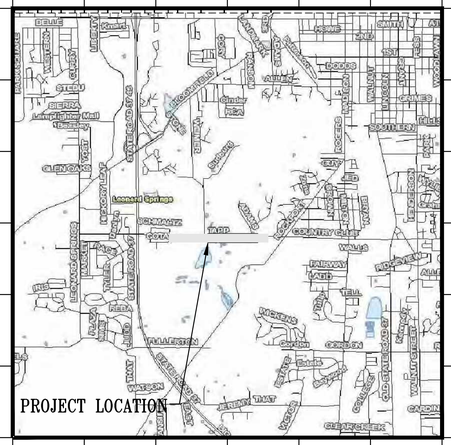
PROPOSED

TAPP ROAD RECONSTRUCTION PHASE III

W. TAPP ROAD
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 (812)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	

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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.

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

architecture
civil engineering
planning

OWNER/DEVELOPER
BLOOMINGTON PUBLIC WORKS DEPT.
401 N. MORTON STREET
BLOOMINGTON, INDIANA 47402

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 INDIANA PROFESSIONAL ENGINEER

certified by:
09-29-11
JEFFREY S. FANYO, P.E.
IND. REG. NO. 18283

revisions

GENERAL LEGEND

PROPERTY LINE	
CONSTRUCTION LIMITS	CL
DEED BOOK AND PAGE	XXX/XXX
TO BE REMOVED	T.B.R.
TO REMAIN UNDISTURBED	T.R.U.
SETBACK LINE	X' SBL
PROPOSED 20'x10' DUMPSTER PAD SURROUNDED BY 6' SOLID WOOD FENCE WITH GATE	
PROPOSED ACCESSIBLE PARKING	
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	—X"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
FLOW LINE	
EXISTING SANITARY SEWER AND MANHOLE	
EXISTING STORM SEWER AND INLET	
FIBER OPTIC CONDUIT 2-4" – SCHEDULE 40 PVC PIPE 1-2" – SCHEDULE 40 PVC PIPE WITH 1– TRACER WIRE	—FOC—

SITE LEGEND

A	PROPOSED BITUMINOUS PAVING
B	PROPOSED BITUMINOUS OVERLAY, 165#/SYD RESURFACING
C	PROPOSED 6" CONCRETE PAVING
CL	PROPOSED CONSTRUCTION LIMITS
F	PROPOSED CONCRETE SIDEWALK
J	PROPOSED BITUMINOUS MIXTURE FOR APPROACHES
PB	PROPOSED PRE-ENGINEERED CONTINENTAL CONNECTOR STYLE PEDESTRIAN BRIDGE OR APPROVED EQUAL
PP	PROPOSED PAVEMENT PATCH
R	PROPOSED CURB RAMP
RT	PROPOSED CURB RAMP – TRANSITIONAL
W	PROPOSED MULTI-USE PATH
WC	PROPOSED CONCRETE MULTI-USE PATH
11	SAWCUT & MATCH EXISTING PAVEMENT
13	PROPOSED 6" STANDING CURB
15	PROPOSED 2' CURB & GUTTER
26	PROPOSED SODDING
31	PROPOSED THERMOPLASTIC LINE, DASHED, WHITE, 4"
32	PROPOSED THERMOPLASTIC LINE, SOLID WHITE, 4"
33	PROPOSED THERMOPLASTIC LINE, DASHED YELLOW, 4"
34	PROPOSED THERMOPLASTIC LINE, SOLID YELLOW, 4"
35	PROPOSED THERMOPLASTIC LINE, SOLID DOUBLE YELLOW, 4"
36	PROPOSED TRAVERSE THERMOPLASTIC MARKING, WHITE, 24"
37	PROPOSED THERMOPLASTIC MARKING, DIRECTIONAL ARROW
38	PROPOSED THERMOPLASTIC, LINE YELLOW 12"
40	PROPOSED MARKING; PAINTED, SOLID, WHITE, 4"
FTP	FARM FIELD TYPE FENCE SEE DETAIL SHEET 5

UTILITY AND GRADING LEGEND

PROPOSED DIP WATER LINE	X"-WL
PROPOSED WATER VALVE	
PROPOSED 6" CAP AND VALVE	
PROPOSED FLUSH HYDRANT (FH)	
PROPOSED WATER METER (TO BE SIZED BY THE CITY OF BLOOMINGTON UTILITIES)	
PROPOSED STORM PIPE, INLET AND END SECTION	
PROPOSED RIP-RAP ON FILTER FABRIC	RR

EROSION CONTROL LEGEND

	SILTATION FENCE (TEMPORARY)
CL	CONSTRUCTION LIMITS
MS	MULCH SEEDING – SEE SPECIFICATIONS (TEMPORARY)
SP	20' X 50' STONE PAD, 6" DEEP TO KEEP FROM TRACKING MUD OFF SITE (TEMPORARY)
CD	CHECK DAM (TEMPORARY)
CW	CONCRETE WASHOUT AREA (TEMPORARY)
ECB	EROSION CONTROL BLANKET (PERMANENT)
DI	DROP INLET PROTECTION (TEMPORARY) (TO BE USED ON ALL YARD INLETS)

SEE EROSION CONTROL DETAILS (SHEETS _____) 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 PUBLIC WORKS
3. PROJECT ADDRESS: W. TAPP ROAD, 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. BUILDING CONTRACTOR SHALL PROVIDE & INSTALL A PERMANENT INDICATING VALVE 12" ABOVE THE FLOOR ON THE FIRE LINE AT THE TERMINATION POINT. THIS VALVE WILL BE USED TO HYDROSTATIC PRESSURE TEST AGAINST & WILL REMAIN AS PART OF THE SYSTEM ONCE ALL TESTING IS COMPLETED. THE FIRE LINE MAIN WILL NOT BE DISMANTLED FOR CONNECTION TO THE FIRE SUPPRESSION SYSTEM. SITE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FIRE MAIN WITH THE BUILDING CONTRACTOR.

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 PARKING LOT PERIMETERS SHOWN TO BE SEEDED 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 BUILDING OR PAVING ARE TO BE VEGETATED (SEEDED 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-698 (95 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.

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

LANDSCAPE NOTES

1. ALL PLANT MATERIAL SHALL ARRIVE ONSITE IN A HEALTHY, VIGOROUS CONDITION AND BE FREE OF PESTS AND DISEASE.
2. ALL PLANTS SHALL BE CONTAINER GROWN OR BALLED AND BURLAPPED AS INDICATED IN THE PLANT LIST.
3. ALL TREES SHALL BE STRAIGHT-TRUNKED, FULL HEADED AND MEET ALL REQUIREMENTS SPECIFIED.
4. ALL TREES SHALL BE GUYED OR STAKED PLUMB AS SHOWN IN THE DETAILS.
5. ALL PLANTING MASS BEDS SHALL BE SPADE CUT UNLESS SPECIFIED WITH A MOW STRIP OR OTHER INSTALL EDGING. TREES TO HAVE A 5' DIAMETER MULCH RING.
6. ALL PLANTING AREAS SHALL BE COMPLETELY MULCHED WHERE SPECIFIED.
7. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION. PLANTING LOCATIONS MAY REQUIRE ADJUSTMENTS IN FIELD TO AVOID OVERHEAD AND UNDERGROUND UTILITIES.
8. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES AND SPECIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK.
9. 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.
10. THE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE (1) YEAR BEGINNING ON THE DATE OF TOTAL ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE OR AT THE END OF THE GUARANTEE PERIOD.
11. THE OWNER SHALL APPROVE THE STAKING LOCATION OF ALL PLANT MATERIAL PRIOR TO INSTALLATION.
12. AFTER BEING DUG AT THE NURSERY SOURCE, ALL TREES IN LEAF SHALL BE ACCLIMATED FOR TWO (2) WEEKS UNDER A MIST OR DRIP IRRIGATION SYSTEM PRIOR TO INSTALLATION. WATER ALL SPECIMENS WITHIN 24 HOURS OF PLANTING.
13. 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.
14. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
15. ALL SHRUB, GROUNDCOVER, ANNUAL AND HERBACEOUS PERENNIAL PLANTING BEDS ARE TO BE COMPLETELY COVERED WITH HARDWOOD MULCH TO A MINIMUM DEPTH OF FOUR INCHES.
16. DURING THE GROWING SEASON ALL ANNUALS AND HERBACEOUS PERENNIALS SHALL REMAIN IN A HEALTHY CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
17. ALL PLANT MATERIAL QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANTING BEDS AT SPACING SHOWN ON PLANS.
18. ALL DISTURBED AREAS NOT INCLUDED IN LANDSCAPE MULCH BEDS ARE TO BE DEBRIS-RAKED AND FINED-GRADED AS NEEDED, THEN MULCH SEEDED (OR SODDED, PER PLAN) AND WATERED UNTIL A HEALTHY STAND OF TURF IS ESTABLISHED.
19. 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.
20. 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.

☒ 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:

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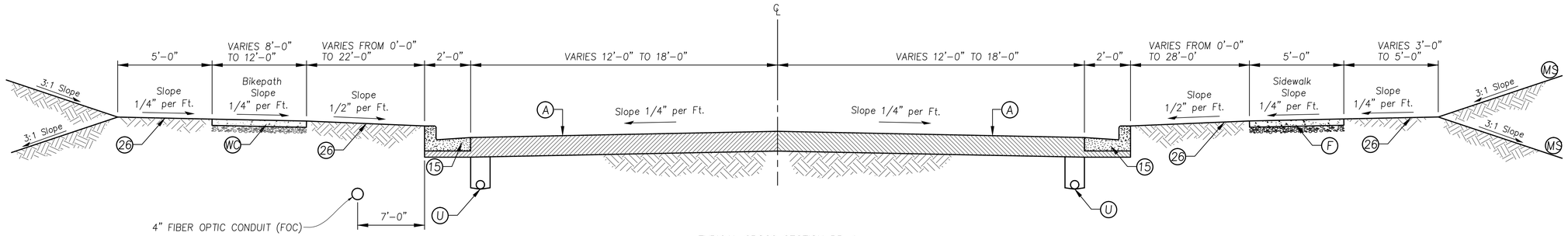
09-29-11

certified by:

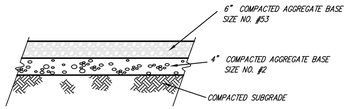
Proposed: TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: LINE PR-1 GENERAL NOTES

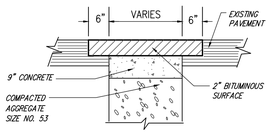
designed by:
drawn by: JR, DS
checked by:
sheet no: 1
project no.: 401101



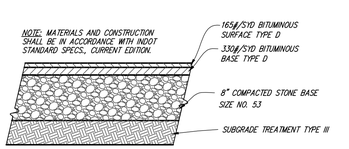
TYPICAL CROSS SECTION PR-1
NOT TO SCALE



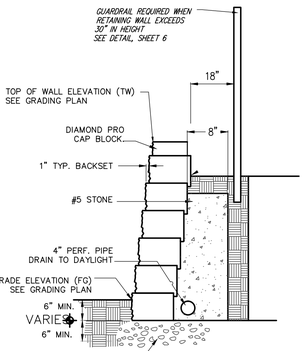
(G) GRAVEL DRIVE
NOT TO SCALE



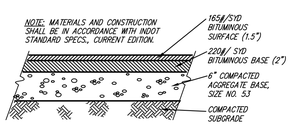
(PP) BITUMINOUS PAVEMENT PATCH
NOT TO SCALE



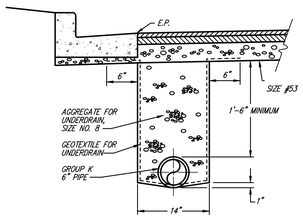
(J) BITUMINOUS MIXTURE FOR APPROACHES & PARKING AREAS
NOT TO SCALE



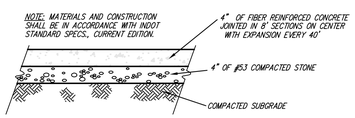
(RW) MODULAR BLOCK RETAINING WALL FOR WALLS UP TO 3' IN HEIGHT
NOT TO SCALE



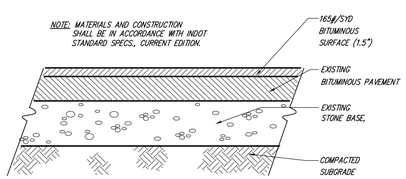
(W) MULTIUSE PATH PAVING DETAIL
NOT TO SCALE



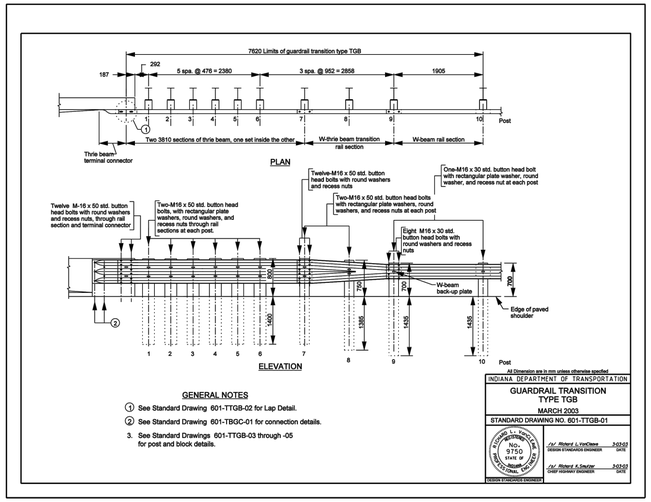
(U) TYPICAL ROAD UNDERDRAIN
NOT TO SCALE

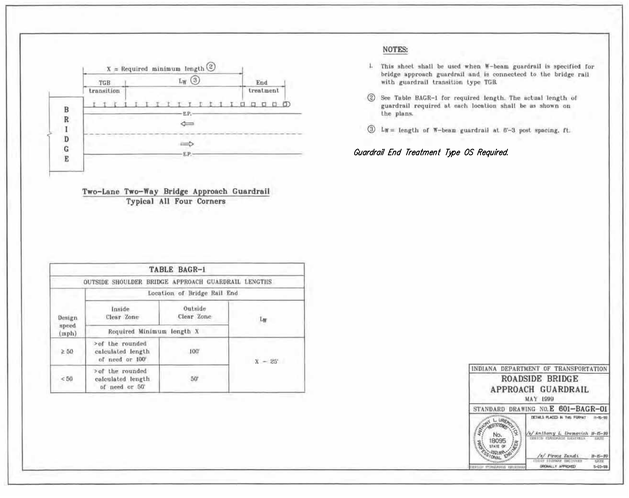


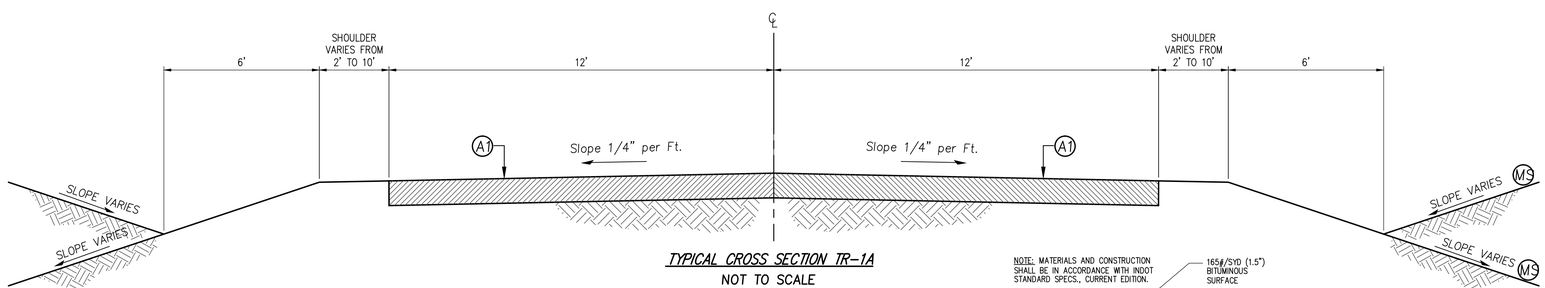
(WC) CONCRETE PATH PAVING DETAIL
NOT TO SCALE



(B) BITUMINOUS PAVING DETAIL OF PARKING LOT
NOT TO SCALE

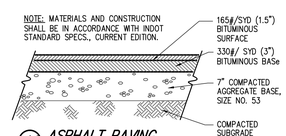






TYPICAL CROSS SECTION TR-1A
NOT TO SCALE

TEMPORARY RUNAROUND SECTION



(A1) ASPHALT PAVING
NOT TO SCALE

revisions:

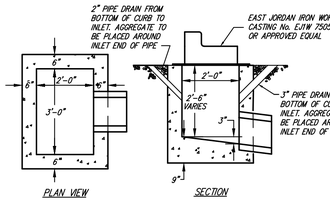
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
528 north walnut street
Bloomington, Indiana
(812) 332-8030
(812) 339-2990 (Fax)

JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

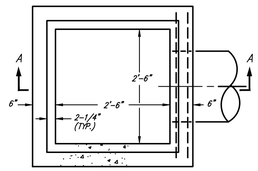
title: LINE PR-1
PLAN & PROFILE

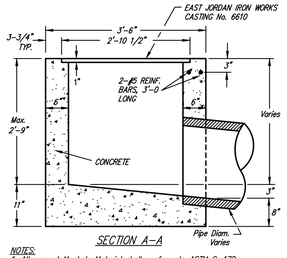
designed by:
drawn by: JR, DS
checked by:
sheet no: 2
project no.: 4011101



STORM INLET, TYPE "J"
NOT TO SCALE

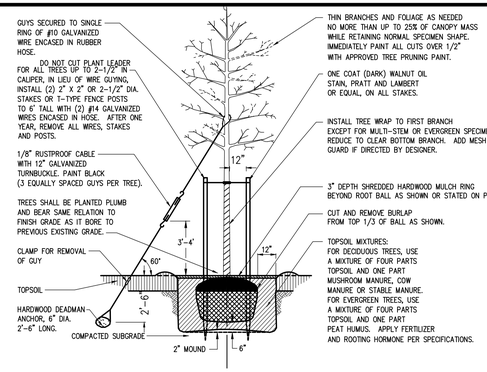
NOTES:
1. FOR INLET INVERT ELEVATIONS SEE STRUCTURE NOTE OR STRUCTURE DATA TABLE.
2. USE OF BRICK, BLOCKS, OR CONCRETE IS PERMISSIBLE.
3. CONTRACTOR MAY BE PERMITTED TO PRECAST INLETS SUBJECT TO THE APPROVAL OF THE ENGINEER AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.





NOTES:
1. All precast Manhole Material shall conform to ASTM C-478 and the standard specifications (min. sq in of reinforcing steel per lineal foot of barrel shall be 0.12).
2. Joints between sections of precast manholes shall be in accordance with ASTM C-443.

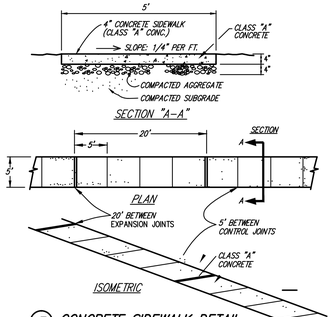
STORM INLET, INDOT TYPE "E"
NOT TO SCALE



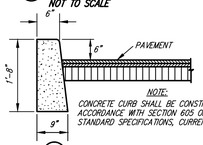
TREE PLANTING WITH GUYING OR STAKING
NOT TO SCALE

STREET TREE LIST

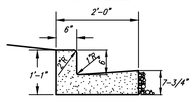
SYMBOL	MARK	BOTANICAL NAME	COMMON NAME	QTY	SIZE & CONDITION
		LARGE DECIDUOUS TREES			
	AR	*ACER RUBRUM*	RED MAPLE	44	2" CAL., B & B
	QA	*QUERCUS ALBA*	WHITE MAPLE	44	2" CAL., B & B
	QR	*QUERCUS RUBRA*	RED OAK	45	2" CAL., B & B
MARK / QTY		*CONTAINER OR BALL AND BURLAP CONDITION ACCEPTABLE			
		*NOTE: SPECIES SHOWN THAT ARE NOT LISTED IN THE CITY OF BLOOMINGTON ZONING ORDINANCE CHAPTER 20.06 TABLES OF RECOMMENDED PLANT MATERIALS ARE GIVEN BOTANICALLY COMPARABLE DENSITY VALUES.			



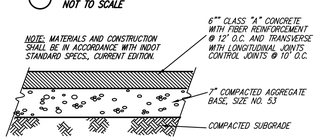
(F) CONCRETE SIDEWALK DETAIL
NOT TO SCALE



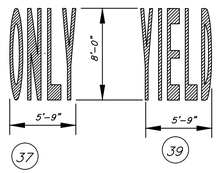
(13) CONCRETE CURB
NOT TO SCALE



(15) CONCRETE CURB AND GUTTER
NOT TO SCALE

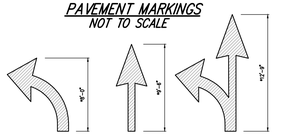


(C) CONCRETE PAVING DETAIL
NOT TO SCALE



(37) (39)

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)

(32) OR (33)

ELONGATED ARROWS FOR PAVEMENT MARKINGS

W4-2R LANE ENDS

18" x 18"

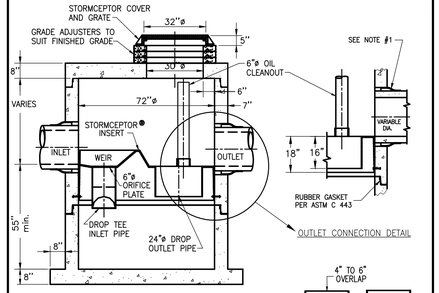
R2-1
24" x 36"
R2-1-A
36" x 48"
R2-1-B
48" x 60"

2B-4 STOP Sign (R1-1)

R1-1
30" x 30"
R1-1-A
36" x 36"
R1-1-B
48" x 48"

SIGNAGE DETAILS

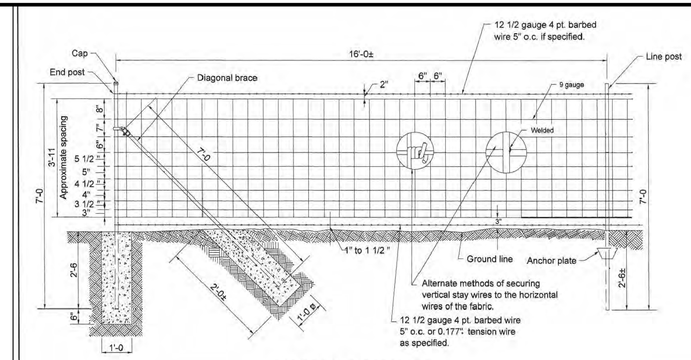
CSR	Hydro Conduit	DR. BY:
	STC 900 Precast Concrete Stormceptor® (900 US Gallon Capacity)	CK. BY:
	PROJECT: LOCATION:	DATE:
		SCALE: N.T.S.
		DWG.#



NOTE :
1. THE USE OF FLEXIBLE CONNECTIONS IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL CLEANOUT PIPE.
3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: #4985148, #5498331, #5725760, #5753115, #5849181.

CONTACT ERIC WATHEN @ RINKER MATERIALS (317-891-7500)

REV.	DESCRIPTION	BY:	DATE



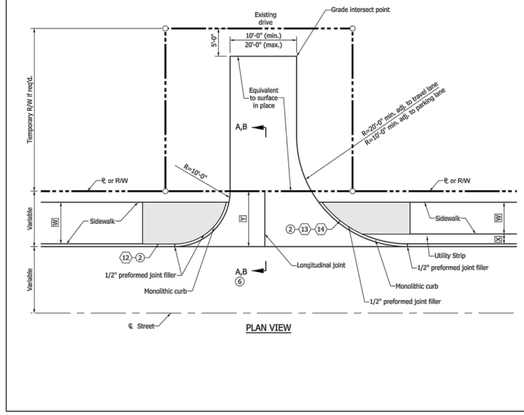
FARM FIELD TYPE FENCE

POST CHART						
4'-0 HEIGHT			GROUP 1		GROUP 2	
		WEIGHT	NOM. DIA.	WEIGHT	NOM. DIA.	WEIGHT
		lb/ft	in.	lb/ft	in.	lb/ft
END, CORNER, AND PULL POSTS			2	3.65	2	3.12
LINE POSTS	STUDDED "T"	1.33				
	"U"	1.33				
DIAGONAL BRACE			1 1/4	2.27	1 1/4	1.84

INDIANA DEPARTMENT OF TRANSPORTATION
FARM FIELD TYPE FENCE
SEPTEMBER 2004
STANDARD DRAWING NO. E 603-FFTF-01

/s/ Richard L. VanCleave 9-24-04 DESIGN STANDARDS ENGINEER DATE
/s/ Richard K. Sinclair 9-24-04 CHIEF HIGHWAY ENGINEER DATE

(FFTP) FARM FILED TYPE FENCE DETAIL
NOT TO SCALE

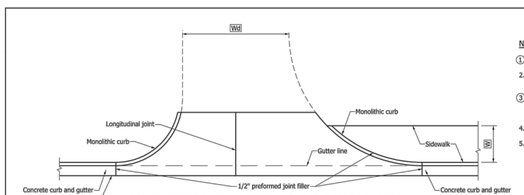


NOTES:
1. See Standard Drawing E 610-DRIV-13 for General Notes.
2. See Standard Drawings E 604-SDWK-01 or E 604-SDWK-02 for sidewalk elevation transition details.
3. See Standard Drawings E 610-DRIV-03 for concrete curb and gutter connection detail.
4. See Standard Drawings E 610-DRIV-07 for PCCP joint placement detail.
5. Pavement shall be PCCP for Approaches, 6 in., on subgrade treatment Type IIIA.
6. See Standard Drawing E 610-DRIV-08 for sections A-A and B-B.

LEGEND
W = Width of sidewalk
X = Distance between back face of curb to sidewalk.
Y = Distance from front face of curb to ℄ or R/W.
= Sidewalk elevation transition.

INDIANA DEPARTMENT OF TRANSPORTATION
CLASS I DRIVE
SEPTEMBER 2010
STANDARD DRAWING NO. E 610-DRIV-01

/s/ Richard L. VanCleave 09/01/10 DESIGN STANDARDS ENGINEER DATE
/s/ Mark A. Miller 09/01/10 CHIEF HIGHWAY ENGINEER DATE

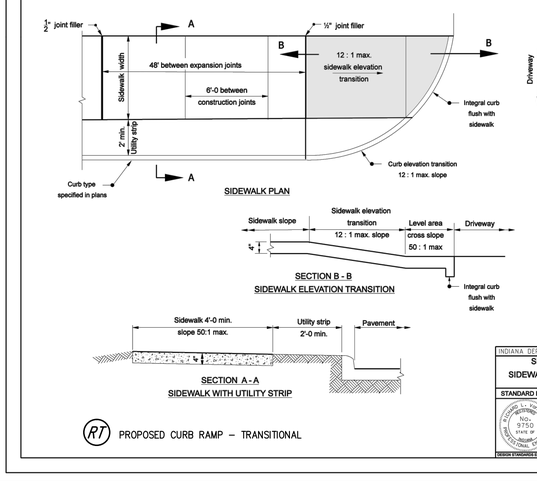


NOTES:
1. See Standard Drawing E 610-DRIV-08 for Section A-A, and Section B-B.
2. Pavement shall be PCCP for Approaches, 9 in., on subgrade treatment Type IIIA.
3. See Standard Drawings E 604-SDWK-01 or E 604-SDWK-02 for sidewalk elevation transition details, or Standard Drawing E 604-SWCR-09 for sidewalk curb ramp details if the drive is signalized.
4. See Standard Drawing E 610-DRIV-07 for joint placement details.
5. See Standard Drawing E 610-DRIV-13 for General Notes and additional Legend.

LEGEND
W = Width of sidewalk
W6 = Driveway width
X = Distance between back face of curb and sidewalk.
Y = Distance from front face of curb to ℄ or R/W
= Sidewalk elevation transition.

INDIANA DEPARTMENT OF TRANSPORTATION
CLASS III DRIVE
SEPTEMBER 2010
STANDARD DRAWING NO. E 610-DRIV-03

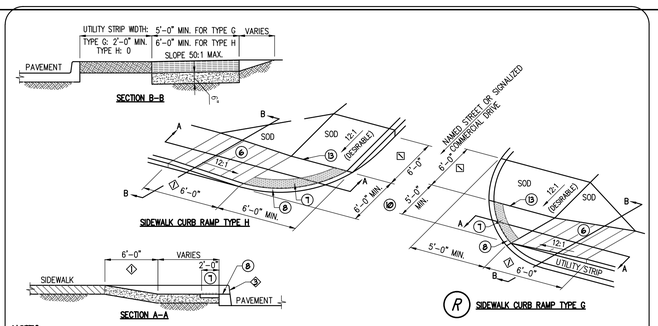
/s/ Richard L. VanCleave 09/01/10 DESIGN STANDARDS ENGINEER DATE
/s/ Mark A. Miller 09/01/10 CHIEF HIGHWAY ENGINEER DATE



INDIANA DEPARTMENT OF TRANSPORTATION
SIDEWALK DETAILS
SIDEWALK WITH UTILITY STRIP
SEPTEMBER 2005
STANDARD DRAWING NO. E 604-SDWK-01

/s/ Richard L. VanCleave 9-21-05 DESIGN STANDARDS ENGINEER DATE
/s/ Richard K. Sinclair 9-21-05 CHIEF HIGHWAY ENGINEER DATE

(RT) PROPOSED CURB RAMP – TRANSITIONAL



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.
15. VERTICAL FACE CURB OPTIONAL.

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

(R) SIDEWALK CURB RAMP TYPE G

revisions:

ARCHITECTURE
CIVIL ENGINEERING
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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 09-29-11
certified by

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: MISCELLANEOUS DETAILS

designed by:
drawn by: JR, DS
checked by:
sheet no: 3
project no.: 4011101

Scale 1" = 20 ft

28+00 29+00 30+00 31+00 32+00 33+00 34+00

TAPP ROAD

LINE PR-1

CONSTRUCTION ENTRANCE

BEGIN CONSTRUCTION
STA 29+40 LINE PR-1

PI=STA 32+24.32
N=141615.2844
E=3099729.7110
I=00°56'12" RT
T=43.16'
R=52.80'
L=86.32'

TEMPORARY RUN-A-ROUND
SEE SHEETS 10-13 FOR PROFILE &
SHEETS 38-42 FOR CROSS SECTIONS

TYPICAL ARRANGEMENT (TOTAL 45 OF EACH TREE) TYPICAL EACH SIDE
QA 1 | AR 1 | QR 1

STR NO. 104 | STR NO. 105 | STR NO. 106 | STR NO. 107 | STR NO. 107A | STR NO. 108 | STR NO. 109 | STR NO. 110 | STR NO. 111

40' OF 18" ADS N-12 PIPE
INV. EL=774.374
INV. EL=777.000

36' OF 24" ADS N-12 PIPE
INV. EL=771.750
INV. EL=771.000

Existing Storm Inlet
T/C=778.52
Inv.=775.74 12" CPP (S)

Existing Storm Inlet
T/C=782.20
Inv.=778.25 12" CPP (S)

Existing Storm Inlet
T/C=782.17
Inv.=776.97 12" CPP (N)
Inv.=776.97 12" CPP (E)

Existing Storm Inlet
T/C=776.87
Inv.=773.47 12" CPP (W)
Inv.=773.47 18" CPP (N)
Inv.=773.47 [illegible] (S)
TBR

Existing Storm Inlet
REPLACE CASTING W/EJIW #V-5665 & ADJUST TO GRADE REMOVE TO EAST CONNECT TO STR 105
T/C=778.97
Inv.=774.70 12" CPP (W) Inv.=774.70
12" CPP (N) Inv.=774.70 12" CPP (E)

TAPP ROAD DEVELOPMENT LLC
INST. NO. 2006007753

PROPOSED R/W
TEMPORARY R/W FOR FUTURE SLOPE CONS.
TEMPORARY R/W FOR SLOPE CONSTRUCTION
B/W FOR SLOPE CONSTRUCTION

STREET TREES 40.00' TYP

BM #16 REBAR W/CAP
N=141635.9403
E=3099877.6564
ELEV=770.51

END TAPER +40 LINE PR-1

LINE PR-1 PROFILE

1" = 20 ' HOR
1" = 5' VERT

PVI STATION 29+00.00
PVI ELEVATION=780.60
CURVE LENGTH=200.00

PROPOSED PR-1 PROFILE

EXISTING PROFILE

-1.00%

-3.00%

58' OF 15" ADS N-12 PIPE @ 0.69%

147' OF 12" ADS N-12 PIPE @ 4.28%

PVI STATION 31+00.00
PVI ELEVATION=778.60
CURVE LENGTH=100.00

EXISTING 20" WATER
(PLOTTED 5' BELOW DATUM)

VPC STATION=28+00.00
VPC STATION=786.45

VPT STATION=30+00.00
VPT STATION=779.60

VPC STATION=30+50.00
VPC STATION=779.10

VPT STATION=31+50.00
VPT STATION=777.10

VPC STATION=33+00.00
VPC STATION=772.60

STRUCTURE NO. 104
STATION 30+35.00
INLET TYPE J
TOP OF CASTING=778.99
INVERT IN=774.50
INVERT IN=774.70
INVERT OUT=774.50
(STR. NO. 105)

STRUCTURE NO. 105
STATION 30+35.00
INLET TYPE J
TOP OF CASTING=778.99
INVERT OUT=775.14
(STR. NO. 104)

STRUCTURE NO. 106
STATION 30+96.00
INLET TYPE J
TOP OF CASTING=778.17
INVERT IN=774.37
INVERT OUT=774.37
(STR. NO. 106)

STRUCTURE NO. 107A
STATION 30+96.00
STORM CEPTOR STC 900
TOP OF CASTING=779.00
INVERT IN=771.75
INVERT OUT=771.75
(STR. NO. 107A)

STRUCTURE NO. 107
STATION 30+96.00
INLET TYPE J
TOP OF CASTING=778.17
INVERT IN=773.82
INVERT IN=774.08
INVERT OUT=773.82
(STR. NO. 107)

STRUCTURE NO. 108
STATION 32+58.00
INLET TYPE J
TOP OF CASTING=773.60

STRUCTURE NO. 109
STATION 32+58.00
INLET TYPE J MOD
TOP OF CASTING=773.60

29+00 30+00 31+00 32+00 33+00 33+80

800 795 790 785 780 775 770 765 760 755

ARCHITECTURE
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revisions:

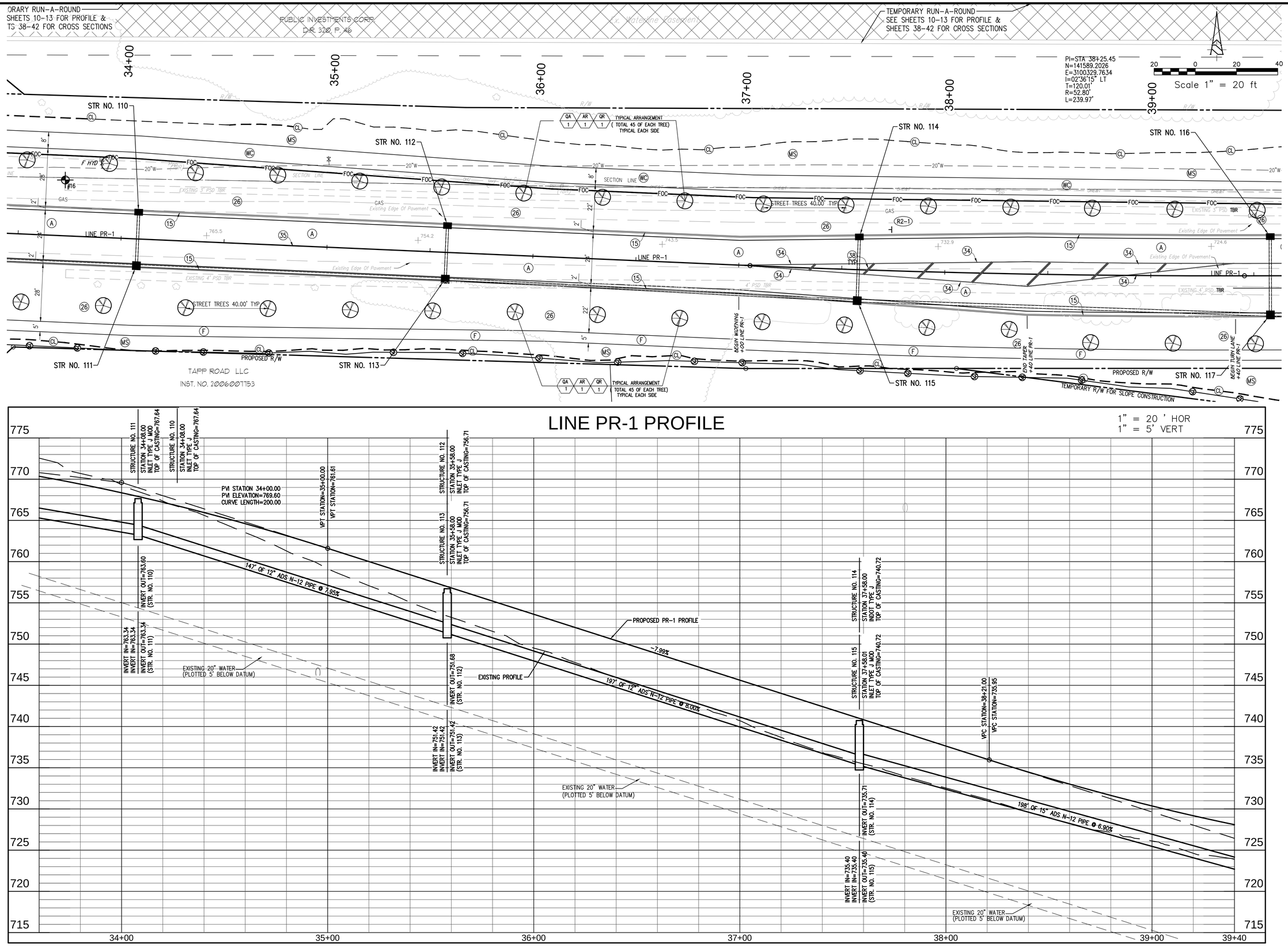
JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: LINE PR-1
PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 4
project no.: 4011101



revisions:

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09-29-11

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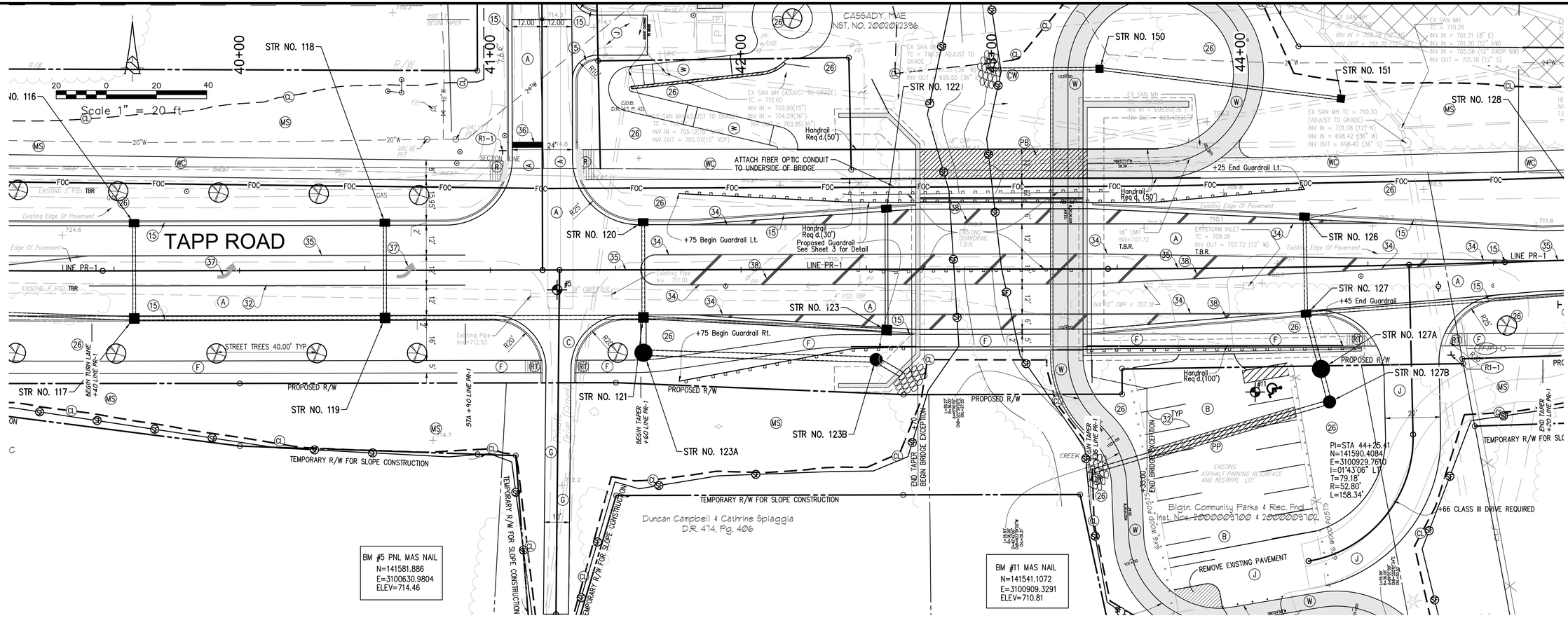
TAPP ROAD RECONSTRUCTION PHASE III

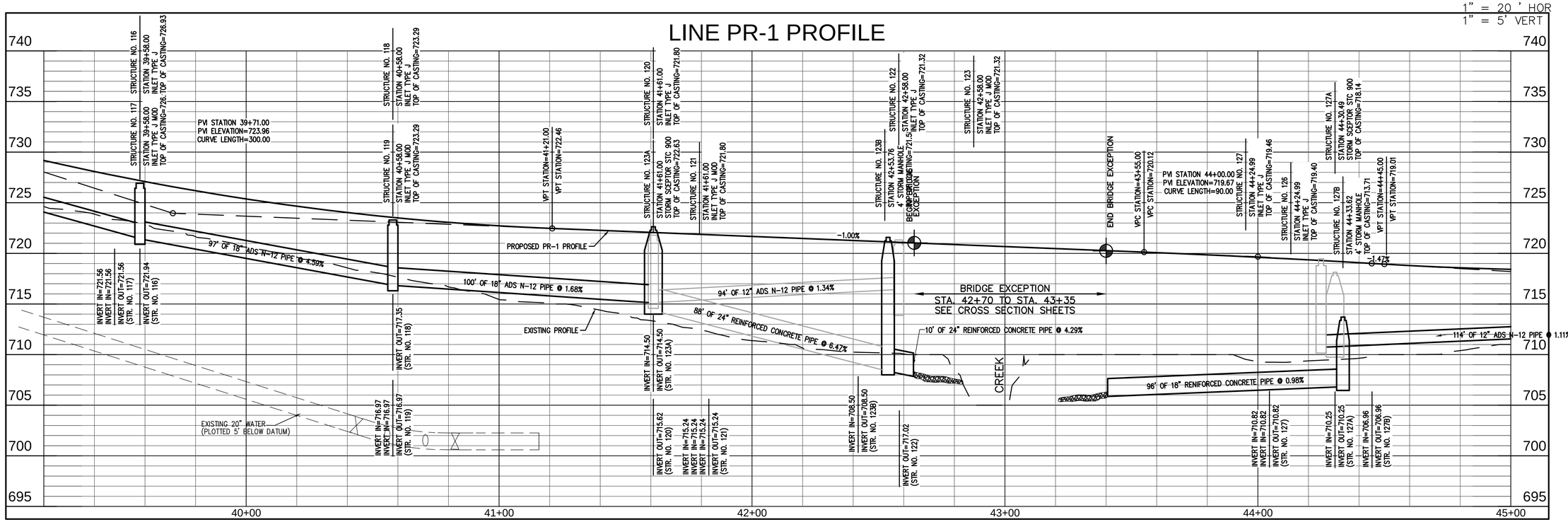
Bloomington, Indiana

title: LINE PR-1
PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 5
project no.: 401101



1" = 20 ' HOR
1" = 5' VERT



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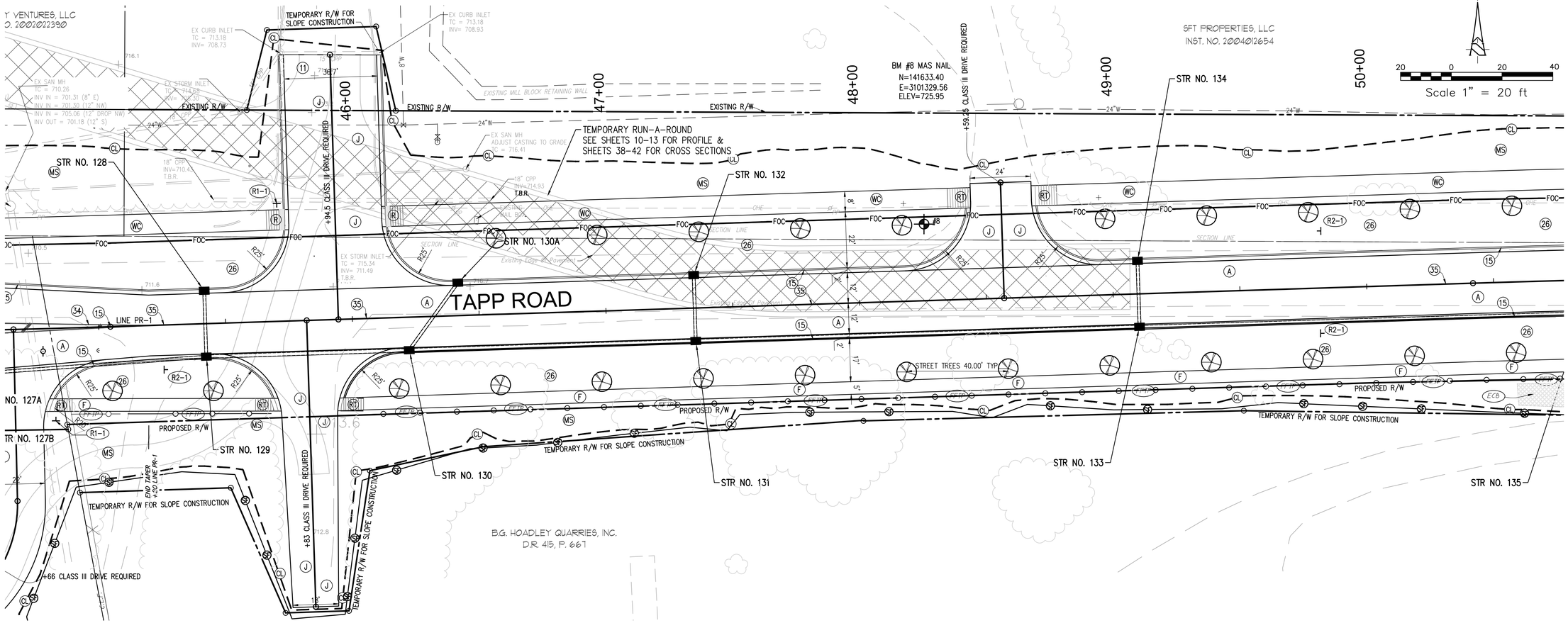
09-29-11

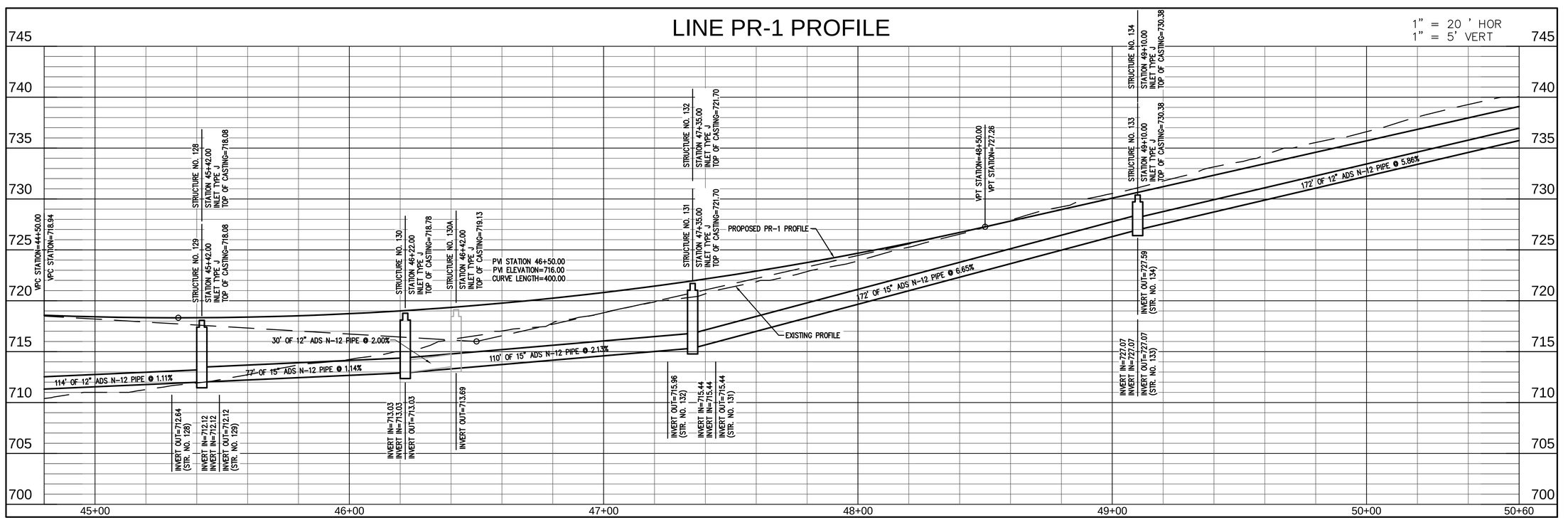
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: LINE PR-1
PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 6
project no.: 401101





revisions:

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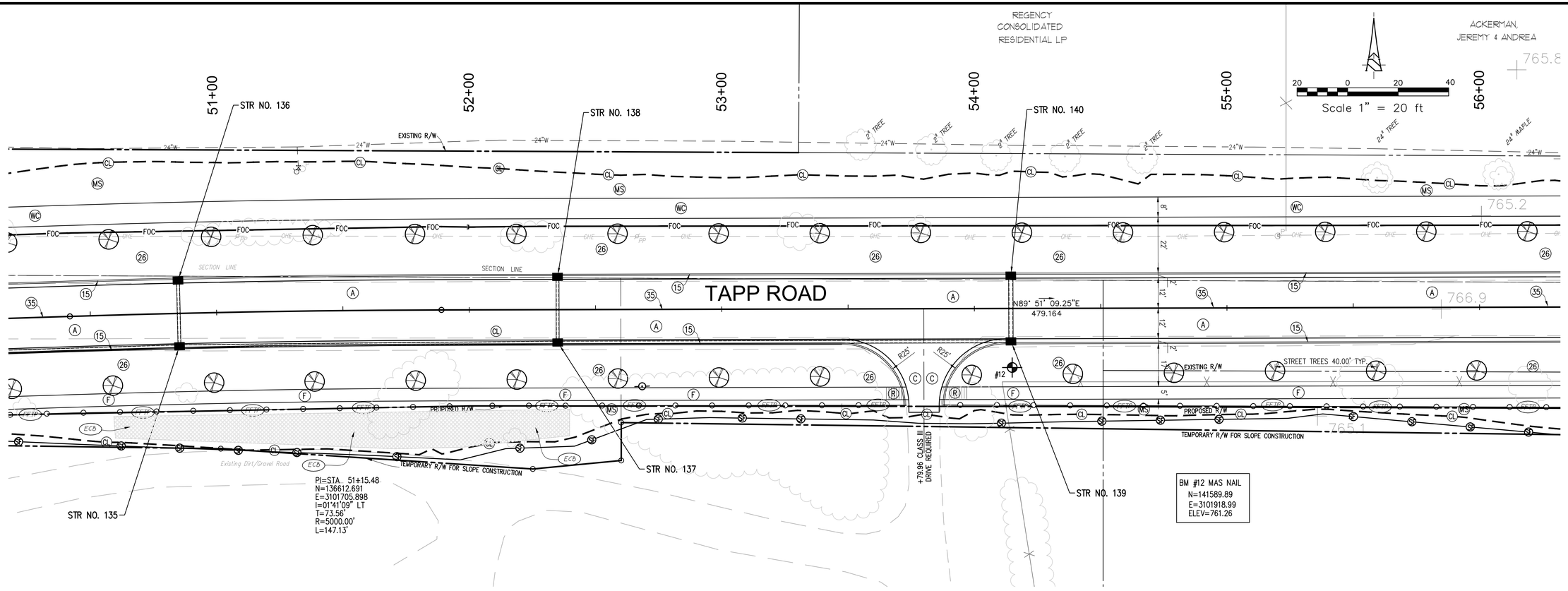
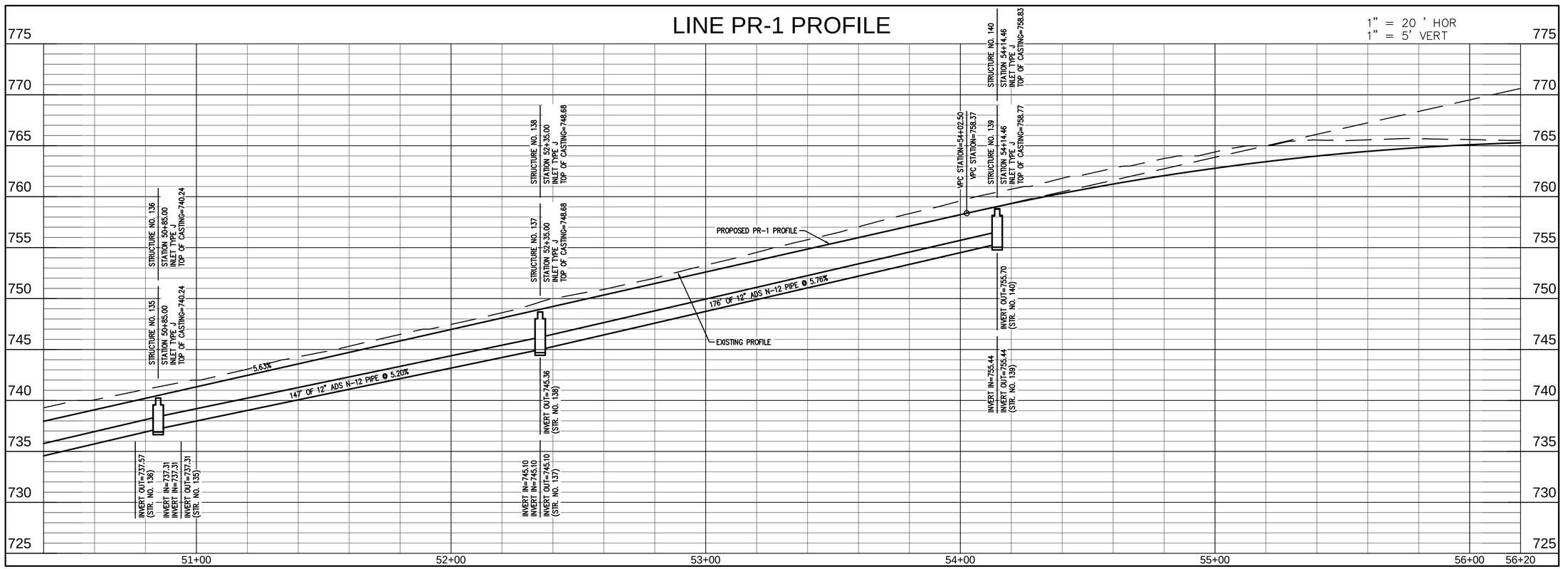
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: LINE PR-1 PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 7
project no.: 401101





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
09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: LINE PR-1
PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 8
project no.: 4011101

ASSISTED LIVING CONCEPTS INC
DBA MONROE HOUSING C/O CBIZ

Scale 1" = 20 ft

STA +33.10
CLASS II DRIVE REQUIRED

30" MAPLE

EXISTING R/W

EXIST. SIDEWALK (TBR)

+72.87
59.80, L

+74.13
51.81, L

+23.19
44.08, L

+24.39
36.08, L

+91.90
62.81, L

+91.99
54.81, L

STR NO. 142

STR NO. 144

TYPICAL ARRANGEMENT
(TOTAL 45 OF EACH TREE)
TYPICAL EACH SIDE

REMOVE PAVED SIDE DITCH
& CAP EXISTING PIPE

15" CPP
INV = 737.89
(TBR)

EX CURB INLET
TC = 739.27
INV= 735.54

EX STORM INLET
TC = 735.33
INV= 731.23

EXIST. PAVED SIDE DITCH
(TBR)

TAPP ROAD

SECTION LINE

RELOCATE ROUNDABOUT SIGN

STREET TREES 40.00' TYP.

PROPOSED R/W

TEMPORARY R/W FOR SLOPE CONSTRUCTION

STR NO. 141

STR NO. 143

STR NO. 145

END CONSTRUCTION
STA 60+84 LINE PR-1

END FULL DEPTH PAVEMENT
STA 59+65.84

PI=STA 56+53.74
N=141630.283
E=3099176.241
I=00°48'55" LT
T=35.57'
R=5000.00'
L=71.14'

B.G. HOADLEY QUARRIES, INC.
D.R. 426, P. 406

LINE PR-1 PROFILE

1" = 20 ' HOR
1" = 5' VERT

INCIDENTAL CONSTRUCTION

PVI STATION 56+80.00
PVI ELEVATION=774.00
CURVE LENGTH=555.00

EXISTING PROFILE

PROPOSED PR-1 PROFILE

STRUCTURE NO. 142
STATION 59+34.00
INLET TYPE J
TOP OF CASTING=756.18

STRUCTURE NO. 141
STATION 59+34.00
INLET TYPE J
TOP OF CASTING=756.18

VPT STATION=59+57.50
VPT STATION=754.88
PVI STATION 59+65.84
PVI STATION 754.31

END FULL DEPTH PAVEMENT
STA 59+65.84

6.89%

147' OF 12" ADS N-12 PIPE @ 6.86%

147' OF 12" ADS N-12 PIPE @ 4.71%

STRUCTURE NO. 144
STATION 60+84.00
INLET TYPE J
TOP OF CASTING=745.95

STRUCTURE NO. 143
STATION 60+84.00
INLET TYPE J
TOP OF CASTING=746.00

STRUCTURE NO. 145
STATION 62+32.43
EXISTING INLET
TOP OF CASTING=739.21

62+32.47

INVERT IN=752.92
INVERT OUT=752.92
(STR. NO. 141)

INVERT OUT=753.18
(STR. NO. 142)

INVERT OUT=742.95
(STR. NO. 144)

INVERT IN=742.63
INVERT IN=742.64
INVERT OUT=742.63
(STR. NO. 143)

INVERT IN=735.56

775 / 770 / 765 / 760 / 755 / 750 / 745 / 740 / 735 / 730 / 725

57+00 / 58+00 / 59+00 / 60+00 / 61+00 / 62+00 / 62+40

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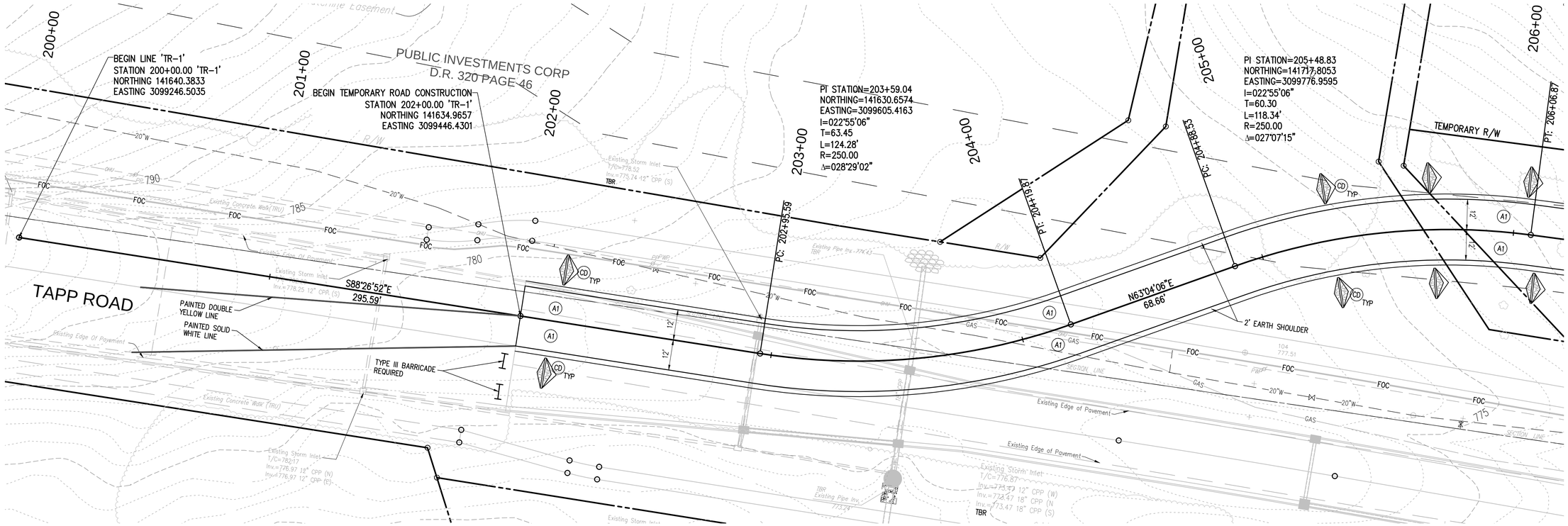
09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

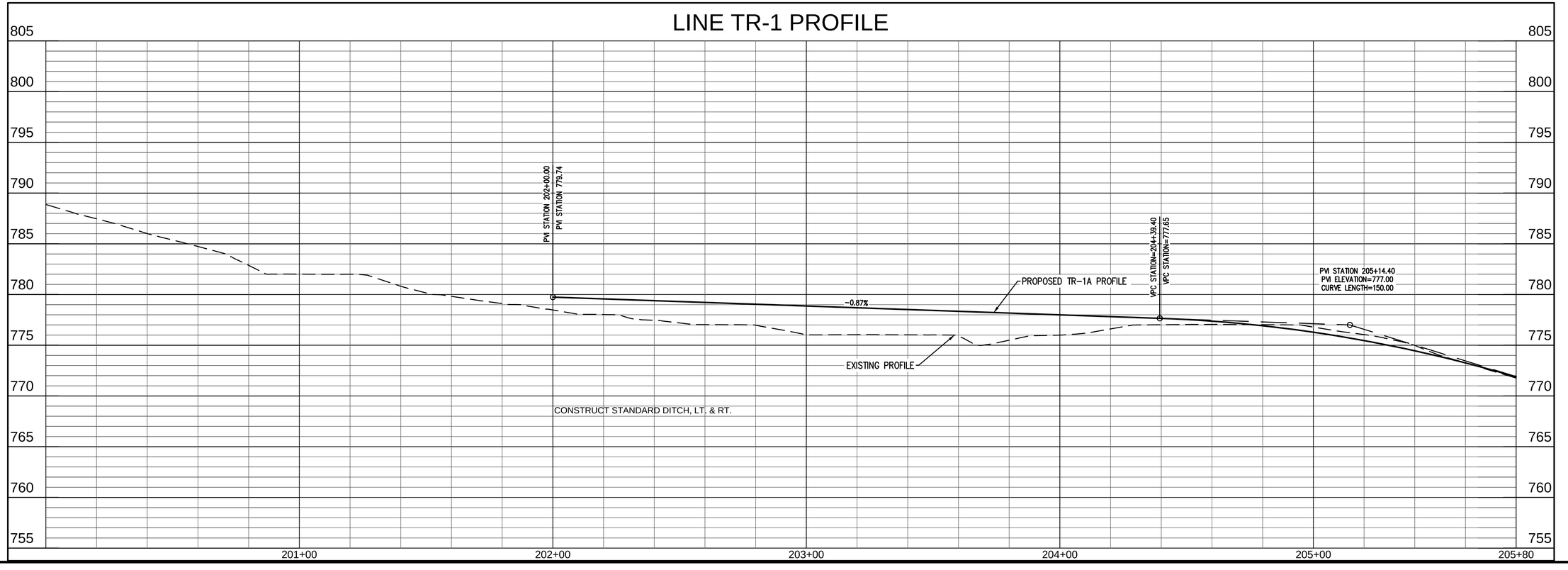
title: LINE PR-1
PLAN & PROFILE

designed by:
drawn by: JR, DS
checked by:
sheet no: 9
project no.: 4011101



TEMPORARY RUN-A-ROUND
SEE TYPICAL CROSS SECTION, SHEET 2

LINE TR-1 PROFILE



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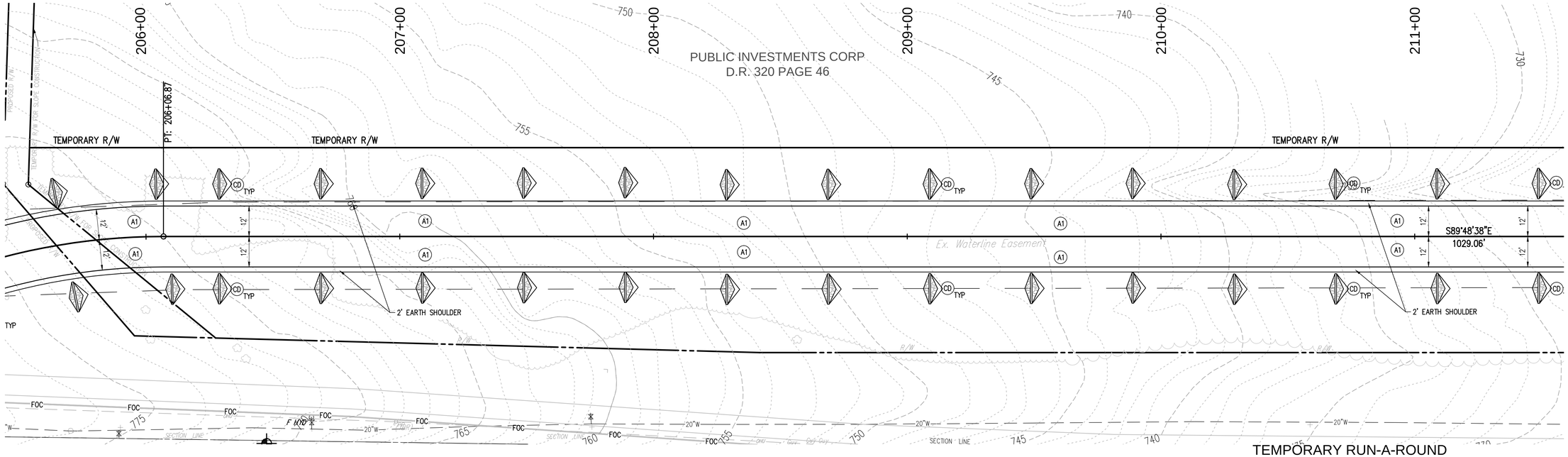
09-29-11
certified by:

Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

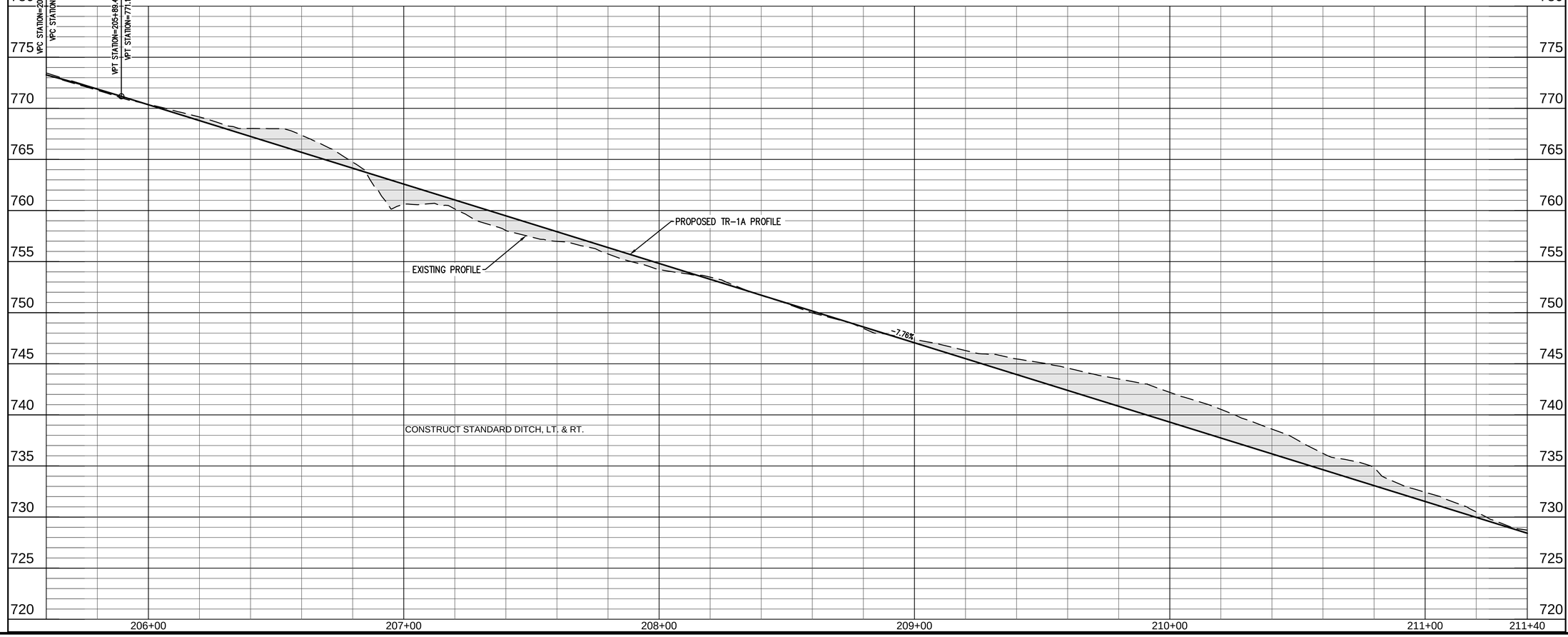
title: LINE TR-1
PLAN & PROFILE

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 10
project no.: 401139



TEMPORARY RUN-A-ROUND
SEE TYPICAL CROSS SECTION, SHEET 2

LINE TR-1 PROFILE



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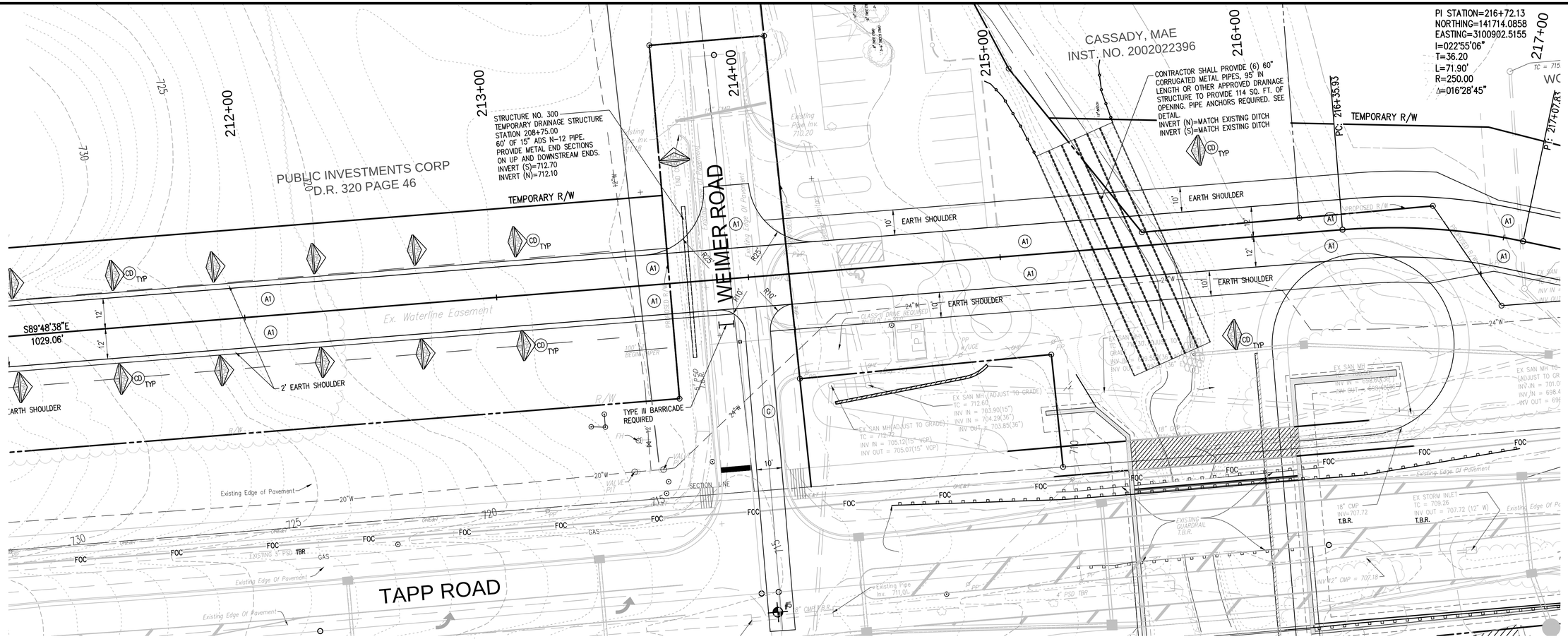
09-29-11
certified by:

Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

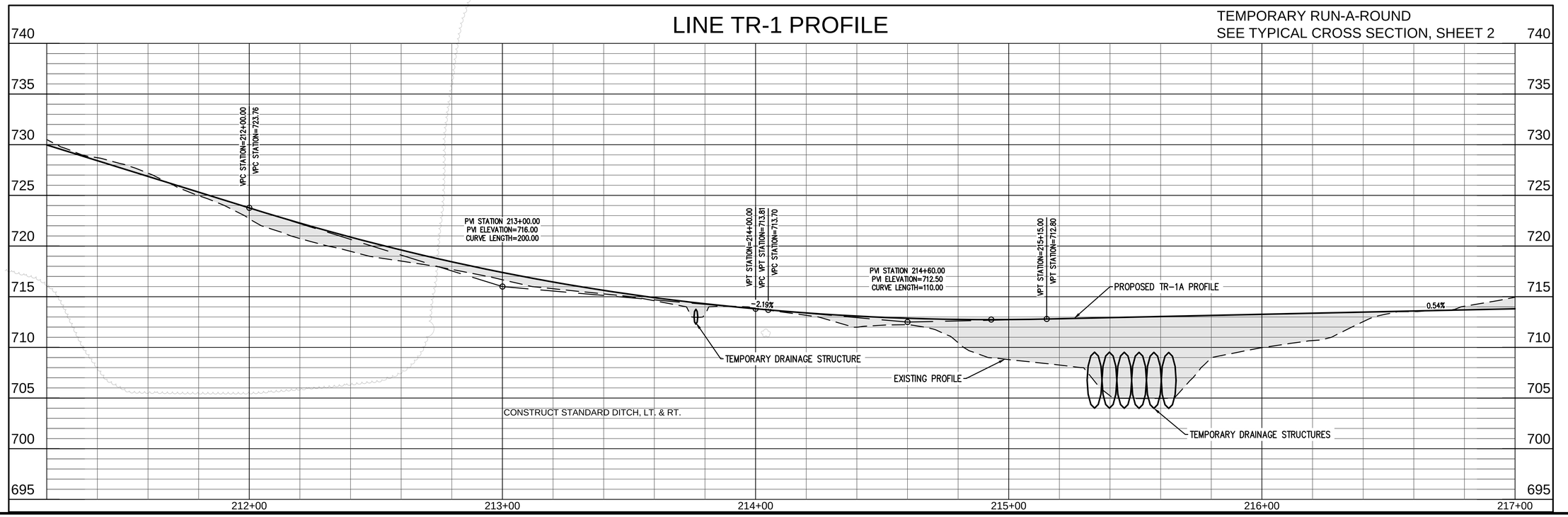
title: LINE TR-1
PLAN & PROFILE

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 11
project no.: 401139



LINE TR-1 PROFILE

TEMPORARY RUN-A-ROUND
SEE TYPICAL CROSS SECTION, SHEET 2



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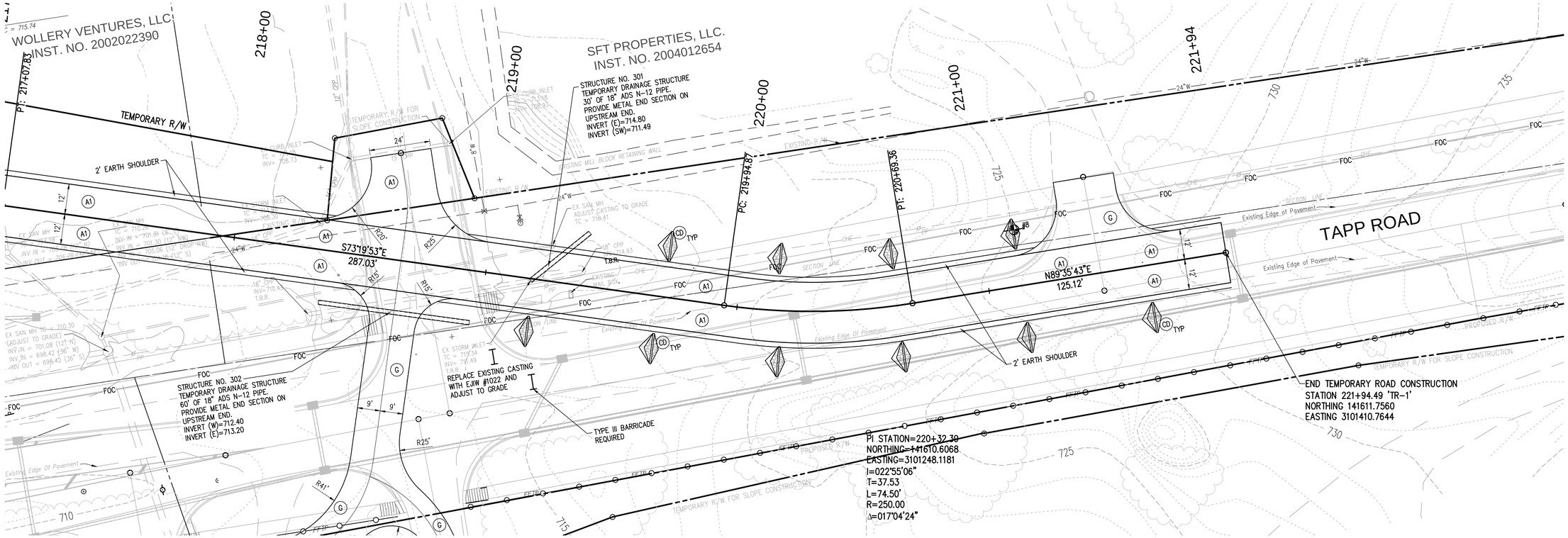
09-29-11

certified by:

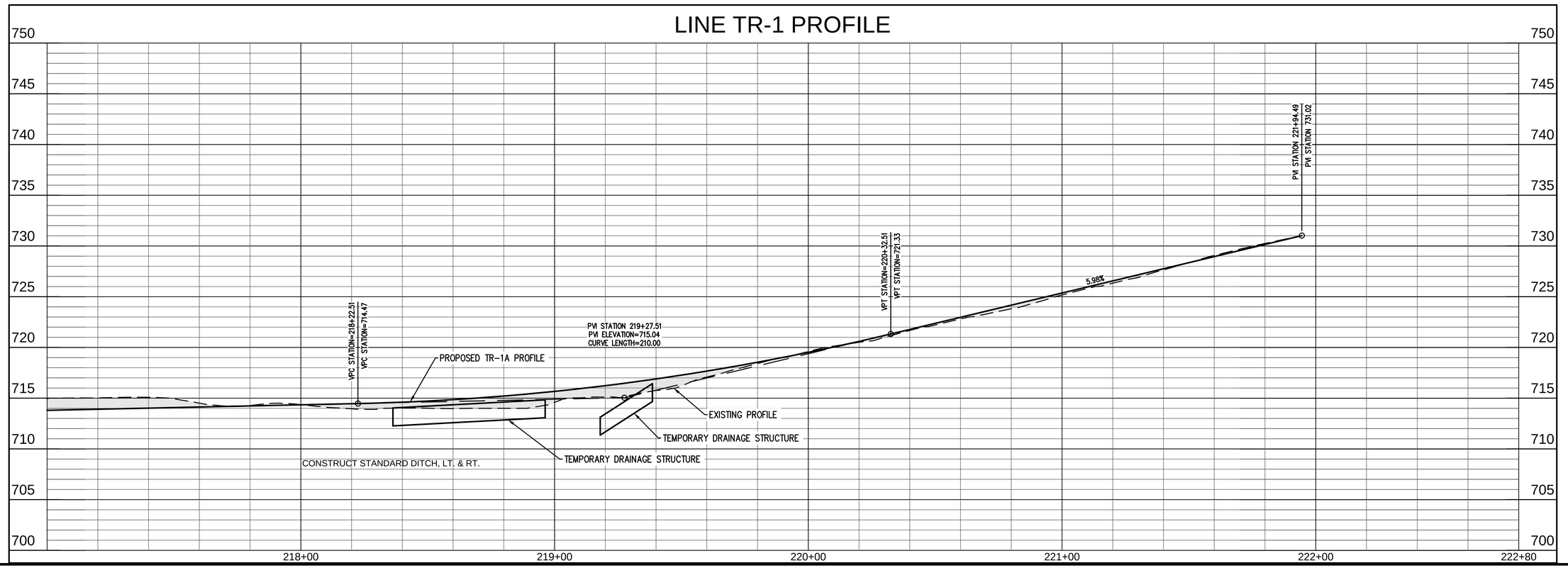
Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

title: LINE TR-1
PLAN & PROFILE

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 12
project no.: 401139



TEMPORARY RUN-A-ROUND
SEE TYPICAL CROSS SECTION, SHEET 2



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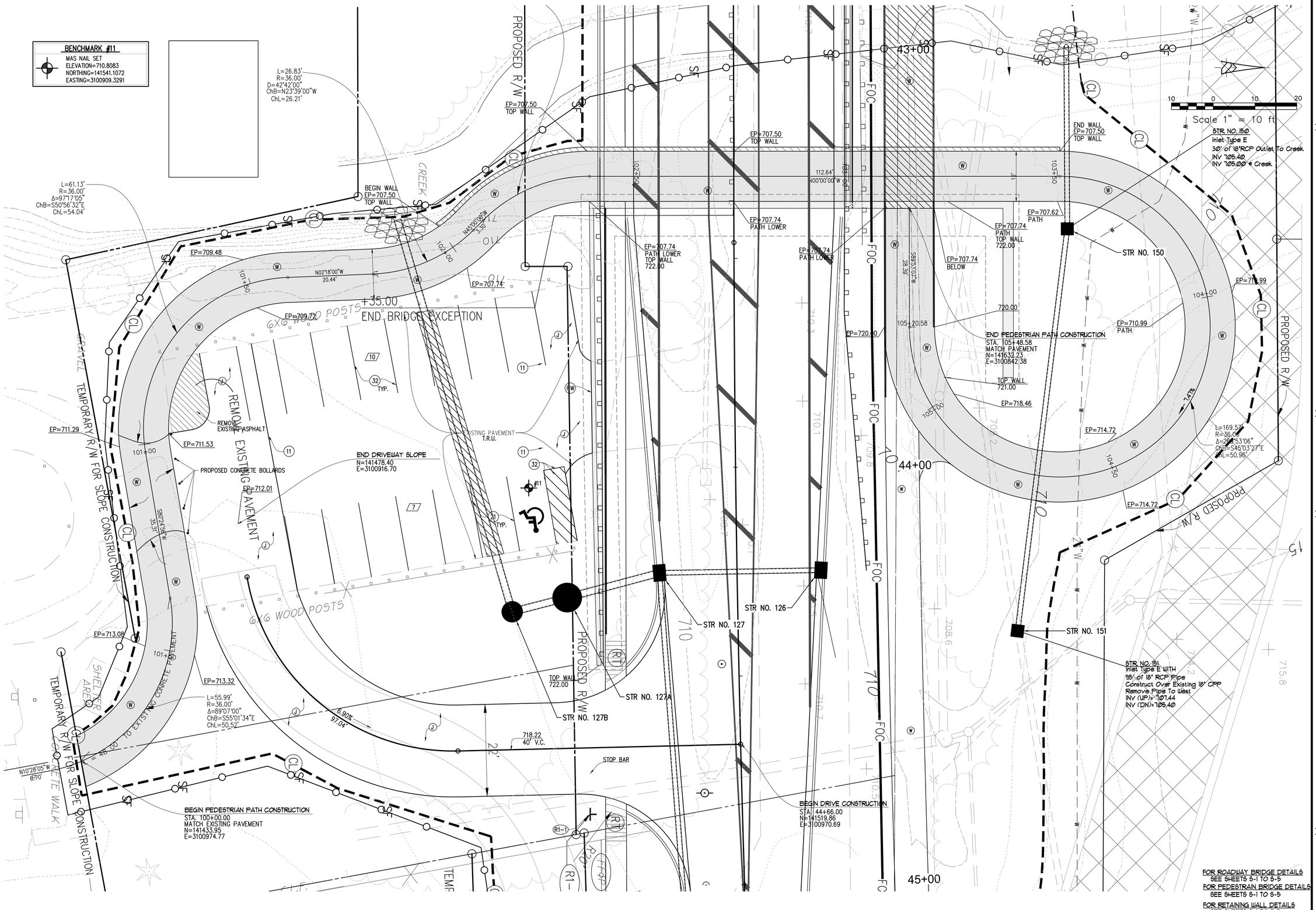
STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11
certified by:

Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

title: LINE TR-1
PLAN & PROFILE

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 13
project no.: 401139



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PROFESSIONAL ENGINEER
09-29-11
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: PEDESTRIAN PATH PLAN

designed by:
drawn by: JR, DS
checked by:
sheet no: 14
project no.: 4011101

PARKING AREA PLANT LIST

SYMBOL	MARK	BOTANICAL NAME	COMMON NAME	QTY	SIZE & CONDITION
			LARGE DECIDUOUS TREES		
	QP	QUERCUS BICOLAR	SWAMP WHITE OAK	3	2" CAL., B & B
	AR	ACER RUBRUM	RED SUNSET MAPLE	3	2" CAL., B & B
	BN	BETULA NIGRA	RIVER BIRCH	12	2" CAL., B & B
			SMALL DECIDUOUS TREES		
	CA	CORNUS ALTERNIFOLIA	PAGODA DOGWOOD	2	2" CAL., B & B

MARK / QTY

*CONTAINER OR BALL AND BURLAP CONDITION ACCEPTABLE

NOTE: SPECIES SHOWN THAT ARE NOT LISTED IN THE CITY OF BLOOMINGTON ZONING ORDINANCE CHAPTER 20.06 TABLES OF RECOMMENDED PLANT MATERIALS ARE GIVEN BOTANICALLY COMPARABLE DENSITY VALUES.

Scale 1" = 10 ft

WEIMER ROAD

PROPOSED R/W

END CURB

STR. NO. 141
36 LFT OF 15" ADS N-12 PIPE & 2- END SECTIONS REQ'D.
INV UP 710.72
INV DN 710.10

STR NO. 120

STR NO. 122

STR NO. 146
9 LFT OF 12" ADS N-12 PIPE & 1- GALVANIZED METAL END SECTION AND 10' WIDE X 10' LONG RIP RAP REQ'D.
INV UP 705.16
INV DN 705.00
(SEE DETAIL FOR MORE INFORMATION)

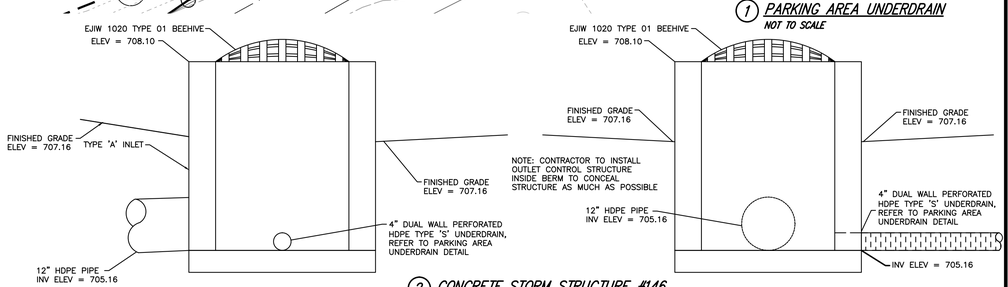
END-LINE UNDERDRAIN CLEANOUT - PLACE 90° FITTING AND EXTEND 4" HDPE TYPE 'S' SOLID PIPE TO 6" BELOW FINISHED GRADE AND PLACE HDPE CAP WITH 1/2" GALV. METAL BOLT & WASHER THROUGH TOP OF CAP

MID-LINE UNDERDRAIN CLEANOUT - PLACE WYE FITTING AND EXTEND 4" HDPE TYPE 'S' SOLID PIPE TO 6" BELOW FINISHED GRADE AND PLACE HDPE CAP WITH 1/2" GALV. METAL BOLT & WASHER THROUGH TOP OF CAP

125 LFT OF 4" ADS N-12 TYPE 'S' PERFORATED PIPE WRAPPED IN A SOCK - REFER TO PARKING AREA UNDERDRAIN DETAIL FOR MORE INFORMATION

RETAINING WALL (SEE SHEET 17 FOR DETAILS)

ADJUST CASTINGS TO GRADE



1 PARKING AREA UNDERDRAIN
NOT TO SCALE

2 CONCRETE STORM STRUCTURE #146
NOT TO SCALE

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STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: PARKING LOT PLAN

designed by:
drawn by: JR, DS
checked by:
sheet no: 15
project no.: 4011101

RULE 5 NARRATIVE

- OWNER & DEVELOPER: TAPP ROAD RECONSTRUCTION PHASE III
  City of Bloomington Public Works
  401 N. Morton Street
  BLOOMINGTON, INDIANA 47403

- SITE LOCATION:
  S1/2 & N1/2 Quarter, Sections 7 & 18, T 8 N, R 1 W
  Perry Township, Monroe County, Indiana
  LATITUDE: 39°08'11" N
  LONGITUDE: 86°33'40" W

- TAPP ROAD WIDENING consists of 3,025 feet of Roadway Construction.

- There is presence of 100 year floodplain's, floodway fringes, or floodways.

- Adjacent areas consist of:
  - Existing Business Facilities and Single Family homes to the South
  - Future Commercial Property to the North
  - Roadway to the East and West
  - The west branch of Clear Creek runs North/South through the proposed site.

- The ultimate receiving waters for the project are Clear Creek

- There are zero (0) sink holes on site.

- Calculations for peak discharge:
  - 100 year pre-developed: 4.23 cfs — LATITUDE: N39° 08' 11" LONGITUDE: W86° 33' 40"
  - 100 year post-developed: 7.25 cfs

- Hydrologic unit code – 051202080900110

- No state or federal water quality permits other than Rule 5 will be required.

- 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 will be treated by routing storm runoff along grass lined ditches and through the proposed water quality basin which will give the sediment a chance to settle out of the water before being discharged into the existing adjacent storm sewer.

- 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 occurred 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 OF 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.

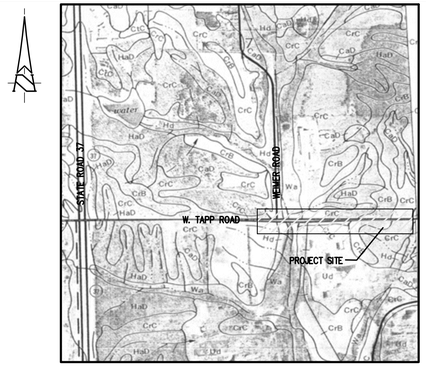
6. Phase of construction activities shall be used, where possible, to minimize disturbance of large areas.

7. Unvegetated areas that are scheduled or likely to be left inactive for fifteen (15) days or more must be temporarily or permanently stabilized with measures appropriate for the season to minimize erosion potential. Alternative measures to site stabilization are acceptable if the project site owner or their representative can demonstrate 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 corrective 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 handling 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 areas not covered by permanent structures, or equivalent permanent stabilization measures have been employed.



SOILS MAP

SCALE: NO SCALE

CrC – Crider silt loam, 6 to 12 percent slopes.
This moderately sloping, deep, well drained soil is on narrow and broad convex ridgetops of the uplands. Areas are generally elongated. They range from 3 to 200 acres and have a dominant size of about 40 acres.
The available water capacity of this Crider soil is high, and permeability is moderate. Runoff from cultivated areas is medium.
The organic matter content of the surface layer is low.
This soil is moderately limited for dwellings with and without basements because of slope. This soil is severely limited for local roads and streets by low strength. Limitations are moderate for septic tank absorption fields because of slope and moderate permeability.

CrB – Crider silt loam 2 to 6 percent slopes.
This gently sloping, deep, well drained soil is on narrow and broad convex ridgetops on uplands. Areas are generally elongated. They range from 3 to 400 acres and have a dominant size of about 40 acres.
The available water capacity of this Crider soil is high, and permeability is moderate. Runoff from cultivated areas is medium.
The organic matter content of the surface layer is low.
This soil is slightly limited for dwellings. This 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.

Hd – Haymond silt loam.
This nearly level, deep, well drained soil is on bottom land. Small areas of this soil are in the bottom of sinkholes. This soil is subject to frequent flooding form January to May for brief periods. Areas are generally variable in size and shape. They range from 3 to 200 acres and have a dominant size of about 25 acres.
The available water capacity of this Haymond soil is very high, and permeability is moderate. Surface runoff from cultivated areas is slow.
The organic matter content of the surface layer is moderate.
This soil is severely limited for building sites because of frequent flooding. This soil is severely limited for local roads because it is subject to frequent flooding and potential frost action. The limitations for septic tank absorption fields are also severe because this soil is subject to frequent flooding.

Wa – Wakeland silt loam.
This nearly level, deep, somewhat poorly drained soil is on broad flats on bottom land and in narrow areas along streams. It is subject to frequent flooding from January to May for brief periods. Areas are generally variable in size and shape. They range from 3 to 100 acres and have a dominant size of about 20 acres.
The available water capacity of this Wakeland soil is very high, and permeability is moderate. Surface runoff from cultivated areas is slow. The organic matter content of the surface layer is moderate.
The soil has a seasonal high water table at a depth of 1 to 3 feet from January to April.
This soil is severely limited for building sites and generally is unsuited to this use because it is subject to frequent flooding and wetness. This soil is severely limited for local roads because of frequent flooding an potential frost action. The limitations for septic tank absorption fields are also severe because of wetness and flooding.

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–Gilpin–Hagerstown silt loams, 18 to 25 percent slopes
EdD	Ebal–Wellston–Gilpin silt loams 12 to 18 percent slopes
EkB	Elkinsville silt loam, 2 to 6 percent slopes
EkF	Elkinsville 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	Steff 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 3.25
ROCK CHECK DAM

REQUIREMENTS (Exhibit 3.25-B and C)
Contributing drainage area: 2 acres maximum.
Dam center: 2 ft. maximum height but at least 9 in. lower than the outer edges at natural ground elevation.
Dam side slope: 2:1 or flatter.
Distance between dams: Spaced so the toe of the upstream dam is the same elevation as the top of the downstream dam.
Overflow areas along channel: Stabilized to resist erosion.
Rock size: INDOT Revetment Riprap.

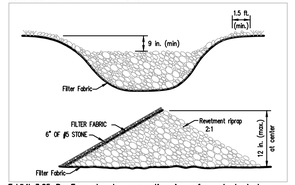


Exhibit 3.25-B. Forward and cross-section views of a rock check dam.

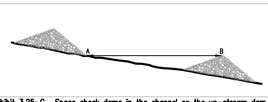


Exhibit 3.25-C. Space check dams in the channel so the up-stream dam toe elevation (A) and down-stream dam top elevation (B) are the same.

INSTALLATION
1. Excavate a cutoff trench into the ditch banks, and extend it a minimum of 18 in. beyond the abutments.
2. Place the rock in the cutoff trench and channel to the lines and dimensions shown in Exhibit 3.25-B—i.e., center a maximum of 2 ft. high yet 9 in. below where the dam abuts the channel banks.
3. Extend the rock at least 18 in. beyond the channel banks to keep overflow water from undercutting the dam as it re-enters the channel.
4. Install as many dams as necessary to satisfy the spacing requirement shown in Exhibit 3.25-C.
5. Stabilize the channel above the uppermost dam.
6. Recognizing that water will flow over and around the lowermost dam, protect the channel downstream from it with an erosion-resistant lining for a distance of 6 ft. unless the channel is protected through other means.

MAINTENANCE
* Inspect check dams and the channel after each storm event, and repair and damage immediately.
* If significant erosion occurs between dams, install a riprap liner in that portion of the channel (Practice 3.32).
* Remove sediment accumulated behind each dam as needed to maintain channel capacity, to allow drainage through the dam, and to prevent large flows from displacing sediment.
* Add rock to the dams as needed to maintain design height and cross section.
* When the dams are no longer needed, remove the rock and stabilize channel, using an erosion-resistant lining if necessary.

PRACTICE 3.16
RIPRAP

PURPOSE
* To protect slopes, streambanks, channels, or similar areas subject to erosion by water.

REQUIREMENTS
Rock: Hard, angular, and weather-resistant, having a specific gravity of at least 2.5.
Gradation: Well-graded stone, 50% (by weight) larger than the specified d_{50}; however, the largest pieces should not exceed two times the specified d_{50}, and no more that 15% of the pieces (by weight) should be less than 3 in.
Filter: Use geotextile fabric for stabilization and filtration or sand/gravel layer placed under all permanent riprap installations.
Slope: 2:1 or flatter, unless approved in the erosion and sediment control plan.
Minimum thickness: Two times the specified d_{50} stone diameter.

INSTALLATION (Exhibit 3.16-B)
SUBGRADE PREPARATION:
1. Remove brush, trees, stumps, and other debris.
2. Excavate only deep enough for both filter and riprap; over-excavation increases the amount of spoil considerably (Practice 3.32).
3. Compact any fill material to the density of the surrounding undisturbed soil.

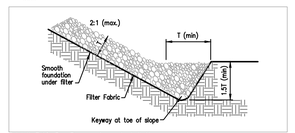


Exhibit 3.16-B. Proper riprap installation on a slope.

4. Cut a keyway in stable material at the base of the slope to reinforce the toe; keyway depth should be 1 1/2 times the design thickness of the riprap and should extend a horizontal distance equal to the design thickness.
5. Smooth the graded foundation.

FILTER PLACEMENT:
1. If using geotextile fabric, place it on the smoothed foundation, overlap The edges at least 12 in., and secure with anchor pins spaced every 3 ft. along the overlap. (For large riprap, consider a 4–in. layer of sand to protect the fabric.)
2. If using a sand/gravel filter, spread the well-graded aggregate in a uniform layer to the required thickness (6 in. minimum); if two or more layers are specified, place the layer of smaller gradation first, and avoid mixing the layers.

RIPRAP PLACEMENT:
1. Immediately after installing the filter, add the riprap to full thickness in one operation. (Do not dump through chutes or use any method that causes segregation of rock sizes or that will dislodge or damage the underlying filter material.)
2. If fabric is damaged, remove the riprap and repair by adding another layer of fabric, overlapping the damaged area by 12 in.
3. Place smaller rock in voids to form a dense, uniform, well-graded mass. (Selective loading at the quarry and some hand placement may be needed to ensure an even distribution of rock material.)
4. Blend the rock surface smoothly with the surrounding area to eliminate protrusions or overfall's.

MAINTENANCE
* Inspect periodically for displaced rock material, slumping, and erosion at edges, especially downstream or downslope. (Properly designed and installed riprap usually requires very little maintenance if promptly repaired.)

PRACTICE 3.01
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT PAD

PURPOSE
* To provide a stable entrance/exit condition from the construction site.
* To keep mud and sediment off public roads.

REQUIREMENTS (Exhibit 3.01–B)
Material: 2–3 in. washed stone (INDOT CA No. 2) over a stable foundation.
Thickness: 6 in. minimum
Width: 50 ft. minimum or full width of entrance/exit roadway, whichever is greater.
Length: 200 ft. minimum. The length can be shorter for small sites such as for an individual home.
Washing facility (optional): Level area with 3 in. washed stone minimum or a commercial rack, and waste water diverted to a sediment trap or basin (Practice 3.72).
Geotextile fabric underliner: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

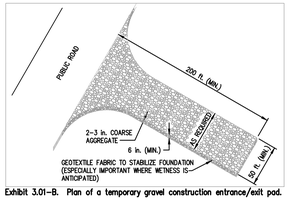


Exhibit 3.01–B. Plan of a temporary gravel construction entrance/exit pad.

INSTALLATION (Exhibit 3.01–C)
1. Avoid locating on steep slopes or at curves in public roads.
2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceeds 2%, construct a 6–8 in.–high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road (Practice 3.24) (see Exhibit 3.01–C).
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion/sediment control plan, leaving the surface smooth and sloped for drainage.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

Exhibit 3.01–C. Temporary construction entrance/exit pad with diversion ridge where grade exceeds 2%

MAINTENANCE
* Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
* Reshape pad as needed for drainage and runoff control.
* Top dress with clean stone as needed.
* Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
* Repair any broken road pavement immediately.

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.

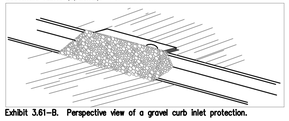


Exhibit 3.61–B. Perspective view of a gravel curb inlet protection.

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.

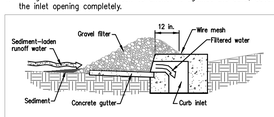


Exhibit 3.61–C. Cross–section detail of a gravel curb inlet protection.

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.

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 geo–textile 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 joints 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.

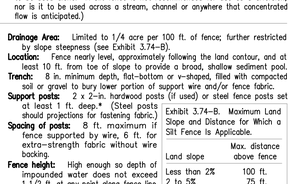
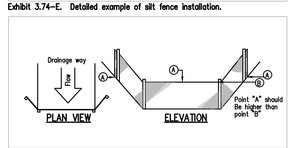


Exhibit 3.74–E. Detailed example of silt fence installation.



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.

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:

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Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: EROSION CONTROL DETAILS

designed by:
drawn by: JR, DB
checked by:
sheet no: 16
project no.: 401101

PRACTICE 3.17
EROSION CONTROL BLANKET (SURFACE–APPLIED)

Erosion control blanket is biodegradable organic or synthetic mulch incorporated into a polypropylene or similar netting material; it is an alternative to mulch and normally used on slopes or in concentrated flow channels.

PURPOSE
* To prevent erosion by protecting the soil from rainfall impact, overland water flow, concentrated runoff, or wind.
* To provide temporary surface stabilization.
* To anchor mulch in critical areas, including slopes.
* To reduce soil crusting.
* To conserve moisture and increase seed germination and seedling growth.

REQUIREMENTS
Material: Either an organic (straw, excelsior, woven paper, coconut, fiber, etc.) or a synthetic mulch incorporated into a polypropylene or similar netting material. It may be biodegradable, photodegradable or permanent.
Expected life: 2 years maximum.
Anchoring: Use of staples or stakes to prevent movement or displacement.

INSTALLATION (Exhibit 3.54–B)
1. Select the type and weight of erosion control blanket to fit the site conditions (e.g., slope, channel, flow velocity).
2. Install any practices needed to control erosion and runoff, such as temporary or permanent diversion, sediment basin or trap, silt fence, and straw bale dam (Practices 3.21, 3.22, 3.72, 3.73, 3.74, 3.75).
3. Grade the site as specified in the construction plan.
4. Add topsoil where appropriate (Practice 3.02).
5. Prepare the seedbed, fertilize (and lime, if needed), and seed the area immediately after grading (Practice 3.12).
6. Following manufacturer's directions, lay the blankets on the seeded area such that they are in continuous contact with the soil and that the upslope or upstream ones overlap the lower ones by at least 8 inches.
7. Tuck the uppermost edge of the upper blankets into a check slot (slit trench), backfill with soil and tamp down.
8. Anchor the blankets as specified by the manufacturer. This typically involves driving 6–8 inch metal staples into the ground in a pattern determined by the site conditions.

MAINTENANCE
* During vegetative establishment, inspect after storm events for any erosion below the blanket.
* If any area shows erosion, pull back that portion of the blanket covering it, add soil, re–seed the area, and re–apply and staple the blanket.
* After vegetative establishment, check the treated area periodically.

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 by-pass 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.

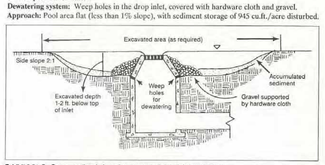


Exhibit 3.51-B. Cross–sectional view of an excavated drop inlet protection.

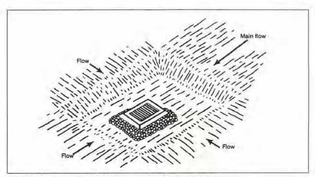


Exhibit 3.51-C. Perspective view of an excavated drop inlet protection.

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 *Exhibit 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.

PRACTICE 3.11
TEMPORARY SEEDING

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 on 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

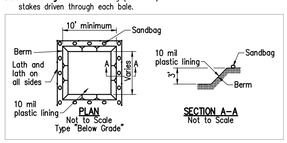
Seed Species*	Rate/acre	Planting Depth	Optimum dates**
Wheat or rye	150 lbs.	1 to 1 1/2 in.	9/15 to 10/30
Spring oats	100 lbs.	1 in.	3/1 to 4/15
Annual ryegrass	40 lbs.	1/4 in.	3/1 to 5/1
			8/1 to 9/1
German millet	40 lbs.	1 to 2 in.	5/1 to 6/1
Sudangrass	35 lbs.	1 to 2 in.	5/1 to 7/30

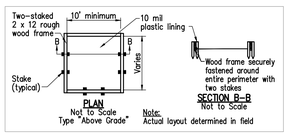
* Perennial species may be used as temporary cover, especially if the area to be seeded will remain ide for more than a year (Practice 3.12).
** Seeding done outside the optimum dates increases the chances of seeding failure.

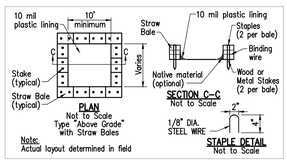
MAINTENANCE
* Inspect periodically after planting to see that vegetative stands are adequately established; reseed if necessary.
* Check for erosion damage after storm events and repair; reseed and mulch if necessary.
* Topdress fall seeded wheat or rye seeding's with 50 lbs./acre of nitrogen in February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

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 14 in. 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

"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.

TYPE I GUARDRAIL
INTERNATIONAL BUILDING CODE (IBC–2006) SUGGESTED DESIGN SPECIFICATIONS FOR PUBLIC ACCESS APPLICATIONS

1. Guardrails and Handrails shall be the product of a company normally engaged in the manufacture of pipe railing. Railing shall be shop assembled in lengths not to exceed 24 feet for field erection.
2. The handrail shall be made of pipes joined together with component fittings. Samples of all components, bases, toe plate and pipe shall be submitted for approval at the request of the engineer. Components that are pop–riveted or glued at the joints will not be acceptable. All components must be mechanically fastened with stainless steel hardware. Handrail and components shall be, as manufactured by Thompson Fabricating, LLC (Birmingham, Alabama) or an approved alternate.
3. Railings shall be 1 1/2" Schedule 40 aluminum pipe alloy 6105–T5, ASTM–B–429 or ASTM–B–221. Posts shall be 1 1/2" Schedule 80 aluminum pipe of the same alloy. Post spacing shall be a maximum of 6'–0".
TUF RAIL
4. Guardrails and Handrails shall be designed to withstand a 200 lb concentrated load applied in any direction and at any point on the top rail. Guardrails and Handrails shall also be designed to withstand a uniform load of 50 lb/ft applied horizontally to the top rail. Uniform loads are not to be applied simultaneously with the concentrated loads.
5. Pickets and intermediate railings shall be provided such that a 4–inch diameter sphere cannot pass through any opening up to a height of 34 inches. From a height of 34 inches to 42 inches above the adjacent walking surface, a sphere 8 inches in diameter shall not pass. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be of a size such that a sphere of 6 inches in diameter cannot pass through the opening.
6. Pickets and intermediate railings shall be designed to withstand a horizontally applied normal load of 50 lb on an area not to exceed one square foot including openings and space between rails.
7. The manufacturer shall submit calculations for approval at the request of the Engineer. Testing of base castings or base extrusions by an independent lab or manufacturer's lab (if manufacturer's lab meets the requirements of the Aluminum Association) will be an acceptable substitute for calculations. Calculations will be required for approval of all other design aspects.
8. Posts shall not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations (OSHA 1910.23). The top surface of the top railing shall be smooth and shall not be interrupted by projected fittings.
9. The mid–rail at a corner return shall be able to withstand a 200 lb load without loosening. The manufacturer is to determine this dimension for their system and provide physical laboratory tests to confirm compliance.
10. Concrete anchors shall be stainless steel type 303 or 304 and shall be furnished by the handrail manufacturer. The anchor design shall include the appropriate reduction factors for spacing and edge distances in accordance with the manufacturer's published data.
11. Toe plate shall conform to OSHA standards. Toe plate shall be a minimum of 4" high and shall be be an extrusion that attaches to the posts with clamps that will allow for expansion and contraction between posts. Toe plates shall be set 1/4" above the walking surface. Toe plates shall be provided on handrails as required by OSHA and/or as shown on drawings. Toe plates shall be shipped loose in stock lengths for field installation.
12. Openings in the railing shall be guarded by a self–closing gate (OSHA 1910.23). Safety chains shall not be used unless specifically shown on the drawings.
13. Finish shall be Aluminum Association M10–C22–A41 (215–R1). The pipe shall be plastic–wrapped. The plastic wrap is to be removed after erection.
14. Aluminum surfaces in contact with concrete, grout or dissimilar metals will be protected with a coat of bituminous paint, mylar isolators or other approved material.

PRACTICE 3.13
DORMANT AND FROST SEEDING

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 ide 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. Perennial 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 seeing 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.

EROSION CONTROL NOTES:

1. Contact the City of Bloomington Engineering Department at 812–349–3417 before commencing construction activities.
2. Install construction entrance as shown on plans
3. Install all storm sewer including the stormceptors before mass grading begins
4. Remove vegetation in areas to be disturbed only.
5. 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.
6. Maintain silt fence during construction and keep clear of debris.
7. 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.
8. All erosion control structures shall be kept in working order and inspected upon completion of every rain event. Add additional measures when necessary.
9. Upon completion of construction of all improvements redistribute top soil to all proposed grassed areas.
10. 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.
11. Fertilize and water seeded areas until mature turf is established.
12. Remove all temporary erosion control measures upon the establishment of the turf.
13. Submit notice of termination to IDEM upon completion of project. Contact the Engineer for more information.

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.

PRACTICE 3.12
PERMANENT SEEDING

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 DISTRIBUTED 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
+ prairie 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 and the legume frost–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.

revisions:

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JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
09–29–11
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: EROSION CONTROL DETAILS

designed by:
drawn by: JR, DS
checked by:
sheet no: 16A
project no.: 401101

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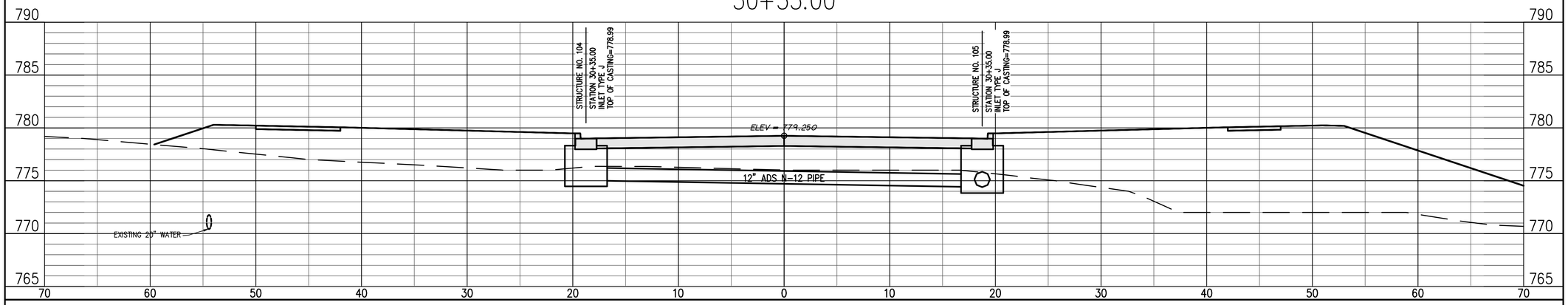

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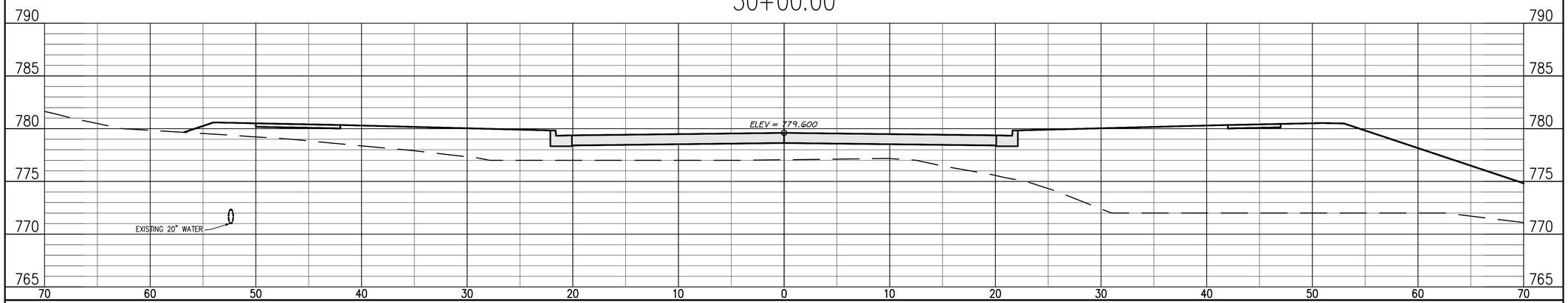

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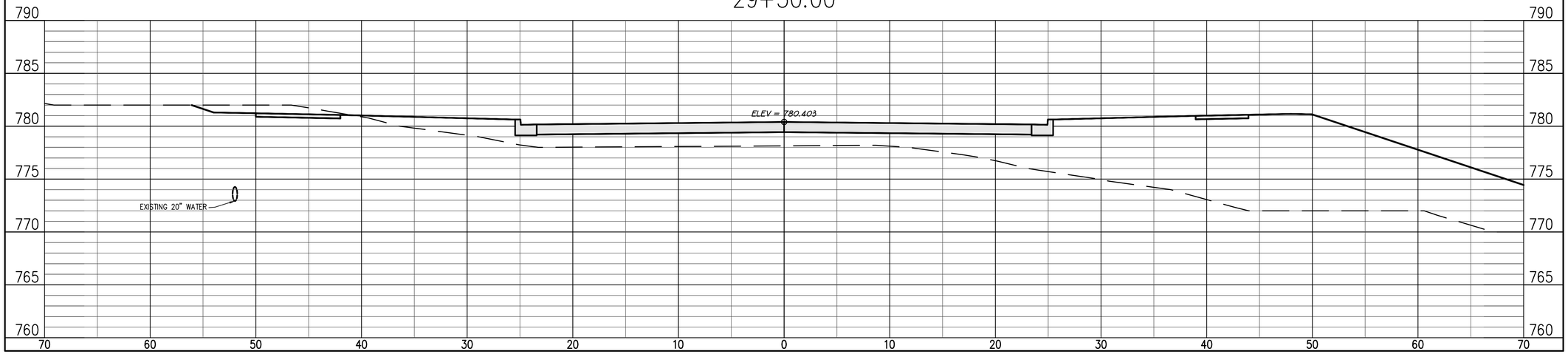

revisions:

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JEFFREY S. FANYO
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09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 17
project no.: 4011101

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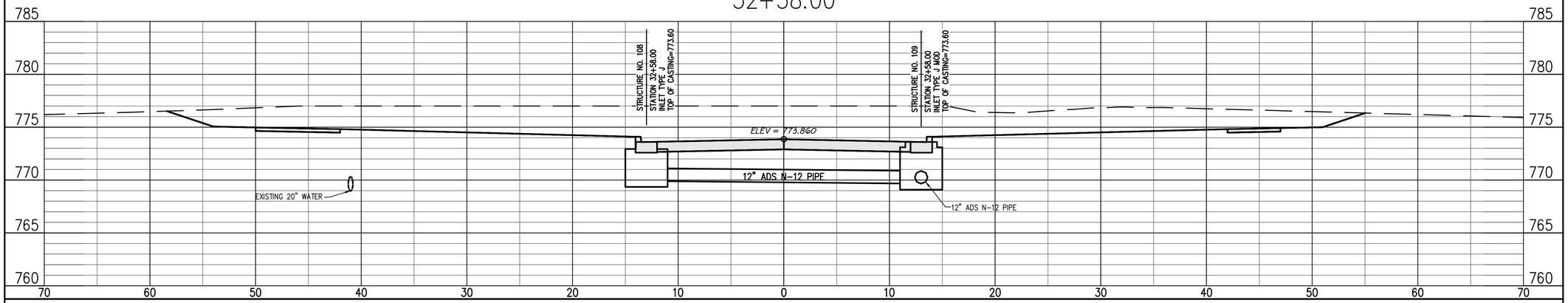

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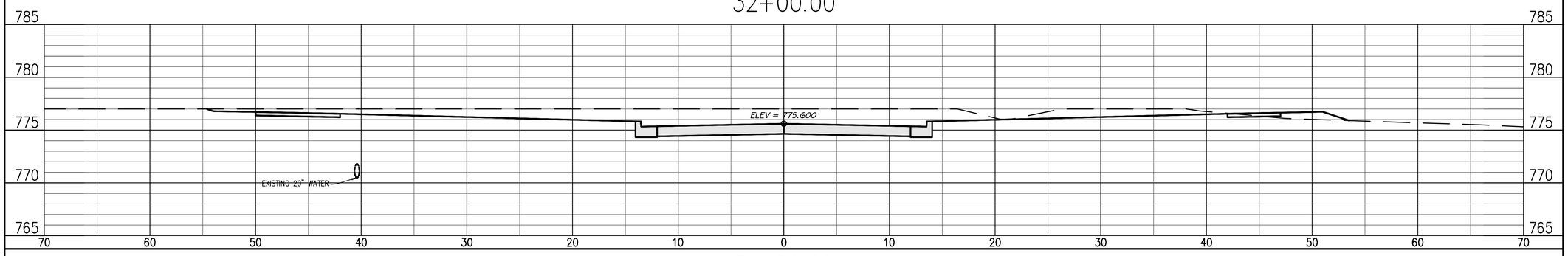

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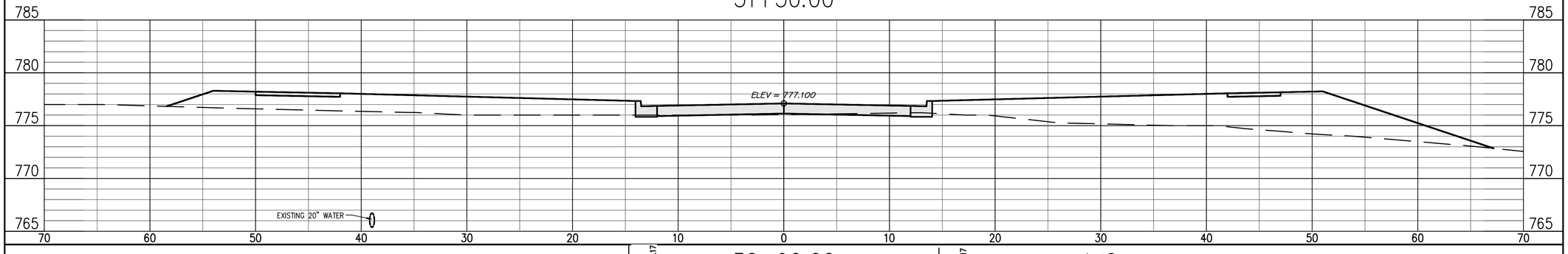

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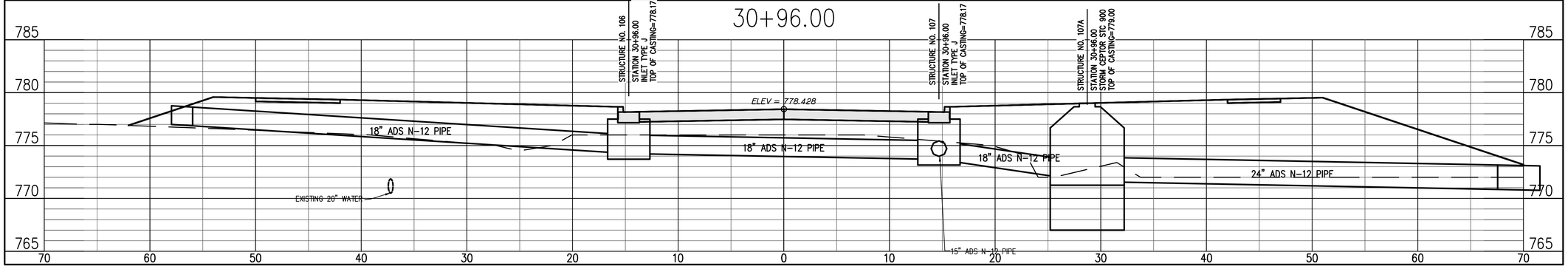

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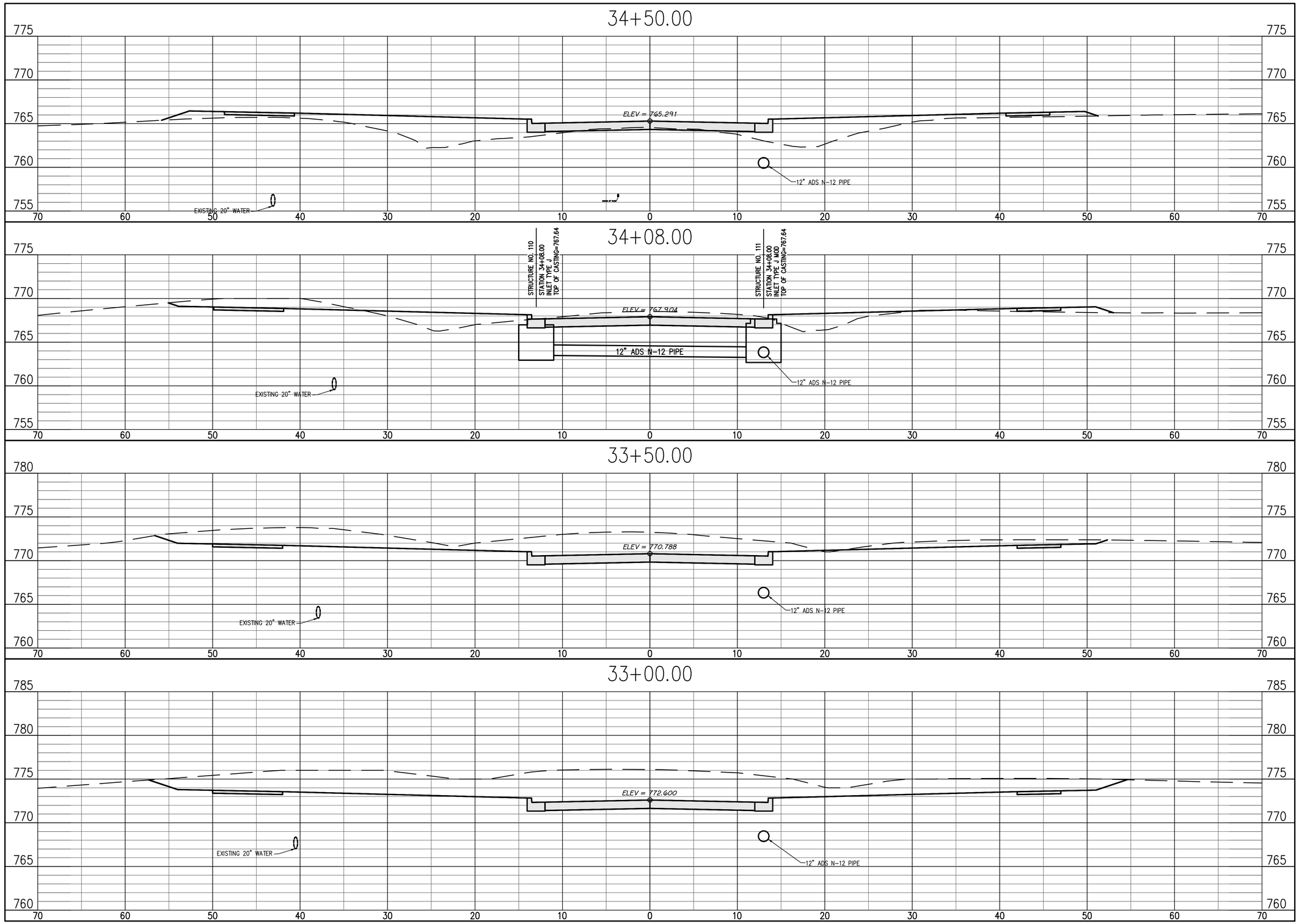
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 18
project no.: 4011101



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BYNUM FANYO & ASSOCIATES, INC.

528 north walnut street
Bloomington, Indiana
(812) 332-8030
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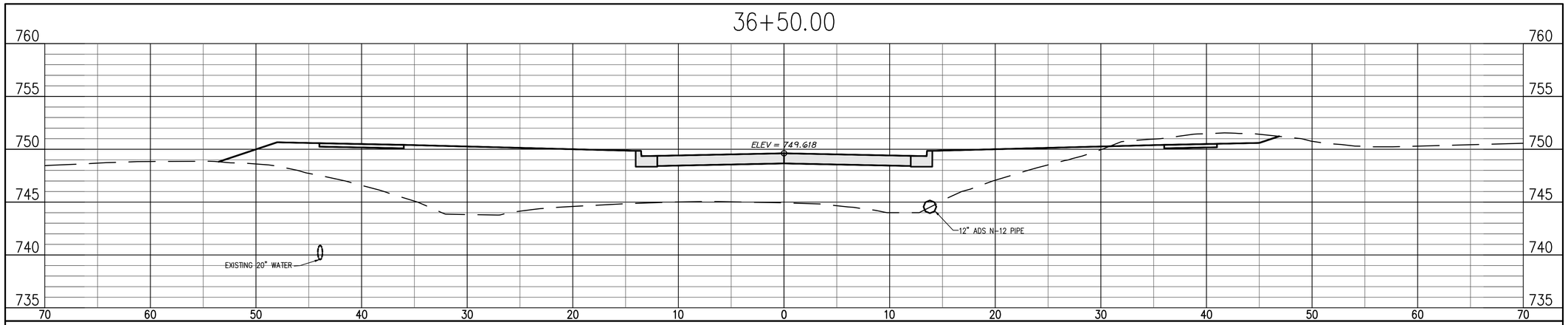
JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11

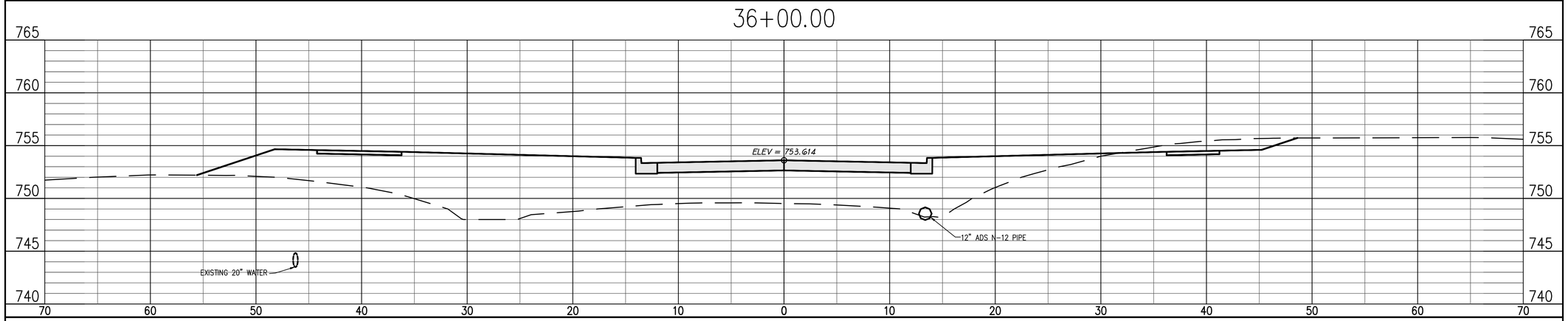
certified by:

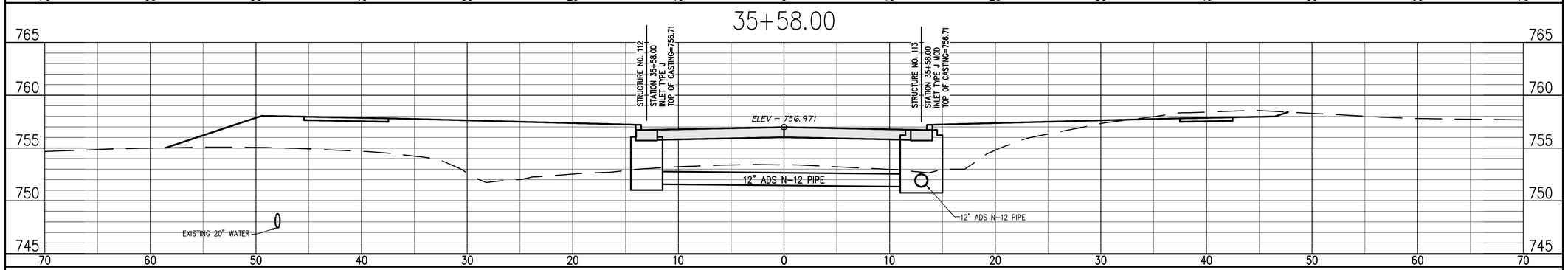
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

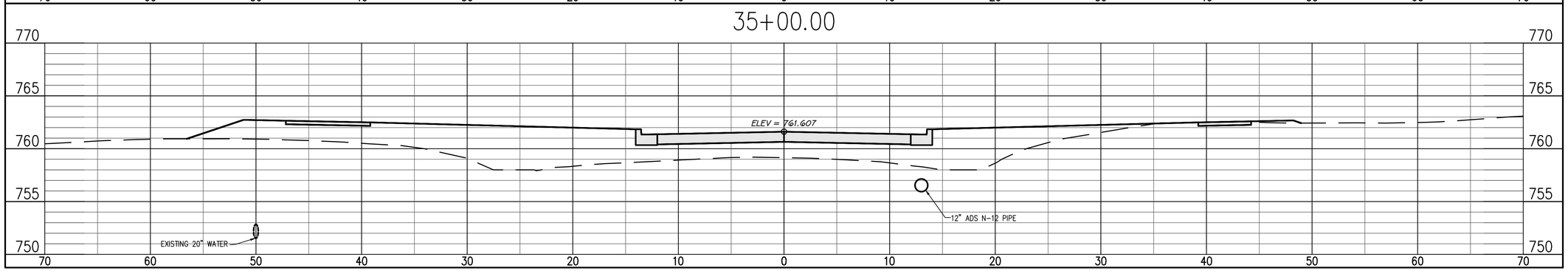
title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 19
project no.: 4011101









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09-29-11

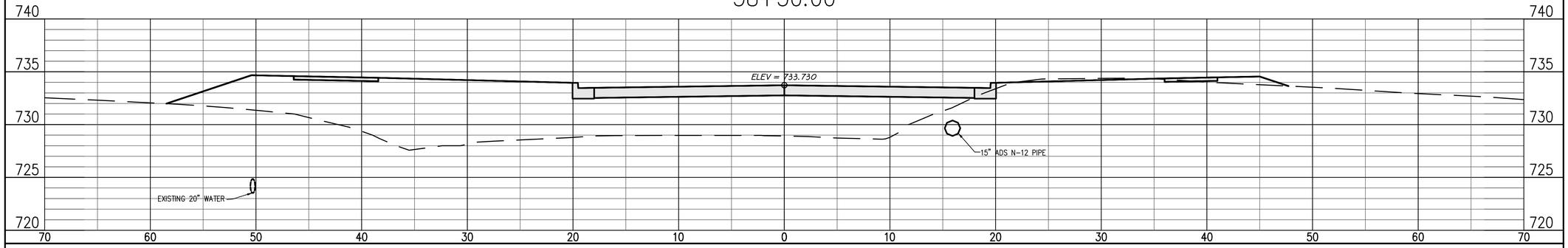
certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 20
project no.: 4011101

38+50.00



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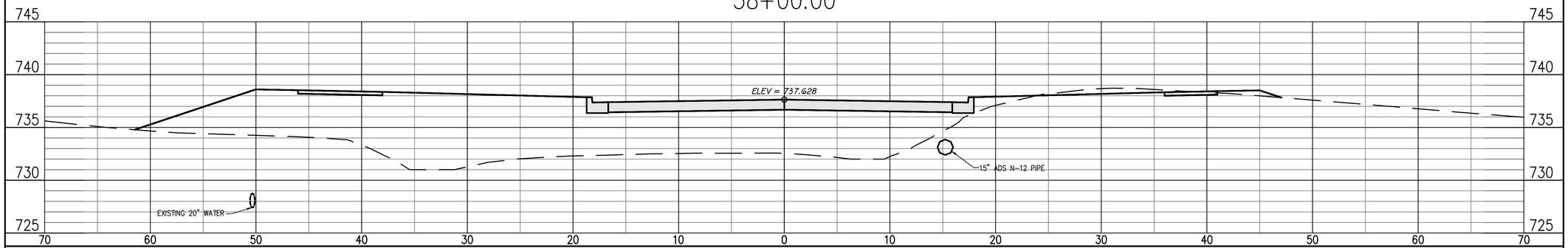

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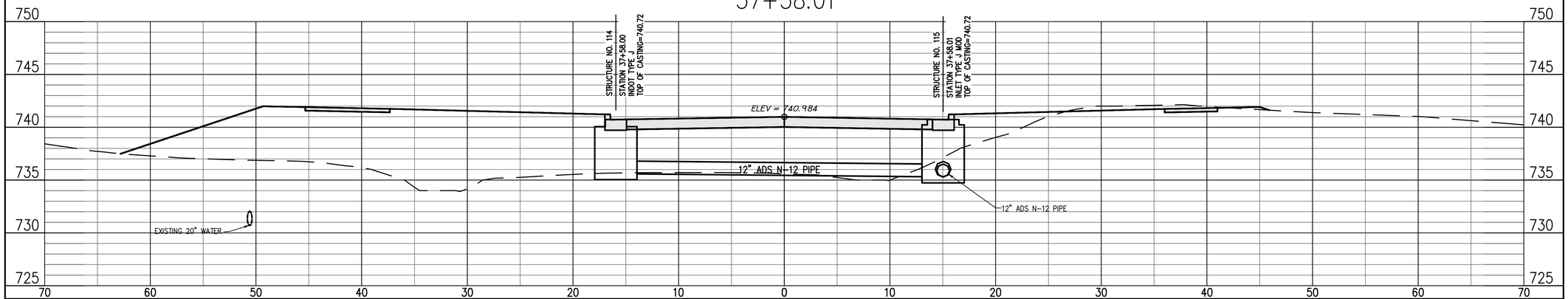

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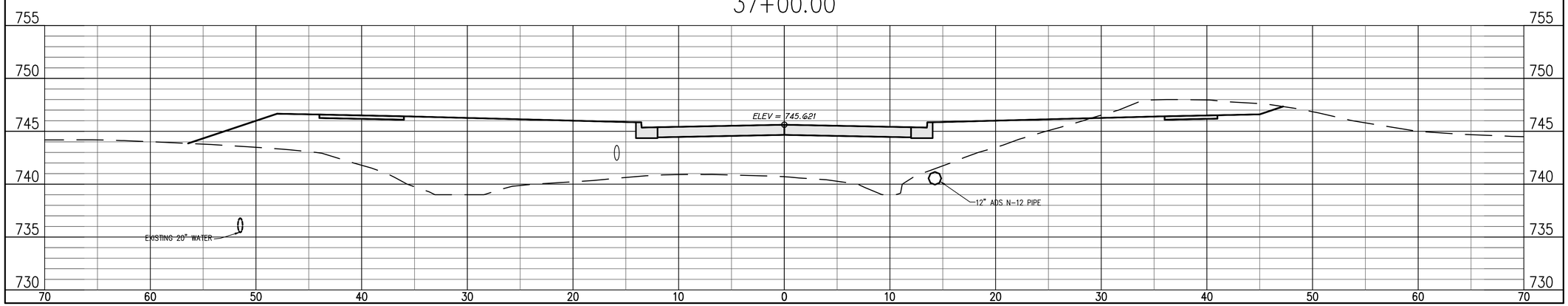

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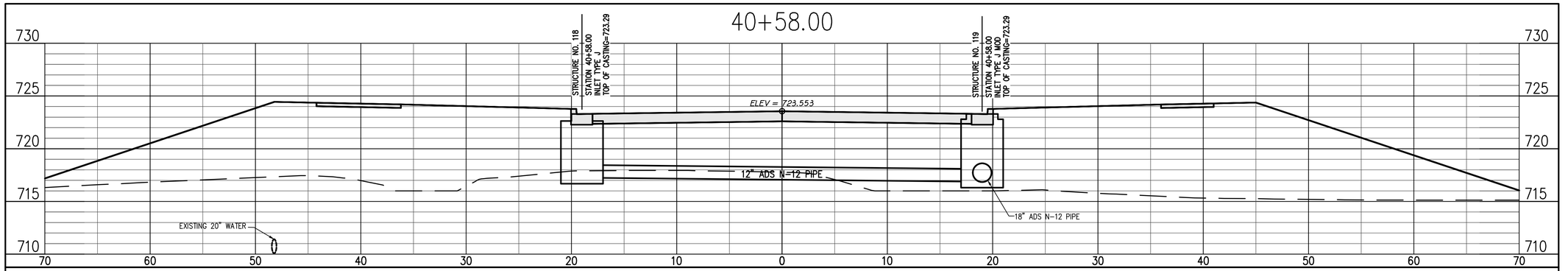
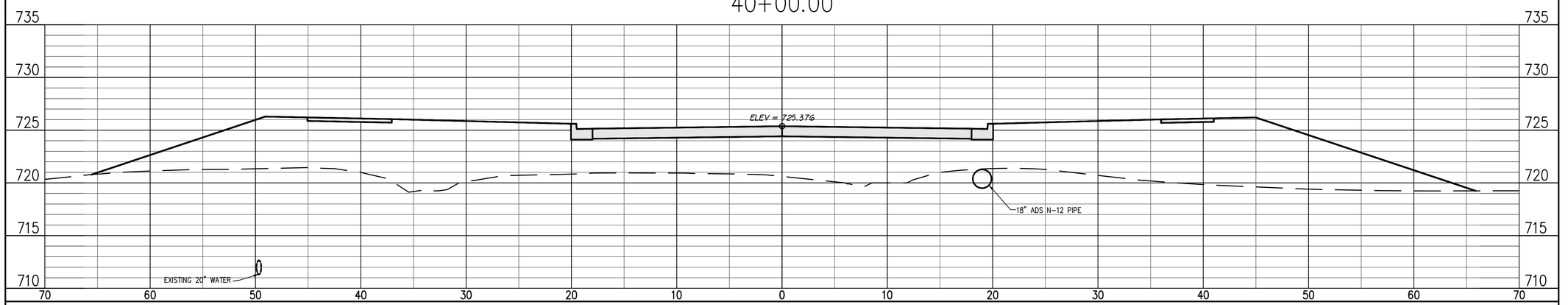
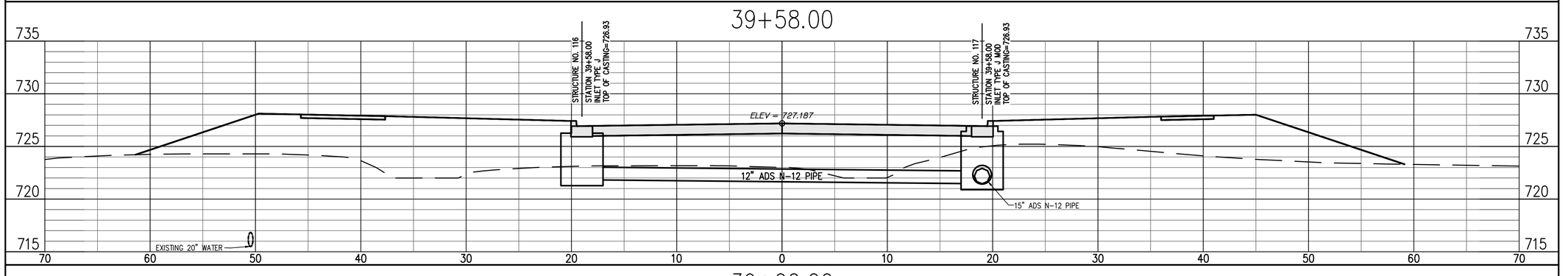
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

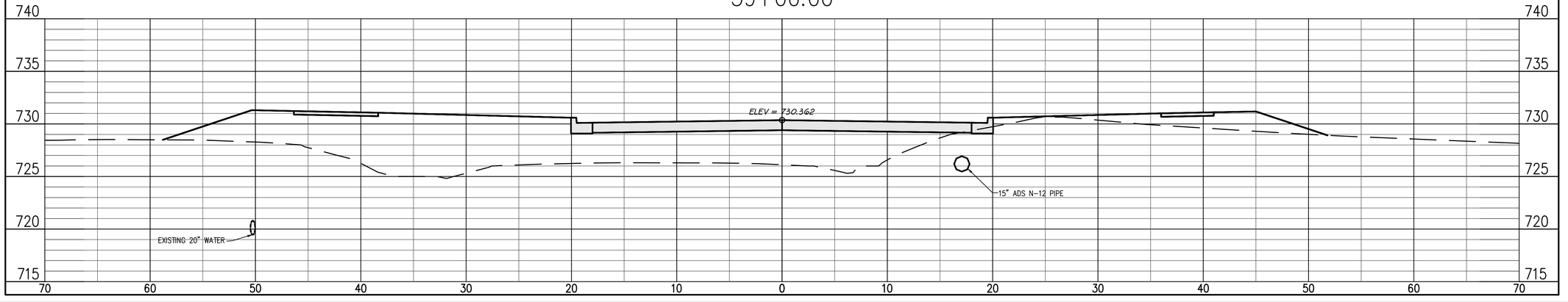
title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 21
project no.: 4011101









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Proposed:
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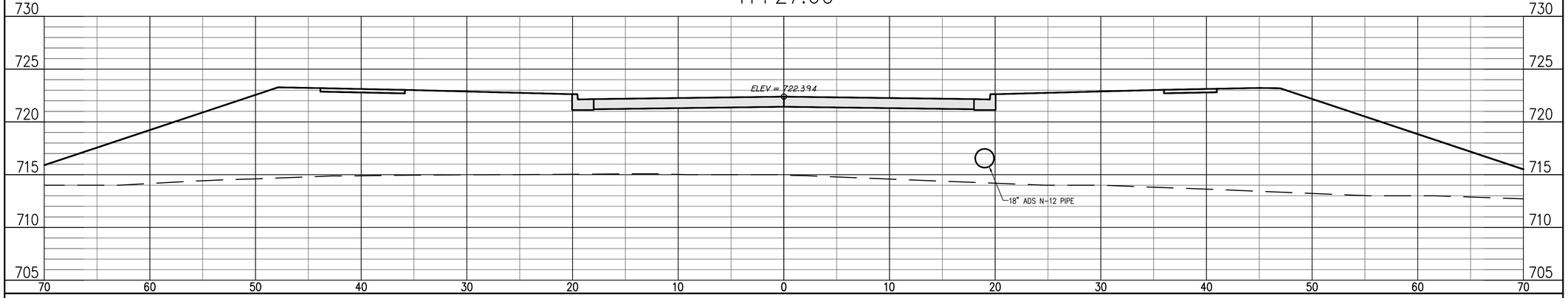
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 22
project no.: 4011101

41+27.60



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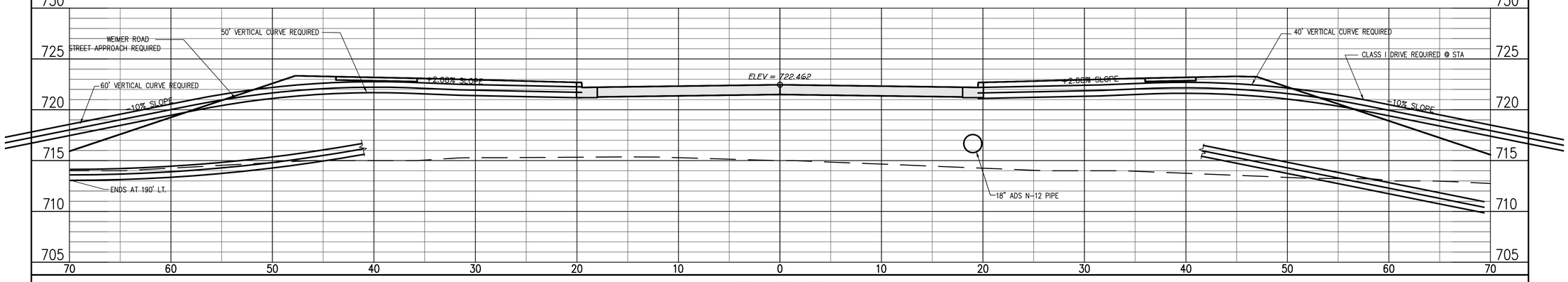

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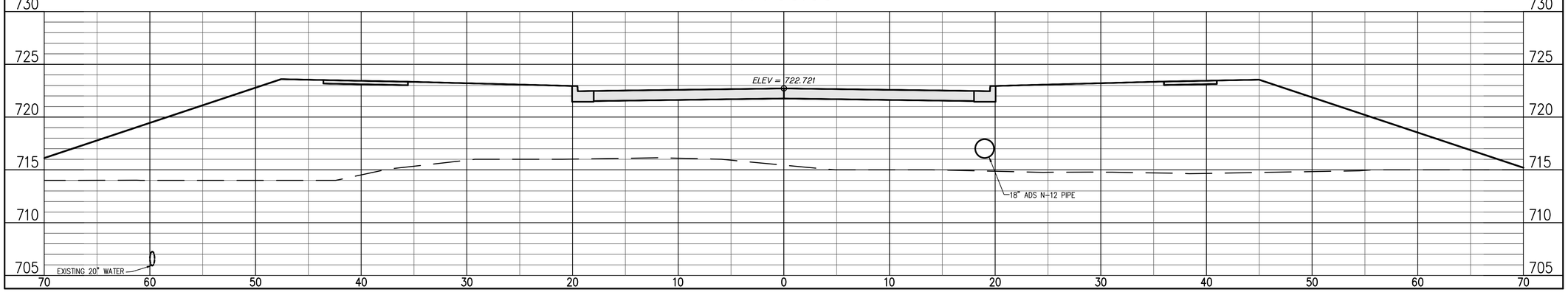

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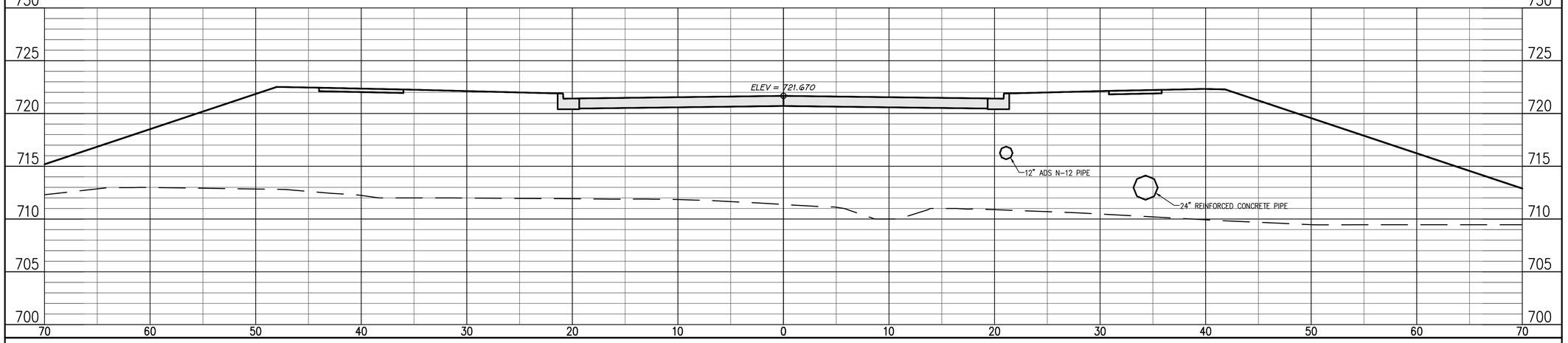
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 23
project no.: 4011101

42+00.00



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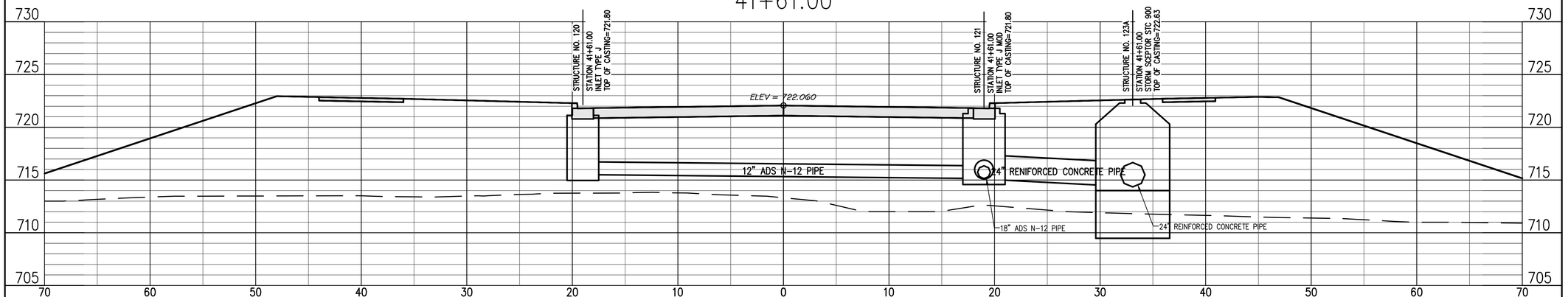

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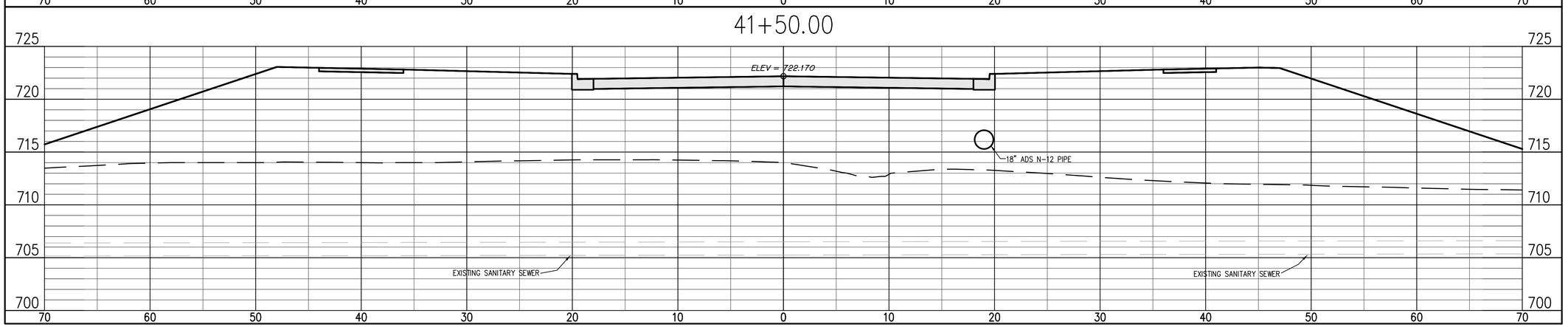

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Proposed:
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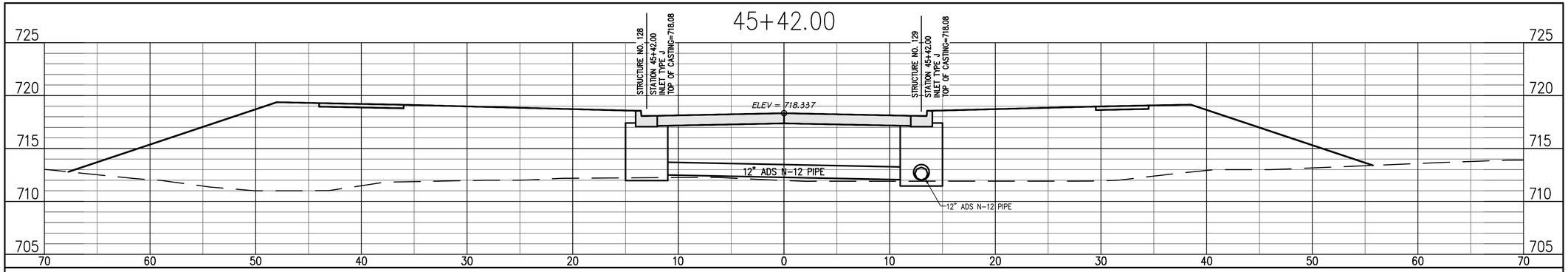
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 24
project no.: 4011101

45+42.00



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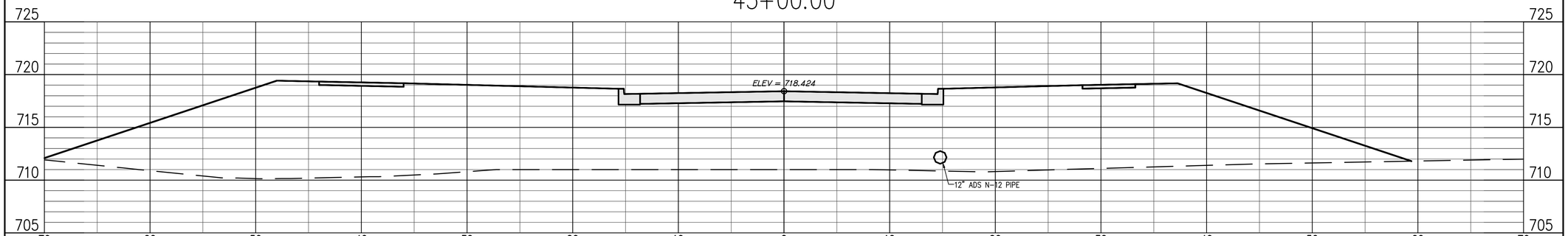

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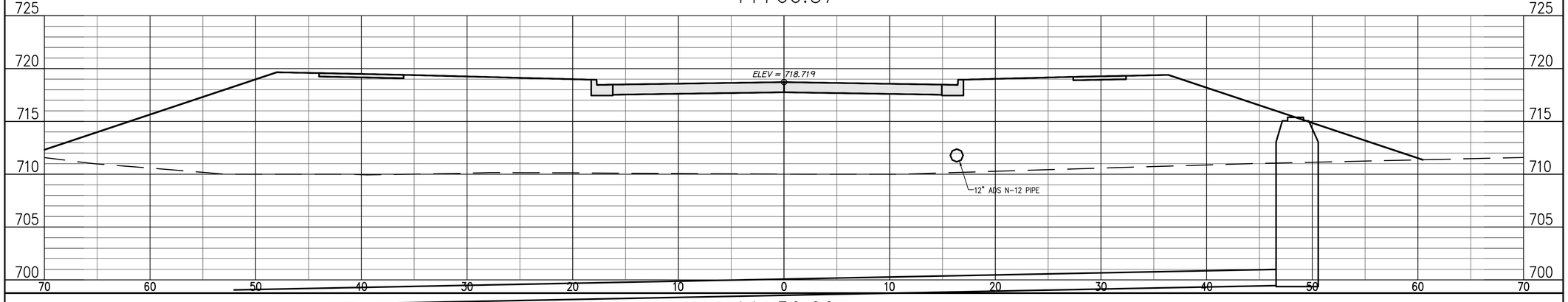

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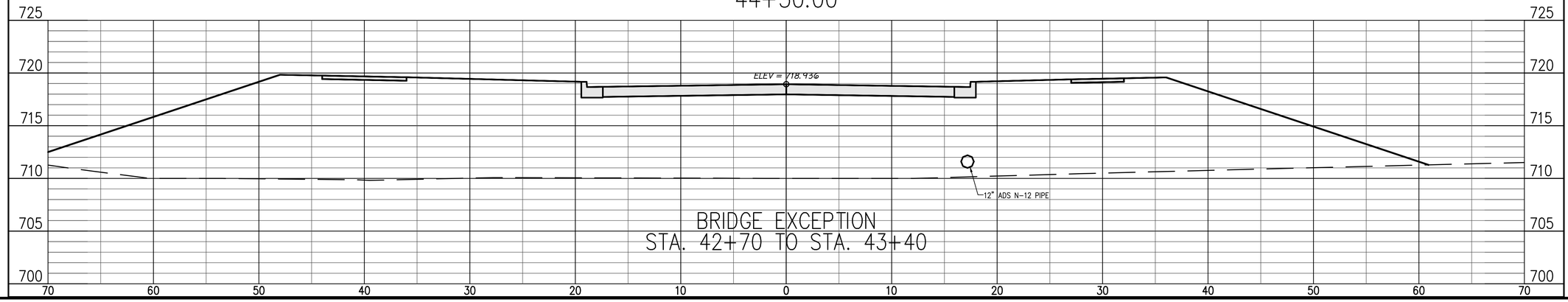

BRIDGE EXCEPTION
STA. 42+70 TO STA. 43+40

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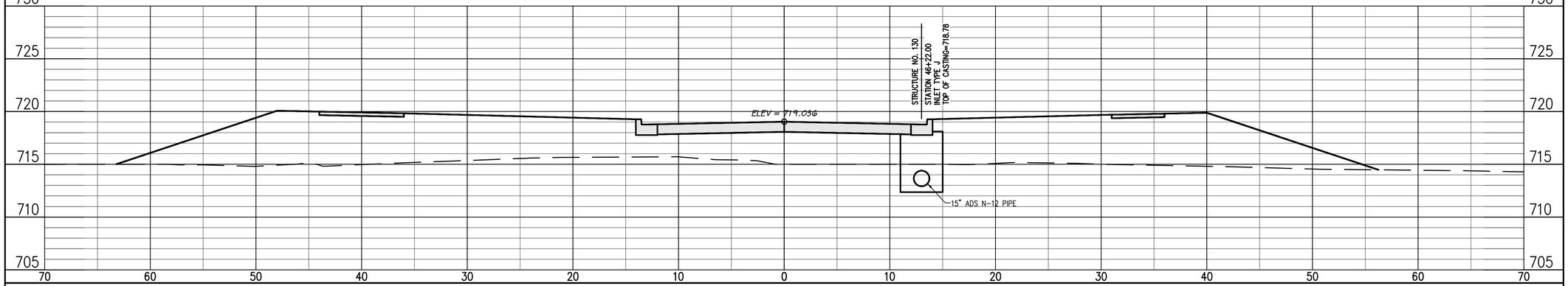
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 25
project no.: 4011101

46+22.00



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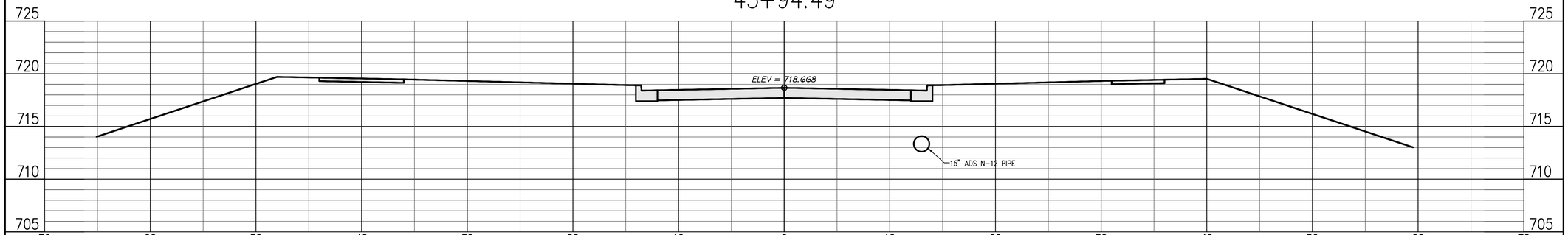

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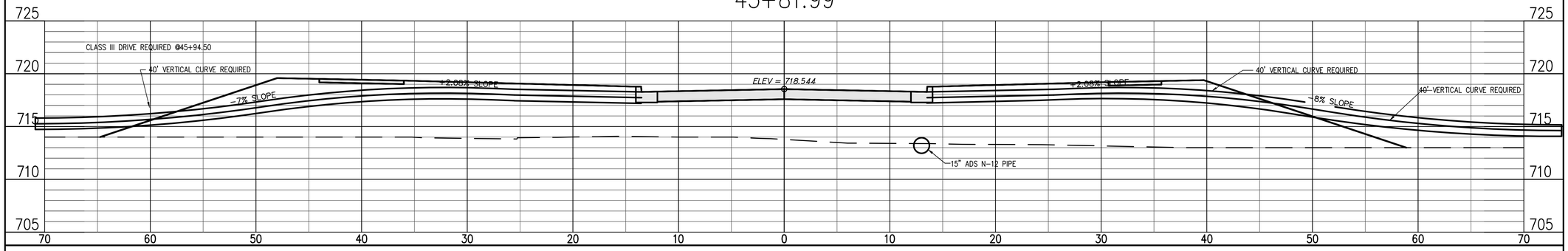

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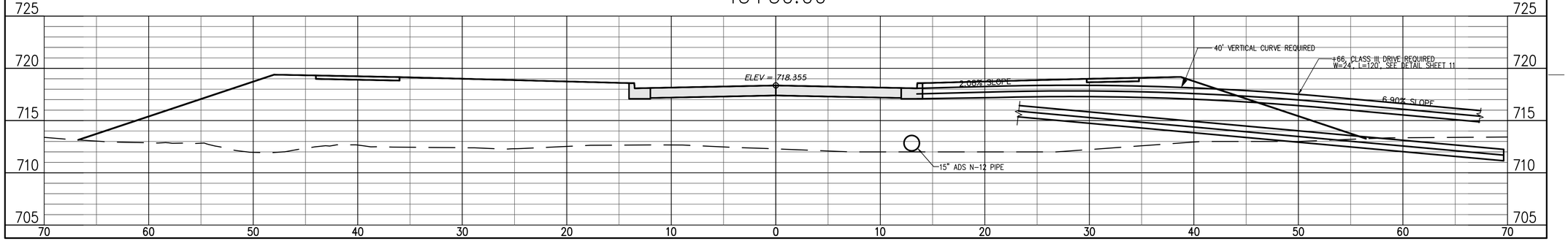

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09-29-11

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Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 26
project no.: 4011101

revisions:

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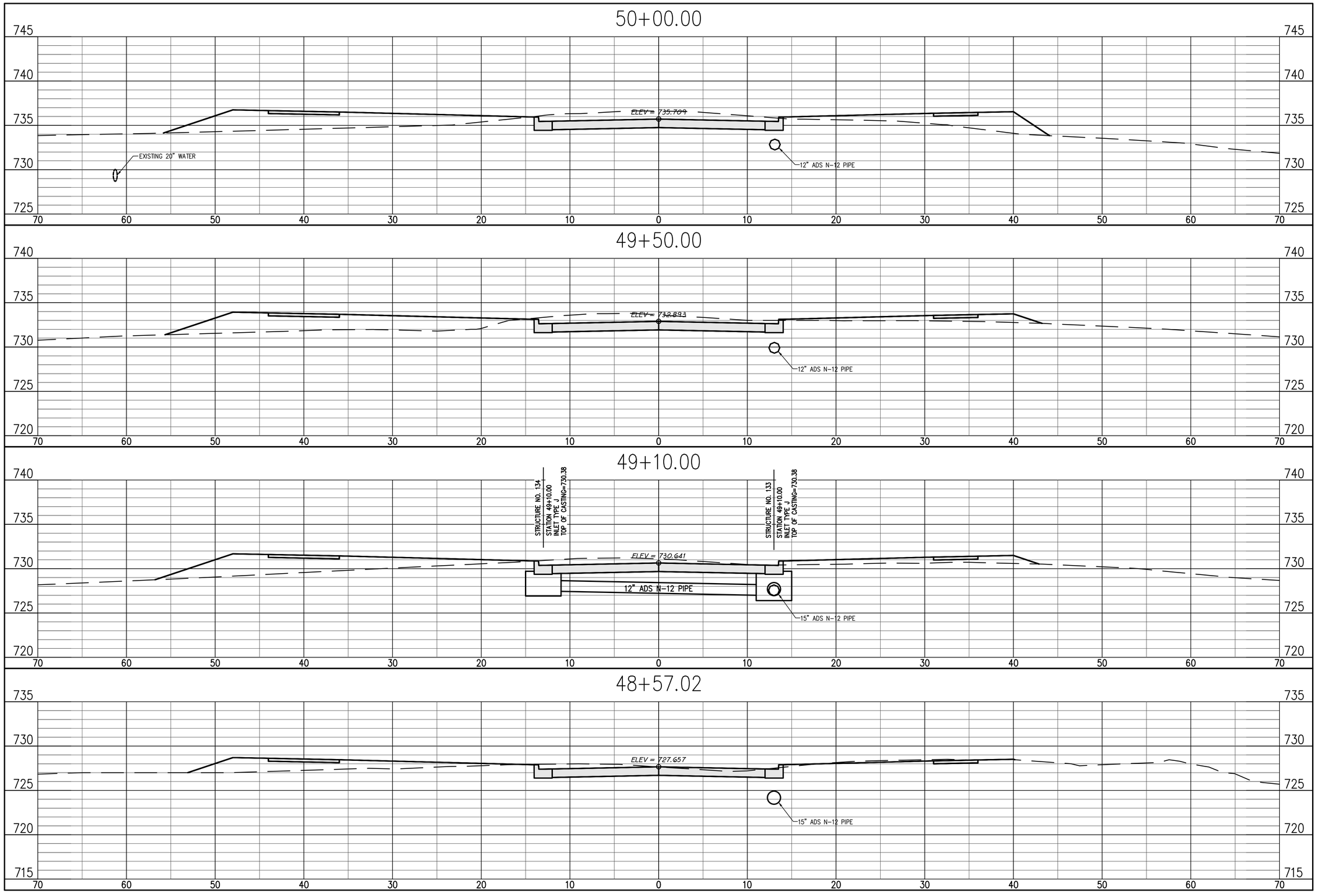
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 27
project no.: 4011101



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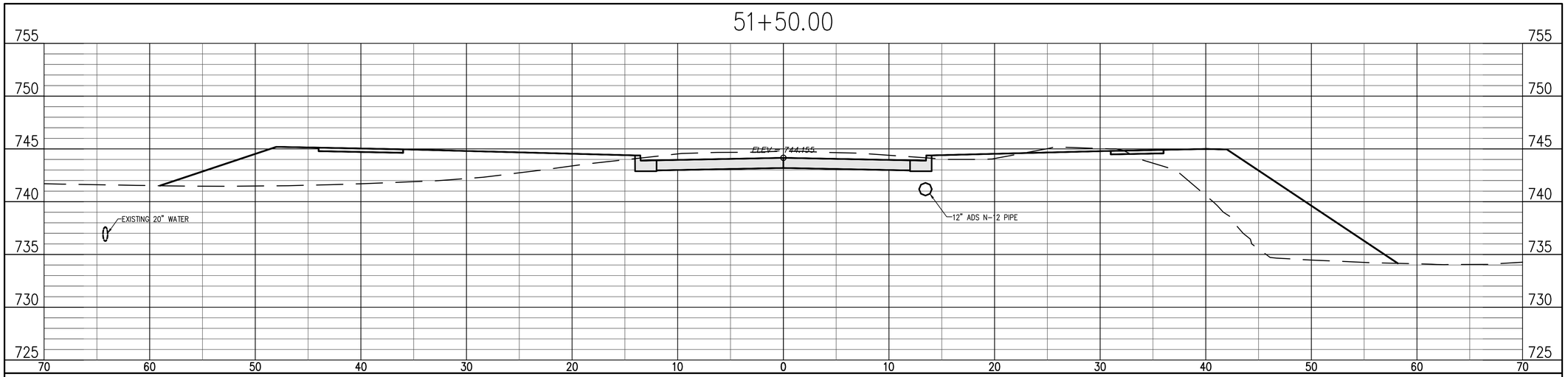
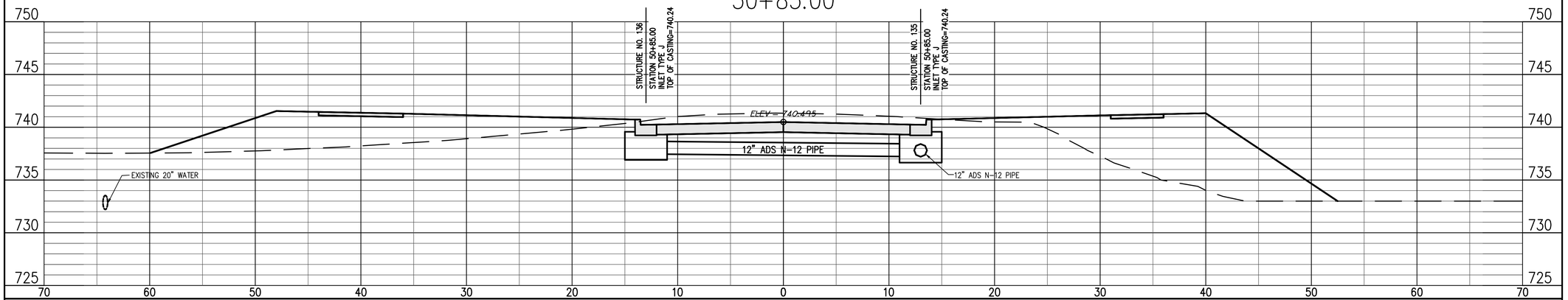
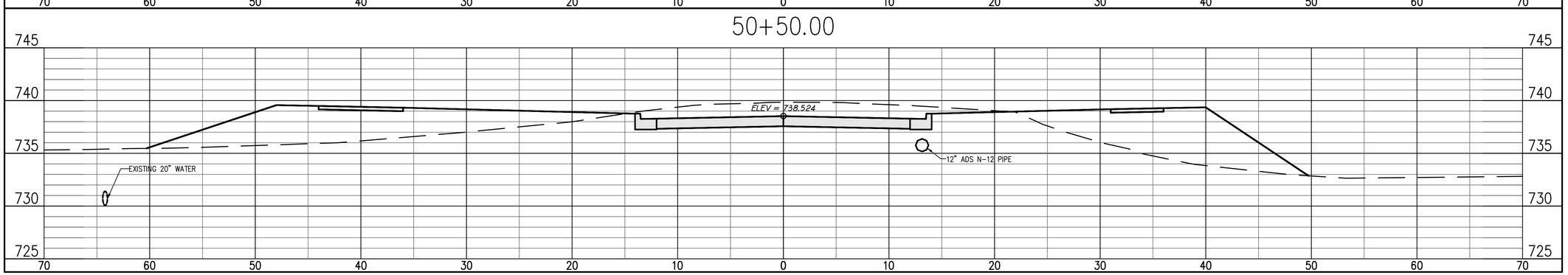
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 28
project no.: 4011101







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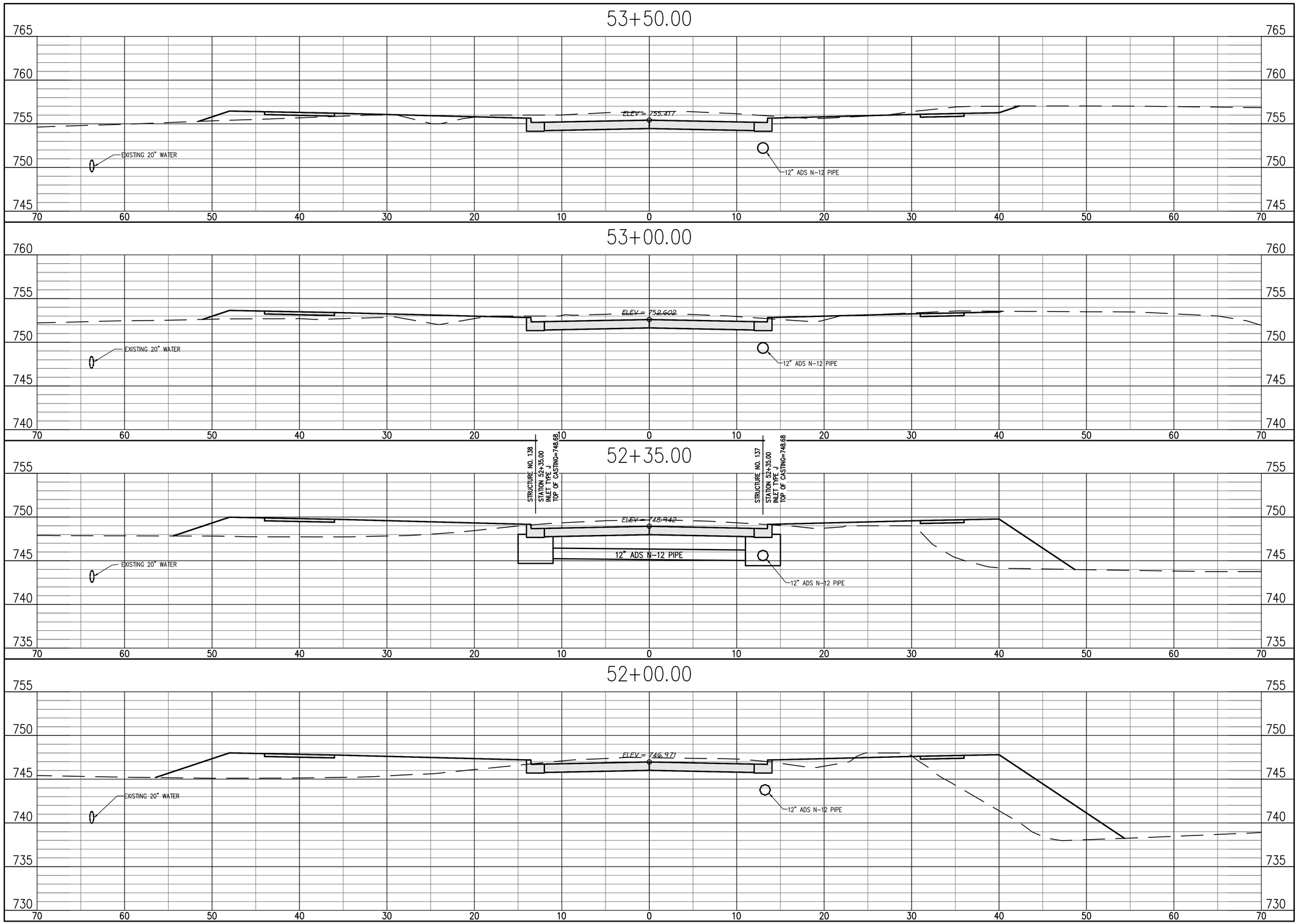
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 29
project no.: 4011101



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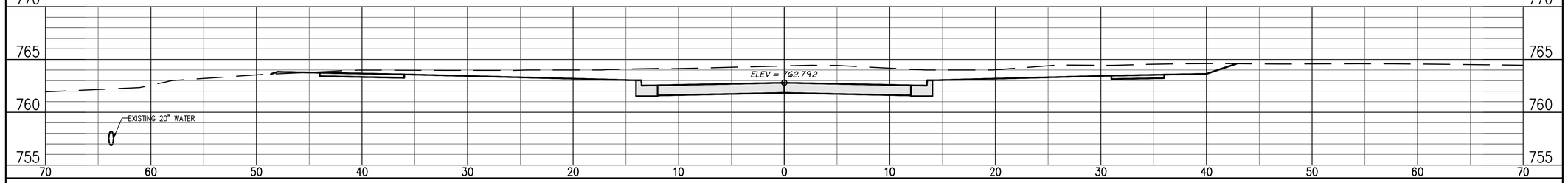
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 30
project no.: 401101

55+00.00



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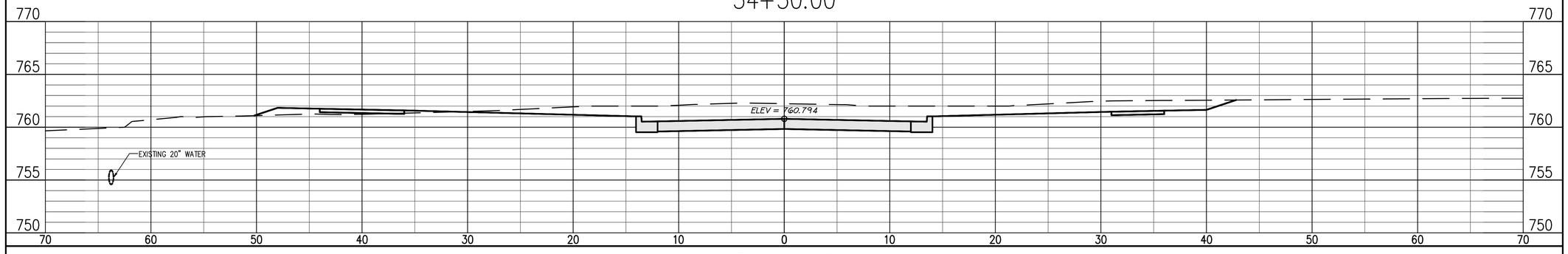

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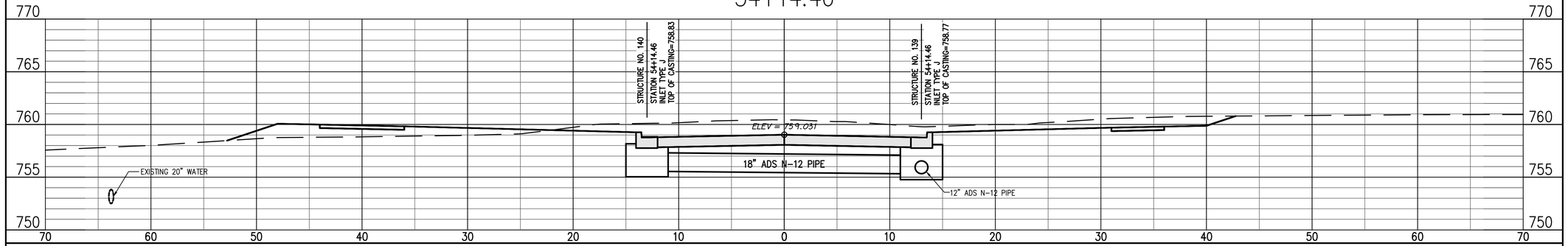

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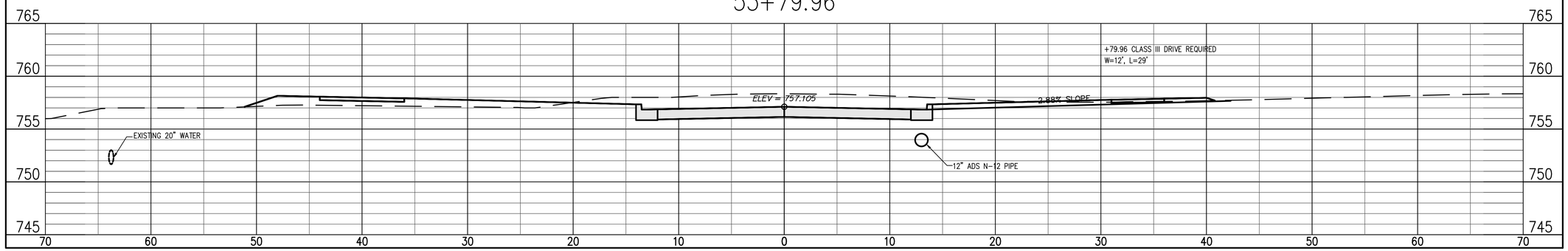

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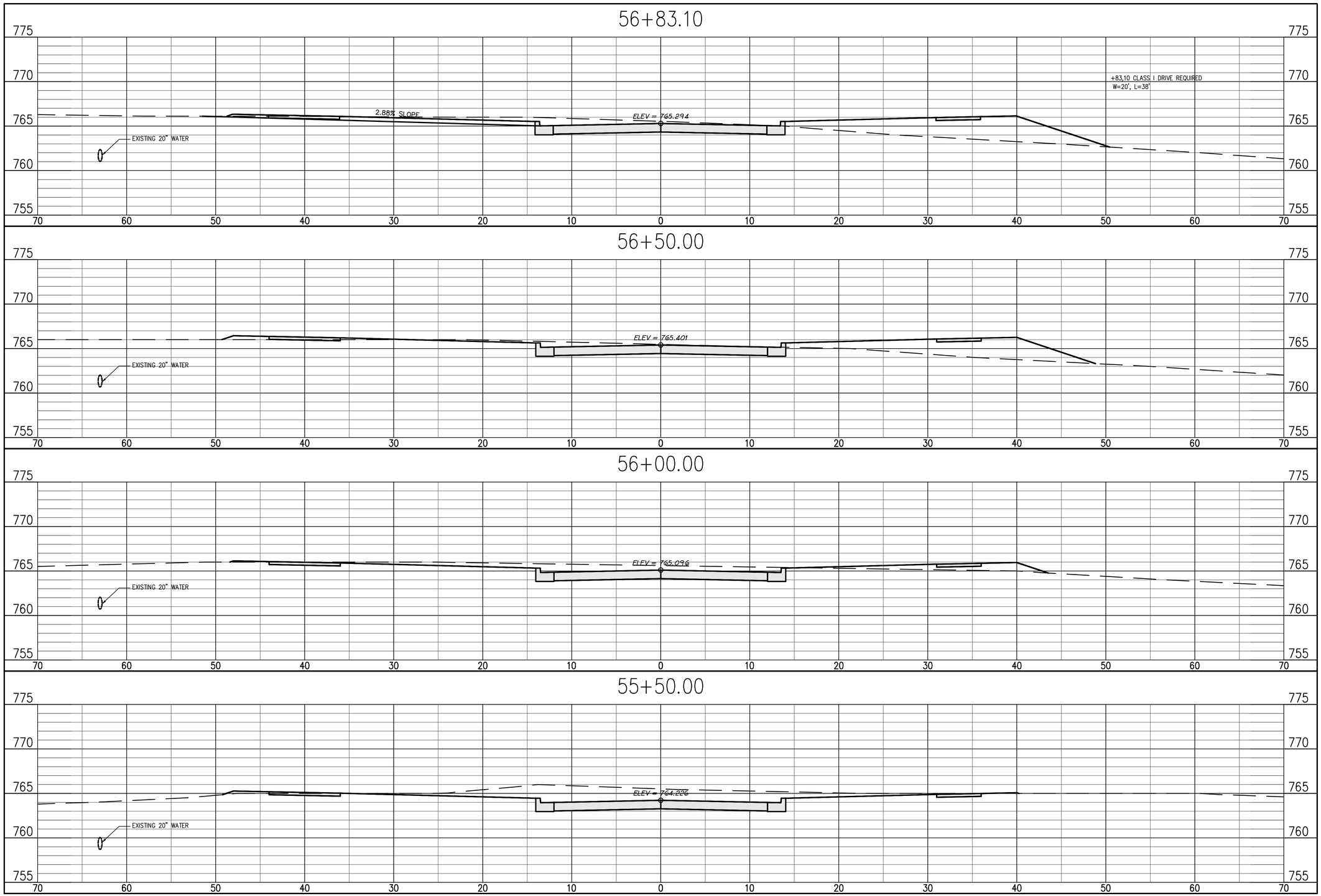
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 31
project no.: 4011101



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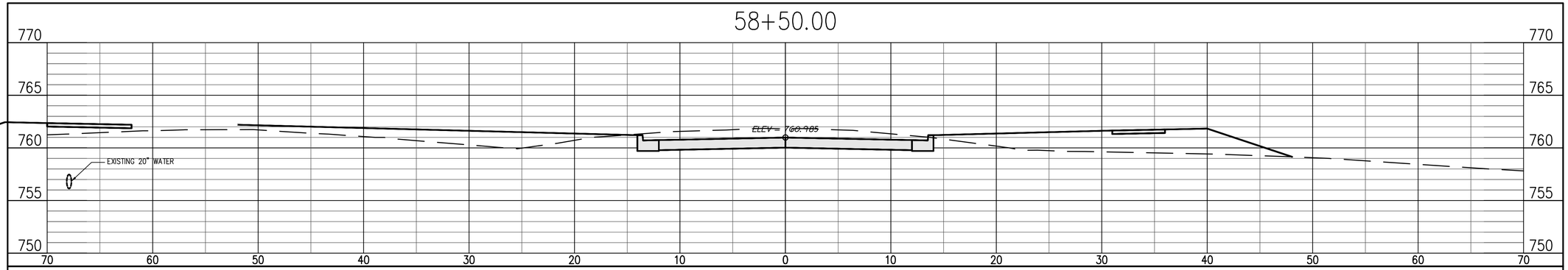
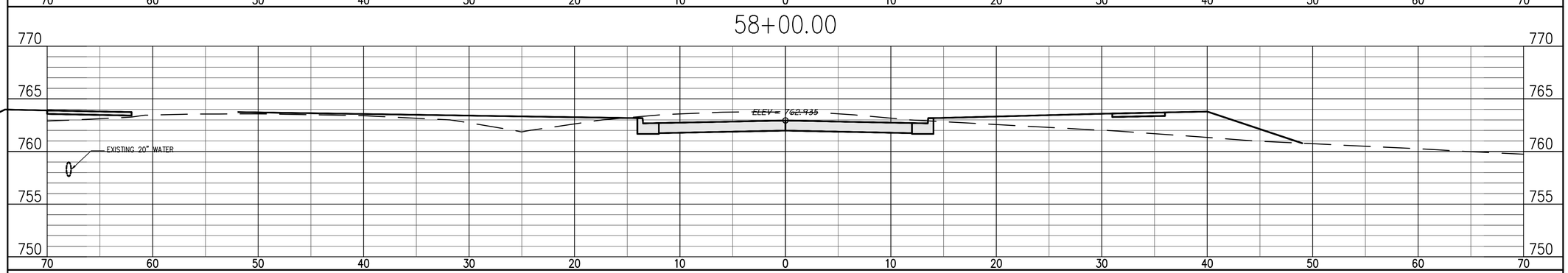
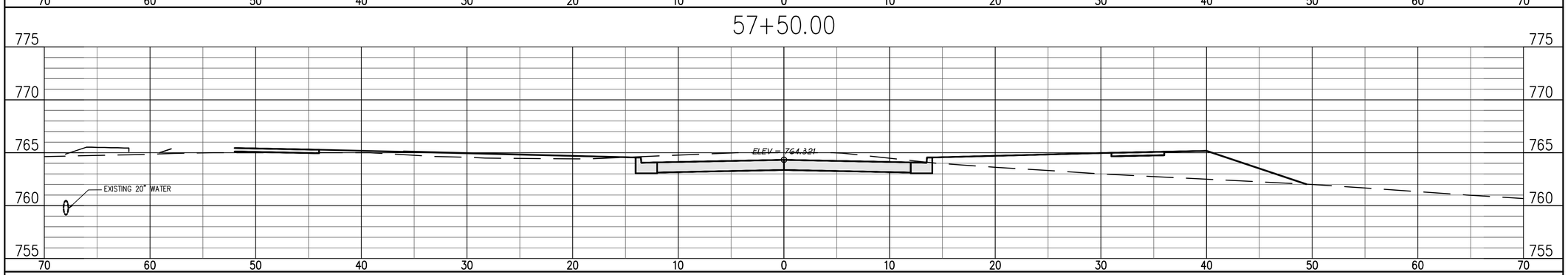
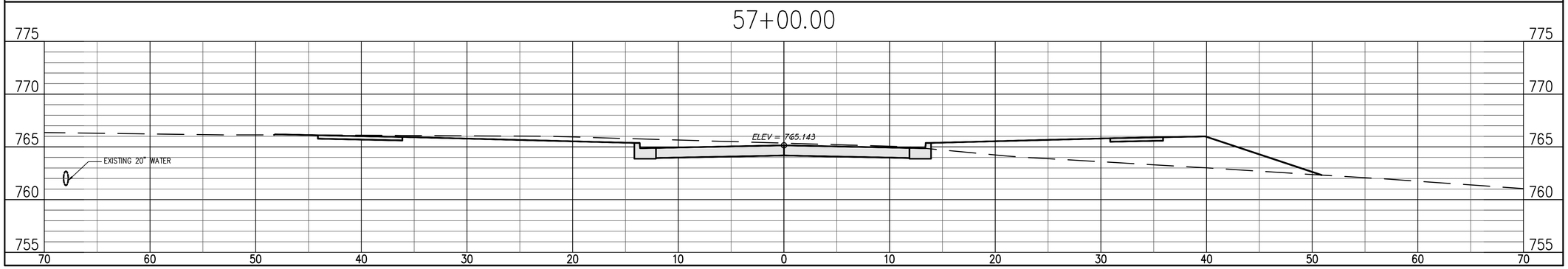
designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 32
project no.: 4011101









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Bloomington, Indiana
(812) 339-2990 (Fax)

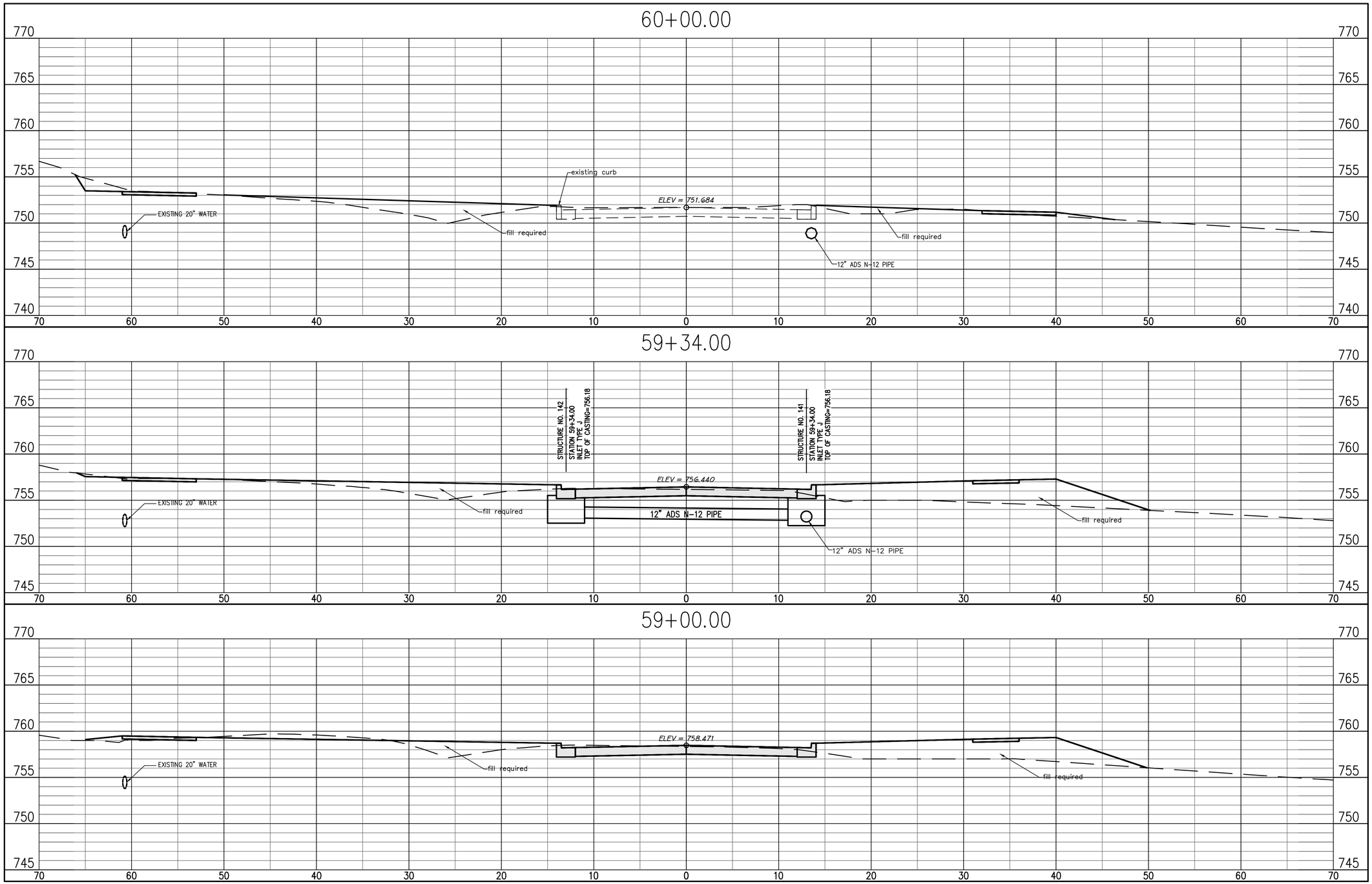
JEFFREY S. FANYO
No. 18283
STATE OF INDIANA
PROFESSIONAL ENGINEER
09-29-11

certified by:

Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

title: CROSS SECTIONS

designed by: JBT
drawn by: JR, DS
checked by: JSF
sheet no: 33
project no.: 4011101



revisions:

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BYNUM FANYO & ASSOCIATES, INC.

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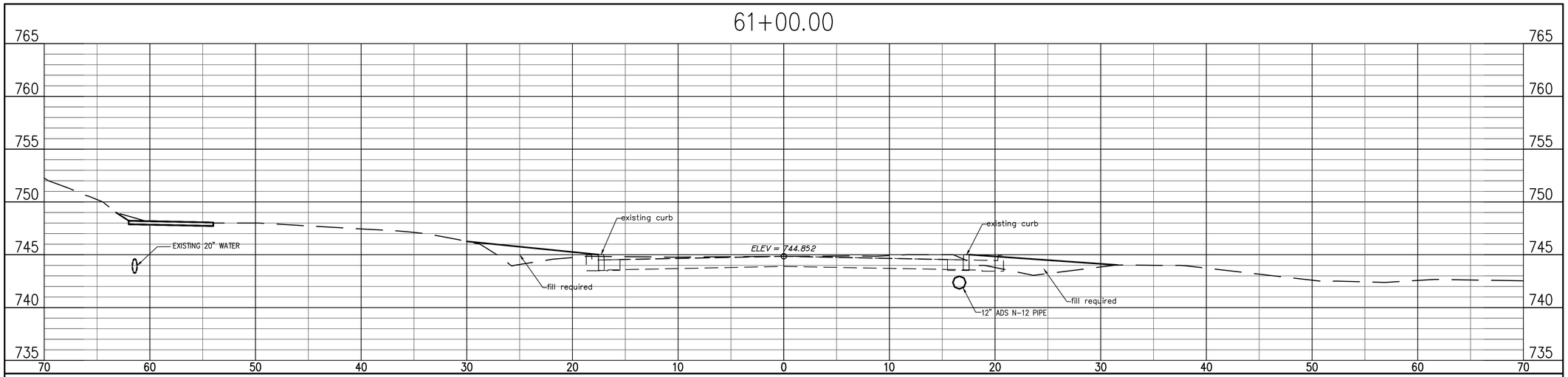
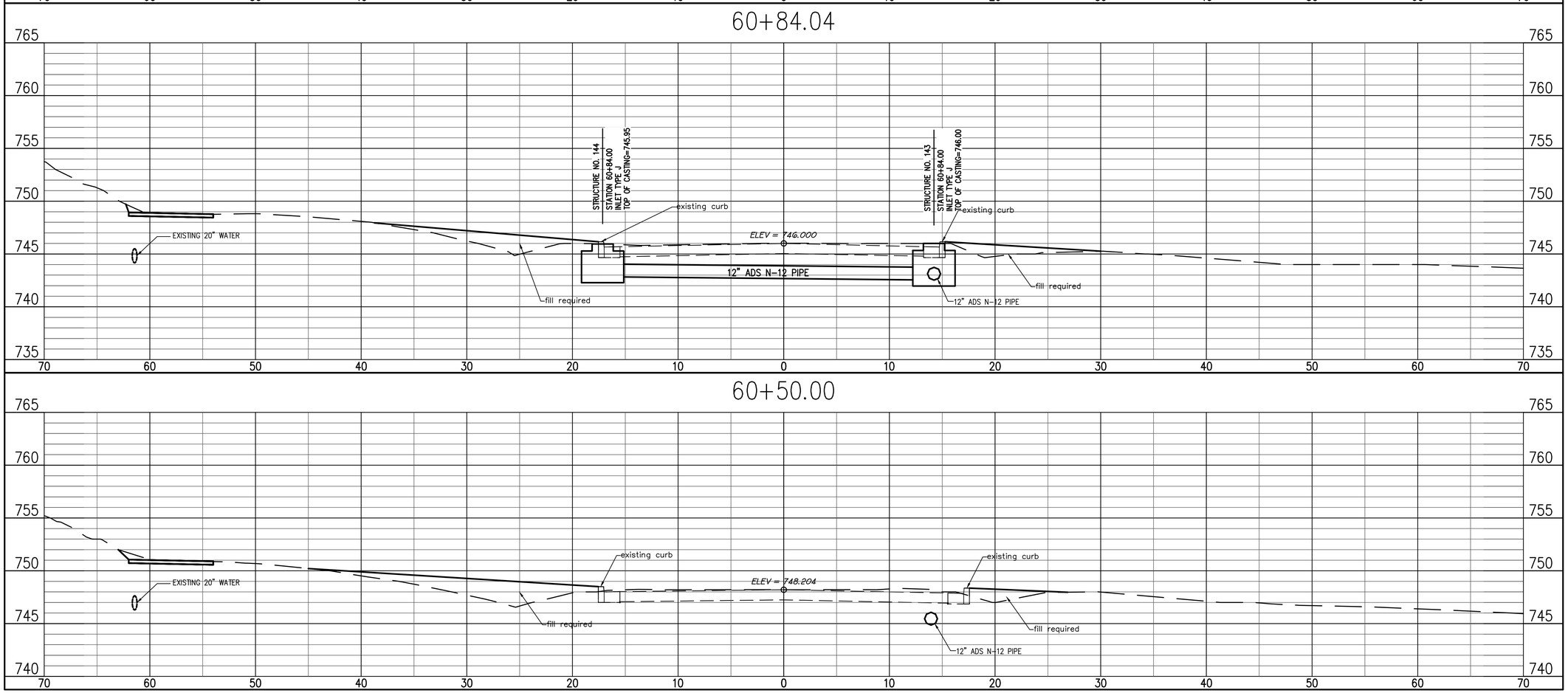
sheet no: 34
project no.: 4011101





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Bloomington, Indiana

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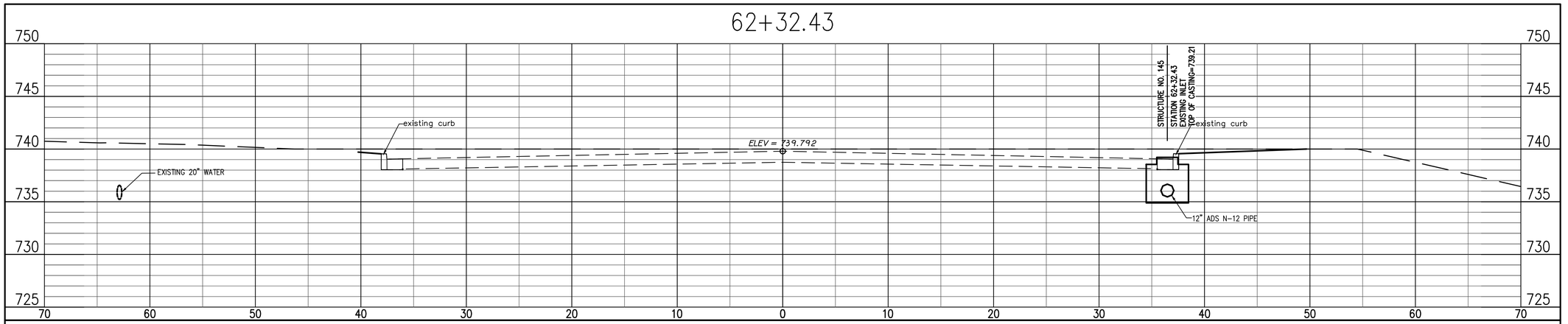
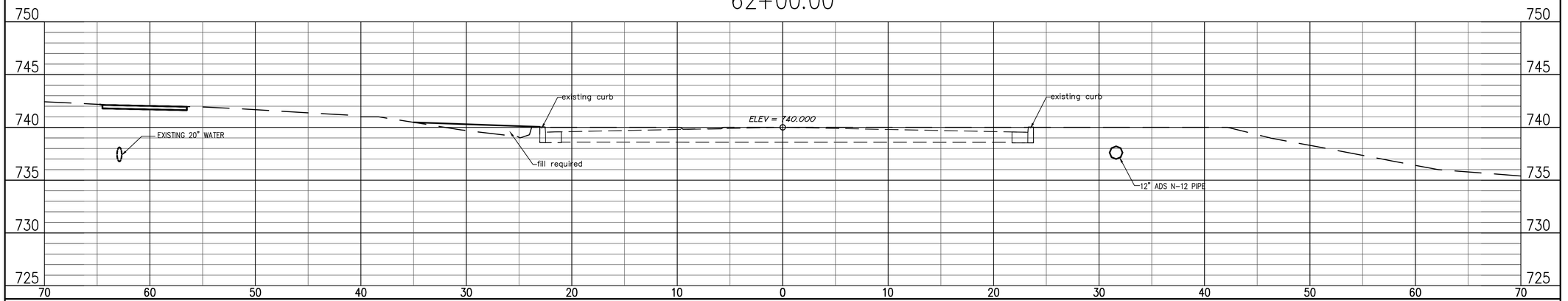
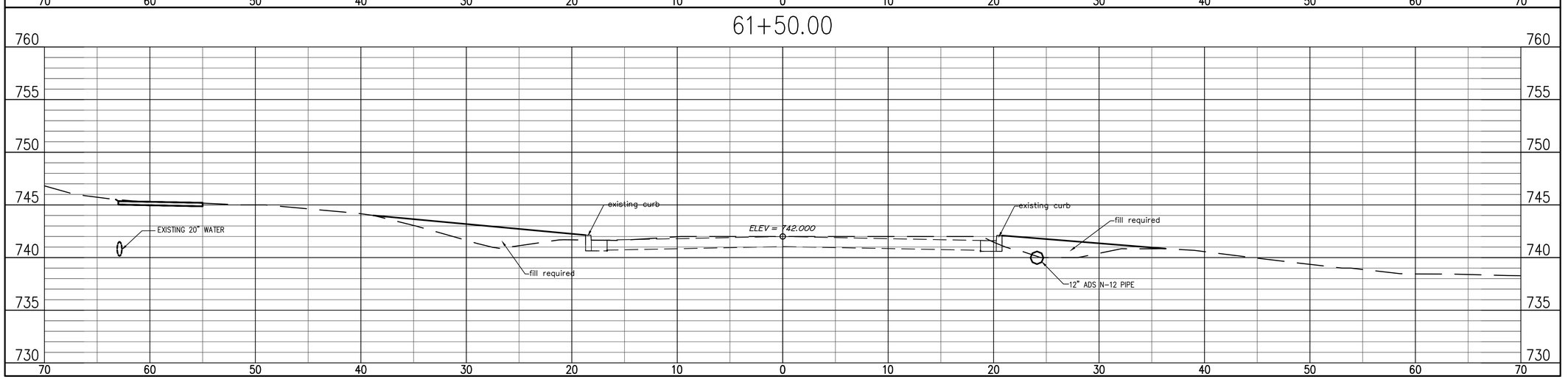
sheet no: 35
project no.: 4011101







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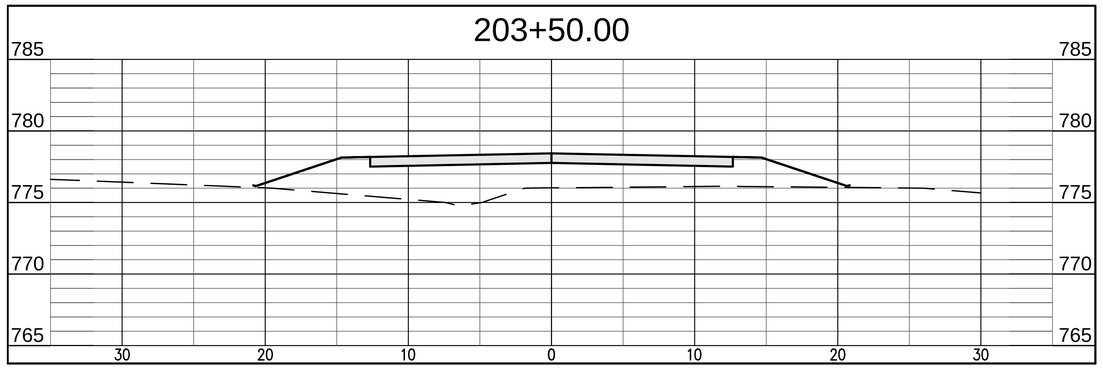
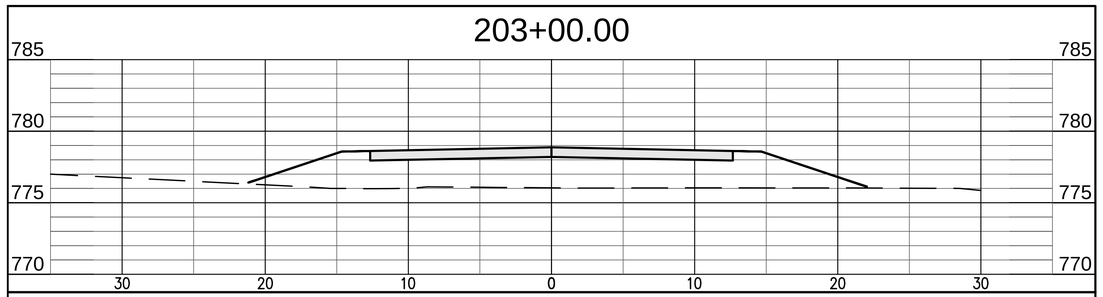
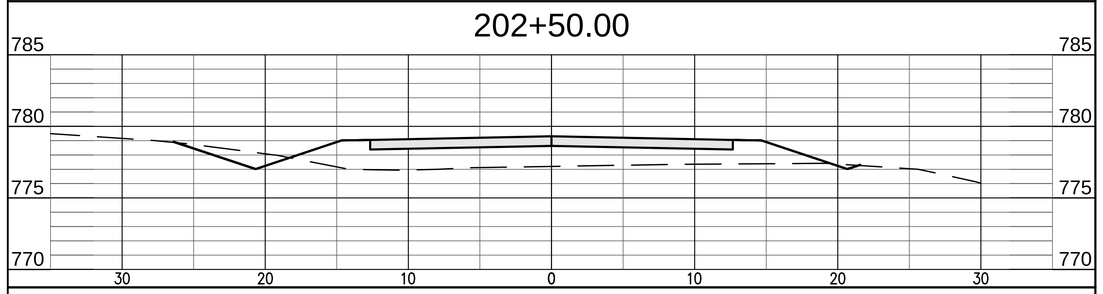
Proposed:
T APP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

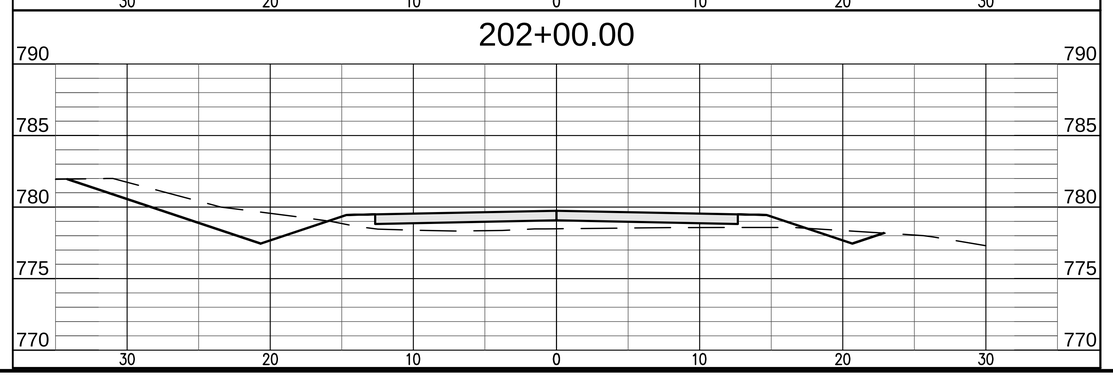
title: CROSS SECTIONS

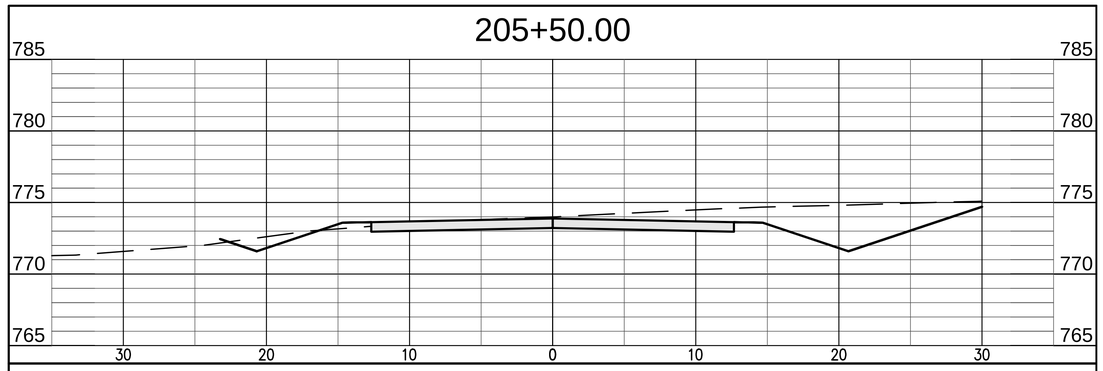
designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 36
project no.: 4011101

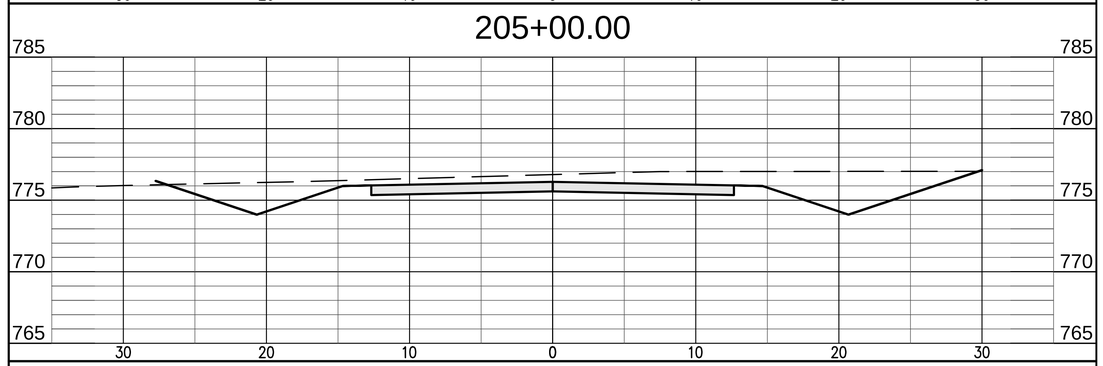


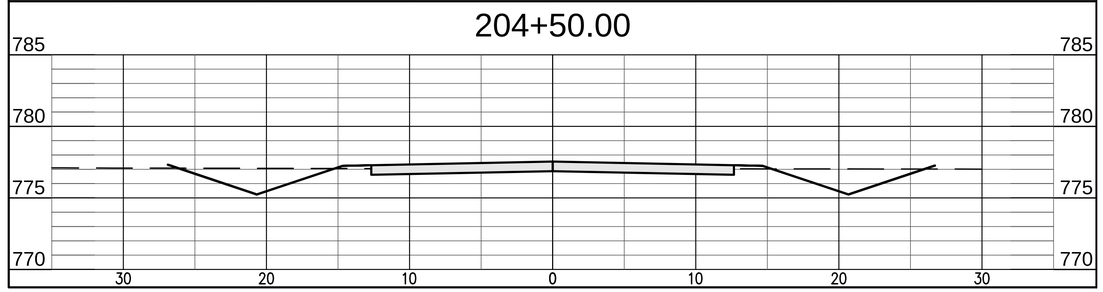


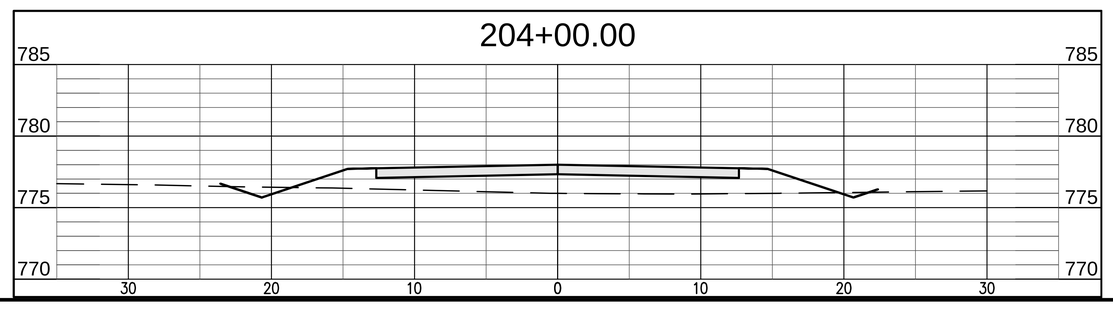












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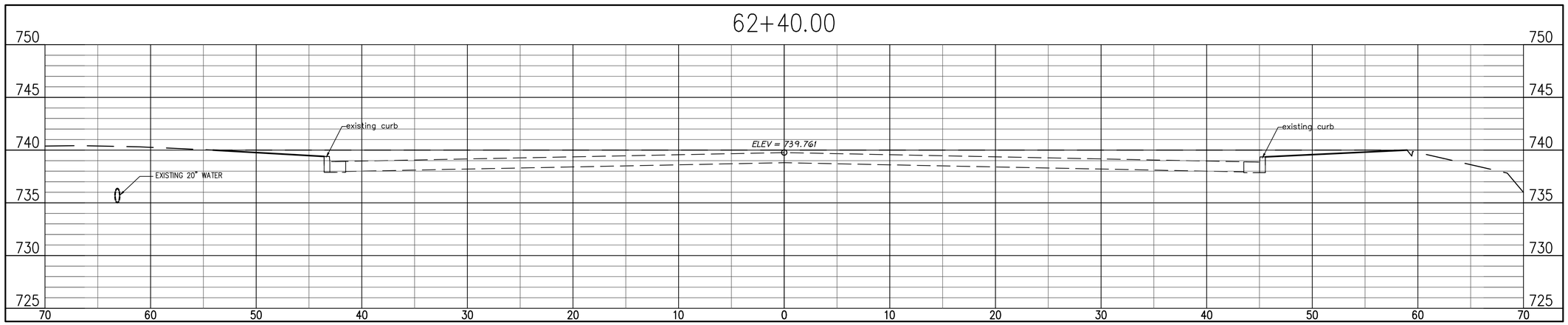
Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

title: LINE TR-1
CROSS SECTIONS

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 38
project no.: 401139



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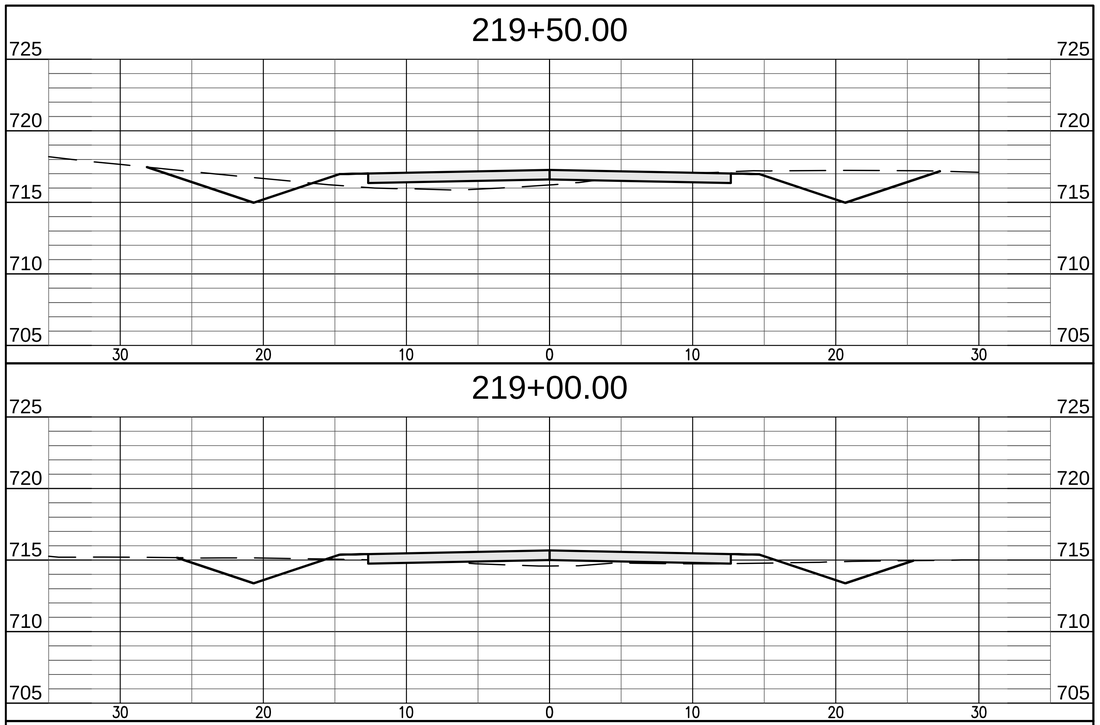
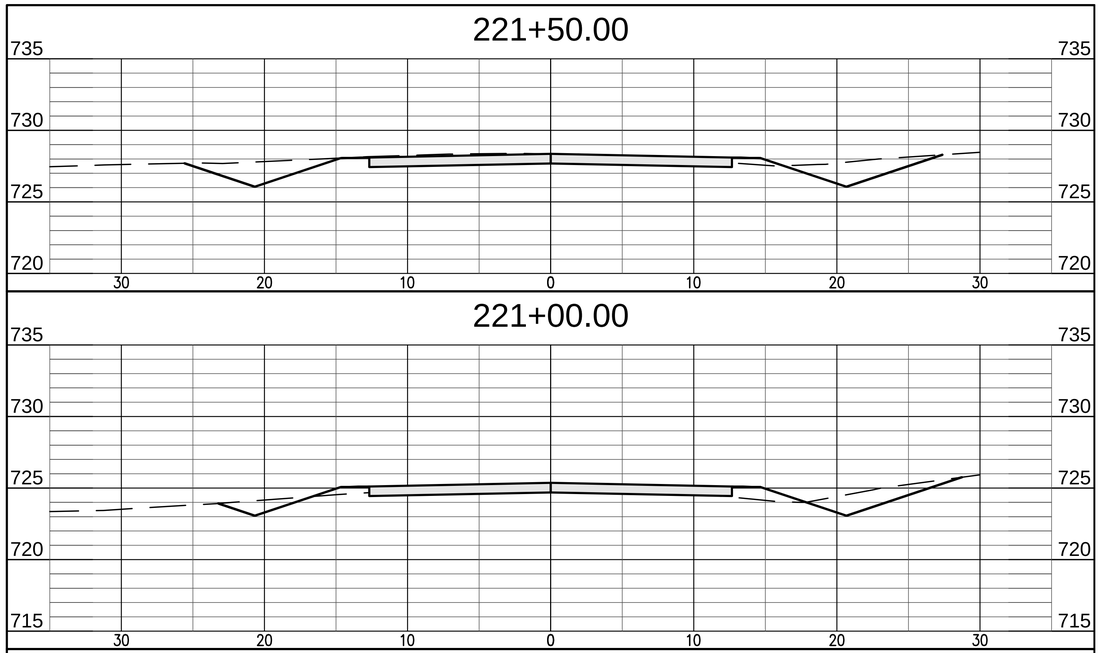
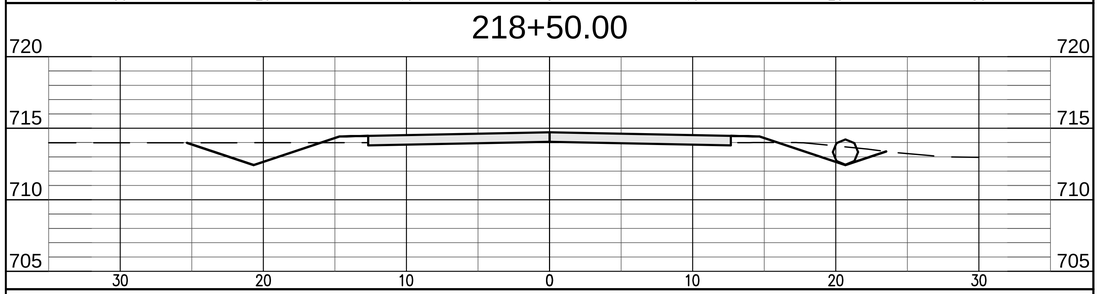
Proposed:
TAPP ROAD RECONSTRUCTION PHASE III
Bloomington, Indiana

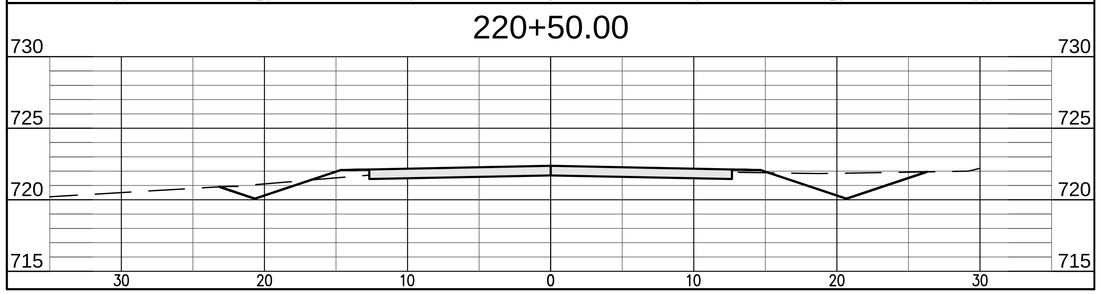
title: CROSS SECTIONS

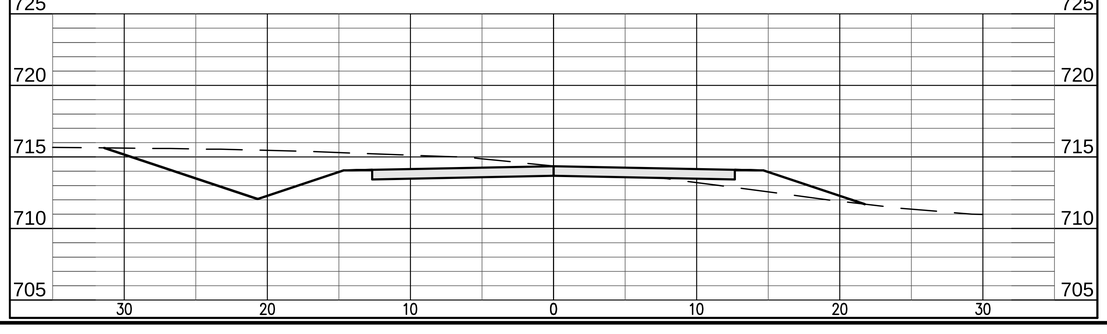
designed by: JBT
drawn by: JR, DS
checked by: JBF
sheet no: 37
project no.: 4011101

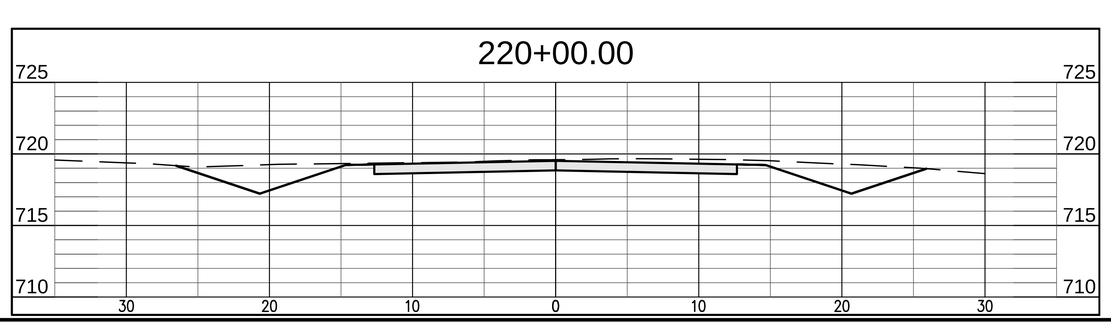












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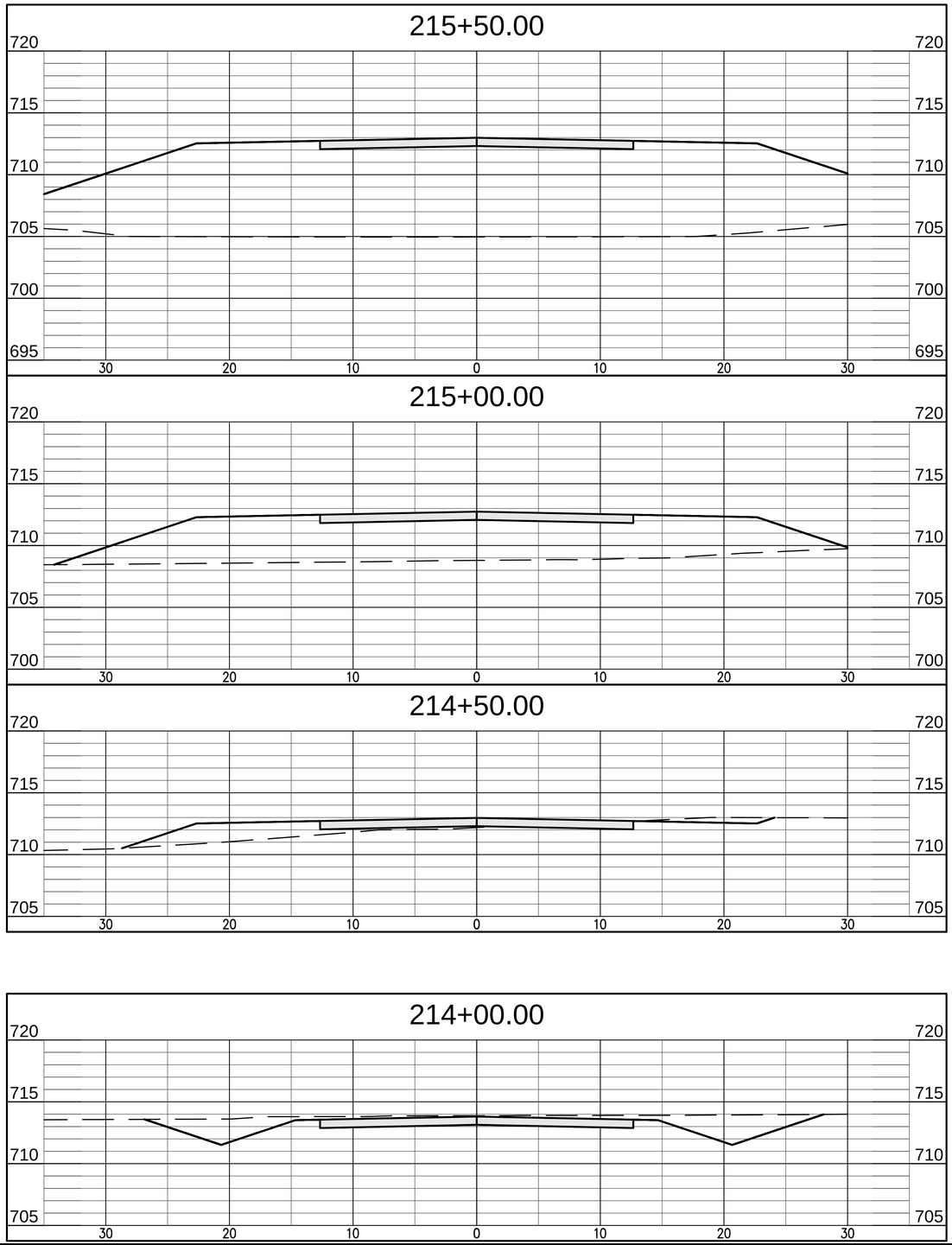
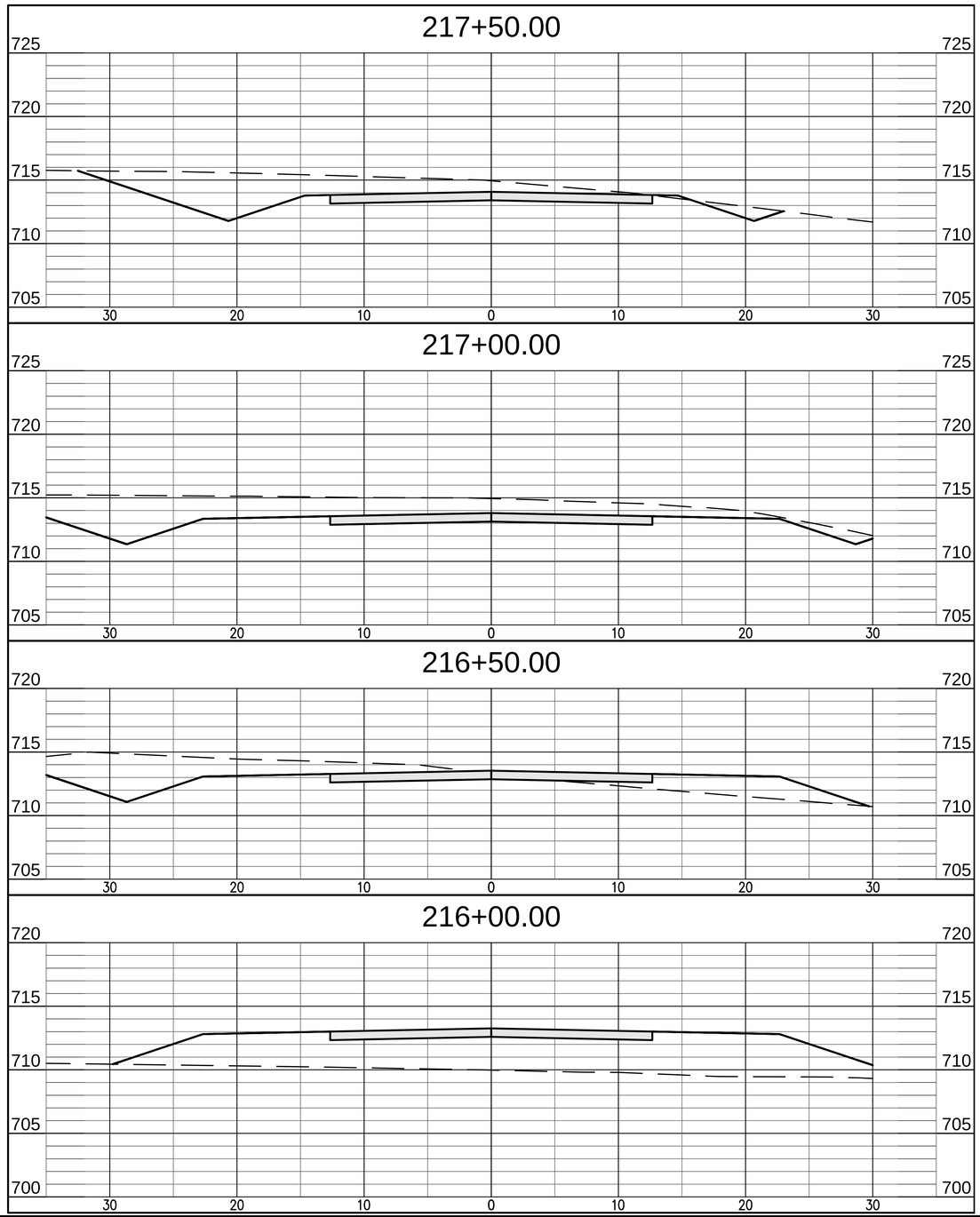
09-29-11
certified by:

Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

title: LINE TR-1
CROSS SECTIONS

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 42
project no.: 401139





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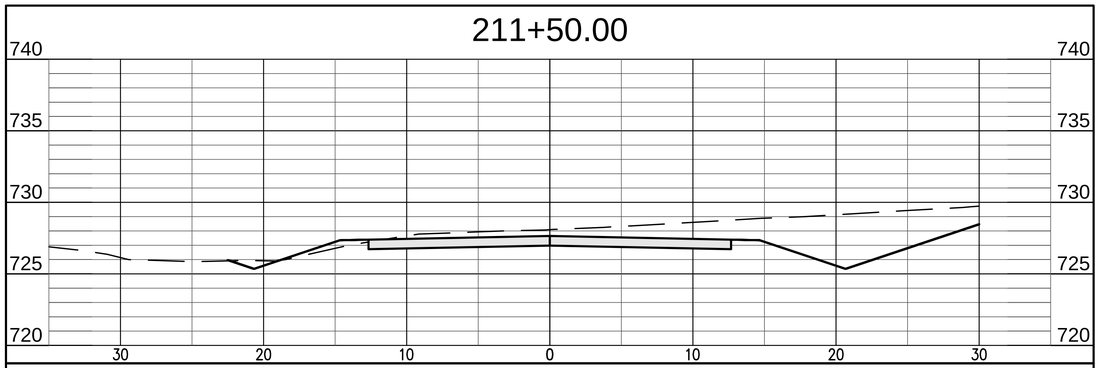
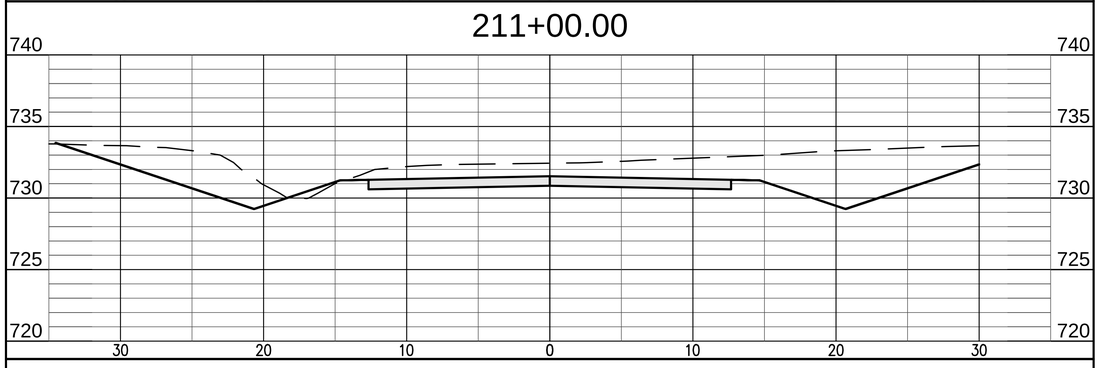
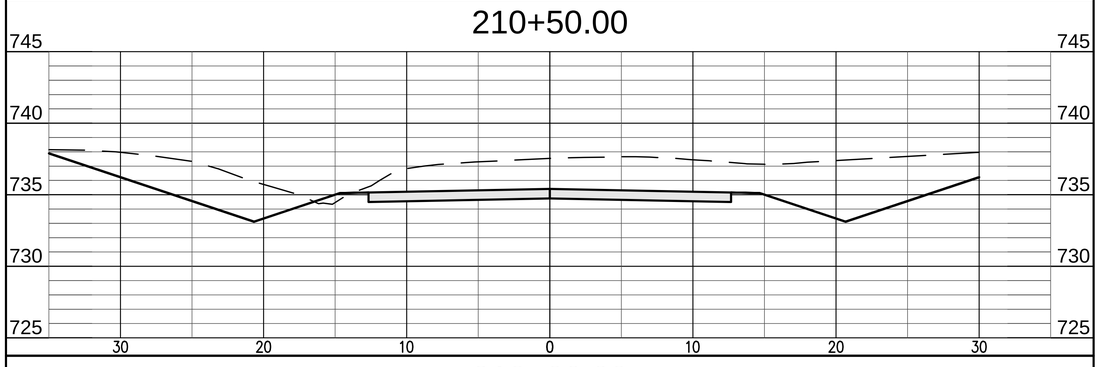
Bloomington, Indiana

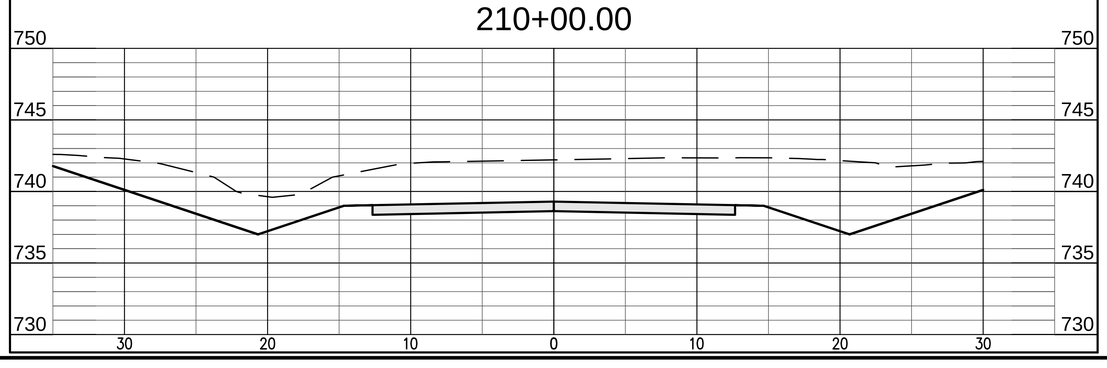
title: LINE TR-1
CROSS SECTIONS

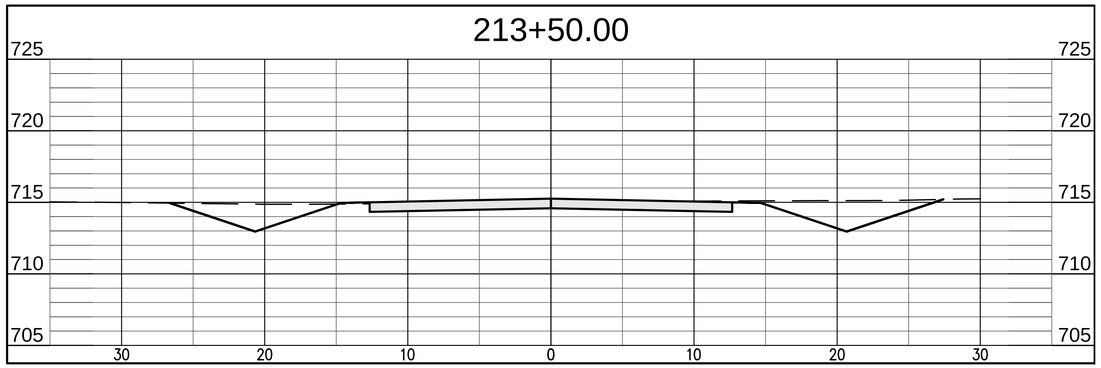
designed by: RC
drawn by: JR
checked by: JSF
sheet no: 41
project no.: 401139

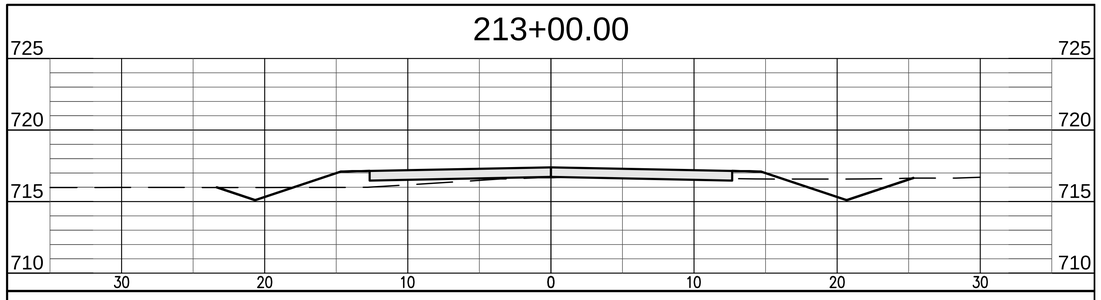


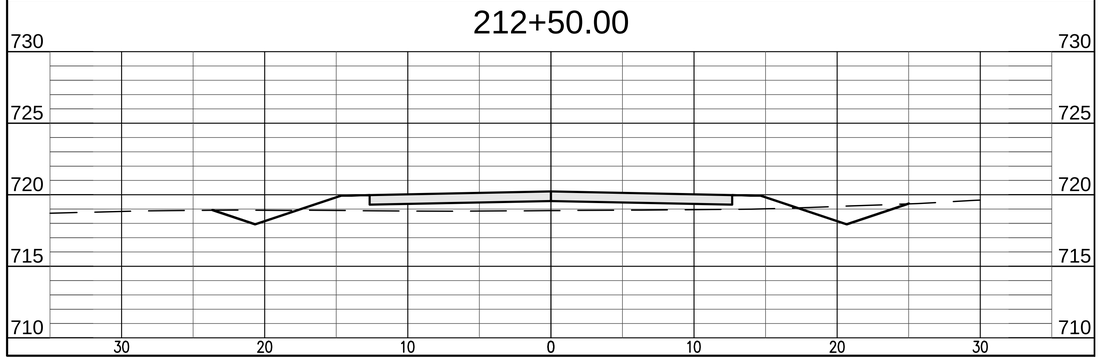


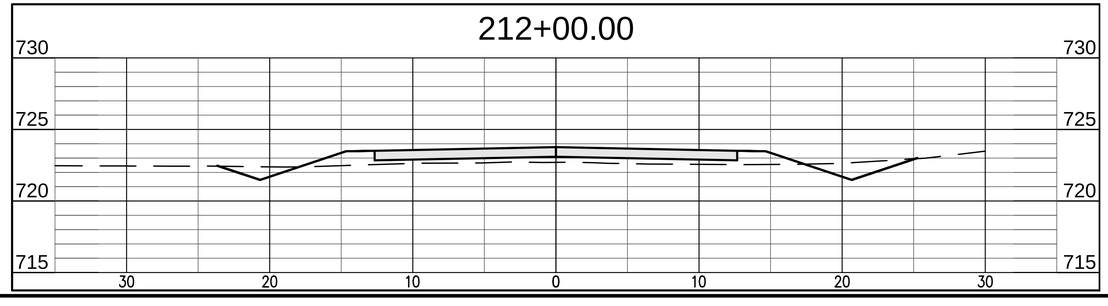












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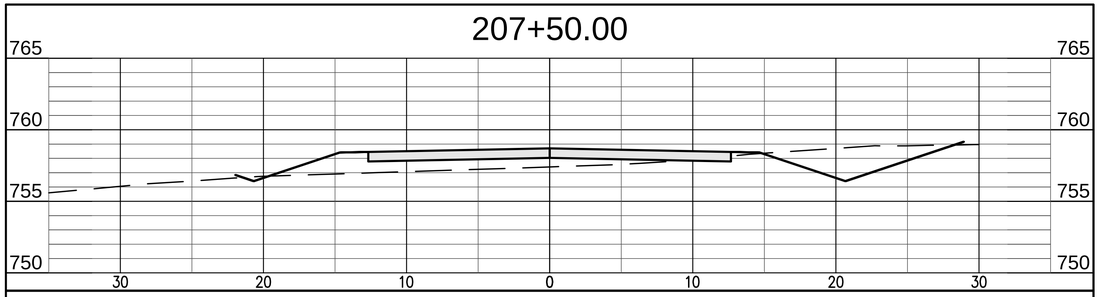
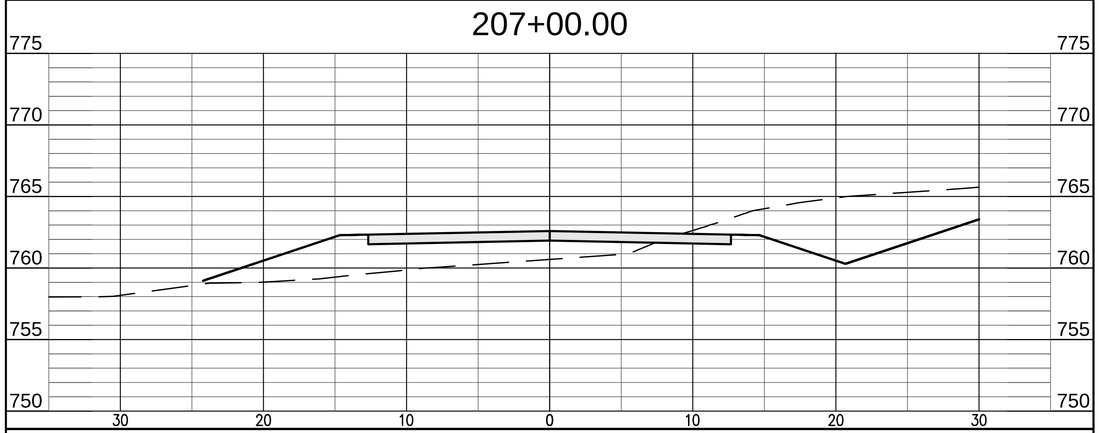
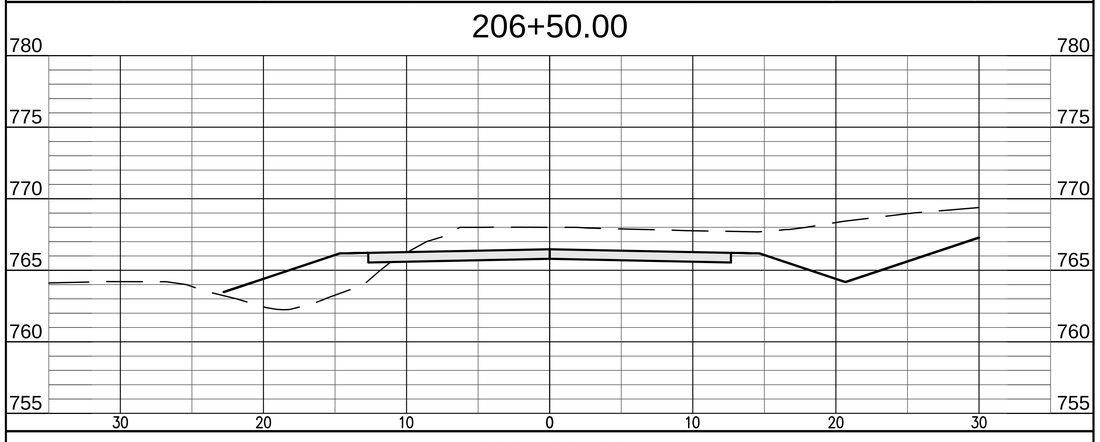
Proposed:
TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

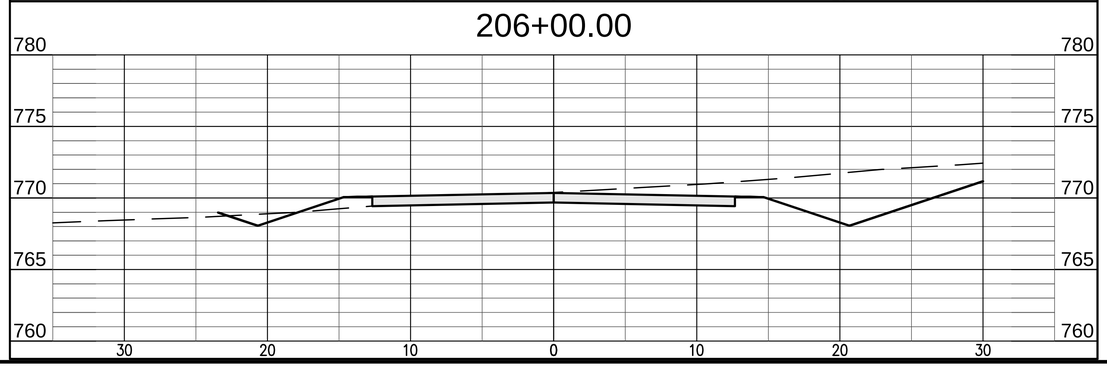
title: LINE TR-1
CROSS SECTIONS

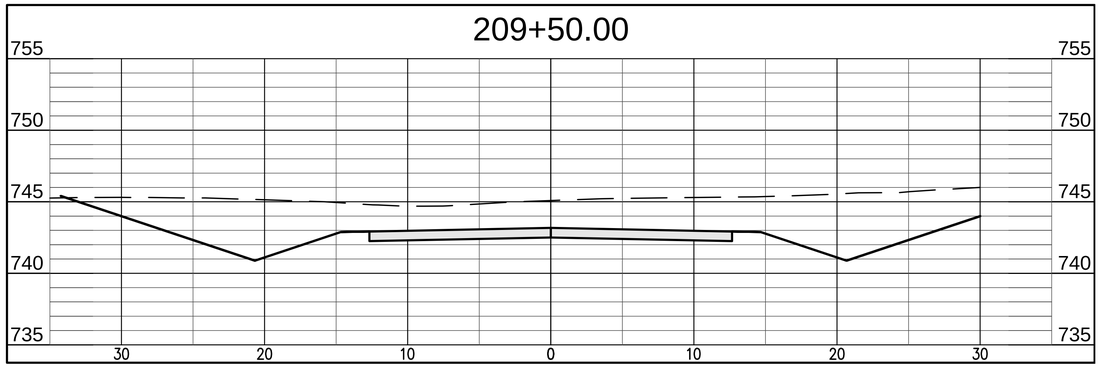
designed by: RC
drawn by: JR
checked by: JSF
sheet no: 40
project no.: 401139

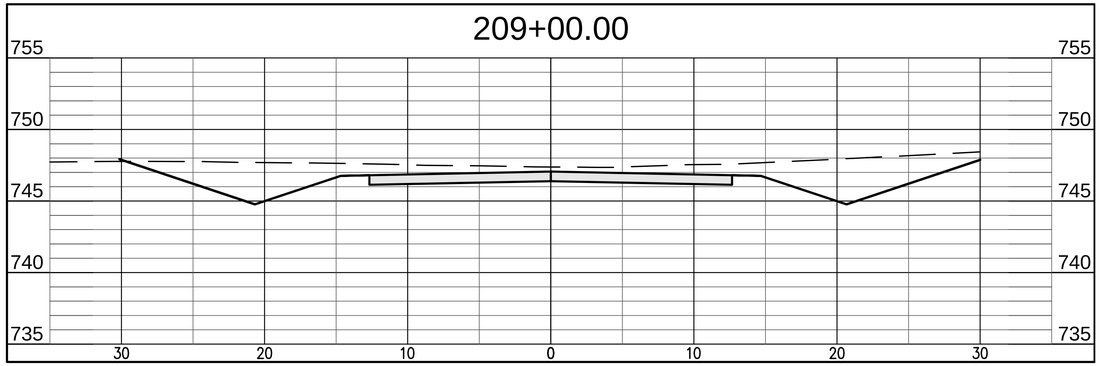


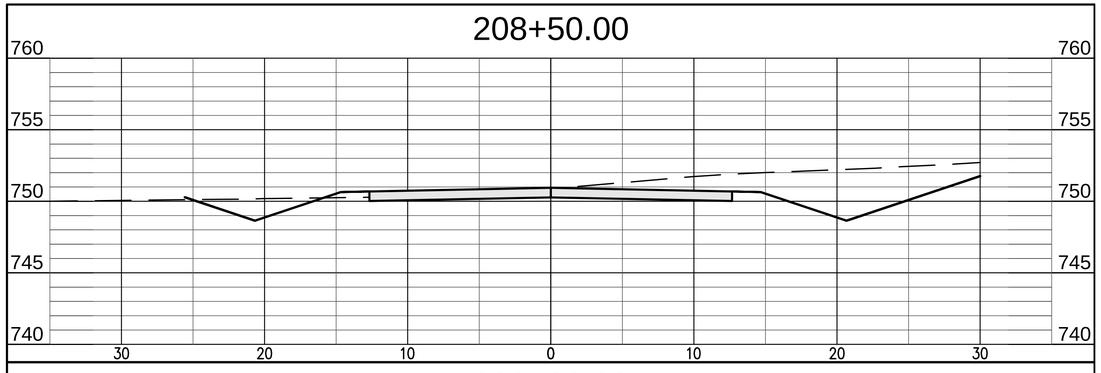


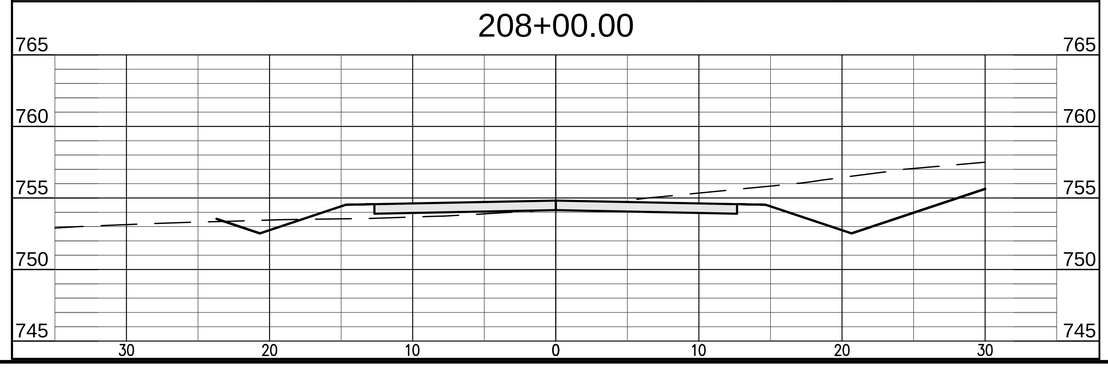












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TAPP ROAD:
TEMPORARY RUN-A-ROUND
Bloomington, Indiana

title: LINE TR-1
CROSS SECTIONS

designed by: RC
drawn by: JR
checked by: JSF
sheet no: 39
project no.: 401139

GENERAL NOTES:

Design beams for an HS20-44 loading in accordance with AASHTO specifications.

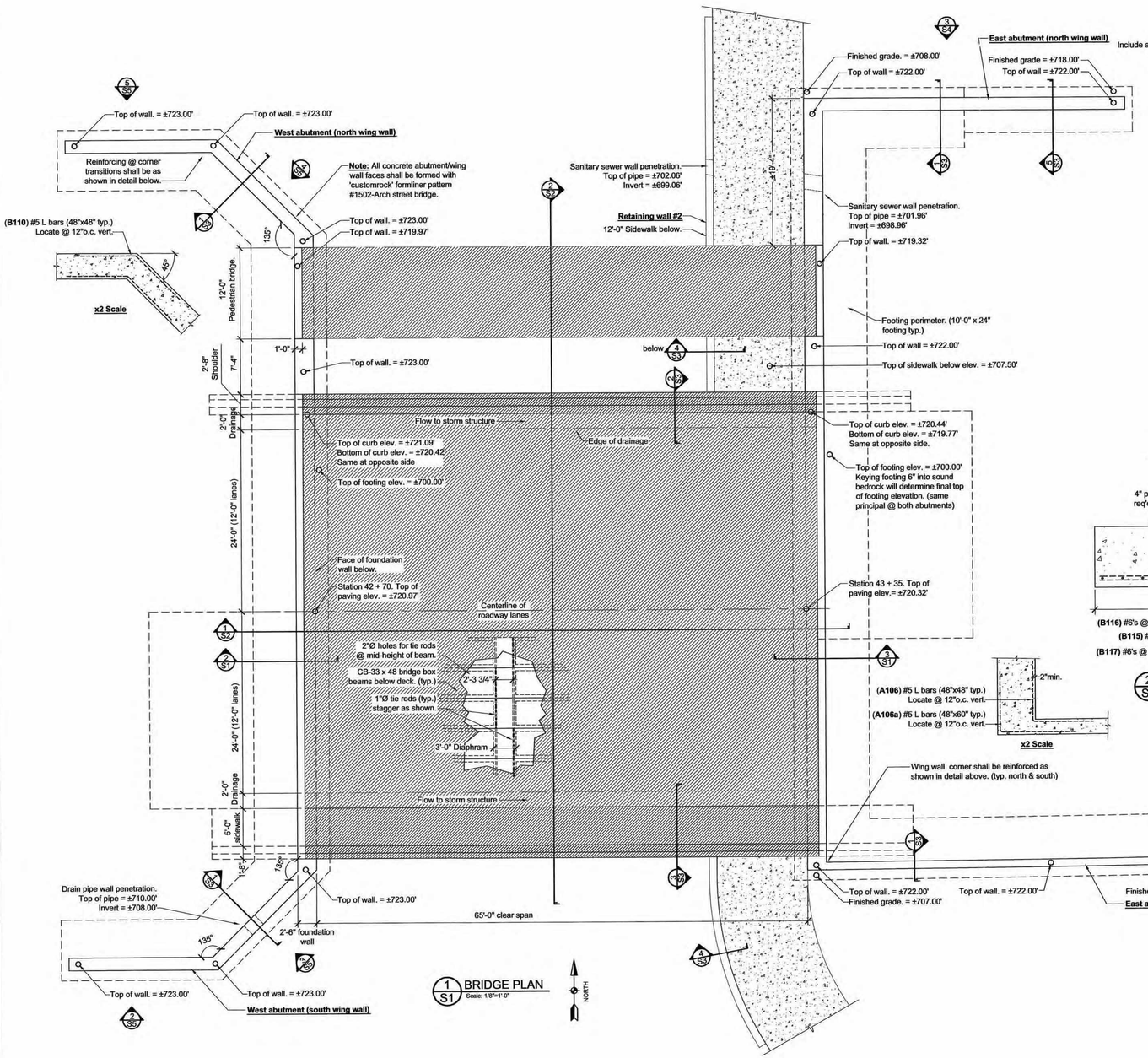
CONCRETE: f'ci = 4,000 psi at release
f'c = 5,000 psi at 28 days

Prestressing steel:
1/2" 270K special lolax strands.
As = 0.167 sq. in./strand.
fu = 270.000 psi

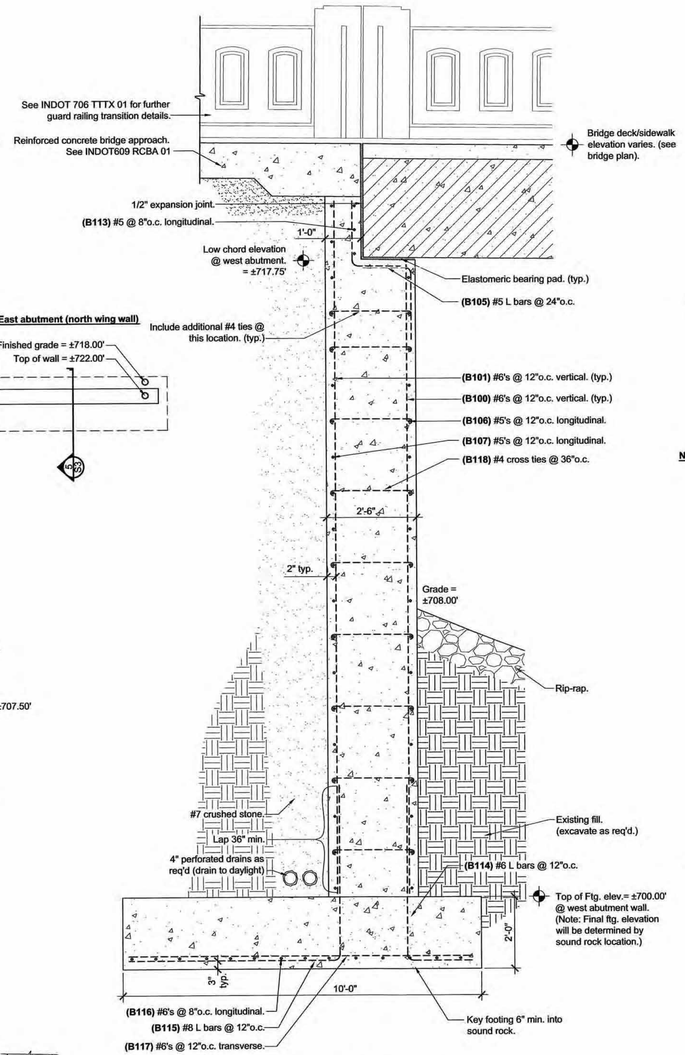
Reinforcing steel grade 60 (ASTM A615) Initial pull per strand: 33.818 lbs. Detention strands symetrically about centerline. All hand placed bars to be epoxy coated.

Seal tops + ends of all beams with sealer. (Apply in shop. Do not rub.)

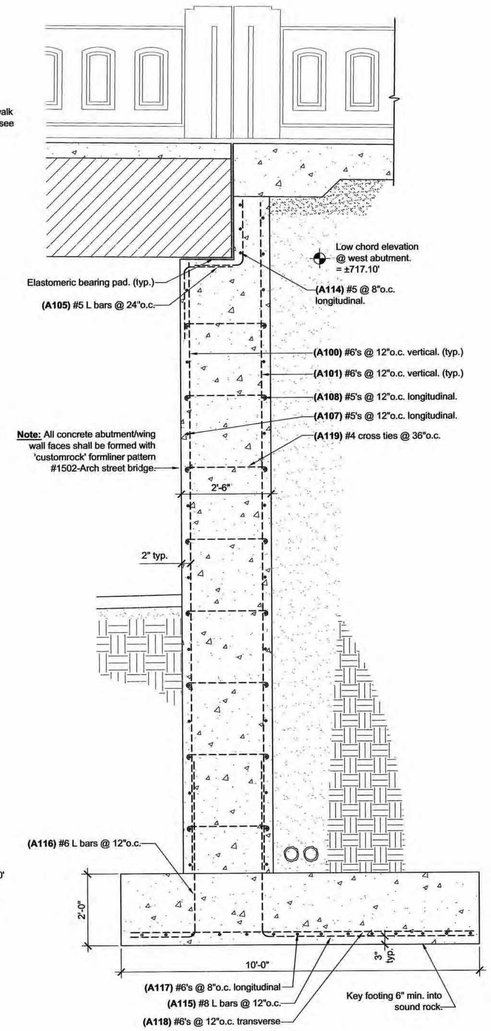
Proposed footings to be founded on solid bedrock.



1 S1 BRIDGE PLAN
Scale: 1/8"=1'-0"



2 S1 ABUTMENT SECTION @ BRIDGE CENTERLINE
Scale: 1/2"=1'-0"



3 S1 ABUTMENT SECTION @ BRIDGE CENTERLINE
Scale: 1/2"=1'-0"

revisions:

drawn by: KLK

STRUCTURAL ENGINEERING
bloomington, indiana (812) 824-5809 (Fax)
BFW Crane, Inc.
6700 S Victor Pike (812) 824-4260

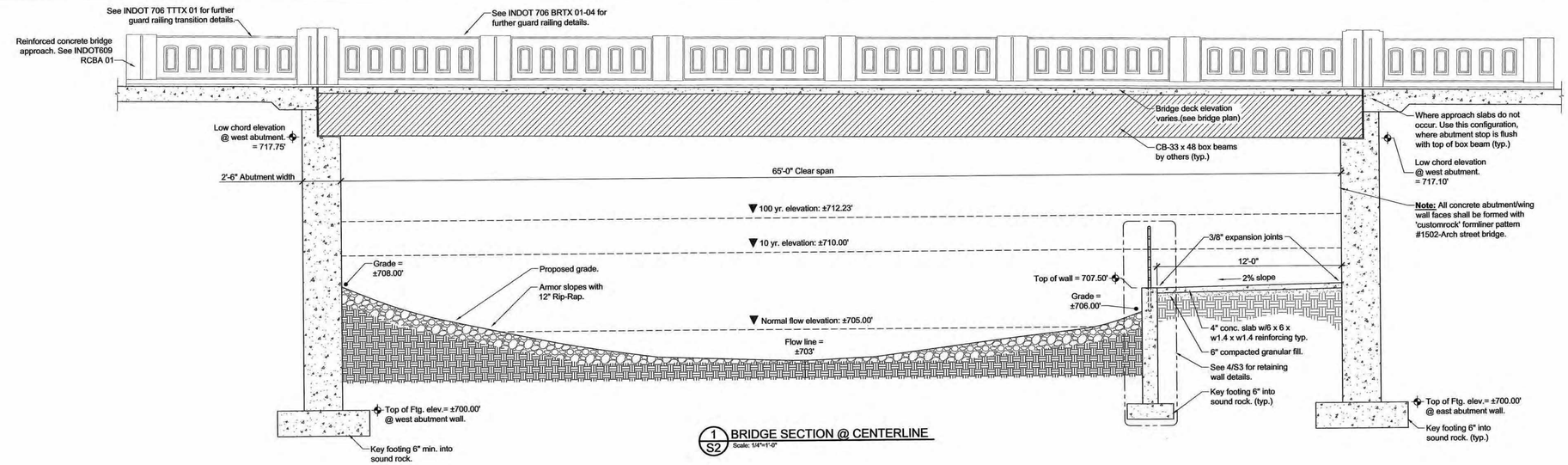
JOHN D. CRANE REGISTERED NO. PE19500032 STATE OF INDIANA PROFESSIONAL ENGINEER 9/30/11
certified by:

Proposed: TAPP & WEIMER ROAD BRIDGE Bloomington, Indiana

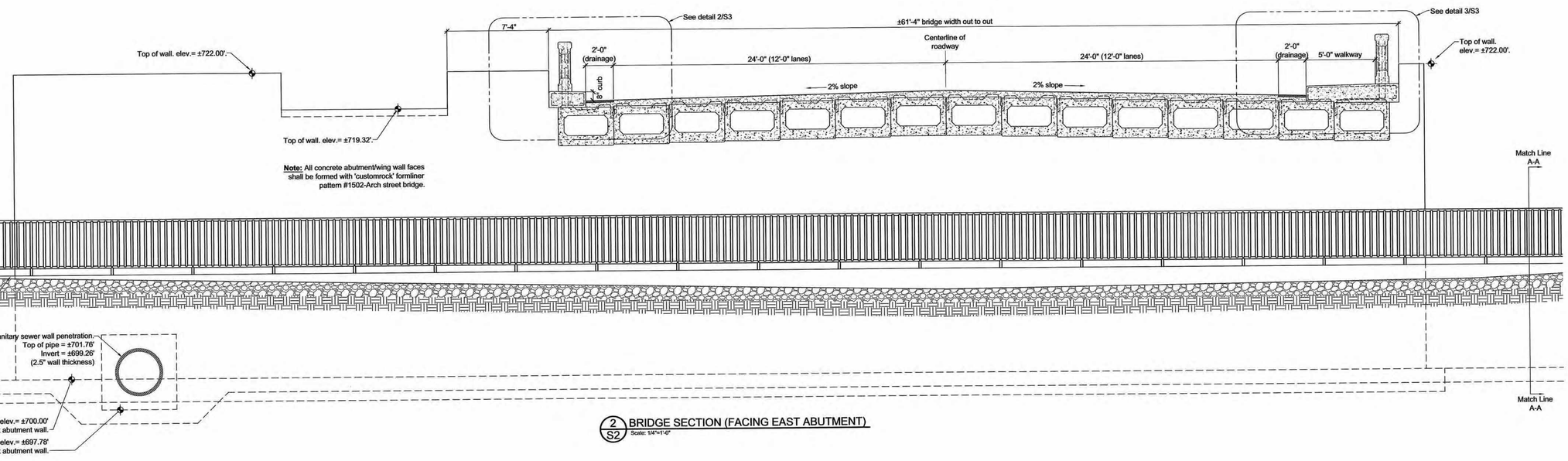
title: Bridge details

S-1

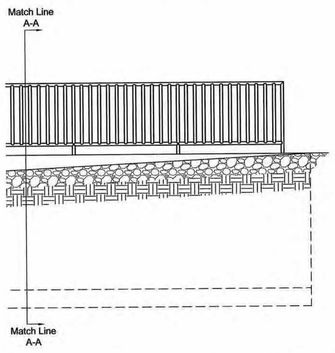
Sheet No: 701071
project no.:



1/S2 BRIDGE SECTION @ CENTERLINE
Scale: 1/4"=1'-0"



2/S2 BRIDGE SECTION (FACING EAST ABUTMENT)
Scale: 1/4"=1'-0"



3/S2 BRIDGE SECTION CONT. (FACING EAST ABUTMENT)
Scale: 1/4"=1'-0"

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certified by:

Proposed:
TAPP & WEIMER ROAD BRIDGE
Bloomington, Indiana

title: Bridge details

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Sheet No: 701071
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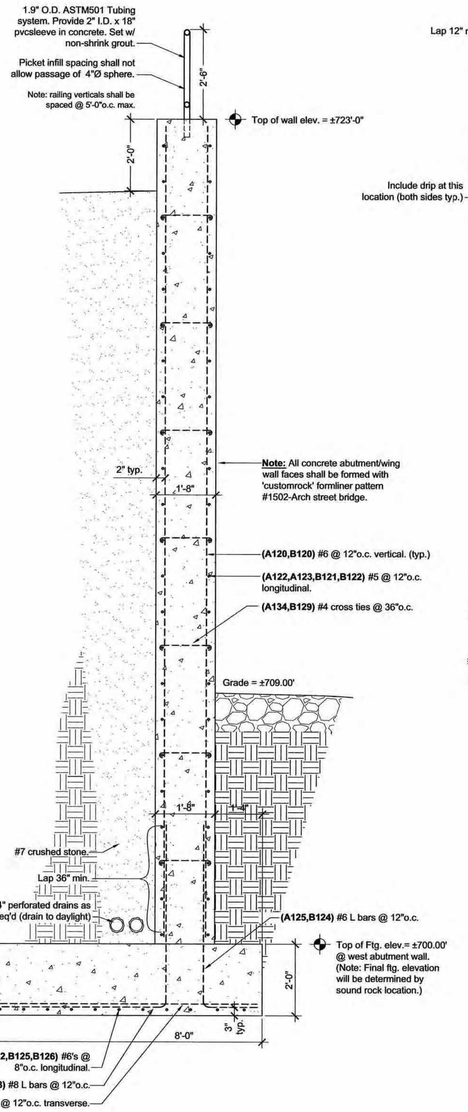
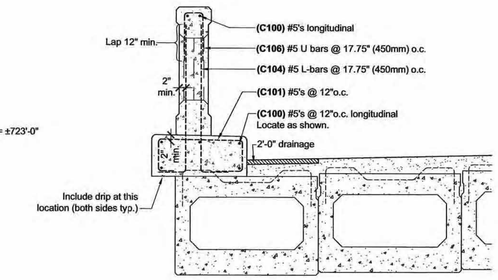
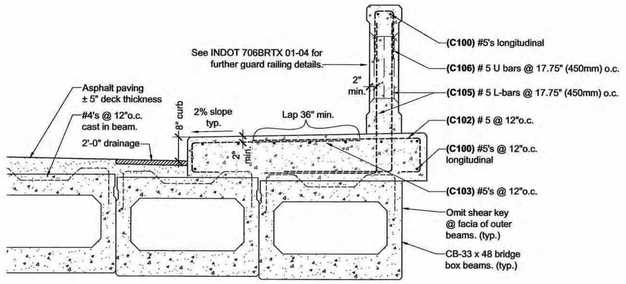


1 S3 WING WALL SECTION
Scale: 1/2"=1'-0"



2 S3 SHOULDER / GUARDRAIL SECTION
Scale: 1/2"=1'-0"

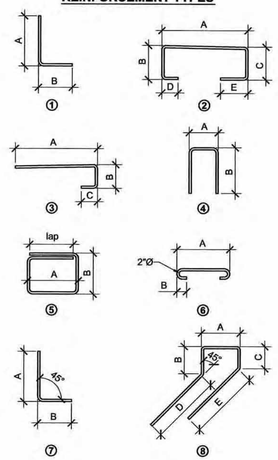


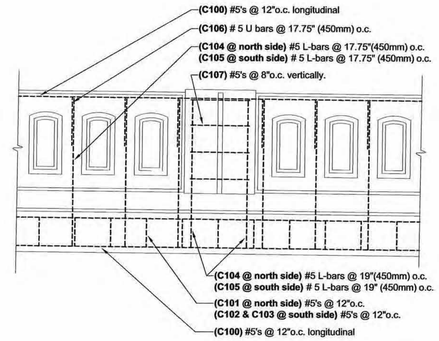
3 S3 SIDEWALK / GUARDRAIL SECTION
Scale: 1/2"=1'-0"

BILL OF REINFORCEMENT (Sidewalk/guardrail)

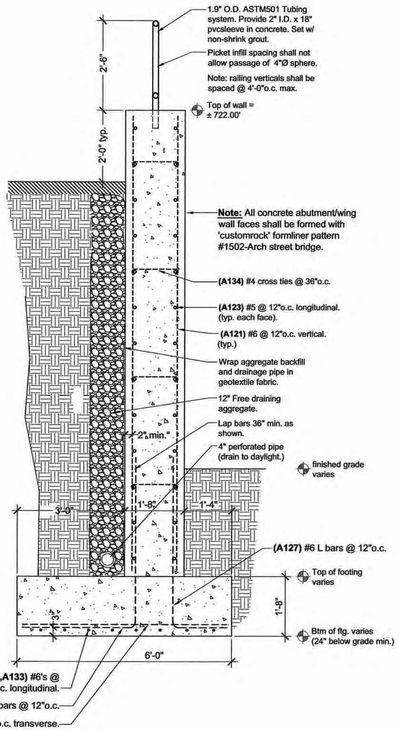
MARK	TYPE	SIZE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.
C100	STR	5	18	92	5	Sidewalk/guardrail										
C101	2	5	94	5	1	" " " " " "	2	4	0	10	0	9	0	6	0	8
C102	3	5	94	6	4	" " " " " "	4	8	0	12	0	8				
C103	3	5	94	6	1	" " " " " "	4	8	0	9	0	8				
C104	1	5	148	5	3	" " " " " "	4	6	0	9						
C105	1	5	148	7	7	" " " " " "	4	6	3	1						
C106	4	5	112	1	10	" " " " " "	0	6	1	4						
C107	5	5	72			" " " " " "	1	7	0	8						

REINFORCEMENT TYPES

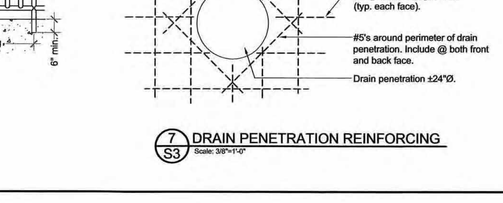




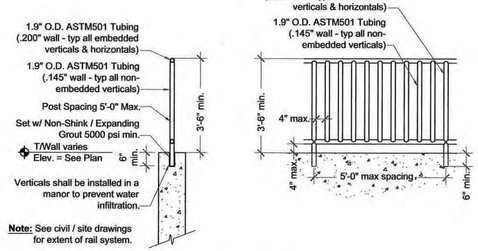
8 S3 GUARDRAIL REINFORCING ELEVATION
Scale: 1/2"=1'-0"



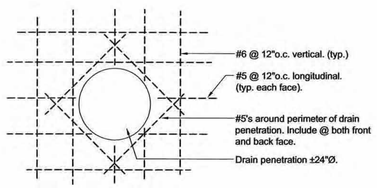
5 S3 WING WALL SECTION
Scale: 1/2"=1'-0"



4 S3 PATHWAY RETAINING WALL SECTION
Scale: 1/2"=1'-0"



6 S3 GUARDRAIL DETAILS
Scale: 3/8"=1'-0"



7 S3 DRAIN PENETRATION REINFORCING
Scale: 3/8"=1'-0"

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TAPP & WEIMER ROAD BRIDGE
Bloomington, Indiana

title: Bridge details

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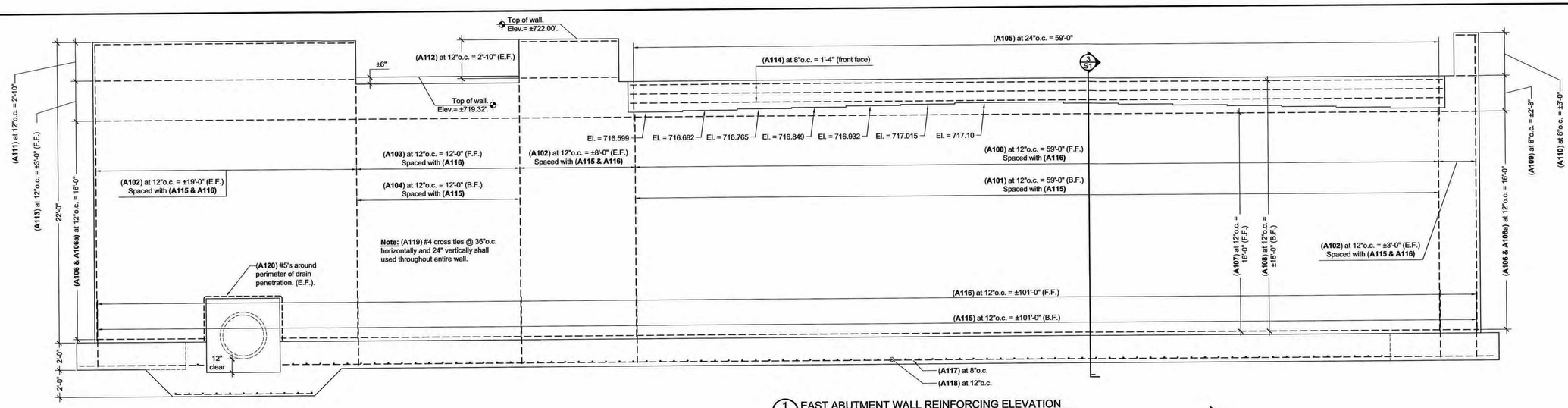
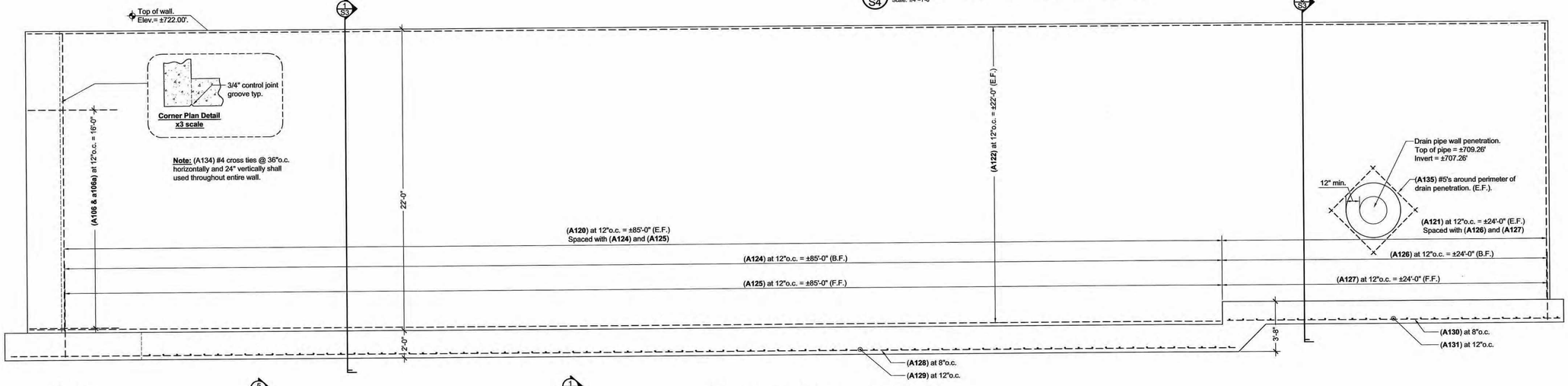
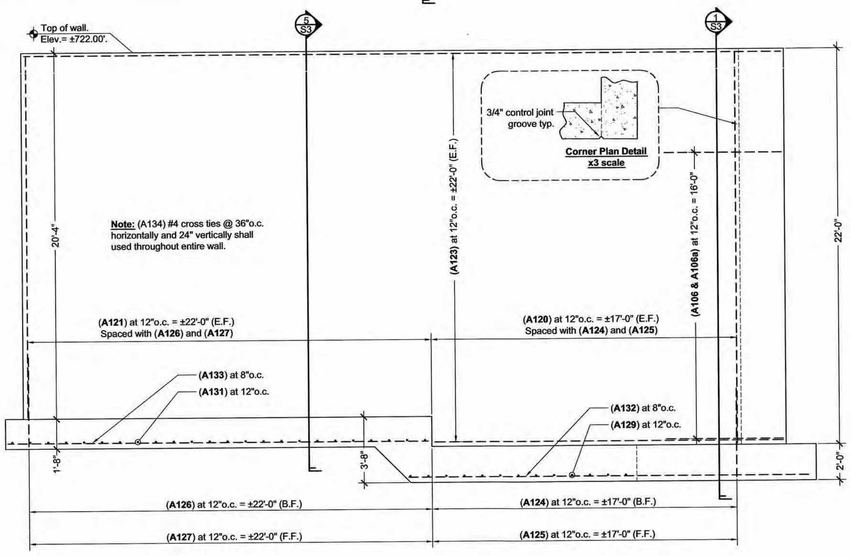
Sheet No: 701071
project no.:



1 S4 EAST ABUTMENT WALL REINFORCING ELEVATION
Scale: 1/4"=1'-0"



2 S4 EAST ABUTMENT (South Wing Wall)
Scale: 1/4"=1'-0"



3 S4 EAST ABUTMENT (North Wing Wall)
Scale: 1/4"=1'-0"

REINFORCEMENT TYPES

BILL OF REINFORCEMENT (East abutment wall)

MARK	TYPE	SIZE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.
A100	STR	6	1 set (59 bars)	529	0	East Abutment, Front face	Length varies from 16'-9"min. to 16'-3"max. (1" increments)									
A101	STR	6	59 bars	18	6	East Abutment, Back face										
A102	STR	6	64	21	8	East Abutment, Each face										
A103	STR	6	13	18	5	East Abutment, Front face										
A104	STR	6	13	18	11	East Abutment, Back face										
A105	1	5	2 sets (60 bars)	3	7	East Abutment Ledge	2	0	1	4						
A106	1	5	32	8	0	East Abutment Corners	4	0	4	0						
A106a	1	5	32	8	0	East Abutment Corners	4	0	5	0						
A107	STR	5	17	101	5	East Abutment, Front face										
A108	STR	5	19	101	5	East Abutment, Back face										
A109	5	4	3			East Abutment, South corner	2	2	2	2						
A110	5	4	6			East Abutment, South corner	1	5	2	2						
A111	STR	4	6	19	0	East Abutment, North corner										
A112	STR	5	8	7	0	East Abutment, Each face										
A113	STR	5	3	39	0	East Abutment, Front face										
A114	STR	5	3	59	8	East Abutment, Front face										
A115	1	8	102	10	8	East Abutment ftg, Back face	4	10	5	10						
A116	1	6	102	6	8	East Abutment ftg., Front face	4	10	1	10						
A117	STR	6	14	104	1	East Abutment Footing										
A118	STR	6	90	9	8	East Abutment Footing										
A119	6	4	±300			East Abutment, Stem Wall	2	2	0	4						
A120	4	5	2	12	5	East Abutment, Stem Wall	5	9	3	4						

BILL OF REINFORCEMENT (East abutment wing walls)

MARK	TYPE	SIZE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.
A120	STR	6	206	21	8	East Abutment (north,south wing wall)										
A121	STR	6	92	20	0	East Abutment (north,south wing wall)										
A122	STR	5	46	111	1	East Abutment, south wing wall										
A123	STR	5	46	42	1	East Abutment, north wing wall										
A124	1	8	102	10	2	East Abutment (north,south wing wall)	5	1	5	1						
A125	1	6	102	6	7	East Abutment (north,south wing wall)	5	1	1	6						
A126	STR	8	46	7	8	East Abutment (north,south wing wall)	4	9	3	2						
A127	STR	6	46	4	9	East Abutment (north,south wing wall)	4	9	1	6						
A128	STR	6	11	90	0	East Abutment Wing Wall Footings										
A129	STR	6	93	7	8	East Abutment Wing Wall Footings										
A130	STR	6	8	24	8	East Abutment Wing Wall Footings										
A131	STR	6	50	5	8	East Abutment Wing Wall Footings										
A132	STR	6	11	22	4	East Abutment Wing Wall Footings										
A133	STR	6	8	23	5	East Abutment Wing Wall Footings										
A134	6	4	±350			East Abutment (north,south wing wall)	1	4	0	4						
A135	STR	5	8	4	10	East Abutment (south wing wall)										

revisions:

drawn by: KLK

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Proposed:
TAPP & WEIMER ROAD BRIDGE
Bloomington, Indiana

title: Bridge details

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Sheet No: 701071
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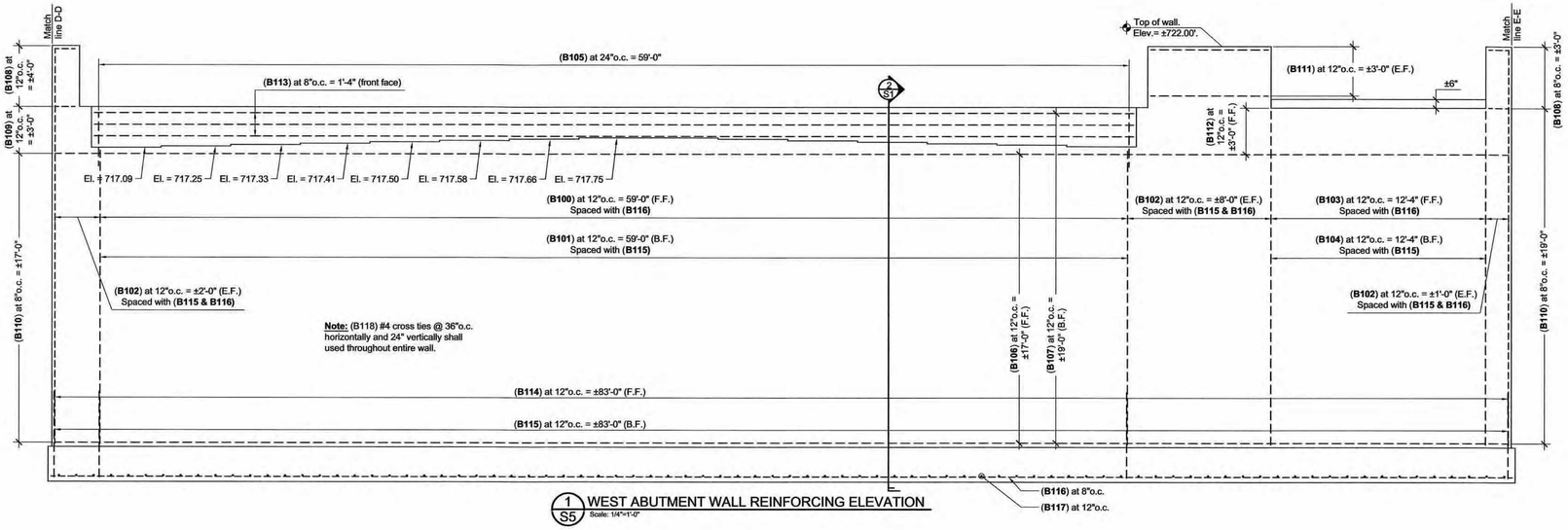
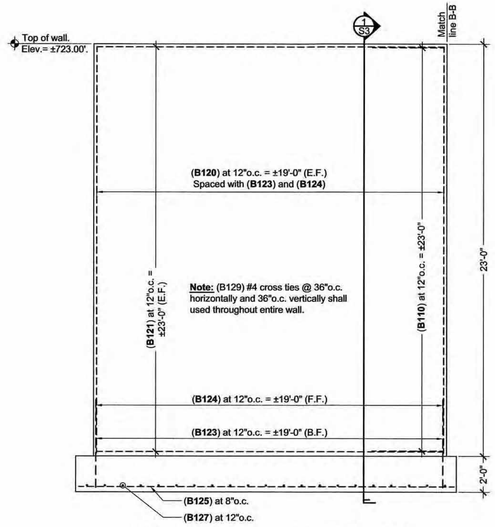
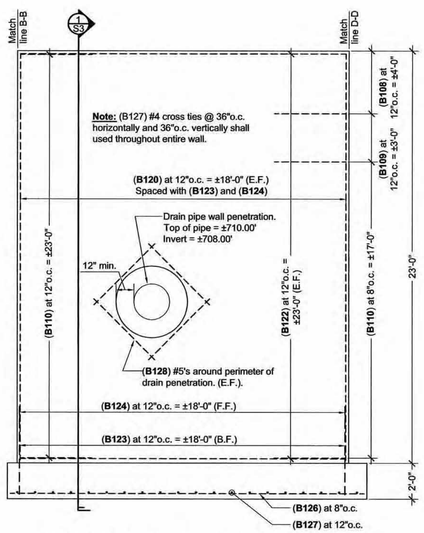


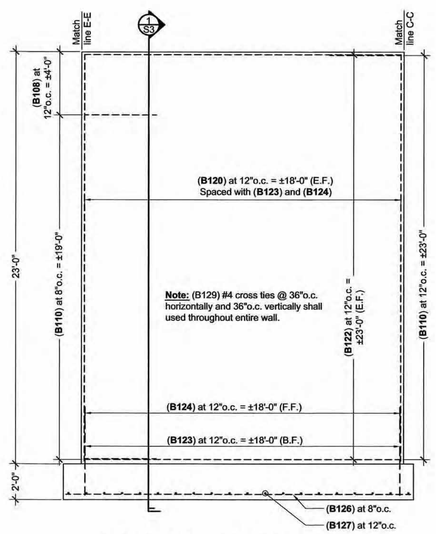
1 S5 WEST ABUTMENT WALL REINFORCING ELEVATION
Scale: 1/4"=1'-0"



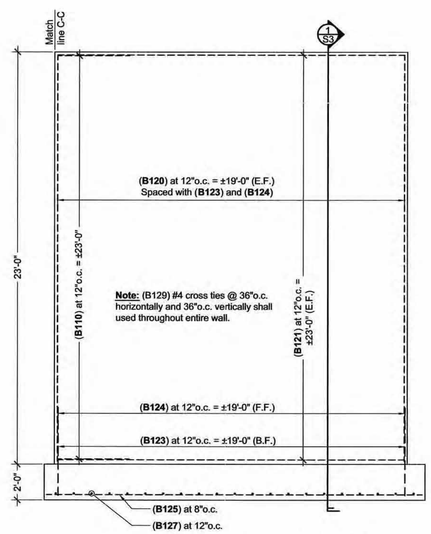
2 S5 WEST ABUTMENT (South Wing Wall)
Scale: 1/4"=1'-0"



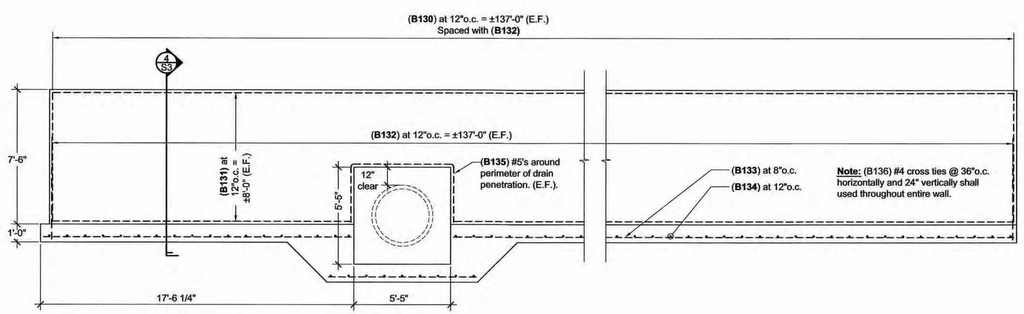
3 S5 WEST ABUTMENT (South Wing Wall)
Scale: 1/4"=1'-0"



4 S5 WEST ABUTMENT (North Wing Wall)
Scale: 1/4"=1'-0"

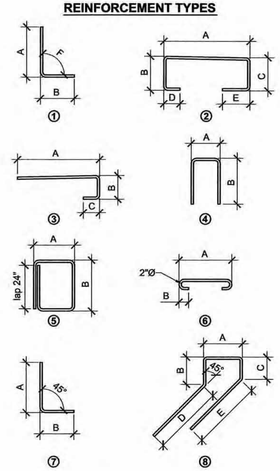


5 S5 WEST ABUTMENT (North Wing Wall)
Scale: 1/4"=1'-0"



6 S5 SIDEWALK / GUARDRAIL SECTION
Scale: 1/4"=1'-0"

REINFORCEMENT TYPES



BILL OF REINFORCEMENT (West abutment wall)

MARK	TYPE	SIZE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.
B100	STR	6	1 set (59 bars)	597	0	West Abutment, Front face	Length varies from 17'-5"min. to 16'-10"max. (1" increments)									
B101	STR	6	59	19	2	West Abutment, Back face										
B102	STR	6	22	22	8	West Abutment, Each face										
A103	STR	6	13	19	2	West Abutment, Front face										
B104	STR	6	13	19	8	West Abutment, Back face										
B105	1	5	2 sets (60 bars)	3	7	West Abutment Ledge	2	0	1	4						
B106	STR	5	18	83	5	West Abutment, Front face										
B107	STR	5	20	83	5	West Abutment, Back face										
B108	8	5	8	12	11	West Abutment Corners	2	2	1	6	1	3	4	0	4	0
B109	8	5	3	14	3	West Abutment South Corner	2	2	2	2	1	11	4	0	4	0
B110	7	5	166	8	0	West Abutment / Wing wall Corners	4	0	4	0						
B111	STR	5	8	6	9	West Abutment, Each face										
B112	STR	5	3	21	2	West Abutment, Front face										
B113	STR	5	3	59	8	West Abutment, Front face										
B114	1	6	84	6	8	West Abutment ftg, Front face	4	10	1	10						
B115	1	8	84	10	8	West Abutment ftg, Back face	4	10	5	10						
B116	STR	6	14	83	10	West Abutment Footing										
B117	STR	6	85	9	8	West Abutment Footing										
B118	6	4	±250			West Abutment, Stem Wall	2	2	0	4						

BILL OF REINFORCEMENT (West abutment wing walls & pathway retaining wall)

MARK	TYPE	SIZE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.
B120	STR	6	156	22	8	West Abutment, Wing Walls										
B121	STR	5	96	19	4	West Abutment, Wing Walls										
B122	STR	5	96	18	2	West Abutment Wing Walls										
B123	1	8	78	10	2	West Abutment, Wing walls (back face)	5	1	5	1						
B124	1	6	78	6	7	West Abutment, Wing walls (front face)	5	1	1	6						
B125	STR	6	11	21	0	West Abutment Wing Wall Footings										
B126	STR	6	11	19	3	West Abutment Wing Wall Footings										
B127	STR	6	84	7	8	West Abutment Wing Wall Footings										
B128	STR	5	8	4	10	West Abutment (south wing wall)										
B129	6	4	±192			West Abutment Wing Walls	1	4	0	4						
B130	STR	6	276	7	2	Pathway retaining wall										
B131	STR	5	16	137	0	Pathway retaining wall										
B132	1	6	276	4	0	Pathway retaining footing	2	11	1	1						
B133	STR	6	5	137	0	Pathway retaining footing										
B134	STR	6	138	2	8	Pathway retaining footing										
B135	STR	5	2	12	5	Pathway retaining wall	5	9	3	4						
B136	6	4	±122			Pathway retaining wall	0	8	0	4						

revisions:

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