall submit to the Westfield Public Works Department for approval calculations on the thickness or strength class and drawings showing pipe lengths, joints, and other construction and installation details. All pipe furnished shall be fabricated only in accordance with the drawings and these specifications.

- a. Thickness class requirements of ductile iron pipe to be used in conveyance of sanitary sewage by gravity shall be minimum thickness of Class 350 unless otherwise noted for standard length pipe.
b. Outside surfaces of the pipe and fittings shall be bituminous coated and complying with ANS/AWWA A21.51/C151 and ANS/AWWA A21.10/C110.
c. Inside surfaces of all pipe, fittings and adapters shall be lined with cement mortar and a bituminous seal coat. Cement mortar lining and bituminous seal coat shall meet the requirements of ANS/AWWA A21.4/C104.
d. Ductile iron pipe and fittings shall be push-on type conforming to ANSI A21.11 (AWWA C111), latest revision. Fittings shall be ductile iron and shall comply with ANSI Specification A21.10, latest revision, with mechanical joints for 150 psi working pressure.

1.4 QUALITY ASSURANCE

A. Performance Tests: The Contractor shall test all gravity sewers constructed. The Contractor shall constantly check horizontal and vertical alignment. Testing for vertical deflection in the case of non-rigid pipe and sewer watertightness testing in the case of all gravity sewers and hydrostatic testing of ductile iron pipe shall be as specified in this Section.

- a. Joints on PVC Sewer Pipe
b. Joints on Ductile Iron Sewer Pipe
c. Joints on Cast Iron Sewer Pipe

B. Line and Grade Requirements: The Contractor shall provide assistance to the Westfield Public Works Department to lay and check the alignment and grade between manholes. Before proceeding with the next section of sewer, the last section shall be checked for proper line and grade. Variations from a uniform line and grade as shown on the drawings shall be described below shall be cause for the line to be rejected.

- a. Joints on PVC Sewer Pipe shall be the integral bell type gasketed joint designed so that when assembled the elastomeric gasket inside the bell covers radially on the pipe spigot to form a positive seal. The joint shall be so designed to avoid displacement of the gasket when installed in accordance with manufacturer's recommendations. The joint shall comply with the physical requirements of ASTM D3212, and the gasket shall be the only element depended upon to make the joint flexible and watertight.
b. All PVC Pipe entering a manhole shall have a manhole watertop gasket as supplied by the manufacturer firmly clamped around the pipe at the manhole. If flexible entry type manhole system is used, the watertop gasket is not required.

1. Variance from established line and grade shall not be greater than 1/32 of an inch per foot of pipe diameter and shall not exceed 1/2 inch, provided that such variation does not result in a level or reverse sloping invert; provided also that the variation in the invert elevation between adjoining ends of pipe, due to non-concentricity of joints and to variations in the interior surfaces, does not exceed 1/64 inch per inch of pipe diameter or 1/2 inch maximum.

- B. Fittings
1. Fittings such as wyes and bends shall be made in such a manner as will provide strength and watertightness at least equal to the class of the adjacent main line pipe to which they are joined and shall conform to all other requirements specified for pipe of corresponding class and internal diameter. Joints shall be of the same type as used on the adjoining pipe.
2. Fabricated branches for wyes and tees shall be securely attached to the wall of the pipe in a watertight manner and shall be flush with the inside surface of the pipe. The branches shall have their axes perpendicular to the longitudinal axis of the pipe. Wye branches shall have their axes approximately 60 degrees for clay pipe and 45 degrees for concrete pipe from the longitudinal axis of the pipe, measured from the bell end. Pipe reinforcement shall not be interrupted beyond a radial distance of 3 inches outside of the fitting.

C. Test Sections

1. Initial Performance Test: An initial performance and leakage test will be performed on the first sections of sanitary sewer constructed of approximately 600 feet in length of each size and type sewer material installed. No additional sewer pipe shall be installed until the first section of sewer of each size and type of sewer material has satisfactorily passed the test for line and grade and the leakage test.

- C. Manholes and Other Structures: Manholes shall be constructed of monolithic concrete or precast manhole sections. Precast manhole sections shall conform to requirements of ASTM Specification C478, latest revision.
1. Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall comply with the following:
a. 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 1-1/2 inches. Slump shall be between 2 and 4 inches.
b. 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.
c. Reinforcing steel shall conform to ASTM A615, Grade 40 deformed bars, or ASTM A616, Grade 40 deformed bars.
d. Mortar Materials
(1) Sand - ASTM Designation C144, passing a No. 8 sieve.
(2) Cement - ASTM Designation C150, Type 1.
(3) Water - shall be potable.
e. All joints shall be fully sealed and waterproofed. Rubber gaskets for precast concrete manhole sections shall meet the requirements of ASTM C443. The gasket shall be the sole element depended upon to make the joint flexible and watertight.
f. The manufacturer of the precast manholes shall provide core-drilled openings to produce a smooth, uniform, cylindrical hole of the proper size to accommodate a resilient connector meeting the requirements of ASTM C923 for all sewers entering and leaving the manhole. The resilient connectors shall be either Press-Seal Gasket Corp., which provides PSX Gasket or Press-Wedge II, or similar flexible manhole sleeves furnished by Kor-N-Seal by NPG Systems, Inc.; or equal.

2. Subsequent Performance Testing: After the initial performance test and leakage test and as work progresses, the Westfield Public Works Department or designee may designate additional test sections for test as conditions in his opinion warrant. If a review of the Contractor's workmanship leads the Westfield Public Works Department or designee to question whether or not the tolerances and standards are being met, the Westfield Public Works Department or designee, reserves the right to select other locations and lengths to be tested. The Westfield Public Works Department or designee shall notify the Contractor of the location where a test is to be required not later than 15 days after the sewer installation has been completed. Unless otherwise authorized in writing, the Contractor shall arrange to commence the test within 15 days after the sewer has been installed or 15 days after receiving notification by the Westfield Public Works Department, whichever date is later.

- 1. Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall comply with the following:
a. 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 1-1/2 inches. Slump shall be between 2 and 4 inches.
b. 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.
c. Reinforcing steel shall conform to ASTM A615, Grade 40 deformed bars, or ASTM A616, Grade 40 deformed bars.
d. Mortar Materials
(1) Sand - ASTM Designation C144, passing a No. 8 sieve.
(2) Cement - ASTM Designation C150, Type 1.
(3) Water - shall be potable.
e. All joints shall be fully sealed and waterproofed. Rubber gaskets for precast concrete manhole sections shall meet the requirements of ASTM C443. The gasket shall be the sole element depended upon to make the joint flexible and watertight.
f. The manufacturer of the precast manholes shall provide core-drilled openings to produce a smooth, uniform, cylindrical hole of the proper size to accommodate a resilient connector meeting the requirements of ASTM C923 for all sewers entering and leaving the manhole. The resilient connectors shall be either Press-Seal Gasket Corp., which provides PSX Gasket or Press-Wedge II, or similar flexible manhole sleeves furnished by Kor-N-Seal by NPG Systems, Inc.; or equal.

3. Final Performance Testing for Acceptance: Before acceptance for all new sanitary sewers, the Contractor and the Westfield Public Works Department or designee shall check all sewers, even if previously checked, for accurate alignment and grade. Also, all sanitary sewers shall be tested as specified in Article 3.10 through 3.14 of this Section for watertightness. The program of testing whether by infiltration, exfiltration, air testing, or vacuum testing shall be determined by the Westfield Public Works Department.

- g. Precast manhole sections shall be steam cured and shall not be shipped from the point of manufacture for at least five days after having been cast. The exterior surface of each section shall be thoroughly coated with a coal tar epoxy type coating as manufactured by TNEMEC Co, Tne-me-46H413 Hi-Build Tne-me-Tar; or approved equal by the Engineer. Final dry mix thickness shall be a minimum of 12 mils. Monolithic concrete manholes and other concrete structures shall be cured for a minimum of seven days and then coated in the field with a coal tar epoxy type coating as mentioned above.
h. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

1.5 LENGTH OF OPEN TRENCH

Except by permission of the Westfield Public Works Department not more than 450 feet of trench shall be opened at any one time. Not more than 30 feet of trench may be opened in advance of the completed pipe laying operation, and not more than one street crossing may be obstructed by the same trench at any one time.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

1.6 RELATION TO WATER MAINS

A. Sewers must be laid at least 10 feet horizontally from any existing or proposed water main. The distance to be measured edge to edge. Should specific conditions prevent this separation, the Contractor shall notify the Westfield Public Works Department for specific instructions regarding the treatment of the separation. Special conditions may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the sewer is at least 18 inches above the top of the sewer. It may be necessary to install 150 psi water main pipe and joints as sewer pipe for the congested areas.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

B. Whenever the sewer crosses a water main, it should be laid at least 18 inches below the main, or the water main should be related with fittings to cross over the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

C. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

D. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

E. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

F. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

G. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

H. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

I. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

J. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

K. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

L. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

M. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

N. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

O. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

P. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

Q. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

R. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

S. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

T. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

U. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

V. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

W. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

X. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

Y. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

Z. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

AA. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

AB. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

AC. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

AD. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

AE. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe, and shall be pressure tested to assure watertightness prior to backfilling. Maximum distance between sewer pipe joints and water pipe shall be provided where vertical separation is a problem.

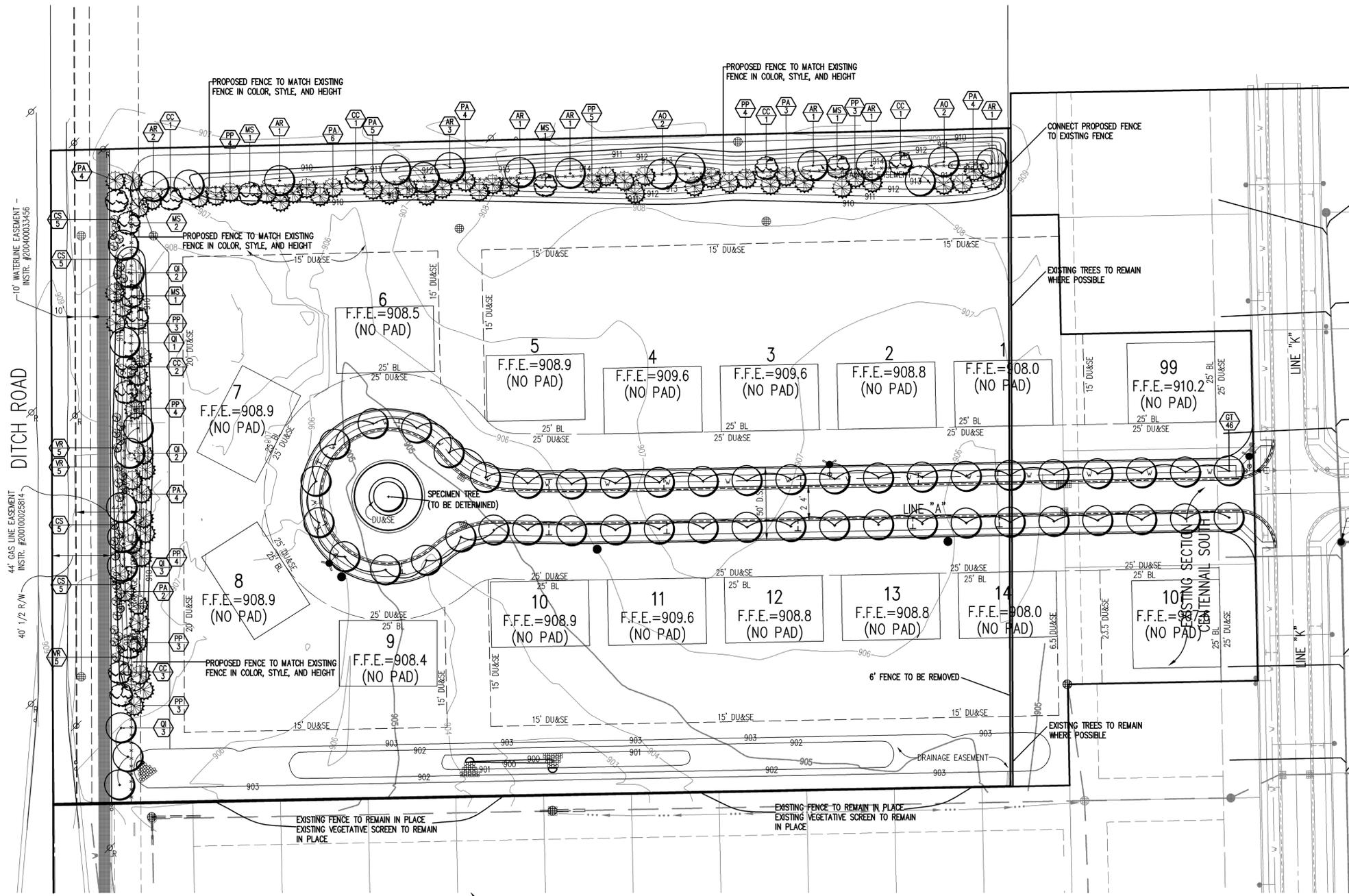
- 1. Manhole castings shall be of good quality cast iron and/or ductile iron, conforming to ASTM Designation A48. Castings shall have a total weight of not less than 335 pounds and shall conform to the designation of the manhole casting as shown on the standard detail sheet. Castings shall have three bolt holes equally spaced around base of frame and shall be securely anchored to one section to provide a water tight-fit with three 3/8-inch stainless steel bolts and expansion shields. Unless specifically designated otherwise, manhole castings shall be the non-locking type.

k. The Contractor may, at

HOLEY MOLEY SAYS
**"DON'T
 DIG
 BLIND"**

"IT'S THE LAW"
 CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
 CALL TOLL FREE
 PER INDIANA STATE LAW IS-69-1991,
 IT IS AGAINST THE LAW TO EXCAVATE
 WITHOUT NOTIFYING THE UNDERGROUND
 LOCATION SERVICE TWO (2) WORKING
 DAYS BEFORE COMMENCING WORK.

ASSUMED NORTH
 SCALE: 1"=50'



LEGEND

-  PERMANENT SEEDING
-  SOD
-  DECORATIVE STONE
-  PERENNIALS
-  CONSTRUCTION LIMITS
-  MULCH LIMITS
-  EXISTING TREELINE
-  PROPOSED TREELINE
-  EXISTING TREES
-  CANOPY TREE
-  ORNAMENTAL TREE
-  EVERGREEN TREE
-  DECIDUOUS SHRUB
-  EVERGREEN SHRUB
-  PLANT TAG

SHADE TREES

AO	<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple	-	2.5"	B & B
AR	<i>Acer rubrum</i> 'Red Sunset'	Red Sunset Red Maple	-	2.5"	B & B
GT	<i>Gleditsia triacanthos</i> 'Impcole'	Imperial Honeylocust	-	2.5"	B & B
SJ	<i>Sophora japonica</i>	Japanses Scholar Tree	-	2.5"	B & B
QI	<i>Quercus imbricaria</i>	Shingle Oak	-	2.5"	B & B

UNDERSTORY TREES

CC	<i>Crataegus crus-galli</i> inermis	Thornless Cockspur Hawthorn	-	2"	B & B
MS	<i>Magnolia Soulangiana</i>	Saucer Magnolia	-	2"	B & B

EVERGREEN TREES

PA	<i>Picea abies</i>	Norway Spruce	-	6'	B & B
PP	<i>Picea pungens</i>	Colorado Spruce	-	6'	B & B

EVERGREEN SHRUBS

VR	<i>Viburnum rhytidophyloides</i>	Allegheny Viburnum	-	36"	5 gal.
CS	<i>Cornus sericea</i>	Red Twig Dogwood	-	36"	5 gal.

REVISIONS:

DATE: 06/27/08
 THIS DRAWING AND THE IDEAS, DESIGNS AND CONCEPTS CONTAINED HEREIN ARE THE EXCLUSIVE INTELLECTUAL PROPERTY OF THE SCHNEIDER CORPORATION, AND ARE NOT TO BE USED, OR REPRODUCED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF THE SCHNEIDER CORPORATION.
 © COPYRIGHTED BY THE SCHNEIDER CORP. (2008)



THE SCHNEIDER CORPORATION
 Historic Fort Harrison
 8901 Otis Avenue
 Indianapolis, IN 46216-1037
 Telephone: 317.826.7100
 Fax: 317.826.7200
 www.schneidercorp.com

Architecture
 Civil Engineering
 Environmental Engineering
 Geotechnical Services
 GIS + LIS
 Home Builder Services
 Interior Design
 Land Surveying
 Landscape Architecture
 Transportation Engineering

CENTENNIAL SOUTH
 EXPANSION
 WESTFIELD, INDIANA

ESTRIDGE DEVELOPMENT CO., INC.
 CARMEL, INDIANA

DATE: 06/27/08 PROJECT NO: 3915.004
 DRAWN BY: KRG CHECKED BY: JLF
 SHEET TITLE: LANDSCAPE PLAN

DRAWING FILES:
 R:\3\3915\004\DWG\S\1101
 XREF: 00485
 XREF: 39150045
 XREF: R:\3\3915\004\DWG\S\00185

SHEET NO.:

L101

LANDSCAPING

PART 1 - GENERAL

1.01 Related Documents

A. Drawings and general provisions of the Contract, including Conditions, Specification Sections, apply to this Section.

1.02 Summary

A. This Section includes the following:

- 1. Trees.
2. Shrubs.
3. Ground covers.
4. Plants.
5. Excavating and backfilling for trees, shrubs, ground covers and plants.

6. Removal of all rock encountered while installing drainage pits.

- 7. Placement of satisfactory fill and topsoil and final grading shown on drawings.
8. Topsoil and soil amendments.
9. Fertilizers and mulches.
10. Stakes and guys.
11. Initial maintenance of landscape materials.

B. Description: This work shall consist of furnishing, transporting, and installing all plants or other materials required for:

- 1. The establishment of landscape plantings community.
2. Post-planting maintenance until released by the Owner.
3. All remedial operations required to fulfill Contractor's obligations of these Specifications.
4. Provide all exterior planting as shown on the drawings or inferable therefrom and/or as specified in accordance with the requirements of the Contract Documents.
5. These specifications include standards necessary for and incidental to the execution and completion of planting.
6. Protection of existing features.
7. All remedial operations required to fulfill Contractor's obligations of these Specifications.
8. Provide all exterior planting as shown on the drawings or inferable therefrom and/or as specified in accordance with the requirements of the Contract Documents.
9. These specifications include standards necessary for and incidental to the execution and completion of planting.
10. Protection of existing features.
11. All remedial operations required to fulfill Contractor's obligations of these Specifications.
12. Provide all exterior planting as shown on the drawings or inferable therefrom and/or as specified in accordance with the requirements of the Contract Documents.

1.03 Applicable Standards:

A. American National Standards Institute for Tree Care Operations, ANSI A300. American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

B. American Standard for Nursery Stock, ANSI Z60.1, American Nursery and Landscape Association, 1250 Eye Street, NW, Suite 500, Washington, D.C. 20005.

C. Hortus Thirt, The Staff of the L.H. Bailey Hortarium. 1976. MacMillan Publishing Co., New York.

D. All standards shall include the latest additions and amendments as of the date of advertisement for bids.

1.03 Submittals: Submit the following unless directed otherwise by Landscape Architect or Owner:

A. General: Submit each item in this Article according to the Conditions of the Contract, Specification Sections.

B. Product certificates signed by manufacturers certifying that their products comply with specified requirements.

1. Manufacturer's certified analysis for standard products.

2. Analysis for other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

3. Label data substantiating that plants, trees, shrubs, and planting materials comply with specified requirements.

C. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience.

D. Submit name of wholesale nursery source for plants within bid package. Include nursery phone numbers so that availability can be checked.

E. Provide updated plant source information as the project progresses. Sources with similar soil types and climate are desirable.

F. Provide a copy of the USDA Zone 5 soil map to the project site.

G. Provide a copy of the USDA Zone 5 soil map to the project site.

H. Provide a copy of the USDA Zone 5 soil map to the project site.

I. Provide a copy of the USDA Zone 5 soil map to the project site.

J. Provide a copy of the USDA Zone 5 soil map to the project site.

K. Provide a copy of the USDA Zone 5 soil map to the project site.

L. Provide a copy of the USDA Zone 5 soil map to the project site.

M. Provide a copy of the USDA Zone 5 soil map to the project site.

N. Provide a copy of the USDA Zone 5 soil map to the project site.

O. Provide a copy of the USDA Zone 5 soil map to the project site.

P. Provide a copy of the USDA Zone 5 soil map to the project site.

Q. Provide a copy of the USDA Zone 5 soil map to the project site.

R. Provide a copy of the USDA Zone 5 soil map to the project site.

S. Provide a copy of the USDA Zone 5 soil map to the project site.

T. Provide a copy of the USDA Zone 5 soil map to the project site.

U. Provide a copy of the USDA Zone 5 soil map to the project site.

V. Provide a copy of the USDA Zone 5 soil map to the project site.

W. Provide a copy of the USDA Zone 5 soil map to the project site.

X. Provide a copy of the USDA Zone 5 soil map to the project site.

Y. Provide a copy of the USDA Zone 5 soil map to the project site.

Z. Provide a copy of the USDA Zone 5 soil map to the project site.

AA. Provide a copy of the USDA Zone 5 soil map to the project site.

AB. Provide a copy of the USDA Zone 5 soil map to the project site.

AC. Provide a copy of the USDA Zone 5 soil map to the project site.

AD. Provide a copy of the USDA Zone 5 soil map to the project site.

AE. Provide a copy of the USDA Zone 5 soil map to the project site.

AF. Provide a copy of the USDA Zone 5 soil map to the project site.

AG. Provide a copy of the USDA Zone 5 soil map to the project site.

AH. Provide a copy of the USDA Zone 5 soil map to the project site.

AI. Provide a copy of the USDA Zone 5 soil map to the project site.

AJ. Provide a copy of the USDA Zone 5 soil map to the project site.

AK. Provide a copy of the USDA Zone 5 soil map to the project site.

AL. Provide a copy of the USDA Zone 5 soil map to the project site.

D. Handle balled and burlapped and container stock by the root ball.

E. Deliver trees, shrubs, ground covers, and plants after preparations for planting have been completed and install immediately.

F. After delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist.

G. Do not deliver more plant material than can be planted in one day.

H. If planting is delayed more than 6 hours: 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.

I. Do not remove container-grown stock from containers before time of planting.

J. Water root systems of trees and shrubs stored on site with a fine-mist spray.

K. Water as often as necessary to maintain root systems in a moist condition.

L. 1.06 Project Conditions:

M. 1. Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage.

N. 2. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before planting.

O. 1.07 Coordination and Scheduling:

P. A. Planting Time: Proceed with and complete landscape work as rapidly as portions of site become available.

Q. B. Plant or install materials only when ground and backfill is not frozen.

R. C. Correlate planting with specified maintenance periods to provide maintenance from date of substantial completion.

S. D. Install plant material between March and June and/or between September and December (whichever contract allows).

T. E. Coordination with Dirt Contractor: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to a Landscape Architect/Owner.

U. 1.08 Warranty:

V. A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents.

W. B. Special Warranty: Warrant the following living planting materials for a period of one year after date of Final Completion, against defects including death and unsatisfactory growth.

X. C. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

Y. D. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

Z. E. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AA. F. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AB. G. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AC. H. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AD. I. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AE. J. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AF. K. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AG. L. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AH. M. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AI. N. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AJ. O. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AK. P. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AL. Q. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AM. R. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AN. S. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AO. T. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AP. U. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AQ. V. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AR. W. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AS. X. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AT. Y. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AU. Z. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AV. AA. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AW. AB. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AX. AC. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AY. AD. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AZ. AE. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BA. AF. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BB. AG. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BC. AH. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BD. AI. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BE. AJ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BF. AK. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BG. AL. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BH. AM. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BI. AN. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BJ. AO. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BK. AP. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BL. AQ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BM. AR. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BN. AS. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BO. AT. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BP. AU. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BQ. AV. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BR. AW. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BS. AX. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

3. All plants shall be selected and tagged by the Landscape Architect at their place of growth.

4. All field grown deciduous trees shall be marked to indicate the trees north orientation in the nursery.

5. Place a 1 in. diameter spot of white paint onto the north side of the tree trunk within the bottom 12 inches of the trunk.

H. Anti-Desiccants: 1. Anti-desiccants, if specified, are to be applied to plants in full leaf immediately before digging or as required by the Landscape Architect.

I. Balled and Burlapped (B&B) Plant Materials: 1. Trees designated B&B shall be properly dug with firm, natural balls of soil retaining as many fibrous roots as possible.

J. Container Plants: 1. Plants grown in containers shall be of appropriate size for the container as specified in the most recent edition of the American Standard for Nursery Stock.

K. Bareroot and Collected Plants: 1. Plants designated as bareroot or collected plants shall conform to the American Standard for Nursery Stock.

L. Bareroot material shall not be dug or installed after bud break or before dormancy.

M. Immediately after harvesting plants, protect from drying and damage until shipped and delivered to the planting site.

N. Transportation and Storage of Plant Material: 1. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.

O. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

P. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

Q. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

R. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

S. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

T. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

U. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

V. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

W. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

X. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

Y. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

Z. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AA. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AB. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AC. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AD. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AE. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AF. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AG. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AH. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AI. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AJ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AK. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AL. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AM. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AN. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AO. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AP. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AQ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AR. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AS. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AT. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AU. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AV. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AW. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AX. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AY. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

AZ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BA. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BB. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BC. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BD. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BE. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BF. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BG. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BH. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BI. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BJ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BK. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BL. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BM. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BN. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BO. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BP. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BQ. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BR. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BS. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

BT. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees.

8. Provide balled and burlapped deciduous shrubs.

9. Container-grown deciduous shrubs will be acceptable in lieu of balled and burlapped deciduous shrubs subject to meeting ANSI Z60.1 limitations for container stock.

10.05 Ground Covers and Plants:

A. Provide ground covers and plants established and well rooted in removable containers or integral peat pots and with not less than the minimum number and length of runners required by ANSI Z60.1 for the pot size indicated.

2.06 Grass Materials:

A. Sod: Certified turfgrass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses.

B. Sod: Seed mixture "T" as described in Section 621.06 of the 1999 Indiana Department of Transportation Standard Specifications Section 621.06 (a).

C. Mulch: Mulch Method A or B as described in Section 621.05 of 1999 Indiana Department of Transportation Standard Specifications and Section 621.05 ?.

2.07 Fill Material:

A. Satisfactory Fill Materials: ASTM D 2487 soil classification groups CW, GP, GM, SW, SP and SM; free of rock or gravel larger than 2 inches (50 mm) in any dimension, debris, water, frozen materials, vegetation and other deleterious matter.

B. Topsoil: Topsoil shall be fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay, limps, brush, weeds and other litter, and free of rocks, stumps, stones larger than 1 inch in any direction, and other extraneous or toxic matter harmful to plant growth.

1. Topsoil Source: Import topsoil from off-site sources. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

C. Drainage Fill: Washed evenly graded mixture of crushed stone with 100 percent (100%) passing a 1 1/2 inch sieve, and not more than 5 percent passing a No. 8 sieve.

D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-nitrogen, 50 percent (50%) derived from natural organic sources of urea-form, phosphorus, and potassium in the following composition:

1. Slow-Release Fertilizer for Trees and Shrubs: Granular fertilizer consisting of 50 percent (50%) water-insoluble nitrogen, phosphorus, and potassium in the following composition:

A. Composition: 5 percent (5%) nitrogen, 10 percent (10%) phosphorus, and 5 percent (5%) potassium, by weight.

2. Fertilizer for reconditioning of lawns: 1 lb. Per 1,000 sq. ft. of actual nitrogen, 4 percent (4%) phosphorus, and 2 percent (2%) potassium by weight.

A. Organic Mulch: Organic mulch, free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of the following:

1. Type: Shredded hardwood bark.

A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects 2 by 2 inches (50 by 50 mm) by length indicated, pointed at one end.