Washington St / Dalrymple Dr IMR
Appendix D

DRAFT

Critical Geometry and Striping Layout.....DX to D1X

Design Criteria.....DX to DX

Build Analysis Input Parameters and Results.....DX to DX

Build Conflict Points.....DX to D-X

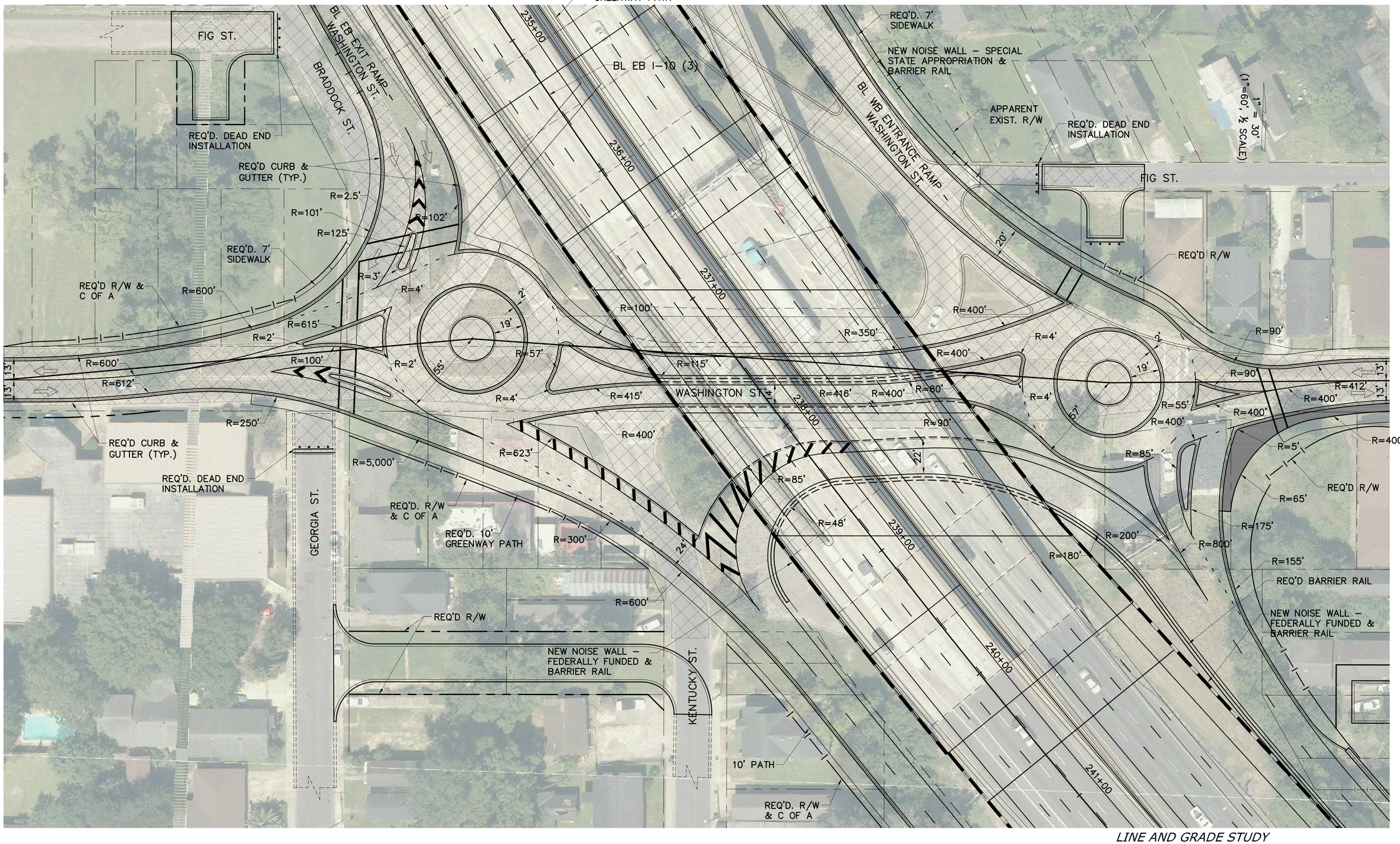
QA-QC Documentation.....D-X

URBAN SYSTEMS inc.

Project # 10-085-2

OCT. 2019

LINE & GRADE STUDY - DRAFT



LINE AND GRADE STUDY

PRELIMINARY	SIGMA CONSULTING GROUP, INC.
FOR INFORMATIONAL PURPOSES ONLY	ENGINEER: MILES B. WILLIAMS LICENSE #: 23094 DATE: OCT. 2019

SHEET NUMBER	WS01
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED / CHECKED	WILLIAMS
DETAILED / CHECKED	THYMES
SERIES NUMBER	1 OF 1

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN VIEW
WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

DOTD SIGMA CONSULTING GROUP

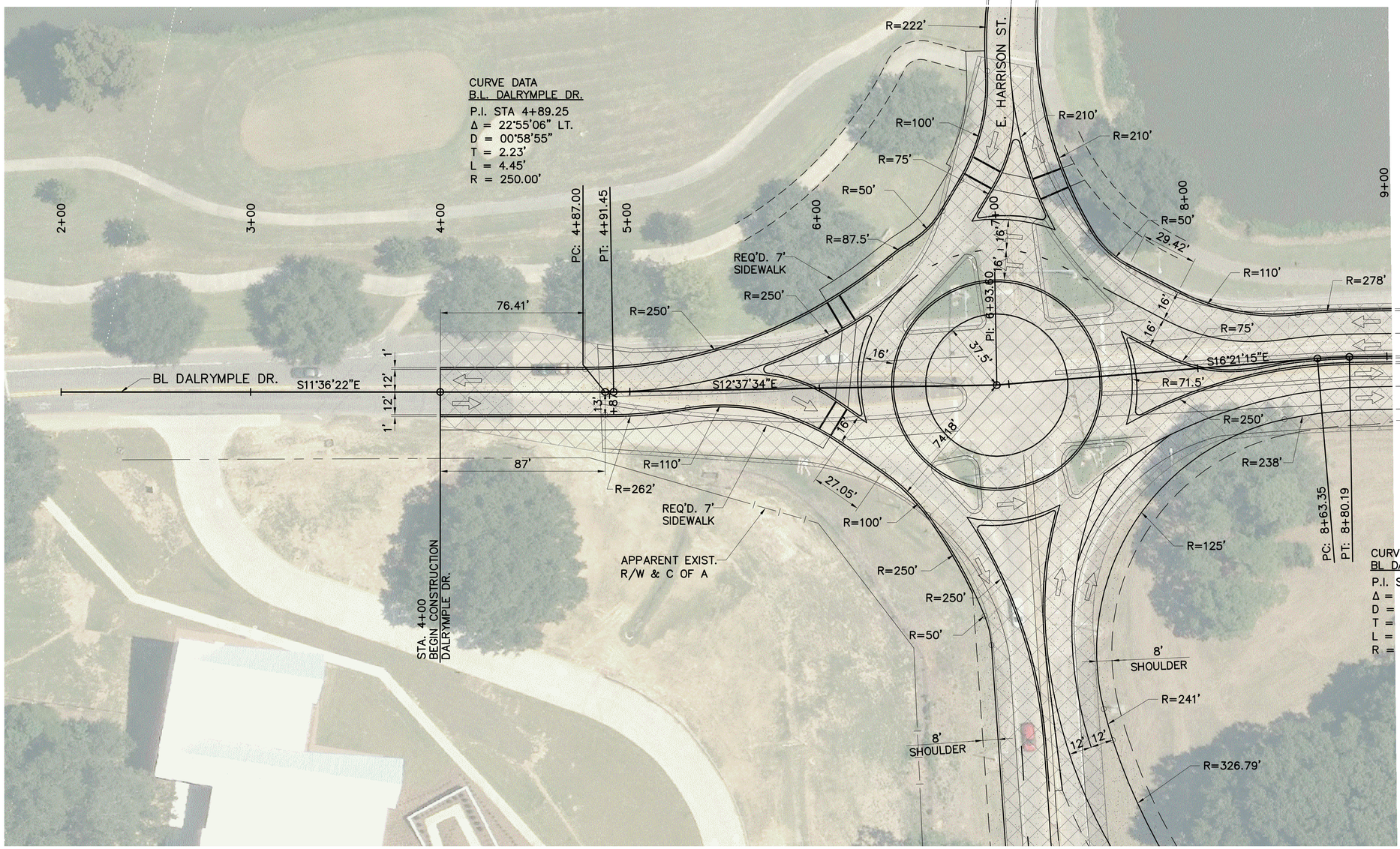
SIGMA CONSULTING GROUP, INC.

F:\02020\101013091800\Line And Grade Study\Washington St.dwg [Wash. St 1] Oct 01, 2019 - 1:46pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

1" = 30'
(1"=60', ½ SCALE)



CURVE DATA
BL DALRYMPLE DR.
P.I. STA 8+71.77
Δ = 03°48'01" RT.
D = 22°33'27"
T = 8.43'
L = 16.85'
R = 254.00'

LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	DD01
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	1 OF 2

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN SHEET
DALRYMPLE DRIVE
I-10: LA 415 TO ESSEN ON I-10 AND I-12

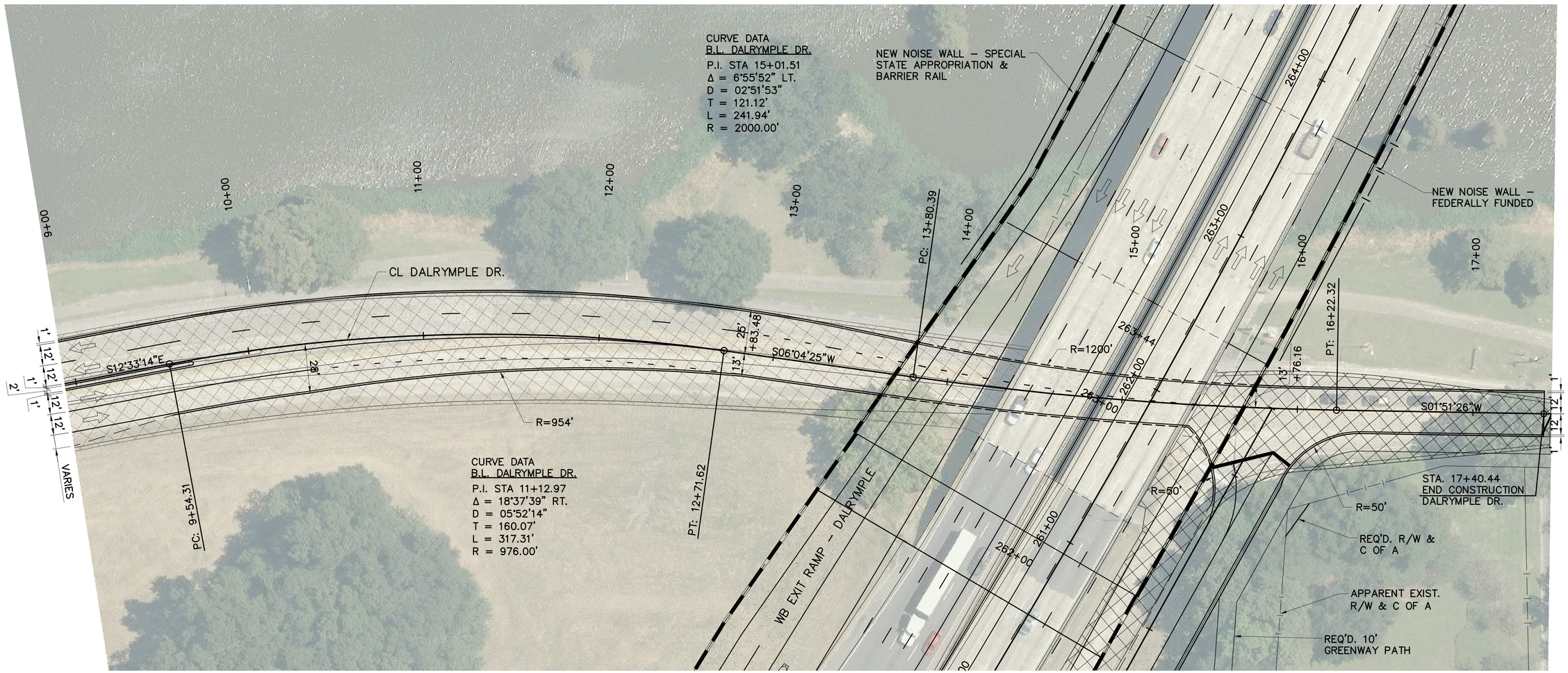
SIGMA CONSULTING GROUP

F:\2020\101013\018000\Line And Grade Study\Dalrymple Dr.dwg [Dalrymple Dr-1] Oct 01, 2019 - 1:23pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

1" = 30'
(1"=60', ½ SCALE)



LINE AND GRADE STUDY

PRELIMINARY *FOR INFORMATIONAL PURPOSES ONLY*	SIGMA CONSULTING GROUP, INC. *ENGINEER: MILES B. WILLIAMS* *LICENSE #: 23094* *DATE: OCT. 2019*

SHEET NUMBER	DD02
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	2 OF 2

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN SHEET
DALRYMPLE DRIVE
I-10: LA 415 TO ESSEN ON I-10 AND I-12

SIGMA CONSULTING GROUP

F:\l2020\101013018\00\Line And Grade Study\Dalrymple Dr.dwg [Dalrymple Dr 2] Oct 01, 2019 - 1:23pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. W.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 226+57.70
Δ = 07°36'52" LT.
D = 05°43'46"
T = 66.55'
L = 132.90'
R = 1,000.00'

CURVE DATA
B.L. W.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 228+57.71
Δ = 07°38'21" RT.
D = 05°43'46"
T = 66.76'
L = 133.33'
R = 1,000.00'

CURVE DATA
B.L. W.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 230+65.66
Δ = 02°52'10" LT.
D = 01°00'54"
T = 141.38'
L = 282.71'
R = 5,645.08'

CURVE DATA
B.L. W.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 232+81.37
Δ = 08°30'27" LT.
D = 05°43'46"
T = 74.38'
L = 148.49'
R = 1,000.00'

(1" = 30' (1"=60', ½ SCALE))

STA. 225+60.31
BEGIN W.B. SERVICE RD. – WASHINGTON ST. =
STA. 225+52.32, 118.116' LT.
B.L. I–10 E.B.

LOUISE ST.

REQ'D R/W
R=100'
R=30'
R=100'

PT: 227+24.05

APPARENT EXIST. R/W

REQ'D. C OF A ON BRIDGE FASCIA

REQ'D. 7' SIDEWALK

REQ'D. 2' CURB & GUTTER

PCC: 232+06.99

B.L. W.B. SERVICE RD. – WASHINGTON ST.

S34°24'23"E

WASHINGTON ST. W.B. SERVICE RD.

S37°07'16"E

NEW NOISE WALL – SPECIAL STATE APPROPRIATION & BARRIER RAIL

REQ'D. 10' GREENWAY PATH

B.L. W.B. ENTRANCE RAMP – WASHINGTON ST.

I–10 (WESTBOUND)

NEW NOISE WALL – SPECIAL STATE APPROPRIATION & BARRIER RAIL

I–10 (EASTBOUND)

PC: 227+90.95

PRC: 229+24.28

B.L. I–10 E.B.

STA. 225+91.15
BEGIN W.B. ENTRANCE RAMP – WASHINGTON ST. =
STA. 225+91.15, 90' LT.
B.L. I–10 E.B.

B.L. I–10 E.B.
SHIFT 6' LT.
STA. EQUATION = 67.33
STA 229+25.37 L.B. =
STA 228+58.01 L.A.

P.V.I. STA. 228+69.00
ELEV. 72.35

−0.40%

PGL W.B. ENTRANCE RAMP – WASHINGTON

175' V.C.

−2.78%

VARIES

6 @ 12' = 72

52.1	51.9 73.03	52.3 72.60	52.6 71.27	53.0 68.71	54.6 65.93	57.2 63.15	59.2 60.37

226+00 227+00 228+00 229+00 230+00 231+00 232+00 233+00

72 69 66 63 60 57 54 51 48

LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER: WB01
PARISH: EAST BATON ROUGE
CONTROL SECTION: 450-10
STATE PROJECT: H.004100
DESIGNED: WILLIAMS
CHECKED:
DETAILED: THYMES
CHECKED:
SERIES NUMBER: 1 OF 8
REVISION OR CHANGE ORDER DESCRIPTION | NO. | DATE | BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP- WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

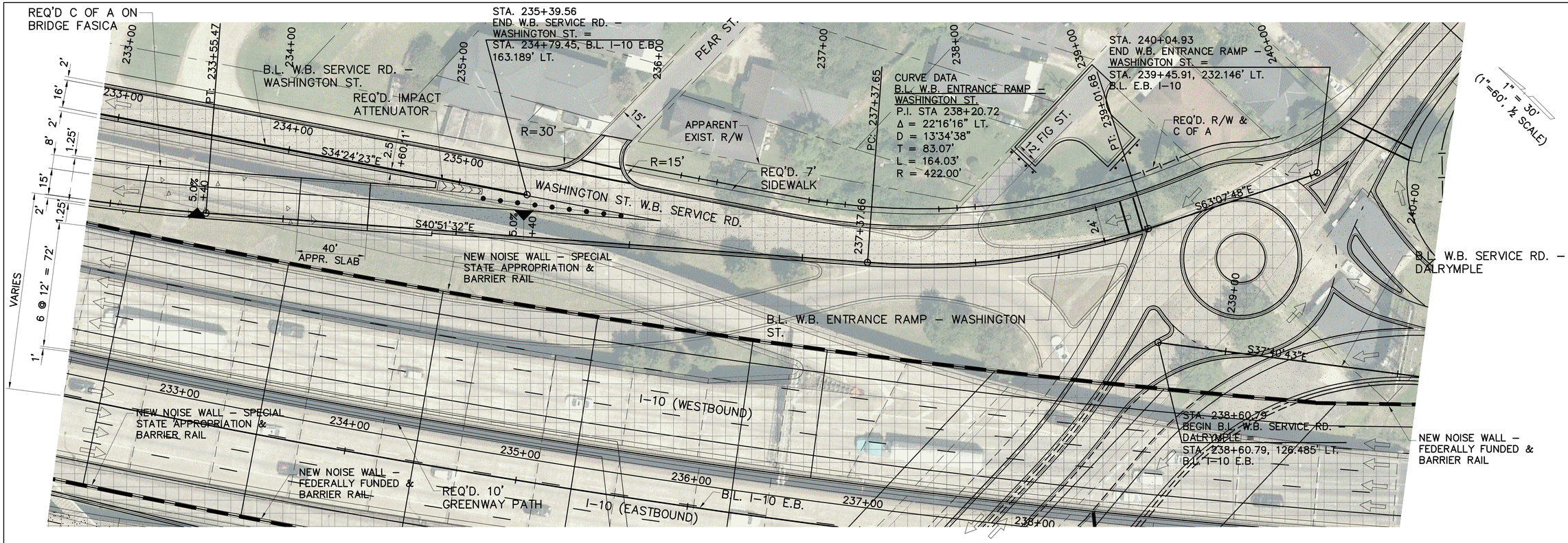
DOTD
SIGMA CONSULTING GROUP

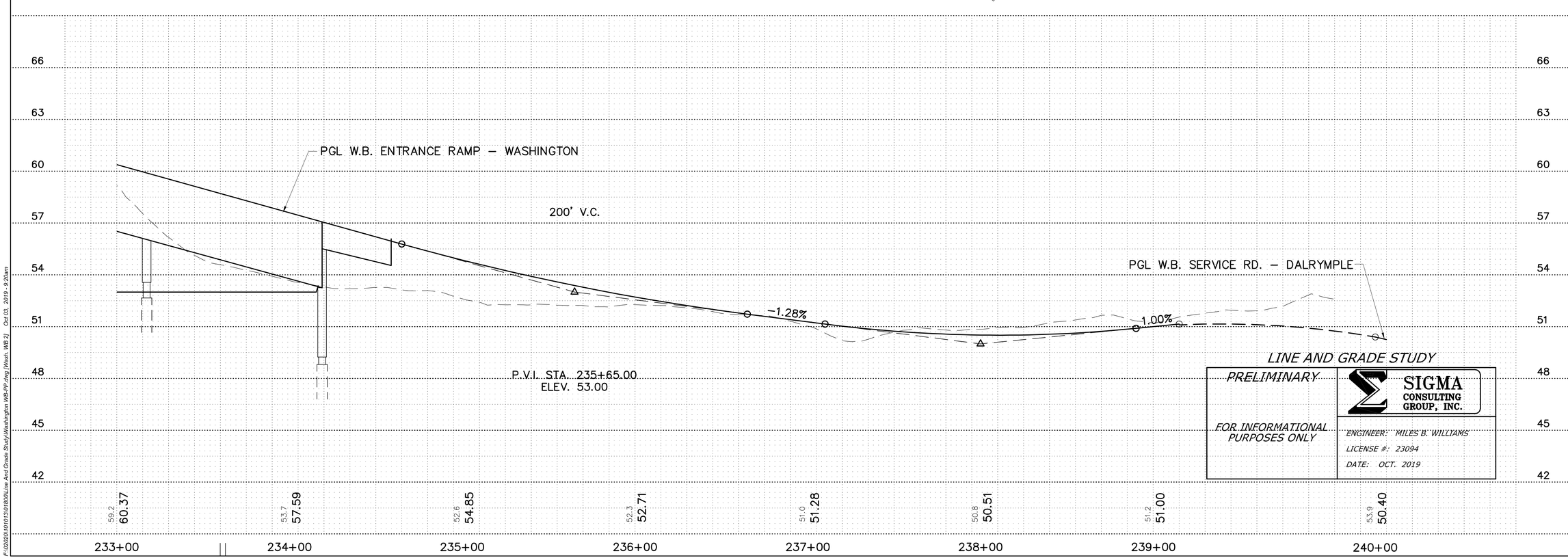
SIGMA CONSULTING GROUP, INC.

F:\02020\101013013800\Line And Grade Study\Washington WB-PP.dwg [Wash. WB 1] Oct 03, 2019 - 9:22am

OCT. 2019

LINE & GRADE STUDY - DRAFT





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WB02
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED / CHECKED	WILLIAMS
DETAILED / CHECKED	THYMES
SERIES NUMBER	2 OF 8

NO. | DATE | REVISION OR CHANGE ORDER DESCRIPTION | BY

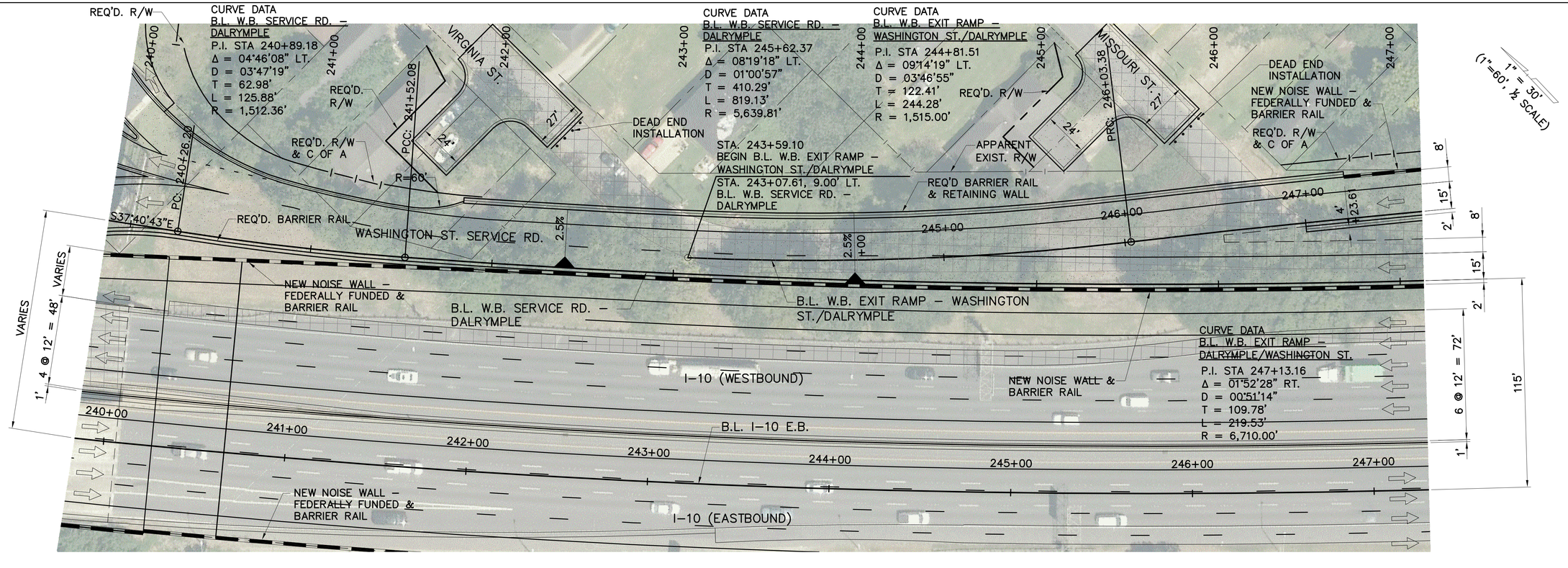
PLAN AND PROFILE
W.B. ENTRANCE RAMP- WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

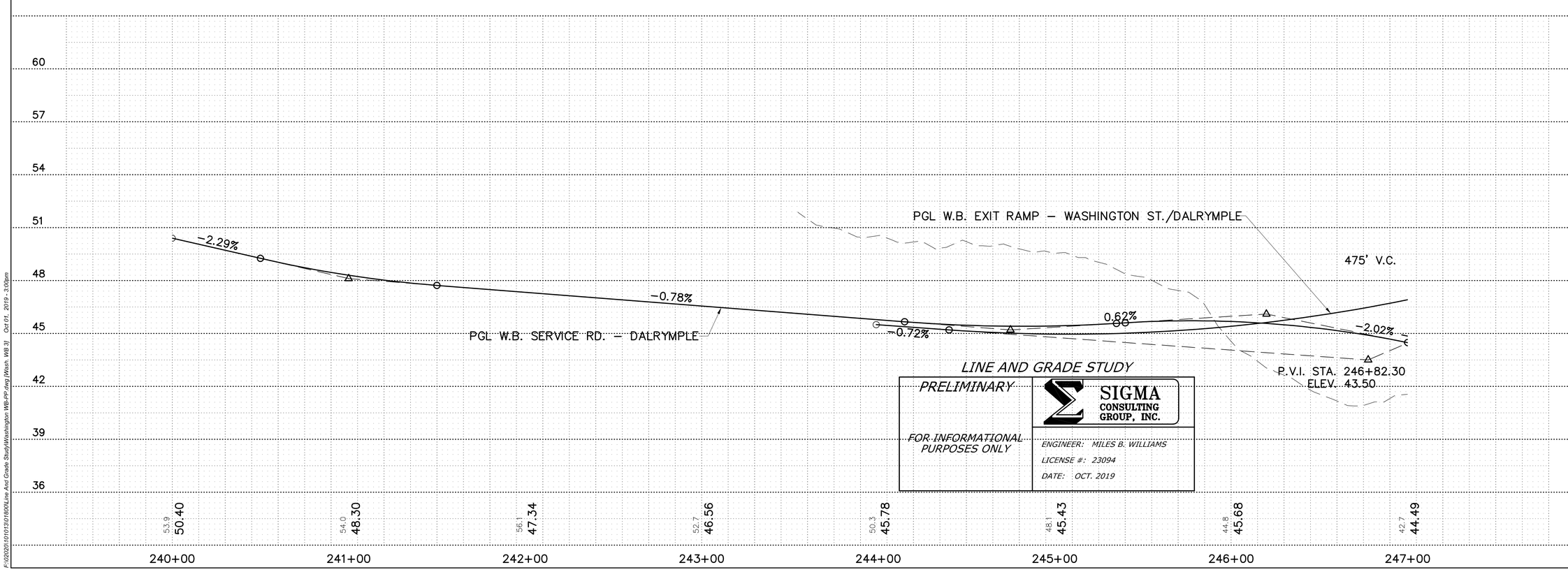
SIGMA CONSULTING GROUP

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OCT. 2019

LINE & GRADE STUDY - DRAFT





LINE AND GRADE STUDY

PRELIMINARY	SIGMA CONSULTING GROUP, INC.
FOR INFORMATIONAL PURPOSES ONLY	ENGINEER: MILES B. WILLIAMS LICENSE #: 23094 DATE: OCT. 2019

SHEET NUMBER	WB03		
PARISH	EAST BATON ROUGE	CONTROL SECTION	450–10
STATE PROJECT	H.004100	DESIGNED	WILLIAMS
CHECKED		DETAILED	THYMES
CHECKED		SERIES NUMBER	3 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP– WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\02020\10101\301800\Line And Grade Study\Washington WB-PP.dwg [Wash. WB 3] Oct 01, 2019 - 3:00pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. W.B. SERVICE RD. – DALRYMPLE
P.I. STA 245+62.37
Δ = 08°19'18" LT.
D = 01°00'57"
T = 410.29'
L = 819.13'
R = 5,639.81'

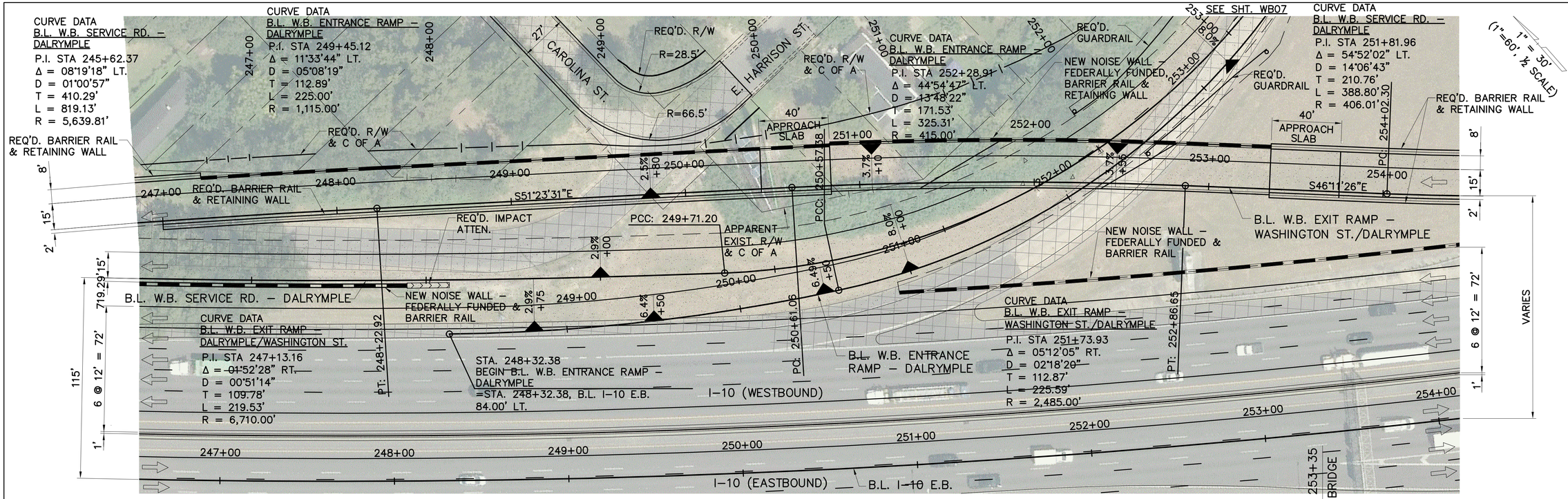
CURVE DATA
B.L. W.B. ENTRANCE RAMP – DALRYMPLE
P.I. STA 249+45.12
Δ = 11°33'44" LT.
D = 05°08'19"
T = 112.89'
L = 225.00'
R = 1,115.00'

CURVE DATA
B.L. W.B. ENTRANCE RAMP – DALRYMPLE
P.I. STA 252+28.91
Δ = 44°54'47" LT.
D = 13°48'22"
T = 171.53'
L = 325.31'
R = 415.00'

CURVE DATA
B.L. W.B. SERVICE RD. – DALRYMPLE
P.I. STA 251+81.96
Δ = 54°52'02" LT.
D = 14°06'43"
T = 210.76'
L = 388.80'
R = 406.01'

CURVE DATA
B.L. W.B. EXIT RAMP – DALRYMPLE/WASHINGTON ST.
P.I. STA 247+13.16
Δ = 01°52'28" RT.
D = 00°51'14"
T = 109.78'
L = 219.53'
R = 6,710.00'

CURVE DATA
B.L. W.B. EXIT RAMP – WASHINGTON ST./DALRYMPLE
P.I. STA 251+73.93
Δ = 05°12'05" RT.
D = 02°18'20"
T = 112.87'
L = 225.59'
R = 2,485.00'



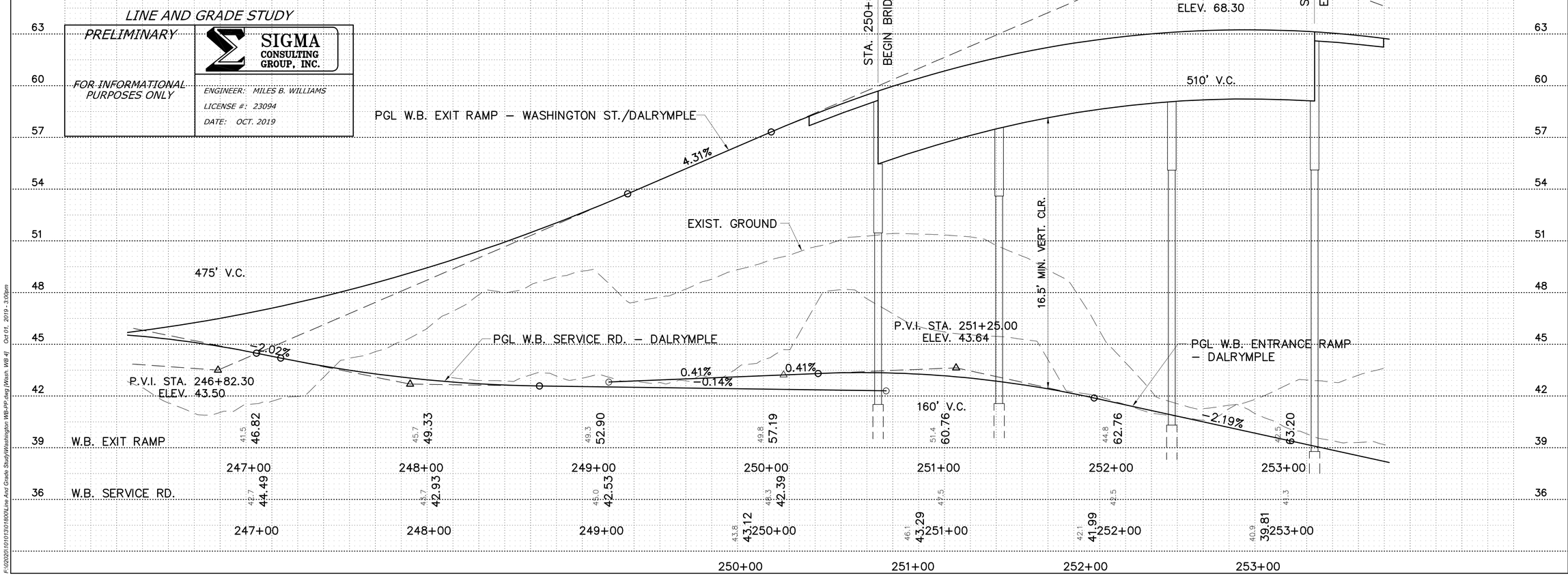
LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019



SHEET NUMBER	WB04
PARISH	EAST BATON ROUGE
CONTROL SECTION	450–10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	4 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP– WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD

SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\02020\101301301800\Line And Grade Study\Washington WB-PIP.dwg (Wash. WB 4) Oct 01, 2019 - 3:00pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. W.B. EXIT RAMP – WASHINGTON ST./DALRYMPLE
P.I. STA 255+55.64
Δ = 11°33'31" LT.
D = 03°46'55"
T = 153.34'
L = 305.63'
R = 1,515.00'

SEE SHT. WB08

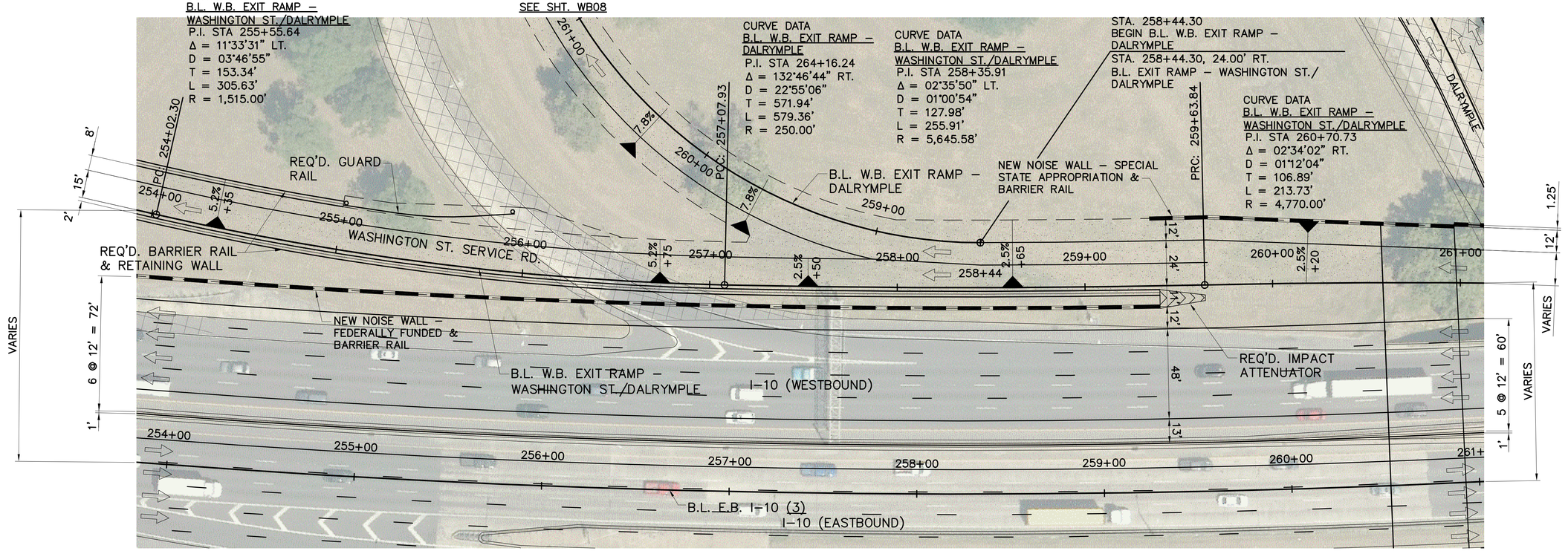
CURVE DATA
B.L. W.B. EXIT RAMP – DALRYMPLE
P.I. STA 264+16.24
Δ = 132°46'44" RT.
D = 22°55'06"
T = 571.94'
L = 579.36'
R = 250.00'

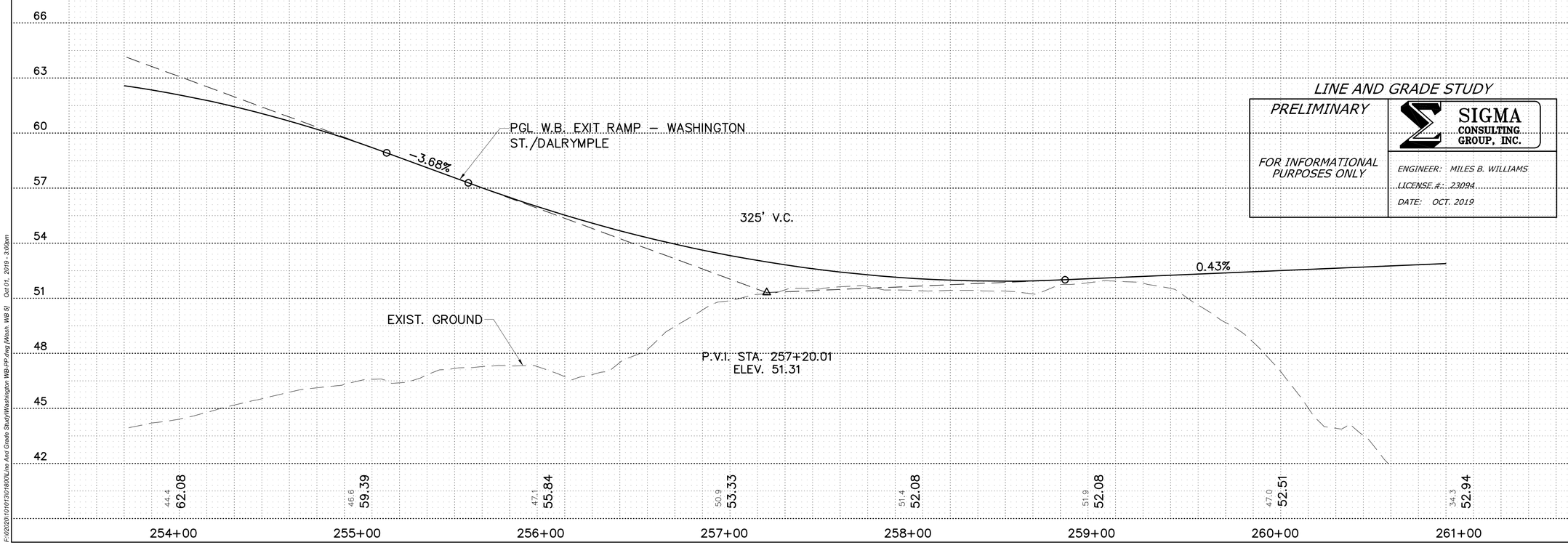
CURVE DATA
B.L. W.B. EXIT RAMP – WASHINGTON ST./DALRYMPLE
P.I. STA 258+35.91
Δ = 02°35'50" LT.
D = 01°00'54"
T = 127.98'
L = 255.91'
R = 5,645.58'

STA. 258+44.30
BEGIN B.L. W.B. EXIT RAMP – DALRYMPLE
STA. 258+44.30, 24.00' RT.
B.L. EXIT RAMP – WASHINGTON ST./ DALRYMPLE

CURVE DATA
B.L. W.B. EXIT RAMP – WASHINGTON ST./DALRYMPLE
P.I. STA 260+70.73
Δ = 02°34'02" RT.
D = 01°12'04"
T = 106.89'
L = 213.73'
R = 4,770.00'

1" = 30'
(1"=60', ½ SCALE)





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WB05
PARISH	EAST BATON ROUGE
CONTROL SECTION	450–10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	5 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP– WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD

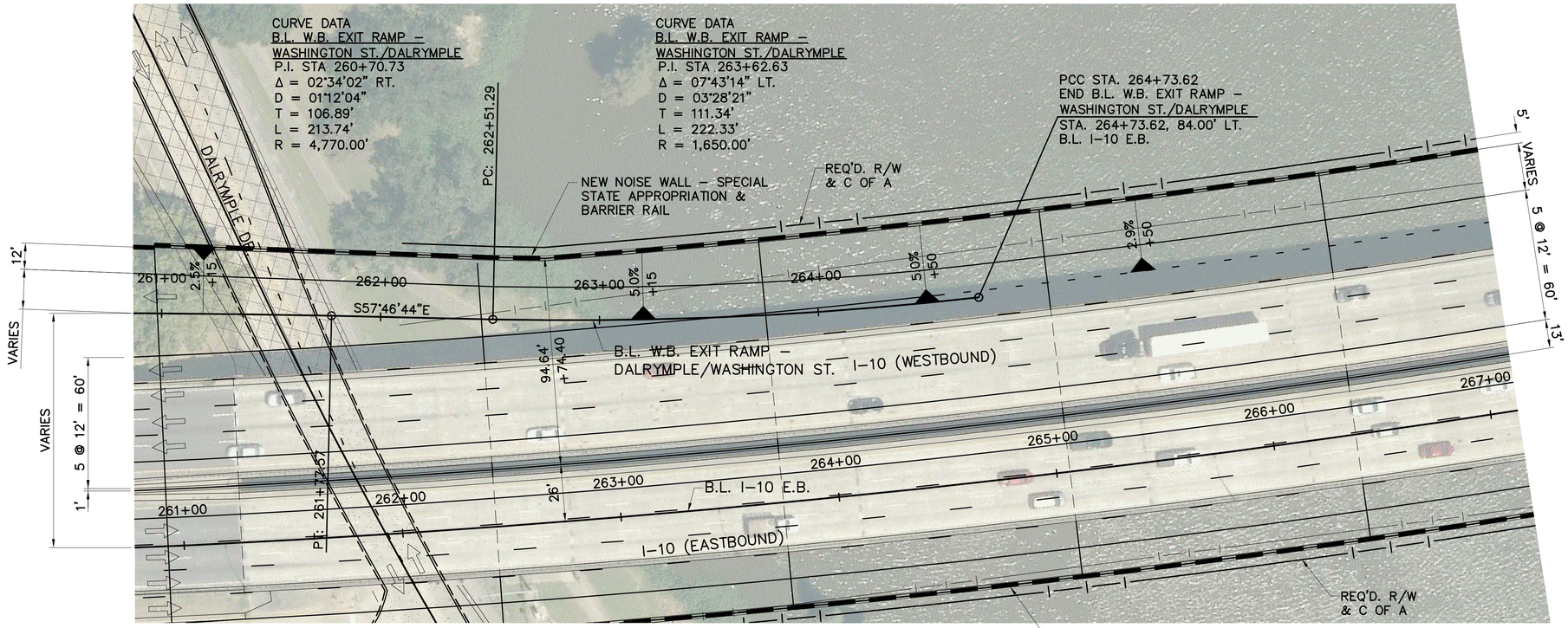
SIGMA CONSULTING GROUP, INC.

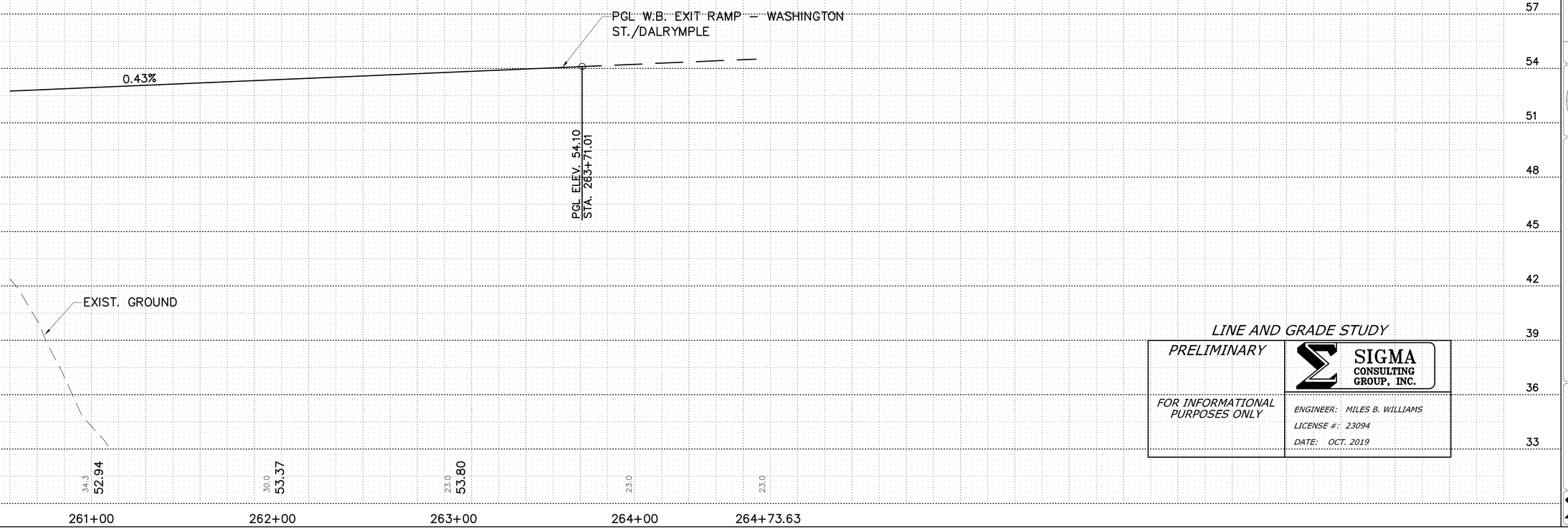
SIGMA CONSULTING GROUP, INC.

F:\02020\101013\01800\Line And Grade Study\Washington WB-PP.dwg [Wash. WB 5] Oct 01, 2019 - 3:00pm

OCT. 2019

LINE & GRADE STUDY - DRAFT





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER: WB06

PARISH	CONTROL SECTION	STATE PROJECT
EAST BATON ROUGE	450–10	H.004100

DESIGNED	CHECKED	DETAILED	CHECKED	SERIES NUMBER
WILLIAMS		THYMES		6 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP– WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

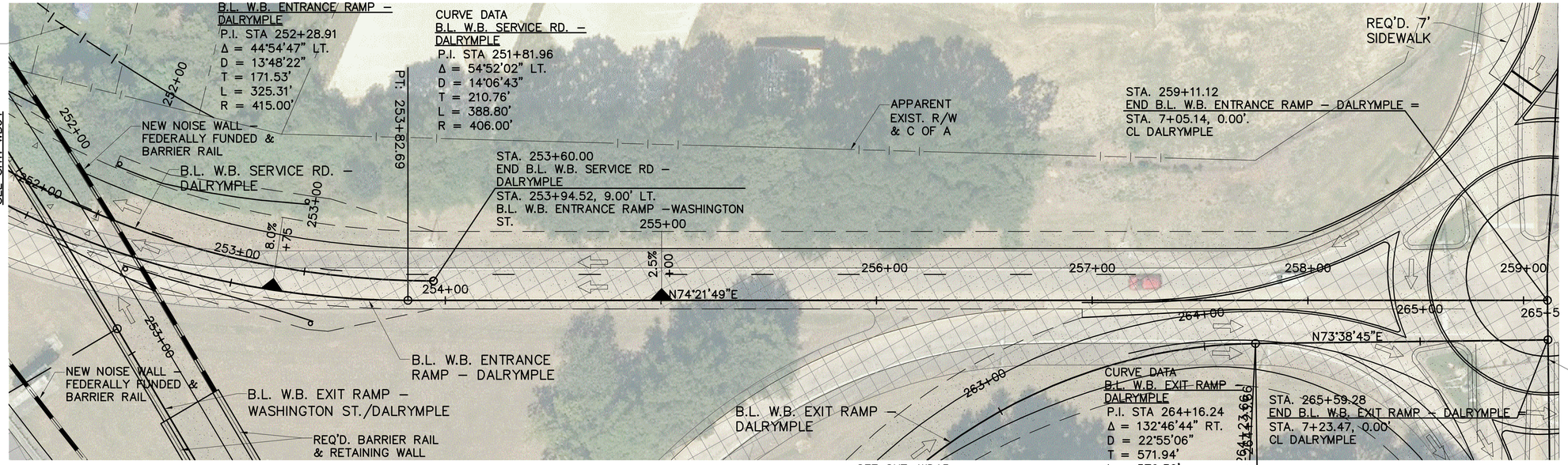
SIGMA CONSULTING GROUP

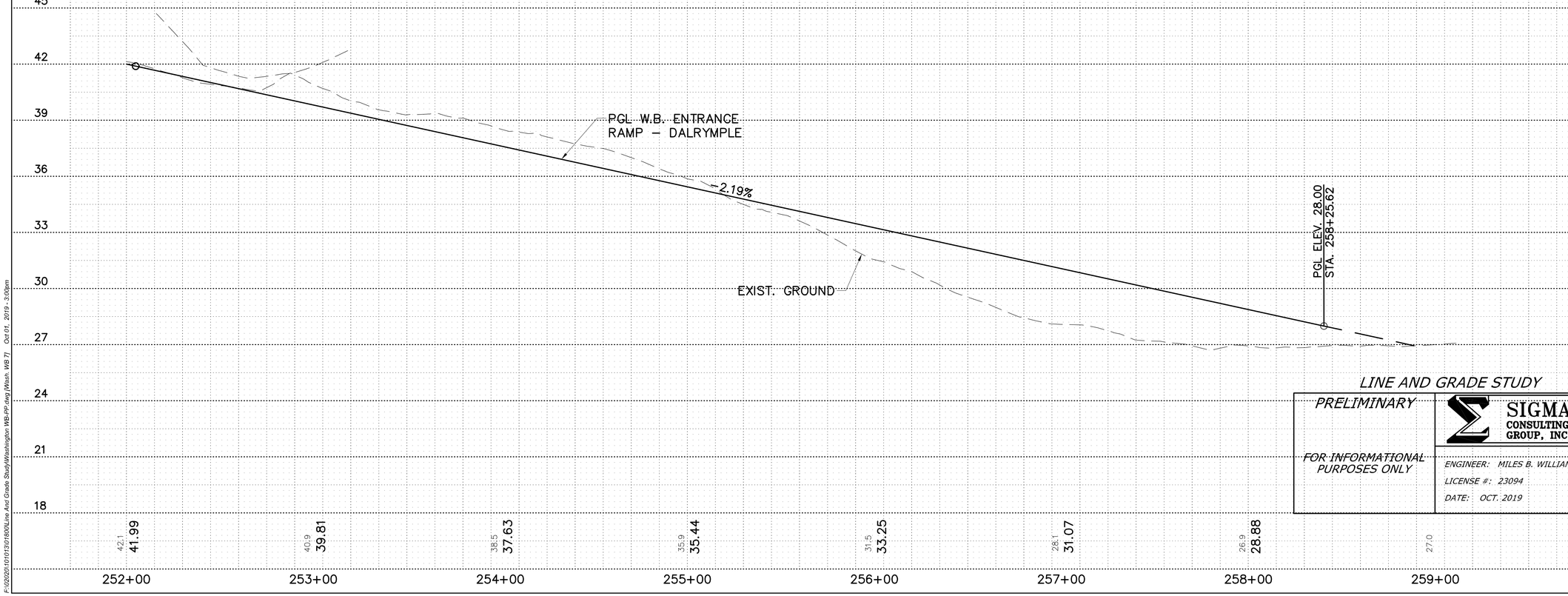
SIGMA CONSULTING GROUP, INC.

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OCT. 2019

LINE & GRADE STUDY - DRAFT





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS

LICENSE #: 23094

DATE: OCT. 2019

SHEET NUMBER	WB07
PARISH	EAST BATON ROUGE
CONTROL SECTION	
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	7 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE

W.B. ENTRANCE RAMP– WASHINGTON ST.

I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD

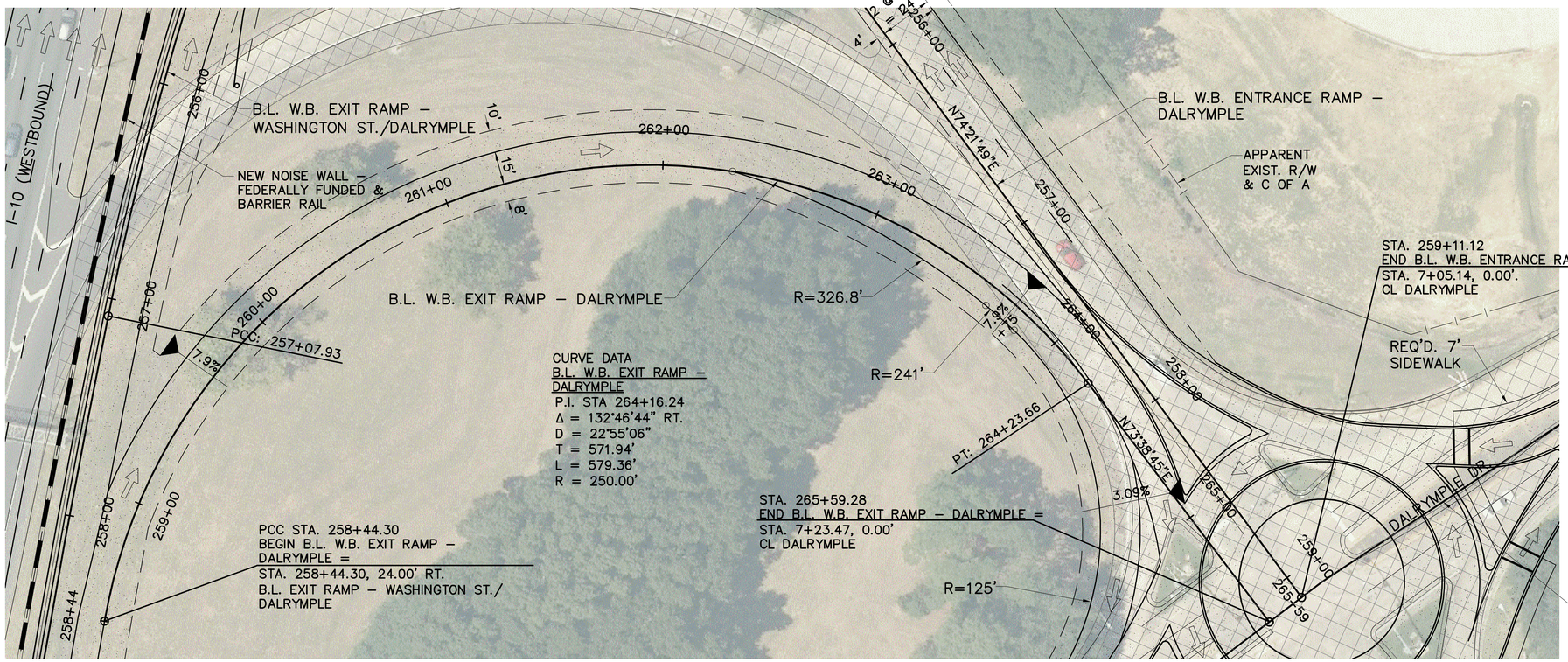
SIGMA CONSULTING GROUP

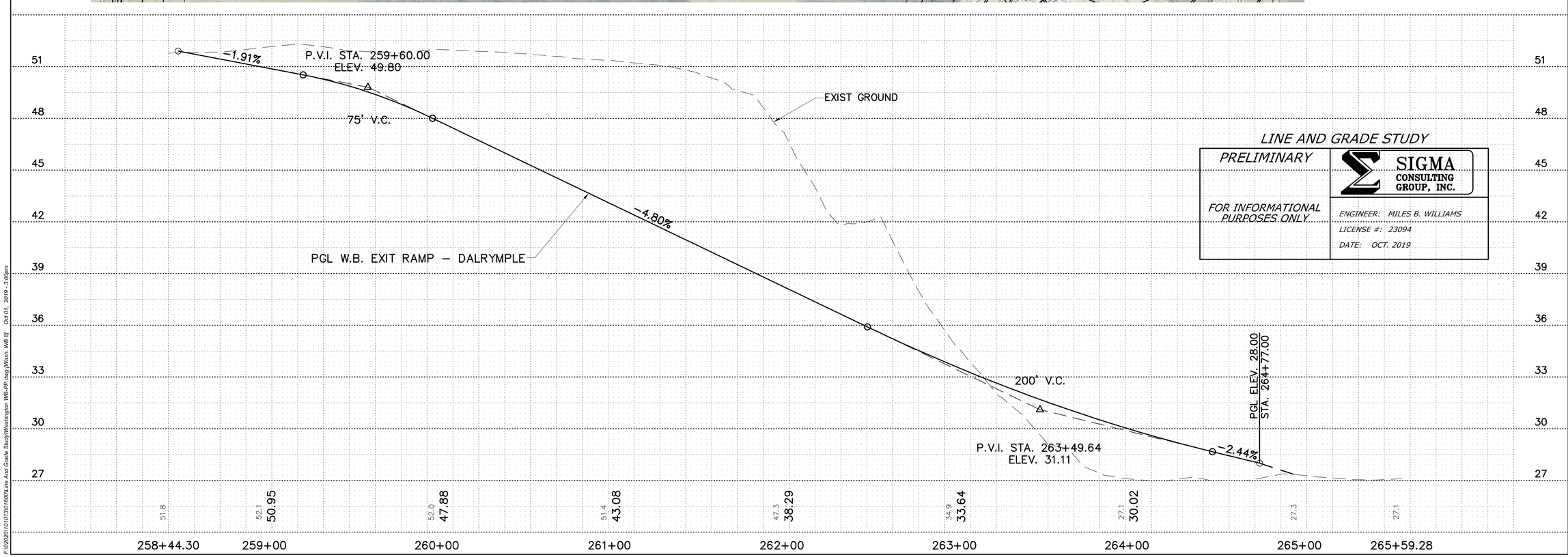
SIGMA CONSULTING GROUP, INC.

F:\02020\101013\101800\Line And Grade Study\Washington WB-PP.dwg [Wash. WB 7] Oct 01, 2019 - 3:00pm

OCT. 2019

LINE & GRADE STUDY - DRAFT





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WB08
PARISH	EAST BATON ROUGE
CONTROL SECTION	
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	8 OF 8

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
W.B. ENTRANCE RAMP– WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\020201\01013\01800\Line And Grade Study\Washington WB-PP.dwg [Wash. WB 8] Oct 01, 2019 - 3:00pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. E.B. EXIT RAMP – WASHINGTON ST.
P.I. STA 218+83.18
Δ = 15°39'22" LT.
D = 02°51'53"
T = 274.96'
L = 546.50'
R = 2,000.00'

CURVE DATA
B.L. I–10 E.B. EXIT RAMP
P.I. STA 218+24.67
Δ = 12°08'12" LT.
D = 3°0'53"
T = 202.04'
L = 402.58'
R = 1,900.51'

I–10 (WESTBOUND)
I–10 (EASTBOUND)
B.L. I–10 E.B.
B.L. I–10 E.B. RAMP
B.L. E.B. EXIT RAMP – WASHINGTON ST.
WASHINGTON ST. SERVICE RD. (BRADDOCK ST.)
TERRACE ST.
SENETTE ST.
SWART ST.
COTTON ST.
PC: 216+08.22
PC: 216+22.63
PT: 220+25.21
PT: 221+54.72
REQ'D 7' SIDEWALK
REQ'D R/W & C OF A
REQ'D. 7' SIDEWALK
REQ'D. C OF A ON BRIDGE FASCIA
APPARENT EXIST. R/W
REQ'D IMPACT ATTENUATOR
NEW NOISE WALL – SPECIAL STATE APPROPRIATION & BARRIER RAIL
REQ'D 2' CURB & GUTTER
S13°59'59"E
S29°39'21"E
STA. 214+46.37
BEGIN E.B. EXIT RAMP – WASHINGTON ST.
STA. 214+46.81, 11.0' RT.
B.L. I–10 E.B. RAMP
STA. 222+08.91
END E.B. I–10 RAMP =
STA. 222+04.81, 3.00' RT.
B.L. I–10 E.B.
VARIES 9.65'
12' 12'
29.5'
1.25'
VARIES
40@12" = 48
1.25'
15'
8'
30'
R=15'
R=30'
R=25'
15'
5.5%
2.5%
2.5%
23'
+32.85
20'

1" = 30'
(1"=60', ½ SCALE)

LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

PGL I–10 E.B. RAMP
PGL E.B. EXIT RAMP – WASHINGTON ST.
PVI STA. 222+00.00
ELEV. 74.06
BEGIN B.L. E.B. EXIT RAMP – WASHINGTON ST. PGL

78 75 72 69 66 63 60 57 54

54.4 76.91
55.7 76.15
54.9 75.39
54.6 74.63
54.2 73.87
53.4 73.11
53.1 72.51

215+00 216+00 217+00 218+00 219+00 220+00 221+00

F:\02020\101013\01800\Line And Grade Study\Washington EB 1-PP.dwg [Wash. EB Exit] Oct 01, 2019 - 4:07pm

SHEET NUMBER	WE01
PARISH	EAST BATON ROUGE
CONTROL SECTION	450–10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	1 OF 7

NO.	REVISION OR CHANGE ORDER DESCRIPTION	DATE	BY

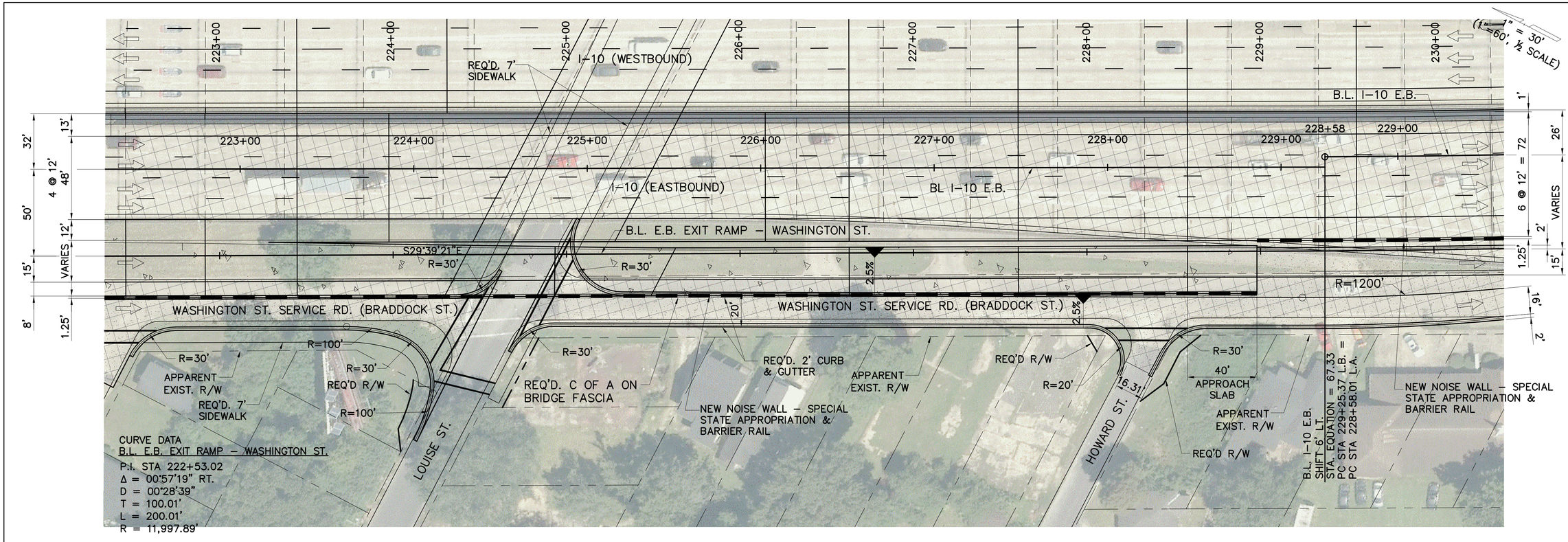
PLAN AND PROFILE
EASTBOUND EXIT RAMP – WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD SIGMA CONSULTING GROUP

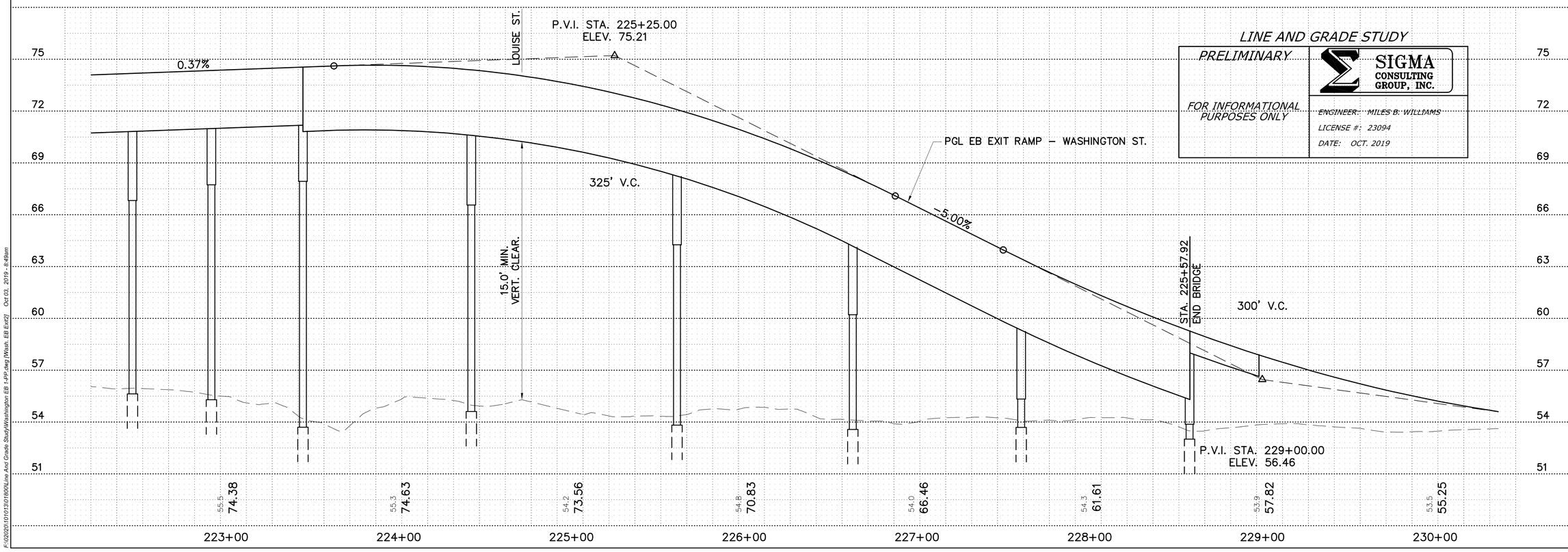
SIGMA CONSULTING GROUP, INC.

OCT. 2019

LINE & GRADE STUDY - DRAFT



CURVE DATA
B.L. E.B. EXIT RAMP – WASHINGTON ST.
P.I. STA 222+53.02
Δ = 00°57'19" RT.
D = 00°28'39"
T = 100.01'
L = 200.01'
R = 11,997.89'



LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

PLAN AND PROFILE
EASTBOUND EXIT RAMP - WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

SIGMA CONSULTING GROUP

SHEET NUMBER	WE02
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	2 OF 7

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

SIGMA CONSULTING GROUP, INC.

F:\02020\101013\01800\Line And Grade Study\Washington EB 1-PP.dwg [Wash. EB Exit2] Oct 03, 2019 - 8:49am

OCT. 2019

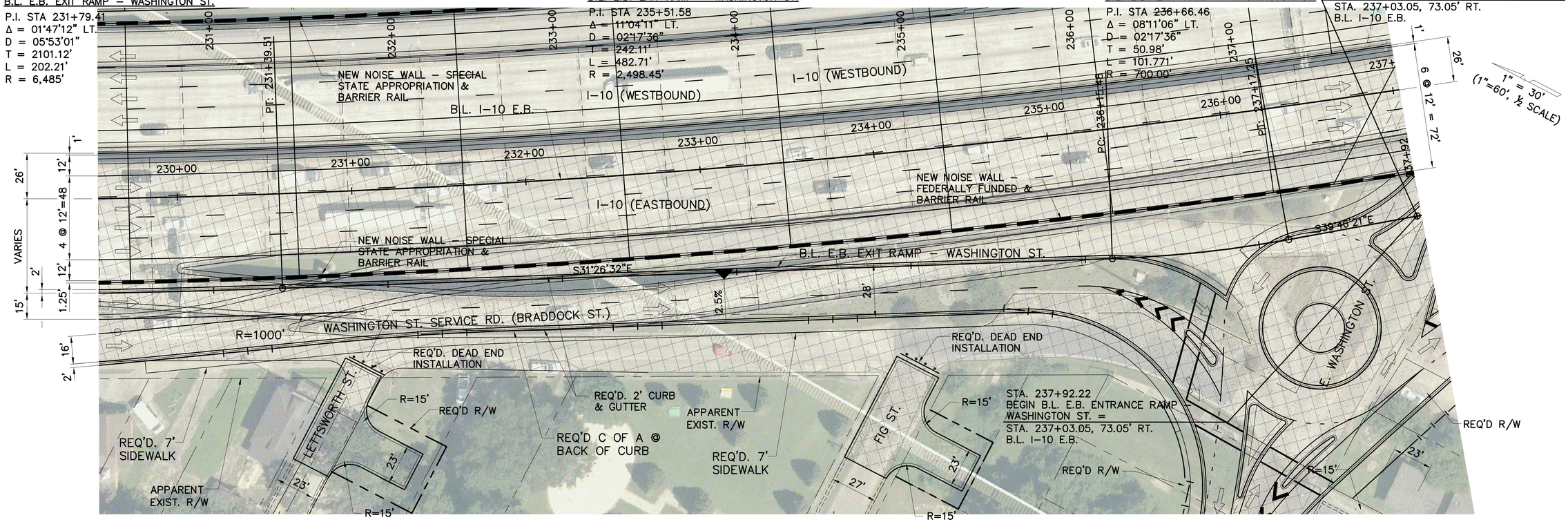
LINE & GRADE STUDY - DRAFT

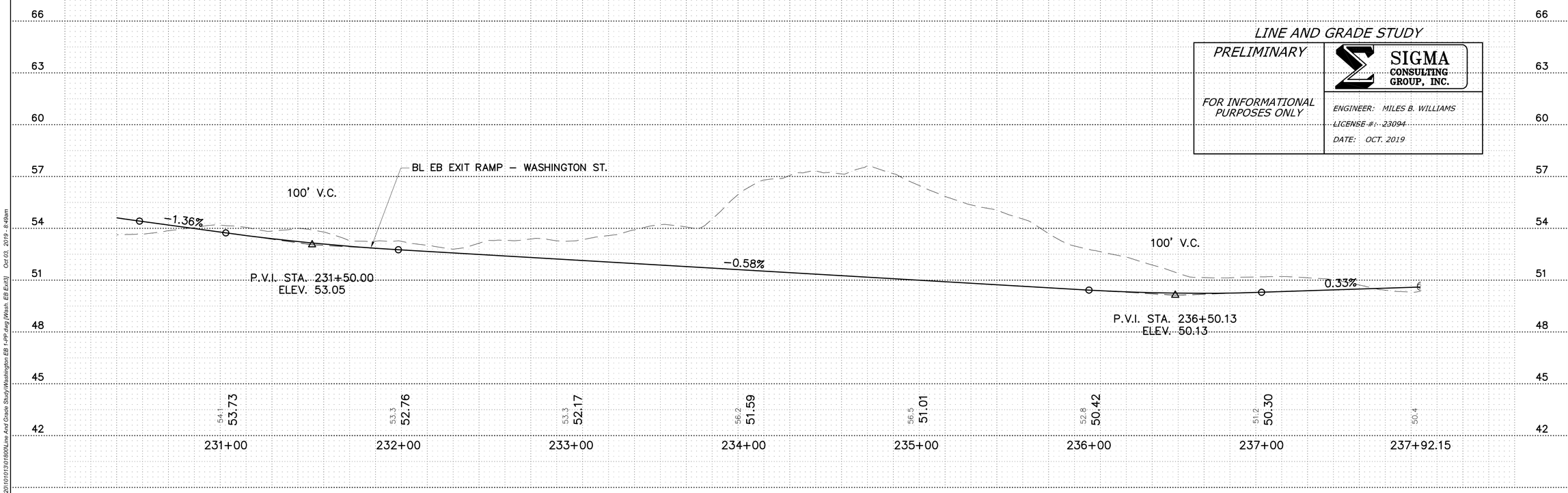
CURVE DATA
B.L. E.B. EXIT RAMP – WASHINGTON ST.
P.I. STA 231+79.41
Δ = 01°47'12" LT.
D = 05°53'01"
T = 2101.12'
L = 202.21'
R = 6,485'

CURVE DATA
B.L. E.B. EXIT RAMP – WASHINGTON ST.
P.I. STA 235+51.58
Δ = 11°04'11" LT.
D = 02°17'36"
T = 242.11'
L = 482.71'
R = 2,498.45'

CURVE DATA
B.L. E.B. EXIT RAMP – WASHINGTON ST.
P.I. STA 236+66.46
Δ = 08°11'06" LT.
D = 02°17'36"
T = 50.98'
L = 101.771'
R = 700.00'

P.T. STA. 237+92.15
END E.B. EXIT RAMP – WASHINGTON ST. =
STA. 237+03.05, 73.05' RT.
B.L. I-10 E.B.





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WE03
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	3 OF 7

REVISION OR CHANGE ORDER DESCRIPTION | BY | DATE | NO.

PLAN AND PROFILE
EASTBOUND EXIT RAMP - WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\020201101013018\00\Line And Grade Study\Washington EB 1-PP.dwg [Wash. EB Exit3] Oct 03, 2019 - 8:49am

OCT. 2019

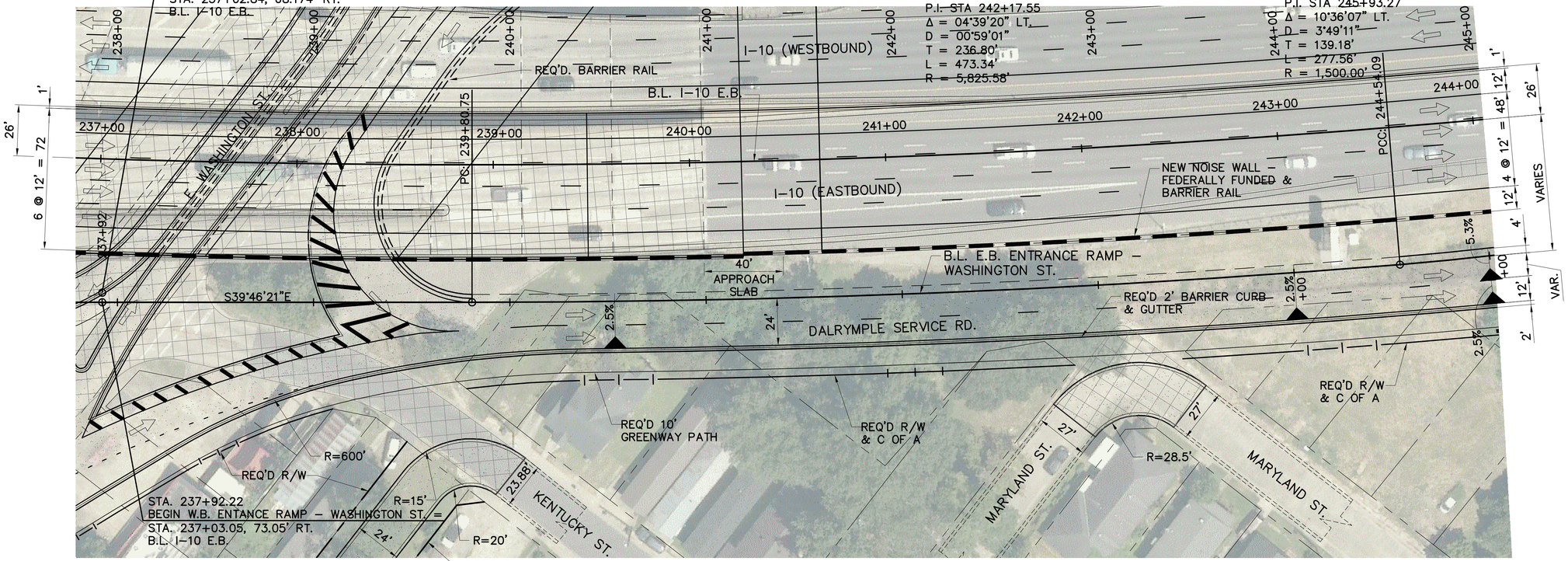
LINE & GRADE STUDY - DRAFT

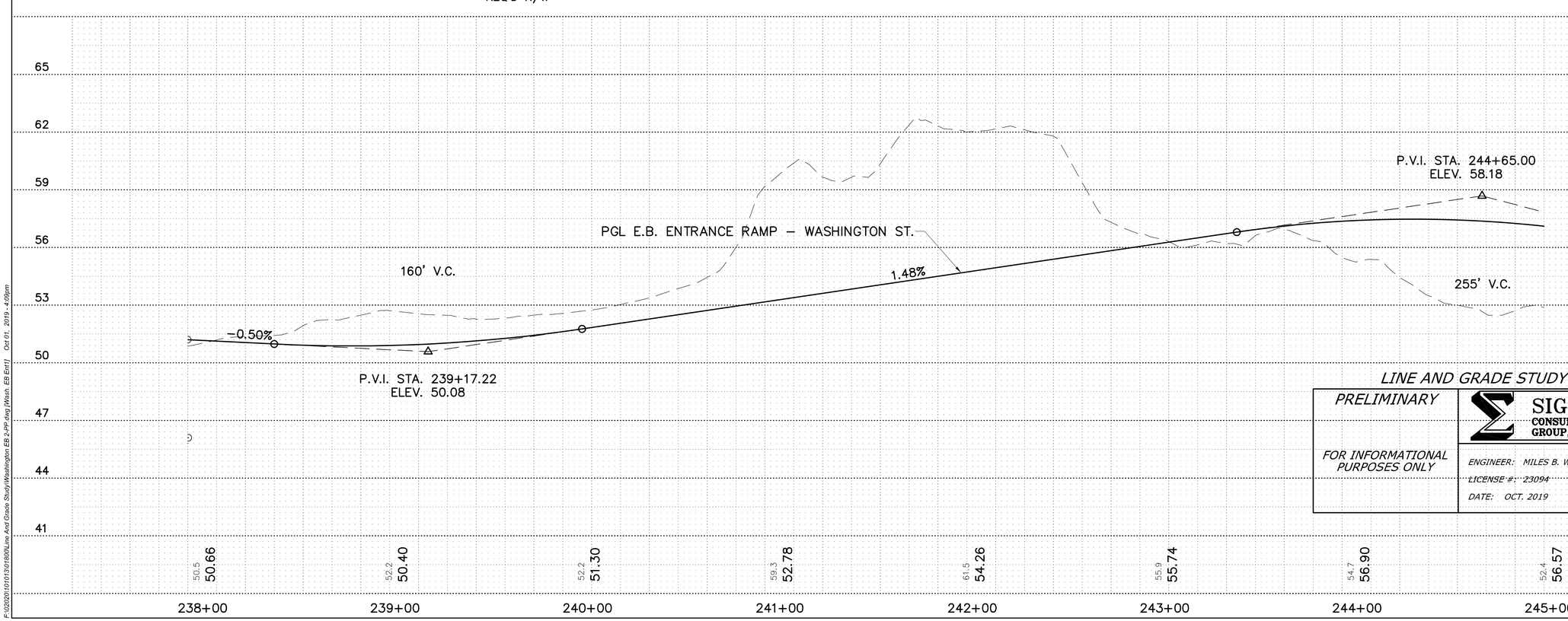
P.T. STA. 237+92.18
END E.B. EXIT RAMP – WASHINGTON ST. =
STA. 237+02.84, 68.174' RT.
B.L. I-10 E.B.

CURVE DATA
B.L. E.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 242+17.55
Δ = 04°39'20" LT.
D = 00°59'01"
T = 236.80'
L = 473.34'
R = 5,825.58'

CURVE DATA
B.L. E.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 245+93.27
Δ = 10°36'07" LT.
D = 3°49'11"
T = 139.18'
L = 277.56'
R = 1,500.00'

1" = 30'
(1"=60', ½ SCALE)





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WE04
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	4 OF 7

NO.	REVISION OR CHANGE ORDER DESCRIPTION	DATE	BY

PLAN AND PROFILE
EASTBOUND EXIT RAMP – WASHINGTON ST.
I-10: LA 415 TO ESSEN ON I-10 AND I-12

DOTD

SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\020201101013\01800\Line And Grade Study\Washington EB 2-PP.dwg [Wash. EB Ent1] Oct 01, 2019 - 4:09pm

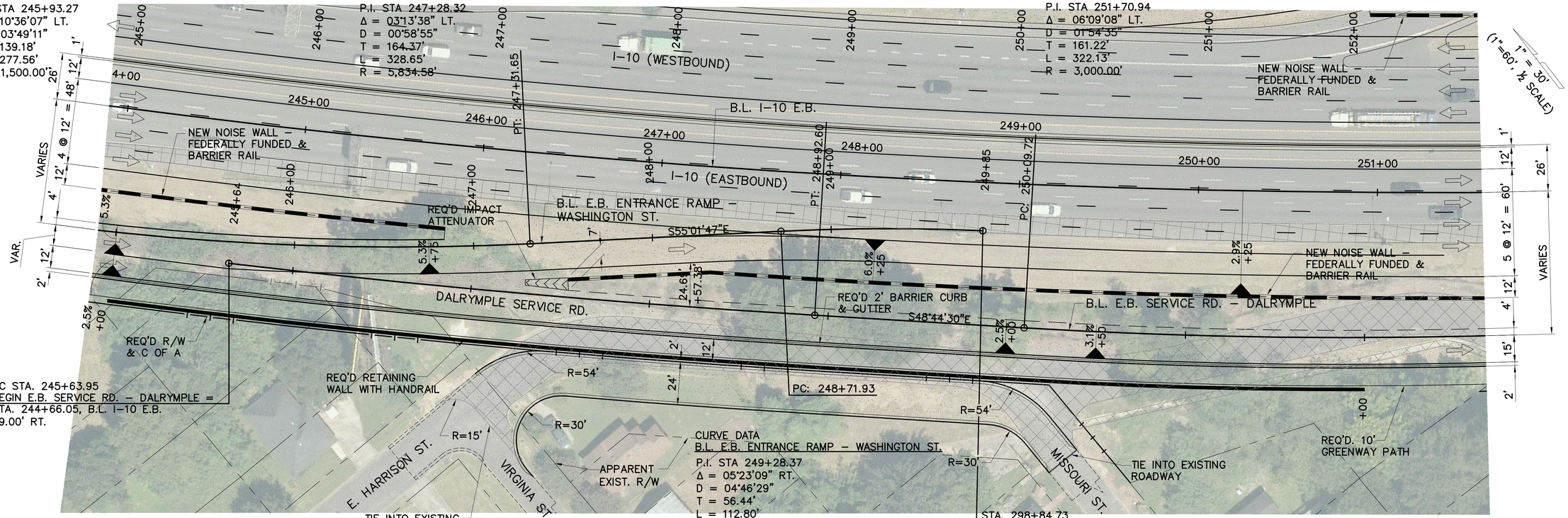
OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. E.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 245+93.27
Δ = 10°36'07" LT.
D = 03°49'11"
T = 139.18'
L = 277.56'
R = 1,500.00'

CURVE DATA
B.L. E.B. SERVICE RD. – DALRYMPLE
P.I. STA 247+28.32
Δ = 03°13'38" LT.
D = 00°58'55"
T = 164.37'
L = 328.65'
R = 5,834.58'

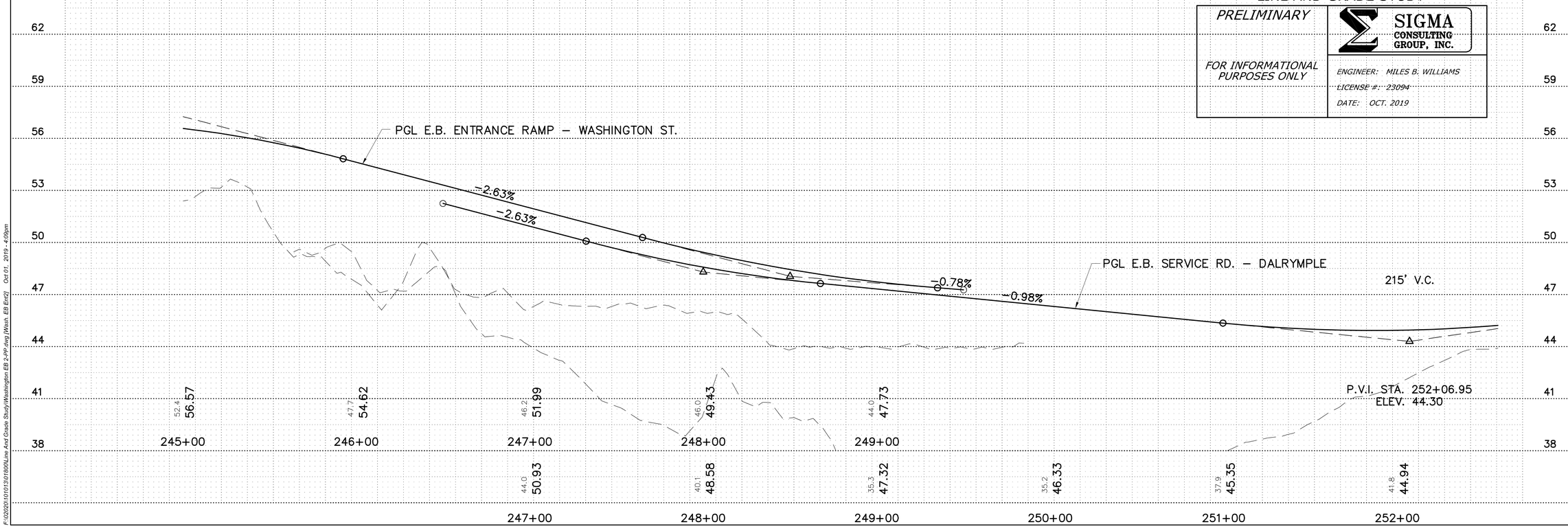
CURVE DATA
B.L. E.B. SERVICE RD. – DALRYMPLE
P.I. STA 251+70.94
Δ = 06°09'08" LT.
D = 01°54'35"
T = 161.22'
L = 322.13'
R = 3,000.00'



PC STA. 245+63.95
BEGIN E.B. SERVICE RD. – DALRYMPLE =
STA. 244+66.05, B.L. I–10 E.B.
79.00' RT.

CURVE DATA
B.L. E.B. ENTRANCE RAMP – WASHINGTON ST.
P.I. STA 249+28.37
Δ = 05°23'09" RT.
D = 04°46'29"
T = 56.44'
L = 112.80'
R = 1,200.00'

STA. 298+84.73
END W.B. ENTANCE RAMP – WASHINGTON ST. =
STA. 248+80.72, B.L. I–10 E.B.
27.00' RT.



LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WE05
PARISH	EAST BATON ROUGE
CONTROL SECTION	450–10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	5 OF 07

REVISION OR CHANGE ORDER DESCRIPTION | BY | DATE | NO.

PLAN AND PROFILE
EASTBOUND EXIT RAMP – WASHINGTON ST.
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

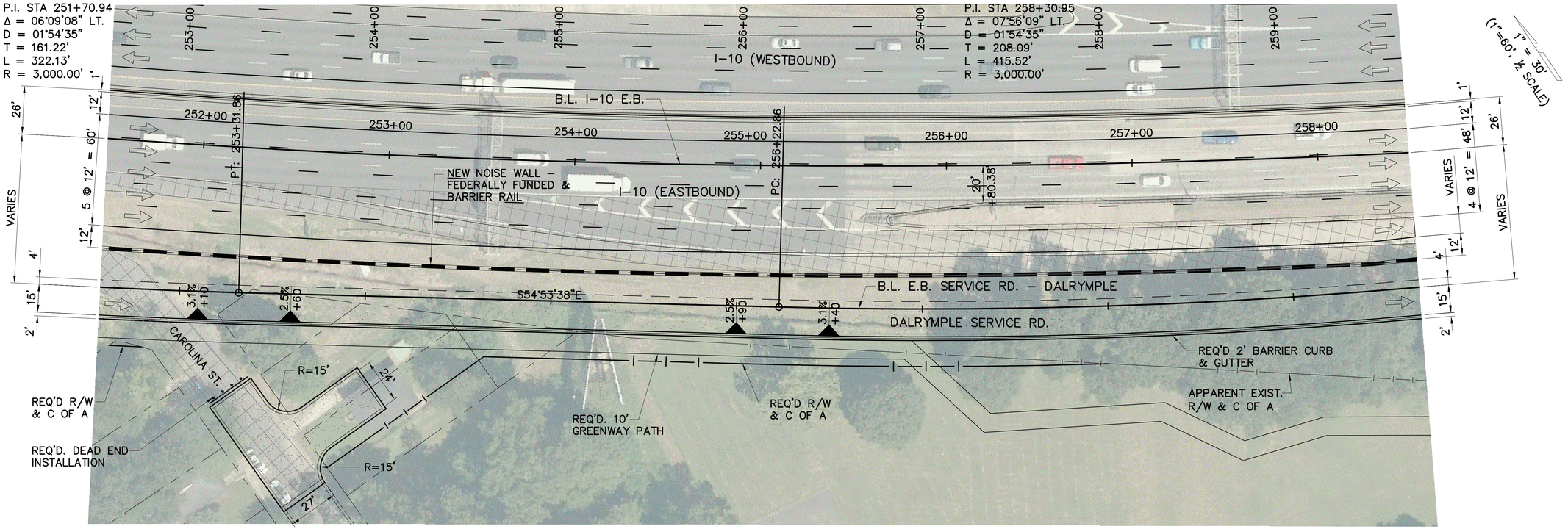
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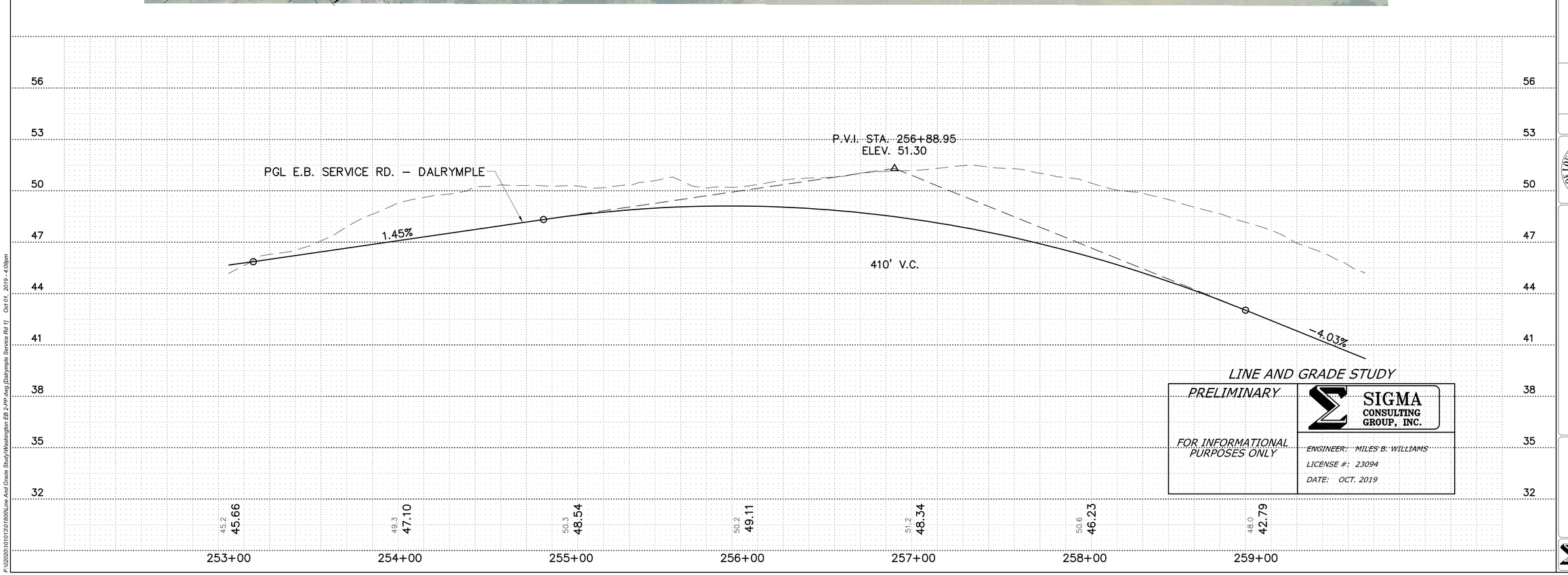
OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. E.B. SERVICE RD. – DALRYMPLE
P.I. STA 251+70.94
Δ = 06°09'08" LT.
D = 01°54'35"
T = 161.22'
L = 322.13'
R = 3,000.00'

CURVE DATA
B.L. E.B. SERVICE RD. – DALRYMPLE
P.I. STA 258+30.95
Δ = 07°56'09" LT.
D = 01°54'35"
T = 208.09'
L = 415.52'
R = 3,000.00'





LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WE06
PARISH	EAST BATON ROUGE
CONTROL SECTION	450-10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	6 OF 7

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
EASTBOUND SERVICE RD. – DALRYMPLE
I-10: LA 415 TO ESSEN ON I-10 AND I-12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

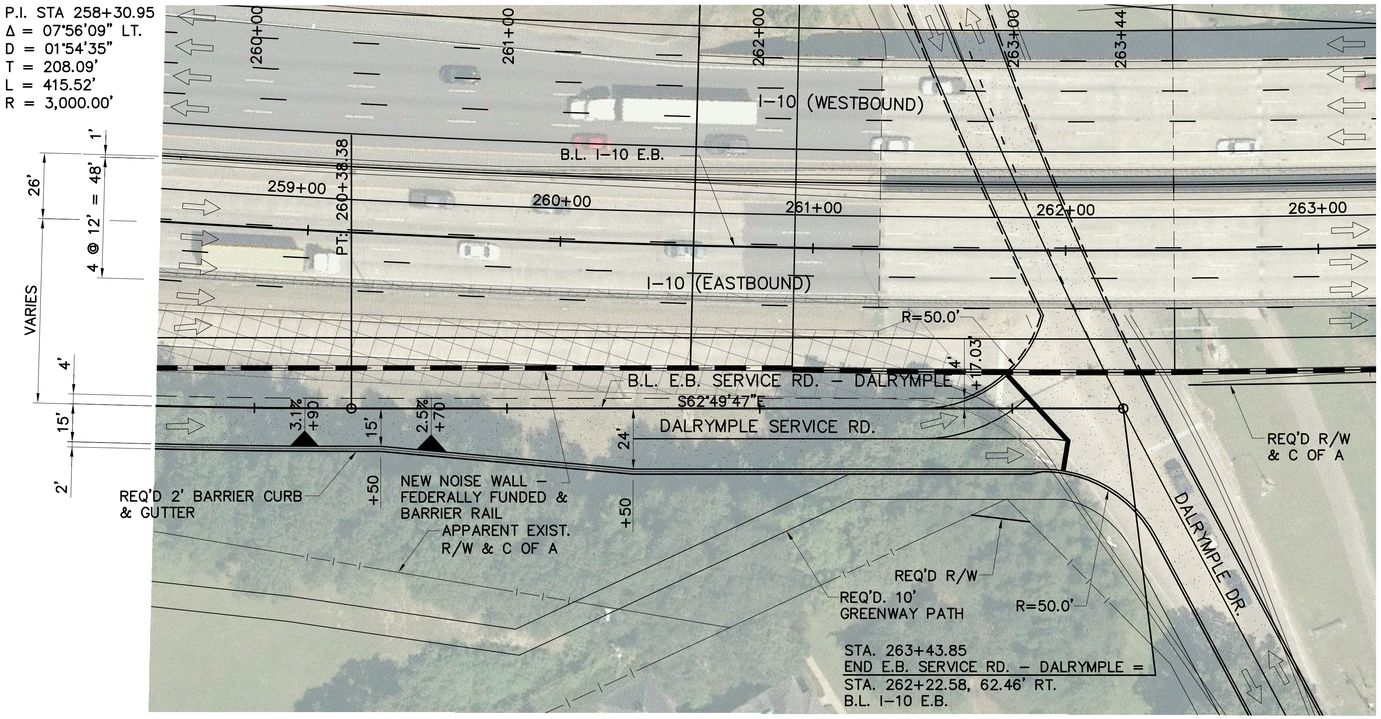
F:\02020\101013\01800\Line And Grade Study\Washington EB 2-PP.dwg [Dalrymple Service Rd 1] Oct 01, 2019 - 4:09pm

OCT. 2019

LINE & GRADE STUDY - DRAFT

CURVE DATA
B.L. E.B. SERVICE RD. – DALRYMPLE

P.I. STA 258+30.95
Δ = 07°56'09" LT.
D = 01°54'35"
T = 208.09'
L = 415.52'
R = 3,000.00'



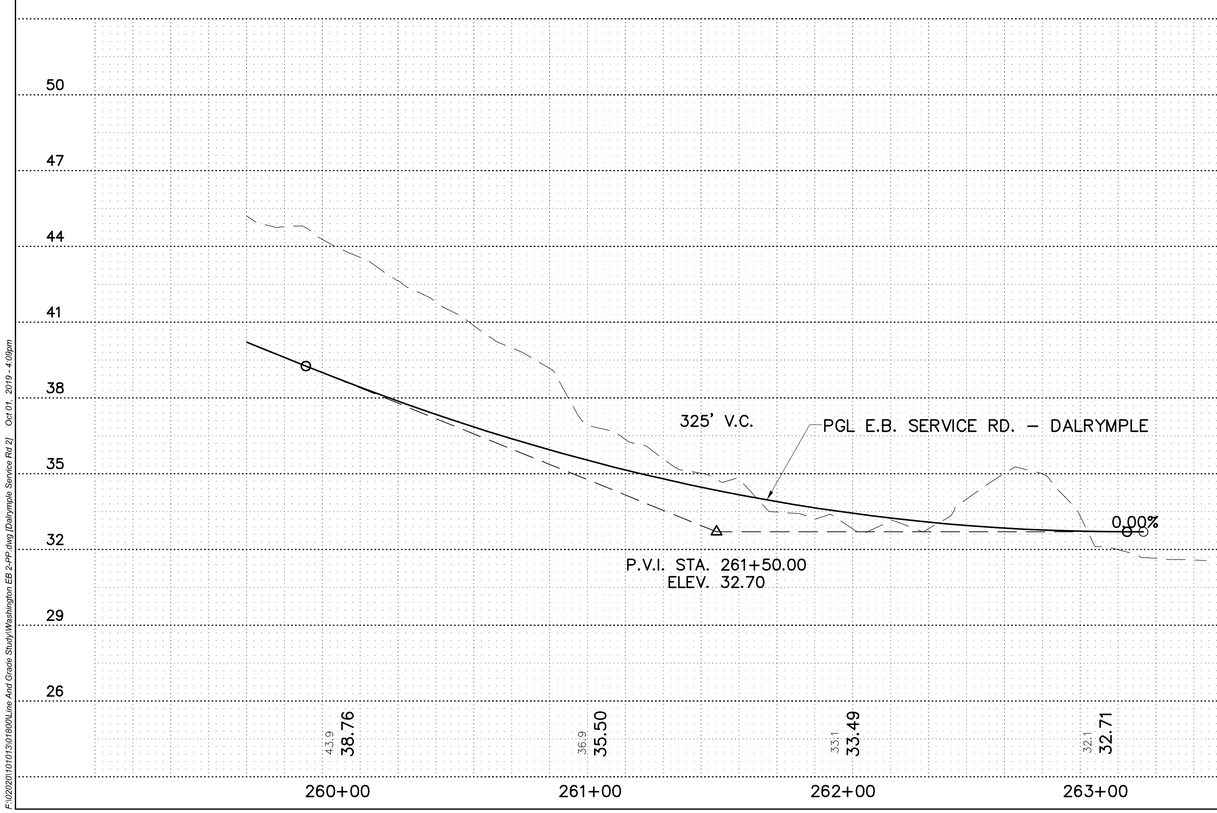
1" = 30'
(1"=60', ½ SCALE)

NEW NOISE WALL – SPECIAL STATE APPROPRIATION & BARRIER RAIL

NEW NOISE WALL – FEDERALLY FUNDED

RELOC. NOISE WALL W/ NEW BARRIER RAIL

EXIST. NOISE WALL



LINE AND GRADE STUDY

PRELIMINARY

FOR INFORMATIONAL PURPOSES ONLY

SIGMA CONSULTING GROUP, INC.

ENGINEER: MILES B. WILLIAMS
LICENSE #: 23094
DATE: OCT. 2019

SHEET NUMBER	WE07
PARISH	EAST BATON ROUGE
CONTROL SECTION	450–10
STATE PROJECT	H.004100
DESIGNED	WILLIAMS
CHECKED	
DETAILED	THYMES
CHECKED	
SERIES NUMBER	7 OF 7

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

PLAN AND PROFILE
EASTBOUND SERVICE RD. – DALRYMPLE
I–10: LA 415 TO ESSEN ON I–10 AND I–12

DOTD
SIGMA CONSULTING GROUP

SIGMA CONSULTING GROUP, INC.

F:\02020\101013\01800\Line And Grade Study\Washington EB 2-PP.dwg [Dalrymple Service Rd 2] Oct 01, 2019 - 4:09pm

2. PROJECT DESIGN CONSIDERATIONS

2.1 Project Design Guidelines

The design guidance, criteria and standards contained herein for the Interstate 10 Corridor Improvements, LA 415 to Essen Lane, generally conform to the following:

- LA DOTD *"Roadway Design Procedures and Details"*
- LA DOTD *"Bridge Design and Evaluation Manual"*
- LA DOTD "Minimum Design Guidelines" (dated March 6, 2017)
- American Association of State Highway and Transportation Officials' (AASHTO) publication *"A Policy on Geometric Design of Highways and Streets",* 7th Edition dated 2018 (Green Book)
- AASHTO publication *"LRFD Bridge Design Specifications"* (7th Edition, 2014 with 2015 and 2016 Interim Revisions)
- LA DOTD Engineering Directives and Standards (EDSMs).

The Corridor specific "Minimum Design Guidelines" and criteria generated were used as a basis to develop line and grade alternatives for Interstate 10 and the associated interchange and surface street improvements through the project corridor. It is important that these design guidelines and criteria are developed early on in project development to provide a coherent and reliable reference and that they are reviewed and updated throughout the roadway and bridge design process.

Geometric Criteria

The project corridor includes both rural (West Baton Rouge Parish) and urban (East Baton Rouge Parish) settings. There are various roadway classifications (types) identified through the limits of the study. These include:

Rural Freeway	I-10 – LA 415 to Mississippi River Bridge West Approach
Urban Freeway	I-10 – Mississippi River Bridge West Approach to Essen Lane
Ramps – Diagonal	Majority of Interchange ramp mods./additions, Service Roads
Ramps – Loop	Dalrymple Drive & College Drive Loop Ramps
Urban Arterial	Acadian Thruway, Washington Street, Perkins Road, etc.
Urban Local	E. Harrison Street, Nairn Drive, S. Eugene Street, etc

Using the LA DOTD "Minimum Design Guidelines" (dated March 6, 2017) supplemented by the other referenced manuals and standards, the following "Design Report" worksheets were generated for each of the roadway classifications (types) identified. There are two "Design Report" worksheets for the Urban Freeway classification. One applies to the I-10 Mississippi River Bridge Approaches and the other applies to I-10 from the I-10/I-110 Interchange to Essen Lane.

DRAFT

State Project No. H.004100 Route RURAL FWY Control Section 450-08

Roadway Features:

Design Feature	Preferred	Acceptable	Proposed Value	Design Waiver Required	Design Exception Required	Remarks or Explanation for Proposed Value
Design Speed (mph)		70 - 80	70			
Lane Width (ft)	NA	12	12			
Shoulder Width (ft)						
Inside	12	10	12			
Outside	12	10	12			
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)			12			
Clear Zone (ft)		30-34	34			
Cross Slope (%)		2.5%	2.5%			
Longitudinal Grade	NA	3% MAX	3% MAX			
Slopes (ft/ft)						
Fore Slope	6:1	4:1	6:1			
Back Slope	4:1	3:1	4:1			
Median Width (ft)	NA	64 w/o	64			CABLE BARRIER PROVIDED

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?	Design Exception Required	Remarks or Explanation for Proposed Value
☑ Yes ☐ No	☐	SSD=730, K crest = 247, K sag = 181

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?	Design Exception Required	Remarks or Explanation for Proposed Value
☐ Yes ☐ No	☐	

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e_{max}	Design Speed (mph)	Required Minimum Radius (ft)			Minimum radius and appropriate superelevation are being used for all curves?	Design Exception Required	Remarks or Explanation for Proposed Value
		Normal Crown	Reverse Crown	Full Super			
8	70	14500	8495	1810	☑ Yes ☐ No	☐	
					☐ Yes ☐ No	☐	

DRAFT

Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb				☐	☐	
Shoulder				☐	☐	N/A

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☐ No	☐	N/A

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☐ No	☐	N/A

Additional Comments:

DRAFT

Roadway Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Design Speed (mph)		60 - 70	60			
Lane Width (ft)	NA	12	12			
Shoulder Width (ft)						
Inside	12	10	2.75		✔	INSIDE SHOULDERS TO MATCH WIDTH ON MAIN TRUSS. MEDIAN BARRIER TO BE UPGRADED.
Outside	12	10	12			12' OUTSIDE SHOULDERS TO BE PROVIDED WHERE ATTAINABLE
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	NA	NA	NA			LIMIT OF REGION ON STRUCTURE WITH BARRIER RAIL @ EDGE OF SHOULDER
Clear Zone (ft)		NA	NA			LIMIT OF REGION ON STRUCTURE WITH BARRIER RAIL @ EDGE OF SHOULDER
Cross Slope (%)		2.5%	1.5 / 2.5%		✔	2.5% ON ALL NEW CONSTRUCTION - MATCH EXISTING 1.5% ON STRUCTURE WIDENING
Longitudinal Grade	NA	3% MAX	3.8% MAX		✔	3.8% IS EXISTING MAXIMUM GRADE
Slopes (ft/ft)						
Fore Slope	NA	NA	NA			
Back Slope	NA	NA	NA			
Median Width (ft)	NA	NA	8			LIMIT OF REGION ON STRUCTURE WITH NEW MEDIAN BARRIER RAIL PROVIDED

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☐ No	☐	N/A

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e max	Design Speed (mph)	***Required Minimum Radius (ft)*** Normal Crown	Reverse Crown	Full Super	*Minimum radius and appropriate superelevation are being used for all curves?*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
8	60	11500	6678	1200	☐ Yes ☑ No	☑	SSD=570', Kcrest = 151, Ksag = 136. ACCEPTABLE GUIDELINES PROVIDED ON ALL NEW CONSTRUCTION - MATCH EXISTING ON STRUCTURE WIDENING
					☐ Yes ☐ No	☐	

DRAFT

Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb				☐	☐	
Shoulder	TL + SW	TL + SW	TL + SW	☐	☑	SAME DESIGN EXCEPTION FOR INSIDE SHOULDER WIDTH

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☑ No	☑	REQUIRED MINIMUM CLEARANCE (16.5' OVER ROADWAYS & 23' OVER RAILROADS) PROVIDED WHERE ATTAINABLE. SEE VERTICAL CLEARANCE MEMO FOR ADDITIONAL DETAILS

Additional Comments:

APPLIES TO THE I-10 MISSISSIPPI RIVER BRIDGE APPROACHES

DRAFT

Roadway Features:

Design Feature	Preferred	Acceptable	Proposed Value	Design Waiver Required	Design Exception Required	Remarks or Explanation for Proposed Value
Design Speed (mph)		60 - 70	60			
Lane Width (ft)	NA	12	12			
Shoulder Width (ft)						
Inside	12	10	10 / 12	✔		10' INSIDE SHOULDER MAY BE REQUIRED ON SOME ELEVATED SEGMENTS TO ADDRESS CONSTRUCTABILITY CONSTRAINTS. ALL OTHER INSIDE SHOULDERS WILL BE 12'.
Outside	12	10	12			
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	12	12	12			
Clear Zone (ft)		30 - 32	32			ALL AREAS WITH CLEAR ZONE LESS THAN 32' WILL BE PROTECTED BY BARRIER RAIL OR GUARDRAIL
Cross Slope (%)		2.5%	1.5 / 2.5%		✔	2.5% ON ALL NEW CONSTRUCTION & ROADWAY WIDENING - MATCH EXISTING 1.5% ON STRUCTURE WIDENING
Longitudinal Grade	NA	3% MAX	3% MAX			
Slopes (ft/ft)						
Fore Slope	6:1	4:1	6:1			
Back Slope	4:1	3:1	4:1			
Median Width (ft)	NA	64 W/O	64 W/O			ALL AREAS WITH MEDIAN WIDTH LESS THAN 64' WILL BE PROTECTED BY BARRIER RAIL

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?		Design Exception Required	Remarks or Explanation for Proposed Value
☑ Yes	☐ No	☐	

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?		Design Exception Required	Remarks or Explanation for Proposed Value
☐ Yes	☐ No	☐	N/A

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e_{max}	Design Speed (mph)	Required Minimum Radius (ft)			Minimum radius and appropriate superelevation are being used for all curves?		Design Exception Required	Remarks or Explanation for Proposed Value
		Normal Crown	Reverse Crown	Full Super				
8	60	11500	6678	1200	☐ Yes	☑ No	☑	SSD=570', Kcrest = 151, Ksag = 136. ACCEPTABLE GUIDELINES PROVIDED ON ALL NEW CONSTRUCTION & ROADWAY WIDENING - MATCH EXISTING ON STRUCTURE WIDENING
					☐ Yes	☐ No	☐	

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Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb				☐	☐	
Shoulder	TL + SW	TL + SW	TL + SW	☐	☐	

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☑ No	☑	REQUIRED MINIMUM CLEARANCE (16.5' OVER ROADWAYS & 23' OVER RAILROADS) PROVIDED WHERE ATTAINABLE. SEE VERTICAL CLEARANCE MEMO FOR ADDITIONAL DETAILS

Additional Comments:

APPLIES TO INTERSTATE 10 FROM THE I-10/I-110 INTERCHANGE TO ESSEN LANE

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Roadway Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Design Speed (mph)		30 - 50	45			
Lane Width (ft)	NA	12 / 15	15			15' SINGLE LANE/24' DUAL LANE - USE CASE "C" FROM AASHTO.
Shoulder Width (ft)						
Inside	NA	2 - 4	2			SEE AASHTO
Outside	NA	8 - 10	8			SEE AASHTO
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	10 Rt.	6 Rt. / 4 Lt.	10 Rt.			
Clear Zone (ft)		NA	NA			
Cross Slope (%)		2.5%	1.5%/2.5%		✔	2.5% ON ALL NEW RAMPS - MATCH EXISTING 1.5% ON RAMP WIDENING
Longitudinal Grade	NA	5% Max	5% Max			
Slopes (ft/ft)						
Fore Slope	NA	4:1	4:1			
Back Slope	NA	3:1	3:1			
Median Width (ft)	NA	NA	NA			

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	SSD=360', K crest = 61, K sag = 79

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☐ Yes ☐ No	☐	N/A

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e max	Design Speed (mph)	***Required Minimum Radius (ft)*** Normal Crown	Reverse Crown	Full Super	*Minimum radius and appropriate superelevation are being used for all curves?*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
8	45	6710	4930	587	☐ Yes ☑ No	☑	FULL RECONSTRUCTION MEETS GUIDELINES. SOME LOCATIONS OF WIDENING OF EXIST. MAY REQUIRE DESIGN EXCEPTIONS.
					☐ Yes ☐ No	☐	

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Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb			23	☐	☐	TRAVEL LANES + 8'
Shoulder			25	☐	☐	TRAVEL LANES + SHOULDER WIDTH

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Additional Comments:

APPLIES TO ALL RAMPS EXCLUDING THE DALRYMPLE DRIVE WB EXIT LOOP RAMP AND THE COLLEGE DRIVE WB ENTRANCE LOOP RAMP
WHERE ELEVATED RAMPS TIE INTO EXISTING, THE CROSS SLOPE/SUPERELEVATION VALUES AND/OR SHOULDER WIDTH VALUES MAY REQUIRE DESIGN EXCEPTIONS.

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Roadway Features:

Design Feature	Preferred	Acceptable	Proposed Value	Design Waiver Required	Design Exception Required	Remarks or Explanation for Proposed Value
Design Speed (mph)		30 - 50	30			
Lane Width (ft)	NA	16	16			USE CASE "C" FROM AASHTO.
Shoulder Width (ft)						
Inside	NA	2 - 4	2			SEE AASHTO
Outside	NA	8 - 10	8			SEE AASHTO
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	10 Rt.	6 Rt. / 4 Lt.	10 Rt.			
Clear Zone (ft)		NA	NA			
Cross Slope (%)		2.5%	2.5%			
Longitudinal Grade	NA	5% MAX	5% MAX			
Slopes (ft/ft)						
Fore Slope	NA	4:1	4:1			
Back Slope	NA	3:1	3:1			
Median Width (ft)	NA	NA	NA			

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?		Design Exception Required	Remarks or Explanation for Proposed Value
☑ Yes	☐ No	☐	SSD=200', K crest = 19 K sag = 37

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?		Design Exception Required	Remarks or Explanation for Proposed Value
☐ Yes	☐ No	☐	N/A

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e_{max}	Design Speed (mph)	Required Minimum Radius (ft) Normal Crown	Reverse Crown	Full Super	Minimum radius and appropriate superelevation are being used for all curves?	Design Exception Required	Remarks or Explanation for Proposed Value
8	30	3240	2370	214	☑ Yes ☑ No	☑	MINIMUMS PROVIDED FOR DALRYMPLE LOOP RAMP - DESIGN EXCEPTION REQUIRED FOR COLLEGE LOOP RAMP
					☐ Yes ☐ No	☐	

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Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb			23	☐	☐	TRAVEL LANES + 8'
Shoulder			25	☐	☐	TRAVEL LANES + SHOULDER WIDTH

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Additional Comments:

APPLIES TO DALRYMPLE WB EXIT LOOP RAMP AND COLLEGE WB ENTRANCE LOOP RAMP

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Roadway Features:

Design Feature	Preferred	Acceptable	Proposed Value	Design Waiver Required	Design Exception Required	Remarks or Explanation for Proposed Value
Design Speed (mph)		30 - 60	35			
Lane Width (ft)	12	11	12			
Shoulder Width (ft)						
Inside	1 (curb)	1 (curb)	1 (curb)			
Outside	4 (curb)	1 (curb)	1 (curb)	✔		
Shoulder Type						
Inside	Paved	Paved	Paved			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	4	1.5 (3@ I/D)	1.5 (3@ I/D)	✔		PROVIDE 4' WHERE ATTAINABLE
Clear Zone (ft)		NA	NA			
Cross Slope (%)		2.5%	2.5%			
Longitudinal Grade	NA	5% MAX	5% MAX		✔	5.8% GRADE REQUIRED @ ACADIAN/KCSRR UNDERPASS
Slopes (ft/ft)						
Fore Slope	NA	4:1	4:1			
Back Slope	NA	3:1	3:1			
Median Width (ft)	NA	NA	NA			

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?	Design Exception Required	Remarks or Explanation for Proposed Value
☑ Yes ☐ No	☐	

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?	Design Exception Required	Remarks or Explanation for Proposed Value
☐ Yes ☑ No	☑	ACCOMODATE COMPLETE STREETS WHERE ATTAINABLE

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e_{max}	Design Speed (mph)	Required Minimum Radius (ft)			Minimum radius and appropriate superelevation are being used for all curves?	Design Exception Required	Remarks or Explanation for Proposed Value
		Normal Crown	Reverse Crown	Full Super			
4	35	527	399	371	☑ Yes ☐ No	☐	SSD=250, Kcrest = 29, Ksag = 49
					☐ Yes ☐ No	☐	

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Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb	TL + 8	TL + SW	TL + SW	☑	☐	
Shoulder				☐	☐	

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☑ Yes ☐ No	☐	

Additional Comments:

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Roadway Features:

Design Feature	Preferred	Acceptable	Proposed Value	Design Waiver Required	Design Exception Required	Remarks or Explanation for Proposed Value
Design Speed (mph)		20 - 30	30			
Lane Width (ft)	11	10	11/12			
Shoulder Width (ft)						
Inside	NA	NA	NA			
Outside	4 (curb)	1 (curb)	1 & 4 (curb)	↘		PROVIDE 4' WHERE ATTAINABLE
Shoulder Type						
Inside	NA	NA	NA			
Outside	Paved	Paved	Paved			
Lateral Offset (ft)	4	1.5 (3@I/D)	1.5 & 4	↘		PROVIDE 4' WHERE ATTAINABLE
Clear Zone (ft)		NA	NA			
Cross Slope (%)		2.5%	2.5%			
Longitudinal Grade	NA	5% MAX	5%/6% MAX		↘	6% GRADE PROPOSED FOR SOUTH APPROACH OF NAIRN DR OVERPASS TO MATCH EXISTING. ALL OTHERS TO BE 5% MAX
Slopes (ft/ft)						
Fore Slope	NA	4:1	4:1			
Back Slope	NA	3:1	3:1			
Median Width (ft)	NA	NA	NA			

Stopping Sight Distance: *Vertical and horizontal distances must be met.*

Do plans meet Stopping Sight Distance requirements?		Design Exception Required	Remarks or Explanation for Proposed Value
↘ Yes	☐ No	☐	SSD=200', K crest = 19, K sag = 37

Complete Streets: *Accommodations for bikes and pedestrians must be considered. See Design Guidelines for accommodation requirements.*

Do plans meet Complete Streets accommodations?		Design Exception Required	Remarks or Explanation for Proposed Value
☐ Yes	↘ No	↘	COMPLETE STREETS WILL BE ACCOMODATED WHERE ATTAINABLE

Horizontal Curves Radius/Superelevation:

Max Super-elevation rate (%) e_{max}	Design Speed (mph)	Required Minimum Radius (ft)			Minimum radius and appropriate superelevation are being used for all curves?	Design Exception Required	Remarks or Explanation for Proposed Value
		Normal Crown	Reverse Crown	Full Super			
4	30	343	267	250	↘ Yes ☐ No	☐	
					☐ Yes ☐ No	☐	

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Bridge Features:

Design Feature	*Preferred*	*Acceptable*	*Proposed Value*	*Design Waiver Required*	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
Bridge Width (ft)						
Curb	TL + 8	TL + SW	32	☐	☐	NAIRN BRIDGE PROPOSED WIDTH MEETS PREFERRED
Shoulder				☐	☐	

Structural Capacity:

Do all structures meet requirements for Structural Capacity?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☒ Yes ☐ No	☐	

Vertical Clearance:

Are minimum required roadway clearances met for all structure types?	*Design Exception Required*	*Remarks or Explanation for Proposed Value*
☒ Yes ☐ No	☐	

Additional Comments:

Applies to Nairn Drive and other local roads that are relocated.

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Right of Way and Construction Servitude Criteria

During the development of the line and grade for the I-10 Corridor Improvements every attempt was made to minimize right of way acquisitions through the corridor. Where acquisition is necessary the guidelines used for the width of proposed Right of Way or Construction Servitude was developed in consultation with LA DOTD based on the existing and proposed roadway/bridge types and location of proposed noise barriers and retaining walls. The description of each roadway/bridge section along with the designation of acquisition width is below.

At-Grade Roadways:
With Noise Barriers – Right-of-way will be set 1'-6" from the back of the noise barrier. A construction servitude will be set 10'-0" from the back of the noise barrier.

Without Noise Barriers – Right-of-way will be 10'-0" from the edge of the proposed roadway shoulder. This excludes areas which are tight, such as Braddock Street, where the existing edge of pavement was used as the marker for the 10'-0" construction servitude.

Elevated Structures:
With or Without Noise Barriers – Right-of-way will be 5'-0" from the fascia of the elevated structure. There will be no construction servitude shown along structures.

Bridge Criteria

Per BDEM 6.1, the minimum requirements for Bridge Widening projects shall include the following:

1. All deficiencies in the existing structure were identified and documented. This was documented under a separate document "Final Bridge Condition Assessment Report."
2. The existing structure shall be rehabilitated to improve the overall condition of the bridge to extend its service life and/or improve its bridge load rating as appropriate.
3. The new or widened portions of the structure shall be designed in accordance with the latest *AASHTO LRFD Bridge Design Specifications* and LADOTD Bridge Design Manuals including Bridge Design Technical Memoranda.
4. Existing bridge components, such as exterior girders, bent caps, columns, piles etc., that are subject to new loadings from the widening sections shall be evaluated based on the current specifications to determine their adequacy. Bridge components with insufficient capacity shall be replaced or rehabilitated as appropriate.

Design Loads: Any new bridge components shall be designed for a future wearing surface equal to 25 psf and a stay-in-place form weight of 10 psf. Live load for all limit states shall be both the HL-93 and the Louisiana design vehicle LADV-11 applied in accordance with LRFD code.

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Earthquake, EQ: [AASHTO *LRFD Bridge Design Specifications 3.10]*: The seismic performance zone is 1b with an acceleration coefficient equal to 0.078, and a site class E(F). The structure has an operational classification of "Essential Bridges". All connections designed to resist 25% of the vertical reaction due to tributary dead loads. No earthquake loads are assumed during construction.

Vehicular Collision force, CT: [AASHTO *LRFD Bridge Design Specifications 3.6.5]*: All bents and piers located within a distance of 30.0 ft to the edge of any roadway (or 25 ft from railroad tracks) shall be investigated for collision. Collision shall be addressed by either redirecting the load through the use of pier protection or designing the structural member to absorb the lateral impact load. All existing columns that are not designed for lateral impact forces shall be protected in accordance with *AASHTO LRFD Bridge Design Specifications*.

Bridge Barrier: All new bridge barrier railings shall have a 36" tall single-slope traffic railing meeting TL-4 test level. Existing bridge railings that do not meet NCHRP 350 or MASH TL-4 shall be replaced.

2.2 Segments of Independent Utility

For major corridor improvement programs or projects it is important to break down the overall proposed improvement program into manageable project increments or Segments of Independent Utility (SIU). Segments of Independent Utility, within a large corridor improvement, each provide beneficial use by interconnecting existing infrastructure, providing upgraded capacity and/or providing increased safety based on its own merits. In addition, segmenting the I-10 Corridor Improvements into reasonable potential independent projects (SIU's) allows for the development of more robust staging and construction packaging scenarios, programmatic scheduling and corridor financial planning.

Following are recommended Segments of Independent Utility for the I-10 Corridor Improvements delineated from west to east through the corridor (See Figure 2-1 at the end of this section for a layout of the SIU's):

I-10: LA 415 to LA 1 – **SIU-01**
(LA 415 to Base of Westside Approach of MRB)
This segment consists of three laning the at-grade roadways of I-10 in each direction from the LA 415 Interchange east to the beginning of the west approaches to the Mississippi River Bridge (MRB). Lane balance can be maintained by adding/dropping the third lane in each direction at the LA 415 east side ramps and the LA 1 west side ramps.

I-10: Mississippi River Bridge Westside Approach – **SIU-02**
(Base of Westside Approach of MRB to Main Cantilever Truss)
This segment consists of proposed shoulder widening improvements, acceleration/deceleration lane extensions at the LA 1 ramps, and the continuation of a third westbound lane past the LA 1 WB exit ramp. This segment provides some capacity

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improvement by the addition of the third I-10 westbound lane and the improvement of the movements at the ramps. It also provides a reasonable safety improvement by adding outside shoulders to I-10 where practical.

I-10: Mississippi River Bridge Eastside Approach – **SIU-03**
(Main Cantilever Truss to I-10 EB/I-110 NB Diverge)
This segment consists of proposed shoulder widening improvements, deceleration lane improvements at the Highland/Nicholson exit ramp and an acceleration lane extension at the St. Ferdinand/St. Louis entrance ramp. This segment provides only limited capacity improvement with the extension of the acceleration/deceleration ramps. It also provides a reasonable safety improvement by adding outside shoulders to I-10 where practical.

Note: The work required for **SIU-02** and **SIU-03** is similar in nature and magnitude and it would be reasonable to consider combining these two sections into one major construction project.

I-10 Eastbound Ramp – **SIU-04**
(I-10 EB/I-110 NB Diverge to I-10 EB/I-110 SB Merge)
This segment consists of proposed shoulder widening improvements and increase of the superelevation to increase design speed. This segment provides very limited capacity improvement by widening shoulders and increasing operating speed. It also provides a reasonable safety improvement by adding full width shoulders where practical.

I-10: Washington/Dalrymple Interchange Area – **SIU-05**
(I-10/I-110 Interchange to Dalrymple)
This segment consists of the four laning of I-10 in each direction from the I-10/I-110 Interchange to Dalrymple Drive. Also included are interchange modifications with the relocation of the Washington Street and Dalrymple Drive Eastbound Exit to a consolidated exit prior to the I-10/I-110 Eastbound merge. The westbound exit to Dalrymple Drive will be incorporated with a weaving set of ramps to provide for traffic to continue to Washington Street and Louise Street. In addition, an at-grade turnaround will be incorporated prior to Washington Street with the westbound entrance provide an eastbound entrance to I-10 for traffic from Dalrymple.

This segment provides limited mainline independent utility by providing a fourth lane in each direction for approximately 4,500 feet. The at-grade/interchange improvements will provide enhanced access through the Louise Street/Washington Street/Dalrymple Drive area by eliminating the lane drop at the Washington Street Eastbound Exit and by providing I-10 Eastbound access from the Dalrymple/LSU area.

I-10: City Park Lake Bridge and Roadways – **SIU-06**
(Dalrymple to Elissalde)
This segment consists of the four laning of I-10 in each direction from Dalrymple Drive to the beginning of the Perkins/KCSRR/Acadian Overpass Bridge. The major components are the improvements to the City Park Lake Bridge and the at-grade roadways to the east for approximately 2,000 feet.

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This segment provides additional mainline independent utility by providing a fourth lane in each direction for approximately 2,900 feet. This segment in conjunction with **SIU-5** *Washington/Dalrymple Interchange Area* will provide four lanes in each direction for approximately 7,400 feet.

I-10: Perkins Road/KCSRR/Acadian Thruway Overpass Bridge – **SIU-07**
(Elissalde to Acadian Thruway)
This segment consists of four laning the I-10 bridge in each direction from just east of Elissalde Street to the east side of Acadian Thruway. The Perkins Road Westbound Entrance Ramp and Eastbound Exit Ramp will be removed. The Acadian Thruway Interchange will be improved to address traffic demand.

This segment provides additional mainline independent utility by providing a fourth lane in each direction for approximately 3,500 feet. This segment in conjunction with **SIU-5** *Washington/Dalrymple Interchange Area* and **SIU-6** *City Park Lake Bridge and Roadways* will provide four lanes in each direction for approximately 10,900 feet. This segment also provides enhanced safety and at grade capacity improvements with the elimination of the Perkins Road Partial Interchange and improvements to the Acadian Thruway Interchange.

- *Acadian Thruway Interchange At-Grade Improvements* – **SIU-07(A)**
  The at-grade improvements for the interchange may be considered a separate project or combined in **SIU-07**. These improvements must be completed to accommodate the additional traffic from the closure of the Perkins Road Partial Interchange

- *Perkins Road Area At-Grade Improvements* – **SIU-07(B)**
  Potential Enhancements Project – may be considered a separate project or combined in **SIU-07.**

I-10: Acadian Thruway to College Drive– **SIU-08**
This segment consists of four laning the I-10 in each direction from just east of Acadian Thruway to just east of College Drive. Minor adjustments to the ramps on the east side of the Acadian Thruway Interchange and the west side of the College Drive Interchange are included in this segment. In addition, the Nairn Drive Overpass will be replaced in this segment.

This segment provides additional mainline independent utility by providing a fourth lane in each direction for approximately 3,400 feet. This segment in conjunction with **SIU-05** *Washington/Dalrymple Interchange Area*, **SIU-06** *City Park Lake Bridge and Roadways* and **SIU-07** *Perkins Road/KCSRR/Acadian Thruway Overpass Bridge* will provide four lanes in each direction through the corridor from the I-10/I-110 Interchange to the I-10/I-12 Split.

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- *Nairn Drive Overpass over I-10* - **SIU-08(A)**: This new bridge can be separated out of **SIU-08** as a standalone project. This bridge must be replaced/extended prior to or in conjunction with the completion of **SIU-08.**

I-10: College Drive to I-10/I-12 Interchange– **SIU-09**
This segment consists of five laning I-10 Eastbound to the I-10/I-12 Split. It also includes providing dedicated westbound exit ramps from I-10 and I-12 to a service road to access College Drive.

This segment provides independent utility by providing eastbound lane balance at the I-10/I-12 split.

- *College Drive Westbound Exits from I-10/I-12* - **SIU-09(A)**: The improvements to provide dedicated westbound exit ramps from I-10 and I-12 to a service road to access College Drive can be separated out of **SIU-09** as a standalone project. As stated above, this improvement provides a safety/capacity improvement for the westbound College Drive exit by eliminating the multilane weave required from I-10 westbound to the existing College Drive exit.

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Project Segment of Independent Utility
Staging and Construction Packaging

Legend

- I-10: LA 415 to LA 1 - SIU-01
- I-10: Mississippi Bridge Westside Approach - SIU-02
- I-10: Mississippi Bridge Eastside Approach - SIU-03
- I-10: Eastbound Ramp - SIU-04
- I-10: Washington/Dalrymple Interchange Area - SIU-05
- I-10: City Park Lake Bridge and Roadways - SIU-06
- I-10: Perkins Road/KCSRR/Acadian Thruway Overpass Bridge - SIU-07
- I-10: Acadian Thruway Interchange At-Grade Improvements - SIU-07 (A)
- I-10: Perkins Road Area At-Grade Enhancements - SIU-07 (B)
- I-10: Acadian Thruway to College Drive - SIU-08
- I-10: Nairn Drive Overpass Over I-10 - SIU-08 (A)
- I-10: College Drive to I-10/I-12 Interchange - SIU-09
- I-10: College Drive WB Exits from I-10/1-12 - SIU-09 (A)

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FIGURE 2-1

2.3 Design Waivers and Exceptions

A substantial portion of The I-10 Corridor Improvements Project involves complex and congested transportation facilities in close proximity to intensely urbanized areas. The design guidelines and criteria described in Section 2.1 above set the framework for which all of the proposed alternative improvements were developed. However, because of the complexity of the facility and the proximity to established residential and commercial areas there are areas or components of the proposed improvements that could not be reasonably designed to meet some of the appropriate design values described in the Design Reports for that type of facility. Therefore several potential design waivers and design exceptions have been identified based on the proposed line and grade design.

There are various reasons that these design waivers and exceptions are necessary. These include:

- Substantial adverse impact to the surrounding neighborhoods
- Substantial increase in project cost for some component of the project
- Difficulty maintaining traffic flow during the construction or reconstruction of that component of the project

A design waiver must be granted by the LA DOTD Supervising Engineer for any design value utilized which is designated as "acceptable" when a "preferred" value for that particular element is also provided. No design waiver is needed for elements which are designated as "acceptable" and where a "preferred" value is not provided. A design exception must be granted by the LA DOTD Chief Engineer for any design value chosen which does not meet the "acceptable" value for the specific criteria.

The designated design waivers and exceptions described below will not create an unsafe condition or compromise the capacity of the upgraded facility.

Potential design waivers and design exceptions for the corridor delineated by Segment of Independent Utility (SIU) and roadway classification include:

- *I-10: LA 415 to LA 1* – **SIU-01**
  - Rural Freeway
    - No design waivers or exceptions anticipated in SIU-01

- *I-10: Mississippi Bridge Westside Approach* – **SIU-02** &
  I-10: Mississippi Bridge Eastside Approach – **SIU-03**
  - Urban Freeway
    - The existing cross slopes of the mainline bridge and approaches are 1.5%. The minimum guideline is 2.5%. Widening of the mainline bridge approaches can be accomplished with a break in cross slope to 2.5%. However, a design exception will be required for the existing portions to remain at 1.5% and if the widening is accomplished with a 1.5% cross slope.

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- The maximum existing vertical grade is 3.8%. The guideline calls for a maximum vertical grade of 3.0%. This will require a design exception.
- Existing inside shoulders are 2' in width. The guideline calls for inside shoulders of 12' in width. No work is proposed for the main cantilever truss and therefore full width inside shoulders cannot be developed on the approaches. This will require a design exception.

o Ramps – Diagonal

- Ramps at LA 1 Interchange, Exit Ramp at Nicholson Drive and Entrance Ramp at St. Ferdinand: Where ramps are being widened and/or tie into existing, the cross slopes/superelevation values and shoulder width values may require design exceptions.
- EB Entrance Ramp – LA 1: The horizontal curve proposed at the beginning of the ramp has a radius of 430'. This value exceeds the minimum guideline of 587'. This will require a design exception.
- WB Entrance Ramp – St. Ferdinand: The horizontal curve proposed (widen existing) along a majority of the ramp has a radius of 327'. This value exceeds the minimum guideline of 587'. This will require a design exception.

- *I-10 Eastbound Ramp* – **SIU-04**
  - o Urban Freeway
    - The existing cross slopes and superelevation rates do not meet the minimum guidelines. Design exceptions will be required where the structure is proposed to be widened at the existing cross slopes/superelevation rates.
    - The horizontal curve proposed along a majority of the segment has a radius of 832'. This value exceeds the minimum guideline of 1200'. This will require a design exception. Also the minimum stopping sight distance for a 60 mph design speed is not provided. The horizontal curve and shoulder offset will comply with a design speed of 50 mph.

- *I-10: Washington/Dalrymple Interchange Area* – **SIU-05**
  - o Urban Freeway
    - The existing cross slopes and superelevation rates do not meet the minimum guidelines. Design exceptions will be required where the structure is proposed to be widened at the existing cross slopes/superelevation rates.
    - The required minimum vertical clearance of 16.5' cannot be feasibly provided at Terrace Street (14.6' provided) and Louise Street (14.7' provided). These will require design exceptions.
    - 10' inside shoulders may be required on some portions of the elevated viaduct to address constructability constraints. This does

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not meet the preferred minimum width of 12'. However it does meet the acceptable minimum width of 10'. This will require a design waiver.

- Ramps – Diagonal
  - WB Entrance Ramp – Washington Street: Minimum required full superelevation rates of 6.7%+/- for the reverse curves at the tie in to I-10 cannot be achieved. The superelevation rates provided are 5.0%+/-. This will require a design exception.
- Urban Arterial – Washington St., etc.
  - The proposed outside shoulder width with curb is 1' (2' curb and gutter section). This meets the acceptable guideline but does not meet the preferred guideline of 4'. A design waiver will be required for this.
  - Some components of the complete streets accommodations cannot be feasibly met. This will require a design exception.

- *I-10: City Park Lake Bridge and Roadways* – **SIU-06**
  - Urban Freeway
    - The required minimum vertical clearance of 16.5' cannot be feasibly provided at East Lakeshore Drive (13.4' provided). This will require a design exception.
    - 10' inside shoulders may be required on the City Park Lake Bridge to address constructability constraints. This will require a design waiver.

- *I-10: Perkins Road/KCSRR/Acadian Thruway Overpass Bridge* – **SIU-07**
  - Urban Freeway
    - Required minimum vertical clearance of 16.5' cannot be feasibly provided at Christian Street (13.0' provided). This will require a design exception.
    - 10' inside shoulders may be required on some portions of the elevated viaduct to address constructability constraints. This will require a design waiver.

- *Acadian Thruway Interchange At-Grade Improvements* – **SIU-07(A)**
  - Urban Arterial
    - The proposed outside shoulder width with curb is 1' (2' curb and gutter section). This meets the acceptable guideline but does not meet the preferred guideline of 4'. A design waiver will be required for this.
    - The required minimum vertical clearance of 16.5' cannot be feasibly provided under the Kansas City Southern Railroad Overpass (15.5' provided). This will require a design exception.

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- The maximum existing vertical grade under the KCSRR is 5.8%. This is greater than the maximum allowed in the guidelines of 5.0%. This will require a design exception.
- Some components of the complete streets accommodations cannot be feasibly met. This will require a design exception.

- *I-10: Acadian Thruway to College Drive*– **SIU-08**
  - Urban Freeway
    - 10' inside shoulders may be required on some portions of the College Drive overpass to address constructability constraints. This will require a design waiver.
  - Ramps – Loop
    - WB Entrance Ramp @ College Drive: The horizontal curve proposed (match existing) at the tie in to I-10 has a radius of 160'. This value exceeds the minimum guideline of 212'. This will require a design exception.

- *Nairn Drive Overpass over I-10* - **SIU-08(A)**
  - Urban Arterial
    - The proposed grade for the south approach to the overpass is 6.0%. This exceeds the minimum guideline of 5.0%. This will require a design exception.

- *I-10: College Drive to I-10/I-12 Interchange*– **SIU-09** - Urban Freeway &
- *College Drive Westbound Exits from I-10/I-12* – **SIU-09A** – Ramps Diagonal
    - No design exceptions or waivers are anticipated for these segments.

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HCS Freeway analysis		
INPUT		Notes
Project Properties		
Analyst	Initials of person doing analysis	
Agency	USI- 10-085-2	
Analysis Year	2017	Or 2040 as applicable
Project Description	I-10 Corridor Improvement Stage 1 EA - "analysis location"	Example: I-10 Corridor Improvement Stage 1 EA - I-10 EB Perkins off ramp
Jurisdiction	LADOTD	
Time Period	"Scenario AM"	Example: Existing AM, No Build PM, Build AM
Date	"Date of analysis"	should be autofilled with date analysis is conducted
Geometric Data		
Number of lanes	3	# of lanes in analysis direction (if weaving segment auxilary lane is included)
Freeway FFS	Posted speed	
Freeway Length	default	
Freeway Terrain Type	level	
Freeway Grade	default	
Freeway Grade Length	default	
Highway or C-D Roadway		Should be unchecked for all Existing and NB analysis. For the Build it may vary by alternative.
Managed Lane	unchecked	
Ramp Lanes	1	# of lanes for ramp. Can be 1 or 2 only.
Ramp FFS	Advisory speed of ramp	
Ramp side	Right	
Ramp Terrain Type	Level	
Ramp Grade	default	
Ramp Grade length	default	
Length of First Accel Lane		Look in Stage 0 analysis files in HCS 2010 file is located in U:\Projects\ENGPROJ\2010Proj\10-085 I-10\10-085-1 initial proj and modeling\A\HCS\Base\Ramp Junctions
Length of Second Accel Lane	default	
Demand Data		
Freeway Demand	I-10 mainline volume	Volume upsteam from the merge
Freeway Peak Hour Factor	Calculated mainline PHF	Same day and time as 2017 vol. Print out to document source.
Freeway Total Trucks	HV % from DCR reports	
Freeway Tractor-Trailers	default	
Freeway Single Unit Trucks	default	
Merge Demand	On/Off ramp volume	
Ramp Peak Hour Factor	Calculated mainline PHF	use same as mainline PHF
Ramp Total Trucks	HV % from DCR reports	
Ramp Single Unit Trucks	default	
Ramp Tractor-Trailers	default	
Adjustment Factors		
Freeway Driver Population	default	All familiar
Freeway Weather Type	default	Non-severe Weather
Frreeway Speed Adjustment Factor	default	1.00
Freeway Capacity Adjustment Factor	default	1.00
Freeway Demand Adjustment Factor	default	1.00
Incident Type	default	no incident
Ramp Driver Population	default	All familiar
Ramp Weather Type	default	Non-severe Weather
Ramp Speed Adjustment Factor	default	1.00
Ramp Capacity Adjustment Factor	default	1.00
Ramp Demand Adjustment Factor	default	1.00
Adjacent Ramps		
Upstream Ramp	**	Merge or Diverge
Distance to Upstream Ramp		Distance in ft
Upstream Ramp Terrain	default	level
Upstream Ramp Demand	Ramp volume	volume from figure
Upstram Ramp PHF	Calculated mainline PHF	use same as mainline PHF
Upstream Ramp Trucks	HV % from DCR reports	
Downstream Ramp	**	Merge or Diverge
Distance to Downstream Ramp		Distance in ft
Downstream Ramp Terrain	default	level
Downstream Ramp Demand	Ramp volume	volume from figure
Downstram Ramp PHF	Calculated mainline PHF	use same as mainline PHF
Downstream Ramp Trucks	HV % from DCR reports	

NOTES** Be sure to put both upstream and downstream ramp information in the same analysis file. HCS 7 will report whichever is the "worst" condition

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1200
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	6466	491
Peak Hour Factor (PHF)	0.98	0.73
Total Trucks, %	6.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.917
Flow Rate (v_i), pc/h	6997	733
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	0.84	0.37

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	25.2
Distance to Upstream Ramp (L_{UP}), ft	950	Speed Index (M_S)	0.370
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2099
Distance to Downstream Ramp (L_{DOWN}), ft	5130	On-Ramp Influence Area Speed (S_R), mi/h	53.3
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.126	Outer Lanes Freeway Speed (S_O), mi/h	54.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2799	Ramp Junction Speed (S), mi/h	53.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3532	Average Density (D), pc/mi/ln	35.9
Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1200
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	6697	839
Peak Hour Factor (PHF)	0.95	0.93
Total Trucks, %	8.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.992
Flow Rate (v_i), pc/h	7613	909
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	0.93	0.45

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	28.4
Distance to Upstream Ramp (L_{UP}), ft	950	Speed Index (M_S)	0.440
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2284
Distance to Downstream Ramp (L_{DOWN}), ft	5130	On-Ramp Influence Area Speed (S_R), mi/h	52.1
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.104	Outer Lanes Freeway Speed (S_O), mi/h	53.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	3045	Ramp Junction Speed (S), mi/h	52.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3954	Average Density (D), pc/mi/ln	40.3
Level of Service (LOS)	D		

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	6050	416
Peak Hour Factor (PHF)	0.98	0.72
Total Trucks, %	6.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.992
Flow Rate (v_i), pc/h	6547	582
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	0.77	0.29

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	25.2
Distance to Upstream Ramp (L_{UP}), ft	860	Speed Index (M_S)	0.361
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1964
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	53.5
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.145	Outer Lanes Freeway Speed (S_O), mi/h	54.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2619	Ramp Junction Speed (S), mi/h	54.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3201	Average Density (D), pc/mi/ln	32.9
Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	6184	512
Peak Hour Factor (PHF)	0.96	0.86
Total Trucks, %	8.00	1.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.987
Flow Rate (v_i), pc/h	6956	603
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	0.82	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	26.7
Distance to Upstream Ramp (L_{UP}), ft	860	Speed Index (M_S)	0.380
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2087
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	53.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.142	Outer Lanes Freeway Speed (S_O), mi/h	54.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2782	Ramp Junction Speed (S), mi/h	53.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3385	Average Density (D), pc/mi/ln	35.1
Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Washington St / Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	7094	771
Peak Hour Factor (PHF)	0.85	0.84
Total Trucks, %	13.00	2.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.885	0.978
Flow Rate (v_i), pc/h	9430	939
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	1.13	0.47

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	37.6
Distance to Upstream Ramp (L_{UP}), ft	1609	Speed Index (M_S)	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2700
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	45.4
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.100	Outer Lanes Freeway Speed (S_O), mi/h	51.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	4030	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4969	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

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HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Washingston St / Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	4990	499
Peak Hour Factor (PHF)	0.89	0.94
Total Trucks, %	11.00	1.70
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.901	0.983
Flow Rate (v_i), pc/h	6223	540
Capacity (c), pc/h	9200	2000
Volume-to-Capacity Ratio (v/c)	0.74	0.27

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	22.7
Distance to Upstream Ramp (L_{UP}), ft	1609	Speed Index (M_S)	0.332
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1867
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.150	Outer Lanes Freeway Speed (S_O), mi/h	55.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2489	Ramp Junction Speed (S), mi/h	54.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3029	Average Density (D), pc/mi/ln	31.0
Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr / Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	7130	1080
Peak Hour Factor (PHF)	0.98	0.90
Total Trucks, %	6.00	5.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.948
Flow Rate (v_i), pc/h	7715	1266
Capacity (c), pc/h	9200	1900
Volume-to-Capacity Ratio (v/c)	0.84	0.67

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	33.9
Distance to Upstream Ramp (L_{UP}), ft	3370	Speed Index (D_S)	0.607
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1819
Distance to Downstream Ramp (L_{DOWN}), ft	860	Off-Ramp Influence Area Speed (S_R), mi/h	49.1
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	62.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	4078	Ramp Junction Speed (S), mi/h	54.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	35.3
Level of Service (LOS)	D		

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HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr / Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	4	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	7298	1114
Peak Hour Factor (PHF)	0.96	0.84
Total Trucks, %	8.00	2.60
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.975
Flow Rate (v_i), pc/h	8210	1360
Capacity (c), pc/h	9200	1900
Volume-to-Capacity Ratio (v/c)	0.89	0.72

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	36.2
Distance to Upstream Ramp (L_{UP}), ft	3370	Speed Index (D_S)	0.615
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1932
Distance to Downstream Ramp (L_{DOWN}), ft	860	Off-Ramp Influence Area Speed (S_R), mi/h	48.9
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.436	Outer Lanes Freeway Speed (S_O), mi/h	62.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	4347	Ramp Junction Speed (S), mi/h	54.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	37.7
Level of Service (LOS)	E		

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HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St / Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	2	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	2570	100
Peak Hour Factor (PHF)	0.85	0.81
Total Trucks, %	13.00	2.90
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.885	0.972
Flow Rate (v_i), pc/h	3416	127
Capacity (c), pc/h	4600	1900
Volume-to-Capacity Ratio (v/c)	0.74	0.07

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	31.4
Distance to Upstream Ramp (L_{UP}), ft	4970	Speed Index (D_S)	0.569
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Distance to Downstream Ramp (L_{DOWN}), ft	1350	Off-Ramp Influence Area Speed (S_R), mi/h	49.8
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	1.000	Outer Lanes Freeway Speed (S_O), mi/h	-
Flow in Lanes 1 and 2 (v_{12}), pc/h	3416	Ramp Junction Speed (S), mi/h	49.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	34.3
Level of Service (LOS)	D		

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HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	7/17/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St / Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	2	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3274	108
Peak Hour Factor (PHF)	0.89	0.85
Total Trucks, %	11.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.901	1.000
Flow Rate (v_i), pc/h	4083	127
Capacity (c), pc/h	4600	1900
Volume-to-Capacity Ratio (v/c)	0.89	0.07

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Density in Ramp Influence Area (D_R), pc/mi/ln	37.1
Distance to Upstream Ramp (L_{UP}), ft	4970	Speed Index (D_S)	0.569
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Distance to Downstream Ramp (L_{DOWN}), ft	1350	Off-Ramp Influence Area Speed (S_R), mi/h	49.8
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	1.000	Outer Lanes Freeway Speed (S_O), mi/h	-
Flow in Lanes 1 and 2 (v_{12}), pc/h	4083	Ramp Junction Speed (S), mi/h	49.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	41.0
Level of Service (LOS)	E		

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LETTSWORTH ST.

BARANCO CLARK BRANCH YMCA

THOMAS H. DELPIT DR.

FIG ST.

NEELY UNITED METHODIST CHURCH

WASHINGTON ST.

MOSQUE

DR. LEO S. BUTLER COMMUNITY CENTER

BELLS TIRE SHOP

CALVARY THIRD BAPTIST CHURCH

TENNESSEE ST.

GEORGIA ST.

KENTUCKY ST.

MARYLAND ST.

VIRGINIA ST.

MISSOURI ST.

BROOKS PARK SWIMMING POOL

PEAR ST.

FANNIE ST.

LUTHERAN CEMETERY

FIG ST.

WASHINGTON ST.

I-10 BR CORRIDOR IMPROVEMENT STUDY

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

U.S. Department of Transportation Federal Highway Administration

STATE PROJECT NO. H.004100

Legend

- Required Right of Way
- Apparent Existing Right of Way
- Proposed At Grade Roadway

100 50 0 100

Scale: 1" = 50'

WASHINGTON STREET LAYOUT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	477	346	26	378	0	0	0	0	73	131	232
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1776	1624	1900	1792	0				1976	1939	1976
Adj Flow Rate, veh/h	0	681	494	37	540	0				104	187	0
Adj No. of Lanes	0	1	1	1	2	0				0	2	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70				0.70	0.70	0.70
Percent Heavy Veh, %	0	7	17	0	6	0				0	0	0
Cap, veh/h	0	947	736	238	1816	0				378	737	0
Arrive On Green	0.00	0.53	0.53	0.53	0.53	0.00				0.30	0.30	0.00
Sat Flow, veh/h	0	1776	1380	485	3495	0				1260	2555	0
Grp Volume(v), veh/h	0	681	494	37	540	0				155	136	0
Grp Sat Flow(s),veh/h/ln	0	1776	1380	485	1703	0				1876	1842	0
Q Serve(g_s), s	0.0	17.4	15.6	3.8	5.3	0.0				3.8	3.4	0.0
Cycle Q Clear(g_c), s	0.0	17.4	15.6	21.2	5.3	0.0				3.8	3.4	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.67		0.00
Lane Grp Cap(c), veh/h	0	947	736	238	1816	0				563	553	0
V/C Ratio(X)	0.00	0.72	0.67	0.16	0.30	0.00				0.28	0.25	0.00
Avail Cap(c_a), veh/h	0	947	736	238	1816	0				563	553	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.6	10.2	18.6	7.8	0.0				16.0	15.9	0.0
Incr Delay (d2), s/veh	0.0	4.7	4.8	1.4	0.4	0.0				1.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	14.6	11.2	1.1	4.6	0.0				3.8	3.4	0.0
LnGrp Delay(d),s/veh	0.0	15.3	15.0	20.0	8.2	0.0				17.2	16.9	0.0
LnGrp LOS		B	B	B	A					B	B	
Approach Vol, veh/h		1175			577						291	
Approach Delay, s/veh		15.2			8.9						17.1	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		32.0		18.0		32.0		
Max Q Clear Time (g_c+I1), s		19.4		5.8		23.2		
Green Ext Time (p_c), s		5.4		0.6		4.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	835	518	49	503	0	0	0	0	78	192	126
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1845	0				1976	1976	1976
Adj Flow Rate, veh/h	0	879	545	52	529	0				82	202	0
Adj No. of Lanes	0	1	1	1	2	0				0	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	3	0				0	0	0
Cap, veh/h	0	993	861	164	1869	0				313	828	0
Arrive On Green	0.00	0.53	0.53	0.53	0.53	0.00				0.30	0.30	0.00
Sat Flow, veh/h	0	1863	1615	382	3597	0				1042	2858	0
Grp Volume(v), veh/h	0	879	545	52	529	0				151	133	0
Grp Sat Flow(s),veh/h/ln	0	1863	1615	382	1752	0				1924	1877	0
Q Serve(g_s), s	0.0	25.0	14.3	7.0	5.0	0.0				3.6	3.2	0.0
Cycle Q Clear(g_c), s	0.0	25.0	14.3	32.0	5.0	0.0				3.6	3.2	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.54		0.00
Lane Grp Cap(c), veh/h	0	993	861	164	1869	0				577	563	0
V/C Ratio(X)	0.00	0.88	0.63	0.32	0.28	0.00				0.26	0.24	0.00
Avail Cap(c_a), veh/h	0	993	861	164	1869	0				577	563	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.4	9.9	27.0	7.7	0.0				16.0	15.8	0.0
Incr Delay (d2), s/veh	0.0	11.4	3.5	5.0	0.4	0.0				1.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	22.4	11.4	1.9	4.4	0.0				3.7	3.3	0.0
LnGrp Delay(d),s/veh	0.0	23.8	13.4	32.0	8.1	0.0				17.1	16.8	0.0
LnGrp LOS		C	B	C	A					B	B	
Approach Vol, veh/h		1424			581						284	
Approach Delay, s/veh		19.8			10.2						16.9	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		32.0		18.0		32.0		
Max Q Clear Time (g_c+I1), s		27.0		5.6		34.0		
Green Ext Time (p_c), s		3.4		0.6		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	477	346	26	378	0	0	0	0	73	131	232
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1709	1900	1900	1792	0				1976	1939	1976
Adj Flow Rate, veh/h	0	681	494	37	540	0				104	187	0
Adj No. of Lanes	0	2	0	1	2	0				0	2	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70				0.70	0.70	0.70
Percent Heavy Veh, %	0	7	7	0	6	0				0	0	0
Cap, veh/h	0	961	693	240	1816	0				378	737	0
Arrive On Green	0.00	0.53	0.53	0.53	0.53	0.00				0.30	0.30	0.00
Sat Flow, veh/h	0	1887	1300	485	3495	0				1260	2555	0
Grp Volume(v), veh/h	0	613	562	37	540	0				155	136	0
Grp Sat Flow(s),veh/h/ln	0	1623	1479	485	1703	0				1876	1842	0
Q Serve(g_s), s	0.0	17.0	17.2	3.7	5.3	0.0				3.8	3.4	0.0
Cycle Q Clear(g_c), s	0.0	17.0	17.2	20.9	5.3	0.0				3.8	3.4	0.0
Prop In Lane	0.00		0.88	1.00		0.00				0.67		0.00
Lane Grp Cap(c), veh/h	0	866	789	240	1816	0				563	553	0
V/C Ratio(X)	0.00	0.71	0.71	0.15	0.30	0.00				0.28	0.25	0.00
Avail Cap(c_a), veh/h	0	866	789	240	1816	0				563	553	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.5	10.5	18.4	7.8	0.0				16.0	15.9	0.0
Incr Delay (d2), s/veh	0.0	4.9	5.4	1.4	0.4	0.0				1.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	13.5	12.7	1.1	4.6	0.0				3.8	3.4	0.0
LnGrp Delay(d),s/veh	0.0	15.4	16.0	19.8	8.2	0.0				17.2	16.9	0.0
LnGrp LOS		B	B	B	A					B	B	
Approach Vol, veh/h		1175			577						291	
Approach Delay, s/veh		15.6			8.9						17.1	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		32.0		18.0		32.0		
Max Q Clear Time (g_c+I1), s		19.2		5.8		22.9		
Green Ext Time (p_c), s		5.8		0.6		4.7		

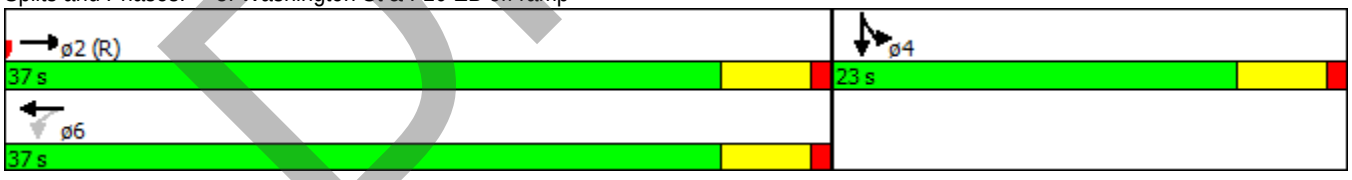
Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

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Phase Number	2	4	6
Movement	EBT	SBTL	WBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	37	23	37
Maximum Split (%)	61.7%	38.3%	61.7%
Minimum Split (s)	21	6	21
Yellow Time (s)	4	4	4
All-Red Time (s)	1	1	1
Minimum Initial (s)	10	1	10
Vehicle Extension (s)	2.5	2.5	2.5
Minimum Gap (s)	2.5	2.5	2.5
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	37	0
End Time (s)	37	0	37
Yield/Force Off (s)	32	55	32
Yield/Force Off 170(s)	32	55	32
Local Start Time (s)	0	37	0
Local Yield (s)	32	55	32
Local Yield 170(s)	32	55	32

Intersection Summary	
Cycle Length	60
Control Type	Pretimed
Natural Cycle	40
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	

Splits and Phases: 3: Washington St & I-10 EB off ramp



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	428	122	0	0	122	63	280	69	50	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1727	1881	0	0	1815	1900	1863	1863	1900			
Adj Flow Rate, veh/h	620	177	0	0	177	0	253	314	0			
Adj No. of Lanes	2	1	0	0	1	0	1	1	0			
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69			
Percent Heavy Veh, %	10	1	0	0	4	4	2	2	2			
Cap, veh/h	798	1160	0	0	545	0	444	466	0			
Arrive On Green	0.25	0.62	0.00	0.00	0.30	0.00	0.25	0.25	0.00			
Sat Flow, veh/h	3191	1881	0	0	1815	0	1774	1863	0			
Grp Volume(v), veh/h	620	177	0	0	177	0	253	314	0			
Grp Sat Flow(s),veh/h/ln	1596	1881	0	0	1815	0	1774	1863	0			
Q Serve(g_s), s	10.9	2.4	0.0	0.0	4.5	0.0	7.5	9.1	0.0			
Cycle Q Clear(g_c), s	10.9	2.4	0.0	0.0	4.5	0.0	7.5	9.1	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	798	1160	0	0	545	0	444	466	0			
V/C Ratio(X)	0.78	0.15	0.00	0.00	0.33	0.00	0.57	0.67	0.00			
Avail Cap(c_a), veh/h	798	1160	0	0	545	0	444	466	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	20.9	4.9	0.0	0.0	16.3	0.0	19.7	20.3	0.0			
Incr Delay (d2), s/veh	7.3	0.3	0.0	0.0	1.6	0.0	5.2	7.6	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	9.4	2.4	0.0	0.0	4.5	0.0	7.7	9.5	0.0			
LnGrp Delay(d),s/veh	28.3	5.1	0.0	0.0	17.9	0.0	24.9	27.9	0.0			
LnGrp LOS	C	A			B		C	C				
Approach Vol, veh/h		797			177			567				
Approach Delay, s/veh		23.1			17.9			26.6				
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		19.0		41.0			19.0	22.0
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		15.0		37.0			15.0	18.0
Max Q Clear Time (g_c+I1), s		11.1		4.4			12.9	6.5
Green Ext Time (p_c), s		0.9		1.3			0.7	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

DRAFT

Phase Number	2	4	5	7	8
Movement	NBT	EBT	NBL	EBL	WBT
Lead/Lag				Lead	Lag
Lead-Lag Optimize				Yes	Yes
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	19	41	19	19	22
Maximum Split (%)	31.7%	68.3%	31.7%	31.7%	36.7%
Minimum Split (s)	8	8	8	8	8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)					
Flash Dont Walk (s)					
Dual Entry	Yes	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	19	0	19	38
End Time (s)	19	0	19	38	0
Yield/Force Off (s)	15	56	15	34	56
Yield/Force Off 170(s)	15	56	15	34	56
Local Start Time (s)	0	19	0	19	38
Local Yield (s)	15	56	15	34	56
Local Yield 170(s)	15	56	15	34	56

Intersection Summary	
Cycle Length	60
Control Type	Pretimed
Natural Cycle	40
Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green	

Splits and Phases: 9: Washington St & I-10 WB on ramp



DRAFT

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	27	68	0	902	1141	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	3	2	2	1	2
Mvmt Flow	31	77	0	1025	1297	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2322	1297	1297	0	-	0
Stage 1	1297	-	-	-	-	-
Stage 2	1025	-	-	-	-	-
Critical Hdwy	6.44	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.327	2.218	-	-	-
Pot Cap-1 Maneuver	41	197	534	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	41	197	534	-	-	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	343	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	86.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	534	-	41	197	-	-
HCM Lane V/C Ratio	-	-	0.748	0.392	-	-
HCM Control Delay (s)	0	-	217.2	34.6	-	-
HCM Lane LOS	A	-	F	D	-	-
HCM 95th %tile Q(veh)	0	-	2.8	1.7	-	-

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	42	601	7	34	21	450	438	14	45	533	37
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1898	1900	1900	1900	1900	1881	1844	1900	1900	1884	1900
Adj Flow Rate, veh/h	47	47	0	8	38	0	506	492	0	51	599	0
Adj No. of Lanes	0	1	0	0	1	0	2	2	0	0	2	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	1	1	1
Cap, veh/h	154	76	0	87	138	0	638	2588	0	143	1503	0
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.00	0.18	0.74	0.00	0.47	0.47	0.00
Sat Flow, veh/h	764	911	0	196	1658	0	3476	3596	0	158	3272	0
Grp Volume(v), veh/h	94	0	0	46	0	0	506	492	0	337	313	0
Grp Sat Flow(s),veh/h/ln	1676	0	0	1854	0	0	1738	1752	0	1715	1628	0
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	8.3	2.6	0.0	0.0	7.5	0.0
Cycle Q Clear(g_c), s	3.2	0.0	0.0	1.4	0.0	0.0	8.3	2.6	0.0	6.9	7.5	0.0
Prop In Lane	0.50		0.00	0.17		0.00	1.00		0.00	0.15		0.00
Lane Grp Cap(c), veh/h	229	0	0	225	0	0	638	2588	0	878	768	0
V/C Ratio(X)	0.41	0.00	0.00	0.20	0.00	0.00	0.79	0.19	0.00	0.38	0.41	0.00
Avail Cap(c_a), veh/h	612	0	0	650	0	0	869	2588	0	878	768	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.6	0.0	0.0	25.8	0.0	0.0	23.4	2.4	0.0	10.2	10.4	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.4	0.0	0.0	2.4	0.2	0.0	1.3	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	0.0	1.3	0.0	0.0	7.6	2.3	0.0	7.0	6.7	0.0
LnGrp Delay(d),s/veh	27.8	0.0	0.0	26.3	0.0	0.0	25.9	2.5	0.0	11.5	12.0	0.0
LnGrp LOS	C			C			C	A		B	B	
Approach Vol, veh/h		94			46			998			650	
Approach Delay, s/veh		27.8			26.3			14.4			11.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	16.0	33.3		10.7		49.3		10.7
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7
Max Green Setting (Gmax), s	15.0	10.0		* 19		30.0		* 19
Max Q Clear Time (g_c+I1), s	10.3	9.5		3.4		4.6		5.2
Green Ext Time (p_c), s	0.7	0.4		0.4		11.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

Notes

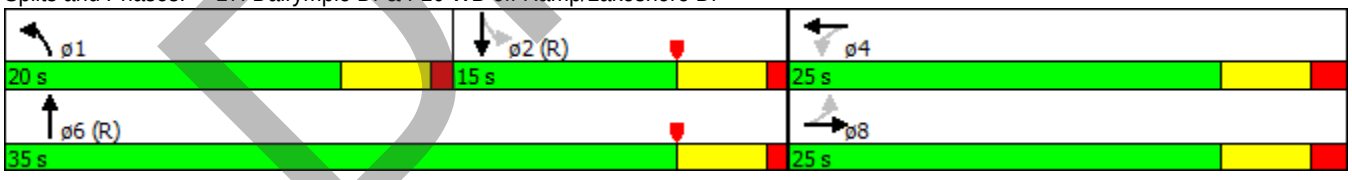
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

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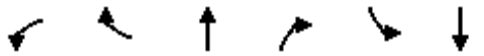
Phase Number	1	2	4	6	8
Movement	NBL	SBTL	WBTL	NBT	EBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Min	None	C-Min	None
Maximum Split (s)	20	15	25	35	25
Maximum Split (%)	33.3%	25.0%	41.7%	58.3%	41.7%
Minimum Split (s)	10	15	10.7	21	10.7
Yellow Time (s)	4	4	4	4	4
All-Red Time (s)	1	1	1.7	1	1.7
Minimum Initial (s)	5	10	5	10	5
Vehicle Extension (s)	2	5	3	5	3
Minimum Gap (s)	2	5	3	5	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)					
Flash Dont Walk (s)					
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	30	50	5	30	5
End Time (s)	50	5	30	5	30
Yield/Force Off (s)	45	0	24.3	0	24.3
Yield/Force Off 170(s)	45	0	24.3	0	24.3
Local Start Time (s)	30	50	5	30	5
Local Yield (s)	45	0	24.3	0	24.3
Local Yield 170(s)	45	0	24.3	0	24.3

Intersection Summary	
Cycle Length	60
Control Type	Actuated-Coordinated
Natural Cycle	55
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow	

Splits and Phases: 17: Dalrymple Dr & I-10 WB off Ramp/Lakeshore Dr



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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	64	0	0	0	0	503
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	73	0	0	0	0	572
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						172
pX, platoon unblocked						
vC, conflicting volume	286	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	100			100	
cM capacity (veh/h)	681	1084			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	73	286	286
Volume Left	73	0	0
Volume Right	0	0	0
cSH	681	1700	1700
Volume to Capacity	0.11	0.17	0.17
Queue Length 95th (ft)	9	0	0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	835	518	49	503	0	0	0	0	78	192	126
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1877	1900	1900	1845	0				1976	1976	1976
Adj Flow Rate, veh/h	0	879	545	52	529	0				82	202	0
Adj No. of Lanes	0	2	0	1	2	0				0	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	0				0	0	0
Cap, veh/h	0	1139	691	194	1869	0				313	828	0
Arrive On Green	0.00	0.53	0.53	0.53	0.53	0.00				0.30	0.30	0.00
Sat Flow, veh/h	0	2230	1295	382	3597	0				1042	2858	0
Grp Volume(v), veh/h	0	731	693	52	529	0				151	133	0
Grp Sat Flow(s),veh/h/ln	0	1783	1648	382	1752	0				1924	1877	0
Q Serve(g_s), s	0.0	19.4	20.3	7.6	5.0	0.0				3.6	3.2	0.0
Cycle Q Clear(g_c), s	0.0	19.4	20.3	27.9	5.0	0.0				3.6	3.2	0.0
Prop In Lane	0.00		0.79	1.00		0.00				0.54		0.00
Lane Grp Cap(c), veh/h	0	951	879	194	1869	0				577	563	0
V/C Ratio(X)	0.00	0.77	0.79	0.27	0.28	0.00				0.26	0.24	0.00
Avail Cap(c_a), veh/h	0	951	879	194	1869	0				577	563	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	11.1	11.3	22.5	7.7	0.0				16.0	15.8	0.0
Incr Delay (d2), s/veh	0.0	5.9	7.1	3.4	0.4	0.0				1.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	16.3	16.2	1.8	4.4	0.0				3.7	3.3	0.0
LnGrp Delay(d),s/veh	0.0	17.0	18.4	25.9	8.1	0.0				17.1	16.8	0.0
LnGrp LOS		B	B	C	A					B	B	
Approach Vol, veh/h		1424			581						284	
Approach Delay, s/veh		17.7			9.7						16.9	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		32.0		18.0		32.0		
Max Q Clear Time (g_c+I1), s		22.3		5.6		29.9		
Green Ext Time (p_c), s		5.7		0.6		1.6		

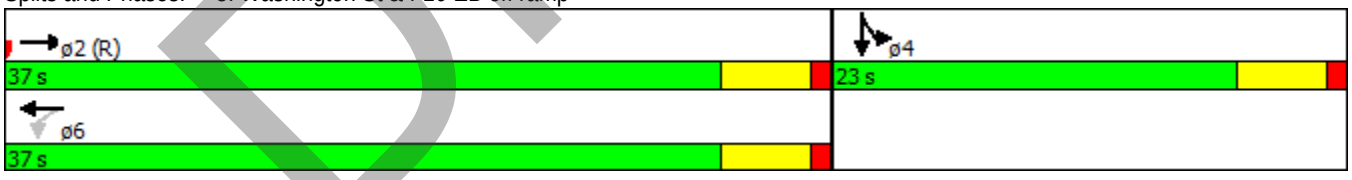
Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

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Phase Number	2	4	6
Movement	EBT	SBTL	WBTL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	Max	Max	Max
Maximum Split (s)	37	23	37
Maximum Split (%)	61.7%	38.3%	61.7%
Minimum Split (s)	21	6	21
Yellow Time (s)	4	4	4
All-Red Time (s)	1	1	1
Minimum Initial (s)	10	1	10
Vehicle Extension (s)	2.5	2.5	2.5
Minimum Gap (s)	2.5	2.5	2.5
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)			
Flash Dont Walk (s)			
Dual Entry	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes
Start Time (s)	0	37	0
End Time (s)	37	0	37
Yield/Force Off (s)	32	55	32
Yield/Force Off 170(s)	32	55	32
Local Start Time (s)	0	37	0
Local Yield (s)	32	55	32
Local Yield 170(s)	32	55	32

Intersection Summary	
Cycle Length	60
Control Type	Pretimed
Natural Cycle	45
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	

Splits and Phases: 3: Washington St & I-10 EB off ramp



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	765	148	0	0	154	74	398	43	29	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1851	1900	1792	1792	1900			
Adj Flow Rate, veh/h	823	159	0	0	166	0	461	0	0			
Adj No. of Lanes	2	1	0	0	1	0	2	1	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	0	0	0	2	2	6	6	6			
Cap, veh/h	1287	1140	0	0	308	0	910	478	0			
Arrive On Green	0.37	0.60	0.00	0.00	0.17	0.00	0.27	0.00	0.00			
Sat Flow, veh/h	3510	1900	0	0	1851	0	3414	1792	0			
Grp Volume(v), veh/h	823	159	0	0	166	0	461	0	0			
Grp Sat Flow(s),veh/h/ln	1755	1900	0	0	1851	0	1707	1792	0			
Q Serve(g_s), s	11.6	2.2	0.0	0.0	4.9	0.0	6.9	0.0	0.0			
Cycle Q Clear(g_c), s	11.6	2.2	0.0	0.0	4.9	0.0	6.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	1287	1140	0	0	308	0	910	478	0			
V/C Ratio(X)	0.64	0.14	0.00	0.00	0.54	0.00	0.51	0.00	0.00			
Avail Cap(c_a), veh/h	1287	1140	0	0	308	0	910	478	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	15.7	5.2	0.0	0.0	22.9	0.0	18.7	0.0	0.0			
Incr Delay (d2), s/veh	2.4	0.3	0.0	0.0	6.6	0.0	2.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	10.1	2.2	0.0	0.0	5.5	0.0	6.2	0.0	0.0			
LnGrp Delay(d),s/veh	18.2	5.5	0.0	0.0	29.5	0.0	20.7	0.0	0.0			
LnGrp LOS	B	A			C		C					
Approach Vol, veh/h		982			166			461				
Approach Delay, s/veh		16.1			29.5			20.7				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		20.0		40.0			26.0	14.0
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		16.0		36.0			22.0	10.0
Max Q Clear Time (g_c+I1), s		8.9		4.2			13.6	6.9
Green Ext Time (p_c), s		1.3		1.2			2.7	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

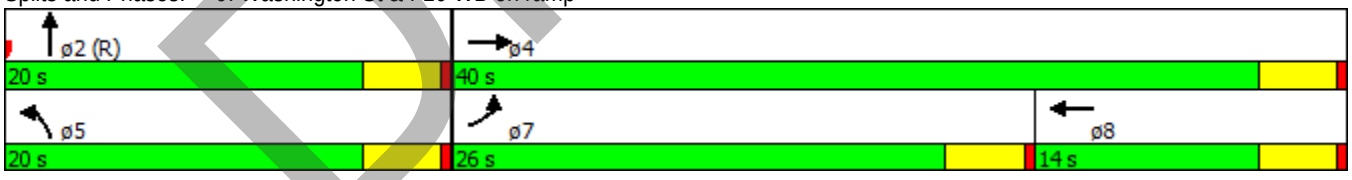
User approved volume balancing among the lanes for turning movement.

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Phase Number	2	4	5	7	8
Movement	NBT	EBT	NBL	EBL	WBT
Lead/Lag				Lead	Lag
Lead-Lag Optimize				Yes	Yes
Recall Mode	Max	Max	Max	Max	Max
Maximum Split (s)	20	40	20	26	14
Maximum Split (%)	33.3%	66.7%	33.3%	43.3%	23.3%
Minimum Split (s)	8	8	8	8	8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Minimum Initial (s)	4	4	4	4	4
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)					
Flash Dont Walk (s)					
Dual Entry	Yes	Yes	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	0	20	0	20	46
End Time (s)	20	0	20	46	0
Yield/Force Off (s)	16	56	16	42	56
Yield/Force Off 170(s)	16	56	16	42	56
Local Start Time (s)	0	20	0	20	46
Local Yield (s)	16	56	16	42	56
Local Yield 170(s)	16	56	16	42	56

Intersection Summary	
Cycle Length	60
Control Type	Pretimed
Natural Cycle	40
Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green	

Splits and Phases: 9: Washington St & I-10 WB on ramp



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Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	75	0	1060	1056	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	12	85	0	1205	1200	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2405	1200	1200	0	-	0
Stage 1	1200	-	-	-	-	-
Stage 2	1205	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	37	228	589	-	-	-
Stage 1	288	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	37	228	589	-	-	-
Mov Cap-2 Maneuver	37	-	-	-	-	-
Stage 1	288	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.7	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	589	-	37	228	-	-
HCM Lane V/C Ratio	-	-	0.338	0.374	-	-
HCM Control Delay (s)	0	-	145.6	29.9	-	-
HCM Lane LOS	A	-	F	D	-	-
HCM 95th %tile Q(veh)	0	-	1.1	1.6	-	-

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	38	550	16	60	33	542	507	11	50	491	21
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1896	1900	1900	1900	1900	1863	1882	1900	1900	1884	1900
Adj Flow Rate, veh/h	65	41	0	17	65	0	589	551	0	54	534	0
Adj No. of Lanes	0	1	0	0	1	0	2	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	2	1	1	1	1	1
Cap, veh/h	188	68	0	97	152	0	696	2595	0	154	1365	0
Arrive On Green	0.10	0.10	0.00	0.10	0.10	0.00	0.20	0.73	0.00	0.44	0.44	0.00
Sat Flow, veh/h	952	709	0	252	1590	0	3442	3669	0	189	3186	0
Grp Volume(v), veh/h	106	0	0	82	0	0	589	551	0	302	286	0
Grp Sat Flow(s),veh/h/ln	1662	0	0	1842	0	0	1721	1788	0	1660	1628	0
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	9.9	3.0	0.0	0.0	7.2	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	2.5	0.0	0.0	9.9	3.0	0.0	6.4	7.2	0.0
Prop In Lane	0.61		0.00	0.21		0.00	1.00		0.00	0.18		0.00
Lane Grp Cap(c), veh/h	256	0	0	249	0	0	696	2595	0	802	717	0
V/C Ratio(X)	0.41	0.00	0.00	0.33	0.00	0.00	0.85	0.21	0.00	0.38	0.40	0.00
Avail Cap(c_a), veh/h	651	0	0	706	0	0	746	2595	0	802	717	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.0	0.0	0.0	25.6	0.0	0.0	23.0	2.7	0.0	11.2	11.4	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.8	0.0	0.0	7.9	0.2	0.0	1.3	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	2.4	0.0	0.0	9.2	2.7	0.0	6.4	6.3	0.0
LnGrp Delay(d),s/veh	27.1	0.0	0.0	26.4	0.0	0.0	30.9	2.9	0.0	12.5	13.1	0.0
LnGrp LOS	C			C			C	A		B	B	
Approach Vol, veh/h		106			82			1140			588	
Approach Delay, s/veh		27.1			26.4			17.3			12.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	17.1	31.4		11.5		48.5		11.5
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7
Max Green Setting (Gmax), s	13.0	10.0		* 21		28.0		* 21
Max Q Clear Time (g_c+I1), s	11.9	9.2		4.5		5.0		5.5
Green Ext Time (p_c), s	0.2	0.6		0.5		10.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Notes

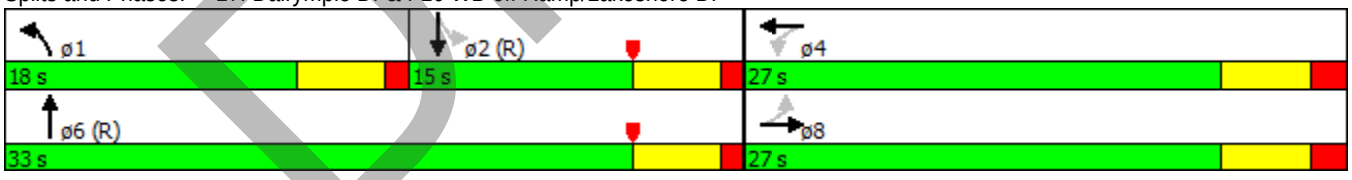
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

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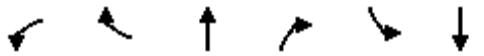
Phase Number	1	2	4	6	8
Movement	NBL	SBTL	WBTL	NBT	EBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Min	None	C-Min	None
Maximum Split (s)	18	15	27	33	27
Maximum Split (%)	30.0%	25.0%	45.0%	55.0%	45.0%
Minimum Split (s)	10	15	10.7	15	10.7
Yellow Time (s)	4	4	4	4	4
All-Red Time (s)	1	1	1.7	1	1.7
Minimum Initial (s)	5	10	5	10	5
Vehicle Extension (s)	2	5	3	5	3
Minimum Gap (s)	2	5	3	5	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)					
Flash Dont Walk (s)					
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	32	50	5	32	5
End Time (s)	50	5	32	5	32
Yield/Force Off (s)	45	0	26.3	0	26.3
Yield/Force Off 170(s)	45	0	26.3	0	26.3
Local Start Time (s)	32	50	5	32	5
Local Yield (s)	45	0	26.3	0	26.3
Local Yield 170(s)	45	0	26.3	0	26.3

Intersection Summary	
Cycle Length	60
Control Type	Actuated-Coordinated
Natural Cycle	55
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow	

Splits and Phases: 17: Dalrymple Dr & I-10 WB off Ramp/Lakeshore Dr



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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	86	0	0	0	0	759
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	98	0	0	0	0	862
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						214
pX, platoon unblocked						
vC, conflicting volume	431	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	431	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	100			100	
cM capacity (veh/h)	555	1091			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	98	431	431
Volume Left	98	0	0
Volume Right	0	0	0
cSH	555	1700	1700
Volume to Capacity	0.18	0.25	0.25
Queue Length 95th (ft)	16	0	0
Control Delay (s)	12.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.9	0.0	
Approach LOS	B		

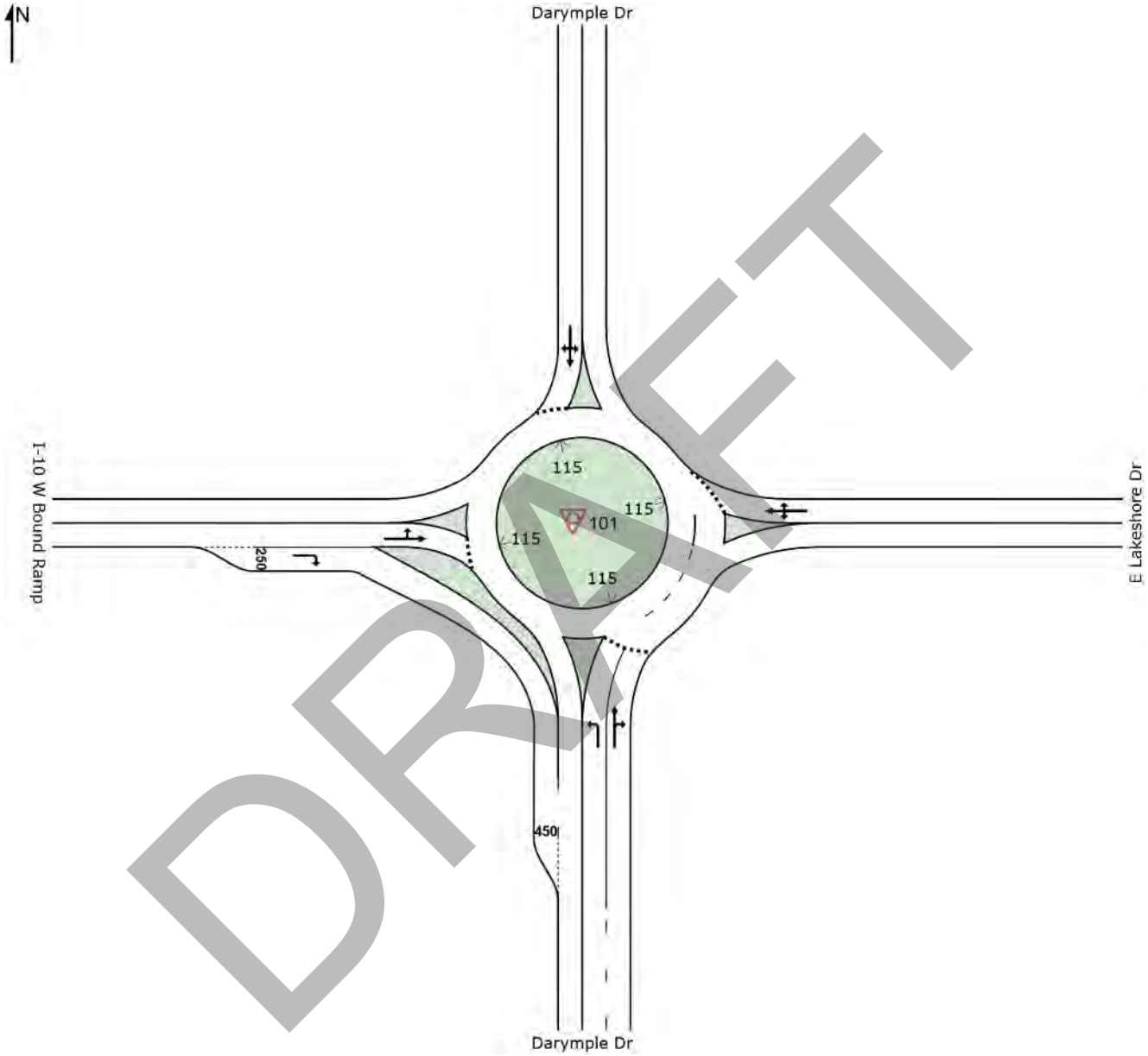
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

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SITE LAYOUT

Site: 101 [AM 2040 E Lakeshore/Darymple Roundabout]

2040 AM Peak
Roundabout



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MOVEMENT SUMMARY

Site: 101 [AM 2040 E Lakeshore/Darymple Roundabout]

2040 AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Darymple Dr											
3	L2	506	1.0	0.397	0.9	LOS A	2.9	73.8	0.43	0.25	34.2
8	T1	492	3.0	0.364	0.8	LOS A	2.6	67.5	0.41	0.22	37.0
18	R2	16	4.0	0.364	0.8	LOS A	2.6	67.5	0.41	0.22	35.6
Approach		1013	2.0	0.397	0.8	LOS A	2.9	73.8	0.42	0.24	35.5
East: E Lakeshore Dr											
1	L2	8	0.0	0.107	3.4	LOS A	0.4	10.6	0.62	0.57	36.2
6	T1	38	0.0	0.107	3.4	LOS A	0.4	10.6	0.62	0.57	36.0
16	R2	24	0.0	0.107	3.4	LOS A	0.4	10.6	0.62	0.57	34.9
Approach		70	0.0	0.107	3.4	LOS A	0.4	10.6	0.62	0.57	35.6
North: Darymple Dr											
7	L2	51	0.0	0.824	13.7	LOS B	13.3	335.6	1.00	1.22	31.4
4	T1	599	1.0	0.824	13.8	LOS B	13.3	335.6	1.00	1.22	31.2
14	R2	42	0.0	0.824	13.7	LOS B	13.3	335.6	1.00	1.22	30.4
Approach		691	0.9	0.824	13.8	LOS B	13.3	335.6	1.00	1.22	31.2
West: I-10 W Bound Ramp											
5	L2	47	2.0	0.112	3.0	LOS A	0.8	20.8	0.79	0.59	34.8
2	T1	47	0.0	0.112	3.0	LOS A	0.8	20.8	0.79	0.59	34.6
12	R2	675	0.0	0.403	0.1	LOS A	0.0	0.0	0.00	0.00	37.5
Approach		770	0.1	0.403	0.4	LOS A	0.8	20.8	0.10	0.07	37.1
All Vehicles		2544	1.1	0.824	4.3	LOS A	13.3	335.6	0.49	0.46	34.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT

MOVEMENT SUMMARY

Site: 101 [PM 2040 E Lakeshore/Darymple Roundabout]

2040 PM Peak
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Darymple Dr											
3	L2	589	2.0	0.423	0.9	LOS A	3.2	82.3	0.45	0.27	34.1
8	T1	551	1.0	0.450	1.1	LOS A	3.5	87.9	0.48	0.28	36.7
18	R2	12	0.0	0.450	1.1	LOS A	3.5	87.9	0.48	0.28	35.4
Approach		1152	1.5	0.450	1.0	LOS A	3.5	87.9	0.47	0.27	35.3
East: E Lakeshore Dr											
1	L2	17	0.0	0.199	4.0	LOS A	0.8	20.8	0.68	0.65	35.8
6	T1	65	0.0	0.199	4.0	LOS A	0.8	20.8	0.68	0.65	35.6
16	R2	36	0.0	0.199	4.0	LOS A	0.8	20.8	0.68	0.65	34.5
Approach		118	0.0	0.199	4.0	LOS A	0.8	20.8	0.68	0.65	35.3
North: Darymple Dr											
7	L2	54	0.0	0.819	16.8	LOS B	12.8	323.3	1.00	1.30	30.1
4	T1	534	1.0	0.819	16.9	LOS B	12.8	323.3	1.00	1.30	29.9
14	R2	23	0.0	0.819	16.8	LOS B	12.8	323.3	1.00	1.30	29.1
Approach		611	0.9	0.819	16.9	LOS B	12.8	323.3	1.00	1.30	29.9
West: I-10 W Bound Ramp											
5	L2	65	2.0	0.118	2.7	LOS A	0.9	21.5	0.75	0.55	34.7
2	T1	41	0.0	0.118	2.6	LOS A	0.9	21.5	0.75	0.55	34.5
12	R2	598	0.0	0.357	0.1	LOS A	0.0	0.0	0.00	0.00	37.5
Approach		704	0.2	0.357	0.5	LOS A	0.9	21.5	0.11	0.08	37.0
All Vehicles		2586	0.9	0.819	4.7	LOS A	12.8	323.3	0.51	0.48	34.3

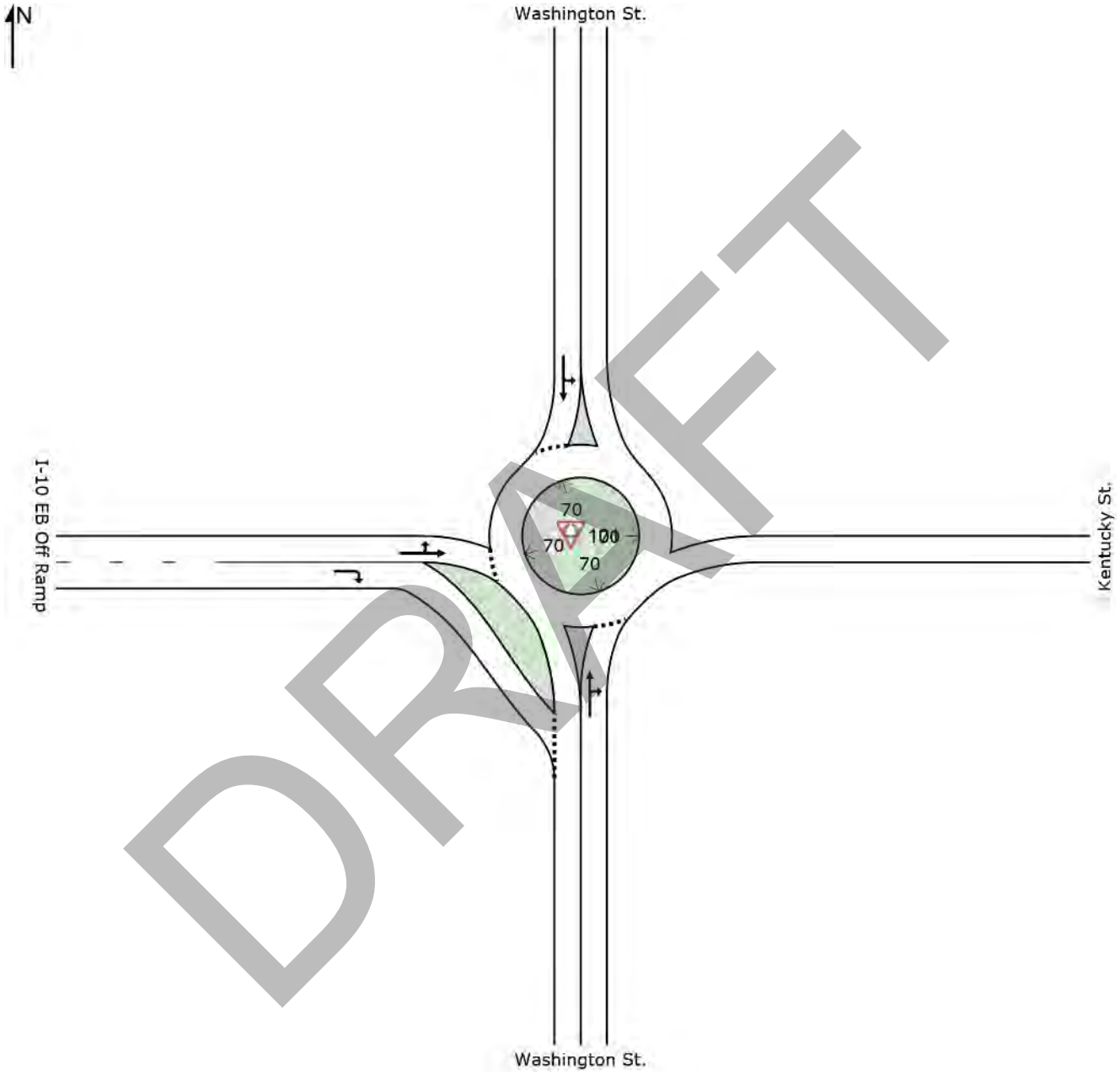
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT

SITE LAYOUT

Site: 101 [Washington EB Terminal (AM) - One Lane - NB right]

New Site
Roundabout



DRAFT

MOVEMENT SUMMARY

Site: 101 [Washington EB Terminal (AM) - One Lane - NB right]

New Site
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Washington St.											
8	T1	681	7.0	0.665	4.3	LOS A	7.3	193.1	0.81	0.71	34.4
18	R2	494	17.0	0.489	2.0	LOS A	3.8	106.6	0.60	0.44	34.5
Approach		1176	11.2	0.665	3.3	LOS A	7.3	193.1	0.72	0.60	34.5
North: Washington St.											
7	L2	37	0.0	0.477	0.0	LOS A	0.0	0.0	0.00	0.00	37.0
4	T1	540	6.0	0.477	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
Approach		577	5.6	0.477	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
West: I-10 EB Off Ramp											
5	L2	104	5.0	0.304	3.8	LOS A	1.9	47.1	0.67	0.57	34.0
2	T1	187	0.0	0.304	3.6	LOS A	1.9	47.1	0.67	0.57	34.2
12	R2	331	2.0	0.338	3.5	LOS A	2.1	53.3	0.66	0.57	34.4
Approach		623	1.9	0.338	3.6	LOS A	2.1	53.3	0.67	0.57	34.3
All Vehicles		2376	7.4	0.665	2.6	LOS A	7.3	193.1	0.53	0.45	35.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Washington EB Terminal (PM) - One Lane - NB right]

New Site
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Washington St.											
8	T1	879	2.0	0.807	7.1	LOS A	13.1	331.5	0.95	0.91	33.3
18	R2	545	0.0	0.456	1.6	LOS A	3.5	87.0	0.58	0.41	35.1
Approach		1424	1.2	0.807	5.0	LOS A	13.1	331.5	0.81	0.72	34.0
North: Washington St.											
7	L2	52	0.0	0.467	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
4	T1	529	3.0	0.467	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
Approach		581	2.7	0.467	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
West: I-10 EB Off Ramp											
5	L2	82	0.0	0.287	3.4	LOS A	1.7	43.6	0.65	0.55	34.3
2	T1	202	0.0	0.287	3.4	LOS A	1.7	43.6	0.65	0.55	34.4
12	R2	133	0.0	0.130	2.7	LOS A	0.7	17.6	0.57	0.44	34.9
Approach		417	0.0	0.287	3.2	LOS A	1.7	43.6	0.63	0.51	34.6
All Vehicles		2422	1.4	0.807	3.5	LOS A	13.1	331.5	0.58	0.51	34.7

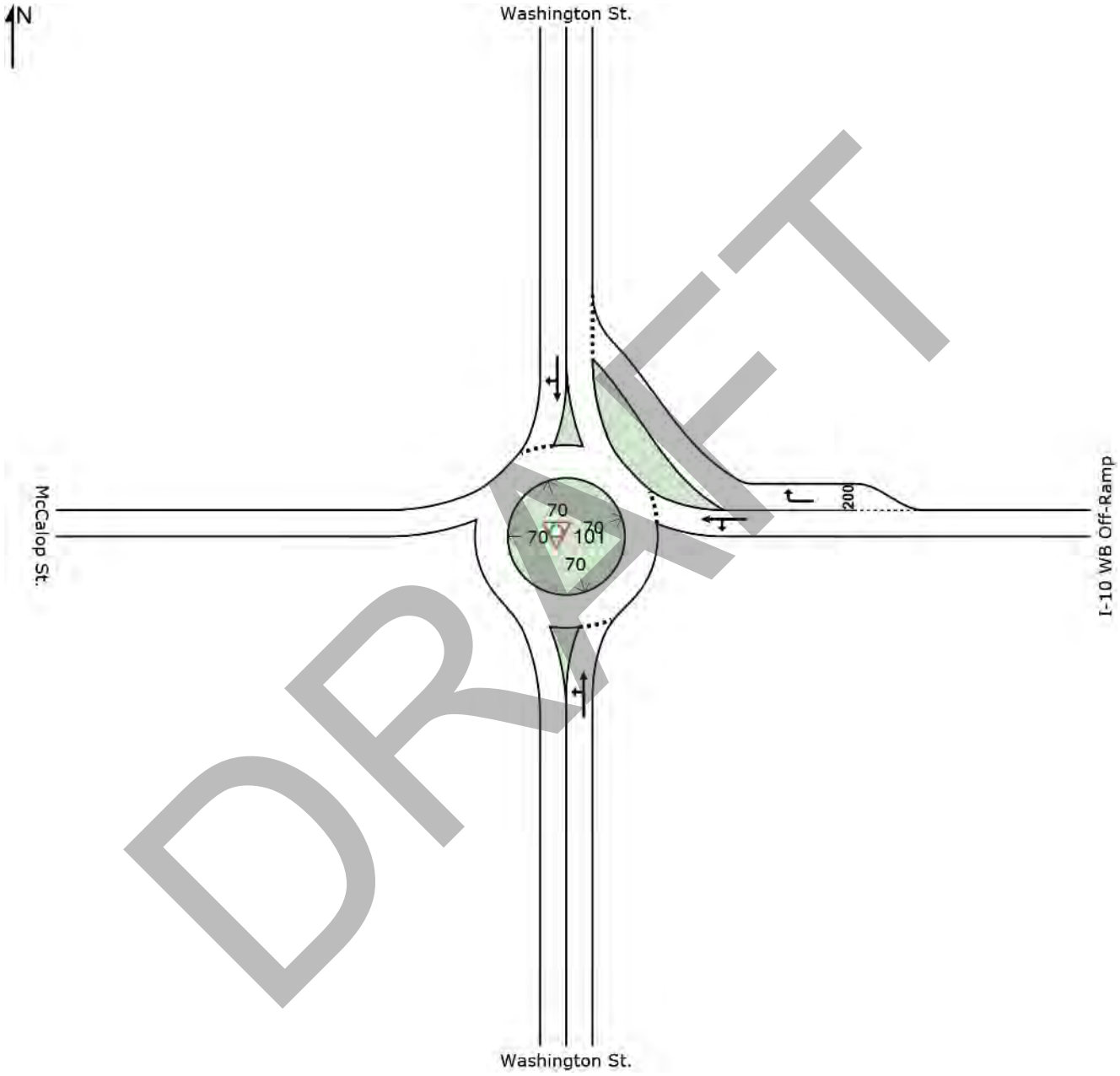
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SITE LAYOUT

Site: 101 [Washington WB Terminal (AM) - One Lane]

New Site
Roundabout



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MOVEMENT SUMMARY

Site: 101 [Washington WB Terminal (AM) - One Lane]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Washington St.											
3	L2	620	10.0	0.676	0.0	LOS A	0.0	0.0	0.00	0.00	34.7
8	T1	177	1.0	0.676	0.0	LOS A	0.0	0.0	0.00	0.00	35.2
Approach		797	8.0	0.676	0.0	LOS A	0.0	0.0	0.00	0.00	34.8
East: I-10 WB Off-Ramp											
1	L2	406	2.0	0.638	12.4	LOS B	7.1	181.1	0.92	1.09	29.4
6	T1	100	2.0	0.638	12.4	LOS B	7.1	181.1	0.92	1.09	29.4
16	R2	72	2.0	0.057	0.7	LOS A	0.3	6.9	0.31	0.16	35.6
Approach		578	2.0	0.638	11.0	LOS B	7.1	181.1	0.84	0.97	30.0
North: Washington St.											
4	T1	177	4.0	0.817	50.2	LOS D	10.7	277.0	1.00	1.42	20.3
14	R2	91	6.0	0.817	50.6	LOS D	10.7	277.0	1.00	1.42	19.9
Approach		268	4.7	0.817	50.4	LOS D	10.7	277.0	1.00	1.42	20.1
All Vehicles		1643	5.3	0.817	12.1	LOS B	10.7	277.0	0.46	0.57	29.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Washington WB Terminal (PM) - One Lane]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Washington St.											
3	L2	823	0.0	0.771	0.0	LOS A	0.0	0.0	0.00	0.00	34.9
8	T1	159	0.0	0.771	0.0	LOS A	0.0	0.0	0.00	0.00	35.0
Approach		982	0.0	0.771	0.0	LOS A	0.0	0.0	0.00	0.00	34.9
East: I-10 WB Off-Ramp											
1	L2	428	6.0	0.704	19.7	LOS B	9.1	238.7	0.98	1.27	26.6
6	T1	46	6.0	0.704	19.7	LOS B	9.1	238.7	0.98	1.27	26.7
16	R2	31	6.0	0.025	0.7	LOS A	0.1	3.0	0.29	0.14	35.6
Approach		505	6.0	0.704	18.5	LOS B	9.1	238.7	0.94	1.20	27.1
North: Washington St.											
4	T1	166	2.0	0.894	81.9	LOS F	13.8	351.3	1.00	1.57	15.7
14	R2	80	4.0	0.894	82.4	LOS F	13.8	351.3	1.00	1.57	15.6
Approach		245	2.6	0.894	82.1	LOS F	13.8	351.3	1.00	1.57	15.7
All Vehicles		1732	2.1	0.894	17.0	LOS B	13.8	351.3	0.42	0.57	27.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCS Multi-Lane analysis		
INPUT		Notes
Project Properties		
Analyst	Initials of person doing analysis	
Agency	USI- 10-085-2	
Analysis Year	2040	
Project Description	I-10 Corridor Improvement Stage 1 EA - "Roadway name"	
Jurisdiction	LADOTD	
Time Period	Build AM	or Build PM
Date	"Date of analysis"	should be autofilled with date analysis is conducted
Geometric Data		
Direction 1	"Roadway Name and Direction"	
Number of Lanes	2	
Measured FFS	Checked	
Free Flow Speed	45	
Demand Data		
Demand Data		Use 2040 Build Volume
Peak hour Factor		Use 2040 No Build PHF for Braddock St On Ramp to I-10 EB and Existing McCalop St Off ramp
Total Trucks %		Use 2040 No Build HV% for Braddock St On Ramp to I-10 EB and Existing McCalop St Off ramp
Adjustment Factors		
Driver population	All Familiar	
Capacity Adjustment Factor	default	Use 2040 Build Volume
Speed Adjustment Factor	default	

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HCS7 Multilane Highway Report

Project Information

Analyst	MHM	Date	3/25/2019
Agency	USI- 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - EB Frontage Rd		

Direction 1 Geometric Data

Direction 1 Description	EB Frontage Rd		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Right-Side Lateral Clearance (LC_R), ft	-
Lane Width, ft	-	Left-Side Lateral Clearance (LC_L), ft	-
Median Type	Divided	Total Lateral Clearance (TLC), ft	-
Access Point Density, pts/mi	-	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	464	Heavy Vehicle Adjustment Factor (f_{HV})	0.978
Peak Hour Factor (PHF)	0.84	Flow Rate (v_p), pc/h/ln	282
Total Trucks, %	2.30	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.15

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (f_{TLC})	-	Density (D), pc/mi/ln	6.3
Median Type Adjustment (f_M)	-	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	-		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}), veh/h	276	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicycle LOS Score (BLOS)	2.59
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

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HCS7 Multilane Highway Report

Project Information

Analyst	MHM	Date	3/25/2019
Agency	USI- 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - EB Frontage Rd		

Direction 1 Geometric Data

Direction 1 Description	EB Frontage Rd		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Right-Side Lateral Clearance (LC_R), ft	-
Lane Width, ft	-	Left-Side Lateral Clearance (LC_L), ft	-
Median Type	Divided	Total Lateral Clearance (TLC), ft	-
Access Point Density, pts/mi	-	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	556	Heavy Vehicle Adjustment Factor (f_{HV})	0.983
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	301
Total Trucks, %	1.70	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.16

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (f_{TLC})	-	Density (D), pc/mi/ln	6.7
Median Type Adjustment (f_M)	-	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	-		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}), veh/h	296	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicycle LOS Score (BLOS)	2.48
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	B

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HCS7 Multilane Highway Report

Project Information

Analyst	MHM	Date	3/21/2019
Agency	USI- 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - WB Frontage Rd		

Direction 1 Geometric Data

Direction 1 Description	WB Frontage Rd		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Right-Side Lateral Clearance (LC_R), ft	-
Lane Width, ft	-	Left-Side Lateral Clearance (LC_L), ft	-
Median Type	Divided	Total Lateral Clearance (TLC), ft	-
Access Point Density, pts/mi	-	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	567	Heavy Vehicle Adjustment Factor (f_{HV})	0.948
Peak Hour Factor (PHF)	0.90	Flow Rate (v_p), pc/h/ln	332
Total Trucks, %	5.50	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.18

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (f_{TLC})	-	Density (D), pc/mi/ln	7.4
Median Type Adjustment (f_M)	-	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	-		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}), veh/h	315	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicycle LOS Score (BLOS)	3.52
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	D

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HCS7 Multilane Highway Report

Project Information

Analyst	MHM	Date	3/25/2019
Agency	USI- 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - WB Frontage Rd		

Direction 1 Geometric Data

Direction 1 Description	WB Frontage Rd		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Right-Side Lateral Clearance (LC_R), ft	-
Lane Width, ft	-	Left-Side Lateral Clearance (LC_L), ft	-
Median Type	Divided	Total Lateral Clearance (TLC), ft	-
Access Point Density, pts/mi	-	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	846	Heavy Vehicle Adjustment Factor (f_{HV})	0.975
Peak Hour Factor (PHF)	0.84	Flow Rate (v_p), pc/h/ln	516
Total Trucks, %	2.60	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.27

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (f_{TLC})	-	Density (D), pc/mi/ln	11.5
Median Type Adjustment (f_M)	-	Level of Service (LOS)	B
Access Point Density Adjustment (f_A)	-		

Direction 1 Bicycle LOS

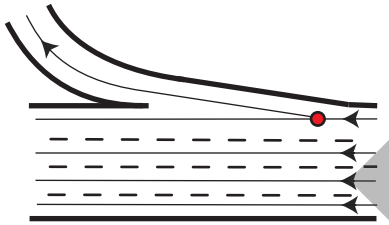
Flow Rate in Outside Lane (v_{OL}), veh/h	504	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicycle LOS Score (BLOS)	2.97
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

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LEGEND:

- Diverging Conflict
- Merging Conflict
- Crossing Conflict



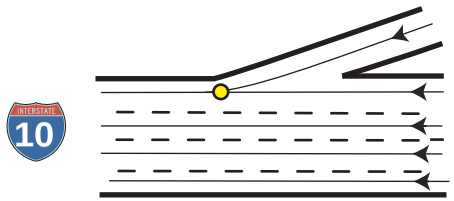
Typical Diverge

Diverging Conflict	1
Merging Conflict	0
Crossing Conflict	0
Typical Diverge Conflicts	1

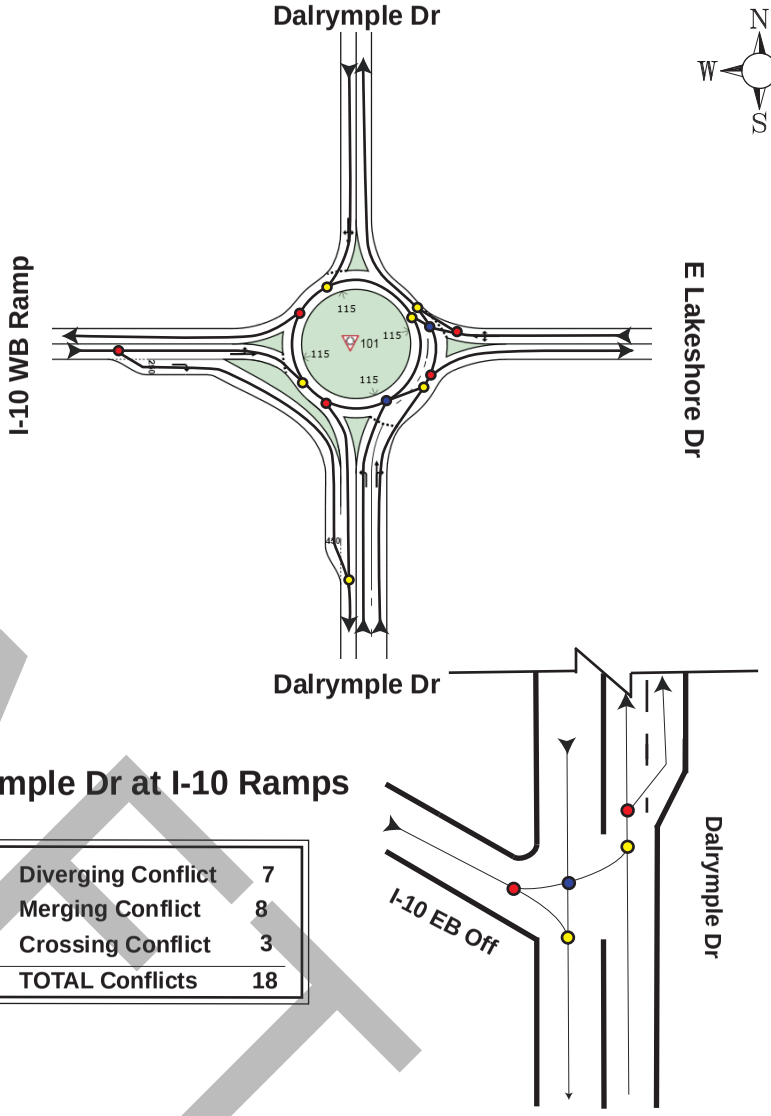
Locations:	
I-10 EB at Washington St Off Ramp	1
I-10 WB at Dalrymple Dr Off Ramp	1
TOTAL Conflicts	2

Typical Merge

Diverging Conflict	0
Merging Conflict	1
Crossing Conflict	0
Typical Merge Conflicts	1



Locations:	
I-10 EB at Braddock St On Ramp	1
I-10 WB at Dalrymple Dr On Ramp	1
TOTAL Conflicts	2



Diverging Conflict	7
Merging Conflict	8
Crossing Conflict	3
TOTAL Conflicts	18

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Figure D-1

2040 Build Conflict Points
Washington / Dalrymple IMR

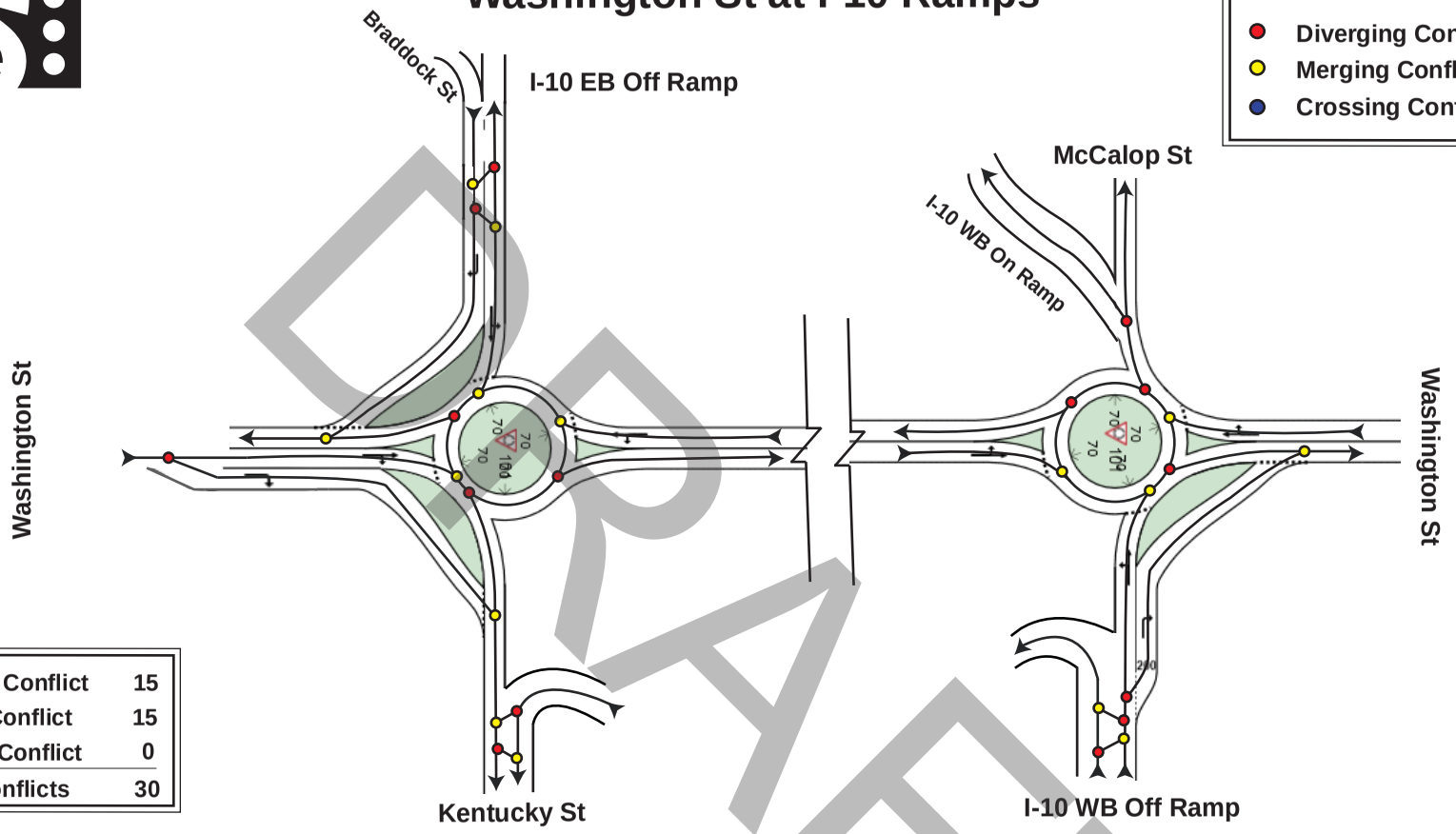
IMR Data Collection
East Baton Rouge Parish, LA

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FOR PLANNING PURPOSES ONLY

URBAN SYSTEMS inc.

URBAN SYSTEMS inc.

Washington St at I-10 Ramps

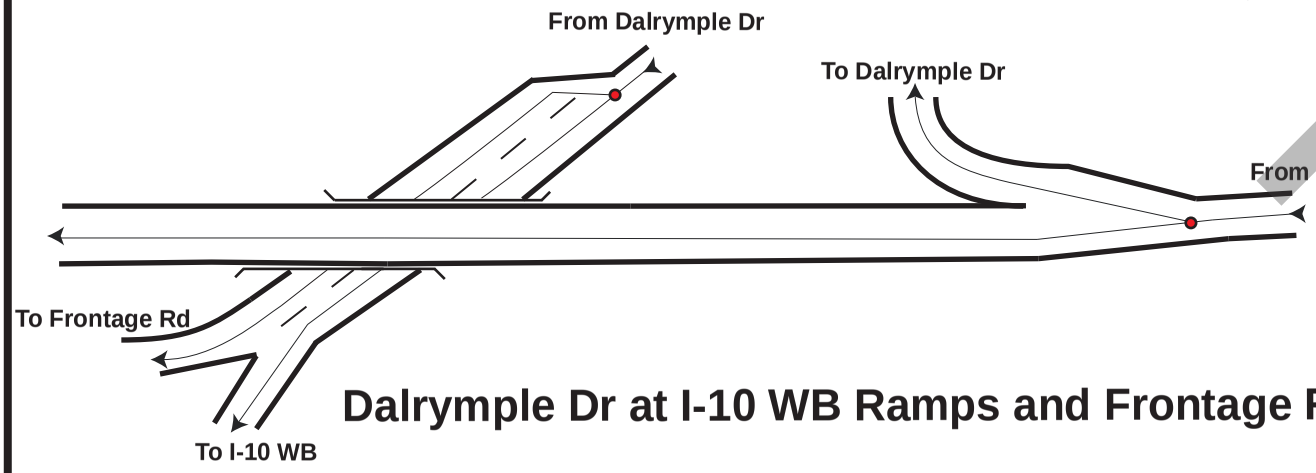


LEGEND:

- Diverging Conflict
- Merging Conflict
- Crossing Conflict

Diverging Conflict	15
Merging Conflict	15
Crossing Conflict	0
TOTAL Conflicts	30

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Dalrymple Dr at I-10 WB Ramps and Frontage Rd

Diverging Conflict	2
Merging Conflict	0
Crossing Conflict	0
TOTAL Conflicts	2

Figure D-2

2040 Build Conflict Points
Washginton / Dalrymple IMR

IMR Data Collection

East Baton Rouge Parish, LA

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Chapter 3 and Appendix D QA/QC

Task	Chapter/Appendix	Done by and Date	Checked by and Date	Notes
Archive Appendix D pdf with "submittal" and the submittal date in the title	App D	mhm 6-11-19	apc 7.26.19	
Delete pdf pages and data in tables that will be updated (have this checked before updating. Make a list if not all deleted at once).	App D	mhm 6-11-19	apc 7.26.19	
Obtain Line and Grade sheets - make sure they are the current line and grade and all areas of IMR are shown	App D	mhm 7-24-19	apc 7-25-19	
Compare L&G geometry to analysis identify what needs to be updated (may be L&G and/or analyses)	App D	mhm 7-24-19	apc 7-25-19	
Update Line and Grade Study, Design Criteria and Exceptions if needed (ask if these have changed)	App D	mhm 8-5-19	apc 8-6-19	
Update Build AM and PM Synchro Files with new Line and Grade geometry, peds, etc. (if needed).	App D	mhm 7.25.19	apc 7.26.19	
Re-pdf reports in Build AM and PM Synchro using HCM 10 report	App D	mhm 7.25.19	apc 7.26.19	
Replace new HCM 10 Synchro report pdf's in Appendix	App D	mhm 7.25.19	apc 7.26.19	
Check Appendix to make sure nothing else should be updated	App D	mhm 7.25.19	apc 7.26.19	
create a pdf and print	App D	mhm 8-6-19	apc 8-6-19	
check the print copy	App D	mhm 8-6-19	apc 8-6-19	
Update QAQC	App D	mhm 8-7-19	apc 8-7-19	
Archive Ch 3 pdf and word with "submittal" and the submittal date in the title	Ch 3	mhm 6-11-19	apc 7-8-19	
Make sure Build Figure matches new Line and Grade in App D	Ch 3	mhm 7-24-19	apc 7-25-19	
Update tables 3.2 and 3.3 with HCM 2010 reports MOEs	Ch 3	mhm 6-11-19	apc 7-9-19	
Add verbiage discussing widening of Washington for signals and impacts	Ch 3	mhm 6-11-19	apc 7-9-19	
Remove signals from tables 3.4 and 3.5	Ch 3	mhm 6-11-19	apc 7-9-19	
Read Ch 3 to make sure nothing else should be updated	Ch 3	mhm 6-11-19	apc 7-9-19	
create a pdf and print	Ch 3	mhm 8-6-19	apc 8-6-19	
check the print copy	Ch 3	mhm 8-6-19	apc 8-6-19	
Update QAQC	Ch 3	mhm 8-7-19	apc 8-7-19	
Comment Response letter	Ch 3	mhm 8-7-19	apc 8-7-19	



Mathew Morgan, E.I.

8/7/19

Date

I certify that I conducted the QAQC listed above on the date shown.



Alben Cooper III, P.E., PTOE

8/7/19

Date

I certify that I conducted the QAQC listed above on the date shown.