APPENDIX R: Traffic Noise

DEIS Reasonable Alternatives Traffic Noise Analysis Technical Report

Spur 399 Extension
(CSJ 0364-04-051, 0047-05-058, 0047-10-002)

Texas Department of Transportation, Dallas District, Collin County
May 2022 Amended

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

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TxDOT proposes to upgrade and extend Spur 399 in McKinney, Texas between US 75 and US 380. The Spur 399 Extension would be an eight-lane, access-controlled freeway with one-way frontage roads on each side within an anticipated right-of-way (ROW) width of between 165 and 696 feet (ft), with an average of 400 ft, depending on location. Frontage roads may be eliminated, and the primary travel lanes may be elevated (on bridge/viaduct) in some locations. In this analysis, the existing year is 2021 and the design year is 2050. The freeway facility would also include ramps, direct connector roadways, frontage roads, and arterial roadways to support connectivity to the existing roadway network. Grade-separated interchanges would be constructed at major crossroads including US Highway (US) 75 / State Highway (SH) 5 and existing US 380. The project area is approximately 919.54 acres (ac), extends approximately 13.24 miles, and intersects 174 parcels. Permanent and temporary easements are included in project schematic plans.

The range of alternatives under consideration includes the No-Build Alternative and two build alternatives on new location that share a common segment connecting to existing Spur 399 at US 75.

The Purple Alternative is a section of the TxDOT Recommended Alignment from the *US 380 Collin County Feasibility Study*, primarily on new location west of the McKinney National Airport (Airport) connecting existing Spur 399 and US 75 with US 380.

The Orange Alternative is also primarily on new location south and east of the Airport, connecting existing Spur 399 and US 75 with US 380.

Introduction

This analysis was accomplished in accordance with TxDOT's (FHWA-approved) Traffic Noise Policy (2019).

Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Because traffic sound levels are never constant due to the changing number, type, and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) shown in **Table 1,** for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

Table 1: FHWA Noise Abatement Criteria (NAC)

Activity Category	FHWA (dB(A) Leq)	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

Source: *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (TxDOT 2019)

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion - The predicted noise level at a receptor approaches, equals, or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion - The predicted noise level substantially exceeds the existing noise level at a receptor even though the predicted noise level does not approach, equal or exceed the NAC. “Substantially exceeds” is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

[1] As of Oct 1, 2021, Category B receptors include permitted new residential development for Meridian at Southgate and NewGrowth McKinney. Development permits issued after Oct 1, 2021, were not included in the analysis.

Analysis

The FHWA traffic noise modeling software (TNM 2.5) was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type, and speed of vehicles; highway alignment and grade; cuts, fills, and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise. The existing traffic numbers are compiled based on Streetlight data. The existing classification is extracted from the January 2021 Traffic Projection Methodology Memorandum for Spur 399. Posted speeds are used for existing. The 2050 predicted average daily traffic volume, vehicle classification, and k-factors are compiled for all build roadway segments. A copy of this traffic noise analysis would be made available to local officials to ensure, to the maximum extent possible, future developments are planned, designed, and programmed in a manner that would avoid traffic noise impacts. On the date of approval of this document (Date of Public Knowledge), TxDOT is no longer responsible for providing noise abatement for new development adjacent to the preferred alternative once one is selected.

The approved traffic data used in this analysis is included in **Attachment B**.

Validation

A validation study was performed in order to ensure that traffic noise is the main source of noise and to verify that the existing model accurately predicts existing traffic noise based on current conditions. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that used field-collected traffic parameters. Differences between the measured and calculated levels for this project were within the +/- 3 dB(A) tolerance allowed by FHWA. Therefore, the existing noise model is considered validated for this project. Additional information on the validation study is included in **Attachment C.**

Results

Existing and predicted traffic noise levels were modeled at receptor locations (**Table 2 and Table 3**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 2: Purple Alternative Traffic Noise Levels dB(A) Leq

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-007 Residential	**B**	**67**	**58**	**66**	**8**	**Yes**
R-008 Residential	**B**	**67**	**59**	**67**	**8**	**Yes**
R-009 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-010 Residential	**B**	**67**	**60**	**70**	**10**	**Yes**
R-011 Residential	**B**	**67**	**62**	**71**	**9**	**Yes**
R-012 Residential	**B**	**67**	**63**	**72**	**9**	**Yes**
R-013 Residential	**B**	**67**	**64**	**73**	**9**	**Yes**
R-014 Residential	**B**	**67**	**67**	**73**	**6**	**Yes**
R-015 Residential	**B**	**67**	**68**	**69**	**1**	**Yes**
R-016 Residential	**B**	**67**	**68**	**67**	**-1**	**Yes**
R-017 Residential	**B**	**67**	**68**	**66**	**-2**	**Yes**

[2] Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level.

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-018 Residential	**B**	**67**	**67**	**70**	**3**	**Yes**
R-019 Residential	**B**	**67**	**67**	**66**	**-1**	**Yes**
R-020 Residential	B	67	67	65	-2	No
R-021 Residential	**B**	**67**	**67**	**66**	**-1**	**Yes**
R-022 Residential	B	67	67	65	-2	No
R-023 Residential	B	67	66	64	-2	No
R-024 Residential	B	67	66	64	-2	No
R-025 Residential	**B**	**67**	**59**	**66**	**7**	**Yes**
R-026 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-027 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**
R-028 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**
R-029 Residential	**B**	**67**	**63**	**71**	**8**	**Yes**
R-030 Residential	**B**	**67**	**64**	**71**	**7**	**Yes**
R-031 Residential	**B**	**67**	**63**	**70**	**7**	**Yes**
R-032 Residential	**B**	**67**	**63**	**69**	**6**	**Yes**
R-033 Residential	**B**	**67**	**62**	**69**	**7**	**Yes**
R-034 Residential	**B**	**67**	**63**	**69**	**6**	**Yes**
R-035 Residential	**B**	**67**	**62**	**68**	**6**	**Yes**
R-036 Residential	**B**	**67**	**62**	**68**	**6**	**Yes**
R-037 Residential	**B**	**67**	**63**	**69**	**6**	**Yes**
R-038 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**
R-039 Residential	**B**	**67**	**61**	**67**	**6**	**Yes**
R-040 Residential	**B**	**67**	**60**	**67**	**7**	**Yes**
R-041 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**
R-042 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**
R-043 Residential	**B**	**67**	**61**	**69**	**8**	**Yes**
R-044 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-045 Residential	**B**	**67**	**60**	**67**	**7**	**Yes**
R-046 Residential	**B**	**67**	**59**	**67**	**8**	**Yes**
R-047 Residential	**B**	**67**	**59**	**67**	**8**	**Yes**
R-048 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-049 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-050 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-051 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-052 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-053 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-054 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-055 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-056 Residential	**B**	**67**	**59**	**69**	**10**	**Yes**
R-057 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-058 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-059 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-060 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-061 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-062 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-063 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-064 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-065 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-066 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-067 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-068 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-069 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-070 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-071 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-072 Residential	**B**	**67**	**56**	**66**	**10**	**Yes**
R-073 Residential	**B**	**67**	**56**	**66**	**10**	**Yes**
R-074 Residential	**B**	**67**	**55**	**66**	**11**	**Yes**
R-075 Residential	**B**	**67**	**56**	**66**	**10**	**Yes**
R-076 Residential	**B**	**67**	**56**	**66**	**10**	**Yes**
R-077 Residential	**B**	**67**	**56**	**67**	**11**	**Yes**
R-078 Residential	**B**	**67**	**56**	**67**	**11**	**Yes**
R-079 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-080 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-081 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-082 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-083 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-084 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-085 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-086 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-087 Residential	**B**	**67**	**57**	**67**	**10**	**Yes**
R-088 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-089 Residential	**B**	**67**	**57**	**68**	**11**	**Yes**
R-090 Residential	**B**	**67**	**57**	**68**	**11**	**Yes**
R-091 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-092 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-093 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-094 Residential	**B**	**67**	**58**	**68**	**10**	**Yes**
R-095 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-096 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-097 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-098 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-099 Residential	**B**	**67**	**59**	**68**	**9**	**Yes**
R-106 Residential	B	67	57	64	7	No
R-107 Residential	B	67	55	62	7	No
R-108 Residential	B	67	62	65	3	No
R-109 Residential	B	67	56	63	7	No
R-110 Residential	B	67	59	64	5	No
R-111 Residential	**B**	**67**	**63**	**66**	**3**	**Yes**
R-112 Residential	B	67	59	64	5	No
R-113 Residential	B	67	57	63	6	No
R-114 Residential	**B**	**67**	**60**	**71**	**11**	**Yes**
R-115 Residential	**B**	**67**	**59**	**70**	**11**	**Yes**
R-116 Residential	**B**	**67**	**64**	**68**	**4**	**Yes**
R-117 Residential	**B**	**67**	**63**	**73**	**10**	**Yes**
R-118 Residential	**B**	**67**	**61**	**71**	**10**	**Yes**
R-119 Residential	**B**	**67**	**61**	**70**	**9**	**Yes**
R-120 Residential	**B**	**67**	**60**	**71**	**11**	**Yes**
R-121 Residential	**B**	**67**	**63**	**71**	**8**	**Yes**
R-122 Residential	**B**	**67**	**63**	**70**	**7**	**Yes**
R-123 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-124 Residential	**B**	**67**	**63**	**71**	**8**	**Yes**
R-125 Residential	B	67	59	65	6	No
R-126 Residential	B	67	58	64	6	No
R-127 Residential	B	67	60	64	4	No
R-128 Residential	**B**	**67**	**49**	**69**	**20**	**Yes**
R-129 Residential	**B**	**67**	**49**	**64**	**15**	**Yes**
R-130 Residential	**B**	**67**	**48**	**62**	**14**	**Yes**
R-131 Residential	**B**	**67**	**48**	**62**	**14**	**Yes**
R-132 Residential	**B**	**67**	**48**	**62**	**14**	**Yes**
R-133 Residential	**B**	**67**	**48**	**62**	**14**	**Yes**
R-134 Residential	**B**	**67**	**48**	**62**	**14**	**Yes**

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-135 Residential	**B**	**67**	**47**	**62**	**15**	**Yes**
R-136 Residential	**B**	**67**	**47**	**62**	**15**	**Yes**
R-137 Residential	**B**	**67**	**47**	**62**	**15**	**Yes**
R-138 Residential	**B**	**67**	**47**	**62**	**15**	**Yes**
R-139 Residential	**B**	**67**	**47**	**62**	**15**	**Yes**
R-140 Residential	**B**	**67**	**46**	**62**	**16**	**Yes**
R-141 Residential	**B**	**67**	**46**	**63**	**17**	**Yes**
R-142 Residential	**B**	**67**	**47**	**63**	**16**	**Yes**
R-143 Residential	**B**	**67**	**46**	**63**	**17**	**Yes**
R-144 Residential	**B**	**67**	**47**	**63**	**16**	**Yes**
R-145 Residential	**B**	**67**	**48**	**61**	**13**	**Yes**
R-146 Residential	**B**	**67**	**47**	**61**	**14**	**Yes**
R-147 Residential	**B**	**67**	**47**	**61**	**14**	**Yes**
R-148 Residential	**B**	**67**	**47**	**61**	**14**	**Yes**
R-149 Residential	**B**	**67**	**47**	**61**	**14**	**Yes**
R-150 Residential	**B**	**67**	**47**	**61**	**14**	**Yes**
R-151 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-152 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-153 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-154 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-155 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-156 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-157 Residential	**B**	**67**	**46**	**62**	**16**	**Yes**
R-158 Residential	**B**	**67**	**46**	**61**	**15**	**Yes**
R-159 Residential	**B**	**67**	**52**	**63**	**11**	**Yes**
R-160 Residential	**B**	**67**	**51**	**63**	**12**	**Yes**
R-161 Residential	**B**	**67**	**50**	**62**	**12**	**Yes**
R-162 Residential	**B**	**67**	**51**	**62**	**11**	**Yes**
R-163 Residential	**B**	**67**	**50**	**61**	**11**	**Yes**
R-164 Residential	**B**	**67**	**50**	**61**	**11**	**Yes**
R-165 Residential	**B**	**67**	**49**	**60**	**11**	**Yes**
R-166 Residential	**B**	**67**	**49**	**61**	**12**	**Yes**
R-167 Residential	**B**	**67**	**57**	**71**	**14**	**Yes**
R-168 Residential	**B**	**67**	**54**	**66**	**12**	**Yes**
R-169 Residential	**B**	**67**	**61**	**67**	**6**	**Yes**
R-170 Residential	**B**	**67**	**66**	**67**	**1**	**Yes**
R-171 Residential	B	67	56	63	7	No

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-172 Residential	B	67	54	61	7	No
R-173 Residential	B	67	57	63	6	No
R-174 Residential	B	67	54	64	10	No
R-175 Residential	B	67	55	64	9	No
R-176 Residential	B	67	57	65	8	No
R-177 Residential	**B**	**67**	**58**	**66**	**8**	**Yes**
R-178 Residential	B	67	56	65	9	No
R-179 Residential	B	67	55	65	10	No
R-180 Residential	B	67	55	64	9	No
R-181 Residential	B	67	54	64	10	No
R-202 Future Residential Development	**B**	**67**	**57**	**66**	**9**	**Yes**
R-203 Future Residential Development	**B**	**67**	**57**	**66**	**9**	**Yes**
R-204 Future Residential Development	B	67	56	65	9	No
R-205 Future Residential Development	B	67	54	63	9	No
R-206 Future Residential Development	B	67	54	63	9	No
R-207 Future Residential Development	B	67	56	64	8	No
R-208 Future Residential Development	B	67	57	64	7	No
R-209 Future Residential Development	B	67	57	64	7	No
R-210 Future Residential Development	B	67	58	64	6	No
R-211 Future Residential Development	B	67	59	65	6	No
R-212 Future Residential Development	B	67	58	65	7	No
R-213 Future Residential Development	B	67	58	65	7	No
R-214 Future Residential Development	B	67	57	64	7	No
R-215 Future Residential Development	B	67	57	64	7	No
R-216 Future Residential Development	B	67	57	64	7	No
R-217 Future Residential Development	B	67	56	63	7	No
R-218 Future Residential Development	B	67	56	63	7	No
R-219 Future Residential Development	B	67	55	63	8	No
R-220 Future Residential Development	B	67	55	63	8	No
R-221 Future Residential Development	B	67	55	63	8	No
R-222 Future Residential Development	B	67	55	63	8	No
R-223 Future Residential Development	B	67	54	63	9	No
R-224 Future Residential Development	B	67	54	63	9	No
R-225 Future Residential Development	B	67	54	63	9	No
R-226 Future Residential Development	B	67	54	63	9	No
R-227 Future Residential Development	B	67	53	62	9	No
R-228 Future Residential Development	B	67	53	62	9	No

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-229 Future Residential Development	B	67	53	62	9	No
R-230 Future Residential Development	B	67	52	61	9	No
R-231 Future Residential Development	B	67	52	61	9	No
R-232 Future Residential Development	B	67	52	61	9	No
R-233 Future Residential Development	B	67	53	61	8	No
R-234 Future Residential Development	B	67	53	62	9	No
R-235 Future Residential Development	B	67	53	62	9	No
R-236 Future Residential Development	B	67	53	62	9	No
R-237 Future Residential Development	B	67	54	62	8	No
R-238 Future Residential Development	B	67	54	63	9	No
R-239 Future Residential Development	B	67	54	63	9	No
R-240 Future Residential Development	B	67	54	63	9	No
R-241 Future Residential Development	B	67	55	63	8	No
R-242 Future Residential Development	B	67	55	63	8	No
R-243 Future Residential Development	B	67	55	64	9	No
R-244 Future Residential Development	B	67	56	64	8	No
R-245 Future Residential Development	B	67	57	64	7	No
R-246 Future Residential Development	B	67	57	64	7	No
R-247 Future Residential Development	B	67	57	63	6	No
R-248 Future Residential Development	B	67	57	63	6	No
R-249 Future Residential Development	B	67	57	64	7	No
R-250 Future Residential Development	B	67	57	64	7	No
R-251 Future Residential Development	B	67	56	63	7	No
R-252 Future Residential Development	B	67	57	63	6	No
R-253 Future Residential Development	B	67	56	63	7	No
R-254 Future Residential Development	B	67	57	64	7	No
R-255 Future Residential Development	B	67	57	64	7	No
R-256 Future Residential Development	B	67	57	64	7	No
R-257 Future Residential Development	B	67	56	63	7	No
R-258 Future Residential Development	B	67	57	64	7	No
R-259 Future Residential Development	B	67	56	64	8	No
R-260 Future Residential Development	B	67	57	64	7	No
R-261 Future Residential Development	B	67	57	64	7	No
R-262 Future Residential Development	B	67	57	65	8	No
R-263 Future Residential Development	B	67	57	65	8	No
R-264 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-265 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-266 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-267 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-268 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-269 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-270 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-271 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-272 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-273 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-274 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-275 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-276 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-277 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-278 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-279 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-280 Future Residential Development	**B**	**67**	**61**	**69**	**8**	**Yes**
R-281 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-282 Future Residential Development	**B**	**67**	**58**	**67**	**9**	**Yes**
R-283 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-284 Future Residential Development	**B**	**67**	**60**	**67**	**7**	**Yes**
R-285 Future Residential Development	**B**	**67**	**60**	**67**	**7**	**Yes**
R-286 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-287 Future Residential Development	**B**	**67**	**62**	**68**	**6**	**Yes**
R-288 Future Residential Development	**B**	**67**	**62**	**68**	**6**	**Yes**
R-289 Future Residential Development	**B**	**67**	**57**	**66**	**9**	**Yes**
R-290 Future Residential Development	B	67	57	65	8	No
R-291 Future Residential Development	B	67	58	65	7	No
R-292 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-293 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-294 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-295 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-296 Future Residential Development	B	67	57	65	8	No
R-297 Future Residential Development	B	67	56	64	8	No
R-298 Future Residential Development	B	67	56	64	8	No
R-299 Future Residential Development	B	67	56	63	7	No
R-300 Park	**C**	**67**	**52**	**64**	**12**	**Yes**
R-304 Park	**C**	**67**	**49**	**69**	**20**	**Yes**
R-305 Park	**C**	**67**	**62**	**67**	**5**	**Yes**

PURPLE ALTERNATIVE Representative Receptors	NAC Category[2]	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-306 Park	**C**	**67**	**52**	**65**	**13**	**Yes**
R-309 Institution	**C**	**67**	**64**	**67**	**3**	**Yes**
R-310 Institution	**C**	**67**	**67**	**69**	**2**	**Yes**

Table 3. Orange Alternative Traffic Noise Levels dB(A) Leq

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-001 Residential	**B**	**67**	**65**	**72**	**7**	**Yes**
R-002 Residential	B	67	59	65	6	No
R-003 Residential	**B**	**67**	**47**	**69**	**22**	**Yes**
R-004 Residential	**B**	**67**	**49**	**67**	**18**	**Yes**
R-005 Residential	**B**	**67**	**48**	**68**	**20**	**Yes**
R-006 Residential	**B**	**67**	**50**	**69**	**19**	**Yes**
R-007 Residential	**B**	**67**	**58**	**66**	**8**	**Yes**
R-008 Residential	**B**	**67**	**59**	**67**	**8**	**Yes**
R-009 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-010 Residential	**B**	**67**	**60**	**70**	**10**	**Yes**
R-011 Residential	**B**	**67**	**62**	**71**	**9**	**Yes**
R-012 Residential	**B**	**67**	**63**	**72**	**9**	**Yes**
R-013 Residential	**B**	**67**	**64**	**73**	**9**	**Yes**
R-014 Residential	**B**	**67**	**67**	**73**	**6**	**Yes**
R-015 Residential	**B**	**67**	**68**	**69**	**1**	**Yes**
R-016 Residential	**B**	**67**	**68**	**67**	**-1**	**Yes**
R-017 Residential	**B**	**67**	**68**	**66**	**-2**	**Yes**
R-018 Residential	**B**	**67**	**67**	**70**	**3**	**Yes**
R-019 Residential	**B**	**67**	**67**	**66**	**-1**	**Yes**
R-020 Residential	B	67	67	65	-2	No
R-021 Residential	**B**	**67**	**67**	**66**	**-1**	**Yes**
R-022 Residential	B	67	67	65	-2	No
R-023 Residential	B	67	66	64	-2	No
R-024 Residential	B	67	66	64	-2	No
R-025 Residential	**B**	**67**	**59**	**66**	**7**	**Yes**
R-026 Residential	**B**	**67**	**60**	**68**	**8**	**Yes**
R-027 Residential	**B**	**67**	**61**	**68**	**7**	**Yes**

[3] Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level.

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-028 Residential	B	67	61	68	7	Yes
R-029 Residential	B	67	63	71	8	Yes
R-030 Residential	B	67	64	71	7	Yes
R-031 Residential	B	67	63	70	7	Yes
R-032 Residential	B	67	63	69	6	Yes
R-033 Residential	B	67	62	69	7	Yes
R-034 Residential	B	67	63	69	6	Yes
R-035 Residential	B	67	62	68	6	Yes
R-036 Residential	B	67	62	68	6	Yes
R-037 Residential	B	67	63	69	6	Yes
R-038 Residential	B	67	61	68	7	Yes
R-039 Residential	B	67	61	67	6	Yes
R-040 Residential	B	67	60	67	7	Yes
R-041 Residential	B	67	61	69	8	Yes
R-042 Residential	B	67	61	69	8	Yes
R-043 Residential	B	67	61	69	8	Yes
R-044 Residential	B	67	60	68	8	Yes
R-045 Residential	B	67	60	67	7	Yes
R-046 Residential	B	67	59	67	8	Yes
R-047 Residential	B	67	59	68	9	Yes
R-048 Residential	B	67	59	68	9	Yes
R-049 Residential	B	67	59	68	9	Yes
R-050 Residential	B	67	60	69	9	Yes
R-051 Residential	B	67	60	69	9	Yes
R-052 Residential	B	67	60	69	9	Yes
R-053 Residential	B	67	60	69	9	Yes
R-054 Residential	B	67	60	69	9	Yes
R-055 Residential	B	67	59	69	10	Yes
R-056 Residential	B	67	59	69	10	Yes
R-057 Residential	B	67	59	69	10	Yes
R-058 Residential	B	67	59	69	10	Yes
R-059 Residential	B	67	59	69	10	Yes
R-060 Residential	B	67	58	69	11	Yes
R-061 Residential	B	67	58	69	11	Yes
R-062 Residential	B	67	58	69	11	Yes
R-063 Residential	B	67	58	69	11	Yes
R-064 Residential	B	67	58	69	11	Yes

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-065 Residential	B	67	58	68	10	Yes
R-066 Residential	B	67	58	68	10	Yes
R-067 Residential	B	67	57	67	10	Yes
R-068 Residential	B	67	60	69	9	Yes
R-069 Residential	B	67	59	69	10	Yes
R-070 Residential	B	67	60	69	9	Yes
R-071 Residential	B	67	59	69	10	Yes
R-072 Residential	B	67	56	66	10	Yes
R-073 Residential	B	67	56	67	11	Yes
R-074 Residential	B	67	55	66	11	Yes
R-075 Residential	B	67	56	66	10	Yes
R-076 Residential	B	67	56	66	10	Yes
R-077 Residential	B	67	56	67	11	Yes
R-078 Residential	B	67	56	67	11	Yes
R-079 Residential	B	67	57	67	10	Yes
R-080 Residential	B	67	57	68	11	Yes
R-081 Residential	B	67	57	68	11	Yes
R-082 Residential	B	67	57	68	11	Yes
R-083 Residential	B	67	57	68	11	Yes
R-084 Residential	B	67	57	68	11	Yes
R-085 Residential	B	67	57	68	11	Yes
R-086 Residential	B	67	57	68	11	Yes
R-087 Residential	B	67	57	68	11	Yes
R-088 Residential	B	67	58	68	10	Yes
R-089 Residential	B	67	57	68	11	Yes
R-090 Residential	B	67	57	68	11	Yes
R-091 Residential	B	67	58	68	10	Yes
R-092 Residential	B	67	58	68	10	Yes
R-093 Residential	B	67	58	68	10	Yes
R-094 Residential	B	67	58	68	10	Yes
R-095 Residential	B	67	58	68	10	Yes
R-096 Residential	B	67	58	67	9	Yes
R-097 Residential	B	67	58	67	9	Yes
R-098 Residential	B	67	59	68	9	Yes
R-099 Residential	B	67	59	68	9	Yes
R-100 Residential	B	67	61	69	8	Yes
R-101 Residential	B	67	46	64	18	Yes

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-102 Residential	**B**	**67**	**47**	**73**	**26**	**Yes**
R-103 Residential	**B**	**67**	**48**	**65**	**17**	**Yes**
R-104 Residential	**B**	**67**	**51**	**64**	**13**	**Yes**
R-105 Residential	**B**	**67**	**52**	**65**	**13**	**Yes**
R-121 Residential	**B**	**67**	**63**	**71**	**8**	**Yes**
R-122 Residential	**B**	**67**	**63**	**70**	**7**	**Yes**
R-123 Residential	**B**	**67**	**58**	**67**	**9**	**Yes**
R-124 Residential	**B**	**67**	**63**	**71**	**8**	**Yes**
R-125 Residential	B	67	59	65	6	No
R-126 Residential	B	67	58	64	6	No
R-127 Residential	B	67	60	63	3	No
R-128 Residential	B	67	49	56	7	No
R-129 Residential	B	67	49	58	9	No
R-173 Residential	B	67	57	63	6	No
R-174 Residential	B	67	54	64	10	No
R-175 Residential	B	67	55	64	9	No
R-176 Residential	B	67	57	65	8	No
R-177 Residential	**B**	**67**	**58**	**66**	**8**	**Yes**
R-178 Residential	B	67	56	65	9	No
R-179 Residential	B	67	55	65	10	No
R-180 Residential	B	67	55	65	10	No
R-181 Residential	B	67	54	64	10	No
R-182 Residential	**B**	**67**	**52**	**64**	**12**	**Yes**
R-183 Residential	B	67	55	63	8	No
R-184 Residential	**B**	**67**	**53**	**64**	**11**	**Yes**
R-185 Residential	B	67	53	62	9	No
R-186 Residential	**B**	**67**	**49**	**60**	**11**	**Yes**
R-187 Residential	**B**	**67**	**47**	**65**	**18**	**Yes**
R-188 Residential	**B**	**67**	**47**	**60**	**13**	**Yes**
R-189 Residential	**B**	**67**	**47**	**66**	**19**	**Yes**
R-190 Residential	**B**	**67**	**42**	**59**	**17**	**Yes**
R-191 Residential	**B**	**67**	**41**	**55**	**14**	**Yes**
R-192 Residential	**B**	**67**	**43**	**58**	**15**	**Yes**
R-193 Residential	**B**	**67**	**43**	**56**	**13**	**Yes**
R-194 Residential	B	67	54	57	3	No
R-195 Residential	B	67	57	59	2	No
R-196 Residential	B	67	56	59	3	No

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-197 Residential	B	67	50	59	9	No
R-198 Residential	B	67	49	58	9	No
R-199 Residential	B	67	52	59	7	No
R-200 Residential	**B**	**67**	**43**	**59**	**16**	**Yes**
R-201 Residential	**B**	**67**	**68**	**73**	**5**	**Yes**
R-202 Future Residential Development	**B**	**67**	**57**	**67**	**10**	**Yes**
R-203 Future Residential Development	**B**	**67**	**57**	**66**	**9**	**Yes**
R-204 Future Residential Development	B	67	56	65	9	No
R-205 Future Residential Development	B	67	54	63	9	No
R-206 Future Residential Development	B	67	54	63	9	No
R-207 Future Residential Development	B	67	56	64	8	No
R-208 Future Residential Development	B	67	57	64	7	No
R-209 Future Residential Development	B	67	57	64	7	No
R-210 Future Residential Development	B	67	58	64	6	No
R-211 Future Residential Development	B	67	59	65	6	No
R-212 Future Residential Development	B	67	58	65	7	No
R-213 Future Residential Development	B	67	58	65	7	No
R-214 Future Residential Development	B	67	57	64	7	No
R-215 Future Residential Development	B	67	57	64	7	No
R-216 Future Residential Development	B	67	57	64	7	No
R-217 Future Residential Development	B	67	56	63	7	No
R-218 Future Residential Development	B	67	56	63	7	No
R-219 Future Residential Development	B	67	55	63	8	No
R-220 Future Residential Development	B	67	55	63	8	No
R-221 Future Residential Development	B	67	55	63	8	No
R-222 Future Residential Development	B	67	55	63	8	No
R-223 Future Residential Development	B	67	54	63	9	No
R-224 Future Residential Development	B	67	54	63	9	No
R-225 Future Residential Development	B	67	54	63	9	No
R-226 Future Residential Development	B	67	54	63	9	No
R-227 Future Residential Development	B	67	53	62	9	No
R-228 Future Residential Development	B	67	53	62	9	No
R-229 Future Residential Development	B	67	53	62	9	No
R-230 Future Residential Development	B	67	52	61	9	No
R-231 Future Residential Development	B	67	52	61	9	No
R-232 Future Residential Development	B	67	52	61	9	No
R-233 Future Residential Development	B	67	53	61	8	No

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-234 Future Residential Development	B	67	53	62	9	No
R-235 Future Residential Development	B	67	53	62	9	No
R-236 Future Residential Development	B	67	53	63	10	No
R-237 Future Residential Development	B	67	54	63	9	No
R-238 Future Residential Development	B	67	54	63	9	No
R-239 Future Residential Development	B	67	54	63	9	No
R-240 Future Residential Development	B	67	54	63	9	No
R-241 Future Residential Development	B	67	55	63	8	No
R-242 Future Residential Development	B	67	55	63	8	No
R-243 Future Residential Development	B	67	55	64	9	No
R-244 Future Residential Development	B	67	56	64	8	No
R-245 Future Residential Development	B	67	57	64	7	No
R-246 Future Residential Development	B	67	57	64	7	No
R-247 Future Residential Development	B	67	57	64	7	No
R-248 Future Residential Development	B	67	57	63	6	No
R-249 Future Residential Development	B	67	57	64	7	No
R-250 Future Residential Development	B	67	57	64	7	No
R-251 Future Residential Development	B	67	56	64	8	No
R-252 Future Residential Development	B	67	57	63	6	No
R-253 Future Residential Development	B	67	56	63	7	No
R-254 Future Residential Development	B	67	57	64	7	No
R-255 Future Residential Development	B	67	57	65	8	No
R-256 Future Residential Development	B	67	57	64	7	No
R-257 Future Residential Development	B	67	56	63	7	No
R-258 Future Residential Development	B	67	57	64	7	No
R-259 Future Residential Development	B	67	56	65	9	No
R-260 Future Residential Development	B	67	57	64	7	No
R-261 Future Residential Development	B	67	57	65	8	No
R-262 Future Residential Development	B	67	57	65	8	No
R-263 Future Residential Development	B	67	57	65	8	No
R-264 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-265 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-266 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-267 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-268 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-269 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-270 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-271 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-272 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-273 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-274 Future Residential Development	**B**	**67**	**61**	**69**	**8**	**Yes**
R-275 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-276 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-277 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-278 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-279 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-280 Future Residential Development	**B**	**67**	**61**	**69**	**8**	**Yes**
R-281 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-282 Future Residential Development	**B**	**67**	**58**	**67**	**9**	**Yes**
R-283 Future Residential Development	**B**	**67**	**59**	**67**	**8**	**Yes**
R-284 Future Residential Development	**B**	**67**	**60**	**67**	**7**	**Yes**
R-285 Future Residential Development	**B**	**67**	**60**	**67**	**7**	**Yes**
R-286 Future Residential Development	**B**	**67**	**61**	**68**	**7**	**Yes**
R-287 Future Residential Development	**B**	**67**	**62**	**68**	**6**	**Yes**
R-288 Future Residential Development	**B**	**67**	**62**	**69**	**7**	**Yes**
R-289 Future Residential Development	B	67	57	66	9	Yes
R-290 Future Residential Development	B	67	57	66	9	Yes
R-291 Future Residential Development	B	67	58	66	8	Yes
R-292 Future Residential Development	B	67	58	66	8	Yes
R-293 Future Residential Development	**B**	**67**	**58**	**66**	**8**	**Yes**
R-294 Future Residential Development	**B**	**67**	**59**	**66**	**7**	**Yes**
R-295 Future Residential Development	**B**	**67**	**59**	**67**	**8**	**Yes**
R-296 Future Residential Development	B	67	57	65	8	No
R-297 Future Residential Development	B	67	56	64	8	No
R-298 Future Residential Development	B	67	56	64	8	No
R-299 Future Residential Development	B	67	56	63	7	No
R-301 Park	**C**	**67**	**45**	**63**	**18**	**Yes**
R-304 Park	**C**	**67**	**49**	**69**	**20**	**Yes**
R-305 Park	**C**	**67**	**62**	**67**	**5**	**Yes**
R-306 Park	**C**	**67**	**52**	**65**	**13**	**Yes**
R-307 Park	**C**	**67**	**42**	**63**	**21**	**Yes**
R-308 Park	**C**	**67**	**41**	**60**	**19**	**Yes**
R-309 Institution	**C**	**67**	**64**	**67**	**3**	**Yes**
R-310 Institution	**C**	**67**	**67**	**69**	**2**	**Yes**

ORANGE ALTERNATIVE Representative Receptors	NAC[3] Category	NAC Level	Existing	Predicted 2050	Change (+/-)	Noise Impact (Yes/No)
R-311 Residential	**B**	**67**	**47**	**70**	**23**	**Yes**
R-312 Residential	**B**	**67**	**49**	**69**	**20**	**Yes**
R-313 Residential	**B**	**67**	**60**	**71**	**11**	**Yes**
R-314 Residential	**B**	**67**	**53**	**68**	**15**	**Yes**
R-315 Residential	B	67	57	59	2	No
R-316 Residential	B	67	56	58	2	No

Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level.

As indicated in **Table 2 and Table 3**, the proposed project would result in a traffic noise impact at one or more representative receptor locations. Of the 273 Category B and C receptors analyzed for the Purple Alternative, 183 receptors are impacted. Of the 256 Category B and C receptors analyzed for the Orange Alternative, 164 receptors are impacted. **Table 4** summarizes the impacts resulting from both build alternatives.

Table 4. Summary of Traffic Noise Impacts of the Purple and Orange Alternatives

	Number of Receptors Impacted	Number with Significant Increases	Number of Receptors Benefited by Feasible and Reasonable Barriers
PURPLE ALTERNATIVE	183	52	26
ORANGE ALTERNATIVE	164	49	26

Noise abatement measures will be considered for each location with predicted noise impacts.

Abatement Analysis

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. Feasibility and reasonableness considerations include constructability, the predicted acoustic reductions provided by an abatement measure, a cost allowance, and whether the adjacent receptors desire abatement. Receptors associated with an abatement measure that achieve a noise reduction of five dB(A) or greater are called benefited receptors.

In order to be "feasible," the abatement measure must benefit a minimum of two impacted receptors AND reduce the predicted noise level by at least five dB(A) at greater than 50 percent of the first-row impacted receptors. Engineering considerations, such as access, drainage, and utility locations, are also factored into the feasibility assessment of a potential noise barrier.

In order to be "reasonable," the abatement measure must also reduce the predicted noise level by at least seven dB(A) for at least one benefited receptor (noise reduction design goal) and not exceed the standard barrier cost of 1,500 square feet per benefited receptor. In addition, an abatement measure may not be reasonable if the construction costs are unreasonably high due to site constraints, as determined through an alternate barrier cost assessment.

The following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers.

Traffic management – Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments – Any alteration of the existing alignment would displace existing businesses and residences, require additional ROW and not be cost effective/reasonable.

Buffer zone – The acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise barriers – Noise barriers in the form of noise walls are the most commonly used noise abatement measures and were considered for this project. A noise abatement analysis was conducted as part of this report. A more comprehensive noise abatement analysis will be conducted as more detailed design data becomes available for the Preferred Alternative. This future analysis will be documented in the Final Environmental Impact Statement (FEIS). Noise barriers were evaluated for each of the impacted receptor locations with the following results:

R-001, R-003, R-004, R-101, R-111, R-128, R-129, R-182, R-186, R-188 to R-193, R-200, R-201, and R-308 - These receptors are separate, isolated residences, which are not associated with a neighborhood or subdivision. Because a noise abatement measure must potentially benefit a minimum of two impacted receptors, noise abatement for these locations is not feasible.

Barrier 2: R-041 to R-099, R-202 and R-203 (Figure 1-2 and Figure 2-2) - These receivers represent a total of 61 impacted residences in Greens of McKinney neighborhood along both alternatives. Based on preliminary calculations, a noise barrier 1,499 feet in length, 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or the noise reduction design goal of 7 dB(A).

Barrier 3: R-007 to R-040, R-125 and R-126 (Figure 1-5 and Figure 2-5) – Barrier 3 is proposed under the separate SH-5 project (CSJ 0047-05-054, etc.) and would not be modified for this project. This barrier was reevaluated with the new roadway design to confirm that the previously proposed noise barrier would meet the TxDOT feasibility and reasonableness requirements. These receivers represented 30 impacted residences at the High Point Manufactured Home Community along northbound SH 5 east of the SH 5/ Spur 399 interchange. Barriers were placed along the proposed TxDOT ROW on the hill nearer to the top of slope and residences. The barrier set was placed north and south of Crestwood Road. The barrier is in two sections with a gap required to maintain access to the community at Crestwood Road.

Results of the previous noise traffic analysis for the proposed SH 5 project indicated that a traffic noise barrier would be both feasible and reasonable. A 12-foot high traffic noise barrier approximately 629 feet long was modeled and benefits 14 receivers, of which 10 were along the first-row receivers, including the 7 dB(A) design goal reduction and 91% (10 out of 11) of the impacted first row receivers. Total cost of the barrier would be $136,128 or $13,613 for each benefited receiver. The noise barrier achieves the design goal of 7 dB(A), the minimum feasible reduction of 5 dB(A) and the reasonable, cost-effectiveness criterion of $25,000. Total cost was estimated using $18 per square foot in accordance with TxDOT's 2011 Guidelines for Analysis and Abatement of Roadway Traffic Noise.

Barrier 4: R-121 to R-124 and R-174 to R-181 (Figure 1-7 and Figure 2-7) - These receivers represent a total of 5 impacted residences in Greens of McKinney neighborhood along both alternatives. Based on preliminary calculations, a noise barrier 437 feet in length (two segments 303, and 134 feet long), 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or the noise reduction design goal of 7 dB(A).

Barrier 5: R-306 (Figure 1-8 and Figure 2-8)– This receptor represents the centroid of the impacted park

area associated with Wilson Creek Greenbelt along both alternatives. The impacted area of the park is predicted to be approximately 21 acres and is equivalent to 77 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 1,259 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted park area.

Barrier 6: R-304 (Figure 1-9 and Figure 2-9) – This receptor represents the centroid of the impacted area of proposed park over the existing landfill along both alternatives. The impacted area of the park is predicted to be approximately 78 acres and is equivalent to 278 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 1,585 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted park area.

Barrier 7: R-006 and R-187 (Figure 2-11) - These receivers represent a total of 2 impacted residences in the neighborhood near Country Lane and Old Mill Road along the Orange Alternative. Based on preliminary calculations, a noise barrier 289 feet in length, 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or the noise reduction design goal of 7 dB(A).

Barrier 8: R-301 (Figure 2-21) – This receptor represents the centroid of the impacted area of the McKinney Future Parkland along the Orange Alternative. The impacted area of the park is predicted to be approximately 62 acres and is equivalent to 221 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 1,666 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted park area.

Barrier 9: R-130 to R-158 (Figure 1-11) - These receivers represent a total of 29 impacted residences in the Bramblewood Mobile Home Community along the Purple Alternative. It is not feasible to locate a noise barrier here due to intervening land use (commercial/industrial) between the receivers and the barrier.

Barrier 10: R-159 to R-166 (Figure 1-12) - These receivers represent a total of 8 impacted residences in the residential neighborhood near Industrial Boulevard along the Purple Alternative. It is not feasible to locate a noise barrier here due to intervening land use (a large commercial building) between the receivers and the barrier.

Barrier 11: R-114 to R-120 and R-167 to R-170 (Figure 1-13) - These receivers represent a total of 11 impacted residences in the Mouzon neighborhood along the Purple Alternative. Based on preliminary calculations, a noise barrier 741 feet in length (two segments 323, and 418 feet long), 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or meet the noise reduction design goal of 7 dB(A).

Barrier 12: R-300 (Figure 1-14) – This receptor represents the centroid of the impacted area of the Trinity River Greenway for the Purple Alternative. The impacted area of the park is predicted to be approximately 11 acres and is equivalent to 40 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 2,073 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted park area.

Barrier 13: R-310 (Figure 1-1 and Figure 2-1) – This receptor represents the four impacted Category C dwelling unit equivalents at the 28 classrooms at Collin County Community College for both alternatives. Based on preliminary calculations, a noise barrier 1,298 feet in length (three segments 420, 485, and 393 feet long), 20 feet in height, and located along the ROW would be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors, but would not meet the 7 dB(A) noise reduction design goal.

Barrier 14: R-309 (Figure 1-1 and Figure 2-1) – This receptor represents the 20 impacted Category C dwelling unit equivalent at the 281- bed Medical Center of McKinney along both alternatives. Based on preliminary calculations, a noise barrier 1,338 feet in length (three segments 356, 368, and 614 feet long), 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or meet the noise reduction design goal of 7 dB(A).

Barrier 15: R-303 (Figure 2-13) - This receptor represents the centroid of the impacted area of the Fairview Nature Preserve along the Orange Alternative. The impacted area of the park is predicted to be approximately 44 acres and is equivalent to 157 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 874 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted area.

Barrier 16: R-100, R-313 and R-314 (Figure 2-17) - These receivers represent a total of three impacted residences in the neighborhood near the intersection of Harry McKillop Boulevard and Almeta Lane along the Orange Alternative. Based on preliminary calculations, a noise barrier 335 feet in length, 20 feet in height, and located along the ROW would reduce noise levels by at least 5 dB(A) for two benefited receivers and 7 dB(A) (design goal) for one of the benefited receivers. However, with the total surface area of abatement at 6,700 square feet or 3,350 square feet per benefited receiver, the barrier would exceed the cost-reasonableness criterion of 1,500 square feet per benefited receptor.

Barrier 17: R-305 (Figure 1-8 and Figure 2-8) – This receptor represents the centroid of the impacted area of the Wilson Creek Greenbelt (West of SH 5) along both alternatives. The impacted area of the park is predicted to be approximately 9 acres and is equivalent to 33 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 1,797 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted area.

Barrier 18 R-102 to R-105, R-184, R-185 and R-311 (Figure 2-12 and Figure 2-13) - These receivers represent a total of 6 impacted residences in the neighborhood along Old Mill Road along the Orange Alternative. Based on preliminary calculations, a noise barrier 593 feet in length, 20 feet in height, and located along the ROW reduce noise levels by at least 5 dB(A) for two benefited receivers and 7 dB(A) (design goal) for two of the benefited receivers. However, with the total surface area of abatement at 11,860 square feet or 5,930 square feet per benefited receiver, the barrier would exceed the cost-reasonableness criterion of 1,500 square feet per benefited receptor.

Barrier 19 R-005, and R-312 (Figure 2-14) - These receivers represent a total of 2 impacted residences in the neighborhood along Old Mill Road along the Orange Alternative. Based on preliminary calculations, a noise barrier 183 feet in length, 20 feet in height, and located along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for a majority of impacted receptors or the noise reduction design goal of 7 dB(A).

Barrier 20 R-307 (Figure 2-14) - This receptor represents the centroid of the impacted area at the Fairview Soccer Complex along the Orange Alternative. The impacted area of the park is predicted to be approximately 50 acres and is equivalent to 177 residential receptors, based on a 12,322 square feet average residential lot size in the project area. A continuous noise barrier, 20 feet in height and approximately 327 feet in length, would not reduce noise levels by at least 5 dB(A) or meet the noise reduction design goal of 7 dB(A) for the receptor representing the centroid of the impacted area.

Feasible and Reasonable Barriers

The following barrier is both feasible and reasonable based on the initial barrier analysis. Table 5 summarizes the proposed barrier. The reasonable/feasible barrier analysis recommendations will be included in the Draft Environmental Impact Statement (DEIS).

Table 5: Proposed Noise Barriers

Barrier	Locations	Receptor Number - Type	Number of Benefited Receivers	Length (feet)	Height (feet)	Total Barrier Area (ft²)	Area / Benefited Receiver (ft²)
1	Magnolia Ranch Apartments	R-173, R-245 to R-299, Residential	12	961	18	17,298	1,442

Barrier 1: R-173, R-245 to R-299 (Figure 1-3 and Figure 2-3) - These receivers represent a total of 30 impacted residences at the permitted Magnolia Ranch Apartments along both alternatives. Based on preliminary calculations, a noise barrier 961 feet in length, 18 feet in height, and located along the ROW would reduce noise levels by at least 5 dB(A) for 12 benefited receptors and meet the noise reduction design goal of 7 dB(A) for at least one of those receptors. With a total area of abatement of 17,298 square feet or 1,442 square feet per benefited receptor, the barrier would be cost reasonable. Therefore, Barrier 1 is considered acoustically feasible and cost effective.

Statement of Likelihood

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation, and polling of all benefited and adjacent property owners and residents.

Noise Contours for Land Use Planning

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the following predicted (2050) noise impact contours (see Table 6).

Table 6. Noise Contours for Land Use Planning

Land Use	Impact Contour	Distance from Right of Way
NAC category B & C	66 dB(A)	≈370 feet
NAC category E	71 dB(A)	≈224 feet

Impact contours are one dB(A) lower than the NAC per category to reflect impacts that would occur as a result of approaching the NAC for the respective contours. Permit research was conducted using the best available online data from the City of McKinney as of October 1, 2021. This research was based on available online permit search and address information from the Collin Central Appraisal District database.

Construction Noise

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receptors are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Local Official Notification and Date of Public Knowledge Statement

A copy of this Traffic Noise Analysis Report will be available to local officials. On the date of the environmental decision for this project (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

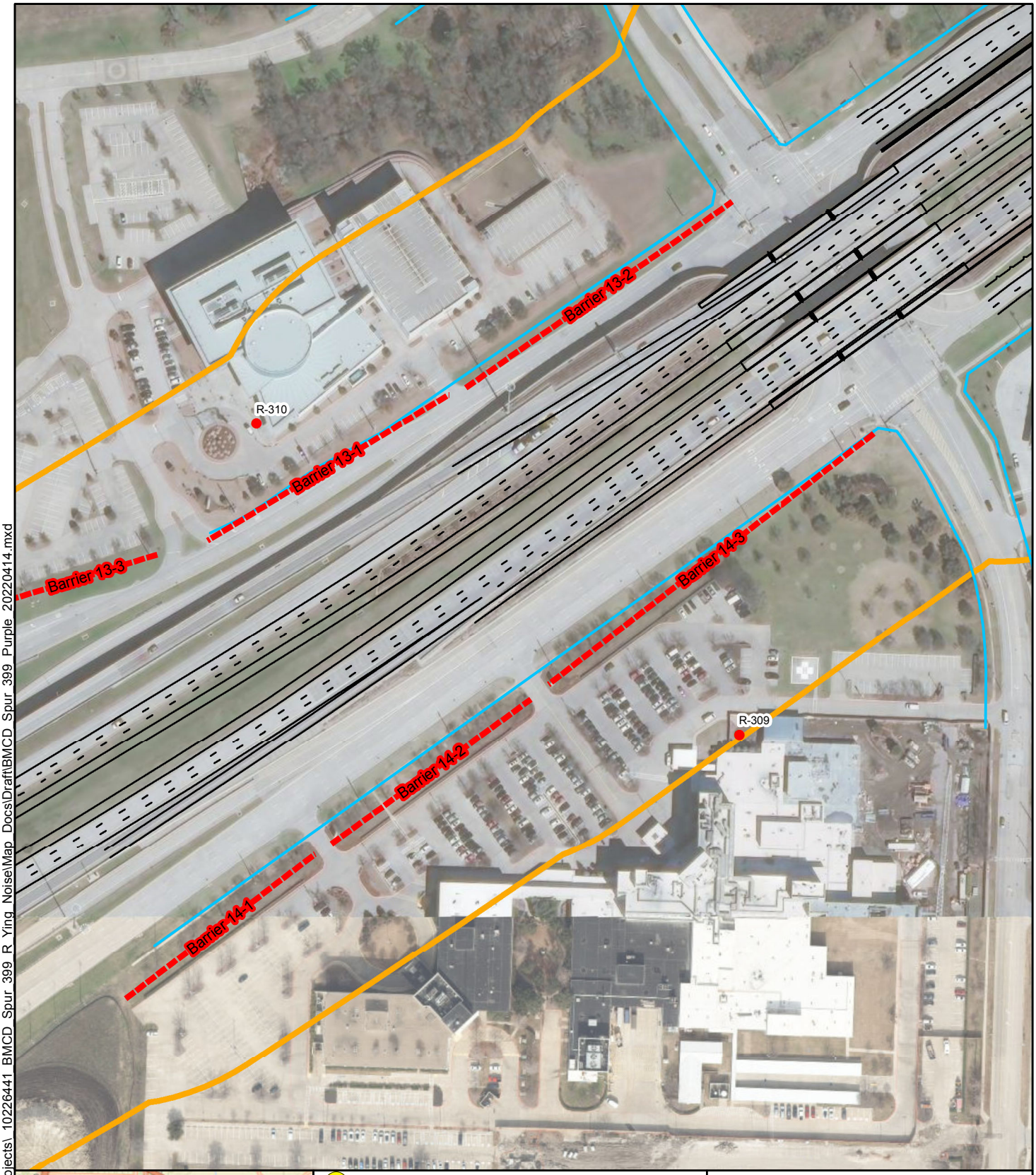
List of Attachments

A. Map figures

B. Traffic data

C. Existing Model Validation Study

Attachment A – Map Figures



VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
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66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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Texas Department of Transportation

FIGURE 1-1
APR 2022

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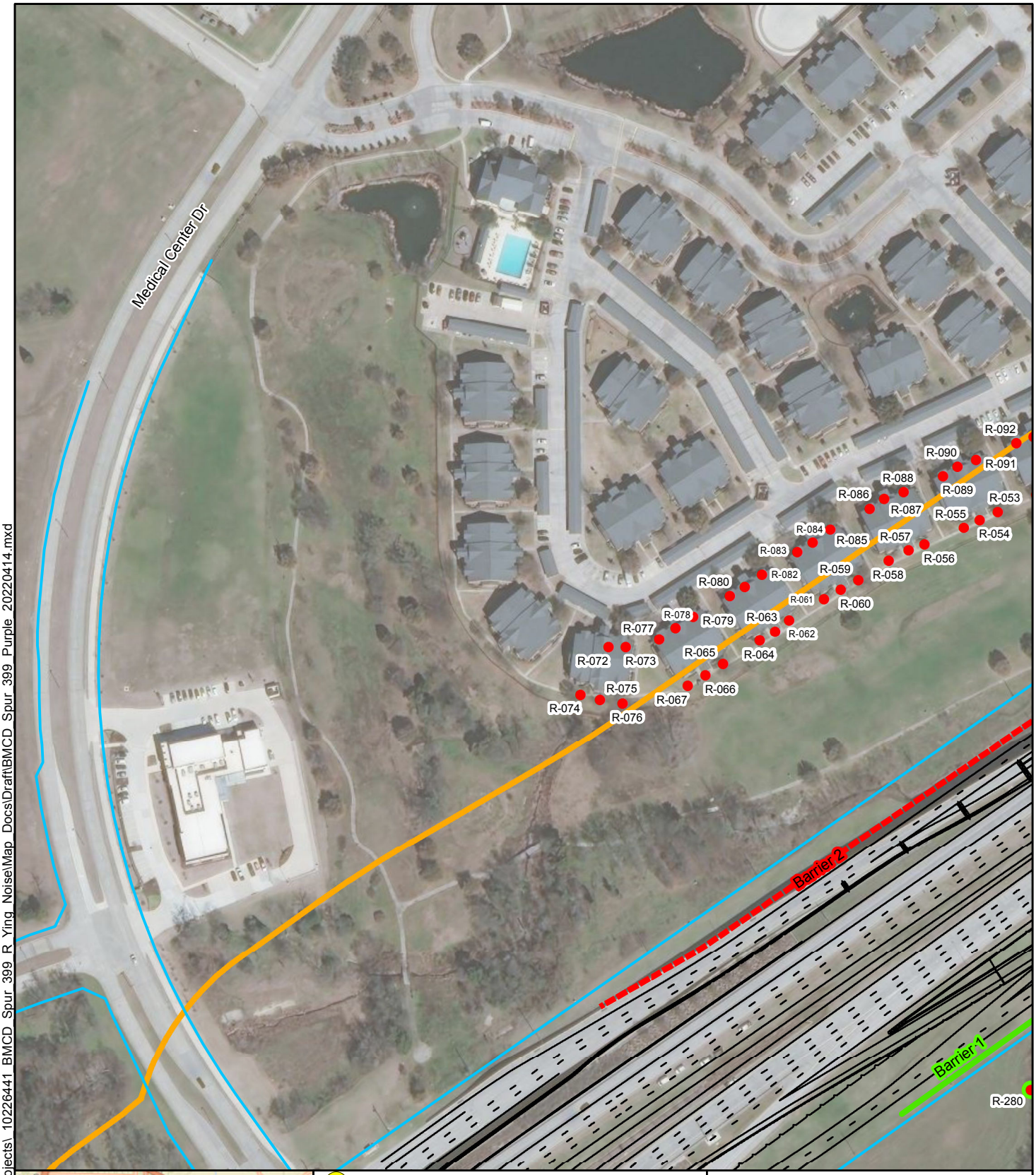

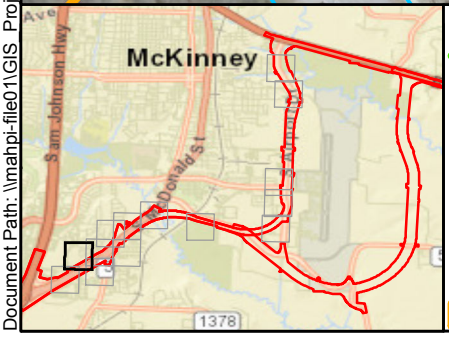

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66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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FIGURE 1-2
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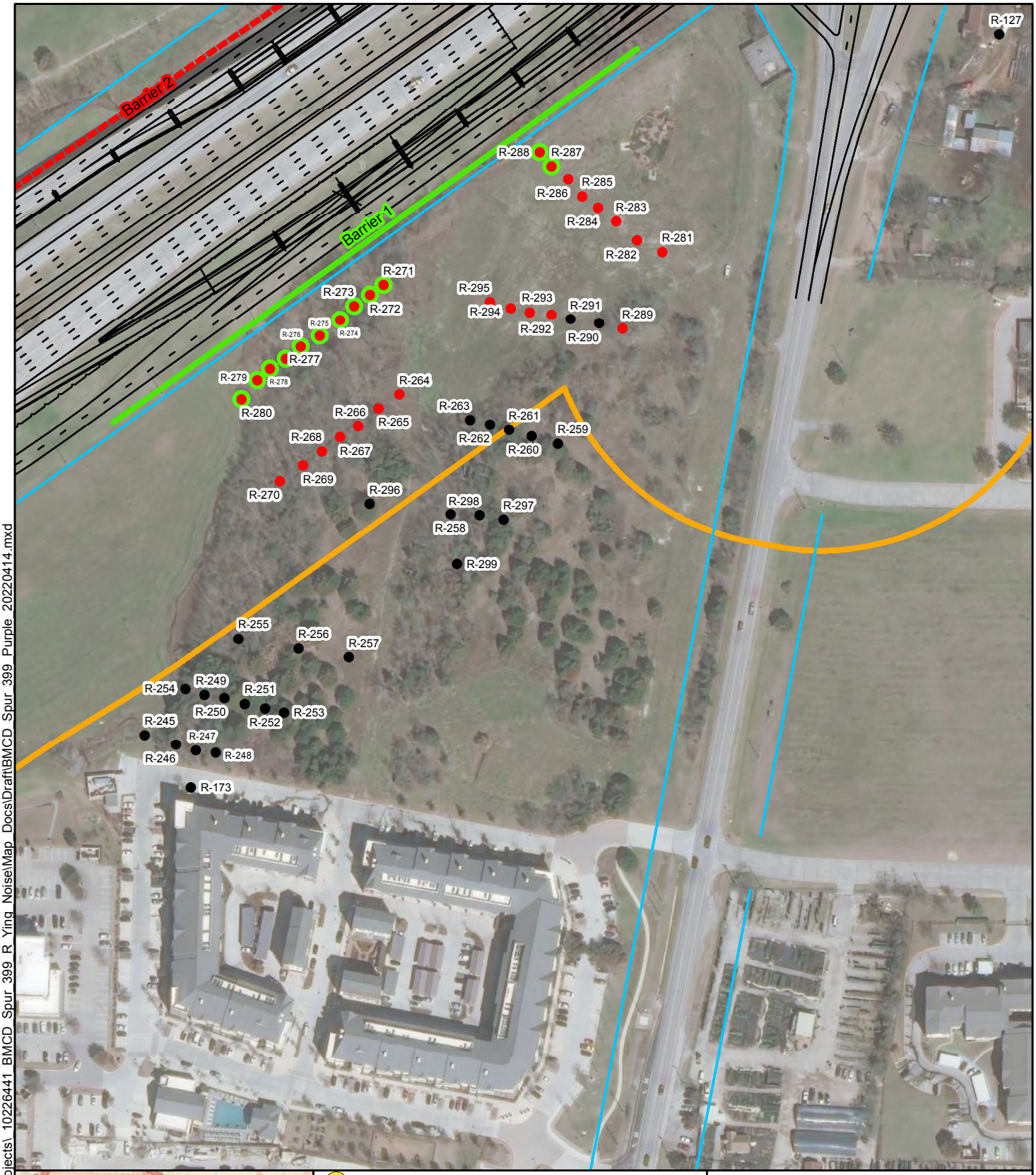

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66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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FIGURE 1-3
APR 2022

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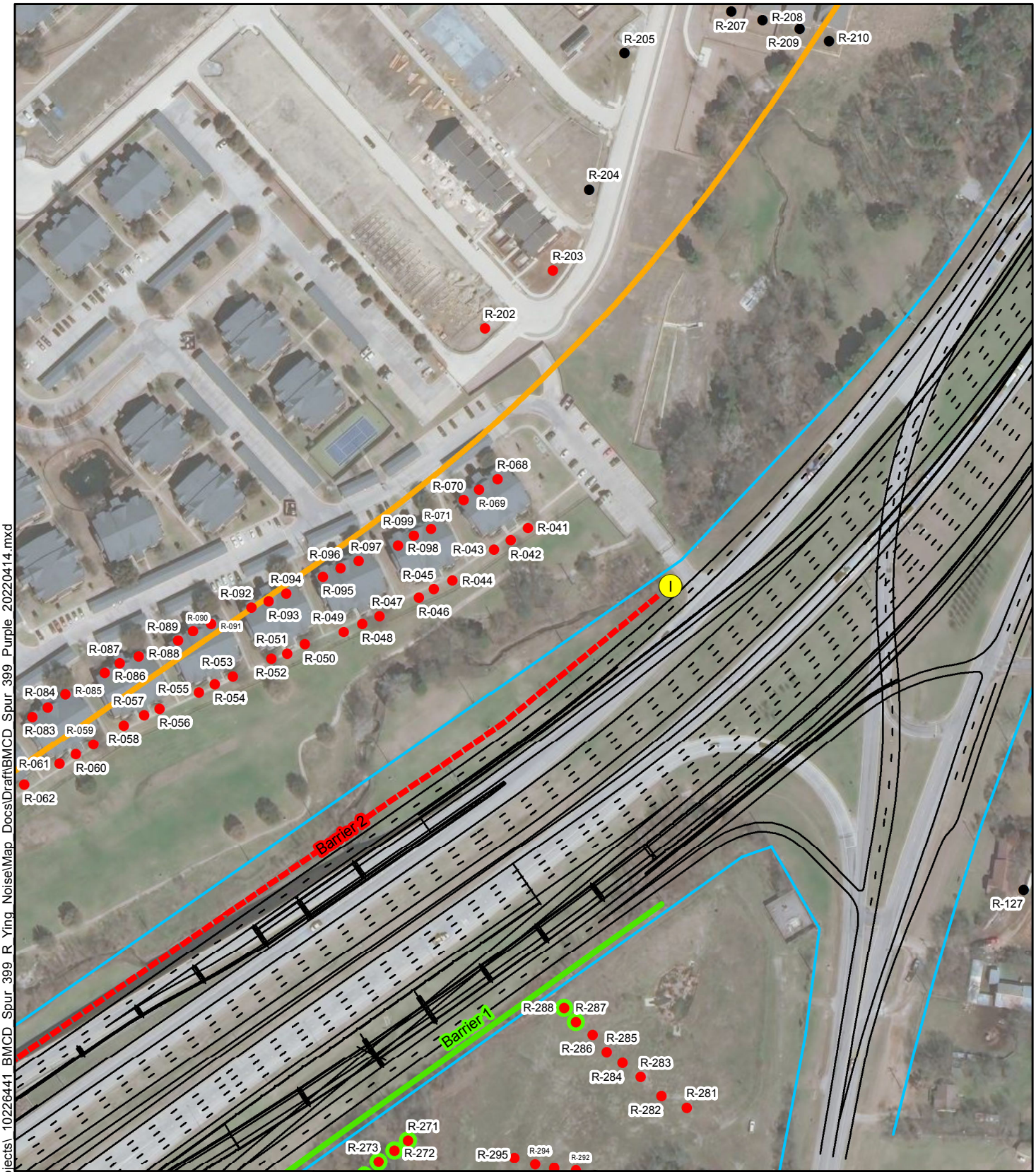

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PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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Texas Department of Transportation

FIGURE 1-4
APR 2022

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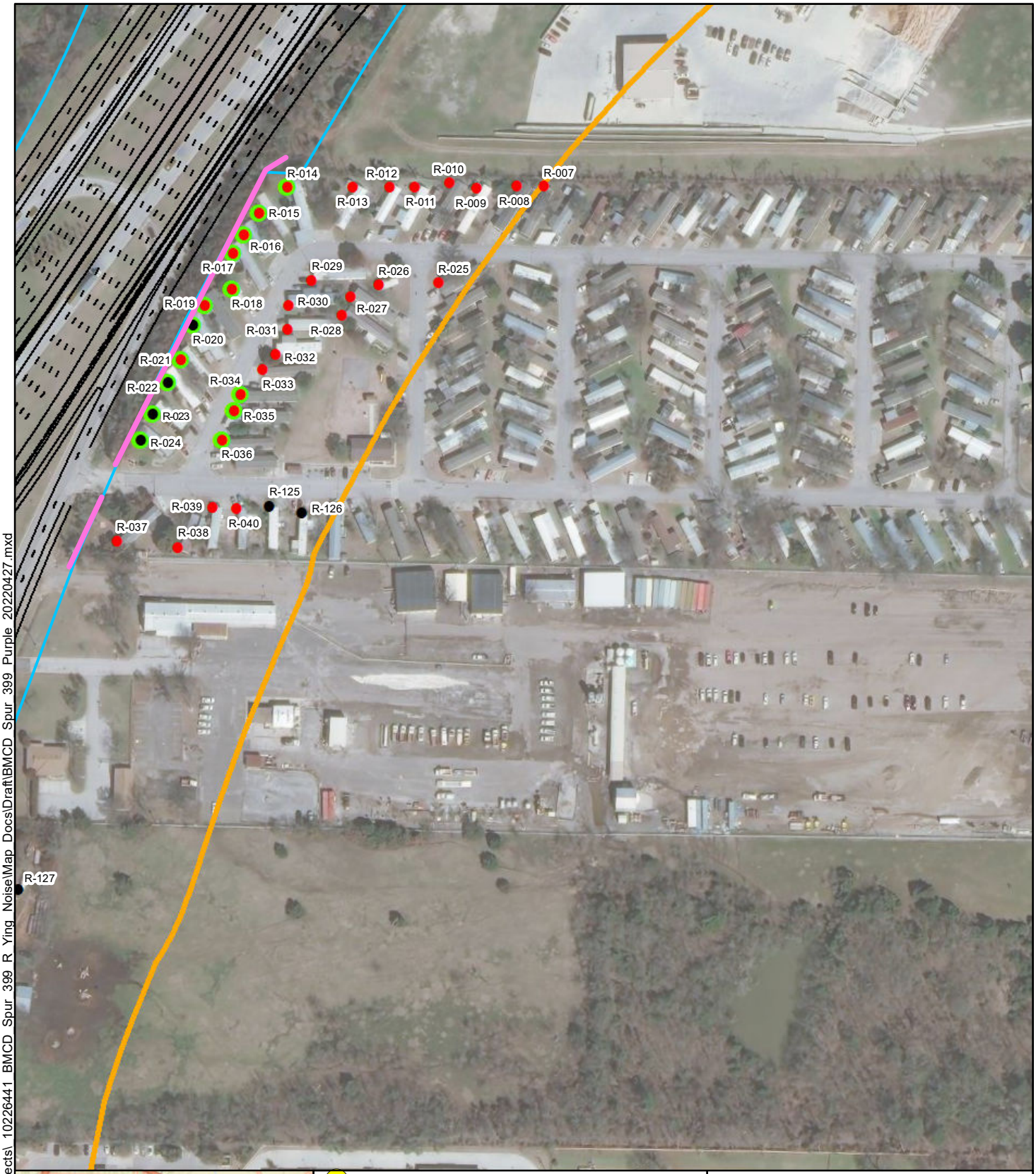

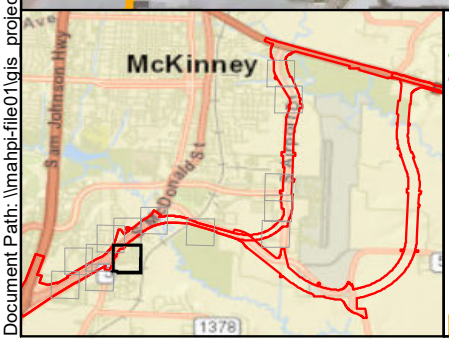

VALIDATION LOCATIONS
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66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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FIGURE 1-5
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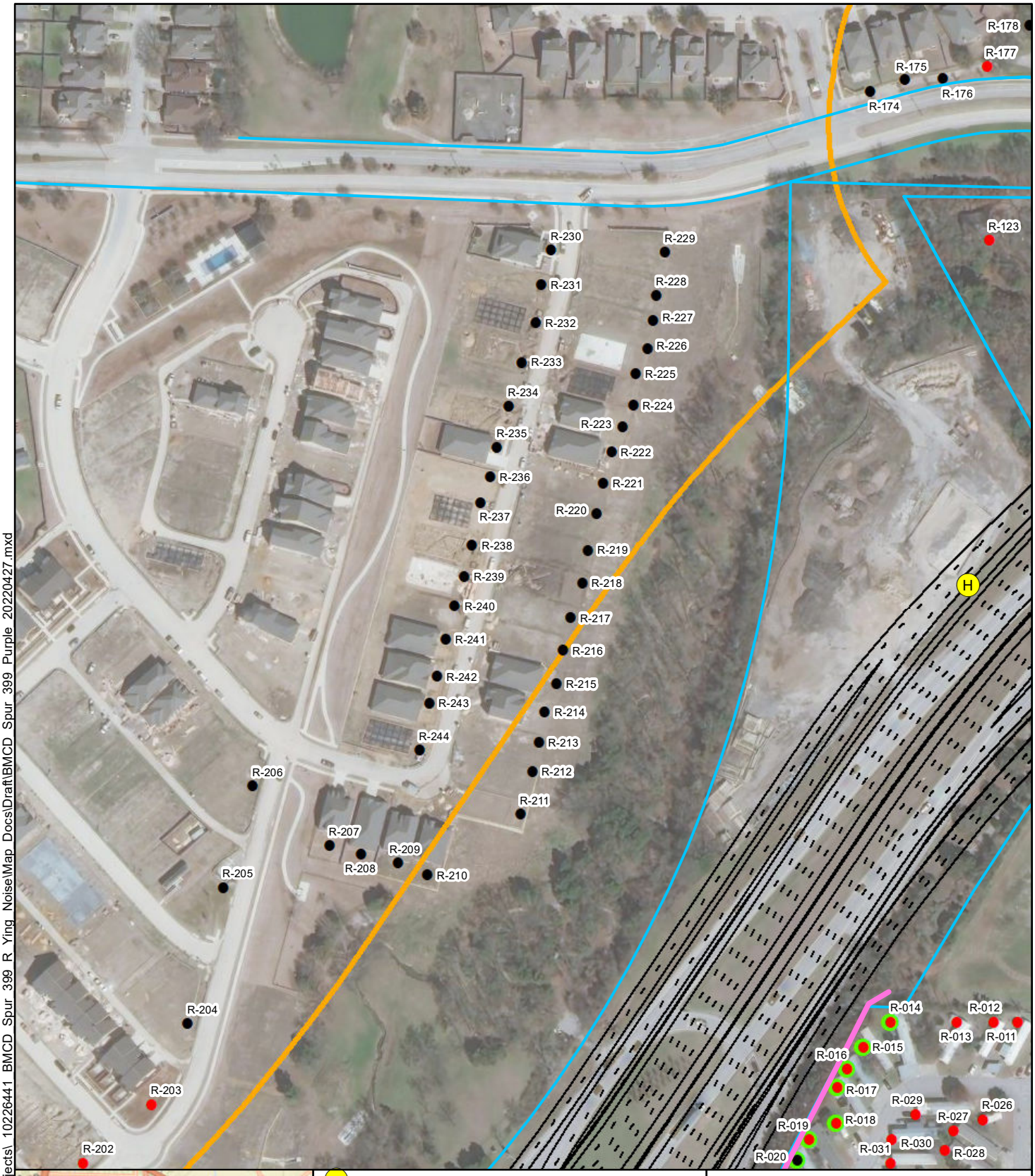

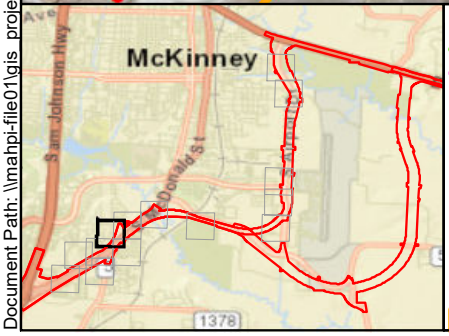

VALIDATION LOCATIONS
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NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

Feet
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Texas Department of Transportation

FIGURE 1-6
APR 2022

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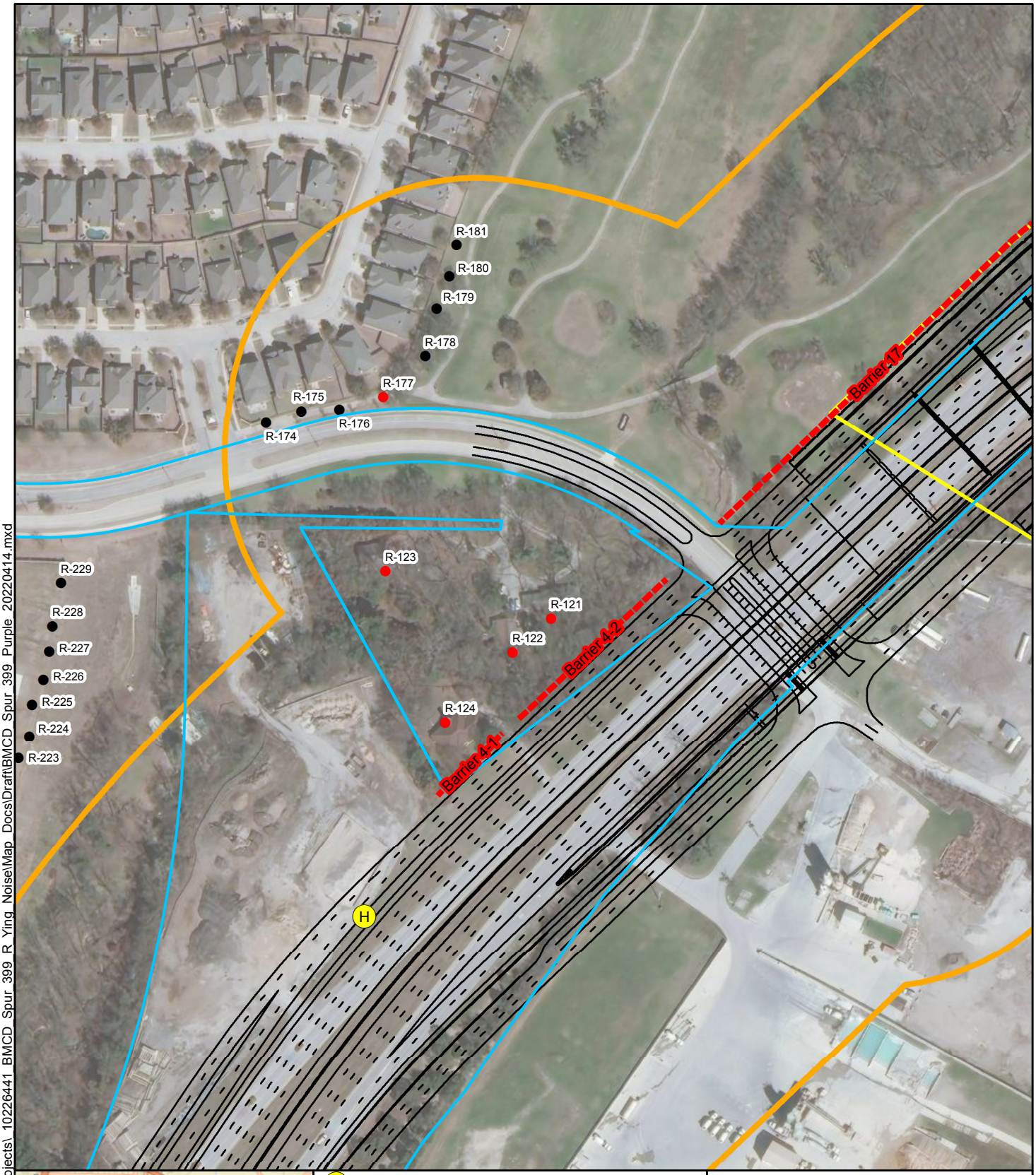

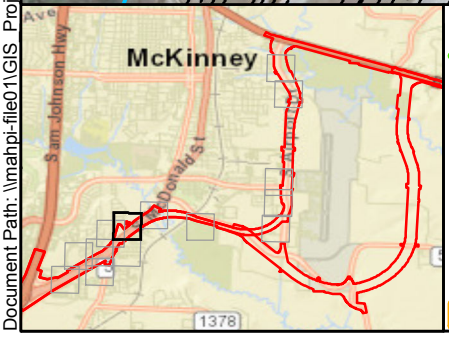

VALIDATION LOCATIONS
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NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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Texas Department of Transportation

FIGURE 1-7
APR 2022

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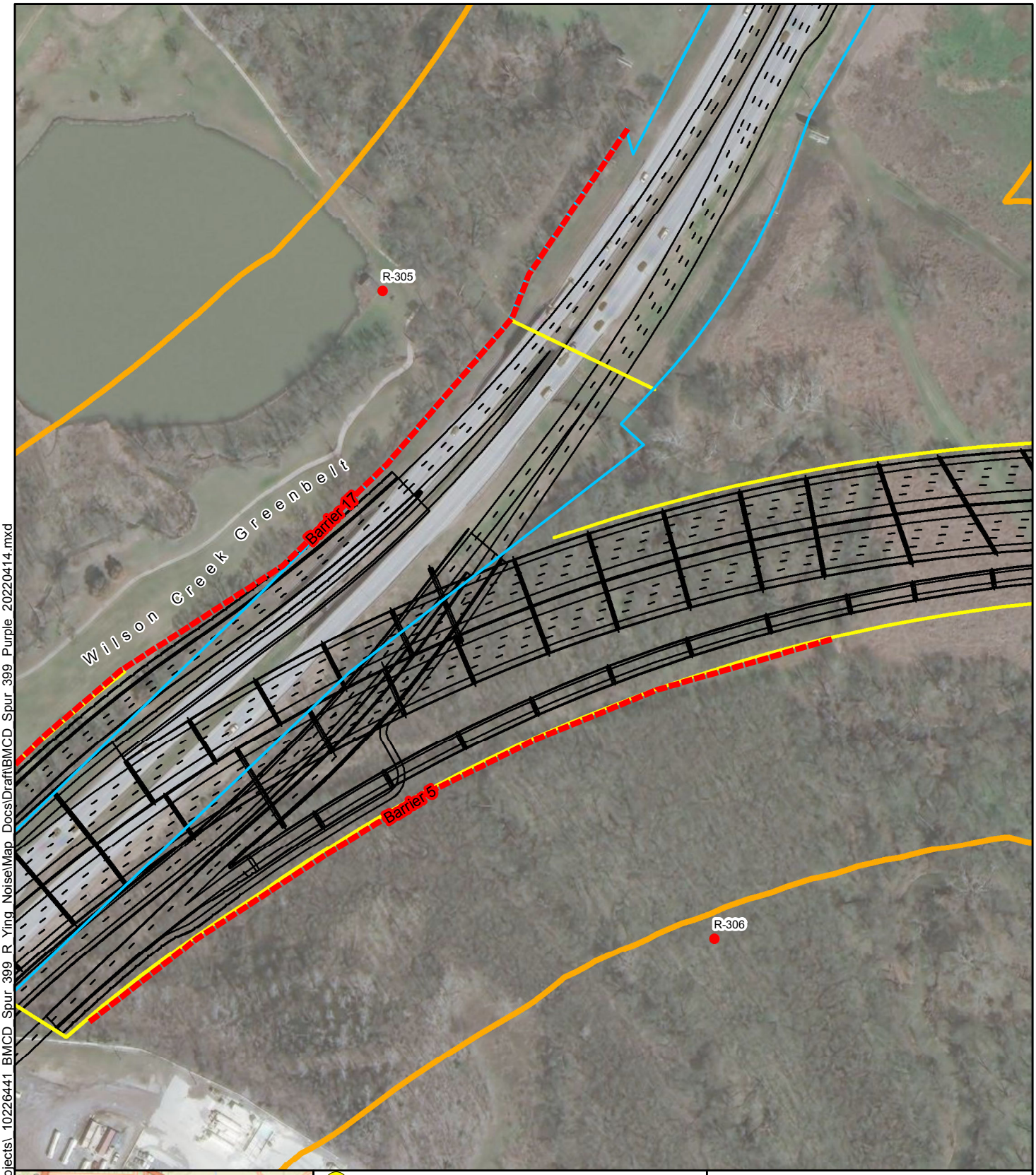

VALIDATION LOCATIONS
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PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

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Texas Department of Transportation

FIGURE 1-8
APR 2022

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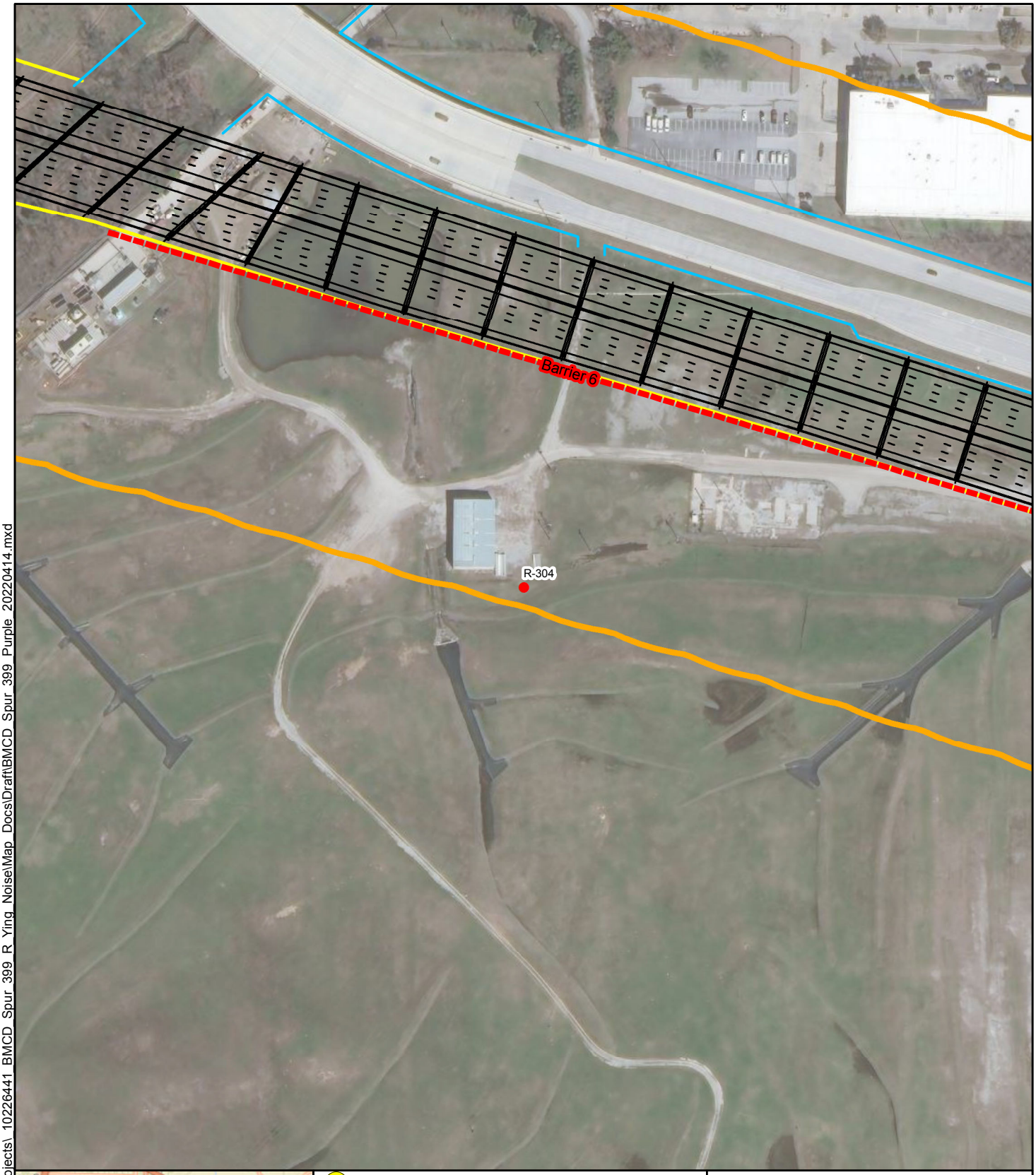

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-9
APR 2022

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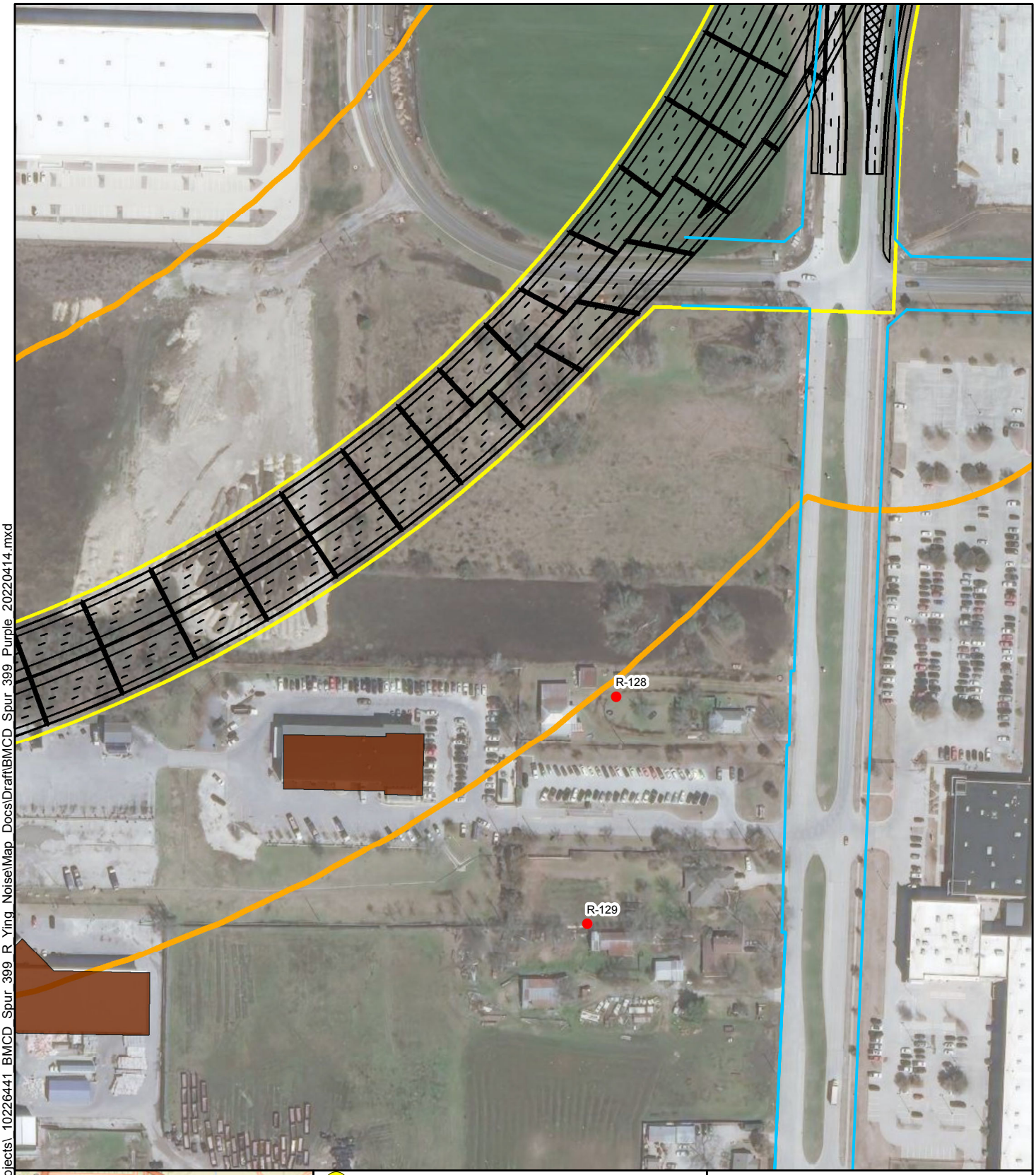

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-10
APR 2022

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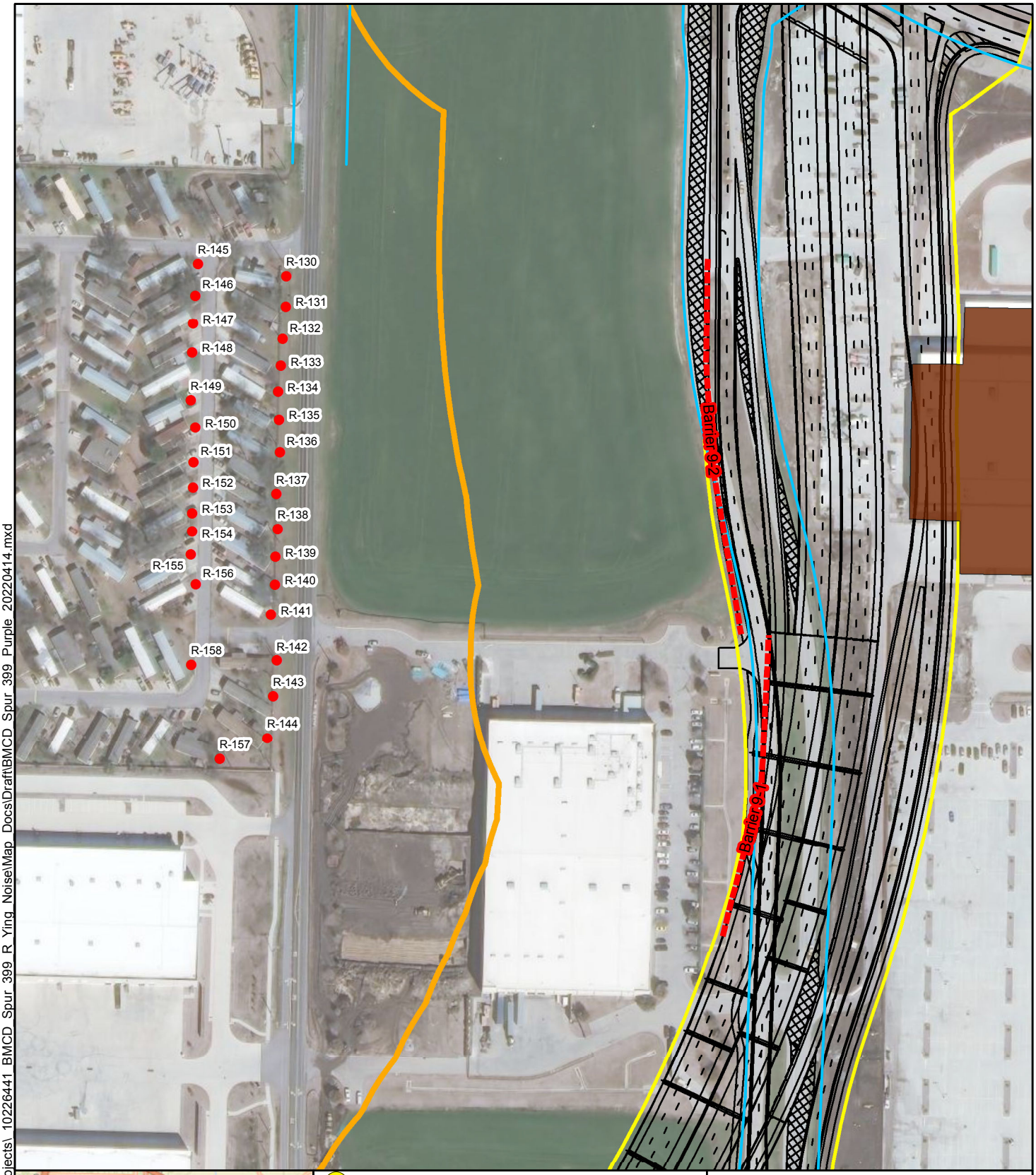

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-11
APR 2022

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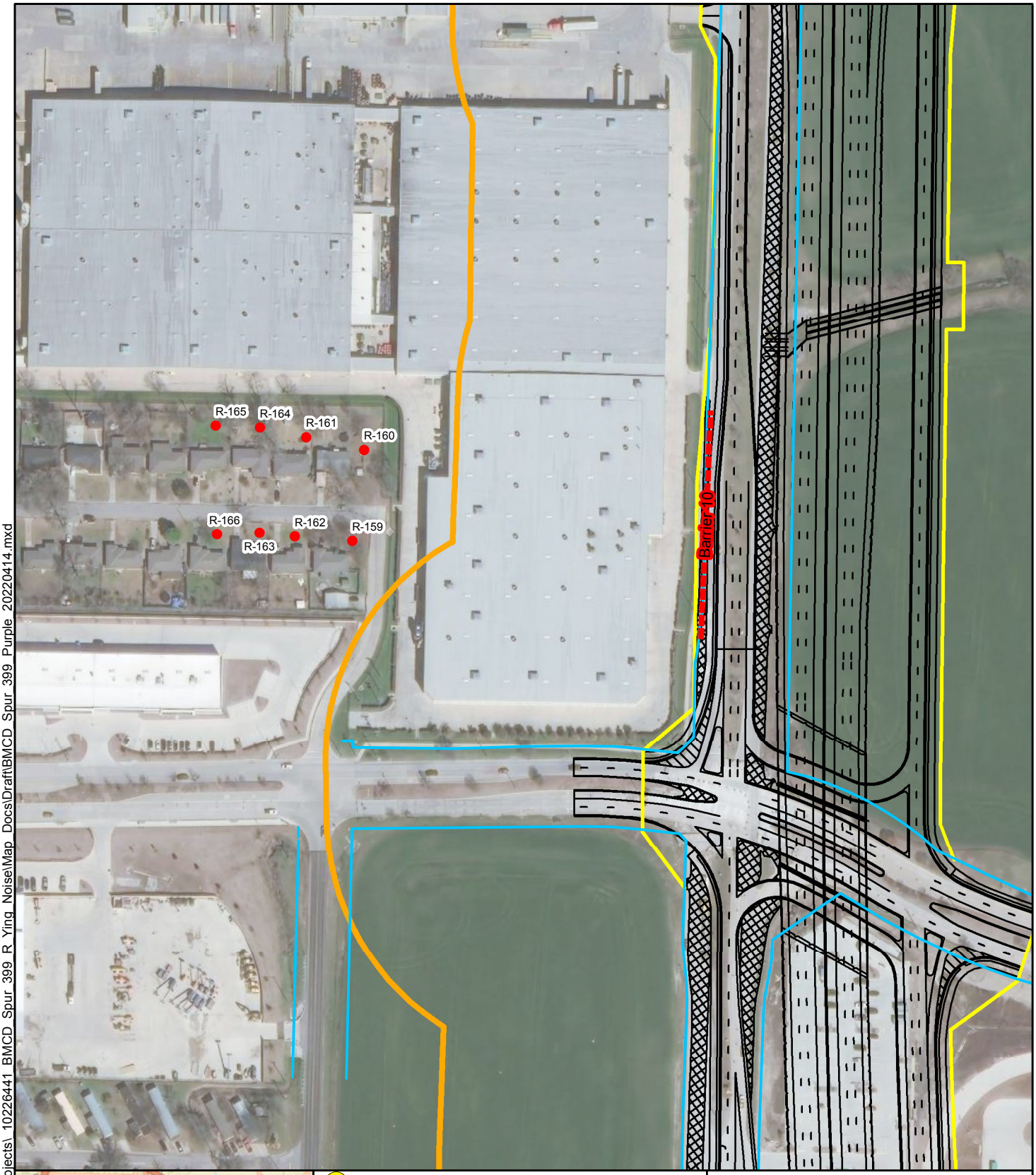

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-12
APR 2022

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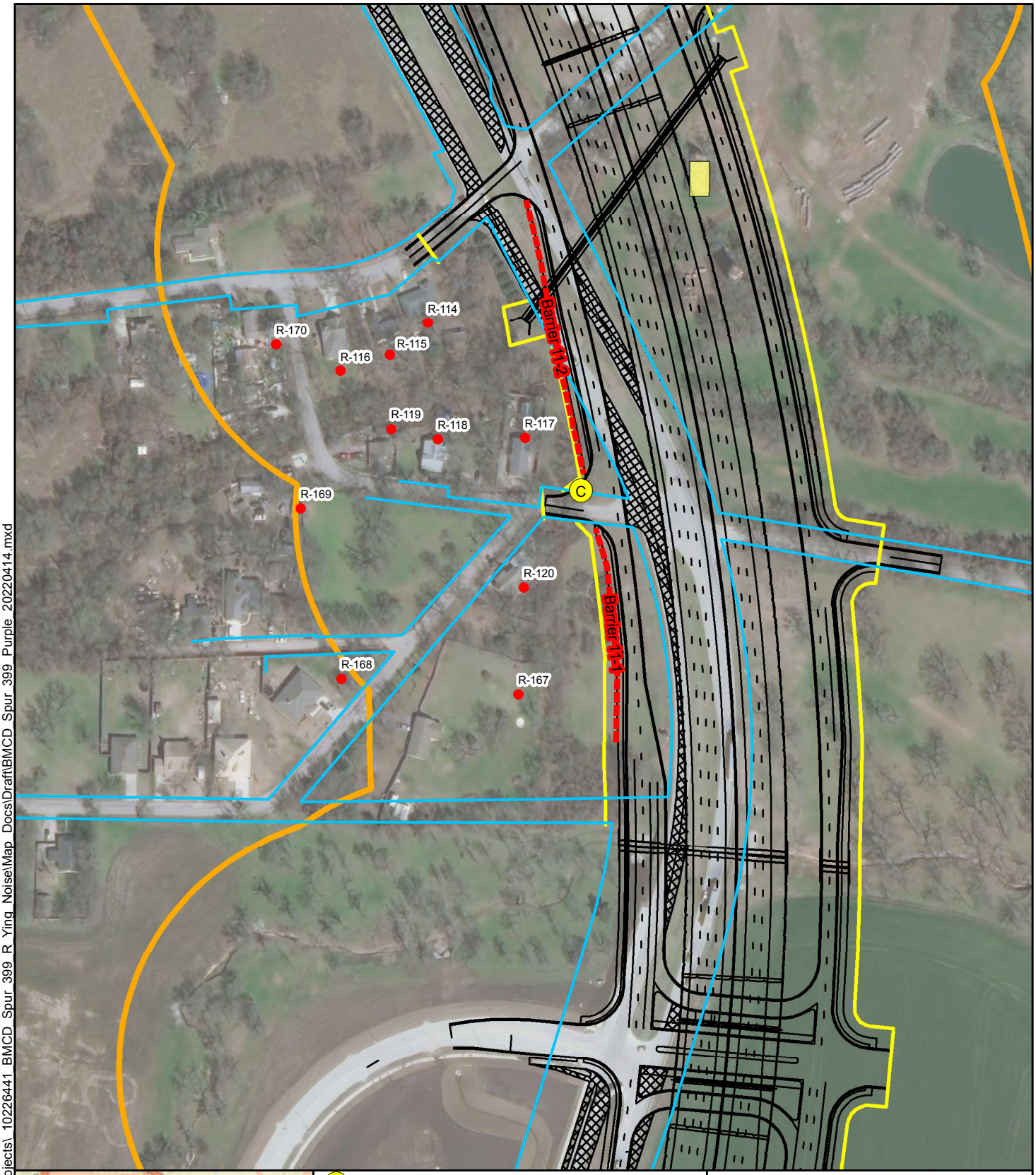

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-13
APR 2022

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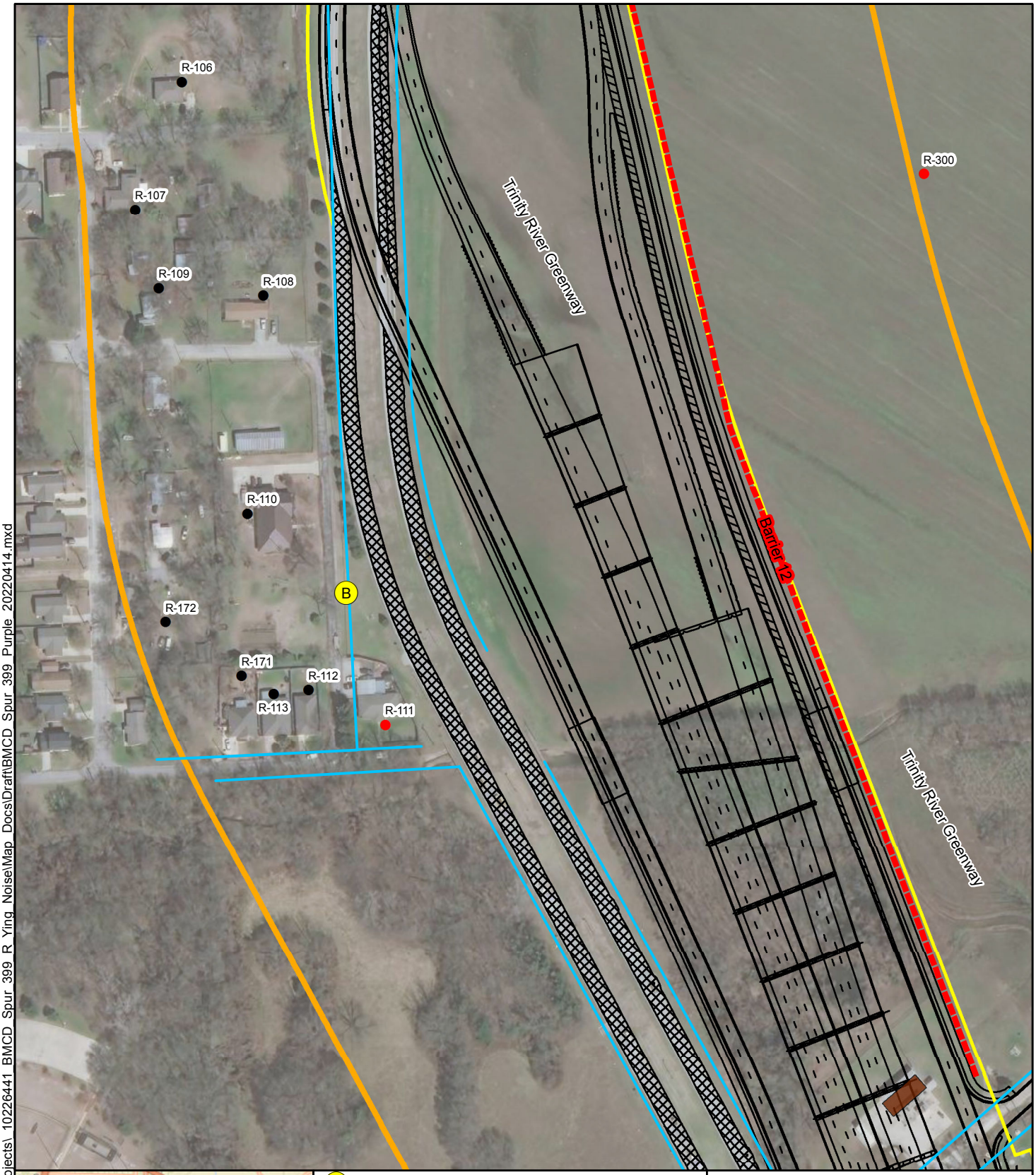

VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
EXISTING ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
PURPLE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 1-14
APR 2022

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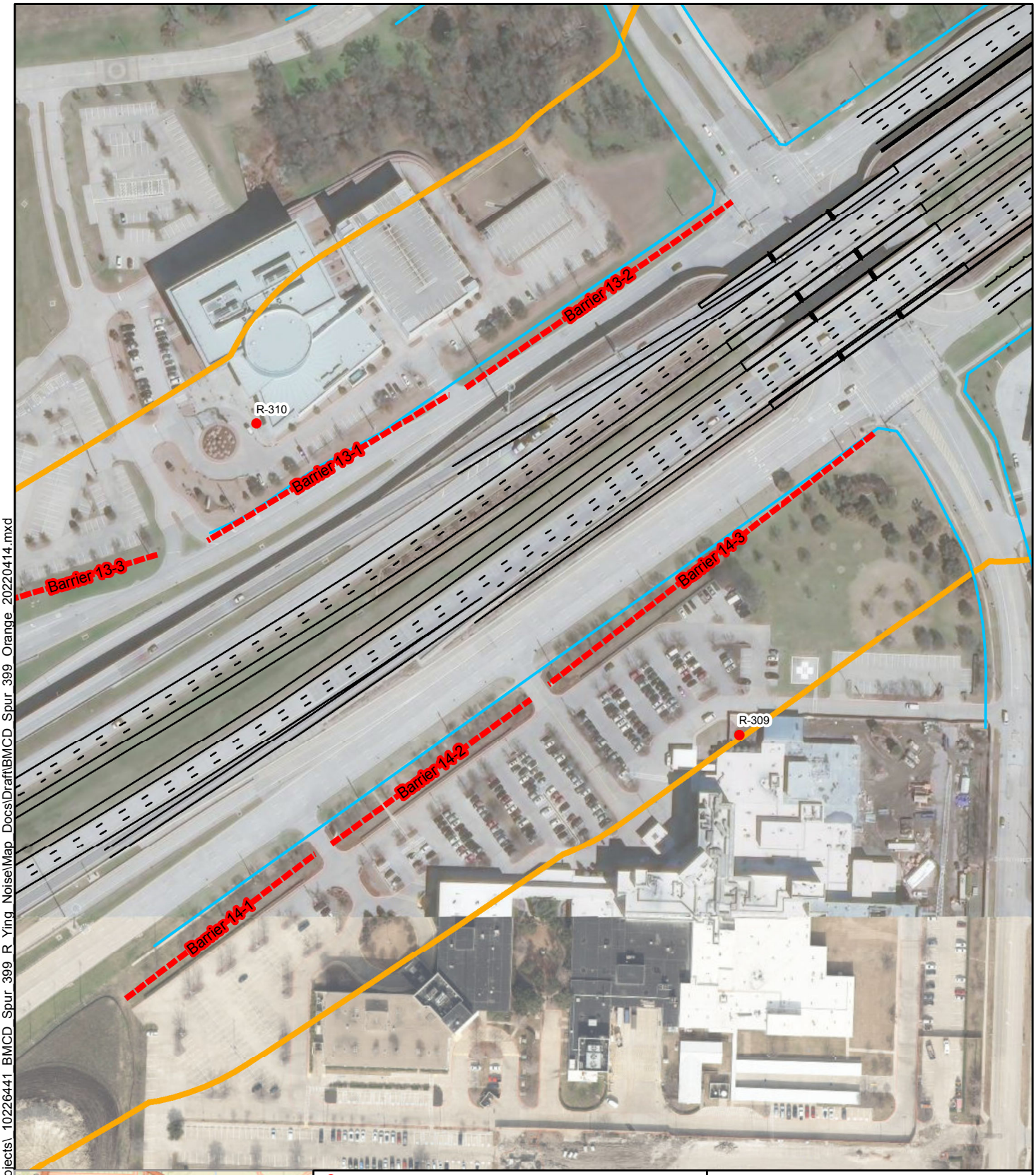

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-1
APR 2022

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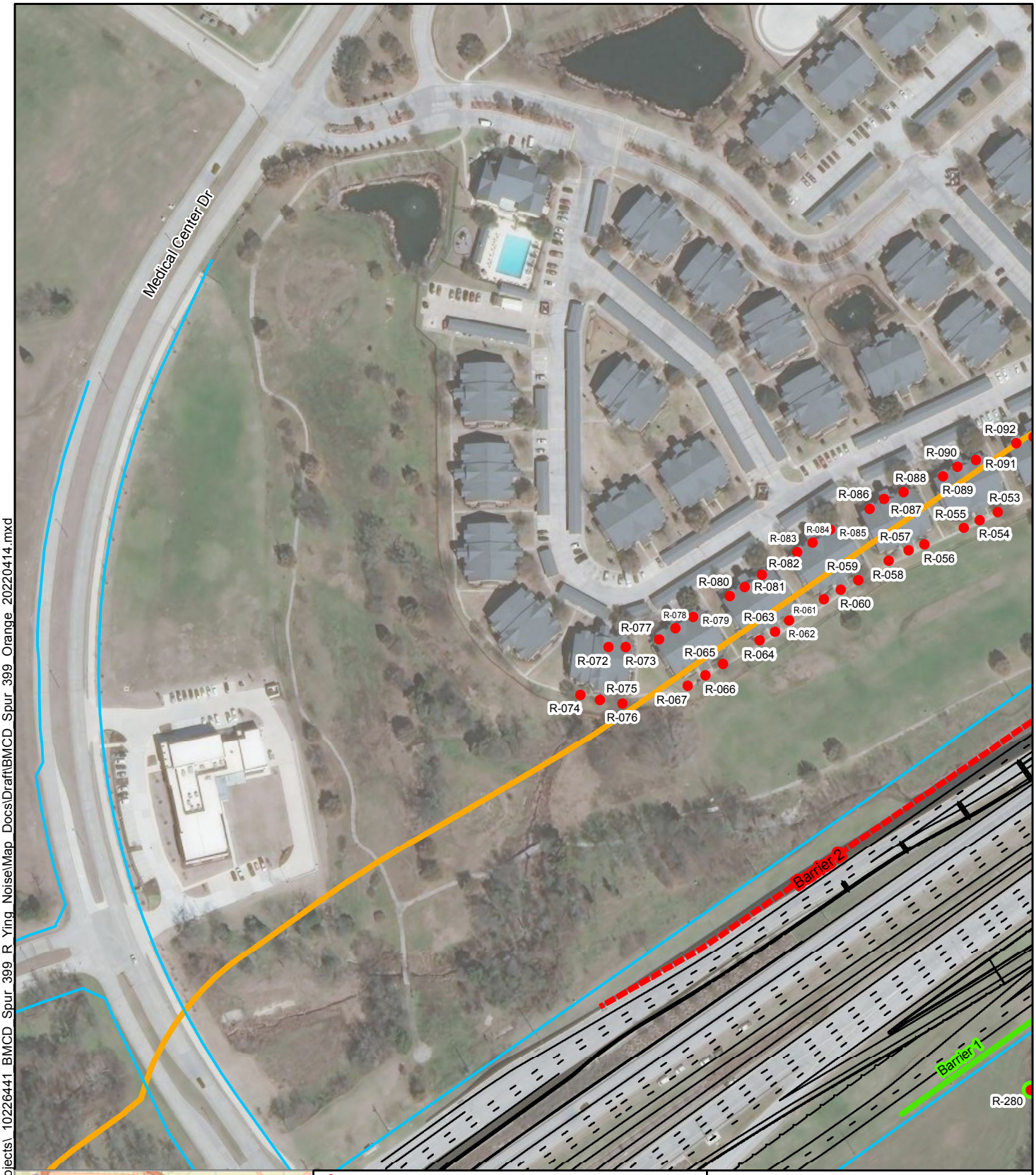

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-2
APR 2022

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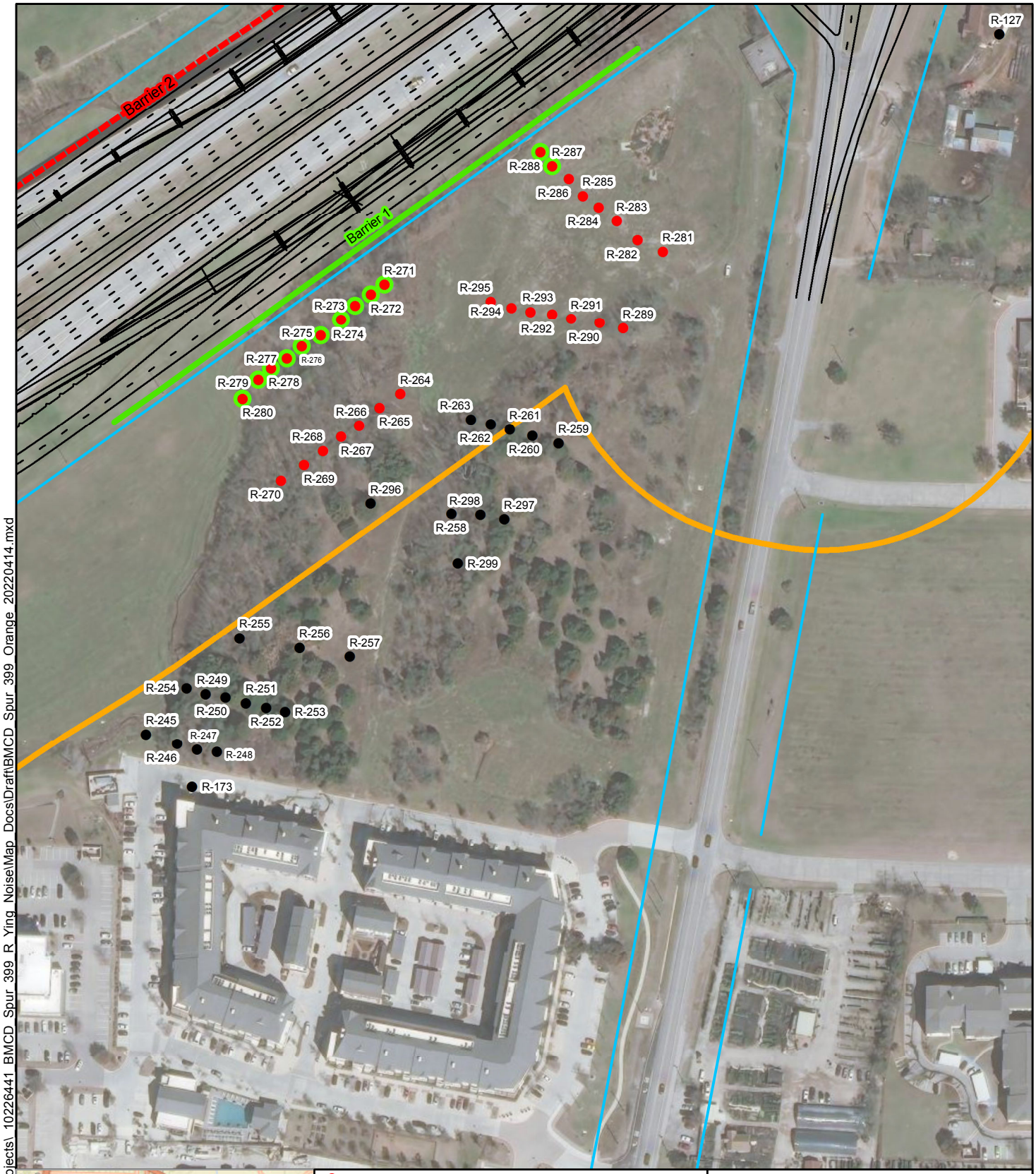

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-3
APR 2022

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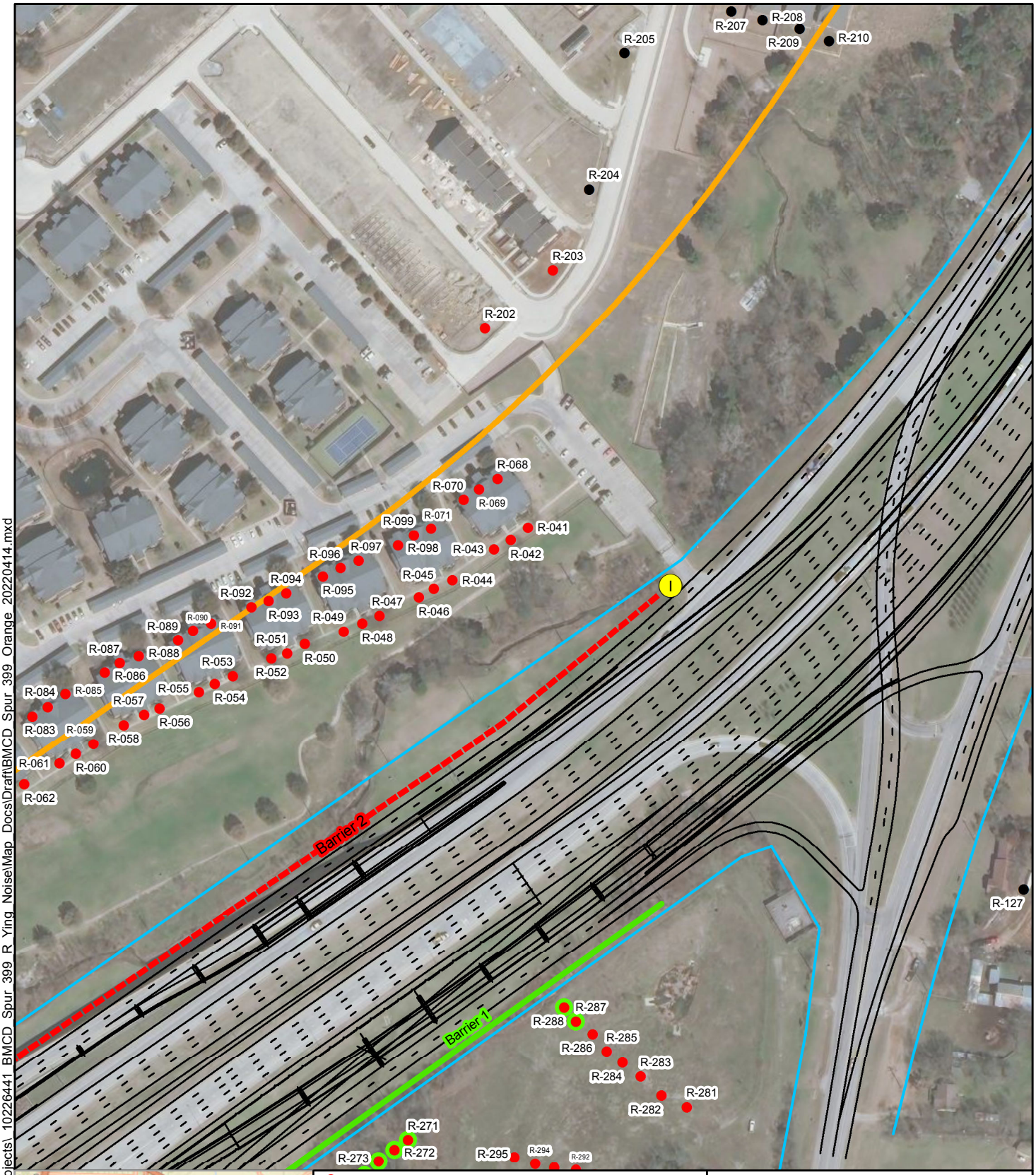

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-4
APR 2022

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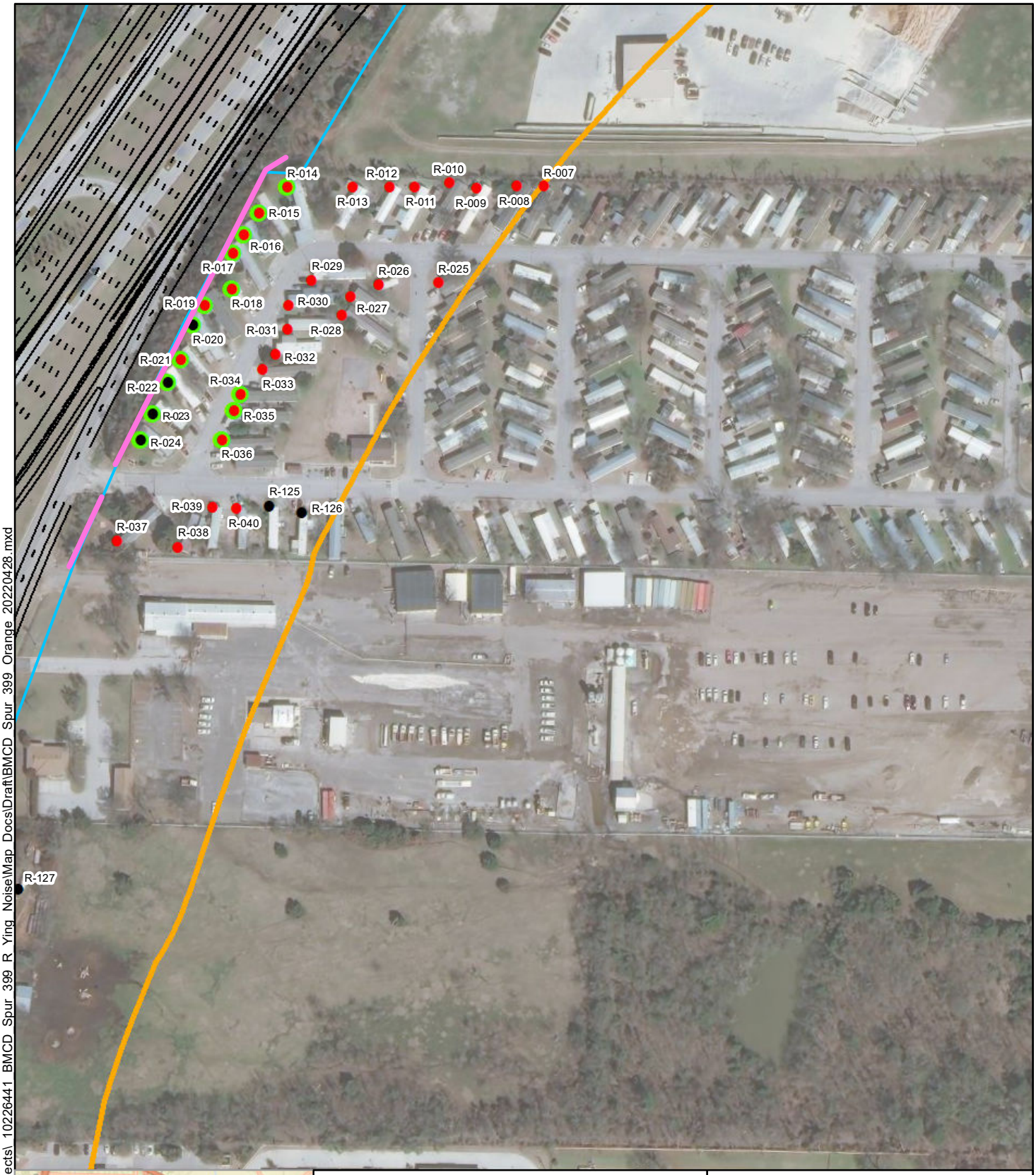

PROPOSED BARRIER
BARRIER TO BE CONSTRUCTED
VALIDATION LOCATIONS
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
66 dB(A) IMPACT CONTOUR LINE
PROPOSED IMPROVEMENTS
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-5
APR 2022

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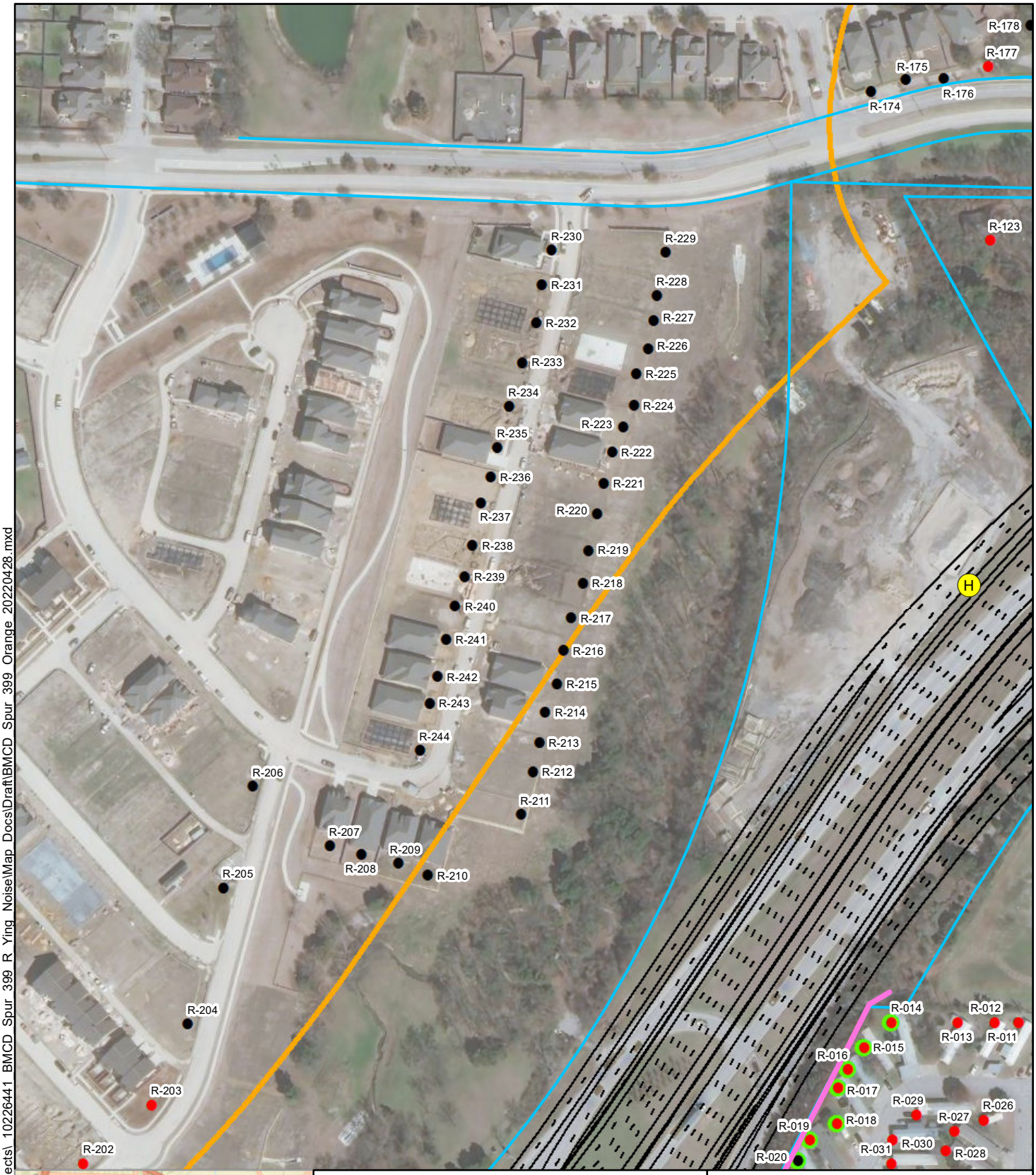

PROPOSED BARRIER
BARRIER TO BE CONSTRUCTED
VALIDATION LOCATIONS
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
66 dB(A) IMPACT CONTOUR LINE
PROPOSED IMPROVEMENTS
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
IMPACTED RECEIVER
NON-IMPACTED RECEIVER

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-6
APR 2022

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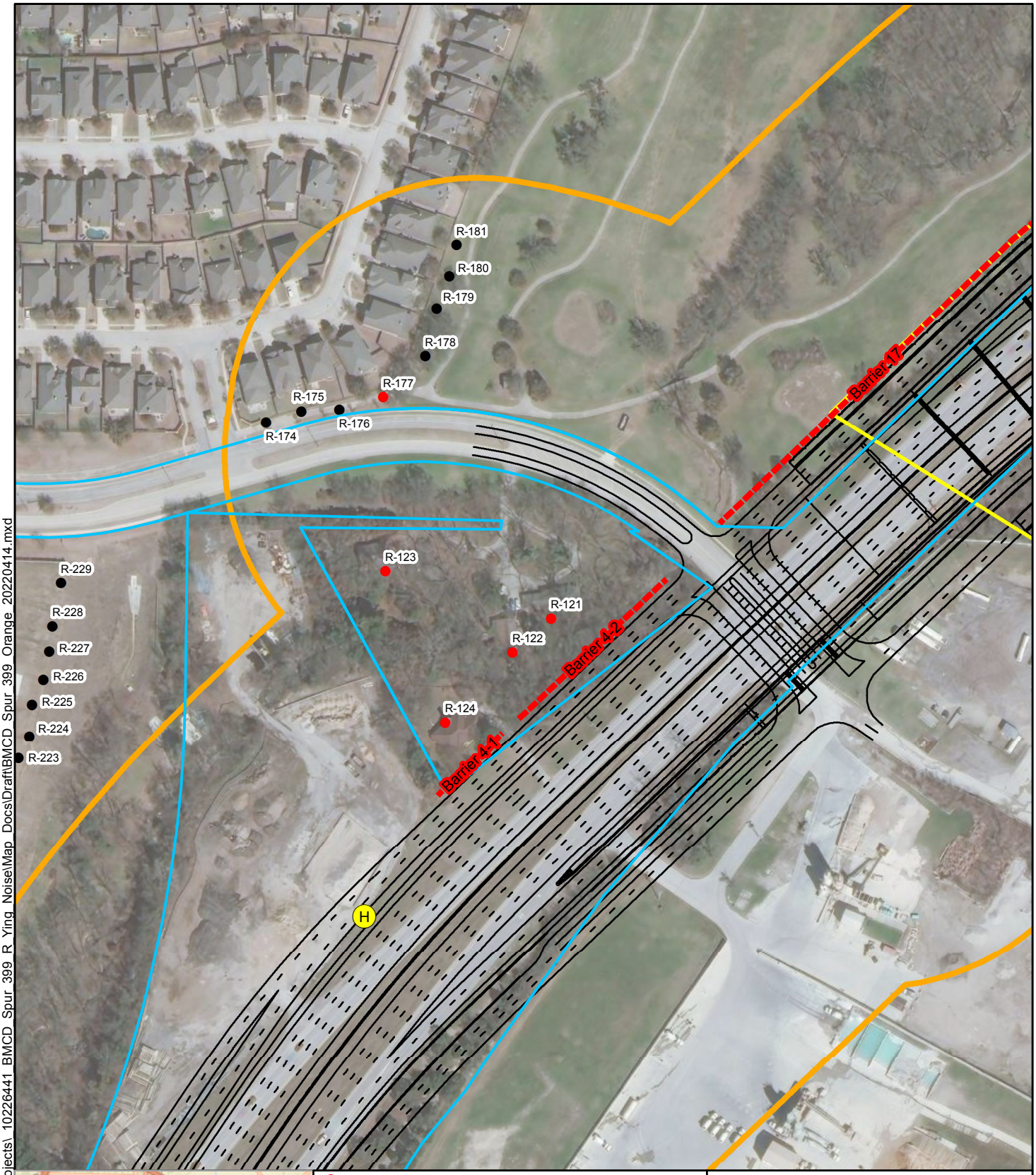

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-7
APR 2022

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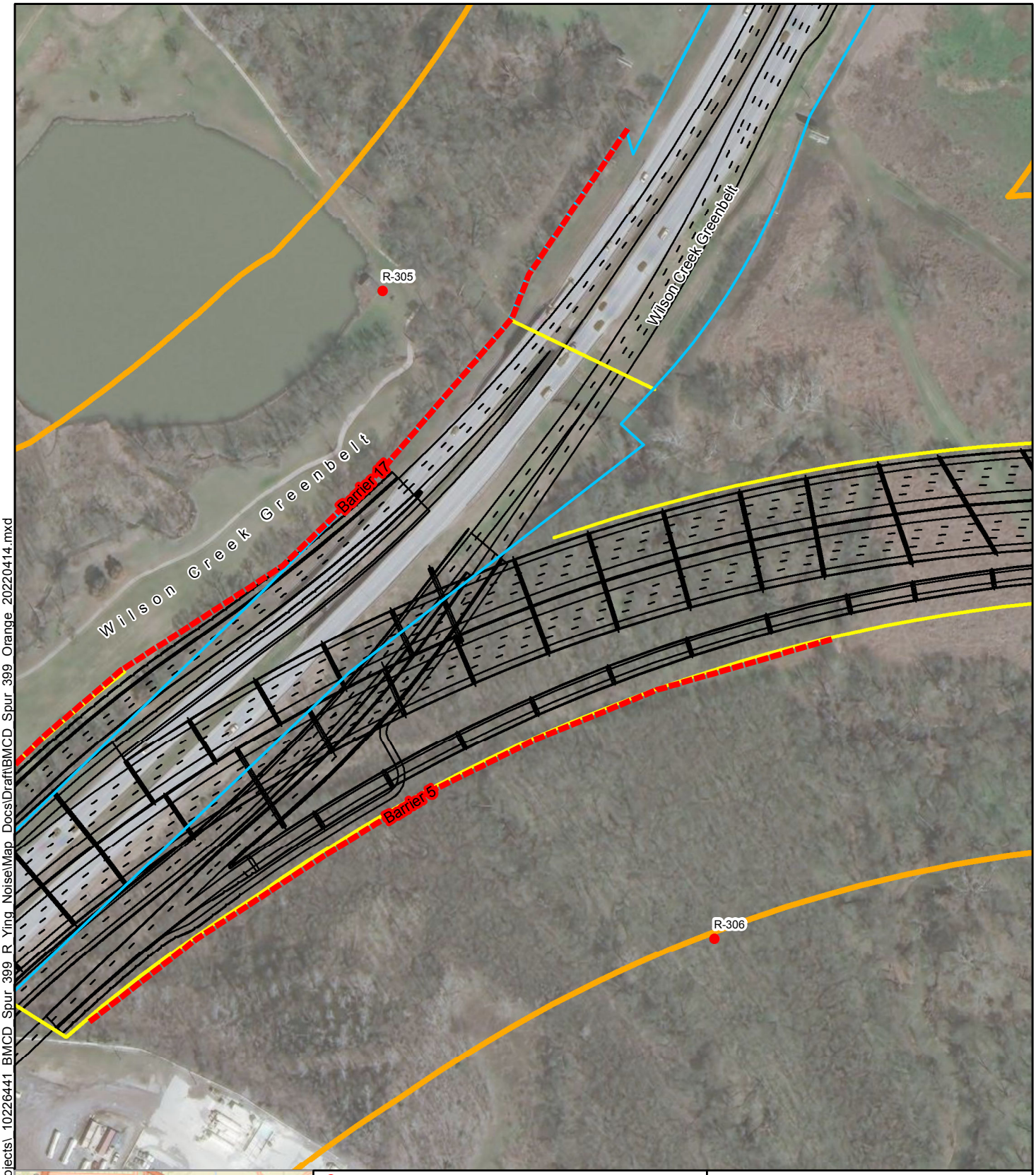

- IMPACTED RECEIVER
- NON-IMPACTED RECEIVER
- VALIDATION LOCATIONS
- PROPOSED BARRIER
- BARRIER ANALYZED BUT NOT PROPOSED
- BENEFITED RECEIVER
- COMMERCIAL DISPLACEMENT
- RESIDENTIAL DISPLACEMENT
- EXISTING ROW
- PROPOSED ROW
- PROPOSED IMPROVEMENTS
- 66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-8
APR 2022

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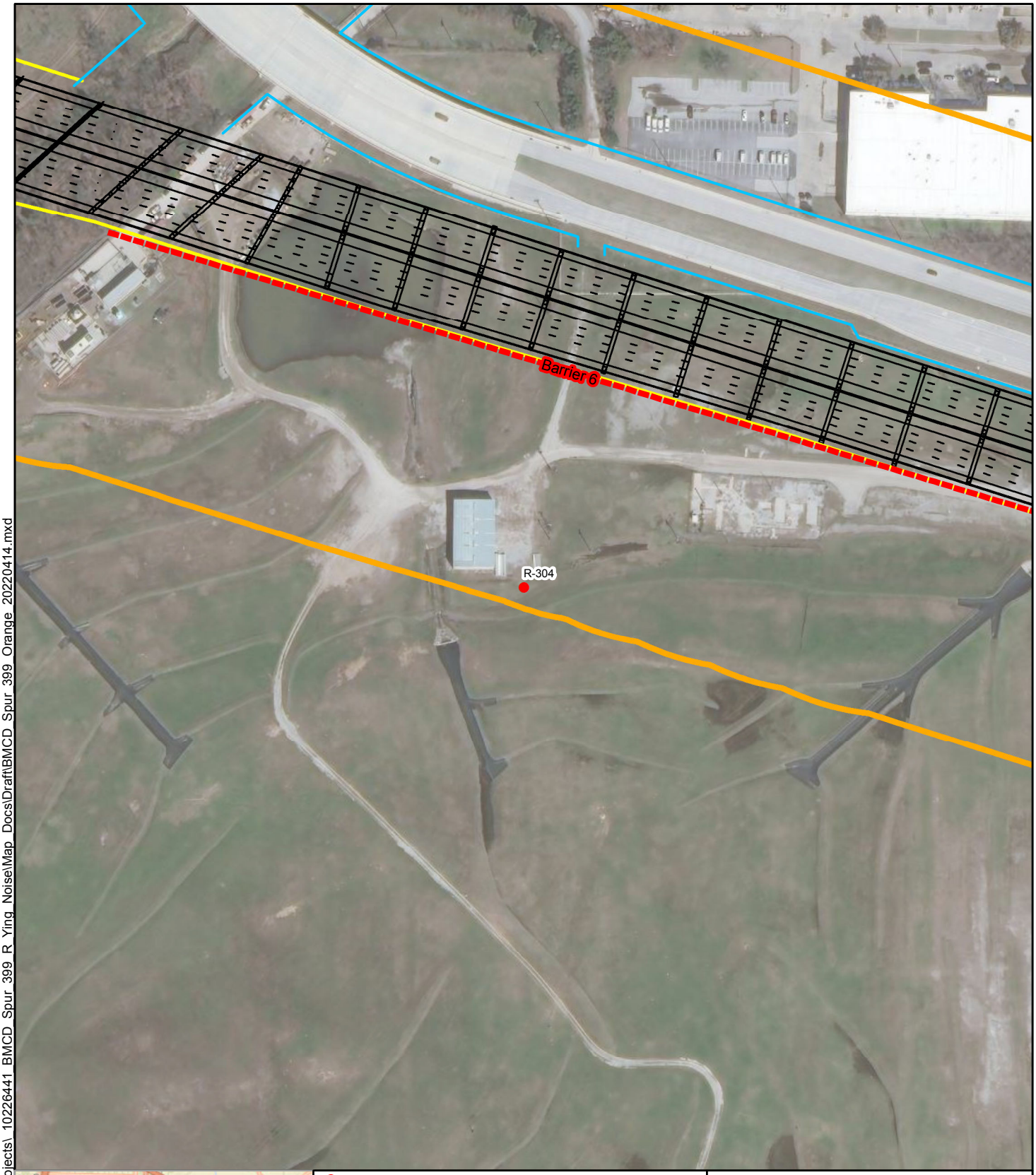

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

Feet
0 100 200
N

Texas Department of Transportation

FIGURE 2-9
APR 2022

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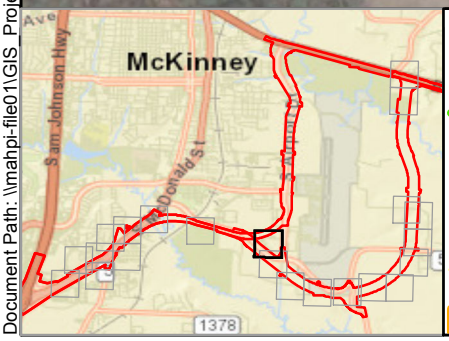

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-10
APR 2022

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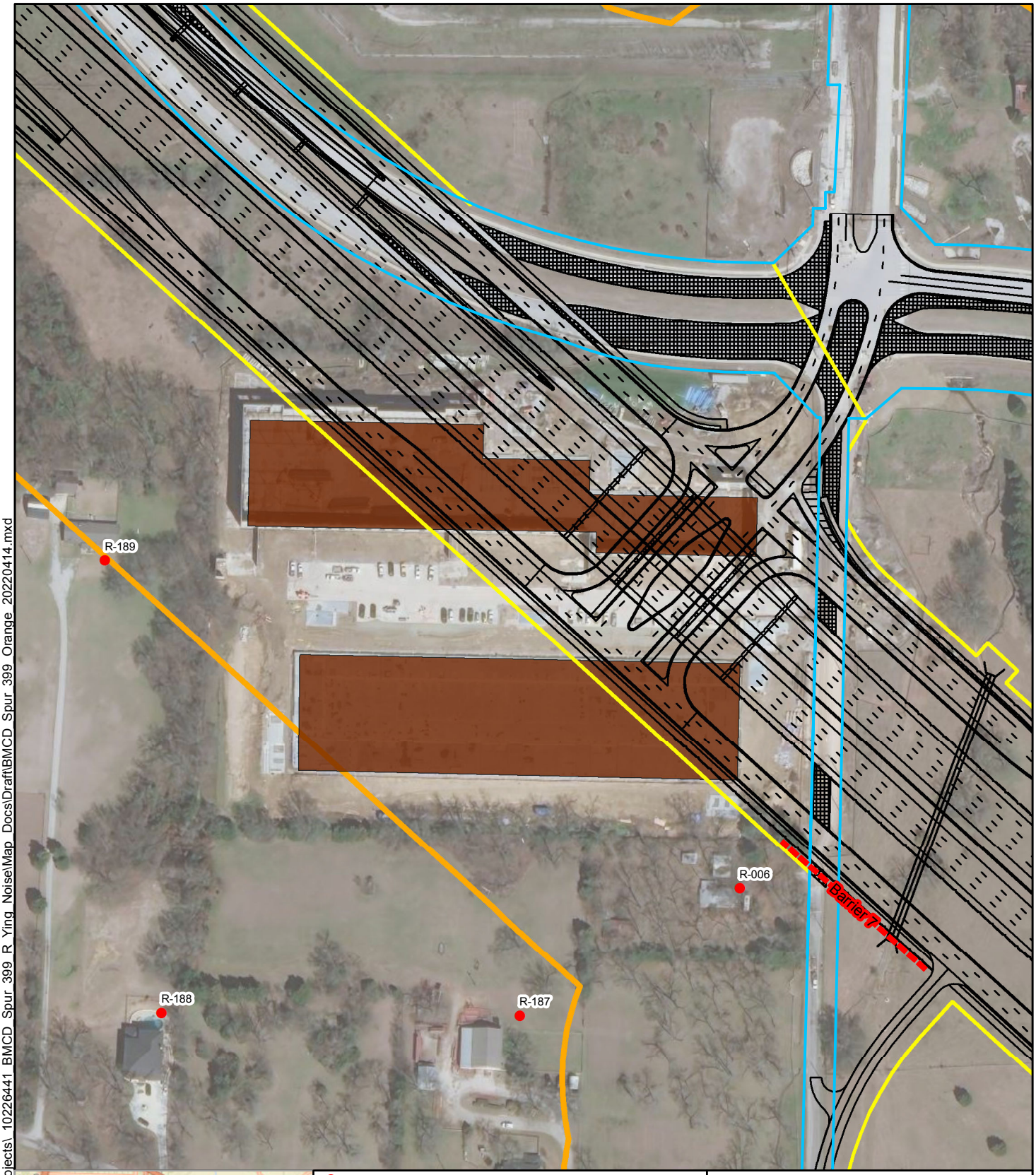

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-11
APR 2022

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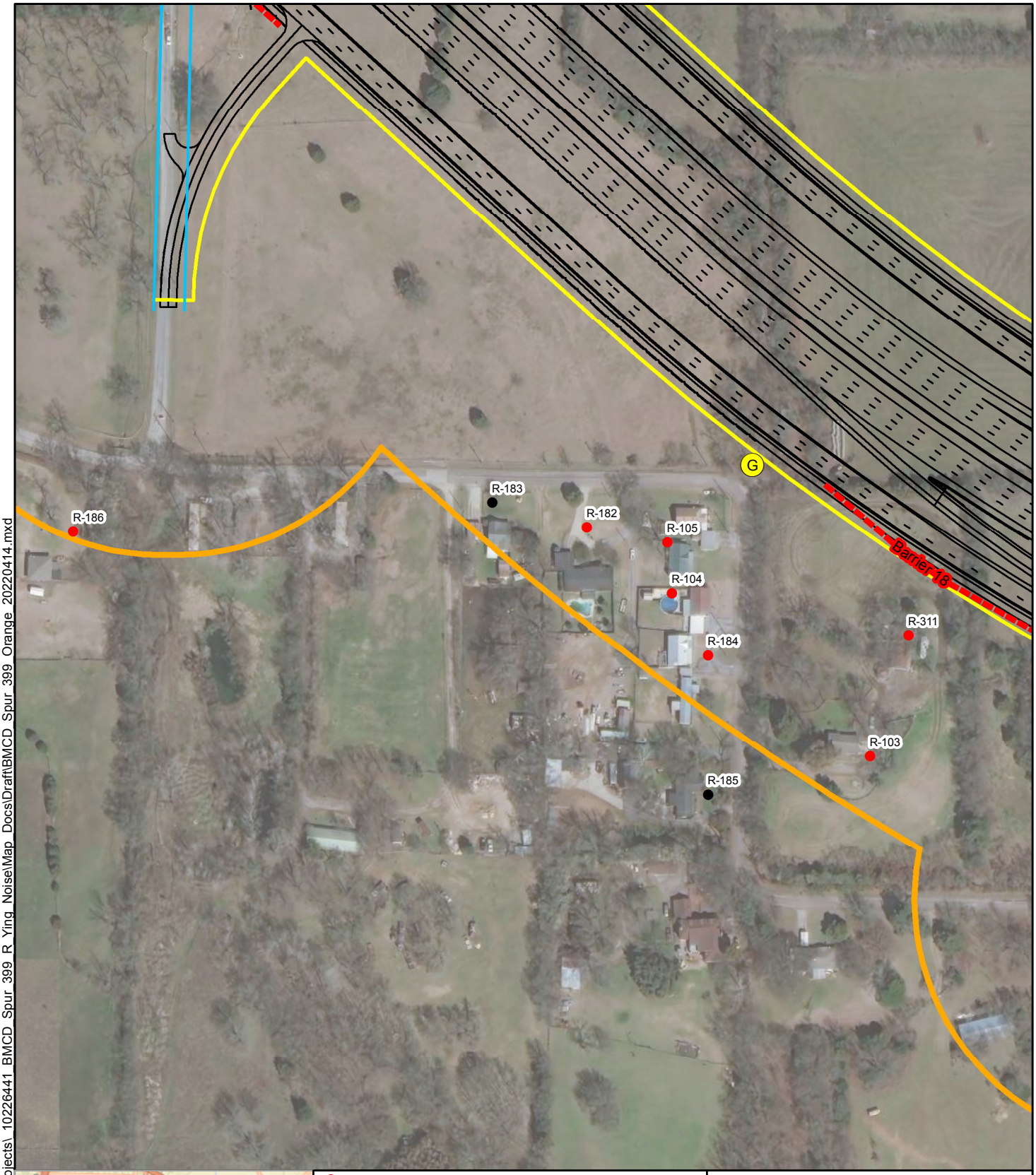

IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-12
APR 2022

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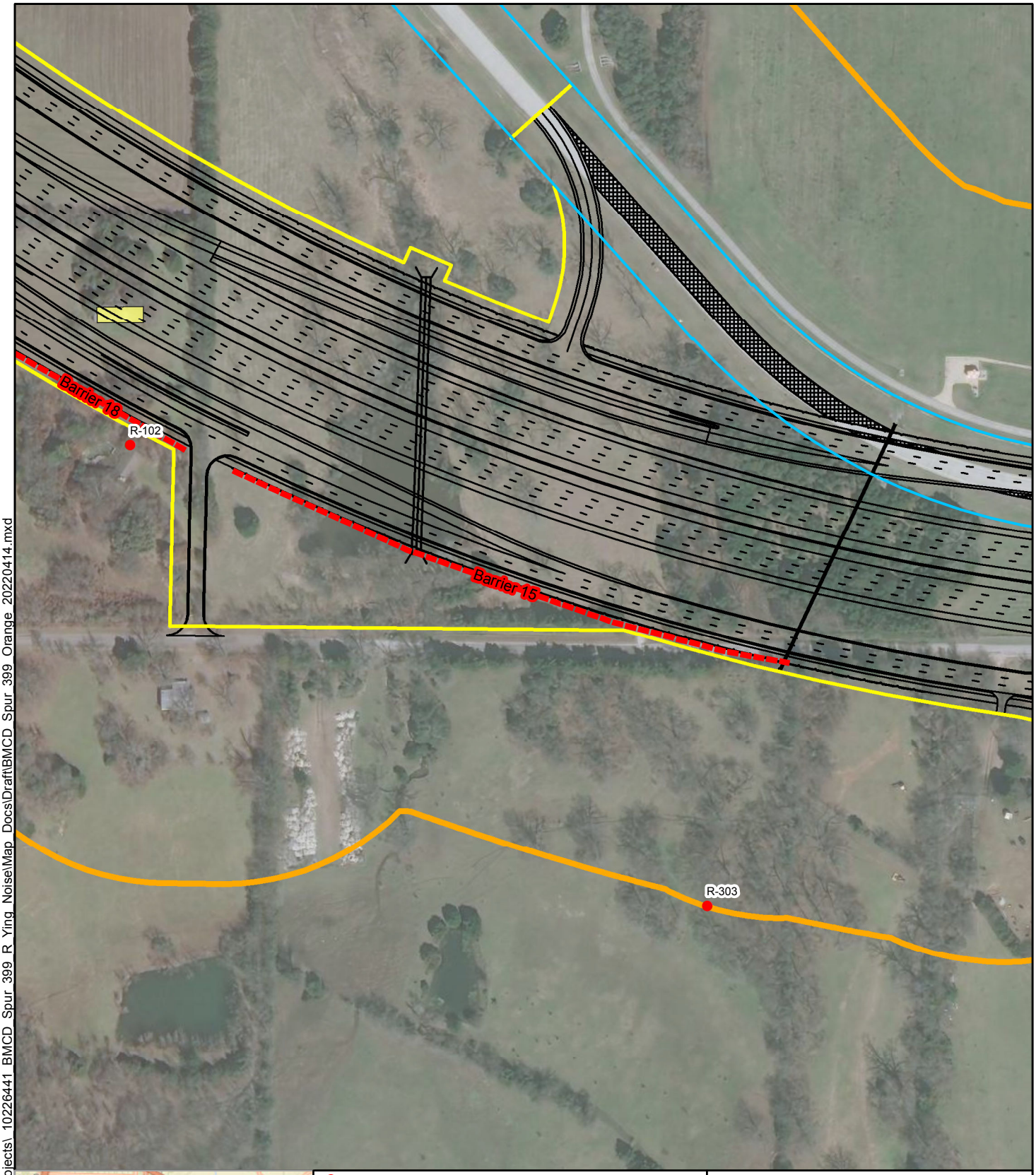

- IMPACTED RECEIVER
- NON-IMPACTED RECEIVER
- VALIDATION LOCATIONS
- PROPOSED BARRIER
- BARRIER ANALYZED BUT NOT PROPOSED
- BENEFITED RECEIVER
- COMMERCIAL DISPLACEMENT
- RESIDENTIAL DISPLACEMENT
- EXISTING ROW
- PROPOSED ROW
- PROPOSED IMPROVEMENTS
- 66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-13
APR 2022

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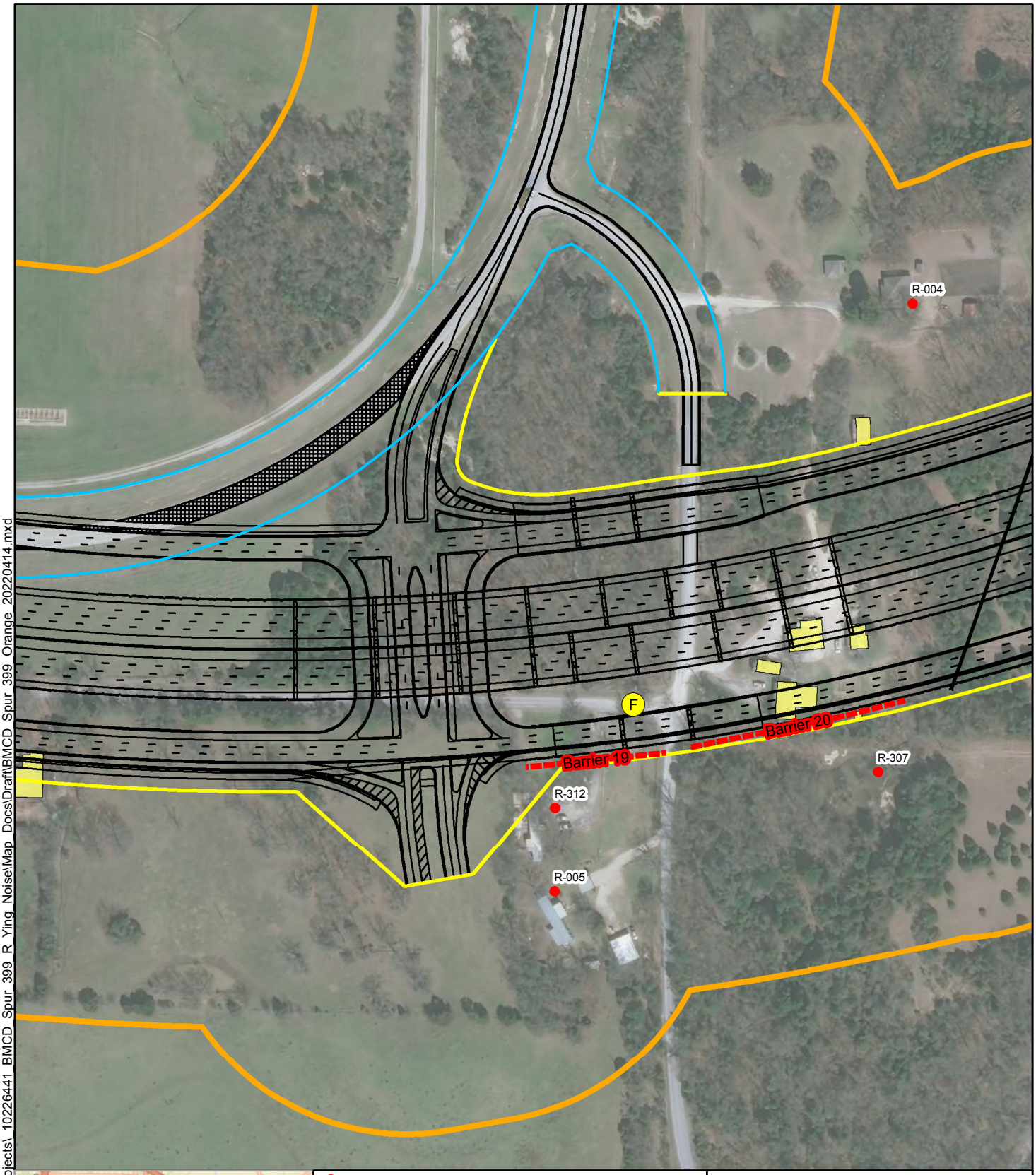

- IMPACTED RECEIVER
- NON-IMPACTED RECEIVER
- VALIDATION LOCATIONS
- PROPOSED BARRIER
- BARRIER ANALYZED BUT NOT PROPOSED
- BENEFITED RECEIVER
- COMMERCIAL DISPLACEMENT
- RESIDENTIAL DISPLACEMENT
- EXISTING ROW
- PROPOSED ROW
- PROPOSED IMPROVEMENTS
- 66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-14
APR 2022

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IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-15
APR 2022

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IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

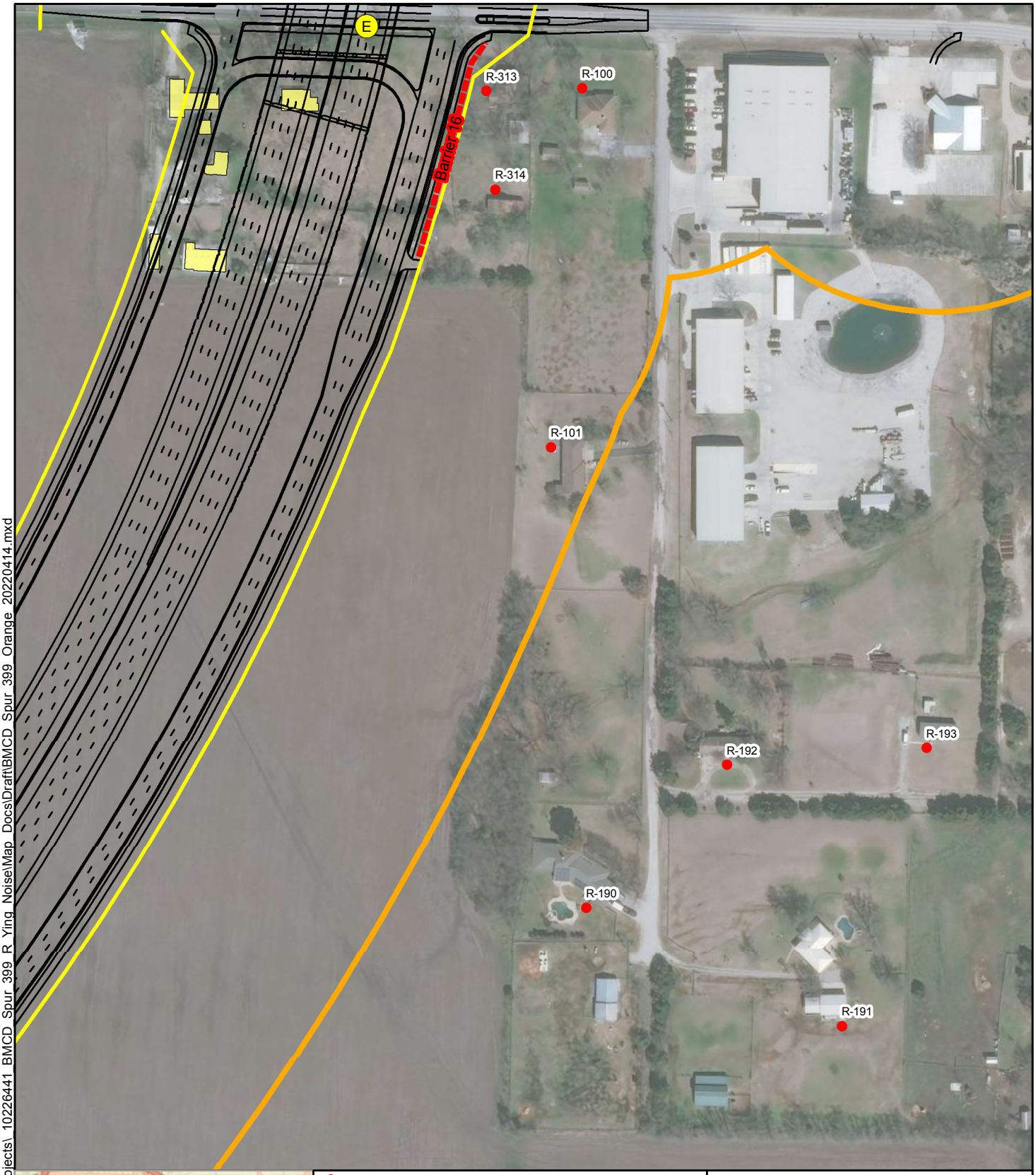
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-16
APR 2022

Document Path: \\mahpi-file01\GIS_Projects\ 10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

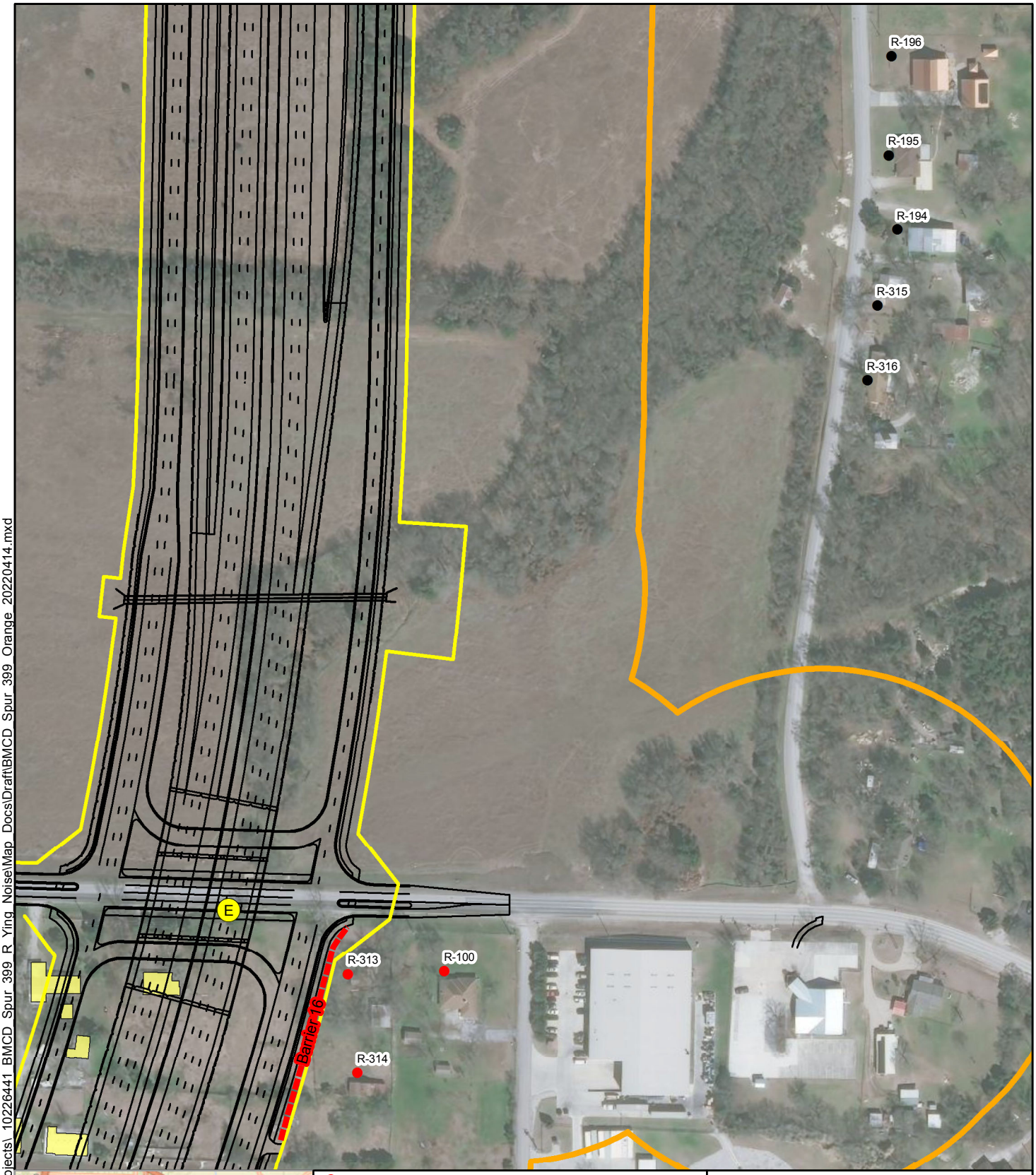
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-17
APR 2022

Document Path: \\mahpi-file01\GIS_Projects\ 10226441 BMCD Spur 399 R Ying Noise\Map Docs\Draft\BMCD Spur 399 Orange 20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

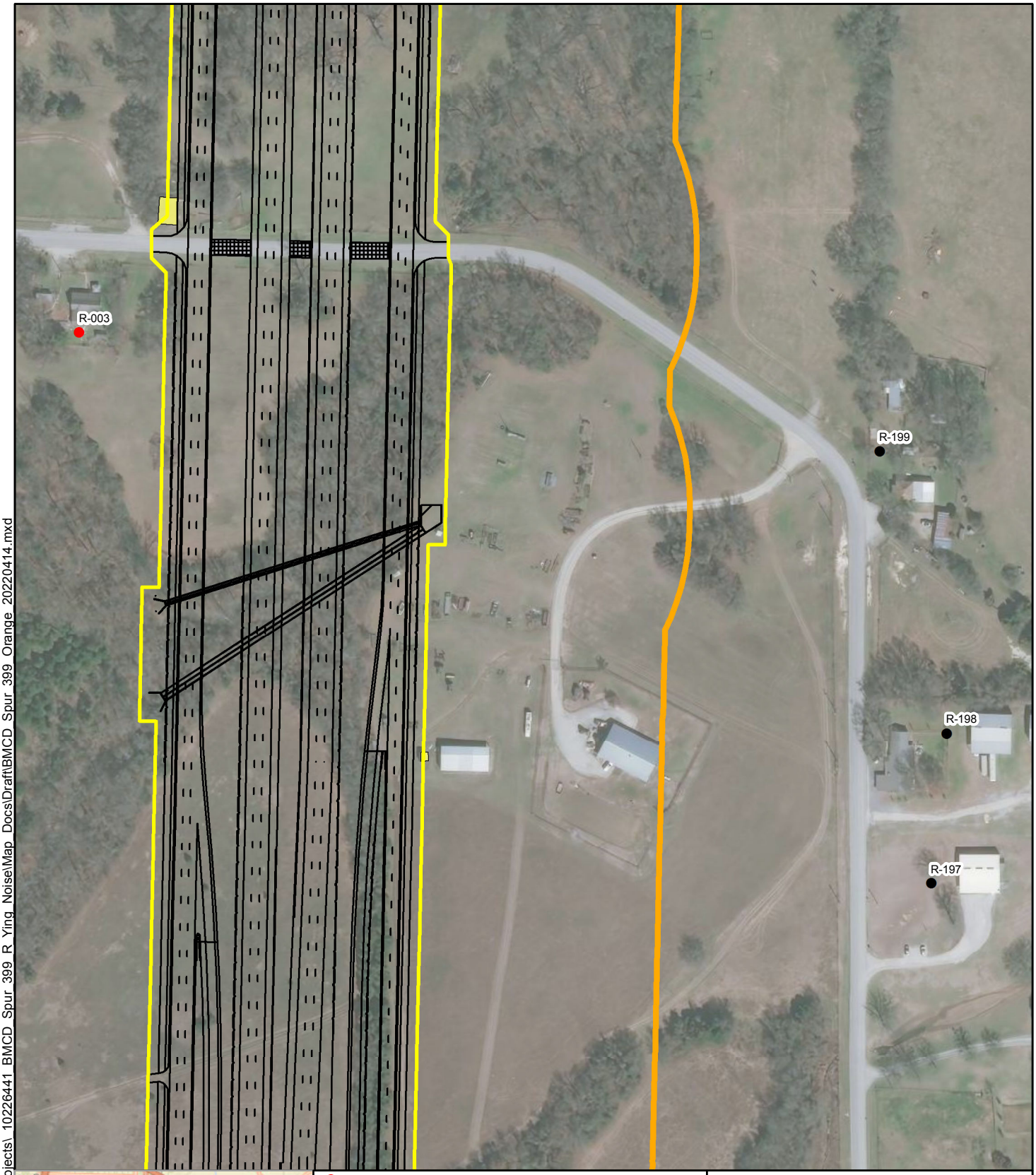
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-18
APR 2022

Document Path: \\mahpi-file01\GIS_Projects_10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

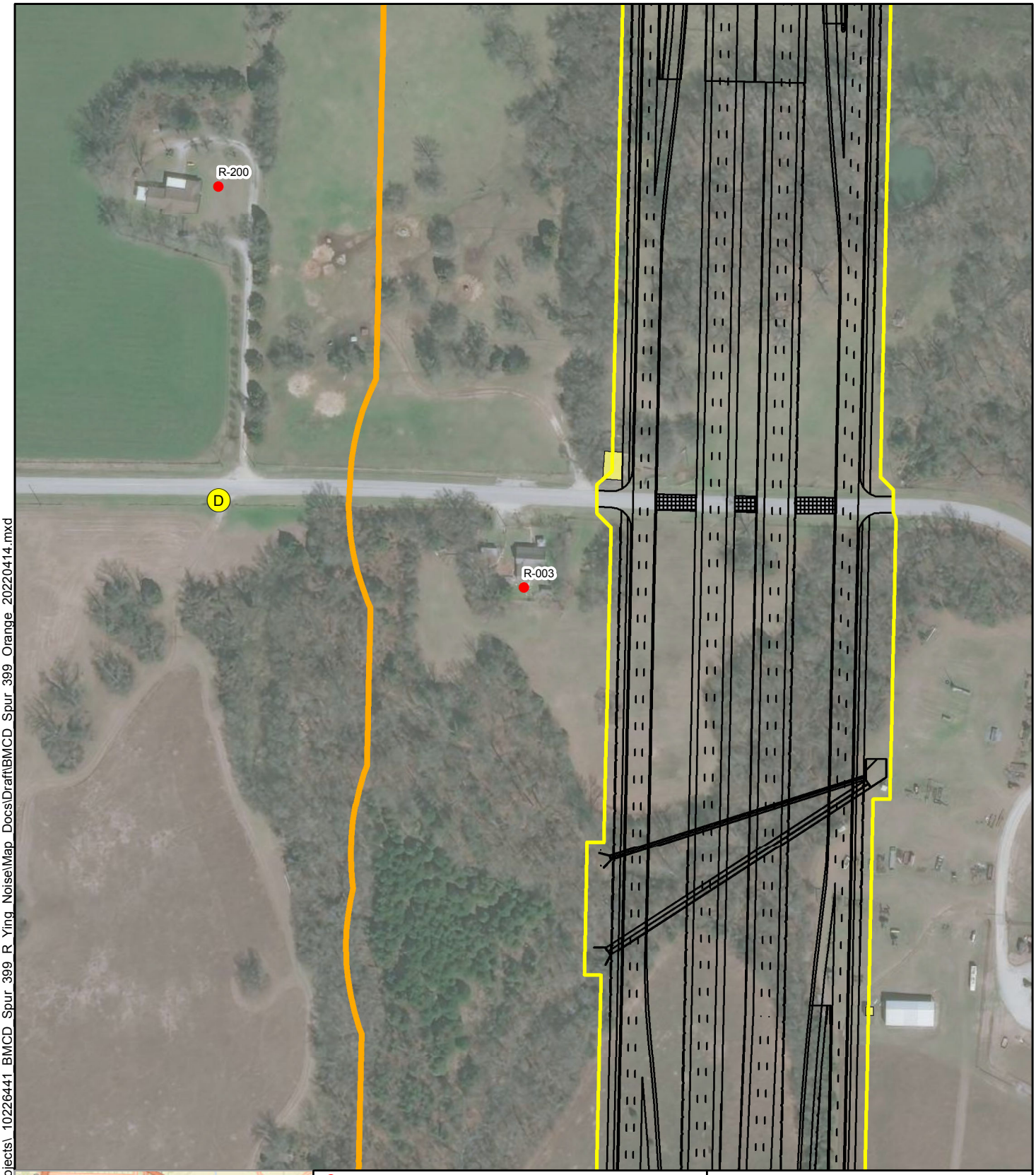
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-19
APR 2022

Document Path: \\mahpi-file01\GIS_Projects\ 10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

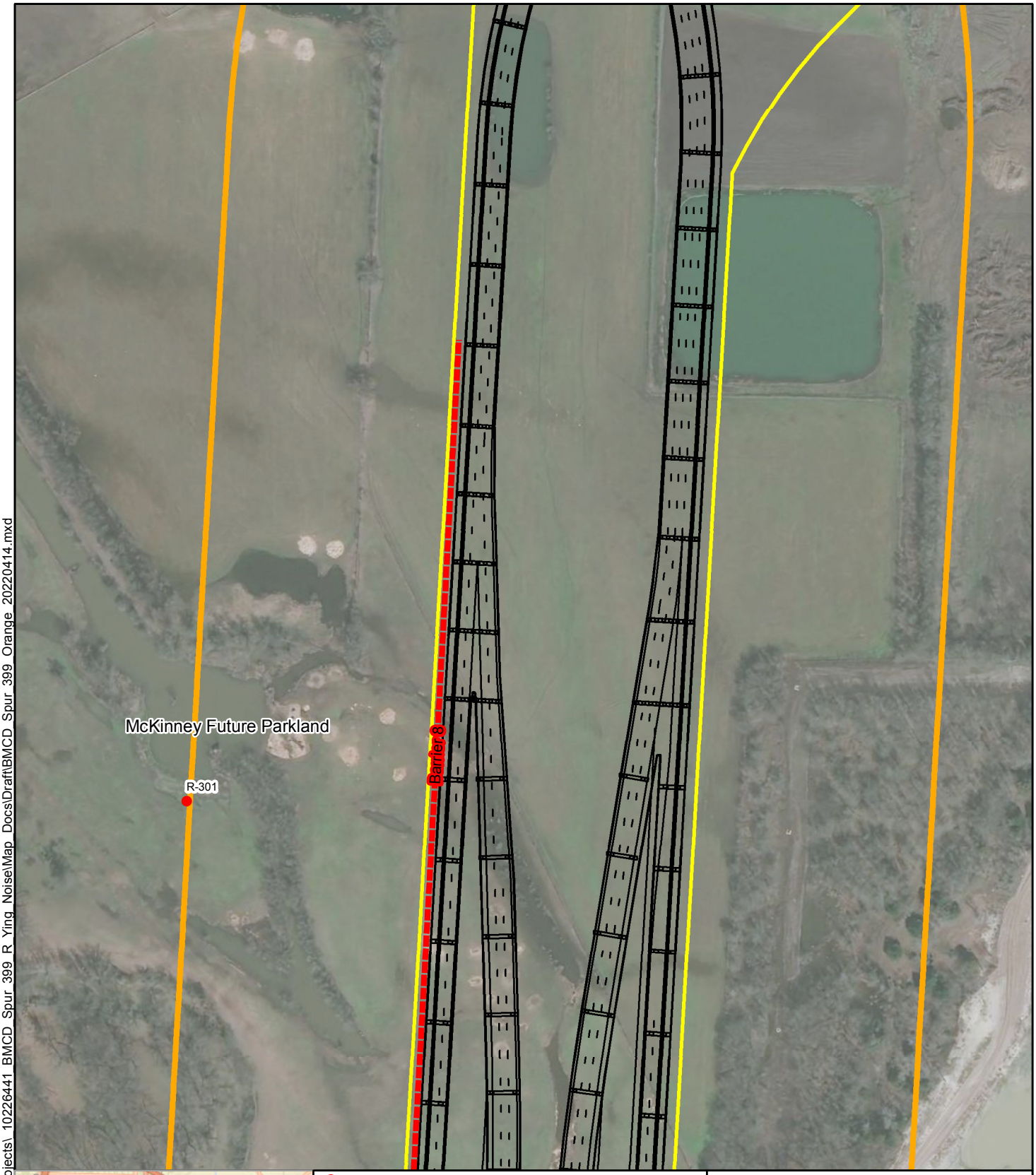
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-20
APR 2022

Document Path: \\mahpi-file01\GIS_Projects_10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

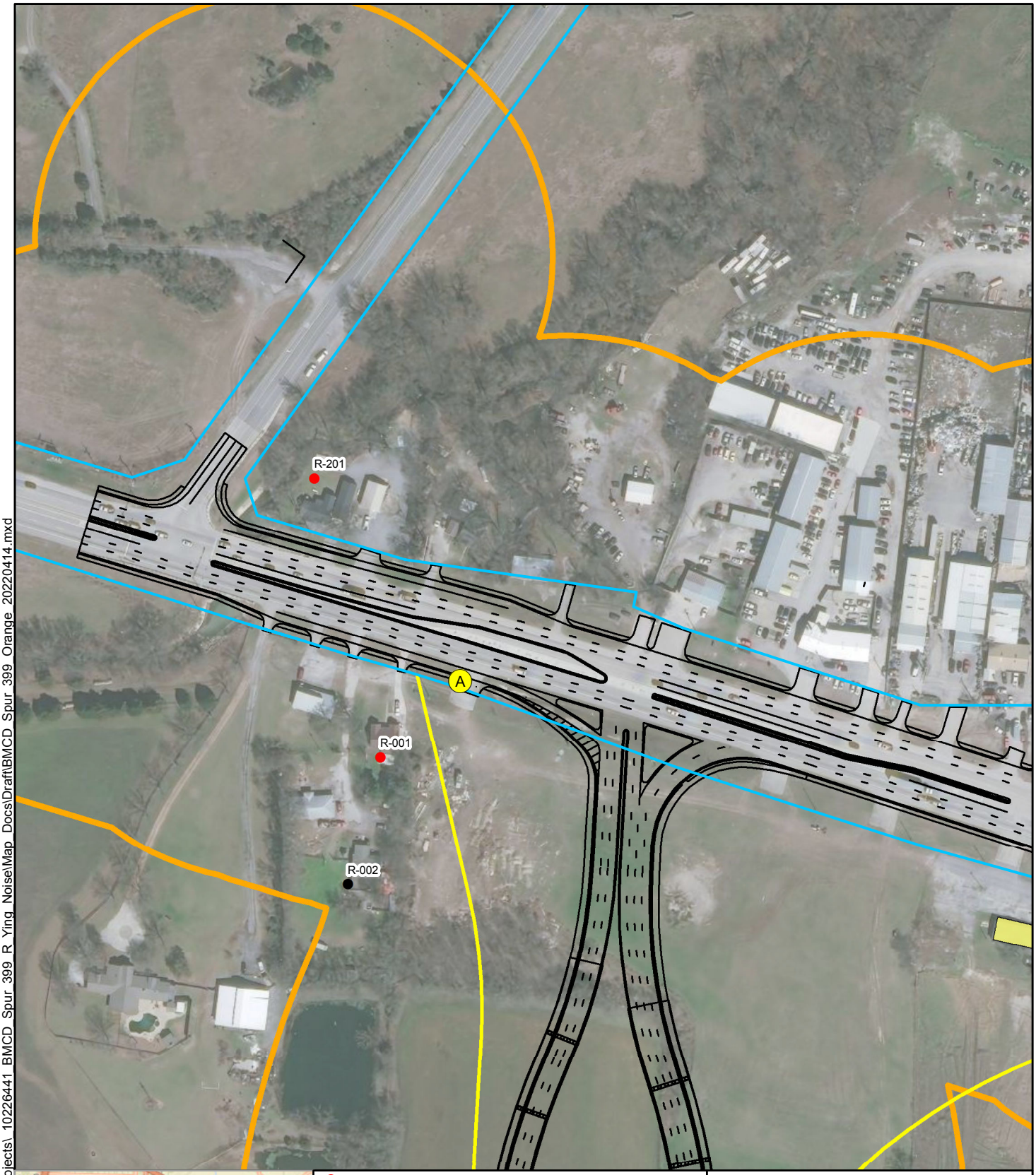
0 100 200 Feet

N

Texas Department of Transportation

FIGURE 2-21
APR 2022

Document Path: \\mahpi-file01\GIS_Projects\ 10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd



IMPACTED RECEIVER
NON-IMPACTED RECEIVER
VALIDATION LOCATIONS
PROPOSED BARRIER
BARRIER ANALYZED BUT NOT PROPOSED
BENEFITED RECEIVER
COMMERCIAL DISPLACEMENT
RESIDENTIAL DISPLACEMENT
EXISTING ROW
PROPOSED ROW
PROPOSED IMPROVEMENTS
66 dB(A) IMPACT CONTOUR LINE

NOISE IMPACTS AND RECEIVERS

SPUR 399 EXTENSION
ORANGE ALTERNATIVE

Feet
0 100 200
N

Texas Department of Transportation

FIGURE 2-22
APR 2022

Document Path: \\mahpi-file01\GIS_Projects\ 10226441_BMCD_Spur_399_R_Ying_Noise\Map_Docs\Draft\BMCD_Spur_399_Orange_20220414.mxd

Attachment B – Traffic Figures

Legend:

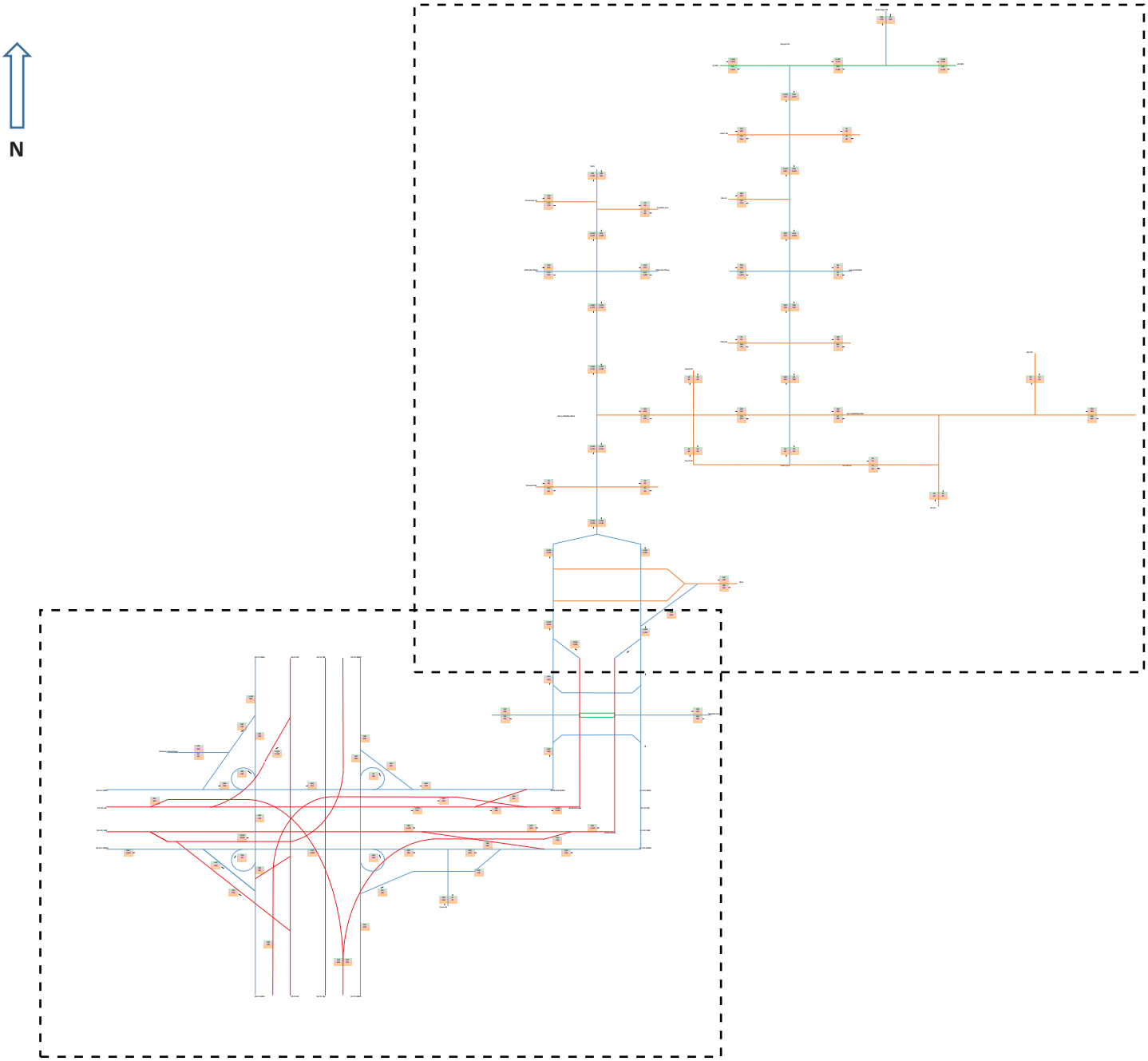
- Study Corridor US 380
- Signalized Crossroads, frongtage road, ramps
- Stop controlled/free two-way driveway or roadway crossing or running parallel
- US 75

AM

PM

N

TMC Collected on 2/4/2020
AM Peak 7:15AM-8:15AM
PM Peak 4:45PM-5:45PM
Streetlight data, whole year 2019, Tue-Thur
AM Peak 7:00AM-8:00AM
PM Peak 5:00PM-6:00PM
TCDS Data, year depends
AM Peak 7:15AM-8:15AM
PM Peak 4:45PM-5:45PM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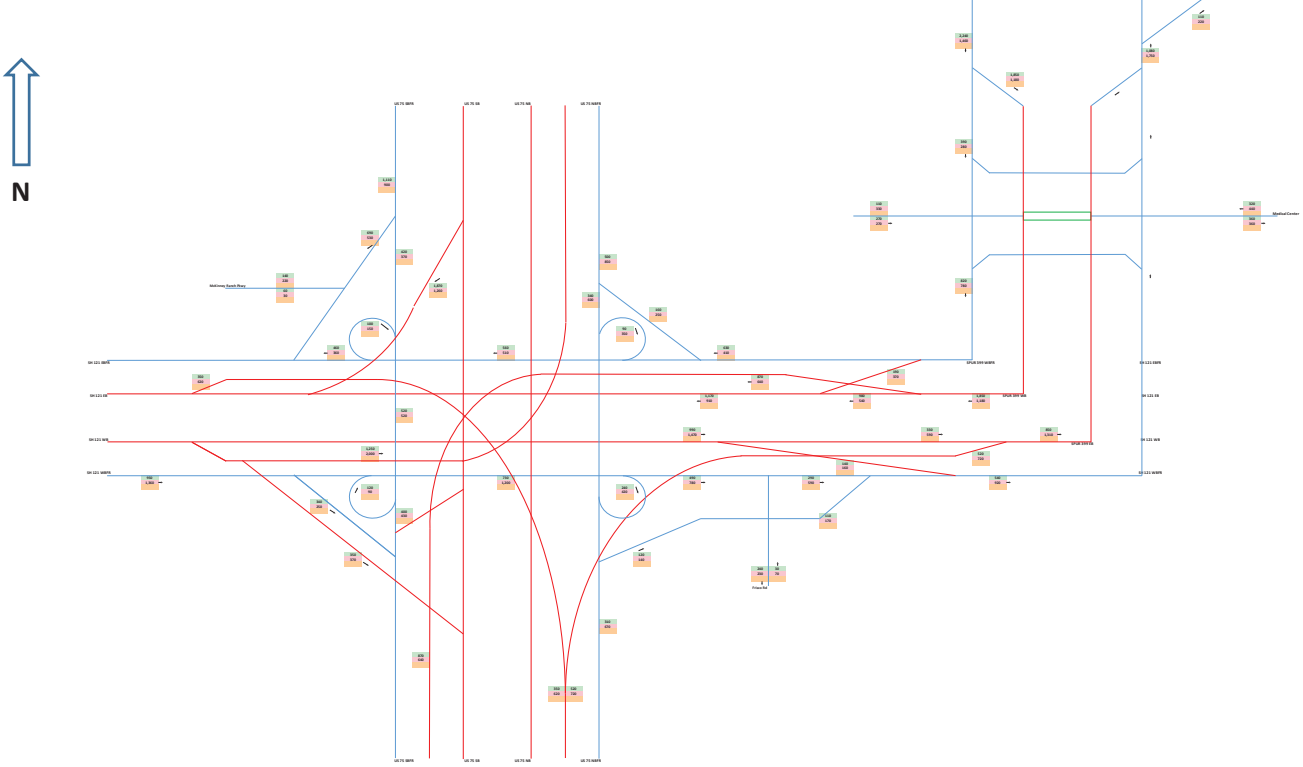
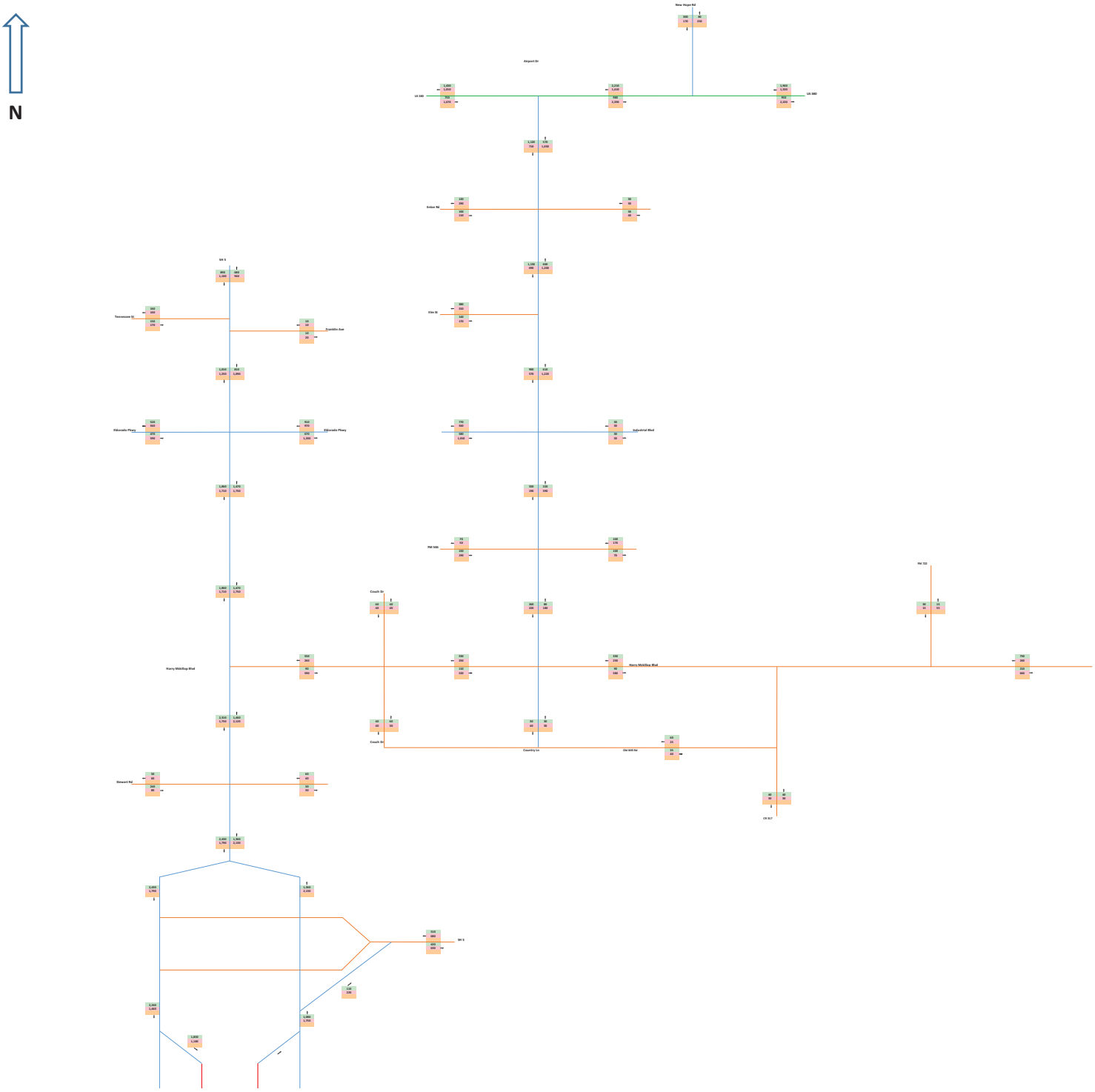

N
US 75 SBFR
US 75 SB
US 75 NB
US 75 NBFR
Mallinwa Ranch Pkwy
SH 121 SBFR
SH 121 SB
SH 121 WB
SH 121 WBFR
SPUR 399 WBFR
SPUR 399 WB
SPUR 399 EB
SH 121 EBFR
SH 121 EB
SH 121 WB
SH 121 WBFR
Medical Center
Frisco Rd


N
New Hope Rd
Airport Dr
US 380
US 380
Indian Rd
SH 5
Tennessee St
Franklin Ave
Elm St
Eldorado Pkwy
Eldorado Pkwy
Industrial Blvd
FM 546
FM 721
Couch Dr
Harry Middlton Blvd
Harry Middlton Blvd
Couch Dr
Country Ln
Old Mill Rd
CR 517
Stewart Rd
SH 5

DATA CALCULATIONS FOR USE IN AIR & NOISE ANALYSIS

FHWA Format Vehicle Class. Counts		
Light	Motorcycles	89
Duty	Passenger	29453
Vehicles	Pickup or Van	8188
Single	Buses	31
Units	Other 2 Axle	1228
	3 Axles	462
	4 Axles or more	32
Truck	3-4 Axles	145
Combs.	5 Axles	719
	6 Axles or more	6
Semi-	5 Axles or less	2
Trailer-	6 Axles	0
Trailer	7 Axles or more	0

	Number	%
Light	**37730**	**93.5**
Medium	**1331**	**3.3**
Heavy	**1294**	**3.2**
Trucks	**2625**	**6.5**

SECTION 1

US

	ADT	**DHV**
Light	**94.0**	**96.4**
Medium	**3.0**	**1.8**
Heavy	**3.0**	**1.8**

Total Vehicles	**40355**
Total Trucks	**2625**
Total Singles	**4109.5**
Total Tandems	**2016.5**
AXLE FACTOR	**2.33**
SINGLE AX FACT	**0.67**

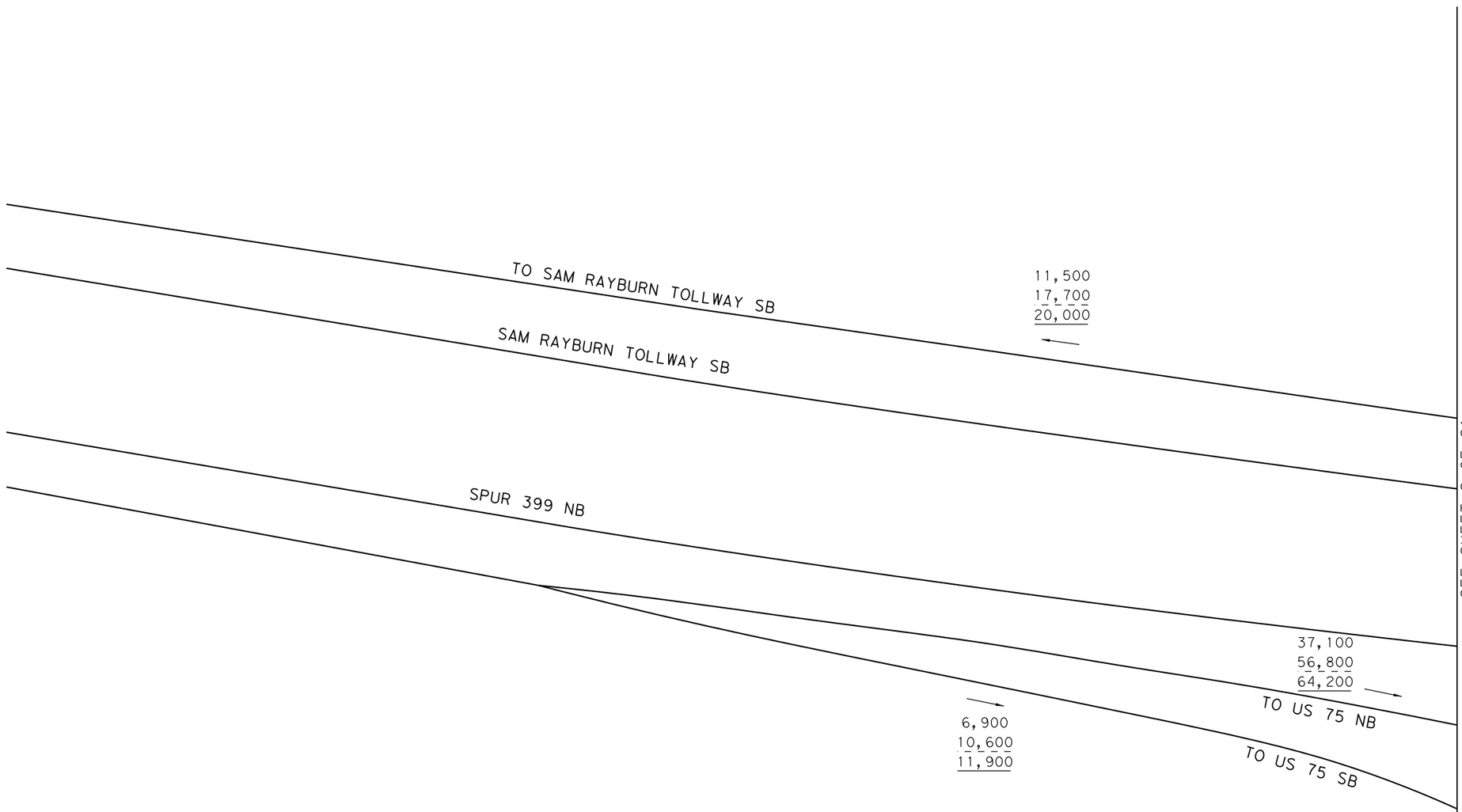
INPUT DATA FOR KIPS: AUTOMATIC

SN, ST	**3, 8**					
Design Periods	**1**	**2**				
Year 1	**30**	**30**				
Year 2	**50**	**60**				
ADT	**47200**	**47200**				
% Trks	**6.0**	**6.0**				
Growth Rate	**1.780**	**1.674**				
Years	**20**	**30**				
Facil Type	**B**	**B**				
S.N.	**3**	**3**				
SLAB	**8**	**8**				
Weight Sta	**99999**	**99999**				
Axle Factor	**2.33**	**2.33**				
Single Axle	**0.67**	**0.67**				

OUTPUT DATA FROM KIPS: ENTER FOR TAHD FORM

SN, ST	**3, 8**					
Design Periods	**1**	**2**				
ATHWLD						
% T in ATHWLD						
FLEXIBLE						
RIGID						

2050 Purple Alternative
Traffic Volumes



SEE SHEET 2 OF 21

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051

DATE: 7/12/2021
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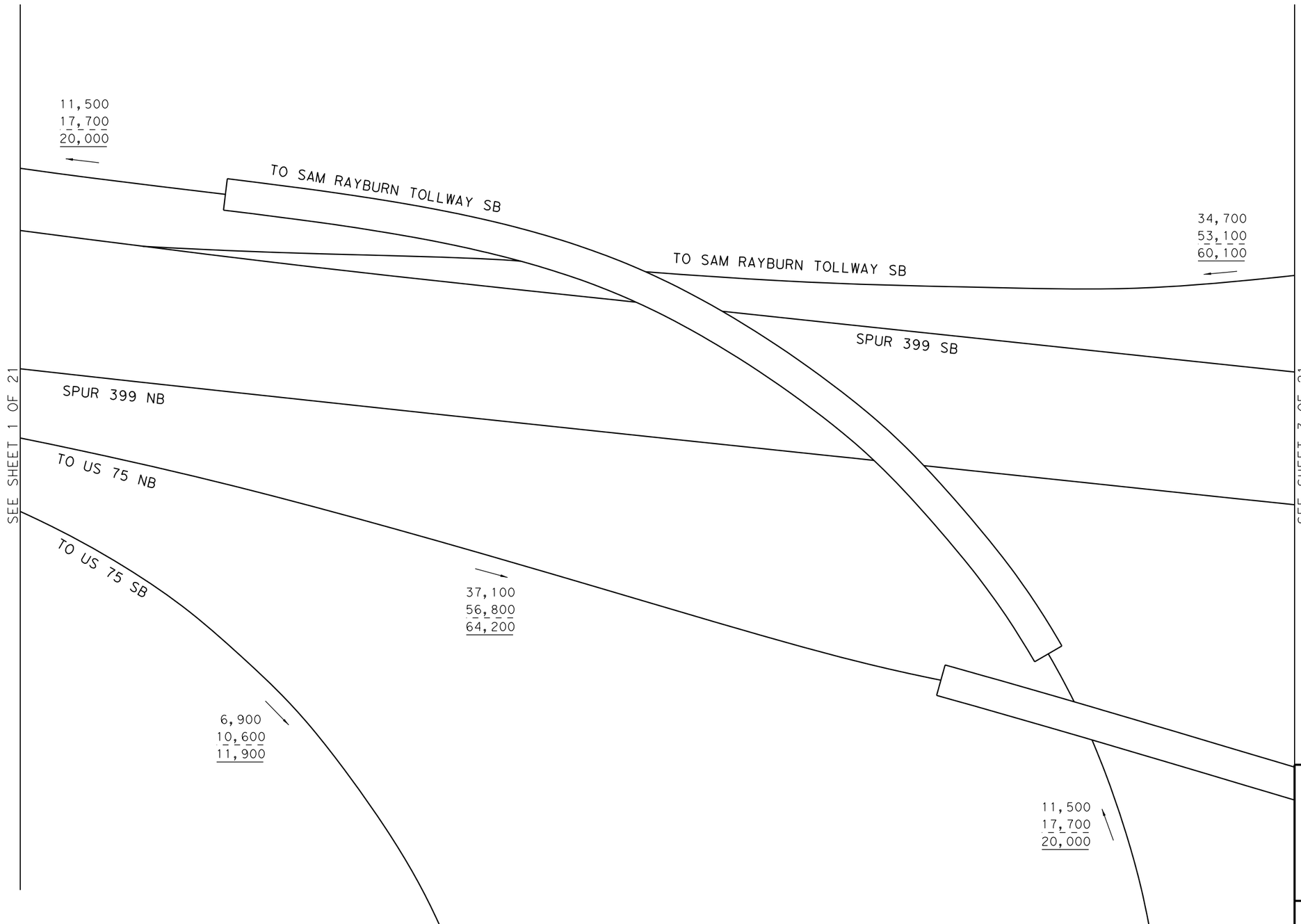

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XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

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SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051

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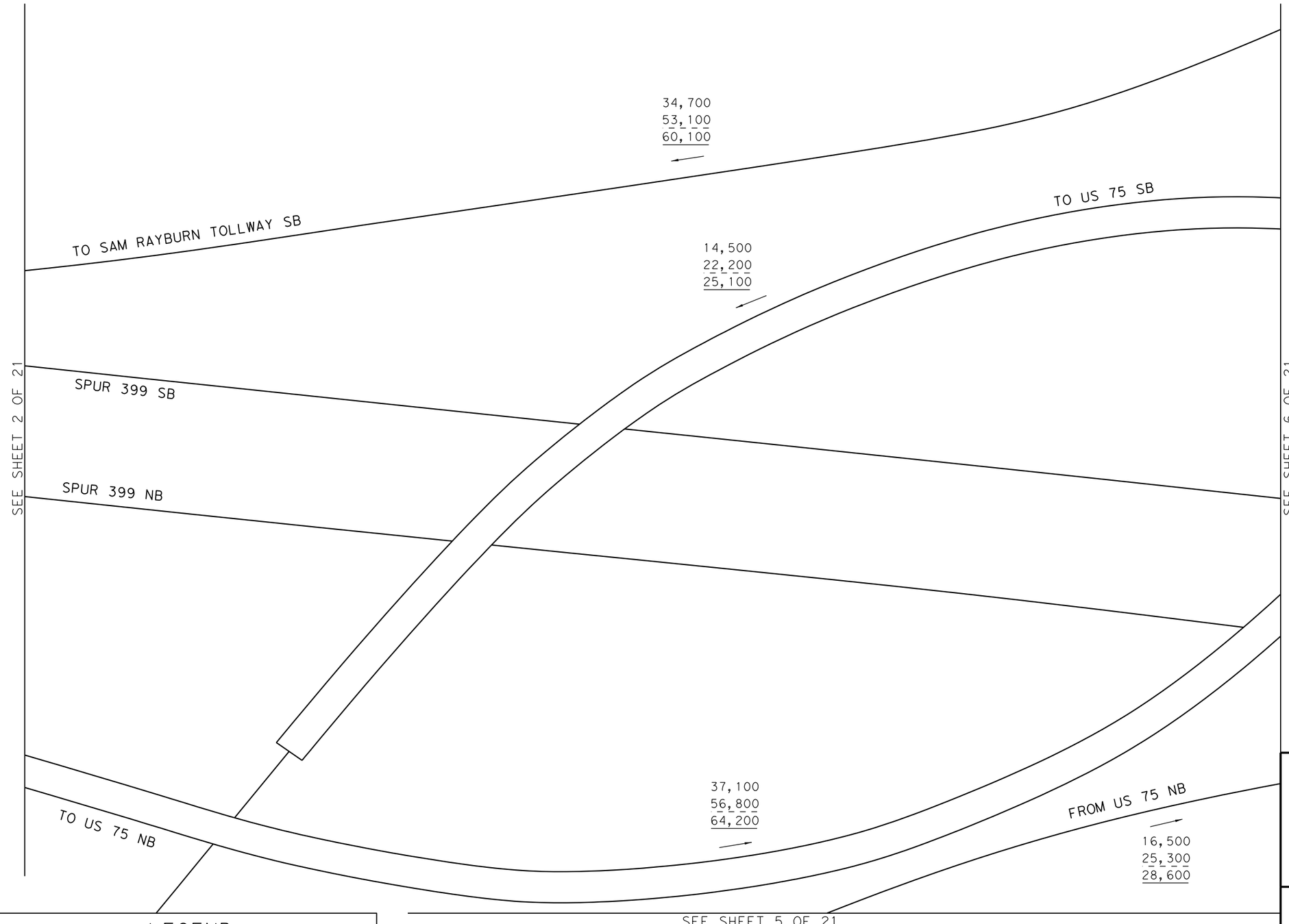

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XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

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SERIAL NUMBER 102185

SPUR 399 AND
US 75
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051

DATE: 7/12/2021
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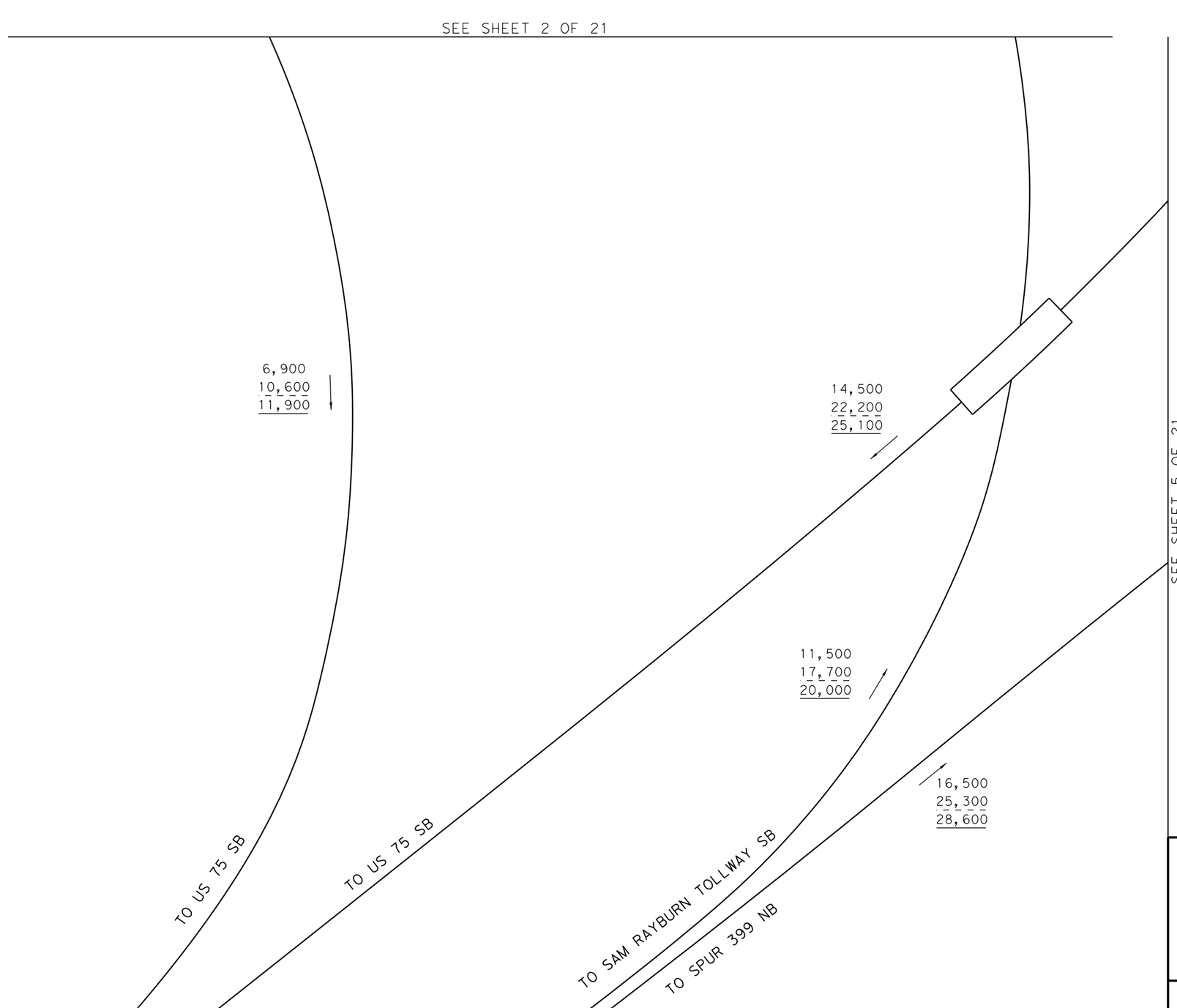

NOT TO SCALE

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XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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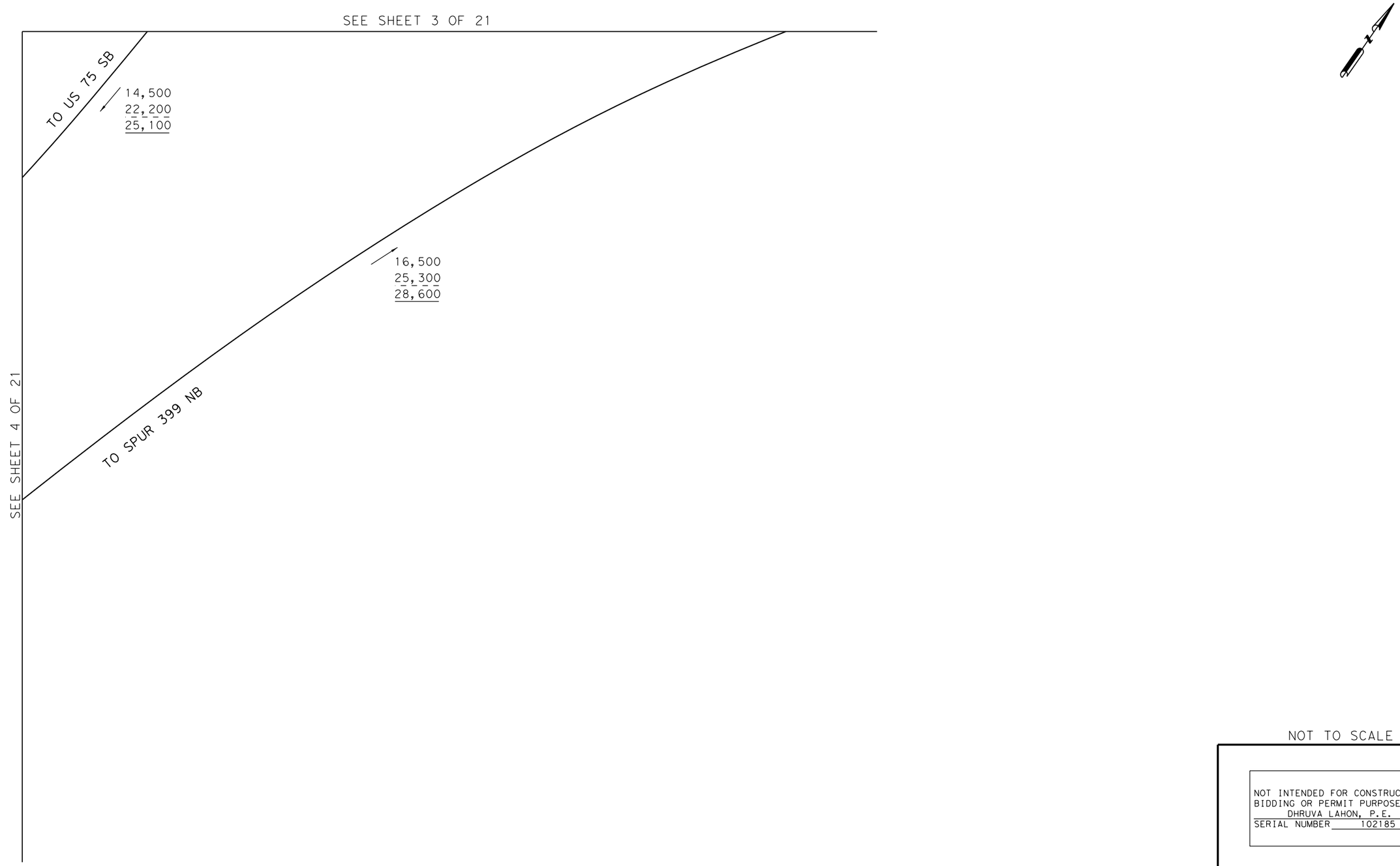

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SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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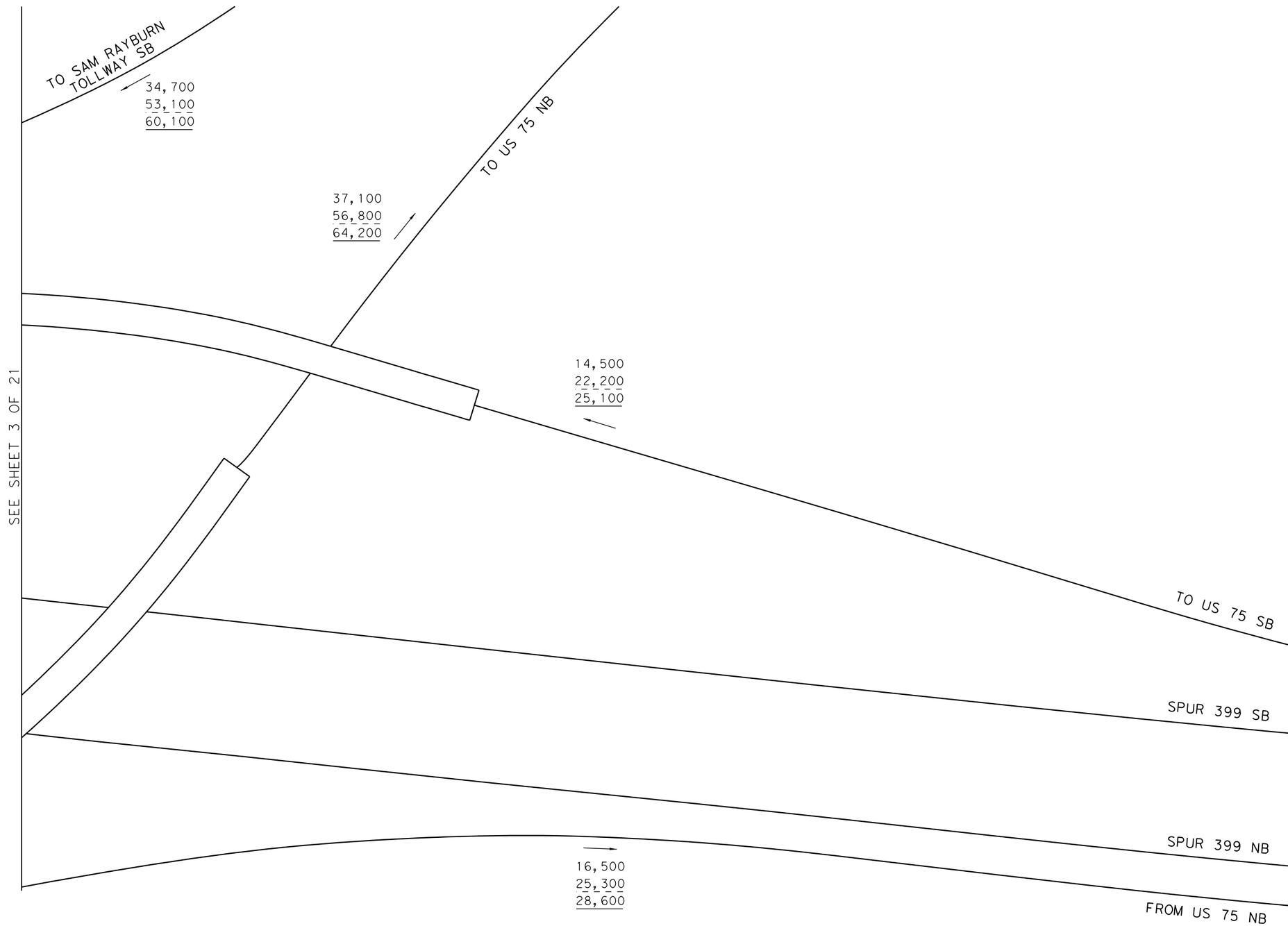

NOTE:
BEGIN STUDY LIMITS

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SERIAL NUMBER 102185

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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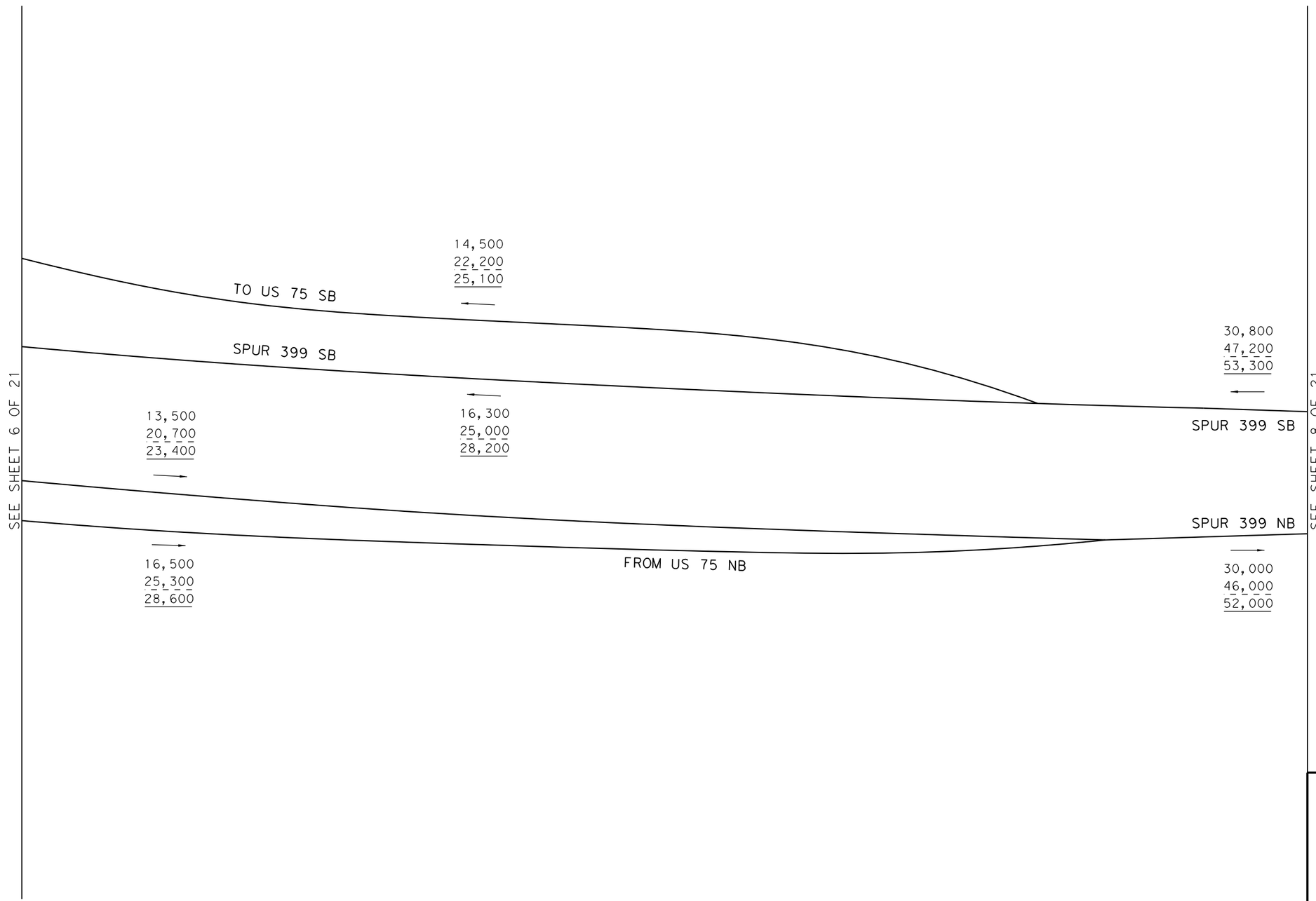

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DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

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XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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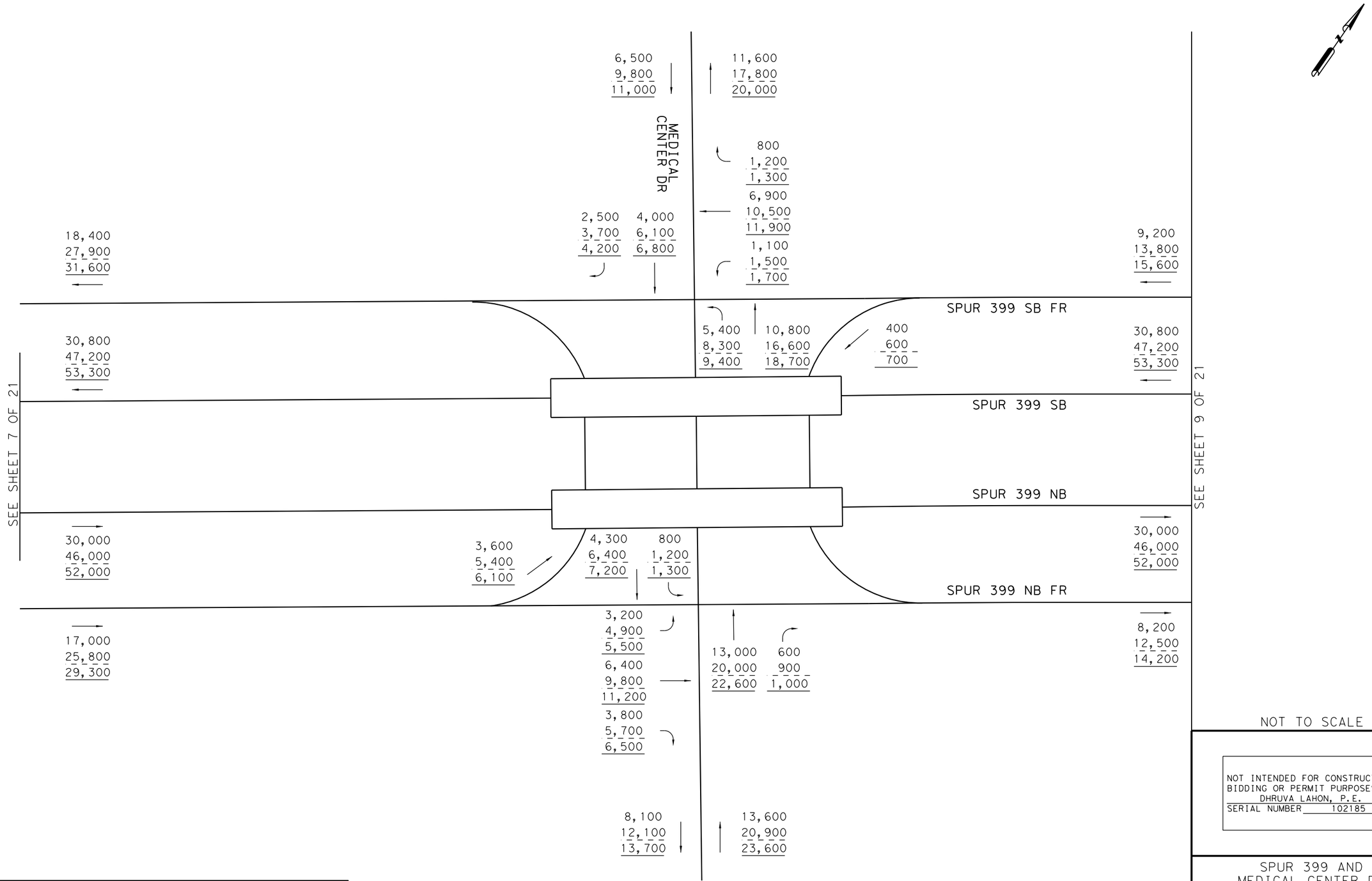

NOT TO SCALE

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XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

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SERIAL NUMBER 102185

SPUR 399 AND
MEDICAL CENTER DR
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051

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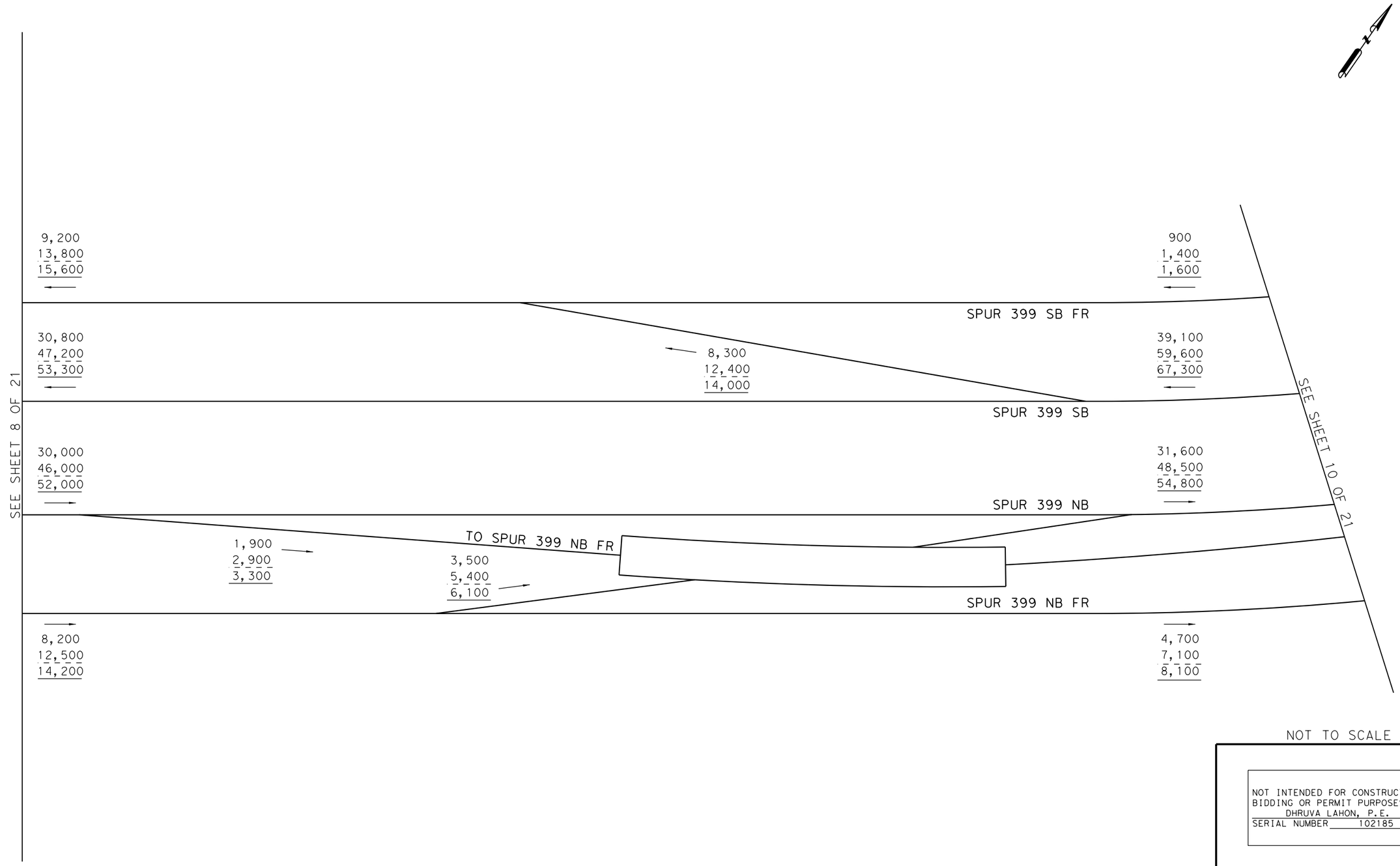

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

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XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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DATE:7/12/2021
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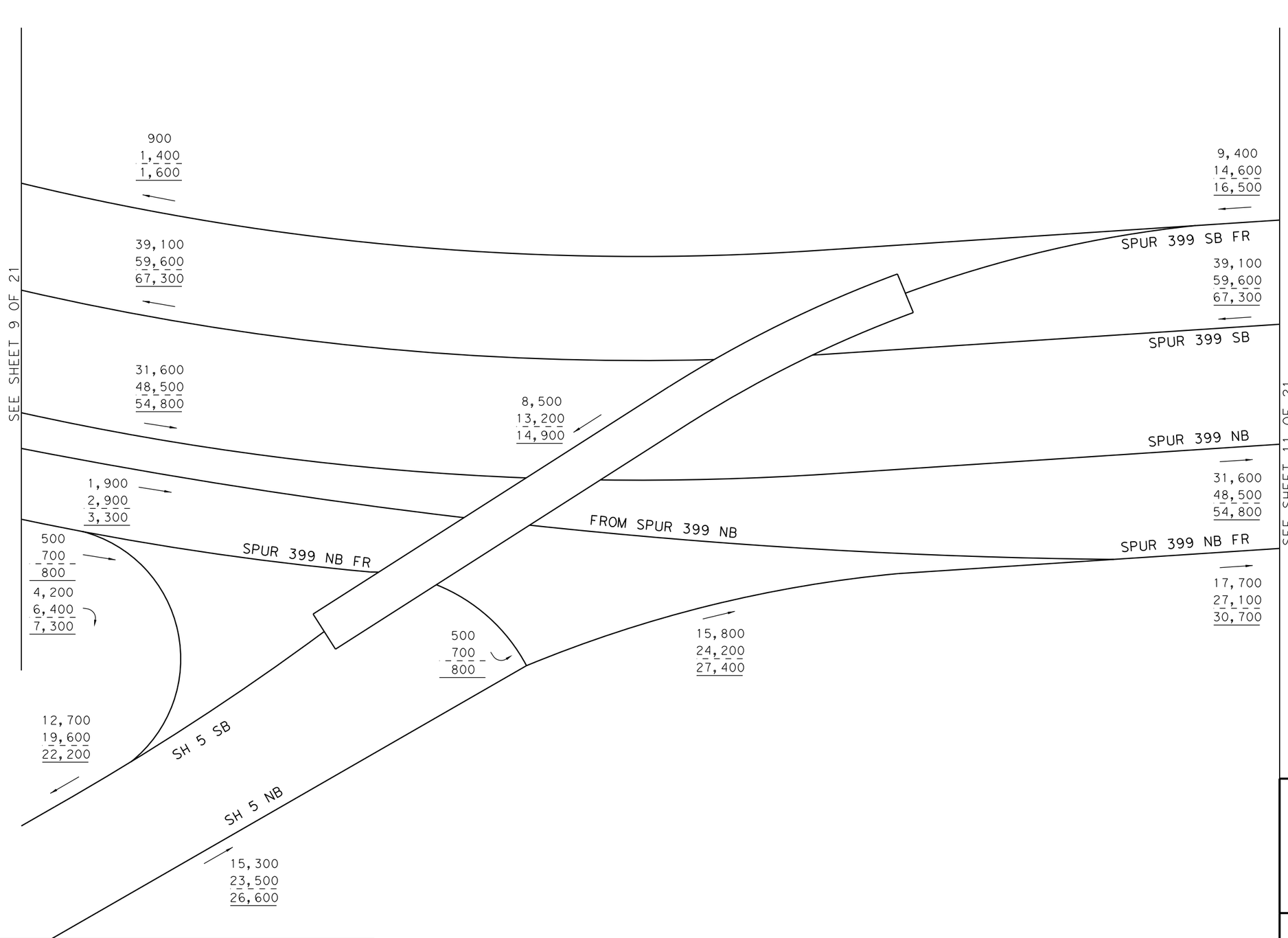

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT TO SCALE

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SERIAL NUMBER 102185

SPUR 399 AND
SH 5
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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DATE: 7/12/2021
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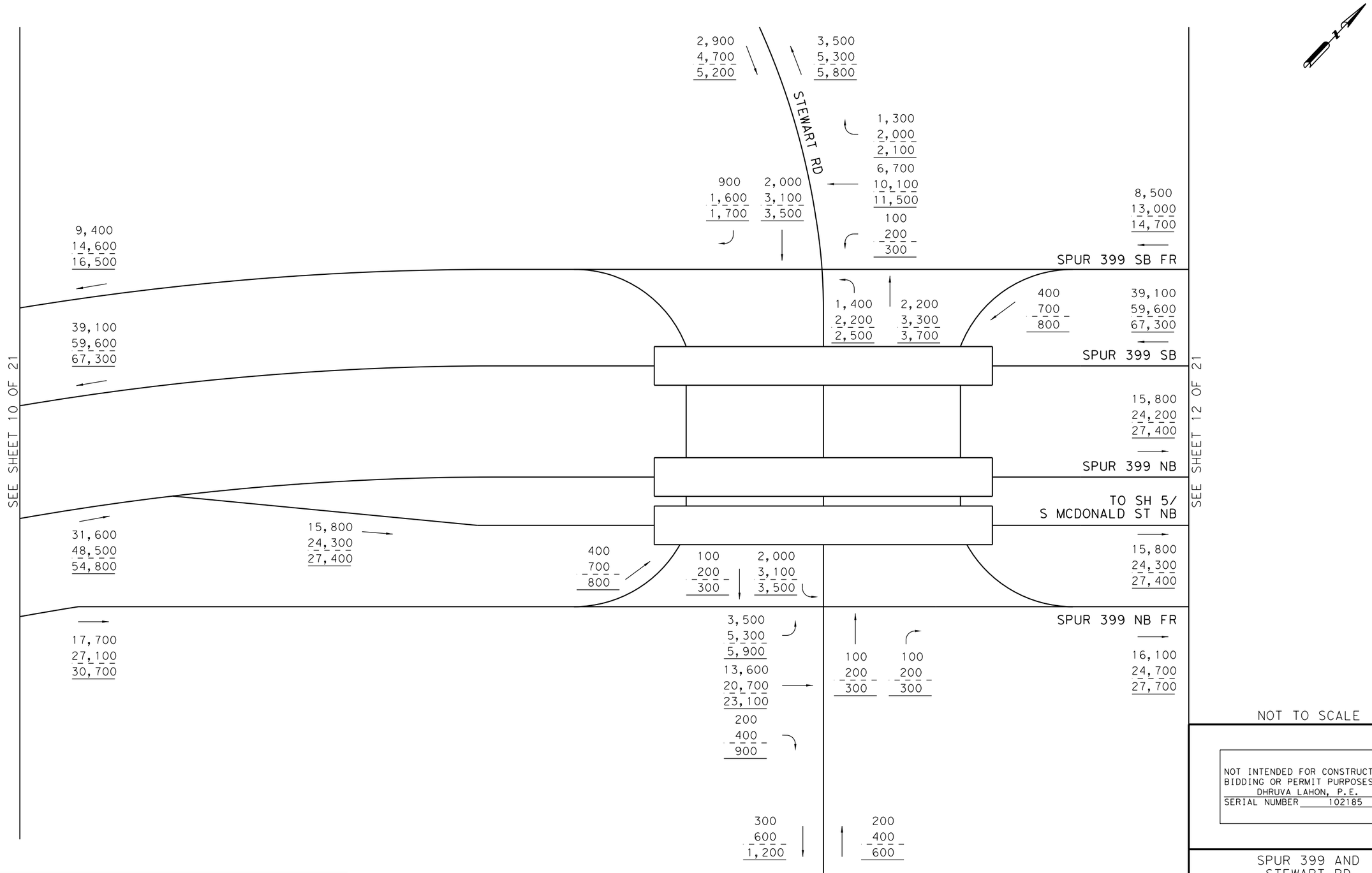

NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
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SPUR 399 AND
STEWART RD
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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DATE:7/12/2021
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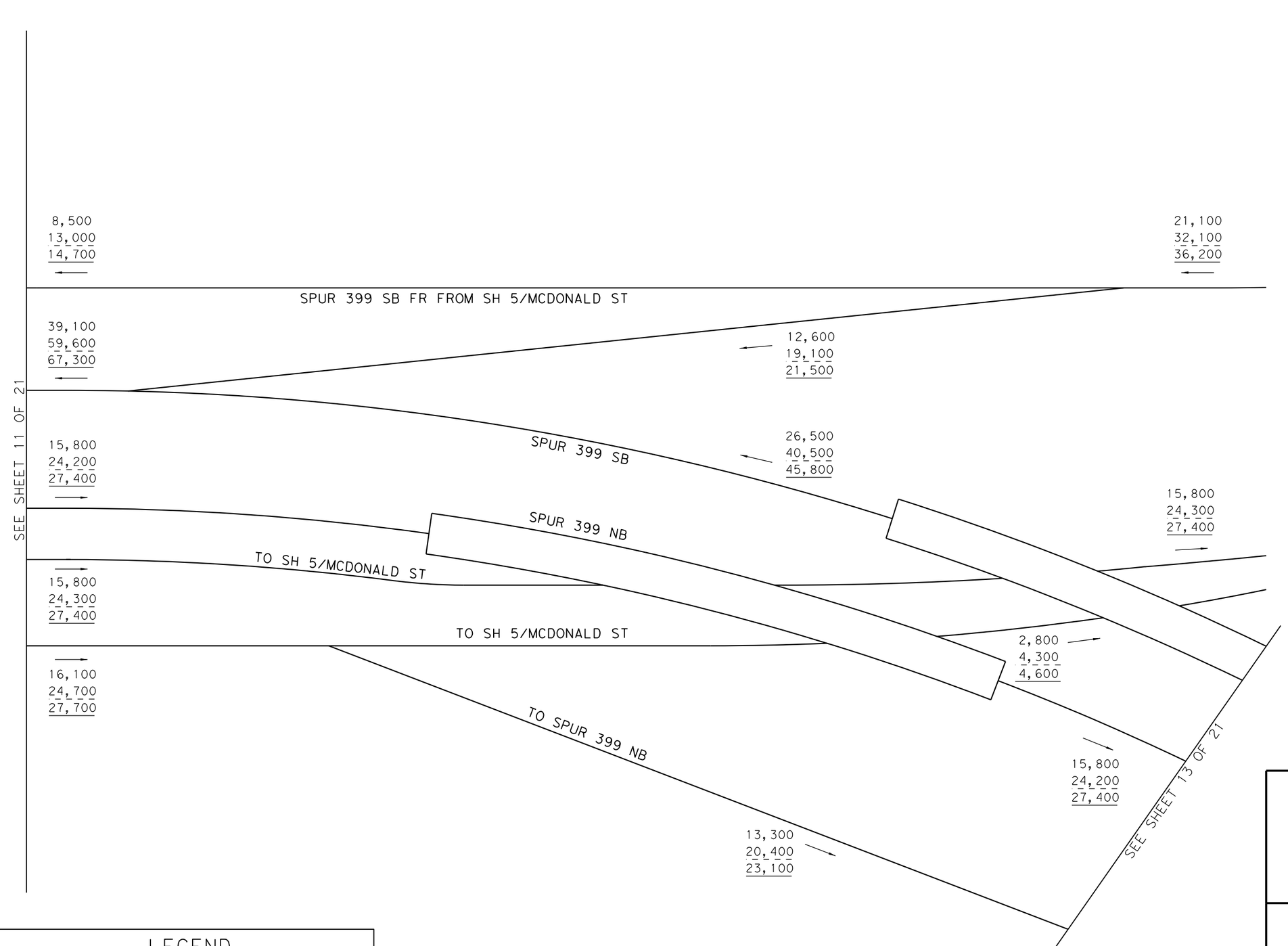

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
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SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051

DATE:7/12/2021
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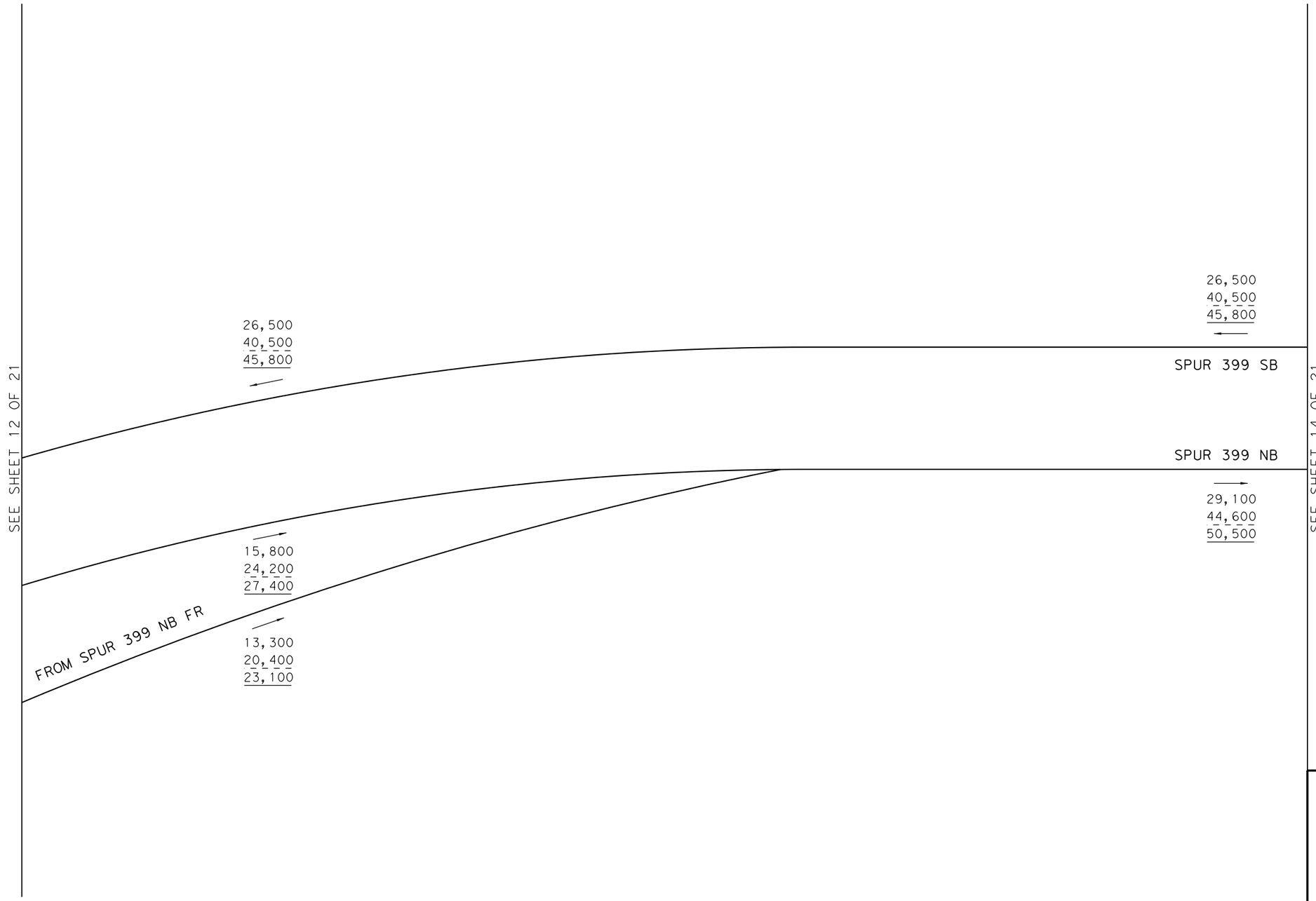

NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
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SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051

DATE:7/12/2021
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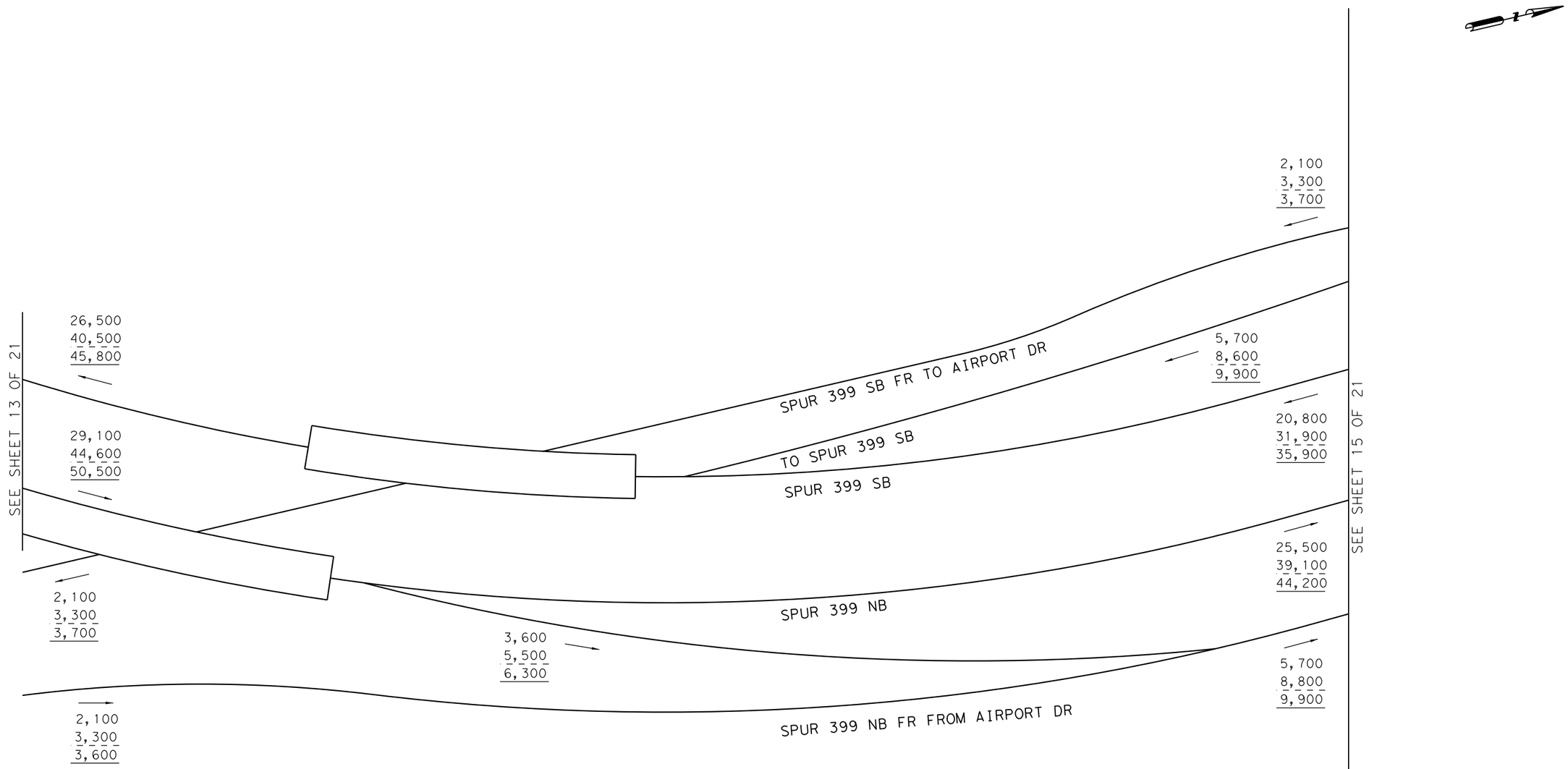

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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0364-04-051 | SHEET 14 OF 21

DATE:7/12/2021
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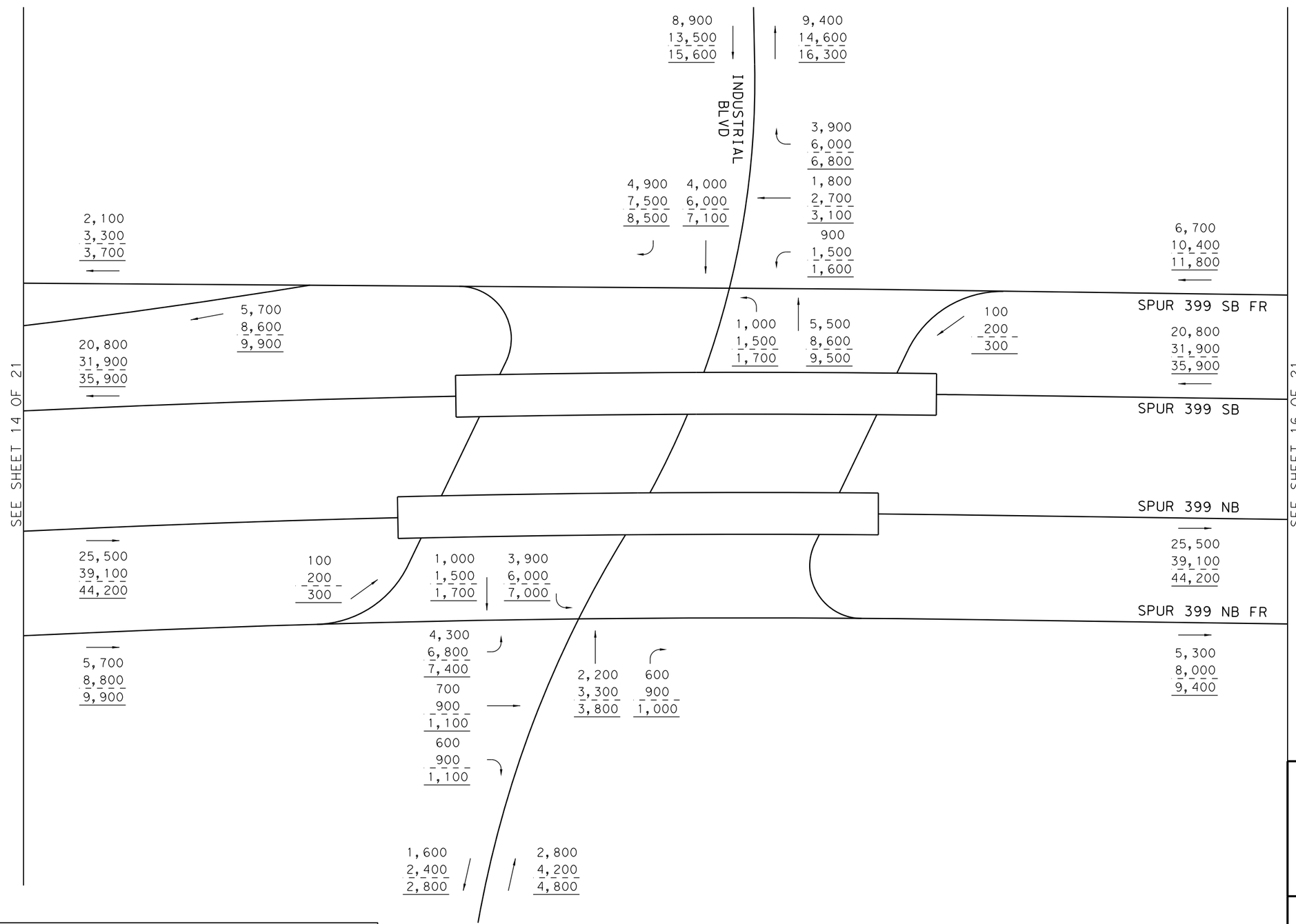

NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
INDUSTRIAL BLVD
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

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DATE:7/12/2021
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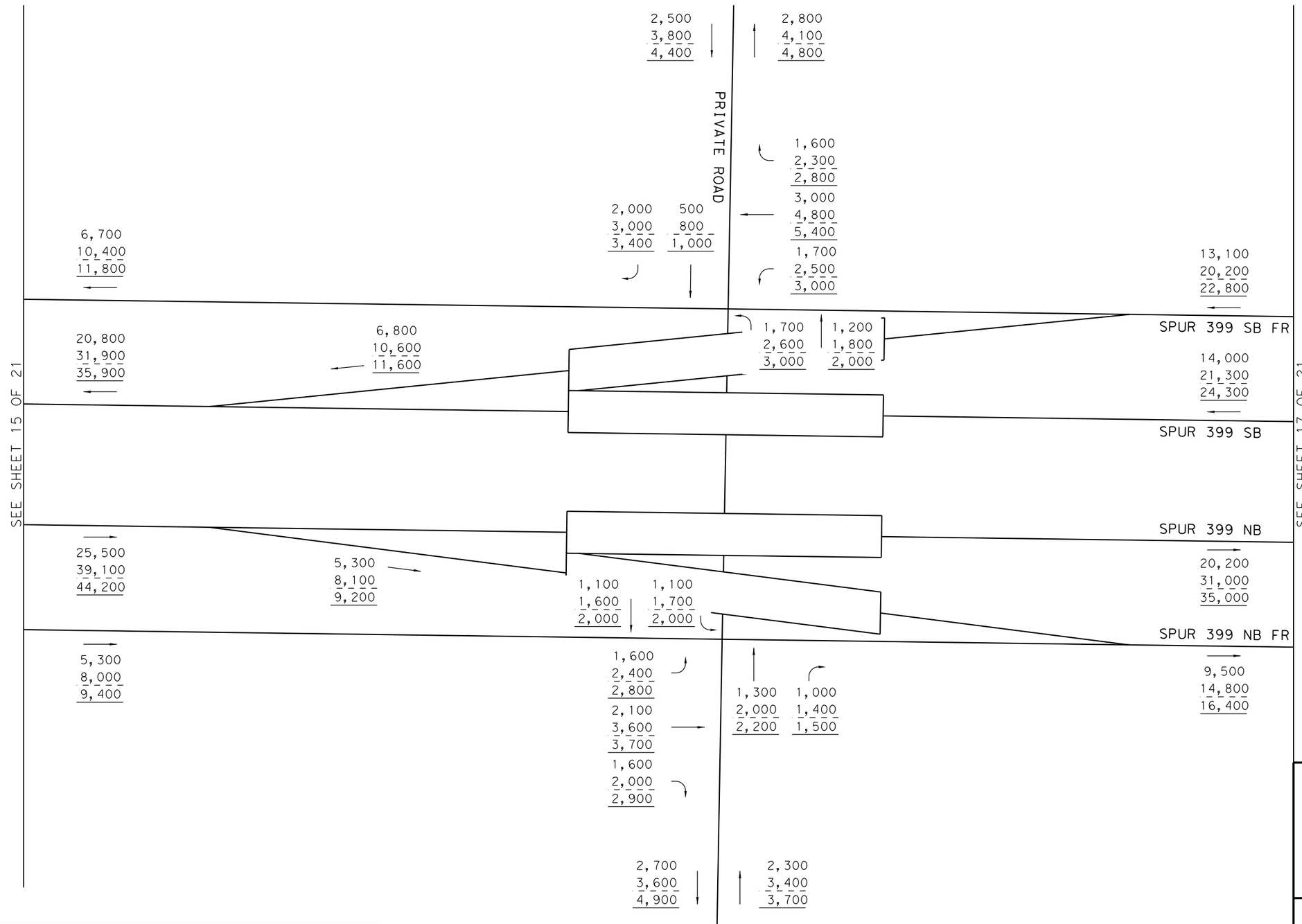


NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

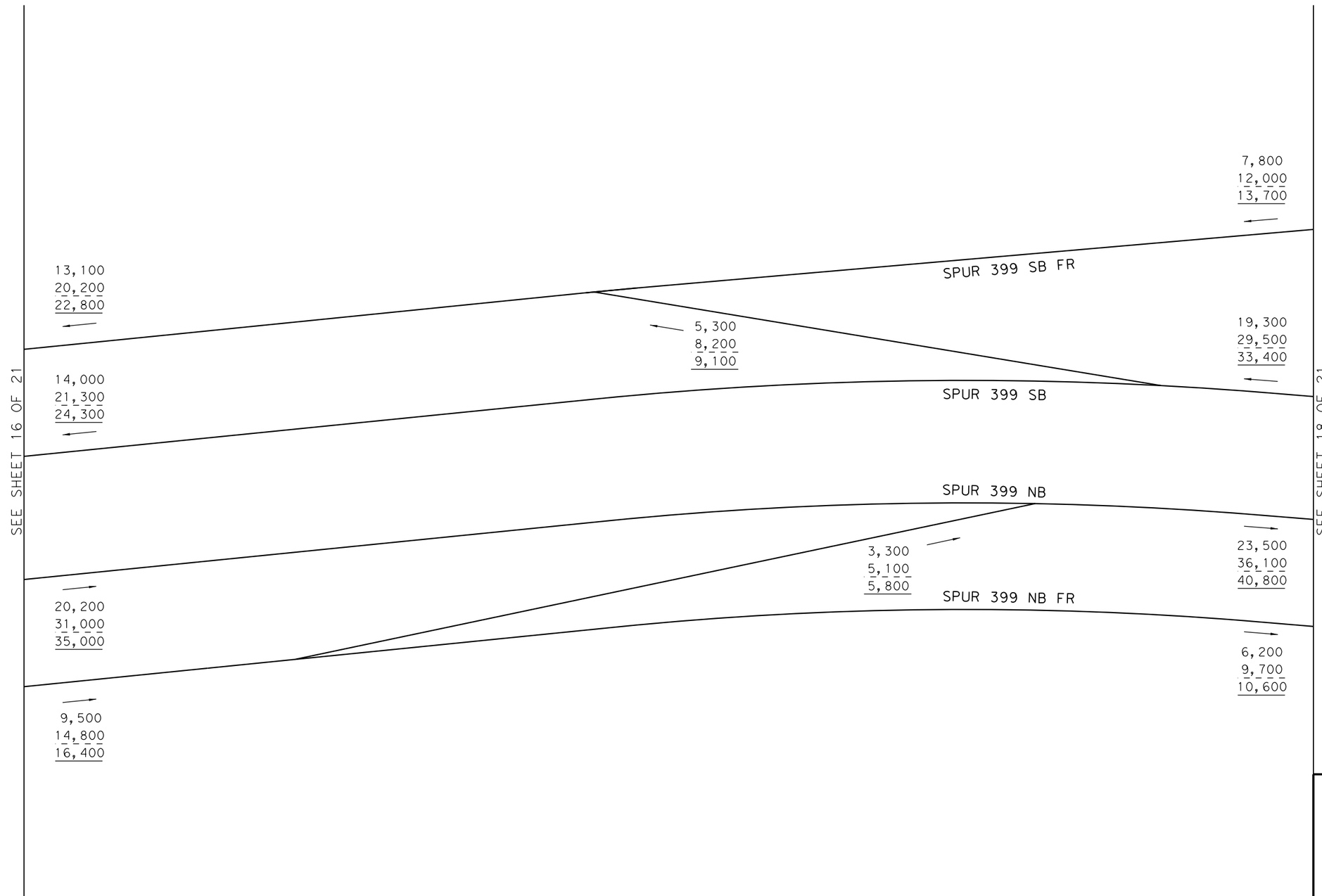
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
PRIVATE ROAD
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 16 OF 21

DATE:7/12/2021
FILE:SPUR399_WEST_1_TRF_16.dgn



NOT TO SCALE

LEGEND
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

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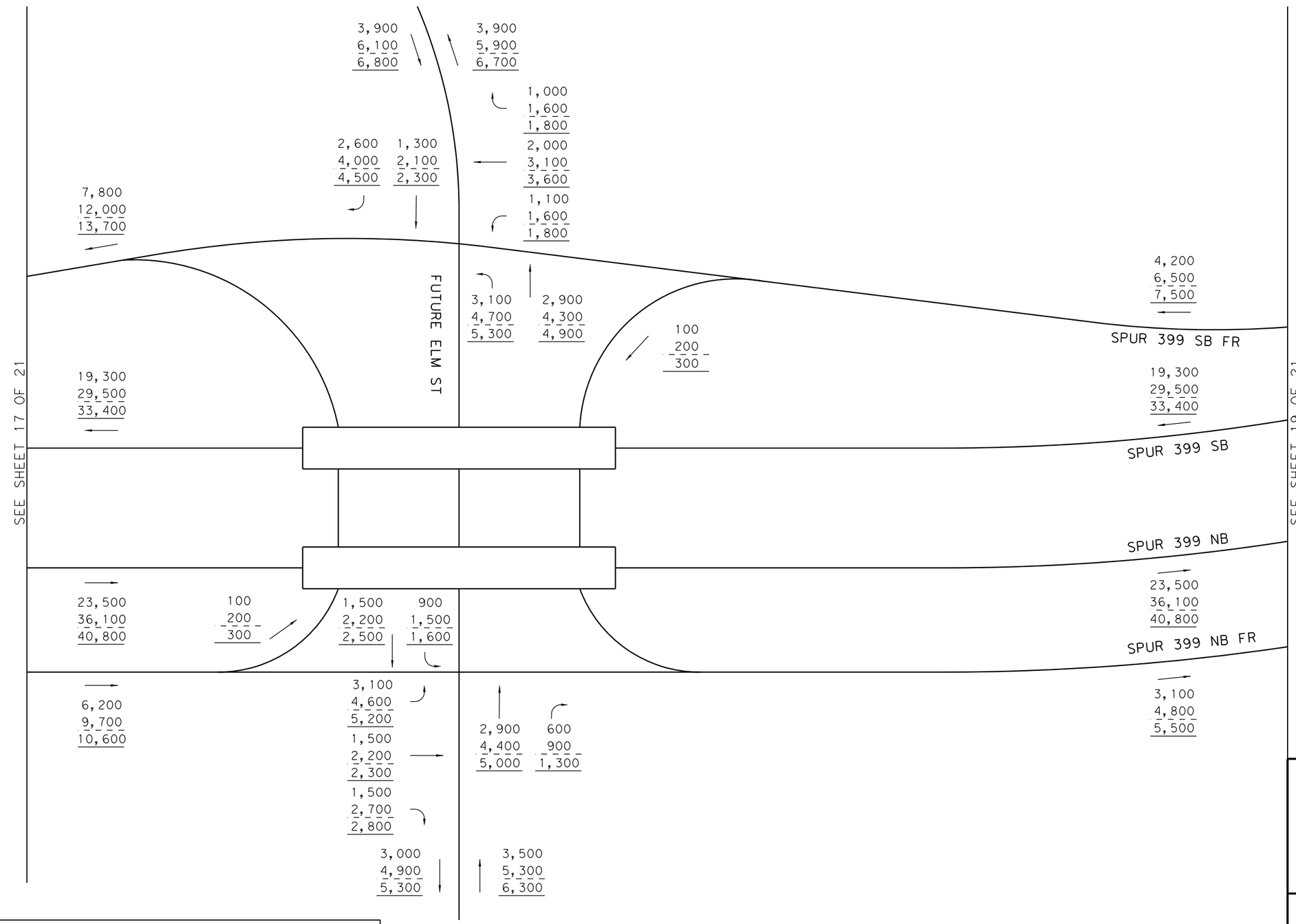
DATE:7/12/2021
FILE:SPUR399_WEST_1_TRF_17.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
FUTURE ELM ST
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

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LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

DATE:7/12/2021
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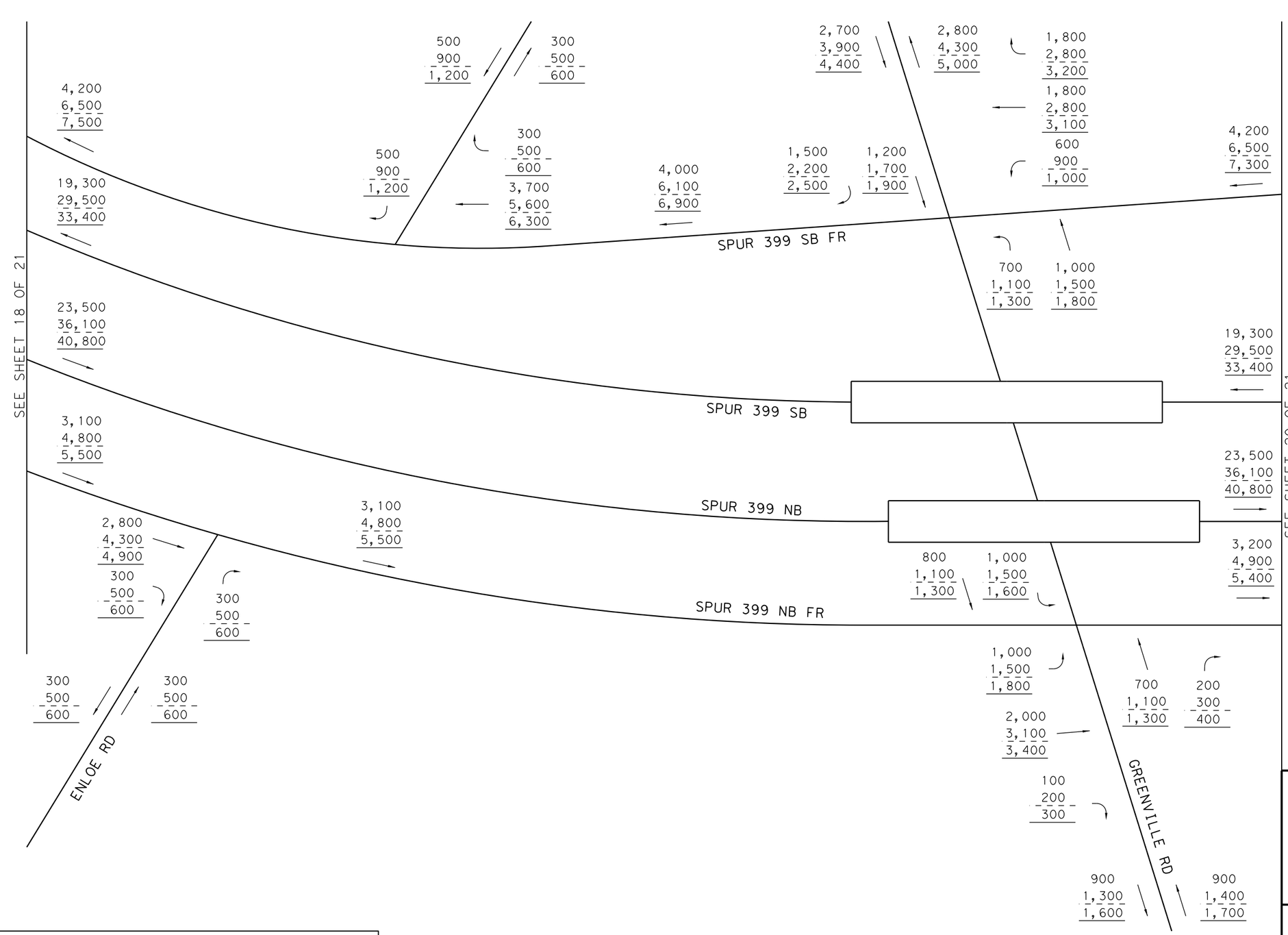


NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

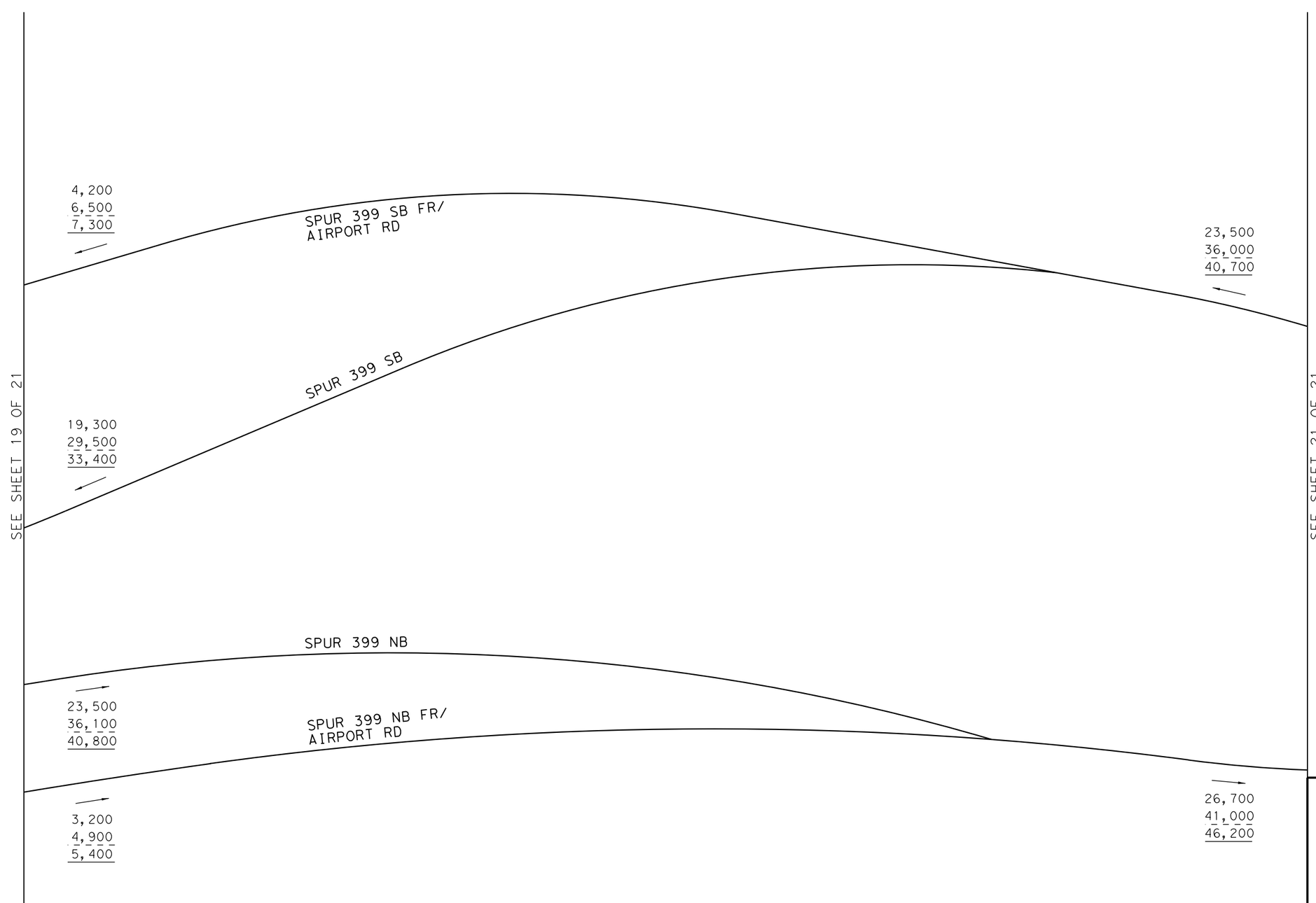
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
GREENVILLE RD/ ENLOE RD
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 19 OF 21

DATE: 7/19/2021
FILE: SPUR399_WEST_1_TRF_19.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION,
BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
RAMPS
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

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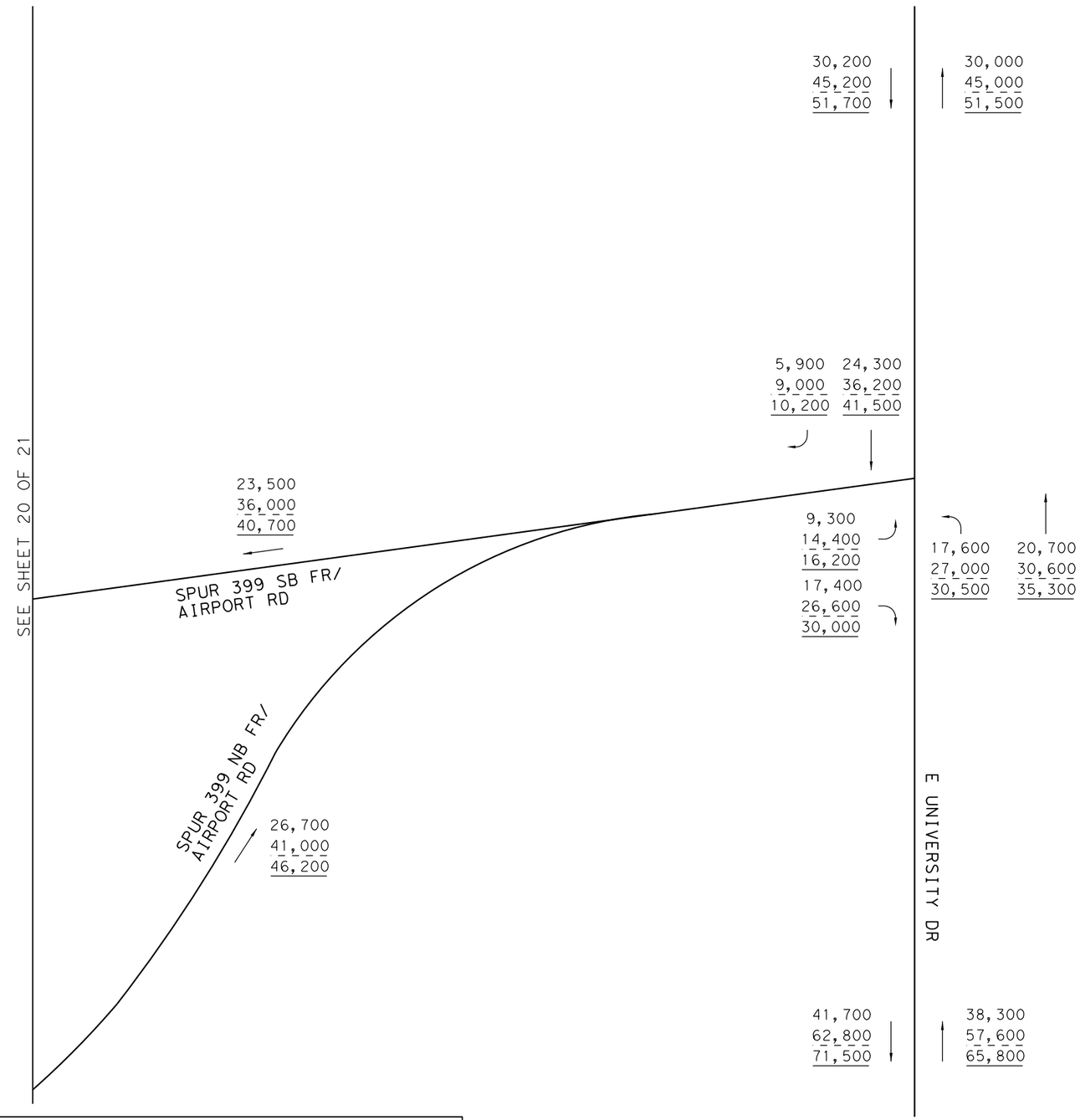
0364-04-051 | SHEET 20 OF 21

DATE:7/12/2021
FILE:SPUR399_WEST_1_TRF_20.dgn



LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
E UNIVERSITY DR
AVERAGE DAILY TRAFFIC
WEST 1 OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 21 OF 21

DATE:7/12/2021
FILE:SPUR399_WEST_1_TRF_21.dgn

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Mainlanes/ Option C Section 1 From US 75 To Direct Connectors, Northeast of US 75 Collin County	29,800	45,700	54 - 46	11.6	7.7	5.1	12,000	30	7,564,000	3	9,632,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	92.3	94.9
Medium Duty	3.9	2.6
Heavy Duty	3.8	2.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Mainlanes/ Option C Section 1 From US 75 To Direct Connectors, Northeast of US 75 Collin County	29,800	51,600	54 - 46	11.6	7.7	5.1	12,100	30	12,232,500	3	15,577,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/ Option C Section 2 From Direct Connectors, Northeast of US 75 To Ramps, Northeast of Medical Center Dr. Collin County	60,800	93,200	54 - 46	11.6	5.3	3.5	12,200	30	10,674,500	3	13,559,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.7	96.5
Medium Duty	2.7	1.8
Heavy Duty	2.6	1.7

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/ Option C Section 2 From Direct Connectors, Northeast of US 75 To Ramps, Northeast of Medical Center Dr. Collin County	60,800	105,300	54 - 46	11.6	5.3	3.5	12,300	30	17,270,000	3	21,937,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Mainlanes/ Option C Section 3 From Ramps, Northeast of Medical Center Dr To Steward Rd. Collin County	70,700	108,100	54 - 46	11.6	4.7	3.1	12,200	30	11,013,500	3	13,976,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	95.3	96.9
Medium Duty	2.4	1.6
Heavy Duty	2.3	1.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Mainlanes/ Option C Section 3 From Ramps, Northeast of Medical Center Dr To Steward Rd. Collin County	70,700	122,100	54 - 46	11.6	4.7	3.1	12,300	30	17,814,000	3	22,606,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/Option C Section 4 From Stewart Rd. To Private Drive Collin County	55,600	85,100	54 - 46	11.6	5.6	3.7	12,200	30	10,295,500	3	13,083,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.4	96.3
Medium Duty	2.8	1.8
Heavy Duty	2.8	1.9

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/Option C Section 4 From Stewart Rd. To Private Drive Collin County	55,600	96,300	54 - 46	11.6	5.6	3.7	12,300	30	16,672,500	3	21,188,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/Option C Section 5 From Private Rd. To North of Greenville Rd. Collin County	42,800	65,600	54 - 46	11.6	5.8	3.8	12,100	30	8,211,000	3	10,437,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.2	96.2
Medium Duty	2.9	1.9
Heavy Duty	2.9	1.9

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Mainlanes/Option C Section 5 From Private Rd. To North of Greenville Rd. Collin County	42,800	74,200	54 - 46	11.6	5.8	3.8	12,100	30	13,293,500	3	16,898,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 / Frontage Road/Option C Section 1 From US 75 To West of Medical Center Dr. Collin County	35,400	53,700	54 - 46	11.6	3.4	2.6	11,500	30	3,472,000	3	4,138,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.6	97.4
Medium Duty	1.7	1.3
Heavy Duty	1.7	1.3

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 / Frontage Road/Option C Section 1 From US 75 To West of Medical Center Dr. Collin County	35,400	60,900	54 - 46	11.6	3.4	2.6	11,500	30	5,629,000	3	6,709,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 / Frontage Road/Option C Section 2 From Medical Center Dr To SH 5 Collin County	17,400	26,300	54 - 46	11.6	3.4	2.6	11,000	30	1,702,500	3	2,029,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.6	97.4
Medium Duty	1.7	1.3
Heavy Duty	1.7	1.3

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 / Frontage Road/Option C Section 2 From Medical Center Dr To SH 5 Collin County	17,400	29,800	54 - 46	11.6	3.4	2.6	11,000	30	2,759,000	3	3,288,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 /Frontage Rd./ Option C Section 3 From SH 5 To SH 5/McDonald St. Collin County	27,100	41,700	54 - 46	11.6	3.7	2.8	11,300	30	2,910,500	3	3,473,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.3	97.2
Medium Duty	1.9	1.4
Heavy Duty	1.8	1.4

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 /Frontage Rd./ Option C Section 3 From SH 5 To SH 5/McDonald St. Collin County	27,100	47,200	54 - 46	11.6	3.7	2.8	11,400	30	4,715,000	3	5,626,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 /Frontage rd./ Option C Section 4 From South of Industrial Blvd To Private Rd Collin County	13,500	20,700	54 - 46	11.6	3.7	2.8	10,900	40	1,446,500	3	1,726,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.3	97.2
Medium Duty	1.9	1.4
Heavy Duty	1.8	1.4

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1 /Frontage rd./ Option C Section 4 From South of Industrial Blvd To Private Rd Collin County	13,500	23,500	54 - 46	11.6	3.7	2.8	10,900	40	2,348,000	3	2,801,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Frontage Rd. / Option C Section 5 From Private Rd. To Future Elm St Collin County	22,600	35,000	54 - 46	11.6	3.5	2.6	11,100	30	2,308,500	3	2,752,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.5	97.4
Medium Duty	1.8	1.4
Heavy Duty	1.7	1.2

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/Frontage Rd. / Option C Section 5 From Private Rd. To Future Elm St Collin County	22,600	39,200	54 - 46	11.6	3.5	2.6	11,200	30	3,715,500	3	4,430,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **November 8, 2021**

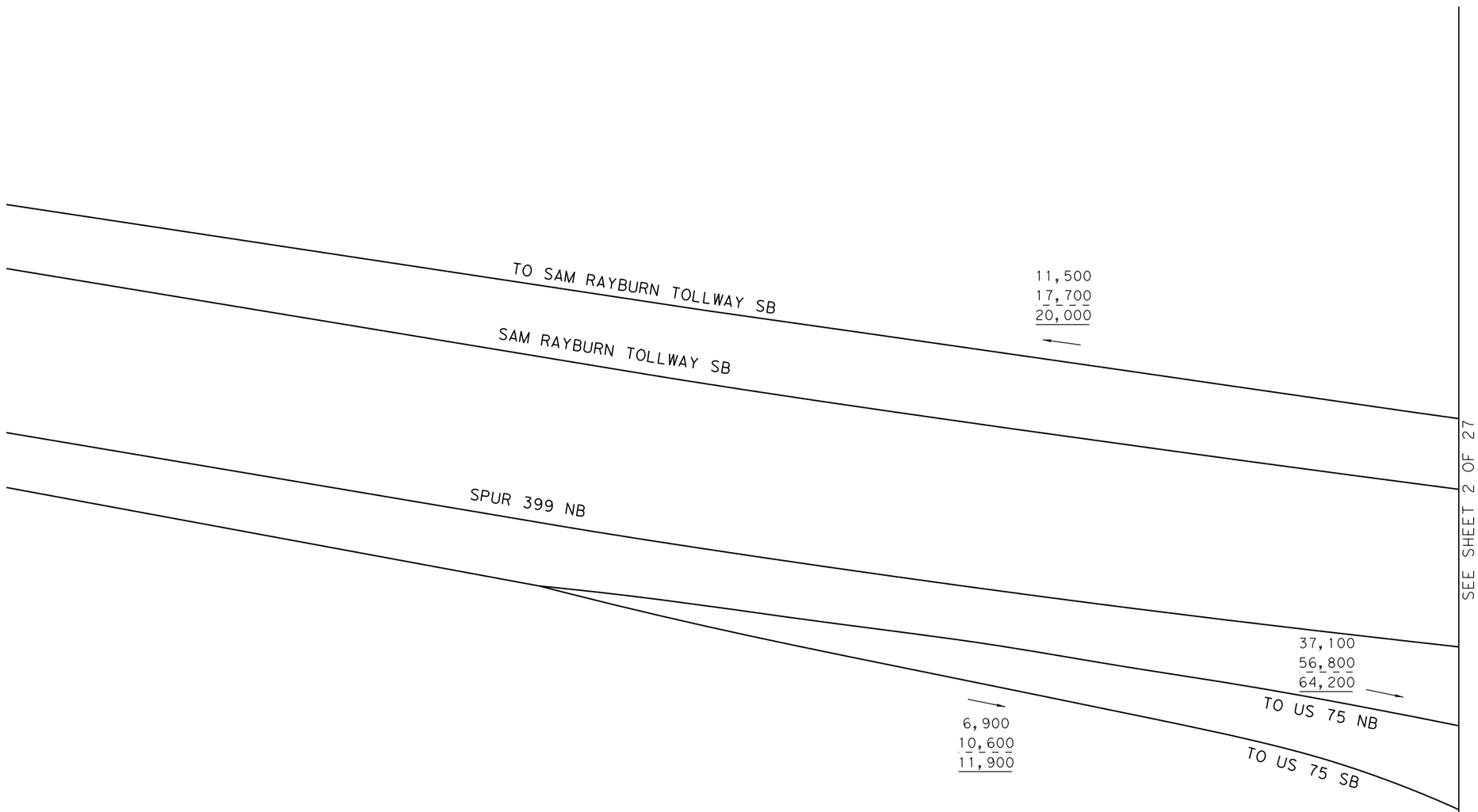
Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Frontage Rd. / Option C Section 6 From Future Elm St To North of Greenville Rd Collin County	7,400	11,400	54 - 46	11.6	6.8	5.1	10,900	40	1,443,500	3	1,732,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	93.2	94.9
Medium Duty	3.5	2.6
Heavy Duty	3.3	2.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario West 1/ Frontage Rd. / Option C Section 6 From Future Elm St To North of Greenville Rd Collin County	7,400	12,700	54 - 46	11.6	6.8	5.1	10,900	40	2,315,000	3	2,778,000	8"

2050 Orange Alternative
Traffic Volumes



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

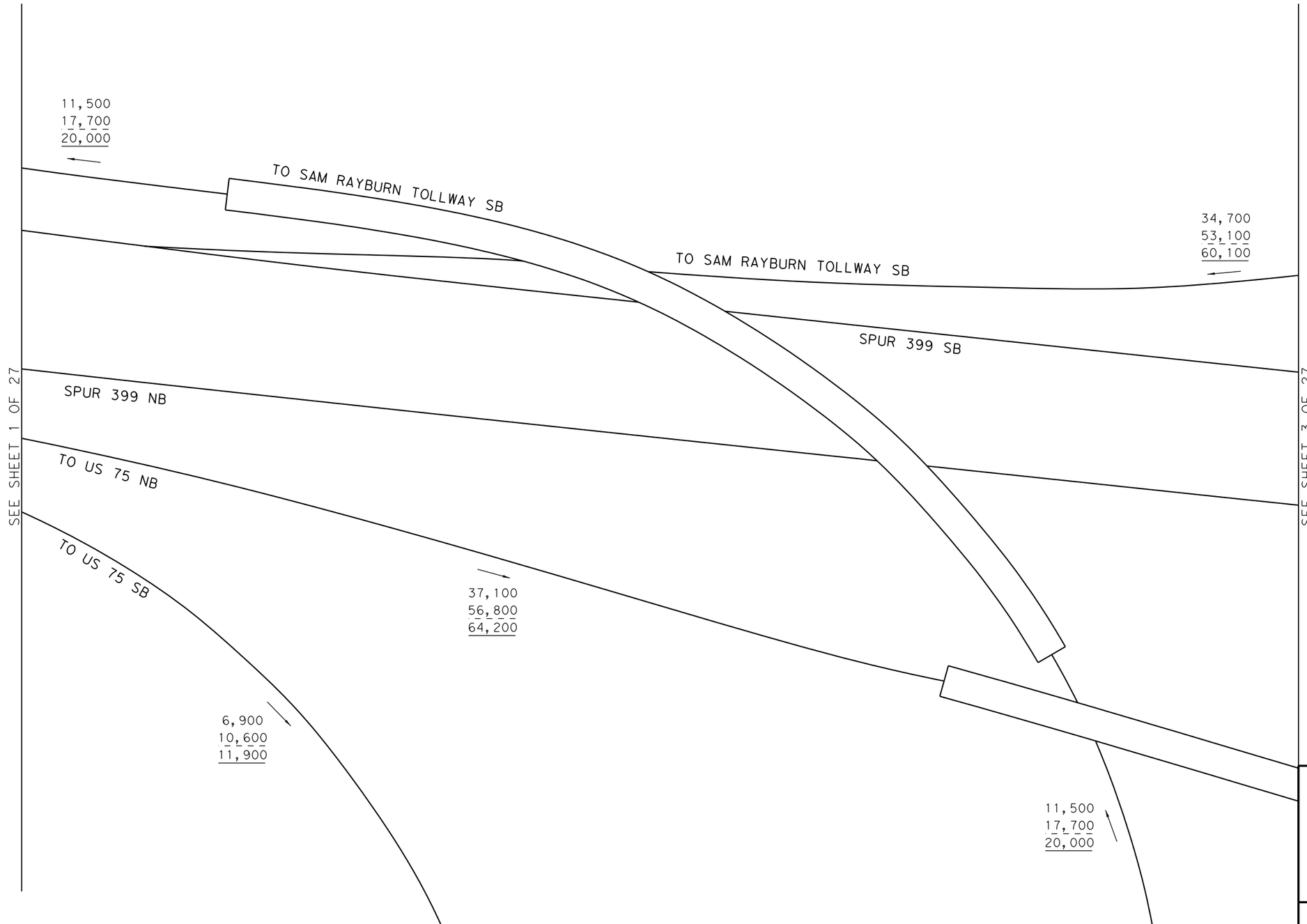
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 1 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_01.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

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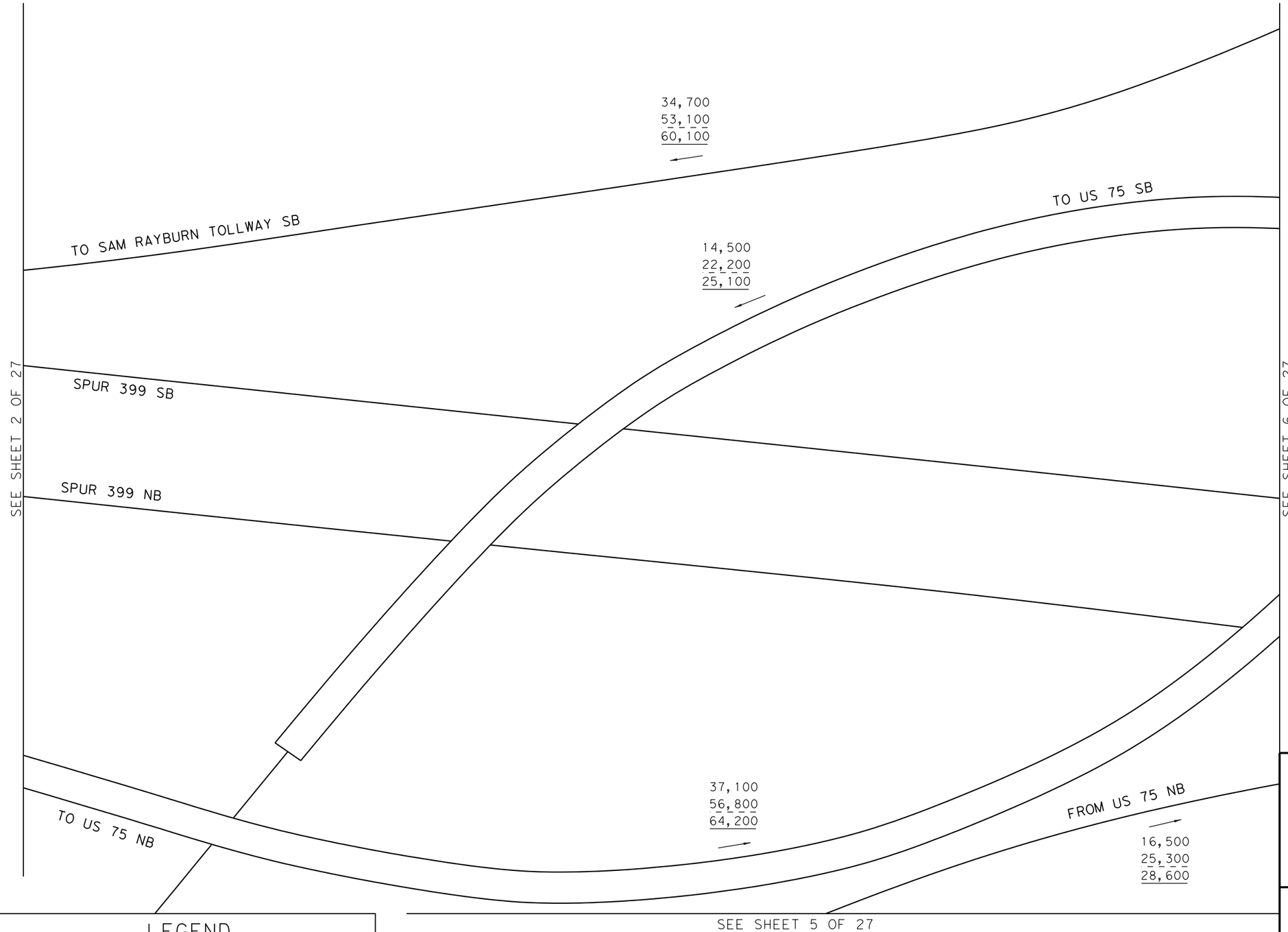
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_02.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

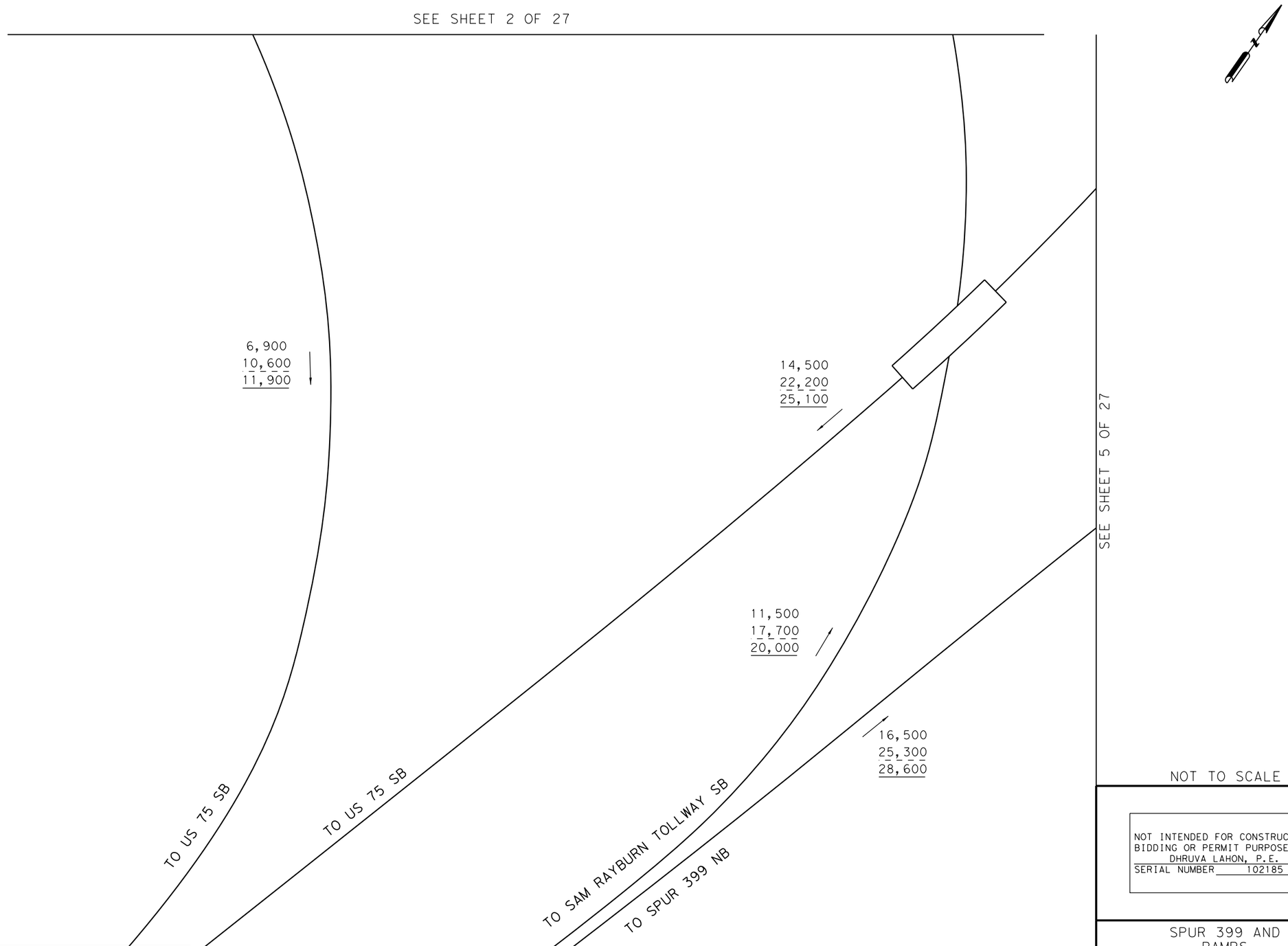
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
US 75
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 3 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_03.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

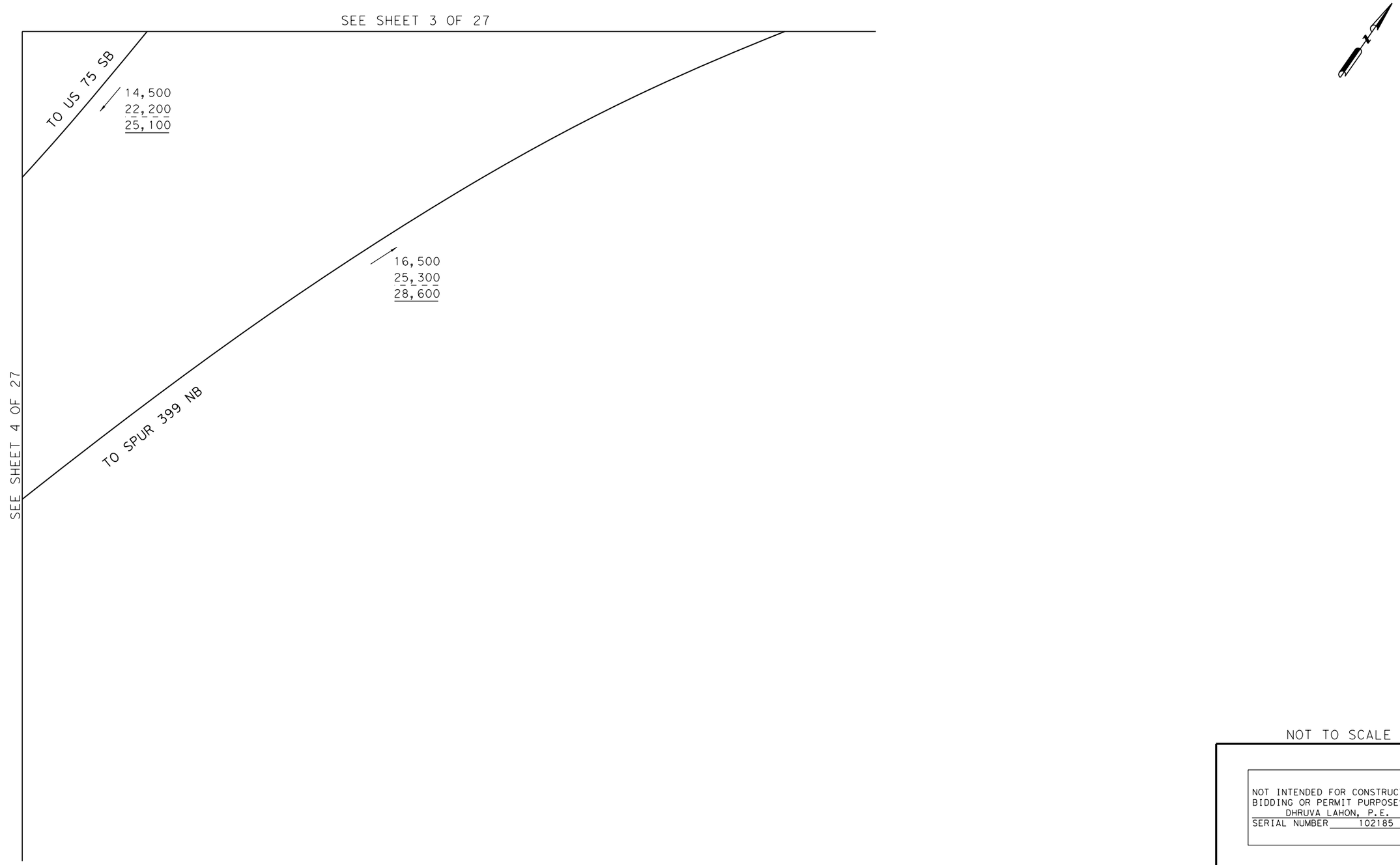
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_04.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

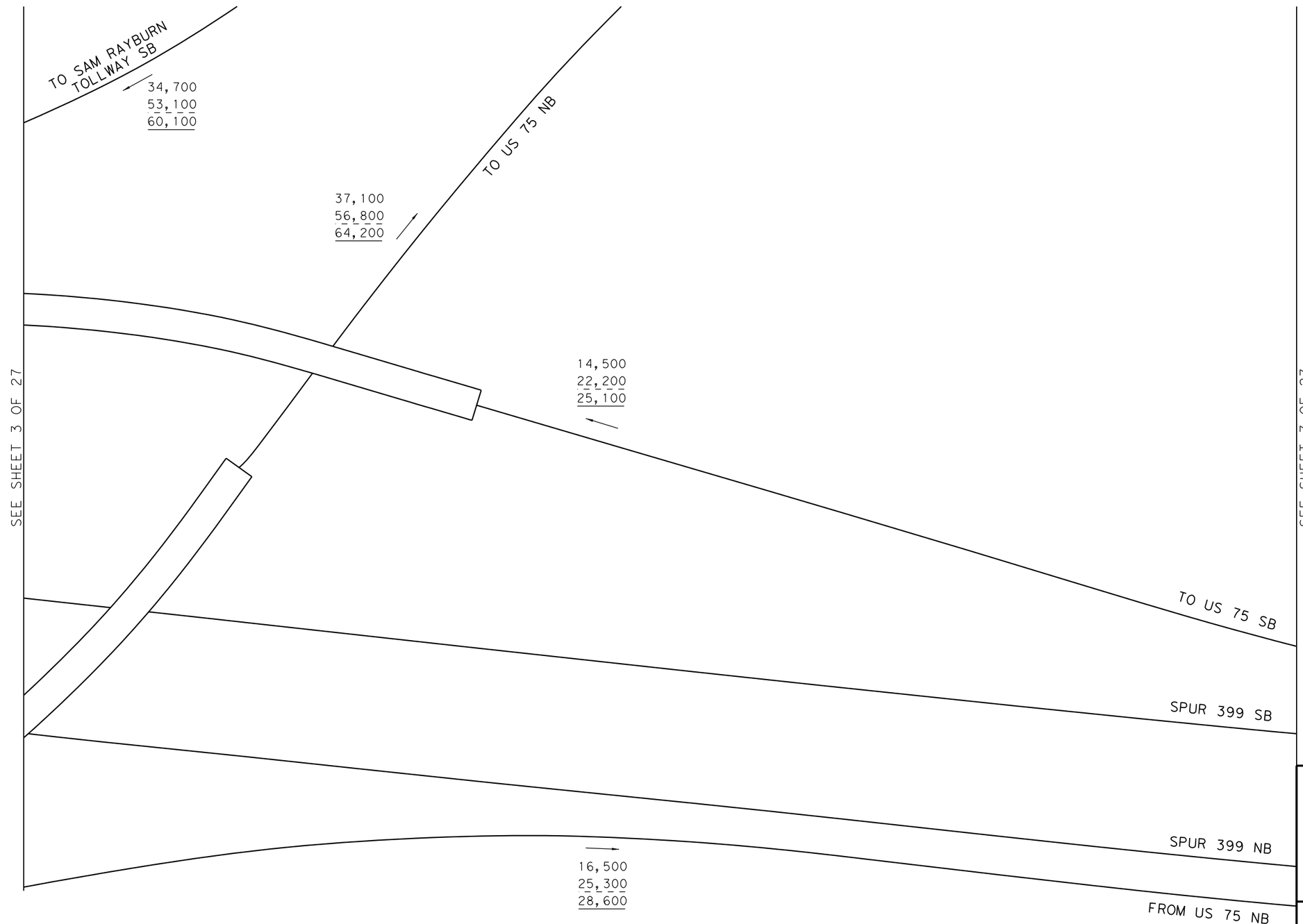
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 5 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_05.dgn



NOTE:
BEGIN STUDY LIMITS

NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

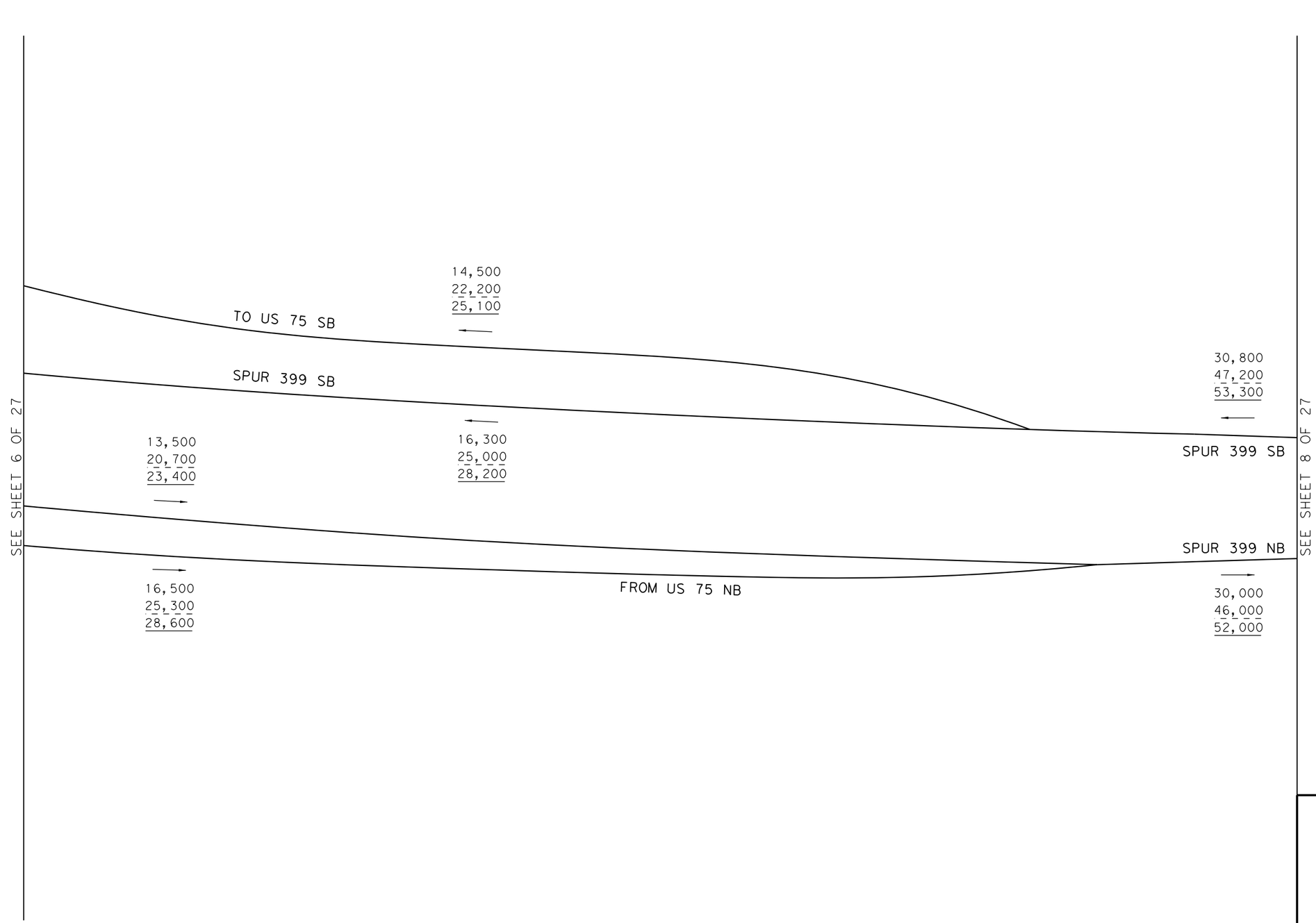
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 6 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_06.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

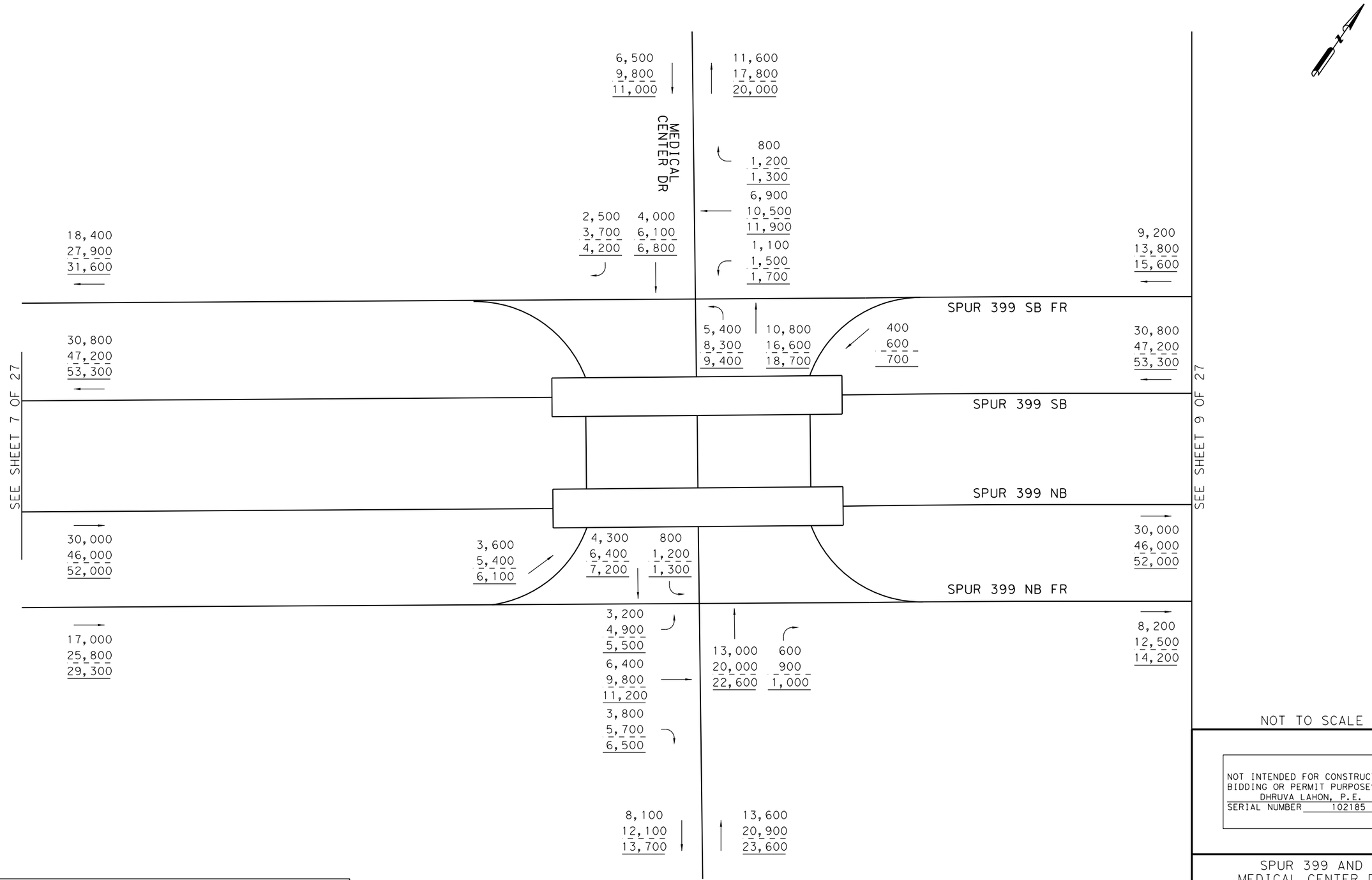
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_07.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

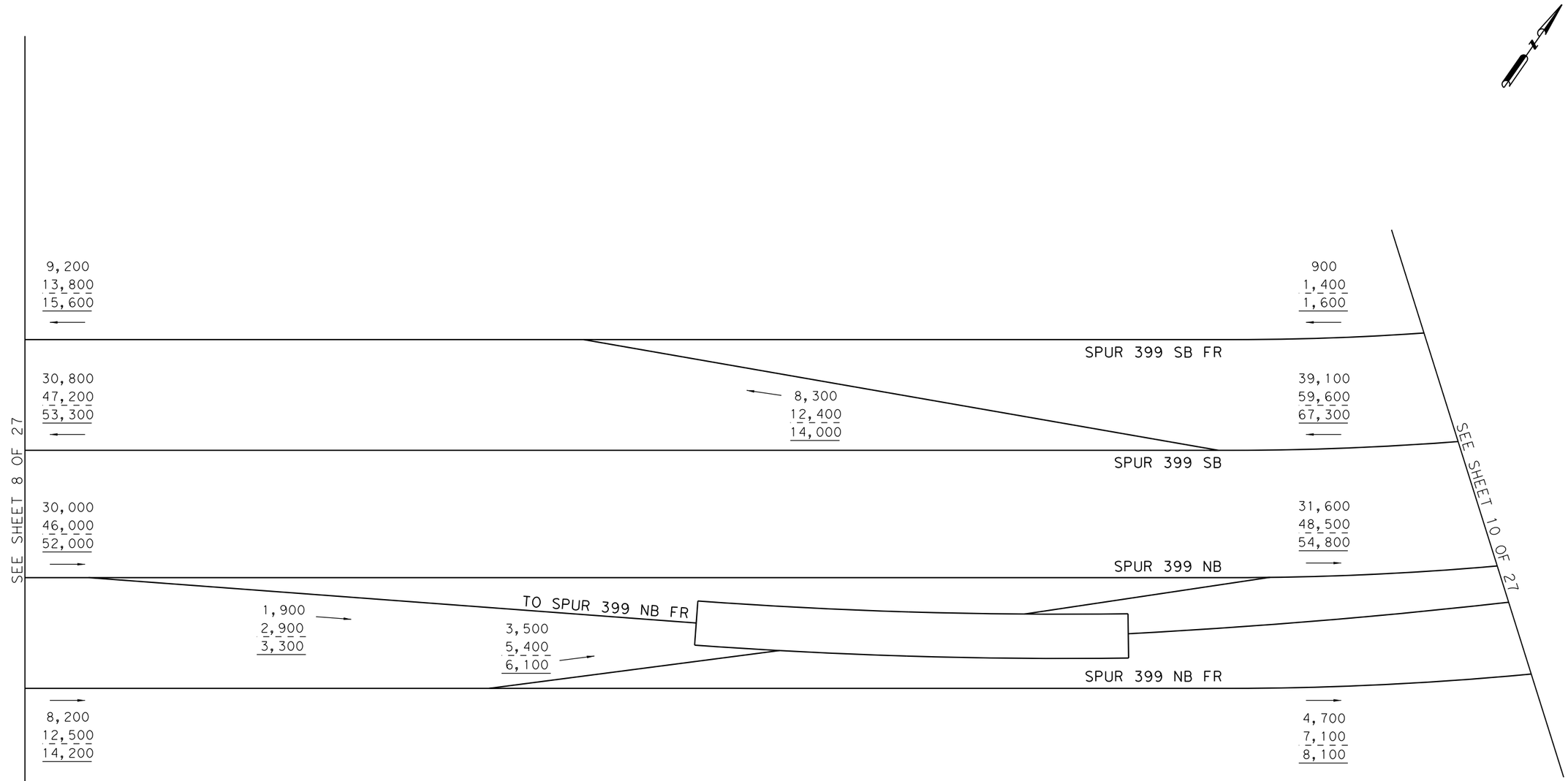
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
MEDICAL CENTER DR
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 8 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_08.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

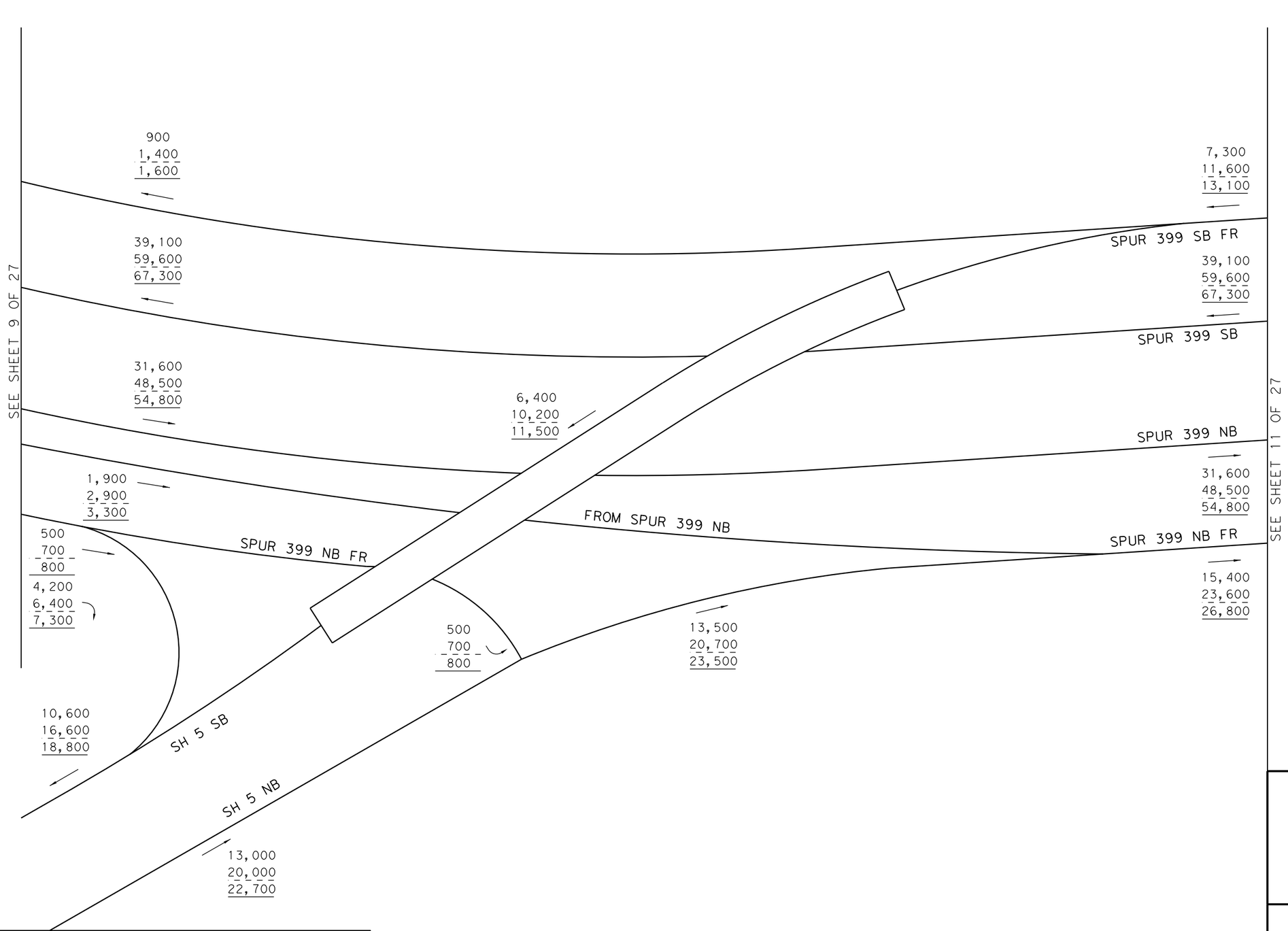
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 9 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_09.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

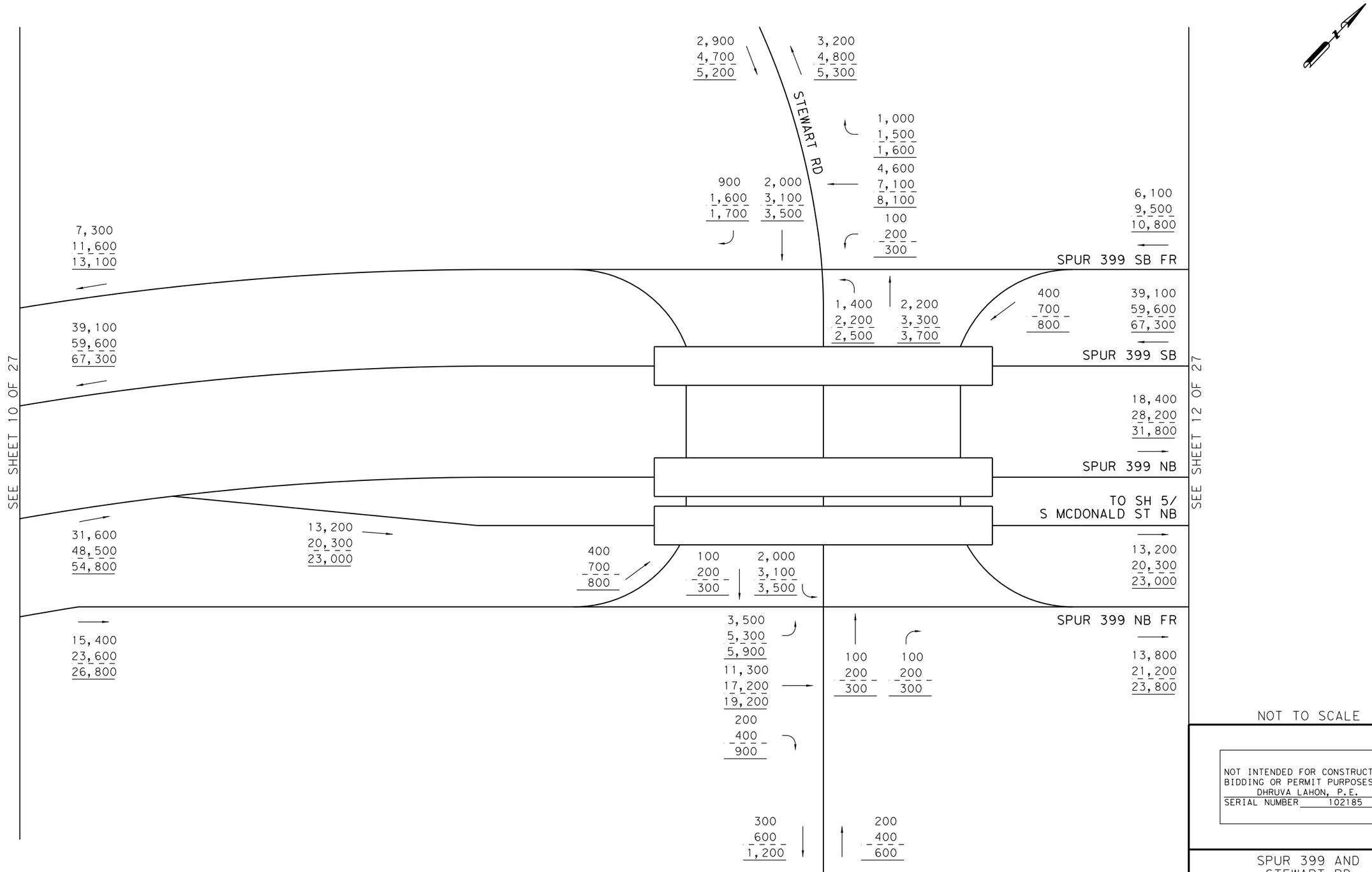
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
SH 5/ GREENVILLE DR
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 10 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_10.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

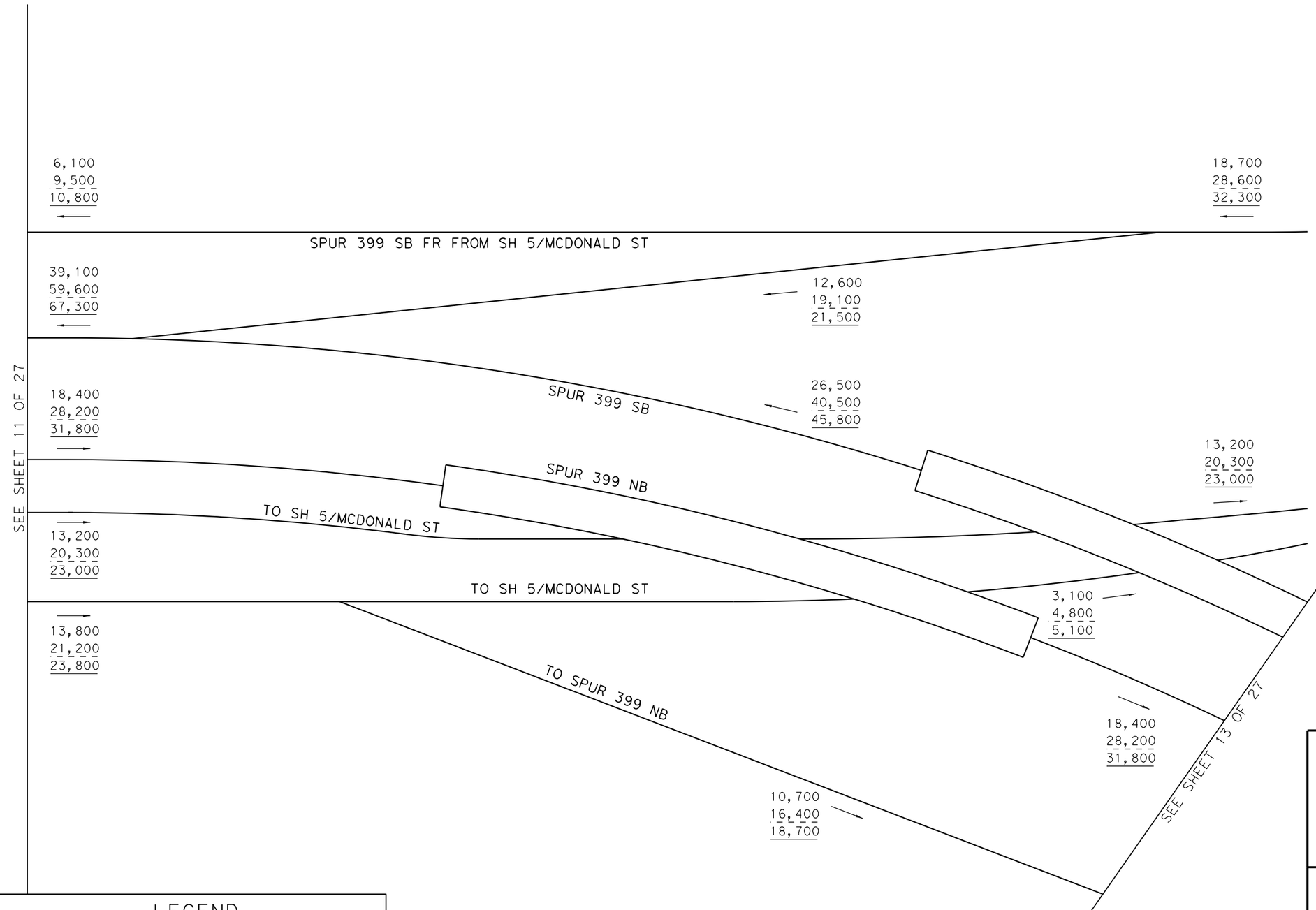
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND
STEWART RD
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 11 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_11.dgn



NOT TO SCALE

LEGEND
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

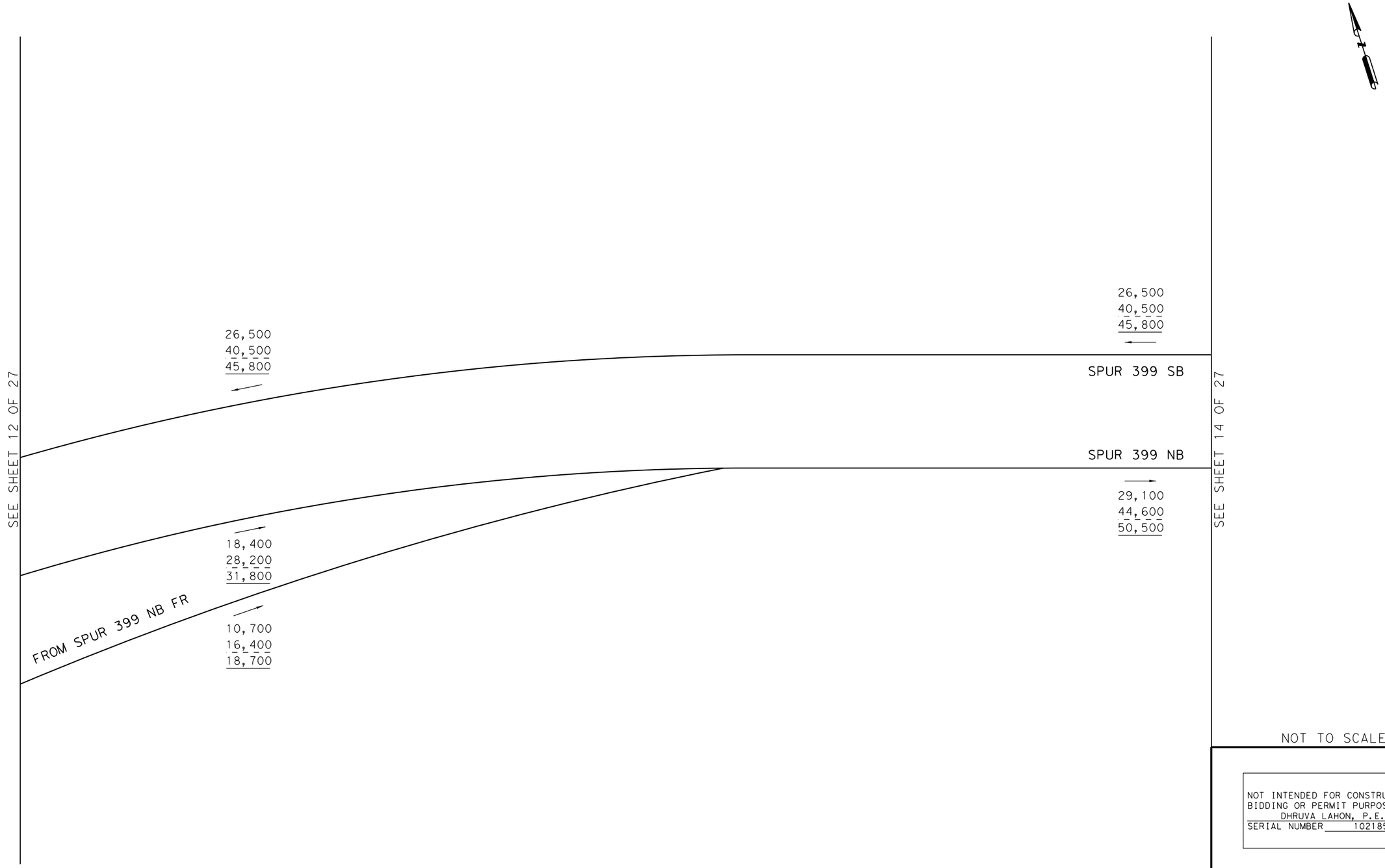
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 12 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_12.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

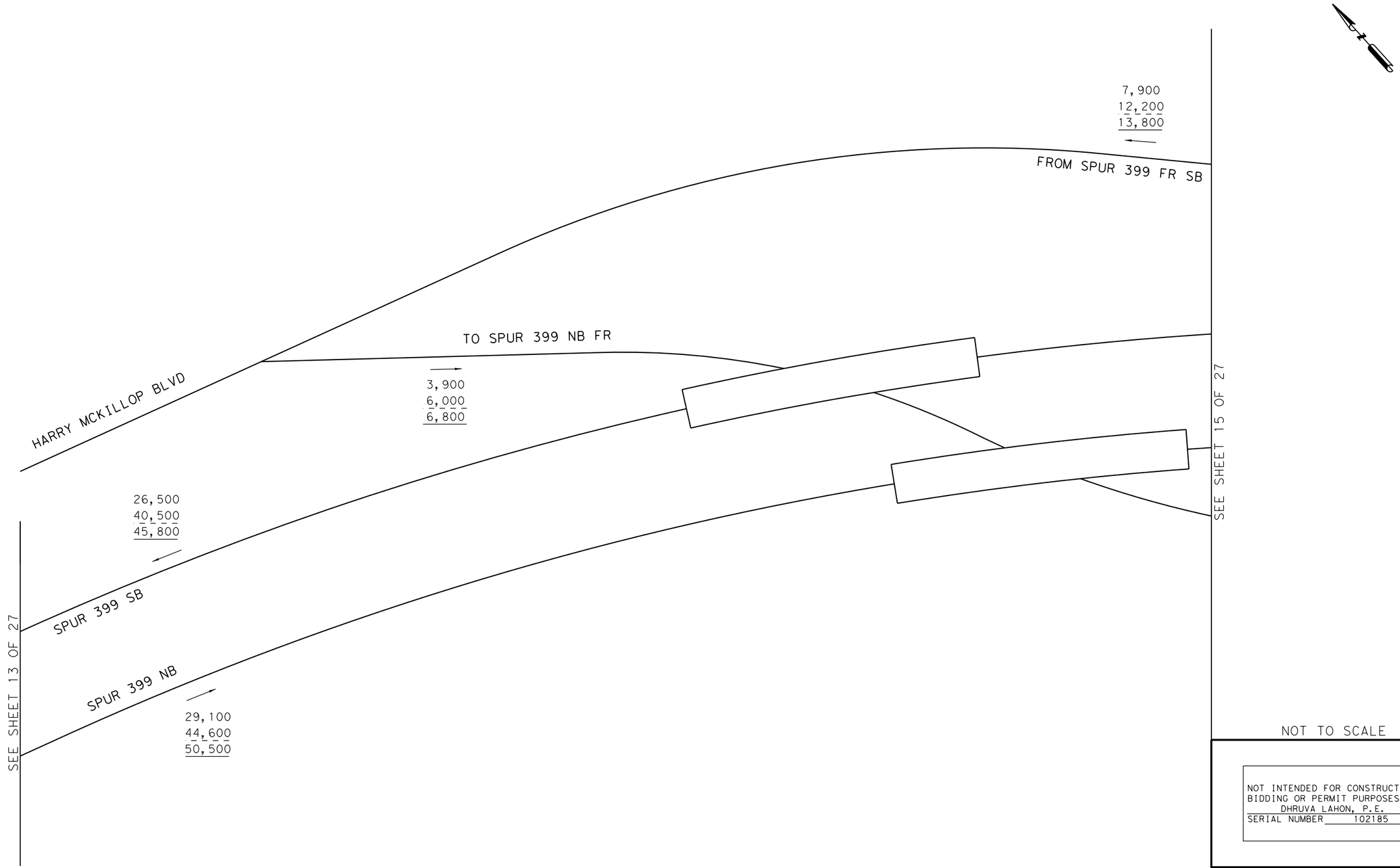
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 13 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_13.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

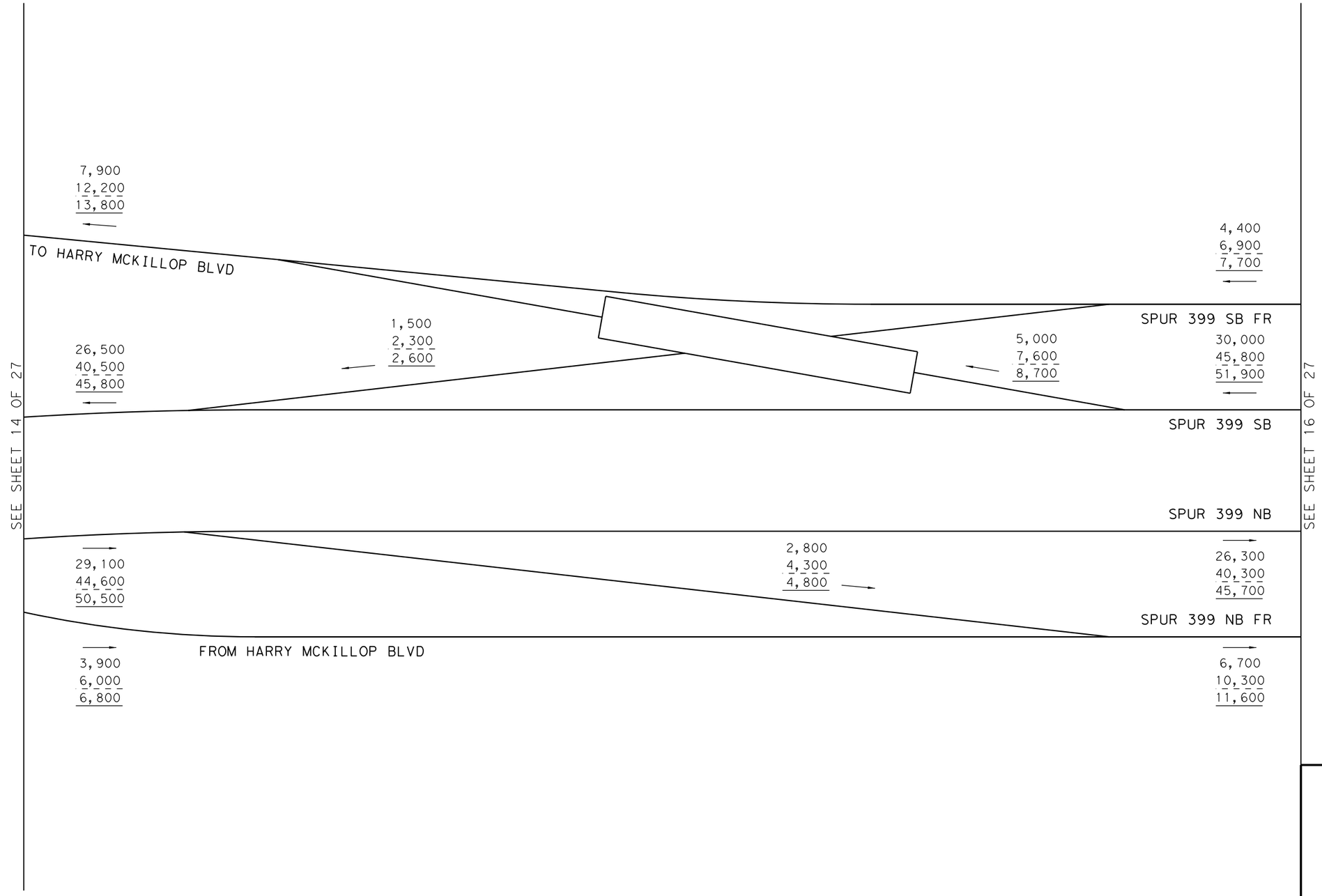
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 14 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_14.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

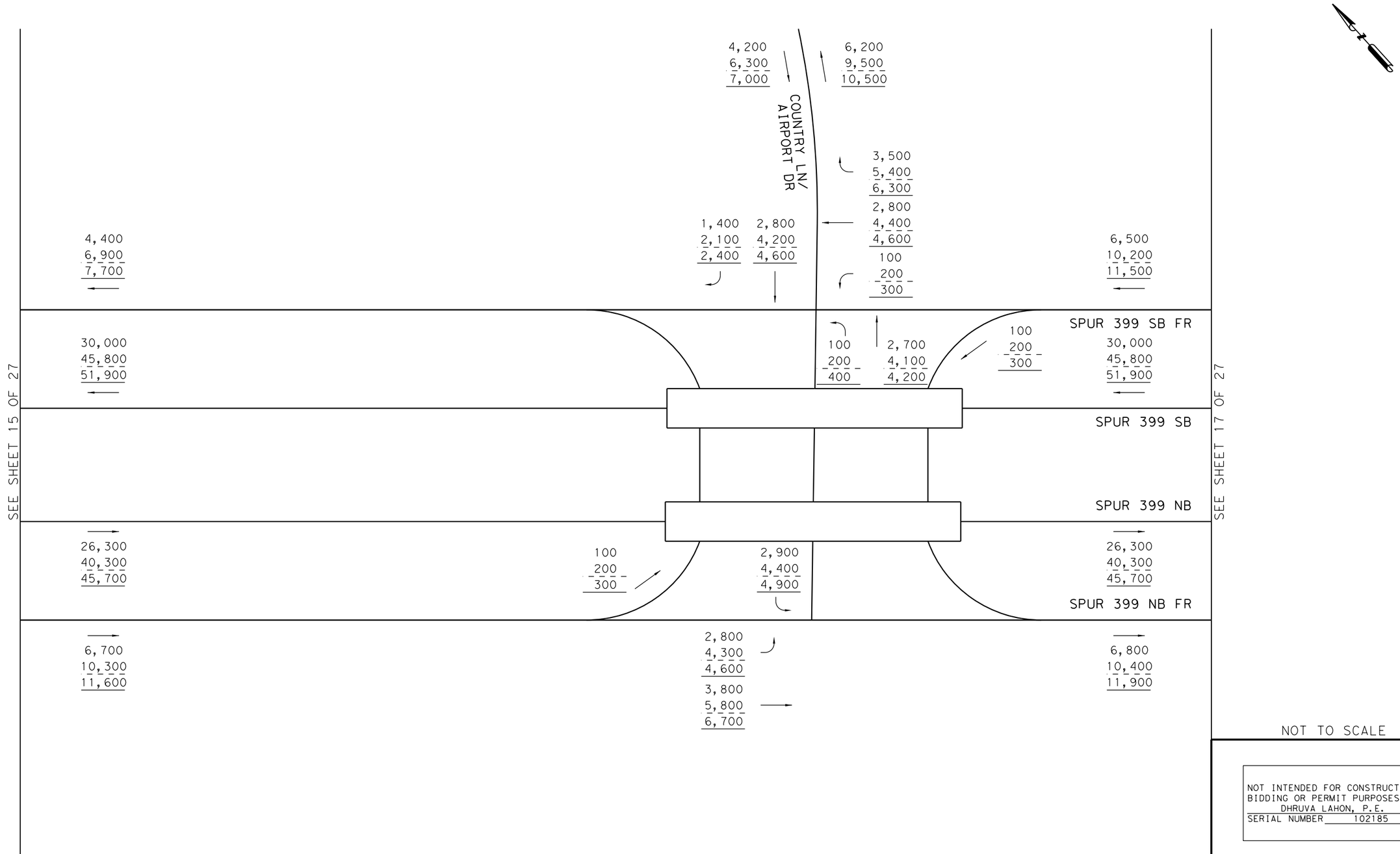
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 15 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_15.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

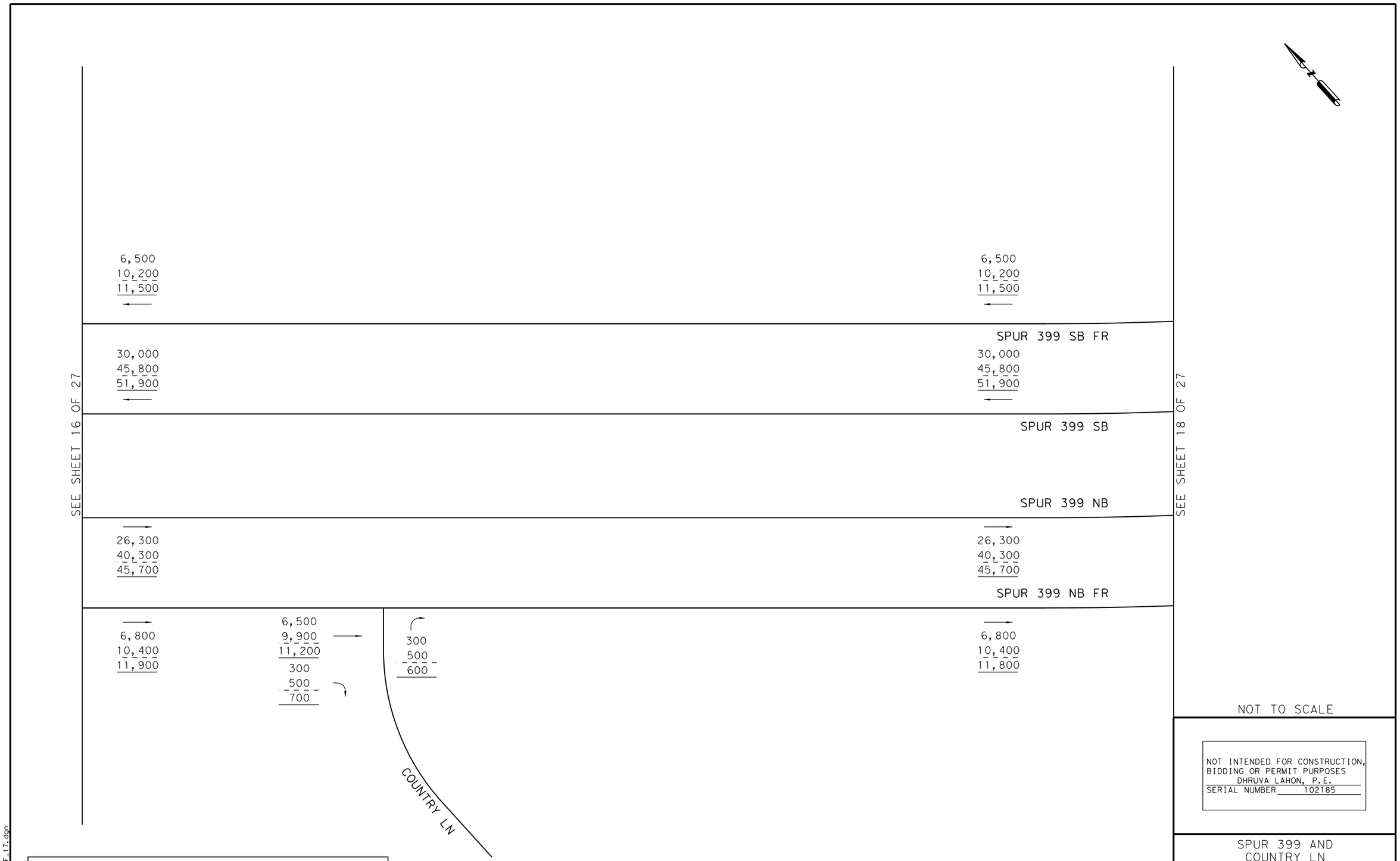
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
COUNTRY LN/ AIRPORT DR
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 16 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_16.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

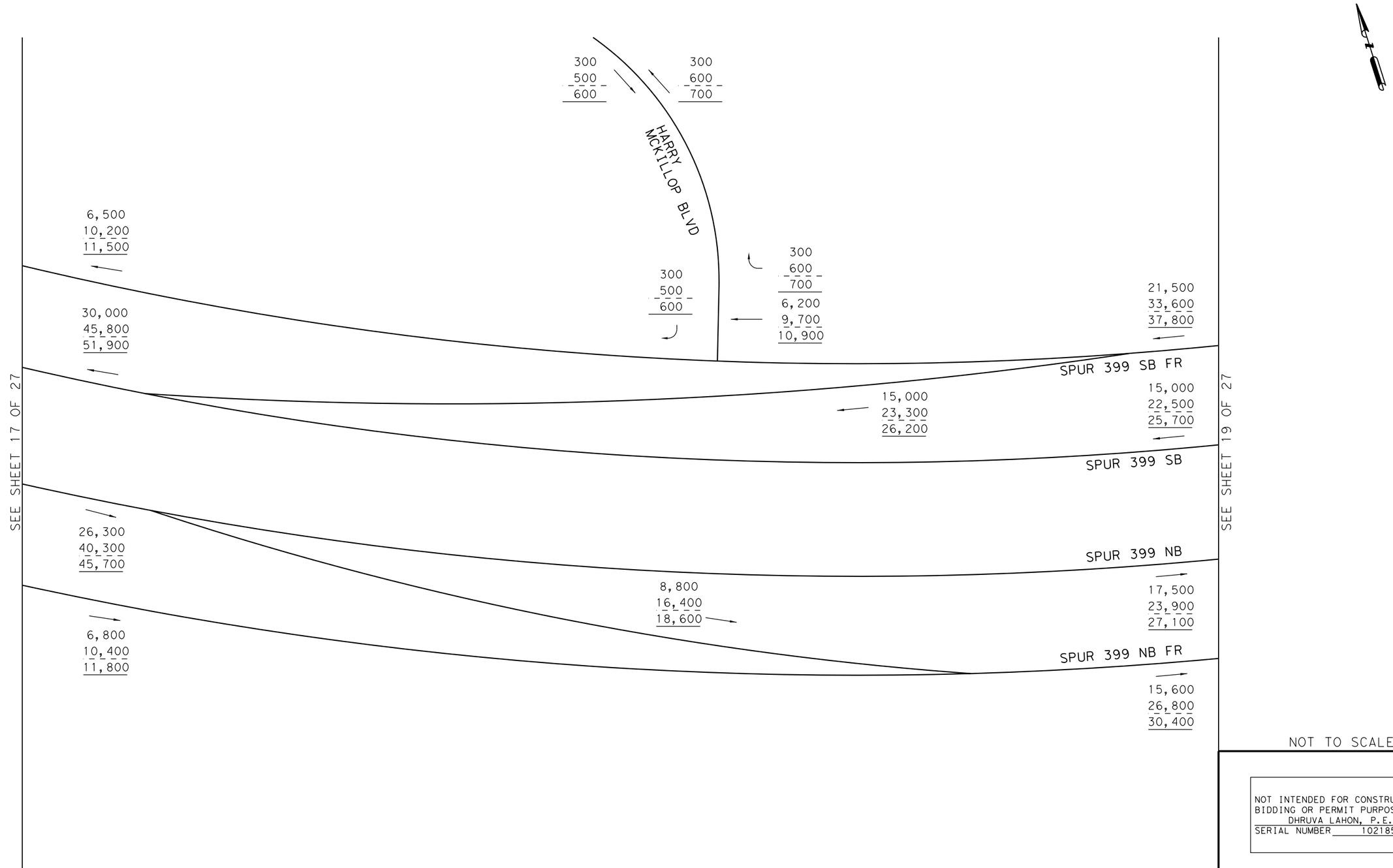
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
COUNTRY LN
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_17.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

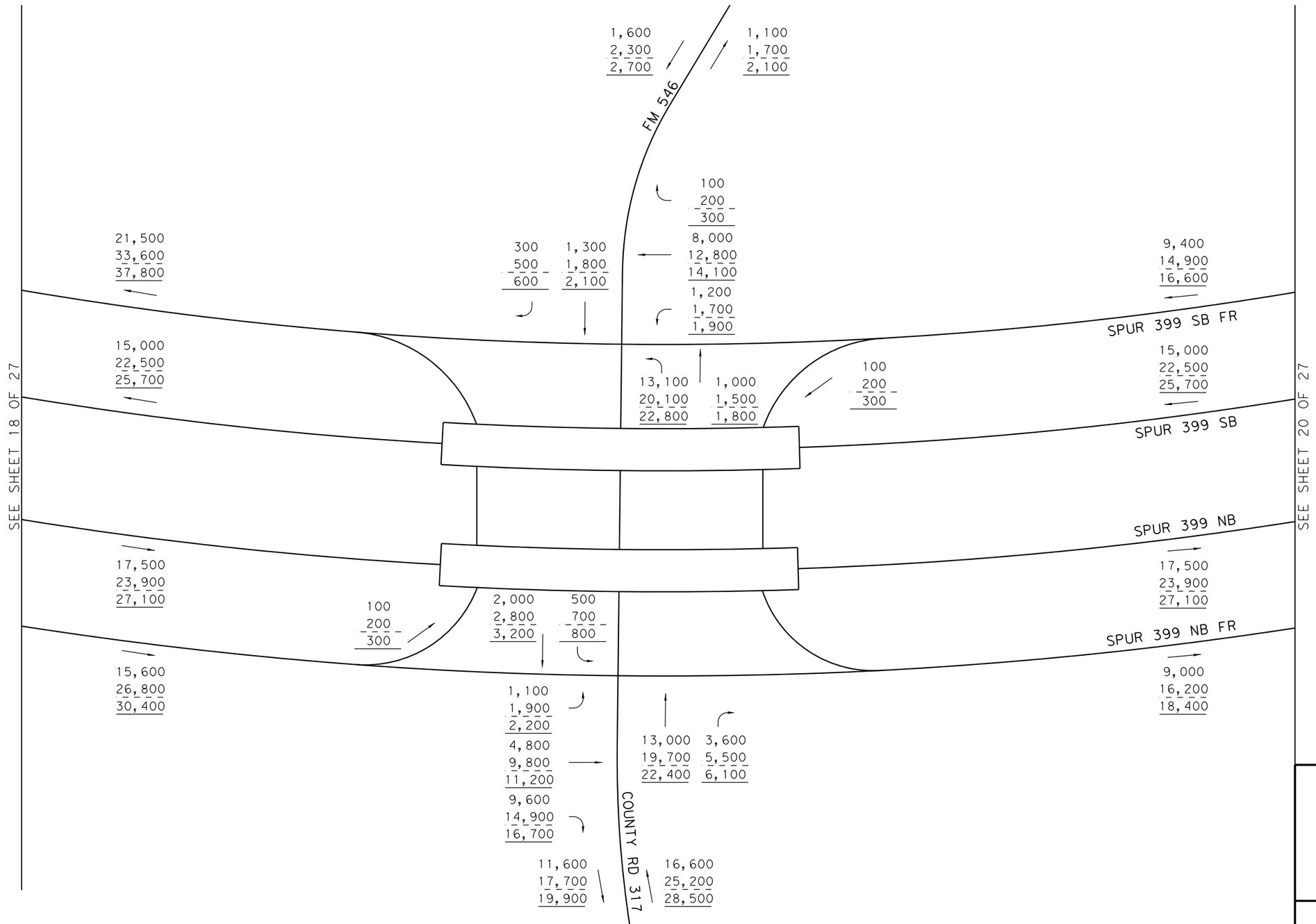
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND
HARRY MCKILLOP BLVD
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 18 OF 27

DATE:7/26/2021
FILE:SPUR399_EAST_TRF_18.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

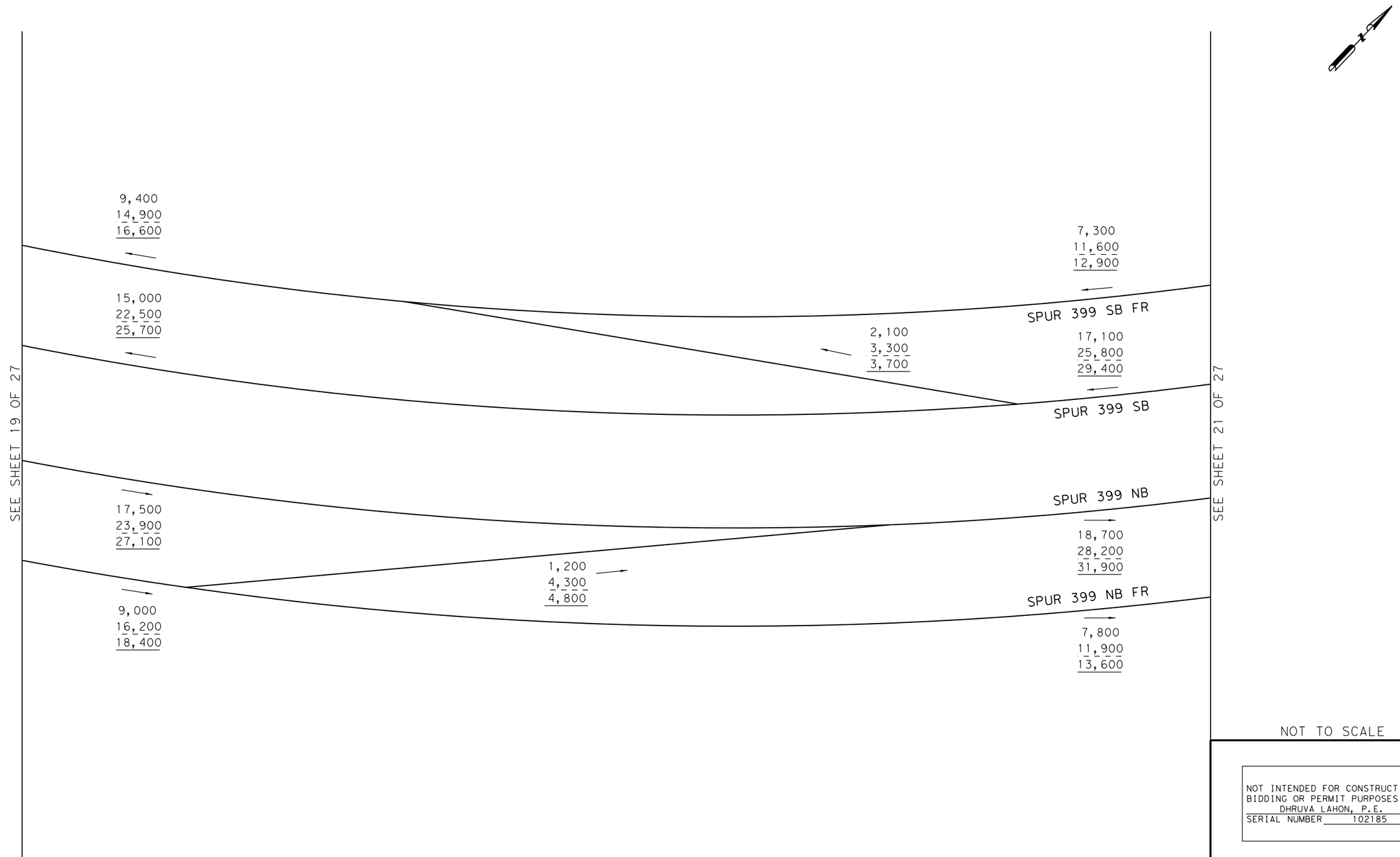
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
CR 317/ FM 546
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 19 OF 27

DATE:7/26/2021
FILE:SPUR399_EAST_TRF_19.dgn



NOT TO SCALE

LEGEND

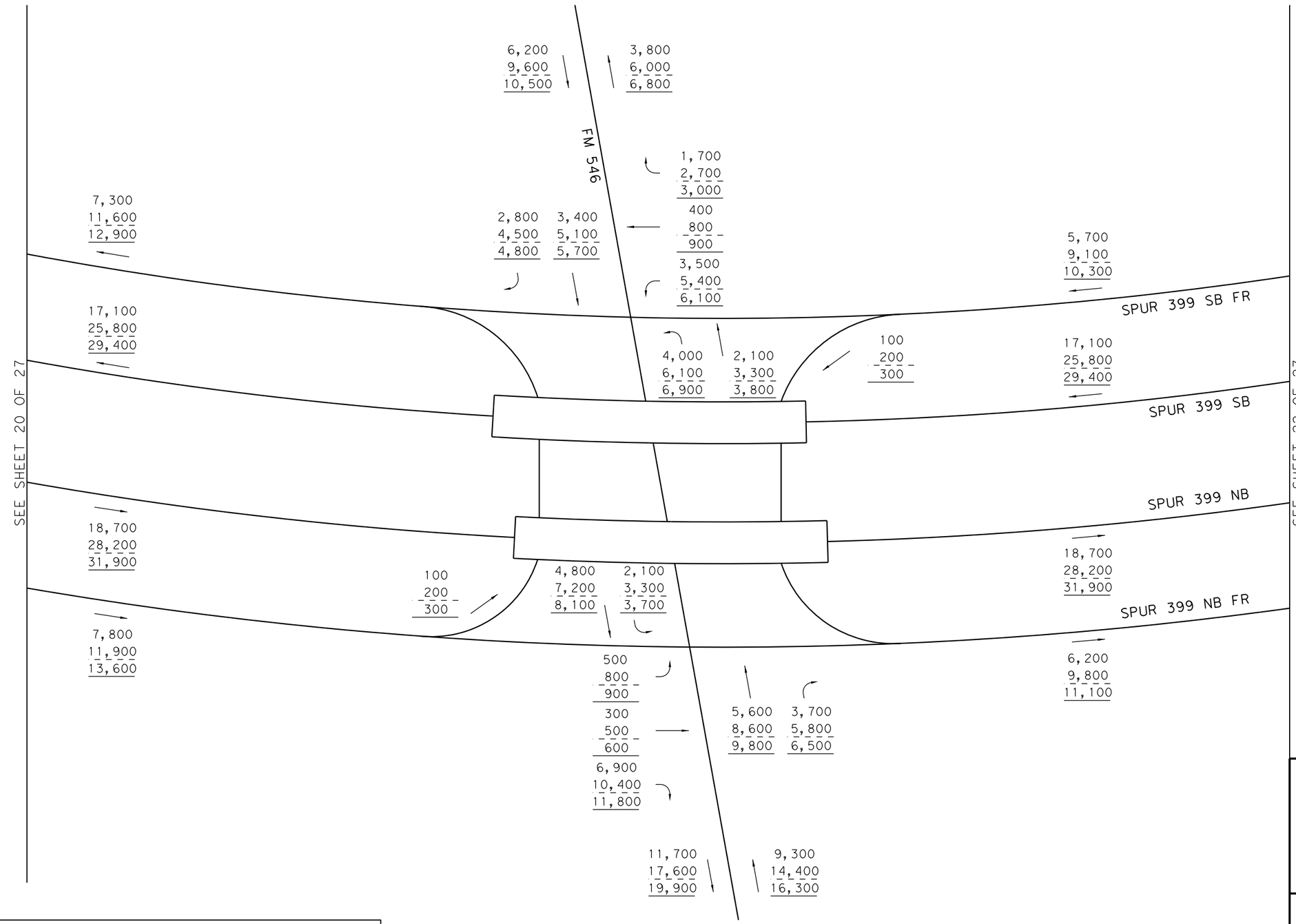
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

DATE: 7/26/2021
FILE: SPUR399_EAST_TRF_20.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

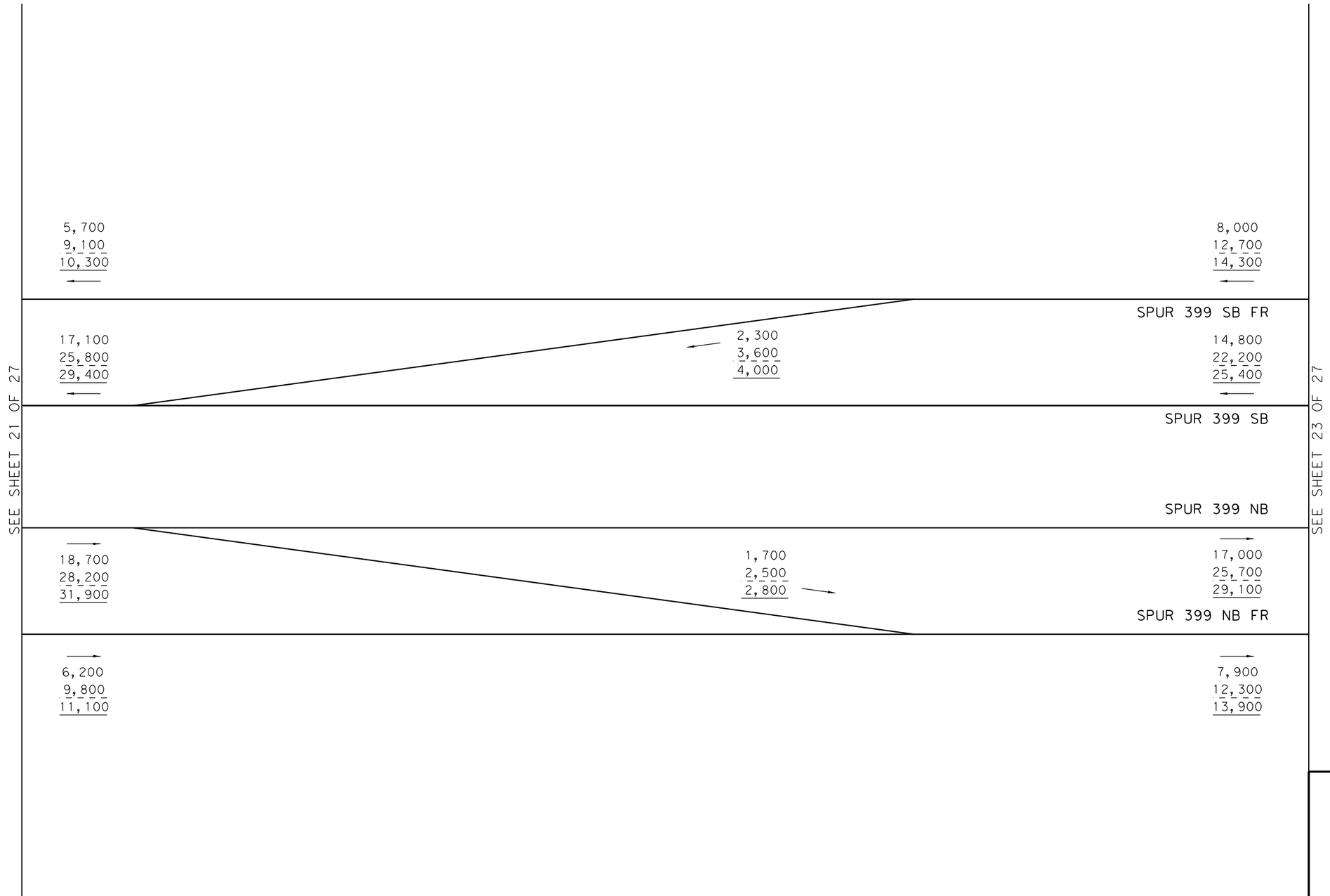
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
FM 546
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 21 OF 27

DATE: 7/26/2021
FILE: SPUR399_EAST_TRF_21.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

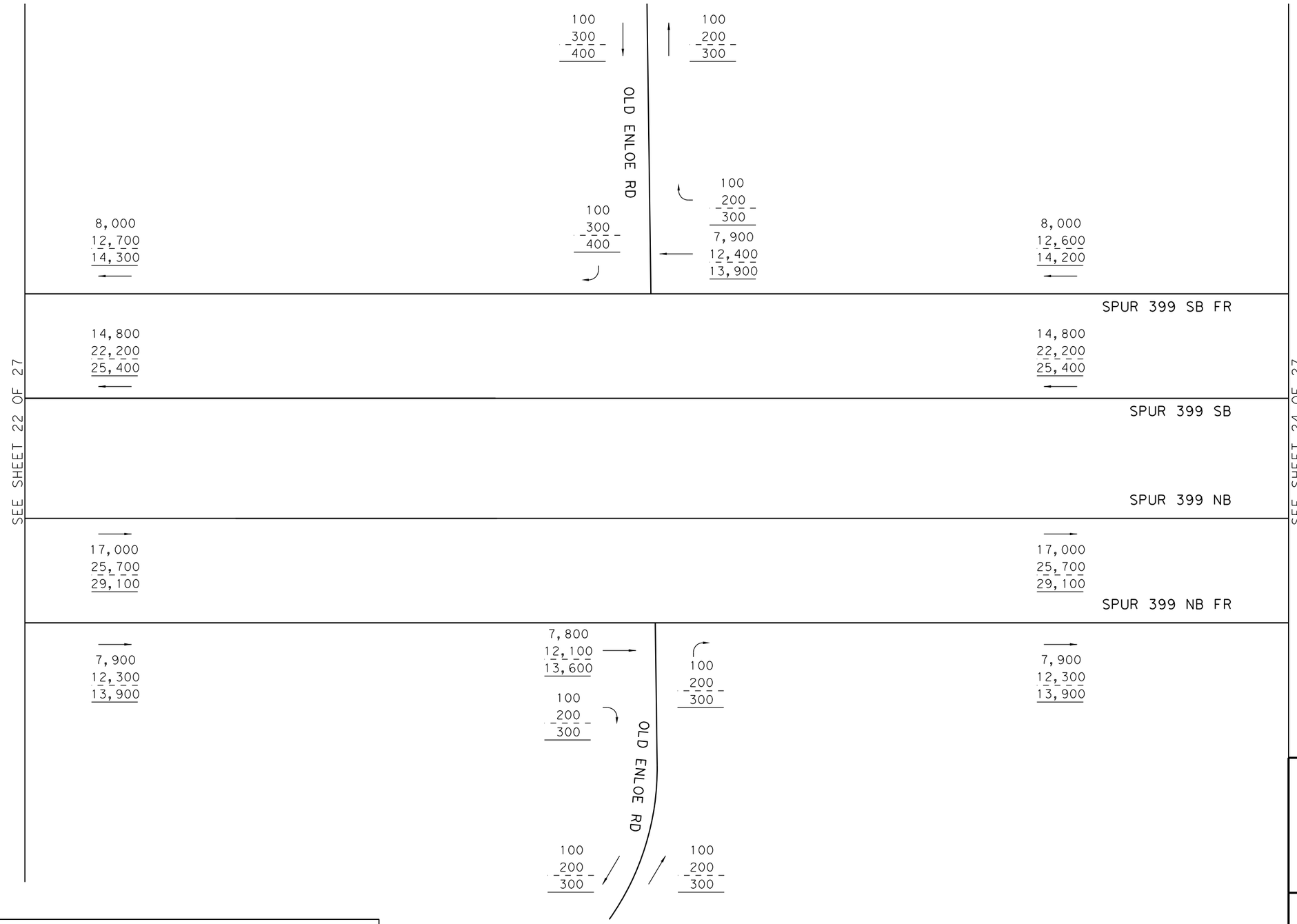
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 22 OF 27

DATE:7/26/2021
FILE:SPUR399_EAST_TRF_22.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

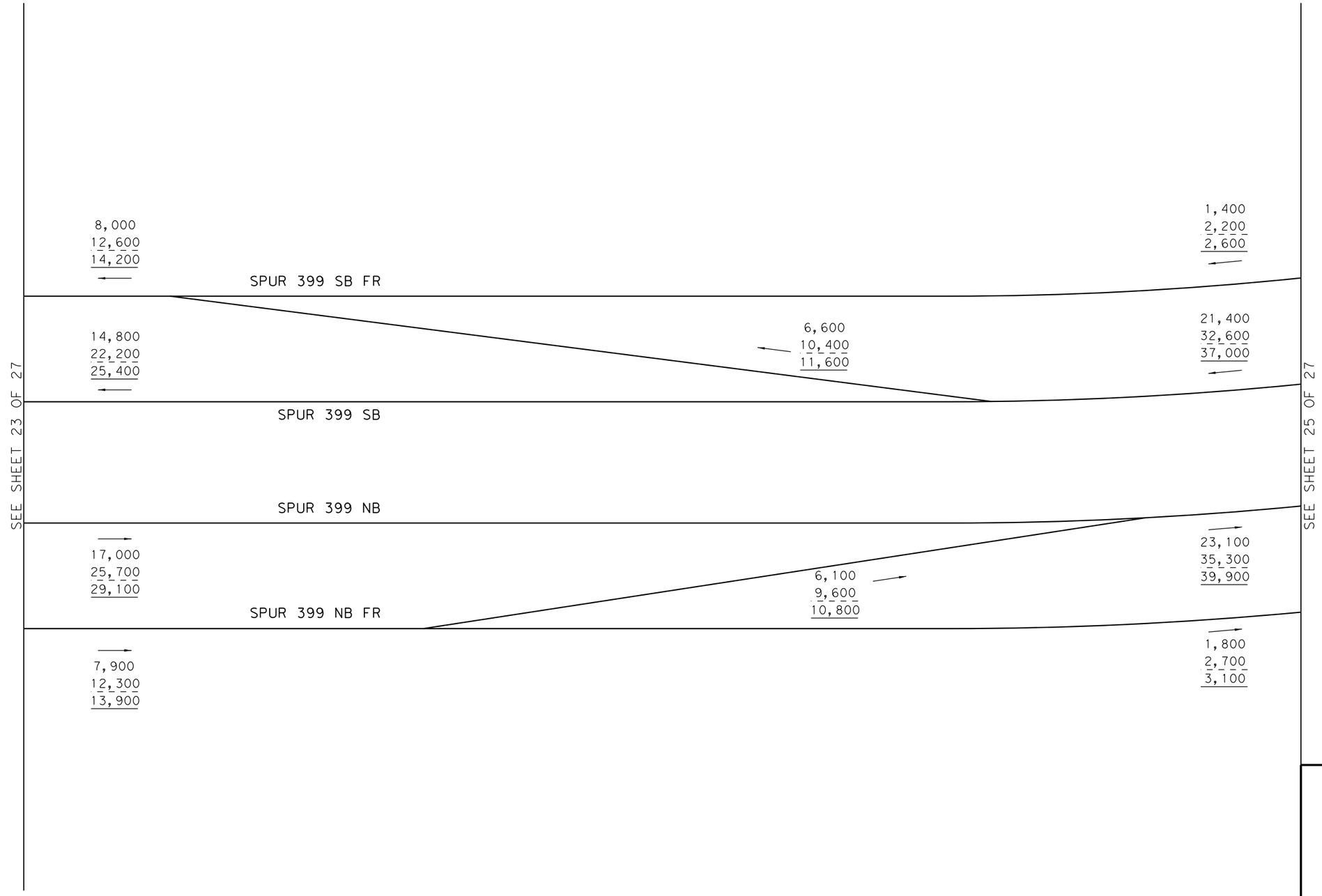
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND
OLD ENLOE RD
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 23 OF 27

DATE:7/26/2021
FILE:SPUR399_EAST_TRF_23.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

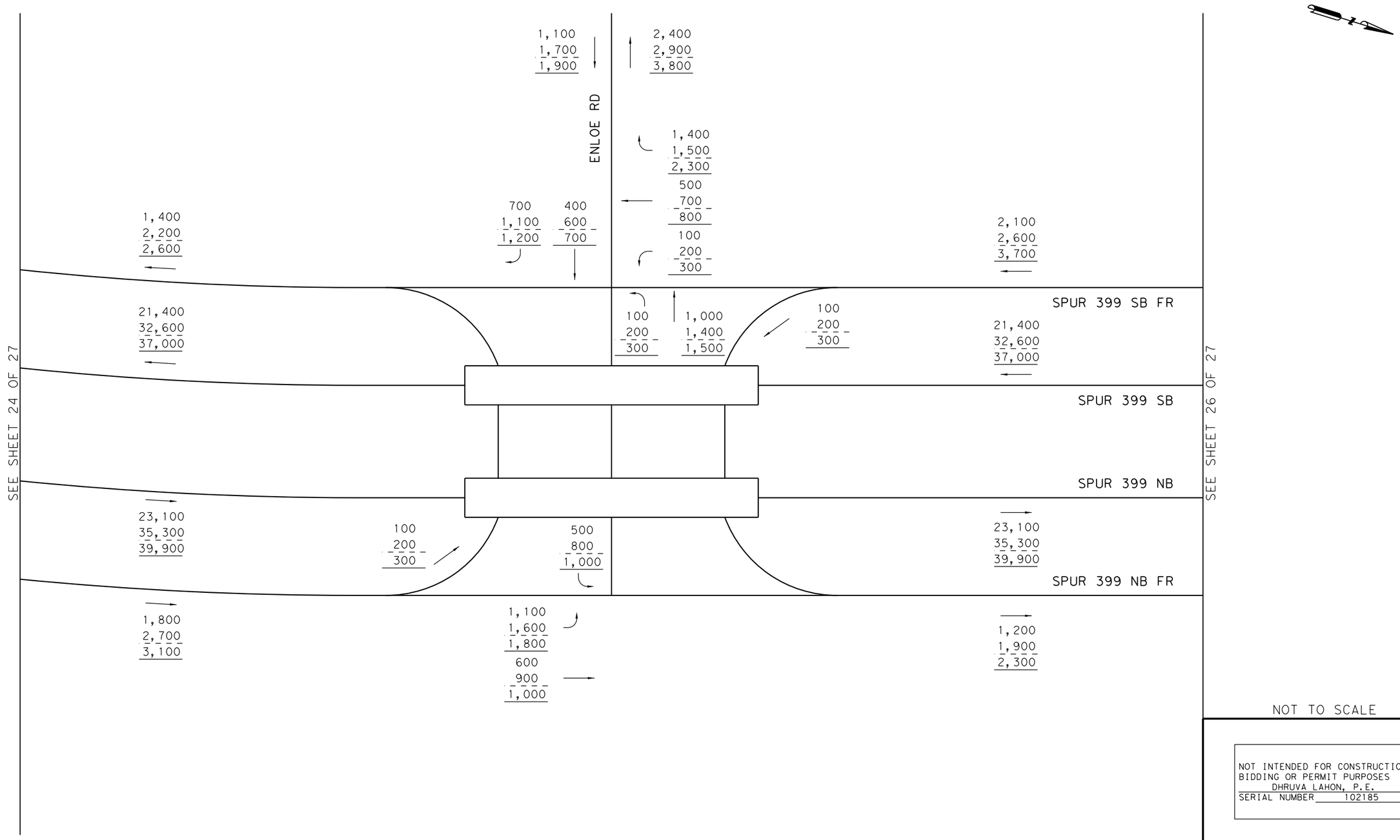
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 24 OF 27

DATE:7/26/2021
FILE:SPUR399_EAST_TRF_24.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

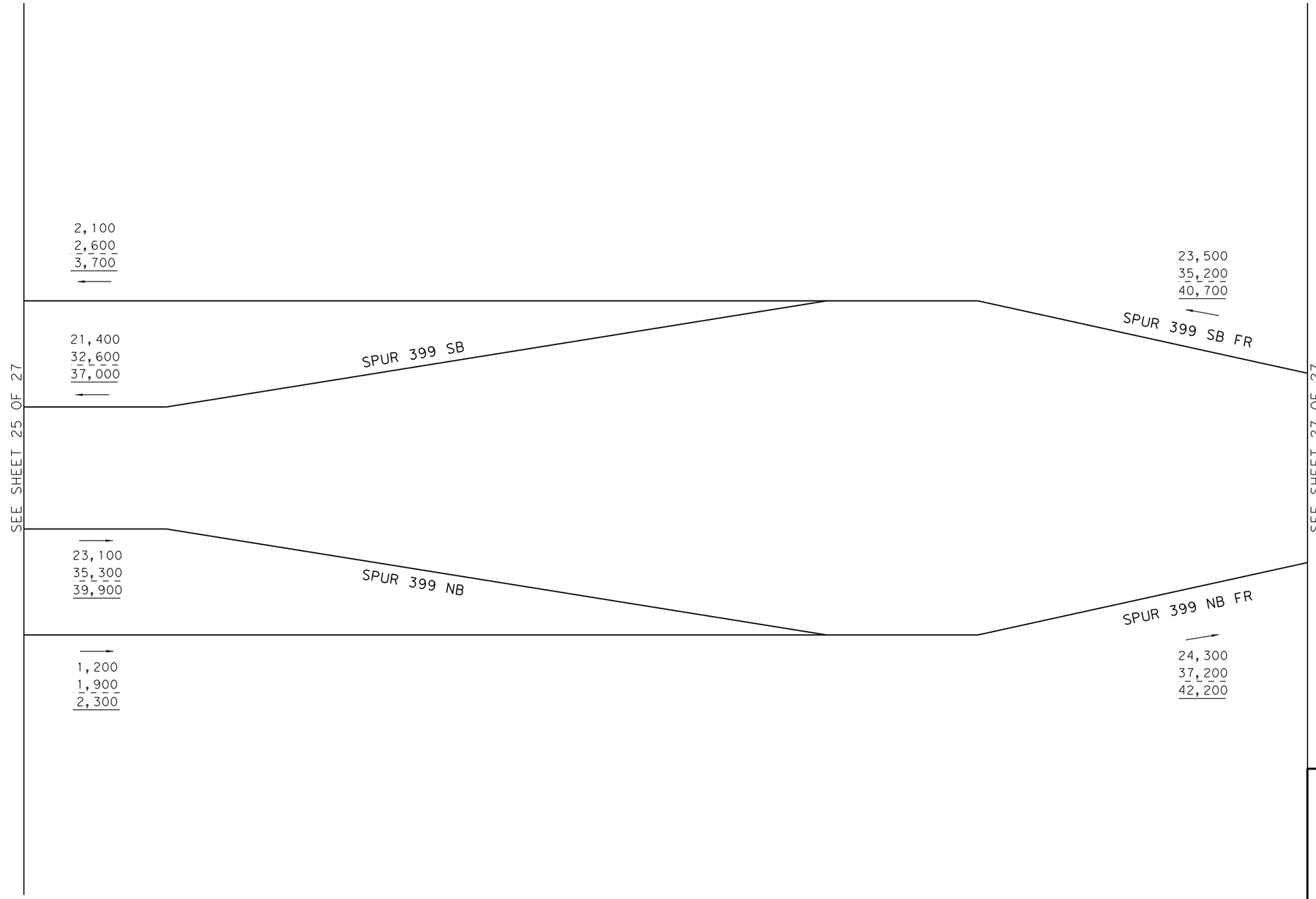
NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
ENLOE RD
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 25 OF 27

DATE: 7/12/2021
FILE: SPUR399_EAST_TRF_25.dgn



NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

LEGEND

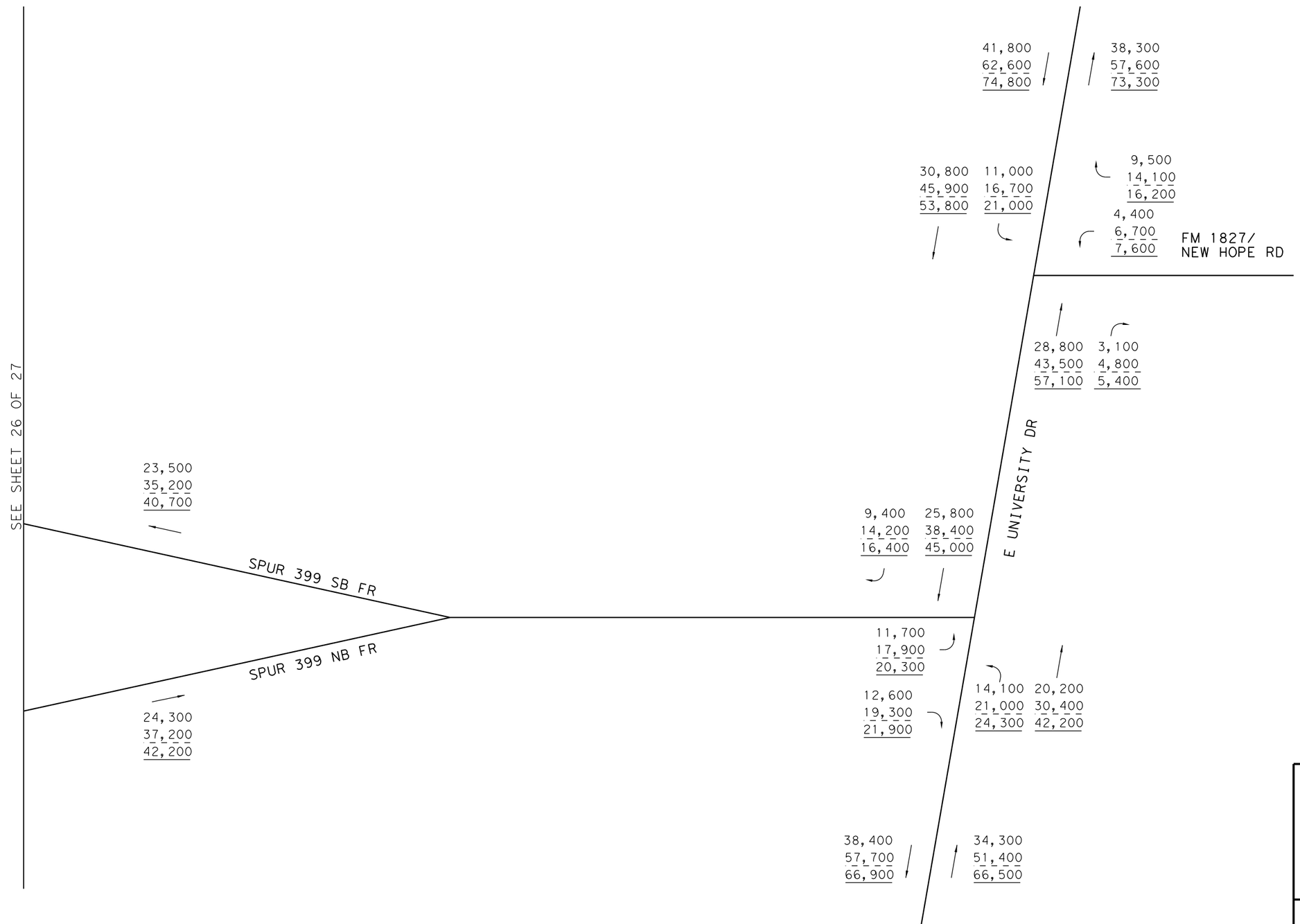
XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

SPUR 399 AND RAMPS
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 26 OF 27

DATE:7/12/2021
FILE:SPUR399_EAST_TRF_26.dgn



NOT TO SCALE

LEGEND

XXXX- 2030 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2050 AVERAGE DAILY TRAFFIC VOLUMES
XXXX- 2060 AVERAGE DAILY TRAFFIC VOLUMES

NOT INTENDED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES
DHRUVA LAHON, P.E.
SERIAL NUMBER 102185

SPUR 399 AND
E UNIVERSITY DR
AVERAGE DAILY TRAFFIC
EAST OPTION BUILD VOLUMES

Kimley»Horn F-928

0364-04-051 | SHEET 27 OF 27

DATE: 7/19/2021
FILE: SPUR399_EAST_TRF_27.dgn

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East-Option C/ Mainlanes Section 1 From US 75 To Direct Connector, Northeast of US 75 Collin County	29,800	45,700	54 - 46	11.6	7.7	5.1	12,000	30	7,564,000	3	9,632,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	92.3	94.9
Medium Duty	3.9	2.6
Heavy Duty	3.8	2.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East-Option C/ Mainlanes Section 1 From US 75 To Direct Connector, Northeast of US 75 Collin County	29,800	51,600	54 - 46	11.6	7.7	5.1	12,100	30	12,232,500	3	15,577,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/Scenario East/Option C/Mainlanes Section 2 From Direct Connectors, Northeast of US 75 To Ramps, Northeast of Medical Center Dr. Collin County	60,800	93,200	54 - 46	11.6	5.3	3.5	12,200	30	10,674,500	3	13,559,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.7	96.5
Medium Duty	2.7	1.8
Heavy Duty	2.6	1.7

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/Scenario East/Option C/Mainlanes Section 2 From Direct Connectors, Northeast of US 75 To Ramps, Northeast of Medical Center Dr. Collin County	60,800	105,300	54 - 46	11.6	5.3	3.5	12,300	30	17,270,000	3	21,937,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/Mainlanes Section 3 From Ramps, Northeast of Medical Center Dr. To Stewart Rd. Collin County	70,700	108,100	54 - 46	11.6	4.7	3.1	12,200	30	11,013,500	3	13,976,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	95.3	96.9
Medium Duty	2.4	1.6
Heavy Duty	2.3	1.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/Mainlanes Section 3 From Ramps, Northeast of Medical Center Dr. To Stewart Rd. Collin County	70,700	122,100	54 - 46	11.6	4.7	3.1	12,300	30	17,814,000	3	22,606,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ Mainlanes Section 4 From Stewart Rd. To Harry McKillop Blvd East Collin County	57,500	87,800	54 - 46	11.6	5.5	3.6	12,200	30	10,445,000	3	13,272,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.5	96.4
Medium Duty	2.8	1.8
Heavy Duty	2.7	1.8

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ Mainlanes Section 4 From Stewart Rd. To Harry McKillop Blvd East Collin County	57,500	99,100	54 - 46	11.6	5.5	3.6	12,300	30	16,886,500	3	21,456,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ mainlanes Section 5 From Harry McKillop Blvd East To Old Enloe Rd. Collin County	35,800	54,000	54 - 46	11.6	6.9	4.6	12,100	30	8,072,500	3	10,273,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	93.1	95.4
Medium Duty	3.5	2.3
Heavy Duty	3.4	2.3

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ mainlanes Section 5 From Harry McKillop Blvd East To Old Enloe Rd. Collin County	35,800	61,300	54 - 46	11.6	6.9	4.6	12,100	30	13,093,500	3	16,662,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ Mainlanes Section 6 From Old Enloe Rd. To North of Enloe Rd. Collin County	44,500	67,900	54 - 46	11.6	5.8	3.8	12,100	30	8,514,000	3	10,822,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	94.2	96.2
Medium Duty	2.9	1.9
Heavy Duty	2.9	1.9

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/ Option C/ Mainlanes Section 6 From Old Enloe Rd. To North of Enloe Rd. Collin County	44,500	76,900	54 - 46	11.6	5.8	3.8	12,100	30	13,793,500	3	17,533,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/Frontage Road/ Option C Section 1 From US 75 To Medical Center Dr. Collin County	35,400	53,700	54 - 46	11.6	3.4	2.6	11,500	30	3,472,000	3	4,138,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.6	97.4
Medium Duty	1.7	1.3
Heavy Duty	1.7	1.3

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East/Frontage Road/ Option C Section 1 From US 75 To Medical Center Dr. Collin County	35,400	60,900	54 - 46	11.6	3.4	2.6	11,500	30	5,629,000	3	6,709,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Road/ Option C Section 2 From Medical Center Dr To SH 5 Collin County	17,400	26,300	54 - 46	11.6	3.4	2.6	11,000	30	1,702,500	3	2,029,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.6	97.4
Medium Duty	1.7	1.3
Heavy Duty	1.7	1.3

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Road/ Option C Section 2 From Medical Center Dr To SH 5 Collin County	17,400	29,800	54 - 46	11.6	3.4	2.6	11,000	30	2,759,000	3	3,288,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Rd./ Option C Section 3 From SH 5 To SH 5/McDonald St. Collin County	22,700	35,200	54 - 46	11.6	3.5	2.6	11,100	30	2,320,500	3	2,767,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.5	97.4
Medium Duty	1.8	1.4
Heavy Duty	1.7	1.2

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Rd./ Option C Section 3 From SH 5 To SH 5/McDonald St. Collin County	22,700	39,900	54 - 46	11.6	3.5	2.6	11,200	30	3,763,500	3	4,487,500	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 4 From Harry McKillop Blvd West To Harry McKillop Blvd East Collin County	13,300	20,600	54 - 46	11.6	3.8	2.9	10,900	40	1,471,500	3	1,756,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.2	97.1
Medium Duty	1.9	1.4
Heavy Duty	1.9	1.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 4 From Harry McKillop Blvd West To Harry McKillop Blvd East Collin County	13,300	23,400	54 - 46	11.6	3.8	2.9	10,900	40	2,390,000	3	2,853,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 5 From Harrry McKillop Blvd East To FM 546 / CR 317 Collin County	37,100	60,400	54 - 46	11.6	3.5	2.6	11,600	30	3,908,000	3	4,660,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.5	97.4
Medium Duty	1.8	1.4
Heavy Duty	1.7	1.2

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 5 From Harrry McKillop Blvd East To FM 546 / CR 317 Collin County	37,100	68,200	54 - 46	11.6	3.5	2.6	11,700	30	6,331,000	3	7,549,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Road/ Option C Section 6 From FM 546/CR 317 To Ramps, North of Old Enloe Rd. Collin County	18,400	31,100	54 - 46	11.6	3.8	2.9	11,100	30	2,149,000	3	2,565,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.2	97.1
Medium Duty	1.9	1.4
Heavy Duty	1.9	1.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East /Frontage Road/ Option C Section 6 From FM 546/CR 317 To Ramps, North of Old Enloe Rd. Collin County	18,400	35,000	54 - 46	11.6	3.8	2.9	11,100	30	3,477,500	3	4,151,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 27, 2021**

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2050	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 7 From Ramps, North of Old Enloe Rd To North of Enloe Rd Collin County	3,200	4,900	54 - 46	11.6	9.4	7.1	10,600	40	856,000	3	1,029,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	90.6	92.9
Medium Duty	4.8	3.6
Heavy Duty	4.6	3.5

Description of Location	Average Daily Traffic 2030	Average Daily Traffic 2060	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060) Flexible Pavement	S N	Rigid Pavement	SLAB
Spur 399/ Scenario East / Frontage Road/Option C Section 7 From Ramps, North of Old Enloe Rd To North of Enloe Rd Collin County	3,200	5,700	54 - 46	11.6	9.4	7.1	10,700	40	1,411,000	3	1,696,500	8"

Attachment C – Existing Model Validation Study

A validation study was performed in order to verify that the existing model accurately predicts existing traffic noise based on current conditions and to ensure that traffic noise is the main source of noise. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that used field-collected traffic parameters.

Seven validation sites were selected along the project ROW (Figure 1). Field measurements were collected on June 10th, 2021 between 8 AM and 5 PM. The weather was mostly sunny and dry, with light winds less than 12 mph. During the measurements, traffic was free-flowing and traveling at a relatively constant speed.

A sound level meter was used to measure sound levels in dB(A) Leq. The sound level meter was positioned on a tripod with the microphone facing the roadway and set at a height of five feet. The measurement duration was 30 minutes. The meter was calibrated before measurements were taken and at the end of the day.

Concurrently with the sound level measurement, traffic was counted by personnel in the field to obtain traffic counts by vehicle classification (car, medium truck, and heavy truck). Because the noise modeling software uses a vehicle per hour input, vehicle counts for the 30-minute measurement interval were multiplied by two to convert the values to the hourly condition. Weather conditions, including temperature and wind speed/direction were obtained from published meteorological information. Field data sheets are included at the end of Attachment C.

The FHWA traffic noise modeling software (TNM 2.5) was used to calculate existing traffic noise levels at each validation location, based on the field-observed conditions. The validation model run(s) used the existing roadway parameters, observed hourly traffic counts, and observed speeds.

The traffic noise model validation results are shown in **Table 1**.

Table 1. Traffic Noise Levels dB(A) Leq

Location	Validation Site	Field-Measured Level dB(A) Leq	Modeled Level dB(A) Leq	Difference (+/-)	Validated?
A	US 380 University Drive	76.2	74.6	-1.6	Yes
B	Airport Road	63.2	62.6	-0.6	Yes
C	Airport Road	65.4	65.4	0.0	Yes
E	FM 546	69.8	71.7	1.9	Yes
F	FM 317	56.9	55.1	-1.8	Yes
H	TX 399/5	71.9	71.4	-0.5	Yes
I	TX 399/5	74.3	73.0	-1.3	Yes

Differences between the measured and model-calculated sound levels were within the +/- 3 dB(A) tolerance allowed by FHWA. Therefore, the existing noise model is considered validated for this project.

Additionally, background noise measurements were taken at two locations near Enloe Road and Old Mill Road, as listed in **Table 2** below. These measurements were performed the same day and under the same conditions as described for the traffic noise measurements above.

Table 2. Background Levels dB(A) Leq

Location	Validation Site	Field-Measured Level dB(A) Leq	Modeled Level dB(A) Leq	Difference (+/-)	Validated?
D	Enloe Road	48.1	----	N/A	N/A
G	Old Mill Road	52.0	----	N/A	N/A

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: A

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: US 380 – University Drive Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

WEIGHTING (circle one) **A** Lin.

Location Description: Location A – US 380 University Drive

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed on south side of roadway, 45ft from edge of shoulder (~53ft from edge of nearest travel lane), in front of berm running east of placement. Good line-of-sight.

N

Posted speed 60 mph. Free-flowing traffic at speed to the extent possible due to traffic light at FM 1827 – New Hope Road. Light cycle approximately 50-55 sec red, 70-100 sec green. Slight grade eastbound affecting heavy truck gearing. Limited traffic queue at light eastbound, significant queue at light westbound ~0.4 miles (best estimate). Individual heavy truck passbys 78-82 dBA. Traffic noise dominant ; all measurements valid.

Start Time:	Stop Time:	Duration:
8:24 AM PM	8:54 AM PM	30 minutes

Wind Speed/Direction: 7-12 mph S/SE Percentiles:_____

Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: US 380 – University Drive EB (Top Row) and WB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
470 per 29 minutes	6 per 29 minutes	70 per 29 minutes	---	1 per 29 minutes
1200-1480 per 30 minutes (40-50 likely representative per minute)	35 per 26 minutes (2-3 likely representative per minute)	16 per 26 minutes (3-4 likely representative per minute)	----	----

***Note roadway direction in table**

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 11 PERSONNEL: RMB

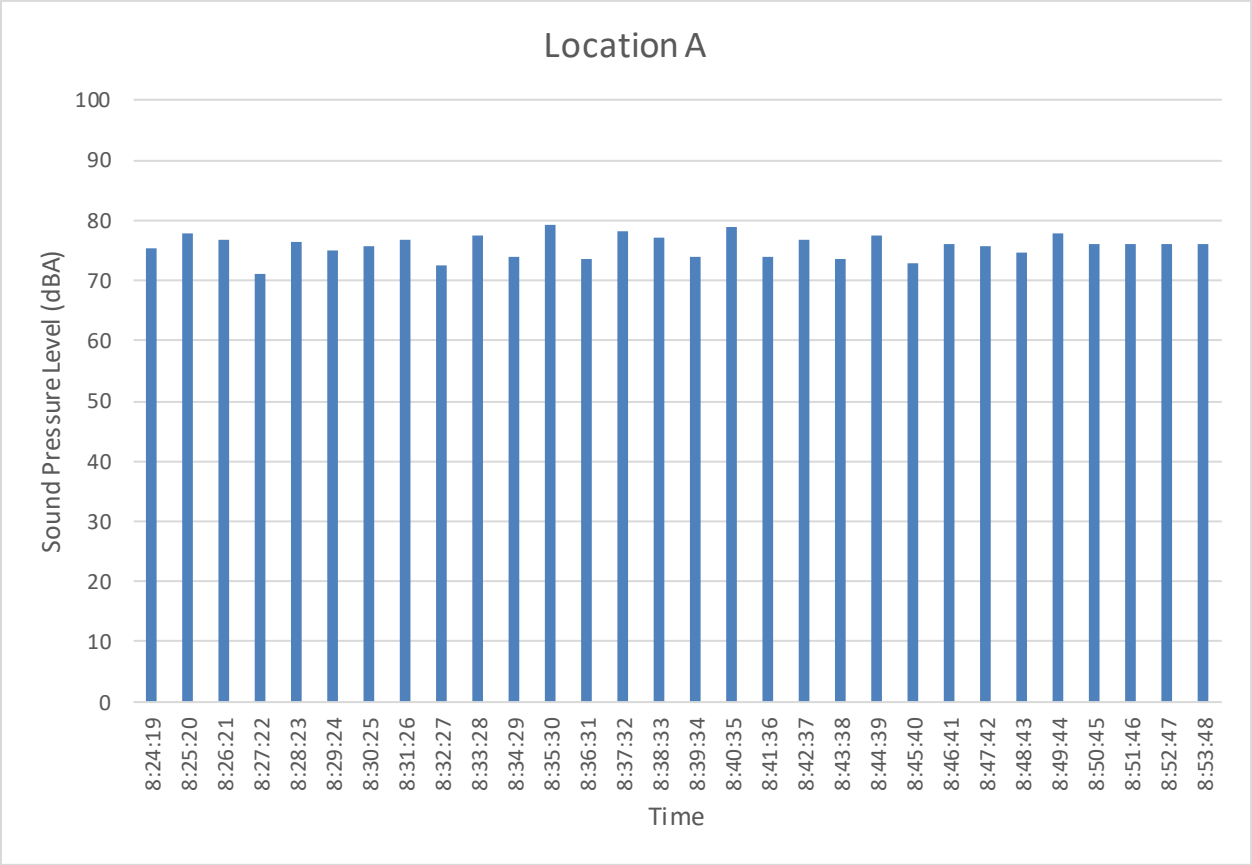
LOCATION/ADDRESS: Location A DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	8:24:19	75.5			Westbound acceleration
2	8:25:20	77.8			Vehicles stopped at light, truck acceleration uphill
3	8:26:20	76.9			Westbound acceleration
4	8:27:20	71.2			Acceleration to stop
5	8:28:19	76.3			Acceleration
6	8:29:20	74.9			
7	8:30:20	75.6			
8	8:31:20	76.6			
9	8:32:20	72.6			Stop, loud music from jeep
10	8:33:20	77.3			Flowing traffic
11	8:34:20	73.9			Flowing traffic
12	8:35:20	79.1			
13	8:36:20	73.5			Stop
14	8:37:20	78.2			Acceleration
15	8:38:20	77.2			
16	8:39:20	74.0			Stop
17	8:40:20	79.0			
18	8:41:20	73.8			
19	8:42:19	76.9			
20	8:43:20	73.4			
21	8:44:20	77.6			
22	8:45:20	72.8			
23	8:46:19	76.2			
24	8:47:20	75.8			
25	8:48:20	74.5			
26	8:49:20	77.9			
27	8:50:20	76.0			
28	8:51:20	76.1			
29	8:52:20	75.9			
30	8:53:20	76.1			

TOTAL Leq = 76.2 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<


Location A
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
8:24:19
8:25:20
8:26:21
8:27:22
8:28:23
8:29:24
8:30:25
8:31:26
8:32:27
8:33:28
8:34:29
8:35:30
8:36:31
8:37:32
8:38:33
8:39:34
8:40:35
8:41:36
8:42:37
8:43:38
8:44:39
8:45:40
8:46:41
8:47:42
8:48:43
8:49:44
8:50:45
8:51:46
8:52:47
8:53:48
Time

#	Eastbound				Westbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	11	0	3	0	50	0	3	0
2	12	0	6	0	50	1	3	0
3	12	0	1	0	40-50	2	3	0
4	11	0	0	0	40-50	3	0	0
5	11	0	3	0	40-50	2	1	0
6	6	0	1	0	40-50	2	0	0
7	19	0	3	0	40-50	4	0	0
8	13	1	3	0	40-50	0	1	0
9	6	0	0	0	40-50	4	0	0
10	48	2	0	0	40-50	1	2	0
11	6	0	2	0	40-50	3	0	0
12	26	0	4	0	40-50	0	0	0
13	10	0	3	0	40-50	0	0	0
14	30	0	2	0	40-50	0	0	0
15	8	0	3	0	40-50	1	0	0
16	32	1	5	0	40-50	2	0	0
17	5	0	2	0	40-50	4	0	0
18	13	0	4	0	40-50	0	0	0
19	16	1	0	0	40-50	0	0	0
20	25	0	2	0	40-50	0	0	0
21	18	0	3	0	40-50	0	0	0
22	11	0	1	0	40-50	1	2	0
23	15	1	5	0	40-50	0	0	0
24	18	0	1	0	40-50	3	0	0
25	26	0	2	0	40-50	0	0	0
26	13	0	2	0	40-50	2	1	0
27	21	0	5	1	40-50			
28	6	0	1	0	40-50			
29	22	0	3	0	40-50			
30					40-50			

Westbound generally averaged 40-50 Auto, 2-3 Med trucks, and 3-4 Hvy trucks per a representative minute and had heaviest traffic.

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: B

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: Airport Road Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

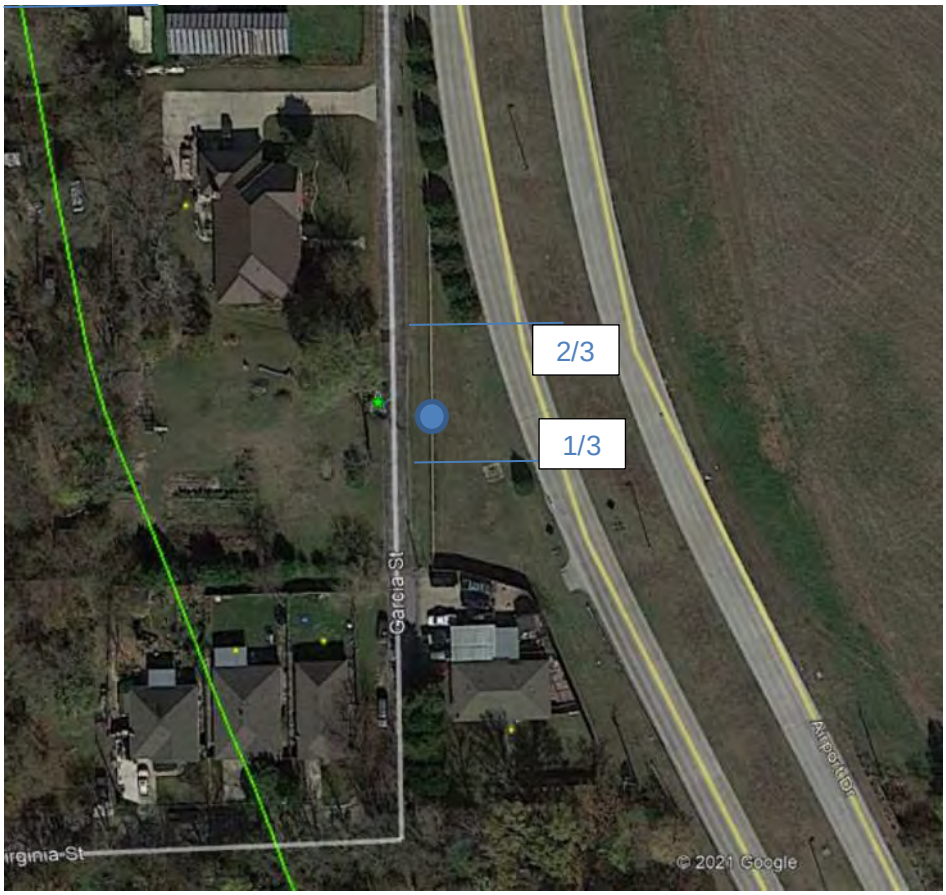
WEIGHTING (circle one) **A** Lin.

Location Description: Location B – Airport Road

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed at fence line along Garcia Street, approximately 2/3 of the way south between evergreen trees as shown. Note, near lane of SB direction closed due to construction. Posted speed 45 mph. Traffic through construction zone perhaps 5 mph reduced from posted (negligible affect). Significant 'clop-clop' of tires between 8-10ft sections of concrete all of roadway.

N



Start Time: Stop Time: Duration:

9:16 AM PM 9:46 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

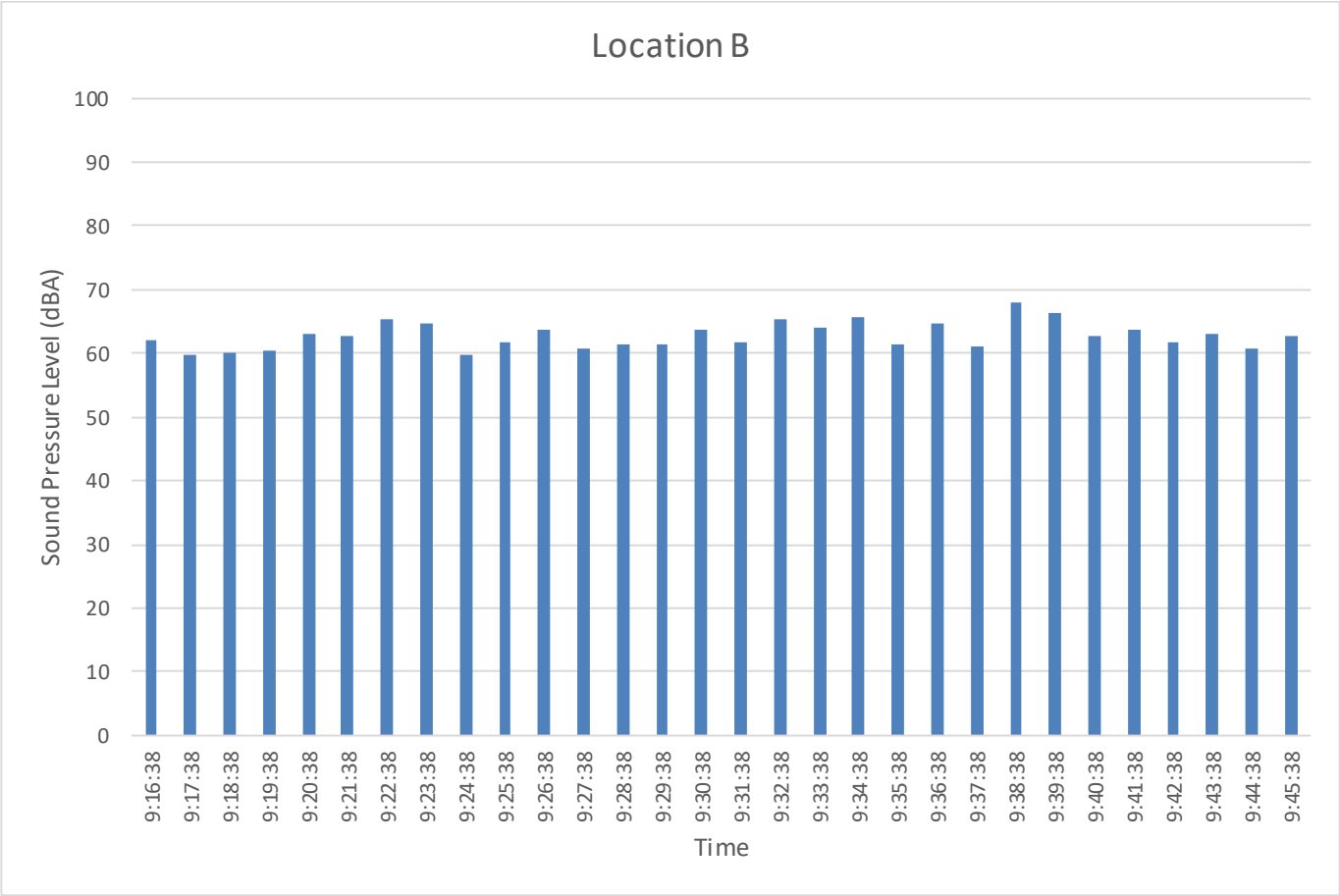
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: Airport Road SB (Top Row) and NB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
336	2	15		
190	17	1		

***Note roadway direction in table**


Location B
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
9:16:38
9:17:38
9:18:38
9:19:38
9:20:38
9:21:38
9:22:38
9:23:38
9:24:38
9:25:38
9:26:38
9:27:38
9:28:38
9:29:38
9:30:38
9:31:38
9:32:38
9:33:38
9:34:38
9:35:38
9:36:38
9:37:38
9:38:38
9:39:38
9:40:38
9:41:38
9:42:38
9:43:38
9:44:38
9:45:38
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 12 PERSONNEL: RMB

LOCATION/ADDRESS: Location B DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	9:16:38	62.0			Dog barking
2	9:17:38	59.8			
3	9:18:38	60.2			
4	9:19:38	60.5			
5	9:20:38	63.1			
6	9:21:38	62.8			
7	9:22:38	65.3			
8	9:23:38	64.6			
9	9:24:38	59.8			
10	9:25:38	61.8			
11	9:26:38	63.6			
12	9:27:38	60.7			
13	9:28:38	61.3			
14	9:29:38	61.5	X		Dog barking (61 dBA)
15	9:30:38	63.8			
16	9:31:38	61.6			Dog barking
17	9:32:38	65.3			
18	9:33:38	63.9	X		Small plane, dog barking
19	9:34:38	65.6			
20	9:35:38	61.4			
21	9:36:38	64.6			
22	9:37:38	61.1	X		Construction noise – dragging signs
23	9:38:38	68.0			
24	9:39:38	66.2	X		Trailer rattle noise
25	9:40:38	62.7			
26	9:41:38	63.8			
27	9:42:38	61.7			
28	9:43:38	63.1			
29	9:44:38	62.9			
30	9:45:38	58.6			

TOTAL Leq = 63.3 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

#	Southbound				Northbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	9	0	0	0	6	0	0	0
2	7	0	0	0	4	0	0	0
3	5	0	0	0	9	2	0	0
4	12	0	0	0	7	1	0	0
5	14	0	0	0	10	0	0	0
6	7	0	1	0	9	0	0	0
7	16	0	1	0	8	1	0	0
8	10	0	1	0	10	0	0	0
9	7	0	0	0	5	0	0	0
10	12	0	0	0	7	1	0	0
11	13	0	1	0	7	0	0	0
12	13	0	0	0	1	0	0	0
13	11	0	0	0	11	0	0	0
14	9	0	1	0	6	0	0	0
15	15	0	1	0	2	0	0	0
16	11	0	0	0	6	1	0	0
17	13	0	1	0	7	1	0	0
18	16	0	0	0	18	2	0	0
19	10	0	2	0	4	0	0	0
20	12	0	0	0	7	1	0	0
21	12	0	1	0	5	1	0	0
22	14	0	0	0	7	0	0	0
23	9	0	0	0	10	2	1	0
24	8	0	1	0	7	3	0	0
25	18	0	0	0	4	1	0	0
26	8	1	1	0	7	0	0	0
27	13	1	0	0	3	0	0	0
28	11	0	1	0	11	0	0	0
29	17	0	1	0	2	0	0	0
30	4	0	1	0	7	0	0	0

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: C

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: Airport Road Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

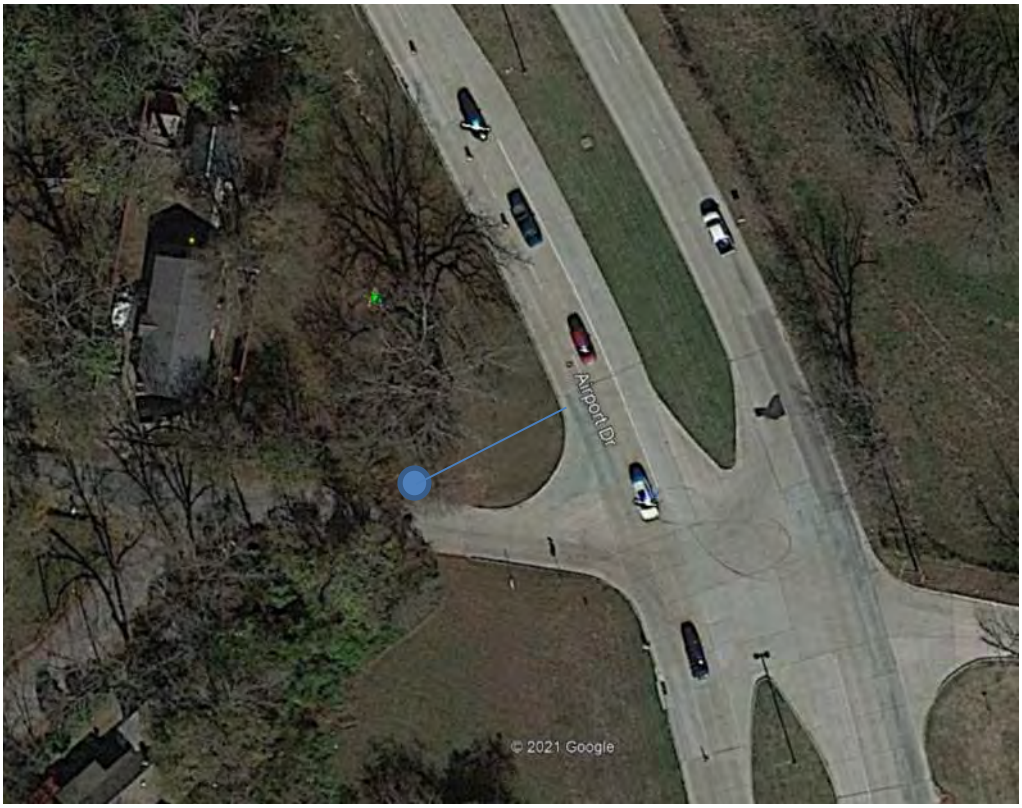
WEIGHTING (circle one) **A** Lin.

Location Description: Location C – Airport Road

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed near telephone pole along SB side of Enloe Road, ~65ft from nearest travel lane of Airport Road. Significant 'clop-clop' of tires between 8-10ft sections of concrete all of roadway.

N



Near lane of NB side of road closed for construction. Approximatley 5-10 mph reduction from posted speed limit. SLM paused intermittently to avoid vehicles passby contributions on Enloe Road.

Start Time: 10:19 AM PM

Stop Time: 10:49 AM PM

Duration: 30 minutes

Wind Speed/Direction: 7-12 S / SE

Percentiles:_____

Temperature: 82-88 F

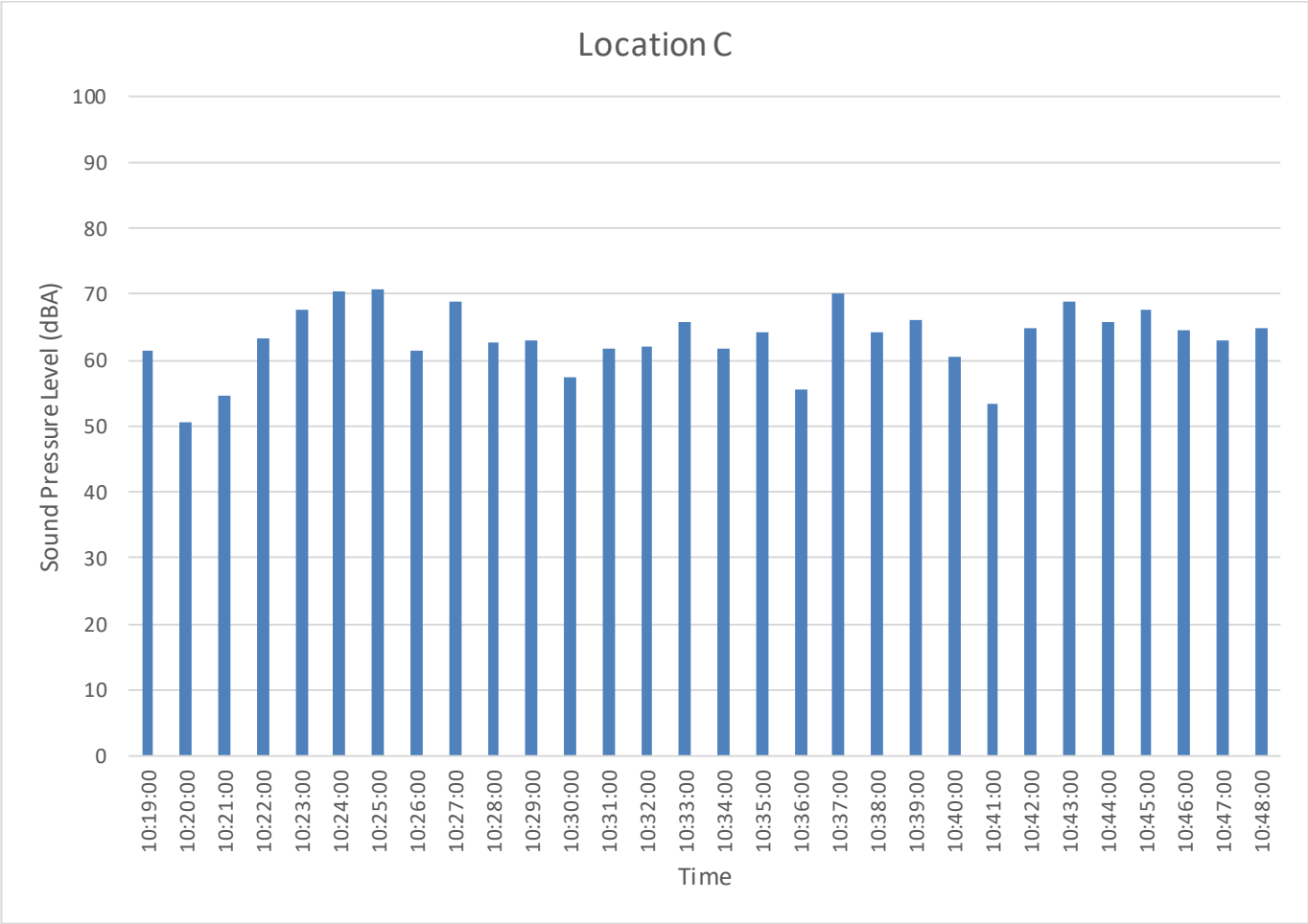
Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: Airport Road SB (Top Row) and NB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
255	7	27		1
226	18	8		0

***Note roadway direction in table**


Location C
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
10:19:00
10:20:00
10:21:00
10:22:00
10:23:00
10:24:00
10:25:00
10:26:00
10:27:00
10:28:00
10:29:00
10:30:00
10:31:00
10:32:00
10:33:00
10:34:00
10:35:00
10:36:00
10:37:00
10:38:00
10:39:00
10:40:00
10:41:00
10:42:00
10:43:00
10:44:00
10:45:00
10:46:00
10:47:00
10:48:00
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 13 PERSONNEL: RMB

LOCATION/ADDRESS: Location C DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	10:19:00	61.3			
2	10:20:00	50.5			
3	10:21:00	54.7			
4	10:22:00	63.3			
5	10:23:00	67.6			
6	10:24:00	70.3			
7	10:25:00	70.6			
8	10:26:00	61.5			Slight wind gust
9	10:27:00	68.9			
10	10:28:00	62.6			Distant small plane
11	10:29:00	63.0			
12	10:30:00	57.4			
13	10:31:00	61.9			Distant small plane
14	10:32:00	62.2			
15	10:33:00	65.9			
16	10:34:00	61.8			Slight wind gust
17	10:35:00	64.1	X		Vehicle back-up beeper
18	10:36:00	55.7			
19	10:37:00	70.1			
20	10:38:00	64.2			
21	10:39:00	66.1			
22	10:40:00	60.5			
23	10:41:00	53.5			
24	10:42:00	65.0			
25	10:43:00	69.0			Breeze
26	10:44:00	65.9			Horn
27	10:45:00	67.5			Breeze
28	10:46:00	64.7			
29	10:47:00	63.0			Breeze
30	10:48:00	64.9			Distant small plane, breeze

TOTAL Leq = 65.4 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

#	Southbound				Northbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	0	0	0	0	9	5	2	0
2	0	0	0	0	2	1	0	0
3	8	0	0	0	5	1	0	0
4	11	0	4	0	8	1	1	0
5	10	0	3	0	6	0	0	0
6	19	0	3	0	?	0	0	0
7	6	0	1	0	9	3	1	0
8	10	0	2	0	1	0	0	0
9	9	0	0	0	7	0	1	0
10	4	0	0	0	4	0	1	0
11	8	0	1	0	2	1	0	0
12	2	0	1	0	7	0	0	0
13	16	0	0	0	8	0	0	0
14	8	2	0	0	4	0	0	0
15	13	2	0	0	2	0	0	0
16	1	0	0	0	4	1	0	0
17	12	0	3	0	6	0	1	0
18	8	0	2	0	6	0	0	0
19	3	0	0	0	6	1	0	0
20	0	0	0	0	8	0	0	0
21	0	0	1	0	3	0	0	0
22	17	0	2	0	10	1	0	0
23	12	1	2	1	7	0	0	0
24	20	0	0	0	3	1	0	0
25	11	2	0	0	8	0	0	0
26	4	0	0	0	8	1	0	0
27	20	0	0	0	10	0	1	0
28	6	0	1	0	7	0	0	0
29	12	0	0	0	10	1	0	0
30	5	0	1	0	6	0	0	0

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: D

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: Background Noise Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

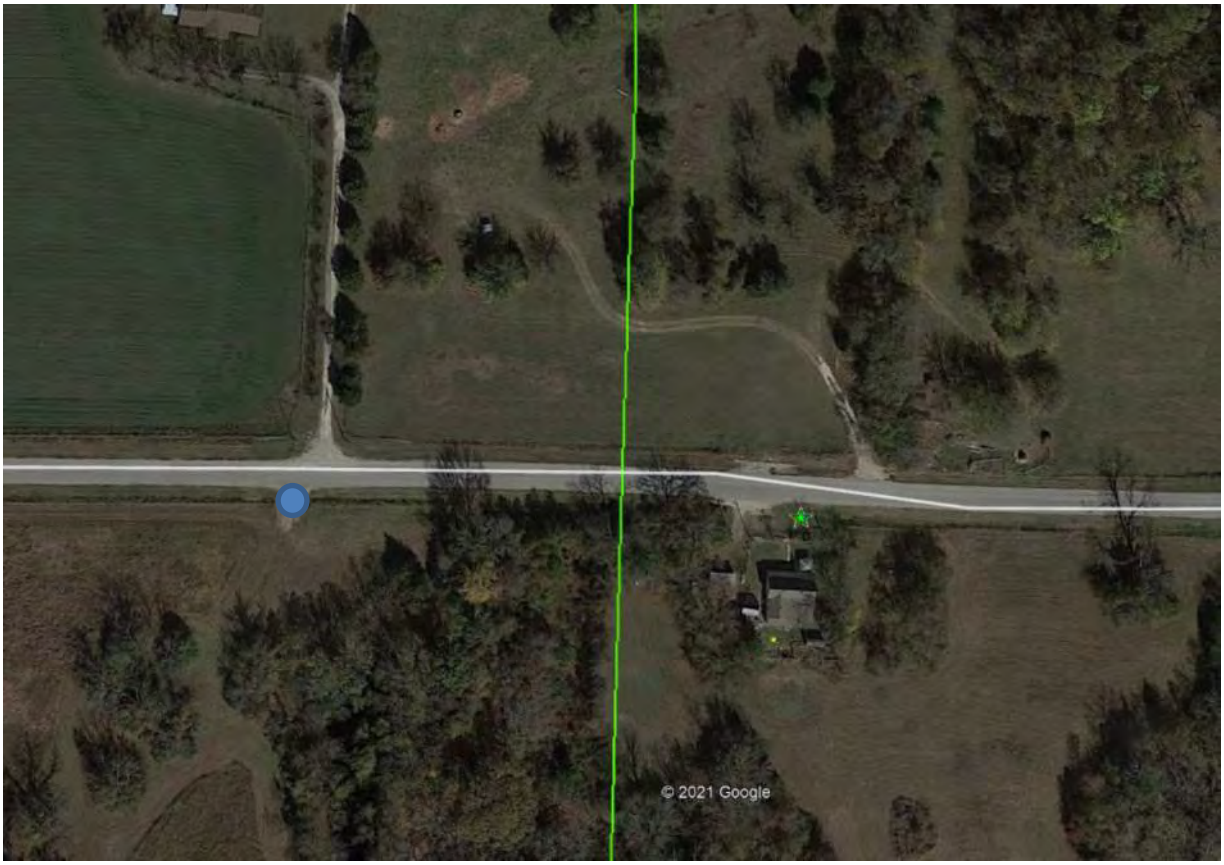
WEIGHTING (circle one) **A** Lin.

Location Description: Location D – Enloe Road

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed along Enloe Road. This is a background noise measurement. SLM paused for any limited vehicle passby on Enloe Road.

N



Start Time: Stop Time: Duration:

11:15 AM PM 11:45 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

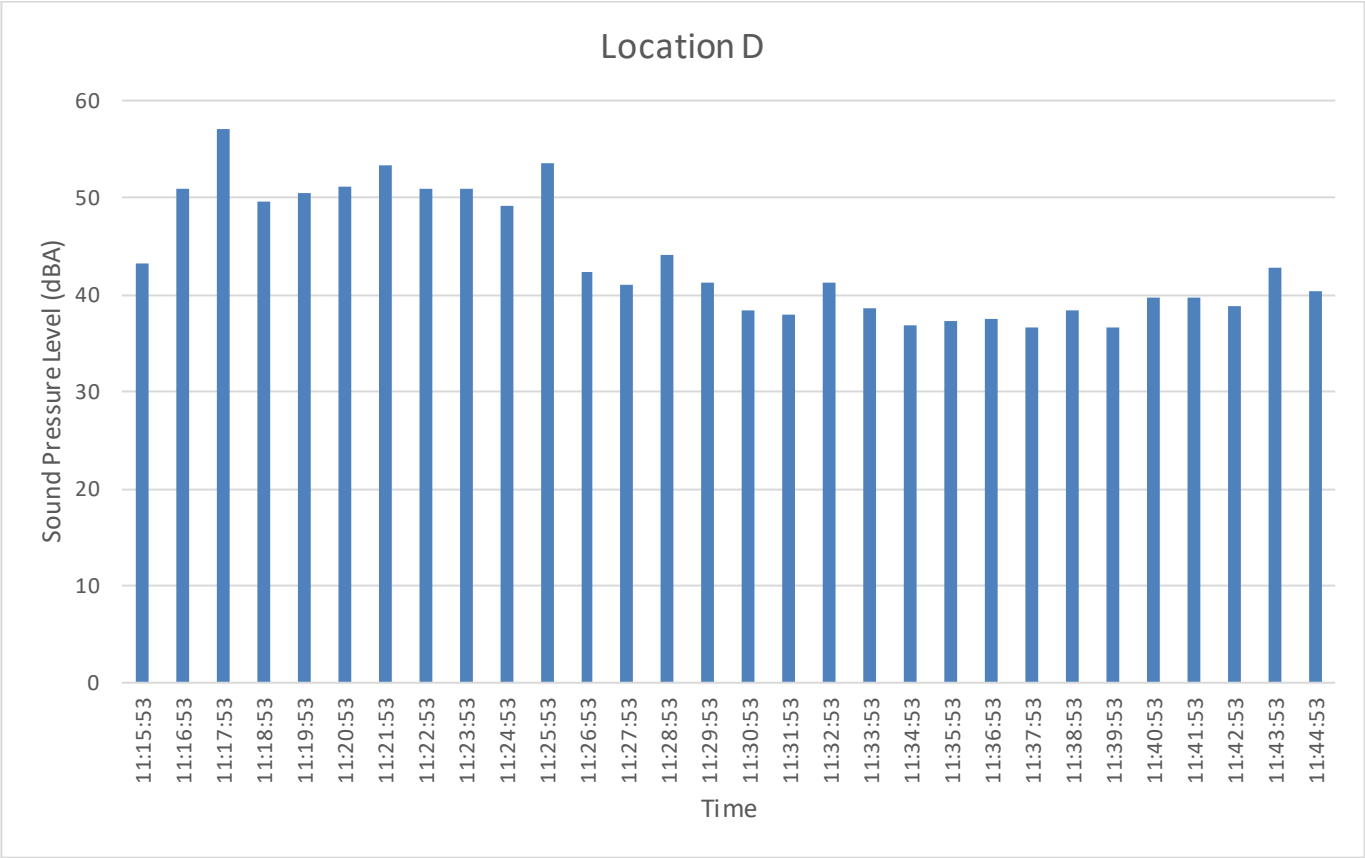
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: N/A

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles

***Note roadway direction in table**


Location D
Sound Pressure Level (dBA)
60
50
40
30
20
10
0
11:15:53
11:16:53
11:17:53
11:18:53
11:19:53
11:20:53
11:21:53
11:22:53
11:23:53
11:24:53
11:25:53
11:26:53
11:27:53
11:28:53
11:29:53
11:30:53
11:31:53
11:32:53
11:33:53
11:34:53
11:35:53
11:36:53
11:37:53
11:38:53
11:39:53
11:40:53
11:41:53
11:42:53
11:43:53
11:44:53
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 14 PERSONNEL: RMB

LOCATION/ADDRESS: Location D DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	11:15:53	43.2			Distant small plane
2	11:16:53	50.8			Birds, small plane takeoff
3	11:17:53	57.0			Small plane overflight, small plane takeoff
4	11:18:53	49.5			Distant small plane, small plane overflight
5	11:19:53	50.5			Small plane takeoff
6	11:20:53	51.2			Distant small plane, small plane overflight
7	11:21:53	53.3			Small plane takeoff, birds
8	11:22:53	51.0			Small plane takeoff, distant small plane
9	11:23:53	51.0			Small plane takeoff, small plane overflight
10	11:24:53	49.2			Helicopter
11	11:25:53	53.6			Helicopter, breeze
12	11:26:53	42.4			Distant small plane, breeze, birds
13	11:27:53	41.1			Birds, distant dog barking, distant small plane
14	11:28:53	44.0			Distant passenger jet
15	11:29:53	41.2			Birds, distant passenger jet
16	11:30:53	38.3			Distant vehicles, distant dog barking, birds
17	11:31:53	37.9			Distant traffic
18	11:32:53	41.3			Distant passenger jet
19	11:33:53	38.6			Breeze, distant dog barking
20	11:34:53	36.9			Birds, distant dog barking, distant passenger jet
21	11:35:53	37.3			Insects
22	11:36:53	37.5			Distant plane engine
23	11:37:53	36.6			Birds, distant traffic
24	11:38:53	38.4			Birds, distant dog barking
25	11:39:53	36.6			
26	11:40:53	39.8			Distant passenger jet, distant dog barking
27	11:41:53	39.7			Distant truck
28	11:42:53	38.9			Distant passenger jet
29	11:43:53	42.7			Distant passenger jet
30	11:44:53	40.4			Distant passenger jet

TOTAL Leq = 48.1 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Background noise floor in the upper 30 dBA range.

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: E

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: FM 546 Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

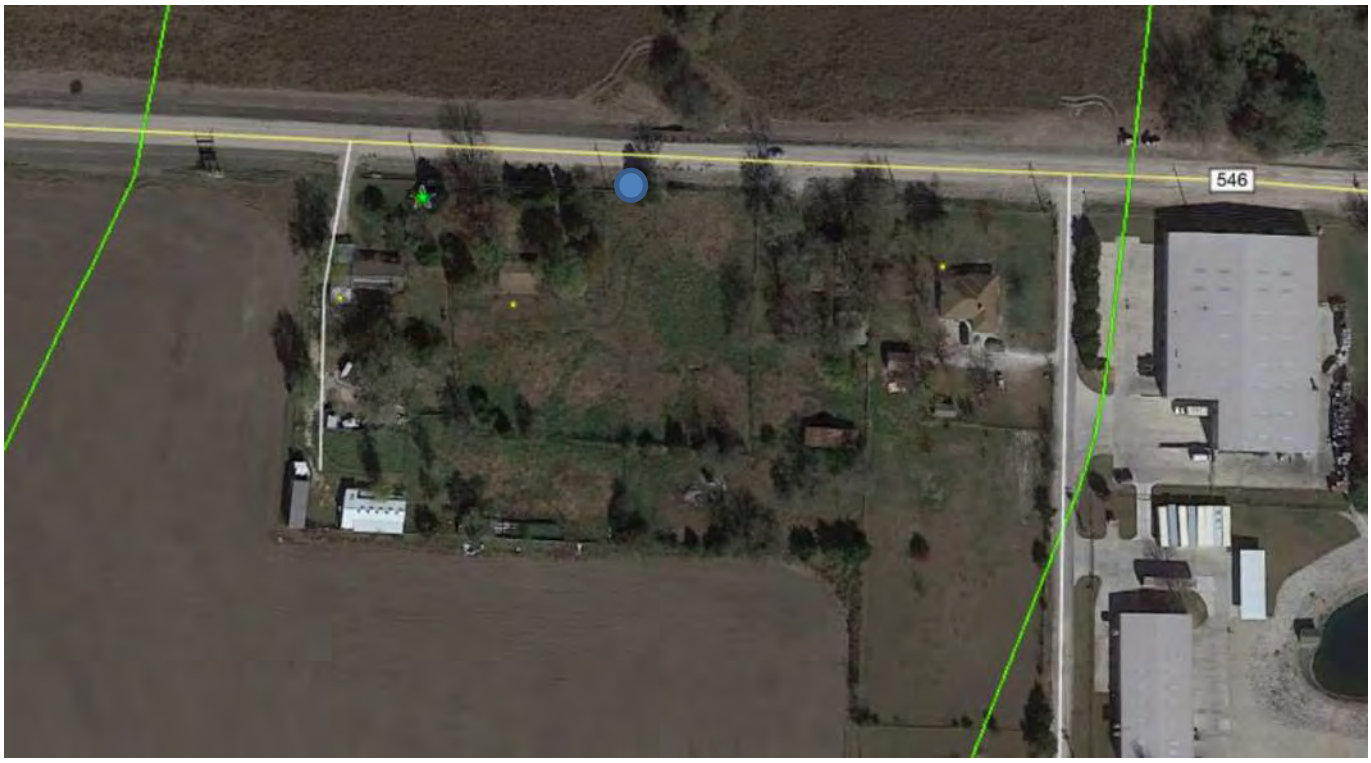
WEIGHTING (circle one) **A** Lin.

Location Description: Location E – FM 546 Traffic

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed stop sign ~28ft from edge of nearest travel lane. Posted speed 55 mph

N



Start Time: 4:07 AM PM

Stop Time: 4:37 AM PM

Duration: 30 minutes

Wind Speed/Direction: 7-12 S / SE

Percentiles:_____

Temperature: 82-88 F

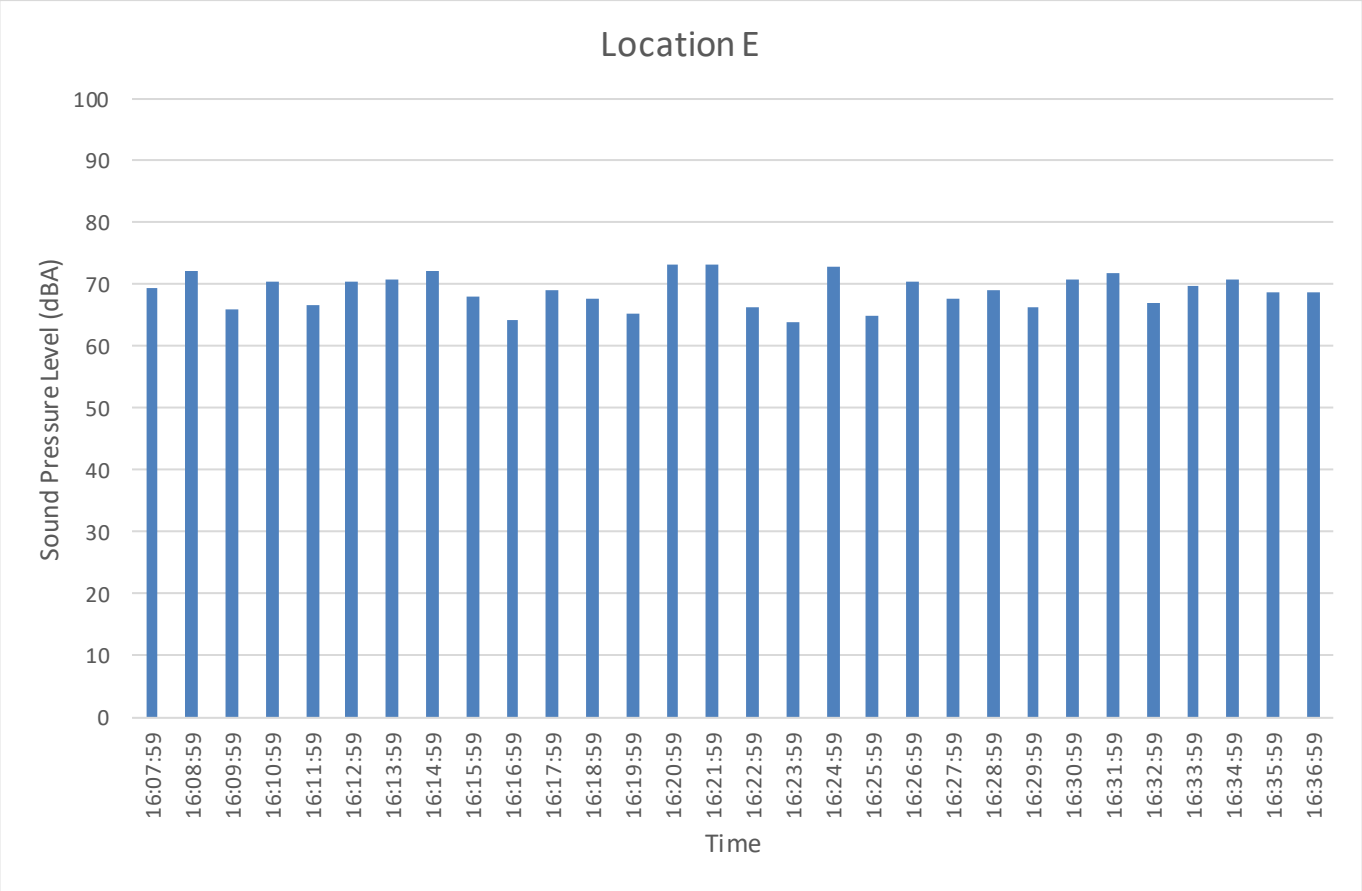
Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: FM 546 EB (Top Row) and WB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
235	1	3		3
71	3	3		1

***Note roadway direction in table**


Location E
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
16:07:59
16:08:59
16:09:59
16:10:59
16:11:59
16:12:59
16:13:59
16:14:59
16:15:59
16:16:59
16:17:59
16:18:59
16:19:59
16:20:59
16:21:59
16:22:59
16:23:59
16:24:59
16:25:59
16:26:59
16:27:59
16:28:59
16:29:59
16:30:59
16:31:59
16:32:59
16:33:59
16:34:59
16:35:59
16:36:59
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 20 PERSONNEL: RMB

LOCATION/ADDRESS: Location E DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	4:07:59	69.6			Small plane passby
2	4:08:59	72.3			Distant passenger jet, distant small plane
3	4:09:59	66.1			Distant small plane
4	4:10:59	70.6			Distant small planes
5	4:11:59	66.6			Distant small plane
6	4:12:59	70.5			Distant small plane
7	4:13:59	70.9			Small plane passby
8	4:14:59	72.2			Distant small planes
9	4:15:59	68.2			Distant small planes
10	4:16:59	64.3			Small plane passby
11	4:17:59	69.2			Distant small plane
12	4:18:59	67.8			Distant small plane
13	4:19:59	65.2			Distant small planes
14	4:20:59	73.3			Distant small planes
15	4:21:59	73.4			Distant small planes
16	4:22:59	66.5			Distant small planes
17	4:23:59	63.9			Distant small planes
18	4:24:59	72.8			
19	4:25:59	65.0			Small plane passby
20	4:26:59	70.4			Distant small plane, vehicle music
21	4:27:59	67.8			Distant small plane
22	4:28:59	69.2			Distant small plane
23	4:29:59	66.4			Small plane passby
24	4:30:59	70.9			Small plane passby
25	4:31:59	72.0			Distant small planes
26	4:32:59	67.2			Distant small planes
27	4:33:59	69.9			Small plane passby
28	4:34:59	70.8			Distant small planes
29	4:35:59	68.8			
30	4:36:59	68.9			Distant small planes

TOTAL Leq = 69.8 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Typically ambient ~ 50 dBA.

#	Eastbound				Westbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	9	0	0	0	0	0	0	0
2	8	0	0	0	3	0	1	0
3	6	0	0	0	3	0	0	0
4	2	0	0	0	3	0	1	1
5	4	0	0	0	2	0	0	0
6	7	0	0	0	4	1	0	0
7	5	0	0	0	1	0	0	0
8	7	0	1	0	6	1	0	0
9	10	0	0	0	0	0	0	0
10	4	0	0	0	0	0	0	0
11	12	0	0	1	0	0	0	0
12	7	0	0	0	1	0	0	0
13	4	0	0	0	4	0	0	0
14	10	0	0	1	5	0	0	0
15	15	0	1	0	4	0	0	0
16	5	0	0	0	3	0	0	0
17	4	0	0	0	1	0	0	0
18	20	0	0	0	2	0	0	0
19	1	0	0	0	1	0	0	0
20	12	0	0	1	2	0	0	0
21	9	0	0	0	1	0	0	0
22	15	0	0	0	1	0	0	0
23	5	0	0	0	3	0	0	0
24	5	1	1	0	3	0	0	0
25	7	0	0	0	3	0	1	0
26	7	0	0	0	2	0	0	0
27	13	0	0	0	1	0	0	0
28	9	0	0	0	2	0	0	0
29	7	0	0	0	3	1	0	0
30	6	0	0	0	7	0	0	0

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading:__F___

Project Description: __10226441 - BMCD_ US380_Spur399_SCH_ENV_____

Noise Source: __Background/FM 317 Traffic_____Date:_June 10, 2021_____ Personnel:_RMB_ _____

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

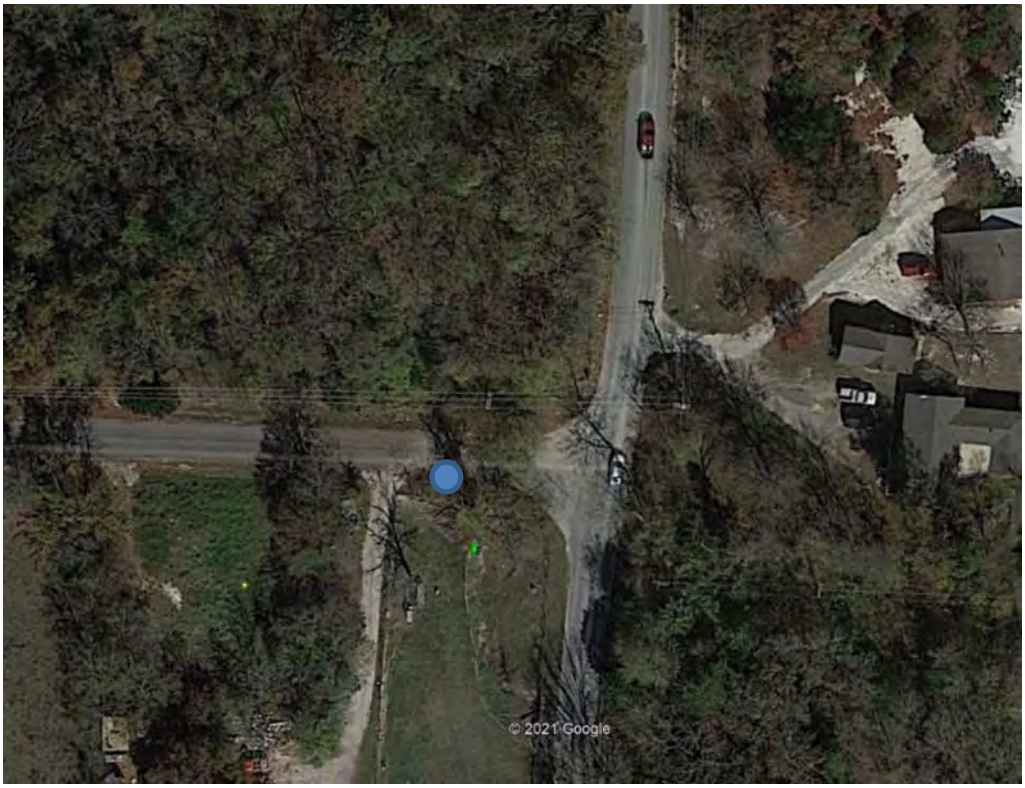
WEIGHTING (circle one) **A** Lin.

Location Description:__Location F – Background/FM 317 Traffic

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed stop sign on Old Mill Road, approximately 50 from near lane of FM 317. SLM pause for very limited Old Mill Road traffic. Posted speed 35 mph.

N



Start Time: Stop Time: Duration:

12:12 AM PM 12:42 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

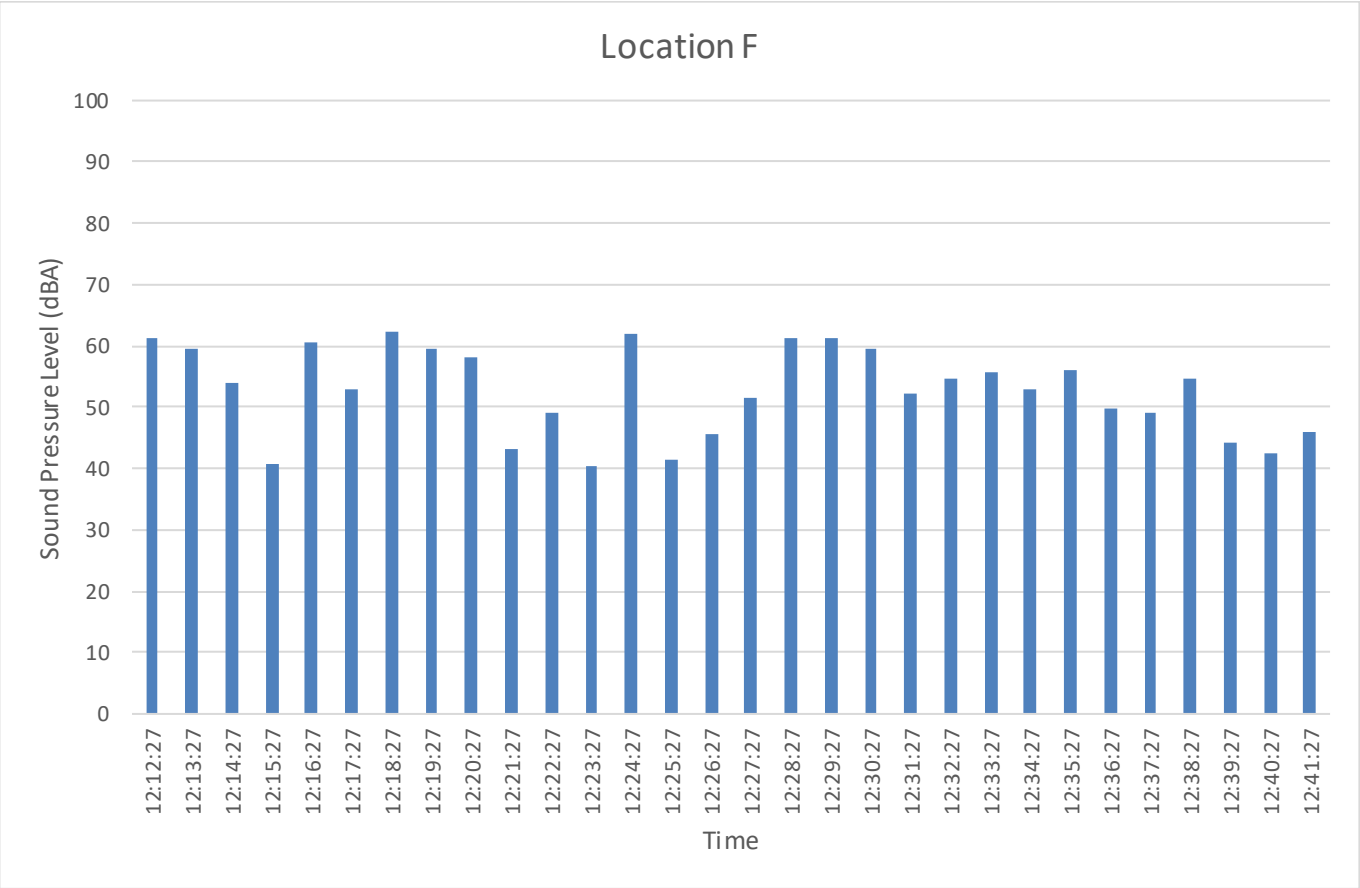
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: FM 317 SB (Top Row) and NB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
30	0	1		
14	0	1		

***Note roadway direction in table**


Location F
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
12:12:27
12:13:27
12:14:27
12:15:27
12:16:27
12:17:27
12:18:27
12:19:27
12:20:27
12:21:27
12:22:27
12:23:27
12:24:27
12:25:27
12:26:27
12:27:27
12:28:27
12:29:27
12:30:27
12:31:27
12:32:27
12:33:27
12:34:27
12:35:27
12:36:27
12:37:27
12:38:27
12:39:27
12:40:27
12:41:27
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 15 PERSONNEL: RMB

LOCATION/ADDRESS: Location F DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	12:12:27	61.4			Small plane passby, helicopter
2	12:13:27	59.6			Roosters, birds, barnyard animals, small plane passby
3	12:14:27	53.9			Small plane passby
4	12:15:27	40.9			Barnyard animals
5	12:16:27	60.5			Distant small planes
6	12:17:27	52.9			Distant misc. activity, barnyard animals
7	12:18:27	62.2			Small plane passby
8	12:19:27	59.7			Distant small plane, small plane passby
9	12:20:27	58.2			Distant small plane
10	12:21:27	43.3			Distant truck, distant small plane, birds
11	12:22:27	49.2			Distant small plane
12	12:23:27	40.4			Barnyard animals, small plane passby
13	12:24:27	62.1			Barnyard animals
14	12:25:27	41.6			
15	12:26:27	45.6			Small plane passby
16	12:27:27	51.7			Distant small plane
17	12:28:27	61.3			Small plane approach
18	12:29:27	61.3			Small plane passby
19	12:30:27	59.7			
20	12:31:27	52.2			
21	12:32:27	54.7			Distant small plane, birds
22	12:33:27	55.8			
23	12:34:27	52.9			Birds
24	12:35:27	55.9			Distant car engine start, birds
25	12:36:27	49.7			Birds
26	12:37:27	49.2			Birds chirping
27	12:38:27	54.6			Distant machine
28	12:39:27	44.3			Birds, barnyard animals
29	12:40:27	42.6			Small plane passby
30	12:41:27	45.8			Distant small plane

TOTAL Leq = 56.9 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Car passbys 67-68 dBA, small planes 70-74 dBA; 40 dBA low background level

#	Southbound				Northbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	3	0	0	0	1	0	0	0
2	1	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	2	0	1	0	2	0	1	0
6	2	0	0	0	0	0	0	0
7	2	0	0	0	0	0	0	0
8	1	0	0	0	0	0	0	0
9	1	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0
12	2	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	1	0	0	0	1	0	0	0
15	0	0	0	0	0	0	0	0
16	4	0	0	0	2	0	0	0
17	2	0	0	0	3	0	0	0
18	1	0	0	0	0	0	0	0
19	1	0	0	0	1	0	0	0
20	2	0	0	0	2	0	0	0
21	1	0	0	0	0	0	0	0
22	1	0	0	0	1	0	0	0
23	1	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
25	1	0	0	0	0	0	0	0
26	0	0	0	0	1	0	0	0
27	0	0	0	0	0	0	0	0
28	1	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: G

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: Background Noise Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

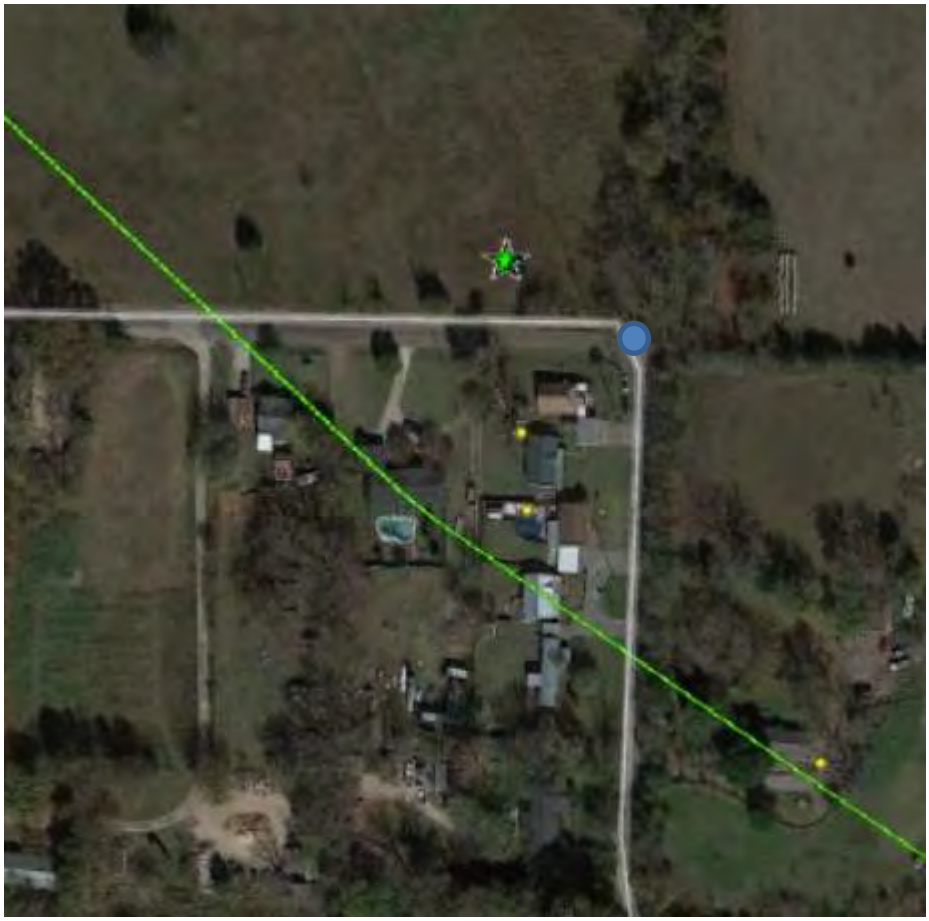
WEIGHTING (circle one) **A** Lin.

Location Description: Location G – Old Mill Road

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed along Old Mill Road. This is a background noise measurement. SLM paused for any limited vehicle passby on Old Mill Road.

N



Start Time: Stop Time: Duration:

3:21 AM PM 3:51 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

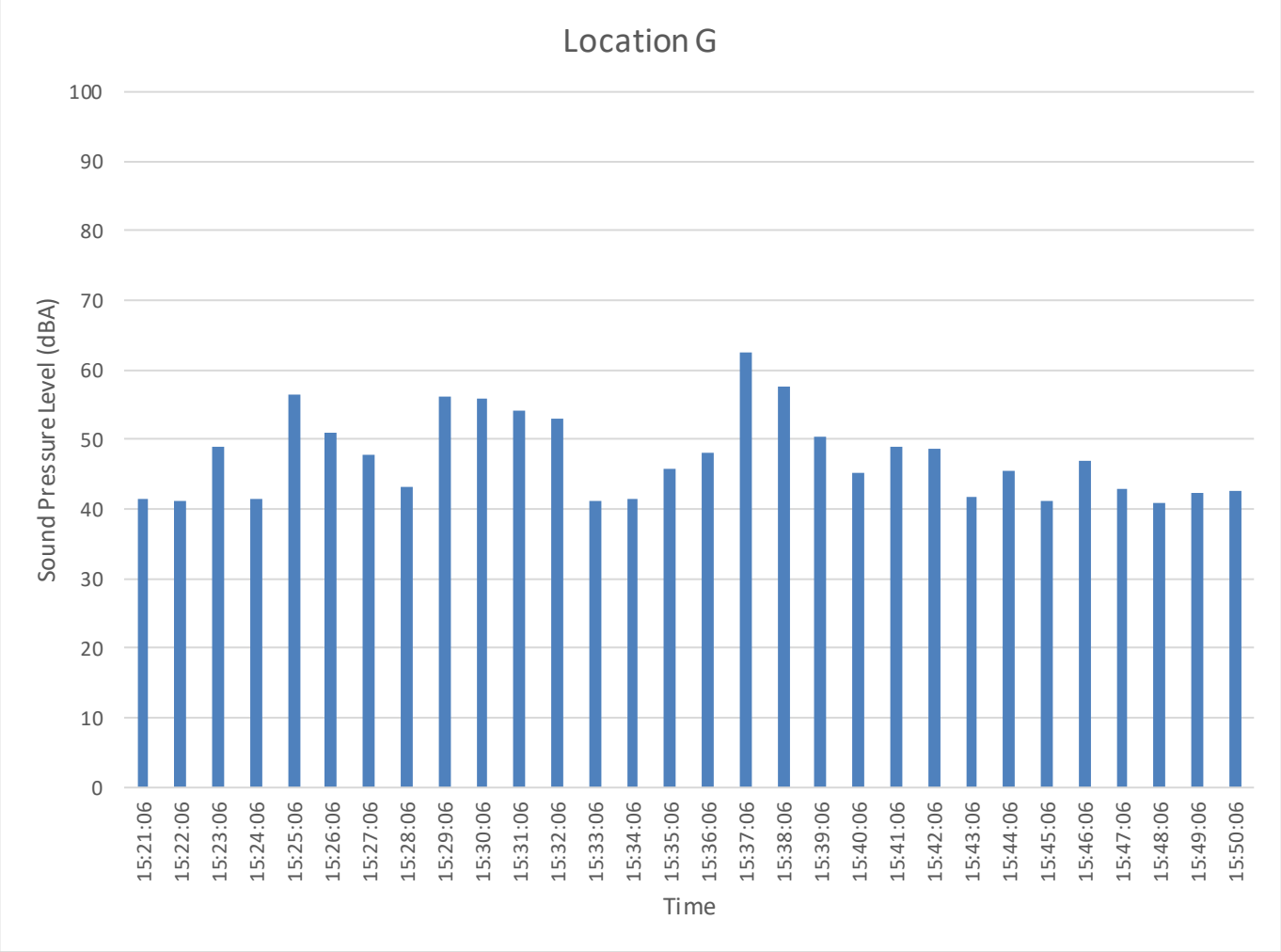
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: N/A

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles

***Note roadway direction in table**


Location G
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
15:21:06
15:22:06
15:23:06
15:24:06
15:25:06
15:26:06
15:27:06
15:28:06
15:29:06
15:30:06
15:31:06
15:32:06
15:33:06
15:34:06
15:35:06
15:36:06
15:37:06
15:38:06
15:39:06
15:40:06
15:41:06
15:42:06
15:43:06
15:44:06
15:45:06
15:46:06
15:47:06
15:48:06
15:49:06
15:50:06
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 19 PERSONNEL: RMB

LOCATION/ADDRESS: Location G DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	3:21:06	41.4			Birds chirping, distant lawn mower
2	3:22:06	41.3			Breeze, distant small plane
3	3:23:06	48.9			Birds chirping, distant truck
4	3:24:06	41.4			Distant passenger jet, distant traffic, engine start
5	3:25:06	56.6			Small plane passby
6	3:27:06	51.0			Distant small planes, distant traffic, small plane passby
7	3:28:06	47.9			Distant small plane
8	3:29:06	43.2			Helicopter
9	3:30:06	56.2	X		Talking cyclist, small plane passby
10	3:31:06	55.8			Distant small planes, distant pickup truck backing/accel
11	3:32:06	54.3			Small plane passby
12	3:33:06	53.1			Distant heavy truck, distant small plane
13	3:34:06	41.3			Distant small plane
14	3:35:06	41.4			Distant small plane
15	3:37:06	45.8			Small plane passby
16	3:38:06	48.1			Small plane passby (71 dBA)
17	3:39:06	62.6			Small plane passby (2x)
18	3:40:06	57.7			Distant small plane
19	3:41:06	50.			Birds
20	3:42:06	45.1			Distant small plane
21	3:43:06	49.0			Birds, distant small planes
22	3:44:06	48.8			Distant traffic, distant passenger jet
23	3:45:06	41.9			Birds
24	3:46:06	45.6			Distant traffic
25	3:47:06	41.2			Small plane passby
26	3:48:06	47.1			Distant small plane
27	3:49:06	43.0			Distant traffic, distant small plane
28	3:50:06	40.9			Distant traffic, distant small plane, horn
29	3:51:06	42.4			Distant traffic, distant dog barking, distant passenger jet
30	3:52:05	42.7			Distant passenger jet, distant traffic, small plane passby

TOTAL Leq = 52.3 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Background noise floor in the upper 30 dBA range.

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: H

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: TX 399/5 Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

SLM SETTINGS (circle one) **FAST** SLOW

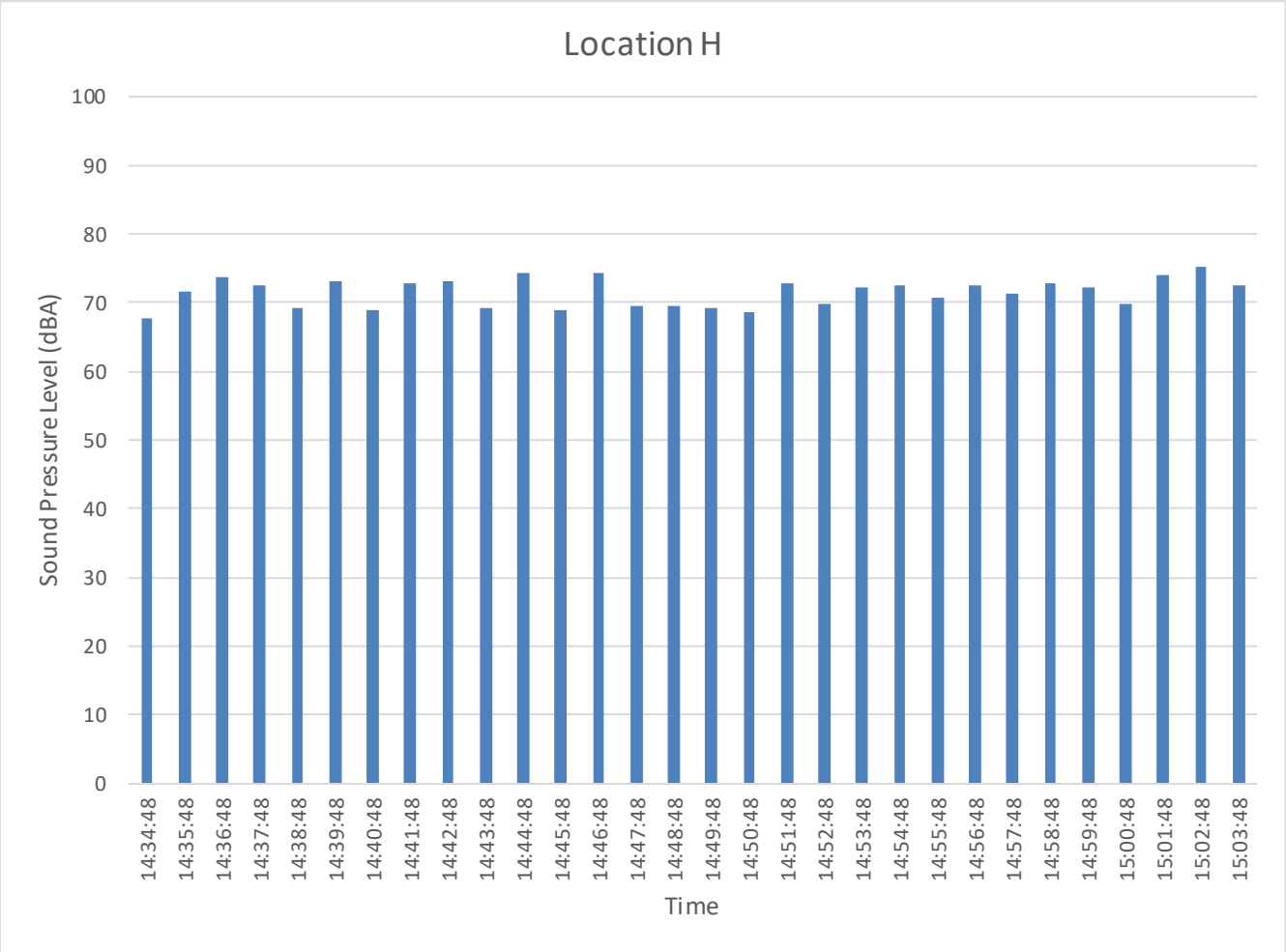
WEIGHTING (circle one) **A** Lin.

Location Description: Location H – TX 399/5 Traffic

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed ~30ft from shoulder ; 40-45ft from edge of nearest travel lane. Posted speed limit 55 mph.

N


Location H
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
14:34:48
14:35:48
14:36:48
14:37:48
14:38:48
14:39:48
14:40:48
14:41:48
14:42:48
14:43:48
14:44:48
14:45:48
14:46:48
14:47:48
14:48:48
14:49:48
14:50:48
14:51:48
14:52:48
14:53:48
14:54:48
14:55:48
14:56:48
14:57:48
14:58:48
14:59:48
15:00:48
15:01:48
15:02:48
15:03:48
Time

Start Time: Stop Time: Duration:

2:35 AM PM 3:05 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

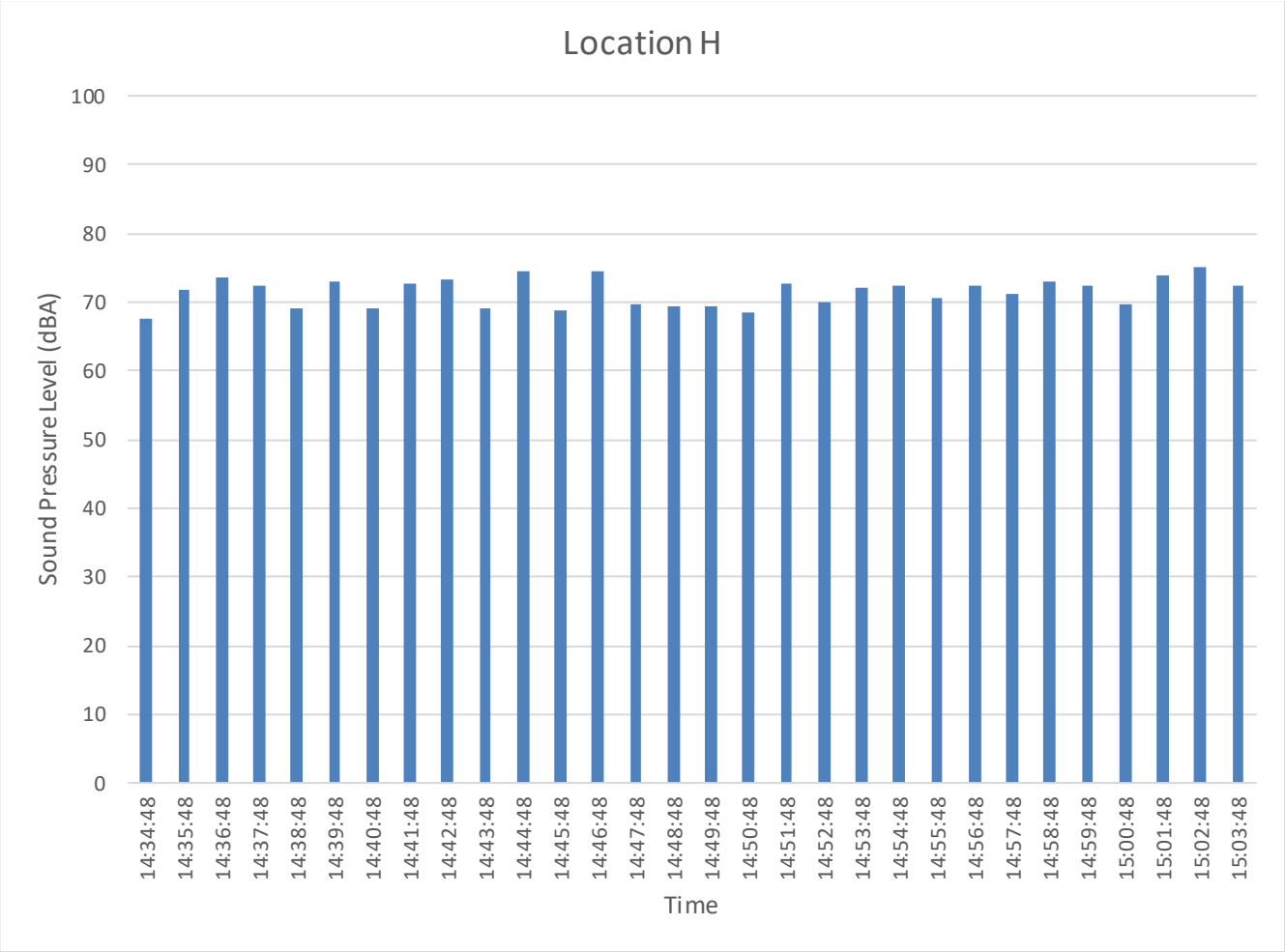
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: TX-5/399 SB (Top Row) and NB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
638	6	40	1	1
677	36	9		

***Note roadway direction in table**


Location H
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
14:34:48
14:35:48
14:36:48
14:37:48
14:38:48
14:39:48
14:40:48
14:41:48
14:42:48
14:43:48
14:44:48
14:45:48
14:46:48
14:47:48
14:48:48
14:49:48
14:50:48
14:51:48
14:52:48
14:53:48
14:54:48
14:55:48
14:56:48
14:57:48
14:58:48
14:59:48
15:00:48
15:01:48
15:02:48
15:03:48
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 18 PERSONNEL: RMB

LOCATION/ADDRESS: Location H DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	2:34:48	67.7			
2	2:35:48	71.7			
3	2:36:48	73.6			
4	2:37:48	72.5			
5	2:38:48	69.1			
6	2:39:48	73.0			
7	2:40:48	69.0			
8	2:41:48	72.7			
9	2:42:48	73.2			
10	2:43:48	69.2			
11	2:44:48	74.4			
12	2:45:48	68.8			
13	2:46:48	74.4			
14	2:47:48	69.6			
15	2:48:48	69.5			
16	2:49:48	69.3			
17	2:50:48	68.5			
18	2:51:48	72.7			
19	2:52:48	69.9			
20	2:53:48	72.2			
21	2:54:48	72.4			
22	2:55:48	70.7			
23	2:56:48	72.5			
24	2:57:48	71.2			
25	2:58:48	72.9			
26	2:59:48	72.3			
27	3:00:48	69.8			
28	3:01:48	73.9			
29	3:02:48	75.1			
30	3:03:48	72.5			

TOTAL Leq = 71.9 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

#	Southbound				Northbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	10	0	0	0	18	1	0	0
2	24	0	0	0	23	3	1	0
3	30	0	2	0	15	1	0	0
4	22	0	3	0	13	2	1	0
5	14	0	0	0	31	1	0	0
6	38	0	4	0	21	1	0	0
7	10	0	1	0	31	2	0	0
8	31	0	0	0	10	3	0	0
9	23	0	3	0	15	0	0	0
10	9	0	1	0	33	1	1	0
11	39	0	2	1	20	4	1	0
12	15	0	0	0	20	0	0	0
13	27	1	1	0	26	0	0	0
14	17	0	0	0	20	2	0	0
15	17	0	0	0	13	0	0	0
16	9	0	1	0	35	0	0	0
17	20	0	1	0	20	1	0	0
18	34	0	0	0	17	2	1	0
19	11	0	0	0	34	1	1	0
20	45	2	2	0	24	1	0	0
21	12	0	0	0	31	1	0	0
22	25	2	4	0	28	0	0	0
23	22	0	2	0	22	1	0	0
24	14	0	2	0	28	2	1	0
25	26	0	3	0	17	0	0	0
26	11	0	1	0	28	2	0	0
27	31	1	4	0	23	0	0	0
28	13	0	1	0	8	0	1	0
29	26	0	2	0	32	3	1	0
30	13	0	0	0	21	1	0	0

NB Traffic counts include merging traffic from Greenville Drive. 1 Bus at 19th minute SB.

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET Reading: I

Project Description: 10226441 - BMCD_US380_Spur399_SCH_ENV

Noise Source: TX 399/5 Traffic Date: June 10, 2021 Personnel: RMB

Equipment	Type	Serial #
Sound Level Meter	Larson Davis	824A2636
Microphone/Preamp	Larson Davis 2541; PRM902	7490
Calibrator	Larson Davis CAL200	2618

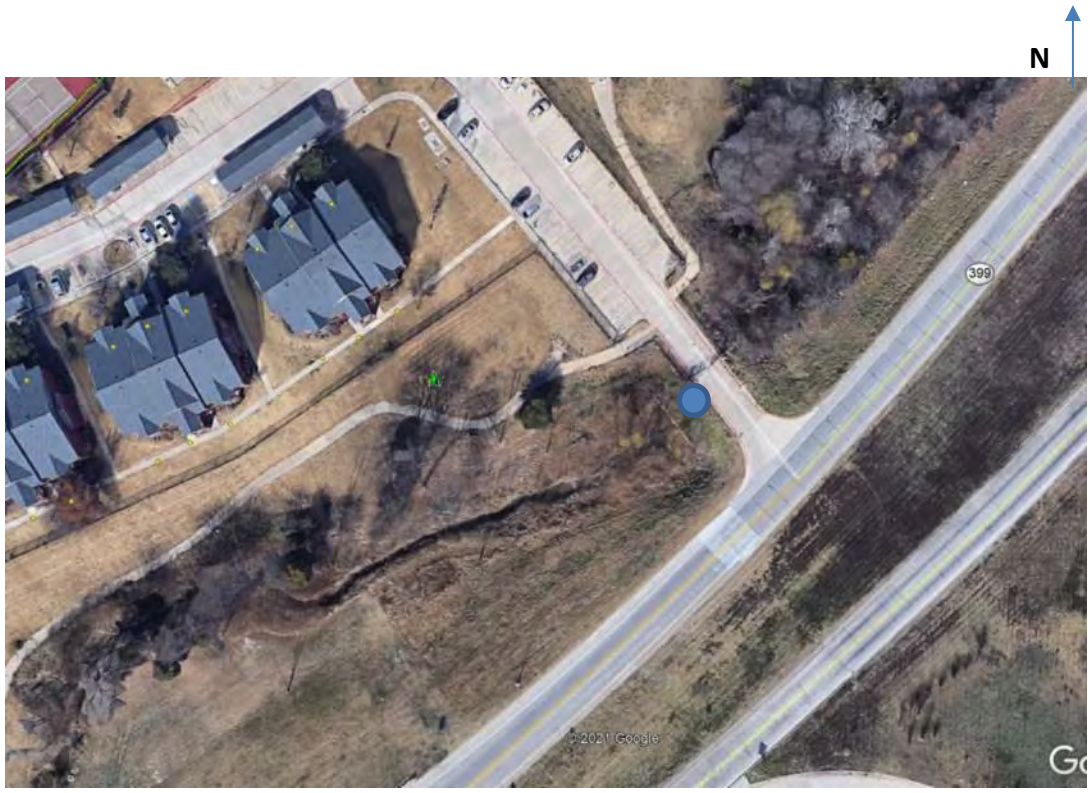
SLM SETTINGS (circle one) **FAST** SLOW

WEIGHTING (circle one) **A** Lin.

Location Description: Location I – TX 399 /5 Traffic

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

SLM placed ~40ft from nearest travel lane of SB TX-399/5. Traffic influenced by signal light at Greenville Drive. Light cycle ~30s green / 30s red. Posted speed limit 55 mph.



Start Time: Stop Time: Duration:

1:49 AM PM 2:19 AM PM 30 minutes

Wind Speed/Direction: 7-12 S / SE Percentiles:_____

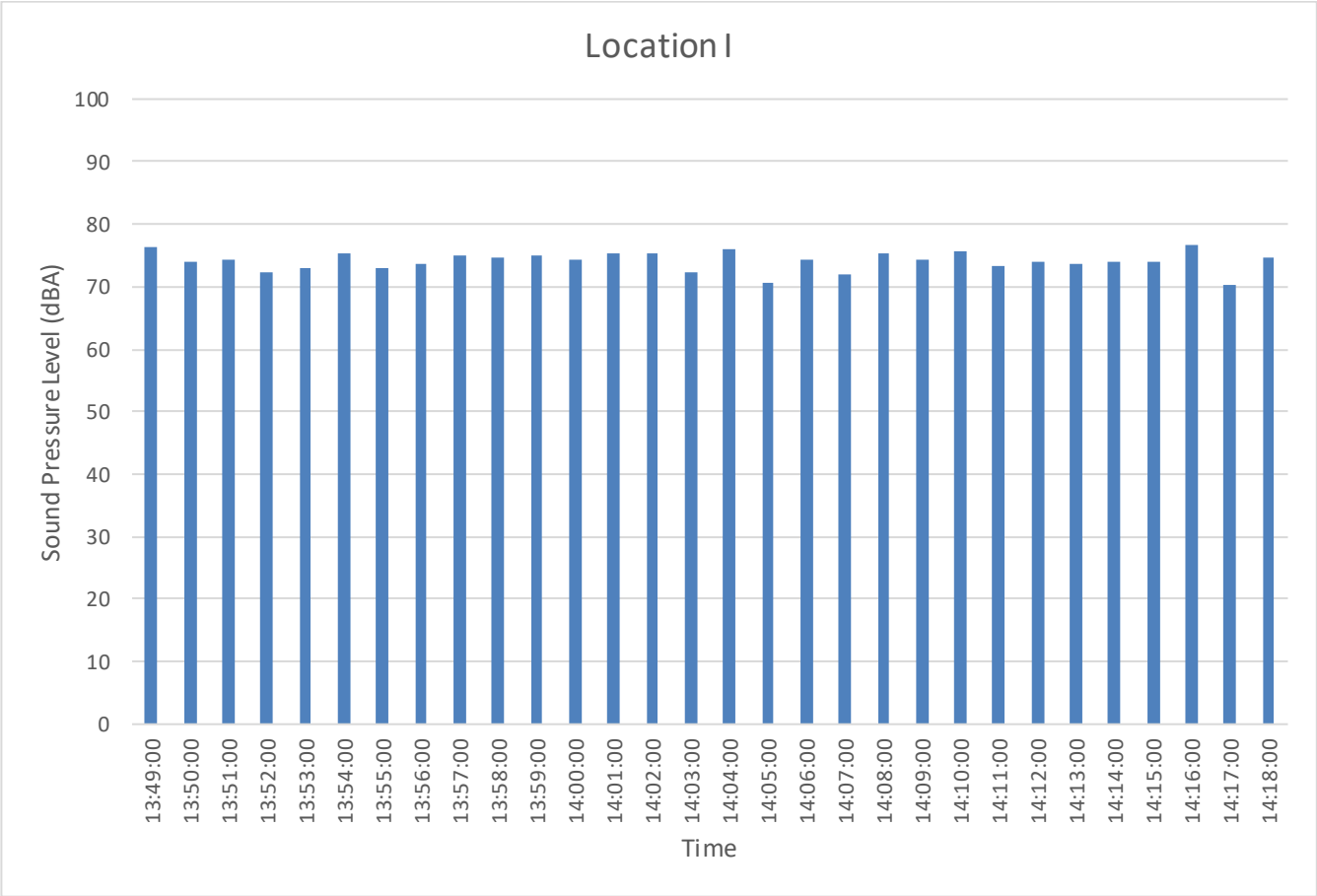
Temperature: 82-88 F Humidity: 65-80% RH

Calibration results before:_____114.1 dBA and after _____114.2 dBA

Traffic Count Roadway: TX-399/5 SB (Top Row) and NB (Bottom Row)

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
510	9	34		4
602	40	4		3

***Note roadway direction in table**


Location I
Sound Pressure Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
13:49:00
13:50:00
13:51:00
13:52:00
13:53:00
13:54:00
13:55:00
13:56:00
13:57:00
13:58:00
13:59:00
14:00:00
14:01:00
14:02:00
14:03:00
14:04:00
14:05:00
14:06:00
14:07:00
14:08:00
14:09:00
14:10:00
14:11:00
14:12:00
14:13:00
14:14:00
14:15:00
14:16:00
14:17:00
14:18:00
Time

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

PROJECT: 10226441 - BMCD US380 Spur399 SCH ENV

JOB NO.: 10226441

SITE/READING NO.: File 16 PERSONNEL: RMB

LOCATION/ADDRESS: Location I DATE: 6/10/2021

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Other Noise Sources	COMMENTS
1	1:49:00	76.3			
2	1:50:00	74.1			
3	1:51:00	74.3			
4	1:52:00	72.2			
5	1:53:00	72.9			Deceleration NB lanes
6	1:54:00	75.3			Stop / NB acceleration
7	1:55:00	73.0			NB stop
8	1:56:00	73.6			Distant small plane
9	1:57:00	75.0			NB stop / acceleration
10	1:58:00	74.5			
11	1:59:00	74.9			
12	2:00:00	74.2			
13	2:01:00	75.4			
14	2:02:00	75.3			
15	2:03:00	72.2			
16	2:04:00	76.1			
17	2:05:00	70.5			
18	2:06:00	74.2			
19	2:07:00	72.0			
20	2:08:00	75.2			
21	2:09:00	74.2			
22	2:10:00	75.7			
23	2:11:00	73.3			
24	2:12:00	73.9			
25	2:13:00	73.6			
26	2:14:00	74.0			
27	2:15:00	73.9			
28	2:16:00	76.5			
29	2:17:00	70.2			
30	2:18:00	74.6			

TOTAL Leq = 74.3 dBA SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

Distant lawn equipment initial 5 minutes or so, but not significant noise contributions.

#	Southbound				Northbound			
	Auto	Med	Hvy	Motorcycle	Auto	Med	Hvy	Motorcycle
1	26	0	1	0	17	0	0	0
2	17	1	1	0	25	3	0	0
3	14	0	2	0	15	3	0	0
4	14	0	1	0	10	0	0	0
5	15	1	0	0	26	1	0	0
6	19	0	2	0	22	0	0	0
7	15	0	0	0	16	1	0	0
8	12	0	2	0	24	0	1	1
9	15	0	1	1	23	4	1	0
10	24	0	2	0	30	2	0	0
11	15	0	1	0	20	3	0	0
12	23	0	1	0	19	0	0	0
13	13	0	1	0	12	0	0	0
14	8	1	4	0	21	3	0	0
15	14	0	0	0	23	2	1	0
16	28	0	3	0	23	2	0	0
17	6	1	1	0	14	2	0	0
18	25	0	0	1	23	0	0	0
19	14	0	0	0	23	3	0	0
20	14	0	3	0	15	3	0	0
21	22	0	0	0	17	1	0	0
22	16	2	1	0	20	1	0	0
23	21	2	1	0	25	1	0	1
24	16	0	3	0	18	1	0	0
25	30	1	0	0	30	0	0	0
26	25	0	0	1	19	1	0	0
27	19	0	0	0	23	0	1	0
28	2	0	2	1	18	0	0	0
29	5	0	0	0	17	0	0	0
30	23	0	1	0	14	3	0	1

A validation study was performed in order to verify that the existing model accurately predicts existing traffic noise based on current conditions and to ensure that traffic noise is the main source of noise. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that used field-collected traffic parameters.

Seven validation sites were selected along the project ROW (Figure 1). Field measurements were collected on June 10th, 2021 between 8 AM and 5 PM. The weather was mostly sunny and dry, with light winds less than 12 mph. During the measurements, traffic was free-flowing and traveling at a relatively constant speed.

A sound level meter was used to measure sound levels in dB(A) Leq. The sound level meter was positioned on a tripod with the microphone facing the roadway and set at a height of five feet. The measurement duration was 30 minutes. The meter was calibrated before measurements were taken and at the end of the day.

Concurrently with the sound level measurement, traffic was counted by personnel in the field to obtain traffic counts by vehicle classification (car, medium truck, and heavy truck). Because the noise modeling software uses a vehicle per hour input, vehicle counts for the 30-minute measurement interval were multiplied by two to convert the values to the hourly condition. Weather conditions, including temperature and wind speed/direction were obtained from published meteorological information. Field data sheets are included at the end of Attachment C.

The FHWA traffic noise modeling software (TNM 2.5) was used to calculate existing traffic noise levels at each validation location, based on the field-observed conditions. The validation model run(s) used the existing roadway parameters, observed hourly traffic counts, and observed speeds.

The traffic noise model validation results are shown in **Table 1**.

Table 1. Traffic Noise Levels dB(A) Leq

Location	Validation Site	Field-Measured Level dB(A) Leq	Modeled Level dB(A) Leq	Difference (+/-)	Validated?
A	US 380 University Drive	76.2	74.6	-1.6	Yes
B	Airport Road	63.2	62.6	-0.6	Yes
C	Airport Road	65.4	65.4	0.0	Yes
E	FM 546	69.8	71.7	1.9	Yes
F	FM 317	56.9	55.1	-1.8	Yes
H	TX 399/5	71.9	71.4	-0.5	Yes
I	TX 399/5	74.3	73.0	-1.3	Yes

Differences between the measured and model-calculated sound levels were within the +/- 3 dB(A) tolerance allowed by FHWA. Therefore, the existing noise model is considered validated for this project.

Additionally, background noise measurements were taken at two locations near Enloe Road and Old Mill Road, as listed in **Table 2** below. These measurements were performed the same day and under the same conditions as described for the traffic noise measurements above.

Table 2. Background Levels dB(A) Leq

Location	Validation Site	Field-Measured Level dB(A) Leq	Modeled Level dB(A) Leq	Difference (+/-)	Validated?
D	Enloe Road	48.1	----	N/A	N/A
G	Old Mill Road	52.0	----	N/A	N/A