

RTIP ID# <i>(required)</i> RIV180101
TCWG Consideration Date December 5, 2023
Project Description <i>(clearly describe project)</i> <p>Harley Knox Boulevard is an east-west six-lane arterial in the City of Perris with three lanes of traffic in each direction. There are two structures within the project limits, Harley Knox Boulevard OC (Bridge Number 56-0765), which spans over Interstate 215 (I-215) and Oleander Avenue OH (Bridge Number 56-C0451), which spans over two sets of railroad tracks utilized by the Metrolink Network.</p> <p>I-215 is a north-south freeway with three lanes of traffic in each direction through the project limits. The current I-215/Harley Knox Boulevard Interchange configuration is a Tight Diamond Interchange, with traffic signals at the ramp terminals. On- and off-ramps at the interchange are currently two lanes.</p> <p>The Project intends to modify the existing interchange in one of three possible configurations: Build Alternative 1 – Tight Diamond Interchange (TDI), Build Alternative 2 – Diverging Diamond Interchange (DDI), or Build Alternative 3 – Single Point Interchange (SPI). The Build Alternatives were designed to accommodate Design Year (2050) traffic forecasts while maintaining accessibility for other modes of transportation.</p> <p>No-Build Alternative</p> <p>The “No-Build” Alternative is considered the base case scenario and proposes that no improvements be implemented on the mainline facility, and the existing overcrossing would not be widened.</p> <p>Build Alternative One: Tight Diamond Interchange</p> <p>Build Alternative One proposes various improvements to the existing Tight Diamond interchange, including widening of the southbound off-ramp and northbound on-ramp. Additional improvements include signal modifications at the northbound and southbound ramp intersections, the Harvill Avenue intersection, and the Western Way intersection. Build Alternative One also proposes to restripe the Western Way intersection’s westbound approach from one left turn lane, two through lanes, and one shared through/right turn lane to one left turn lane, two through lanes, and a dedicated right turn trap lane. The restriping will accommodate the high right turn volume forecasted at this intersection under Design Year 2050 conditions.</p> <p>The four-lane overcrossing will be maintained with two through lanes and left turn lanes in each direction. While Harley Knox Boulevard will remain a four-lane facility in the study area, Build Alternative One proposes to widen the eastbound approach of the southbound ramp terminal intersection and westbound approach of the northbound ramp terminal intersection to provide trap lanes that offer additional storage capacity for the corresponding upstream left turn lanes.</p> <p>At the southbound ramp terminal intersection, Build Alternative One also proposes to widen the southbound ramp from two to three lanes. Build Alternative One also proposes dual right-turn lanes in the westbound direction at the northbound ramp terminal intersection to accommodate a high right-turn volume.</p> <p>Build Alternative Two: Diverging Diamond Interchange</p> <p>Build Alternative Two proposes construction of a Diverging Diamond interchange (DDI), which will include widening of the northbound and southbound off-ramps and northbound on-ramp. Consistent with Build Alternative One, additional improvements include signal modifications at the proposed northbound and southbound ramp intersections, the Harvill Avenue intersection, and the Western Way intersection. Build Alternative Two also proposes to restripe the Western Way intersection’s westbound approach from one left turn lane, two through lanes, and one shared through/right turn lane to one left turn lane, two through lanes, and a dedicated right turn trap lane.</p>

Harley Knox Boulevard will retain four through lanes (two in each direction) in the study area. The DDI will maintain the four-lane overcrossing, which will consist of one left turn lane, one shared left/through lane, and one through lane in each direction. The southbound off-ramp will be widened from two to four lanes, and the northbound off-ramp will be widened from two to three lanes. All right turn movements will be channelized. Build Alternative Two also proposes the dual right-turn lanes in the westbound direction at the northbound ramp terminal.

Build Alternative Three: Single Point Interchange

Build Alternative Three proposes construction of a Single Point interchange (SPI), which will include widening of the overcrossing, off-ramps, northbound on-ramp, and the westbound direction of Harley Knox Boulevard west of the interchange from two to three lanes. Consistent with Build Alternatives One and Two, additional improvements include signal modifications at the proposed I-215 intersection, the Harvill Avenue intersection, and the Western Way intersection. Build Alternative Three also proposes to restripe the Western Way intersection’s westbound approach from one left turn lane, two through lanes, and one shared through/right turn lane to one left turn lane, two through lanes, and a dedicated right turn trap lane.

The SPI condenses the northbound and southbound ramp terminal intersections to a single intersection and will maintain the four-lane overcrossing, have dual eastbound and westbound left-turn lanes, and all right turn movements will be channelized. The southbound off-ramp will be widened from two to three lanes. Build Alternative Three also proposes the dual right-turn lanes to the westbound approach at the northbound ramp terminal intersection.

The westbound direction of Harley Knox Boulevard, west of the interchange, is proposed to be widened to provide an additional lane for southbound right turning vehicles. This lane will trap into the existing westbound right-turn pocket at Harvill Avenue / Harley Knox Boulevard and will not provide additional capacity along Harley Knox.

Type of Project (use Table 1 on instruction sheet)
Reconfigure existing interchange

County Riverside	Narrative Location/Route & Postmiles I-215 (PM R31.8 to R32.8) Caltrans Projects – EA# 08-1K8300
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Lead Agency: City of Perris

Contact Person John Pourkazemi	Phone# 951-467-5930	Fax#	Email jpourkazemi@cityofperris.org
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Hot Spot Pollutant of Concern (check one or both) **PM_{2.5}** X **PM₁₀** X

Federal Action for which Project-Level PM Conformity is Needed (check appropriate box)

Categorical Exclusion (NEPA)	X	EA or Draft EIS	FONSI or Final EIS	PS&E or Construction	Other
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Scheduled Date of Federal Action: 12/2025

NEPA Assignment – Project Type (check appropriate box)

Exempt	Section 326 – Categorical Exemption	X	Section 327 – Non-Categorical Exemption
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Current Programming Dates (as appropriate)				
	PE/Environmental	ENG	ROW	CON
Start	11/2021	6/2024	1/2025	7/2027
End	12/2025	12/2026	12/2026	4/2030

Project Purpose and Need (Summary): *(attach additional sheets as necessary)*

Purpose

The purpose of the proposed project is to:

- Improve access and traffic circulation within the project limits, which serves key areas of employment and regional and inter-regional goods movement;
- Improve access efficiency to the Interstate I-215 regional goods movement corridor;
- Improve community/employment travel and emergency response times;
- Improve multi-modal connectivity, compatibility, and equity along Harley Knox Boulevard through the I-215 interchange; and
- Reconstruct pavement, if removed on I-215, consistent with recommendations included in the California Department of Transportation (Caltrans) Adaptation Priorities Report.

Need

Currently, the I-215/Harley Knox Boulevard Interchange experiences high traffic demand and severe congestion, limiting the accessibility from the City of Perris to the I-215 goods movement corridor. This congestion further limits the ability of workers to efficiently access employment areas, and for goods to fluently move to and from distribution centers, including the March Air Reserve Base/March Global Port, located within close proximity of the interchange. This congestion further affects the community by restricting the ability of trucks and other vehicles to access the freeway, which results in spillover of traffic to parallel facilities, and reduces the efficiency of good movement at both a regional and inter-regional level. These deficiencies also affect the ability of the local community to both access and traverse I-215. Furthermore, as the only truck access point for I-215 in the northern portion of the City, trucks must utilize more circuitous routes to access I-215 via other roadways that are designated by the City for truck traffic when the Harley Knox Interchange is oversaturated, such as Placentia Avenue and 4th Street. These congestion and operational deficiencies are projected to further degrade into the future.

The current conditions at the interchange result in some additional concerns for the travelling public. This includes AM peak traffic along the northbound I-215 off-ramp to Harley Knox Boulevard backing up onto the I-215 mainline impacting vehicles exiting from northbound I-215 to Harley Knox Boulevard and vehicles travelling northbound on I-215.

Through the interchange, Harley Knox Boulevard includes a wide outside lane for shared vehicular and bicycle users (i.e., Class III bikeway). In addition, there are existing sidewalks on both sides of the roadway (i.e., eastbound and westbound) as well as crosswalks at each of the off- and on-ramps. However, due to the lack of dedicated bicycle lanes and pedestrian separation, the current situation does not provide an inviting or accommodating environment for multi-modal users. This situation is further exacerbated by the congestion and operational deficiencies at the interchange, which further limits the ability of bicyclists and pedestrians to comfortably and confidently utilize the existing facility to traverse I-215, due to the potential for conflicts with vehicular traffic.

<p>Surrounding Land Use/Traffic Generators <i>(especially effect on diesel traffic)</i> The land uses within the project area are predominantly commercial and industrial developments. There are no residential, park, school, or other sensitive land uses within the project area.</p>
<p>Opening Year: Build and No Build LOS, AADT, % and # Trucks, Truck AADT of Proposed Facility <u>I-215</u></p> <p>2030 No Build: ADT= 204,920, Truck ADT= 20,902 (10.2%), LOS F 2030 Build Alt 1: ADT= 204,920, Truck ADT= 20,902 (10.2%), LOS F 2030 Build Alt 2: ADT= 204,920, Truck ADT= 20,902 (10.2%), LOS F 2030 Build Alt 3: ADT= 204,920, Truck ADT= 20,902 (10.2%), LOS F</p>
<p>RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # Trucks, Truck AADT of Proposed Facility <u>I-215</u></p> <p>2050 No Build: ADT= 254,050, Truck ADT= 25,913 (10.2%), LOS F 2050 Build Alt 1: ADT= 254,050, Truck ADT= 25,913 (10.2%), LOS F 2050 Build Alt 2: ADT= 254,050, Truck ADT= 25,913 (10.2%), LOS F 2050 Build Alt 3: ADT= 254,050, Truck ADT= 25,913 (10.2%), LOS F</p>
<p>Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT <u>Harley Knox Boulevard</u></p> <p>2030 No Build: ADT= 16,300, Truck ADT= 4,564 (28%), LOS F 2030 Build Alt 1: ADT= 16,300, Truck ADT= 4,564 (28%), LOS C 2030 Build Alt 2: ADT= 16,300, Truck ADT= 4,564 (28%), LOS B 2030 Build Alt 3: ADT= 16,300, Truck ADT= 4,564 (28%), LOS C</p> <p>RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT <u>Harley Knox Boulevard</u></p> <p>2050 No Build: ADT= 21,600, Truck ADT= 6,048 (28%), LOS F 2050 Build Alt 1: ADT= 21,600, Truck ADT= 6,048 (28%), LOS C 2050 Build Alt 2: ADT= 21,600, Truck ADT= 6,048 (28%), LOS D 2050 Build Alt 3: ADT= 21,600, Truck ADT= 6,048 (28%), LOS C</p>
<p>Describe potential traffic redistribution effects of congestion relief <i>(impact on other facilities)</i> See attached analysis.</p>
<p>Comments/Explanation/Details <i>(attach additional sheets as necessary)</i> See attached analysis.</p>

PM_{2.5}/PM₁₀ Hot-Spot Analysis

The proposed Project is within a nonattainment area for federal standards for particulate matter less than 2.5 microns in diameter (PM_{2.5}) and within an attainment/maintenance area for the federal standards for particulate matter less than 10 microns in diameter (PM₁₀). Therefore, per 40 Code of Federal Regulations (CFR) Part 93, hot-spot analyses are required for conformity purposes. However, the U.S. Environmental Protection Agency does not require hot-spot analyses—qualitative or quantitative—for projects that are not listed in Section 93.123(b)(1) as an air quality concern.

According to 40 CFR Part 93.123(b)(1), the following are Projects of Air Quality Concern (POAQC):

- i. New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
- ii. Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- v. Projects in or affecting locations, areas, or categories of sites which are identified in the PM₁₀ and PM_{2.5} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The Project does not qualify as a POAQC because of the following reasons:

- i) The build alternatives proposed as part of the Project would reconfigure the existing I-215/Harley Knox Boulevard Interchange. Tables 1 and 2 list the average daily traffic (ADT) and truck ADT volumes along the highway and local roadway segments within the Project area for the opening year (2030) and horizon year (2050) conditions, respectively. As the project would not increase the capacity of I-215 or Harley Knox Boulevard, the volumes included in Tables 1 and 2 are applicable to the no-build and each of the build alternatives. Therefore, the interchange reconfiguration would not significantly increase the number of diesel vehicles.
- ii) As discussed above, the Project would not significantly increase the number of diesel vehicles operating within the Project study area. In addition, as shown in Tables 3 and 4, the build alternatives would improve the level of service (LOS) and reduce the delay at the intersections in the project area. Therefore, the proposed Project would not affect intersections that are at LOS D, E, or F with a significant number of diesel vehicles.
- iii) The proposed build alternative does not include the construction of a new bus or rail terminal.
- iv) The proposed build alternative does not expand an existing bus or rail terminal.
- v) The proposed build alternative is not in or affecting locations, areas, or categories of sites that are identified in the PM_{2.5} and PM₁₀ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Therefore, the Project meets the Clean Air Act requirements and 40 CFR 93.116 without any explicit hot-spot analysis and would not create a new, or worsen an existing, PM_{2.5} and PM₁₀ violation.

Table 1. 2030 Traffic Volumes

Roadway Segment	No-Build and All Build Alternatives		
	ADT	Truck ADT	Truck %
I-215			
Between Van Buren Boulevard and Harley Knox Boulevard	204,920	20,902	10.2%
Between Harley Knox and Ramona Expressway	196,840	20,078	10.2%
Harley Knox Boulevard			
East of Harville Avenue	4,000	1,120	28%
Between Harville Avenue and I-215	11,200	3,136	28%
Between I-215 and Western Way	16,300	4,564	28%
East of Western Way	15,600	4,368	28%

Source: Fehr and Peers, March 2023

Table 2. 2050 Traffic Volumes

Roadway Segment	No-Build and All Build Alternatives		
	ADT	Truck ADT	Truck %
I-215			
Between Van Buren Boulevard and Harley Knox Boulevard	254,050	25,913	10.2%
Between Harley Knox and Ramona Expressway	244,290	24,918	10.2%
Harley Knox Boulevard			
East of Harville Avenue	9,000	2,520	28%
Between Harville Avenue and I-215	19,400	5,432	28%
Between I-215 and Western Way	21,600	6,048	28%
East of Western Way	20,800	5,824	28%

Source: Fehr and Peers, March 2023

Table 3. 2030 Intersection Operations

Intersection	Peak Hour	No-Build		Alternative 1		Alternative 2		Alternative 3	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-215 SB Ramps/Van Buren Blvd	AM	9.7	A	9.7	A	9.7	A	9.7	A
	PM	16.6	B	16.6	B	16.6	B	16.6	B
I-215 SB Ramps/Van Buren Blvd	AM	10.9	B	10.9	B	10.9	B	10.9	B
	PM	9.0	A	9.0	A	9.0	A	9.0	A
Harvill Avenue/Harley Knox Blvd	AM	111.9	F	22.0	C	18.8	B	22.8	C
	PM	34.5	C	27.9	C	18.4	B	22.1	C
I-215 SB Ramps/Harley Knox Blvd	AM	124.1	F	18.4	B	13.5	B	19.0	B
	PM	57.4	E	16.9	B	11.4	B	15.2	B
I-215 NB Ramps/Harley Knox Blvd	AM	35.1	D	13.0	B	13.0	B	19.0	B
	PM	63.5	E	13.3	B	12.2	B	15.2	B
Western Way/Harley Knox Blvd	AM	24.5	C	17.8	B	12.1	B	14.4	B
	PM	114.7	F	8.4	A	8.2	A	9.0	A
I-215 SB Ramps/Ramona Exp.	AM	62.9	E	62.9	E	62.9	E	62.9	E
	PM	102.4	F	102.4	F	102.4	F	102.4	F
I-215 NB Ramps/Ramona Exp.	AM	49.0	D	49.0	D	49.0	D	49.0	D
	PM	92.7	F	92.7	F	92.7	F	92.7	F

Source: Fehr and Peers, March 2023

Table 4. 2050 Intersection Operations

Intersection	Peak Hour	No-Build		Alternative 1		Alternative 2		Alternative 3	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-215 SB Ramps/Van Buren Blvd	AM	7.2	A	7.2	A	7.2	A	7.2	A
	PM	87.1	F	87.1	F	87.1	F	87.1	F
I-215 SB Ramps/Van Buren Blvd	AM	17.6	B	17.6	B	17.6	B	17.6	B
	PM	10.9	B	10.9	B	10.9	B	10.9	B
Harvill Avenue/Harley Knox Blvd	AM	170.5	F	34.1	C	28.1	C	33.6	C
	PM	175.7	F	32.0	C	33.9	B	30.8	B
I-215 SB Ramps/Harley Knox Blvd	AM	119.5	F	22.1	C	15.5	B	26.2	C
	PM	108.1	F	15.7	B	14.1	B	22.1	B
I-215 NB Ramps/Harley Knox Blvd	AM	89.0	F	18.5	B	14.5	B	26.2	C
	PM	89.5	F	15.6	B	14.5	B	22.1	B
Western Way/Harley Knox Blvd	AM	123.6	F	25.5	C	38.3	D	30.4	C
	PM	130.9	F	11.8	B	15.1	B	15.1	B
I-215 SB Ramps/Ramona Exp.	AM	23.0	C	23.0	C	23.0	C	23.0	C
	PM	35.2	D	35.2	D	35.2	D	35.2	D
I-215 NB Ramps/Ramona Exp.	AM	48.9	D	48.9	D	48.9	D	48.9	D
	PM	27.2	C	27.2	C	27.2	C	27.2	C

Source: Fehr and Peers, March 2023

No.	X	R	Δ	T	L
1		42500.00'	01°04'51"	400.87'	801.72'
2		41500.00'	01°06'27"	401.10'	802.18'
10		15000.00'	01°03'54"	139.43'	278.85'
15		5000.00'	04°20'07"	189.26'	378.34'
16		3000.00'	05°03'48"	132.65'	265.12'
20		7000.00'	02°41'26"	164.39'	328.72'
25		3000.00'	07°12'08"	188.08'	377.11'

DESIGN DESIGNATION (ROUTE 215)
 ADT (2030) = 182,060 D = 58'
 ADT (2050) = 224,450 T = 10%
 DHV = 12,890 V = 70 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB ON-RAMP)
 ADT (2030) = 13,590 D = 100'
 ADT (2050) = 18,350 T = 28%
 DHV = 1,160 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB OFF-RAMP)
 ADT (2030) = 4,770 D = 100'
 ADT (2050) = 7,900 T = 28%
 DHV = 850 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB ON-RAMP)
 ADT (2030) = 8,060 D = 100'
 ADT (2050) = 11,520 T = 28%
 DHV = 700 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB OFF-RAMP)
 ADT (2030) = 7,240 D = 100'
 ADT (2050) = 10,530 T = 28%
 DHV = 990 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (HARLEY KNOX Blvd)
 ADT (2030) = 20,300 D = 62'
 ADT (2050) = 29,700 T = 28%
 DHV = 2,040 V = 40 MPH
 CLIMATE REGION = DESERT

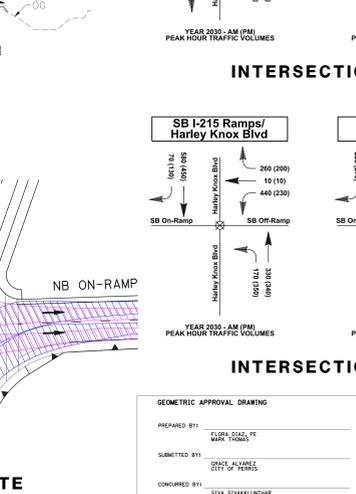
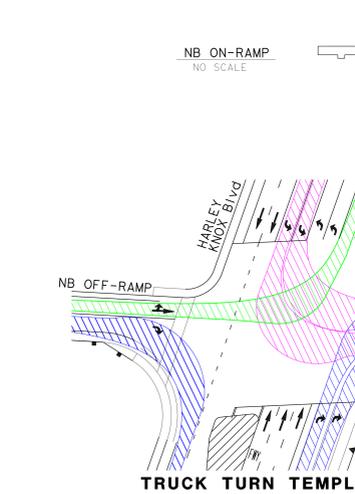
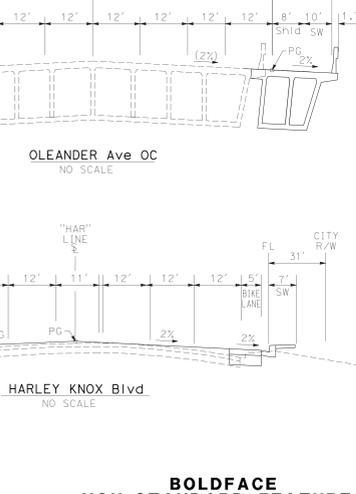
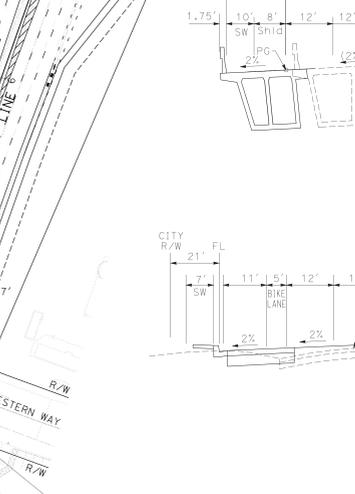
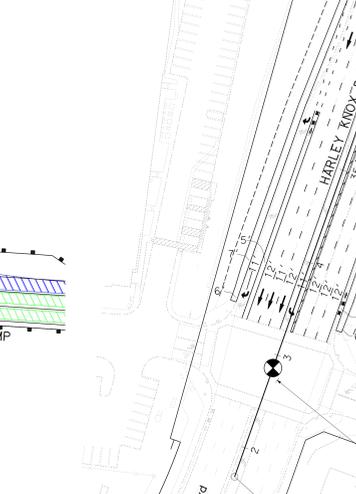
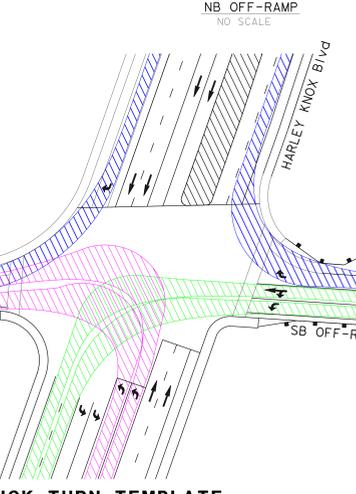
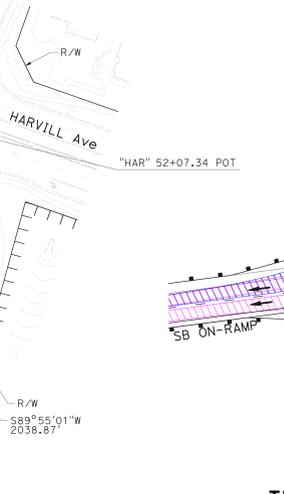
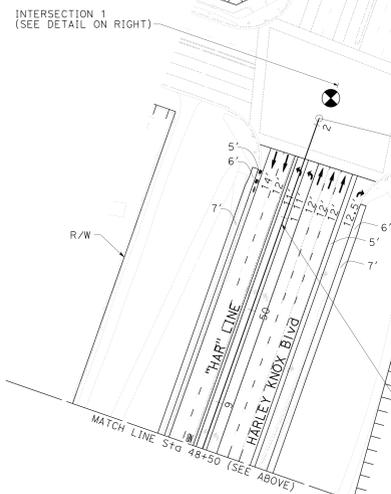
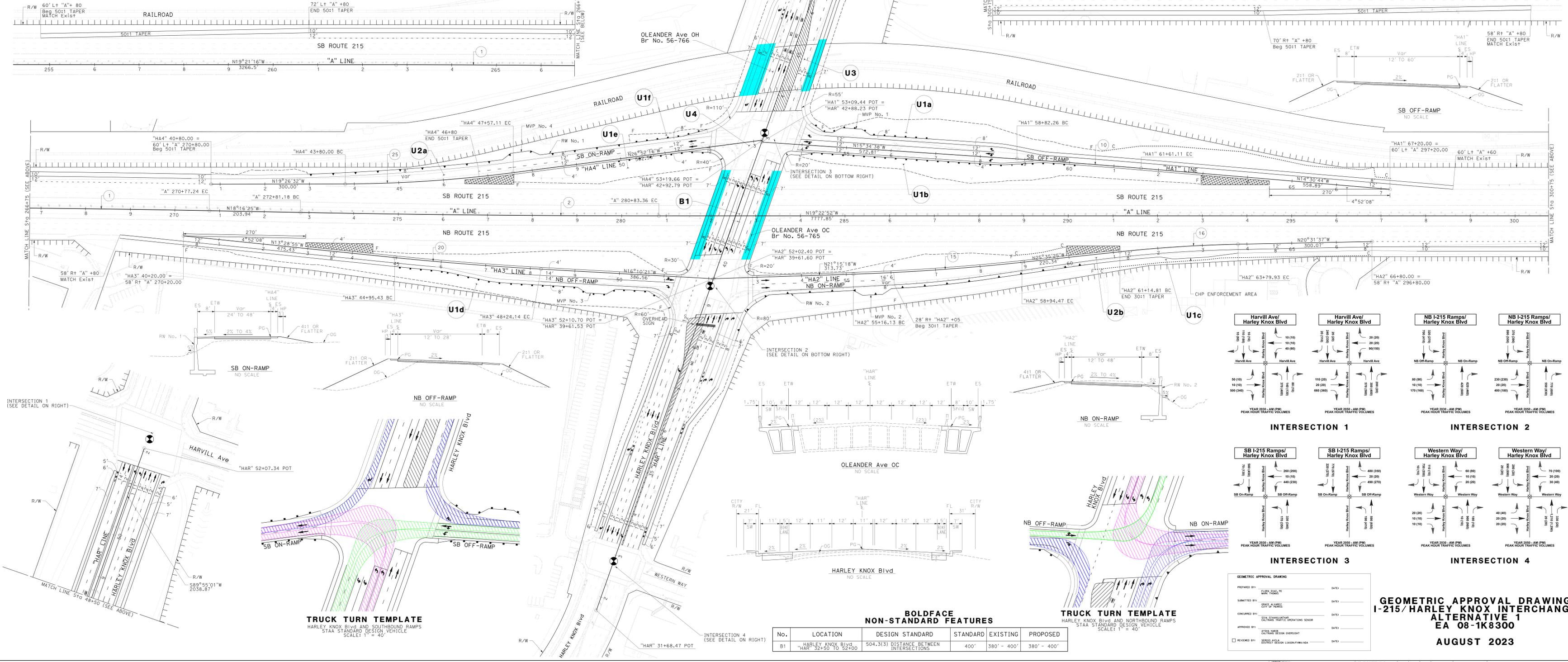
- LEGEND**
- GUARDRAIL
 - RETAINING WALL
 - EXISTING CALTRANS ACCESS CONTROL
 - TRAFFIC SIGNAL
 - BC BEGIN CURVE
 - EC END CURVE
 - PCC POINT OF COMPOUND CURVE
 - NEW BRIDGE
 - RAISED ISLAND
 - CONTRASTING SURFACE TREATMENT
 - C CUT
 - F FILL



PRELIMINARY

No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
U1	SEE PLAN VIEW	304.1 SIDE SLOPE STANDARDS	4:1	VQR, 2:1 OR FLATTER	2:1
U2	NB & SB ENTRANCE RAMP	504.3(2)(A) RAMP METERING	METERED HOV LANE	NO HOV LANE	NO HOV LANE
U3	HARLEY KNOX Blvd "HAR" 44+00 TO 45+30	309.5(1) MINIMUM VERTICAL CLEARANCES ABOVE HIGHEST RAIL	23' 4"	23' 3/4"	24' 7"
U4	SB ENTRANCE RAMP & HARLEY KNOX Blvd	403.3 ANGLE OF INTERSECTION	75°	63°	63°

DATE:	DATE:
DRAWINGS CHECKED AGAINST CALCULATIONS, AND CALCULATIONS CHECK CONFIRMED.	
BY:	DATE:
CHECKED:	DATE:
BACKCHECKED:	DATE:
CORRECTED:	DATE:
VERIFIED:	DATE:



Intersection	Year	AM (PM)	Peak Hour Traffic Volumes
Intersection 1	2030	AM (PM)	10 (10) / 10 (10) / 40 (40) / 20 (20) / 20 (20) / 90 (150)
	2050	AM (PM)	110 (20) / 20 (20) / 440 (230) / 640 (340) / 600 (340) / 100 (10)
Intersection 2	2030	AM (PM)	80 (80) / 20 (20) / 20 (20) / 400 (140)
	2050	AM (PM)	230 (230) / 20 (20) / 400 (140) / 400 (140)
Intersection 3	2030	AM (PM)	200 (200) / 10 (10) / 440 (230) / 400 (270)
	2050	AM (PM)	400 (230) / 10 (10) / 440 (230) / 400 (270)
Intersection 4	2030	AM (PM)	40 (40) / 20 (20) / 20 (20) / 70 (140) / 20 (20) / 30 (40)
	2050	AM (PM)	40 (40) / 20 (20) / 20 (20) / 70 (140) / 20 (20) / 30 (40)



GEOMETRIC APPROVAL DRAWING
I-215/HARLEY KNOX INTERCHANGE
ALTERNATIVE 1
EA 08-1K8300
AUGUST 2023

No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
B1	HARLEY KNOX Blvd "HAR" 32+50 TO 52+00	504.3(3) DISTANCE BETWEEN INTERSECTIONS	400'	380' - 400'	380' - 400'

DATE:	DATE:
PREPARED BY: ELORA SULLIVAN, PE	
SUBMITTED BY: ELORA SULLIVAN, PE	
CONCURRED BY: STAFF EVALUATION AND OPERATIONS SENIOR	
APPROVED BY: ANITA HARRIS, CALTRANS DESIGN OVERSIGHT	
REVIEWED BY: SERGIO AYALA, DESIGN LEAD/PROJECT MANAGER	

CURVE DATA

No.	R	Δ	T	L
1	42500.00'	01°04'51"	400.87'	801.72'
2	41500.00'	01°06'27"	401.10'	802.18'
10	20000.00'	01°03'54"	185.90'	371.80'
15	3000.00'	03°11'29"	83.57'	167.09'
20	7000.00'	02°41'26"	164.39'	328.72'
25	3000.00'	05°36'16"	146.84'	293.44'

PRELIMINARY

BOLDFACE NON-STANDARD FEATURES

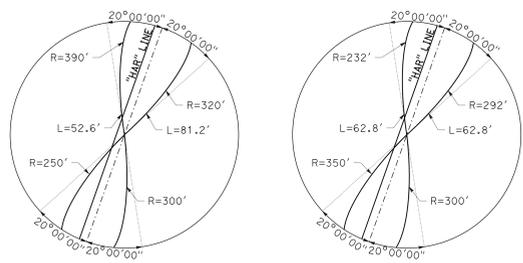
No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
B1	"HAR" 32+50 TO 52+00 HARLEY KNOX Blvd	504.3(3) DISTANCE BETWEEN INTERSECTIONS	400'	380' - 400'	380' - 400'
B2	"HA2" 56+60 TO 66+30 NB ON-RAMP	302.1 SHOULDER WIDTH	8'	8'	4'

UNDERLINED NON-STANDARD FEATURES

No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
U1	SEE PLAN VIEW	304.1 SIDE SLOPE STANDARDS	4:1	2:1	2:1
U2	NB & SB ENTRANCE RAMP	504.3(2)(A) RAMP METERING	METERED HOV LANE	NO HOV LANE	NO HOV LANE
U3	"HAR" 44+00 TO 45+30 HARLEY KNOX Blvd	309.5(1) MINIMUM VERTICAL CLEARANCES ABOVE HIGHEST RAIL	23' 4"	23' 3/4"	24' 3/4"
U4	NB ENTRANCE RAMP	504.2 FREEWAY ENTRANCE DESIGN	CONFORM TO FIGURE 504.2A	STANDARD ENTRANCE APPROACH	NONSTANDARD ENTRANCE APPROACH

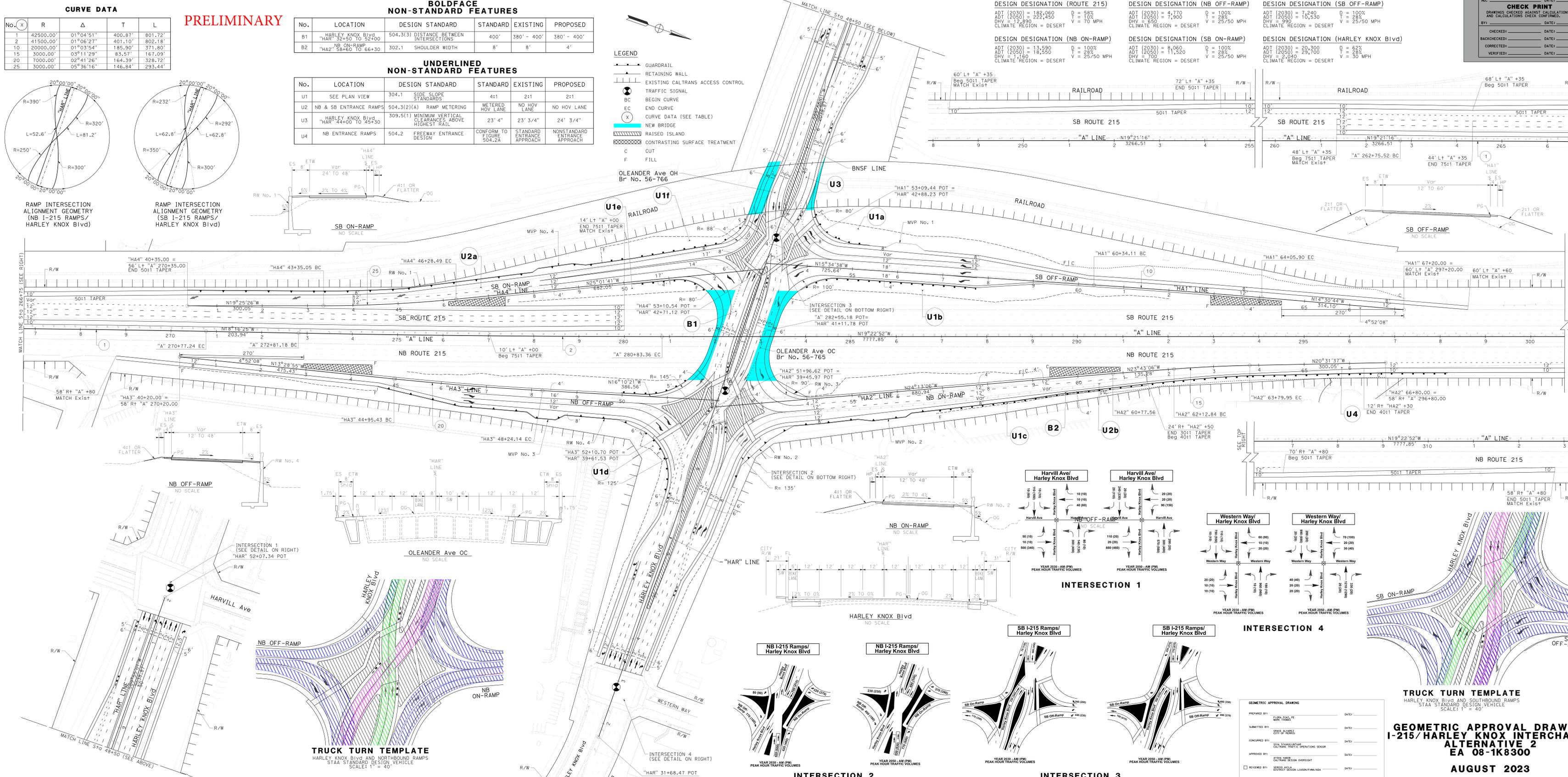
LEGEND

- +— GUARDRAIL
- +— RETAINING WALL
- +— EXISTING CALTRANS ACCESS CONTROL
- ⊙ TRAFFIC SIGNAL
- ⊙ BC BEGIN CURVE
- ⊙ EC END CURVE
- ⊙ X CURVE DATA (SEE TABLE)
- +— NEW BRIDGE
- +— RAISED ISLAND
- +— CONTRASTING SURFACE TREATMENT
- C CUT
- F FILL



RAMP INTERSECTION ALIGNMENT GEOMETRY (NB I-215 RAMP/HARLEY KNOX Blvd)

RAMP INTERSECTION ALIGNMENT GEOMETRY (SB I-215 RAMP/HARLEY KNOX Blvd)



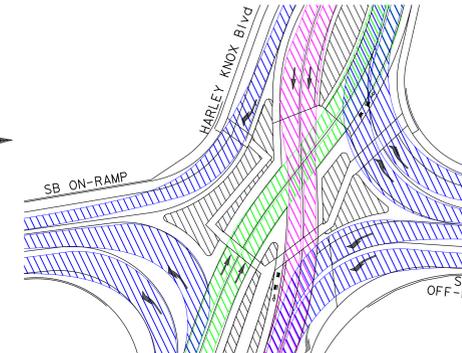
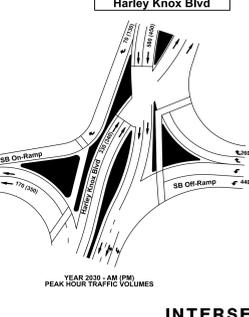
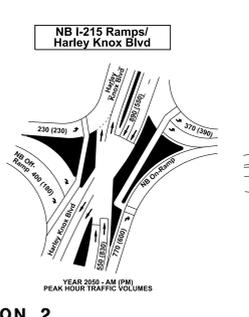
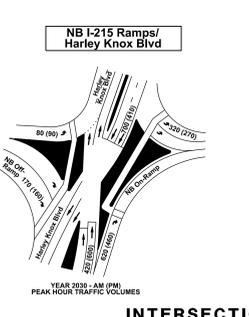
MATCH LINE S10 266+15 (SEE RIGHT)

MATCH LINE S10 266+15 (SEE LEFT)

MATCH LINE S10 266+15 (SEE ABOVE)



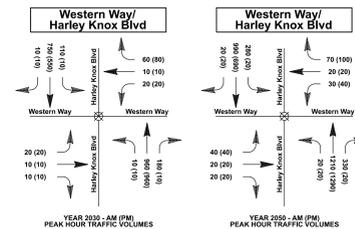
TRUCK TURN TEMPLATE
HARLEY KNOX Blvd AND NORTHBOUND RAMP
STAA STANDARD DESIGN VEHICLE
SCALE: 1" = 40'



TRUCK TURN TEMPLATE
HARLEY KNOX Blvd AND SOUTHBOUND RAMP
STAA STANDARD DESIGN VEHICLE
SCALE: 1" = 40'



INTERSECTION 1
Harvill Ave / Harley Knox Blvd
YEAR 2030 - AM (PM) PEAK HOUR TRAFFIC VOLUMES
YEAR 2050 - AM (PM) PEAK HOUR TRAFFIC VOLUMES



INTERSECTION 4
Western Way / Harley Knox Blvd
YEAR 2030 - AM (PM) PEAK HOUR TRAFFIC VOLUMES
YEAR 2050 - AM (PM) PEAK HOUR TRAFFIC VOLUMES



CHECK PRINT
DRAWINGS CHECKED AGAINST CALCULATIONS, AND CALCULATIONS CHECK CONFIRMED.

BY:	DATE:
CHECKED:	DATE:
BACKCHECKED:	DATE:
CORRECTED:	DATE:
VERIFIED:	DATE:

DESIGN DESIGNATION (ROUTE 215)
ADT (2030) = 182,060 D = 58%
ADT (2050) = 222,450 T = 10%
DHW = 12,890 V = 70 MPH
CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB OFF-RAMP)
ADT (2030) = 4,770 D = 100%
ADT (2050) = 7,900 T = 28%
DHW = 650 V = 25/50 MPH
CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB OFF-RAMP)
ADT (2030) = 7,240 D = 100%
ADT (2050) = 10,530 T = 28%
DHW = 990 V = 25/50 MPH
CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB ON-RAMP)
ADT (2030) = 13,590 D = 100%
ADT (2050) = 18,550 T = 28%
DHW = 1,160 V = 25/50 MPH
CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB ON-RAMP)
ADT (2030) = 8,060 D = 100%
ADT (2050) = 11,520 T = 28%
DHW = 700 V = 25/50 MPH
CLIMATE REGION = DESERT

DESIGN DESIGNATION (HARLEY KNOX Blvd)
ADT (2030) = 20,300 D = 62%
ADT (2050) = 29,700 T = 28%
DHW = 2,040 V = 30 MPH
CLIMATE REGION = DESERT

GEOMETRIC APPROVAL DRAWING
I-215/HARLEY KNOX INTERCHANGE
ALTERNATIVE 2
EA 08-1K8300
AUGUST 2023

PREPARED BY:	ELIJA SIZEMORE	DATE:
SUBMITTED BY:	ORVILLE JAMES	DATE:
CONCLUDED BY:	STYLA STAVROPOULOS	DATE:
APPROVED BY:	ATYIA HERRERA	DATE:
REVIEWED BY:	SEBASTIAN BUSTAMANTE	DATE:

No. _____		DATE: _____	
CHECK PRINT			
DRAWINGS CHECKED AGAINST CALCULATIONS, AND CALCULATIONS CHECK CONFIRMED.			
BY: _____	DATE: _____	DATE: _____	DATE: _____
CHECKED: _____	DATE: _____	DATE: _____	DATE: _____
BACKCHECKED: _____	DATE: _____	DATE: _____	DATE: _____
CORRECTED: _____	DATE: _____	DATE: _____	DATE: _____
VERIFIED: _____	DATE: _____	DATE: _____	DATE: _____

CURVE DATA

No.	R	Δ	T	L
1	42500.00'	01°04'51"	400.87'	901.72'
2	41500.00'	01°06'27"	401.10'	802.18'
10	15000.00'	01°03'54"	139.43'	278.85'
15	5000.00'	04°20'07"	189.26'	378.34'
16	3000.00'	05°03'48"	132.65'	265.12'
20	7000.00'	02°41'26"	164.39'	328.72'
25	3000.00'	07°12'08"	188.08'	377.11'

DESIGN DESIGNATION (ROUTE 215)
 ADT (2030) = 182,060 D = 58%
 ADT (2050) = 224,450 F = 10%
 DHV = 12.890 V = 70 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB ON-RAMP)
 ADT (2030) = 113,590 D = 100%
 ADT (2050) = 148,450 F = 28%
 DHV = 11.180 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (NB OFF-RAMP)
 ADT (2030) = 4,770 D = 100%
 ADT (2050) = 7,900 F = 28%
 DHV = 5.560 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB ON-RAMP)
 ADT (2030) = 8,060 D = 100%
 ADT (2050) = 11,520 F = 10%
 DHV = 7.000 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (SB OFF-RAMP)
 ADT (2030) = 7,240 D = 100%
 ADT (2050) = 10,430 F = 28%
 DHV = 9.900 V = 25/50 MPH
 CLIMATE REGION = DESERT

DESIGN DESIGNATION (HARLEY KNOX Blvd)
 ADT (2030) = 20,300 D = 62%
 ADT (2050) = 29,700 F = 28%
 DHV = 9.940 V = 40 MPH
 CLIMATE REGION = DESERT

LEGEND

- GUARDRAIL
- RETAINING WALL
- EXISTING CALTRANS ACCESS CONTROL
- ⊙ TRAFFIC SIGNAL
- ⊙ BC BEGIN CURVE
- ⊙ EC END CURVE
- ⊙ PCC POINT OF COMPOUND CURVE
- ⊙ CURVE DATA (SEE TABLE)
- NEW BRIDGE
- RAISED ISLAND
- CONTRASTING SURFACE TREATMENT
- C CUT
- F FILL

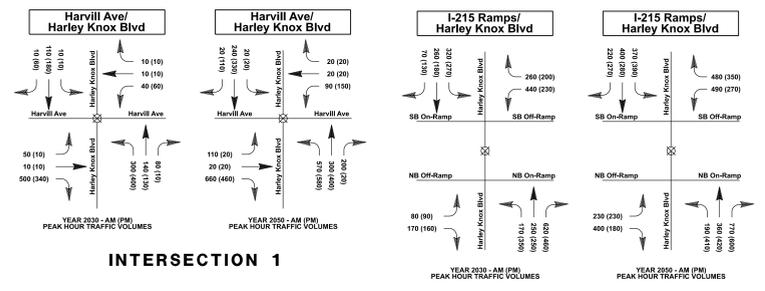
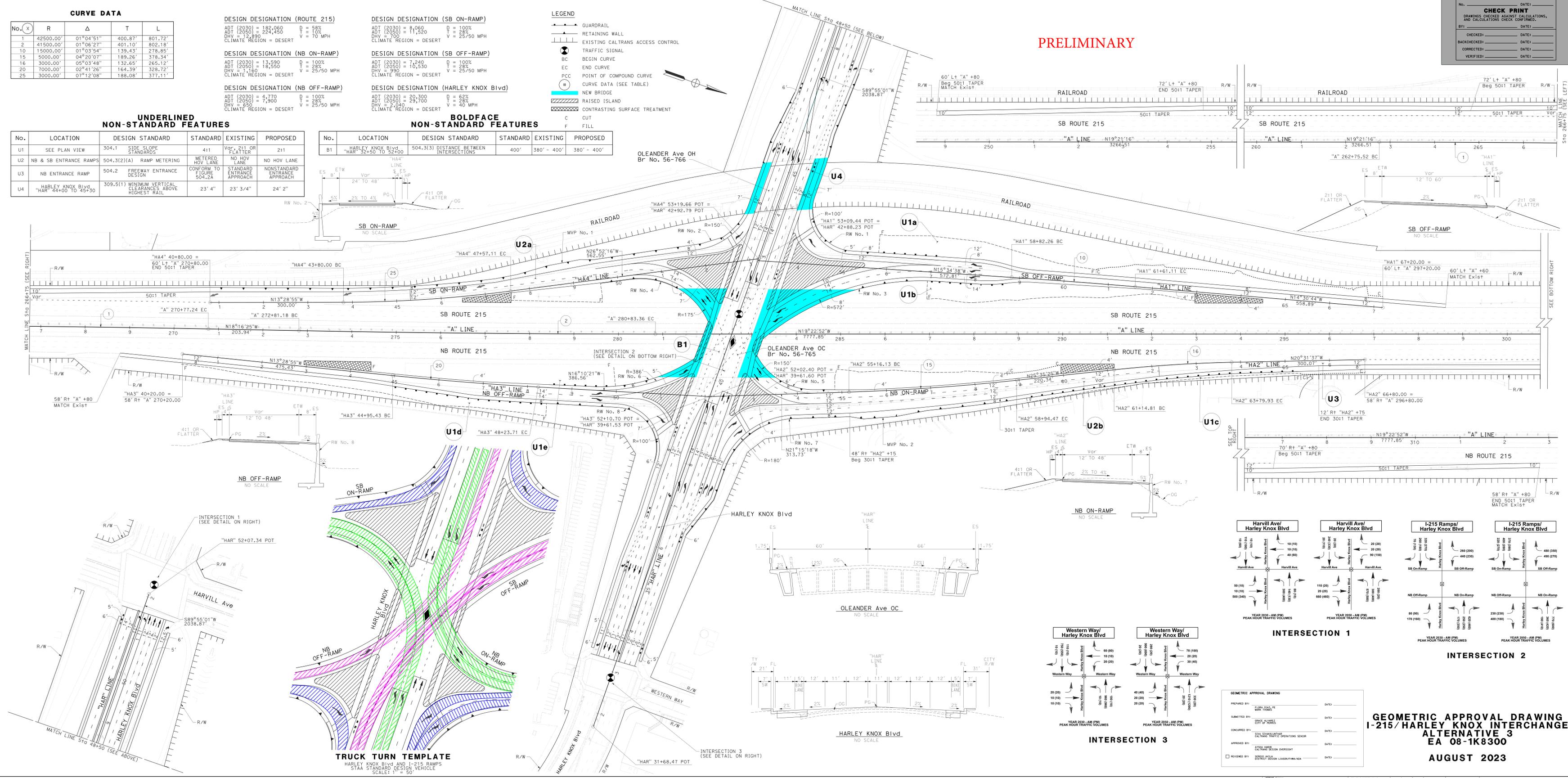
UNDERLINED NON-STANDARD FEATURES

No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
U1	SEE PLAN VIEW	304.1 SIDE SLOPE STANDARDS	4:1	Var, 2:1 OR FLATTER	2:1
U2	NB & SB ENTRANCE RAMPS	504.3(2)(A) RAMP METERING	METERED HOV LANE	NO HOV LANE	NO HOV LANE
U3	SB ENTRANCE RAMP	504.2 FREEWAY ENTRANCE DESIGN	CONFORM TO FIGURE 504.2A	STANDARD ENTRANCE APPROACH	NONSTANDARD ENTRANCE APPROACH
U4	HARLEY KNOX Blvd "HAR" 44+00 TO 45+30	309.5(1) MINIMUM VERTICAL CLEARANCES ABOVE HIGHEST RAIL	23' 4"	23' 3/4"	24' 2"

BOLDFACE NON-STANDARD FEATURES

No.	LOCATION	DESIGN STANDARD	STANDARD	EXISTING	PROPOSED
B1	HARLEY KNOX Blvd "HAR" 32+50 TO 32+00	504.3(3) DISTANCE BETWEEN INTERSECTIONS	400'	380' - 400'	380' - 400'

PRELIMINARY



GEOMETRIC APPROVAL DRAWING

PREPARED BY: ELIJA SELL, PE DATE: _____

SUBMITTED BY: DATE: _____

CONCURRED BY: DATE: _____

APPROVED BY: DATE: _____

REVIEWED BY: DATE: _____

GEOMETRIC APPROVAL DRAWING I-215/HARLEY KNOX INTERCHANGE ALTERNATIVE 3 EA 08-1K8300 AUGUST 2023