ROADWAY IMPROVEMENTS
JOB No. 400826

PROPOSED

PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY & STREAM IMPROVEMENTS

BLOOMINGTON, INDIANA

VICINITY/LOCATION MAP
SCALE: 1"=2000'

UTILITY CONTACT INFORMATION

GAS	SEWER AND WATER	ELECTRIC
VECTREN	CITY OF BLOOMINGTON UTILITIES	DUKE ENERGY
205 S. MADISON ST,	600 E. MILLER DR.	1619 W. DEFFENBAUGH ROAD
BLOOMINGTON, IN 47401	BLOOMINGTON, IN 47402	KOKOMO, INDIANA 46902
DOUG ANDERSON (812)330-4009	NANCY AXSOM (812)349-3989	JIM SHIELDS (317)375-2071
TELEPHONE	**CABLE TELEVISION**	**UNDERGROUND UTILITY LOCATION**
AT&T	COMCAST	INDIANA UNDERGROUND
P.O. BOX 56	2450 SOUTH HENDERSON STREET	PLANT PROTECTION
BLOOMINGTON, IN 47402	BLOOMINGTON, IN 47404	1-(800)382-5544
BRENT McCABE (812)334-4521	SCOTT TEMPLETON (812)355-7822	

HOLEY MOLEY SAYS

"DIG SAFELY"

"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
CALL TOLL FREE
PER INDIANA STATE LAW IC8-1-26, IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

RULE 5 EROSION CONTROL INDEX

SHEET NO.		ASSESSMENT OF CONSTRUCTION PLAN ELEMENTS
COVER	A1	PLAN ELEMENTS INDEX
16	A2	NARRATIVE DESCRIBING THE NATURE AND PUROSE OF THE PROJECT
N/A	A3	LEGAL DESCRIPTION OF THE PROJECT SITE
N/A	A4	REDUCED PLAT (11" X 17")
16	A5	HYDROLOGIC UNIT CODE
16	A6	NOTATION OF ANY STATE OR FEDERAL WATER QUALITY PERMITS
COVER	A7	VICINITY MAP
3	A8	EXISTING PROJECT SITE LAYOUT
3	A9	LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS
16,24-27	A10	LOCATION AND NAME OF ALL WETLANDS, LAKES AND WATER COURSES ON AND ADJACENT TO THE SITE
16	A11	IDENTIFICATION OF ALL RECEIVING WATERS AND PONTENTIAL DISCHARGES TO GROUND WATER
16	A12	100 YEAR FLOODPLAINS, FLOODWAYS, AND FLOODWAY FRINGES
16	A13	PRE-CONSTRUCTION AND POST CONSTRUCTION ESTIMATE OF PEAK DISCHARGE
3,16	A14	ADJACENT LANDUSE, INCLUDING UPSTREAM WATERSHED
3	A15	LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS
3	A16	IDENTIFICATION OF EXISTING VEGETATIVE COVER
16	A17	SOILS MAP INCLUDING SOIL DESCRIPTIONS AND LIMITATIONS
1-27	A18	LOCATIONS, SIZE AND DIMENSIONS OF PROPOSED STORMWATER SYSTEMS
3	A19	PLANS FOR ANY OFFSITE CONSTRUCTION ACTIVITIES
N/A	A20	LOCATIONS OF PROPOSED SOIL STOCKPILES AND/OR BORROW/DISPOSAL AREAS ON AND ADJACENT TO THE SITE
3-27	A21	EXISTING SITE TOPOGRAPHY
3-27	A22	PROPOSED SITE TOPOGRAPHY
N/A	A23	CONSTRUCTION SCHEDULE AND PHASING
SHEET NO.		**ASSESSMENT OF STORMWATER POLLUTION PREVENTION**
16	B1	DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES
16	B2	SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND DISTURBING ACTIVITIES
N/A	B3	STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS (at all points of ingress and egress)
16	B4	SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS
16,17	B5	SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS
17	B6	STORM SEWER INLET PROTECTION MEASURE LOCATIONS AND SPECIFICATIONS
16,17	B7	RUNOFF CONTROL MEASURES
16,17	B8	STORM WATER OUTLET PROTECTION SPECIFICATIONS
16,17	B9	GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS
1-27	B10	LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE
16	B11	TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON
16	B12	PERMANENT SURFACE STABILIZATION SPECIFICATIONS
16	B13	MATERIAL HANDLING AND SPILL PREVENTION PLAN
16,17	B14	MONITORING AND MAINTENANCE GUIDELINES FOR EACH PROPOSED STORMWATER QUALITY MEASURE
N/A	B15	EROSION AND SEDIMENT CONTROL SPECIFICATIONS FOR INDIVIDUAL BUILDING LOTS
SHEET NO.		**STORMWATER POLLUTION PREVENTION PLAN - POST CONSTRUCTION COMPONENT**
	C1	DESCRIPTION OF POLLUTANTS AND THEIR SOURCES ASSOCIATED WITH THE PROPOSED LAND USE
	C2	SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION
	C3	DESCRIPTION OF PROPOSED POST CONSTRUCTION STORMWATER QUALITY MEASURES
	C4	LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE
	C5	DESCRIPTION OF MAINTENANCE GUIDELINES FOR POST CONSTRUCTION STORMWATER QUALITY MEASURES

INDEX

SHEET NO.	DESCRIPTION
1	GENERAL NOTES, LEGENDS & STRUCTURE DATA TABLE
2	TYPICAL ROAD CROSS SECTIONS
3	OVERALL PROJECT PLAN
4-10	ROAD PROFILES
11-13	ROAD IMPROVEMENT DETAILS
14	PATTERSON DR. & FARIVIEW ST. TRAFFIC SIGNAL DETAIL
15	MISCELLANEOUS DETAILS
16-17	EROSION CONTROL DETAILS
18-23	CROSS SECTIONS
24	CREEK STABILIZATION & SEEDING PLAN
25	CREEK RESTORATION LANDSCAPE PLAN
26-27	CREEK RESTORATION NOTES & DETAILS
28	BRIDGE MODIFICATION PLAN

BYNUM FANYO & ASSOCIATES, INC.
528 North Walnut Street
Bloomington, Indiana 47404 (812) 332-8030

architecture
civil engineering
planning

OWNER/DEVELOPER
CITY OF BLOOMINGTON
401 N. MORTON STREET
BLOOMINGTON, INDIANA

THE CURRENT EDITION OF THE INDIANA DEPARTMENT OF TRANSPORATION, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES & CITY OF BLOOMINGTON UTILITIES STANDARD SPECIFICATIONS IS TO BE USED WITH THESE PLANS

JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER

certified by:
6-12-09
JEFFREY S. FANYO, P.E.
IND. REG. NO. 18283

revisions

PATTERSON, HILLSIDE, ROGERS & FAIRVIEW
JOB No. 400826

GENERAL LEGEND

PROPERTY LINE	
CONSRUCTION LIMITS	CL
DEED BOOK AND PAGE	XXX/XXX
TO BE REMOVED	T.B.R.
TO REMAIN UNDISTURBED	T.R.U.
SANITARY SEWER EASEMENT	S.S.E.
GAS EASEMENT	G.E.
WATER LINE EASEMENT	W.L.E.
ELECTRIC EASEMENT	E.E.
DRAINAGE EASEMENT	D.E.
UTILITY EASEMENT	U.E.

EXISTING LEGEND

EXISTING FENCE	
EXISTING WATER LINE	—"W"—
EXISTING OVERHEAD ELECTRIC AND TELEPHONE LINES	—OHE+OHT—
EXISTING UNDERGROUND ELECTRIC AND TELEPHONE LINES	—UGE+UGT—
EXISTING UNDERGROUND TELEPHONE LINES	—UGT—
EXISTING CONTOUR	XXX
EXISTING SANITARY SEWER AND MANHOLE	
EXISTING STORM SEWER AND INLET	

SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED PAVEMENT MILLING AND RESURFACING
B1	PROPOSED PAVEMENT RESURFACING
C	PROPOSED CONCRETE PAVING
F	PROPOSED CONCRETE SIDEWALK
F1	PROPOSED MONOLITHIC CURB AND SIDEWALK
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED ACCESSIBLE RAMP, TYPE "H"
R1	PROPOSED ACCESSIBLE RAMP, TYPE "G"
R2	PROPOSED ACCESSIBLE RAMP, TYPE "A"
R3	PROPOSED ACCESSIBLE RAMP, TYPE "K"
W	PROPOSED 8' BITUMINOUS SIDEPATH
11	SAWCUT AND MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
26	PROPOSED NURSERY SODDING
31	PROPOSED THERMOPLASTIC LINE, BROKEN, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, BROKEN, YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID, YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 6"
36	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, STOP BAR, 24"
37	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, WORD, "ONLY"
38	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, LANE INDICATION ARROW

SEE MISCELLANEOUS DETAILS (SHEET 15) FOR CLARIFICATION.

GENERAL NOTES

☒ 1. BOUNDARY AND TOPO BY BYNUM FANYO AND ASSOCIATES, 528 NORTH WALNUT STREET, BLOOMINGTON, INDIANA 47404 (812) 332-8030

☒ 2. DEVELOPER: CITY OF BLOOMINGTON, 401 N. MORTON STREET BLOOMINGTON, INDIANA

☒ 3. PROJECT ADDRESS: HILLSIDE DRIVE AT ROGERS, PATTERSON DRIVE AT ROGERS, FAIRVIEW STREET AT PATTERSON, BLOOMINGTON, INDIANA

☒ 4. ALL WORK IS TO BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.

☒ 5. ALL PERMITS ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

☐ 6. HYDRANT LOCATION SHALL BE APPROVED BY THE LOCAL FIRE MARSHALL.

☒ 7. EXISTING UTILITIES ON SITE SHALL BE RELOCATED AS REQUIRED. CONTRACTOR SHALL PAY ALL COSTS ASSOCIATED WITH RELOCATION.

☒ 8. SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.

PARKING AND PAVEMENT NOTES

☒ 1. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC DEVICES, 1988 EDITION AS AMENDED.

☐ 2. ALL PAVEMENT MARKINGS SHALL BE PAINTED WHITE ON ASPHALT PAVEMENT / YELLOW ON CONCRETE PAVEMENT AND SHALL BE FOUR (4) INCHES WIDE UNLESS INDICATED OTHERWISE.

☐ 3. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS INDICATED OTHERWISE. ALL CURB RADIUS ARE TO BE 5' UNLESS INDICATED OTHERWISE.

☒ 4. CONTRACTOR SHALL FURNISH AND INSTALL PAVEMENT MARKINGS AS SHOWN ON THE PLANS.

☒ 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES WITH OTHER CONTRACTORS ON THE SITE.

☒ 6. JOINTS OR SCORE MARKS ARE TO BE SHARP AND CLEAN WITHOUT SHOWING EDGES OF JOINTING TOOLS.

☒ 7. CONTRACTOR SHALL SAW-CUT TIE-INS AT EXISTING CURBS AS NECESSARY TO INSURE SMOOTH TRANSITIONS. CONTRACTOR SHALL SAW-CUT AND TRANSITION TO MEET EXISTING PAVEMENT AS NECESSARY AND AS DIRECTED BY INSPECTOR TO INSURE POSITIVE DRAINAGE. (TYPICAL AT ALL INTERSECTIONS).

☒ 8. CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY A.G.C. OF AMERICA, INC. AND THE HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.

ON-SITE UTILITY NOTES

☐ 1. ALL WATER PIPE 6" AND LARGER SHALL BE PRESSURE CLASS 350 DIP WATER PIPE CONFORMING TO ALL STATE AND LOCAL STANDARDS.

☐ 2. WATER MAIN FITTINGS 6" AND LARGER SHALL BE DUCTILE IRON CONFORMING TO AWWA/ANSI STANDARD SPECIFICATIONS C153/A21.53, LATEST REVISION.

☐ 3. 2" WATER MAINS SHALL BE SDR-21 (PR200) AND 4" PIPE MAY BE EITHER SDR-21 (PR200) OR C900 (DR-14).

☐ 4. ALL WATER SERVICE LINES CONNECTING TO 2" PVC MAINS SHALL BE 1" TYPE "K" COPPER. ALL SERVICE LINES FROM MAIN TO METER SHALL BE TYPE "K" COPPER WITH FLARED ENDS.

☐ 5. MECHANICAL RESTRAINTS SHALL BE PROVIDED AT ALL WATER LINE BENDS, OFFSETS, TEES, PLUGS, ETC...

☐ 6. ALL WATER LINE GATE VALVES OTHER THAN AIR RELEASE VALVES AND TAPPING VALVES SHALL BE CAST IRON BODY, FULLY BRONZE MOUNTED, WITH RESILIENT SEAT AND NON-RISING STEM AND SHALL BE MANUFACTURED BY M & H VALVE COMPANY, DARLING VALVE AND MANUFACTURING COMPANY, KENNEDY VALVE COMPANY, OR MUELLER COMPANY.

☐ 7. FLUSH HYDRANTS SHALL BE PLACED AT THE ENDS OF ALL WATER MAINS AND AT ANY HIGH POINTS IN THE LINE.

☐ 8. AIR RELEASE VALVES SHALL BE PROVIDED AT ALL HIGH POINTS OF WATER MAINS AND SHALL BE VAL-MATIC BRAND AND SHALL INCORPORATE THE OPTIONAL VACUUM-CHECK FEATURE.

☐ 9. ALL FIRE HYDRANTS SHALL BE MANUFACTURED BY KENNEDY GUARDIAN OR MUELLER CENTURION.

☐ 10. ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED AND DISINFECTED BEFORE ACCEPTANCE. SEE SITE WORK SPECIFICATIONS.

☐ 11. WATER AND SANITARY SEWER MAINS SHALL HAVE A MINIMUM COVER OF 4'-0" ABOVE TOP OF PIPE.

☐ 12. ALL SPRINKLER, DOMESTIC, AND SANITARY LEADS TO THE BUILDING SHALL END AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END (FOR OTHERS TO REMOVE AND EXTEND AS NECESSARY).

☒ 13. THE MINIMUM HORIZONTAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND SEWER LINE IS TEN FEET (10'). THE MINIMUM VERTICAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND SEWER LINE IS EIGHTEEN INCHES (18").

☐ 14. GRAVITY SANITARY SEWER PIPE 6" TO 15" SHALL BE CONSTRUCTED OF SDR-35 PVC.

☐ 15. THE UPSTREAM ENDS OF ALL SANITARY SEWER LATERALS SHALL BE CLEARLY MARKED WITH A 4x4 TREATED POST EXTENDING 3' BELOW GRADE AND 1' ABOVE GRADE.

☒ 16. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

☒ 17. SEE SITE SPECIFICATIONS FOR BACKFILLING AND COMPACTION REQUIREMENTS.

☒ 18. SITE CONTRACTOR SHALL HAVE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER THIS SYSTEM PRIOR TO INSTALLATION.

☒ 19. ALL WORK ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH SITE WORK SPECIFICATIONS.

☒ 20. ALL CATCH BASIN GRATE AND FRAMES ARE TO BE BY EAST JORDAN IRON WORKS.

☒ 21. LOCATIONS OF EXISTING BURIED UTILITY LINES SHOWN ON THE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AND ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF UTILITY LINES ADJACENT TO THE WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY LINES DURING THE CONSTRUCTION PERIOD.

☒ 22. STORM SEWER PIPE SHALL BE ADS BRAND SERIES N-12 HDPE PIPE.

UTILITY AND GRADING LEGEND

PROPOSED STORM PIPE, INLET AND END SECTION	
PROPOSED CONTOUR	XXX

EROSION CONTROL LEGEND

	SILTATION FENCE (TEMPORARY)
CL	CONSTRUCTION LIMITS
DI	DROP INLET PROTECTION (TEMPORARY) (TO BE USED ON ALL CURB INLETS)
CW	CONCRETE WASHOUT AREA (TEMPORARY)
ECB	EROSION CONTROL BLANKET (PERMANENT)

SEE EROSION CONTROL DETAILS (SHEETS 16-17) FOR CLARIFICATION.

GRADING NOTES

☒ 1. NEW FINISHED CONTOURS SHOWN ARE TOP OF FUTURE PAVING IN AREAS TO RECEIVE PAVEMENT AND TOP OF TOPSOIL IN AREAS TO BE SEEDED OR PLANTED.

☒ 2. AREAS OUTSIDE OF THE ROADWAYS PERIMETERS SHOWN TO BE SODDED OR PLANTED SHALL RECEIVE 6" OF TOPSOIL. THIS TOPSOIL IS TO BE PLACED AND LEVELED BY THE CONTRACTOR.

☒ 3. CONTRACTOR SHALL NOTIFY AND COOPERATE WITH ALL UTILITY COMPANIES OR FIRMS HAVING FACILITIES ON OR ADJACENT TO THE SITE BEFORE DISTURBING, ALTERING, REMOVING, RELOCATING, ADJUSTING, OR CONNECTING TO SAID FACILITIES. CONTRACTOR SHALL PAY ALL COSTS IN CONNECTION WITH ALTERATION OF OR RELOCATION OF THE FACILITY.

☒ 4. ALL AREAS NOT COVERED BY PAVING ARE TO BE VEGETATED WITH SODDING OR PER LANDSCAPE PLAN.

☒ 5. UNUSABLE EXCAVATED MATERIALS AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.

☒ 6. ALL EXCAVATING IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED.

☒ 7. BEFORE ANY MACHINE WORK IS DONE, CONTRACTOR SHALL STAKE OUT AND MARK THE ITEMS ESTABLISHED BY THE SITE PLAN. CONTROL POINTS SHALL BE PRESERVED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION. THE LACK OF PROPER WORKING POINTS AND GRADE STAKES MAY REQUIRE CESSATION OF OPERATIONS UNTIL SUCH POINTS AND GRADES HAVE BEEN PLACED TO THE OWNER'S SATISFACTION.

☒ 8. CONTRACTOR SHALL COMPACT AND MAINTAIN A 30,000 SQ. FT. STONEBASE CONSTRUCTION LAYDOWN AREA W/ STONE ACCESS FROM THE CONSTRUCTION ENTRANCE AND STONE ACCESS TO THE BUILDING PAD.

☒ 9. THESE DOCUMENTS ARE SCHEMATIC IN NATURE AND CANNOT SHOW EVERY ITEM NEEDED FOR A COMPLETE OPERATIONAL STORM SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE OPERATING STORM SYSTEM.

☒ 10. ALL FILL SHALL BE FREE OF VEGETABLE MATTER, RUBBISH, LARGE ROCK, AND OTHER DELETERIOUS MATERIAL. THE FILL MATERIAL SHOULD BE PLACED IN LAYERS NOT TO EXCEED SIX (6) INCHES IN LOOSE THICKNESS AND SHOULD BE SPRINKLED WITH WATER AS REQUIRED TO SECURE SPECIFIED COMPACTION. EACH LAYER SHOULD BE UNIFORMLY COMPACTED BY MEANS OF SUITABLE EQUIPMENT AS DICTATED BY THE TYPE OF FILL MATERIAL. UNDER NO CIRCUMSTANCES SHOULD A BULLDOZER OR SIMILARLY TRACKED VEHICLE BE USED AS COMPACTING EQUIPMENT. MATERIAL CONTAINING AN EXCESS OF WATER SHOULD BE SPREAD AND DRIED TO A MOISTURE CONTENT THAT WILL PERMIT PROPER COMPACTION. ALL FILL SHOULD BE COMPACTED TO THE SPECIFIED PERCENTAGE OF THE MAXIMUM DENSITY OBTAINED IN ACCORDANCE WITH ASTM DENSITY TEST D-1557 (98 PERCENT OF MAXIMUM DRY DENSITY). IF THE SPECIFIED COMPACTION LIMITS ARE NOT MET, SUCH AREAS SHOULD BE REWORKED AND RETESTED AS REQUIRED UNTIL THE SPECIFIED LIMITS ARE REACHED.

STORM STRUCTURE DATA TABLE

STR. NO.	ROAD STATION	INLET/CASTING	T/C @ FLOWLINE	PIPE TYPE	PIPE LENGTH (FT)	PIPE SIZE (IN)	INVERT (N)	INVERT (S)	INVERT (E)	INVERT (W)	COMMENTS
10	20+76.08	Type B/7565 M3-T1	723.42	ADS N-12	59	15	720.05	--	719.85	719.60	Disch. Invert= 719.00; Install metal end section
11	20+91.29	Type J/7505 M3-T1	723.17	ADS N-12	29	12	720.35	720.35	--	--	
12	10+40.00	Type J/7505 M3-T1	724.43	ADS N-12	86	12	--	721.25	721.25	--	
13	10+40.00	Type J/7505 M3-T1	724.43	ADS N-12	21	12	--	--	--	721.50	
14	11+63.77	Type J/7505 M3-T1	723.34	ADS N-12	26	12	--	--	720.15	720.15	
15	11+63.77	2 - Type J/7505 M3-T1	723.34	ADS N-12	22	12	--	--	--	720.40	Connect two type J inlets with 12" pipe
16	14+00.90	Mod Type B/7565 M3-T1	723.47	EX. RCP	--	12	718.90	718.90	718.90	720.60	Proposed manhole must be installed by cutting out a section of the existing main, placing the manhole at the proper grade and sleeving the existing main together on each side of the manhole. "Dog-house manhole" construction will not be allowed.
17	13+58.46	Type J/7505 M3-T1	723.97	ADS N-12	39	12	--	--	721.10	--	
18	14+98.50	2 - Type J/7505 M3-T1	722.41	ADS N-12	88	12	--	719.50	--	719.50	Connect two type J inlets with 12" pipe
19	14+98.50	2 - Type J/7505 M3-T1	722.66	ADS N-12	33	12	719.85	719.85	--	--	Connect two type J inlets with 12" pipe
19A	14+98.50	Type E	722.50	ADS N-12	4	12	720.00	--	--	--	Connect to Structure No. 19 at invert=719.85
20	40+90.34	Existing Type J	737.09	Exist. RCP	--	12	733.64	730.14	--	734.60	Replace existing casting with V-5665; Adjust to grade
21	40+82.30	Type J/7505 M3-T1	737.60	ADS N-12	6	12	--	--	734.75	--	Connect to Str. No. 20 at invert=734.60
22	42+04.99	Existing Type J	738.17	Exist. RCP	--	18	734.17	733.47	733.87	735.00	Replace existing casting with V-5665; Adjust to grade
23	41+95.09	Type J/7505 M3-T1	737.99	ADS N-12	8	12	--	--	735.15	--	Connect to Str. No. 22 at invert=735.00
24	43+39.19	Existing Type J	740.02	Exist. RCP	--	15	736.82	736.90	736.07	736.02	
25	43+41.59	Type J/7505 M3-T1	739.90	ADS N-12	4	12	737.00	--	--	--	Connect to Str. No. 24 at invert=736.90
26	44+53.48	Existing Type J	742.16	Exist. RCP	--	15	737.96	738.75	738.16	737.91	Replace existing casting with V-5665
27	44+53.48	Type J/7505 M3-T1	741.87	ADS N-12	12	12	739.00	--	--	--	Connect to Str. No. 26 at invert=738.75
28	45+46.06	Existing Type J	744.00	Exist. RCP	--	12	740.05	740.90	739.68	739.68	Replace existing casting with V-5665; Adjust to grade
29	45+46.06	Type J/7505 M3-T1	743.87	ADS N-12	5	12	741.00	--	--	--	Connect to Str. No. 28 at invert=740.90
30	46+37.59	Existing Type J	745.56	Exist. RCP	--	12	742.11	742.50	--	742.11	Replace existing casting with V-5665; Adjust to grade
31	46+37.59	Type J/7505 M3-T1	745.46	ADS N-12	3	12	742.60	--	--	--	Connect to Str. No. 30 at invert=742.50
37	64+91.59	Type J/7505 M3-T1	728.18	ADS N-12	34	12	--	--	--	725.68	Connect to Str. No. 38 at invert=725.40
38	64+91.59	Type J/7505 M3-T1	728.00	ADS N-12	120	12	--	725.40	725.40	--	Connect to Str. No. 40 at invert=722.55
39	63+65.12	Type J/7505 M3-T1	725.50	ADS N-12	34	12	--	--	--	723.00	Connect to Str. No. 40 at invert=722.55
40	63+65.12	Type J/7505 M3-T1	725.30	ADS N-12	167	15	722.55	722.55	--	--	Connect to Str. No. 41 at invert=720.22
41	61+92.46	Type J/7505 M3-T1	722.72	ADS N-12	61	15	720.22	720.22	--	--	Connect to Str. No. 42 at invert=719.61
42	61+34.60	Type J/7505 M3-T1	722.39	ADS N-12	80	15	719.61	719.61	--	--	Connect to Str. No. 43 at invert=718.81
43	60+65.54	Type J/7505 M3-T1	722.05	ADS N-12	32	18	718.81	--	--	718.81	Connect to Str. No. 44 at invert=718.40
44	60+55.25	Storm Manhole	723.00	ADS N-12	102	18	718.49	718.49	--	--	Connect to Str. No. 45
45	59+13.85	Storm Manhole	722.00	ADS N-12	50	18	717.00	717.00	717.00	--	Outfall invert=716.50
46	59+13.85	Type J/7505 M3-T1	722.07	ADS N-12	16	12	--	--	--	719.57	Connect to Str. No. 45 at invert=717.00

NOTES:
1. CONTRACTOR SHALL "CORE" ALL EXISTING STRUCTURES THAT ARE TO ACCEPT NEW PIPES.
2. CONTRACTOR MUST REFER TO AND FOLLOW THE 2009 VERSION OF THE CITY OF BLOOMINGTON UTILITIES CONSTRUCTION SPECIFICATIONS FOR STORM INFRASTRUCTURE WORK.
3. CONTRACTOR IS REQUIRED TO PERFORM A FINAL WALK THROUGH INSPECTION (AND CORRECT ANY DEFICIENCIES) WITHIN 30 DAYS OF THE SUBSTANTIAL COMPLETION DATE.

NOTE: ONLY NOTES ON THIS SHEET MARKED WITH AN ☒ APPLY TO THIS PROJECT.

☒ **NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.**

revisions:

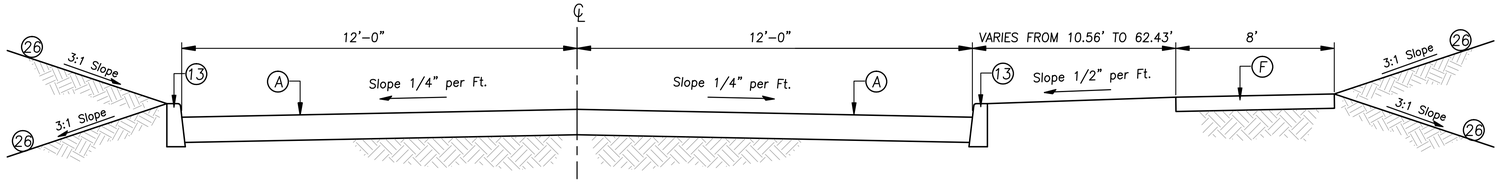
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
bloomington, indiana
(812) 339-2990 (Fax)
528 north walnut street
(812) 332-8030

JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
5-12-09
certified by

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

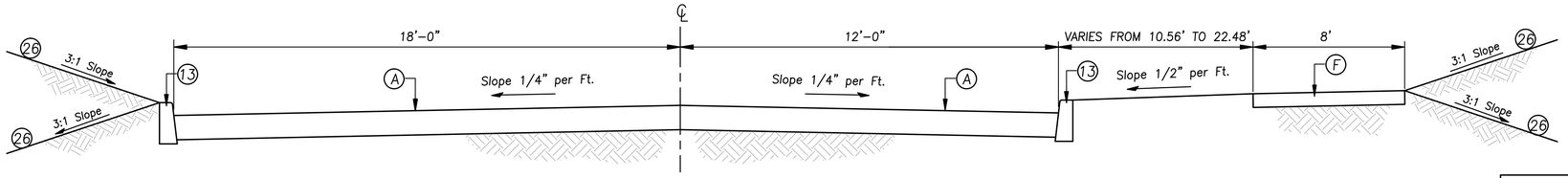
title: GENERAL NOTES, LEGENDS & STRUCTURE DATA TABLE

designed by:
drawn by: JR
checked by:
sheet no: 1 OF 28
project no.: 400826



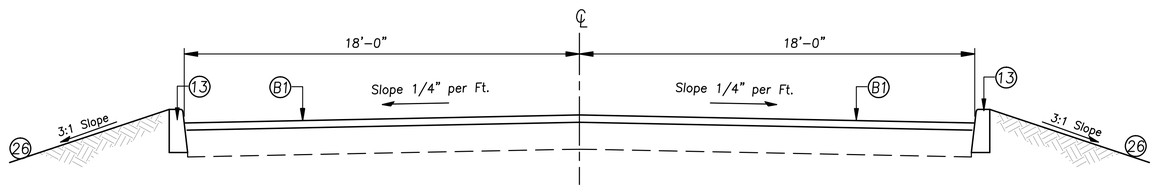
TYPICAL ROADWAY CROSS SECTION LINE A (HILLSIDE DRIVE) STA. 10+00.00 TO STA. 13+84.17
TRANSITION FROM 12' LT. TO 18' LT. STA. 13+84.17 TO STA. 14+87.08

NOT TO SCALE



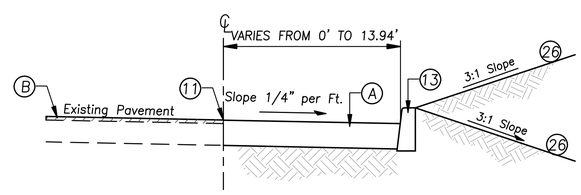
TYPICAL ROADWAY CROSS SECTION LINE A (HILLSIDE DRIVE) STA. 14+87.08 TO STA. 16+00.70

NOT TO SCALE



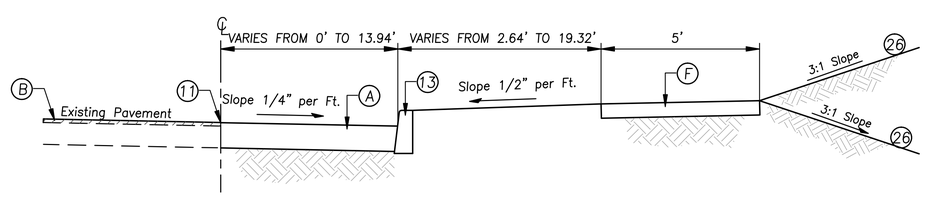
TYPICAL ROADWAY CROSS SECTION LINE D (FAIRVIEW STREET)
TRANSISTION FROM 12.37' LT. TO 18' LT. STA. 50+00.00 TO STA. 50+65.50

NOT TO SCALE



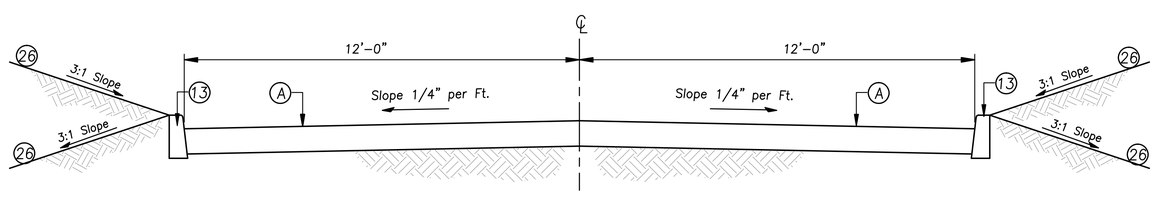
TYPICAL ROADWAY CROSS SECTION LINE C (PATTERSON DRIVE) STA. 39+93.00 TO STA. 42+34.07

NOT TO SCALE



TYPICAL ROADWAY CROSS SECTION LINE C (PATTERSON DRIVE) STA. 42+34.07 TO STA. 46+86.48

NOT TO SCALE



TYPICAL ROADWAY CROSS SECTION LINE B (COOK SOUTH DRIVE) STA. 20+15.78 TO STA. 21+10.36

NOT TO SCALE

SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED PAVEMENT MILLING AND RESURFACING
B1	PROPOSED PAVEMENT RESURFACING
C	PROPOSED CONCRETE PAVING
F	PROPOSED CONCRETE SIDEWALK
F1	PROPOSED MONOLITHIC CURB AND SIDEWALK
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED ACCESSIBLE RAMP, TYPE "H"
R1	PROPOSED ACCESSIBLE RAMP, TYPE "G"
R2	PROPOSED ACCESSIBLE RAMP, TYPE "A"
R3	PROPOSED ACCESSIBLE RAMP, TYPE "K"
W	PROPOSED 8' BITUMINOUS SIDEPATH
11	SAWCUT AND MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
26	PROPOSED NURSERY SODDING
31	PROPOSED THERMOPLASTIC LINE, BROKEN, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, BROKEN, YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID, YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 6"
36	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, STOP BAR, 24"
37	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, WORD, "ONLY"
38	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, LANE INDICATION ARROW

SEE MISCELLANEOUS DETAILS (SHEET 12) FOR CLARIFICATION.

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

certified by:

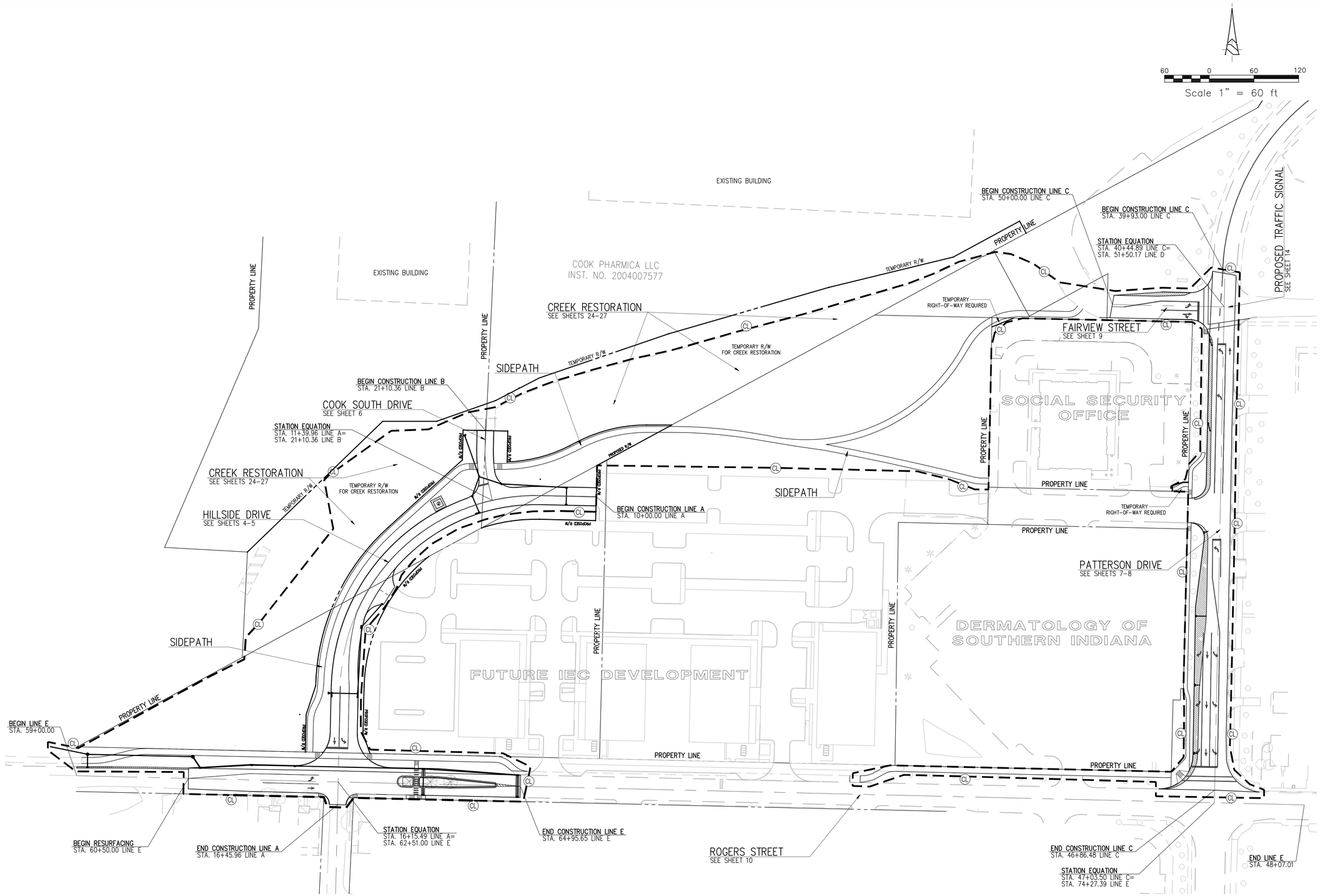
Proposed:

PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS

Bloomington Indiana

title: TYPICAL ROAD CROSS SECTIONS

designed by:
drawn by: JR
checked by:
sheet no: 2 OF 28
project no.: 400826



revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING

BYNUM FANYO & ASSOCIATES, INC.

bloomington, indiana
(812) 339-2990 (Fax)

528 north walnut street
(812) 332-8030

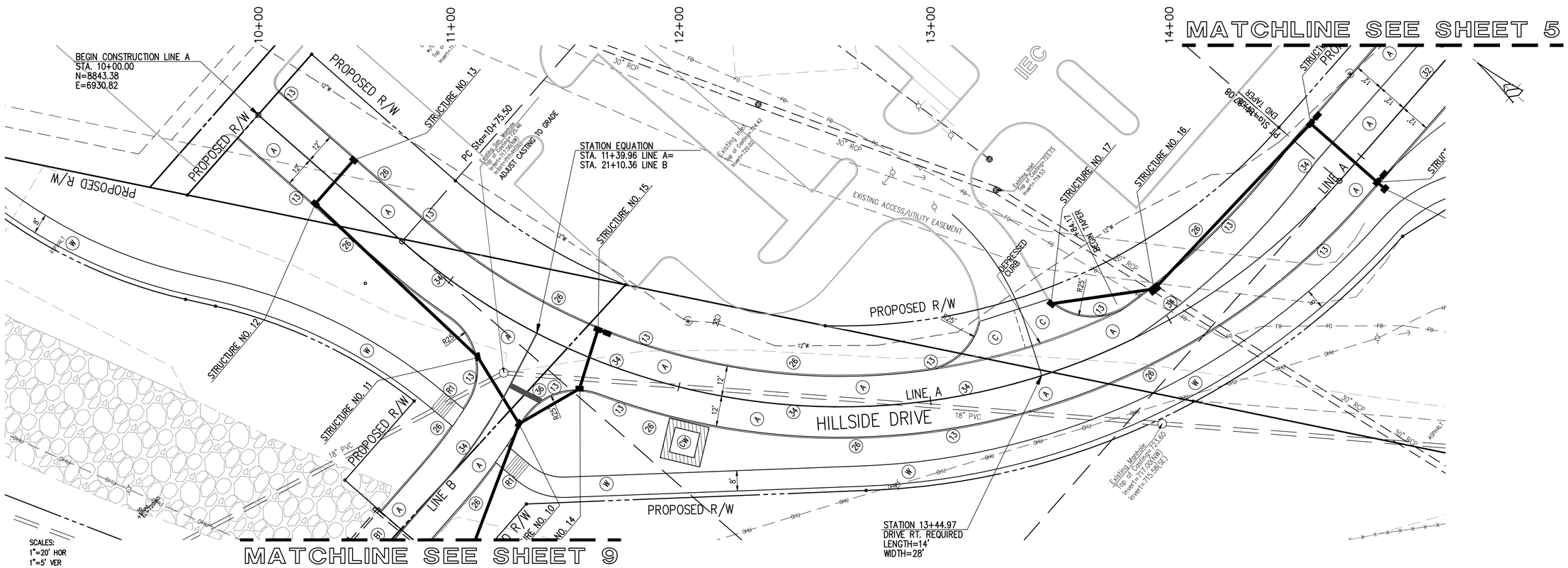
JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

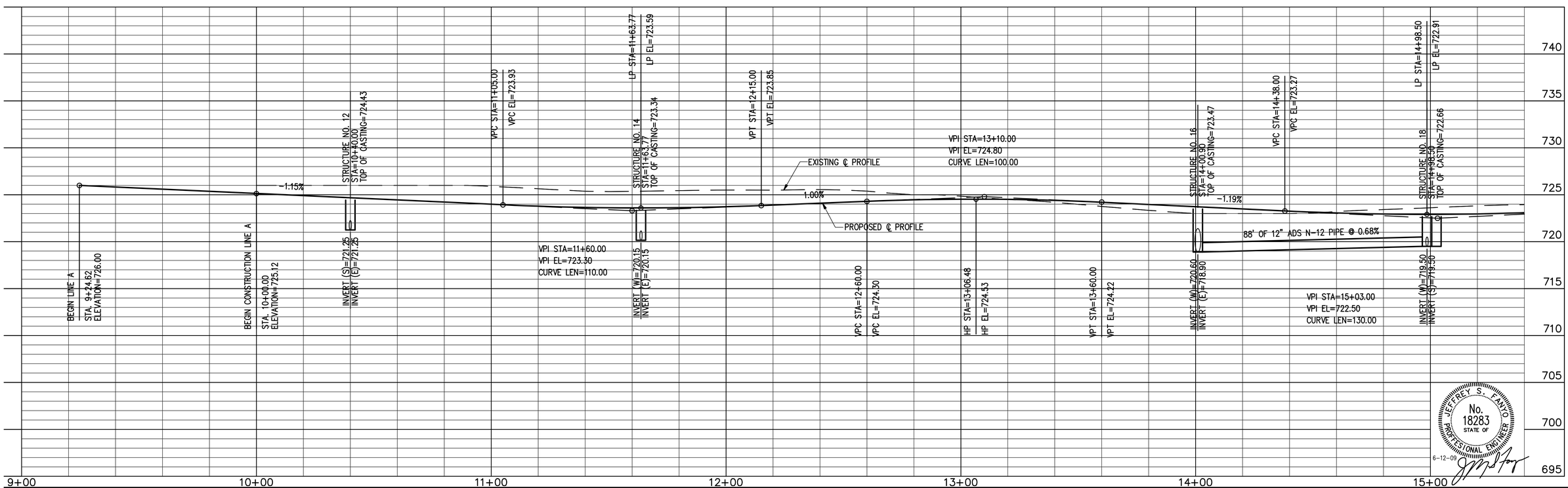
certified by:

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

title: OVERALL PROJECT PLAN

designed by:
drawn by: JR
checked by:
sheet no: 3 OF 28
project no.: 400826

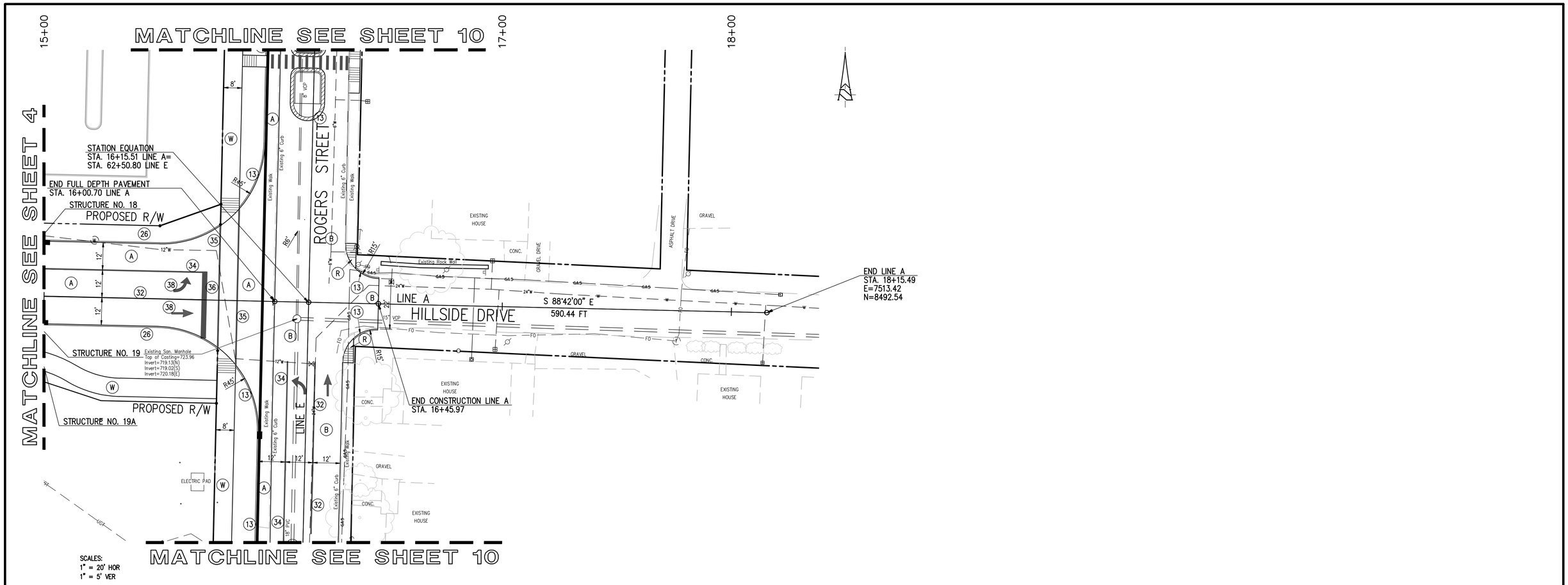




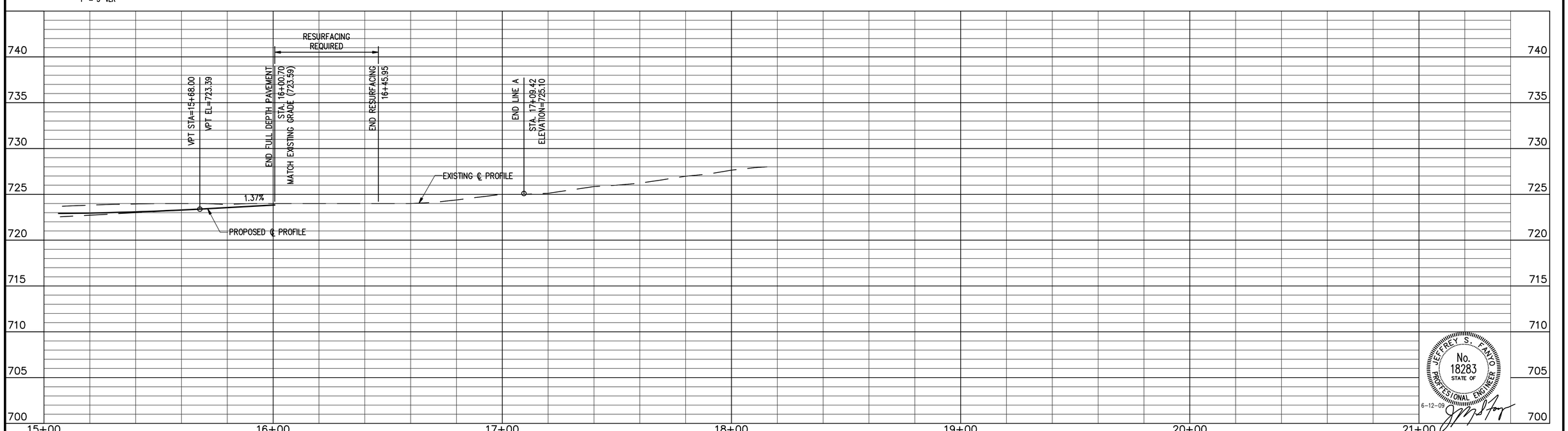
JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	4	28	HILLSIDE DRIVE



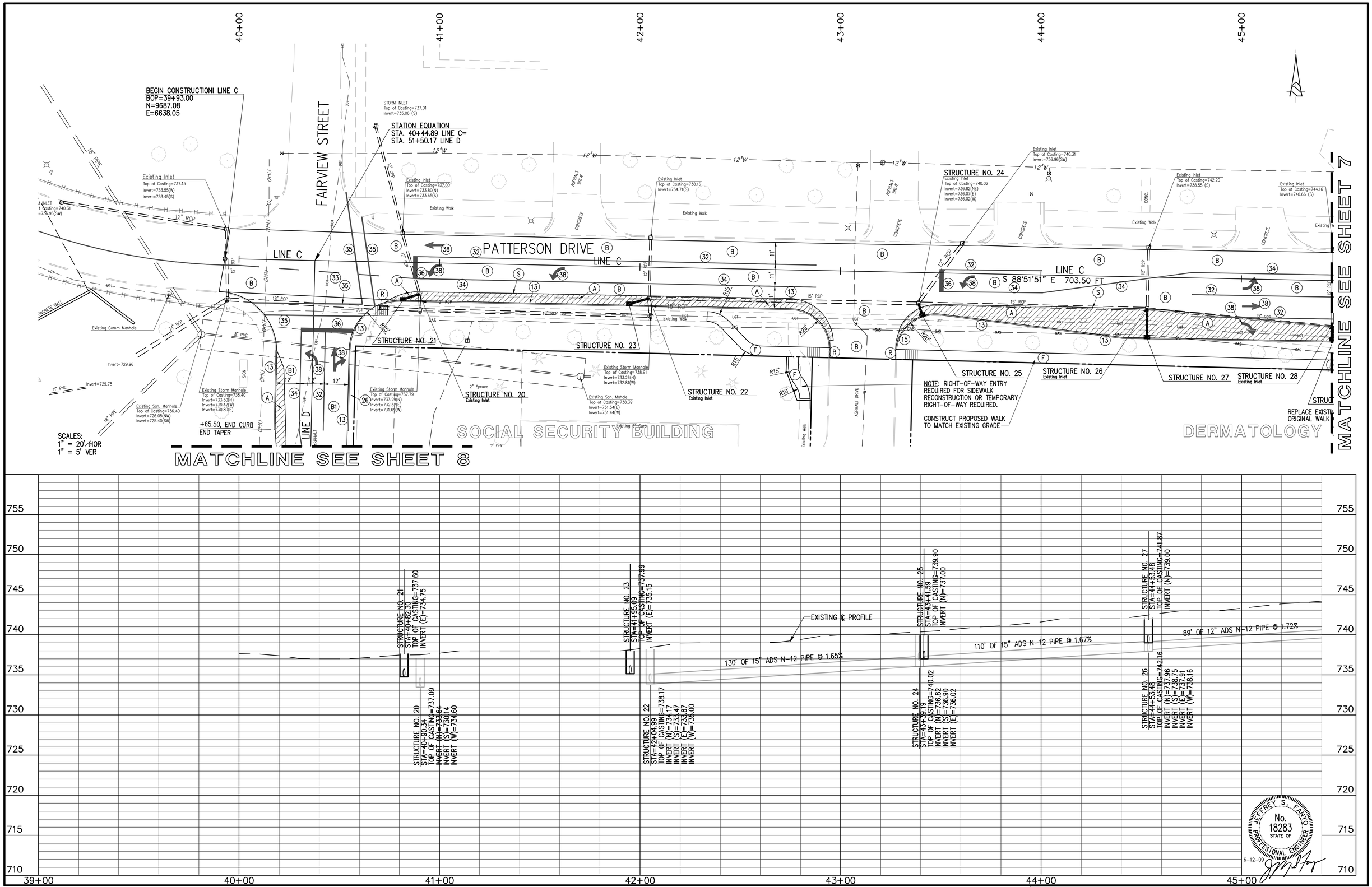
SCALES:
1" = 20' HOR
1" = 5' VER



JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

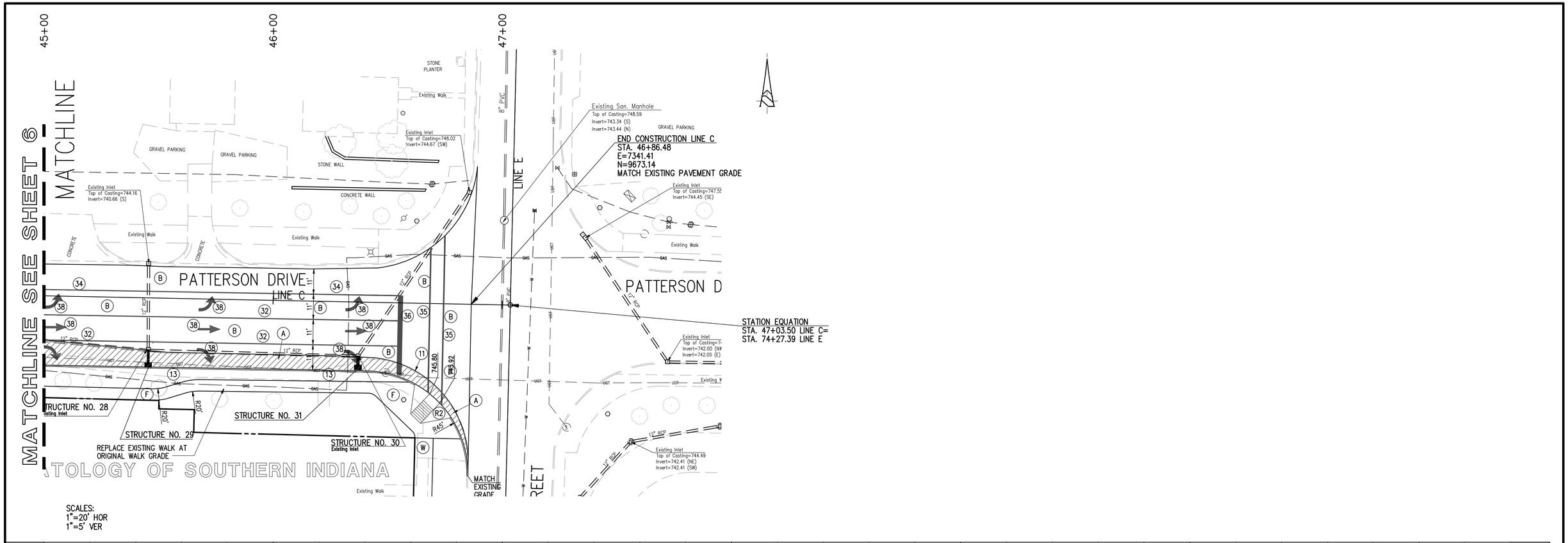
PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	5	28	HILLSIDE DRIVE

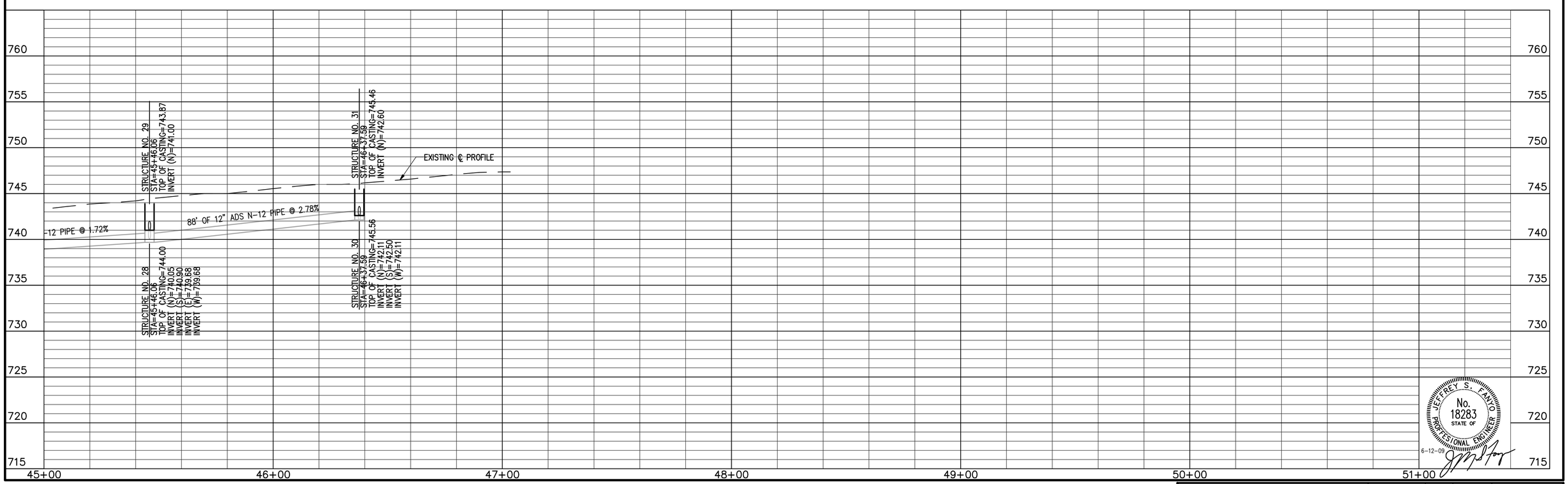


PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	6	28	PATTERSON DRIVE



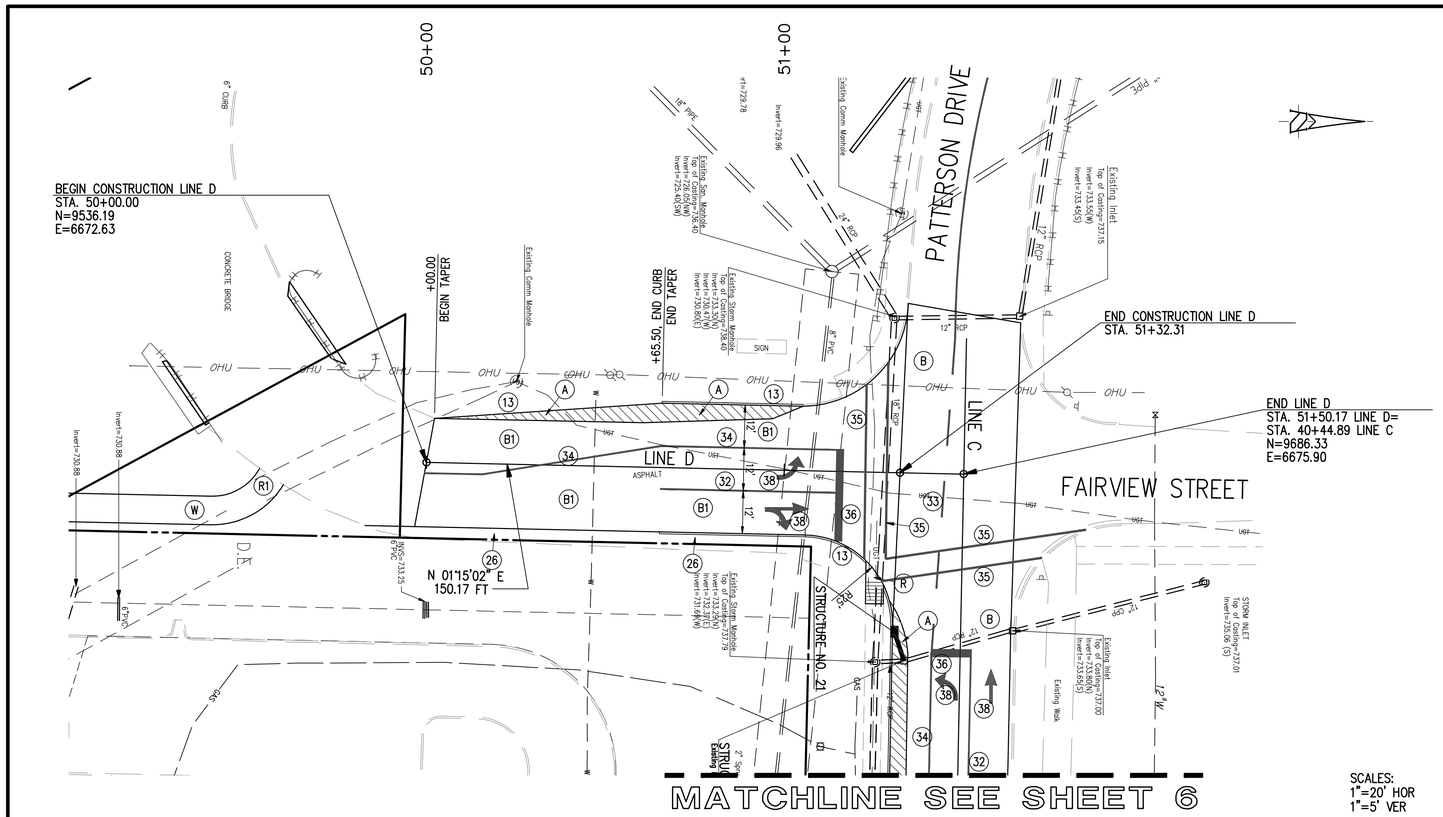
SCALES:
1"=20' HOR
1"=5' VER



JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	7	28	PATTERSON DRIVE



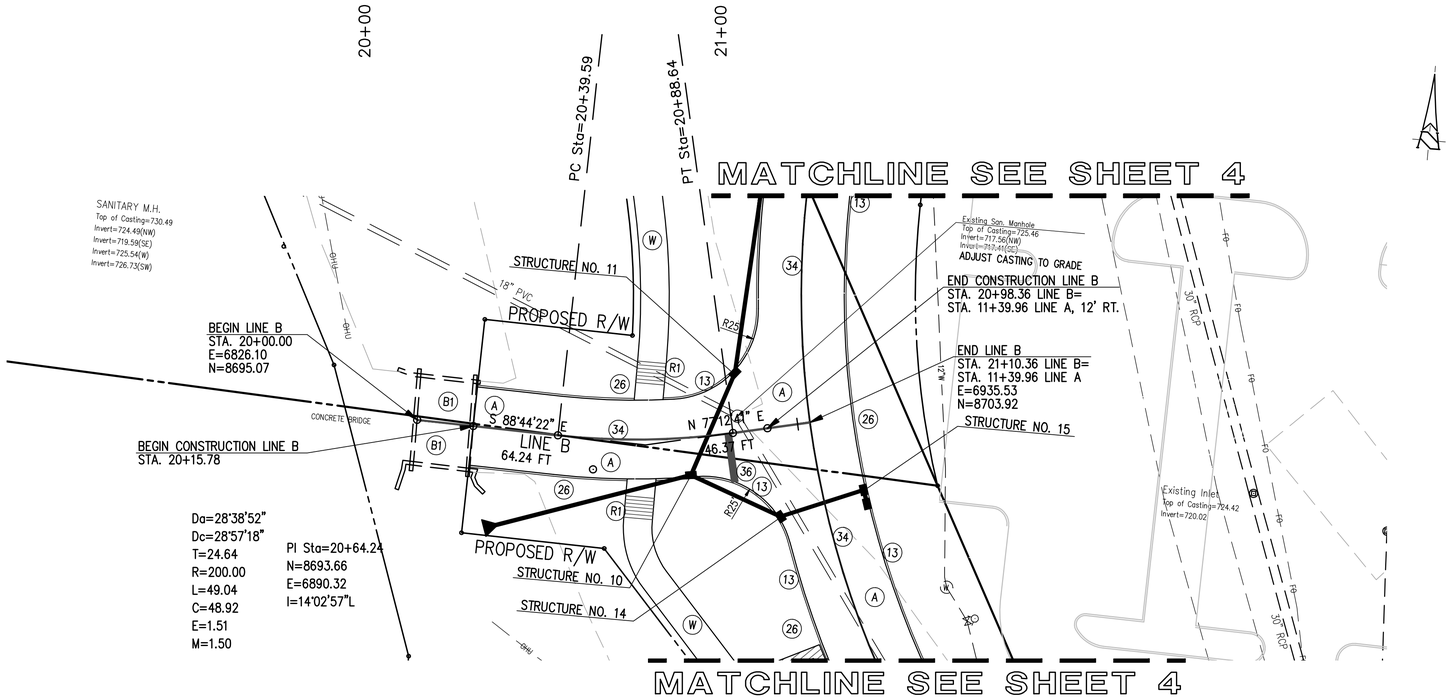
SCALES:
1"=20' HOR
1"=5' VER

NOTE:
FOR TRAFFIC SIGNAL DETAILS
SEE SHEET 14.

JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

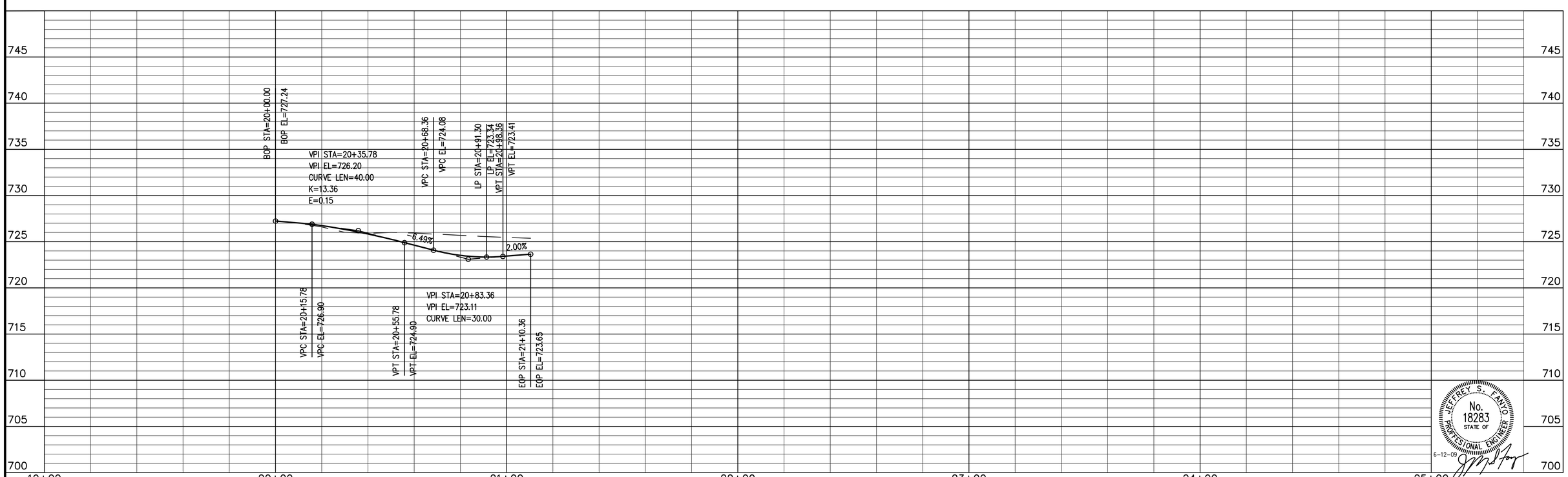
PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	8	28	FAIRVIEW STREET



SCALES:
1"=20' HOR
1"=5' VER

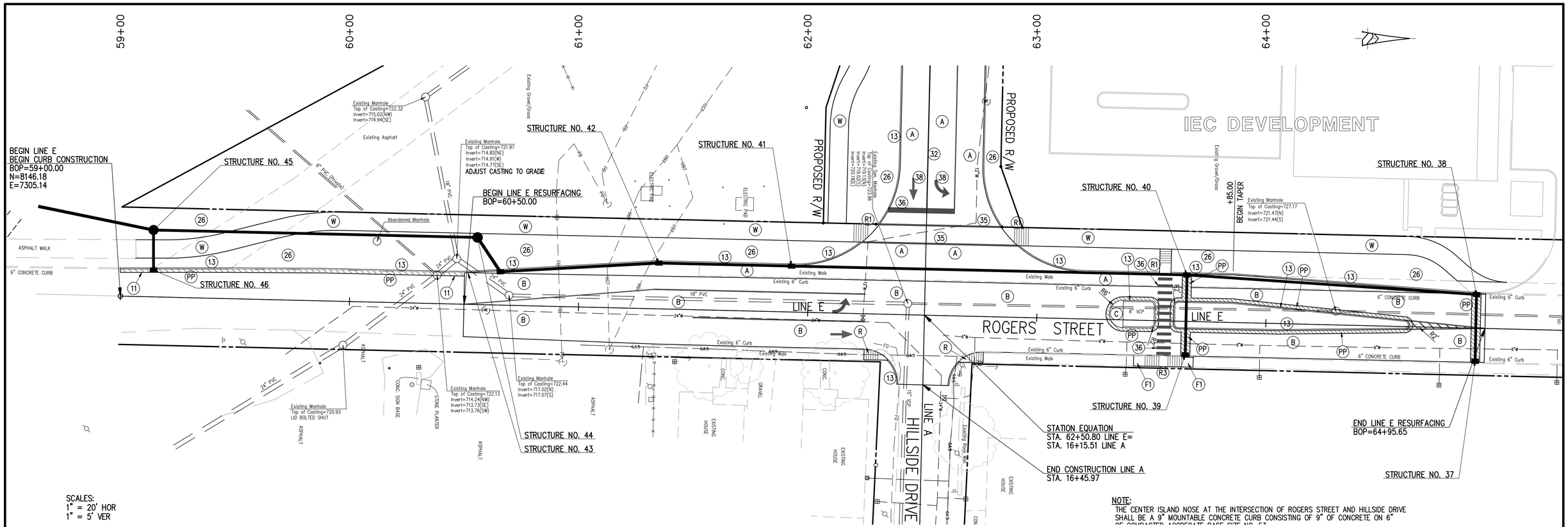
NOTE:
FOR BRIDGE MODIFICATIONS, SEE SHEET 28.



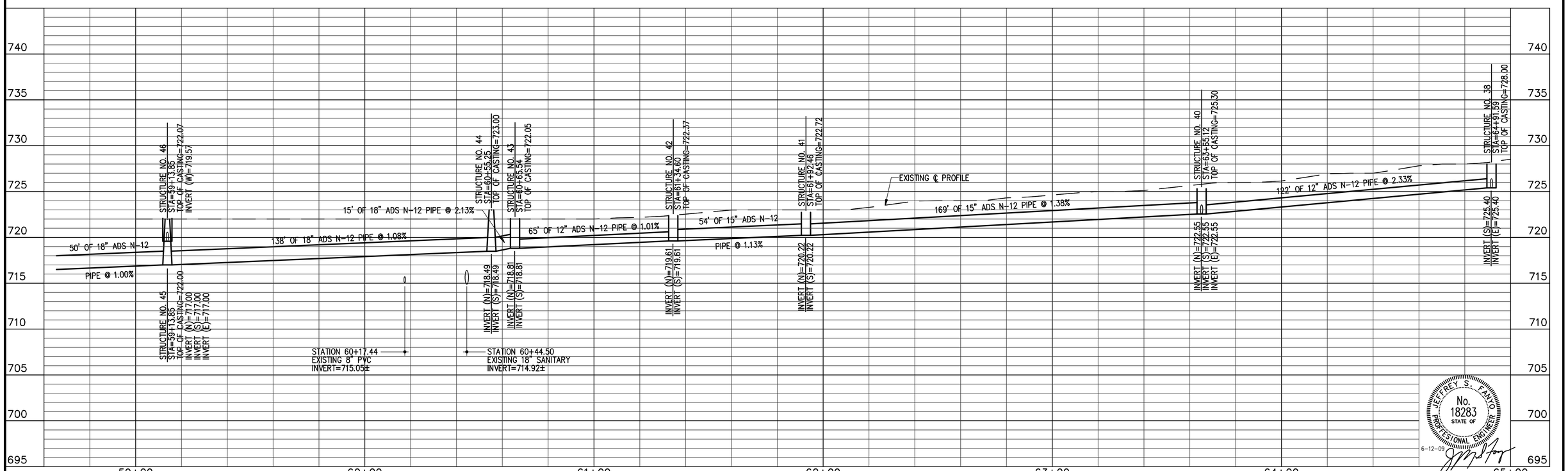
JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	9	28	COOK S. DRIVE



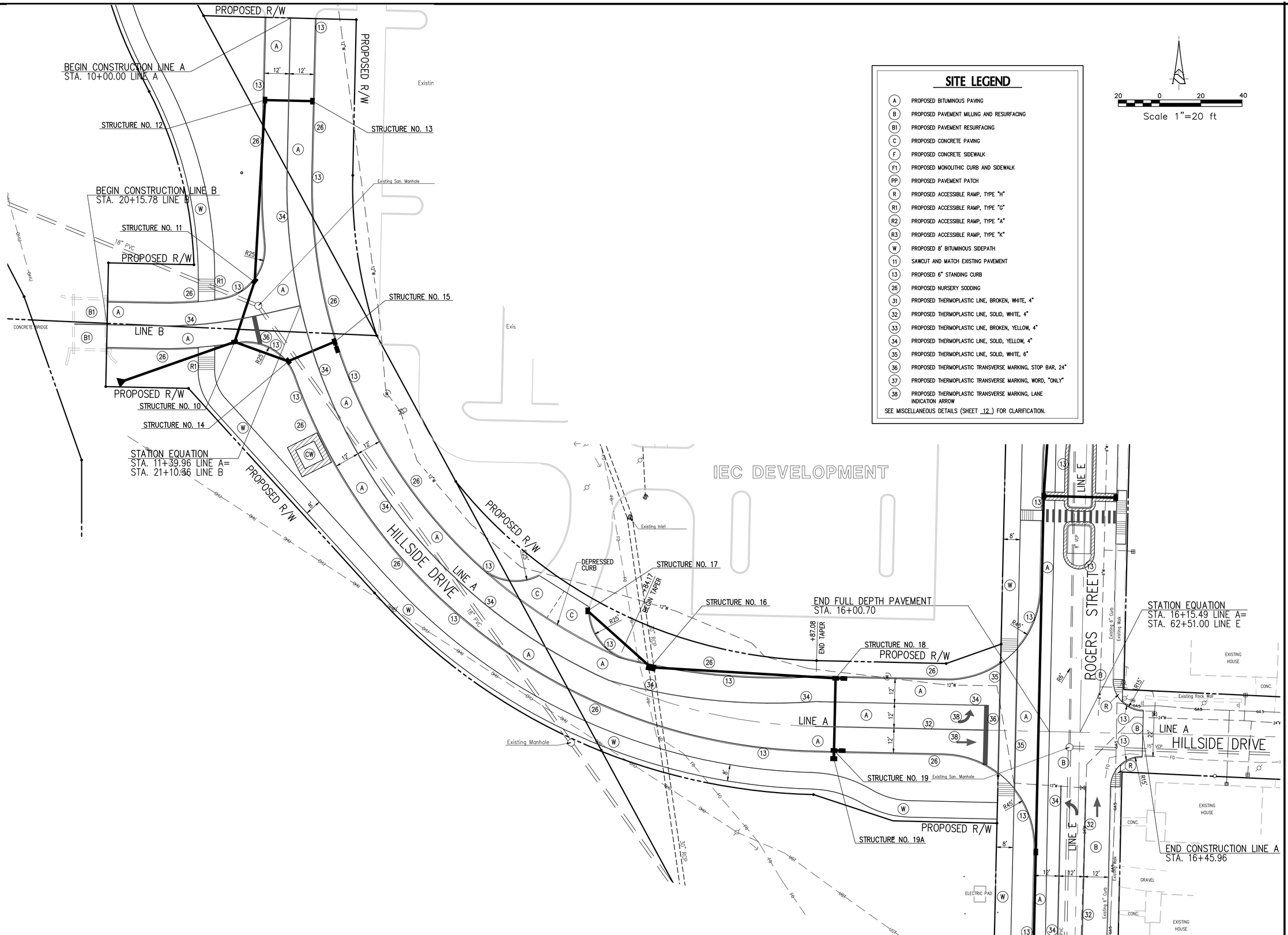
NOTE:
THE CENTER ISLAND NOSE AT THE INTERSECTION OF ROGERS STREET AND HILLSIDE DRIVE SHALL BE A 9" MOUNTABLE CONCRETE CURB CONSISTING OF 9" OF CONCRETE ON 6" OF COMPACTED AGGREGATE BASE STD. NO. 53



JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	10	28	ROGERS STREET



SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED PAVEMENT MILLING AND RESURFACING
B1	PROPOSED PAVEMENT RESURFACING
C	PROPOSED CONCRETE PAVING
F	PROPOSED CONCRETE SIDEWALK
F1	PROPOSED MONOLITHIC CURB AND SIDEWALK
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED ACCESSIBLE RAMP, TYPE "H"
R1	PROPOSED ACCESSIBLE RAMP, TYPE "G"
R2	PROPOSED ACCESSIBLE RAMP, TYPE "A"
R3	PROPOSED ACCESSIBLE RAMP, TYPE "K"
W	PROPOSED 8' BITUMINOUS SIDEPATH
11	SAWCUT AND MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
26	PROPOSED NURSERY SODDING
31	PROPOSED THERMOPLASTIC LINE, BROKEN, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, BROKEN, YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID, YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 6"
36	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, STOP BAR, 24"
37	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, WORD, "ONLY"
38	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, LANE INDICATION ARROW

SEE MISCELLANEOUS DETAILS (SHEET 12) FOR CLARIFICATION.

Scale 1"=20 ft

revisions:

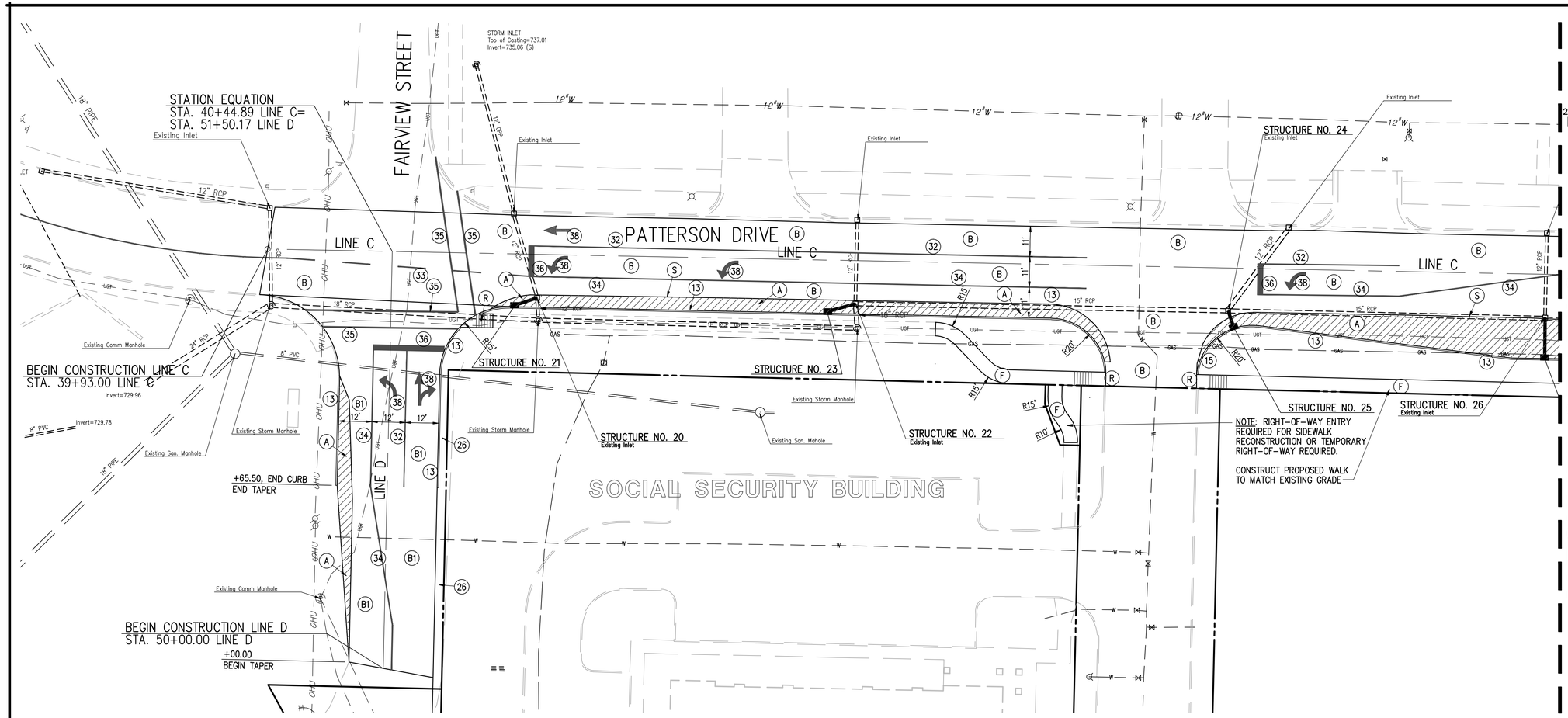
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

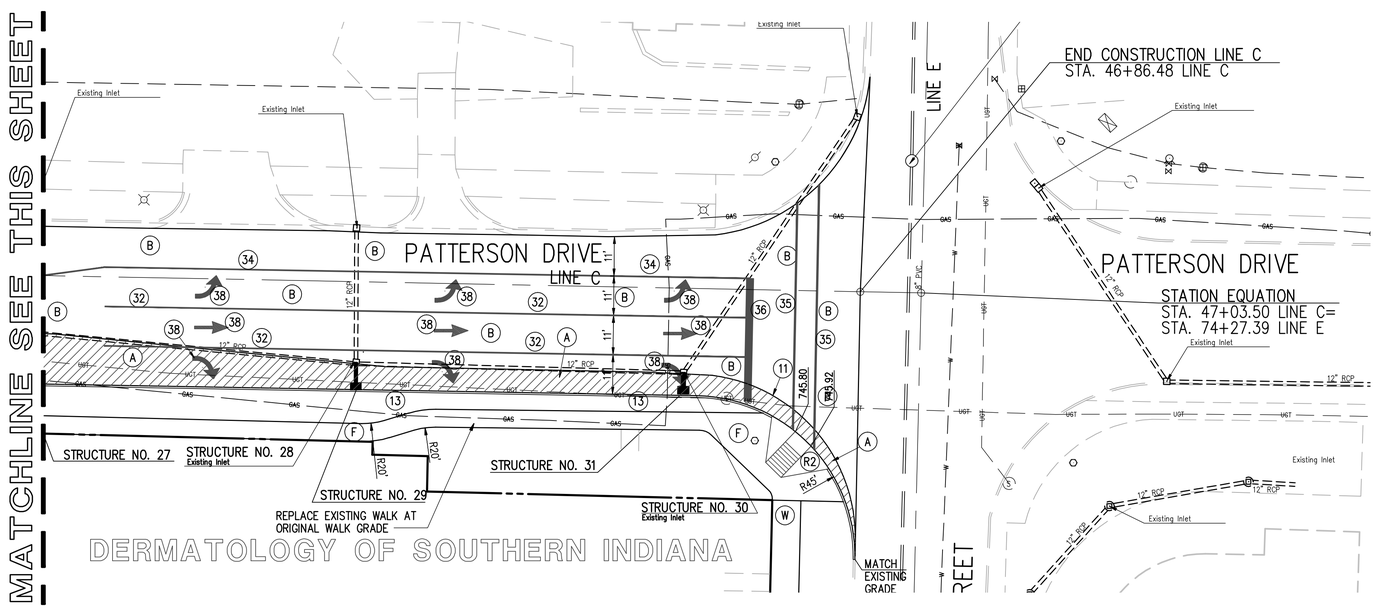
JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
6-12-09
certified by:

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

title: HILLSIDE DRIVE ROAD IMPROVEMENT DETAIL

designed by:
drawn by: JR
checked by:
sheet no: 11 OF 28
project no.: 400826





SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED PAVEMENT MILLING AND RESURFACING
B1	PROPOSED PAVEMENT RESURFACING
C	PROPOSED CONCRETE PAVING
F	PROPOSED CONCRETE SIDEWALK
F1	PROPOSED MONOLITHIC CURB AND SIDEWALK
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED ACCESSIBLE RAMP, TYPE "H"
R1	PROPOSED ACCESSIBLE RAMP, TYPE "G"
R2	PROPOSED ACCESSIBLE RAMP, TYPE "A"
R3	PROPOSED ACCESSIBLE RAMP, TYPE "K"
W	PROPOSED 8' BITUMINOUS SIDEPATH
11	SAWCUT AND MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
26	PROPOSED NURSERY SODDING
31	PROPOSED THERMOPLASTIC LINE, BROKEN, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, BROKEN, YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID, YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 6"
36	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, STOP BAR, 24"
37	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, WORD, "ONLY"
38	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, LANE INDICATION ARROW

SEE MISCELLANEOUS DETAILS (SHEET 12) FOR CLARIFICATION.

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
bloomington, indiana
(812) 339-2990 (Fax)

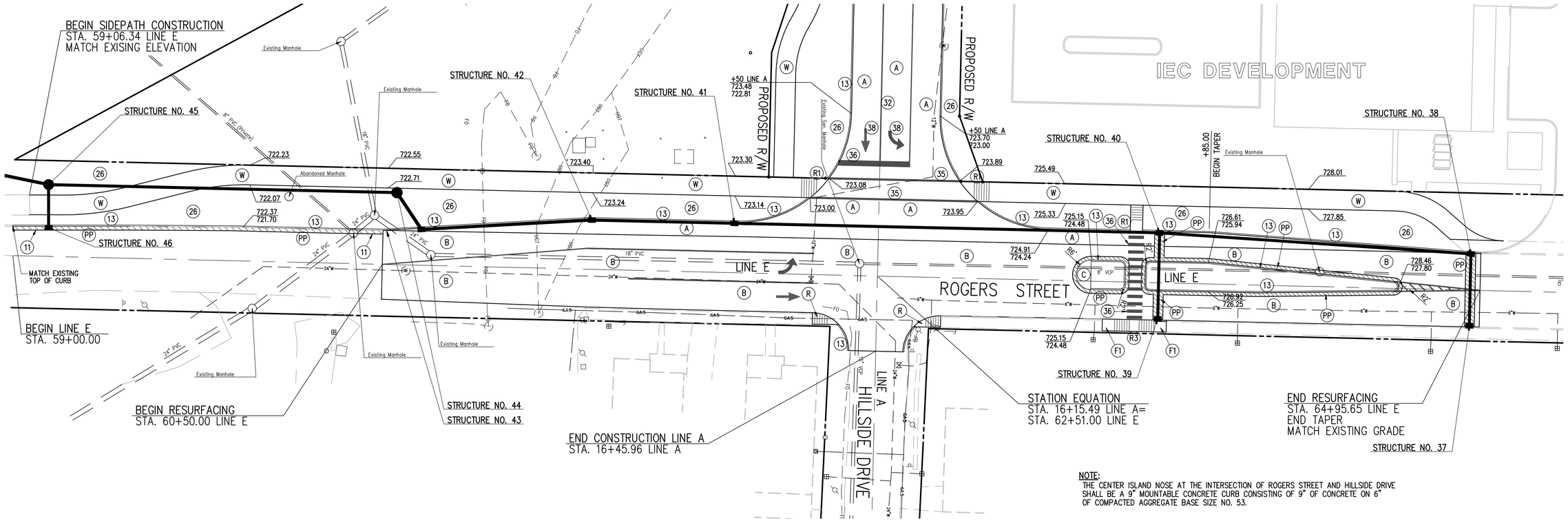
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
(812) 332-8030

JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
6-12-09
certified by

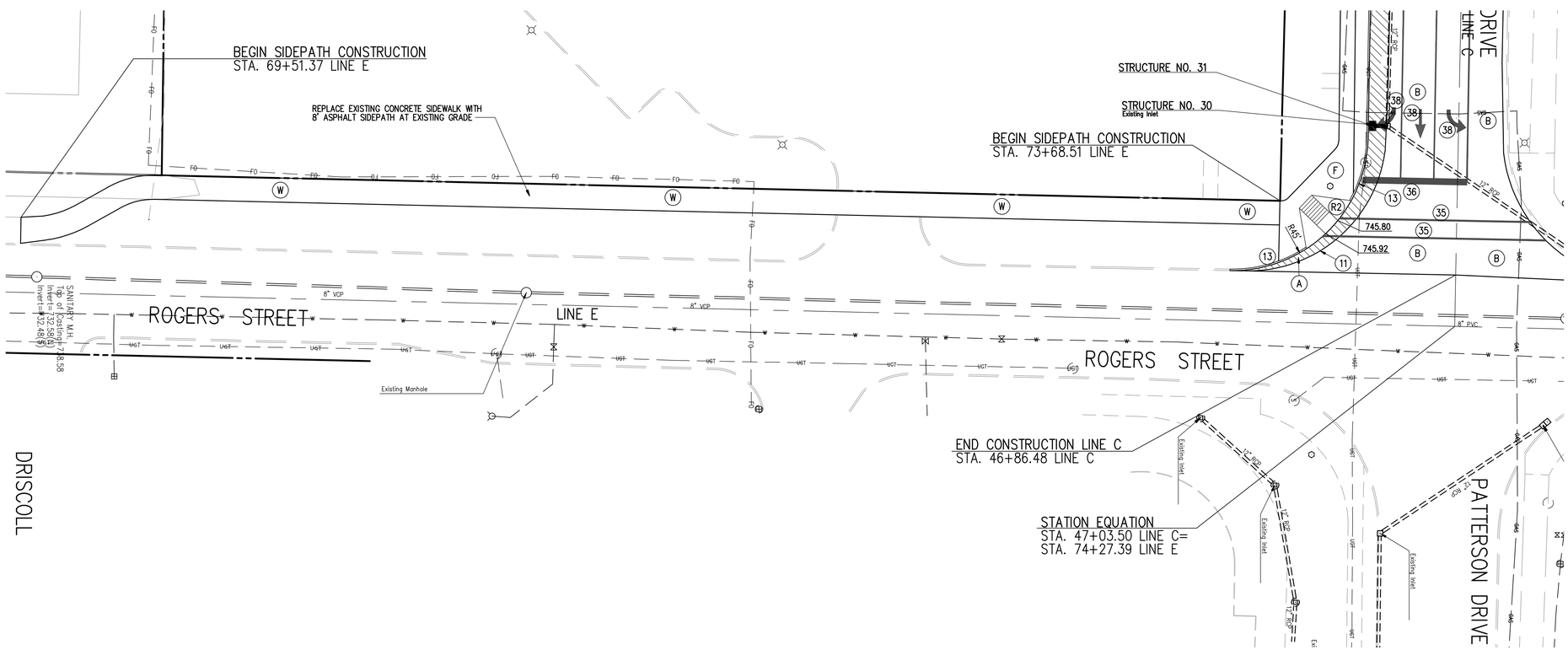
Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

title: PATTERSON DR., FAIRVIEW ST ROAD IMPROVEMENT DETAIL

designed by:
drawn by: JR
checked by:
sheet no: 12 OF 28
project no.: 400826



NOTE:
THE CENTER ISLAND NOSE AT THE INTERSECTION OF ROGERS STREET AND HILLSIDE DRIVE SHALL BE A 9" MOUNTABLE CONCRETE CURB CONSISTING OF 9" OF CONCRETE ON 6" OF COMPACTED AGGREGATE BASE SIZE NO. 53.



Scale 1"=20 ft

SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED PAVEMENT MILLING AND RESURFACING
B1	PROPOSED PAVEMENT RESURFACING
C	PROPOSED CONCRETE PAVING
F	PROPOSED CONCRETE SIDEWALK
F1	PROPOSED MONOLITHIC CURB AND SIDEWALK
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED ACCESSIBLE RAMP, TYPE "H"
R1	PROPOSED ACCESSIBLE RAMP, TYPE "G"
R2	PROPOSED ACCESSIBLE RAMP, TYPE "A"
R3	PROPOSED ACCESSIBLE RAMP, TYPE "K"
W	PROPOSED 8' BITUMINOUS SIDEPATH
11	SAWCUT AND MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
26	PROPOSED NURSERY SODDING
31	PROPOSED THERMOPLASTIC LINE, BROKEN, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, BROKEN, YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID, YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID, WHITE, 6"
36	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, STOP BAR, 24"
37	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, WORD, "ONLY"
38	PROPOSED THERMOPLASTIC TRANSVERSE MARKING, LANE INDICATION ARROW

SEE MISCELLANEOUS DETAILS (SHEET 12) FOR CLARIFICATION.

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

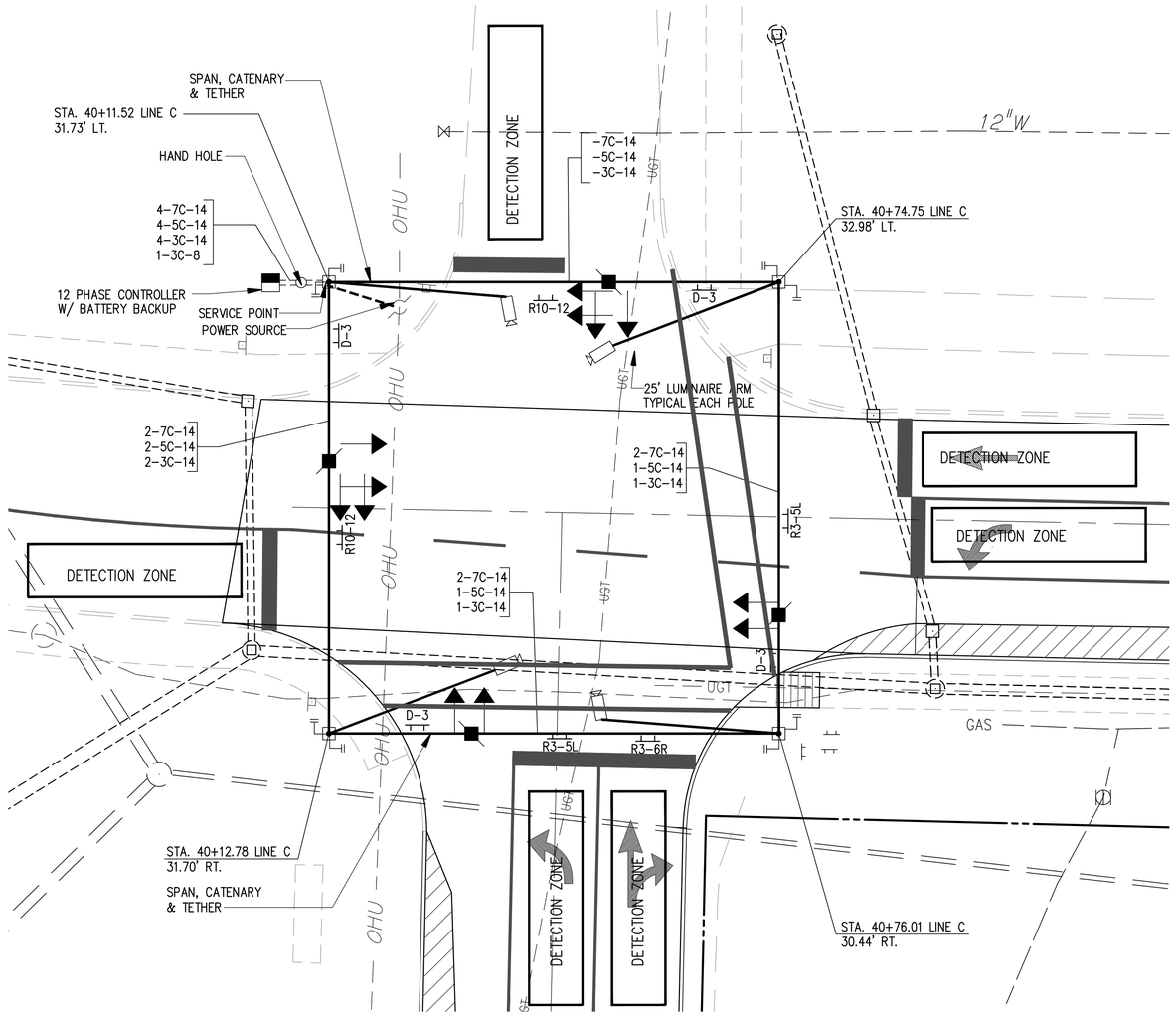
JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER 6-12-09

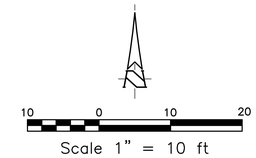
certified by:

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

title: ROGERS ST. ROAD IMPROVEMENT DETAIL

designed by:
drawn by: JR
checked by:
sheet no: 13 OF 28
project no.: 400826



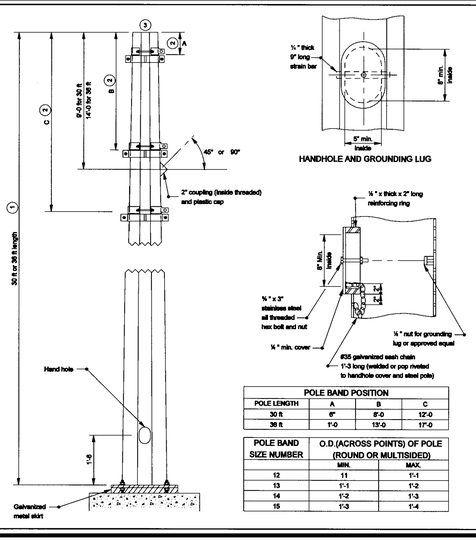


SIGN LEGEND

R3-5L	LEFT TURN ONLY 30" X 36"
R3-6R	STRAIGHT / RIGHT TURN 30" X 36"
D-3	SPAN MOUNTED STREET NAME : 1100 S FAIRVIEW STREET 18" WIDE PER CITY OF BLOOMINGTON STANDARDS FOR SPAN MOUNTED SIGNS
D-3	SPAN MOUNTED STREET NAME : 600 W PATTERSON DRIVE 18" WIDE PER CITY OF BLOOMINGTON STANDARDS FOR SPAN MOUNTED SIGNS
R10-12	LEFT TURN YIELD ON GREEN
NOTE:	ALL SIGNS SHALL CONFORM TO THE INDIANA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES CURRENT EDITION AND BE APPROVED BY THE CITY OF BLGTN. TRAFFIC DIVISION

SIGNAL LEGEND

- 15"X30' STEEL STRAIN POLE WITH 25' LUMINAIRE ARM FOR VIDEO CAMERA
- 1-WAY 3-SECTION (12" RED LED, 12" AMBER 12" GREEN LED) SIGNAL INDICATION
- 1-WAY 5-SECTION (12" RED LED, 12" AMBER 12" GREEN LED, 12" AMBER ARROW, 12" GREEN ARROW) SIGNAL INDICATION
- PEDESTRIAN INDICATION, INTERNATIONAL SYMBOL WITH PUSH BUTTON AND COUNTDOWN FEATURE
- 12 PHASE, MENU DRIVEN CONTROLLER & TYPE "P-1" CABINET ON "P-1" FOUNDATION WITH BATTERY BACKUP SYSTEM
- SOLO TERRA DETECTION CAMERA
- SPAN MOUNTED JUNCTION BOX
- HAND HOLE
- 2" GALVANIZED STEEL CONDUIT



GENERAL NOTES:

1. Taper pole 0.14 in. per foot of length.
2. Bend position can be variable depending of minimum clearance requirement of tether the cable over the road, and the elevation of the top of the foundation relative to the top of the traveled roadway.
3. Design load of 8000 lb applied perpendicular to pole axis 1'-6 from top of pole.

POLE BAND POSITION			
POLE LENGTH	A	B	C
30 ft	6"	8'-0	12'-0
36 ft	1'-0	13'-0	17'-0

POLE BAND SIZE NUMBER	O.D.(ACROSS POINTS) OF POLE (ROUND OR MULTISIDED)	
	MIN.	MAX.
12	11	1'-1
13	1'-1	1'-2
14	1'-2	1'-3
15	1'-3	1'-4

INDIANA DEPARTMENT OF TRANSPORTATION

30 ft. AND 36 ft. SIGNAL STEEL STRAIN POLES

SEPTEMBER 2005

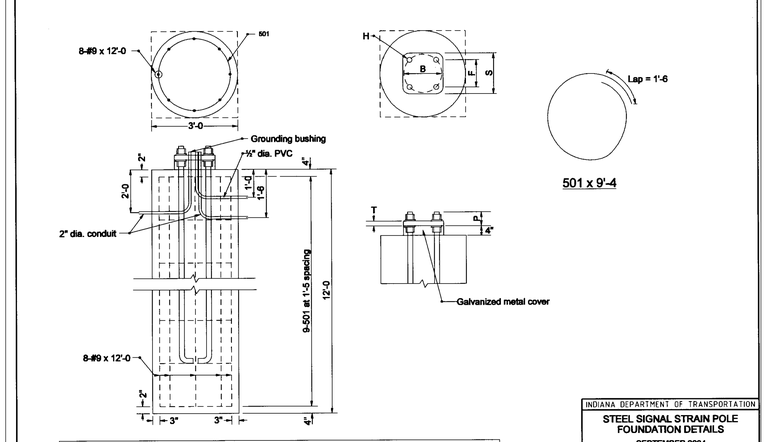
STANDARD DRAWING NO. E 805-SGSP-01

RICHARD L. VANCLEAVE No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Richard L. VanCleave 9-9-05 DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Sautter 9-9-05 CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



BASE PLATE AND ANCHOR BOLT DATA								
Anchor bolts	B	F	H	P	S	T	Pole size	Foundation
2 1/4" x 8'-0	1'-10	1'-3½	2¾"	4¾"	1'-11	2½"	1'-3 x 30 ft 1'-5 x 36 ft	3'-0 x 12 ft

INDIANA DEPARTMENT OF TRANSPORTATION

STEEL SIGNAL STRAIN POLE FOUNDATION DETAILS

SEPTEMBER 2004

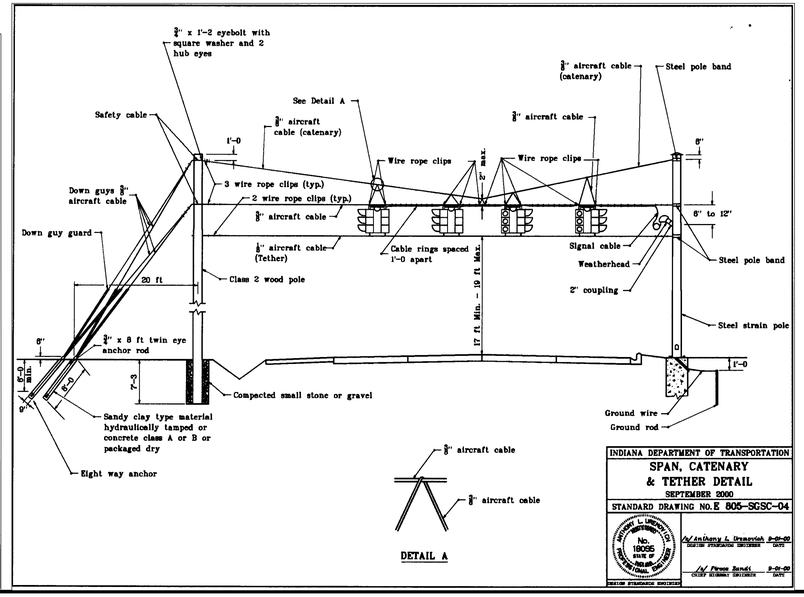
STANDARD DRAWING NO. E 805-SGSC-02

RICHARD L. VANCLEAVE No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Richard L. VanCleave 9-9-04 DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Sautter 9-9-04 CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



INDIANA DEPARTMENT OF TRANSPORTATION

SPAN, CATENARY & TETHER DETAIL

SEPTEMBER 2000

STANDARD DRAWING NO. E 805-SGSC-04

RICHARD L. VANCLEAVE No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Anthony L. Drewrowich 9-9-00 DESIGN STANDARDS ENGINEER DATE

/s/ Trevor Bandi 9-9-00 CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING

BYNUM FANYO & ASSOCIATES, INC.

528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER 6-12-09

certified by:

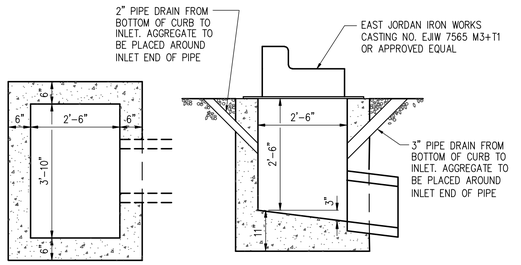
Proposed:

PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS

Bloomington Indiana

title: PATTERSON DR. & FAIRVIEW ST. TRAFFIC SIGNAL DETAIL

designed by:
drawn by: JR
checked by:
sheet no: 14 OF 28
project no.: 400826

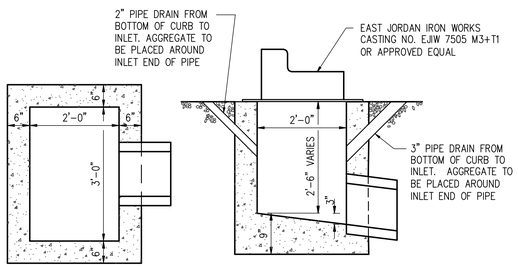


PLAN VIEW SECTION

STORM INLET, TYPE "B"

NOT TO SCALE

NOTES:
1. FOR INLET INVERT ELEVATIONS SEE STRUCTURE NOTE OR STRUCTURE DATA TABLE.
2. USE OF BRICK, BLOCKS, OR CONCRETE IS PERMISSIBLE.
3. CONTRACTOR MAY BE PERMITTED TO PRECAST INLETS SUBJECT TO THE APPROVAL OF THE ENGINEER AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

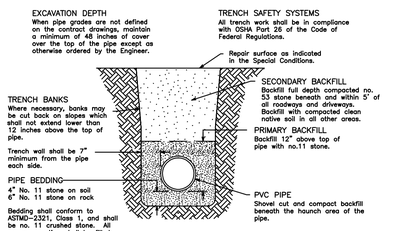


PLAN VIEW SECTION

STORM INLET, TYPE "J"

NOT TO SCALE

NOTES:
1. FOR INLET INVERT ELEVATIONS SEE STRUCTURE NOTE OR STRUCTURE DATA TABLE.
2. USE OF BRICK, BLOCKS, OR CONCRETE IS PERMISSIBLE.
3. CONTRACTOR MAY BE PERMITTED TO PRECAST INLETS SUBJECT TO THE APPROVAL OF THE ENGINEER AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



TYPICAL TRENCH SECTION FOR PVC PIPE LESS THAN 18"

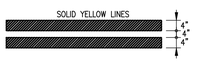
NOT TO SCALE

2B-4 STOP SIGN (R1-1)

R1-1
30" x 30"

(R1-1) STOP SIGN

NOT TO SCALE

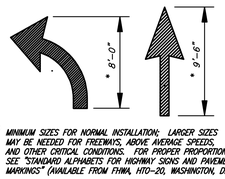


(34) STANDARD PAVEMENT MARKINGS

NOT TO SCALE

(36) STANDARD PAVEMENT MARKINGS

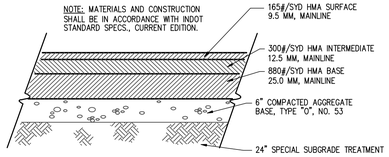
NOT TO SCALE



* MINIMUM SIZES FOR NORMAL INSTALLATION; LARGER SIZES MAY BE NEEDED FOR FREEWAYS, ABOVE AVERAGE SPEEDS, AND OTHER CRITICAL CONDITIONS. FOR PROPER PROPORTION, SEE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" (AVAILABLE FROM FHWA, HTO-20, WASHINGTON, D.C. 20590)

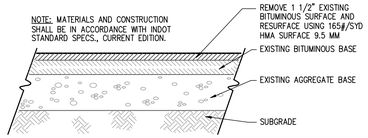
(38) ELONGATED ARROWS FOR PAVEMENT MARKINGS

NOT TO SCALE



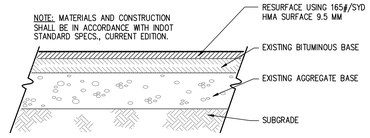
(A) BITUMINOUS PAVING DETAIL

NOT TO SCALE



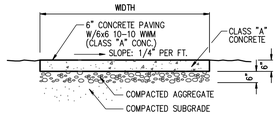
(B) BITUMINOUS RESURFACING DETAIL

NOT TO SCALE



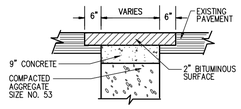
(B1) BITUMINOUS RESURFACING DETAIL

NOT TO SCALE



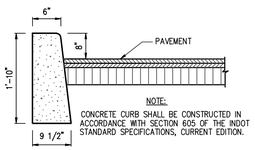
(C) 6" CONCRETE PAVEMENT

NOT TO SCALE



(PP) BITUMINOUS PAVEMENT PATCH

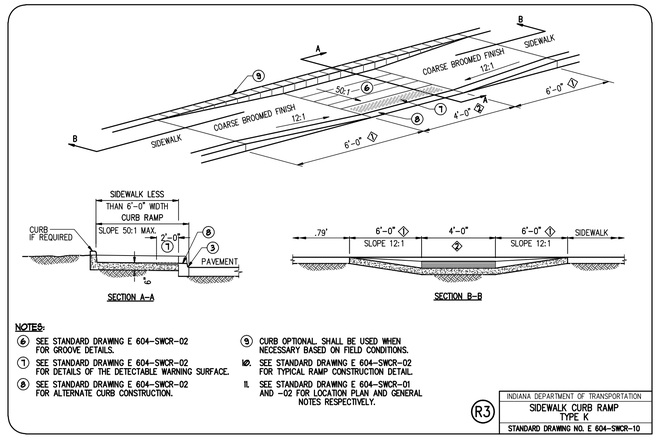
NOT TO SCALE



NOTE:
CONCRETE CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 605 OF THE INDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

(13) CONCRETE CURB

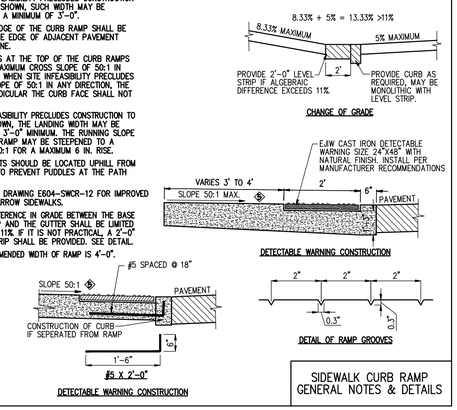
NOT TO SCALE



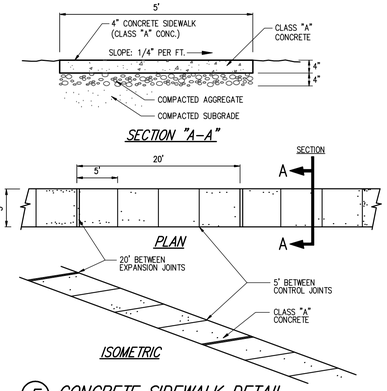
NOTES:
6. SEE STANDARD DRAWING E 604-SWCR-02 FOR GROOVE DETAILS.
7. SEE STANDARD DRAWING E 604-SWCR-02 FOR DETAILS OF THE DETECTABLE WARNING SURFACE.
8. SEE STANDARD DRAWING E 604-SWCR-02 FOR ALTERNATE CURB CONSTRUCTION.
9. CURB OPTIONAL. SHALL BE USED WHEN NECESSARY BASED ON FIELD CONDITIONS.
10. SEE STANDARD DRAWING E 604-SWCR-02 FOR TYPICAL RAMP CONSTRUCTION DETAIL.
11. SEE STANDARD DRAWING E 604-SWCR-01 AND -02 FOR LOCATION PLAN AND GENERAL NOTES RESPECTIVELY.

(R3) INDIANA DEPARTMENT OF TRANSPORTATION
SIDEWALK CURB RAMP TYPE K
STANDARD DRAWING NO. E 604-SWCR-10

GENERAL NOTES:
1. THESE DIMENSIONS ARE BASED ON A 6 IN. CURB HEIGHT. THEY SHALL BE PROPORTIONALLY ADJUSTED FOR OTHER CURB HEIGHTS.
2. WHERE SITE INFEASIBILITY PRECLUDES CONSTRUCTION TO THE WIDTH SHOWN, SUCH WIDTH MAY BE DECREASED TO A MINIMUM OF 3'-0".
3. THE BOTTOM EDGE OF THE CURB RAMP SHALL BE FLUSH WITH THE EDGE OF ADJACENT PAVEMENT AND GUTTER LINE.
4. LANDING AREAS AT THE TOP OF THE CURB RAMPS SHALL HAVE MAXIMUM CROSS SLOPE OF 50:1 IN ANY DIRECTION WHEN SITE INFEASIBILITY PRECLUDES A LANDING SLOPE OF 50:1 IN ANY DIRECTION, THE SLOPE PERPENDICULAR THE CURB FACE SHALL NOT EXCEED 50:1.
5. IF THE SITE FEASIBILITY PRECLUDES CONSTRUCTION TO THE WIDTH SHOWN, THE LANDING WIDTH MAY BE DECREASED TO 3'-0" MINIMUM. THE RUNNING SLOPE OF THE CURB RAMP MAY BE STEEPENED TO A MAXIMUM OF 10:1 FOR A MAXIMUM 6 IN. RISE.
6. DRAINAGE INLETS SHOULD BE LOCATED UPHILL FROM CURB RAMPS TO PREVENT PUDDLES AT THE PATH OF TRAVEL.
7. SEE STANDARD DRAWING E604-SWCR-12 FOR IMPROVED ACCESS ON NARROW SIDEWALKS.
8. ALGEBRAIC DIFFERENCE IN GRADE BETWEEN THE BASE OF CURB RAMP AND THE GUTTER SHALL BE LIMITED TO LESS THAN 11% IF IT IS NOT PRACTICAL, A 2'-0" WIDE LEVEL STRIP SHALL BE PROVIDED. SEE DETAIL.
9. MINIMUM RECOMMENDED WIDTH OF RAMP IS 4'-0".

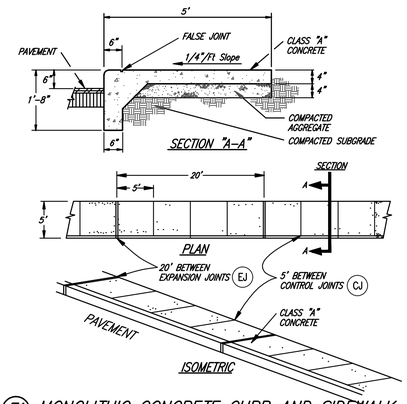


SIDEWALK CURB RAMP GENERAL NOTES & DETAILS



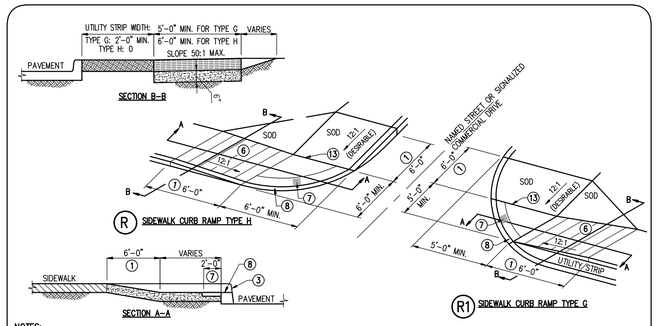
(F) CONCRETE SIDEWALK DETAIL

NOT TO SCALE



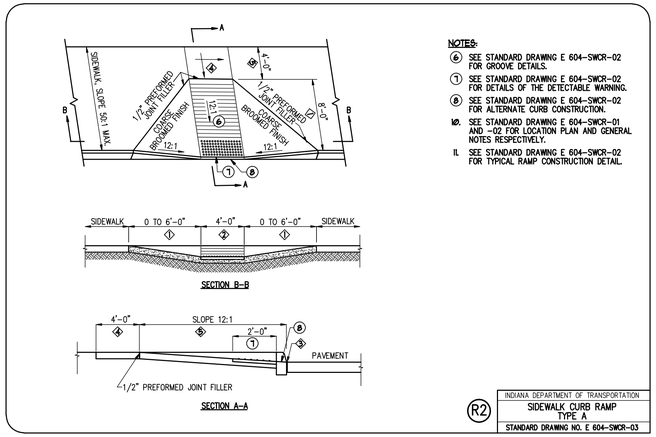
(F1) MONOLITHIC CONCRETE CURB AND SIDEWALK

NOT TO SCALE



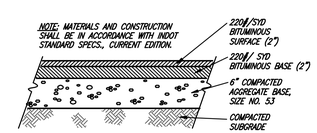
NOTES:
6. SEE STANDARD DRAWING E 604-SWCR-02 FOR GROOVE DETAILS.
7. SEE STANDARD DRAWING E 604-SWCR-02 FOR DETAILS OF THE DETECTABLE WARNING SURFACE
8. SEE STANDARD DRAWING E 604-SWCR-02 FOR ALTERNATE CURB CONSTRUCTION.
10. SIDEWALK ACROSS APPROACH SHALL BE SLOPED AT 50:1 MAXIMUM TRANSVERSELY.
11. SEE STANDARD DRAWING E 604-SWCR-02 FOR TYPICAL RAMP CONSTRUCTION DETAIL.
12. SEE STANDARD DRAWING E 604-SWCR-01 AND -02 FOR LOCATION PLAN AND GENERAL NOTES RESPECTIVELY.
13. VERTICAL FACE CURB OPTIONAL.

INDIANA DEPARTMENT OF TRANSPORTATION
SIDEWALK CURB RAMPS TYPE G AND TYPE H
STANDARD DRAWING NO. E 604-SWCR-09



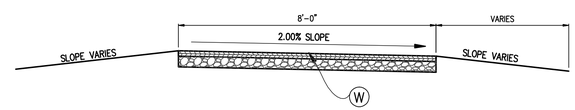
NOTES:
6. SEE STANDARD DRAWING E 604-SWCR-02 FOR GROOVE DETAILS.
7. SEE STANDARD DRAWING E 604-SWCR-02 FOR DETAILS OF THE DETECTABLE WARNING.
8. SEE STANDARD DRAWING E 604-SWCR-02 FOR ALTERNATE CURB CONSTRUCTION.
10. SEE STANDARD DRAWING E 604-SWCR-01 AND -02 FOR LOCATION PLAN AND GENERAL NOTES RESPECTIVELY.
11. SEE STANDARD DRAWING E 604-SWCR-02 FOR TYPICAL RAMP CONSTRUCTION DETAIL.

(R2) INDIANA DEPARTMENT OF TRANSPORTATION
SIDEWALK CURB RAMP TYPE A
STANDARD DRAWING NO. E 604-SWCR-03



(W) BITUMINOUS SIDEPATH PAVING SECTION

NOT TO SCALE



(W) BITUMINOUS SIDEPATH TYPICAL SECTION

NOT TO SCALE

NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.

revisions:

BBB
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER 5-12-09

certified by:

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bloomington Indiana

title: GENERAL NOTES & LEGENDS

designed by:
drawn by: JR
checked by:
sheet no: 15 OF 28
project no.: 400826

RULE 5 NARRATIVE

- OWNER & DEVELOPER: CITY OF BLOOMINGTON DEPARTMENT OF PUBLIC WORKS 401 N. MORTON STREET BLOOMINGTON, INDIANA 47402
- The subject property consists existing streets, vacant land and an existing stream
- This site lies within a Zone AE Floodplain as mapped in FEMA's Flood Insurance Rate Map panel 180169 0025C for Bloomington Indiana
- Adjacent areas consist of:
  - Existing Industrial Facilities to the West
  - Commercial Property to the South
  - Professional Offices to the North
  - Residential neighborhood to the East.
- West Branch Clear Creek is nearby
- The ultimate receiving water for the project is the West Branch Clear Creek
- There are zero (0) sink holes on site.
- Calculations for peak discharge:
  - 100 year pre-developed: n/a
  - 100 year post-developed: n/a

  LATITUDE: N39° 9.04' LONGITUDE: N86° 32.37'
- Hydrologic unit code – 05120208080010
- Other than RULE 5, a IDNR Consrtuction in a Floodway, IDEM 401 & USACE 404 Water Quality permits are required for this Project.
- Potential pollutant sources associated with construction:

	Pollutant	Source
Sedimentation	Particulates	Mass grading activities
Hydrocarbons	Petroleum	Fuel, oil, antifreeze leaks and /or spills
	Trash	Debris from individual home construction.
	Concrete	Waste from individual home construction

- Potential pollutant sources post construction:

	Pollutant	Source
Sedimentation	Particulates	Pavement wear, vehicles, the atmosphere and maintenance activities
Nutrients	Nitrogen & Phosphorus	Atmosphere and fertilizer application
Heavy Metals	Lead	Leaded gasoline from auto exhausts and tire wear
	Zinc	Tire wear, motor oil and grease
	Iron	Auto body rust, steel highway structures such as bridges and guardrails, and moving engine parts
	Copper	Metal plating, bearing and brushing wear, moving engine parts, brake lining wear, fungicides and insecticides
	Cadmium	Tire wear and insecticide application
	Chromium	Metal plating, moving engine parts and brake lining wear
	Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear and asphalt paving
	Manganese	Moving engine parts
	Cyanide	Anti-caking compounds used to keep deicing salt granular
	Sodium, Calcium & & Chloride	Deicing salts
	Sulfates	Roadway beds, fuel and deicing salts
Hydrocarbons	Petroleum	spills, leaks, antifreeze and hydraulic fluids and asphalt surface leachate

- Post construction pollutants for future will be treated with the addition of a wetland and thorough restoration of 1,033 ft of West Branch Clear Creek as well as it's adjoining East Floodplain.
- Maintenance Plan
  - All vegetative buffers, water quality ponds and outlet structures shall be inspected bi-annually to ensure that they are in working order. If any bare or eroded areas are discovered, they shall be reported and re-seeded immediately. If excess sedimentation has occured in the past six (6) months, excess sediment shall be removed and properly disposed of. During construction, the contractor shall be responsible for these duties. After construction has been completed, the responsibility of inspection and maintenance shall transfer to the land owner.
- Material handling and spill prevention plan
  - All erosion control structures shall be installed following the sequence of events outlined in the erosion control rules, on this sheet, before further grading activities begin.
  - During construction, all erosion control structures shall be inspected and maintained in accordance with the details on this sheet.
  - No materials shall be stored on site.
  - All fueling and fluid changes shall be done on the stone layout pad using care to prevent spillage. If a spillage should occur during fueling or fluid change, the contractor shall remove, properly dispose of, and replace the contaminated stone.
  - All construction equipment shall be inspected regularly and proper preventative maintenance performed to prevent oil, fuel or antifreeze leakage.
- Owner Responsibility

  If a reportable amount of sediment laden water is allowed to leave the site, the Owner is obligated to notify IDEM's spill line at 317.233.7745 within twenty-four (24) hours. Owner is responsible fo all fines and any other liability associated with such an event.

  Reapproval of construction plans and resubmittal of the Notice of Intent (NOI) to Indiana Department of Environmental Management (IDEM) may be required if changes or revisions of the approved construction plans are needed or requested.

  Revised plans, if requested, must be submitted to the appropriate entity within twenty-one (21) calendar days of a request for a modification from the location authority.

  1. All storm water quality measures and erosion and sediment controls necessary to comply with SPPP must be implemented in accordance with the approved construction plan.

  2. Public or private roadways shall be kept cleared of accumulated sediment that is a result of run-off or tracking. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment shall be redistributed or disposed of in a manner that is in accordance with all applicable statutes and regulations.

  3. The project site owner shall post a notice near the main entrance of the project site. The notice must be maintained in a legible condition and contain the following information:

  a. Copy of the completed NOI letter and the NPDES permit number.
  b. Name, company name, telephone number, e-mail address and address of the project site owner or a local contact person.
  c. Location of the construction plan if the project site does not have an on-site location to store the plan.

  This permit and posting of the notice does not provide the public with any right to trespass on the project site for any reason, nor does it require that the project Owner allow members of the public access to the project site.

  4. The SPPP shall serve as a guideline for storm water quality but should not be interpreted to be the only basis for implementation of storm water quality measures for the project site. The project site owner is responsible for implementing, in accordance to SPPP, all measures necessary to adequately prevent polluted storm water run-off.

  5. The project site owner shall inform all general contractors, construction management firms, grading or excavating contractors, utility contractors and the contractors that have primary oversight on individual building lots of the terms and conditions of SPPP and the conditions and standards of the SPPP and the schedule for proposed implementation and shown on the approved construction plans.

  6. Phase of construction activities shall be used, where possible, to minimize disturbance of large areas.

  7. Unvegetated areas that are scheduled or likely to be left inactive for fifteen (15) dyas or more must be temporarily or permanently stabilized with measures appropriate for the season to minimize eosion potential. Alternative measures to site stabilization are acceptable if the project site owner or thier representative can domonstrate they have implemented erosion and sediment control measures adequate to prevent sediment discharge. Vegetated areas with a density of less than seventy percent (70%) shall be restabilized using appropriate methods to minimize the erosion potential.

  8. A self-monitoring program that includes the following must be implemented:

  a. A trained individual shall perform a written evaluation of the project site and a log of the written evaluation kept on the project site:
  i. by the end of the next business day following each measurable storm event; and
  ii. at a minimum of one (1) time per week.

  b. The evaluation must address:
  i. the maintenance of existing storm water quality measures to ensure they are functioning properly; and
  ii. identify additional measures necessary to remain in compliance with all applicable statutes and rules.

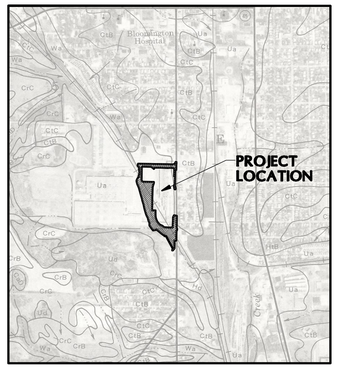
  c. Written evaluation reports must include:
  i. the name of the individual performing the evaluation;
  ii. the date of the evaluation;
  iii. problems identified at the project site; and
  iv. details of corective actions recommended and completed.

  d. All evaluation reports for the project site must be made available to the inspecting authority within forty-eight (48) hours of a request.

  9. Proper storage and handlinf of materials, such as fuels or hazardous wastes, and spill prevention and clean-up measures shall be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality.

  10. Final stabilization of a project site is achieved when:

  a. All land disturbing activities have been completed and a uniform (for example, evenly distributed, without large bare areas_ perennial vegetative cover with a density of seventy percent (70%) has been established on all unpaved areas and area not covered by permanent structures, or equivalent permanent stabilization measures have been employed.



SOILS MAP

SCALE: 1"=1/4 MILE

Ua – Udorthents, loamy.
These nearly level to moderately sloping, deep, well drained to somewhat poorly drained soils are in disturbed areas of the uplands and flood plains. Areas range from 5 to 300 acres and have a dominant size of about 20 acres.
The available water capacity of the Udorthents is moderate, and permeability is moderate or moderately slow. Surface runoff is slow to rapid. Organic matter content of the surface layer is low. A seasonal high water table is at a depth of 1.5 to 6 feet. The reaction of the profile ranges from slightly acid to extremely acid.

CtB – Crider–Urban land complex, 2 to 6 percent slopes.
This complex consists of gently sloping, deep, well drained Crider soil and areas of Urban land on narrow and broad convex ridgetops of the uplands. It is about 50 percent Crider soil and 45 percent Urban land. Individual areas range from 10 to 200 acres and have a dominant size of about 40 acres. The Crider soils and Urban land are so intermingled or so small in area that they could not be shown separately at the scale selected for mapping.
The Crider soil in this unit has high available water capacity and permeability is moderate. Surface runoff is medium. The organic matter content of the surface layer is low, and reaction is generally medium acid or strongly acid in unlimed areas. This soil is slightly limited for dwellings. The Crider soil is severely limited for local roads and streets because of low strength. The limitation for septic tank absorption fields is moderate because permeability is moderate.

SOIL LEGEND

Map symbols consist of a combination of letters or of letters and numbers. The first capital letter is the initial one of the map unit name. The lowercase letter that follows separates map units having names that begin with the same letter, except that it does not separate sloping or eroded phases. The second capital letter indicates the class of slope. Symbols without a slope letter are for nearly level soils or miscellaneous areas. A final number of 3 indicates that the soil is severely eroded.

SYMBOL	NAME
AfB	Alford silt loam, 2 to 6 percent slopes
Ba	Bartle silt loam
BdB	Bedford silt loam, 2 to 6 percent slopes
BkF	Berks–Weikert complex, 25 to 75 percent slopes
Bo	Bonnie silt loam
Bu	Burnside silt loam
CaD	Caneyville silt loam, 12 to 18 percent slopes
Cb	Caneyville–Hagerstown silt loams, karst
ChF	Chetwynd silt loam, 25 to 70 percent slopes
CoF	Corydon Variant–Caneyville Variant complex, 25 to 70 percent slopes
CrB	Crider silt loam, 2 to 6 percent slopes
CrC	Crider silt loam, 6 to 12 percent slopes
CrD	Crider silt loam, 12 to 18 percent slopes
CsC	Crider–Caneyville silt loams, 6 to 12 percent slopes
CtB	Crider–Urban land complex, 2 to 6 percent slopes
CtC	Crider–Urban land complex, 6 to 12 percent slopes
Cu	Cuba silt loam
EbE	Ebal–Elpin–Hagerstown silt loams, 18 to 25 percent slopes
EdD	Ebal–Wellston–Gilpin silt loams 12 to 18 percent slopes
EkB	Ekinsville silt loam, 2 to 6 percent slopes
EkF	Ekinsville silt loam, upland, 20 to 40 percent slopes
GpD	Gilpin silt loam, 12 to 18 percent slopes
GrD	Gilpin–Gullied land complex, 12 to 22 percent slopes
HaC	Hagerstown silt loam, 6 to 12 percent slopes
HaD	Hagerstown silt loam, 12 to 18 percent slopes
HaE	Hagerstown silt loam, 18 to 25 percent slopes
HbD3	Hagerstown silty clay loam, 12 to 22 percent slopes, severely eroded
Hc	Hagerstown–Caneyville silt loams, karst
Hd	Haymond silt loam
HkF	Hickory silt loam, 25 to 70 percent slopes
HoA	Hosmer silt loam, 0 to 2 percent slopes
HoB	Hosmer silt loam, 2 to 6 percent slopes
HoC	Hosmer silt loam, 6 to 12 percent slopes
HtB	Hosmer–Urban land complex, 2 to 12 percent slopes
IvA	Iva silt loam, 0 to 3 percent slopes
MbB	Martinsville loam, 2 to 6 percent slopes
PaB	Parke silt loam, 2 to 6 percent slopes
PaC	Parke silt loam, 6 to 12 percent slopes
PcD	Parke–Chetwynd silt loam, 12 to 18 percent slopes
PeA	Pekin silt loam, 0 to 2 percent slopes
PeB	Pekin silt loam, 2 to 6 percent slopes
PeC	Pekin silt loam, 6 to 12 percent slopes
Po	Peoga silt loam
PrC	Princeton loam, 4 to 10 percent slopes
PrE	Princeton loam, 18 to 25 percent slopes
RcB	Ryker silt loam, 2 to 6 percent slopes
RcC	Ryker silt loam, 6 to 12 percent slopes
RcD	Ryker silt loam, 12 to 18 percent slopes
Sf	Sleff silt loam
St	Stendal silt loam
Sx	Stonelick silt loam
TlA	Tilsit silt loam, 0 to 2 percent slopes
TlB	Tilsit silt loam, 2 to 6 percent slopes
Ua	Udorthents, loamy
Ud	Udorthents–Pits complex
Wa	Wakeland silt loam
WeC	Wellston silt loam, 6 to 12 percent slopes
WmC	Wellston–Gilpin silt loams, 6 to 20 percent slopes
Wo	Whitaker loam
Wr	Wilbur silt loam
ZnC	Zanesville silt loam, 6 to 12 percent slopes
Zo	Zipp silty clay loam
Zp	Zipp silty clay loam, frequently flooded
Zs	Zipp Variant silt loam

PRACTICE 3.11 TEMPORARY SEEDING (WITHIN R/W ONLY)

REQUIREMENTS
Site and seedbed preparation: Graded and fertilizer applied.
Plant Species: Selected on the basis of quick germination, growth, and time of year to be seeded (see Exhibit 3.11–B).
Mulch: Clean grain, straw, hay, wood, fibre, etc., to protect seedbed and encourage plant growth.
Seeding Frequency: As often as possible following construction activity. Daily seeding of rough graded areas when the soil is loose and moist is usually most effective.

APPLICATION (Exhibit 3.11–B)

SITE PREPARATION:
1. Install practices needed to control erosion, sedimentation, and water runoff, such as temporary and permanent diversions, sediment traps or basins, silt fences, and straw bale dams (practices 3.21, 3.22, 3.72, 3.73, 3.74, and 3.75).
2. Grade the site as specified in the construction plan.

SEEDBED PREPARATION:
1. Test soil to determine its nutrient levels. (Contact your county SWDC or Cooperative Extension office for assistance and soils information,
2. Fertilize as recommended by the soil test. If testing is not done, consider applying 400–600 lbs./acre of 12–12 analysis, or equivalent, fertilizer.
3. Work the fertilizer into the soil 2–4 in. deep with a disk or rake operated across the slope.

SEEDING:
1. Select a seeding mixture and rate from Exhibit 3.11–B, and plant at depth and on dates shown.
including available soil testing services.)
2. Apply seed uniformly with a drill or cultipacker–seeder or by broadcasting, and cover to the depth shown in Exhibit 3.11–B.
3. If drilling or broadcasting, firm the seedbed with a roller or cultipacker
4. Mulch seeded areas to increase seeding success. Anchor all mulch by crimping or tackifying. Use of netting or erosion control blankets is possible, but may not be cost–effective for temporary seeding.

Exhibit 3.11–B. Temporary Seeding Recommendations

Seed Species*	Rate/acre	Planting Depth	Optimum dates**
Wheat or rye	150 lbs.	1 to 1 1/2 in.	9/15 to 10/30
Spring oats	100 lbs.	1 in.	3/1 to 4/15
Annual ryegrass	40 lbs.	1/4 in.	3/1 to 5/1
			8/1 to 9/1
~~German millet~~	~~40 lbs.~~	~~1 to 2 in.~~	~~5/1 to 6/1~~
~~Sudangrass~~	~~35 lbs.~~	~~1 to 2 in.~~	~~5/1 to 7/30~~

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

MAINTENANCE
* Inspect periodically after planting to see that vegetative stands are adequately established; reseed if necessary.
* Check for erosion damage after storm events and repair; reseed and mulch if necessary.
* Topdress fall seeded wheat or rye seedings with 50 lbs./acre of nitrogen in February or March if nitrogen deficiency is apparent. (Exhibit 3.11–B shows only wheat/rye fall seeded.)

EROSION CONTROL SEQUENCE

1. Contact the City of Bloomington MS4 agent @ 812.349.3417, 48 hours prior to commencing construction.
2. Prior to any earth moving place siltation fence along the down stream side of all grading activity.
3. Remove vegetation in areas to be disturbed only.
4. Strip top soil from all areas to be disturbed by construction and stock pile at locations above silt fence. Seed with temporary seed mixture type T, immediately.
5. Maintain silt fence during construction and keep clear of debris.
6. Perform construction activities as shown on the plans. Do not disturb turf areas outside of construction limits so that turf acts as a vegetative filter strip.
7. All erosion control structures shall be kept in working order and inspected upon completion of every rain event. Add additional measures when necessary.
8. Upon completion of construction of all improvements redistribute top soil to all proposed grassed areas.
9. Mulch seed all disturbed areas immediately upon completion of all earthmoving and underground utility work in accordance with INDOT SS–621 Seed Mixture type U.
10. Fertilize and water seeded areas until mature turf is established.
11. Remove all temporary erosion control measures upon the establishment of the turf.

PRACTICE 3.13 DORMANT AND FROST SEEDING (WITHIN R/W ONLY)

PURPOSES
* To provide early germination and soil stabilization in the spring.
* To reduce sediment runoff to downstream areas.
* To improve the visual aesthetics of the construction area.
* To repair previous seedings.

REQUIREMENTS **Site and seedbed preparation:** Graded as needed, and lime and fertilizer applied.
Plant species: Selected on the basis of soil type, adaptability to the region, and planned use of the area (see Exhibits 3.13–B and 3.13–C).

APPLICATION (Exhibit 3.13–B and C)

SITE PREPARATION:
1. Grade the area to be seeded.
2. Install needed erosion/water runoff control practices, such as temporary or permanent diversions, sediment basins, silt fences, or straw bale dams (Practices 3.21, 3.22, 3.72, 3.74 or 3.75).

FOR DORMANT SEEDING
Site and seedbed preparation and mulching can be done months ahead of actual seeding or if the existing ground cover is adequate, seeding can be directly into it.
Seeding dates: Dec. 1–Feb. 28 (north of US 40), Dec. 10–Jan. 15 (south of US 40).
1. Broadcast Fertilizer as recommended by a soil test; or if testing was not done consider applying 400–600 lbs./ acre of 12–12–12 analysis or equivalent, fertilizer.
2. Apply mulch upon completion of grading (Practice 3.15).
3. Select an appropriate seed species or mixture from Exhibit 3.13–B or Exhibit 3.13–C, and broadcast on top of the mulch and/or into existing ground cover at rate shown.

FOR FROST SEEDING
Seed is broadcast over the prepared seedbed and incorporated into the soil by natural freeze–thaw action.
Seeding dates: Feb. 28–Mar. 28 (north of US 40), Feb. 15–Mar. 15 (south of US 40).
1. Broadcast Fertilizer as recommended by a soil test; or if testing was not done consider applying 400–600 lbs./ acre of 12–12–12 analysis or equivalent, fertilizer.
2. Apply mulch upon completion of grading (Practice 3.15).
3. Select an appropriate seed species or mixture from Exhibit 3.13–B or Exhibit 3.13–C, and broadcast on top of the mulch and/or into existing ground cover at rate shown. Do not work the seed into the soil.

Exhibit 3.13–B. Temporary Dormant or Frost Seeding Recommendations.

Seed species*	Rate per acre
Wheat or rye	150lbs.
Spring oats	150 lbs.
Annual ryegrass	60 lbs.

* Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than a year (Practice 3.12).

Exhibit 3.13–C. Permanent Dormant of Frost Seeding Recommendations.
This table provides several seeding options. Additional seed species and mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties, slope aspect and the tolerance of each species to shade and droughtiness.

Seed species*	Rate per acre	Optimum soil pH
OPEN AND DISTRIBUTED AREAS (REMAINING IDLE MORE THAN 1 YR).		
1. Perennial ryegrass	50 to 75 lbs.	5.6 to 7.0
+ white or ladino clover*	1 1/2 to 3 lbs.	
2. Kentucky bluegrass	30 lbs.	5.5 to 7.5
~~+ smooth bromegrass~~	~~15 lbs.~~	
+ switchgrass	5 lbs.	
+ timothy	6 lbs.	
+ perennial ryegrass	15 lbs.	
+ white or ladino clover*	1 1/2 to 3 lbs.	
3. Perennial ryegrass	22 to 45 lbs.	5.6 to 7.0
+ prairie switchgrass	22 to 45 lbs.	
4. Prarie switch grass	50 to 75 lbs.	5.5 to 7.5
+ white or ladino clover*	1 1/2 to 3 lbs.	
STEEP BANKS AND CUTS, LOW MAINTENANCE AREAS (NOT MOWED).		
~~1. Smooth bromegrass~~	~~35 to 50 lbs.~~	~~5.5 to 7.5~~
~~+ red clover*~~	~~15 to 30 lbs.~~	
2. Prarie switch grass	50 to 75 lbs.	5.5 to 7.5
+ white or ladino clover*	1 1/2 to 3 lbs.	
3. Prarie switch grass	50 to 75 lbs.	5.5 to 7.5
+ red clover*	15 to 30 lbs.	
(Recommended north of US 40.)		
4. Orchardgrass	30 to 45 lbs.	5.6 to 7.0
+ red clover*	15 to 30 lbs.	
+ ladino clover*	1 1/2 to 3 lbs.	
~~5. Crownvetch*~~	~~15 to 18 lbs.~~	~~5.6 to 7.0~~
~~+ prairie switchgrass~~	~~30 to 45 lbs.~~	
~~(Recommended north of US 40.)~~		
LAWNS AND HIGH MAINTENANCE AREAS		
1. Bluegrass	160 to 210 lbs.	5.5 to 7.5
2. Perennial ryegrass (turf–type)	70 to 90 lbs.	5.6 to 7.0
+ bluegrass	105 to 135 lbs.	
3. Prarie switch grass (turf–type)	195 to 250 lbs.	5.6 to 7.5
+ bluegrass	30 to 45 lbs.	
CHANNELS AND AREAS OF CONCENTRATED FLOW		
1. Parennial ryegrass	150 to 225 lbs.	5.6 to 7.0
+ white or ladino clover*	1 1/2 to 3 lbs.	
2. Kentucky bluegrass	30 lbs.	5.5 to 7.5
~~+ smooth bromegrass~~	~~15 lbs.~~	
+ switchgrass	5 lbs.	
+ timothy	6 lbs.	
+ perennial ryegrass	15 lbs.	
+ white or ladino clover*	1 1/2 to 3 lbs.	
3. Prarie switch grass	150 to 225 lbs.	5.5 to 7.5
+ white or ladino clover*	1 1/2 to 3 lbs.	
4. Prarie switch grass	150 to 225 lbs.	5.5 to 7.5
+ perennial bluegrass	22 to 30 lbs.	
+ kentucky bluegrass	22 to 30 lbs.	

* For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be spring–seeded, although the grass may be fall–seeded and the legume frost–seeded; (c) if legumes are fall–seeded, do so in early fall.

NOTE: If using mixtures other than those listed here, increase the seeding rate by 50% over the conventional rate.

MAINTENANCE
* Apply 200–300 lbs./acre of 12–12–12 or equivalent fertilizer between Apr. 15 and May 10 or during periods of vigorous growth.
* Re–seed and mulch any areas that have inadequate cover by mid to late Apr. For best results, re–seed within the recommended dates shown in Practices 3.11 for temporary seeding or 3.12 for permanent seeding.

PRACTICE 3.12 PERMANENT SEEDING (WITHIN R/W ONLY)

REQUIREMENTS **Site and seedbed preparation:** Graded, and lime and fertilizer applied.
Plant Species: Selected on the basis of soil type, soil pH, region of the state, time of year, and planned use of the area to be seeded (see Exhibit 3.12–C).
Mulch: Clean grain, straw, hay, wood, fibre, etc., to protect seedbed and encourage plant growth. The mulch may need to be anchored to reduce removal by wind or water, or erosion control blankets may be considered.

APPLICATION (Exhibit 3.12–B, C, and D)
Permanently seed all final grade areas (e.g., landscape berms, drainage swales, erosion control structures, etc.) as each is completed and all areas where additional work is not scheduled for a period of more than a year.

SITE PREPARATION:
1. Install practices needed to control erosion, sedimentation, and runoff prior to seeding. These include temporary and permanent diversions, sediment traps and basins, silt fences, and straw bale dams (Practices 3.21, 3.22, 3.72, 3.73, 3.74, and 3.75).
2. Grade the site and fill in depressions that can collect water.
3. Add topsoil to achieve needed depth for establishment of vegetation (Practice 3.02).

SEEDBED PREPARATION:
1. Test soil to determine pH and nutrient levels. (Contact your county SWDC or Cooperative Extension office for assistance and soils information, including available soil testing services.)
2. If soil pH is unsuitable for the species to be seeded, apply lime according to test recommendations.
3. Fertilize as recommended by the soil test. If testing was not done, consider applying 400–600 lbs./acre of 12–12–12 analysis, or equivalent, fertilizer.
4. Till the soil to obtain a uniform seedbed, working the fertilizer and lime into the soil 2–4 in. deep with a disk or rake operated across the slope (Exhibit 3.12–B).

SEEDING:
Optimum seeding dates are Mar. 1–May 10 and Aug. 10–Sept. 30. Permanent seeding done between May 10 and Aug. 10 may need to be irrigated. As an alternative, use temporary seeding (Practice 3.11) until the preferred date for permanent seeding.
1. Select a seeding mixture and rate from Exhibit 3.12–C, based on site conditions, soil pH, intended land use, and expected level of maintenance.
2. Apply seed uniformly with a drill or cultipacker–seeder (Exhibit 3.12–D) or by broadcasting, and cover to a depth of 1/4–1/2 in.
3. If drilling or broadcasting, firm the seedbed with a roller or cultipacker
4. Mulch all seeded areas (Practice 3.15).Consider using erosion blankets on sloping areas (Practice 3.17). (NOTE: If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.)

Exhibit 3.12–C. Permanent Seeding Recommendations
This table provides several seeding options. Additional seed species and mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties (e.g., soil pH and drainage), slope aspect and the tolerance of each species to shade and droughtiness.

Seed species and mixtures	Rate per acre	Optimum soil pH
OPEN AND DISTURBED AREAS (REMAINING IDLE MORE THAN 1 YR.)		
1. Perennial ryegrass	35 to 50 lbs.	5.6 to 7.0
+ white or ladino clover*	1 to 2 lbs.	
2. Kentucky bluegrass	20 lbs.	5.5 to 7.5
~~+ smooth bromegrass~~	~~10 lbs.~~	
+ switchgrass	3 lbs.	
+ timothy	4 lbs.	
+ perennial ryegrass	10 lbs.	
+ white or ladino clover*	1 to 2 lbs.	
3. Perennial ryegrass	15 to 30 lbs.	5.6 to 7.0
+ prarie switch grass	15 to 30 lbs.	
4. Prarie switch grass	35 to 50 lbs.	5.5 to 7.5
+ ladino or white clover*	1 to 2 lbs.	
STEEP BANKS AND CUTS, LOW MAINTENANCE AREAS (NOT MOWED)		
~~1. Smooth bromegrass~~	~~25 to 35 lbs.~~	~~5.5 to 7.5~~
~~+ red clover*~~	~~10 to 20 lbs.~~	
2. Prarie switch grass	35 to 50 lbs.	5.5 to 7.5
+ white or ladino clover*	1 to 2 lbs.	
3. Prarie switch grass	35 to 50 lbs.	5.5 to 7.5
+ red clover*	10 to 20 lbs.	
(Recommended north of US 40)		
4. Orchardgrass	20 to 30 lbs.	5.6 to 7.0
+ red clover*	10 to 20 lbs.	
+ ladino clover*	1 to 2 lbs.	
~~5. Crownvetch*~~	~~10 to 12 lbs.~~	~~5.6 to 7.0~~
~~+ prarie switchgrass~~	~~20 to 30 lbs.~~	
~~(Recommended south of US 40)~~		
LAWNS AND HIGH MAINTENANCE AREAS		
1. Bluegrass	105 to 150 lbs.	5.5 to 7.0
2. Perennial ryegrass (turf–type)	45 to 60 lbs.	5.6 to 7.0
+ bluegrass	70 to 90 lbs.	
3. Prarie switch grass(turf–type)	130 to 107 lbs.	5.5 to 7.5
+ bluegrass	20 to 30 lbs.	
CHANNELS AND AREAS OF CONCENTRATED FLOW		
1. Perennial ryegrass	100 to 150 lbs.	5.6 to 7.0
+ white or ladino clover*	1 to 2 lbs.	
2. Kentucky bluegrass	20 lbs.	5.5 to 7.5
~~+ smooth bromegrass~~	~~10 lbs.~~	
+ switchgrass	3 lbs.	
+ timothy	4 lbs.	
+ perennial ryegrass	10 lbs.	
+ white or ladino clover*	1 to 2 lbs.	
3. Prarie switch grass	100 to 150 lbs.	5.5 to 7.5
+ ladino or white clover*	1 to 2 lbs.	
4. Prarie switch grass	100 to 150 lbs.	5.5 to 7.5
+ Perennial ryegrass	15 to 20 lbs.	
+ Kentucky bluegrass	15 to 20 lbs.	

* For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be spring–seeded, although the grass may be fall–seeded (Practice 3.13); and (c) if legumes are fall–seeded, do so in early fall.

NOTE: An oat or wheat companion or nurse crop may be used with any of the above permanent seeding mixtures. If so, it is best to seed during the fall seeding period, especially after Sept. 15, and at the following rates: spring oats–1.4 to 3/4 bu./acre; wheat–no more than 1/2 bu./acre.

MAINTENANCE
* Inspect periodically, especially after storm events, until the stand is successfully established. (Characteristics of a successful stand include: vigorous dark green or bluish–green seedlings; uniform density with nurse plants, legumes, and grasses well inter–mixed; green leaves; and the perennials remaining green throughout the summer, at least at the plant base.)
* Plan to add fertilizer the following growing season according to soil test recommendations.
* Repair damaged, bare or sparse areas by filling any gullies, re–fertilizing, over– or re–seeding, and mulching.
* If plant cover is sparse or patchy, review the plant materials chosen, soil fertility, moisture condition, and mulching; then repair the affected area either by over–seeding or by re–seeding and mulching after re–preparing the seedbed.
* If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. (Contact your SWCD or Cooperative Extension office for assistance.)
* If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.

NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES

revisions:

BYNUM FANYO & ASSOCIATES, INC.
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
528 north walnut street
bloomington, Indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER 6-12-09

certified by

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. &
Bloomington Indiana

title: EROSION CONTROL DETAILS

designed by:
drawn by: JR
checked by:
sheet no: 16 OF 28
project no.: 400826

Practice 3.51
Excavated Drop Inlet Protection

Purpose *(Exhibit 3.51-A)*

* To capture sediment at the approach to a storm drain inlet, allowing full use of the storm drain system during the construction period.

NOTE: This practice may be used to improve the ef-fectiveness and reliability of other sediment traps and barriers, such as fabric, block-and-gravel, slotted-barrel, straw bale, and gravel donut inlet protections.

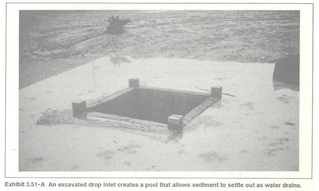


Exhibit 3.51-A An excavated drop inlet creates a pool that allows sediment to settle out as water drains.

Requirements *(Exhibit 3.51-B and C)*

Contributing drainage area: 1 acre maximum.
Capacity: Runoff from a 2-yr. frequency, 24-hr. storm event entering a storm drain without bypass flow.
Excavated depth: 1-2 ft. measured from top of inlet.
Excavated volume: Minimum of 945 cu.ft./acre disturbed.
Side slopes: 2:1 or flatter.
Dewatering system: Weep holes in the drop inlet, covered with hardware cloth and gravel.
Approach: Pool area flat (less than 1% slope), with sediment storage of 945 cu.ft./acre disturbed.

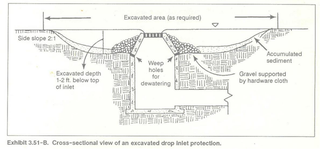


Exhibit 3.51-B. Cross-sectional view of an excavated drop inlet protection.

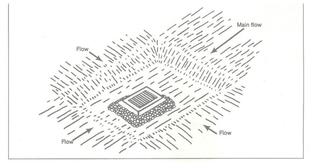


Exhibit 3.51-C. Perspective view of an excavated drop inlet protection.

Installation

1. Clear the area of all debris.
2. Excavate the basin to a 1-2 ft. depth, with 2:1 maximum side slopes and the longest dimension oriented toward the largest inflow (see *Exhibits 3.51-B and 3.51-C*).
3. Stockpile or spread the excavated soil so it will not block the flow or wash back into the excavation.
4. Install weep holes in the drop inlet so the pool drains slowly.
5. Cover the weep holes with hardware cloth and at least 1 ft. of gravel (INDOT CA No. 5) to retain the sediment (see *Exhibit 3.51-C*).
6. If necessary, spoil may be placed to form a dike on the downslope side of the excavation to prevent bypass flow.
7. Stabilize all disturbed areas, except the excavated pool bottom.

Maintenance

* Inspect the excavated basin after every storm event, and repair as necessary until the contributing drainage area has been permanently stabilized.
* Remove sediment when the basin is approximately half full of sediment.
* Remove and replace gravel over the weep holes when drainage stops.
* Once the contributing drainage area has been permanently stabilized, seal the weep holes, remove the sediment, fill the basin with soil, compact and grade to final elevation, and stabilize.

Common concerns

Sediment fills excavated basin and enters storm drain—the sediment-producing area is too large for the basin design or the inlet is not properly maintained.
Excessive ponding—gravel over the weep holes may be plugged with sediment; to correct, remove the debris, clear the sediment, and replace the gravel.

(SF) PRACTICE 3.74
SILT FENCE (SEDIMENT FENCE)

PURPOSE

To retain sediment from small, sloping disturbed areas by reducing the velocity of sheet flow.

(NOTE: Silt fence captures sediment by ponding water to allow deposition, not by filtration. Although the practice usually works best in conjunction with temporary basins, traps, or diversions, it can be sufficiently effective to be used alone. A silt fence is not recommended for use as a diversion; nor is it to be used across a stream, channel or anywhere that concentrated flow is anticipated.)

REQUIREMENTS (Exhibit 3.74-B and C)

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

Exhibit 3.74-B. Maximum Land Slope and Distance for Which a Silt Fence Is Applicable.

Land slope	Max. distance above fence
Less than 2%	100 ft.
2 to 5%	75 ft.
5 to 10%	50 ft.
10 to 20%	25 ft.
More than 20%	15 ft.

* Some commercial silt fences come ready to install, with support posts attached and requiring now wire support.

Exhibit 3.74-C. Specifications Minimums for Silt Fence Fabric.

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

Outlet (optional): To allow for safe storm flow bypass without overtopping fence. Placed along fence line to limit water depth to 1 1/2 ft. maximum; crest--1 ft. high maximum; weir width--4 ft. maximum; splash pad--5 ft. wide, 3 ft. long, 1 ft. thick minimum.

INSTALLATION

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

OUTLET CONSTRUCTION (OPTIONAL)
1. Determine the appropriate location for a reinforced, stabilized bypass flow outlet.
2. Set the outlet elevation so that water depth cannot exceed 1 1/2 ft. at the lowest point along the fence line.
3. Locate the outlet weir support posts no more than 4 ft. apart, and install a horizontal brace between them. (Weir height should be no more than 1 ft. and water depth no more than 1 1/2 ft. anywhere else along the fence.)
4. Excavate the foundation for the outlet splash pad to minims of 1 ft. deep, 5 ft. wide and 5 ft. long on level grade
5. Fill the excavated foundation with INDOT CA No. 1 stone, being careful that the finished surface blends with the surrounding area, allowing no overfall.
6. Stabilize the area around the pad.

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

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

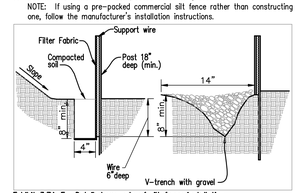
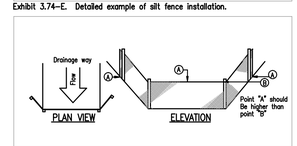


Exhibit 3.74-E. Detailed example of silt fence installation.



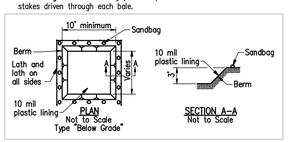
MAINTENANCE

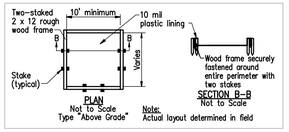
* Inspect the silt fence periodically and after each storm event.
* If fence fabric tears, starts to decompose or in any way becomes ineffective, replace the affected portion immediately.
* Remove deposited sediment when it reaches half the height of the fence at its lowest point or is causing the fabric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

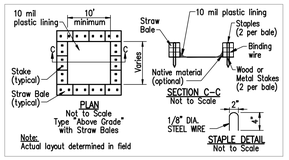
(CW) TEMPORARY
CONCRETE WASHOUT AREA

REQUIREMENTS

Capacity: Temporary washout facilities shall be constructed above or below grade at the option of the contractor. Temporary washout facilities shall be constructed and maintained in sufficient quality and size to contain all liquid and concrete waste generated by washout operations.
Type: Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.
Location: Facilities shall be located a minimum of 50' from storm drain inlets, open drainage facilities, and water courses.
Plastic Lining Material: Minimum 10 mil polyethylene sheeting and should be free of holes, tears or other defects.
Straw Bale Dimensions: Approximately 14i n. x 18 in. x 36 in.
Bale Anchoring: Two 36-in. long (minimum) steel rebars or 2 x 2-in. hardwood stakes driven through each bale.







INSTALLATION

* Temporary concrete washout facilities shall be constructed as shown in the above details, and as described below. All temporary washout facilities shall have at minimum 10' width, 3' depth, and sufficient length to contain all liquid and concrete waste generated.

"Below Grade"

1. A pit shall be excavated with a minimum width of 10', depth of 3' and to contain all liquid and concrete waste generated.
2. The pit should be lined with a minimum 10 mil plastic lining which overhangs the pit rim by 5' in each direction.
3. Sandbags shall be placed on top of the plastic lining at 3' intervals along the rim of the excavated pit.
4. Lath and flagging shall be installed on all sides of the excavated pit to clearly mark its location.

"Above Grade"

1. A wood frame shall be constructed using two 2 x 12 boards staked on edge with a minimum width of 10' and length sufficient to contain all liquid and concrete waste generated.
2. The wood frame shall be securely fastened around the entire perimeter using steel rebar or 2 in. x 2 in. hardwood stakes.
3. The wood farm shall be lined with 10 mil plastic sheeting which shall be attached to the outside face of the wood frame.

"Above Grade" with Straw Bales

1. Straw bales shall be arranged such that they create a basin with a minimum width of 10' and length sufficient to contain all liquid and concrete waste generated.
2. The straw bales shall be securely staked using steel rebar or 2 in. x 2 in. hardwood stakes. (two per bale)
3. The basin shall be lined with 10 mil plastic sheeting which is attached to the straw bales using 4" steel wire staples. (two per bale)

MAINTENANCE

* Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and disposed of.
* Washout facilities must be cleaned, or new facilities must be constructed ready for use once the washout is 75% full.
* At the conclusion of concrete construction activities the temporary concrete washout area shall be removed and returned to its original condition.

(GP) PRACTICE 3.61-B
GRAVEL CURB INLET PROTECTION

REQUIREMENTS (Exhibit 3.61-B)

Contributing drainage area: 1 acre maximum.
Capacity: Runoff from a 2-yr. frequency, 24-hr. duration storm event entering the storm drain without bypass flow.
Location: At curb inlets where ponding is not likely to cause inconvenience or damage.
Gravel: 1-2 in. diameter (INDOT CA No. 2)
Wire mesh: Chicken wire or hardware cloth with 1/2-in. openings.
Geotextile fabric (optional): For Filtration.

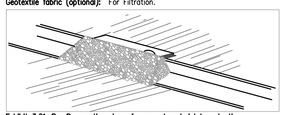


Exhibit 3.61-B. Perspective view of a gravel curb inlet protection.

INSTALLATION (Exhibit 3.61-B)

1. Install gravel curb inlet protections as soon as the streets are paved in a new development situation or before land-disturbing activities in stabilized areas.
2. Place wire mesh over the curb inlet opening and/or grate so it extends at at least 12 in. beyond both top and bottom of the opening/grate.
3. Install geotextile fabric over the wire mesh for additional filtration (optional).
4. Pile gravel over the wire mesh to anchor it against the curb, covering the inlet opening completely.

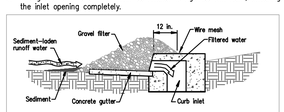


Exhibit 3.61-C. Cross-section detail of a gravel curb inlet protection.

MAINTENANCE

* After each storm event, remove sediment and replace the gravel; replace the geotextile filter fabric if used.
* Periodically remove sediment and tracked-on soil from the street (but not by flushing with water) to reduce the sediment load on the curb inlet practice.
* Inspect periodically, and repair damage caused by vehicles.
* When the contributing drainage area has been stabilized, remove the gravel, wire mesh, geotextile fabric, and any sediment, and dispose of them properly.

NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

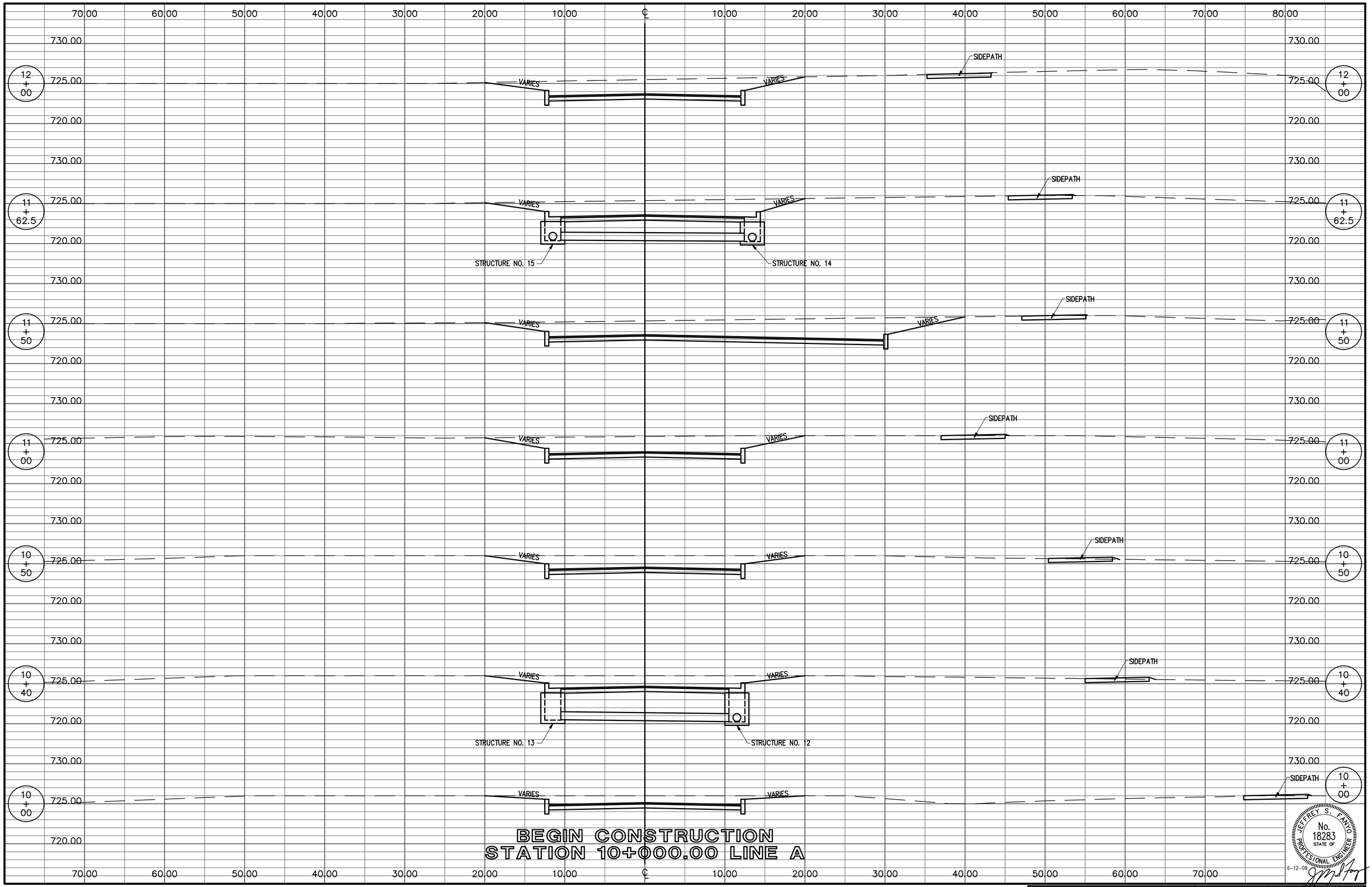
JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER 6-12-09

certified by:

Proposed:
PATTERSON DR., HILLSIDE DR., ROGERS ST. &
Bloomington Indiana

title: EROSION CONTROL DETAILS

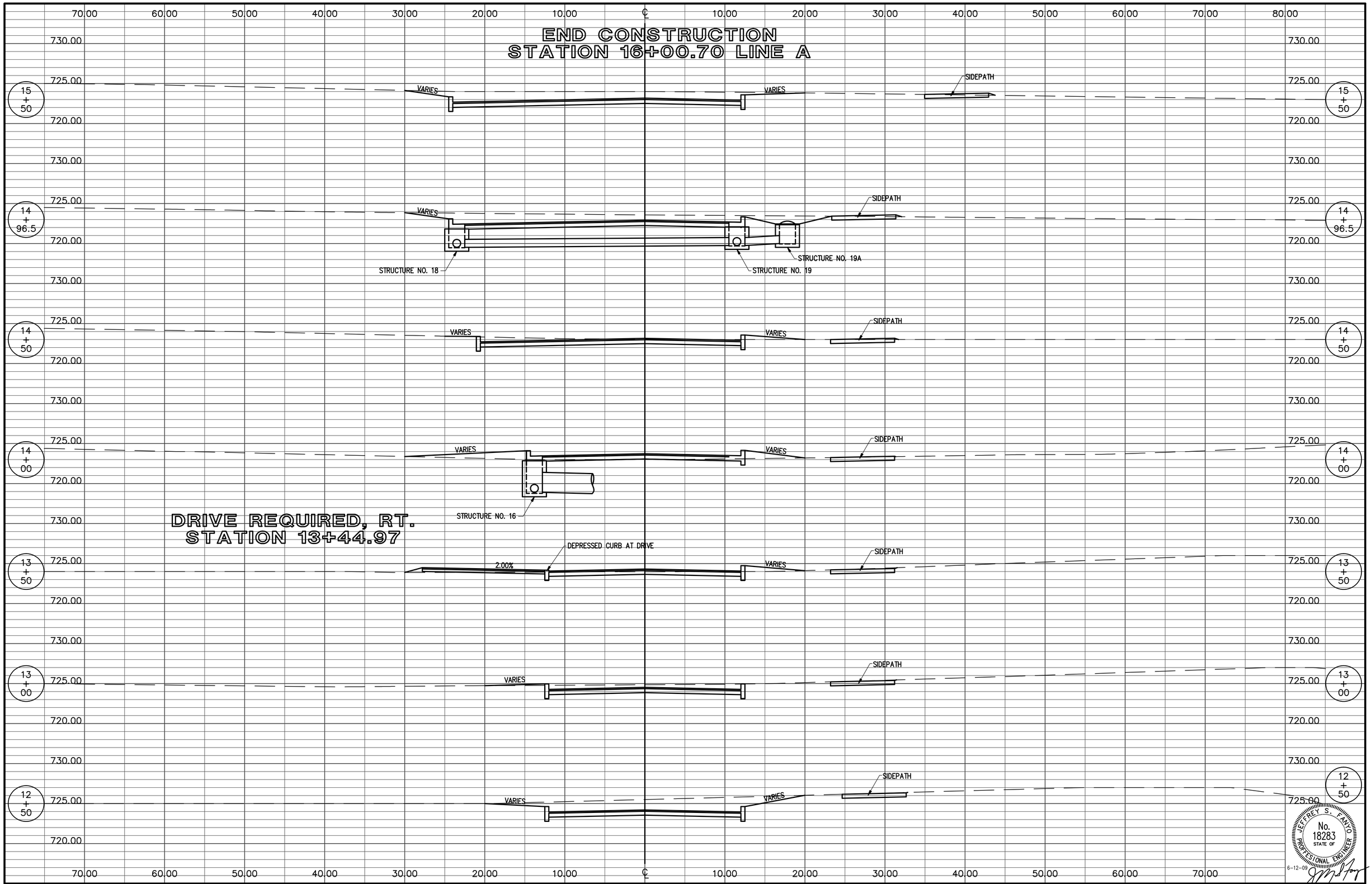
designed by:
drawn by: JR
checked by:
sheet no: 17 OF 28
project no.: 400826



JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

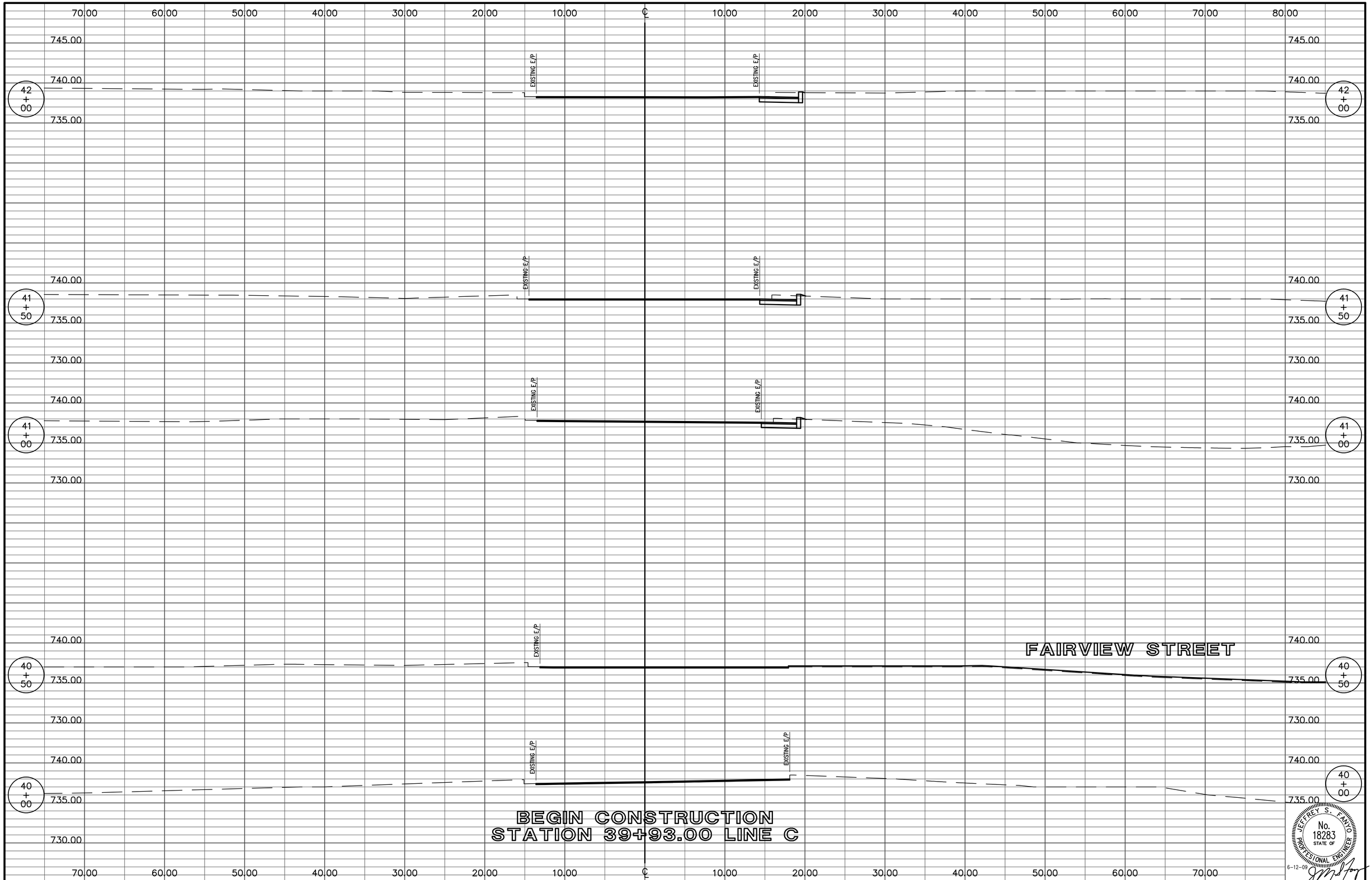
PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	18	28	HILLSIDE DRIVE



JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

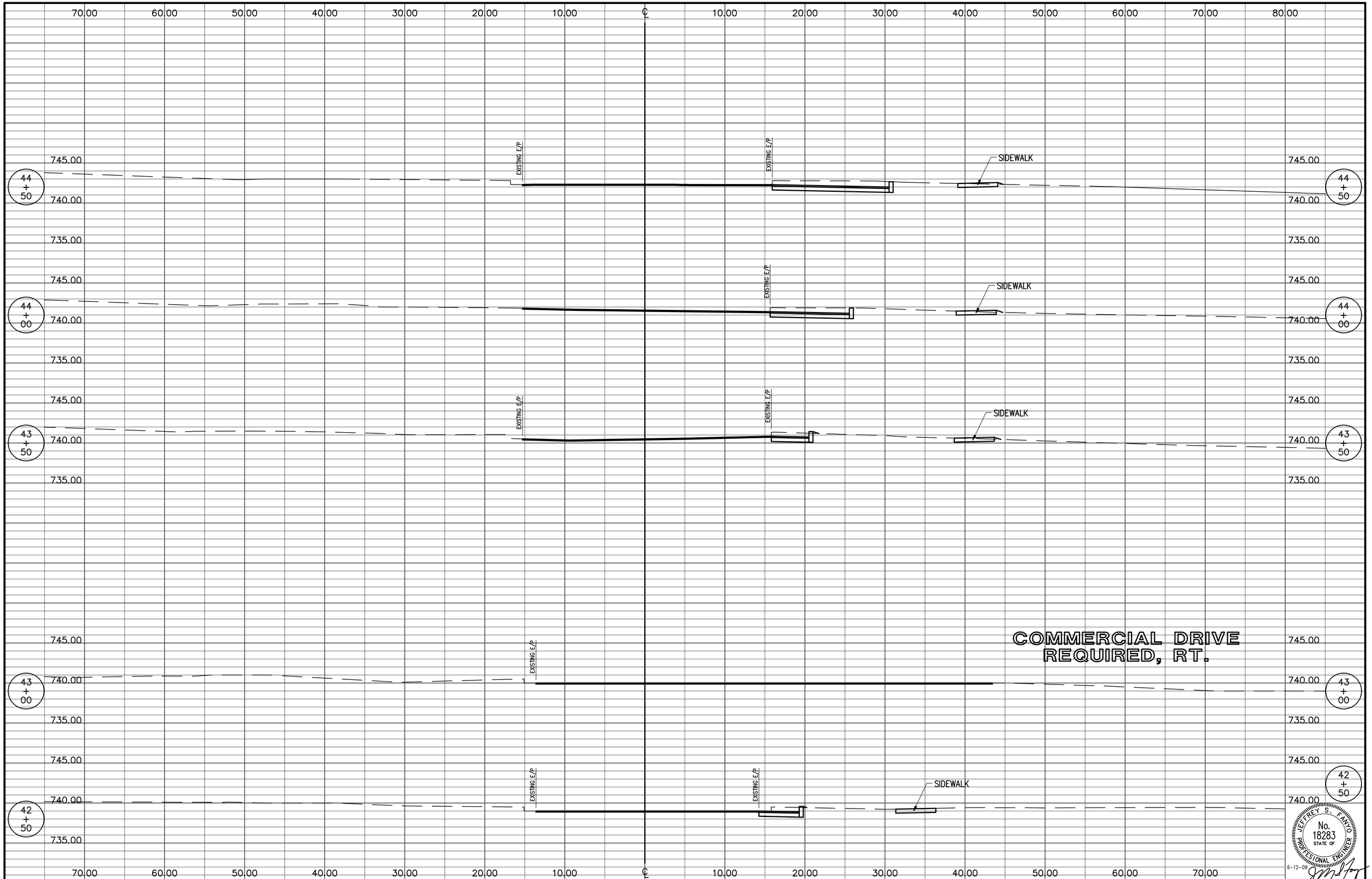
PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	19	28	HILLSIDE DRIVE



JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

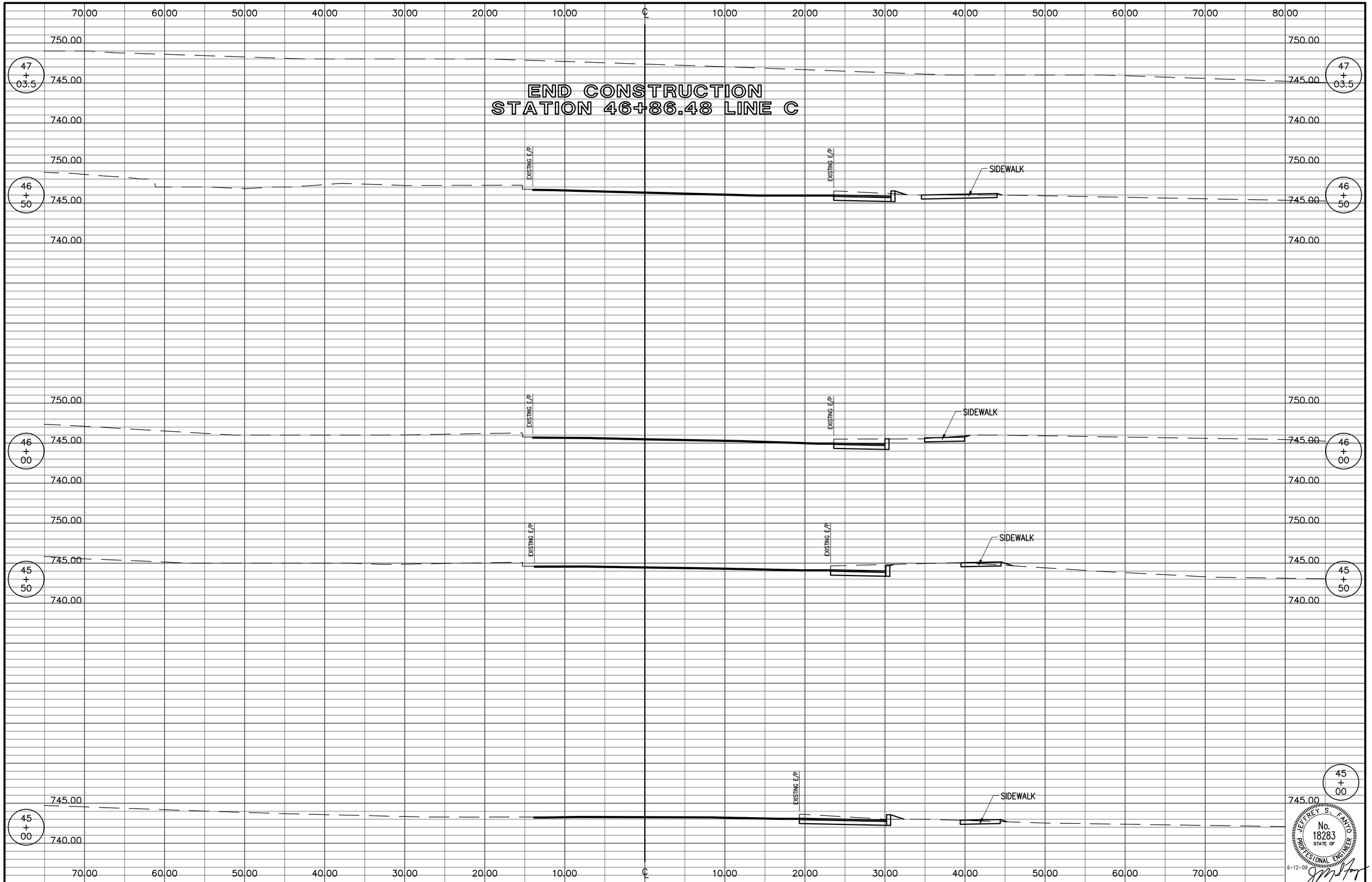
PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	20	28	PATTERSON DRIVE



PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

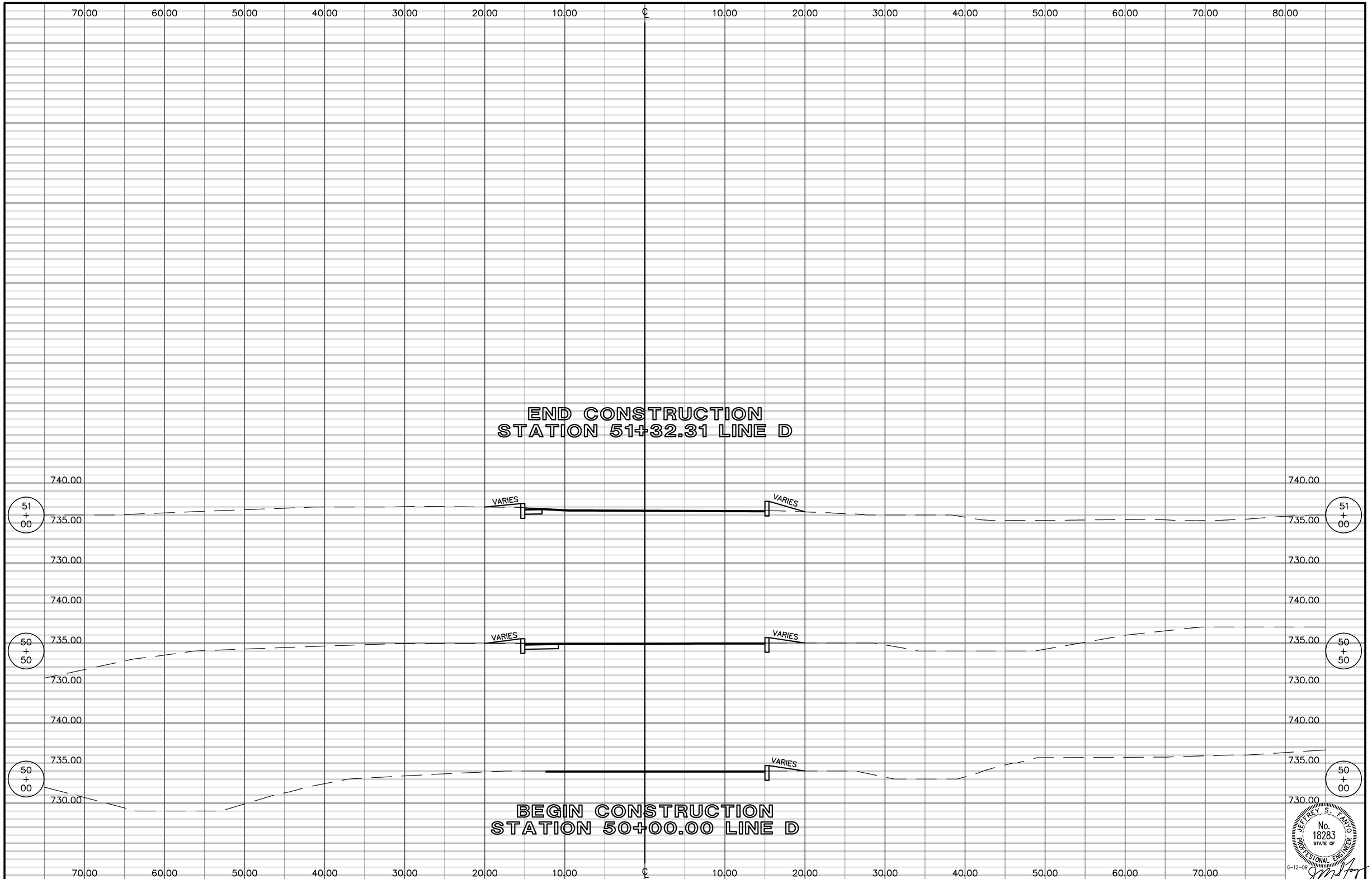
PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	21	28	PATTERSON DRIVE



PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

JEFFREY S. FANYO
No. 18283
STATE OF
PROFESSIONAL ENGINEER
6-12-09

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	22	28	PATTERSON DRIVE



PREPARED BY BYNUM FANYO & ASSOCIATES INC. 528 N. WALNUT ST. BLOOMINGTON, IN. 47404 (812) 332-8030

PROJECT NAME	PROJECT NO.	SHEET	TOTAL SHEETS	REFERENCE
PATTERSON, HILLSIDE, ROGERS & FAIRVIEW	400826	23	28	FAIRVIEW STREET

VICINITY MAP

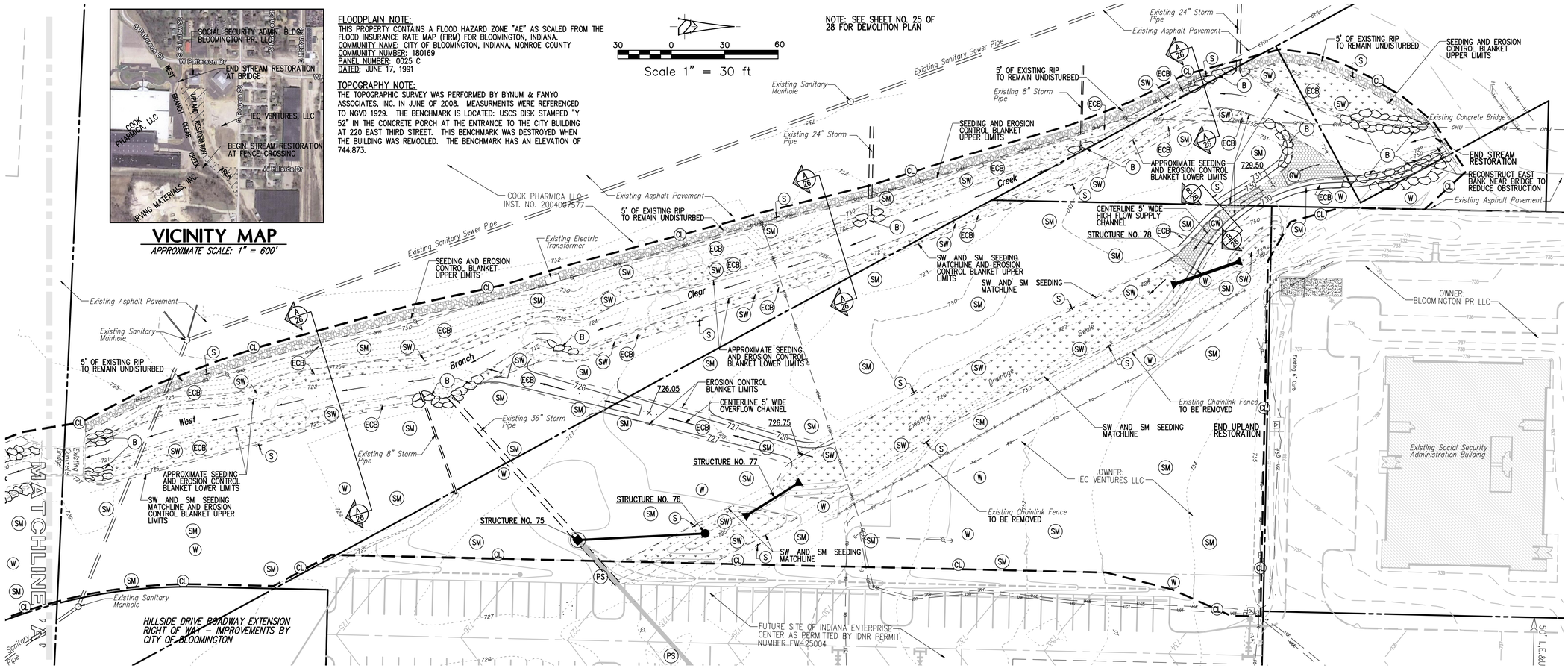
APPROXIMATE SCALE: 1" = 600'

FLOODPLAIN NOTE:
THIS PROPERTY CONTAINS A FLOOD HAZARD ZONE "AE" AS SCALED FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR BLOOMINGTON, INDIANA.
COMMUNITY NAME: CITY OF BLOOMINGTON, INDIANA, MONROE COUNTY
COMMUNITY NUMBER: 180169
PANEL NUMBER: 0025 C
DATED: JUNE 17, 1991

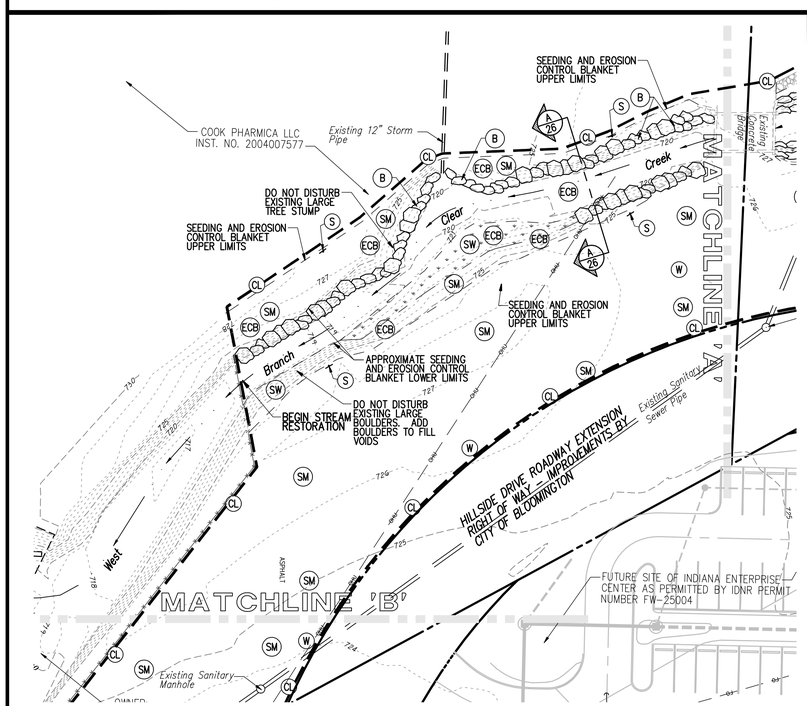
TOPOGRAPHY NOTE:
THE TOPOGRAPHIC SURVEY WAS PERFORMED BY BYNUM & FANYO ASSOCIATES, INC. IN JUNE OF 2008. MEASUREMENTS WERE REFERENCED TO NGVD 1929. THE BENCHMARK IS LOCATED: USCS DISK STAMPED "Y 52" IN THE CONCRETE PORCH AT THE ENTRANCE TO THE CITY BUILDING AT 220 EAST THIRD STREET. THIS BENCHMARK WAS DESTROYED WHEN THE BUILDING WAS REMODLED. THE BENCHMARK HAS AN ELEVATION OF 744.873.

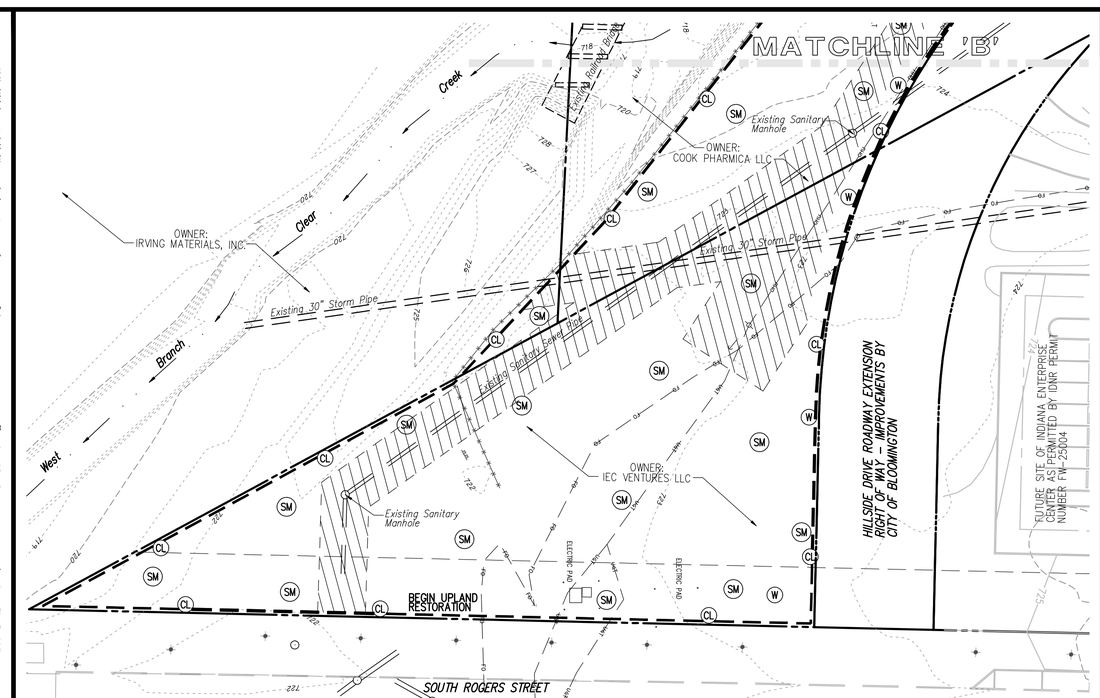
Scale 1" = 30 ft

NOTE: SEE SHEET NO. 25 OF 28 FOR DEMOLITION PLAN



NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.





EXISTING LEGEND

PROPERTY LINE	
EXISTING FENCE	
EXISTING OVERHEAD UTILITY	OHU
EXISTING UNDERGROUND TELEPHONE LINES	UGT
EXISTING CONTOUR	XXX
TO BE REMOVED	T.B.R.
TO REMAIN UNDISTURBED	T.R.U.

GENERAL LEGEND

	SILTATION FENCE (TEMPORARY)
CL	PROPOSED CONSTRUCTION LIMITS
W	8' WIDE ASPHALT PEDESTRIAN PATH AS DETAILED
PS	PROPOSED STORM PIPE AS DETAILED IN PLANS PREPARED BY BYNUM FANYO FOR THE INDIANA ENTERPRISE CENTER AND AS PERMITTED BY IDNR PERMIT NUMBER FW-25004
B	PROPOSED LIMESTONE BOULDERS (SIZE 10 TO 20 CF)
GW	PROPOSED PRESTO GEOSYSTEMS BRAND GEOWEB SERIES GW20V6P FILLED WITH NO. 2 CRUSHED STONE
SW	PROPOSED STORMWATER SEEDING WITHIN 15' OF CREEK EDGE (NORMAL FLOW). SEE MIX SPECS.
SM	PROPOSED UPLAND NATIVE GRASS/FORBE SEED MIX. SEE MIX SPECIFICATIONS.
S	PROPOSED "DO NOT MOW – DO NOT SPRAY" SIGN PROVIDED AND INSTALLED BY CITY OF BLOOMINGTON.
ECB	NORTH AMERICAN GREEN BRAND SERIES SC-250 EROSION CONTROL BLANKET INSTALLED USING STAPLE PATTERN 'E'.
PROPOSED CONTOUR	XXX
PROPOSED SPOT GRADE	XXX.XX

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO No. 18283 STATE OF INDIANA PROFESSIONAL ENGINEER
6-12-09
certified by:

Proposed:
WEST BRANCH CLEAR CREEK RESTORATION
Bloomington Indiana

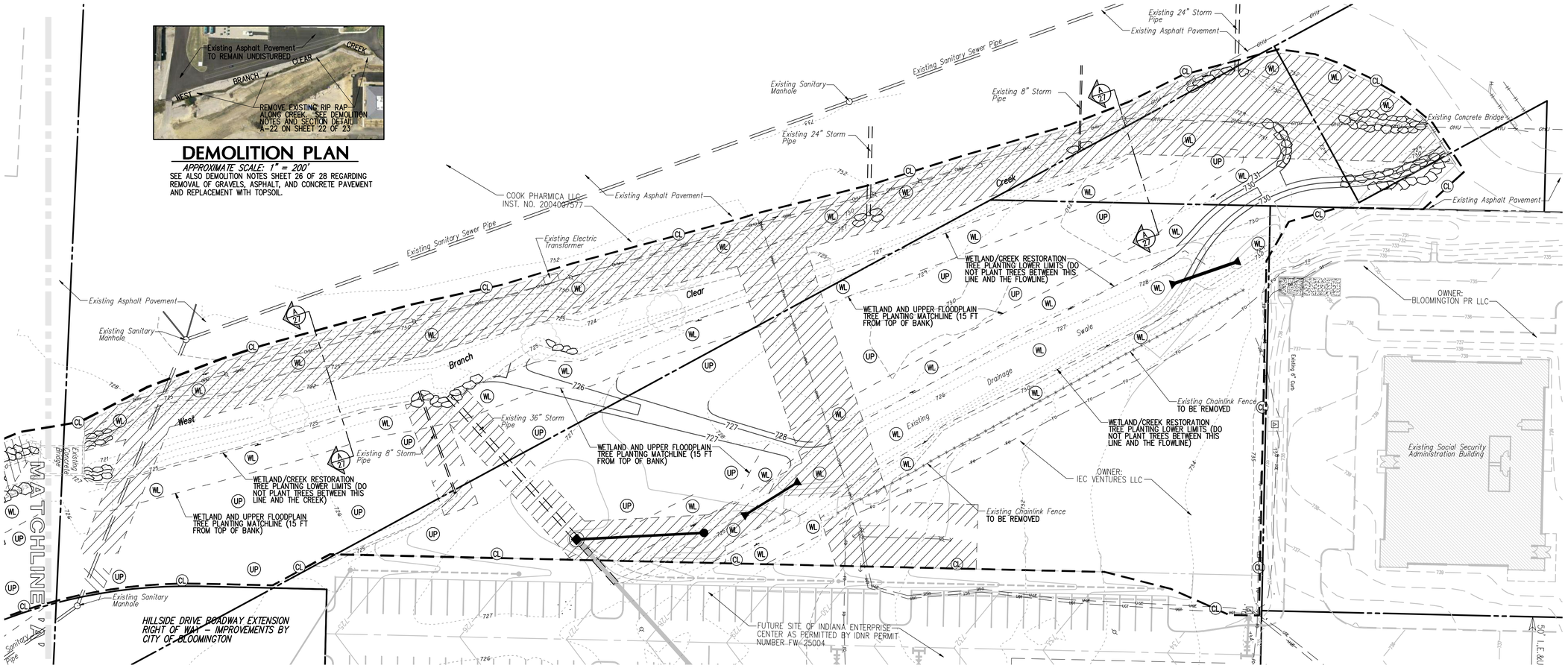
title: CREEK STABILIZATION & SEEDING PLAN

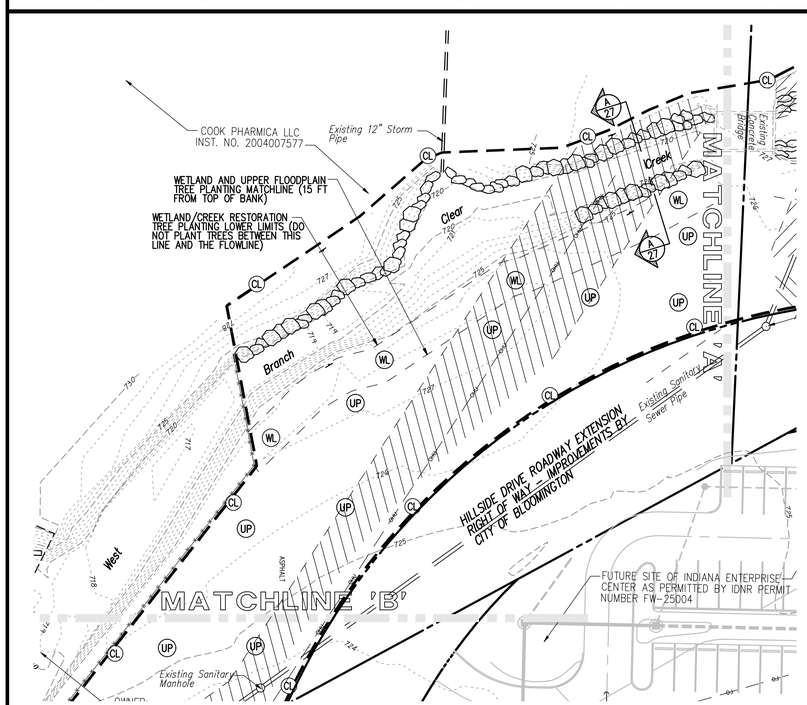
designed by: JT
drawn by: JT
sheet no: 24 OF 28
project no.: 400826

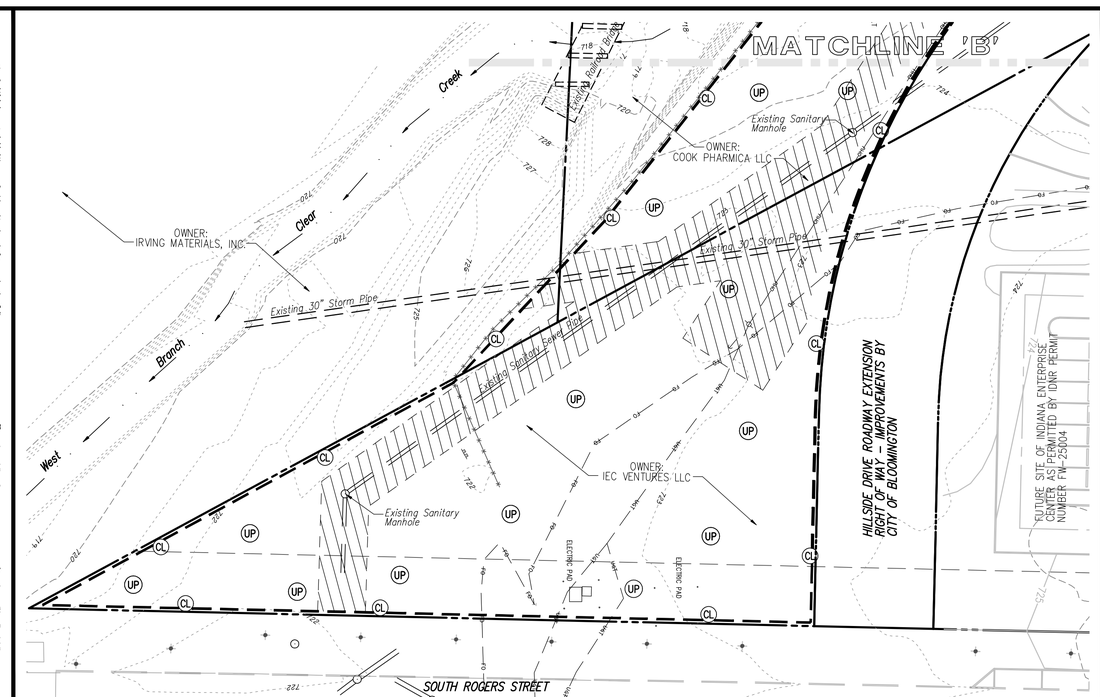
DEMOLITION PLAN

APPROXIMATE SCALE: 1" = 200'

SEE ALSO DEMOLITION NOTES SHEET 26 OF 28 REGARDING REMOVAL OF GRAVELS, ASPHALT, AND CONCRETE PAVEMENT AND REPLACEMENT WITH TOPSOIL.







EXISTING LEGEND

PROPERTY LINE	
EXISTING FENCE	
EXISTING OVERHEAD UTILITY	OHU
EXISTING UNDERGROUND TELEPHONE LINES	UGT
EXISTING CONTOUR	XXX
TO BE REMOVED	T.B.R.
TO REMAIN UNDISTURBED	T.R.U.

LANDSCAPE LEGEND

CL	PROPOSED CONSTRUCTION LIMITS
UP	UPPER FLOODPLAIN RESTORATION AREA: SEE TREE & SHRUB PLANTING TABLES
WL	WETLAND/CREEK RESTORATION AREA: SEE TREE & SHRUB PLANTING TABLES
	UTILITY ZONE: DO NOT PLANT ANY NEW TREES OR SHRUBS WITHIN 10' OF SANITARY OR STORM SEWER PIPES AND MANHOLES. TREES PLANTED WITHIN 20' OF OVERHEAD UTILITY LINES MUST BE CLASSIFIED AS SMALL AT MATURITY
PROPOSED CONTOUR	XXX

30 0 30 60

Scale 1" = 30 ft

NOTE: CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING

BYNUM FANYO & ASSOCIATES, INC.

528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

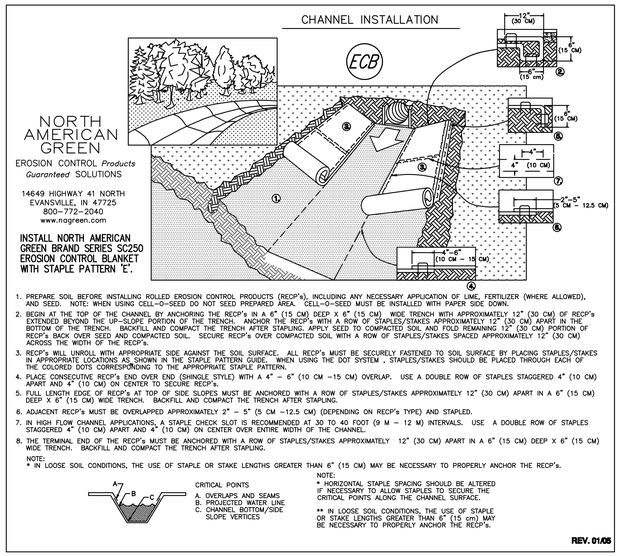
JEFFREY S. FANYO No. 18283 STATE OF PROFESSIONAL ENGINEER 6-12-09

certified by:

Proposed:
WEST BRANCH CLEAR CREEK RESTORATION
Bloomington Indiana

title: CREEK SEEDING & RESTORATION LANDSCAPE PLAN

designed by: JT
drawn by: JT
sheet no: 25 OF 28
project no.: 400826



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER (WHERE ALLOWED), AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" - 6" (10 CM -15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP'S MUST BE OVERLAPPED APPROXIMATELY 2" - 5" (5 CM -12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M - 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

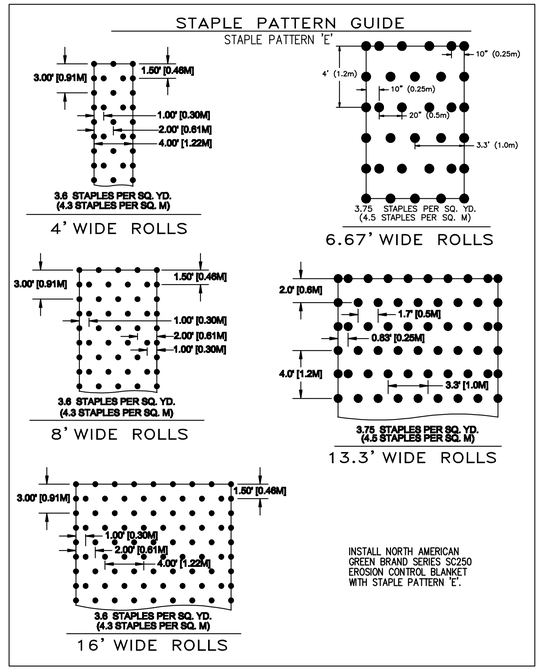
NOTE:
* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

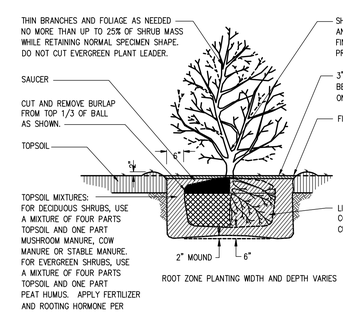
NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

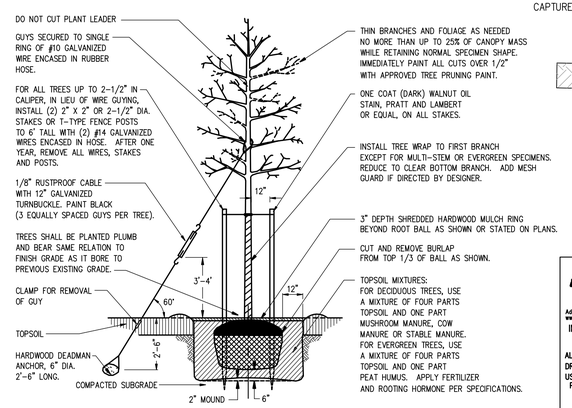
REV. 01/05



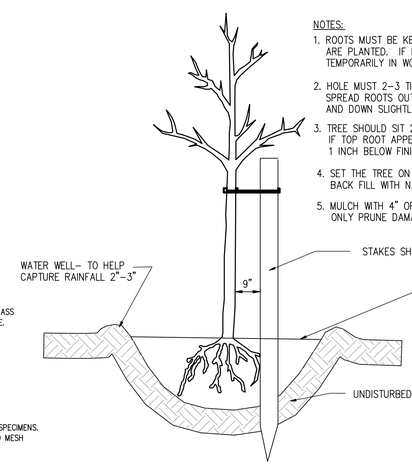
INSTALL NORTH AMERICAN GREEN BRAND SERIES SC250 EROSION CONTROL BLANKET WITH STAPLE PATTERN 'E'.



SHRUB PLANTING
NOT TO SCALE

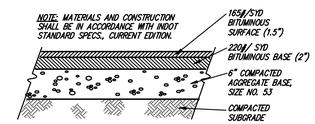


TREE PLANTING WITH GUYING OR STAKING
NOT TO SCALE

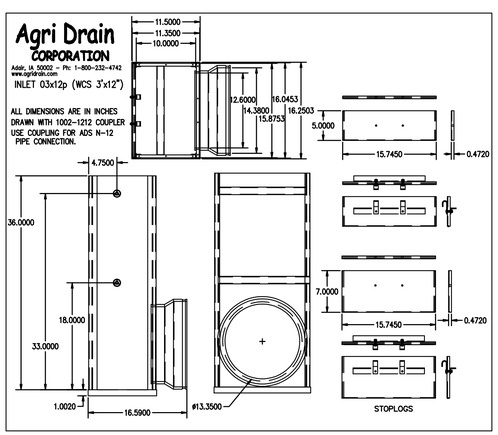


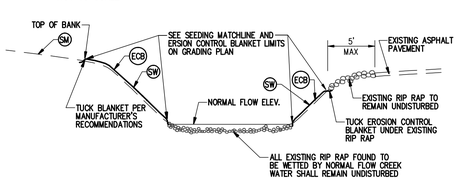
NOTES:
1. ROOTS MUST BE KEPT MOIST IN PACKING MATERIAL UNTIL THEY ARE PLANTED. IF PLANTING WILL BE DELAYED THEN PLANT TREES TEMPORARILY IN WOODCHIPS OR SOIL UNTIL TIME OF PLANTING.
2. HOLE MUST 2-3 TIMES THE DIAMETER OF THE ROOTS SPREAD. SPREAD ROOTS OUT IN HOLE SO THAT THEY ARE RADIATING OUT AND DOWN SLIGHTLY.
3. TREE SHOULD SIT 2-3 INCHES HIGER THAN THE FIRST LARGE ROOT. IF TOP ROOT APPEARS TO BE THE LARGEST THEN IT SHOULD BE 1 INCH BELOW FINISHED GRADE.
4. SET THE TREE ON UNDISTURBED SOIL IN THE CENTER OF THE AREA. BACK FILL WITH NATIVE SOIL AND SETTLE IN WITH WATER.
5. MULCH WITH 4" OF WOODCHIPS OR COMPOST. ONLY PRUNE DAMAGED OR BROKEN BRANCHES.

BARE ROOT PLANTING DETAIL
NOT TO SCALE

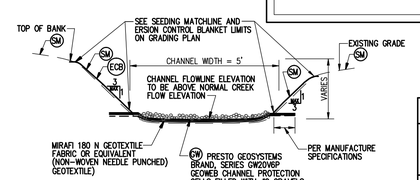


(W) 8' WIDE ASPHALT PEDESTRIAN PATH
NOT TO SCALE





(A 22) EXISTING STREAM CHANNEL TREATMENT
NOT TO SCALE



NOTES:
1. EXCAVATE NEW OVERFLOW CHANNEL PER GRADING PLAN SPECIFICATIONS.
2. INSTALL MIRAFI 180 N GEOTEXTILE OR EQUIVALENT OVER CHANNEL BOTTOM.
3. INSTALL PRESTO GEO-WEB CELLULAR CONFINEMENT SYSTEM DIRECTLY OVER GEOTEXTILE FABRIC AND ANCHOR PER MANUFACTURE SPECIFICATIONS.
4. FILL CELLS W/ #2 GRAVEL.

CONTACT SEAN CRIMMINS AT D2 LAND & WATER FOR PRICING AND AVAILABILITY
PH: 812.988.6180

(B 22) PROPOSED OVERFLOW CHANNEL TREATMENT
NOT TO SCALE

DEMOLITION NOTES:

1. REMOVE ALL EXISTING RIP RAP ALONG WEST BRANCH CLEAR CREEK EXCEPT FOR RIP RAP LOCATED WITHIN 5' OF THE EXISTING EDGE OF PAVEMENT AND THAT WHICH IS BELOW THE NORMAL BASE FLOW ELEVATION (WETTED RIP RAP) OF THE CREEK. THE PAVEMENT EDGE RIP RAP WILL BE LEFT IN PLACE TO DISSIPATE RUNOFF VELOCITIES DEVELOPED FROM THE ASPHALT PARKING LOT PRIOR TO ENTERING THE CREEK SYSTEM. STREAM BED RIP RAP SHALL REMAIN TO PRESERVE A STABLE CREEK BED.

2. ERADICATE ALL NON-NATIVE, INVASIVE PLANTS AND GRASSES SUCH AS CROWN VETCH, JAPANESE BUSH HONEYSUCKLE, JAPANESE KNOT WEED, MULTIFLORA ROSE AND ANY OTHER SPECIES FOUND TO BE NON-NATIVE AND/OR INVASIVE. SPRAYING (HERBICIDES) IS PERMITTED IN ALL AREAS BUT CARE SHOULD BE EXERCISED SO AS NOT TO SPRAY CREEK WATER DIRECTLY. HAND OR MACHINE REMOVAL OF COMPLETE PLANT INCLUDING THE ROOT BALL WILL BE NECESSARY FOR MOST LARGE PLANTS.

3. COMPLETELY REMOVE ALL NON-NATIVE TREES SMALLER THAN 2" CALIPER SUCH AS AILANTHUS (TREE OF HEAVEN) AND SIBERIAN ELM. DO NOT REMOVE NATIVE TREES (SAPLINGS OR LARGER TREES) UNLESS THEY ARE UNHEALTHY OR DISEASED.

4. UPLAND AREAS SHOWN TO BE SEEDED WITH THE SM SEED MIXTURE ONLY SHALL FIRST BE MOWED, RAKED TO REMOVE CUTTINGS, DISKED (LOOSENED TO DEPTH OF 3") AND FINELY RAKED TO A UNIFORM SURFACE. CARE SHOULD BE EXERCISED SO AS NOT TO REMOVE TOPSOIL. SEE INDOT STANDARD SPECIFICATIONS SECTION 621.03.

5. ALL EXISTING GRAVEL, ASPHALT, AND CONCRETE PAVEMENT WITHIN THE UPLAND RESTORATION AREA SHALL BE REMOVED AND DISPOSED OF OFFSITE. REMOVAL WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF RIGHT OF WAY CLEARING. THESE AREAS SHALL RECEIVE NO LESS THAN 6" OF IMPORTED TOPSOIL.

6. WETLAND AREAS SHOWN TO BE SEEDED WITH THE SW SEED MIXTURE ONLY SHALL BE MOWED TO BARE GROUND (SCALPED), LIGHTLY RAKED TO REMOVE CUTTINGS AND TO LOOSEN THE SOIL PRIOR TO SEEDING. DO NOT DISK WITHIN THESE AREAS.

ADDITIONAL PLANTING & SEEDING NOTES:

1. ALL PLANTS, TREES AND SEED SHALL BE OBTAINED FROM NURSERIES RUN BY INDIANA DNR OR COMMERCIAL SOURCES WITHIN AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PLANT HARDINESS ZONES 4, 5, OR 6.

2. ALL PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORTATION AND STORAGE.
PLANT MATERIAL SHALL NOT BE SUBJECTED TO FREEZING, DRYING, OR EXCESSIVE WARMING.
ONLY THE NUMBER OF SAPLINGS THAT CAN REASONABLY BE PLANTED DURING A SINGLE DAY MAY BE REMOVED FROM STORAGE. THEY SHALL BE KEPT MOIST AT ALL TIMES.

3. SAPLINGS SHALL BE PLANTED DURING THE PERIOD FROM SEPTEMBER 15 TO DECEMBER 15 OR UNTIL THE GROUND HAS FROZEN OR AFTER MARCH 1 OR WHEN THE FROST LEAVES THE GROUND IN SPRING TO JUNE 1.

4. SAPLINGS SHALL BE PLANTED IN ACCORDANCE WITH SOUND HORTICULTURAL PRACTICES, INCLUDING PROPER PLANTING DEPTH AND SOIL COMPACTION FOLLOWING PLANTING.

5. SAPLINGS SHALL BE PLANTED SO THE ROOT COLLAR IS NO DEEPER THAN ½ INCH BELOW THE GROUND SURFACE. ROOTS SHALL NOT BE FORCED INTO AN IMPROPER PLANTING HOLE, WHICH WILL RESTRICT THEIR ABILITY TO GROW AND SUPPORT THE SAPLINGS THEREBY REDUCING THE OVERALL SURVIVAL RATE.

6. ALL PLANTING SHALL BE IN ACCORDANCE WITH INDOT SPECIFICATIONS SECTION 622 PLANTING TREES, SHRUBS, AND VINES.

7. THE SITE MUST BE MONITORED FOR THE SURVIVAL OF THE PLANTINGS FOR A MINIMUM OF THREE YEARS; A REPORT MUST BE SUBMITTED TO THE SOUTH REGION ENVIRONMENTAL BIOLOGIST AT THE DIVISION OF FISH AND WILDLIFE, 402 W. WASHINGTON ST., RM W273, INDIANAPOLIS, IN 46204-2781 BY DECEMBER 31 OF EACH YEAR TO MONITOR THE INITIATION, PROGRESS, AND SUCCESS OF THE OF THE MITIGATION SITE; THE REPORT MUST INCLUDE APPROPRIATE PICTURES OF VEGETATIVE PLANTINGS; A NARRATIVE MUST DESCRIBE THE ACTIVITY ACCOMPLISHED TO DATE, ACRES PLANTED, NUMBER PLANTED, LIST OF SPECIES PLANTED ON SITE, AND ESTIMATED SURVIVAL (VOLUNTEERS SHOULD NOT BE INCLUDED IN SURVIVAL COUNTS, ONLY PLANTED SPECIMENS); REPORTS MUST BE SUBMITTED EACH YEAR, EVEN IF WORK HAS NOT BEEN INITIATED ON SITE, AND CONTINUE FOR A MAXIMUM OF FIVE YEARS AFTER WORK INITIATION, OR UNTIL THE MITIGATION SITE IS COMPLETE AND DETERMINED TO BE SUCCESSFUL; IF THE MITIGATION SITE IS NOT SUCCESSFUL AFTER FIVE YEARS AFTER WORK INITIATION, THE PERMIT WILL BE CONSIDERED IN VIOLATION, AND ANOTHER PLAN MUST BE SUBMITTED FOR APPROVAL.

8. TREE AND SHRUB PLANTINGS MUST HAVE A MINIMUM SURVIVAL OF 75% OF PLANTED MATERIAL AT THE END OF THE MONITORING PERIOD OR ADDITIONAL TREES AND SHRUBS MUST BE PLANTED TO MEET THE MINIMUM SURVIVAL (VOLUNTEER SPECIES WILL NOT BE COUNTED IN THE SURVIVAL RATE OF PLANTED TREES AND SHRUBS).

9. UPLAND RESTORATION AREAS, WHERE ASPHALT OR GRAVEL WAS REMOVED DURING THE DEMOLITION PHASE SHALL RECEIVE NO LESS THAN 6" OF TOPSOIL. TOPSOIL SHALL BE IMPORTED AND COMPLY WITH INDOT STANDARD SPECIFICATION 914.

10. PREPARATION OF THE GROUND BEFORE SEEDING SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 621.03 OF THE INDOT STANDARD SPECIFICATIONS. THE RESTORATION PLANTING AREA WILL BE SEEDED FOLLOWING THE COMPLETION OF THE GRADING OPERATION. AREAS SEEDED WITH SEED MIXTURE SM SHALL BE MULCHED WITH STRAW IN ACCORDANCE WITH SECTION 621.05 OF THE INDOT STANDARD SPECIFICATIONS. SAND OR OTHER APPROVED MATERIAL MAY BE USED AS FILLER TO FACILITATE SEEDING. FERTILIZER OR AMENDED FILLERS ARE NOT TO BE USED. SEED MAY BE DRILLED OR SLICED INTO THE SEEDBED, OR BROADCAST MECHANICALLY OR BY HAND. SEEDING AREAS THAT ARE BROADCAST SEEDED REQUIRE LIGHT RAKING TO INSURE ADEQUATE SEED-TO-SOIL CONTACT. SEED SHALL NOT BE PLACED MORE THAN 1/8 (0.125) INCH DEEP. SEED THAT IS HAND BROADCAST SHALL BE DISTRIBUTED UNIFORMLY ONTO THE SEEDBED. IT IS RECOMMENDED THE CONTRACTOR PURCHASE SEED FROM A SOURCE THAT HAS TREATED THE SEED IN ACCORDANCE WITH APPROPRIATE HORTICULTURAL MEANS PRIOR TO DELIVERY. SOME SEED SUCH AS LEGUMES REQUIRE SCARIFICATION. OTHER SEED REQUIRES EXPOSURE TO COLD TEMPERATURE, CALLED STRATIFICATION.

SEED MIXES

(SM) NATIVE GRASS/FORB SEED MIX - (JF NEW NURSURY)

CAREX FRANKII	FRANK'S SEDGE	4 OUNCES/ACRE
ELYMUS RIPARIUS	RIVERBAND WILD RYE	16 OUNCES/ACRE
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	32 OUNCES/ACRE
PANICUM VIRGATUM	SWITCHGRASS	4 OUNCES/ACRE
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	32 OUNCES/ACRE
SORGHASTRUM NUTANS	INDIAN GRASS	8 OUNCES/ACRE
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	1 OUNCE/ACRE

(SW) STORMWATER SEED MIX - (JF NEW NURSERY)

PERMANENT		
CAREX CRISTATELLA	CRESTED OVAL SEDGE	1 OUNCES/ACRE
CAREX LURIDA	BOTTLEBRUSH SEDGE	2 OUNCES/ACRE
CAREX VULPINOIDEA	BROWN FOX SEDGE	6 OUNCES/ACRE
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	12 OUNCES/ACRE
GLYCERIA STRIATA	FOWL MANNA GRASS	1.25 OUNCES/ACRE
JUNCUS EFUSUS	COMMON RUSH	1 OUNCES/ACRE
JUNCUS TORREYI	TORREY'S RUSH	0.25 OUNCES/ACRE
LEERSIA ORYZOIDES	RICE CUT GRASS	1 OUNCES/ACRE
PANICUM VIRGATUM	SWITCH GRASS	8 OUNCES/ACRE
SCIRPUS ATROVIRENS	DARK GREEN RUSH	1 OUNCES/ACRE
SCIRPUS CYPERINUS	WOOL GRASS	0.50 OUNCES/ACRE
SCIRPUS FLUVIATILIS	RIVER BULRUSH	0.25 OUNCES/ACRE
SCIRPUS VALIDUS	GREAT BULRUSH	6 OUNCES/ACRE
TEMPORARY		
AVENA SATIVA	COMMON OAT	360 OUNCES/ACRE
LOLIUM MULTIFLORUM	ANNUAL RYE	100 OUNCES/ACRE
FORBS		
ALISMA SPP.	WATER PLANTAIN MIX	4.25 OUNCES/ACRE
ASCLEPIAS INCARNATA	SWAMP MILKWEED	1.50 OUNCES/ACRE
BIDENS SPP.	BIDENS MIX	2 OUNCES/ACRE
HELENIUM AUTUMNALE	SNEEZE WEED	2 OUNCES/ACRE
LYCOPUS AMERICANUS	COMMON WATER HOREHOUND	0.25 OUNCES/ACRE
MIMULUS RINGENS	MONKEY FLOWER	1 OUNCES/ACRE
PENTHORUM SEDOIDES	DITCH STONECROP	0.50 OUNCES/ACRE
POLYGONUM PENSYLVANICUM	PINKWEED	4 OUNCES/ACRE
RUDBECKIA SUBTOMENTOSA	SWEET BLACK-EYED SUSAN	1 OUNCES/ACRE
SAGITTARIA LATIFOLIA	COMMON ARROWHEAD	1 OUNCES/ACRE
SENNA HEBECARPA	WILD SENNA	1 OUNCES/ACRE
THALICTRUM DASYCARPUM	PURPLE MEADOW RUE	2 OUNCES/ACRE

NOTE: CONTACT JF NEW BY PHONE AT 574.586.3400 OR BY EMAIL AT SALES@JFNEW.COM

GENERAL NOTES

1. TOPOGRAPHIC SURVEY PERFORMED BY BYNUM FANYO & ASSOC., INC.
2. PROJECT ADDRESS: 1300 S. PATTERSON DRIVE, BLOOMINGTON, INDIANA 47402.
3. ALL WORK IS TO BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
4. ALL PERMITS ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
5. EXISTING UTILITIES ON SITE SHALL BE RELOCATED AS REQUIRED. CONTRACTOR SHALL PAY ALL COSTS ASSOCIATED WITH RELOCATION.
6. SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
7. CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY A.G.C. OF AMERICA, INC. AND THE HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
8. SITE CONTRACTOR SHALL HAVE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER THIS PROJECT PRIOR TO INSTALLATION.
9. ALL WORK ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH SITE WORK SPECIFICATIONS.
10. LOCATIONS OF EXISTING BURIED UTILITY LINES SHOWN ON THE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AND ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF UTILITY LINES ADJACENT TO THE WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY LINES DURING THE CONSTRUCTION PERIOD.

GRADING NOTES

1. NEW FINISHED CONTOURS SHOWN ARE TOP OF TOPSOIL IN AREAS TO BE SEEDED OR PLANTED.
2. CONTRACTOR SHALL NOTIFY AND COOPERATE WITH ALL UTILITY COMPANIES OR FIRMS HAVING FACILITIES ON OR ADJACENT TO THE SITE BEFORE DISTURBING, ALTERING, REMOVING, RELOCATING, ADJUSTING, OR CONNECTING TO SAID FACILITIES. CONTRACTOR SHALL PAY ALL COSTS IN CONNECTION WITH ALTERATION OF OR RELOCATION OF THE FACILITY.
3. UNUSABLE EXCAVATED MATERIALS AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.

LANDSCAPE NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING AND LAWN AREAS INCLUDING, BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, PRUNING, FERTILIZING, ETC., UNTIL WORK IS ACCEPTED IN FULL BY THE OWNER.
2. ANY NEW OR TRANSPLANTED PLANT MATERIAL WHICH DIES, TURNS BROWN OR DEFOLIATES PRIOR TO TOTAL ACCEPTANCE OF THE WORK SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY AND SIZE TO MEET ALL PLANT LIST SPECIFICATIONS.
3. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
4. DURING THE GROWING SEASON ALL ANNUALS AND HERBACEOUS PERENNIALS SHALL REMAIN IN A HEALTHY CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
5. ALL DISTURBED AREAS ARE TO BE DEBRIS-RAKED AND FINED-GRADED AS NEEDED, THEN SEEDED AND WATERED UNTIL A HEALTHY STAND OF TURF IS ESTABLISHED.
6. ANY PLANT OR OTHER LANDSCAPE MATERIAL SUBSTITUTIONS INSTALLED WITHOUT DESIGNER AND/OR OWNER APPROVAL SHALL BE REPLACED AT CONTRACTOR'S EXPENSE. ALL PLANTS ARE SUBJECT TO THE APPROVAL OF THE OWNER BEFORE, DURING AND AFTER INSTALLATION.

UTILITIES

GAS
VECTREN
205 S. MADISON ST,
BLOOMINGTON, IN 47401
DOUG ANDERSON (812)330-4009

SEWER AND WATER
CITY OF BLOOMINGTON UTILITIES
600 E. MILLER DR.
BLOOMINGTON, IN 47401
NANCY AXSOM (812)349-3989

ELECTRIC
DUKE ENERGY
1619 W. DEFFENBAUGH ROAD
KOKOMO, INDIANA 46902
JIM SHIELDS (812)375-2071

TELEPHONE
AT&T
P.O. BOX 56
BLOOMINGTON, IN 47402
BRENT McCABE (812)334-4521

CABLE TELEVISION
COMCAST
2450 SOUTH HENDERSON STREET
BLOOMINGTON, IN 47404
SCOTT TEMPLETON (812)355-7822

UNDERGROUND UTILITY LOCATION
INDIANA UNDERGROUND
PLANT PROTECTION
1-(800)382-5544

STORM STRUCTURE DATA TABLE

STR. NO.	INLET/CASTING	T/C @ FLOWLINE	PIPE TYPE	PIPE LENGTH (FT)	PIPE SIZE (IN)	INVERT (N)	INVERT (S)	INVERT (E)	INVERT (W)	COMMENTS
75	Type B w/ East Jordan Iron Works cstg V5669	727.10	Existing 36"	--	--	724.04	--	(FUTURE NE) 724.04	(SW) 724.04	Future 24" pipe to connect from northeast
76	Water Level Control Structure	727.60	ADS N-12	71	12	--	724.60	--	--	Agri Drain brand Inlet Water Level Control Structure Model Num. "Inlet 03x12P" (WCS 3' x 12"); Adjust stop logs to elevation = 726.50; See detail this sheet.
77	Culvert	--	ADS N-12	34	12	725.10	724.80	--	--	Provide metal end section on upstream and downstream end.
78	Culvert	--	ADS N-12	37	18	728.60	727.75	--	--	Provide metal end section on upstream and downstream end.

revisions:

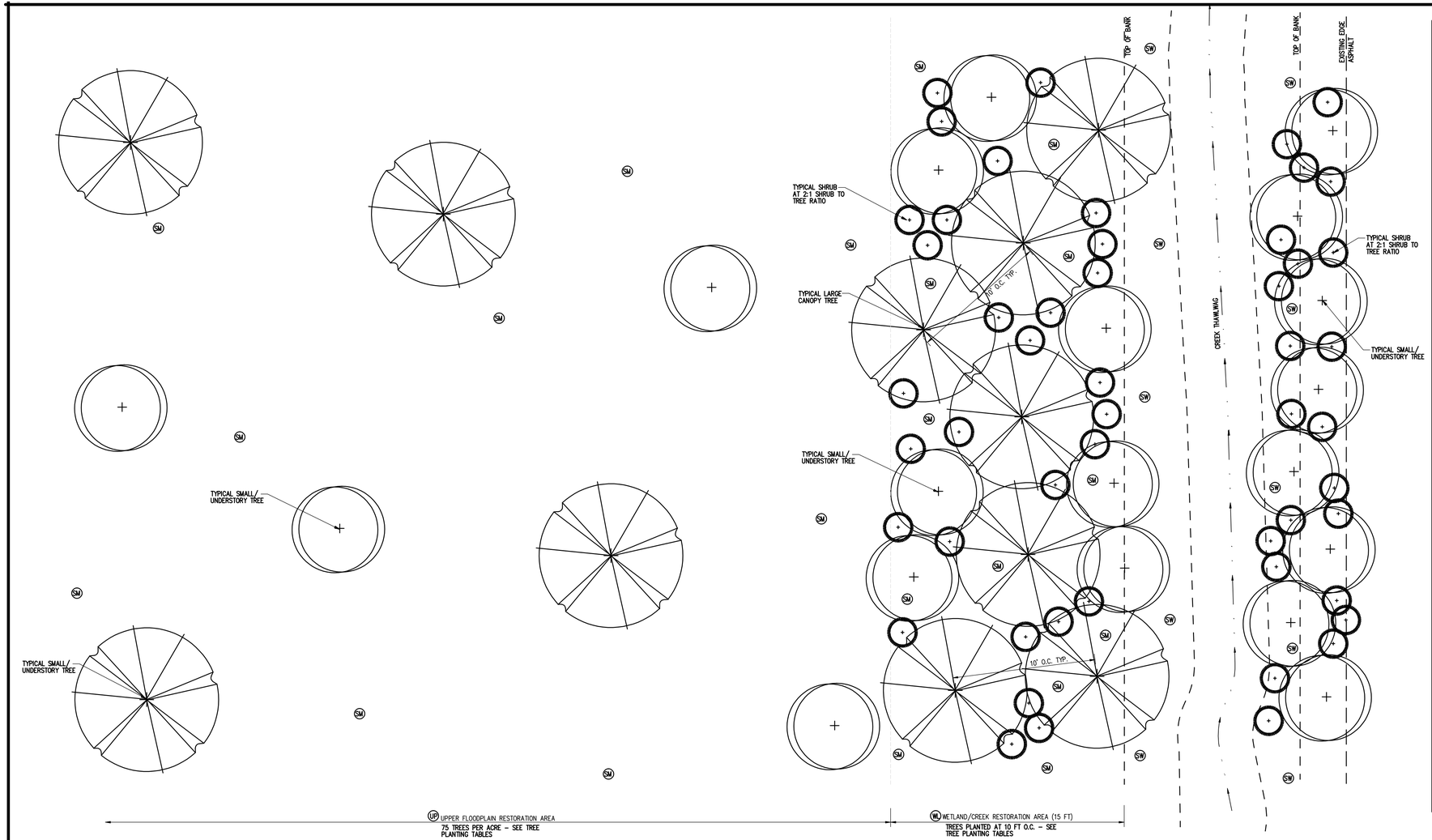
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
6-12-09
certified by

Proposed:
WEST BRANCH CLEAR CREEK RESTORATION
Bloomington Indiana

title: CREEK RESTORATION NOTES & DETAILS

designed by: JT
drawn by: JT
sheet no: 26 OF 28
project no.: 400826



List of Acceptable Trees and Shrubs

Common name	Species name	Wetland Indicator	Size of plant
American basswood	Tilia americana	FACU	med-lg tree
American bladdernut	Staphylea trifolia	FAC	shrub
American filbert	Corylus americana	FACU-	shrub
American plum*	Prunus americana	UPL	sm tree
Bitternut hickory	Carya cordiformis	FAC	med-lg tree
Black cherry**	Prunus serotina	UPL	med-lg tree
Black chokeberry	Aronia melanocarpa	FACW-	shrub
Black gum	Nyssa sylvatica	FAC	lg tree
Black Walnut	Juglans nigra	FACU	lg tree
Bur oak	Quercus macrocarpa	FAC-	lg tree
Carolina rose	Rosa carolina	FACU-	shrub
Chinkapin oak*	Quercus muehlenburgii	UPL	lg tree
Cockspur hawthorn	Crataegus crus-galli	FAC	small tree
Common Ninebark	Physocarpus opulifolius	FACW-	shrub
Common paw paw	Asimina triloba	FAC	understory tree
Common spicebush	Lindera benzoin	FACW-	shrub
Common winterberry	Ilex verticillata	FACW+	shrub
Dotted hawthorn	Crataegus punctata	floodplains-ok	small tree
Downy hawthorn	Crataegus mollis	FACW-	small tree
Elderberry	Sambucus canadensis	FACW-	shrub
Gray dogwood	Cornus racemosa	FACW-	shrub
Hackberry	Celtis occidentalis	FAC-	med-lg tree
Hercules' Club	Aralia spinosa	FACW-	sm tree
Indigobush	Amorpha fruticosa	FACW-	shrub
Ironwood (aka Hornbeam, blue beech)	Carpinus caroliniana	FAC	understory tree
Kentucky coffeetree	Gymnocladus dioicius		med tree
Ohio buckeye	Aesculus glabra	FAC+	med tree
Pagoda dogwood	Cornus alternifolia	ok along streams	sm tree
Pale dogwood (was silky dogwood)	Cornus obliqua	FACW+	shrub
Pasture gooseberry	Ribes cynosbati	-	shrub
Pin oak	Quercus palustris	FACW	med-lg tree
Redbud	Cercis canadensis	FACU	understory tree
Red Maple	Acer rubrum	FAC	med-lg tree
Red mulberry	Morus rubra	FAC-	sm-med. tree
Shagbark hickory	Carya ovata	FACU	lg tree
Shellbark hickory	Carya laciniosa	FACW	lg tree
Shingle oak	Quercus imbricaria	FAC-	med tree
Shumard oak	Quercus shumardii	FACW-	lg tree
Smooth hydrangea	Hydrangea arborescens	FACU-	shrub
Sugarberry	Celtis laevigata	FACW	med-lg tree
Sugar maple	Acer saccharum	FACU	lg tree
Swamp chestnut oak	Quercus michauxii	FACW	med-lg tree
Swamp white oak	Quercus bicolor	FACW+	med-lg tree
Sweet gum	Liquidambar styraciflua	FACW	lg tree
Tulip tree	Liriodendron tulipifera	FACU+	lg tree
White oak	Quercus alba	FACU	lg tree

* ok to plant along well-drained stream banks

**upland species but can be planted along streams and well-drained river banks

Species with a Wetland Indicator status of FAC-, FACU-, FACU, or FACU+ should be planted farthest from the stream channel.

Species with a Wetland Indicator status of FAC, FAC+, FACW-, FACW, or FACW+ should be planted closest to the stream channel.

Species with a Wetland Indicator status of UPL are suitable for areas outside the floodplain only.

Tree and Shrub Planting Tables

UP - Upper Floodplain Restoration Area (2.70 Acres)

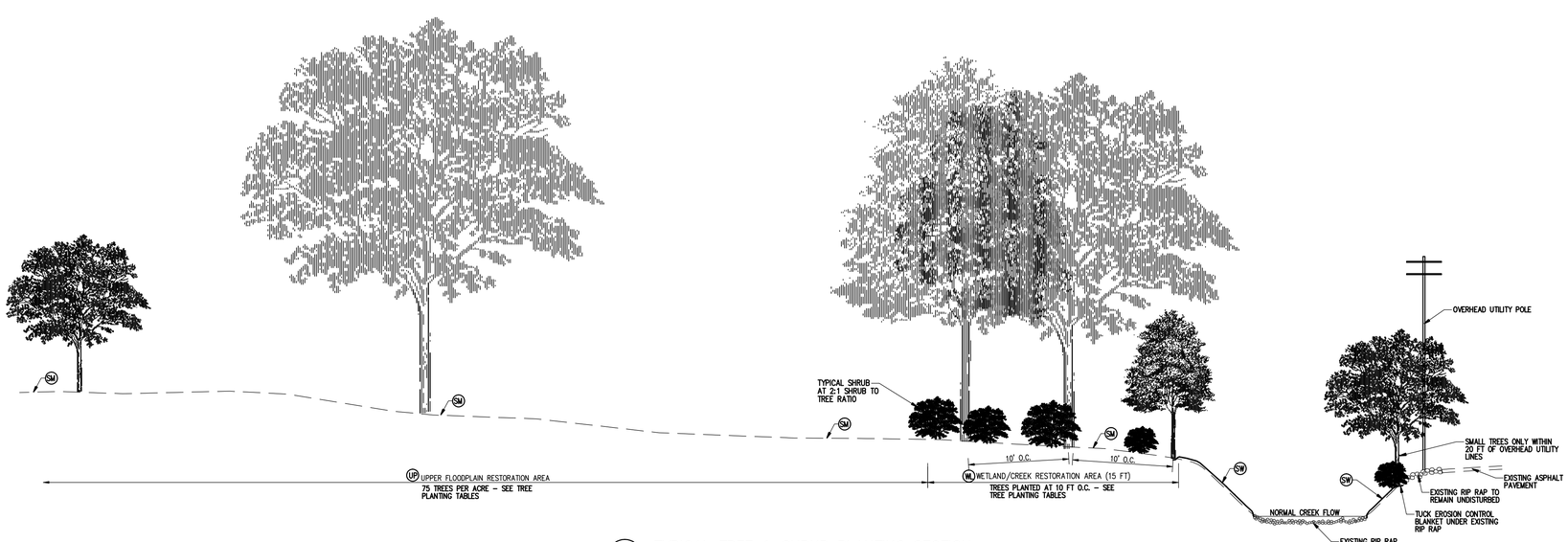
Common Name	Species Name	Type	Planting Density	Approximate Quantity
Shingle oak	Quercus imbricaria	Canopy	15/ac	40
Bur oak	Quercus macrocarpa	Canopy	15/ac	40
Shagbark hickory	Carya ovata	Canopy	15/ac	40
Redbud	Cercis canadensis	Understory	10/ac	27
Pagoda dogwood	Cornus alternifolia	Small tree	10/ac	27
American plum	Prunus americana	Small tree	10/ac	27
		Total	75 Trees/ac	201

Note: All trees planted in areas designated as UP shall be container grown or ball & burlap.

WL - Wetland/Creek Restoration Area

Common Name	Species Name	Type	Approximate Quantity
Pin oak	Quercus palustris	Canopy	73
Shumard oak	Quercus shumardii	Canopy	73
Shellbark hickory	Carya laciniosa	Canopy	73
Ironwood	Carpinus caroliniana	Understory	73
		Total	292 Trees
Elderberry	Sambucus canadensis	Shrub	292
Indigobush	Amorpha fruticosa	Shrub	292
		Total	584 Shrubs

Note: All trees planted in areas designated as WL shall be bare root saplings planted 10 ft apart and within 15 ft of the top of creek bank. Do not plant saplings within the creek flowline.



A/23 TYPICAL TREE & SHRUB PLANTING SECTION

DEPICTS TREES AT MATURITY — NOT TO SCALE

revisions:

BYNUM FANYO & ASSOCIATES, INC.
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

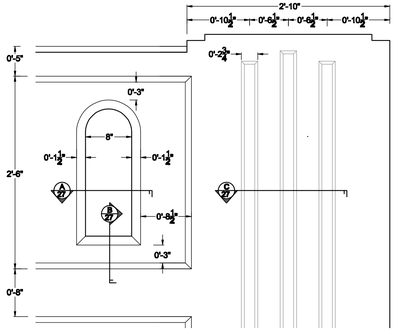
JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
6-12-09

certified by:

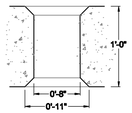
Proposed:
WEST BRANCH CLEAR CREEK RESTORATION
Bloomington Indiana

title: CREEK RESTORATION NOTES & DETAILS

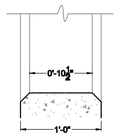
designed by: JT
drawn by: JT
sheet no: 27 OF 28
project no.: 400826



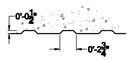
5/27 ENLARGED DETAIL
Scale: 1/2"=1'-0"



A/27 DETAIL 'A'
Scale: 1"=1'-0"



B/27 DETAIL 'B'
Scale: 1"=1'-0"



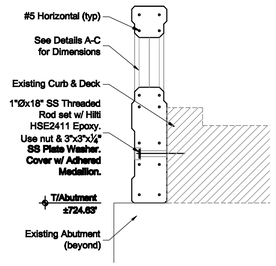
C/27 DETAIL 'C'
Scale: 1"=1'-0"

Project Summary:

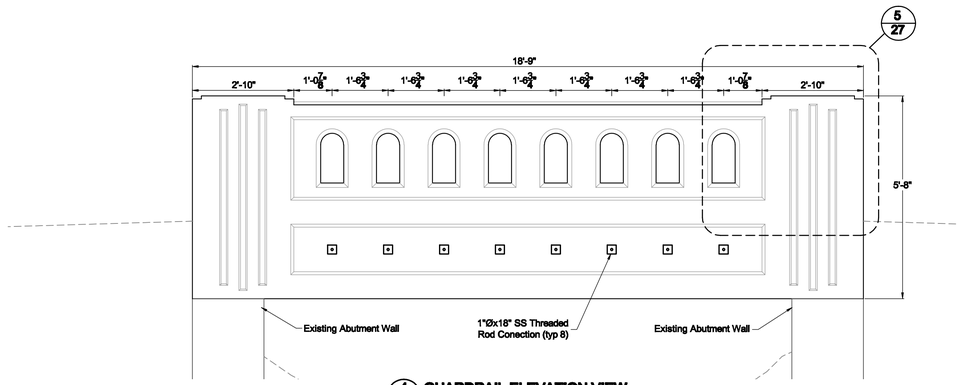
This project basically consists of addition of architectural "pigeon-hole guardrail" features to the existing bridge structure. The intent is for the "guardrails" to be "pre-cast on site" and then set into place. The new "guardrails" will bear on the ends of the existing abutment and will be anchored to the existing bridge section. These "guardrails" are for aesthetic purposes only and were not designed to resist vehicular impact.

Notes:

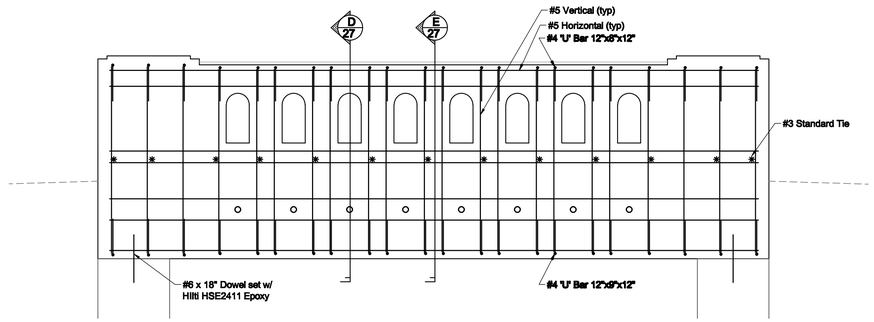
1) All formwork to be constructed per ACI 301.4.
2) Concrete shall be placed per ACI 301.8. Embedded items shall be installed per ACI 301.6.
3) Curing and protection of concrete shall be per ACI 301.12.
4) Concrete shall be 4000 psi, proportioned per ACI 301.3 and include air entrainment.
5) Surface tolerance to be per ACI 10.1, Finish to be per ACI 10.2.2 (rubbed finish)
6) All reinforcement shall be furnished and installed per ACI 301.5
7) Guardrails are intended to bear on the existing concrete abutments @ +/- 724.63
8) Field verify all dimensions prior to commencing project; adjust as required.
9) Use Hilti HSE2411 epoxy @ dowels and rod attachments; install per manuf guidelines.
10) Adhered medallions to be 8"x8"x3" precast concrete; details to be selected by the Owner.



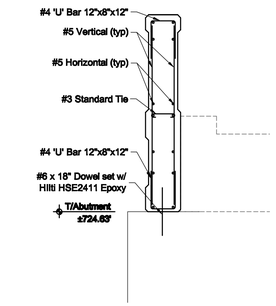
D/27 DETAIL 'D'
Scale: 1/2"=1'-0"



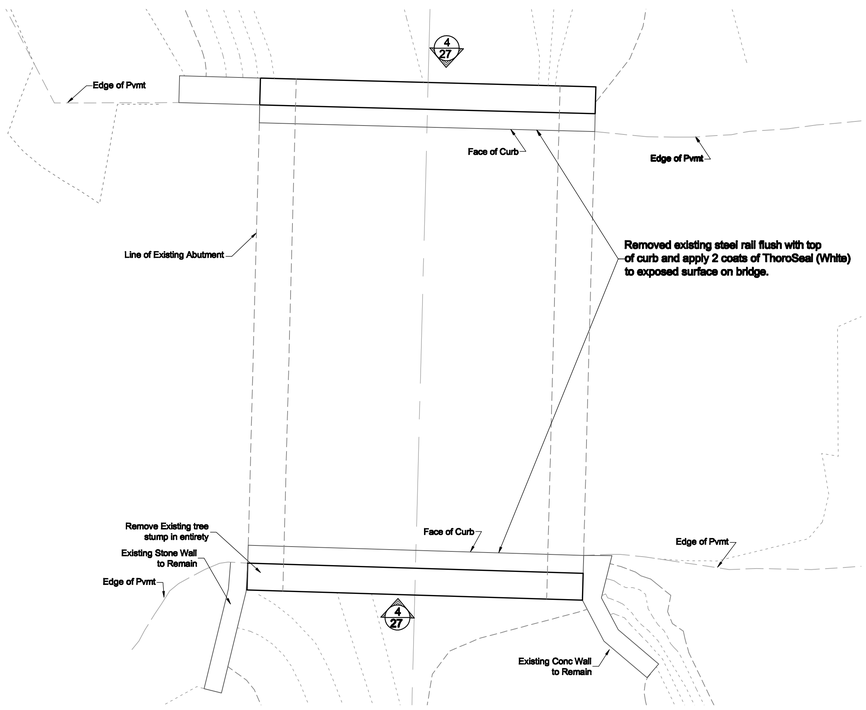
4/27 GUARDRAIL ELEVATION VIEW
Scale: 1/2"=1'-0"



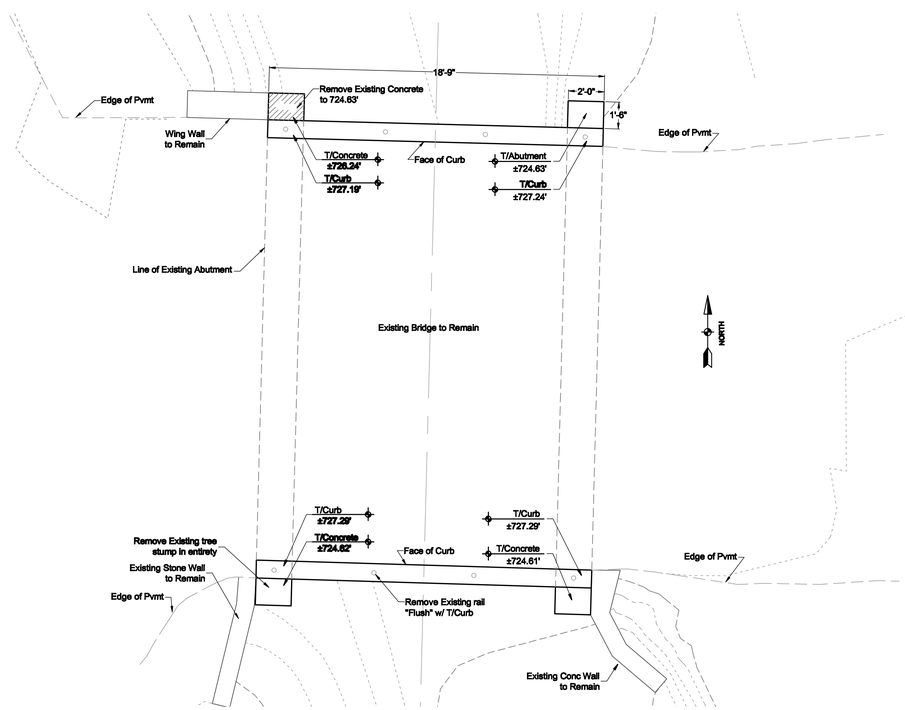
3/27 REINFORCING ELEVATION VIEW
Scale: 1/2"=1'-0"



E/27 DETAIL 'E'
Scale: 1/2"=1'-0"



2/27 NEW GUARDRAIL PLAN
Scale: 1/4"=1'-0"



1/27 EXISTING BRIDGE / DEMO PLAN
Scale: 1/4"=1'-0"

revisions:

drawn by: JDC

STRUCTURAL ENGINEERING
bloomington, indiana
(812) 824-5809 (Fax)

BFW Crane, Inc.
6700 S Victor Pike
(812) 824-4260

certified by:

Proposed Improvements:
PATTERSON DR., HILLSIDE DR., ROGERS ST. & FAIRVIEW ST. ROADWAY IMPROVEMENTS
Bridge over Minor Drainageway
Bloomington, Indiana

title: STEEL FRAMING DETAILS

Sheet No: 700925-1
project no.: BFA#XXXXX