

WILLIAMSON COUNTY, TEXASCHANGE ORDER NUMBER: 19

NTP Required:

Contractor: James Construction Group ☒ Yes ☐ NoProject Name: FM3349 at US 79Change Order Work Limits: Sta. 503+00 to Sta. 536+00Type of Change(on federal-aid non-exempt projects): Minor (Major/Minor)Reasons: 1A (3 Max. - In order of importance - Primary first)

Contract Award Date:	<u>9/26/2022</u>
Project Number:	<u>22IFB139</u>
Funding Source:	<u>P332</u>
Roadway:	<u>FM3349</u>
CSJ Number:	<u>N/A</u>

Describe the work being revised:

1. Design Error or Omission. 1A Incorrect PS&E : This Change Order compensates the Contractor for replacing the bridge blister anchor bolts for the illumination poles on the northbound and southbound bridges. The as-bid plan set specified the incorrect type of base plate and anchor bolts for the bridge mounted poles. The Contractor submitted an RFI proposing to use the specified base plates with the correct type of anchor bolts. The Engineer of Record (EOR) reviewed the request and agreed with the Contractor's proposal. As a result of this change, 27 previously approved and fabricated anchor bolt sets, will be replaced with the correct type for the specified illumination poles. The supplier did not give the Contractor the option to pay a re-stocking fee for the original anchor bolts. Therefore, 27 anchor bolts will be delivered to Wilco maintenance yard to be used in future projects.

Each signatory hereby warrants that each has the authority See AttachedNew or revised plan sheet(s) are attached and numbered: N/ANew Special Provisions/Specifications to the contract are attached: ☐ Yes ☒ NoNew Special Provisions to Item N/A No. N/A. Special Specification Item N/A are attached.

Each signatory hereby warrants that each has the authority to execute this Change Order (CO).

The contractor must sign the Change Order and, by doing so, agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change.	The following information must be provided
THE CONTRACTOR Date <u>7-15</u>	Time Ext. #: <u>N/A</u> Days added on this CO: <u>0</u>
By <u>[Signature]</u>	Amount added by this change order: <u>\$9,869.00</u>
Typed/Printed Name <u>Joey Williams</u>	Original Contract Amount: <u>\$81,941,038.13</u>
Typed/Printed Title <u>Division Manager</u>	Total Change Orders To-Date: <u>\$2,162,933.94</u>
	Percent Change in Original Contract: <u>2.64%</u>

RECOMMENDED FOR EXECUTION:

[Signature] 7/16/2024
Senior Construction Engineer Date

Christen Eschberger 8/6/2024
Program Manager Date

N/A
3rd Party Signature Date

RECOMMENDED FOR EXECUTION:

[Signature] 8/6/2024
Department of Infrastructure Date
Williamson County

APPROVED:

Presiding Officer of the Date
Williamson County Commissioners Court

WILLIAMSON COUNTY, TEXAS

CHANGE ORDER NUMBER: 19

Project #: 22IFB139

TABLE A: Force Account Work and Materials Placed into Stock[illegible]**TABLE B: Contract Items:**

				ORIGINAL + PREVIOUSLY REVISED		ADD or (DEDUCT)	NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
999 WC16	BRIDGE BLISTER BOLT SETS	LS	\$ 9,869.00	0.00	\$ -	1.00	1.00	\$ 9,869.00	\$ 9,869.00
TOTALS					\$ -			\$ 9,869.00	\$ 9,869.00

CHANGE ORDER REASON(S) CODE CHART

1. Design Error or Omission	1A. Incorrect PS&E 1B. Other
2. Differing Site Conditions (unforeseeable)	2A. Dispute resolution (expense caused by conditions and/or resulting delay) 2B. Unavailable material 2C. New development (conditions changing after PS&E completed) 2D. Environmental remediation 2E. Miscellaneous difference in site conditions (unforeseeable)(Item 9) 2F. Site conditions altered by an act of nature 2G. Unadjusted utility (unforeseeable) 2H. Unacquired Right-of-Way (unforeseeable) 2I. Additional safety needs (unforeseeable) 2J. Other
3. County Convenience	3A. Dispute resolution (not resulting from error in plans or differing site conditions) 3B. Public relations improvement 3C. Implementation of a Value Engineering finding 3D. Achievement of an early project completion 3E. Reduction of future maintenance 3F. Additional work desired by the County 3G. Compliance requirements of new laws and/or policies 3H. Cost savings opportunity discovered during construction 3I. Implementation of improved technology or better process 3J. Price adjustment on finished work (price reduced in exchange for acceptance) 3K. Addition of stock account or material supplied by state provision 3L. Revising safety work/measures desired by the County 3M. Other
4. Third Party Accommodation	4A. Failure of a third party to meet commitment 4B. Third party requested work 4C. Compliance requirements of new laws and/or policies (impacting third party) 4D. Other
5. Contractor Convenience	5A. Contractor exercises option to change the traffic control plan 5B. Contractor requested change in the sequence and/or method of work 5C. Payment for Partnering workshop 5D. Additional safety work/measures desired by the contractor 5E. Other
6. Untimely ROW/Utilities	6A. Right-of-Way not clear (third party responsibility for ROW) 6B. Right-of-Way not clear (County responsibility for ROW) 6C. Utilities not clear 6D. Other

Williamson County Road Bond Program

**FM3349 at US 79
Williamson County Project No. 22IFB139**

Change Order No. 19

Reason for Change

This Change Order compensates the Contractor for replacing the bridge blister anchor bolts for the illumination poles on the northbound and southbound bridges. The as-bid plan set specified the incorrect type of base plate and anchor bolts for the bridge mounted poles. The Contractor submitted an RFI proposing to use the specified base plates with the correct type of anchor bolts. The Engineer of Record (EOR) reviewed the request and agreed with the Contractor's proposal. As a result of this change, 27 previously approved and fabricated anchor bolt sets, will be replaced with the correct type for the specified illumination poles. The supplier did not give the Contractor the option to pay a re-stocking fee for the original anchor bolts. Therefore, 27 anchor bolts will be delivered to Wilco maintenance yard to be used in future projects.

Following is summary of new items required for this Change Order.

ITEM	DESCRIPTION	QTY	UNIT
999 WC16	BRIDGE BLISTER BOLT SETS	1	LS

This Change Order results in a net increase of \$9,869.00 to the Contract amount, for an adjusted Contract total of \$84,103,972.07. The original Contract amount was \$81,941,038.13. As a result of this and all Change Orders to-date, \$2,162,933.94. has been added to the Contract, resulting in an 2.64% net increase in the Contract cost. No additional days will be added to or deducted from the Contract as a result of this Change Order.

HNTB Corporation

Oscar Salazar-Bueno, P.E.

Change Order Worksheet

Contract Name FM3349 at US79

Solicitation # 22IFB139

Date awarded 9/26/2022

Awarded Contract Amount \$81,941,038.13

		Percentage Change
Change order #1	\$925,354.41	1.13%
Change order #2	\$82,000.00	0.10%
Change order #3	\$195,302.81	0.24%
Change order #4	-\$472,492.20	-0.58%
Change order #5	-\$5,274.97	-0.01%
Change order #6	\$130,053.00	0.16%
Change order #7	\$661,031.30	0.81%
Change order #8	\$327,321.48	0.40%
Change order #9	-\$368,749.53	-0.45%
Change order #10	\$67,965.30	0.08%
Change order #11	\$271,902.72	0.33%
Change order #12	\$64,791.00	0.08%
Change order #13	\$82,301.65	0.10%
Change order #14	\$101,248.22	0.12%
Change order #15	\$24,513.18	0.03%
Change order #16	\$35,324.07	0.04%
Change order #17	\$11,849.07	0.01%
Change order #18	\$18,623.43	0.02%
Change order #19	\$9,869.00	0.01%

Total changes to date

\$2,162,933.94

2.64%

(Running totals here)

Adjusted contract amount

\$84,103,972.07

AUSTIN TRAFFIC SIGNAL CONSTRUCTION COMPANY, INC.

P.O. Box 130
Round Rock, Texas 78680

Ph. (512) 255-9951
Fax (512) 255-0146

CHANGE ORDER PROPOSAL

June 10, 2024

CONTROL : 0204-02-034
PROJECT: US 79 BRIDGE BLISTERS
HIGHWAY: US 79
COUNTY: WILLIAMSON

Item No.	Desc. Code	Bid Item Description	Unit of Measure	Approx. Quantities	Unit Bid Price	Amount
610		BRIDGE BLISTER BOLT SETS FOR ITEM 610-6208 RD IL TY SA(40S-10)	SET	27	\$347.00	\$0.00
		1.25 " BOLTS-PLATES-NUTS-WASHERS	SET	27.00	\$347.00	\$9,369.00
		DELIVERY LABOR	LS	1.00	\$500.00	\$500.00
					SUBTOTAL	\$9,869.00
					TOTAL	\$9,869.00

EXCLUSIONS

- 1) Forklift unloading of anchor bolts onsite

Clark Thomas 512-255-9951 ext 214



REQUEST FOR INFORMATION FORM

RFI NO.: 57 DATE: 4/2/24
PROJECT: 3349 @ US-79 RESPONSE REQUESTED BY
TO: HNTB: ASIF DATE: 4/16/24

REFERENCE: Plan Sheets: xxx

PROBLEM:
See attached

Received

04/03/2024
HNTB CORPORATION
ROUND ROCK

RECOMMENDED SOLUTION:

Originator

Supervisor

RESPONSE:

Responder

Date

Sign, Date & Return to HNTB via e-mail or fax.

Mail original to: HNTB Corporation
101 E Old Settlers Blvd, Ste 225
Round Rock, Texas 78664

Attachments to RFI:
Cc:



5880 West Highway 190
LEWISVILLE, Texas 76513
Phone: 972-538-5300 Fax: 866-785-2025

Request for Information # 057

Project FM 3349 @ SH 79

JCG Job# 10906

CSJ # 3486-01-008

To:	From:
ASIF MIRZAZADA	GARY COUCH
HNTB CORPORATION	JAMES CONSTRUCTION GROUP, LLC.
101 E. OLD SETTLERS BLVD. STE.225	5880 W. US HWY190
ROUND ROCK, TX 78664	BELTON, TX 76513
Phone: 512-987-9179	Phone: 254-346-5037
Fax:	Fax:
Email: AMIRZAZADA@HNTB.COM	Email: GCOUCH@PRIM.COM

Subject:	Status:	Response Required By:
Bridge Blister Anchor Bolts	RFI OPEN	4/16/2024

Submittal #:	Drawing #:	Addendum:	Spec Section:	Schedule #:
	ILLUMINATION		600	

Please be advised that this document shall serve as notice pursuant to the terms of the Contract. The timeliness and/or content of the response may impose time and cost impacts to the project that could not have been reasonably or objectively contemplated at the time of the Bid, which may therefore merit an adjustment to the Contract.

RFI Detail:
I have noticed error in the bid item description for the illumination poles that need clarification: There is an error in the bid item description for the illumination poles. The 27 poles that are listed as "IN RD II (TY SA) 40S are "S" base poles, these are mounted on concrete foundations without a "T" base (mostly behind guard rail). The description should have read "IN RD IL (TY SA) 40B for bridge blister or retaining wall poles. See Below the 2 differences: 1. Anchor Bolts, the poles have a separate set of anchor bolts listed in the bridge details "BL". 2. Handhole height ATS mention that they don't see many blister poles with the correct handhole height, but we do need the correct anchor bolts (to attach the S base poles to the blister). Please let me know if the engineer is going to require the correct poles (B base), or will the correct anchor bolt with the S base poles be sufficient? We do have the S base poles materials on MOH.

Suggestion:



5880 West Highway 190
LEWISVILLE, Texas 76513
Phone: 972-538-5300 Fax: 866-785-2025

Response:

IN RD IL (TY SA) 40S ("S" base) type poles have the same anchor bolt plate size, anchor bolt circle diameter size, and anchor bolt hole diameter size as IN RD IL (TY SA) 40B ("B" base) type poles required for bridge illumination pole brackets (BL standard) and retaining wall light pole brackets (RW-LB standard). Contractor to utilize the (27) IN RD IL (TY SA) 40S ("S" base) type poles the contractor already has MOH for all illumination poles mounted to bridge light pole brackets (BL standard) and retaining wall light pole brackets (RW-LB standard). BL and RW(LB) standards are located within the project plan set. Provide the correct anchor bolts only, per the BL bridge light bracket standards and RW(LB) retaining wall light bracket standards, for the (27) IN RD IL (TY SA) 40S ("S" base) type poles contractor already has MOH. GM@HDR.

Signature: G. Martinez III @ HDR, Inc.

Date: April 19, 2024

SUMMARY OF ILLUMINATION QUANTITIES														
PLAN SHEET NO.	STATION TO STATION	0416 6029	0432 6001	0610 6106	0610 6208	0610 6216	0618 6023	0618 6064	0520 6005	0620 6006	0620 6007	0620 6008	0624 6002	0628 6049
		DRILL SHAFT (ROW) ILL POLE (30 IN)	RIPRAP (CONC) (4 IN)	IN RD IL (U/P) (TY 2) (150W EQ) LED	IN RD IL (TY SA) 405-10 (250W EQ) LED	IN RD IL (TY SA) 40T-10 (250W EQ) LED	CONDT (PVC) (SCH 40) (2")	CONDT (RM) (1")	ELEC CONDR (NO. 10) BARE	ELEC CONDR (NO. 10) INSULATED	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311) W/APRON	ELC SRV TY A 240/480 060 (NS) SS (T) SP (O)
		LF	CY	EA	EA	EA	LF	LF	LF	LF	LF	LF	EA	EA
ILLUMINATION SHEETS														
698	BEGIN TO 426+00	32	1.68			4	844				874	1748	1	
699	426+00 TO 437+00	24	1.61			3	1281				1316	2632	2	
700	437+00 TO 448+00	32	1.86			4	1543				1578	3156	2	1
701	481+00 TO 492+00	16	1.26	1		2	1075	1			1095	2190	2	1
702	492+00 TO 503+00	48	2.66			6	1768				1813	3626	3	1
703	503+00 TO 514+00	8	0.91		7	1	5668		2277	4554	2228	7052	2	
704	514+00 TO 525+00				7		3007		1316	2632	1841	3682		
705	525+00 TO 536+00	8	0.91		8	1	4180		2119	4238	2191	4382	2	1
706	536+00 TO 547+00	64	3.64			8	2370				2445	4890	4	1
707	547+00 TO 558+00	32	2.24			4	1339				1379	2758	3	
708	558+00 TO END	24	1.05			3	461				476	952		
709	UNDERPASS			8	4			518	578	1156				
710	UNDERPASS			8	1			475	535	1070				
ILLUMINATION TOTALS		288	17.92	16	27	36	23536	993	6825	13650	18534	37068	21	4

Join 2568

1	2/21/23	CD #2	PAF
NO.	DATE	REVISION	APPROVED
			
HDR Engineering, Inc. 710 Hesters Crossing, Suite 150 Round Rock, Texas 78661 Texas Registered Engineering Firm F-754			
			
FM 3349 SUMMARY OF QUANTITIES			
SHEET 13 OF 17			
DESIGN	FED. RD. CIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
GRM	6		FM 3349
GRAPHICS	STATE	DISTRICT	SHEET NO.
GRM	TEXAS	AUS	WILLIAMSON
CHECK	CONTROL	SECTION	JOB
PKD	3486	01	008, ETC
CHECK			31

PLOT DRIVER: T:\DOT_PDF_BN.plt
PLOT DATE: 5/23/2022 9:18:45 AM
SCALE: 1/8"=1'-0"
PEN/PLT: 025/45, 1/8"
DATE: 5/23/2022
TIME: 9:18:45 AM
USER: GOMEZGONZ
FILE: FM3349-Illumination Plan - STA 503+00 to STA 514+00

CONDUCTORS AND CONDUIT SUMMARY										NOTES
SERVICE	CIRCUIT	SEGMENT NO.	SEGMENT LENGTH (LF)	CONDUIT (LF)		CONDUCTORS (LF)				
				0618-6023 2" PVC SCH 40	0620-6005 #10 BARE (GROUND)	0620-6006 #10 XHHW (POWER)	0620-6007 #8 BARE (GROUND)	0620-6008 #8 XHHW (POWER)		
ES2	E	33	294	1 X 294 = 294			1 X 299 = 299	2 X 299 = 598		
	F					1 X 299 = 299	2 X 299 = 598			
	G									
	H									
ES2	E	34	56	1 X 56 = 56			1 X 299 = 299	2 X 299 = 598		
	F			1 X 61 = 61	2 X 61 = 122	1 X 61 = 61	2 X 61 = 122			
	G									
	H									
ES2	E	35	185	1 X 185 = 185	1 X 190 = 190	2 X 190 = 380	1 X 190 = 190	2 X 190 = 380	1	
	F									
	G									
	H									
ES2	E	36	205	1 X 205 = 205	1 X 210 = 210	2 X 210 = 420	1 X 210 = 210	2 X 210 = 420	1	
	F									
	G									
	H									
ES2	E	37	200	1 X 200 = 200	1 X 205 = 205	2 X 205 = 410	1 X 205 = 205	2 X 205 = 410	1	
	F									
	G									
	H									
ES2	E	38	139	1 X 139 = 139	1 X 144 = 144	2 X 144 = 288	1 X 144 = 144	2 X 144 = 288	1	
	F									
	G									
	H									
ES2	E	39	326	1 X 326 = 326	1 X 331 = 331	2 X 331 = 662	1 X 331 = 331	2 X 331 = 662	1	
	F									
	G									
	H									
ES2	E	40	16	1 X 16 = 16			1 X 211 = 211	2 X 211 = 422	1	
	F									
	G									
	H									
ES2	E	41	294	1 X 294 = 294	1 X 236 = 236	2 X 236 = 472	1 X 236 = 236	2 X 236 = 472	1	
	F									
	G									
	H									
ES2	E	43	210	1 X 210 = 210	1 X 215 = 215	2 X 215 = 430	1 X 215 = 215	2 X 215 = 430	1	
	F									
	G									
	H									
ES2	E	44	200	1 X 200 = 200	1 X 205 = 205	2 X 205 = 410	1 X 205 = 205	2 X 205 = 410	1	
	F									
	G									
	H									
ES2	E	45	176	1 X 176 = 176	1 X 181 = 181	2 X 181 = 362	1 X 181 = 181	2 X 181 = 362	1	
	F									
	G									
	H									
SHEET TOTAL				5668	2277	4554	3526	7052		

NOTES:
1) CONDUIT SEGMENT RUN EMBEDDED WITHIN THE CONCRETE RETAINING WALL AND/OR BRIDGE STRUCTURE. COORDINATE WITH RETAINING WALL AND/OR BRIDGE CONTRACTOR PRIOR TO ROUGH-IN.

ROADWAY ILLUMINATION ASSEMBLY SUMMARY						
SERVICE	POLE NO.	CIRCUIT	STATION	OFFSET	ASSEMBLY TYPE	NOTE
ES2	20	E	506+56.75	WALL LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	21	E	508+46.25	WALL LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	22	E	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES2	23	E	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES2	24	D	503+15.00	194.50 RT (FM3349)	(TYPE SA 40 1-10 (250W EQ) LED	
ES2	25	G	508+24.25	WALL RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	26	G	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES2	27	G	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2

NOTES:

- 1) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON TOP OF THE CONCRETE RETAINING WALL LIGHTING BRACKET. REFER TO RETAINING WALL PLANS FOR ADDITIONAL INFORMATION. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.
- 2) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON THE BRIDGE BLISTER LIGHTING BRACKET. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION. COORDINATE INSTALLATION WITH BRIDGE CONTRACTOR. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.

SHEET SUMMARY OF ESTIMATED QUANTITIES			
ITEM#	DESCRIPTION	UNIT	QTY
0416 6029	DRILL SHAFT (ROWY ILL POLE) (30 IN)	LF	8
0432 6001	RIPRAP (CONC) (4 IN)	CY	0.91
0610 6208	IN RD IL (TY SA) 40F-10 (250W EQ) LED	EA	7
0610 6216	IN RD IL (TY SA) 40F-10 (250W EQ) LED	EA	1
0618 6023	COND (PVC) (SCH 40) (2")	LF	5668
0620 6005	ELEC CONDR (NO.10) BARE	LF	2277
0620 6006	ELEC CONDR (NO.10) INSULATED	LF	4554
0620 6007	ELEC CONDR (NO.8) BARE	LF	3526
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	7052
0624 6002	GROUND BOX TY A (12X31) W/APRON	EA	2

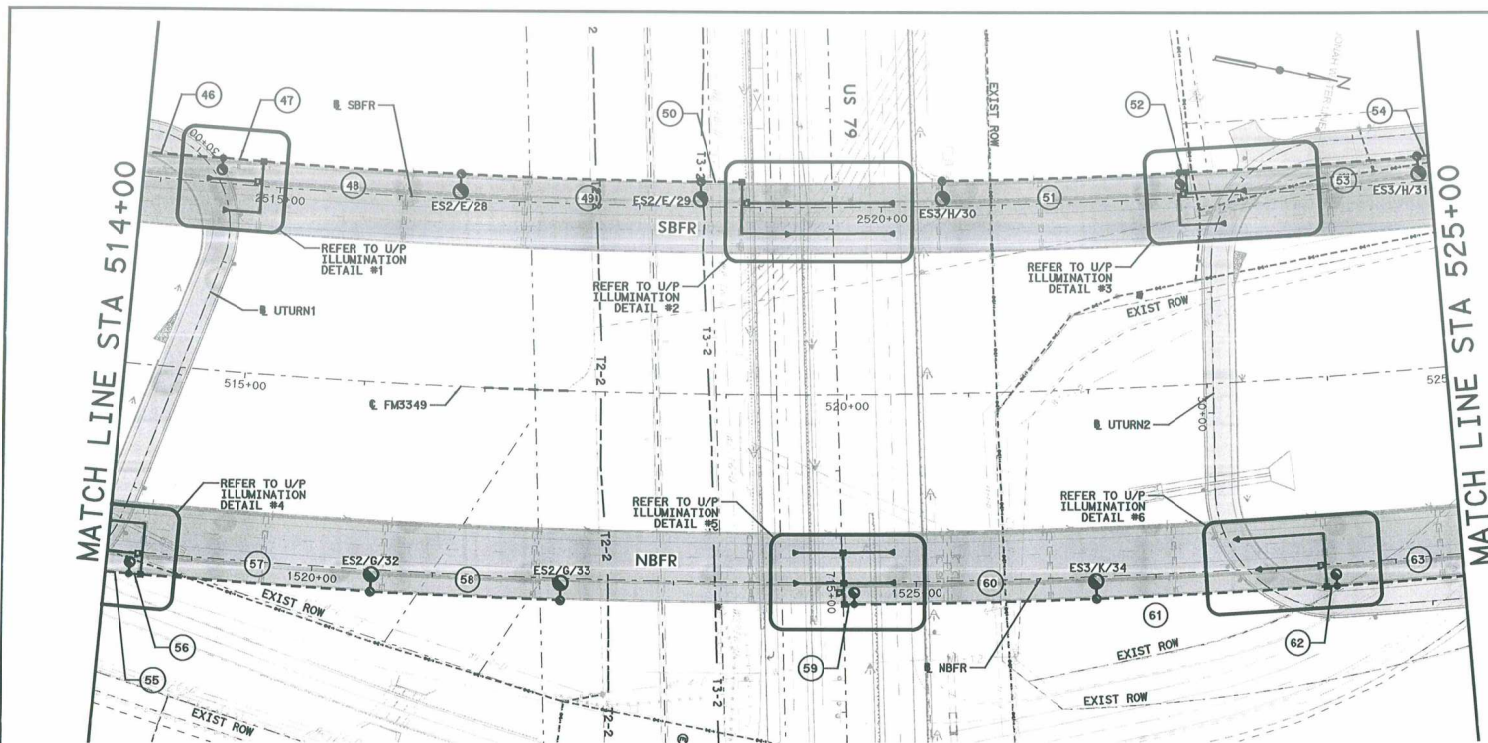
GENERAL NOTES:

1. ALL WORK SHALL BE COMPLETED ACCORDING TO THE MOST CURRENT TxDOT STANDARDS, UTILITY COMPANY STANDARDS, AND THE NATIONAL ELECTRIC CODE.
2. THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES THE EXACT LOCATION OF EXISTING/PROPOSED UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT, OR DAMAGE TO THE UTILITIES. THE CONTRACTOR SHALL SEEK THE APPROVAL OF THE ENGINEER AND ADJUST THE OFFSETS TO AVOID DAMAGE TO THE EXISTING/PROPOSED UTILITIES.
3. REFER TO ILLUMINATION SUMMARIES, SCHEMATICS, AND TxDOT STANDARDS FOR ADDITIONAL INFORMATION.
4. PROPOSED ABOVE GROUND NEMA 3R JUNCTION BOXES SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
5. PROVIDE CONDUIT EXPANSION AND DEFLECTION COUPLING PRIOR TO ENTERING BRIDGE MOUNTED JUNCTION BOX FOR TRANSITION FROM UNDERGROUND CONDUIT TO BRIDGE EMBEDDED CONDUIT. COUPLING SHALL ALLOW FOR A MAXIMUM OF 4" HORIZONTAL AND VERTICAL MOVEMENT.
6. REFER TO BRIDGE DRAWINGS FOR EXACT LOCATION OF BRIDGE MOUNTED ILLUMINATION ASSEMBLIES AND ASSOCIATED INSTALLATION DETAILS.

ILLUMINATION LEGEND

- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO BRIDGE BLISTER, TYPE III DISTRIBUTION
- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO RETAINING WALL LIGHTING BRACKET, TYPE III DISTRIBUTION
- TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO RETAINING WALL LIGHTING BRACKET, TYPE III DISTRIBUTION
- TxDOT STANDARD TYPE II UNDERPASS ILLUMINATION ASSEMBLY, (1) LED LUMINAIRE (150W EQ), TYPE III DISTRIBUTION
- ELECTRICAL SERVICE ASSEMBLY, TYPE A, 240/480 VOLT, 1 PHASE, STEEL POLE
- GROUND BOX WITH APRON (NEMA 3R)
- GROUND BOX (NEMA 3R)
- JUNCTION BOX (NEMA 3R)
- DISCONNECT SWITCH (NEMA 3R)
- CONDUCTORS IN CONDUIT RUN (RIGID METAL CONDUIT)
- CONDUCTORS IN CONDUIT RUN (EMBEDDED IN BRIDGE STRUCTURE)
- CONDUCTORS IN CONDUIT RUN (TRENCH)
- CONDUCTORS IN CONDUIT RUN (BORED)
- CONDUCTORS/CONDUIT SEGMENT NO.
- X/X/X - ILLUMINATION ASSEMBLY DESIGNATION
- SERVICE POINT CIRCUIT DESIGNATION ELECTRICAL SERVICE DESIGNATION

		DATE		REVISION	APPROVED
		NO.			
		HDR Engineering, Inc. 710 Heister Crossing, Suite 150 Round Rock, Texas 78681 Texas Registered Engineering Firm F-754			
		Texas Department of Transportation			
FM 3349					
ILLUMINATION PLAN					
STA 503+00 TO STA 514+00					
SCALE: 1"=100'		SHEET 6 OF 11			
DESIGN	GRM	FED. RD. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	GRM	6			FM 3349
STATE	DISTRICT	COUNTY		SHEET NO.	
CHECK	TEXAS	AUS	WILLIAMSON		703
PKD	CONTROL	SECTION	JOB		
PKD	3486	01	008, ETC		



ILLUMINATION LEGEND

- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO BRIDGE BLISTER, TYPE III DISTRIBUTION
- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO RETAINING WALL LIGHTING BRACKET, TYPE III DISTRIBUTION
- TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), TYPE III DISTRIBUTION
- TxDOT STANDARD TYPE II UNDERPASS ILLUMINATION ASSEMBLY, (1) LED LUMINAIRE (150W EQ), TYPE III DISTRIBUTION
- ELECTRICAL SERVICE ASSEMBLY, TYPE A, 240/480 VOLT, 1 PHASE, STEEL POLE
- GROUND BOX WITH APRON (NEMA 3R)
- GROUND BOX (NEMA 3R)
- JUNCTION BOX (NEMA 3R)
- DISCONNECT SWITCH (NEMA 3R)
- CONDUCTORS IN CONDUIT RUN (RIGID METAL CONDUIT)
- CONDUCTORS IN CONDUIT RUN (EMBEDDED IN BRIDGE STRUCTURE)
- CONDUCTORS IN CONDUIT RUN (TRENCH)
- CONDUCTORS IN CONDUIT RUN (BORED)
- CONDUCTORS/CONDUIT SEGMENT NO.
- X/X/X - ILLUMINATION ASSEMBLY DESIGNATION
- SERVICE POINT CIRCUIT DESIGNATION
- ELECTRICAL SERVICE DESIGNATION

CONDUCTORS AND CONDUIT SUMMARY

SERVICE	CIRCUIT	SEGMENT NO.	SEGMENT LENGTH (LF)	(CONDUIT) (LF)		CONDUCTORS (LF)				NOTE				
				0618-6023		0620-6005		0620-6006			0620-6007		0620-6008	
				2" PVC SCH 40		#10 BARE (GROUND)		#10 XHHW (POWER)			#8 BARE (GROUND)		#8 XHHW (POWER)	
ES2	E	46	66	1 X 66 = 66		1 X 71 = 71	2 X 71 = 142		1 X 71 = 71	2 X 71 = 142	1			
	F			1 X 66 = 66		1 X 71 = 71	2 X 71 = 142		1 X 40 = 40	2 X 40 = 80	1			
	F	47	35	1 X 35 = 35		1 X 40 = 40	2 X 40 = 80		1 X 40 = 40	2 X 40 = 80	1			
ES2	E	48	165	1 X 165 = 165		1 X 170 = 170	2 X 170 = 340		1 X 170 = 170	2 X 170 = 340	1			
	F			1 X 165 = 165		1 X 170 = 170	2 X 170 = 340		1 X 205 = 205	2 X 205 = 410	1			
	F	49	200	1 X 200 = 200	1 X 205 = 205	2 X 205 = 410		1 X 205 = 205	2 X 205 = 410	1				
ES2	F	50	35	1 X 35 = 35		1 X 40 = 40	2 X 40 = 80				1			
	H	51	200	1 X 200 = 200				1 X 205 = 205	2 X 205 = 410	1				
	H	52	10	1 X 10 = 10				2 X 15 = 30	2 X 15 = 30	1				
ES3	H	53	194	1 X 194 = 194		1 X 199 = 199	2 X 199 = 398		1 X 199 = 199	2 X 199 = 398	1			
	J			1 X 194 = 194		1 X 199 = 199	2 X 199 = 398		1 X 15 = 15	2 X 15 = 30	1			
	H	54	10	1 X 10 = 10		1 X 15 = 15	2 X 15 = 30		1 X 15 = 15	2 X 15 = 30	1			
ES2	F	55	20	1 X 20 = 20		1 X 25 = 25	2 X 25 = 50				1			
	F			1 X 20 = 20				1 X 25 = 25	2 X 25 = 50	1				
	F	56	9	1 X 9 = 9		1 X 14 = 14	2 X 14 = 28		1 X 25 = 25	2 X 25 = 50	1			
ES2	G	57	191	1 X 191 = 191				1 X 14 = 14	2 X 14 = 28		1			
	G			1 X 191 = 191				1 X 196 = 196	2 X 196 = 392		1			
	G	58	157	1 X 157 = 157				1 X 162 = 162	2 X 162 = 324		1			
ES3	J	59	8	1 X 8 = 8	1 X 13 = 13	2 X 13 = 26					1			
	K	60	200	1 X 200 = 200	1 X 205 = 205	2 X 205 = 410		1 X 205 = 205	2 X 205 = 410		1			
	K	61	192	1 X 192 = 192	1 X 197 = 197	2 X 197 = 394		1 X 197 = 197	2 X 197 = 394		1			
ES3	K	62	8	1 X 8 = 8	1 X 13 = 13	2 X 13 = 26		1 X 13 = 13	2 X 13 = 26		1			
	J			1 X 8 = 8				1 X 13 = 13	2 X 13 = 26		1			
	K	63	104	1 X 104 = 104	1 X 109 = 109	2 X 109 = 218		1 X 109 = 109	2 X 109 = 218		1			
SHEET TOTAL				3007	1316	2632		1041	3682					

NOTES:
1) CONDUIT SEGMENT RUN EMBEDDED WITHIN THE CONCRETE RETAINING WALL AND/OR BRIDGE STRUCTURE. COORDINATE WITH RETAINING WALL AND/OR BRIDGE CONTRACTOR PRIOR TO RUGH-IN.

ROADWAY ILLUMINATION ASSEMBLY SUMMARY

SERVICE	POLE NO.	CIRCUIT	STATION	OFFSET	ASSEMBLY TYPE	NOTES
ES2	28	G	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	29	G	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	30	H	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	31	H	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	32	J	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	33	J	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	34	K	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1

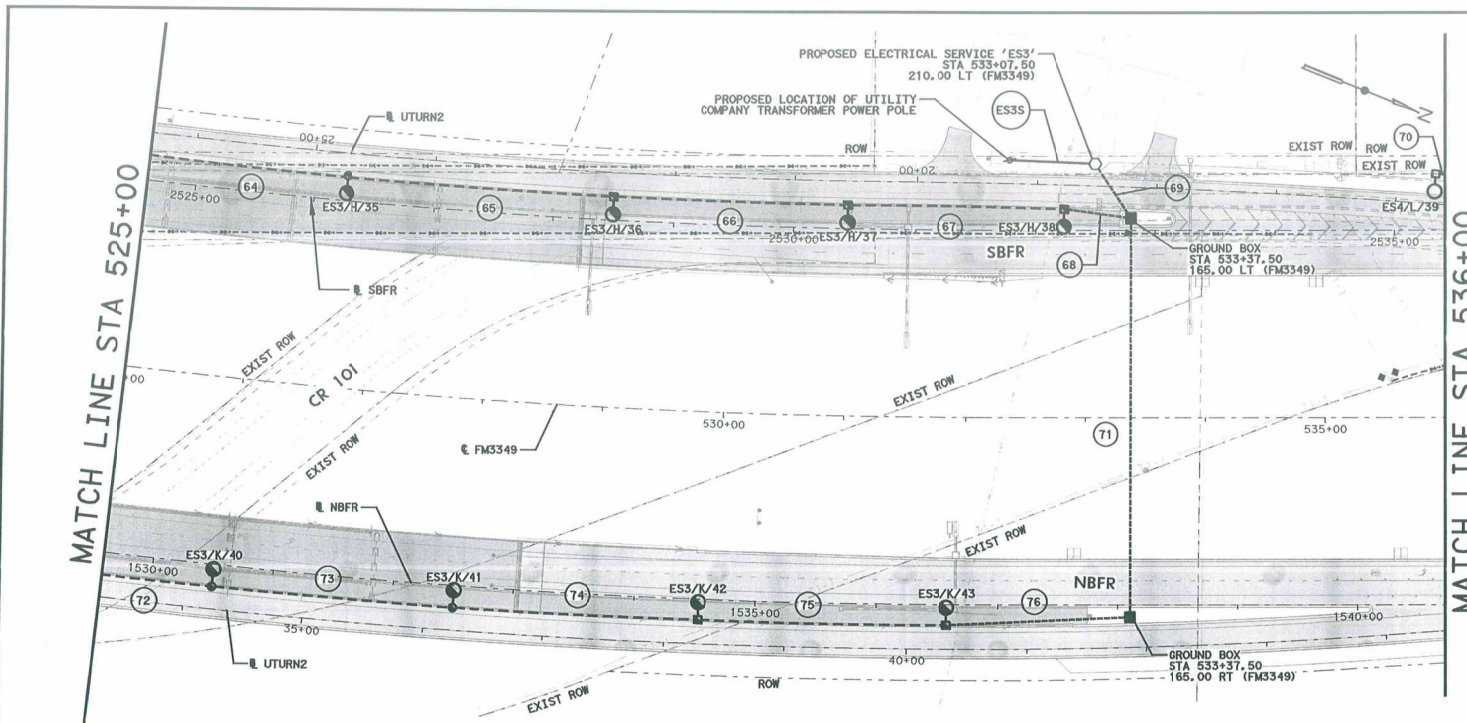
NOTE:
1) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON THE BRIDGE BLISTER LIGHTING BRACKET. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION. COORDINATE INSTALLATION WITH BRIDGE CONTRACTOR. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.

ITEM	DESCRIPTION	UNIT	QTY
0610 1208	IN RD IL (TY SA) 40'-10" (250W EQ) LED	EA	7
0618 6023	CONDIT (PVC) (SCH 40) (1")	LF	3050
0620 6005	ELEC CONDR (NO.10) BARE	LF	1316
0620 6006	ELEC CONDR (NO.10) INSULATED	LF	2632
0620 6007	ELEC CONDR (NO.8) BARE	LF	1884
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	3768

GENERAL NOTES:

- ALL WORK SHALL BE COMPLETED ACCORDING TO THE MOST CURRENT TxDOT STANDARDS, UTILITY COMPANY STANDARDS, AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES THE EXACT LOCATION OF EXISTING/PROPOSED UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THE UTILITIES. THE CONTRACTOR SHALL SEEK THE APPROVAL OF THE ENGINEER AND ADJUST THE OFFSETS TO AVOID DAMAGE TO THE EXISTING/PROPOSED UTILITIES.
- REFER TO ILLUMINATION SUMMARIES, SCHEMATICS, AND TxDOT STANDARDS FOR ADDITIONAL INFORMATION.
- PROPOSED ABOVE GROUND NEMA 3R JUNCTION BOXES SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
- PROVIDE CONDUIT EXPANSION AND DEFLECTION COUPLING PRIOR TO ENTERING BRIDGE MOUNTED JUNCTION BOX FOR TRANSITION FROM UNDERGROUND CONDUIT TO BRIDGE EMBEDDED CONDUIT. COUPLING SHALL ALLOW FOR A MAXIMUM OF 4" HORIZONTAL AND VERTICAL MOVEMENT.
- REFER TO BRIDGE DRAWINGS FOR EXACT LOCATION OF BRIDGE MOUNTED ILLUMINATION ASSEMBLIES AND ASSOCIATED INSTALLATION DETAILS.

		DATE		REVISION	APPROVED
		NO.		DATE	REVISION
				HDR Engineering, Inc. 710 Heaters Crossing, Suite 150 Round Rock, Texas 78681 Texas Registered Engineering Firm F-754	
Texas Department of Transportation					
FM 3349					
ILLUMINATION PLAN					
STA 514+00 TO STA 525+00					
SCALE: 1"=100'					
SHEET 7 OF 11					
DESIGN	GRM	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		RIGHTWAY NO.
GRAPHICS	6				FM 3349
GRM	STATE	DISTRICT	COUNTY		
CHECK	TEXAS	AUS	WILLIAMSON		
CHECK	CONTROL	SECTION	JOB		
PKD	3486	01	008, ETC		704



ILLUMINATION LEGEND

- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO BRIDGE BLISTER, TYPE III DISTRIBUTION
- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO RETAINING WALL LIGHTING BRACKET, TYPE III DISTRIBUTION
- TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), TRANSFORMER BASE, TYPE III DISTRIBUTION
- TxDOT STANDARD TYPE II UNDERPASS ILLUMINATION ASSEMBLY, (1) LED LUMINAIRE (150W EQ), TYPE III DISTRIBUTION
- ELECTRICAL SERVICE ASSEMBLY, TYPE A, 240/480 VOLT, 1 PHASE, STEEL POLE
- GROUND BOX WITH APRON (NEMA 3R)
- GROUND BOX (NEMA 3R)
- JUNCTION BOX (NEMA 3R)
- DISCONNECT SWITCH (NEMA 3R)
- CONDUCTORS IN CONDUIT RUN (RIGID METAL CONDUIT)
- CONDUCTORS IN CONDUIT RUN (EMBEDDED IN BRIDGE STRUCTURE)
- CONDUCTORS IN CONDUIT RUN (TRENCH)
- CONDUCTORS IN CONDUIT RUN (BORED)
- CONDUCTORS/CONDUIT SEGMENT NO.
- ILLUMINATION ASSEMBLY DESIGNATION
- SERVICE POINT CIRCUIT DESIGNATION
- ELECTRICAL SERVICE DESIGNATION

CONDUCTORS AND CONDUIT SUMMARY									
SERVICE	CIRCUIT	SEGMENT NO.	SEGMENT LENGTH (LF)	CONDUIT (LF)		CONDUCTORS (LF)			
				0618-6023 2" PVC SCH 40	0620-6005 #10 BARE (GROUND)	0620-6006 #10 XHHW (POWER)	0620-6007 #8 BARE (GROUND)	0620-6008 #8 XHHW (POWER)	NOTES
ES3	H	72	167	1 X 167 = 167	1 X 172 = 172	2 X 172 = 344	1 X 172 = 172	2 X 172 = 344	2
ES3	J	64	167	1 X 167 = 167	1 X 172 = 172	2 X 172 = 344	1 X 172 = 172	2 X 172 = 344	1
ES3	J	65	223	1 X 223 = 223	1 X 228 = 228	2 X 228 = 456	1 X 228 = 228	2 X 228 = 456	1
ES3	H	66	195	1 X 195 = 195	1 X 200 = 200	2 X 200 = 400	1 X 200 = 200	2 X 200 = 400	1
ES3	J	67	179	1 X 179 = 179	1 X 184 = 184	2 X 184 = 368	1 X 184 = 184	2 X 184 = 368	1
ES3	H	68	56	1 X 56 = 56	1 X 61 = 61	2 X 61 = 122	1 X 61 = 61	2 X 61 = 122	1
ES3	J	69	54	1 X 54 = 54	1 X 59 = 59	2 X 59 = 118	1 X 59 = 59	2 X 59 = 118	1
ES4	L	70	8	1 X 8 = 8	1 X 13 = 13	2 X 13 = 26	1 X 13 = 13	2 X 13 = 26	1
ES3	K	71	330	1 X 330 = 330	1 X 335 = 335	2 X 335 = 670	1 X 335 = 335	2 X 335 = 670	1
ES3	J	72	92	1 X 92 = 92	1 X 97 = 97	2 X 97 = 194	1 X 97 = 97	2 X 97 = 194	1
ES3	J	73	201	1 X 201 = 201	1 X 206 = 206	2 X 206 = 412	1 X 206 = 206	2 X 206 = 412	1
ES3	J	74	203	1 X 203 = 203	1 X 208 = 208	2 X 208 = 416	1 X 208 = 208	2 X 208 = 416	1
ES3	J	75	205	1 X 205 = 205	1 X 210 = 210	2 X 210 = 420	1 X 210 = 210	2 X 210 = 420	1
ES3	J	76	154	1 X 154 = 154	1 X 159 = 159	2 X 159 = 318	1 X 159 = 159	2 X 159 = 318	1
SHEET TOTAL				4180	2119	4238	2191	4382	

NOTES:
1) CONDUIT SEGMENT RUN EMBEDDED WITHIN THE CONCRETE RETAINING WALL AND/OR BRIDGE STRUCTURE. COORDINATE WITH RETAINING WALL AND/OR BRIDGE CONTRACTOR PRIOR TO ROUGH-IN.
2) AERIAL SERVICE DRIP (CONDUCTORS, SERVICE GRIPS, AND SERVICE CONNECTORS) OWNED, INSTALLED AND CONNECTED TO SERVICE ENTRANCE CONDUCTORS BY UTILITY COMPANY. COORDINATE WITH UTILITY COMPANY REQUIREMENTS.

ROADWAY ILLUMINATION ASSEMBLY SUMMARY						
SERVICE	POLE NO.	CIRCUIT	STATION	OFFSET	ASSEMBLY TYPE	NOTES
ES3	35	K	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES3	36	K	529+00.00	WALL LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	37	K	531+00.00	WALL LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	38	K	532+82.00	WALL LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES4	39	L	535+92.50	291.50 LT (FM3349)	(TYPE SA 40 T-10 (250W EQ) LED	
ES3	40	K	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES3	41	K	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	2
ES3	42	K	529+85.00	WALL RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	43	K	531+85.00	WALL RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1

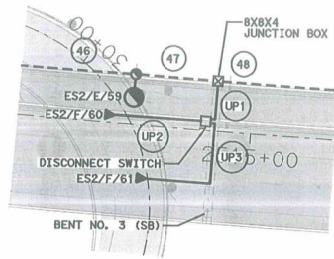
NOTES:
1) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON TOP OF THE CONCRETE RETAINING WALL LIGHTING BRACKET. REFER TO RETAINING WALL PLANS FOR ADDITIONAL INFORMATION. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.
2) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON THE BRIDGE BLISTER LIGHTING BRACKET. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION. COORDINATE INSTALLATION WITH BRIDGE CONTRACTOR. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.

SHEET SUMMARY OF ESTIMATED QUANTITIES			
ITEM#	DESCRIPTION	UNIT	QTY
0416 6029	DRILL SHAFT (ROW) (1" POLE) (30 IN)	LF	8
0432 6001	RIPRAP (CONC) (4 IN)	CY	0.91
0610 6208	IN RD IL (TY SA) 40'-10" (250W EQ) LED	EA	8
0610 6216	IN RD IL (TY SA) 40'-10" (250W EQ) LED	EA	1
0618 6023	CONDUIT (PVC) (SCH 40) (2")	LF	4180
0620 6005	ELEC CONDR (NO.10) BARE	LF	2119
0620 6006	ELEC CONDR (NO.10) INSULATED	LF	4238
0620 6007	ELEC CONDR (NO.8) BARE	LF	2191
0620 6008	ELEC CONDR (NO.8) INSULATED	LF	4382
0624 6002	GROUND BOX TY A (122311) W/APRON	EA	2
0628 6049	ELE SRV TY A 240/480 060 (NS) SS (1) SP (0)	EA	1

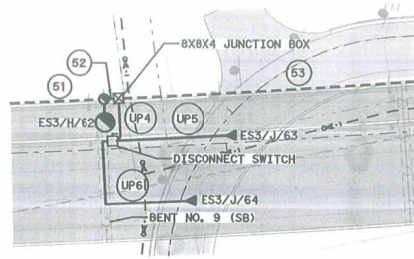
GENERAL NOTES:

- ALL WORK SHALL BE COMPLETED ACCORDING TO THE MOST CURRENT TxDOT STANDARDS, UTILITY COMPANY STANDARDS, AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES THE EXACT LOCATION OF EXISTING/PROPOSED UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THE UTILITIES. THE CONTRACTOR SHALL SEEK THE APPROVAL OF THE ENGINEER AND ADJUST THE OFFSETS TO AVOID DAMAGE TO THE EXISTING/PROPOSED UTILITIES.
- REFER TO ILLUMINATION SUMMARIES, SCHEMATICS, AND TxDOT STANDARDS FOR ADDITIONAL INFORMATION.
- PROPOSED ABOVE GROUND NEMA 3R JUNCTION BOXES SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
- PROVIDE CONDUIT EXPANSION AND DEFLECTION COUPLING PRIOR TO ENTERING BRIDGE MOUNTED JUNCTION BOX FOR TRANSITION FROM UNDERGROUND CONDUIT TO BRIDGE EMBEDDED CONDUIT. COUPLING SHALL ALLOW FOR A MAXIMUM OF 4" HORIZONTAL AND VERTICAL MOVEMENT.
- REFER TO BRIDGE DRAWINGS FOR EXACT LOCATION OF BRIDGE MOUNTED ILLUMINATION ASSEMBLIES AND ASSOCIATED INSTALLATION DETAILS.

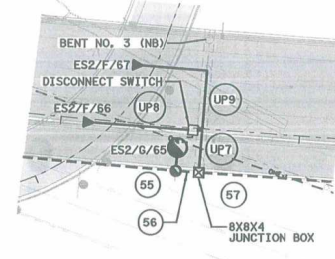
		REVISION		APPROVED
		NO.	DATE	
WILLIAMSON COUNTY		HDR Engineering, Inc. 710 Heister Crossing, Suite 150 Round Rock, Texas 78681 Texas Registered Engineering Firm F-754		
FM 3349				
ILLUMINATION PLAN				
STA 525+00 TO STA 536+00				
SCALE: 1"=100'				
SHEET 8 OF 11				
DESIGN	ED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
GRAPHICS	6		FM 3349	
GRM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	AUS	WILLIAMSON	705
PKD	COUNTY	SECTION	JOB	
CHECK	3486	01	008, ETC	



UNDERPASS ILLUMINATION DETAIL #1



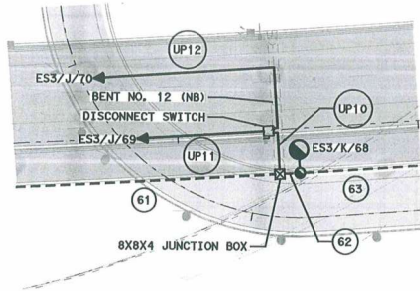
UNDERPASS ILLUMINATION DETAIL #3



UNDERPASS ILLUMINATION DETAIL #4

ILLUMINATION LEGEND

- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO BRIDGE BLISTER, TYPE III DISTRIBUTION
- TxDOT STANDARD TYPE II UNDERPASS ILLUMINATION ASSEMBLY, (1) LED LUMINAIRE (150W EQ), TYPE III DISTRIBUTION
- JUNCTION BOX (NEMA 3R).
- DISCONNECT SWITCH (NEMA 3R)
- CONDUCTORS IN CONDUIT RUN (RIGID METAL CONDUIT)
- CONDUCTORS IN CONDUIT RUN (EMBEDDED IN BRIDGE STRUCTURE)
- CONDUCTORS/CONDUIT SEGMENT NO.
- ILLUMINATION ASSEMBLY DESIGNATION
- SERVICE POINT CIRCUIT DESIGNATION
- ELECTRICAL SERVICE DESIGNATION



UNDERPASS ILLUMINATION DETAIL #6

SERVICE	POLE NO.	CIRCUIT	STATION	OFFSET	ASSEMBLY TYPE	NOTES
ES2	59	E	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	60	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES2	61	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	62	H	SEE BRIDGE DWGS	BRIDGE LT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	63	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	64	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES2	65	G	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES2	66	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES2	67	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	68	K	SEE BRIDGE DWGS	BRIDGE RT (FM3349)	(TYPE ST 40 5-10 (250W EQ) LED	1
ES3	69	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	70	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	

NOTE: THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON THE BRIDGE BLISTER LIGHTING BRACKET. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION. COORDINATE INSTALLATION WITH BRIDGE CONTRACTOR. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.

ITEM#	DESCRIPTION	UNIT	QTY
0610 6106	IN RD IL (U/P) (TY 2) (150W EQ) LED	EA	8
0610 6208	IN RD IL (TY 5A) 408-10 (250W EQ) LED	EA	4
0618 6064	COND (RMD 11")	LF	518
0620 6005	ELEC CONDR (NO.10) BARE	LF	578
0620 6006	ELEC CONDR (NO.10) INSULATED	LF	1156

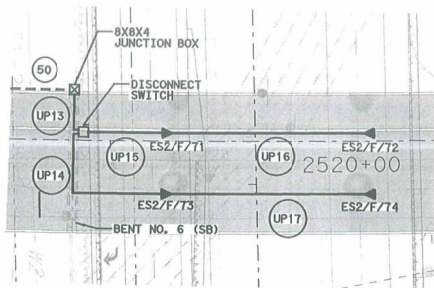
CONDUCTORS AND CONDUIT SUMMARY										NOTE
SERVICE	CIRCUIT	SEGMENT NO.	SEGMENT LENGTH (LF)	CONDUIT (LF)		CONDUCTORS (LF)				
				0618-6064		0620-6005				
				1" RIGID METAL	#10 BARE (GROUND)	#10 XHHW (POWER)				
ES2	E, F	46		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						
ES2	E, F	47		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES2	E, F	48		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	H	51		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	H	52		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	H, J	53		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES2	F, G	55		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES2	F, G	56		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES2	G	57		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	J, K	61		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	J, K	62		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES3	J, K	63		REFER TO THE OVERALL ILLUMINATION PLAN SHEET						1
ES1	F	UP1	20	1 X 20 =	20	1 X 25 =	25	2 X 25 =	50	
ES2	F	UP2	36	1 X 36 =	36	1 X 41 =	41	2 X 41 =	82	
ES2	F	UP3	54	1 X 54 =	54	1 X 59 =	59	2 X 59 =	118	
ES2	J	UP4	20	1 X 20 =	20	1 X 25 =	25	2 X 25 =	50	
ES1	J	UP5	45	1 X 45 =	45	1 X 50 =	50	2 X 50 =	100	
ES1	J	UP6	62	1 X 62 =	62	1 X 67 =	67	2 X 67 =	134	
ES1	F	UP7	20	1 X 20 =	20	1 X 25 =	25	2 X 25 =	50	
ES2	F	UP8	41	1 X 41 =	41	1 X 46 =	46	2 X 46 =	92	
ES2	F	UP9	53	1 X 53 =	53	1 X 58 =	58	2 X 58 =	116	
ES1	J	UP10	20	1 X 20 =	20	1 X 25 =	25	2 X 25 =	50	
ES1	J	UP11	49	1 X 49 =	49	1 X 54 =	54	2 X 54 =	108	
ES1	J	UP12	98	1 X 98 =	98	1 X 103 =	103	2 X 103 =	206	
SHEET TOTAL					518		578		1156	

NOTE: 1) CONDUIT SEGMENT RUN EMBEDDED WITHIN THE CONCRETE RETAINING WALL AND/OR BRIDGE STRUCTURE. COORDINATE WITH RETAINING WALL AND/OR BRIDGE CONTRACTOR PRIOR TO ROUGH-IN.

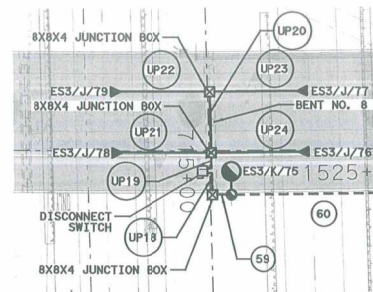
GENERAL NOTES:

- ALL WORK SHALL BE COMPLETED ACCORDING TO THE MOST CURRENT TxDOT STANDARDS, UTILITY COMPANY STANDARDS, AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES THE EXACT LOCATION OF EXISTING/PROPOSED UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THE UTILITIES. THE CONTRACTOR SHALL SEEK THE APPROVAL OF THE ENGINEER AND ADJUST THE OFFSETS TO AVOID DAMAGE TO THE EXISTING/PROPOSED UTILITIES.
- REFER TO ILLUMINATION SUMMARIES, SCHEMATICS, AND TxDOT STANDARDS FOR ADDITIONAL INFORMATION.
- PROPOSED ABOVE GROUND NEMA 3R JUNCTION BOXES SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
- PROVIDE CONDUIT EXPANSION AND DEFLECTION COUPLING PRIOR TO ENTERING BRIDGE MOUNTED JUNCTION BOX FOR TRANSITION FROM UNDERGROUND CONDUIT TO BRIDGE EMBEDDED CONDUIT. COUPLING SHALL ALLOW FOR A MAXIMUM OF 4" HORIZONTAL AND VERTICAL MOVEMENT.
- REFER TO DRAWINGS FOR EXACT LOCATION OF BRIDGE MOUNTED ILLUMINATION ASSEMBLIES AND ASSOCIATED INSTALLATION DETAILS.

		NO.		DATE	REVISION	APPROVED
FM 3349 UNDERPASS ILLUMINATION PLANS						
SCALE: 1"=50'		SHEET 1 OF 2				
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
GRAPHICS	6				FM 3349	
STATE	DISTRICT	COUNTY			SHEET NO.	
CHECK	TEXAS	AUS			WILLIAMSON	
PKD	CONTROL	SECTION			JOB	
CHECK	3486	01			008, ETC	
PKD					709	



UNDERPASS ILLUMINATION DETAIL #2



UNDERPASS ILLUMINATION DETAIL #5

ILLUMINATION LEGEND

- FUTURE TxDOT STANDARD ILLUMINATION ASSEMBLY, 40' MOUNTING HEIGHT, 10 FT. LUMINAIRE ARM, (1) LED LUMINAIRE (250W EQ), SHOE BASE TO BRIDGE BLISTER, TYPE III DISTRIBUTION
- TxDOT STANDARD TYPE II UNDERPASS ILLUMINATION ASSEMBLY, (1) LED LUMINAIRE (150W EQ), TYPE III DISTRIBUTION
- JUNCTION BOX (NEMA 3R).
- DISCONNECT SWITCH (NEMA 3R)
- CONDUCTORS IN CONDUIT RUN (RIGID METAL CONDUIT)
- CONDUCTORS IN CONDUIT RUN (EMBEDDED IN BRIDGE STRUCTURE)
- CONDUCTORS/CONDUIT SEGMENT NO.
- ILLUMINATION ASSEMBLY DESIGNATION
- SERVICE POINT CIRCUIT DESIGNATION
- ELECTRICAL SERVICE DESIGNATION

ROADWAY ILLUMINATION ASSEMBLY SUMMARY						
SERVICE	POLE NO.	CIRCUIT	STATION	OFFSET	ASSEMBLY TYPE	NOTES
ES2	71	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES2	72	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	73	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	74	F	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	75	K	SEE BRIDGE DNGS	BRIDGE RT (FM3349)	(TYPE ST 40 S-10 (250W EQ) LED	1
ES3	76	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	77	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	78	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	
ES3	79	J	N/A	N/A	U/P (150W EQ) LED (TYPE 2)	

NOTE:
1) THE FUTURE ILLUMINATION ASSEMBLY WILL BE MOUNTED ON THE BRIDGE BLISTER LIGHTING BRACKET. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION. COORDINATE INSTALLATION WITH BRIDGE CONTRACTOR. ILLUMINATION ASSEMBLY TO BE INSTALLED IN THE FUTURE.

SHEET SUMMARY OF ESTIMATED QUANTITIES				
ITEM#	DESCRIPTION	UNIT	QTY	
0610 6106	IN RD IL (U/P) (TY 2) (150W EQ) LED	EA	8	
0610 6208	IN RD IL (TY SA) 40S-10 (250W EQ) LED	EA	1	
0618 6064	CONDT (RM) (1")	LF	475	
0620 6005	ELEC CONDR (NO.10) BARE	LF	535	
0620 6006	ELEC CONDR (NO.10) INSULATED	LF	1070	

CONDUCTORS AND CONDUIT SUMMARY								NOTES
SERVICE	CIRCUIT	SEGMENT NO.	SEGMENT LENGTH (LF)	CONDUIT (LF)		CONDUCTORS (LF)		
				0618-6064		0620-6005		
				1" RIGID METAL		#10 BARE (GROUND)		
							#10 2HHH (POWER)	
ES2	F	50		REFER TO THE OVERALL ILLUMINATION PLAN SHEET				1
ES3	J	59		REFER TO THE OVERALL ILLUMINATION PLAN SHEET				1
ES3	J,K	60		REFER TO THE OVERALL ILLUMINATION PLAN SHEET				1
ES2	F	UP13	20	1 X 20 = 20	1 X 25 = 25	2 X 25 = 50		
ES2	F	UP14	64	1 X 64 = 64	1 X 69 = 69	2 X 69 = 138		
ES2	F	UP15	31	1 X 31 = 31	1 X 36 = 36	2 X 36 = 72		
ES2	F	UP16	81	1 X 81 = 81	1 X 86 = 86	2 X 86 = 172		
ES2	F	UP17	81	1 X 81 = 81	1 X 86 = 86	2 X 86 = 172		
ES3	J	UP18	15	1 X 15 = 15	1 X 20 = 20	2 X 20 = 40		
ES3	J	UP19	10	1 X 10 = 10	1 X 15 = 15	2 X 15 = 30		
ES3	J	UP20	25	1 X 25 = 25	1 X 30 = 30	2 X 30 = 60		
ES3	J	UP21	37	1 X 37 = 37	1 X 42 = 42	2 X 42 = 84		
ES3	J	UP22	37	1 X 37 = 37	1 X 42 = 42	2 X 42 = 84		
ES3	J	UP23	37	1 X 37 = 37	1 X 42 = 42	2 X 42 = 84		
ES3	J	UP24	37	1 X 37 = 37	1 X 42 = 42	2 X 42 = 84		
SHEET TOTAL				475	535	1070		

NOTE:
1) CONDUIT SEGMENT RUN EMBEDDED WITHIN THE CONCRETE RETAINING WALL AND/OR BRIDGE STRUCTURE. COORDINATE WITH RETAINING WALL AND/OR BRIDGE CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL NOTES:

- ALL WORK SHALL BE COMPLETED ACCORDING TO THE MOST CURRENT TxDOT STANDARDS, UTILITY COMPANY STANDARDS, AND THE NATIONAL ELECTRIC CODE.
- THE CONTRACTOR SHALL VERIFY WITH THE UTILITY COMPANIES THE EXACT LOCATION OF EXISTING/PROPOSED UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION TO AVOID CONFLICT OR DAMAGE TO THE UTILITIES. THE CONTRACTOR SHALL SEEK THE APPROVAL OF THE ENGINEER AND ADJUST THE OFFSETS TO AVOID DAMAGE TO THE EXISTING/PROPOSED UTILITIES.
- REFER TO ILLUMINATION SUMMARIES, SCHEMATICS, AND TxDOT STANDARDS FOR ADDITIONAL INFORMATION.
- PROPOSED ABOVE GROUND NEMA 3R JUNCTION BOXES SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.
- PROVIDE CONDUIT EXPANSION AND DEFLECTION COUPLING PRIOR TO ENTERING BRIDGE MOUNTED JUNCTION BOX FOR TRANSITION FROM UNDERGROUND CONDUIT TO BRIDGE EMBEDDED CONDUIT. COUPLING SHALL ALLOW FOR A MAXIMUM OF 4" HORIZONTAL AND VERTICAL MOVEMENT.
- REFER TO BRIDGE DRAWINGS FOR EXACT LOCATION OF BRIDGE MOUNTED ILLUMINATION ASSEMBLIES AND ASSOCIATED INSTALLATION DETAILS.

NO.	DATE	REVISION	APPROVED
FM 3349 UNDERPASS ILLUMINATION PLANS			
SCALE: 1"=50' SHEET 2 OF 2			
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
GRM	6		FM 3349
GRAPHICS	STATE	DISTRICT	COUNTY
GRM	TEXAS	AUS	WILLIAMSON
CHECK	CONTROL	SECTION	JOB
PKD	3486	01	008, ETC
			710

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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base				Quantity	T-Base				Quantity	CSB/SSCB Mounted				Quantity
	Pole	Designation	A1	A2		Pole	Designation	A1	A2		Pole	Designation	A1	A2	
20	(Type SA 20 S - 4)	(150W EQ) LED				(Type SA 20 T - 4)	(150W EQ) LED								
	(Type SA 20 S - 4 - 4)	(150W EQ) LED				(Type SA 20 T - 4 - 4)	(150W EQ) LED								
30	(Type SA 30 S - 4)	(250W EQ) LED				(Type SA 30 T - 4)	(250W EQ) LED				(Type SP 23 S - 4)	(250W EQ) LED			
	(Type SA 30 S - 4 - 4)	(250W EQ) LED				(Type SA 30 T - 4 - 4)	(250W EQ) LED				(Type SP 23 S - 4 - 4)	(250W EQ) LED			
40	(Type SA 40 S - 8)	(250W EQ) LED				(Type SA 40 T - 8)	(250W EQ) LED				(Type SP 23 S - 8)	(250W EQ) LED			
	(Type SA 40 S - 8 - 8)	(250W EQ) LED				(Type SA 40 T - 8 - 8)	(250W EQ) LED				(Type SP 23 S - 8 - 8)	(250W EQ) LED			
50	(Type SA 50 S - 12)	(400W EQ) LED				(Type SA 50 T - 12)	(400W EQ) LED				(Type SP 33 S - 12)	(400W EQ) LED			
	(Type SA 50 S - 12 - 12)	(400W EQ) LED				(Type SA 50 T - 12 - 12)	(400W EQ) LED				(Type SP 33 S - 12 - 12)	(400W EQ) LED			

GENERAL NOTES:

- All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.
- The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
- Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.
- Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.
 - Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
 - Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G , and Wind Importance Factor, I_r , shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, I_r , value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
 - Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
 - Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.
- Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.
 - Meet all of the requirements stated above for optional steel pole designs and the following:
 - Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
 - Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
 - Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
 - Pole components shall be constructed using the following material:
 - Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
 - Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
 - Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
 - Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
 - Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
 - Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seize Compound, Permatex 133K or equal.
- Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.
- Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - X - X) (400W EQ) LED

SA: Pole and mast arm may be steel or—
aluminum.
ST: Pole and mast arm must be steel.
AL: Pole and mast arm must be aluminum.
SP: Special (ovalized) steel or aluminum pole for installing on CSB or SSCB. See standard sheet CSB (4), or SSCB (4).

Two numerical digits denote nominal mounting height in feet.

Next letter denotes type of base, (S-Shoe Base, T-Transformer Base, or B-Bridge/Ret.Wall Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Luminaire rating in watts (i.e. 400W). Equivalent wattage LED fixtures will include EQ (i.e. 400W EQ)

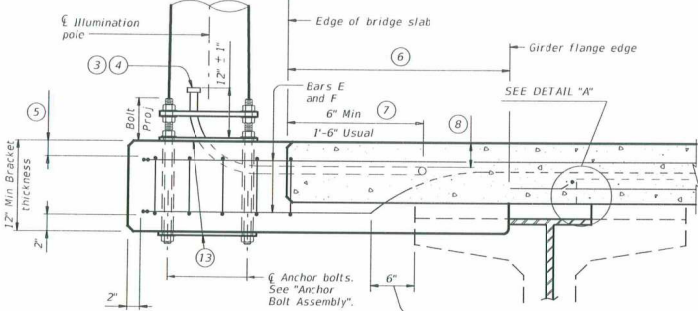
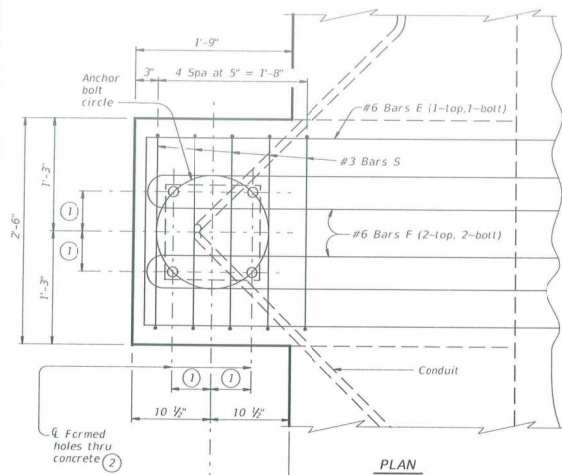
Last letters indicate light source (S - High Pressure Sodium; LED - LED luminaire)

SHEET 1 OF 4

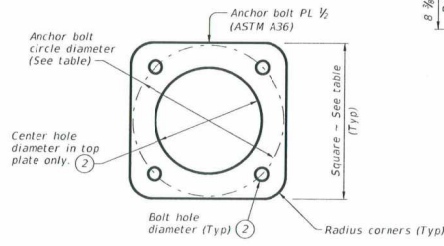
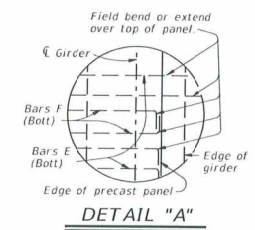
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ROADWAY ILLUMINATION POLES			
RIP(1)-19			
FILES: r1p-19.dgn	DATE: 01/19/2007	BY: [initials]	CHK: [initials]
©TxDOT January 2007	CONT: 01	SECT: 008, ETC	JOB: FM 3349
7-17	REVISIONS:	DESIGN: AUS	COUNTY: WILLIAMSON
12-19			SHEET NO: 723
73A			

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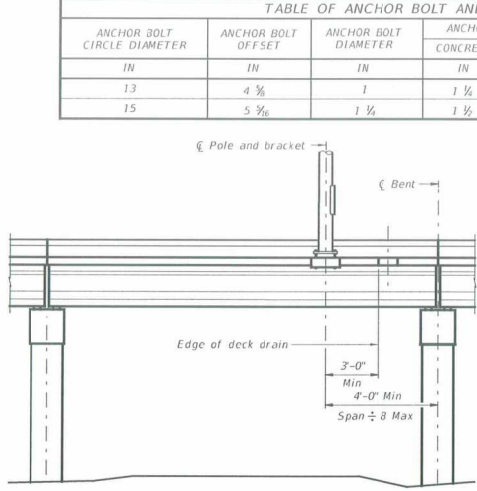
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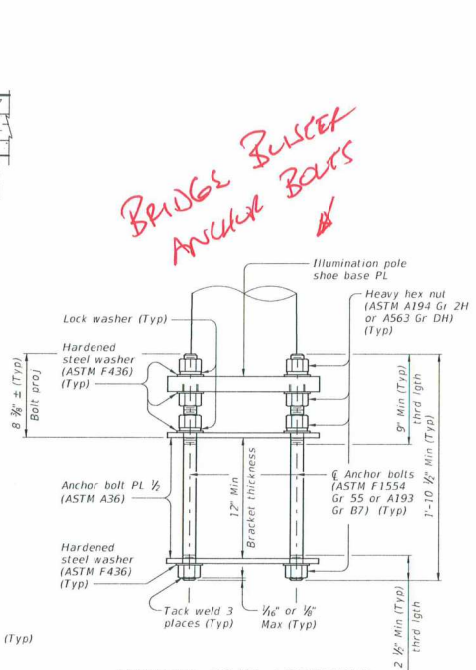
ILLUMINATION POLE BRACKET LOCATION AND REINFORCING



ANCHOR BOLT PLATE



TYPICAL BRIDGE ELEVATION



ANCHOR BOLT ASSEMBLY

(See table for anchor bolt diameter)

TABLE OF ANCHOR BOLT AND ANCHOR BOLT PLATE INFORMATION						
ANCHOR BOLT CIRCLE DIAMETER	ANCHOR BOLT OFFSET	ANCHOR BOLT DIAMETER	ANCHOR BOLT HOLE SIZE		TOP AND BOTTOM ANCHOR BOLT PLATE SIZE	CENTER HOLE DIAMETER IN TOP ANCHOR BOLT PLATE
IN	IN	IN	CONCRETE	STEEL	IN	IN
13	4 5/16	1	1 1/4	1 1/4	PL 1/2 X 13 X 1'-1"	9 1/2
15	5 5/16	1 1/4	1 1/2	1 1/2	PL 1/2 X 15 X 1'-3 1/2"	10 1/2

ESTIMATED QUANTITIES—ONE BRACKET		
ITEM	UNIT	QUANT
CONCRETE	(9)(10)	0.2
REINFORCING STEEL	(10)	1.46
STRUCTURAL STEEL	(10)(11)	11.2
CONDUIT	(12)	4

- See table for anchor bolt offset dimension.
- See table for hole diameter size.
- If lighting is to be placed on future contract, extend conduit only 6" and provide water tight cap.
- Ream burrs and install bell ends or bushings on all conduit ends.
- Provide same clear cover required for bridge slab. Place Bars E and F beneath top slab reinforcing only if necessary to provide this cover.
- If slab edge to girder flange edge exceeds 3'-11", lengthen Bars E and F proportionally to ensure Bars E and F extend 1'-6" Min beyond girder flange edge.
- Clear rail anchors, drains, etc 1 1/2" Min.
- 1 1/2" Min cover and always beneath top layer slab reinforcing.
- Variation due to slab thickness is insignificant.
- For Contractor's information only.
- Anchor bolts, nuts, washers, and 2 plates. Verify anchor bolt lengths prior to ordering.
- Additional to main run (size and type as shown elsewhere on the plans).
- See "Anchor Bolt Assembly", "Anchor Bolt Plate", and table for anchor bolt, and anchor bolt plate information.

MATERIAL NOTES:
Galvanize anchor bolts, nuts, washers, and anchor bolt plates. Repair galvanizing damage from tack welding per Item 445, "Galvanizing".
Provide Grade 60 reinforcing steel.
Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.
Concrete for Illumination Pole Brackets must be of the same type and placed monolithically with the bridge slab. The bracket quantity is considered subsidiary to the Item "Reinforced Concrete Slab".

GENERAL NOTES:
Designed for up to 50 ft light pole with one 12 ft arm, 60 lb luminaire with 1.6 sq ft EPA at maximum design wind speed of 110 mph (3 second gusts). A special design is required if luminaire mounting height exceeds 100 ft above average surrounding terrain.
The anchor bolts, nuts, washers, and anchor bolt plates are subsidiary to the Item "Roadway Illumination Assemblies".
The type and size of conduit, the anchor bolt circle diameter, and the number and location of brackets is shown elsewhere on the plans. Brackets found to conflict with other components of the bridge may be relocated as necessary.
See Roadway Illumination Poles standard for details and notes not shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

SHEET 1 OF 2

Texas Department of Transportation

BRIDGE LIGHTING
DETAILS

BL

FILE: b1steel01-19.dgn	IN: TxDOT	EX: TxDOT	IN: TxDOT	EX: TxDOT
DATE: April 2019	CONF: 01	BLCT: 008, ETC	JOB: FM 3349	PROJECT: AUS
REVISED: 001	DATE: 04/25/2019	BY: WILLIAMSON	CHECK: 588	SCALE: 1/8" = 1'-0"

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GENERAL NOTES:

- TRANSFORMER BASE POLE

4. For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
5. Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
6. Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60X minimum penetration. All welding shall be in accordance with AWS D1.1, "Structural Welding Code-Steel."
7. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
8. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
9. Lubricate and tighten anchor bolts, when erecting shoe poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."



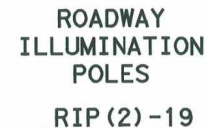
10. All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted steel base poles, hand holes shall be placed 90 degrees to the ground surface and shall be placed on the pole. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaires and all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
11. The finished pole shall have a smooth, uniform finish free of rust, pitting, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
12. Pole length is based on a 5'-6" luminaire arm rise, 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms shall have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
13. Front transformer base poles in accordance with sheet RID(1)

NOTES:

- ① 2'-6" rise for 4 ft. luminaire arms.
- ② Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 5.
- ③ A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

SHEET 2 OF 4



FILE#	rip-19.dgn		DWG	CK1	DWG	CK1
©1xDO1	January 2007		CONT	SECT	JOB	HIGHWAY
REVISIONS			3486	01	008, ETC	FM 3349
7-17			DIST	COUNTY		SHEET NO.
12-19			AUS	WILLIAMSON		724

**Traffic
Safety
Division
Standard**