



June 11, 2025

Ms. Kathy Raasch
Director of Development Services/Capital Projects
CITY OF NEEDLES
817 3RD Street
Needles, CA 92363

**RE: Multi-Way Stop (AWS) Warrant Evaluation
Broadway Street & B Street**

Dear Ms. Raasch:

TKE Engineering has completed a multi-way stop (AWS) warrant analysis for the following intersection:

- Broadway Street & B Street

An on-site field review was performed to observe current operational conditions on May 13, 2025 for this location. Outsourced traffic data was collected by Counts Unlimited on May 22, 2025.

Broadway Street & B Street

Broadway Street is a major roadway with two lanes in each direction and on-street parking. It has a posted speed of 30 M.P.H. The nearest adjacent intersection with an existing all-way stop is at Broadway Street and "D" Street, approximately 700' westerly.

Broadway Street and "B" Street intersection has existing standard street lights on two (2) of the four (4) corners and decorative street lighting on the segments between intersections. The roadway through the city is part of historic Route 66.

The occupied land use for Broadway Street is commercial including a hardware store and a plumbing company at this location. An employee parking area is located on the northeast quadrant generating minor foot traffic across Broadway Street as well as a local bus stop on the northwest quadrant.

Multi-Way (AWS) Stop Warrants

Currently "B" Street stops for Broadway Street in the north/south direction. There are no marked crosswalks at this location.

Section 2B-07 of the CA Manual on Uniform Traffic Control Devices (CA MUTCD) provides guidance for the installation of multi-way stops and specifies that the decision to install this type of traffic control should be based on an engineering study to include various factors including, but not limited to, traffic volumes and collision incidents.

Based on minimum vehicle volumes and/or City provided SWITRS collision history reporting, this intersection does not meet the minimum CA MUTCD criteria for this type of installation using this criterion.

However, field observation of sight distance was measured and found to be less than adequate for northbound vehicles entering the roadway. The less-than-optimal sight distance is due to the existing building structure on the southeast quadrant and the existing brick/wrought iron fencing on the southwest quadrant. Additionally, on street parking and the horizontal curve on Broadway Street contribute to reduced sight distance at this location.

The CA MUTCD specifies optional criteria for *locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop* (Section 2B.07.05.C).

Based on engineering judgement and field observation of the sight distance constraints stated above, installation of an all-way stop is recommended. Marked crosswalks are recommended to accommodate pedestrian road users.

Review of the existing red curb for this intersection is compliant with AB 413 which became effective in the California Vehicle Code on January 1, 2025. The installation work order will include the refreshing of the red curb as needed to restrict parking within 20' of marked/unmarked crosswalks.

Based on the above, the installation of Multi-Way Stop (AWS) is recommended for Broadway Street and "B" Street.

Multi-Way Evaluation Analysis worksheets are attached including supporting outsourced vehicle data for your use. An installation work order has been prepared and is included with this recommendation. The work order includes temporary post-top mounted flashing beacons to alert motorists of this new traffic pattern. Alternatively, the city may choose to use changeable message sign boards for a typical duration of 3-4 weeks.

TKE Engineering is pleased to submit this analysis to the city. Please let us know if we can assist further to provide an installation work order for signing and striping at this location.

Sincerely,



Terry Renner, P.E, P.L.S., Q.S.D.
Senior Vice President

Attachments: Warrant Study: Broadway Street & "B" Street
Outsourced Traffic Data
Installation Work Order



MULTI-WAY STOP EVALUATION

City of Needles

Location: **Broadway Street and B Street**

Date of Count: May 22, 2025

WARRANT STUDY

Count Warrants Met?

A. Temporary measure in lieu of traffic signal installation	Not Studied	
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B. Correctible Collisions: 5 or more correctible collisions in a 12 month period. 2022-2023 reported by SWITRS = 0 incident (VRW/correctible collision) (highest of 3 years)	0	No
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C. Minimum Volumes:

1. The vehicular volume entering the intersection from the major approaches (total of both) averages at least 300 vehicles per hour for any 8 hours of an average day, and	146	No
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2. The combined vehicular, pedestrian and bicycle volume entering the intersection from the minor street approaches (total of both) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but,	14	No
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3. When the 85th-percentile approach speed of the major-street traffic exceeds 65 km/h (40 mph), the minimum vehicular volume warrants are 70 percent of the above values. (210/140) 85th percentile speed: 30 +		N/A
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D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. (4/240/160) Criterion C.3 is excluded from this condition.	0 / 146 / 14	No
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Recommendation

Dated: 5/28/2025

By: Monae Pugh

Approved By:

Source: CA MUTCD 2014(Rev 9) Section 2B.07

All-Way Stop Warrants (AWS) are Not Satisfied based on volumes; and/or reported crash incidents. Vehicle volumes are very low on minor roadway; well below the CA Manual of California on Uniform Traffic Control Devices (MUTCD) criteria thresholds. However, sight distance at this location is less than optimal for approach speed due to "fence effect" created by wrought iron/brick fencing, on street parking and horizontal curve on Broadway Street. All-Way Stop Installation and marked crosswalk is recommended to improve intersection operation. Additionally implementation of red curb restricting parking within 20' of marked/unmarked crosswalks in compliance with AB 413 is included in installation work order.



MULTI-WAY STOP EVALUATION

City of Needles

Location: **Broadway Street and B Street**

Date of Count: May 22, 2025

Time	Major Approach		Broadway Street		Minor Approach		B Street	HIGHEST 8 Hours
	EB	WB	EB + WB	HIGHEST 8 Hours	NB	SB	NB + SB	
12:00PM	4	3	7		1	0	1	
01:00AM	0	2	2		1	1	2	
02:00AM	1	0	1		0	0	0	
03:00AM	3	3	6		0	0	0	
04:00AM	9	3	12		0	0	0	
05:00AM	34	14	48		7	0	7	
06:00AM	34	24	58		5	1	6	
07:00AM	48	56	104		12	1	13	
08:00AM	65	63	128	128	7	3	10	10
09:00AM	72	70	142	142	10	4	14	14
10:00AM	74	74	148	148	8	4	12	12
11:00AM	79	68	147	147	12	4	16	16
12:00AM	65	82	147	147	9	4	13	13
01:00PM	81	70	151	151	13	3	16	16
02:00PM	69	86	155	155	7	4	11	11
03:00PM	75	71	146	146	15	2	17	17
04:00PM	42	60	102		14	0	14	
05:00PM	53	63	116		7	1	8	
06:00PM	35	59	94		5	1	6	
07:00PM	32	31	63		5	1	6	
08:00PM	31	30	61		6	2	8	
09:00PM	21	18	39		0	0	0	
10:00PM	9	12	21		2	0	2	
11:00PM	9	13	22		0	0	0	
TOTALS	945	975	1920	1164	146	36	182	109

City of Needles
N/S: B Street
E/W: Broadway Street
24 Hour Entering Volume Count

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

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NDL002EW
Site Code: 219-25566

Start Time	5/22/25 Thu	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	12			2	15				
12:15		2	14			0	18				
12:30		0	22			1	24				
12:45		1	17	4	65	0	25	3	82	7	147
01:00		0	19			0	12				
01:15		0	20			2	15				
01:30		0	24			0	25				
01:45		0	18	0	81	0	18	2	70	2	151
02:00		0	28			0	19				
02:15		0	11			0	23				
02:30		1	17			0	22				
02:45		0	13	1	69	0	22	0	86	1	155
03:00		0	17			1	22				
03:15		1	19			1	22				
03:30		1	19			0	14				
03:45		1	20	3	75	1	13	3	71	6	146
04:00		0	12			0	18				
04:15		0	9			0	15				
04:30		5	11			1	16				
04:45		4	10	9	42	2	11	3	60	12	102
05:00		4	17			0	14				
05:15		9	10			4	23				
05:30		11	16			4	15				
05:45		10	10	34	53	6	11	14	63	48	116
06:00		6	10			9	19				
06:15		6	7			3	13				
06:30		13	9			7	14				
06:45		9	9	34	35	5	13	24	59	58	94
07:00		7	5			6	8				
07:15		13	11			15	6				
07:30		13	7			17	10				
07:45		15	9	48	32	18	7	56	31	104	63
08:00		13	7			14	6				
08:15		12	10			18	10				
08:30		18	6			13	8				
08:45		22	8	65	31	18	6	63	30	128	61
09:00		15	4			19	5				
09:15		21	10			17	4				
09:30		18	2			16	4				
09:45		18	5	72	21	18	5	70	18	142	39
10:00		22	1			15	4				
10:15		14	1			13	5				
10:30		17	3			26	2				
10:45		21	4	74	9	20	1	74	12	148	21
11:00		27	3			28	6				
11:15		11	2			12	4				
11:30		17	2			11	1				
11:45		24	2	79	9	17	2	68	13	147	22
Total		423	522	423	522	380	595	380	595	803	1117
Combined Total		945		945		975		975		1920	
AM Peak	-	09:15	-	-	-	10:15	-	-	-	-	-
Vol.	-	79	-	-	-	87	-	-	-	-	-
P.H.F.		0.898				0.777					
PM Peak	-	-	01:15	-	-	-	02:15	-	-	-	-
Vol.	-	-	90	-	-	-	89	-	-	-	-
P.H.F.			0.804				0.967				
Percentage		44.8%	55.2%			39.0%	61.0%				
ADT/AADT		ADT 1,920	AADT 1,920								

City of Needles
N/S: B Street
E/W: Broadway Street
24 Hour Entering Volume Count

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Page 1

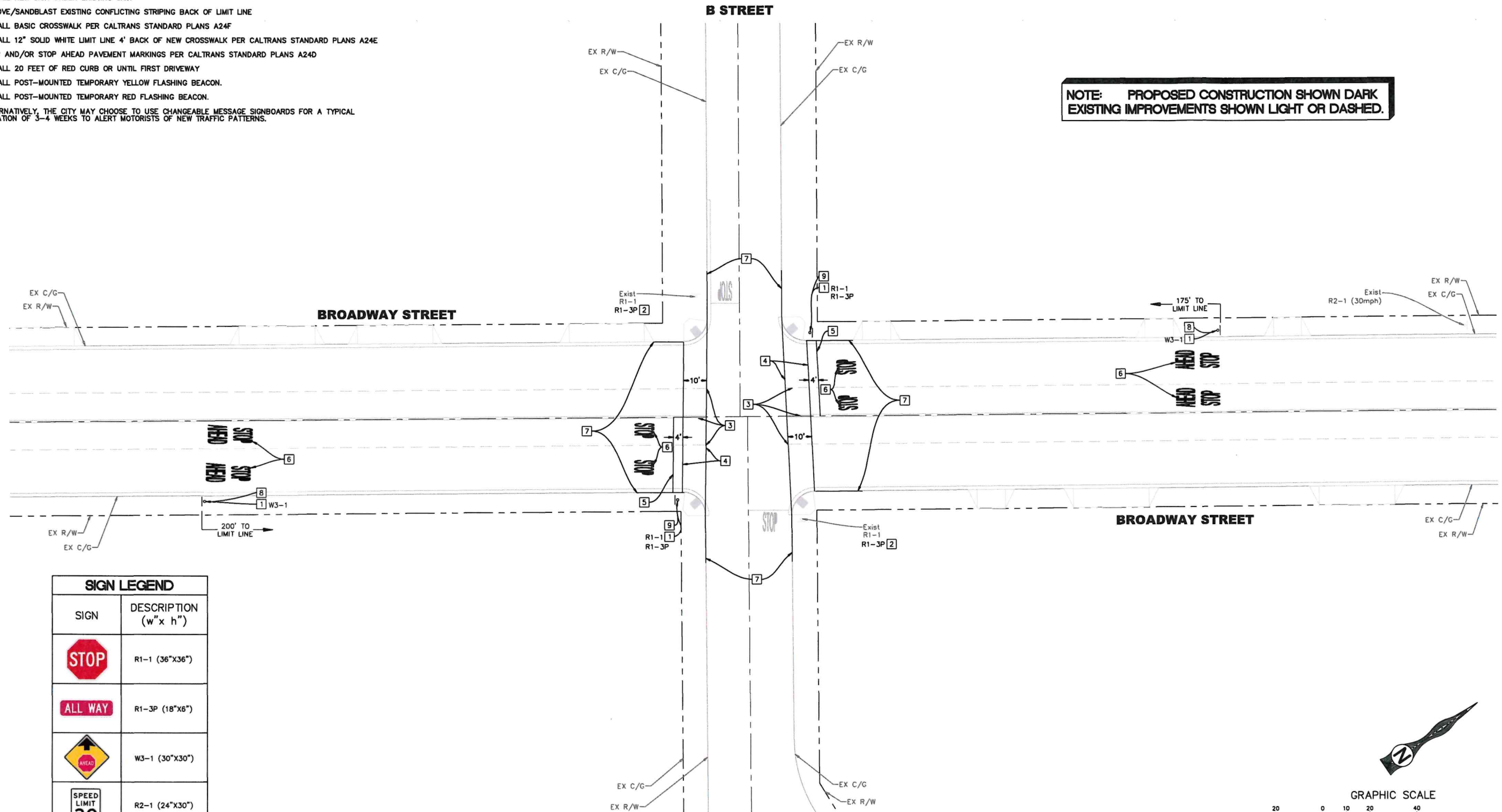
NDL002NS
Site Code: 219-25566

Start Time	5/22/25 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	0			0	2				
12:15		0	1			0	0				
12:30		1	5			0	1				
12:45		0	3	1	9	0	1	0	4	1	13
01:00		0	2			0	3				
01:15		0	5			1	0				
01:30		1	3			0	0				
01:45		0	3	1	13	0	0	1	3	2	16
02:00		0	1			0	0				
02:15		0	1			0	1				
02:30		0	0			0	0				
02:45		0	5	0	7	0	3	0	4	0	11
03:00		0	1			0	0				
03:15		0	8			0	0				
03:30		0	3			0	1				
03:45		0	3	0	15	0	1	0	2	0	17
04:00		0	4			0	0				
04:15		0	1			0	0				
04:30		0	5			0	0				
04:45		0	4	0	14	0	0	0	0	0	14
05:00		0	2			0	0				
05:15		5	2			0	0				
05:30		2	3			0	1				
05:45		0	0	7	7	0	0	0	1	7	8
06:00		0	1			1	0				
06:15		1	4			0	1				
06:30		3	0			0	0				
06:45		1	0	5	5	0	0	1	1	6	6
07:00		1	1			1	0				
07:15		4	0			0	0				
07:30		3	1			0	0				
07:45		4	3	12	5	0	1	1	1	13	6
08:00		0	0			1	0				
08:15		3	1			1	2				
08:30		3	3			1	0				
08:45		1	2	7	6	0	0	3	2	10	8
09:00		4	0			0	0				
09:15		2	0			0	0				
09:30		1	0			1	0				
09:45		3	0	10	0	3	0	4	0	14	0
10:00		0	1			1	0				
10:15		2	0			1	0				
10:30		5	1			2	0				
10:45		1	0	8	2	0	0	4	0	12	2
11:00		1	0			1	0				
11:15		1	0			1	0				
11:30		4	0			2	0				
11:45		6	0	12	0	0	0	4	0	16	0
Total		63	83	63	83	18	18	18	18	81	101
Combined Total		146		146		36		36		182	
AM Peak	-	07:00	-	-	-	09:45	-	-	-	-	-
Vol.	-	12	-	-	-	7	-	-	-	-	-
P.H.F.	-	0.750	-	-	-	0.583	-	-	-	-	-
PM Peak	-	-	03:15	-	-	-	00:15	-	-	-	-
Vol.	-	-	18	-	-	-	5	-	-	-	-
P.H.F.	-	-	0.563	-	-	-	0.417	-	-	-	-
Percentage		43.2%	56.8%			50.0%	50.0%				
ADT/AADT		ADT 182		AADT 182							

SIGNING AND STRIPING CONSTRUCTION NOTES:

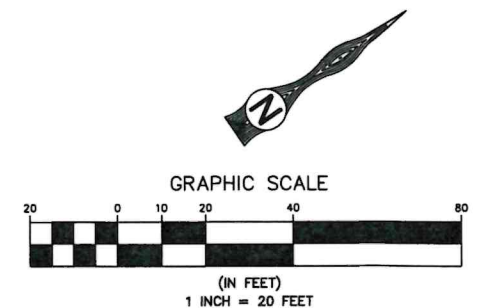
1. INSTALL NEW SIGNS
 2. INSTALL NEW SIGN UNDER EXISTING SIGN
 3. REMOVE/SANDBLAST EXISTING CONFLICTING STRIPING BACK OF LIMIT LINE
 4. INSTALL BASIC CROSSWALK PER CALTRANS STANDARD PLANS A24F
 5. INSTALL 12" SOLID WHITE LIMIT LINE 4' BACK OF NEW CROSSWALK PER CALTRANS STANDARD PLANS A24E
 6. STOP AND/OR STOP AHEAD PAVEMENT MARKINGS PER CALTRANS STANDARD PLANS A24D
 7. INSTALL 20 FEET OF RED CURB OR UNTIL FIRST DRIVEWAY
 8. INSTALL POST-MOUNTED TEMPORARY YELLOW FLASHING BEACON.
 9. INSTALL POST-MOUNTED TEMPORARY RED FLASHING BEACON.
- * ALTERNATIVELY, THE CITY MAY CHOOSE TO USE CHANGEABLE MESSAGE SIGNBOARDS FOR A TYPICAL DURATION OF 3-4 WEEKS TO ALERT MOTORISTS OF NEW TRAFFIC PATTERNS.

**NOTE: PROPOSED CONSTRUCTION SHOWN DARK
EXISTING IMPROVEMENTS SHOWN LIGHT OR DASHED.**



SIGN LEGEND	
SIGN	DESCRIPTION (w"x h")
	R1-1 (36"x36")
	R1-3P (18"x6")
	W3-1 (30"x30")
	R2-1 (24"x30")

NOTE: ALL SIGN SIZES SHALL BE CONSISTENT WITH CA MUTCD REQUIREMENTS.



Call: TOLL FREE
1-800
227-2600

BASIS OF BEARINGS:

BENCHMARK:

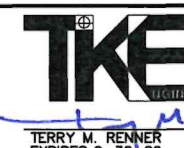
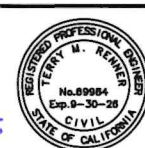
REVISIONS

MARK	DATE	INITIAL	DESCRIPTION	DATE	APP'VD

CITY OF NEEDLES

APPROVED FOR CONSTRUCTION:

STEVEN W. LEDBETTER
R.C.E. 84044 EXP. DATE 9-30-25



TKE ENGINEERING, INC.
2305 CHICAGO AVENUE
RIVERSIDE, CA 92507
(951) 680-0440
(951) 680-0490 FAX
TERRY M. RENNER R.C.E. No. 69984
EXPIRES: 9-30-25

DRAWN BY: MV
DESIGNED BY: MV
CHECKED BY: MP
RECOMMENDED BY:

CITY OF NEEDLES
SIGNING AND STRIPING
BROADWAY STREET AND B STREET

SHEET
1
OF
1