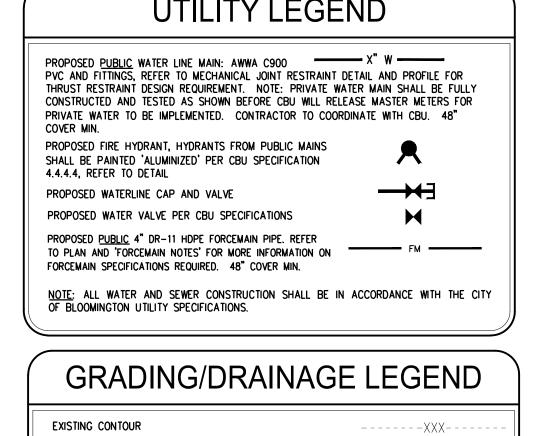
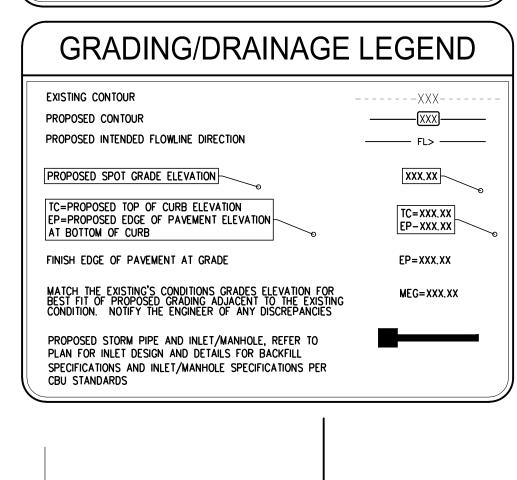


## **GENERAL NOTES** 1. BOUNDARY AND TOPO BY BYNUM FANYO AND ASSOCIATES, 528 NORTH WALNUT STREET, BLOOMINGTON, INDIANA 47404. PHONE (812) 332-8030 2. DEVELOPER: CRIDER & CRIDER, INC. 3. PROJECT ADDRESS: W HUNTER VALLEY ROAD, BLOOMINGTON, INDIANA 47404 4. ALL WORK IS TO BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS. 5. ALL PERMITS ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START 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. **EXISTING LEGEND** EXISTING FENCE EXISTING WATER LINE EXISTING OVERHEAD UTILITY LINES EXISTING UNDERGROUND ELECTRIC EXISTING UNDERGROUND TELEPHONE ———— UGT ———— EXISTING UNDERGROUND FIBER OPTIC LINES EXISTING GAS LINE ——— GAS ——— EXISTING SANITARY FORCEMAIN ----- FM -----EXISTING CONTOUR ----XXX-----FLOW LINE EXISTING SANITARY SEWER AND = = =MANHOLE EXISTING STORM SEWER AND INLET PROPERTY LINE **UTILITY LEGEND** PVC AND FITTINGS, REFER TO MECHANICAL JOINT RESTRAINT DETAIL AND PROFILE FOR THRUST RESTRAINT DESIGN REQUIREMENT. NOTE: PRIVATE WATER MAIN SHALL BE FULLY CONSTRUCTED AND TESTED AS SHOWN BEFORE CBU WILL RELEASE MASTER METERS FOR PRIVATE WATER TO BE IMPLEMENTED. CONTRACTOR TO COORDINATE WITH CBU. 48" PROPOSED FIRE HYDRANT, HYDRANTS FROM PUBLIC MAINS $\boldsymbol{\wedge}$ SHALL BE PAINTED 'ALUMINIZED' PER CBU SPECIFICATION 4.4.4.4, REFER TO DETAIL PROPOSED WATERLINE CAP AND VALVE PROPOSED WATER VALVE PER CBU SPECIFICATIONS PROPOSED <u>Public</u> 4" DR-11 HDPE FORCEMAIN PIPE. REFER TO PLAN AND 'FORCEMAIN NOTES' FOR MORE INFORMATION ON FORCEMAIN SPECIFICATIONS REQUIRED. 48" COVER MIN. NOTE: ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY F BLOOMINGTON UTILITY SPECIFICATIONS.





VARIES to proposed buildings, front

yard width varies, see plan

Slope Varies/See Plan

PROPOSED 90' TYP.

RIGHT-OF-WAY VARIES SEE PLANS

# 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
- 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
- 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.

# **EROSION CONTROL LEGEND**

ŀ	
	EXISTING CONTOUR  PROPOSED CONTOUR XXX  [XXX]
l	TEMPORARY SILTATION FENCE, REFER TO DETAIL SF
	TREE PRESERVATION FENCING REQUIRED - TEMPORARY DURING CONSTRUCTION - REFER TO DETAILS ON SHEET C801
	CONSRUCTION LIMITS: DELINEATED BY PROPERTY LINE UNLESS  OTHERWISE SPECIFIED
	TEMPORARY MULCH SEEDING - REFER TO DETAILS (MS)
	25' X 100' STONE PAD, 6" DEEP TO KEEP FROM TRACKING MUD OFF SITE - REFER TO DETAIL (TEMPORARY DURING CONSTRUCTION)
	TEMPORARY CONCRETE WASHOUT AREA - REFER TO DETAIL (CW)
	AEC PREMIER STRAW WATTLE SLOPE INTERRUPTION DEVICE OR ———————————————————————————————————
	D-50 RIP-RAP STORM OUTLET PROTECTION - REFER TO DETAIL AND PLAN FOR MIN. QUANTITY (PERMANENT)
	(CD)

GRAVEL CURB INLET PROTECTION (TEMPORARY) (TO BE USED ON ALL

TEMPORARY ROCK CHECK DAM - REFER TO DETAILS

5'-0"

Concrete Sidewalk

See plan for limit

VARIES SEE PLANS

\$50.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00 \$6.00

.5% SLOPE TYP...

Slope Varies

1/2"per Ft.

Lypical

19' TYP., VARIFS

SEE PLAN

Slope Varies/See Plan

## GENERAL LEGEND PROPERTY LINE XXX/XXX DEED BOOK AND PAGE TO BE REMOVED T.R.U. TO REMAIN UNDISTURBED x' SBL SETBACK LINE 5 PROPOSED ACCESSIBLE PARKING SPACE S.S.E. SANITARY SEWER EASEMENT GAS EASEMENT WATER LINE EASEMENT W.L.E. **ELECTRIC EASEMENT** DRAINAGE EASEMENT

UTILITY EASEMENT

TER DEPENDING ON

# **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
- 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.

THE CURRENT EDITION OF THE INDIANA DEPARTMENT OF TRANSPORATION SPECIFICATIONS & THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES ARE TO BE USED WITH THESE PLANS



DIAL '811' BEFORE YOU DIG 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.

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

# NOTE TO CONTRACTOR

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.

## LANDSCAPE NOTES

- 1. ALL PLANT MATERIAL SHALL ARRIVE ONSITE IN A HEALTHY, VIGOROUS CONDTION 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.
- 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.
- 19. 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.
- 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,

# SITE IMPROVEMENT LEGEND

- PROPOSED ROAD BITUMINOUS PAVING REFER TO DETAIL
- PROPOSED ALL-PURPOSE PATH BITUMINOUS PAVING REFER TO DETAIL
- PROPOSED HEAVY-DUTY ROAD BITUMINOUS PAVING REFER TO DETAIL
- PROPOSED CONCRETE PAVING REFER TO DETAIL
- PROPOSED GRAVEL PAVING REFER TO DETAIL
- PROPOSED PAVEMENT MILL AND OVERLAY. CONTRACTOR TO REFER TO PROFILE GRADE AND PROPOSED CONTOUR LINES FOR PROPOSED SURFACE ASPHALT CONSTRUCTION. 1 3" MILL MIN. AND 1 3" OVERLAY MIN. EXCESS MILL AND OVERLAY NECESSARY IN SOME LOCATIONS TO CONSTRUCT PROPOSED GRADE CONTRACTOR SHALL CONSTRUCT PAVEMENT WITH 1% MIN. CROSS SLOPE TO Ensure positive drainage and no ponding. Refer to plans for details.
- PROPOSED CONCRETE PATIO OR SIDEWALK. REFER TO PLAN FOR LOCATIONS AND REFER TO DETAIL.
- PROPOSED PAVEMENT MARKING, THERMOPLASTIC, DOUBLE SOLID LINE, YELLOW, 2 -4" WIDE LINES SPACED 4" WIDE (MARKING PER INDOT STANDARD 808.07 AND
- MUTCD PART 3 STANDARDS) PROPOSED 6" MONOLITHIC CURB AND GUTTER - REFER TO DETAIL
- PROPOSED INDOT SIDEWALK ACCESSIBLE RAMP WITH CAST IRON DETECTIBLE WARNING SURFACES - REFER TO DETAILS ON SHEET CO(3)
- PROPOSED VINYL COATED CHAIN-LINK FENCE REFER TO DETAIL
- PROPOSED INDOT W-BEAM GUARDRAIL REFER TO INDOT DESIGN MANUAL AND
- STANDARD DRAWINGS FOR CONSTRUCTION DETAILS AND SPECIFICATIONS SEE ARCHITECTURAL & STRUCTURAL DRAWINGS/SPECIFICATIONS FOR ALL SHADED

16' TYP., VARIES, SEE PLAN

Slope Varies/See Plan

## **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
- 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
- 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
- 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.
- 23. ALL PROJECTS WILL REQUIRE A PRE-CONSTRUCTION MEETING WITH THE CITY OF BLOOMINGTON UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR AND/OR DEVELOPER MUST CONTACT TOM AXSOM AT (812)349-3633 TO SCHEDULE THE MEETING.
- 24. CONTRACTOR SHALL NOTIFY THE CITY OF BLOOMINGTON UTILITIES ENGINEERING DEPARTMENT ONE (1) WORKING DAY PRIOR TO CONSTRUCTION OF ANY WATER. STORM OR SANITARY SEWER UTILITY WORK. A CBU INSPECTOR MUST HAVE NOTICE SO WORK CAN BE INSPECTED, DOCUMENTED, AND PROPER AS-BUILT MADE. WHEN A CONTRACTOR WORKS WEEKENDS, A CBU DESIGNATED HOLIDAY, OR BEYOND NORMAL CBU WORK HOURS, THE CONTRACTOR WILL PAY FOR THE INSPECTOR'S OVERTIME. FOR CBU WORK HOURS AND HOLIDAY INFORMATION, PLEASE CONTACT THE CITY OF BLOOMINGTON UTILITIES ENGINEERING DEPARTMENT AT (812)349-3660.

 $\bigcirc \bigcirc \bigcirc$ 744 INTER VAL MINGTON, N STONE > HR X le: **GENERAL NOTES** 

& LEGENDS

designed by: AJW drawn by: AJW checked by: **JSF** sheet no: **C0** project no.: **402224** 

NOTE TO CONTRACTOR

VARIES to proposed buildings, front yard

width varies, see plan

Slope Varies/See Plan

PROPOSED 90' TYP.

VARIES SEE PLANS

RIGHT-OF-WAY

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

14' SEE PLANS FOR LIMITS OF CURB | 1 AND GUTTER DEPENDING ON LOCATION | Slope Varies EE PLÁNS FOR LIMITS OF CURB 1/2"per Ft. Typical (A1) VARIES SEE PLAŃS 2% SLOPE TYP./ 2% SLOPE TYP., VARIES SEE PLÂNS\_ VARIES SEE PLÂNS

NOTE: "LINE HUNTER VALLEY ROAD" IS THE EXISTING EXISTING

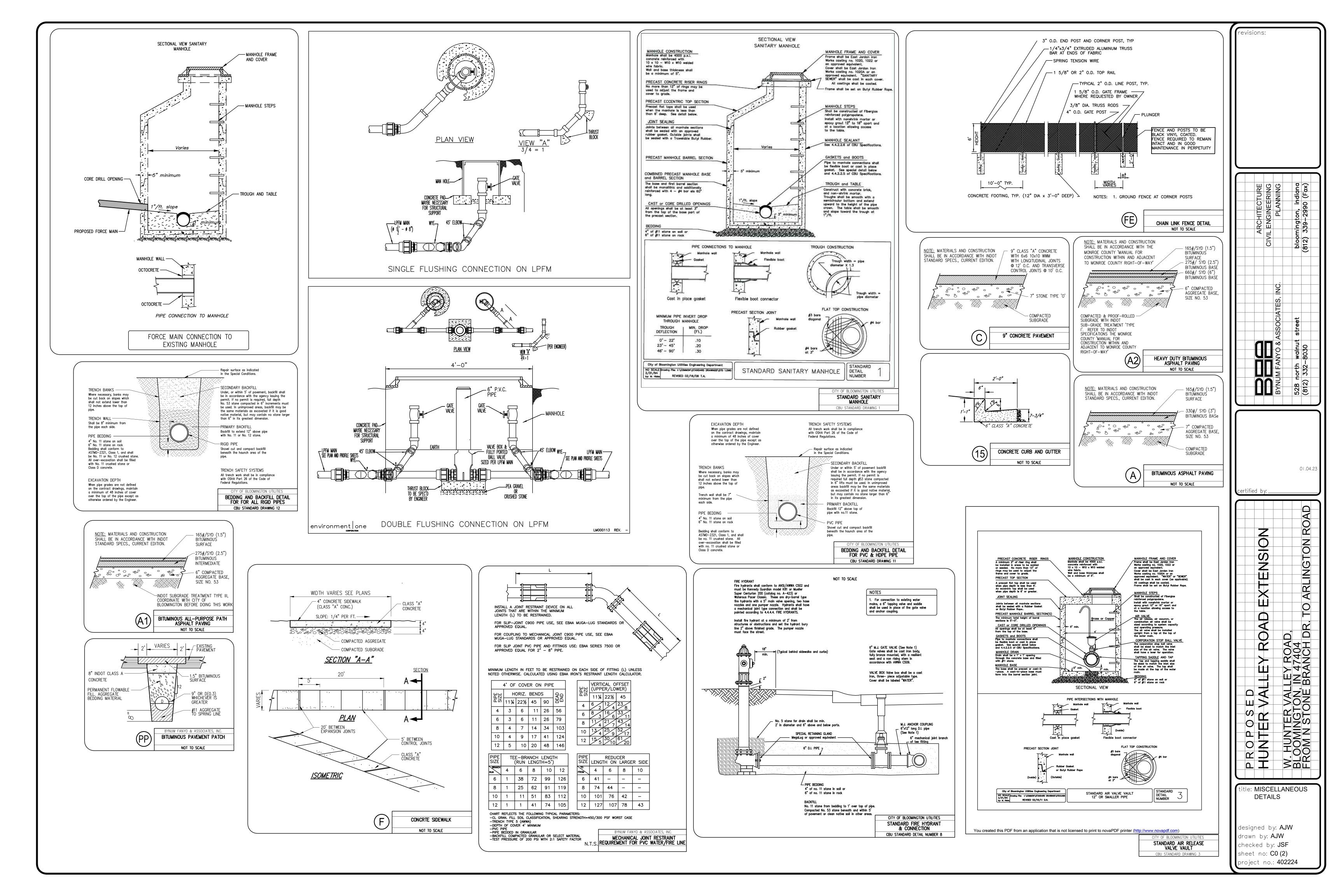
AND PROPOSED CENTERLINE OF HUNTER VALLEY ROAD

8'-0"

Asphalt All-Purpose Path

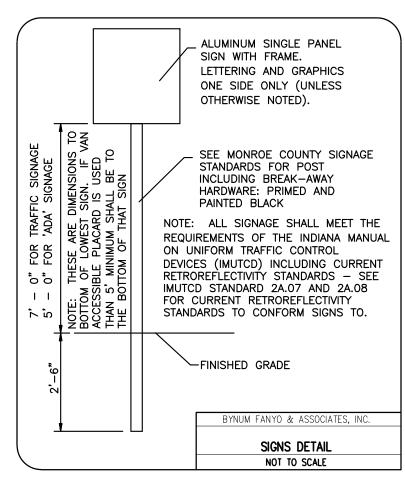
· See plan for limit

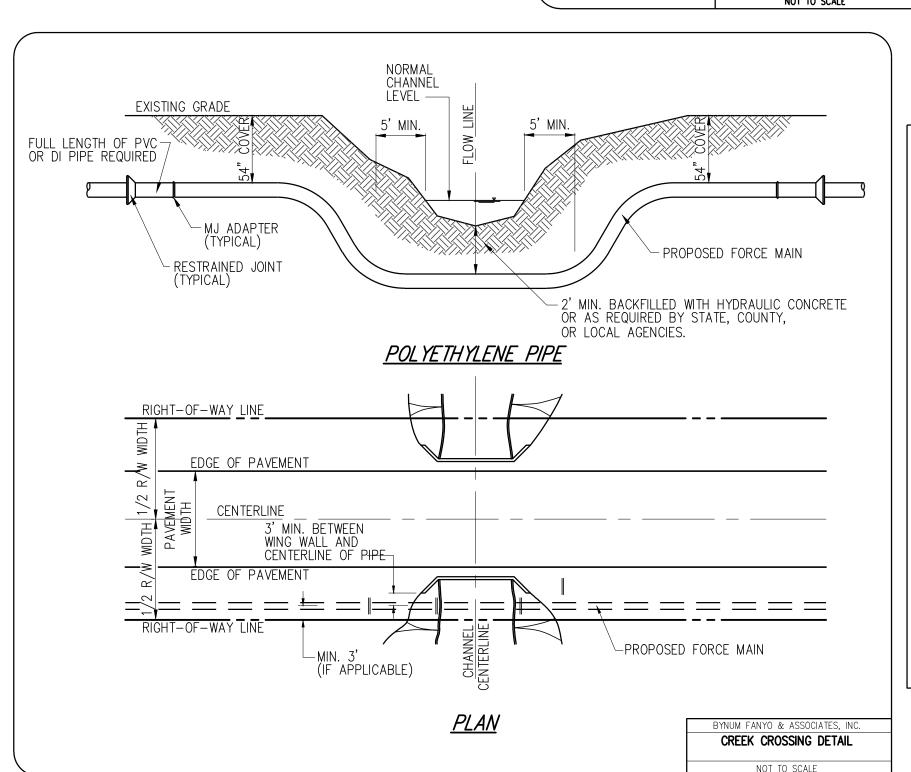
HUNTER VALLEY ROADWAY EXTENSION TYPICAL CROSS SECTION

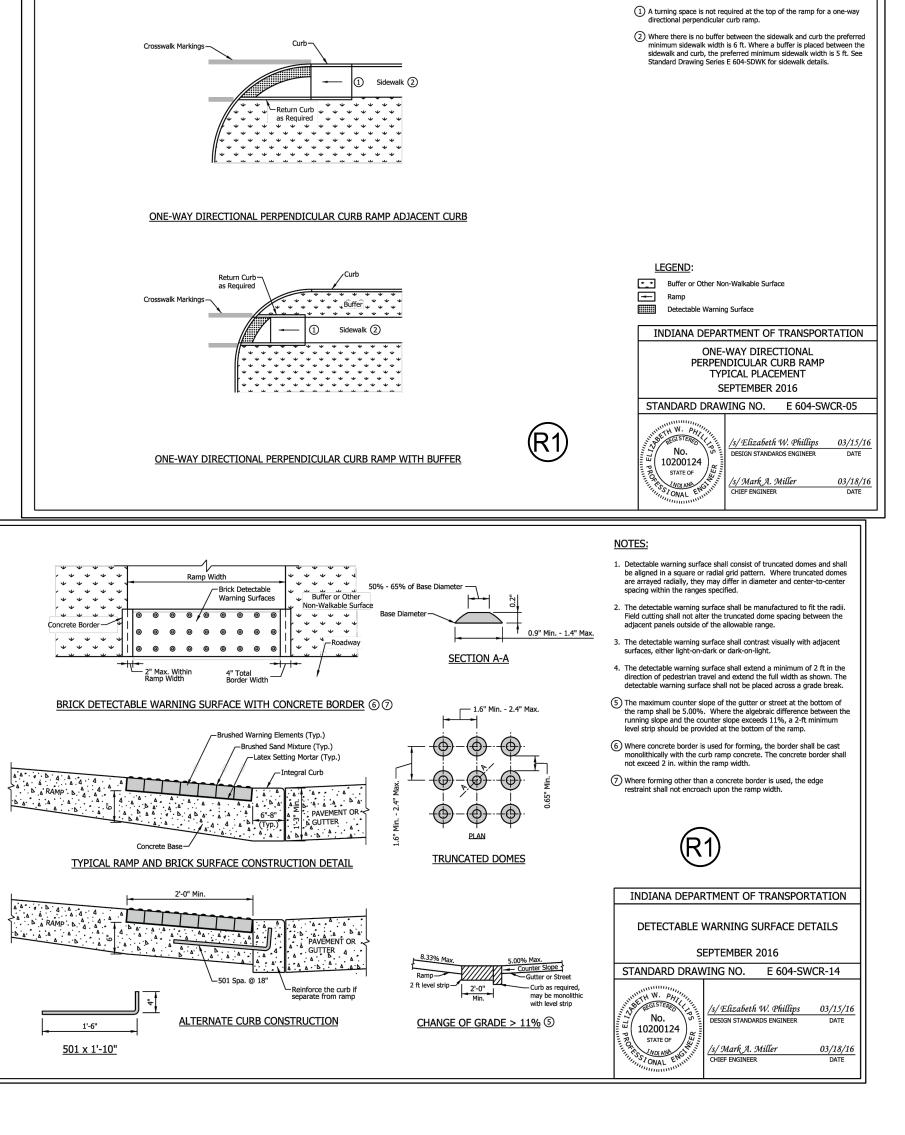


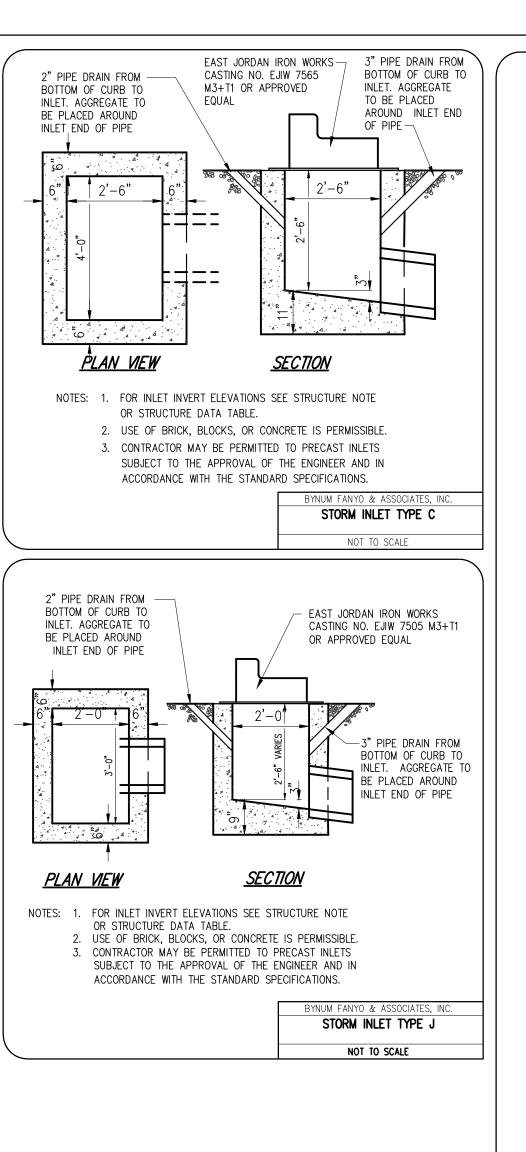
				STO	ORM S	TRUCT	URE D	ATA TA	ABLE		
STR. NO.	INLET / *CASTING	ROADWAY STATION	TOP OF CASTING @ FLOWLINE	PIPE LENGTH (FT)	PIPE SIZE (IN)	INVERT IN (NORTH)	INVERT IN (SOUTH)	INVERT IN (EAST)	INVERT IN (WEST)	INVERT OUT	COMMENTS
11	InDOT Type C / 7565		728.24	35	24		724.37	722.31		721.81	Dishcarge pipe shall daylight with metal end section and Rip-Rap at an elevation of 721.00. Refer to plan for location.
12	InDOT Type J / 7505		728.24	27	12					724.91	
13	Two (2) InDOT Type C / 7565		727.43	73	18		723.56	723.31		723.06	18" pipe between the inlets at an elevation of 723.06.
14	Two (2) InDOT Type C / 7565		727.43	27	12					724.10	12" pipe between the inlets at an elevation of 724.10.
15	InDOT Type J / 7505		729.35	118	15		725.48	724.90		724.65	
16	InDOT Type J / 7505		729.35	27	12					726.02	
17	InDOT Type J / 7505		747.68	272	12		743.81	743.81		740.75	
18	InDOT Type J / 7505		747.68	27	12					744.35	
19	InDOT Type J / 7505		770.63	279	12		766.76			766.76	
20	InDOT Type J / 7505		770.63	27	12					767.30	
21	InDOT Type J / 7505		731.27	19	12		727.73			727.73	Dishcarge pipe shall daylight with metal end section and Rip-Rap at an elevation of 727.00. Refer to plan for location.
22	InDOT Type J / 7505		731.27	27	12					728.27	
23	InDOT Type C / 7565		786.91	36	24	783.04		782.02		782.04	Dishcarge pipe shall daylight with metal end section and Rip-Rap at an elevation of 781.50. Refer to plan for location.
24	InDOT Type C / 7505		786.91	27	12					783.58	
25	InDOT Type C / 7565		789.09	171	24	784.25				783.75	
26	InDOT Type C / 7565		789.09	27	18			785.04		784.79	
27	InDOT Type C / 7565		794.94	173	15			790.00		790.00	
28	InDOT Type E / 6610 Beehive		798.00	78	15			795.00		794.75	
29	InDOT Type E / 6610 Beehive		803.50	83	12		800.86			800.86	
30	InDOT Type C / 7565		804.39	20	12					801.06	

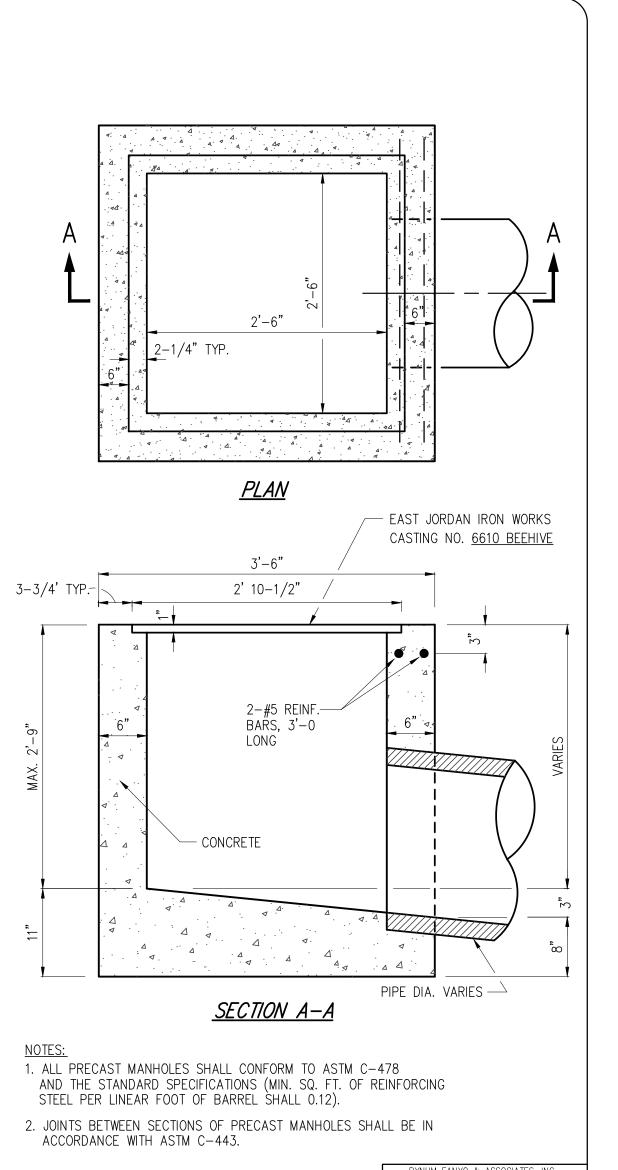
\* All castings are to be by East Jordan Co. NOTE: ALL STORM PIPE SHALL BE REINFORCED CONCRETE PIPE

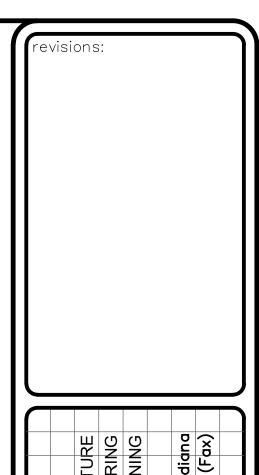




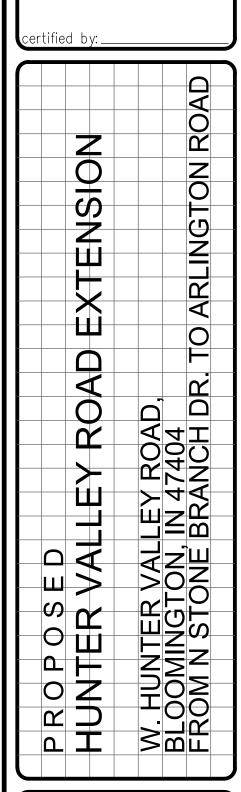








528 north walnut street (812) 332-8030



tle: MISCELLANEOUS

DETAILS

designed by: AJW

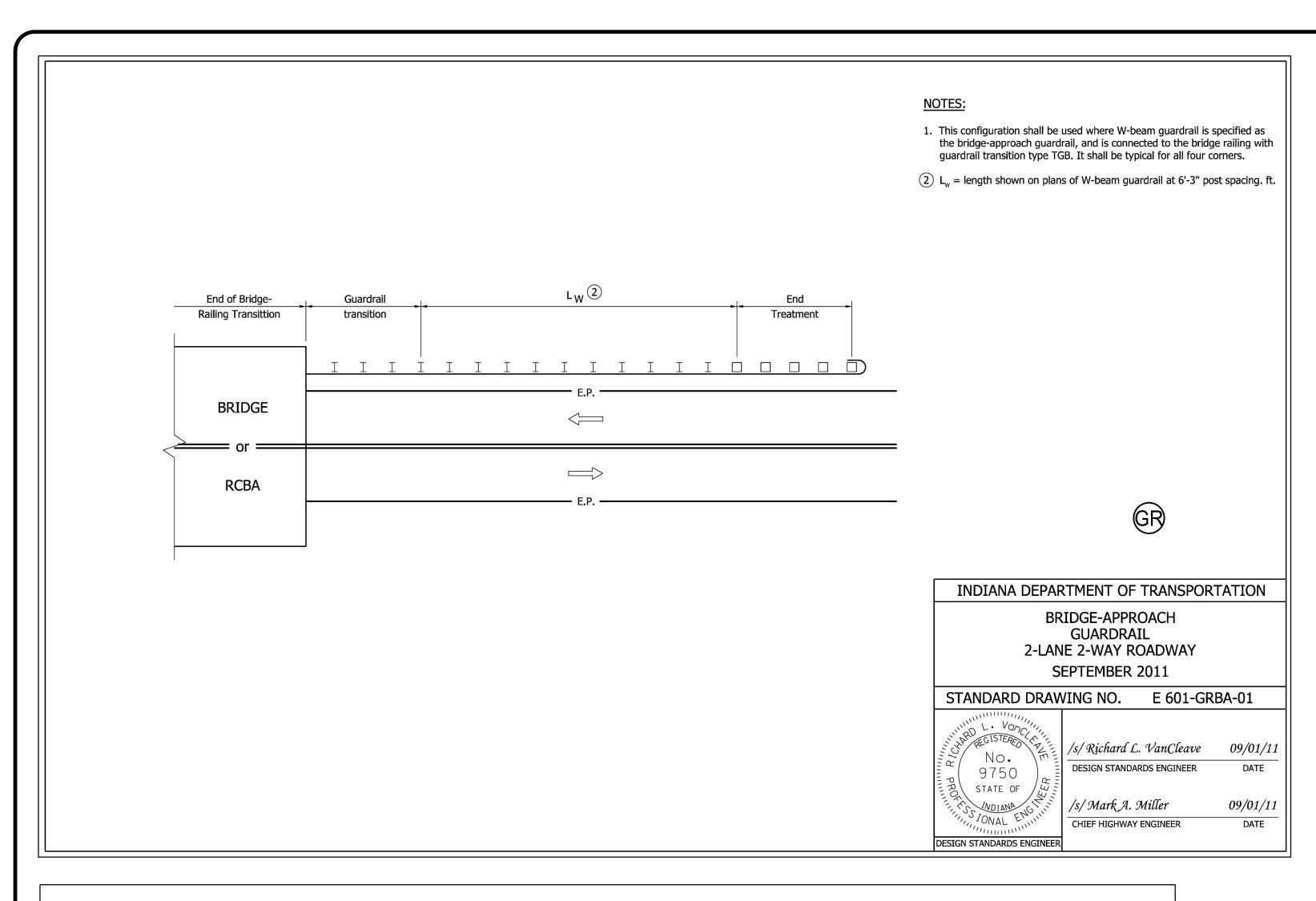
drawn by: AJW checked by: JSF

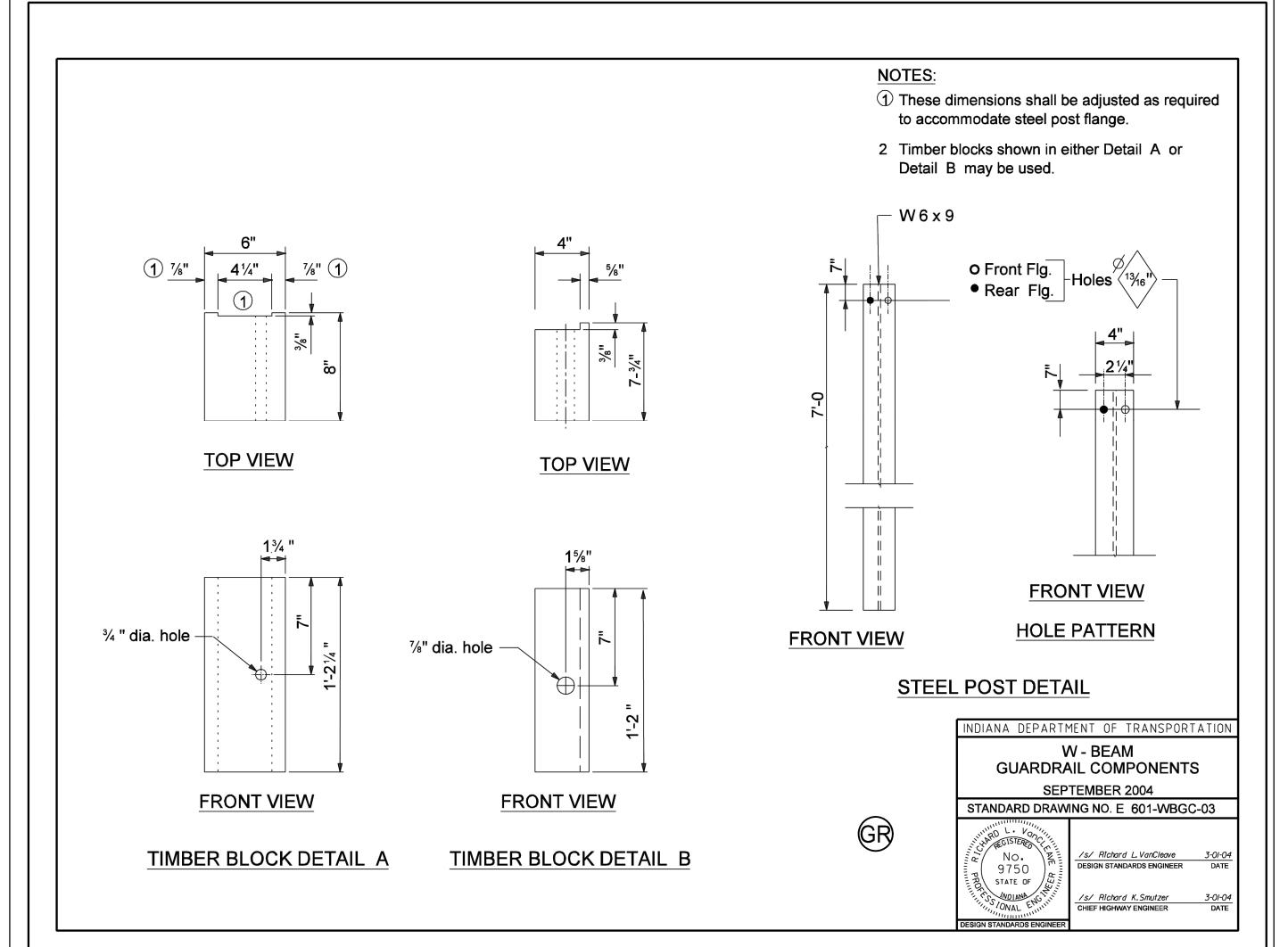
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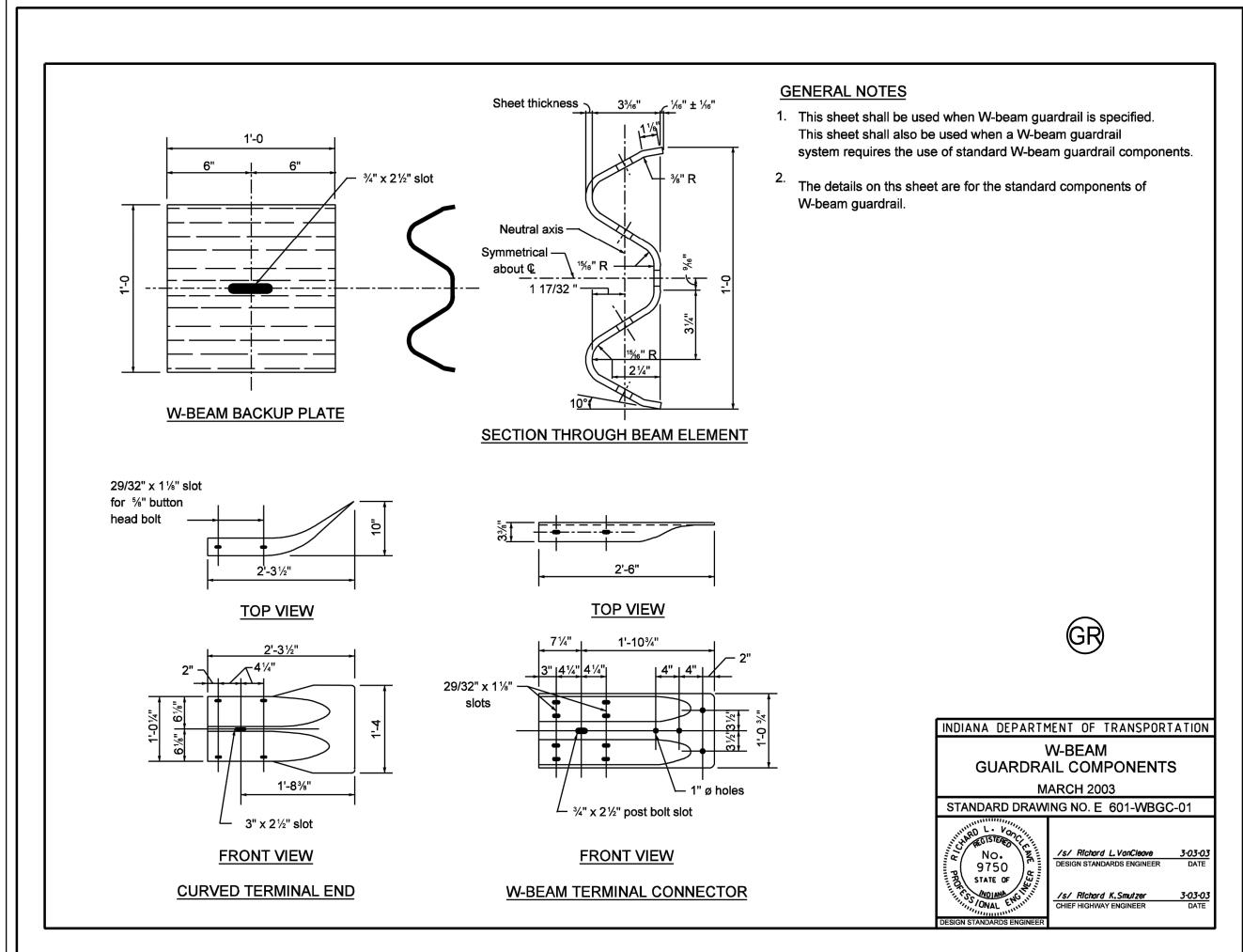
project no.: **402224** 

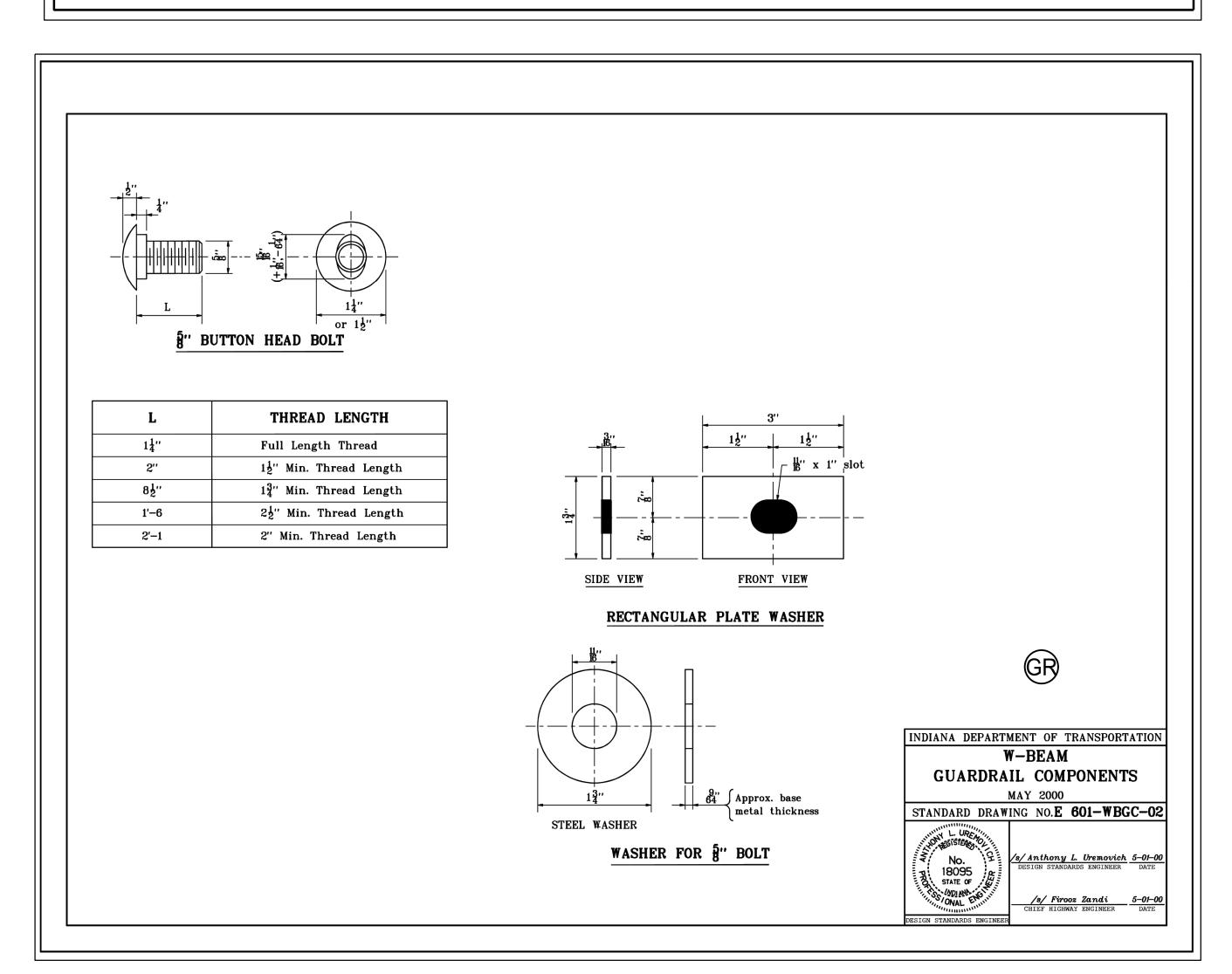
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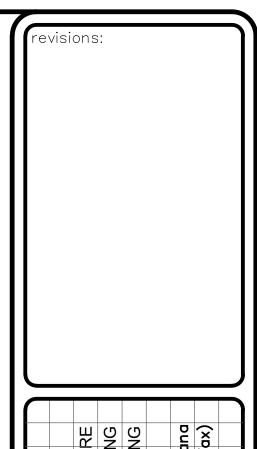
NOT TO SCALE





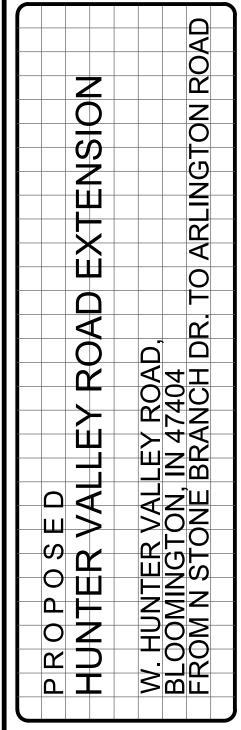






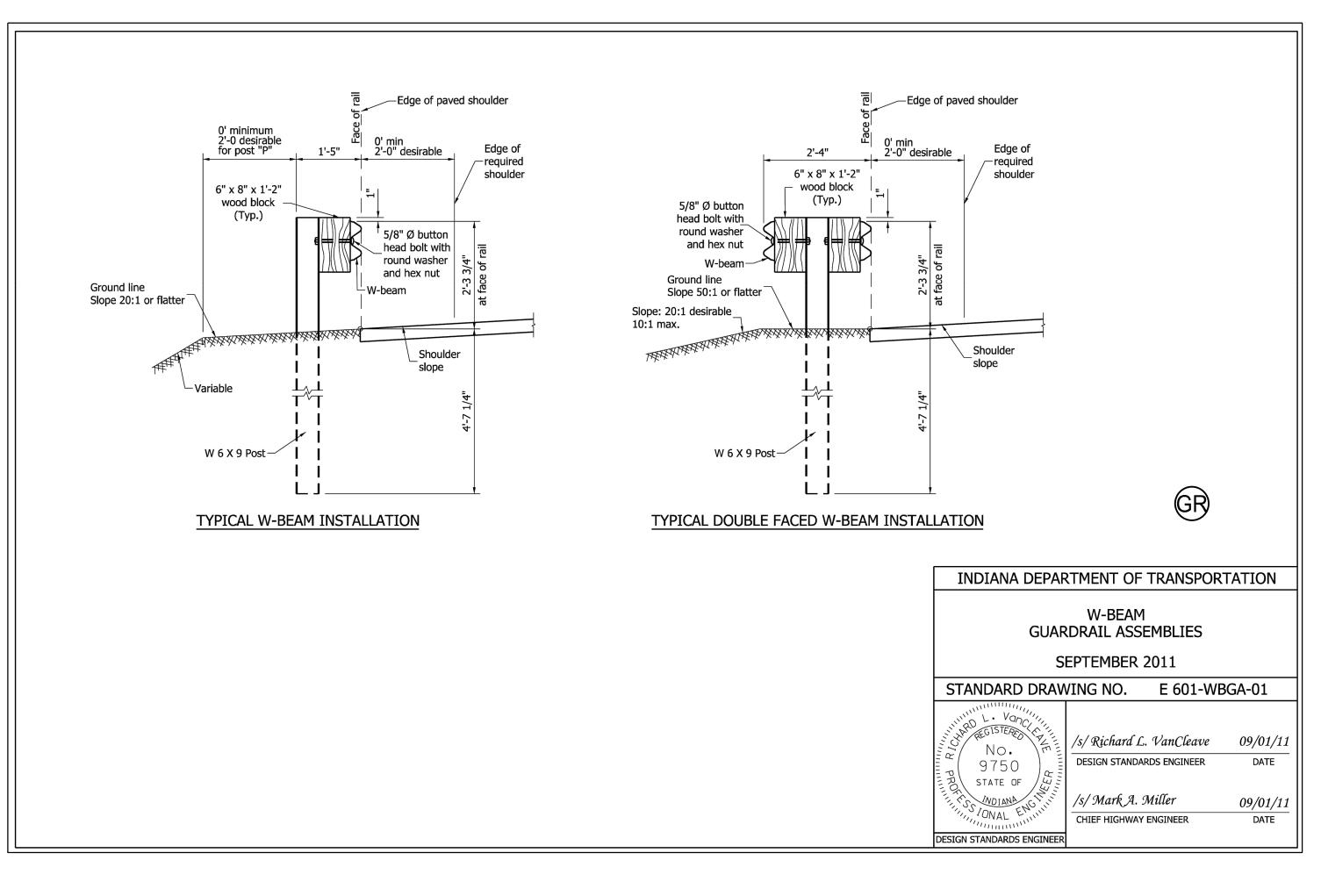
ARCHITECTUR	CIVIL ENGINEERIN	PLANNIN	bloomington, india	(812) 339-2990 (Fc	
		BYNUM FANYO & ASSOCIATES, INC.	528 north walnut street	(812) 332–8030	

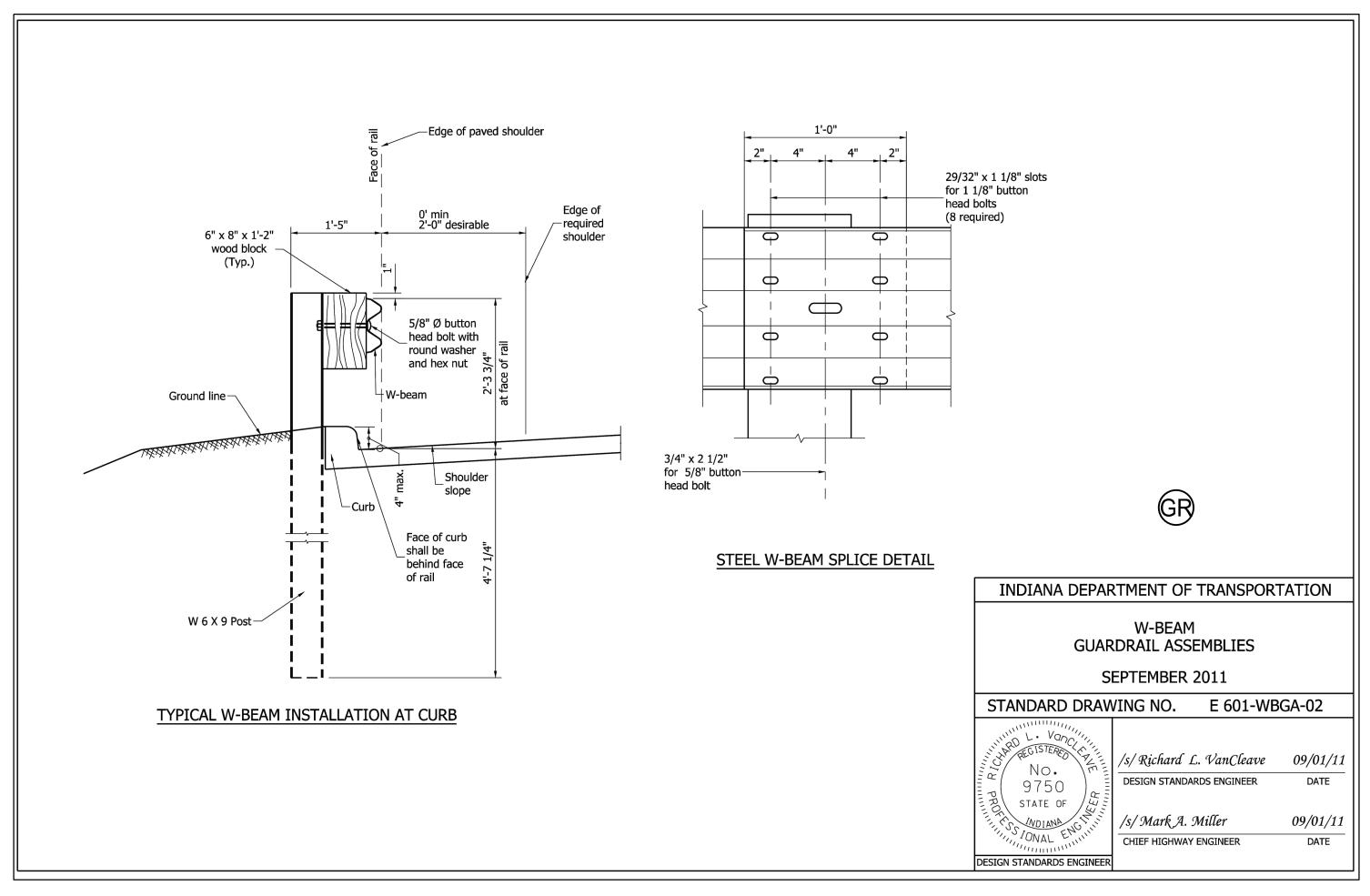
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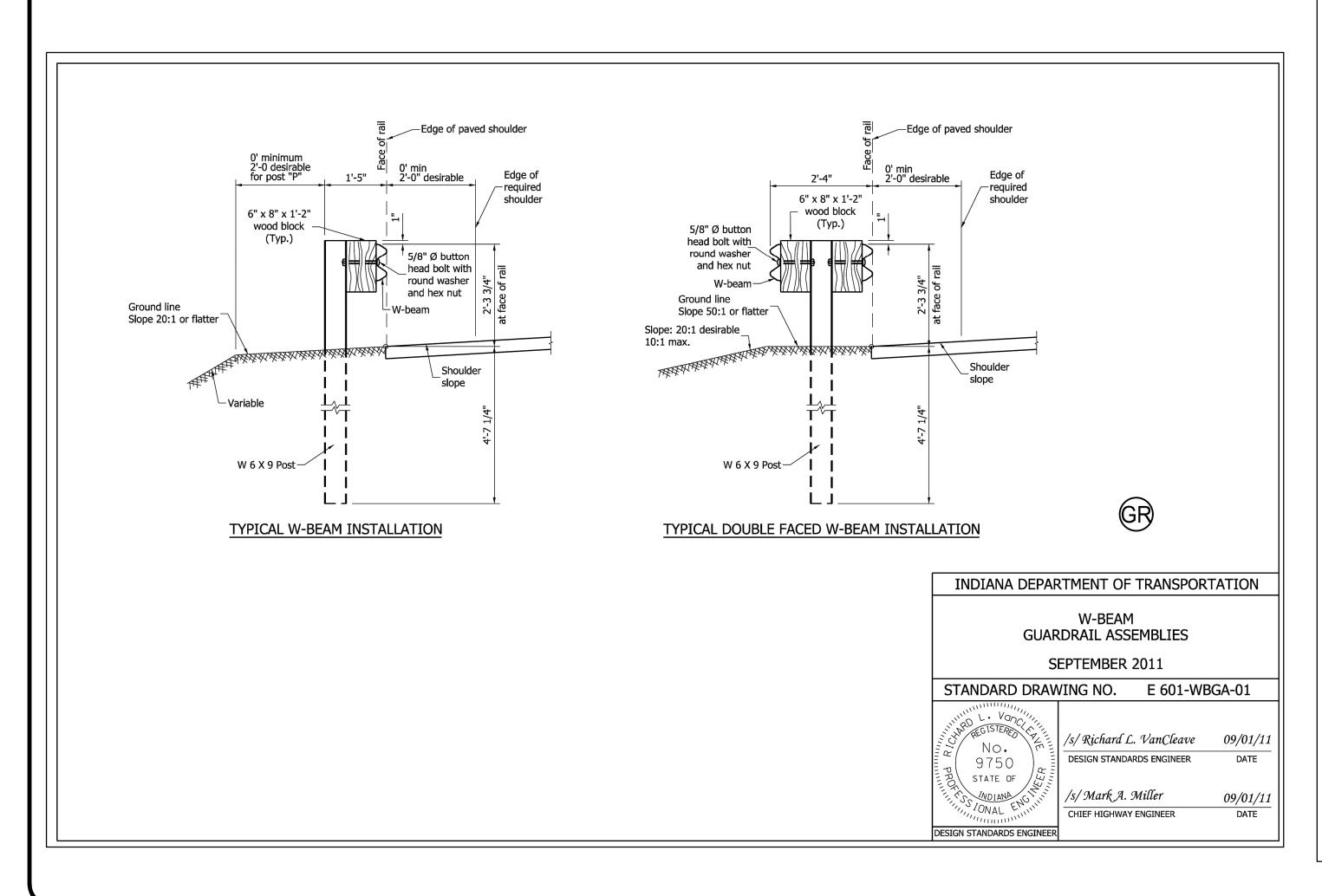


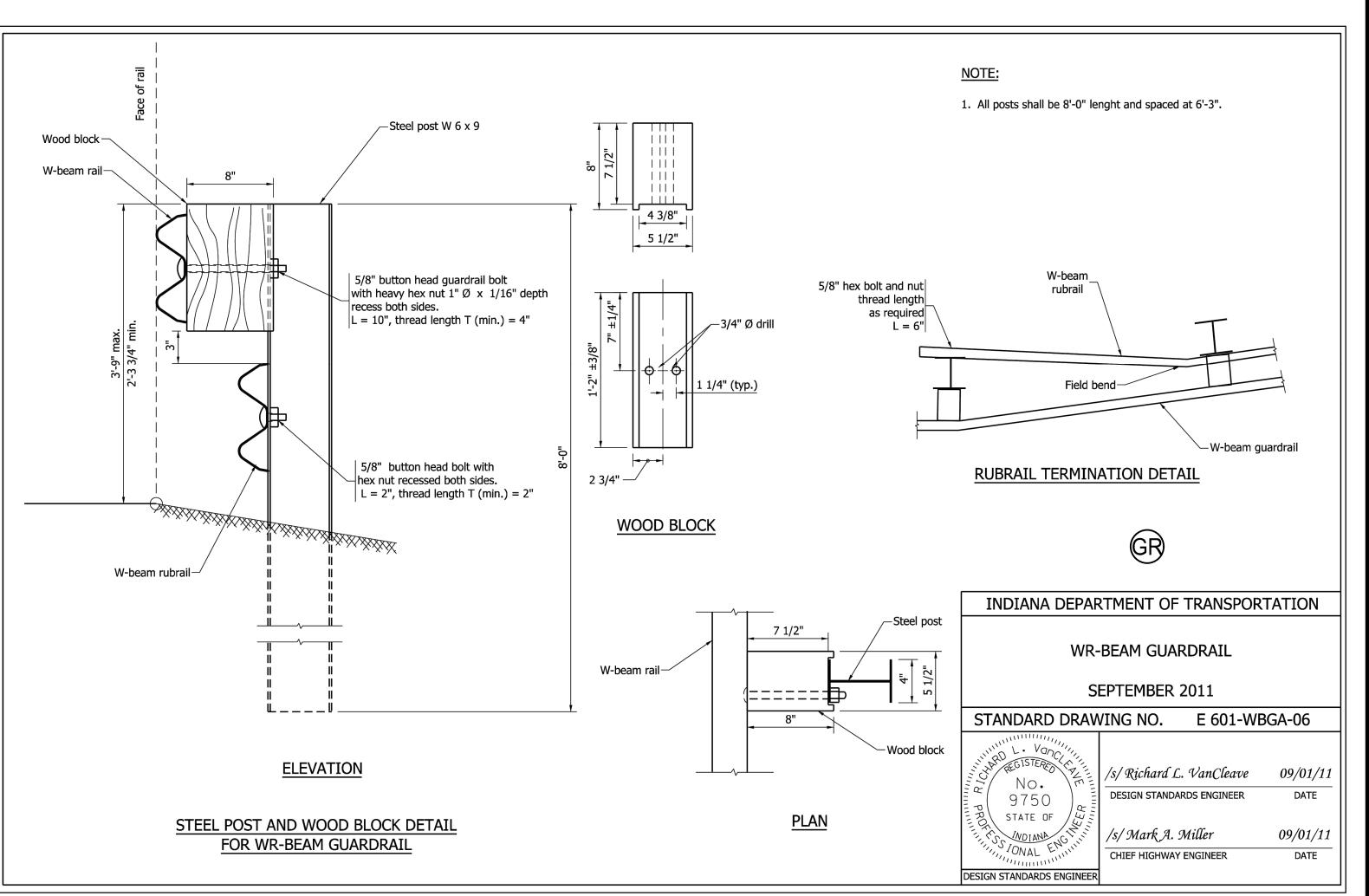
tle: **GUARDRAIL DETAILS** 

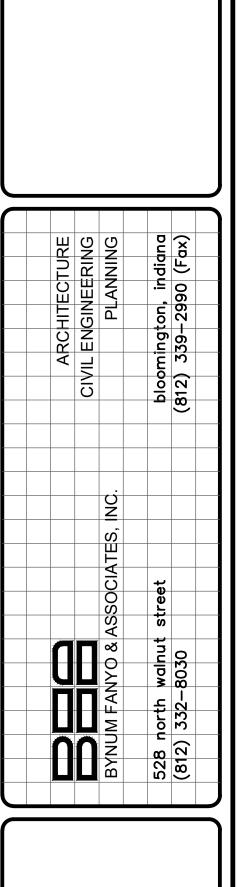
designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C0 (4)
project no.: 402224









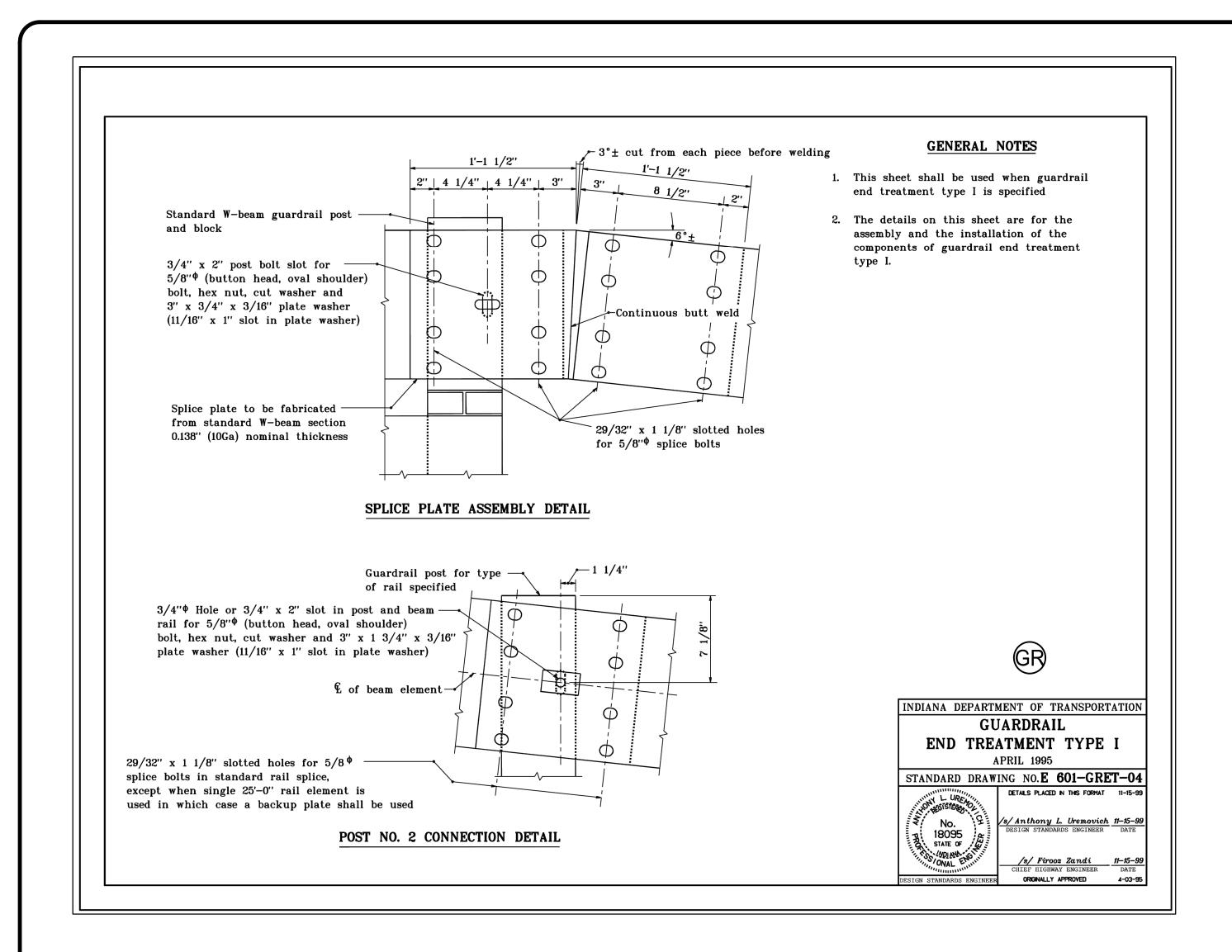


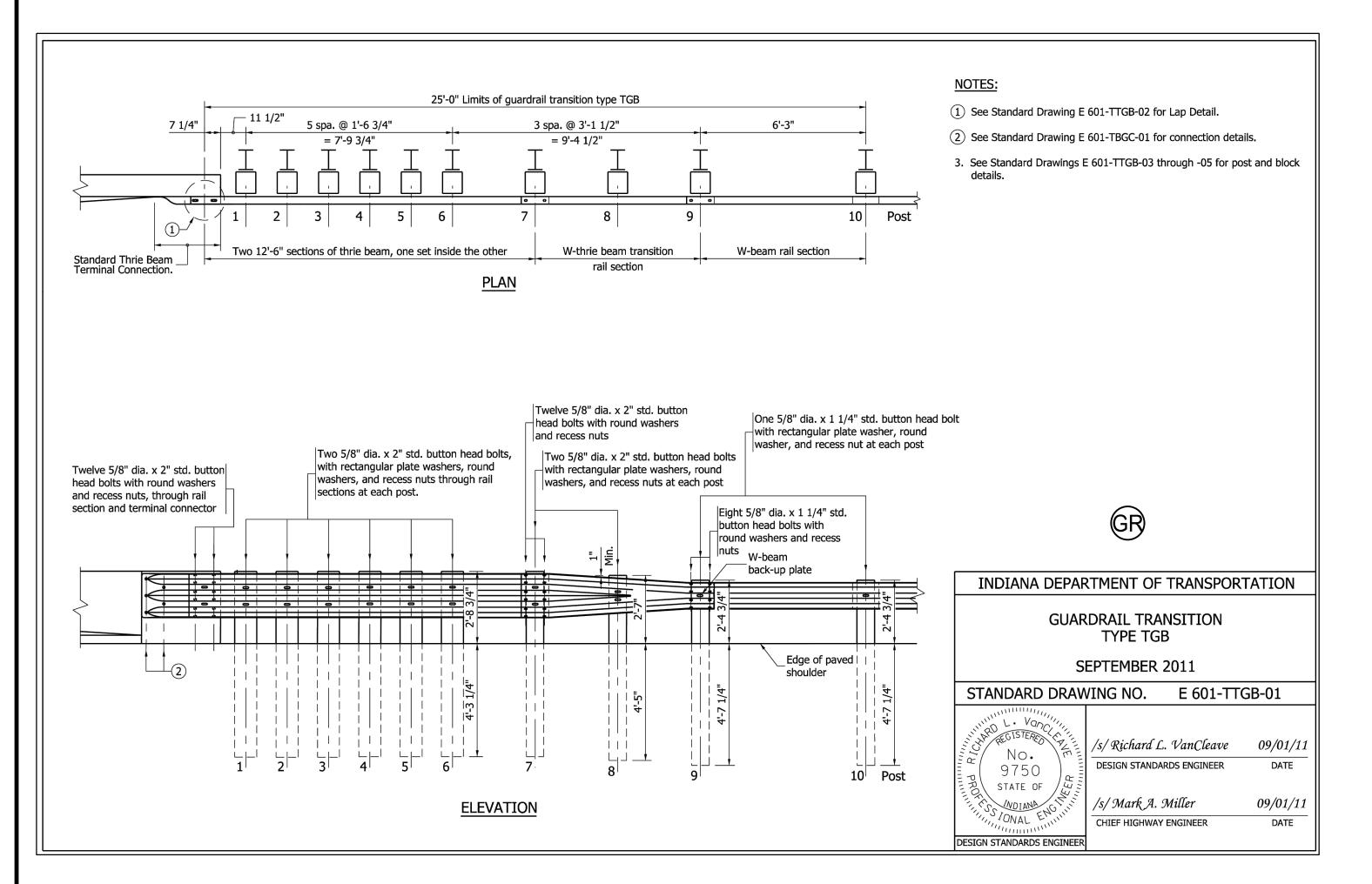


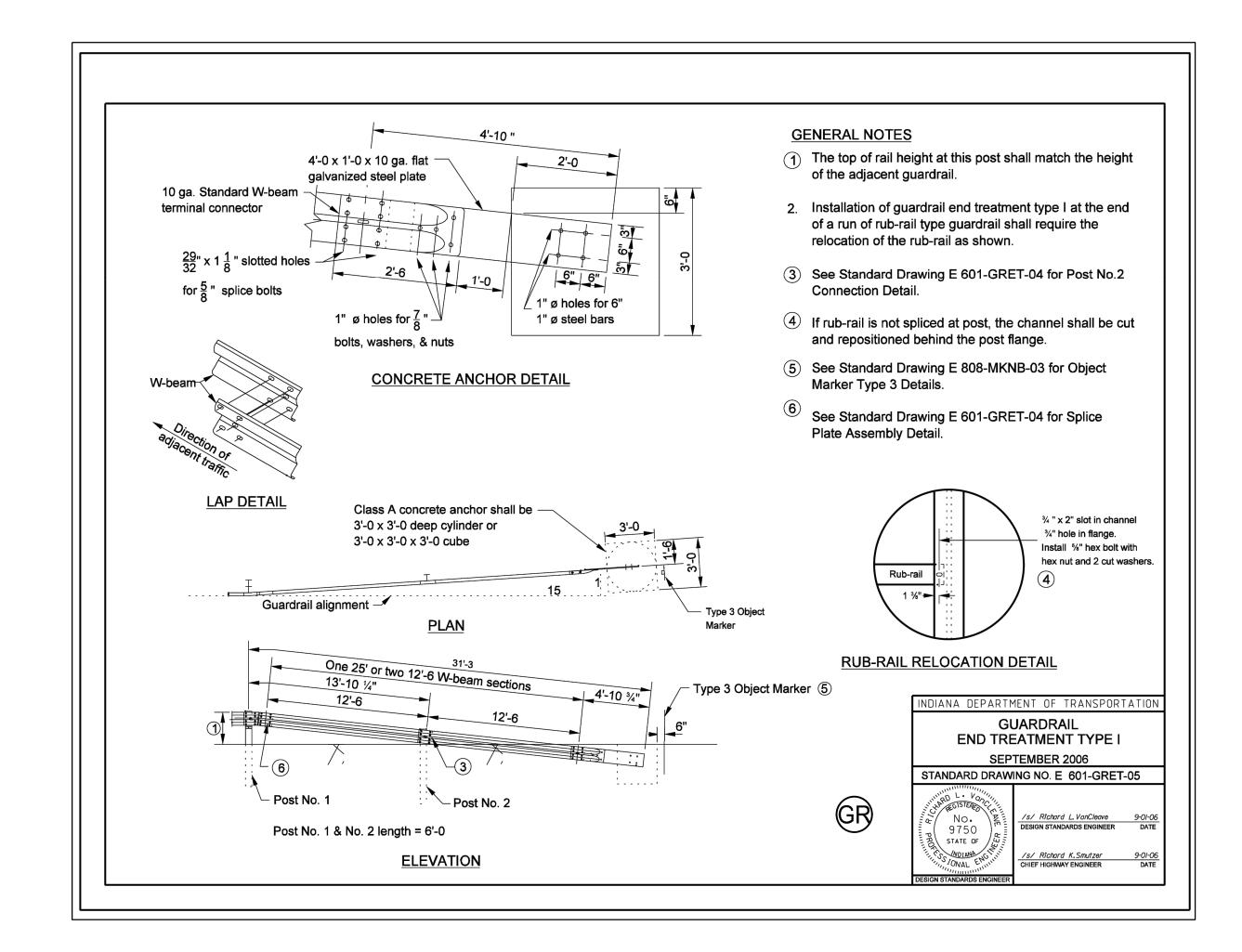
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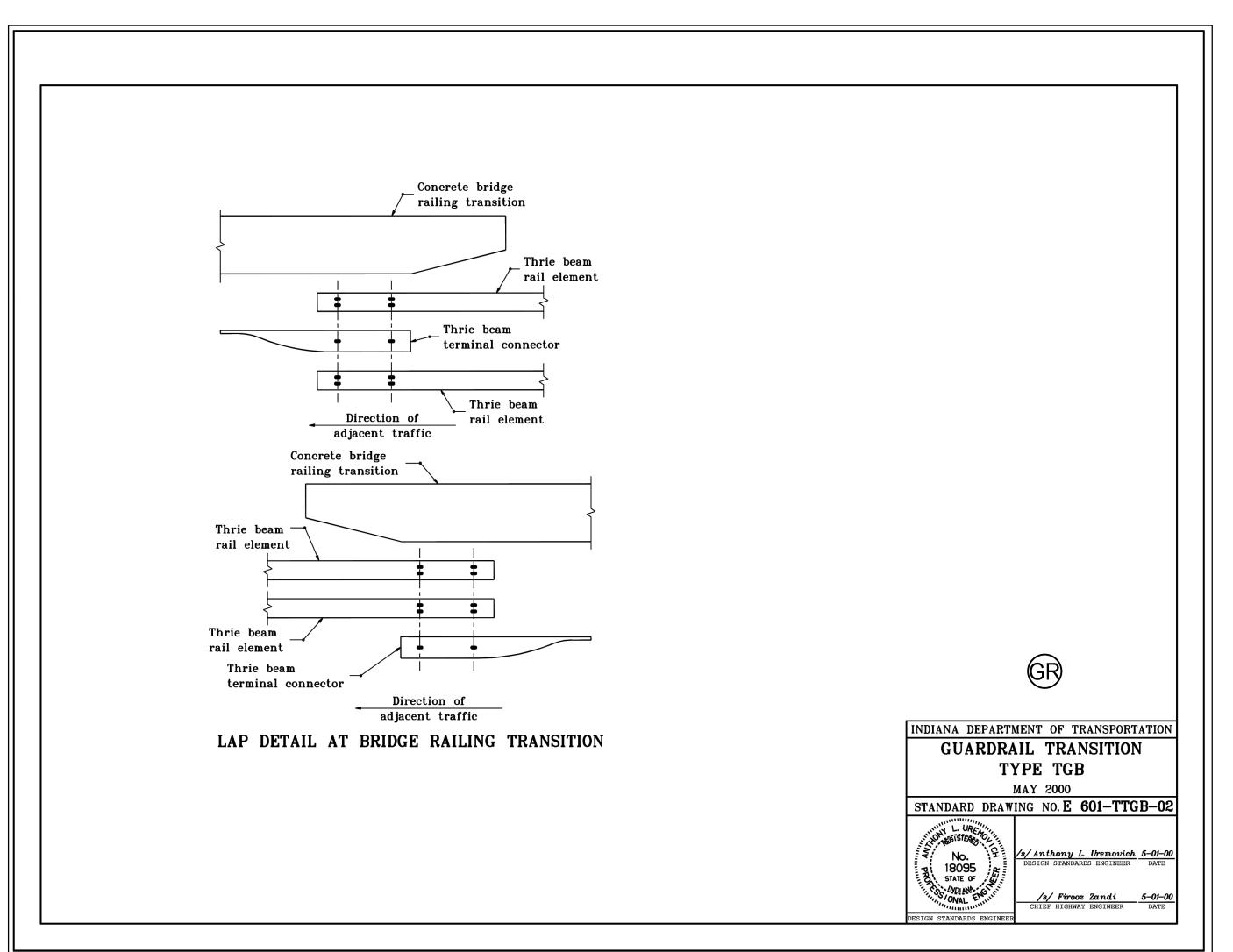
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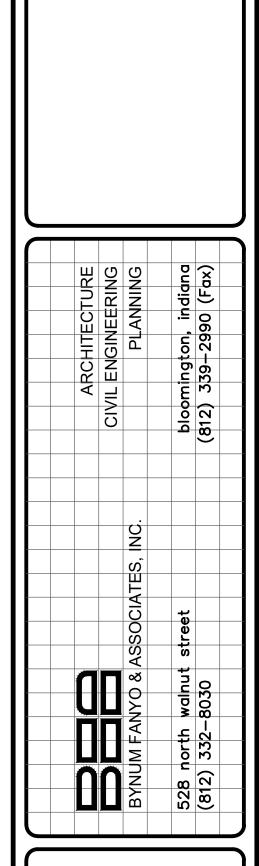
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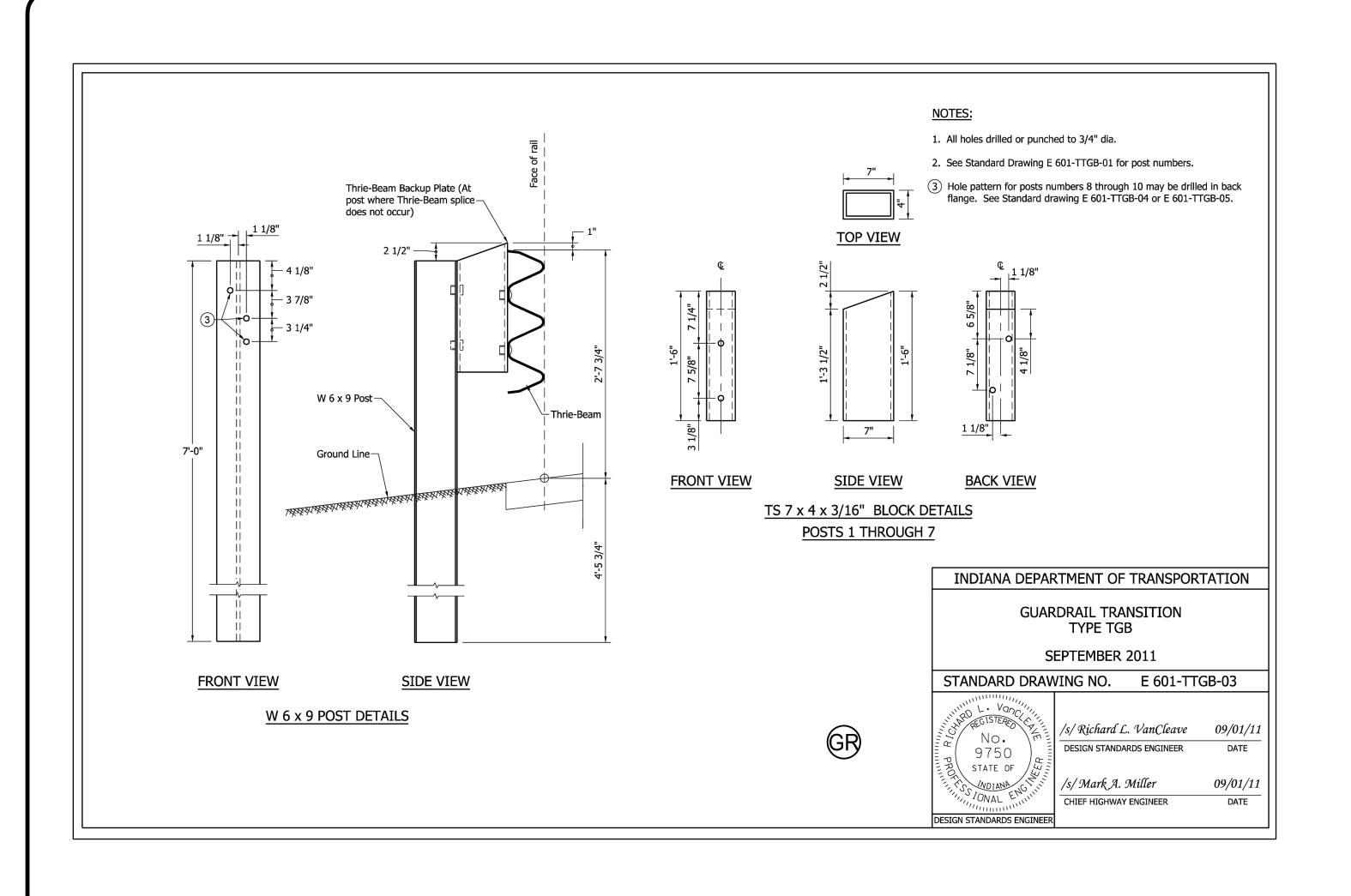


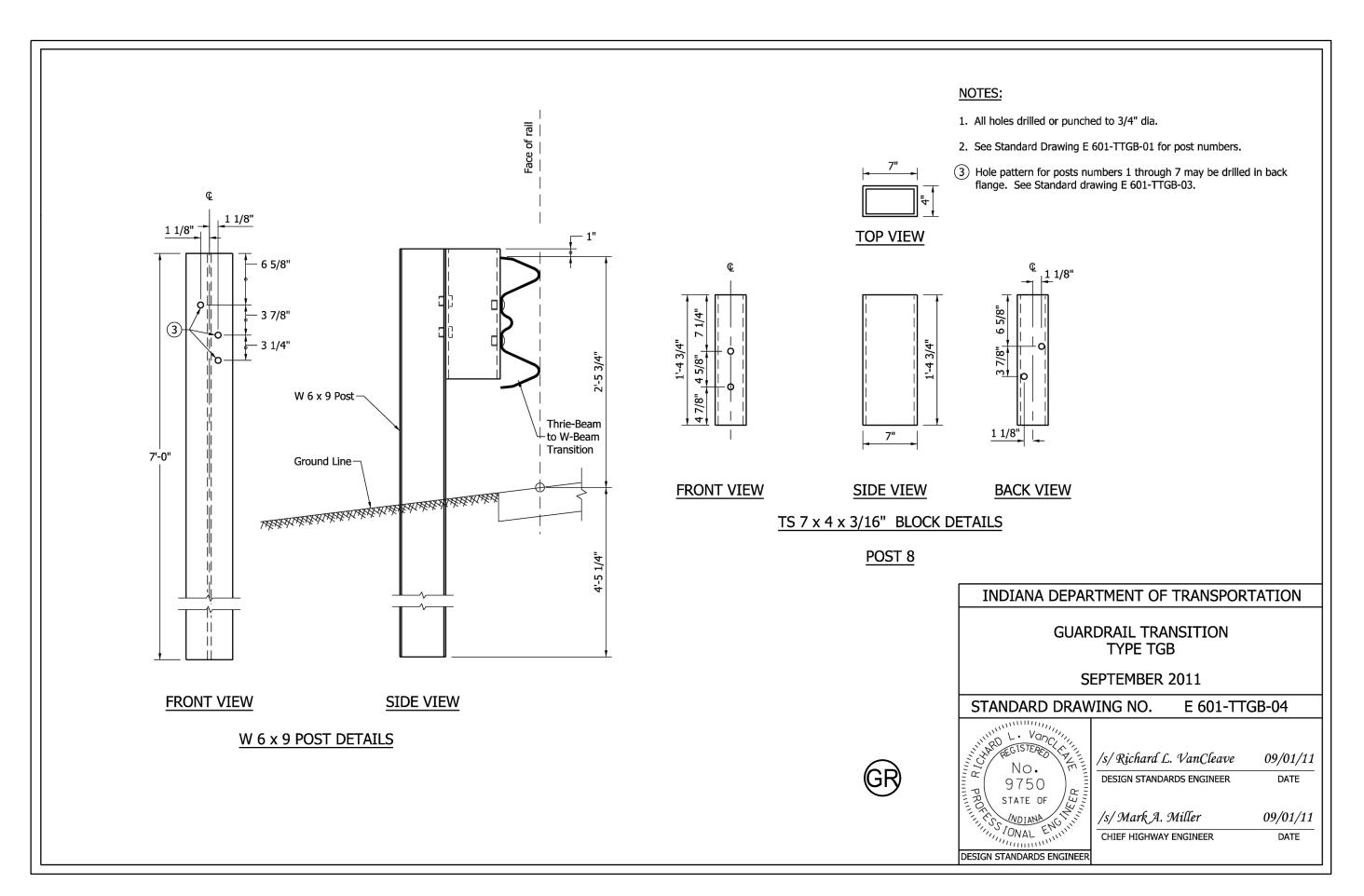


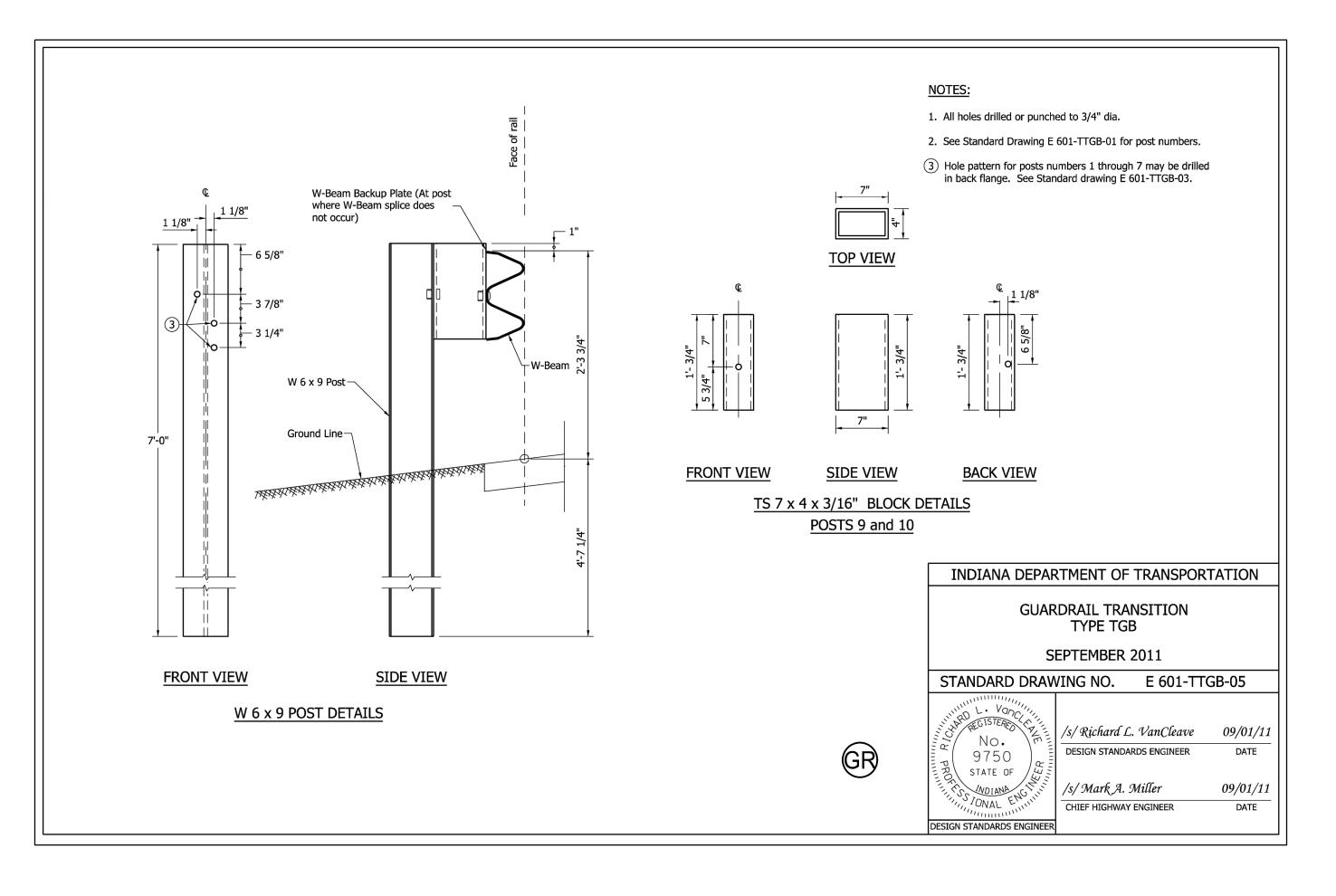
HUNTER VALLEY ROAD EXTENSION
W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD

tle: **GUARDRAIL DETAILS** 

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C0 (6)
project no.: 402224



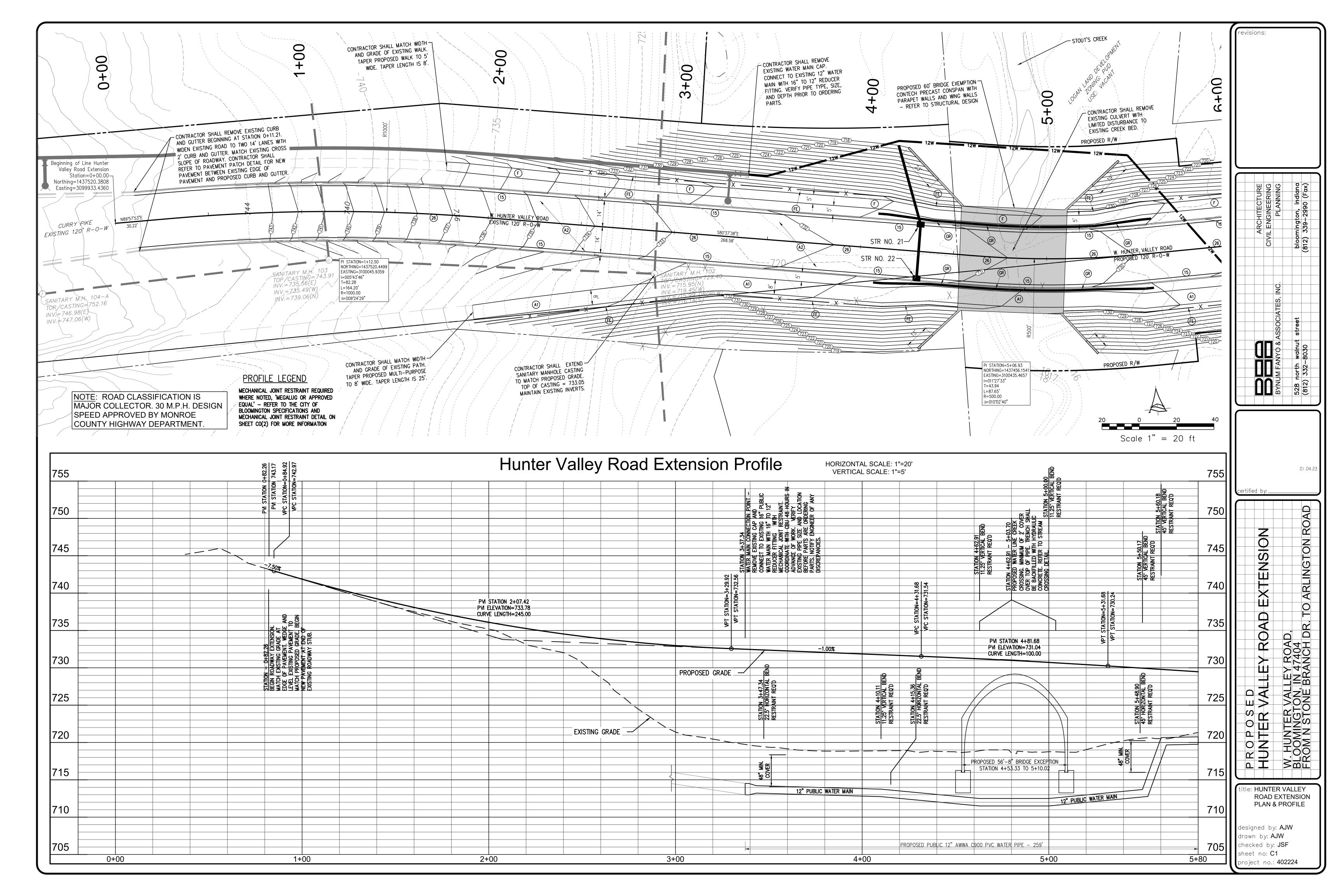


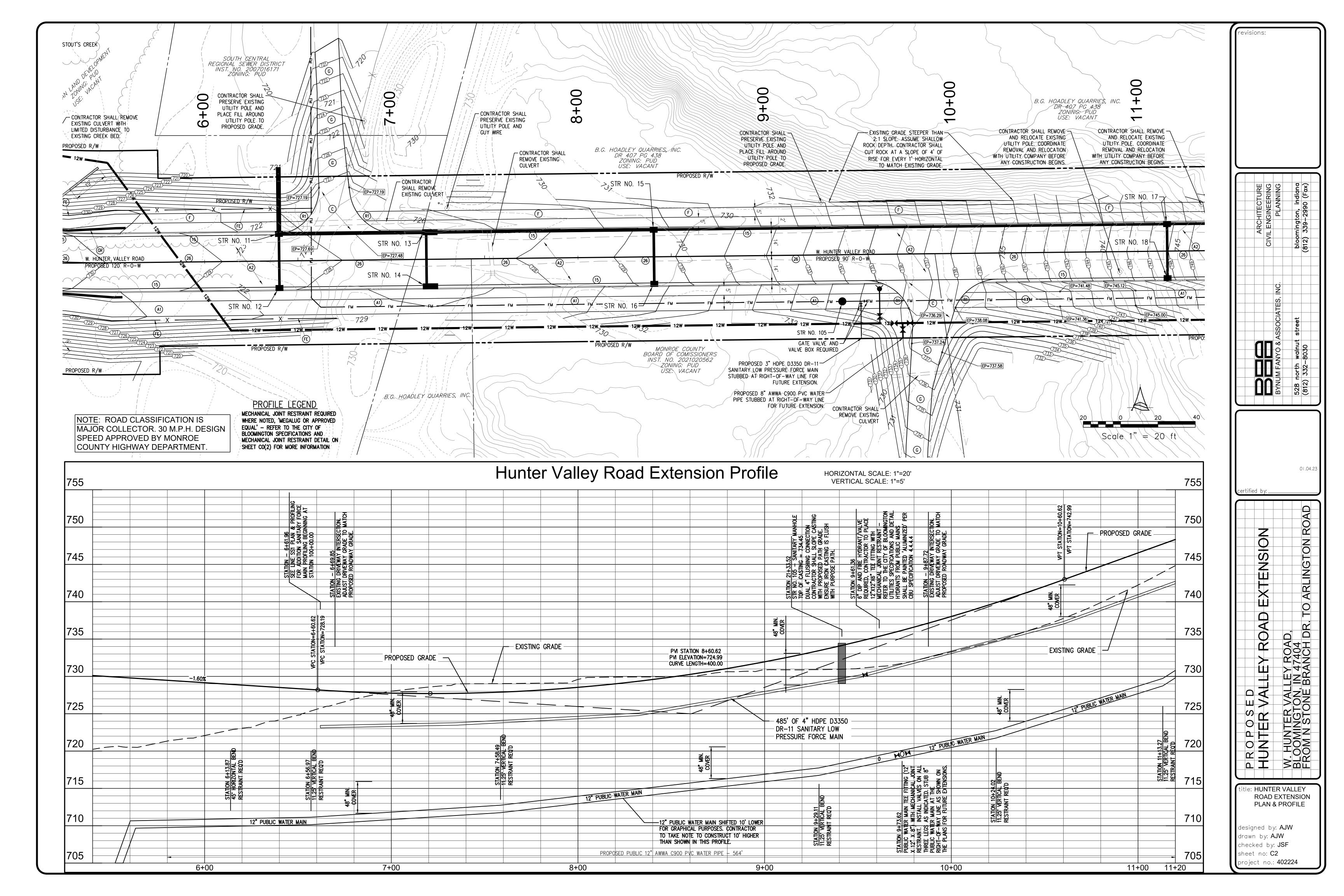


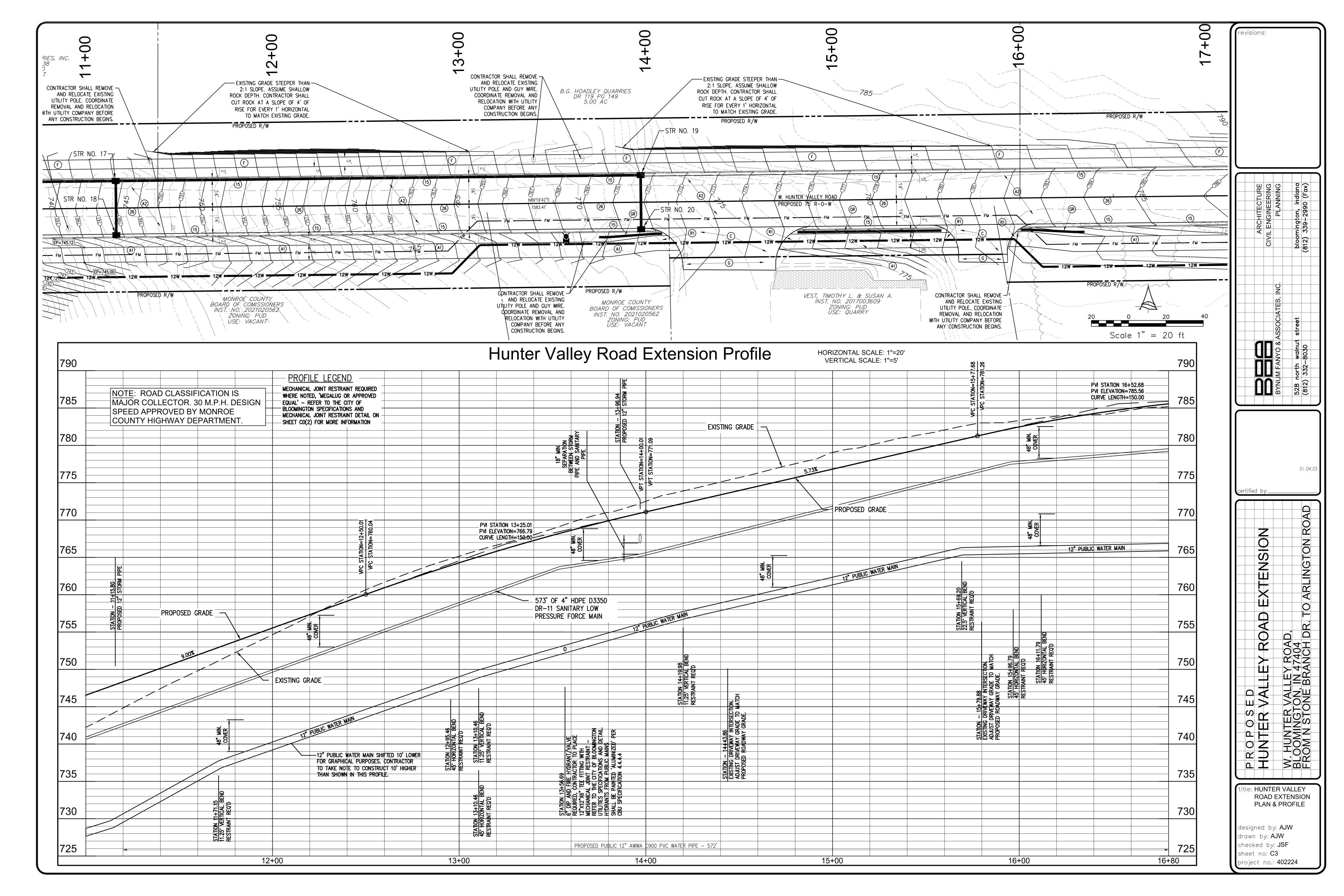
itle: **GUARDRAIL** DETAILS designed by: AJW drawn by: **AJW** 

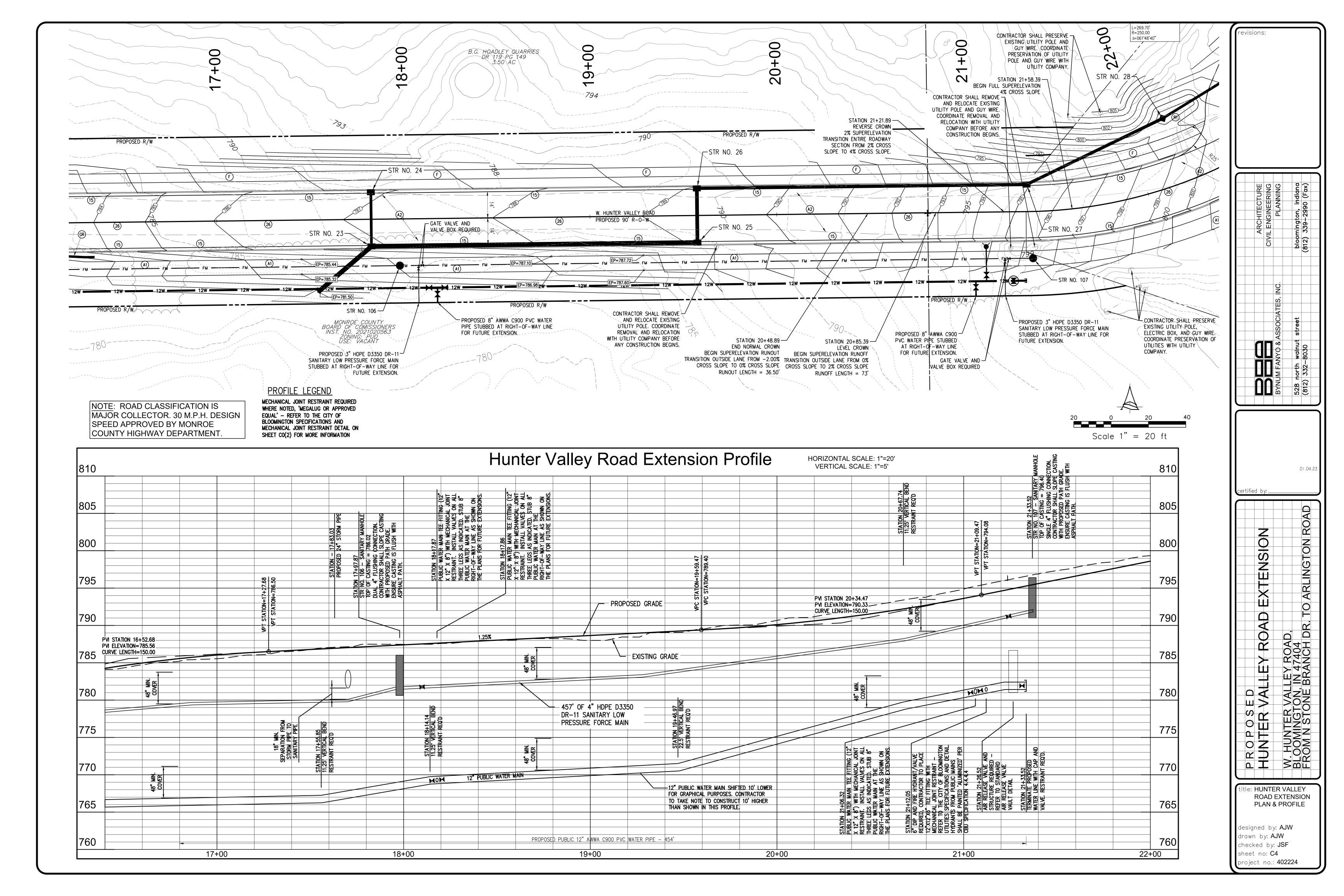
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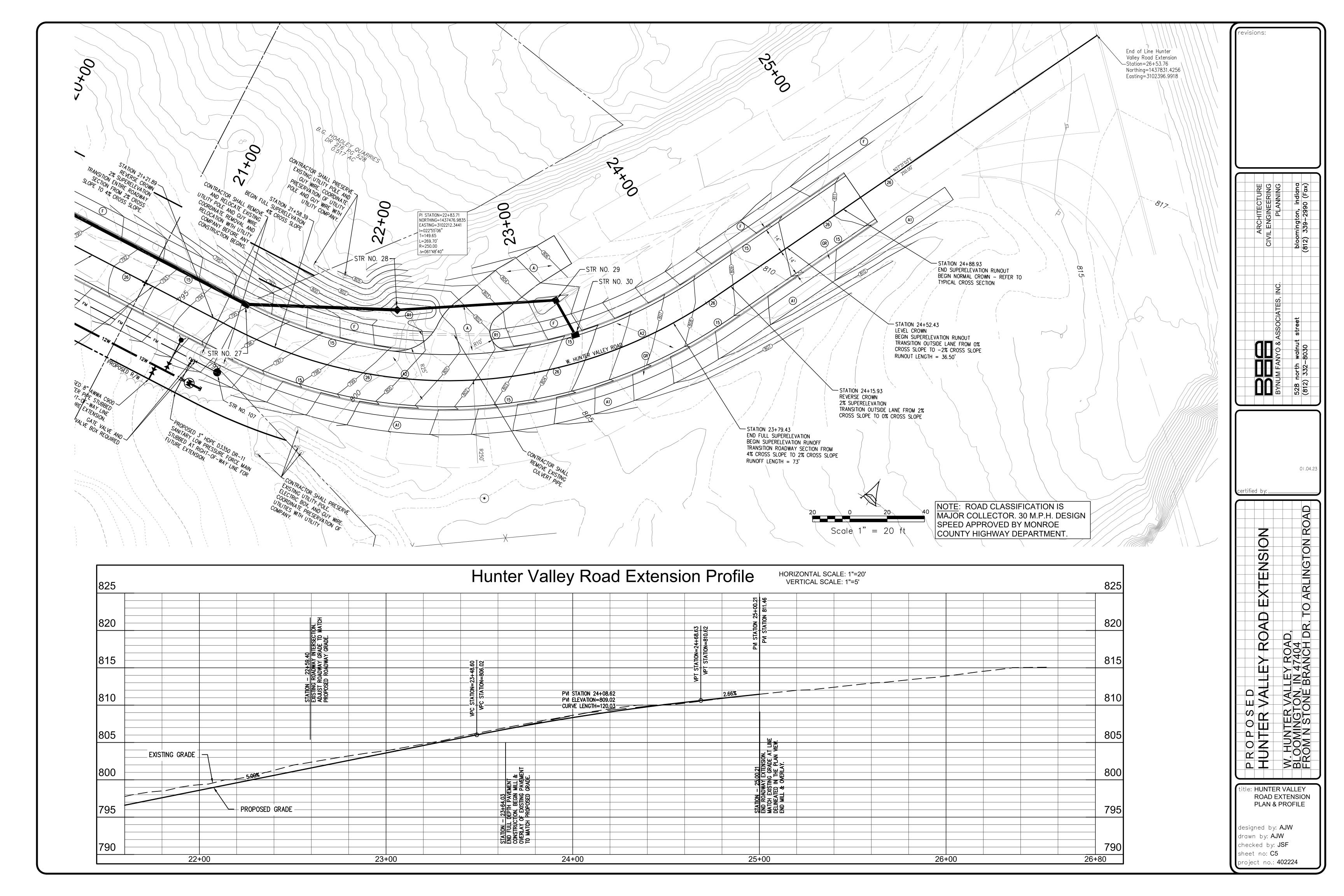
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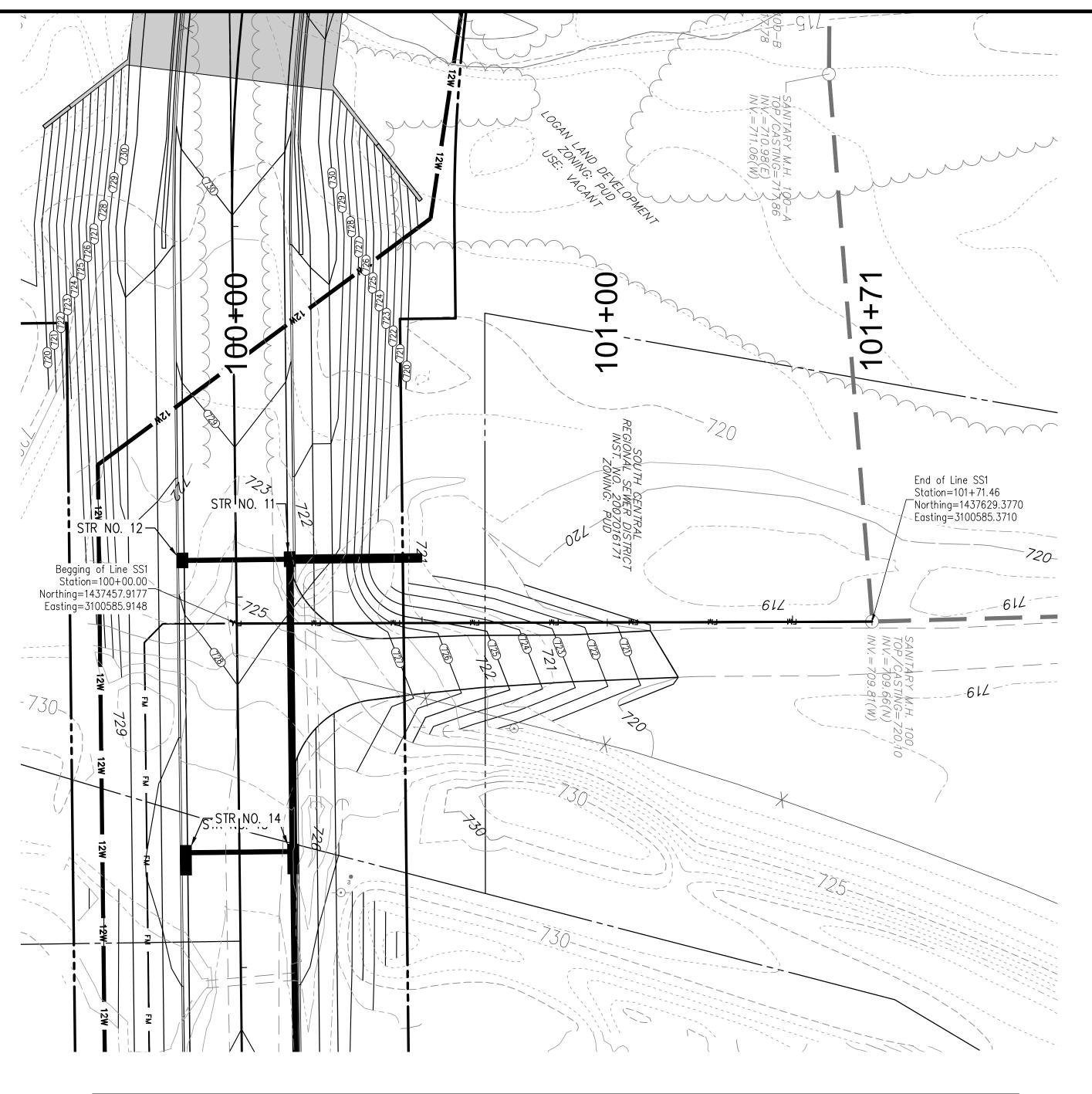


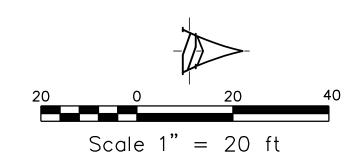


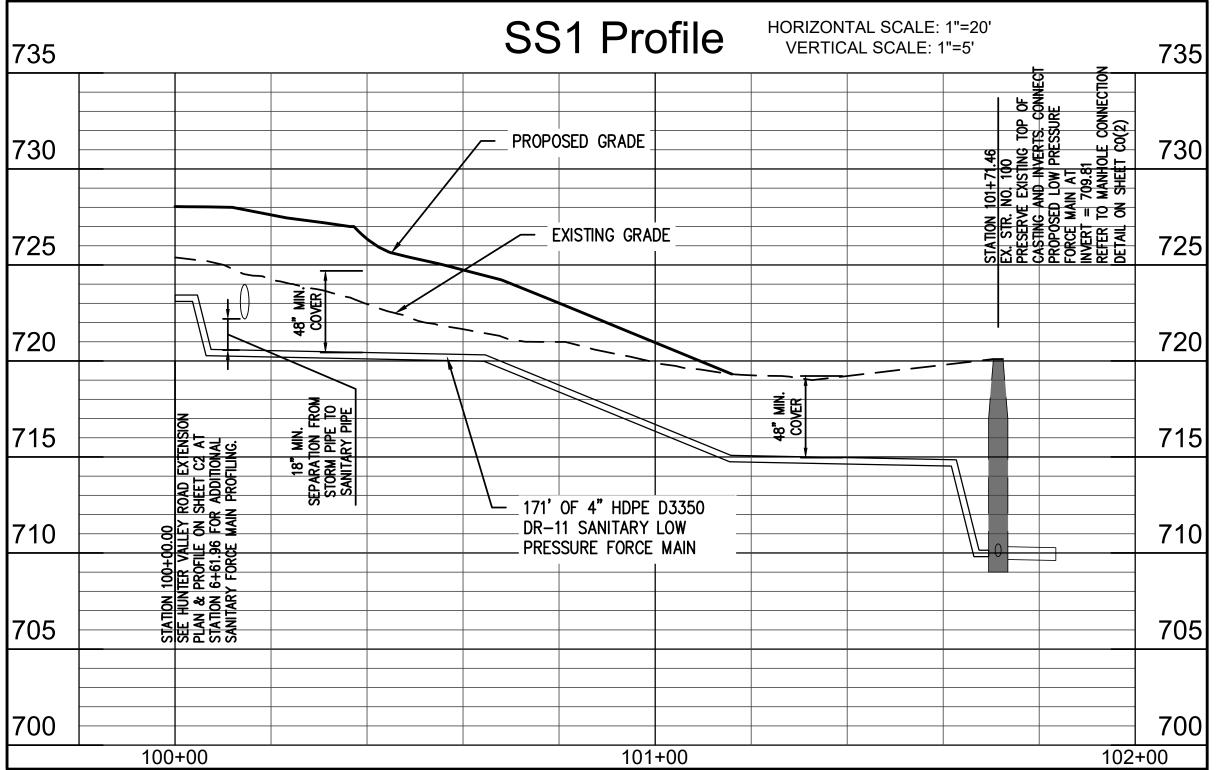












## FORCEMAIN NOTES

HDPE PIPE MATERIALS, INSTALLATION AND TESTING SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

ALL FORCEMAIN PIPE SHALL BE DR-11 HDPE PIPE AND FITTINGS.

POLYETHYLENE PIPE, INCLUDING THE SERVICE LATERAL TO THE MAIN LINE, SHALL BE JOINED BY BUTT FUSION AS DESCRIBED IN 4.4.3.2.3.2 OF THE CONSTRUCTION SPECIFICATIONS FOR SEWER PROJECTS.

PIPE SUPPLIED UNDER THIS SPECIFICATION SHALL HAVE A NOMINAL IPS (IRON PIPE SIZE) OD AND SHALL HAVE A MINIMUM DR DR (DIMENSION RATIO) OF 11. THE PIPE SHALL BE PRODUCED FROM A HDPE PIPE GRADE RESIN MEETING THE SPECIFICATIONS OF ASTM D 3350 WITH A MINIMUM CELL CLASSIFICATION OF 345464C. PIPE SHALL BE MADE TO THE DIMENSIONS AND TOLERANCES SPECIFIED IN THE LATEST VERSION OF ASTM D3035, STANDARD SPECIFICATIONS FOR POLYETHYLENE (PE) PLASTIC PIPE (DR-PR) BASED ON CONTROLLED OUTSIDE DIAMETER. PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF 160 PSI.

THE PIPE WILL BE EXTRUDED FROM RESIN MEETING THE SPECIFICATIONS OF ASTM D 3350 WITH A MINIMUM CELL CLASSIFICATION OF 345464C.

HDPE FITTINGS SHALL BE IN ACCORDANCE WITH ASTM D 3261 AND SHALL BE MANUFACTURED BY INJECTION MOLDING, A COMBINATION OF EXTRUSION AND MACHINING, OR FABRICATION FROM HDPE PIPE CONFORMING TO THIS SPECIFICATION. THE FITTINGS SHALL BE FULLY PRESSURE RATED AND PROVIDE A WORKING PRESSURE EQUAL TO THAT OF THE PIPE WITH AN INCLUDED 2:1 SAFETY FACTOR. THE FITTINGS BE MANUFACTURED FROM THE SAME RESIN TYPE AND CELL CLASSIFICATIONS THE PIPE ITSELF. THE FITTINGS SHALL BE HOMOGENEOUS THROUGHOUT AND FREE FROM CRACKS, HOLES, FOREIGN INCLUSIONS, VOIDS, OR OTHER INJURIOUS DEFECTS.

THE NORMAL, TRADITIONAL HYDROSTATIC TEST METHOD FOR HDPE PIPE THROUGHOUT NORTH AMERICAN INDUSTRIES AND MUNICIPALITIES IS GIVEN IN THE PLASTIC PIPE INSTITUTE (PPI) TECHNICAL REPORT #30 (TR-30). THE PPI PROCEDURE REQUIRES THE APPLICATION OF HYDROSTATIC WATER PRESSURE NOT TO EXCEED 1.5 TIMES THE 50-YEAR PRESSURE (WRWP) CALCULATED AT ITS AMBIENT TEMPERATURE, THEN ISOLATING THE PRESSURE PUMP FOR A ONE TO THREE HOUR PERIOD. DUE TO THE VISCO-ELASTIC "CREEP" OF THE PLASTIC AT THE ELEVATED HOOP-STRESS DURING THE TEST PERIOD DURATION, ADDITIONAL MAKE-UP WATER IS REQUIRED TO SUSTAIN THE INTENSITY OF THE HYDROSTATIC PRESSURE. THE SUCCESS OF THE TEST IS THEN JUDGED BY THE QUANTITY OF MAKE-UP WATER REQUIRED TO RESTORE AND HOLD THE ORIGINAL TEST PRESSURE.

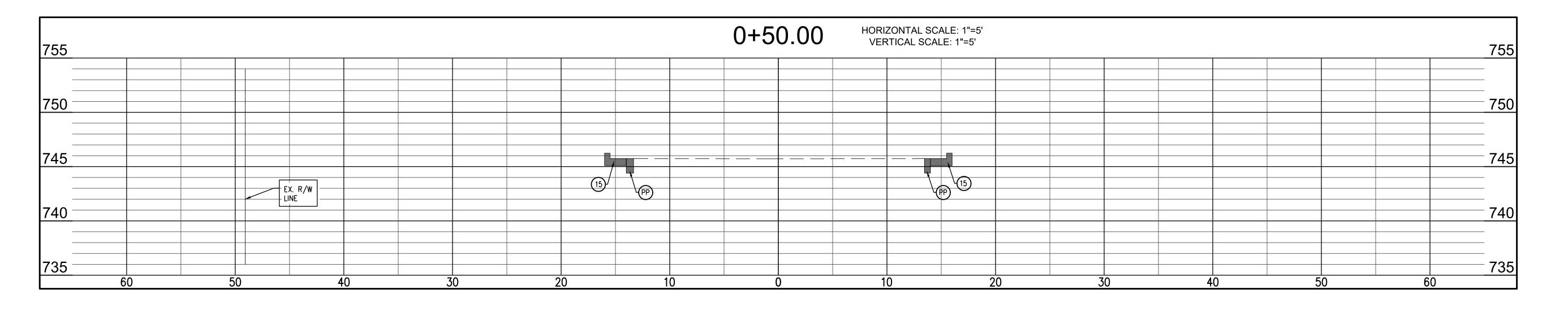
LOCATE WIRE REQUIRED —
A #10 INSULATED SOLID COPPER LOCATOR WIRE SHALL BE WRAPPED AROUND ALL FORCEMAIN PIPES SO THAT ONE REVOLUTION IS MADE AT LEAST EVERY PIPE JOINT. SPLICES ARE TO BE MADE WITH AN APPROVED CONNECTOR, AND ARE TO BE SUITABLY PROTECTED AGAINST CORROSION. THE WIRE IS TO BE BROUGHT TO THE SURFACE AT A CLEAN—OUT OR VALVE CASTING.

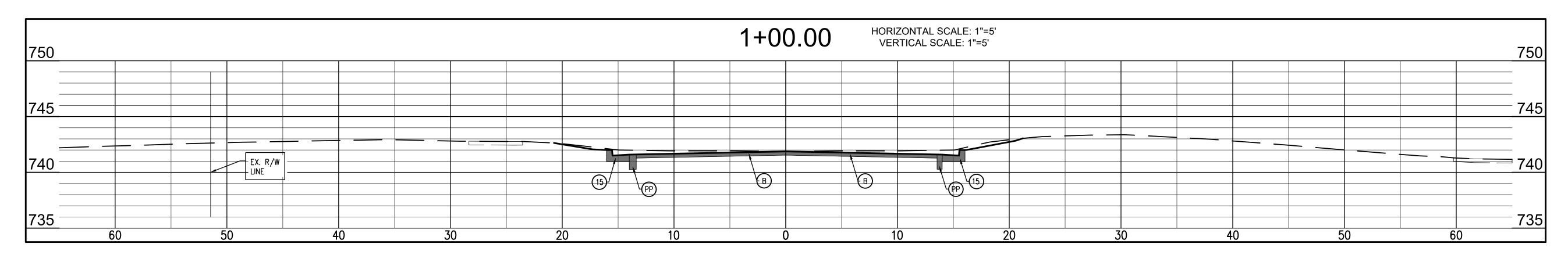
ARCHITECTURE	CIVIL ENGINEERING PLANNING	bloomington, indiana (812) 339-2990 (Fax)
	BYNUM FANYO & ASSOCIATES, INC.	528 north walnut street (812) 332-8030

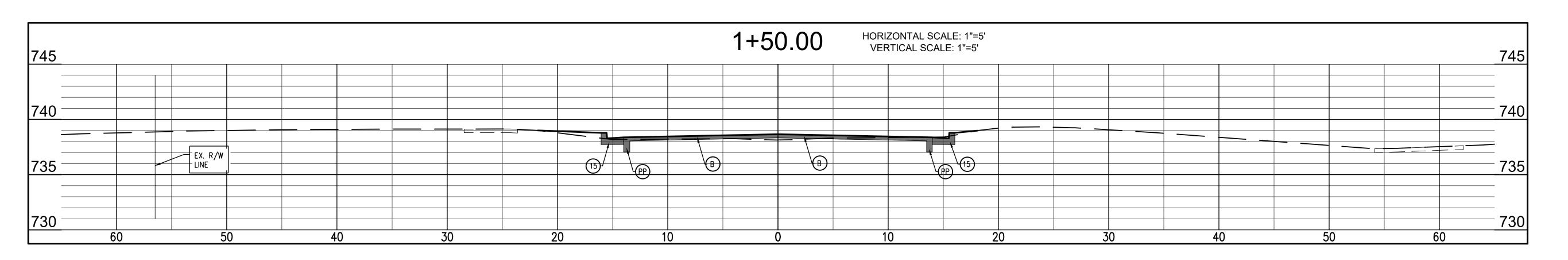
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tle: SS1 PLAN & PROFILE

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C6
project no.: 402224





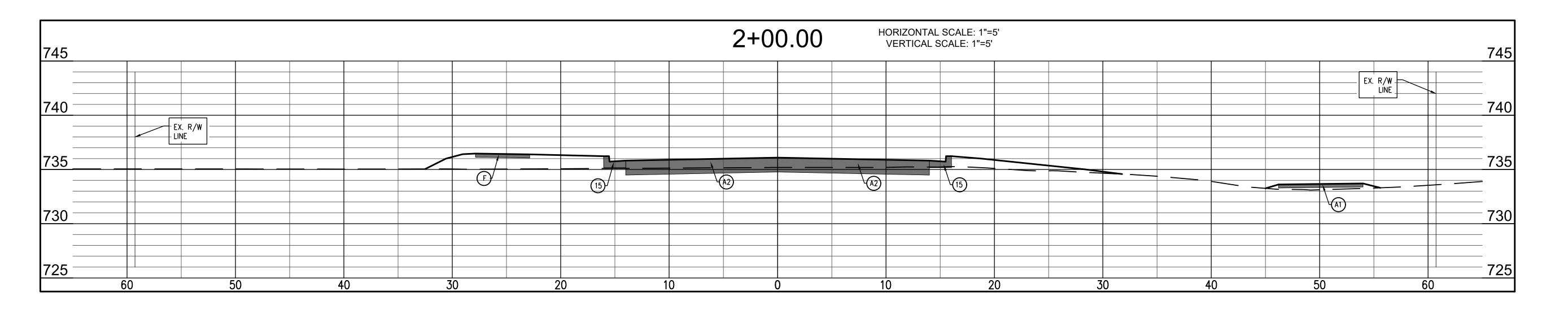


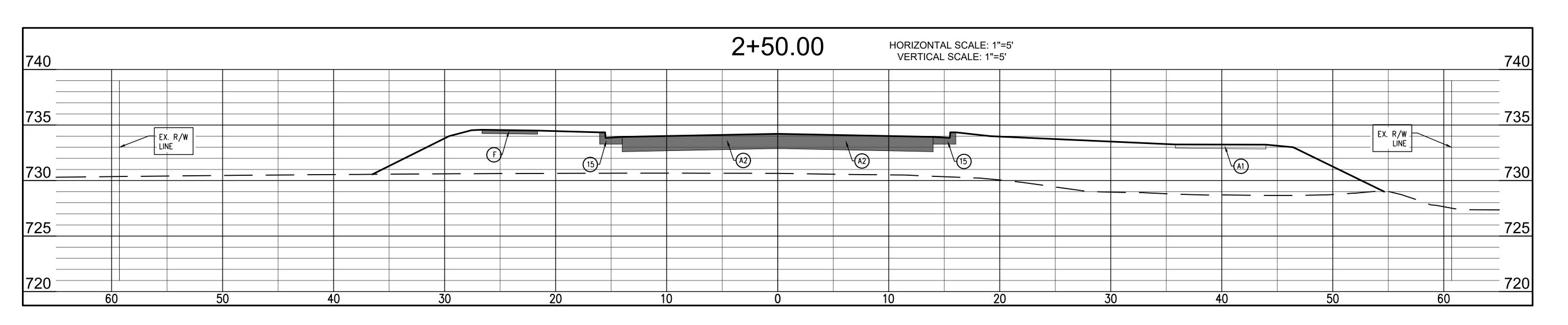
S28 north walnut street bloomington, indigna (812) 332–8030 (812) 339–2990 (Fax)

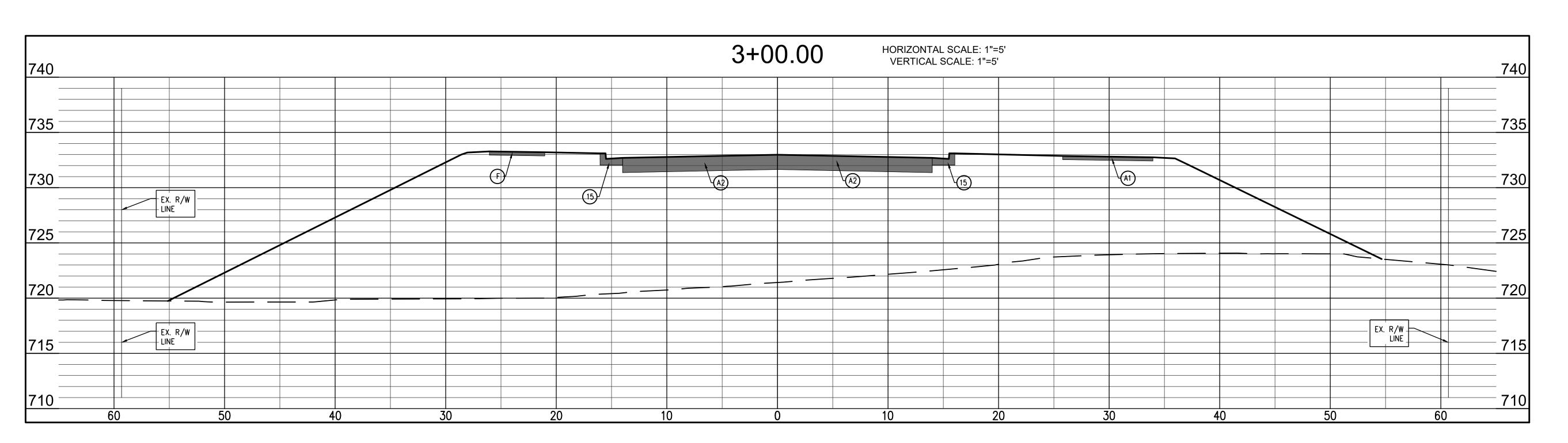
POSED		NTER VALLEY ROAD,	IINGTON, IN 47404	N STONE BRANCH DR. TO ARLINGTON ROAD	
PROPOSE		W. HUNTER V	BLOOMINGTOI	FROM N STON	

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C7
project no.: 402224





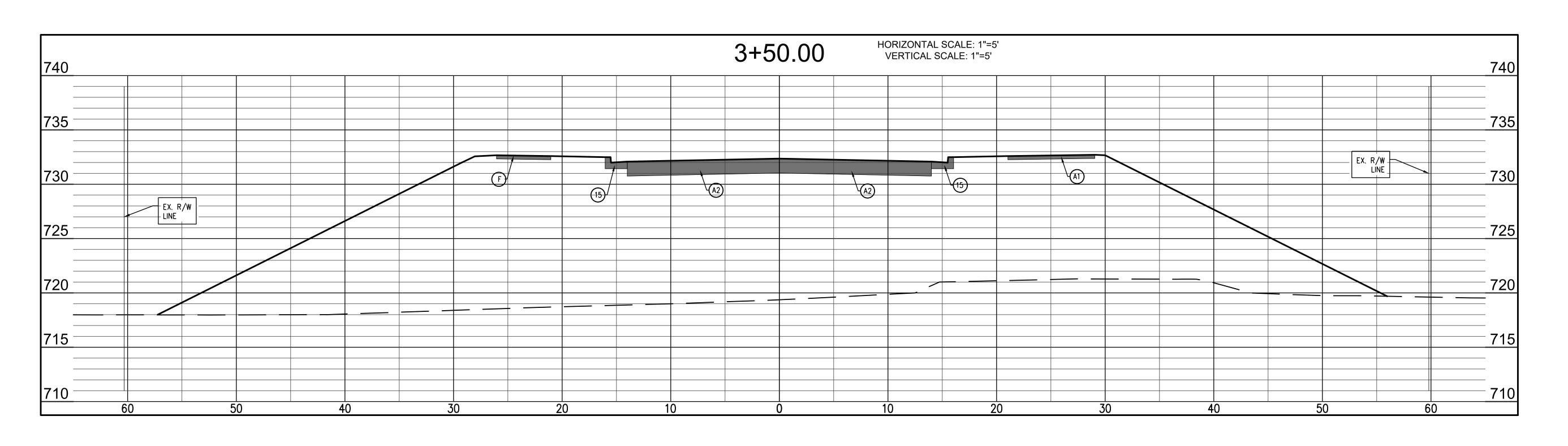


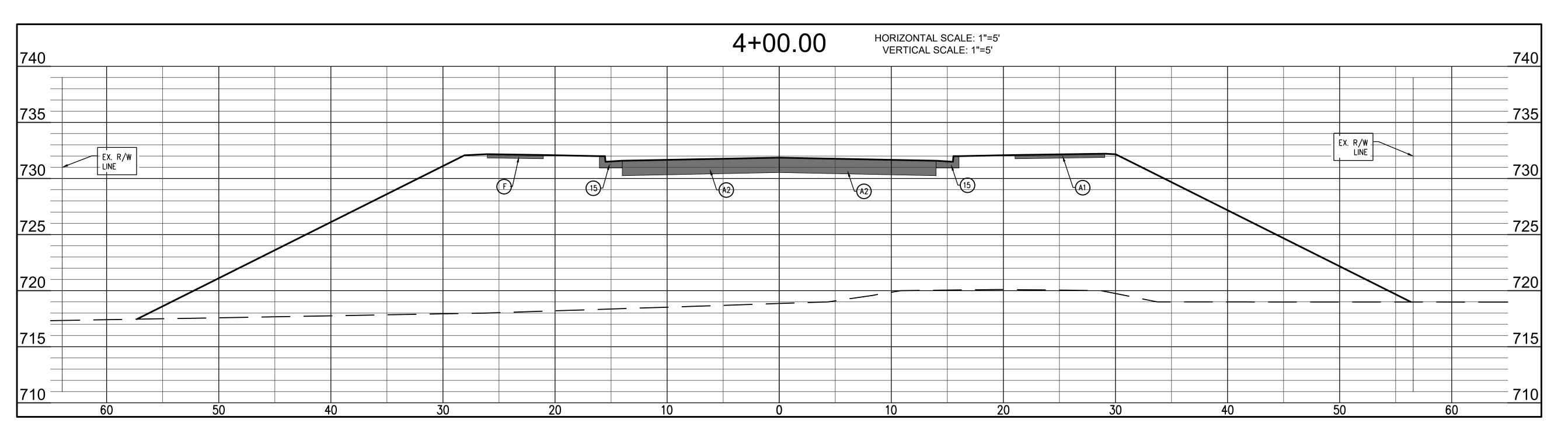
01.04.23 EXTENSION PROPOSED HUNTER VALLEY ROAD

TO ARLINGTON ROAD W. HUNTER VALLEY ROAD, BLOOMINGTON, IN 47404 FROM N STONE BRANCH DR.

title: **HUNTER VALLEY EXTENSION** CROSS-SECTIONS

designed by: **AJW** drawn by: **AJW** checked by: **JSF** sheet no: **C8** project no.: **402224** 

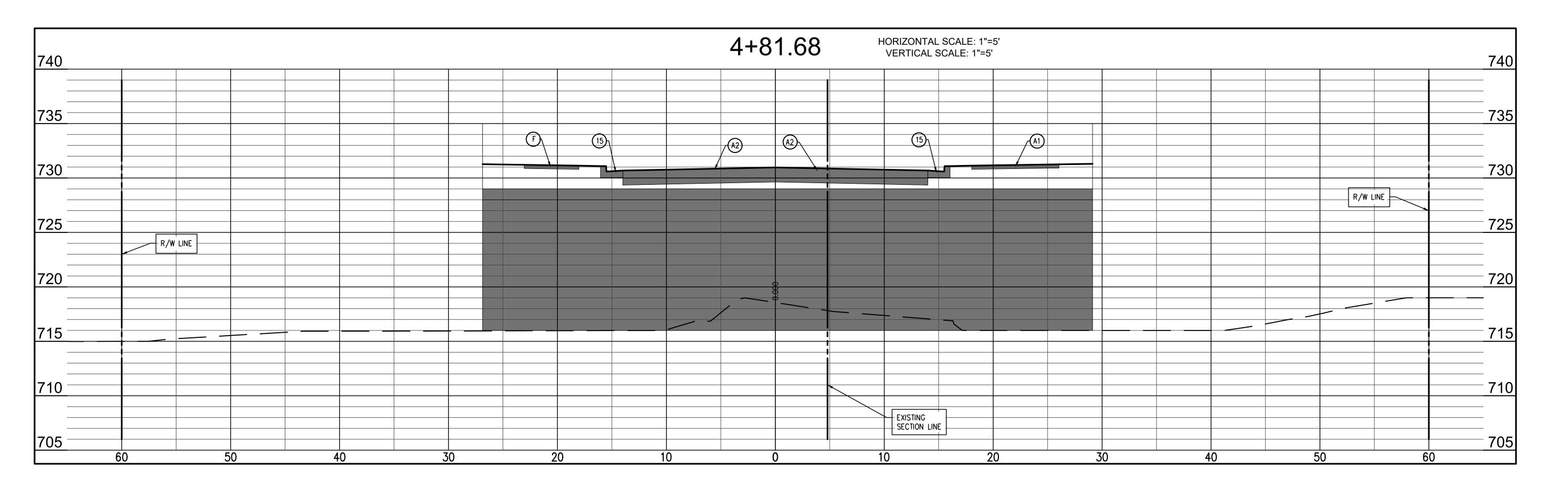


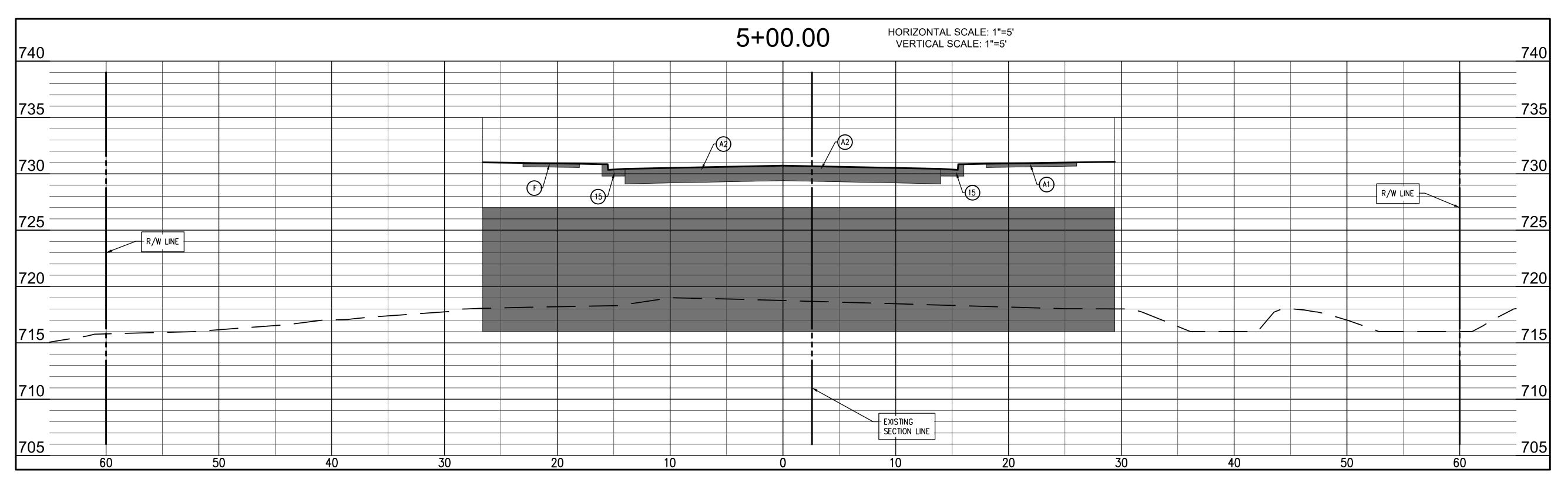


W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW drawn by: AJW checked by: JSF sheet no: C9 project no.: 402224



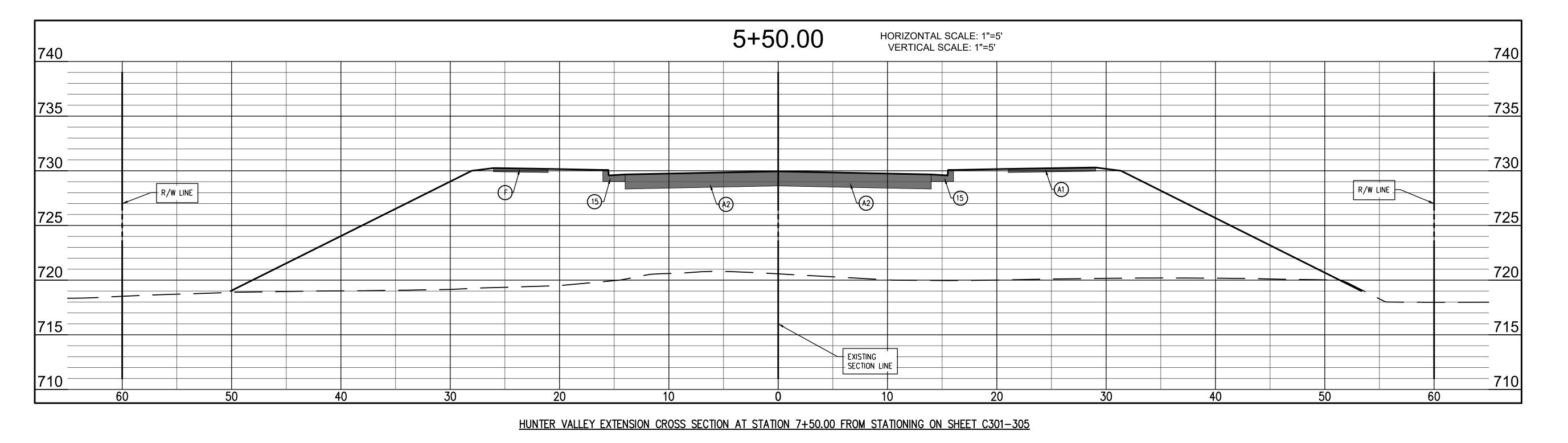


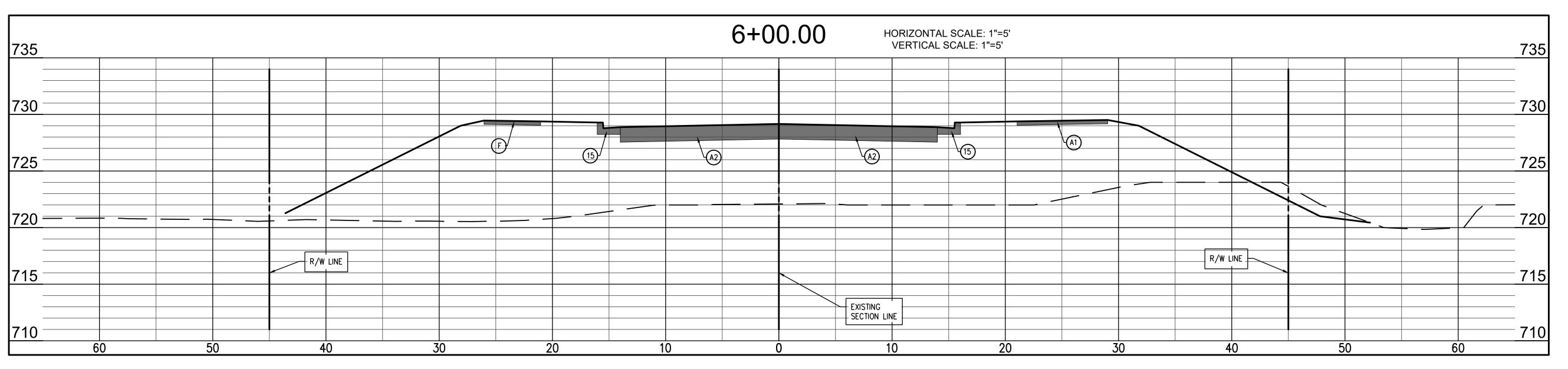
EXTENSION

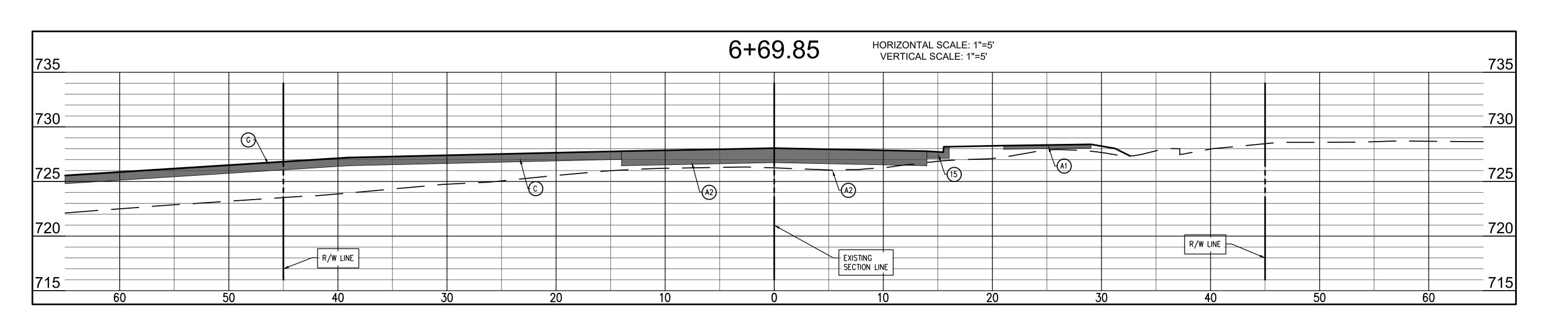
HUNTER VALLEY ROAD EXTENSION
W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW drawn by: AJW checked by: JSF sheet no: C10 project no.: 402224





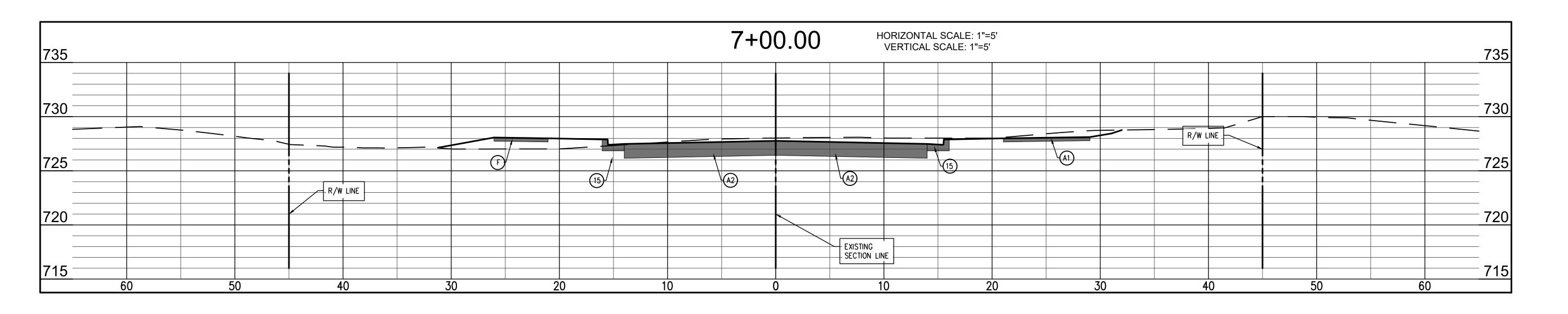


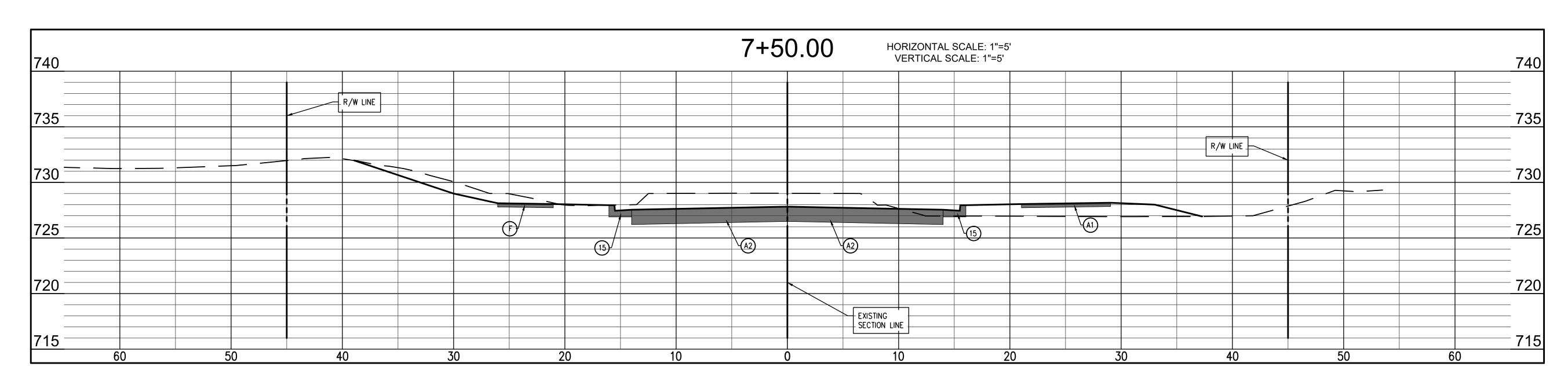
ARLINGTON ROAD

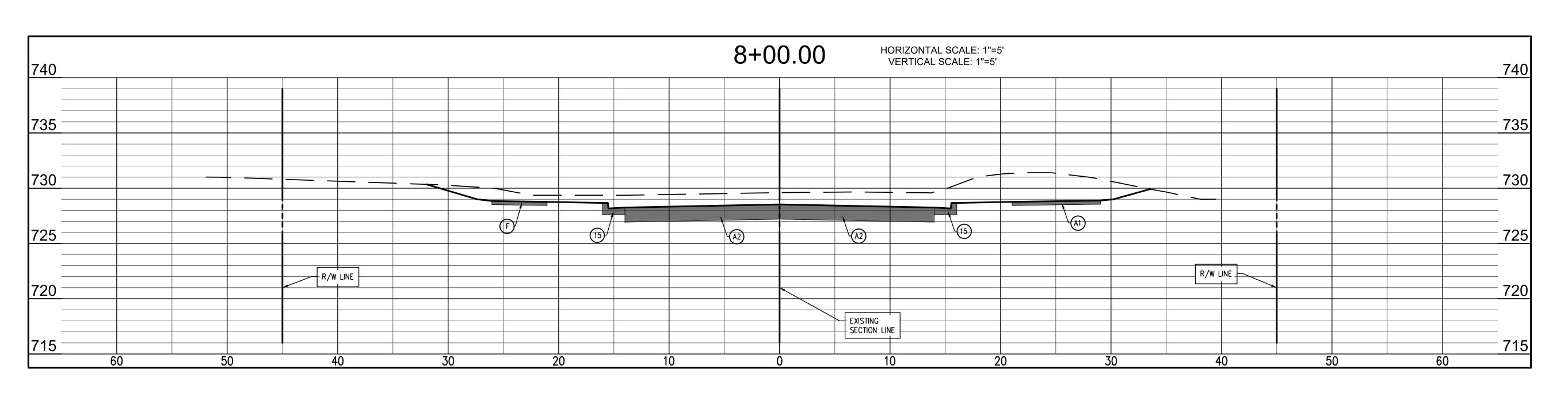
PROPOSED HUNTER VALLEY ROAD D A W. HUNTER VALLEY ROAD BLOOMINGTON, IN 47404 FROM N STONE BRANCH D

itle: HUNTER VALLEY **EXTENSION** CROSS-SECTIONS

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: **C11** project no.: **402224** 



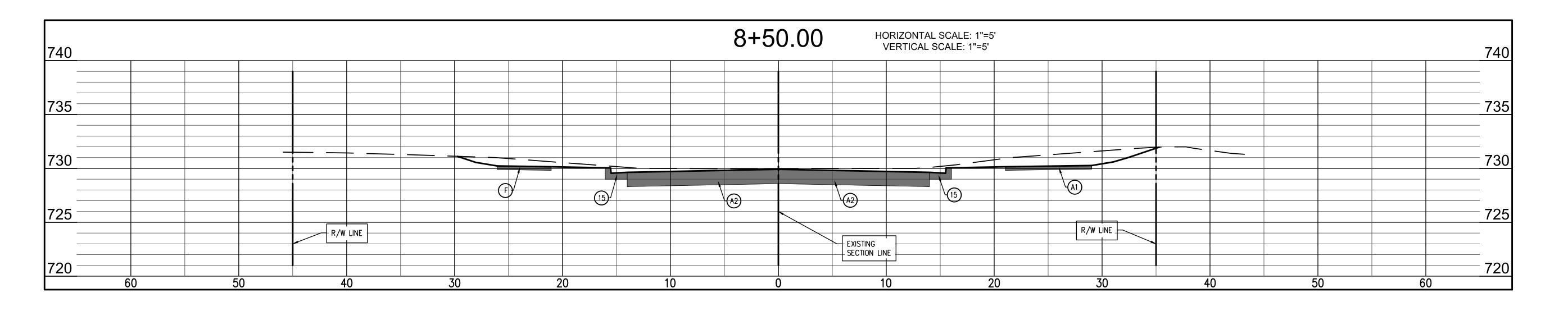


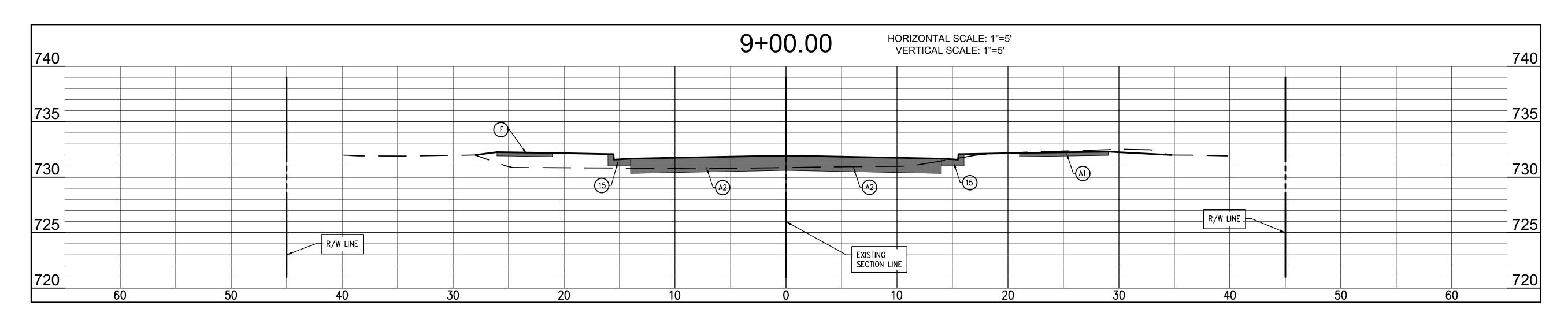


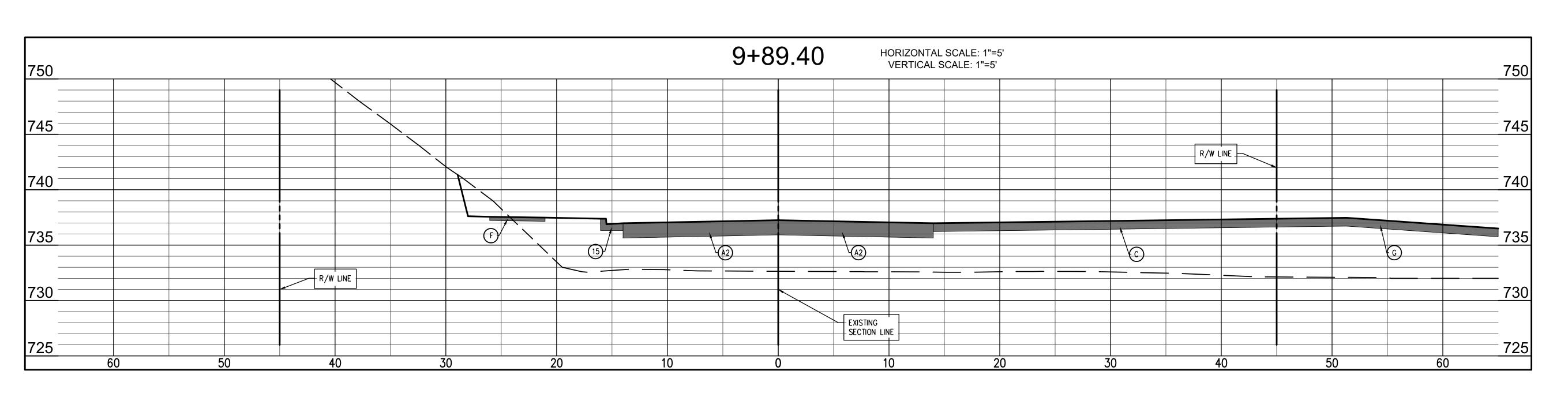
01.04.23 W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD EXTENSION PROPOSED HUNTER VALLEY ROAD

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C12
project no.: 402224



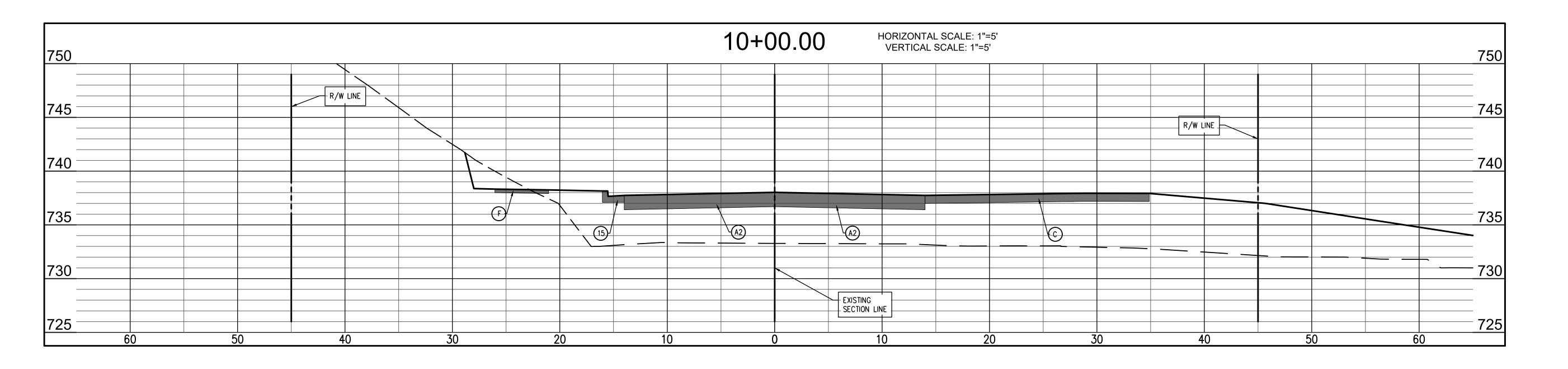


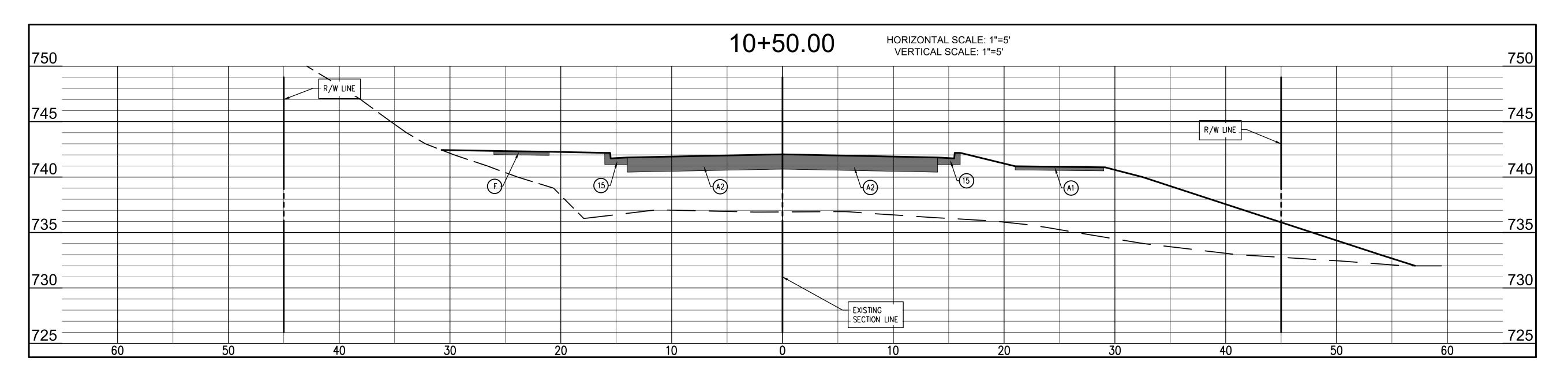


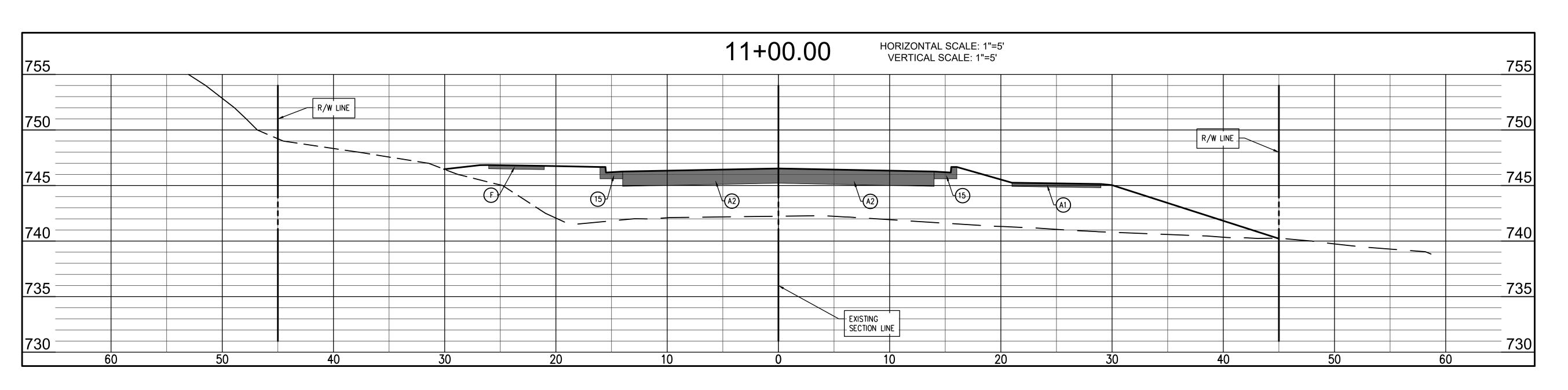
TO ARLINGTON ROAD PROPOSED HUNTER VALLEY ROAD D A W. HUNTER VALLEY ROAD BLOOMINGTON, IN 47404 FROM N STONE BRANCH D

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW drawn by: AJW checked by: JSF sheet no: C13 project no.: 402224



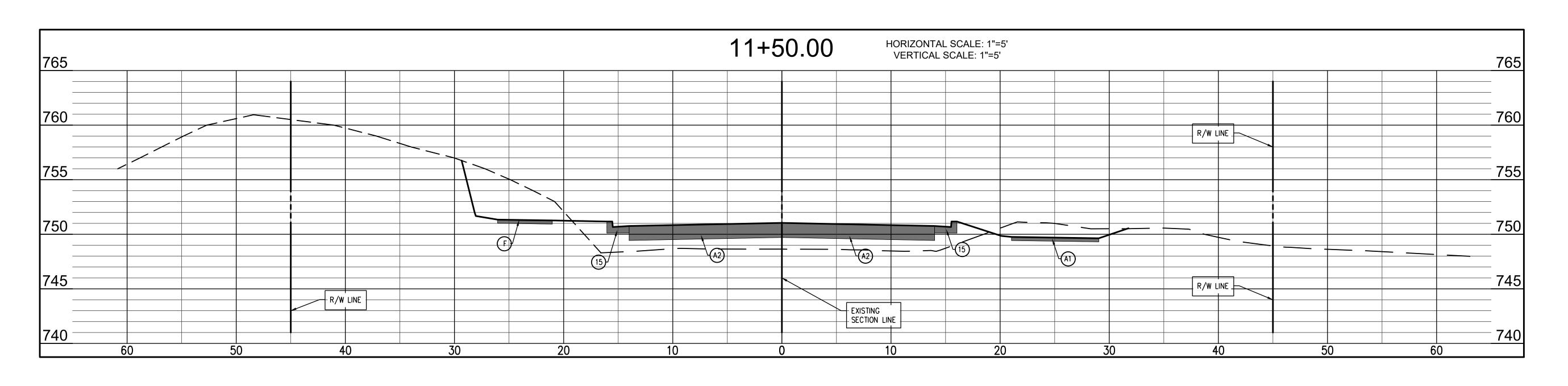


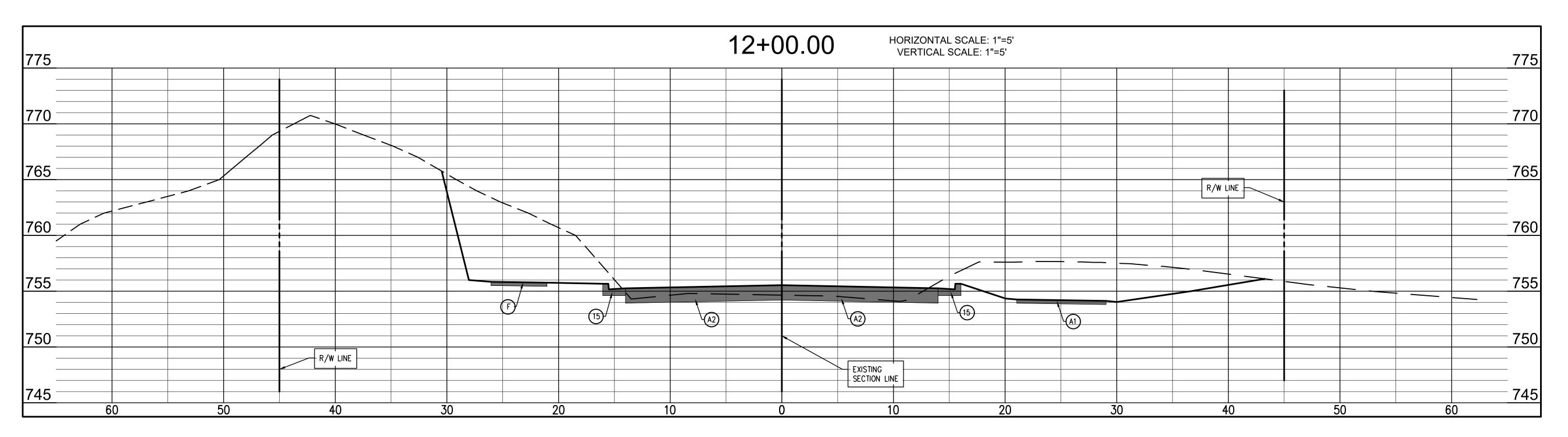


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		BYNUM FANYO & ASSOCIATES, INC.	528 north walnut street	(812) 332–8030
certifie	d by:			NO4.23
	LLEY ROAD EXTENSION			

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW drawn by: AJW checked by: JSF sheet no: C14 project no.: 402224





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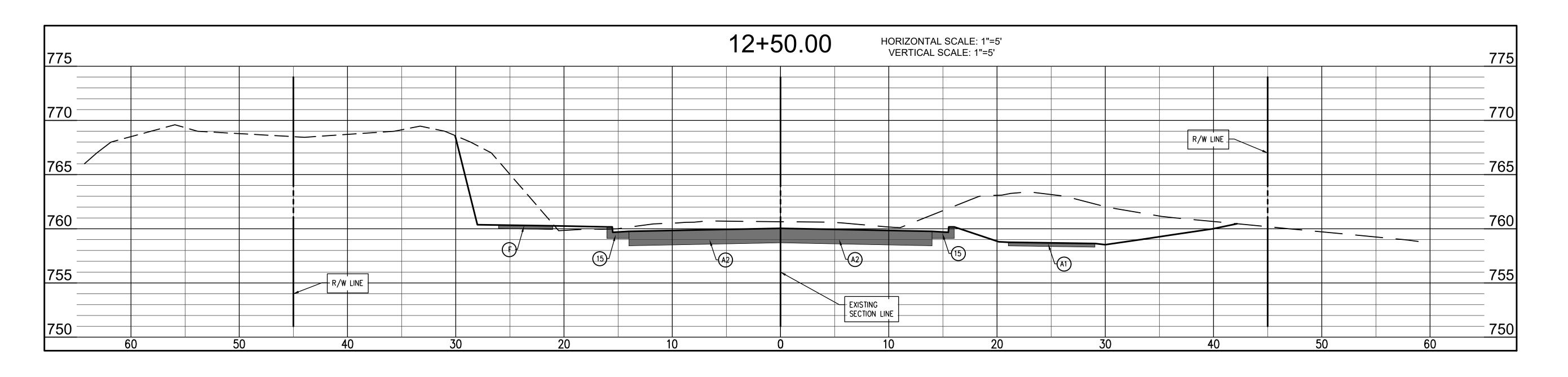
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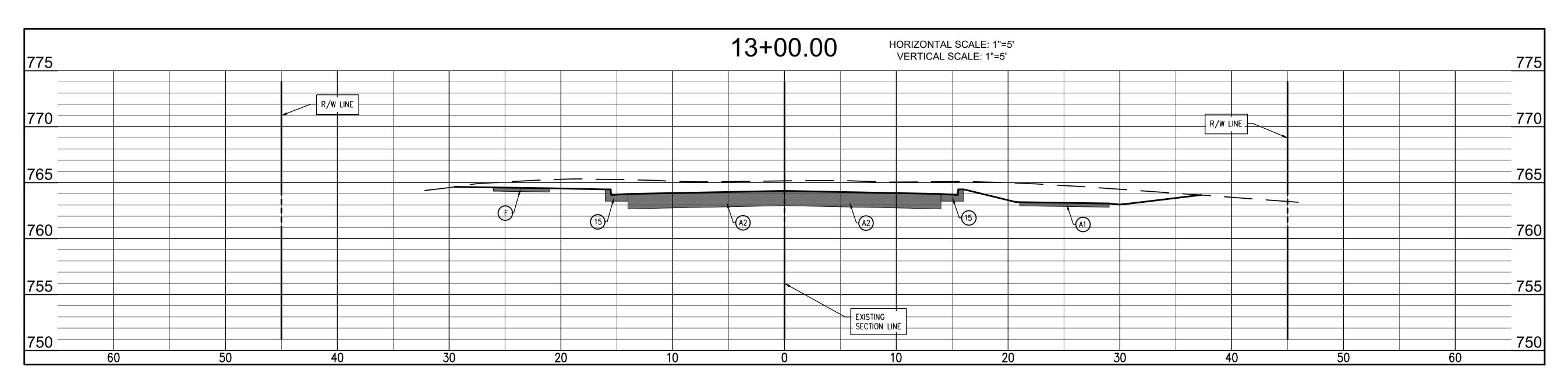
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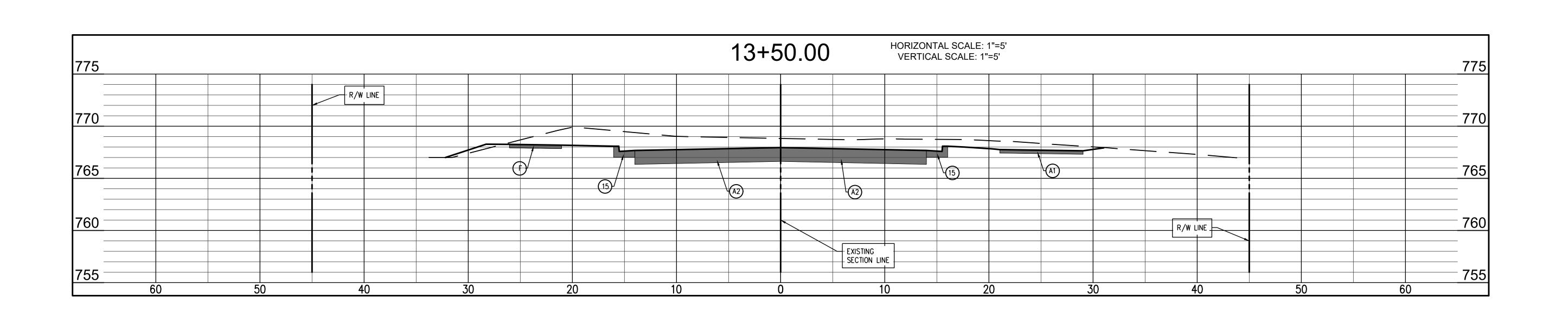
HUNTER VALLEY ROAD EXTENSION
W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW drawn by: AJW checked by: JSF sheet no: C15 project no.: 402224



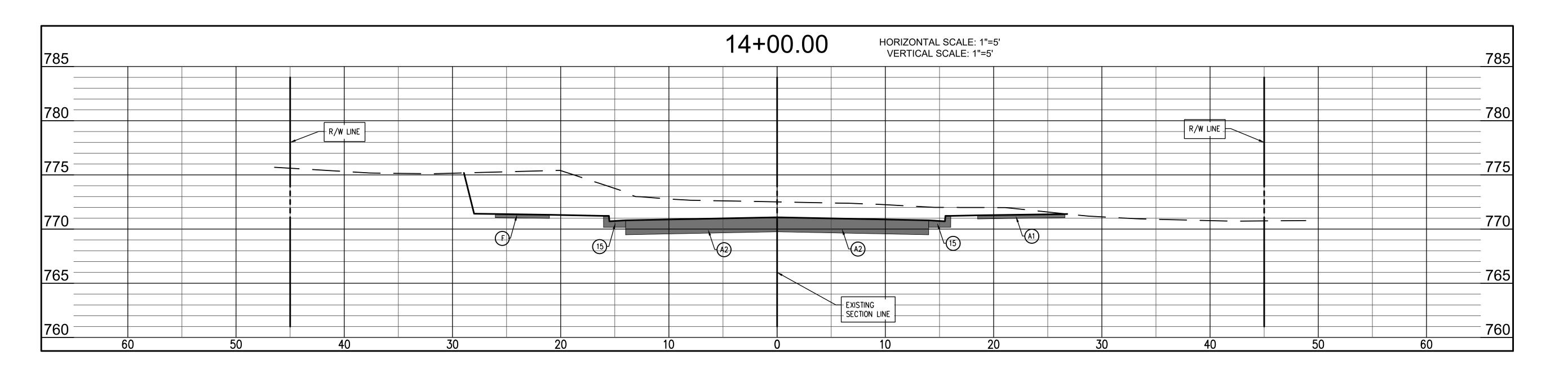


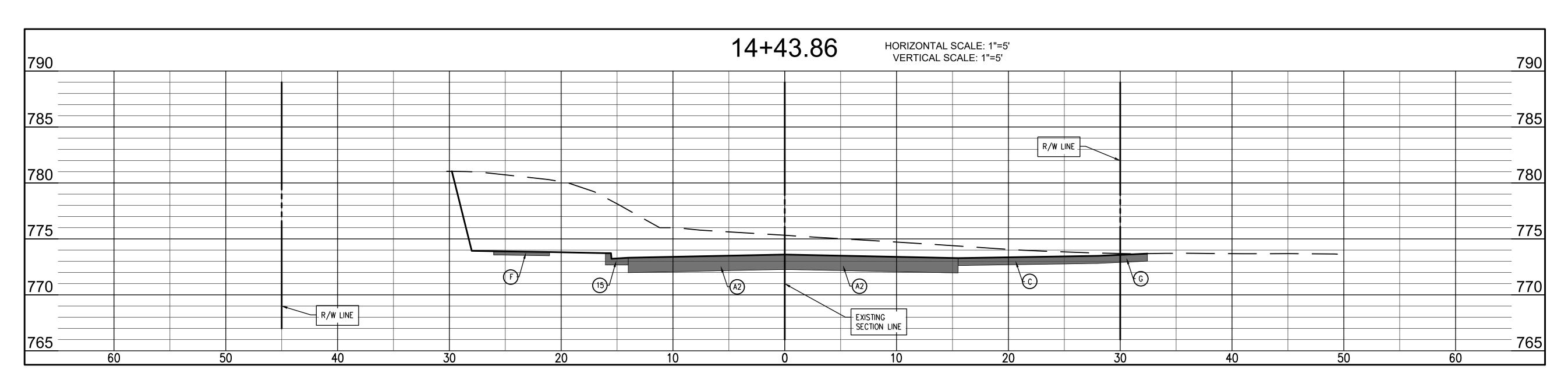


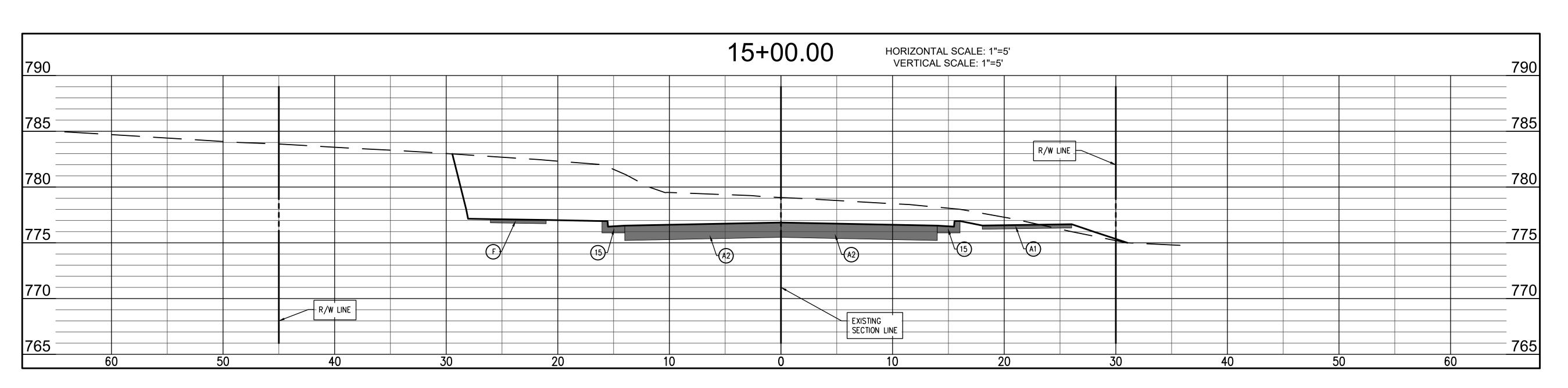
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designed by: AJW drawn by: AJW checked by: JSF sheet no: C16

project no.: **402224** 



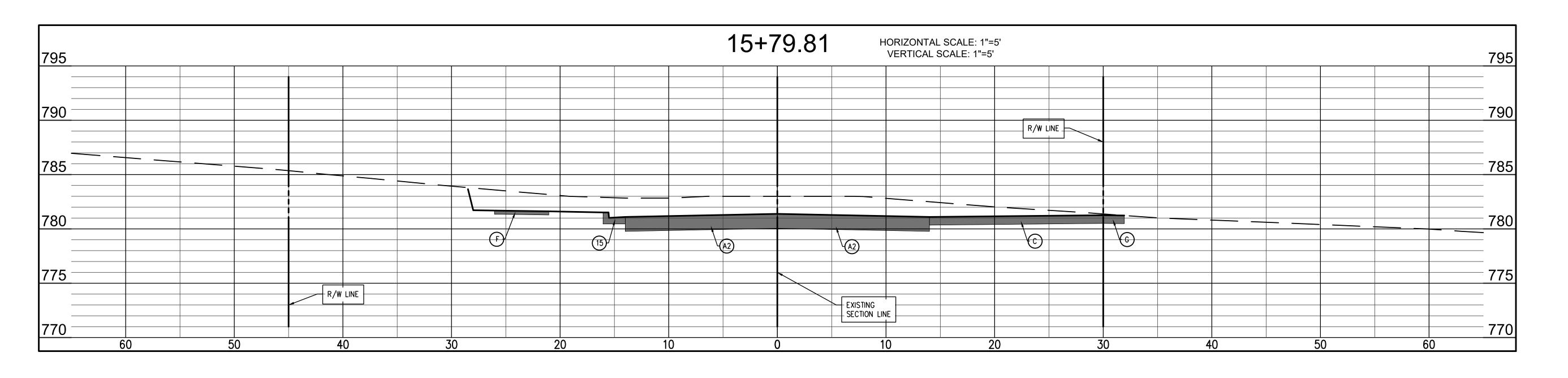


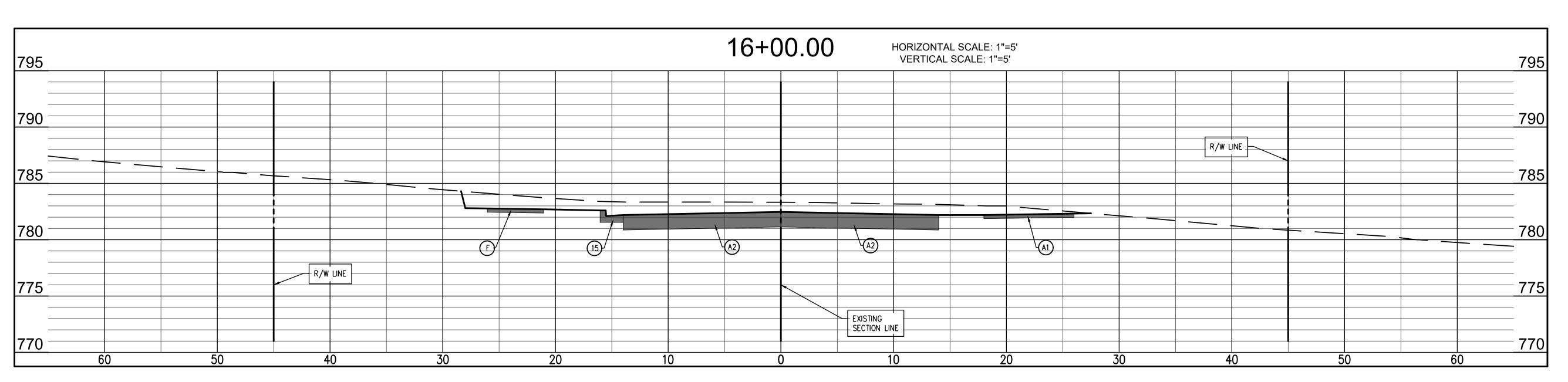


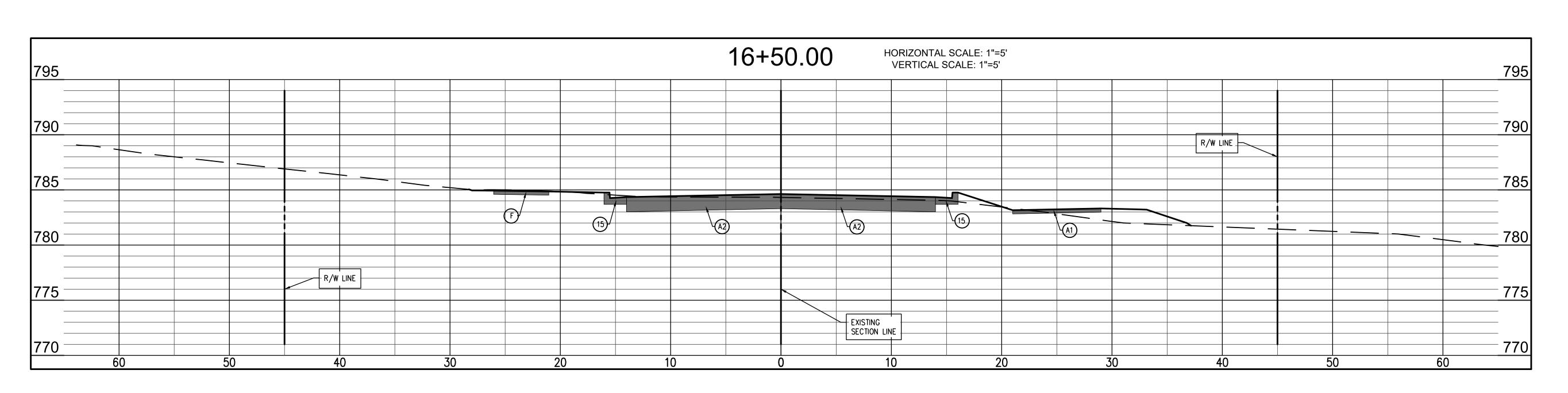
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**EXTENSION** CROSS-SECTIONS

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: C17 project no.: **402224** 





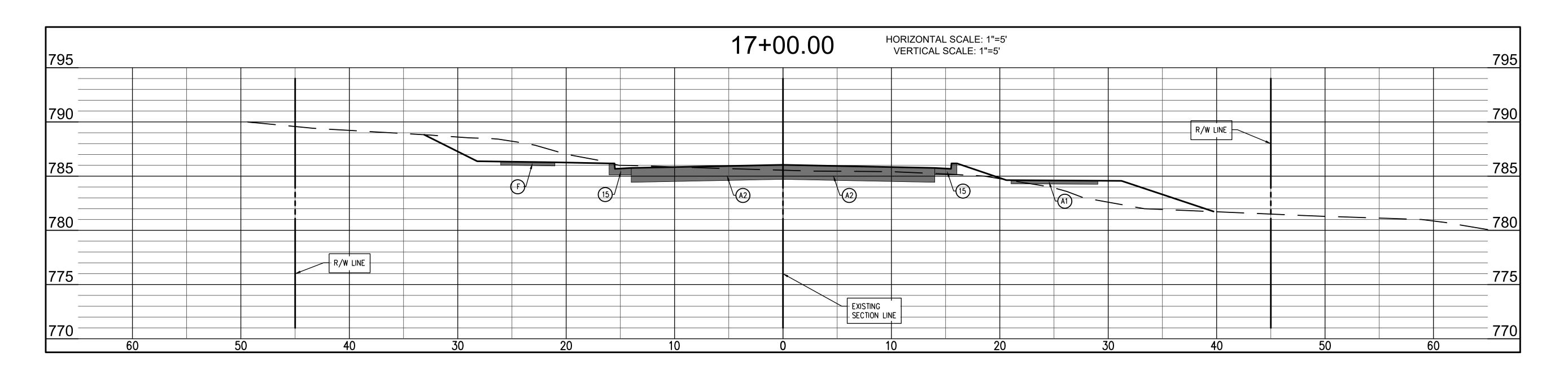


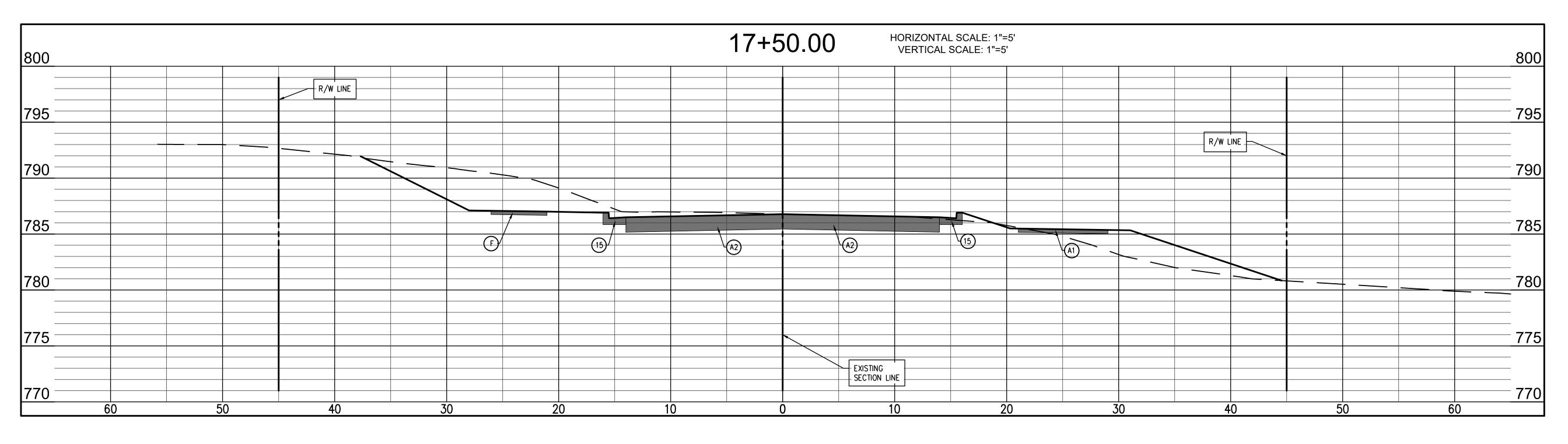
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title: **HUNTER VALLEY EXTENSION** CROSS-SECTIONS

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: C18 project no.: **402224** 





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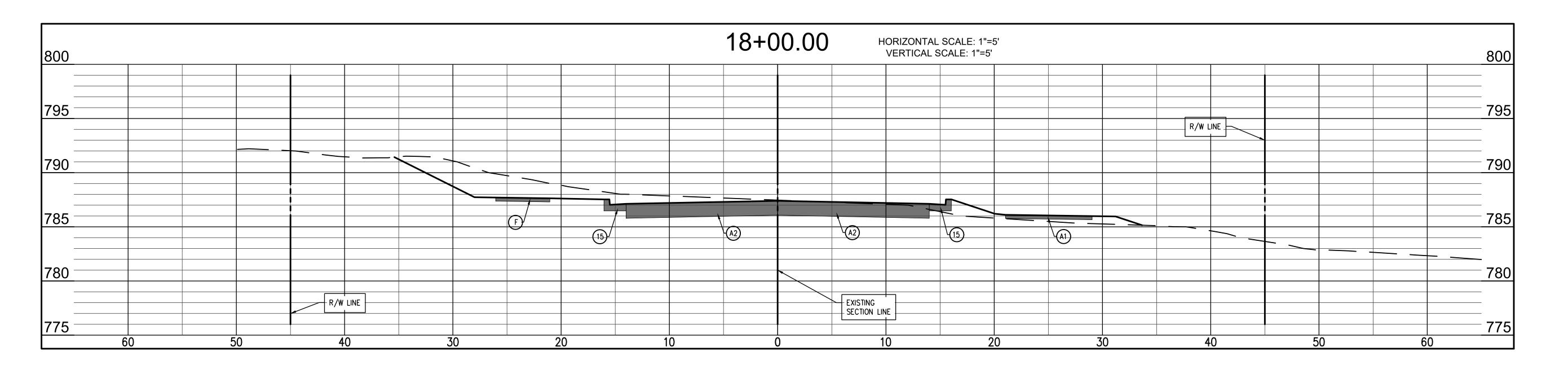
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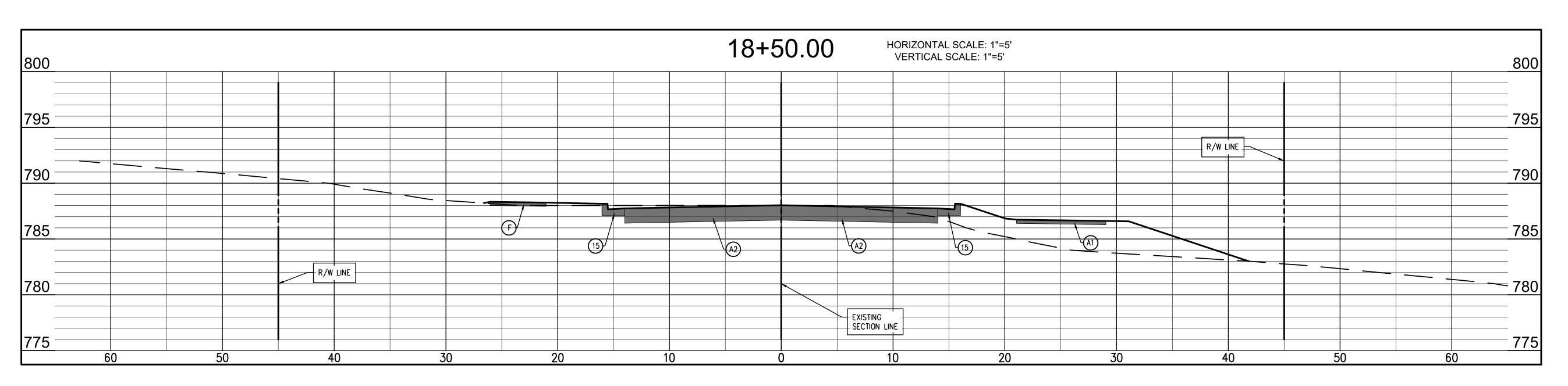
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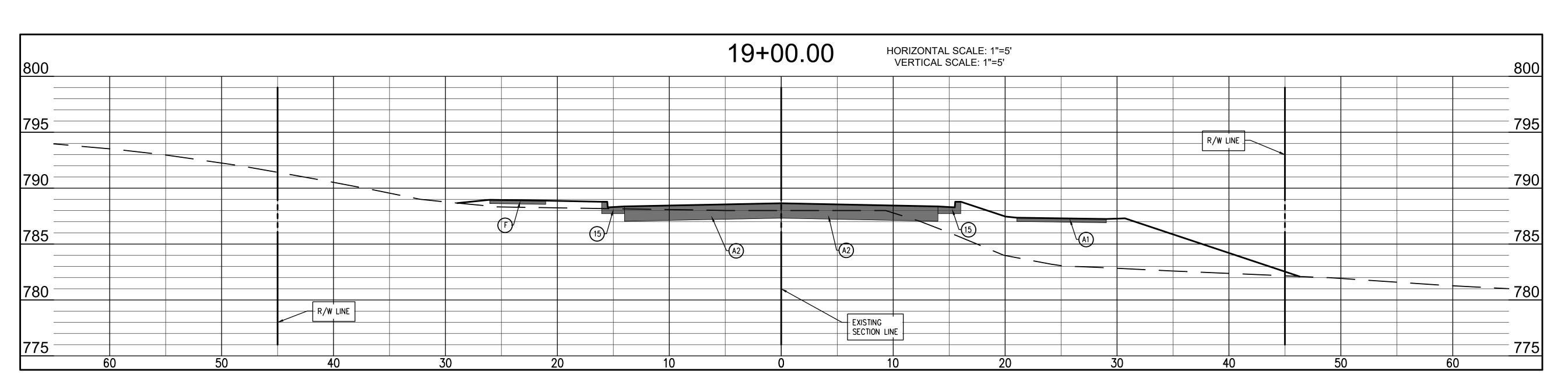
HUNTER VALLEY ROAD EXTENSION
W. HUNTER VALLEY ROAD,
BLOOMINGTON, IN 47404
FROM N STONE BRANCH DR. TO ARLINGTON ROAD

title: HUNTER VALLEY
EXTENSION
CROSS-SECTIONS

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C19
project no.: 402224







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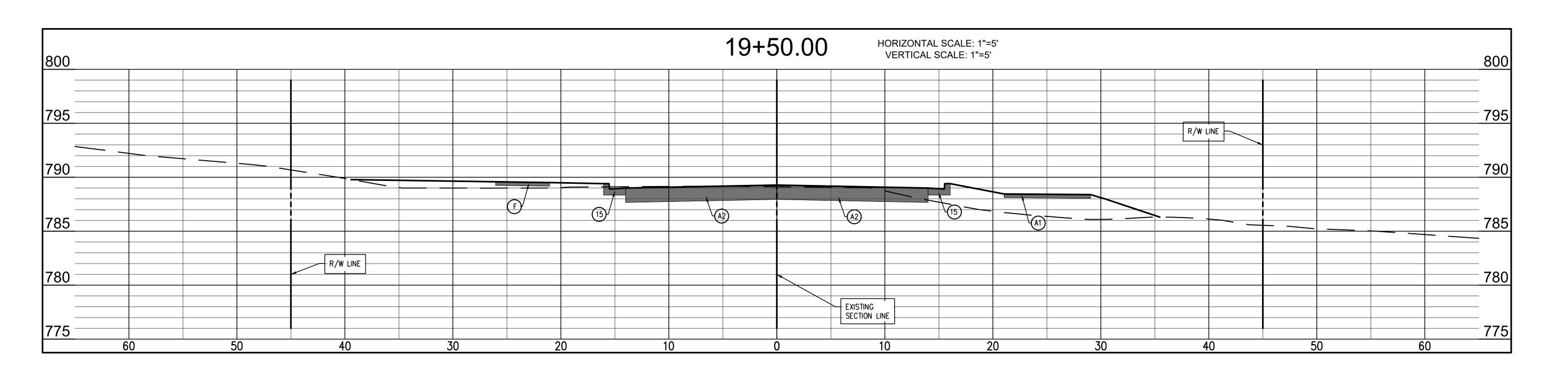
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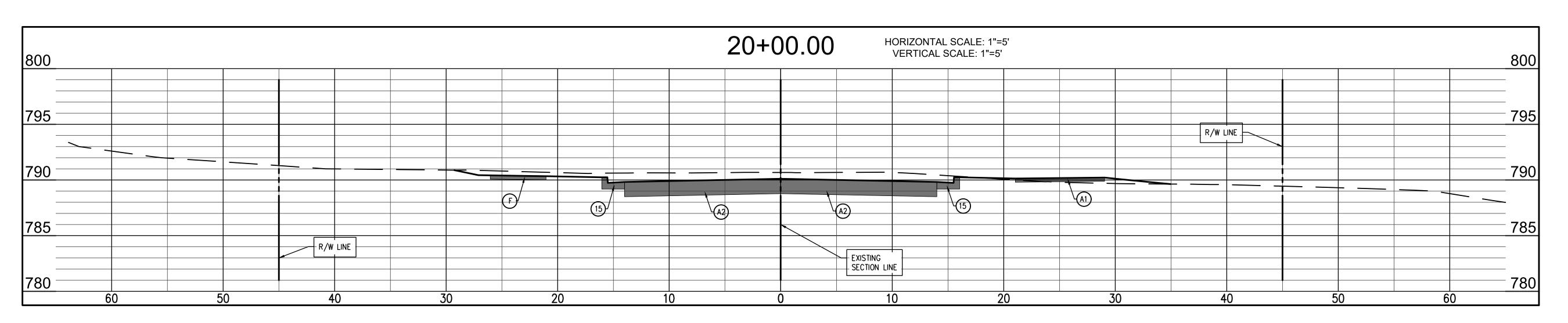
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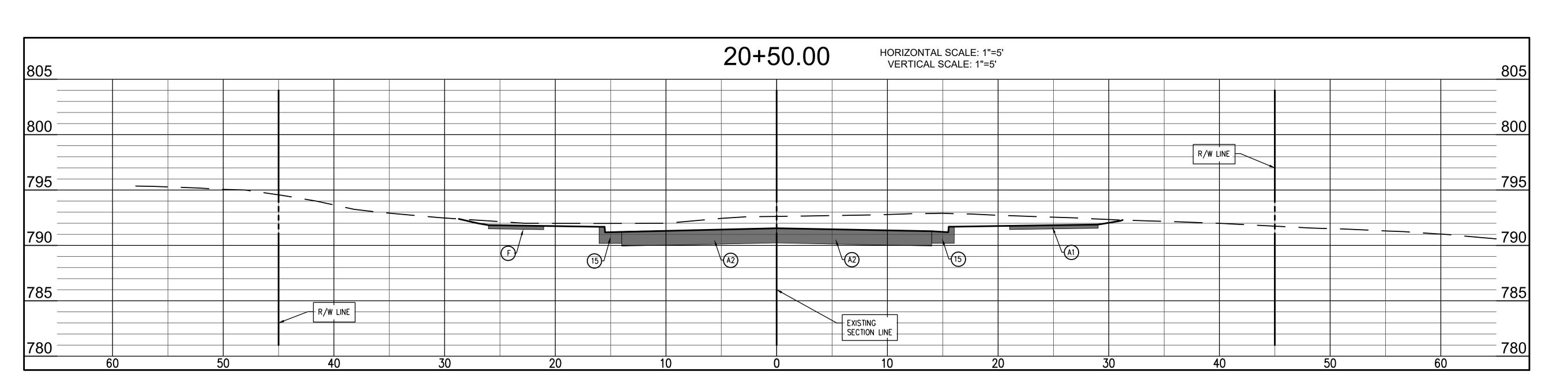
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CROSS-SECTIONS





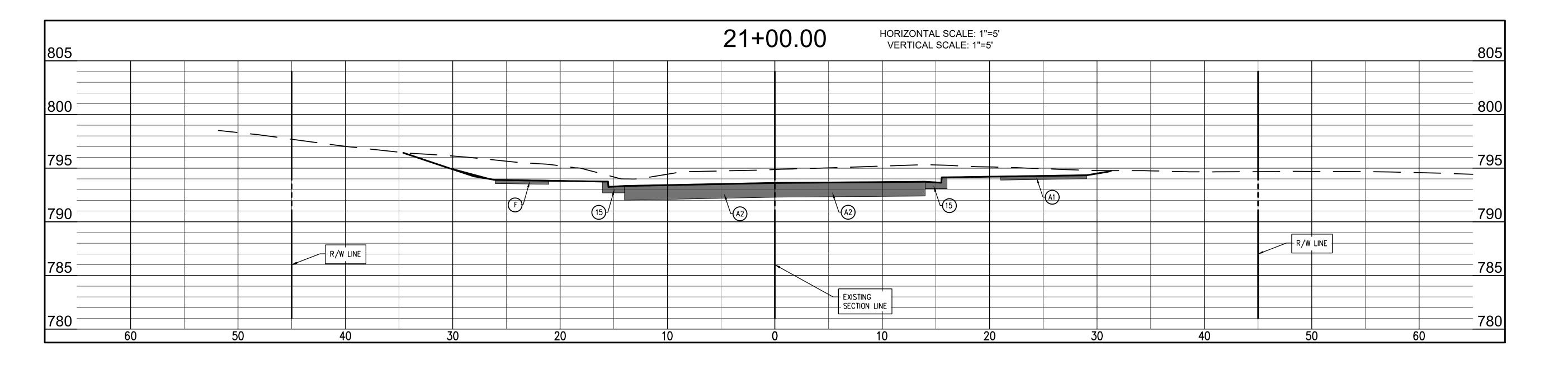


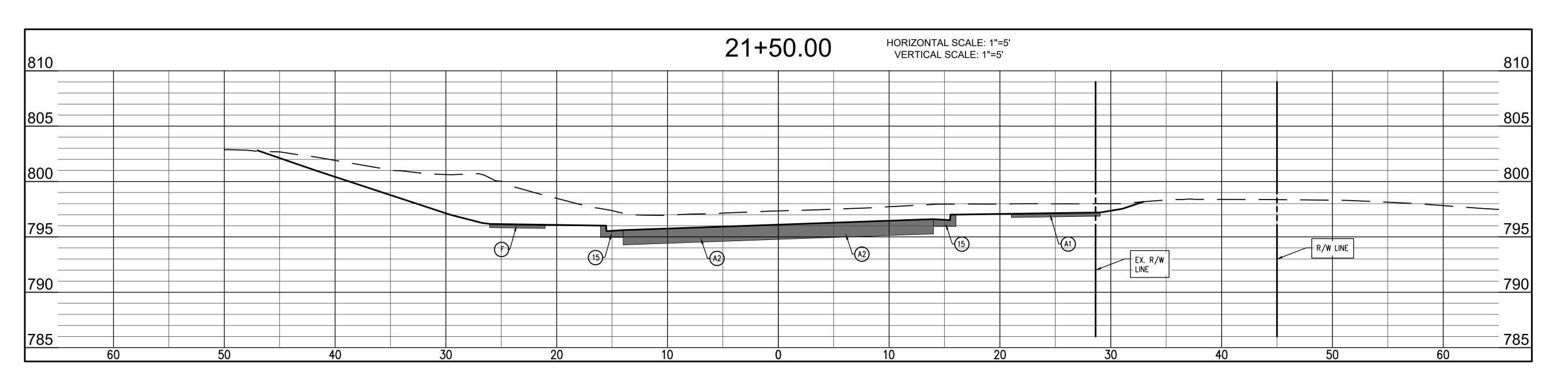
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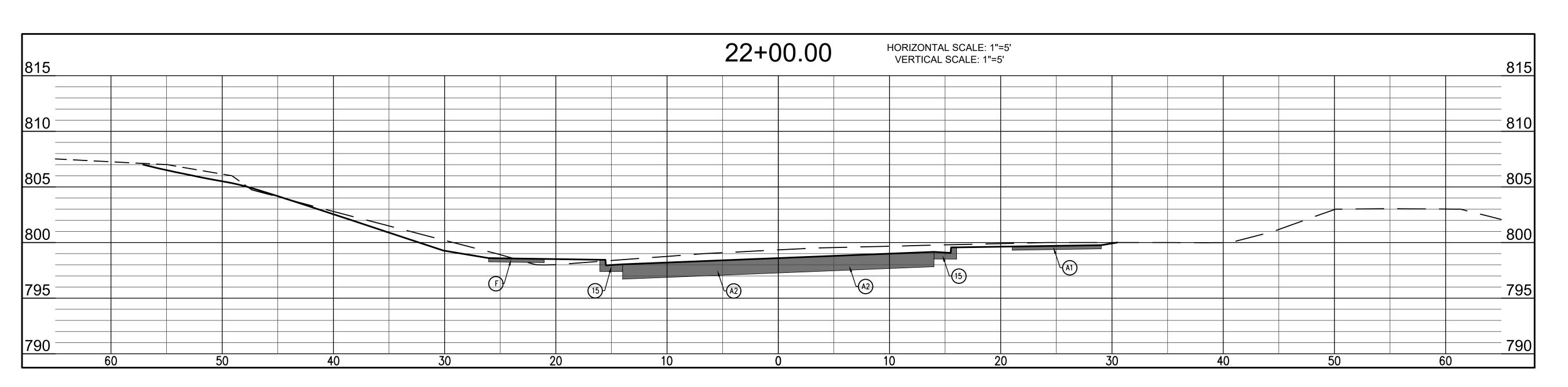
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title: **HUNTER VALLEY** EXTENSION CROSS-SECTIONS

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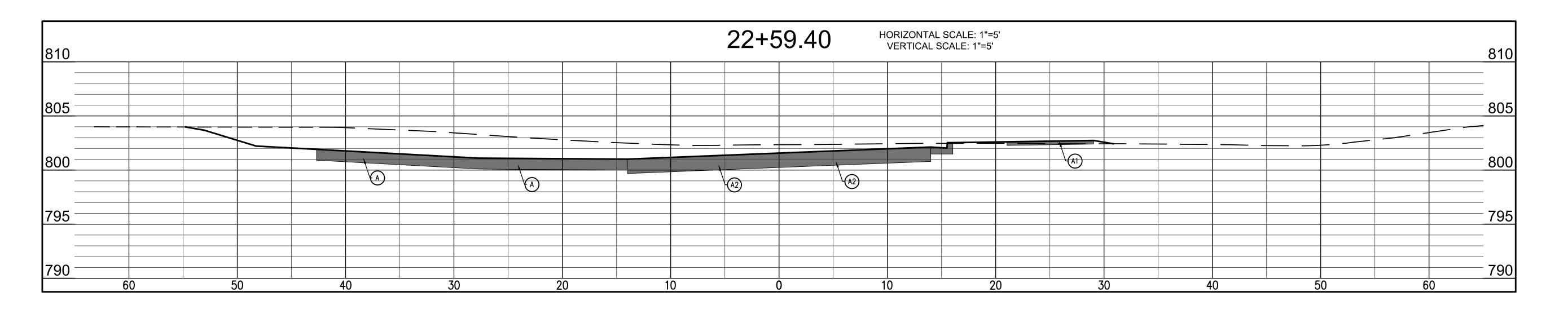


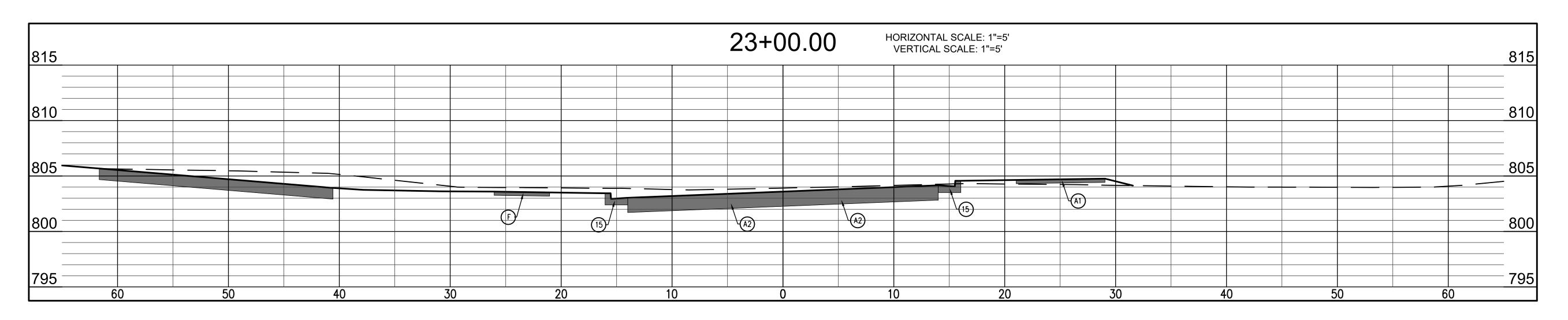
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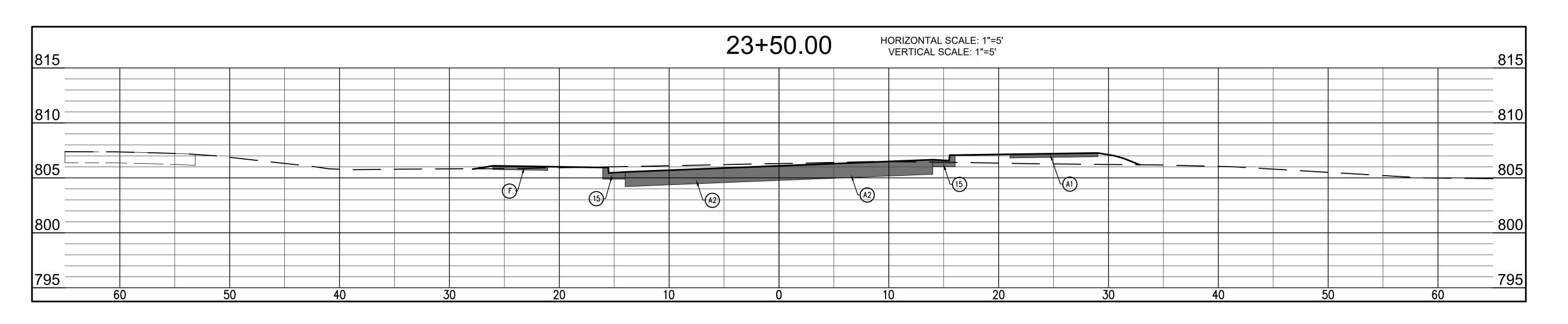
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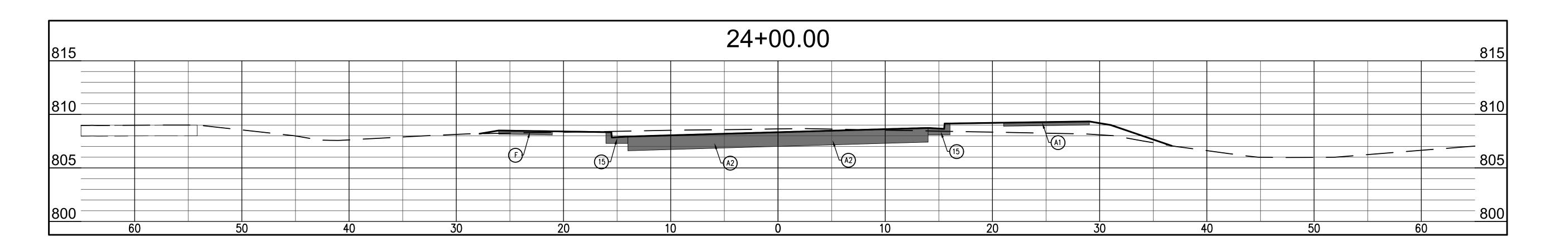


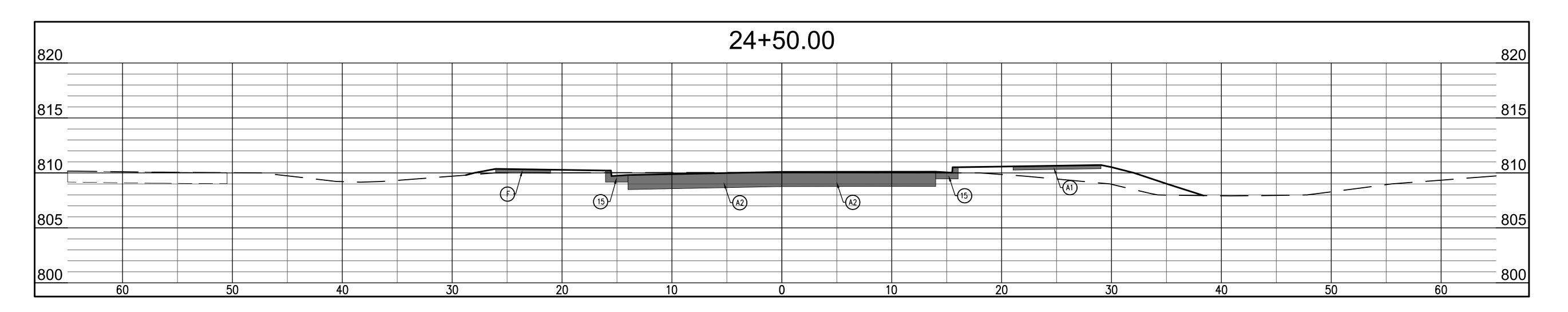
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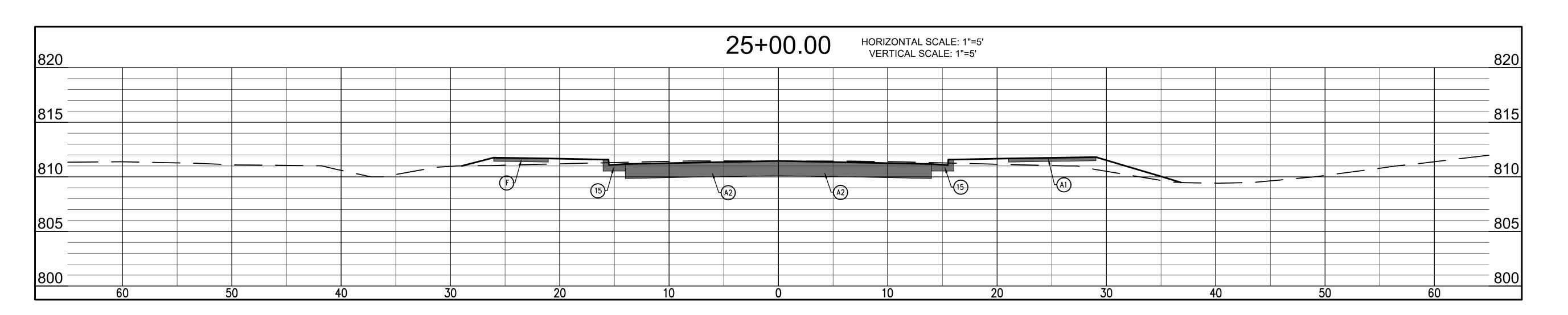
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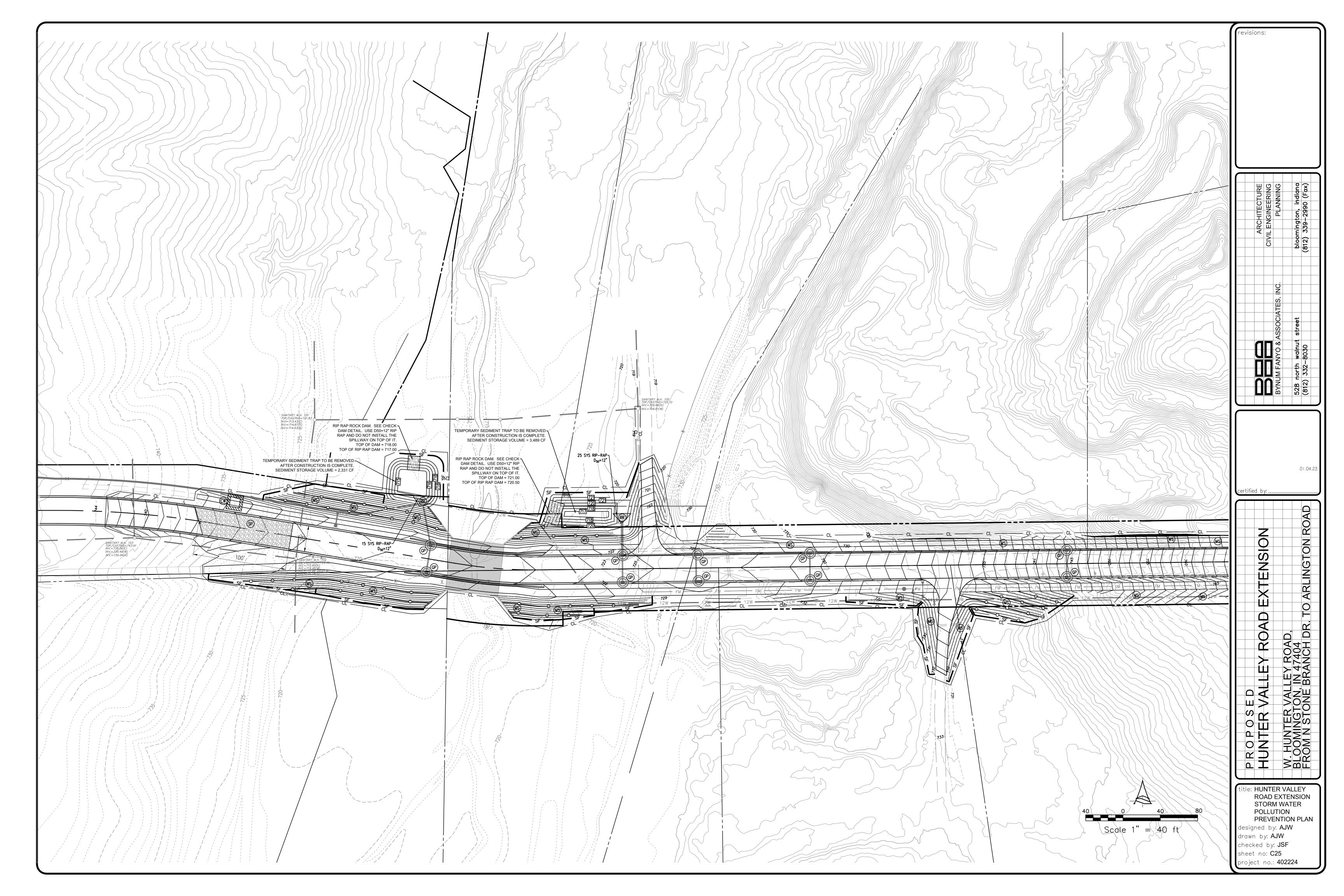
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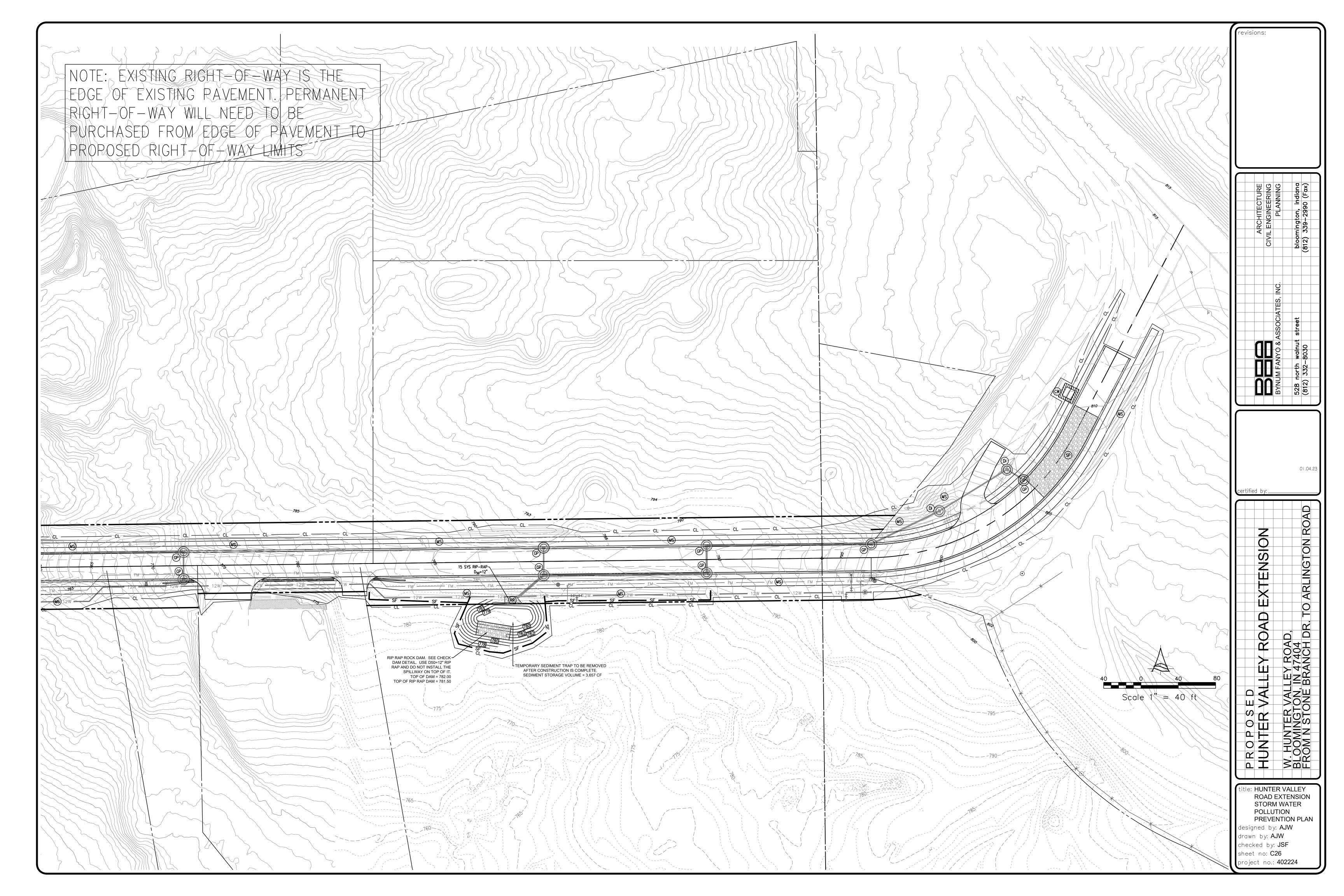
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designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: **C24** 

project no.: **402224** 

CROSS-SECTIONS





# **RULE 5 NARRATIVE**

SECTION A - CONSTRUCTION PLAN ELEMENTS

A1. PLAN INDEX SHOWING LOCATIONS OF REQUIRED ITEMS: REFER TO THE PLAN FOR UTILITIES, GRADING, STORMWATER QUALITY, AND EROSION CONTROL MEASURES. DETAIL SHEETS INDICATE MEASURES PROPOSED FOR LEGEND AND APPLICATION OF CONSTRUCTION / STORMWATER POLLUTION PREVENTION METHODS.

A2. 11 X 17 INCH PLAT SHOWING BUILDING LOT NUMBER/BOUNDARIES AND ROAD LAYOUT/NAMES: NOT APPLICABLE

A3. NARRATIVE DESCRIBING PROJECT NATURE AND PURPOSE: THE PROJECT CONSISTS OF THE EXTENSION OF W HUNTER VALLEY ROAD FROM NORTH CURRY PIKE TO W ARLINGTON ROAD.

A4. VICINITY MAP SHOWING PROJECT LOCATION: REFER TO COVER

A5. LEGAL DESCRIPTION: DOES NOT APPLY.

A6. LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS: LOCATION OF PROPOSED SITE IMPROVEMENTS ARE AS INDICATED ON THE PLAN AND PROFILE SHEETS C1-C5.

A7. HYDROLOGIC UNIT CODE: 051202020106

A8. NOTATION OF ANY STATE OR FEDERAL WATER QUALITY PERMITS: THE BRIDGE CONSTRUCTION IS EXEMPT FROM FLOODWAY PERMITTING PER THE RURAL BRIDGE EXEMPTION. A WATER QUALITY NOTICE WILL BE SUBMITTED TO IDEM FOR THE REMOVAL OF AN EXISTING CULVERT PIPE WITHIN STOUTS CREEK.

A9. SPECIFIC POINTS WHERE STORMWATER DISCHARGE WILL LEAVE THE SITE: THE SITE NATURALLY DRAINS EAST TO WEST TOWARDS STOUTS CREEK. THE ROAD CONSTRUCTION WILL MATCH EXISTING DRAINAGE PATTERNS.

A10. LOCATION AND NAME OF ALL WETLANDS, LAKES, AND WATERCOURSES ON/OR ADJACENT TO THE SITE: STOUTS CREEK RUNS NORTH AND SOUTH THROUGH THE LIMITS OF THE ROADWAY. STOUTS CREEK HAS A FLOOD ZONE AE.

A11. IDENTIFY ALL RECEIVING WATERS: STOUTS CREEK.

A12. IDENTIFICATION OF POTENTIAL DISCHARGES TO GROUNDWATER: THERE APPEAR TO BE NO POTENTIAL DISCHARGES DIRECTLY TO GROUND WATER.

A13. 100 YEAR FLOOD PLAINS, FLOODWAYS, AND FLOODWAY FRINGES: THE SITE PARTIALLY LIES WITHIN A ZONE AE FLOOD ZONE.

A14. PRE-CONSTRUCTION AND POST CONSTRUCTION ESTIMATE OF PEAK DISCHARGE:

A15. ADJACENT LAND USE, INCLUDING UPSTREAM WATERSHED: PROPERTY TO THE NORTH OF THE ROADWAY IS PRIMARILY QUARRY. THE PROPERTY TO SOUTH IS VACANT, QUARRY, AND ONE SMALL BUSINESS.

A16. LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS: THE CONSTRUCTION AND GRADING LIMITS ARE INDICATED ON THE GRADING AND EROSION CONTROL PLAN, REFER TO SHEET C1-5 AND C25-C26.

A17. IDENTIFICATION OF EXISTING VEGETATIVE COVER:

A18. SOIL MAP INCLUDING DESCRIPTIONS AND LIMITATIONS: REFER TO THIS SHEET FOR THE SOILS MAP AND SOIL PROPERTIES.

A19. LOCATION, SIZE AND DIMENSIONS OF PROPOSED STORMWATER SYSTEMS: SEE THE PLAN AND PROFILING SHEETS C1-C5 AND THE STRUCTURE DATA TABLE ON SHEET CO(3).

A20. PLAN FOR ANY OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT: THE PROJECT CONSISTS OF REQUIRING RIGHT-OF-WAY FOR THE ENTIRETY OF THE EXTENSION.

A21. LOCATIONS OF PROPOSED SOIL STOCKPILES. BORROW AND/OR DISPOSAL AREAS: REFER TO THE SWPPP PLAN, SHEET C25-C26.

A22. EXISTING SITE TOPOGRAPHY AT AN INTERVAL APPROPRIATE TO SHOW DETAILED DRAINAGE PATTERNS: THE EXISTING SITE TOPOGRAPHY ID DEPICTED ON THE PLAN AND PROFILE SHEETS C1-C5.

A23. PROPOSED FINAL TOPOGRAPHY AT AN INTERVAL APPROPRIATE TO SHOW DETAILED DRAINAGE PATTERNS: PROPOSED FINAL TOPOGRAPHY IS DEPICTED ON THE PLAN AND PROFILE SHEETS

C1-C5.

SECTION B - CONSTRUCTION COMPONENT

B1. DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH THE CONSTRUCTION ACTIVITIES: A. THE MOST ABUNDANT POLLUTANT CAUSED BY CONSTRUCTION WOULD BE SOIL SUSPENDED IN STORM WATER RUNOFF.

B. FUEL, OILS, AND OTHER FLUIDS ASSOCIATED WITH THE CONSTRUCTION EQUIPMENT COULD POSSIBLY RUNOFF AS WELL. C. TRASH ASSOCIATED WITH HUMAN ACTIVITY, INCLUDING CONSTRUCTION MATERIALS.

B2. SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND DISTURBING ACTIVITIES: SEE THE EROSION CONTROL SEQUENCE NOTES ON THIS SHEET.

B3. STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS: REFER TO THE SWPP PLAN SHEET C25-C26 AND THE SWPPP DETAILS ON SHEET C28-29 FOR DIMENSIONS OF THE CONSTRUCTION ENTRANCE.

B4. SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS: A COMBINATION OF SILT FENCE AND VEGETATED COVER ARE PROPOSED TO CONTROL EROSION FROM SHEET FLOW AREAS/NEWLY GRADED AREAS.

B5. SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS: TEMPORARY SEDIMENT TRAPS ARE PROPOSED AT STORM SEWER DISCHARGE LOCATIONS.

B6. STORM SEWER INLET PROTECTION MEASURE LOCATION: GRAVEL INLET PROTECTION IS PROPOSED FOR YARD AND ROADWAY INLETS.

B7. RUNOFF CONTROL MEASURES: CONSISTS OF SILT FENCE, TIERED WATTLES, AND SEEDING

B8. STORMWATER OUTLET PROTECTION SPECIFICATIONS: RIP-RAP WILL BE USED TO STABILIZE STORMWATER OUTLETS FROM THE STORM INLETS.

B9. GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS: SEE THE PLAN AND PROFILING SHEETS C1-C5. THE PROPOSED BRIDGE WILL HAVE PRE-CAST WING WALLS. THERE ARE SEVERAL AREAS WHERE THERE WILL BE ROCK CUTS AND THE ROCK WILL ACT AS A NATURAL RETAINING WALL.

B10. LOCATION, DIMENSIONS, SPECIFICATIONS AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE: EACH ELEMENT TO BE IMPLEMENTED AS A PART OF THIS PLAN IS SHOWN ON THE PLAN AND PROFILING AND SWPP PLAN, SHEET C1-C5 AND C25-C26 AND IN THE SWPPP DETAILS, SHEET C28-C29.

B11. TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON: WILL BE REQUIRED ON ANY BARE AREA THAT IS SCHEDULED TO REMAIN INACTIVE FOR MORE THAN 15 DAYS. REFER TO THE SEEDING DETAILS, SHEET C28-29.

B12. PERMANENT SURFACE STABILIZATION SPECIFICATIONS: REFER TO THE SEEDING DETAILS, SHEET C28-C29.

B13. MATERIAL HANDLING AND SPILL PREVENTION PLAN: ALL MATERIALS ON-SITE WILL BE HANDLED PER THE REQUIREMENTS OF THE MSDS SHEETS. THE CONTRACTOR SHALL HAVE AN EMERGENCY SPILL CLEAN-UP KIT ON SITE FOR RECOVERY OF PETROLEUM PRODUCT SPILLS AT ALL TIMES. IF A REPORTABLE AMOUNT OF SEDIMENT LADEN WATER OR OTHER POLLUTANT IS ALLOWED TO LEAVE THE SITE. THE CONTRACTOR IS OBLIGATED TO NOTIFY IDEM'S SPILL LINE AT (317) 233-7745 WITHIN 24 HOURS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINES AND ANY LIABILITY ASSOCIATED WITH SUCH AN EVENT. SEDIMENT LADEN WATER. WHICH OTHERWISE WOULD FLOW FROM THE PROJECT SITE, SHALL BE TREATED BY EROSION AND SEDIMENT CONTROL MEASURES APPROPRIATE TO MINIMIZE SEDIMENTATION. ALL WATER (INCLUDING STORMWATER, GROUNDWATER, OR ANY OTHER WATER) THAT LEAVES THE CONSTRUCTION SITE MUST HAVE A TOTAL SUSPENDED SOLIDS LEVEL OF LESS THAN 50 PARTS PER MILLION OR HAVE NO VISIBLE SEDIMENT. THIS CAN BE DETERMINED ON SITE BY TAKING A SETTLEABLE SOLIDS SAMPLE WITH AN IMHOFF CONE WITH A RESULT OF LESS THAN 0.5 ML PER LITER. IT SHOULD BE EXPECTED THAT ALL MATERIALS NECESSARY TO CONSTRUCT THE PROPOSED SITE IMPROVEMENTS WILL BE ENCOUNTERED ON SITE AT ONE TIME OR ANOTHER. ALL MATERIALS THAT APPEAR ON SITE WILL BE ACCOMPANIED WITH MSDS SHEETS IN ACCORDANCE WITH OSHA GUIDELINES AND THE CODE OF FEDERAL REGULATION (CFR). MSDS SHEETS PROVIDE AMONG OTHER THINGS, THE PROCEDURES FOR CLEAN-UP OF SPILLS AND LEAKS. REFER TO ITEM B1 ABOVE FOR ADDITIONAL INFORMATION.

B14. MONITORING AND MAINTENANCE GUIDELINES FOR EACH PROPOSED POLLUTION PREVENTION MEASURE: MONITORING AND MAINTENANCE OF ALL POLLUTION PREVENTION MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL INSPECT ALL MEASURES AT LEAST ONCE A WEEK AND AFTER EACH STORM EVENT. THE CONTRACTOR SHALL PREPARE A WRITTEN REPORT FOR EACH INSPECTION NOTING CONDITIONS AND MAINTENANCE PROVIDED. A COPY OF EACH REPORT SHALL BE KEPT ON FILE AT THE PROJECT SITE. REFER TO EACH PREVENTION MEASURE DETAIL FOR CONSTRUCTION AND MAINTENANCE GUIDELINES.

B15. EROSION & SEDIMENT CONTROLS SPECIFICATIONS FOR INDIVIDUAL BUILDING LOTS: THIS ITEM DOES NOT APPLY TO THIS PROJECT.

SEED MIXTURE TYPE U.

SECTION C - POST CONSTRUCTION COMPONENT

C1. DESCRIPTION OF POLLUTANTS AND THEIR SOURCES ASSOCIATED WITH WITH THE PROPOSED LAND USE: THE MAIN POST CONSTRUCTION POLLUTANTS MAY COME FROM THE FILL AREA. ROUTINE INSPECTIONS OF THE FILL AREA FOR BARE SPOTS WILL BE VERY IMPORTANT.

C2. SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION:

1. CONTACT THE MONROE COUNTY SWCD AT (812) 334-4325 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

2. INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLANS

3. PRIOR TO ANY EARTH MOVING PLACE SILTATION FENCE ALONG THE DOWN STREAM SIDE OF ALL GRADING ACTIVITY.

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

11. FERTILIZE AND WATER SEEDED AREAS UNTIL MATURE TURF IS ESTABLISHED. 14. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON THE ESTABLISHMENT OF THE TURF.

C3. DESCRIPTION OF PROPOSED POST CONSTRUCTION STORMWATER QUALITY MEASURES: DOES NOT APPLY.

C4. LOCATION, DIMENSIONS, SPECIFICATIONS AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE: SEE THE SWPP PLAN ON SHEET C25 AND C26.

C5. DESCRIPTION OF MAINTENANCE GUIDELINES FOR PROPOSED POST CONSTRUCTION WATER QUALITY MEASURES: SEE THE MAINTENANCE NOTE AND GUIDELINES FOR EACH POST CONSTRUCTION MEASURE WITHIN THE DETAILS.

Monroe County, Indiana CaD—Caneyville silt loam, 12 to 18 percent slopes Map Unit Setting National map unit symbol: 2z8ys Elevation: 500 to 960 feet Mean annual precipitation: 37 to 52 inches Mean annual air temperature: 43 to 63 degrees F Frost-free period: 173 to 212 days Farmland classification: Not prime farmland Map Unit Composition Caneyville and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit. Description of Canevville Setting Landform: Hills Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Down-slope shape: Convex Across-slope shape: Linear Parent material: Clayey residuum weathered from limestone Typical profile Ap - 0 to 5 inches: silt loam

Bt - 5 to 35 inches: clay R - 35 to 45 inches: bedrock Properties and qualities Slope: 12 to 18 percent Depth to restrictive feature: 20 to 40 inches to lithic

bedrock Drainage class: Well drained Runoff class: Medium Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches Frequency of floodina: None Frequency of ponding: None Available water supply, 0 to 60 inches: Low (about 4.9)

inches) Interpretive groups Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C Ecological site: F122XY002KY - Deep Well Drained Limestone Uplands

Other vegetative classification: Trees/Timber (Woody Vegetation) Hydric soil rating: No

Monroe County, Indiana CrC—Crider silt loam, 6 to 12 percent slopes Map Unit Setting National map unit symbol: 2vp3r Elevation: 440 to 990 feet Mean annual precipitation: 37 to 58 inches Mean annual air temperature: 43 to 68 degrees F Frost-free period: 150 to 212 days Farmland classification: Not prime farmland Map Unit Composition Crider and similar soils: 80 percent Minor components: 20 percent Estimates are based on observations, descriptions, and transects of the mapunit. Description of Crider Setting

Landform: Hills Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Side slope Down-slope shape: Convex Across—slope shape: Linear

Parent material: Fine-silty noncalcareous loess over clayey residuum weathered from limestone Typical profile Ap - 0 to 7 inches: silt loam

Bt1 - 7 to 36 inches: silty clay loam 2Bt2 - 36 to 80 inches: clay Properties and qualities Slope: 6 to 12 percent Depth to restrictive feature: More than 80 inches Drainage class: Well drained Runoff class: Medium

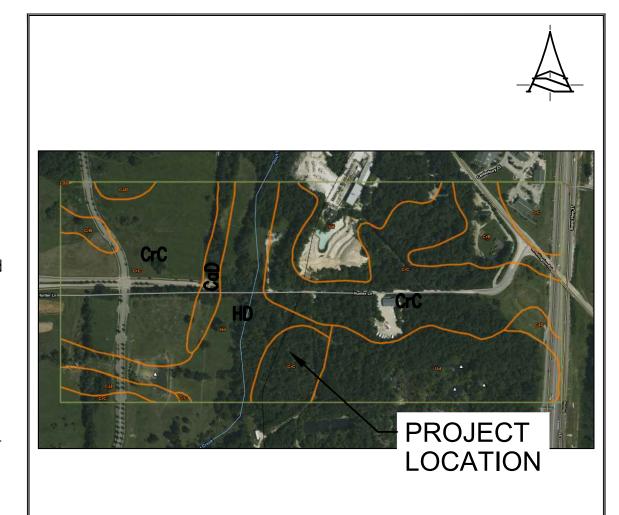
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: B

Ecological site: F122XY004KY - Loess Veneered Uplands Other vegetative classification: Trees/Timber (Woody Vegetation)

Hydric soil rating: No



## **SOILS MAP** SCALE: 1"=1320'

Monroe County, Indiana Hd—Haymond silt loam, frequently flooded Map Unit Setting National map unit symbol: kz8l Elevation: 340 to 1.020 feet Mean annual precipitation: 40 to 46 inches Mean annual air temperature: 52 to 57 degrees F Frost-free period: 170 to 200 days Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing

Map Unit Composition Haymond and similar soils: 97 percent Minor components: 3 percent Estimates are based on observations, descriptions, and transects of the mapunit. Description of Haymond Setting Landform: Flood plains, natural levees Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across—slope shape: Linear Parent material: Silty over loamy alluvium Typical profile

Ap - 0 to 10 inches: silt loam Bw - 10 to 44 inches: silt loam C - 44 to 60 inches: stratified silt loam to sandy loam

to loam Properties and aualities Slope: 0 to 2 percent Depth to restrictive feature: More than 80 inches Drainage class: Well drained Runoff class: Very low Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr) Depth to water table: More than 80 inches

Frequency of flooding: None, Frequent

Frequency of ponding: None Available water supply, 0 to 60 inches: Very high (about 12.5 inches) Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: B Other vegetative classification: Trees/Timber (Woody

Vegetation) Hydric soil rating: No

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tle: **HUNTER VALLEY ROAD EXTENSION** SWPPP INFORMATION

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: C27 project no.: **402224** 

. CONTACT MONROE COUNTY STORMWATER INSPECTOR AT: (812) 803-6345 TO SCHEDULE A PRE-CONSTRUCTION MEETING PRIOR TO ANY EARTH MOVING ACTIVITY ON-SITE.

PUBLIC ACCESSIBLE LOCATION WITH THE FOLLOWING INFORMATION: CONTACT PHONE NUMBERS,

5. STRIP TOPSOIL FROM ALL AREAS TO BE DISTURBED BY CONSTRUCTION AND STOCK PILE AT LOCATIONS ABOVE SILT FENCE. SEED WITH TEMPORARY SEED MIXTURE TYPE T, IMMEDIATELY. DISCARD ANY UNSUITABLE SOILS OFF SITE AS DETERMINED BY THE GEOTECHNICAL ENGINEER.

8. ALL EROSION CONTROL STRUCTURES SHALL BE KEPT IN WORKING ORDER AND INSPECTED UPON COMPLETION OF EVERY MEASURABLE RAIN EVENT (3" OF RAINFALL. ADD ADDITIONAL MEASURES WHEN NECESSARY.

STOCKPILE TO ALL PROPOSED GRASSED AREAS OR VEGETATE THE STOCKPILE. EARTHMOVING AND UNDERGROUND UTILITY WORK IN ACCORDANCE WITH INDOT SS-621

11. FERTILIZE AND WATER SEEDED AREAS UNTIL MATURE TURF IS ESTABLISHED.

INSPECTOR AT: (812) 803-6345 TO SCHEDULE A FINAL VEGETATION INSPECTION.

# **EROSION CONTROL SEQUENCE**

2. CREATE OPENING AT LOCATION TO INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLANS

3. PRIOR TO ANY EARTH MOVING INSTALL INITIAL EROSION CONTROLS. POST PERMITS IN A EMERGENCY NUMBERS, IDEM SPILL LINE 1-888-233-7745, PRINTED PLAN SET LOCATION, SPILL KIT LOCATION, SELF-MONITORING INSPECTION SHEET LOCATION, AND CONTRACTOR TRAINING

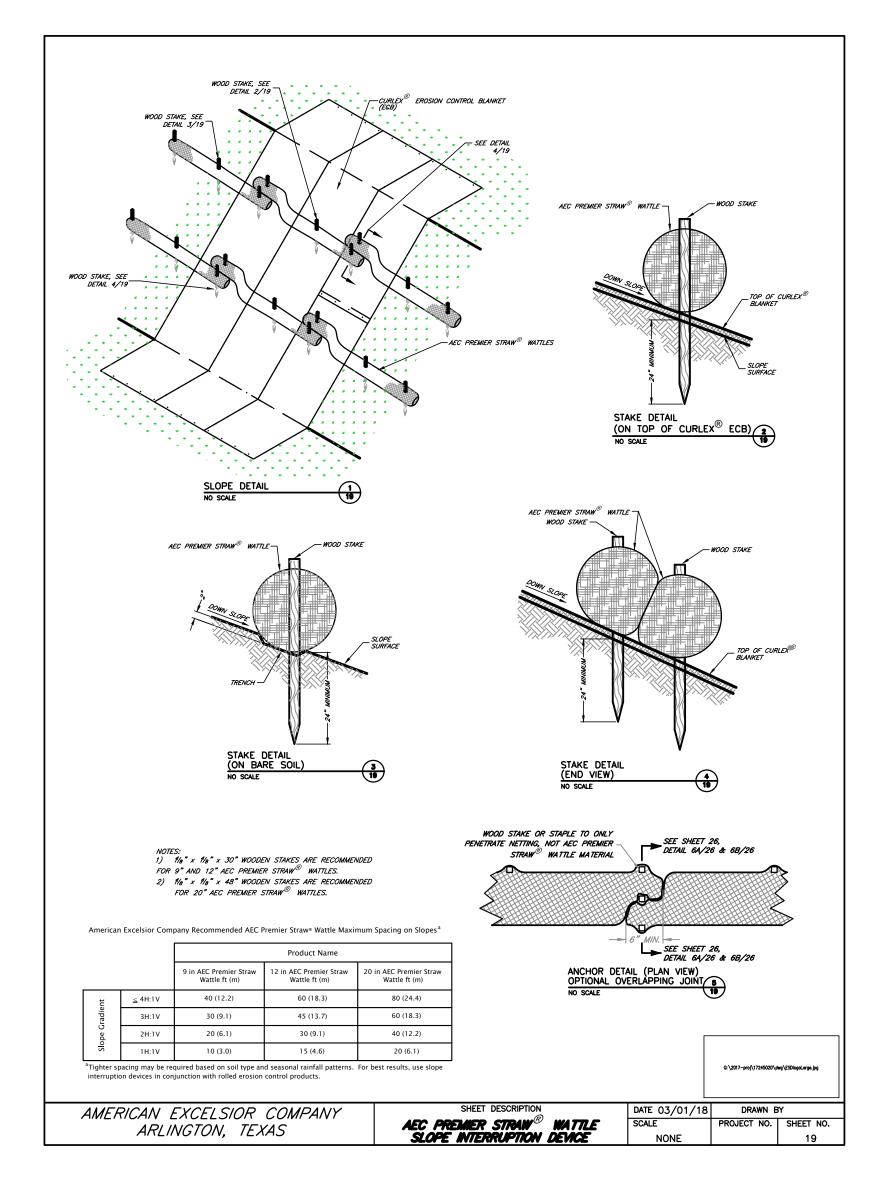
4. REMOVE TREES THAT HAVE BEEN VERIFIED IN CONSTRUCTION ZONE OF THIS SITE.

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.

9. UPON COMPLETION OF CONSTRUCTION OF ALL IMPROVEMENTS REDISTRIBUTE TOP SOIL 10. MULCH SEED ALL DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF ALL

12. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON THE ESTABLISHMENT OF THE TURF. CONTACT THE MONROE COUNTY HIGHWAY DEPARTMENT STORMWATER

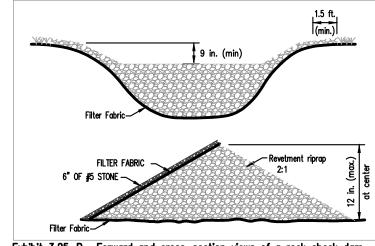


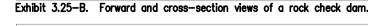


**REQUIREMENTS** Contributing drainage area: 2 acres maximum. (Exhibit 3.25-B Dam center: 2 ft. maximum height but at least 9 in. lower than the outer edges at natural ground elevation. **Dam side slope:** 2:1 or flatter.

**Rock size:** INDOT Revetment Riprap.

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.







### 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
  - \* When the dams are no longer needed, remove the rock and stabilize channel, using an erosion—resistant lining if necessary.



### PRACTICE 3.16 RIPRAP

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

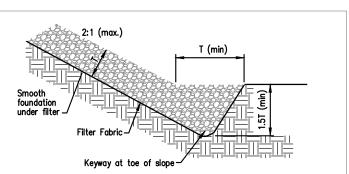
**REQUIREMENTS** Rock: Hard, angular, and weather—resistant, having a specific gravity of at **Gradation:** Well-graded stone, 50% (by weight) larger than the specified  $d_{50}$ ; however, the largest pieces should not exceed two times the specified  $d_{50}$ , and no more that 15% of the pieces (by 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.

**Minimum thickness:** Two times the specified  $d_{50}$  stone diameter.

## INSTALLATION SUBGRADE PREPARATION:

(Exhibit 3.16-B) 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

Slope: 2:1 or flatter, unless approved in the erosion and sediment control plan.



## 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 rip rap 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:

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

1. Immediately after installing the filter, add the riprap to full thickness in

- 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 overfalls.

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

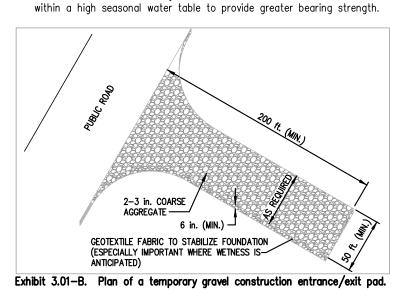
## \* To provide a stable entrance/exit condition from the construction site.

\* To keep mud and sediment off public roads.

### **REQUIREMENTS** Material: 2-3 in. washed stone (INDOT CA No. 2) over a stable foundation. Thickness: 6 in. minimum

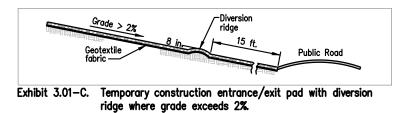
Width: 50 ft. minimum or full width of entrance/exit roadway, whichever is Length: 200 ft. minimum. The length can be shorter for small sites such as for an individual home. Washing facility (optional): Level area with 3 in. washed stone minimum or

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



**INSTALLATION** 1. Avoid locating on steep slopes or at curves in public roads.

- (Exhibit 3.01-C) 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



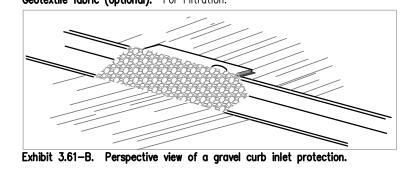
- MAINTENANCE \* Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
  - Reshape pad as needed for drainage and runoff control.
  - ' Top dress with clean stone as needed.
  - \* Immediately remove mud and sediment tracked or washed onto public roads by brushing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



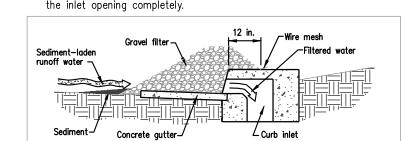
PRACTICE 3.61-B **GRAVEL CURB INLET PROTECTION** 

**REQUIREMENTS** Contributing drainage area: 1 acre maximum. (Exhibit 3.61-B) 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

> **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.



- **INSTALLATION** 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 4. Pile gravel over the wire mesh to anchor it against the curb, covering



**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

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

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



### PRACTICE 3.74 SILT FENCE (SEDIMENT FENCE)

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** 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.) Exhibit 3.74—B. Maximum Land Spacing of posts: 8 ft. maximum if fence supported by wire, 6 ft. for extra-strength fabric without wire Max. distance Land slope above fence

Fence height: High enough so depth of impounded water does not exceed Less than 2% 1 1/2 ft. at any point along fence line. | 2 to 5% Support wire (optional): 14 gauge, 6 in. 5 to 10% 50 ft. wire fence (needed if using standard- | 10 to 20% 25 ft. 15 ft. More than 20% 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. \* 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 Tensile strenath at 20% elongation: 30lbs./linear in. 50lbs./linear in. Standard strength 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 220 gal./min./sq.ft. 15 gal. /min./sq.ft. UV resistance

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.

1. Determine the appropriate location for a reinforced, stabilized bypass flow 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  $1 \frac{1}{2}$  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.

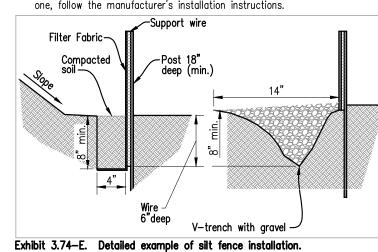
### **OUTLET CONSTRUCTION (OPTIONAL)** 1. Along the entire intended fence line, dig an 8 in. deep flat—bottomed or

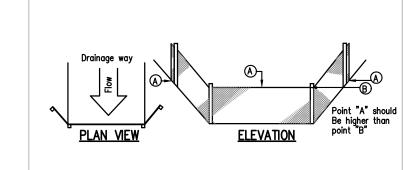
**OUTLET CONSTRUCTION (OPTIONAL)** 

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 if the fence is supported by wire or 6 ft. if extra strength fabric is used without support wire. Adjust spacing, if necessary, to ensure that posts are set at the low points along the fence line. (NOTE: If the fence has pre attached posts or stakes, drive them deep enough so the fabric is satisfactory

in the trench as described in step 6.) 3. Fasten support wire fence to the upslope side of the posts, extending it 8 in. into the trench.

- 4. Run a continuous length of geotextile fabric in front of the support wire and posts avoiding joints, particularly at low points in the fence line. 5. If a joint is necessary, nail the overlap to the nearest post with a lath. 6. Place the bottom 1 ft. of fabric in the 8 in. deep trench, extending the remaining 4 in. toward the upslope side.
- 7. Backfill the trench with compacted earth or gravel. NOTE: If using a pre-packed commercial silt fence rather than constructing one, follow the manufacturer's installation instructions.





**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.

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itle: **HUNTER VALLEY** ROAD EXTENSION SWPPP DETAILS

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: C28

project no.: **402224** 



### 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. \* 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 1. Select the type and weight of erosion control blanket to fit the site

- (Exhibit 3.54—B) 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 appropiate (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 (silt 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

MAINTENANCE \* During vegetative establishment, inspect after storm events for any

determined by the site conditions.

\* 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.

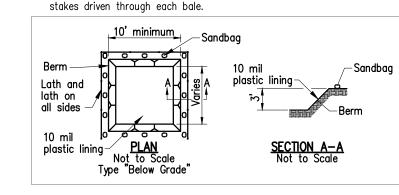
\* After vegetative establishment, check the treated area periodically.

### **TEMPORARY** CONCRETE WASHOUT AREA

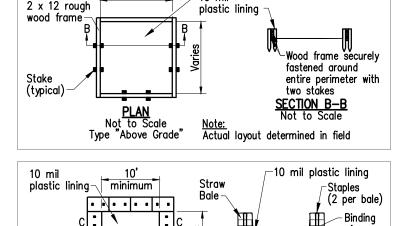
**REQUIREMENTS** Capacity: Temporary washout facilities shall be constructed above or below grade at the option of the contractor. Temporary washout facilities shall be constructed and maintained in sufficient quality and size to contain all

liquid and concrete waste generated by washout operations. Type: Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical. **Location:** Facilities shall be located a minimum of 50' from storm drain inlets, open drainage facilities, and water courses. Plastic Lining Material: Minimum 10 mil polyethylene sheeting and should be free of holes, tears or other defects.

**Straw Bale Dimensions:** Approximately 14i n. x 18 in. x 36 in. **Bale Anchoring:** Two 36-in. long (minimum) steel rebars or 2 x 2-in. hardwood



Two-staked 10' minimum 10 mil



Native material /

SECTION C—C Not to Scale

\_ (optional) —

Metal Stakes

STAPLE DETAIL
Not to Scale

Actual layout determined in field INSTALLATION \* Temporary concrete washout facilities shall be constructed as shown in the above details, and as described below. All temporary washout facilities

(typical)

all liquid and concrete waste generated. "Below Grade" 1. A pit shall be excavated with a minimum width of 10', depth of 3' and to contain all liquid and concrete waste generated.

steel rebar or 2 in. x 2 in. hardwood stakes.

with Straw Bales

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.

shall have at minimum 10' width, 3' depth, and sufficient length to contain

"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

3. The wood farm shall be lined with 10 mil plastic sheeting which shall be attached to the outside face of the wood frame. Straw bales shall be arranged such that they create a basin with a minimum **with Straw Bales** width of 10' and length sufficient to contain all liquid and concrete waste

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.

### 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.

SITE PREPARATION:

APPLICATION

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

eed Species*	Rate/acre	Planting Depth	Optimum dates
heat or rye	150 lbs.	1 to 1 1/2 in.	9/15 to 10/30

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. <sup>'</sup>	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.	<del>5/1 to 6/1</del>
Cudanarana	35 lba	1 to 2 in	5/1 +0 7/30
ouddingi doo	00 100.	1 (0 2 11)	<del>- 5/1 to 7/50 -</del>

area to be seeded will remain idle for more than a year (Practice 3.12). \*\* Seeding done outside the optimum dates increases the chances of seeding failure.

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



## **SWALE SEEDING**

**REQUIREMENTS** Site and seedbed preparation: Proposed pond grading, as shown on Grading Plan. Entire area to be swale seeded shall be cleared of all underbrush and debris as to expose topsoil but not to disturb existing trees. **Plant Species:** Swale Seeding Mix as referred to in the latest JF NEW catalog (574.586.2412) or equal.

**APPLICATION** 1/4 acre permanent grasses as referred to in the latest JF NEW catalog (574.586.2412) or equal.

shows only wheat/rye fall seeded.)

### 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 SITE PREPARATION:

## (Exhibit 3.13-B 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, 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). I. 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,

2. Apply mulch upon completion of grading (Practice 3.15). 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

Exhibit 3.13-B.	Temporary Dorman	t or Frost Seeding Recommendation
Seed	species*	Rate per acre
Whea	t or rye	150lbs.
Sprin	g oats	150 lbs.
Annu	al ryegrass	60 lbs.

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

Seed species*	Rate per acre	Optimum soil pH
OPEN AND DISTRIBUTED AREAS	(REMAINING IDLE	MORE THAN 1 YR)
Perennial ryegrass     + white or ladino clover*	50 to 75 lbs.	5.6 to 7.0
2. Kentucky bluegrass	30 lbs.	5.5 to 7.5
+ switchgrass	5 lbs.	
+ timothy	6 lbs.	
+ perennial ryegrass	15 lbs.	
+ white or ladino clover*		
<ul><li>3. Perennial ryegrass</li><li>+ prairie switchgrass</li></ul>	22 to 45 lbs. 22 to 45 lbs.	5.6 to 7.0
<ul><li>4. Prarie switch grass</li><li>+ white or ladino clover*</li></ul>		5.5 to 7.5
STEEP BANKS AND CUTS, LOW	•	REAS (NOT MOWED).
1. Smooth bromegrass	15 to 30 lbs.	3.5 (0 7.5
2. Prarie switch grass + white or ladino clover*	50 to 75 lbs. 1 1/2 to 3 lbs.	5.5 to 7.5
3. Prarie switch grass	50 to 75 lbs.	5.5 to 7.5

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	0.)	
4. Orchardarass	30 to 45 lbs.	5.6 to 7.0
+ red clover*	15 to 30 lbs.	
+ ladino clover*	$1 \frac{1}{2}$ to 3 lbs.	
5. Crownvetch#	15 to 18 lbs.	5.6 to 7.0
+ prairie switcharass	30 to 45 lbe.	
- (Recommended north of US 46	<del>).)</del>	
LAWNS AND HIGH MAINTENANO	CE AREAS	
1. Bluegrass	160 to 210 lbs.	5.5 to 7.
2. Perennial ryegrass (turf-type)		5.6 to 7.
+ bluegrass	105 to 135 lbs.	0.0 10 7.
3. Prarie switch grass (turf-type		5.6 to 7.
+ bluegrass	30 to 45 lbs.	0.0 10 7.
CHANNELS AND AREAS OF CO		
	150 to 225 lbs.	5.6 to 7.0
<ol> <li>Parennial ryegrass</li> <li>+ white or ladino clover*</li> </ol>	1 1/2 to 3 lbs.	3.0 (0 7.
	30 lbs.	5.5 to 7.5
2. Kentucky bluegrass	JU 105.	5.5 (0 7.
+ 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.
+ white or ladino clover*	1 1/2 to 3 lbs.	5.5 (0 7.
	150 to 225 lbs.	5.5 to 7.
4. Prarie switch grass	22 to 30 lbs.	5.5 (0 /.
+ perennial bluegrass	ZZ (U JU IDS.	

+ 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.

\* 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

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.

for temporary seeding or 3.12 for permanent seeding.

- 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.)
  - recommendations.
  - 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

wheat—no more than 1/2 bu./acre.

- \* If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. (Contact your SWCD or Cooperative Extension
- \* If additional fertilization is needed to get a satisfactory stand, do so



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

> 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** Permanently seed all final grade areas (e.g., landscape berms, drainage swales, (Exhibit 3.12-B, 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 eauivalent, 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). 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.
- 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.)

3. If drilling or broadcasting, firm the seedbed with a roller or

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

OPEN AND DISTURBED AREAS (REMAINING IDLE MORE THAN 1 YR.) 1. Perennial ryegrass 35 to 50 lbs. 5.6 to 7.0 + white or ladino clover\* 1 to 2 lbs. 5.5 to 7.5 Kentucky bluegrass 20 lbs. 3 lbs. + switchgrass 4 lbs. + timothy + 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. T MOWED)

STEEP BANKS AND CUTS, LOW	MAINTENANCE AREAS	S (NOT MOWED)
t sed clevert	10 to 20 lbs.	0.0 to 7.0
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

LAWNS AND HIGH MAINTENANCE AREAS 105 to 150 lbs. 2. Perennial ryegrass (turf-type) 45 to 60 lbs. 5.6 to 7.0 70 to 90 lbs. 3. Prarie switch grass(turf-type)130 to 107 lbs. + bluegrass 20 to 30 lbs. CHANNELS AND AREAS OF CONCENTRATED FLOW

5.6 to 7.0 100 to 150 lbs. 1. Perennial ryegrass + white or ladino clover\* 1 to 2 lbs. 5.5 to 7.5 2. Kentucky bluegrass 20 lbs. + switchgrass 3 lbs. + timothy 4 lbs. + perennial ryegrass 10 lbs. + white or ladino clover\* 1 to 2 lbs. 5.5 to 7.5 Prarie switch grass 100 to 150 lbs. + ladino or white clover\* 1 to 2 lbs. 5.5 to 7.5 4. Prarie switch grass 100 to 150 lbs. + 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 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;

\* Plan to add fertilizer the following growing season according to soil test

\* Repair damaged, bare or sparse areas by filling any gullies, re-fertilizing,

area either by over—seeding or by re—seeding and mulching after re-preparing the seedbed.

office for assistance.) according to soil test recommendations.

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itle: **HUNTER VALLEY** ROAD EXTENSION SWPPP DETAILS

designed by: AJW drawn by: **AJW** checked by: **JSF** sheet no: **C29** 

project no.: **402224**