

Common Issues and Comments for INDOT Plan Submittals INDOT Roadway Design Conference Tuesday May 12, 2026



Introductions

Presenters:

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Monte Mildenberg, P.E.

Senior Engineer

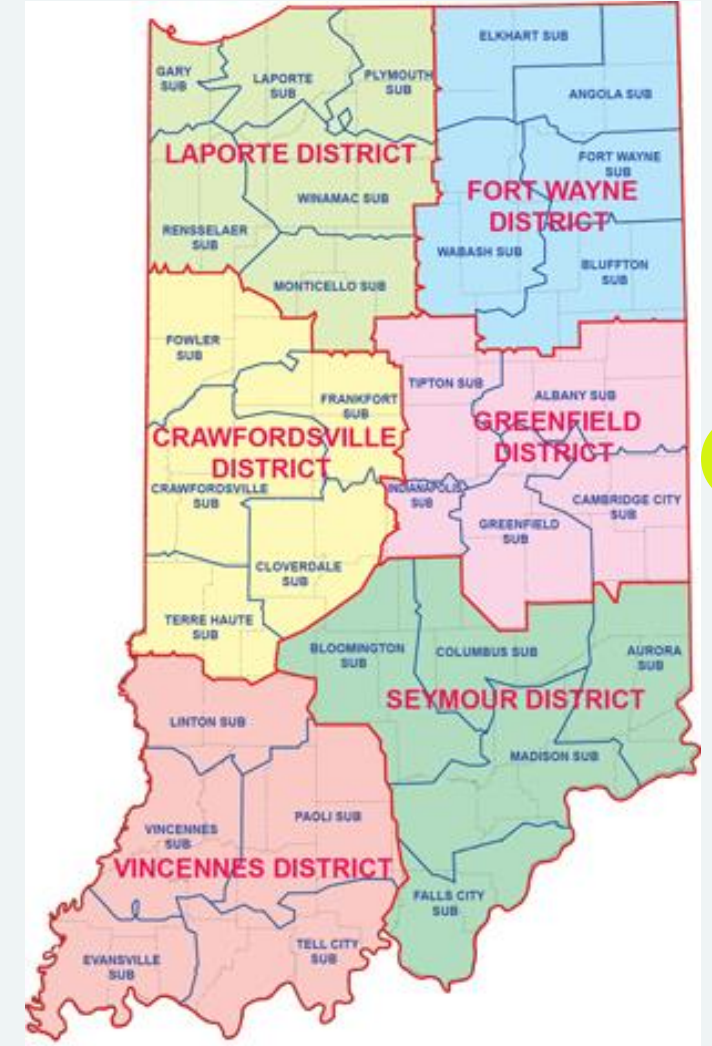
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John Beery, P.E.

Transportation Services Director

Egis



Agenda Topics

Requirements for Various Stages
Plans

Supporting Documents

Design Calculations and Computations

Estimates

Specifications

Submittal
Coordinators

1. Crawfordville
2. Fort Wayne
3. Greenfield
4. LaPorte
5. Seymour
6. Vincennes
7. Central Office



Plan Submittal and Project Stages_

Project Stages

- Engineering Assessment
- Stage 1 – 25 to 30% Complete
- PFC – Approximately 30% Complete
- Stage 2 – Approximately 55% Complete
- Stage 3 – 95% Complete
- Final Tracings – 100% Complete
- Post Tracings

INDIANA DEPARTMENT OF TRANSPORTATION—2013 DESIGN MANUAL

CHAPTER 14

Plan Preparation

Design Memos, RSPs and USPs

(posted January 28, 2026)
Effective for
June, July, and August 2026 lettings.
(03/10/26 - Updated RP D 801-T-227d (replaced "ROAD CONSTRUCTION AHEAD" sign with "ROAD WORK AHEAD" and "END CONSTRUCTION" sign with "END WORK")

- Check Design Memos before any submittal.
- Complete headers
- Check all applicable RSP
- Make sure all documents are current documents and up to date.
 - RSP Menu
 - Utility Coordination RSP
- USP/RSP Menu saved over the other
- USPs should be reviewed by Stage 3

Contract _____
District _____

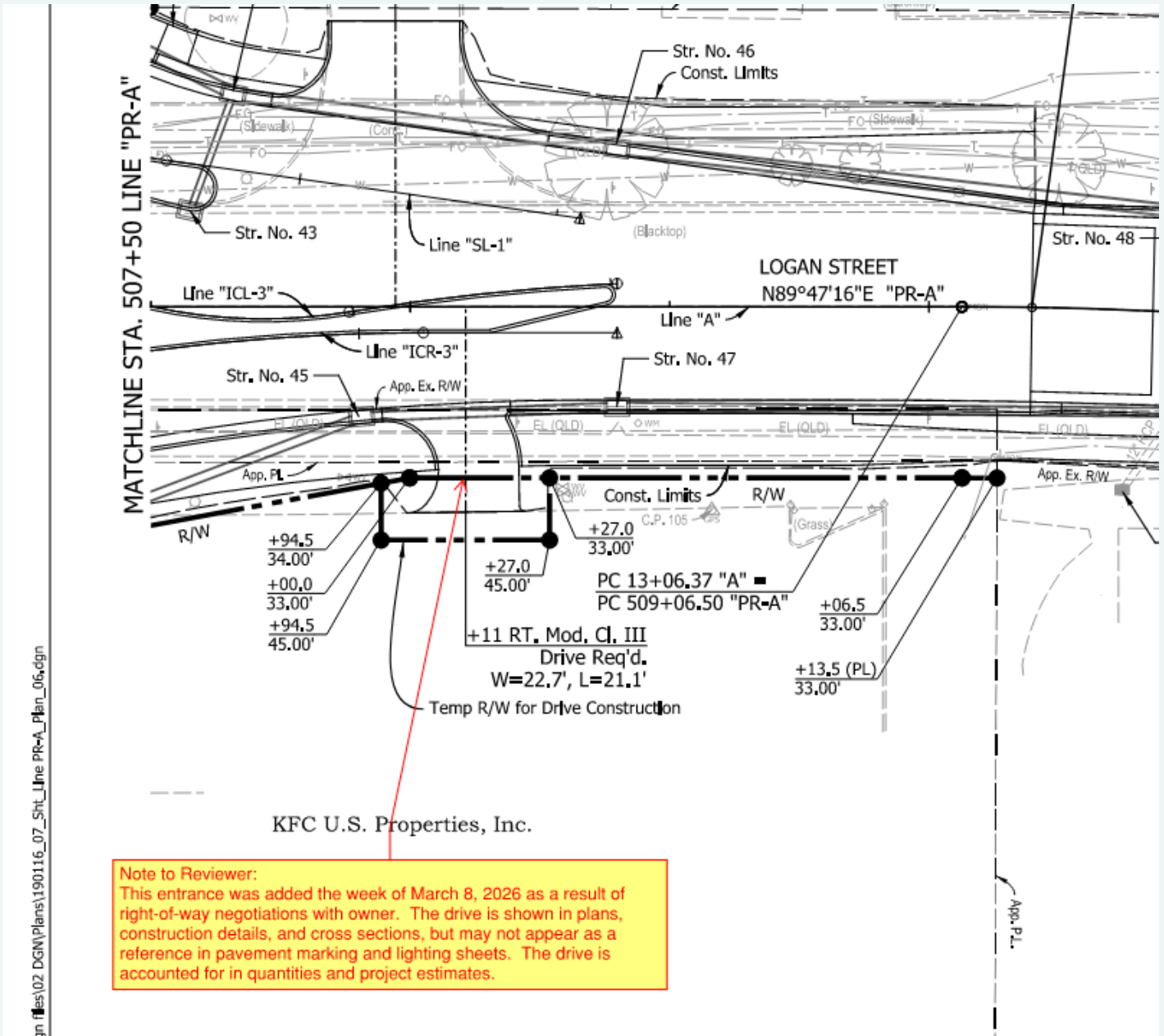
NOTE: This Menu is divided into two sections:
SECTION I - Standard Recurring Special Provisions and Recurring Plan Details
and
SECTION II - Contract Specific Recurring Special Provisions.
Please review both sections to locate and ensure the correct items are placed in the contract.

Place In Contract (X)	Attach. Req'd. (X)	RSP Number	Title	A or R	Adopted or Revised Date	Letting Effective Date	Basis for Use
SECTION I: Standard Recurring Special Provisions and Recurring Plan Details							
		100-C-146	Payment of Predetermined Minimum Wage Determination (Davis-Bacon Act) IN 20250001	R	06-16-22	01-06-23	Required for all contracts in Lake, LaPorte, Porter, and St. Joseph counties except building construction. Do not use for maintenance contracts such as: mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming.
		100-C-147	Payment of Predetermined Minimum Wage Determination (Davis-Bacon Act) IN 20250006	R	06-16-22	01-06-23	Required for all contracts in counties other than Lake, LaPorte, Porter, and St. Joseph except building construction. Do not use for maintenance contracts such as: mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming.
		100-C-151A	FHWA-1273	R	10-23-23	10-23-23	Required for all Federal Aid contracts.
		100-C-151D	Executive Order 11246	R	05-01-25	09-01-25	Required for all Federal Aid contracts.
X		100-C-151E	Title VI Assurances	R	05-21-15	08-01-15	Required for all contracts.

Notes to Reviewer_

Potential Uses

- Plan Changes beyond scope or control at relevant Stage Submittal
- Waiting on approval that affects design element
- Small changes in scope prior to submittal
- Pending Decisions on Project
- Should be accounted for in estimate if item affects cost.
- Should not be used solely as a substitute for incomplete work.
- Use is appropriate but should be used sparingly.



Documentation Submission and Completion Time

Project Scope

- Approved project scope should be submitted with stage 1 submittal

Design Exception

- Should be identified at Stage 1 and completed before Stage 3

Proprietary Material

- Should be submitted at Stage 2 and completed before Stage 3

ADA Technical Inquiry

- Should be submitted at Stage 2 and completed before Stage 3

Separate Traffic Plan Submittal

- Submitted at Stage 2

TMP & IHCP Documentation

- Should start at Stage 1 and completed before Stage 3

Cost Estimate

- Signed and checked, CES format, identify nonparticipating items. Comparable with scope— should be under budget

- USPs – Submitted by Stage 3

Upload PSE checklist with Stage 3 submittal as FT.

Plan Review Process

- Road, Bridge and Traffic review of design plans with review comments and scoring documentation.
- Includes INDOT staff and Consultant Review teams under INDOT supervision. Egis has assisted with typically 200 road plan review submissions each calendar year.
- Documents are submitted via ERMS in pdf format and then assigned to a reviewer.
- Tip: Make sure files are using INDOT file name per project naming conventions on INDOT website.
- EdDoc103-02-02NamingConventions.docx

INDOT PROJECT NAMING CONVENTIONS

Rev. 08/14/2024

Submittal	Sub. Abbreviation
Construction Change	ConstChg
Engineer's Report	EngRpt
Environmental	ENV
Final Field Check	FFC
Final Hearing	FHRG
Final Right-of-Way	FRW
Final Tracings*	FT
Geotechnical	GEO
Grade Review (Road)	GR
Hydraulics (See Note 7.)	HYD
Load Rating	LOADRTG
Pavement Design	PVMTDGN
Preliminary Field Check	PFC
Preliminary Geometrics Review	PGR
Preliminary Right-of-Way	PRW
Public Hearing	PHRG
Railroad	RR
Stage 1	STG1
Stage 2	STG2
Stage 3	STG3
Survey	SVY
Traffic	TRAF
Utility	UTIL

Permits Description	Descr. Abbreviation
Construction Stormwater General Permit	CSGP
County Drain Permit	CoDrain
FAA Navigable Airspace/Tall Structure Permit	FAA
IDEM 401 Water Quality Permit	401Wtr
IDNR Const. in a Floodway Permit	DNR
IDNR Lake Preservation Act Permit	LakePres
National Pollutant Discharge Elimination System Permit	NPDES
US Coast Guard Bridge Permit (Section 9)	CstGdBr
US Coast Guard Const., Dumping, Dredging Permit	CstGdCDD
USACE 404 Permit	404Corps
USACE Levee Permit	LeveeCorps

*The file naming convention and abbreviations are essential for locating specific types of submittals within ERMS. For Final Tracings, the required ERMS document type and file format for submissions to Contract Administration are included on the Final Tracings Checklist.

Notes:

Access to ERMS is available through the INDOT Technical Applications

Description	Descr. Abbreviation
[Previous Submittal] Mark-ups	[Previous Submittal] MrkUps
10-Week Letter	10WkLtr
Abbreviated Engineer's Assessment	AbbEngRpt
All Projects Commitments Report	Commit
Asbestos Certification (14-ID)	AsbCert
Asbestos Report	AsbRpt
Bridge Preventive Maintenance Meeting Minutes	BrPMtgMin
Bridge Rehabilitation Report	BrRhbRpt
Bridge Load Rating Memo	LoadRtgMemo
Contract Preparation Documents Form (14-1C)	ContPrepDoc
Correspondence	Corresp
Cost Estimate	Est
Cross Sections	Xsect
Deeds	Deeds
Demolition Letter	DemoLtr
Design Computations (including but not limited to – roadway design, bridge design, traffic design, hydraulic approval memo, scour memo, inlet spacing, intersection sight distance, MOT)	DgnComps
Draft Engineer's Report	DraftEngRpt
Draft Environmental Document	DraftEnvDoc
Draft Transportation Management Plan	DraftTMP
Environmental Consultation Form (7-3C)	EnvConFrm
Environmental Review Plans	EnvRvwPlans
Experimental Features Approval (if applicable)	ExperFeatAppr
Final Engineer's Report	FinalEngRpt
Final Environmental Document	FinalEnvDoc
Final Pavement Design	FinalPvmtDgn
Final Transportation Management Plan	FinalTMP
Foundation Review	FndRvw
Geotechnical Report	GeoRpt
Geotechnical Review of Final Check Prints Form (107-5A)	GeoRvwFrm
Geotechnical Review of Final Check Prints Plans	GeoRvwPlans
Geotechnical Waiver	GeoWaiver
Guarantees / Warranties Approval	Guar/Warr Appr
Historic Bridge Alternatives Analysis - Draft /Final(See Note 6.)	DraftHBAA or FinalHBAA
Incentive/Disincentive Clauses	IncenDisincenClau
Initial Financial Plan	InitFinPlan
Interchange Access Document	IJRpt
Interstate Highways Congestion Policy Exception	IHCPEXcep
Inspection Report	InspRpt
Level 1 Design Criteria Checklist (40-8B) (include Level 1 computations)	Lvl1Chk
Level 1 Design Exception Request (40-8C or 40-8D)	Lvl1Exc
Level 2 Design Exception Request	Lvl2Exc
Lighting Design Model	LtgDgnMod
Load Rating Review Plans	LoadRtgRvwPlans
Location Control Route Survey Plat	LCRSP
Official Detour Route (if not on plans)	OfficialDetRte
Pavement Patching Table	PvmtPatching

Title Sheet Typical Review Comments

Verify letting date with current year of INDOT Standard Specifications.

INDIANA DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS DATED 2026
TO BE USED WITH THESE PLANS

Verify correct project number per DM 25-14 changes.

Title Sheet (INDOT Template Documents)

- Removed “Project” heading in the upper left and lower right project information boxes.
- Replaced “Project No.” with “Designation No.” in the center of the sheet. Only the designation number for the current plan set should be shown. Suffixes P.E., R/W, and Const. should not be shown.
- Added “(Lead)” to the Designation entry on the Project Kin Information table.

Complete KIN Project Table and List (LEAD) Des Number In Table

DESIGNATION
ADDRESS
CONTACT
DATE

CULVERT ASSETS		
DES. NO.	CULVERT ASSET ID	WORK TYPE
2200516	CLV-11685	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River

KIN PROJECT INFORMATION	
DES. NO.	PROJECT DESCRIPTION
2200516	SR 56 over UNT to West Fork Blue River
2200516	SR 56 over UNT to West Fork Blue River

INDIANA DEPARTMENT OF TRANSPORTATION

ROAD PLANS

SMALL STRUCTURE REPLACEMENTS

DESIGNATION NO. 2200516

No Additional Right-of-Way Required

TRAFFIC DATA

DESIGN SPEED	DESIGN LANE WIDTH	DESIGN TRUCK
55 MPH	11' 0"	10%

DESIGN DATA

DESIGN SPEED	DESIGN LANE WIDTH	DESIGN TRUCK
55 MPH	11' 0"	10%

TRAFFIC DATA

DESIGN SPEED	DESIGN LANE WIDTH	DESIGN TRUCK
55 MPH	11' 0"	10%

DESIGN DATA

DESIGN SPEED	DESIGN LANE WIDTH	DESIGN TRUCK
55 MPH	11' 0"	10%

CLV-11685

ROUTE: SR 56 AT RP: 105+12

SR 56 over UNT to West Fork Blue River
Located 4.31 miles East of the Salem Bypass in Section 6,
T-3-N, R-5-E, Monroe Township, Washington County, Indiana

CLV-11597

ROUTE: SR 56 AT RP: 107+99

SR 56 over UNT to West Fork Blue River
Located 7.16 miles East of the Salem Bypass in Section 28,
T-3-N, R-5-E, Gibson Township, Washington County, Indiana

CLV-42855

ROUTE: SR 135 AT RP: 47+29

W Pump Station Rd adjacent to SR 135 over UNT to Highland Creek
Located at W Pump Station Rd Intersection in Section 32,
T-3-N, R-5-E, Washington Township, Washington County, Indiana

CLV-42595

ROUTE: SR 135 AT RP: 54+72

SR 135 over UNT to Duncan Branch
Located 1.26 miles South of Muscatatuck River in Section 29,
T-3-N, R-5-E, Monroe Township, Washington County, Indiana

CLV-42585

ROUTE: SR 135 AT RP: 54+95

SR 135 over UNT to Duncan Branch
Located 0.96 miles South of Muscatatuck River in Section 29,
T-3-N, R-5-E, Monroe Township, Washington County, Indiana

PROJECT LOCATION
CLV-42595
STA. 597+19 "H"

PROJECT LOCATION
CLV-42585
STA. 609+59 "H"

PROJECT LOCATION
CLV-11597
STA. 632+37 "A"

PROJECT LOCATION
CLV-42855
STA. 4+09 TO
STA. 4+59 "S-4-H"

PROJECT LOCATION
CLV-11685
STA. 280+45 TO
STA. 280+95 "A"

LOCATION MAP
Washington County

SCALE: 1"=5000'

INDIANA DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS DATED 2026
TO BE USED WITH THESE PLANS

egis

FINAL TRACINGS
DATE: 06/01/2026

APPROVED FOR LITTING

INDIANA DEPARTMENT OF TRANSPORTATION

DESIGNATION
ADDRESS
CONTACT
DATE

CULVERT ASSETS		
DES. NO.	CULVERT ASSET ID	WORK TYPE
2200516	CLV-11685	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River
2200516	CLV-11597	SR 56 over UNT to West Fork Blue River

KIN PROJECT INFORMATION	
DES. NO.	PROJECT DESCRIPTION
2200516	SR 56 over UNT to West Fork Blue River
2200516	SR 56 over UNT to West Fork Blue River

Egis | Common Issues and Tips for INDOT Plan Submittals

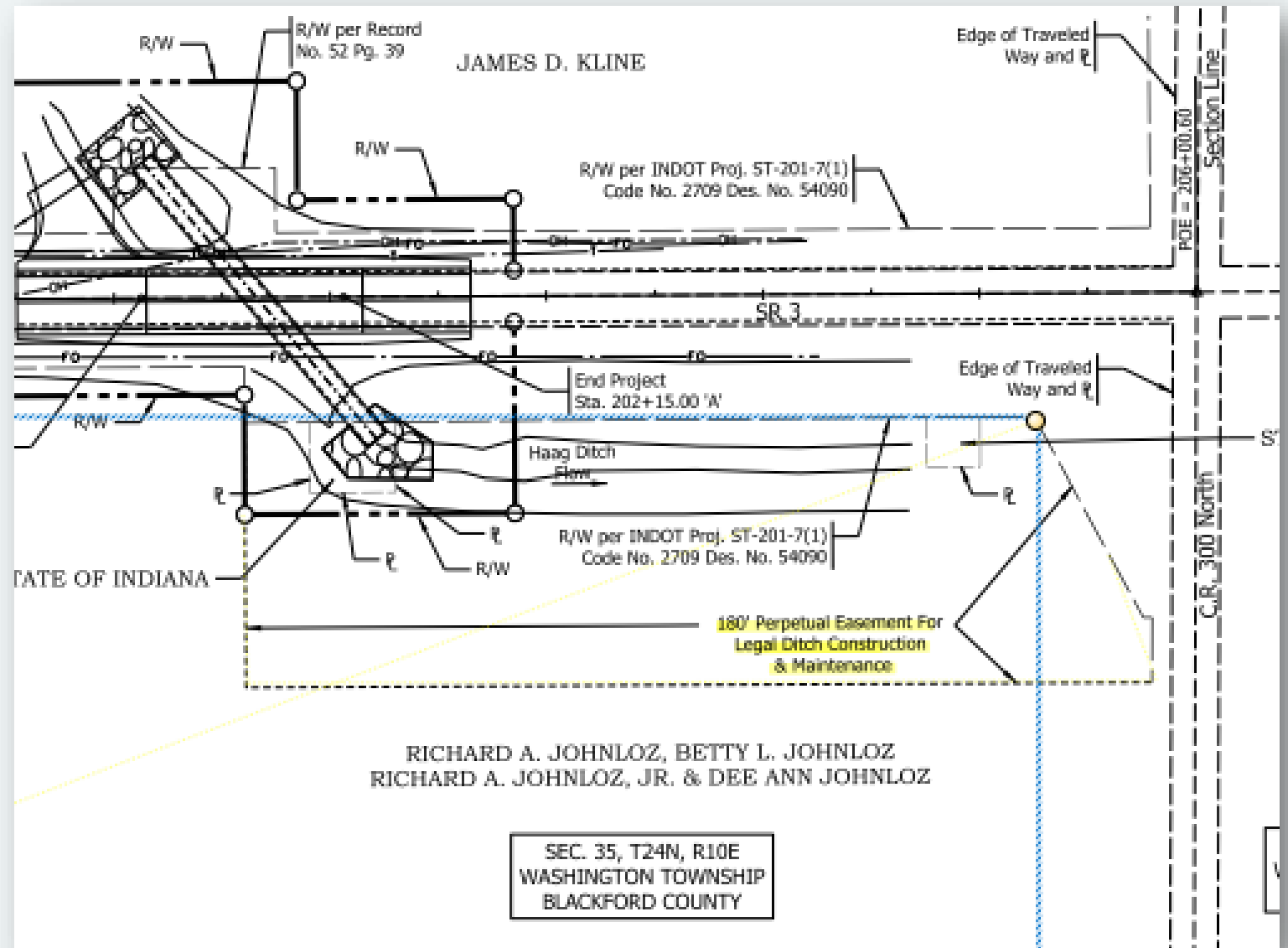
Data sensitivity - Internal

Egis | Common Issues and Tips for INDOT Plan Submittals

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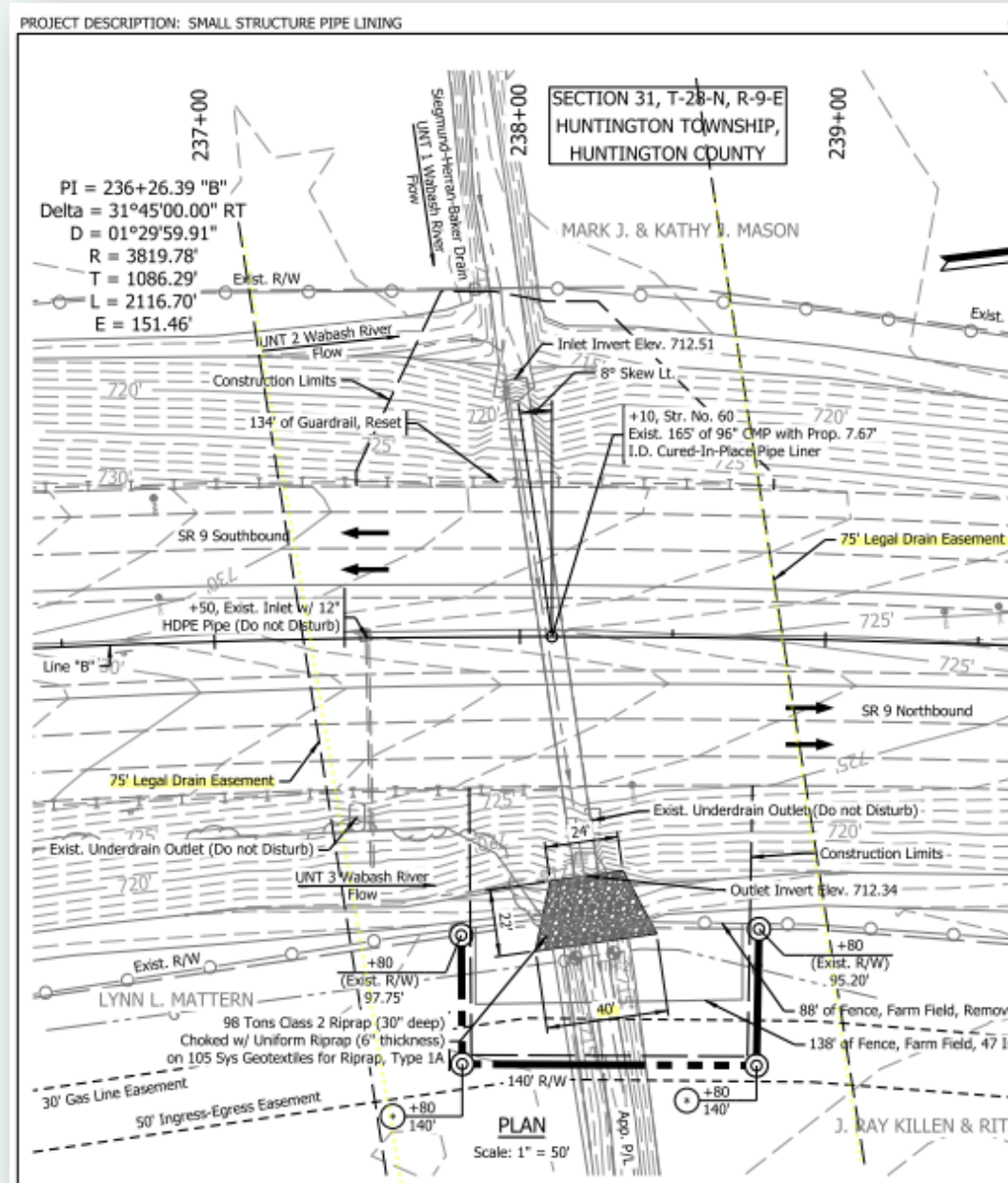
Small Structures

Indicate Legal Drain name and easements in plans.



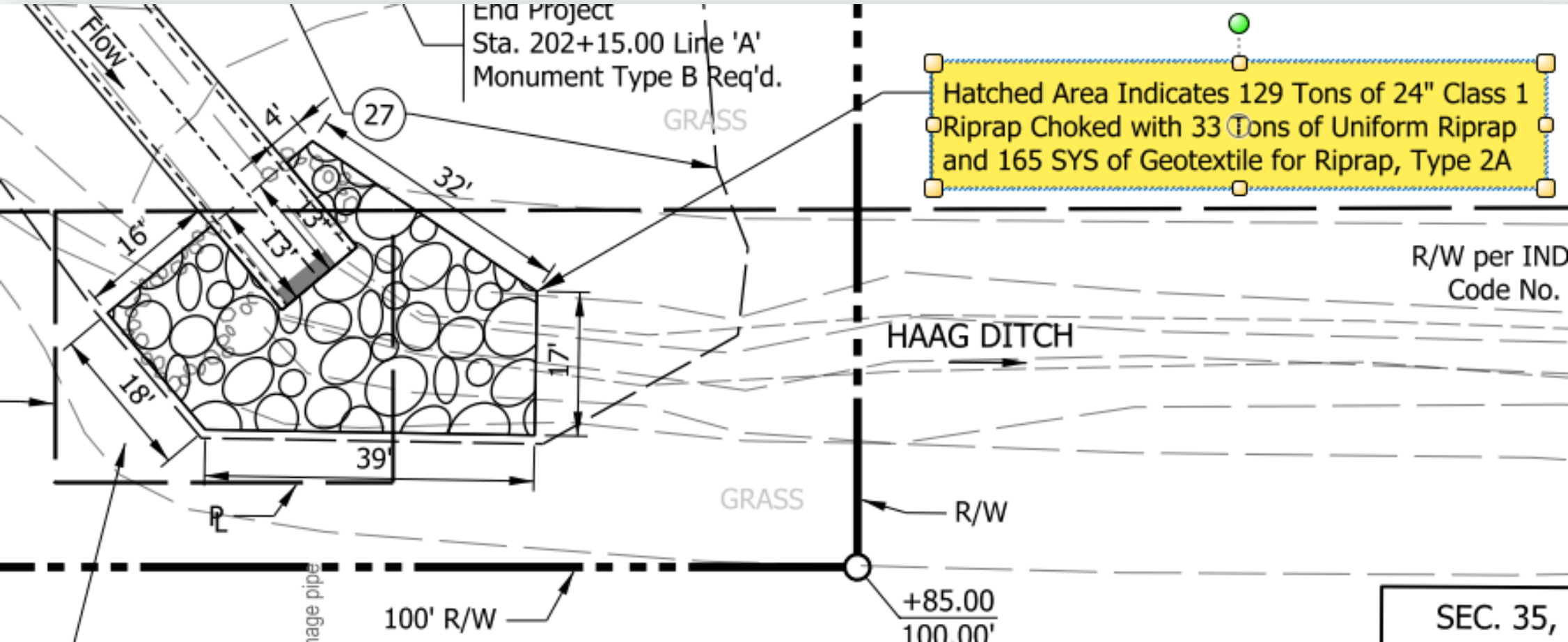
Small Structures

Indicate Legal Drain name and easement limits in plans.



Small Structures_

Provide Dimensions and Notes for Rip Rap

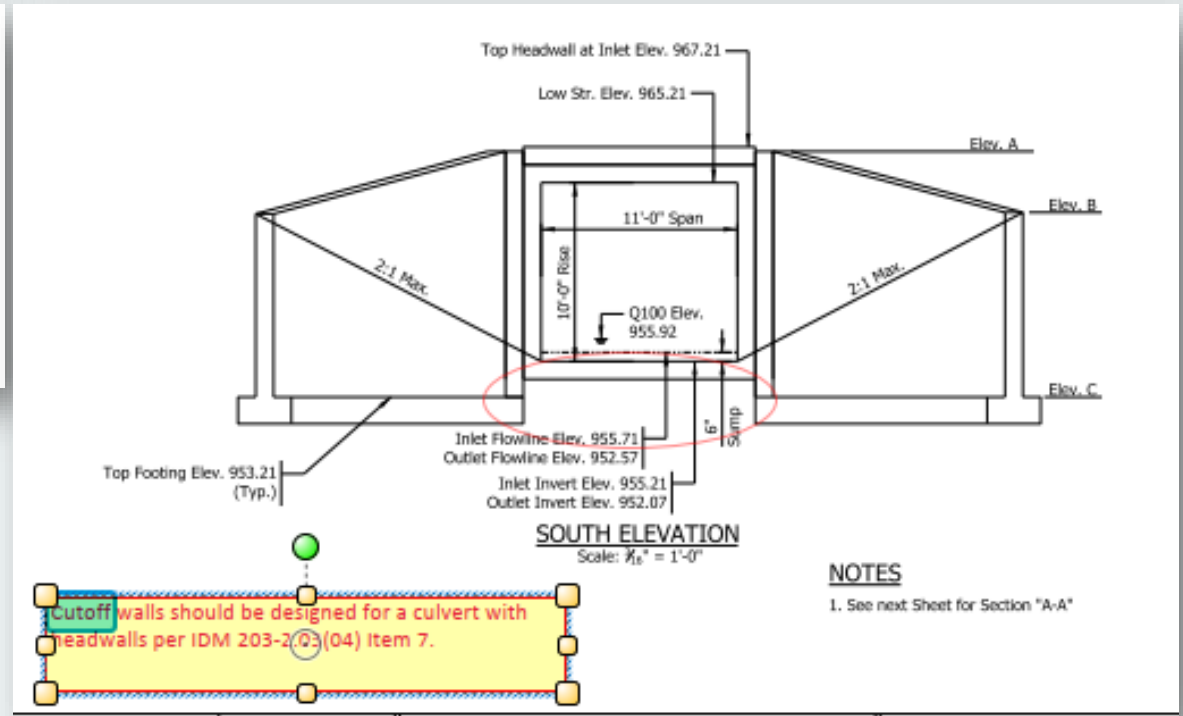


Small Structures – Cut Off Walls

- Design for box culverts should have Cutoff Wall per IDM 203-2.03(04) item 7
- Originally in DM 22-24. Now in the IDM. (Archived 1-10-2025)

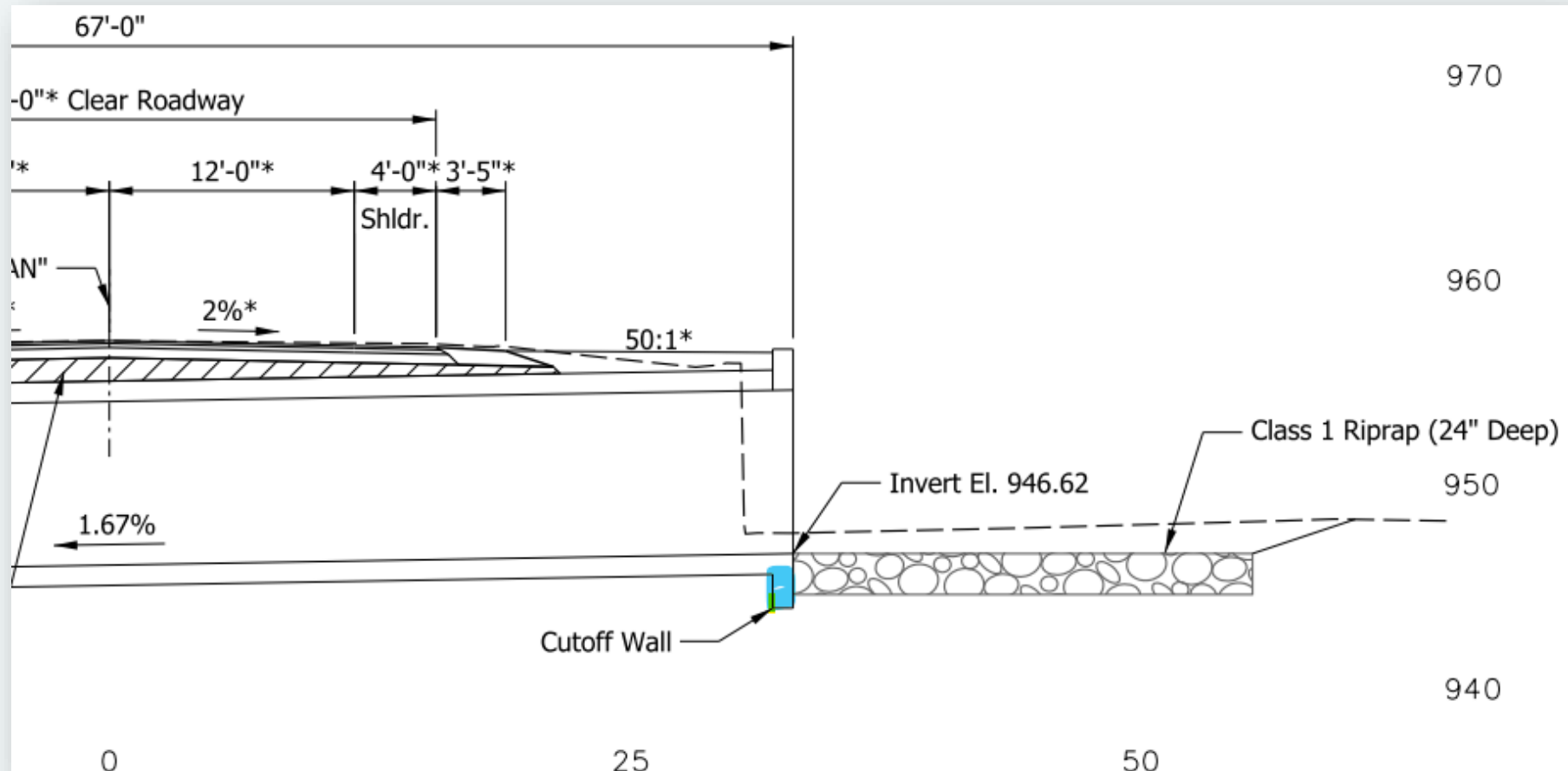
7. Cutoff Wall.

- Used to prevent piping along the culvert barrel and undermining at the culvert end.
- Should be used for all box structures with a concrete bottom.
 - If bedding material (i.e. crushed stone, borrow, etc.) is present, the cutoff wall should extend 6 inches below the bedding material.
 - If bedding material is not present, the depth of the cutoff wall should be a minimum of 20 inches below the bottom of the culvert.



Small Structures – Cut Off Walls

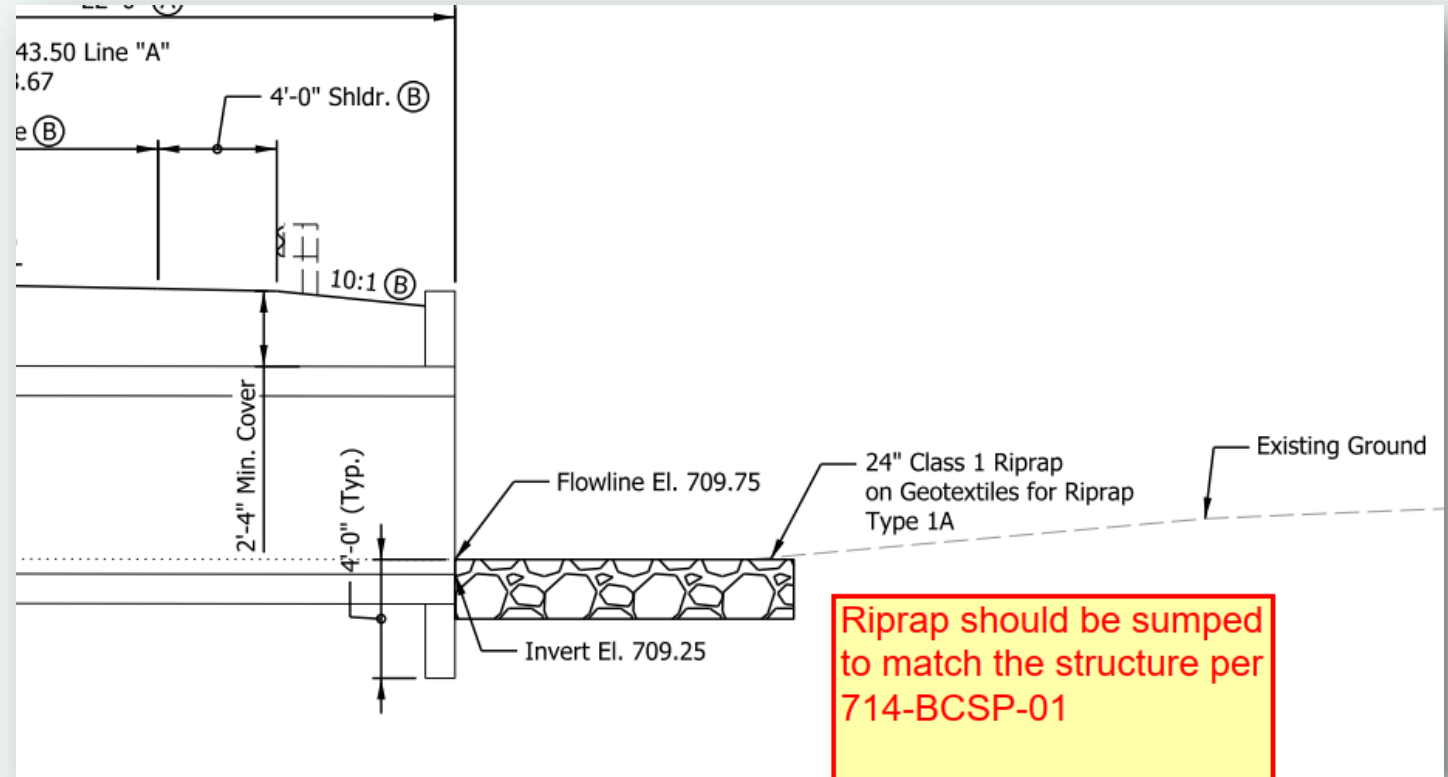
- Design for box culverts should have Cutoff Wall per IDM 203-2.03(04) item 7
- Originally in DM 22-24. Now in the IDM. (Archived 1-10-2025)



Small Structures_

Design riprap to match outlet invert for the culvert.

- Typical road review comment on small structure replacements.
- In accordance with:
 - Standard Drawing E 714-BCSP (2011)
 - Standard Drawing E 723-CCSP-02 (2011)
 - INDIANA Design Manual Section 203



Small Structures

HMA items for Small Structure Replacements

- Roadway designers should use the pay item HMA or PCCP for Structure Installation (715 pay item). Designer to use the table in IDM Figure 601-5C to select HMA Type B, C, or D.
- Thickness will match the existing pavement.

IDM Figure 601-5C

Road Category	Annual Average Daily Truck Traffic (Construction Year)	ESAL (millions)	ESAL Category Name	Minimum HMA Pavement Depth (in.)	Pavement Type ⁽²⁾
Interstate (A)	1900 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D
Freeway and Principal Arterial (B)	AADTT < 570	< 3	Low	10	QC/QA-HMA Cat. 3 / HMA Type B
	570 < AADTT < 1900	3 < ESAL < 10	Medium	12	QC/QA-HMA Cat. 3 / HMA Type C
	1900 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D
Remaining Road Classes (C)	AADTT < 510	< 3	Low	10	QC/QA-HMA Cat. 3 / HMA Type B
	510 < AADTT < 1700	3 < ESAL < 10	Medium	12	QC/QA-HMA Cat. 3 / HMA Type C
	1700 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D

⁽¹⁾ AADTT > 5700 requires a pavement design request
⁽²⁾ Pavement type and section based on application

Sample Pavement note for HMA for Structure Installation, C

P

HMA for Structure Installation, Type C
165 lbs/syd HMA Surface, Type C on
275 lbs/syd HMA Intermediate Type C on
880 lbs/syd HMA Base Type C on
Subgrade Treatment, Type IC

Small Structures/Large Culverts (span 4 ≥ ft and ≤ 20 ft)

- Generally, no pavement design is needed unless the project requires shoulder evaluation for MOT
- Construction will be based on specific plan details for the structure
- Roadway designer to use the table in IDM Figure 601-5C to select pavement thickness and pay items

IDM Figure 601-5C

Road Category	Annual Average Daily Truck Traffic (Construction Year)	ESAL (millions)	ESAL Category Name	Minimum HMA Pavement Depth (in.)	Pavement Type ⁽²⁾
Interstate (A)	1900 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D
Freeway and Principal Arterial (B)	AADTT < 570	< 3	Low	10	QC/QA-HMA Cat. 3 / HMA Type B
	570 < AADTT < 1900	3 < ESAL < 10	Medium	12	QC/QA-HMA Cat. 3 / HMA Type C
	1900 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D
Remaining Road Classes (C)	AADTT < 510	< 3	Low	10	QC/QA-HMA Cat. 3 / HMA Type B
	510 < AADTT < 1700	3 < ESAL < 10	Medium	12	QC/QA-HMA Cat. 3 / HMA Type C
	1700 < AADTT < 5700 ⁽¹⁾	10 < ESAL < 30	High	14	QC/QA-HMA Cat. 4 / HMA Type D

⁽¹⁾ AADTT > 5700 requires a pavement design request
⁽²⁾ Pavement type and section based on application

The upper portion of the table indicates QC/QA or the use of HMA Type B, C, D.

Small Structures/Large Culverts (span 4 ≥ ft and ≤ 20 ft)

IDM Figure 601-5C

Application		PAVEMENT TYPE AND SECTION		
		Low ESAL	Medium ESAL	High ESAL
New/Reconstructed Full Depth Pavement, HMA	All Shoulder Widths, Without Terminal Joint	165 lbs/syd QC/QA-HMA, 3, 58S, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58S, Intermediate, 19.0 mm on 660 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on Subgrade Treatment Type IC on Geotextile for Pavement Type 2B (or per Geotechnical Report)	165 lbs/syd QC/QA-HMA, 3, 58H, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58H, Intermediate, 19.0 mm on 880 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on Subgrade Treatment Type IC on Geotextile for Pavement, Type 2B (or per Geotechnical Report)	165 lbs/syd QC/QA-HMA, 4, 58E, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 4, 58E, Intermediate, 19.0 mm on 1100 lbs/syd QC/QA-HMA, 4, 58S, Base, 25.0 mm on Subgrade Treatment Type IC on Geotextile for Pavement, Type 2B (or per Geotechnical Report)
	Mainline and Adjacent Shoulder All Shoulder Widths, Includes Terminal Joint, HMA (pavement depth 15 in. all ESALs)	165 lbs/syd QC/QA-HMA, 3, 58S, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58S, Intermediate, 19.0 mm on 1210 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on 6 inches of Compacted Aggregate, No. 53 on Subgrade Treatment, Type IC on Geotextile for Pavement, Type 2B	165 lbs/syd QC/QA-HMA, 3, 58H, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58H, Intermediate, 19.0 mm on 1210 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on 6 inches of Compacted Aggregate, No. 53 on Subgrade Treatment, Type IC on Geotextile for Pavement, Type 2B.	165 lbs/syd QC/QA-HMA, 4, 58E, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 4, 58E, Intermediate, 19.0 mm on 1210 lbs/syd QC/QA-HMA, 4, 58S, Base, 25.0 mm on 6 inches of Compacted Aggregate, No. 53 on Subgrade Treatment, Type IC on Geotextile for Pavement, Type 2B.
New/Reconstructed Full Depth Pavement, HMA Shoulder Only	Shoulder Width > 8 ft	165 lbs/syd QC/QA-HMA, 3, 58S, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58S, Intermediate, 19.0 mm on 660 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on Subgrade Treatment Type IC (or per Geotechnical Report)	165 lbs/syd QC/QA-HMA, 3, 58H, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 3, 58H, Intermediate, 19.0 mm on 880 lbs/syd QC/QA-HMA, 3, 58S, Base, 25.0 mm on Subgrade Treatment Type IC (or per Geotechnical Report)	165 lbs/syd QC/QA-HMA, 4, 58E, Surface, 9.5 mm on 275 lbs/syd QC/QA-HMA, 4, 58E, Intermediate, 19.0 mm on 1100 lbs/syd QC/QA-HMA, 4, 58S, Base, 25.0 mm on Subgrade Treatment Type IC (or per Geotechnical Report)
	Shoulder Width ≤ 8 ft	Widening with HMA, Type B, consisting of 165 lbs/syd HMA Surface, Type B ⁽³⁾ on 275 lbs/syd HMA Intermediate, Type B on 660 lbs/syd HMA Base, Type B on Subgrade Treatment Type IC (or per Geotechnical Report)	Widening with HMA, Type C, consisting of 165 lbs/syd HMA Surface, Type C ⁽³⁾ on 275 lbs/syd HMA Intermediate, Type C on 880 lbs/syd HMA Base, Type C on Subgrade Treatment Type IC (or per Geotechnical Report)	Widening with HMA, Type D, consisting of 165 lbs/syd HMA Surface, Type D ⁽³⁾ on 275 lbs/syd HMA Intermediate, Type D on 1100 lbs/syd HMA Base, Type D on Subgrade Treatment Type IC (or per Geotechnical Report)
⁽³⁾ Where existing mainline pavement is resurfaced, use QC/QA HMA surface course as shown for shoulder width > 8 ft. Intermediate and base courses should consist of type specified.				

PAVEMENT DESIGN FOR STANDALONE BRIDGE AND SMALL STRUCTURE PROJECTS
Figure 601-5C (Page 1 of 2) (Rev. Dec. 2023)

The lower portion of IDM Fig 601-5C provides individual HMA items.

Small Structures

- OK to have small quantities of QC/QA HMA since the 401 INDOT Standard Specification for QC/QA HMA has a provision that will automatically convert the mix to have the same QC/QA testing requirements as the equivalent 402 Type B/C/D HMA mix.
- On small projects, effectively the only difference between using the QC/QA mixes and the Type B/C/D mixes is that all the HMA layers (surface/int/base) are paid for with separate QC/QA pay items. If Type B/C/D is used, the combined tonnage of all the layers is rolled up into a single pay item.
- If the pavement patch is 30' in length or longer, a guideline is to use QC/QA materials.

Sample pavement note for small structure replacement:

(K) 165 lbs./Syd. QC/QA-HMA, 3, 58S, Surface, 9.5 mm, on
275 lbs./Syd. QC/QA-HMA, 3, 58S, Intermediate, 19.0 mm, on
660 lbs./Syd. QC/QA-HMA, 3, 58S, Base, 25.0 mm on
Subgrade Treatment Type IC on Geotextile for Pavement Type 2B

Structure Data Tables

- Assign a Structure Number in Column 1 to All Structures (Existing and Proposed)
- Complete all elements in table, including "Cover". Verify minimum cover per Std Dwg E 715-PHCL

Cover not filled out.

STRUCTURE DATA

STRUCTURE NUMBER	LOCATION			SIZE	PIPE TYPE	MANHOLE, INLET, CATCH BASIN, OR SPECIALTY STRUCTURE AND TYPE	LENGTH	SKEW	FLOW LINE			SERVICE LIFE	SITE DESIGNATION	pH	BACKFILL METHOD	STRUCTURE BACKFILL		
	STATION	LEFT	CROSS						RIGHT	UP STREAM	DOWN STREAM					COVER	TYPE	CY.
	LINE "OLD PR"																	
1	144+60			X	15	3	PIPE	58		0.6	912.7	912.46	75	A	7	2	1	7.1
2	147+73			X	15	3	PIPE	95		0.8	911.62	911.24	75	A	7	2	1	9.1
3	152+74		X		36 X 24		R.C.B.	70	0		908.49	908.38	75	A	7			
4	152+74			X	12	2	CATCH BASIN, E7	16			906.75	906.5	75	A	7			
5	152+91			X			CATCH BASIN PIPE											
	LINE "A"																	
6	499+44			X	15	3	PIPE	16			909.34	909.28	75	A	7			
7	499+48		X		36 X 24		R.C.B.	54	0		908.64	908.56	75	A	7			
8	500+55	X					INLET, A2				907.44							
9	501+14			X	15	3	PIPE	35		1	908.93	908.75	75	A	7	2	1	4.1

Structure Data Tables

- List the Culvert Asset ID and add any remarks to the end of the Structure Data Table.

SAFETY METAL END SECTION			CONNECT TO STR.	CULVERT ASSET ID	REMARKS
TYPE	SLOPE	EA.			
				CLV-90302	
					CONNECT TO EXIST. FIELD TILE
					CONNECT TO EXIST. PIPE

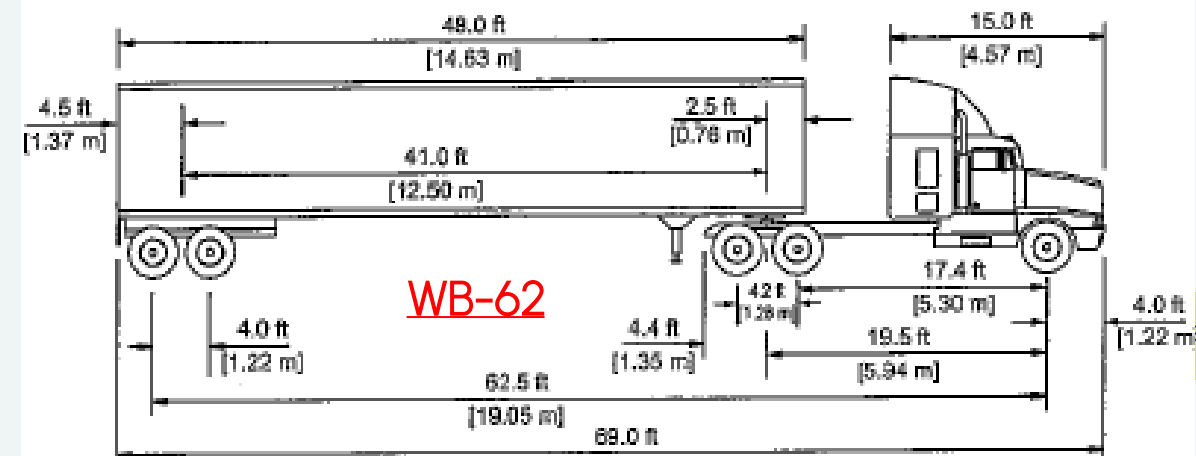
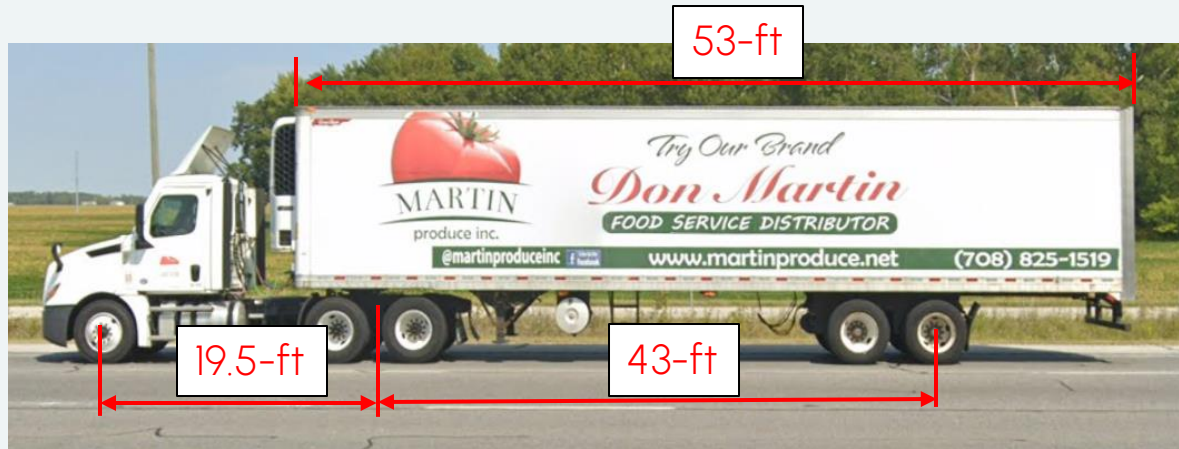
Missing CLV ID for Structure No. 7



FHWA Vehicle Classifications

FHWA Vehicle Classifications				
1. Motorcycles 2 axles, 2 or 3 tires 	2. Passenger Cars 2 axles, can have 1- or 2-axle trailers 	3. Pickups, Panels, Vans 2 axles, 4-tire single units Can have 1 or 2 axle trailers 	4. Buses 2 or 3 axles, full length 	
5. Single Unit 2-Axle Trucks 2 axles, 6 tires (dual rear tires), single-unit 	6. Single Unit 3-Axle Trucks 3 axles, single unit 	7. Single Unit 4 or More-Axle Trucks 4 or more axles, single unit 	8. Single Trailer 3- or 4-Axle Trucks 3 or 4 axles, single trailer 	
9. Single Trailer 5-Axle Trucks 5 axles, single trailer 		10. Single Trailer 6 or More-Axle Trucks 6 or more axles, single trailer 		
				
11. Multi-Trailer 5 or Less-Axle Trucks 5 or less axles, multiple trailers 		12. Multi-Trailer 6-Axle Trucks 6 axles, multiple trailers 		
13. Multi-Trailer 7 or More-Axle Trucks 7 or more axles, multiple trailers 				

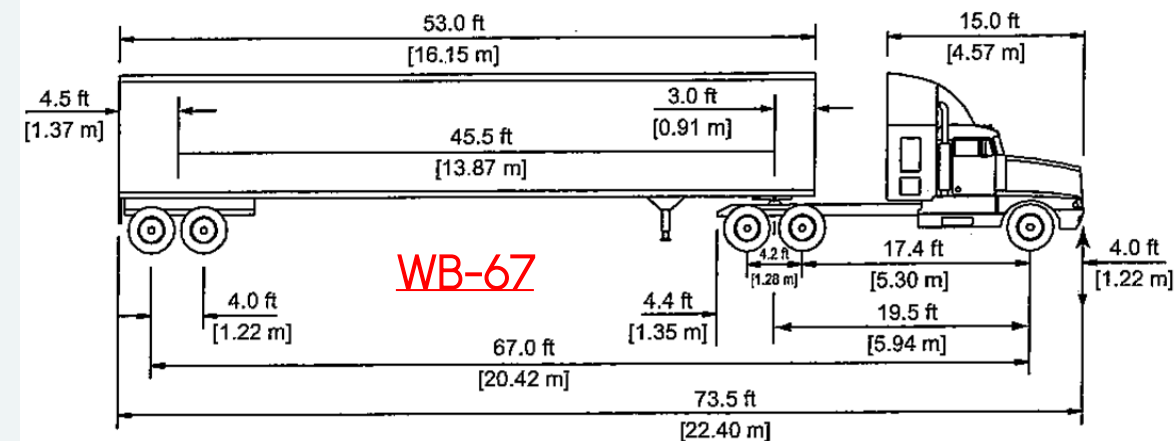
WB-62-The Indiana Legal Semitrailer Truck Size



IC 9-20-13-4 Semitrailers in excess of 48 feet, 6 inches; restrictions on operation

Sec. 4. Notwithstanding section 2 of this chapter, a semitrailer longer than forty-eight (48) feet, six (6) inches, may be operated on a highway designated as part of the state highway system under IC 8-23-4 only if the distance between the kingpin and the rear most axle of the semitrailer is not more than:

- (1) forty-six (46) feet, if the semitrailer is used exclusively or primarily in connection with *motorsports*; or
- (2) for **all** other semitrailers, forty-three (43) feet.



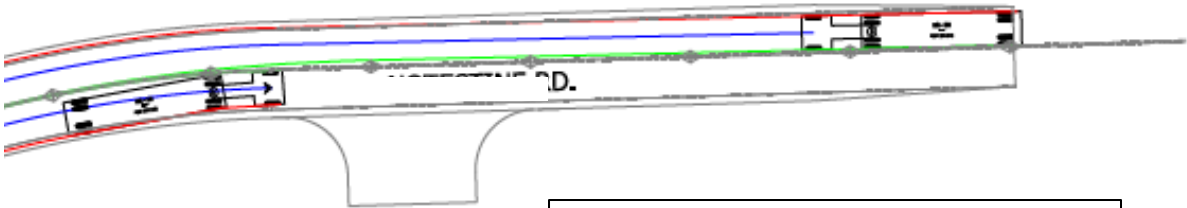
Offset Between Trucks on Curved Segments



Offset Between Trucks on Curved Segments

FHWA Classification ?																
Start Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
12:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 AM	0	2	2	0	0	0	0	0	1	0	0	0	0	0	0	5
2:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
3:00 AM	0	5	2	0	0	0	0	0	2	0	0	0	0	0	0	9
4:00 AM	0	15	14	0	1	0	0	0	1	0	0	0	0	0	0	31
5:00 AM	0	34	36	0	2	1	0	1	2	0	0	0	1	0	0	77
6:00 AM	0	52	45	0	3	0	1	0	1	0	0	0	0	0	0	102
7:00 AM	0	51	34	0	3	2	0	2	1	0	0	0	0	0	0	93
8:00 AM	0	58	33	0	0	3	2	0	2	0	0	0	0	0	0	98
9:00 AM	2	40	24	0	2	5	1	2	5	0	0	0	0	0	0	81
10:00 AM	0	32	22	0	1	4	4	0	3	0	0	1	0	0	0	67
11:00 AM	2	47	28	0	1	2	5	0	2	0	0	0	1	0	0	88
12:00 PM	1	45	24	0	3	4	4	2	1	0	0	1	0	0	0	85
1:00 PM	1	64	24	0	1	7	4	3	2	0	0	0	0	0	0	106
2:00 PM	1	49	29	0	3	7	5	3	6	0	0	0	0	0	0	103
3:00 PM	0	66	57	0	3	1	3	1	4	1	0	0	1	0	0	137
4:00 PM	2	80	61	0	10	1	1	2	4	0	0	0	0	0	0	161
5:00 PM	2	87	53	0	1	0	0	1	5	0	0	0	0	0	0	149
6:00 PM	3	49	21	0	0	0	0	0	2	0	0	0	0	0	0	75
7:00 PM	1	29	13	0	0	0	0	1	1	0	0	1	0	0	0	46
8:00 PM	2	15	10	0	1	0	0	0	0	0	0	0	0	0	0	28
9:00 PM	2	25	15	0	1	0	0	0	2	0	0	0	0	0	0	45
10:00 PM	2	13	2	0	0	0	0	0	2	0	0	0	0	0	0	19
11:00 PM	1	6	4	0	0	0	0	1	0	0	0	0	0	0	0	12
TOTAL	22	864	554	0	36	37	30	19	50	1	0	3	3	0	0	1619

Count Navigation: |<< < > >>|



Truck path shown is for WB-50.

50 vehicles of Class 9

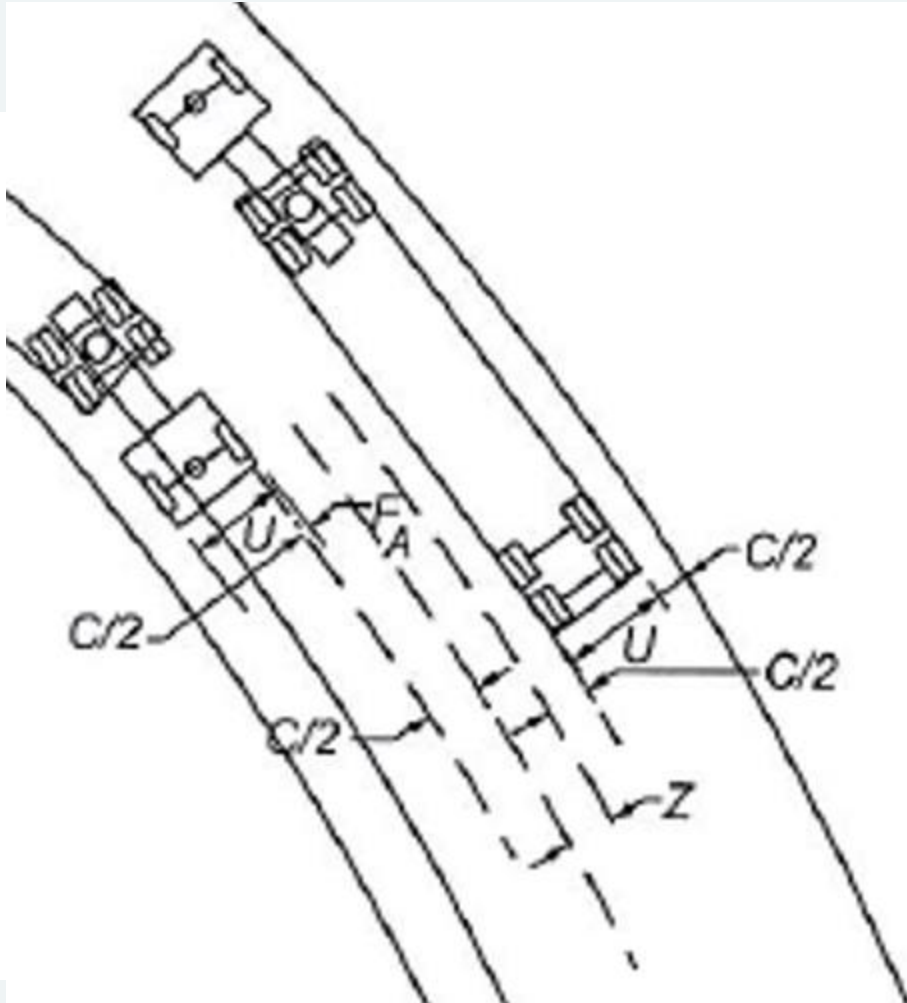
roach into opposing lane.
Distance from vehicle envelope to edge of paved/usable shoulder is provided.

- LEGEND
- RIGHT VEHICLE ENVELOPE
 - VEHICLE PATH
 - LEFT VEHICLE ENVELOPE

Offset Between Trucks on Curved Segments



Offset Between Trucks on Curved Segments



Traveled-way Widening Terminology- Section 3.3.10 GDHS:

W_c Width of traveled-way on curve

W_n Width of Traveled-Way on Tangent

C Lateral clearance (ft) (Typically 4-ft)

Z Extra width allowance (ft) ($Z = V/R^{0.5}$)

F_A Width of front overhang on inner lane

U Width of wheel track of vehicle

N Number of lanes

$$W_c = N(U+C) + (N-1)F_A + Z$$

Common Errors

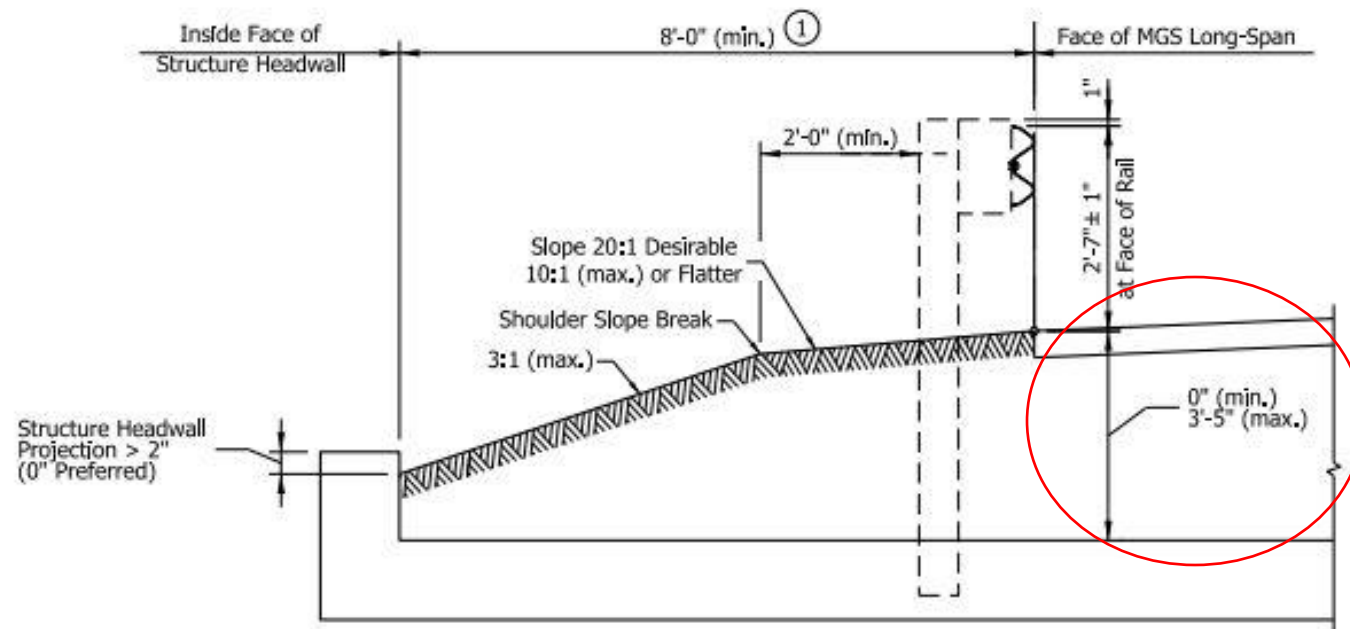
- Guardrail

- Placing standard MGS Guardrail over a culvert without sufficient cover for the 3'-4" post lengths.

- Options

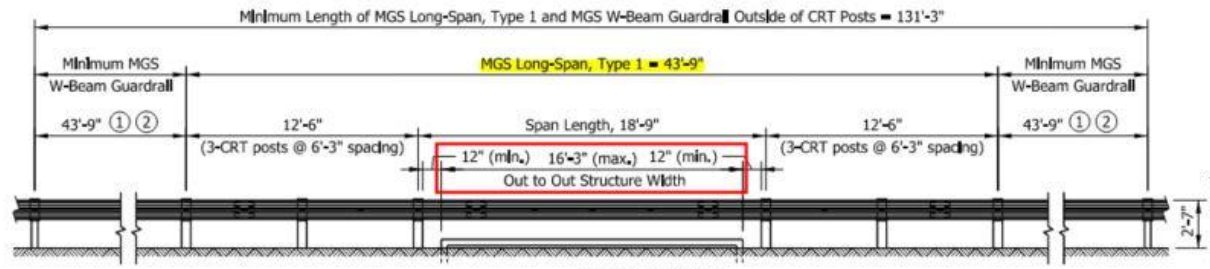
- Omit one post (max. out to out structure width is 16'-3")
- Use long span section (max. out to out structure width is 22'-6")
- Specify top-mounted posts

• Don't forget to check working width for any of these options.

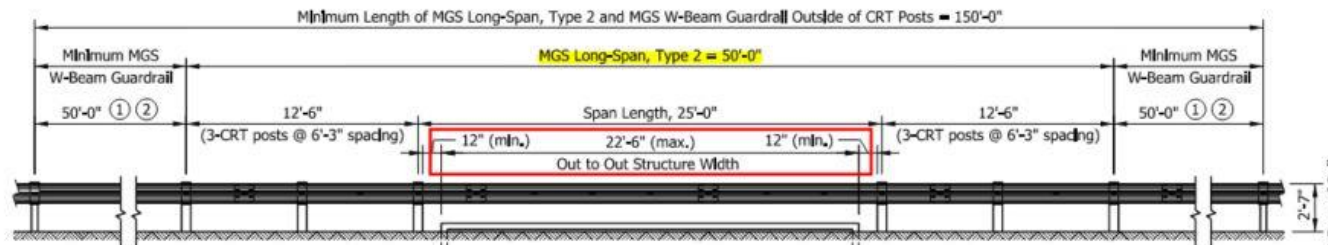


Common Errors

- MGS Guardrail over low fill structures
 - Placing an MGS Long Span section without sufficient lateral clearance between the posts and structure.



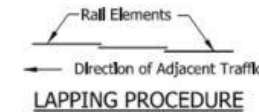
ELEVATION VIEW
INSTALLATION TYPE 1
(2 POSTS OMITTED)



ELEVATION VIEW
INSTALLATION TYPE 2
(3 POSTS OMITTED)

NOTES:

1. A minimum length of MGS w-beam guardrail shall be installed on the approach and departure ends of the outermost CRT posts. This length may include the length of a guardrail end treatment, cable terminal anchor, or transition.
2. A minimum of 62 ft 6 in. of tangent MGS w-beam guardrail shall be installed between the outermost CRT post and the beginning of any flared guardrail section.
3. An MGS w-beam guardrail run containing MGS Long-Span shall not be installed adjacent to curb.
4. See Standard Drawing E 601-MGSA-06 for one omitted post, span length 12 ft 6 in.



- Follow guidance on maximum out to out structure width. Don't forget to account for a skew.
- If a structure's out to out width exceeds 22'-6", then Top-Mounted Posts can be used. See 601-MGSA-10

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN	
SEPTEMBER 2018	
STANDARD DRAWING NO.	E 601-MGSA-08

Common Errors

- Curved W-Beam Guardrail Connector and Terminal Systems
 - Incorrect layout for Curved W-Beam Guardrail and Connector Systems
 - An MGS height transition is required when connecting MGS Guardrail to either of the W-beam curved sections – MGS curved sections are under development (national effort, every DOT is looking at it).
 - The connector system is specified at a public road approach, the terminal system is generally specified at a driveway approach, but can be specified at a low volume public road approach with approval.
 - Ensure hatched area shown on the Std. Dwg. 601-CWGS-02 is free of fixed objects.
 - A W-beam connector system can be connected directly to an end treatment, but a height transition is needed when specifying the taller GRET OS. The MGS height transition can replace the min 25' of guardrail shown on Std. Dwg. E 601-CWGS-01.
 - Refer to Design Memos 17-10 and 17-17. IDM Ch. 49 has not yet been updated. Refer to Std. Dwg. E 601-CSGS-01 thru 06. **Read the fine print!**



Common Errors

- Compatibility for Guardrail Systems

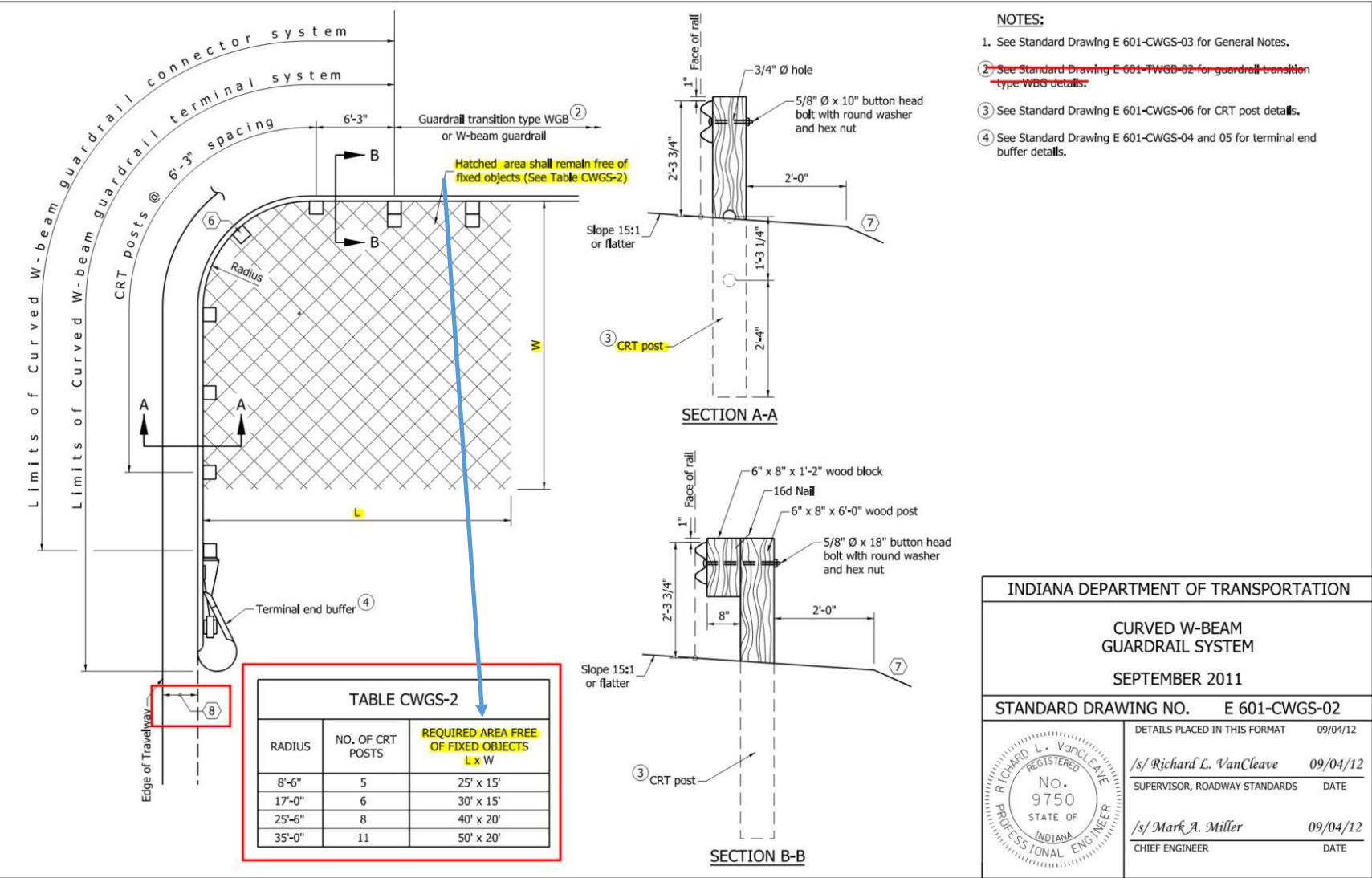
2. Ensure compatibility among guardrail systems.

27 ¾" Height NCHRP 350	31" Height (601-MGSA) MASH	Notes
W-beam Guardrail	MGS W-beam Guardrail	These are standard longitudinal runs of guardrail
	MGS W-beam Guardrail, Omitted Post	Omitting post acceptable only in longitudinal runs, not acceptable in other systems
Guardrail Transition, TGB	Guardrail Transition, MGS	Transition to concrete bridge railing transition
Nested Guardrail	Long Span Guardrail (type)	Over culvert
Connector System		Use with MGS W-beam requires an MGS Height Transition
Terminal System		
	MGS Structure Top-Mounted Posts	Flat top or Box Culvert only



Common Errors

Curved Guardrail Connector and Terminal Systems



NOTES:

1. See Standard Drawing E 601-CWGS-03 for General Notes.
2. See Standard Drawing E 601-TWGB-02 for guardrail transition type WGB details.
3. See Standard Drawing E 601-CWGS-06 for CRT post details.
4. See Standard Drawing E 601-CWGS-04 and 05 for terminal end buffer details.

GENERAL NOTES

1. This drawing shall be used in conjunction with Standard Drawings E 601-CWGS-01 through -06, and E 601-CWGT-01 and -02 where a curved W-beam guardrail system is specified.
2. The type of curved W-beam guardrail system to be used shall be as shown on the plans in accordance with Table CWGS-3.
3. Except where otherwise shown, all hardware and installation shall be the same as for the guardrail specified for the adjacent run.
4. A curved W-beam guardrail terminal system shall be used to terminate a run of guardrail only at a driveway. For a public road approach, a curved W-beam guardrail connector system shall be used.
5. A maximum of two guardrail panels may be omitted from the curved W-beam guardrail terminal system only where the bridge railing falls outside of the clear zone and the plans specifically state that panels are to be omitted. See Table CWGS-03 for the number of guardrail panels to be removed for each type of curved W-beam guardrail system.
6. For the 8'-6" radius curved W-beam guardrail terminal system, guardrail shall not be bolted to this post.
7. The embankment slope behind the curved W-beam guardrail system shall be 2:1 or flatter.
8. A minimum 4 ft width shoulder shall be used with a 15 ft minimum drive radius.
9. This dimension shall be 5 ft for the 35 ft radius curved W-beam guardrail connector system.

INDIANA DEPARTMENT OF TRANSPORTATION

CURVED W-BEAM GUARDRAIL SYSTEM

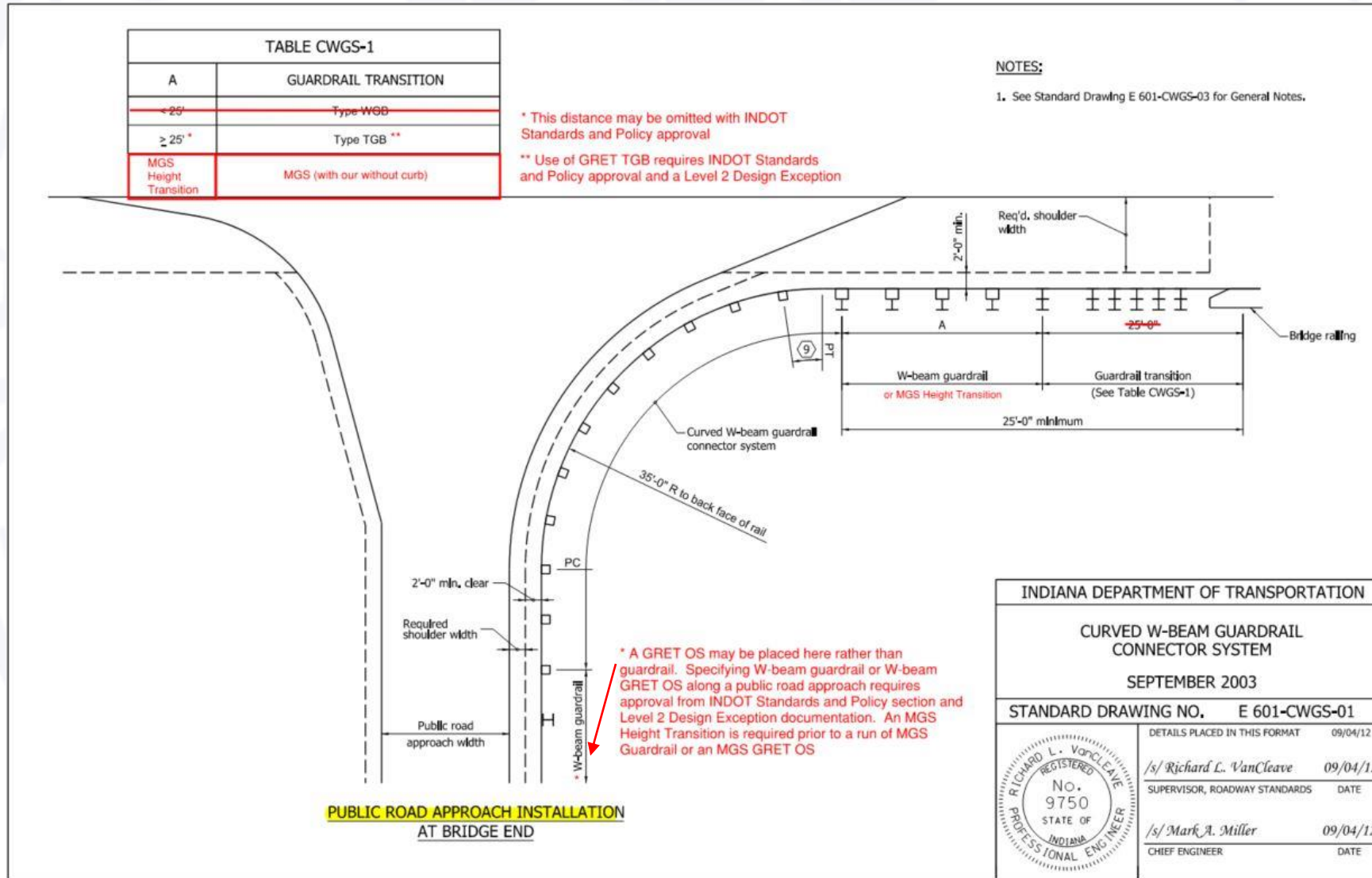
SEPTEMBER 2011

STANDARD DRAWING NO. E 601-CWGS-02

DETAILS PLACED IN THIS FORMAT	09/04/12
/s/ Richard L. VanCleave	09/04/12
SUPERVISOR, ROADWAY STANDARDS	DATE
/s/ Mark A. Miller	09/04/12
CHIEF ENGINEER	DATE

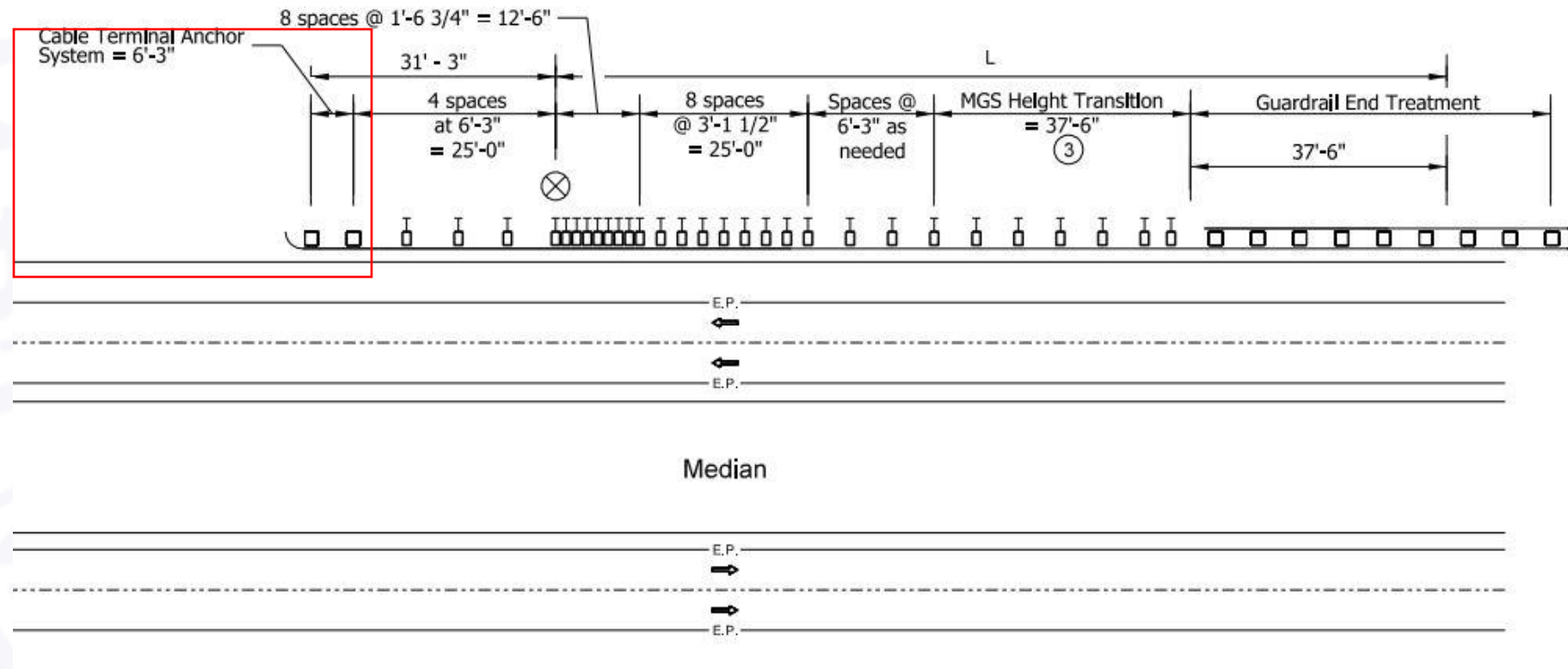
Common Errors

- Curved W-Beam Guardrail Connector System



Common Errors

- Guardrail on Divided Highways
 - Provide an MGS Cable Terminal Anchor at the outgoing end of MGS Guardrail on a divided highway application.



From Std. Dwg. 601-RHPG-02

Common Errors

- Guardrail – Most Common Error
 - Specifying W-beam guardrail or any non-standard application requires INDOT Standards & Policy Section approval AND a Level 2 Design Exception

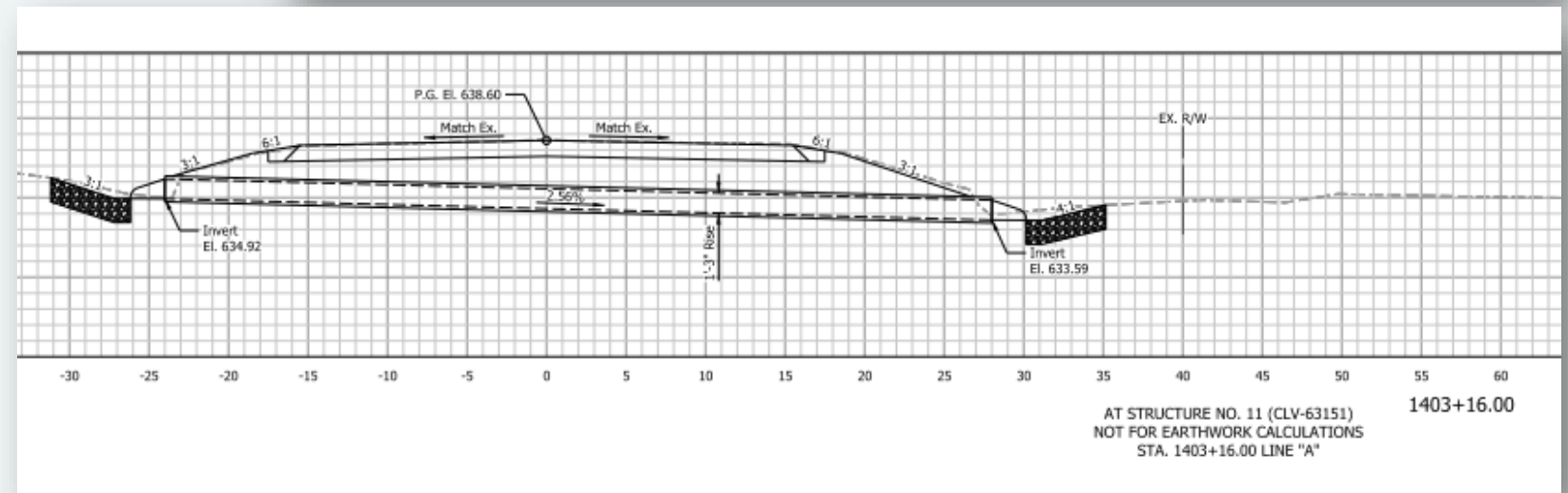
Cross Sections

Preliminary drainage design of mainline culverts needs to be submitted at Stage 1 per IDM 14-2.01(04) item 11c.

11. Cross Sections. The preliminary cross sections should include the following:

- templates of the typical sections placed on the existing cross sections;
- profile-grade elevations; and
- mainline drainage structures.

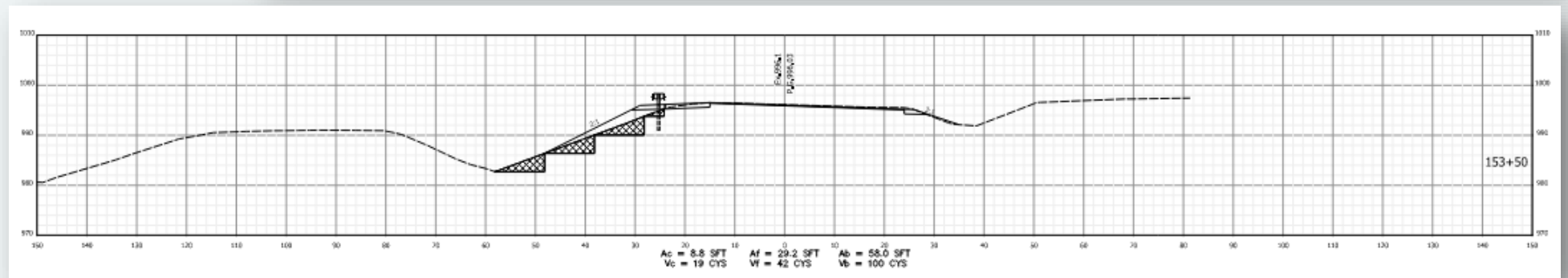
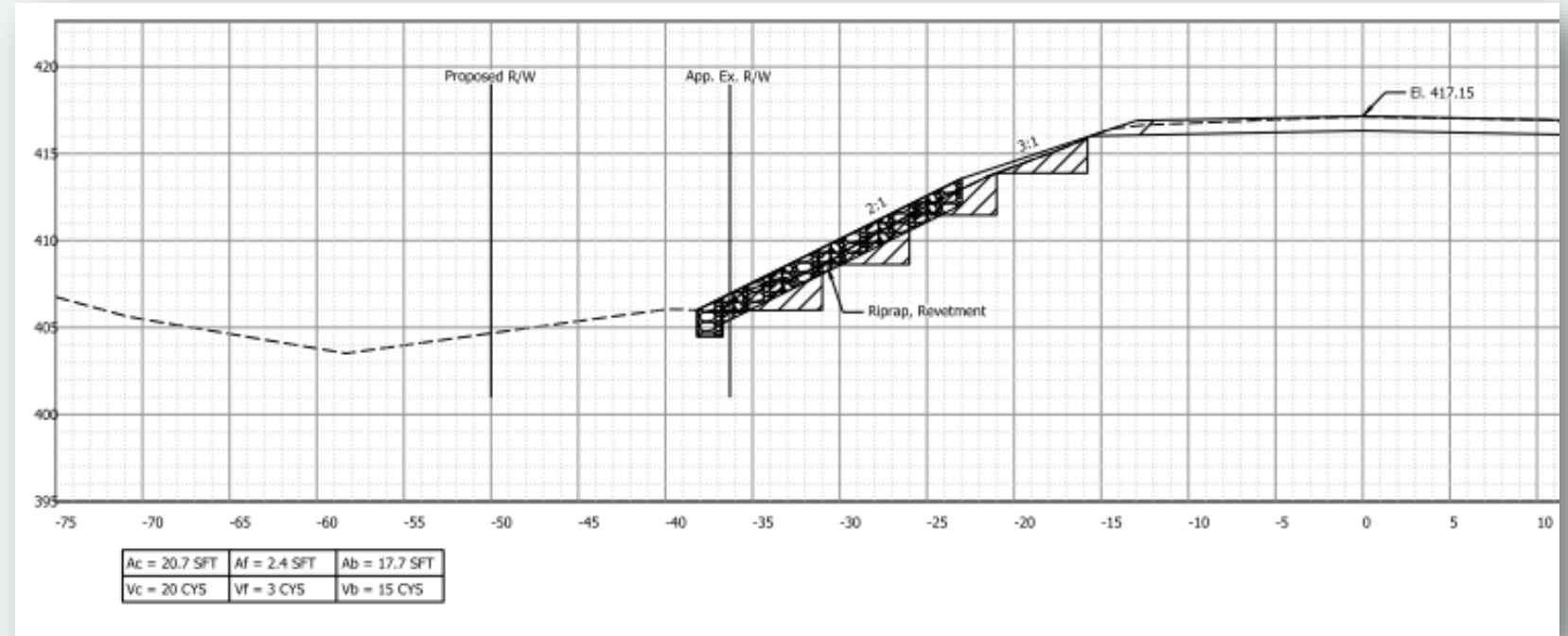
12. Design Information. In addition to the plans, the designer should include copies of the preliminary hydraulic analysis for each mainline culvert, if applicable, and results of economic analyses that may have been completed for alternative grade lines. The preliminary cost estimate should be developed for the major pay items with percentages for the minor pay items. The hydraulic analysis should be signed and sealed by a professional engineer licensed in Indiana.



Cross Sections

Stage 3 cross sections

- Finalize Earthwork quantities.
- Include and indicate any Benching quantities.
- Round Area of Cut or Fill to the nearest 0.1 Sft
- Round Volumes to the nearest 1 Cyd.



Earthwork_

Round up Earthwork total pay quantity to next multiple of 5 cubic yard per IDM 17-1.03 item 4.

4. Earthwork. For an individual cross-section area, round to the nearer 0.1 ft². For an individual end-area volume, round to the nearer 1 yd³. For a total pay quantity, round up to the next multiple of 5 yd³.

EARTHWORK BALANCE					
	LINE A	LINE B	APPROACHES	MODULAR BLOCK WALLS	TOTALS
Fill + 25%	5,188	1,070	290	0	6,550 Cys
Common Excavation	4,630	320	560	350	5,860 Cys
Borrow					690 Cys
The above earthwork balance does not include benching, however benching is estimated to be:					
Benching	650	215			865 Cys
Excavation for subgrade treatment is not included in the excavation quantities.					

Earthwork

Include Earthwork Balance Summary

Earthwork Summary		
Common Excavation		
Line "PR-A"	=	890 Cyd
Line "PR-D"	=	2355 Cyd
Total Common Excavation	=	3245 Cyd
Fill		
Line "PR-A"	=	2865 Cyd
Line "PR-D"	=	6660 Cyd
25% Swell	=	2380 Cyd
Total Fill	=	11905 Cyd
Balance		
Total Fill	=	11905 Cyd
Less Usable Excavation	=	1175 Cyd
Total Borrow	=	10730 Cyd

Earthwork Balance

Fill + ①②

cys

Common Excavation②③④⑤

cys

Unclassified Excavation②③④⑤

cys

Rock Excavation②③④⑤

cys

Borrow or Waste

cys

Peat Excavation

cys

Benching②③⑤

cys

Notes:

① For shrinkage and swell factors to be used, see Figure 17-2C.

② When the project is on new alignment, increase both the excavation and fill quantities to include any benching required. See Figure 107-6B for typical benching procedures.

③ Where benching is required for construction of a new embankment over an existing embankment, no direct payment is made for benching.

④ Excavation for subgrade treatment is not included in the excavation quantities.

⑤ If applicable, include a note that the _____ excavation quantity includes _____ cys of unsuitable material and/or _____ cys of benching.

EARTHWORK BALANCE TABLE
(Road Project)

Figure 17-2D

Erosion and Sediment Removal Maintenance

Sediment removal quantity should be included in the erosion control table and the estimate.

- 1. Filter sock sediment removal once it reaches half the height of the filter sock. Std specs 205.07(a)
- 2. Silt fence sediment removal once it reaches a third of the height of the silt fence. Std specs 205.07(b)
- 3. Removal of sediment is measured in cubic yards. Std specs 205.10
- 4. Pay item is “Sediment, Remove”. Std specs 205.11

Sediment, Remove.....	CYS.....	\$26.50
-----------------------	----------	---------



Maintenance of Traffic

Work Zone and Barrel Spacing

- Minimum offset to barrier or barrels in a work zone is 2' per Std Dwg E 801-TCDV-02
- Barrel Spacing
 - May Differ between IDM and Work Zone Guidelines
 - Hold IDM, unless specifically direction for INDOT Projects
 - Work Zone Guidelines may be required for INDOT Permits

Construction Zone Design Speed (mph)	Spacing (ft)	
	Tapered Section	Tangent Section
45 or less	25	50
50 or greater	50	100

	TABLE II: INDOT SKIPS BASED - STANDARD TAPERS (12 Ft Closure)									
	Speed (mph)	Merging Tapers			Shifting Tapers			Shoulder Tapers		
		#Skips (Length)	Cone Spacing	#Cones	#Skips (Length)	Cone Spacing	#Cones	#Skips (Length)	Cone Spacing	#Cones
Low Speed	20	4 (160')	20	9	2 (80')	20	5	2 (80')	20	5
	25	4 (160')	20	9	2 (80')	20	5	2 (80')	20	5
	30	5 (200')	20	11	3 (120')	20	7	2 (80')	20	5
	35	7 (280')	20	15	4 (160')	20	9	3 (120')	20	7
	40	8 (320')	40	9	4 (160')	40	5	3 (120')	40	4
High Speed	45	14 (560')	40	16	7 (280')	40	8	5 (200')	40	6
	50	15 (600')	40	17	8 (320')	40	9	5 (200')	40	6
	55	17 (680')	40	18	9 (360')	40	10	6 (240')	40	7
	60	18 (720')	60	13	9 (360')	60	7	6 (240')	60	5
	65	20 (800')	60	15	10 (400')	60	8	7 (280')	60	6
	70	21 (840')	60	15	11 (440')	60	9	7 (280')	60	6
2-Way & Downstream Tapers are always 3 skips (120'), 20' cone spacing, with 7 cones										

Note: The white or yellow part of 1 skip line is 10 feet and the gap between these skips is 30 feet.

Maintenance of Traffic

Verify Use of Channelizing Devices

Construction Zone Design Speed (mph)	Spacing (ft)	
	Tapered Section	Tangent Section
45 or less	25	50
50 or greater	50	100

SUGGESTED MAXIMUM SPACING OF CHANNELIZATION DEVICES

Figure 503-7F

Distance of Drop-off from the Travel Lane	Drop-off Height			
	≤ 3 in.	> 3 in. to 5 in.	> 5 in. to 12 in.	> 12 in.
≤ 4 ft	No Channelizing Devices Required	Use Channelizing Devices Throughout Drop-off Condition ^{1, 2, 4}	Use Temporary Concrete Barrier ³	Use Temporary Concrete Barrier
> 4 ft to 12 ft	No Channelizing Devices Required	Use Channelizing Devices Throughout Drop-off Condition ^{1, 2, 4}	Use a 3:1 Slope of Suitable Material Compacted to Non-movement	Use Temporary Concrete Barrier ³
> 12 ft to 18 ft	No Channelizing Devices Required	Use Channelizing Devices Throughout Drop-off Condition ^{1, 4}	Use Channelizing Devices Throughout Drop-off Condition ^{1, 4}	Use Channelizing Devices Throughout Drop-off Condition ^{1, 4}

Notes:

- ¹ Use Shoulder Drop-off symbol sign and plaque (W8-17 and W8-17P). The first sign should be placed approximately at the beginning of the drop-off condition and continued, when applicable, at ½ mile intervals throughout the drop-off condition.
- ² May use a temporary shoulder with a mix design from the Pavement Division, or on asphalt pavements a 1:1 or flatter safety wedge.
- ³ May use a 3:1 slope of suitable material that is compacted to non-movement.
- ⁴ No channelizing devices are needed if the drop-off is outside the right-of-way, behind guardrail or curb, or more than 18 ft from the travel lane.
- ⁵ Figure applies to any work zone duration.

TRAFFIC CONTROL FOR PAVEMENT DROP-OFFS (For Freeways and Expressways)

Figure 503-3F

Maintenance of Traffic

Temporary Speed Limits

- Figure 503-7A of IDM
- Typically, at least 10 mph under maximum speed limit. (Unless special conditions exist.)
- Document in Design Comps
- Drops should staged be in 10 mph increments

Existing Facility and Construction Method	Existing Posted Speed Limit				
	50 mph	55 mph	60 mph	65 mph	70 mph
4-lane Interstate with crossover to a 2-lane facility	Not Applicable	WZ 45 mph with TCB WS 45 mph	WZ 50 mph with TCB WS 50 mph	WZ 55 mph with TCB WS 55 mph	WZ 55 mph with TCB WS 55 mph
4-lane Interstate with lane closure without a crossover	Not Applicable	WS 45 mph	WZ 50 mph WS 50 mph	WZ 55 mph WS 55 mph	WZ 55 mph WS 55 mph
6-lane Interstate with crossover to a 4-lane facility with TCB	WS 40 mph	WS 45 mph	WZ 50 mph WS 50 mph	WZ 55 mph WS 55 mph	WZ 55 mph WS 55 mph
6-lane Interstate with lane closure without a crossover	WS 40 mph	WS 45 mph	WZ 50 mph WS 50 mph	WZ 55 mph WS 55 mph	WZ 55 mph WS 55 mph
Non-Interstate divided highway with crossover	Project-by-project WS 40 mph	WZ 45 mph with TTM & TDSYL	WZ 50 mph with TTM & TDSYL WS 50 mph	WZ 55 mph with TCB or TTM & TDSYL WS 55 mph	Not Applicable
Non-Interstate divided highway with lane closure without a crossover	Project-by-project WS 40 mph	WS 45 mph	WS 50 mph	WZ 55 mph WS 55 mph	Not Applicable

WS = Work-Site Speed Limit (Set under IC 9-21-5-11)
 WZ = Work-Zone Speed Limit (Set by Official Action)
 TCB = Temporary Concrete Barrier
 TTM = Temporary Tubular Markers
 TDSYL = Temporary Double Solid Yellow Line

Notes:

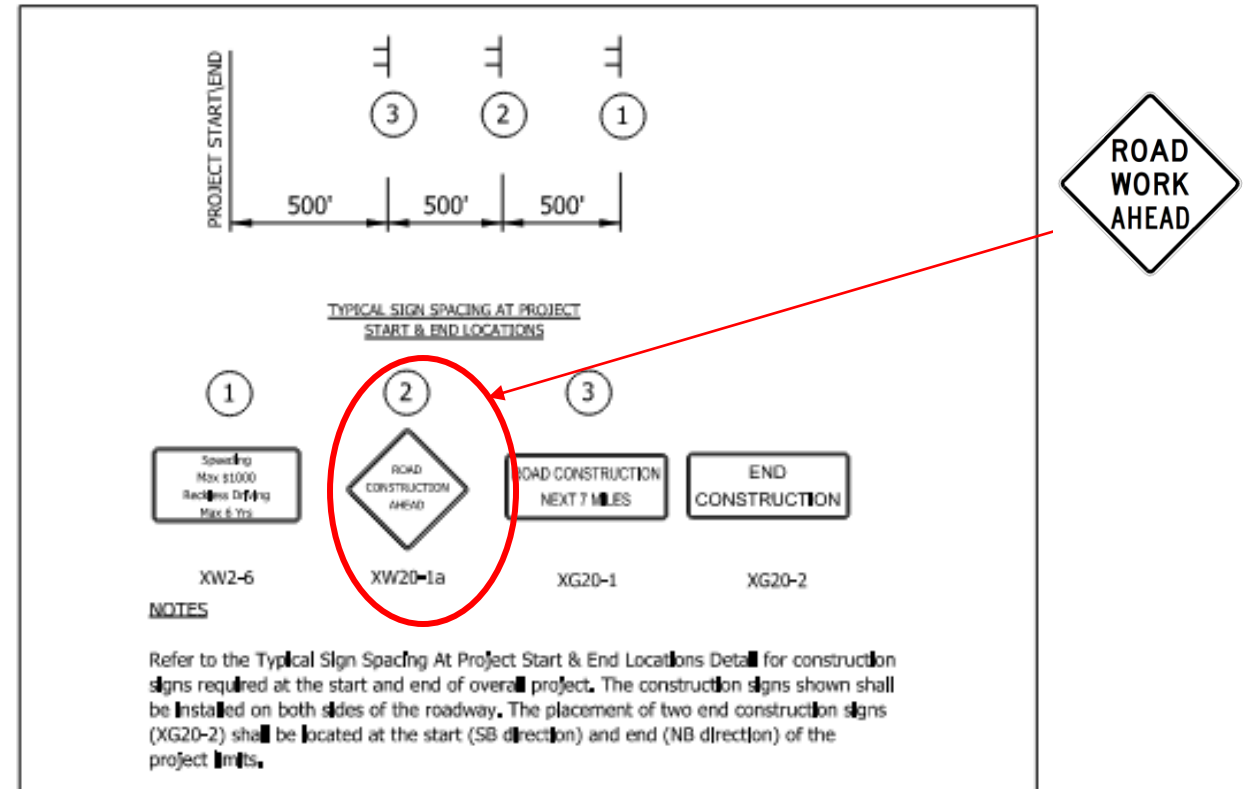
1. Work-zone speed limits are recommended only for projects greater than ½ mile in length. For road work areas where there is no lane closure, work-zone speed limits should only be used on a case-by-case basis. See Construction Memorandum 14-06 for additional information.
2. Work-site speed limits must be at least 10 mph less than the maximum speed limit. Lower work site speed limits may be established but reductions from the normal speed limit greater than 15mph must be accomplished in two increments (e.g. from 70 mph to 55 mph and then from 55 mph to 45 mph).
3. Speed limit may vary based on circumstances and actual field conditions such as lane widths and offset distances for TCB and TTM.

SUGGESTED TEMPORARY SPEED LIMITS FOR FREEWAYS AND EXPRESSWAYS

Figure 503-7A

Maintenance of Traffic

- Verify MOT operational signage with the most recent Standard Drawings and Design Memo 25-20
- Ensure signage is consistent with current standards.
- MOT quantity tables should be included at Stage 2.

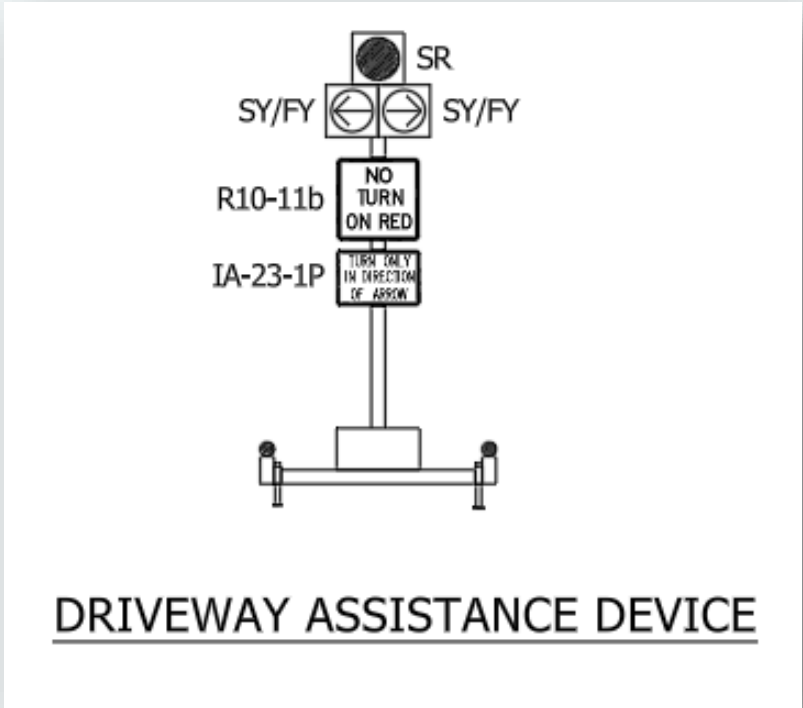


Signs should comply with guidance provided in DM 25-20.

MOT quantity table should be provided.

Residential Driveway Temporary Signals RTDS (DAD)

Components of a RTDS, Per FHWA IA-23 (January 8, 2025)



RSP 801-T-212 for Temp Signal Timings

Comps Required Submittal for all Signal Timings

US 52 in Brookville
Des. No. 2501119
Franklin County
Temporary Signal Timing Calculations

Calc: DJG Date: 11/3/2025
Chk: JMB Date: 11/3/2025
SHEET NO. 3 OF 3

Phase Diagram
(See Phase Diagram on Plan Sheet)

Φ1 US 52 EB →	Φ2 US 52 WB ←	Φ3	Φ4
Φ5	Φ6	Φ7	Φ8

Notes:

Signal Timing Parameters

Phase	Φ1	Φ2	Φ3	Φ4	Φ5	Φ6	Φ7	Φ8
Min Green	10.0	10.0						
Yellow	4.0	4.0						
All Red	16.0	16.0						
Max Green 1	15.0	15.0						
Max Green 2								
Max Cycle	35.0	35.0	0.0	0.0	0.0	0.0	0.0	0.0

Tot. Max Cycle

70.0 seconds

255 sec maximum Guidance per Item 6.c of Previous IDM Section 83-5.02

Total All Red

32.0 seconds

99 sec maximum Guidance per Item 6.c of Previous IDM Section 83-5.02

Assume Max Red Controls, even for driveway approaches. Max Cycle can be lowered if Max Red for drives is used. However, the Max Red is more conservative.

Number of Cycles per Hour at Max

51.43 Cycles

Total Max Cycle

1.17 Minutes

This scenario represents majority of time for Peak Hour Work Zone Operations.

Data sensitivity - Public

3 of 3

801-T-212 TEMPORARY SIGNAL TIMING PLAN
(Adopted 12-17-15)

Intersection: SR 236 Over UNT to Lick CrContract No.:B-43121
Official Action #:

Controller Type:

☐ Temporary Traffic Signal

☒ Portable Traffic Signal

Intersection Operation:

☒ Pre-Timed

☐ Semi-Actuated

☐ Fully Actuated

Preemption:

☒ None

☐ Railroad

☐ Emergency Vehicle

Interconnection:

☒ None

☐ Radio

☐ Fiber-Optic

☐ Other

Pedestrian Phasing:

☐ Yes

☒ No

Phase Diagram

☒ Two Phase

1 →	2 ←
--------	--------

☐ Four Phase

1 -	2 -
3 -	4 -

☐ Eight Phase

1 -	2 -	3 -	4 -
5 -	6 -	7 -	8 -

Signal Timing Parameters

Phase Number	1	2						
Minimum Green	10	10						
Yellow	5	5						
All Red	16	16						
Max. Green 1	10	10						
Max. Green 2								

Other Instructions:

Signals On:

Signals Flash:

Prepared by:

John Beery, PE, PTOE

Title:

Traffic Services Manager

Data sensitivity - Public

801-T-212

Traffic Management Plans and Significant Work Zone Determinations

Traffic Management Plans

- Required for all projects.
- Significant Work Zone Impact Worksheet Required
 - Should be completed as part of Engineering Assessment Report or as part of early design scope.
 - Coordinate with INDOT PM and District to confirm.
- If Project is NOT Significant:
 - MOT Plans becomes the TMP.
 - USP for Project Coordination May Be Necessary
 - Confirm with District and Place Confirmation in Correspondence File

DETERMINATION OF SIGNIFICANT WORK ZONE IMPACTS		
Route: _____ Des: _____ Project Development Stage: choose _____ Date: _____		
Note: this worksheet should be completed during scoping and the results placed in the SPMS project schedule.		
1. Determination by Federal Rule (Interstate corridors only)		
a. Is the project in a Traffic Management Area (see list below)?	☐ YES	☐ NO
b. Will travel lane(s) be affected, continuously or intermittently, for more than three days?	☐ YES	☐ NO
If answers to both 1a and 1b are yes, then the project is significant If no proceed to item 2, If yes, item 2 may be skipped	Significant	☐
2. Determination by INDOT Policy (All INDOT corridors)		
a. Is project scope major reconstruction or new construction?	☐ YES	☐ NO
b. Is AADT > 12,000 for 2 lane roads or 30,000 for multilane?	☐ YES	☐ NO
c. Is the project in an urban or suburban area (will pedestrian access be restricted)?	☐ YES	☐ NO
d. Will side street or driveway access will be closed for more than one daytime; or will access to a local business be significantly impacted?	☐ YES	☐ NO
e. Will ramps or an interchange be closed?	☐ YES	☐ NO
f. Will the closure be for more than one daytime period and will emergency vehicles or school access, including school bus stops, be affected; or will a significant employer or industrial facility be affected by the work?	☐ YES	☐ NO
g. Are timing and seasonal impacts significant?	☐ YES	☐ NO
If the answers to one or more of 2a thru 2g are yes, then the project may be significant – engineering judgment should be applied. If answers to all questions are no, then project is non-significant.	Significant	☐
	Non-Significant	☐
3. Comments:		

- Indiana Traffic Management Areas:**
- Gary (all of Lake, Porter, and La Porte counties)
 - South Bend/Elkhart (all of St Joseph and Elkhart counties)
 - Fort Wayne (all of Allen County)
 - Indianapolis (all of Marion, Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, and Shelby counties)
 - Evansville (all of Vanderburgh and Warrick counties)
 - Cincinnati (all of Dearborn County)
 - Louisville (all of Clark and Floyd counties)

Editable Determination of Significant Work Zone Impact Worksheet

Roundabouts

Roundabout Checklist

- Ensure all questions and information boxes are complete.
- Use brief statements accompanied by referenced calculations.

Design Criteria

- INDOT still uses NCHRP Report 672 for roundabout design and review and has not adopted NCHRP Report 1043.

DESIGN DOCUMENTATION									
6	Speeds Appropriate / Fastest Paths	Mini - 20mph Single Lane - 25mph Multi-Lane - 25mph - 30mph	NCHRP 6.7.1, 6.7.2 IDM	Yes	Yes		1	Fastest Path diagrams need to be submitted with Level 2 calculations and should be constructed consistent with NCHRP 672 process. Exit Speeds must be a calculated using acceleration equation (NCHRP Equation 6-4), instead of fastest path tables. Any and all fastest paths not meeting desired values should be explained as a part of calculations submitted. The desired speeds shown are recommended values only. If good engineering judgement has been used, speeds in excess of the desired speeds listed can be accepted.	See exhibits.
7	Speed Differential / Consistency	10mph - 15mph	NCHRP 6.7.1.3, IDM	Yes	Yes		1	Any and all fastest paths not meeting desired values should be explained as a part of calculations submitted. As with other design elements, speed consistency should be balanced with other objectives in establishing a design.	See notes.
8	Stopping Sight Distance		NCHRP 6.7.3.1, IDM	Yes	Yes		1	SSD for circulating movements should be shown graphically, based on the appropriate fastest path speed. Three SSD locations should be checked. SSD Calculations should be included in Level 2 calculations.	See exhibits.

12	Geometry matches capacity analysis		ENGINEER'S REPORT				1	Capacity of a roundabout is directly correlated to its geometry, therefore, the design must be completed in accordance with the parameters used in the capacity analysis.	
13	Inscribed Circle Diameter Range	Mini / Compact SU-30 45' - 90' Single Lane B-40 90' - 150' WB-50 105' - 150' WB-67 130' - 180' Two Lane WB-50 150' - 220' WB-67 165' - 220' Three Lane WB-50 200' - 250' WB-67 220' - 300'	NCHRP 6.3.1	Yes	Yes		1	See NCHRP 672, Section 6.3.1 for recommended sizes of roundabouts by design vehicle type.	140' provided.

General Comment: The roundabout checklist is used to summarize and verify the roundabout design. In each row, the selected criteria needs to be listed and any appropriate remarks should be listed to briefly explain to the reviewer that element of design. The reviewer should be able to look over the checklist and quickly see that rows meet the design, and if a row doesn't, an explanation should be provided as to why it's not met. The reviewer will check individual DgnComps as needed. Please complete the design summary and narrative in the checklist and resubmit.

Project Estimates and Estimates in CES

Contingencies

- Required for all projects.
- For various stages, consult Chapter 20 of the IDM.
- In General:
 - Preliminary Engineering – 20 to 30%
 - Stage 1 and PFC – 10 to 25% based on level of accuracy of quantities.
 - Stage 2 – 10 to 15%
 - Stage 3 – No Contingency
 - Coordinate with District and PM and Document Direction
 - Typically, Inflation is not used

INDIANA DEPARTMENT OF TRANSPORTATION CES JOB SUMMARY ESTIMATE									
JOB NUMBER: 1802900					ESTIMATOR: NEEL PANDYA			DATE : 10/20/2025	
DESCRIPTION: ROAD RECONSTRUCTION (3R/4R STANDARDS) ON I1932 CR 300N FROM SR 56/61 TO INDIANA SOUTHERN RAILROAD					COUNTY: C063 SEASON: SPRING			PAGE : 8	
HIGHWAY TYPE: Major Collector					VINCENNES DISTRICT			SPEC YEAR: 26	
DATE UPDATED: 10/20/2025					LETTING DATE: 02/11/2026			WORK TYPE: J000	
CONTRACT NO: R -42008					CHECKED BY: JMB			UNIT SYSTEM: E	
LATITUDE: 382756					PROJECT LENGTH: 0.9500			CONTINGENCY: 0.00%	
LONGITUDE: 871632					LANE MILES/KM: 1.9			READY FOR CONTRACT DATE: 11/19/2025	
								DATE CHECKED: 10/20/2025	
								PAVEMENT WIDTH: 24.0000	
								PAVEMENT DEPTH: 12	
LINE	CAT	ITEM	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT	OBS	REC/STD/UNIQUE
0102	0001	802-05701	BARRICADE TYPE III-B	150.0000	LFT	@ \$ 35.00 =	\$ 5,250.00	N	S
0103	0001	802-07059	SIGN POST SQ 1 REINFORCED ANCHOR BASE	17.0000	EACH	@ \$ 160.00 =	\$ 2,720.00	N	S
0104	0001	802-09837	SIGN SHEET AND SUPPORTS REMOVE	6.0000	SFT	@ \$ 100.00 =	\$ 600.00	N	S
0105	0001	802-09838	SIGN DBLE-FACED SHEET WITH LEG 0.080 IN	71.0000	SFT	@ \$ 40.00 =	\$ 2,840.00	N	S
0106	0001	808-75007	SIGN SHEET WITH LEGEND 0.080 IN	8,468.0000	LFT	@ \$ 1.00 =	\$ 8,468.00	N	S
0107	0001	808-75047	LINE PAINT SOLID WHITE 6 IN	8,782.0000	LFT	@ \$ 1.00 =	\$ 8,782.00	N	S
0108	0001	808-75140	LINE PAINT SOLID YELLOW 6 IN	2.0000	EACH	@ \$ 1,000.00 =	\$ 2,000.00	N	S
0109	0001	808-75297	PAVEMENT MSG MARKING PAINT RXR	97.0000	LFT	@ \$ 15.00 =	\$ 1,455.00	N	S
0110	0001	808-75998	TRANSVERSE MKG THERMO STOP WHITE 24 IN	116.0000	EACH	@ \$ 80.00 =	\$ 9,280.00	N	S
							ESTIMATE ITEM TOTAL =	\$ 3,898,558.00	
							INFLATED ESTIMATE TOTAL =	\$ 3,898,558.00	
							CONTINGENCY (0.00%) =	\$ 0.00	
							TOTAL ESTIMATE =	\$ 3,898,558.00	
NOTE: The estimate item total includes all alternate items. The other estimate totals include only low cost alternate items.									

CES JOB SUMMARY ESTIMATE									
JOB NUMBER: 1901880					ESTIMATOR: VANCE G. EPPL			PAGE : 1	
DESCRIPTION: INTERSECTION IMPROVEMENT, ROUNDABOUT ON SR38 AT LOGAN STREET					COUNTY: C029 SEASON: SUMMER			SPEC YEAR: 10	
HIGHWAY TYPE: Other Principal Arterial					GREENFIELD DISTRICT			WORK TYPE: P000	
DATE UPDATED: 06/22/2023					LETTING DATE: 07/09/2025			UNIT SYSTEM: E	
CONTRACT NO: R -42227					CHECKED BY: ANDREW M. PLOUGH			CONTINGENCY: 0.00%	
LATITUDE: 400311					PROJECT LENGTH: 1.1100			READY FOR CONTRACT DATE: 11/22/2023	
LONGITUDE: 860157					LANE MILES/KM: 2.2			DATE CHECKED: 06/22/2023	
								PAVEMENT WIDTH: 24.0000	
								PAVEMENT DEPTH: 20	
LINE	CAT	ITEM	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT	OBS	REC/STD/UNIQUE
0001	0001	105-06807	ADDITIONAL 10% for misc items	1.0000	LS	@ \$ 375,000.00 =	\$ 375,000.00	N	U TYPE OF WORK IN SUPP DESCR
0002	0001	105-06845	CONSTRUCTION ENGINEERING	1.0000	LS	@ \$ 127,500.00 =	\$ 127,500.00	N	S
0003	0001	110-01001	MOBILIZATION AND DEMOBILIZATION	1.0000	LS	@ \$ 230,000.00 =	\$ 230,000.00	N	S

Project Estimates and Estimates in CES

CES

- Complete head
- Common issues missing:
 - Ready for Letting Date
 - Date checked
 - Pavement Width and Depth
 - Complete "Checker"
 - Ready for Contracts Date
 - Note "Non-Participating Items"
 - Non-Participating Items may get combined with other items during Contracts Prep

INDIANA DEPARTMENT OF TRANSPORTATION
CES JOB SUMMARY ESTIMATE
Workbook last saved: Just now

DATE : 03/24/2023
PAGE : 1

ESTIMATOR: ART
COUNTY: C054
SEASON: SPRING

SPEC YEAR: 10
WORK TYPE: J000
UNIT SYSTEM: E

CRAWFORDSVILLE DISTRICT

LETTING DATE: 1
CHECKED BY: E
PROJECT LENGTH: 2.0800
LANE MILES/KM: 8.3

CONTINGENCY: 10.0%

READY FOR CONTRACT DATE
DATE CHECKED
PAVEMENT WIDTH
PAVEMENT DEPTH

Should not have any contingency at Stage 3

Missing Information

QTY	UNIT	PRICE	AMOUNT	OBS	REC/STD/UNIQUE
0061	0001	714-11192 STRUCTURE RC BOX SECTIONS 4 X 3 FT	48.0000 LFT @ \$ 1,150.00 = \$ 55,200.00	N	S
0062	0001	714-11197 STRUCTURE RC BOX SECTIONS 3 X 2 FT	46.0000 LFT @ \$ 730.00 = \$ 33,580.00	N	S
0063	0001	715-02388 WATER MAIN 3 IN, PVC C-900 NON-PARTICIPATING	30.0000 EACH @ \$ 40.00 = \$ 1,200.00	N	U
0064	0001	715-02743 GATE VALVE WITH VALVE BOX 4 IN NON-PARTICIPATING	4.0000 EACH @ \$ 2,750.00 = \$ 11,000.00	N	U
0065	0001	715-04522 PIPE END SECTION DIAMETER 42 IN	2.0000 EACH @ \$ 4,600.00 = \$ 9,200.00	N	S
0066	0001	715-04612 PIPE 2" HDPE WITH 1" HDPE SERVICE NON-PARTICIPATING	100.0000 LFT @ \$ 45.00 = \$ 4,500.00	N	U

Project Estimates and Estimates in CES

CES

- Complete head
- Common missing items and issues:
 - Ready for Letting Date
 - Date checked
 - Pavement Width and Depth
 - Complete "Checker"
 - Ready for Contracts Date
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INDIANA DEPARTMENT OF TRANSPORTATION
CES JOB SUMMARY ESTIMATE
Workbook last saved: Just now

DATE : 03/24/2023
PAGE : 1

ESTIMATOR: ART
COUNTY: C054
SEASON: SPRING

SPEC YEAR: 10
WORK TYPE: J000
UNIT SYSTEM: E

CRAWFORDSVILLE DISTRICT

LETTING DATE: 1
CHECKED BY: E
PROJECT LENGTH: 2.0800
LANE MILES/KM: 8.3

CONTINGENCY: 10.0%

READY FOR CONTRACT DATE
DATE CHECKED
PAVEMENT WIDTH
PAVEMENT DEPTH

Should not have any contingency at Stage 3

Missing Information

QTY	UNIT	PRICE	AMOUNT	OBS	REC/STD/UNIQUE
0061 0001	714-11192	STRUCTURE RC BOX SECTIONS 4 X 3 FT	48.0000 LFT @ \$ 1,150.00 = \$ 55,200.00	N	S
0062 0001	714-11197	STRUCTURE RC BOX SECTIONS 3 X 2 FT	46.0000 LFT @ \$ 730.00 = \$ 33,580.00	N	S
0063 0001	715-02388	WATER MAIN 3 IN, PVC C-900	30.0000 EACH @ \$ 40.00 = \$ 1,200.00	N	U
0064 0001	715-02342	NON-PARTICIPATING	4.0000 EACH @ \$ 2,750.00 = \$ 11,000.00	N	U
0065 0001	715-04522	GATE VALVE WITH VALVE BOX 4 IN	2.0000 EACH @ \$ 4,600.00 = \$ 9,200.00	N	S
0066 0001	715-04612	PIPE END SECTION DIAMETER 42 IN	100.0000 LFT @ \$ 45.00 = \$ 4,500.00	N	U
		PIPE 2" HDPE WITH 1" HDPE SERVICE			
		NON-PARTICIPATING			

Design Memos, RSPs and USPs

(posted January 28, 2026)
Effective for
June, July, and August 2026 lettings.
(03/10/26 - Updated RP D 801-T-227d (replaced "ROAD CONSTRUCTION AHEAD" sign with "ROAD WORK AHEAD" and "END CONSTRUCTION" sign with "END WORK")

- Check Design Memos before any submittal.
- Complete headers
- Check all applicable RSP
- Make sure all documents are current documents and up to date.
 - RSP Menu
 - Utility Coordination RSP
- USP/RSP Menu saved over the other
- USPs should be reviewed by Stage 3

Contract _____
District _____

NOTE: This Menu is divided into two sections:
SECTION I - Standard Recurring Special Provisions and Recurring Plan Details
and
SECTION II - Contract Specific Recurring Special Provisions.
Please review both sections to locate and ensure the correct items are placed in the contract.

Place In Contract (X)	Attach. Req'd. (X)	RSP Number	Title	A or R	Adopted or Revised Date	Letting Effective Date	Basis for Use
SECTION I: Standard Recurring Special Provisions and Recurring Plan Details							
		100-C-146	Payment of Predetermined Minimum Wage Determination (Davis-Bacon Act) IN 20250001	R	06-16-22	01-06-23	Required for all contracts in Lake, LaPorte, Porter, and St. Joseph counties except building construction. Do not use for maintenance contracts such as: mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming.
		100-C-147	Payment of Predetermined Minimum Wage Determination (Davis-Bacon Act) IN 20250006	R	06-16-22	01-06-23	Required for all contracts in counties other than Lake, LaPorte, Porter, and St. Joseph except building construction. Do not use for maintenance contracts such as: mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming.
		100-C-151A	FHWA-1273	R	10-23-23	10-23-23	Required for all Federal Aid contracts.
		100-C-151D	Executive Order 11246	R	05-01-25	09-01-25	Required for all Federal Aid contracts.
X		100-C-151E	Title VI Assurances	R	05-21-15	08-01-15	Required for all contracts.

Closing

Summary:

- Documentation is important
- Ensure good communication in documentation
- Be consistent with Design Manual and Standards.
- Complete regular checks
- ? Or !

