CSXT
DRAINAGE REPORT

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

S.R. 115 (US-129, ALCOA HIGHWAY)
FROM: SOUTH OF TOPSIDE ROAD
TO: NORTH OF MALONEY ROAD

Knox County, Tennessee

July 2018

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DRAINAGE REPORT
S.R. 115 (US-129, ALCOA HIGHWAY)
FROM: SOUTH OF TOPSIDE ROAD
TO: NORTH OF MALONEY ROAD
TDOT PIN NO. 100241.02

This 2-mile section of State Route 115 (Alcoa Highway, US-129) begins just south of Topside Road and continues northward to Maloney Road. The improvements will follow the existing alignments and consist of widening Alcoa Highway to six lanes, with three lanes in each direction. A center median barrier will be constructed throughout the project limits and all left turns onto S.R. 115 will be eliminated. Traffic desiring to turn left will utilize the new interchanges that are being proposed at the intersections of Alcoa Highway and John Sevier Highway and Alcoa Highway and Topside Road. Right turns will be allowed at all existing locations along the route. Additionally, frontage roads will be provided to carry local traffic adjacent to S.R. 115 at Topside Road and Power Drive. The CSXT railroad runs parallel with SR 115, on the western side of the roadway, from the beginning of the project north until it crosses the proposed alignment at a grade separated intersection near I.C. King park. A 12-foot-wide greenway will also be constructed on the western edge of the project, between the southbound lanes and the railroad.

The following is a Drainage Report on the effects that roadway improvements to Alcoa Highway will have on the storm drainage systems that outlet onto the CSXT Right-of-Way (R.O.W.). There are 12 drainage areas that will be directly affected by the roadway improvements. These are existing outlet areas that include both ditch outlets and pipe outlets. In each case, the existing and proposed overland flow paths where compared and a Time of Concentration, T_C, was determined. The T_C was then used to determine the rainfall intensity, *i*. Pre-developed and Post-developed 100-Year storm event flows were calculated using the *Rational Method*. A summary of each of these 'Highway Drainage Areas' is given below. A tabular comparison of the Pre- and Post- Developed conditions can be found in the appendix of this report.

In addition to discussing the impacts that the proposed roadway work will have on the roadway storm drainage flowing onto CSXT R.O.W., the existing storm drainage that flows under the CSX track was analyzed. For each of these 'Railroad Cross Drain' areas, the 100-year flood rate, the 100-year flow velocity, and with the Headwater to Depth Ratio (HW/D) was calculated. An attempt was made to field survey all of these culverts but in some cases, the pipes were unrecoverable. Also, some of the culverts were collapsed or had one invert that was collapsed. In these cases, assumptions on size, culvert type, invert elevation, and / or slope had to made. A table presenting all of these findings can be found in the appendix of this report as well. Notes on assumptions that were made can be found on this table as well.

HIGHWAY DRAINAGE AREA #1

This is an existing 36-inch reinforced concrete pipe (RCP) that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR 115 station 118+46.93. It is currently carrying runoff from the eastern side of the road. This pipe is approximately 136 feet long and it is going to be extended by approximately 75 feet. An area drain will be added to the inlet. Additionally, storm drainage structures running under the proposed median barrier wall and structures along the curb and gutter on the western side of the northbound lanes will now drain into this 36-inch pipe. The drainage area for this pipe is increasing from the pre-developed area of 16.316 acres to the post-developed area of 17.431 acres. The runoff coefficient, C, will increase from 0.30 to 0.40 because of the roadway improvements. The flow produced by the 100-year storm event flows will increase from 28.3 cfs to 40.7 cfs. The velocities at the outlet of the pipe produced from the 100-year event will raise the velocity from 6.8 fps to 7.6 fps.

HIGHWAY DRAINAGE AREA #2

This is an existing 3-foot by 4-foot reinforced concrete box culvert (RCBC) that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR115 station 121+88.01 and is currently carrying runoff from the eastern side of the road. This culvert is 122 feet long and it is going to be extended by approximately 76 feet. Additionally, storm drainage structures running under the proposed barrier wall that follows the northbound lane on the western side of the roadway will now drain into this box culvert. The drainage area for this pipe is increasing from the pre-developed area of 15.710 acres to the post-developed area of 17.404 acres. The runoff coefficient, C, will increase from 0.30 to 0.32 because of the roadway improvements. The flow produced by the 100-year storm event flow will increase from 27.2 cfs to 32.7 cfs. The velocities at the outlet of the culvert produced from the 100-year event will raise the velocity from 6.1 fps to 6.5 fps.

HIGHWAY DRAINAGE AREA #3

This is an existing 36-inch RCP that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR 115 station 125+91.57. It is currently carrying runoff from the eastern side of the road. This pipe is approximately 213 feet long and it is going to be extended by approximately 11 feet, with a median barrier drain added to the inlet side. The drainage area for this pipe is decreasing from the pre-developed area of 4.805 acres to the post-developed area of 0.448 acres. The runoff coefficient, C, will increase from 0.25 to 0.50 because of the roadway improvements. The 100-year storm event flow will decrease from 10.3 cfs to 1.9 cfs. The velocities at the outlet of the pipe produced from the 100-year event will lower the velocity from 4.9 fps to 3.1 fps.

HIGHWAY DRAINAGE AREA #4

This is an existing 4-foot by 4-foot reinforced concrete box culvert (RCBC) that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR115 station 132+54.88 and is currently carrying runoff from the eastern side of the road. This culvert is 338 feet long and it is going to be extended by approximately 4 feet. Additionally, storm drainage runoff from the median ditch between SR 115 and Ramp A will now drain into this culvert. The drainage area for this pipe is increasing from the pre-developed area of 35.929 acres to the post-developed area of 39.930 acres. The runoff coefficient, C, will increase from 0.20 to 0.22 because of the roadway improvements. The flow produced by the 100-year storm event flows will increase from 40.5 cfs to 50.3 cfs. The velocities at the outlet of the culvert produced from the 100-year event will raise the velocity from 6.7 fps to 7.1 fps.

HIGHWAY DRAINAGE AREA #5

This is a 15-inch RCP that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR 115 station 123+00. It is currently carrying runoff from the existing roadway median ditch. This pipe is approximately 61 feet long with a catch basin on the inlet side. Both the pipe and catch basin are going to be removed and replaced with an 18-inch cross drain. The new drain will be carrying runoff from the median area between the proposed roadway and the proposed greenway and will be located to the left of station 123+50. The drainage area for this proposed pipe is increasing from the pre-developed area of 0.482 acres to the post-developed area of 0.564 acres. The runoff coefficient, C, will remain constant at 0.8. The 100-year storm event flows will increase from 3.3 cfs to 3.9 cfs. The velocities at the outlet of the pipe produced from the 100-year event will raise the velocity from 4.2 fps to 4.4 fps.

HIGHWAY DRAINAGE AREA #6

This is a 6-foot by 6-foot reinforced concrete box culvert. This culvert receives the runoff from the intersection of Alcoa Highway and John Sevier Highway. The inlet is located to the right of Ramp ‘A’ station 265+55.51 and the outlet is located to the left of SR 115 station 134+24.73. The total length is 1185 feet. There are no modifications planned for the culvert at this time, however, the drainage area is increasing from the pre-developed area of 181.680 acres to the post-developed area of 185.533 acres. The runoff coefficient, C, will remain constant at 0.4. The flow produced by the 100-year storm event flows will increase from 197.9 cfs to 200.9 cfs. The velocities at the outlet of the pipe produced from the 100-year event will raise the velocity from 9.8 fps to 9.9 fps.

HIGHWAY DRAINAGE AREA #7

This is an 18-inch RCP storm sewer outlet that is draining 2 catch basins. The outlet is located to the left of SR 115 station 135+23.60. It is currently carrying runoff from the existing concrete curb and gutter along the southbound lanes on the western side of the project. There is a total of 62 linear feet of pipe along with 2, 5-foot deep curb inlets. The pipe and catch basins are going to be removed and replaced with an 18-inch cross drain. The new drain will be carrying runoff from the median area between the proposed roadway and the proposed greenway and will be located to the left of station 135+54.75. The drainage area for this proposed pipe is decreasing from the pre-developed area of 0.475 acres to the post-developed area of 0.311 acres. The runoff coefficient, C, will decrease from 0.8 to 0.2. The flow produced by the 100-year storm event flows will decrease from 3.2 cfs to 0.5 cfs. The velocities at the outlet of the pipe produced from the 100-year event will lower the velocity from 4.1 fps to 2.4 fps.

HIGHWAY DRAINAGE AREA #8

This is an existing 42-inch corrugated metal pipe (CMP) that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR 115 station 157+01.16. It is currently carrying runoff from the eastern side of the road. This pipe is approximately 329 feet long. A junction box will be added to the existing inlet side and 50 feet of 42" pipe will be added, extending in an easterly direction. The drainage area for this pipe is decreasing from the pre-developed area of 12.602 acres to the post-developed area of 11.258 acres. The runoff coefficient, C, will increase from 0.28 to 0.34 because of the roadway improvements. The flow produced by the the 100-year storm event flows will increase from 30.2 cfs to 32.8 cfs. The velocities at the outlet of the pipe produced from the 100-year event will raise from 6.5 fps to 6.7 fps.

HIGHWAY DRAINAGE AREA #9

This is an existing 4-foot by 4-foot reinforced concrete box culvert (RCBC) that flows under the existing roadway and outlets onto the CSXT R.O.W. The outlet is located to the left of SR115 station 161+94.93 and is currently carrying runoff from the eastern side of the road. This culvert is 239 feet long and it is going to be extended, on the outlet side, by approximately 23 feet. A rip-rap apron will also be added. The drainage area for this culvert is increasing from the pre-developed area of 48.048 acres to the post-developed area of 48.863 acres. The runoff coefficient, C, will increase from 0.25 to 0.27 because of the roadway improvements. The flow produced by the 100-year storm event flows will increase from 52.7 cfs to 57.9 cfs. The velocities at the outlet of the culvert produced from the 100-year event will raise the velocity from 7.2 fps to 7.5 fps.

HIGHWAY DRAINAGE AREA #10

This is an existing roadway ditch that carries runoff from Alcoa Highway near the John Sevier interchange. This is an approximately 1 foot deep, irregular shaped, dirt-lined ditch that varies in width from 2 to 4 feet. This ditch currently outfalls onto CSXT ROW at Ramp 'F' Sta. 375+78.65. This existing ditch outlets into a 24" cast iron pipe that crosses under the CSX tracks. The proposed ditch will be a 4 foot wide, 1 foot deep, grass-lined 'V' ditch and will be located to the left of Ramp 'F' Sta. 375+25.00. The drainage area will decrease from 0.722 acres to 0.178 acres. The runoff coefficient, C, will increase from 0.60 to 0.90 because of the roadway improvements. The flow produced by the 100-year storm event will decrease from 3.8 cfs to 1.4 cfs. The velocities at the outlet produced from the 100-year event will raise from 3.0 fps to 4.0 fps.

HIGHWAY DRAINAGE AREA #11

This is an existing roadway ditch that carries runoff from Alcoa Highway. This is near the grade separated intersection of Alcoa Highway and the CSX railroad. This is an approximately 1 foot deep, irregular shaped, grass-lined ditch that varies in width. This ditch currently outfalls onto CSXT ROW to the left S.R. 115 Sta. 182+68.10. The proposed ditch will be a 2 foot deep, grass-lined 'V' ditch and will outlet to the left of S.R. 115 Sta. 182+81.97. The drainage area will increase from 0.396 acres to 1.167 acres. The runoff coefficient, C, will increase from 0.45 to 0.55 due to the roadway improvements. The flow produced by the 100-year storm event will increase from 1.5 cfs to 5.5 cfs. The velocities at the outlet produced from the 100-year event will raise from 3.0 fps to 4.0 fps.

HIGHWAY DRAINAGE AREA #12

This is an existing roadway ditch that carries runoff from Alcoa Highway. This is near the grade separated intersection of Alcoa Highway and the CSX railroad. This is an approximately 3 foot deep, round shaped, concrete-lined ditch with a width of 4 feet. This ditch currently outfalls onto CSXT ROW to the right of S.R. 115 Sta. 184+56.94. The proposed ditch will be a 2 foot deep, 8 foot wide, grass-lined 'V' ditch and will outlet to the right of S.R. 115 Sta. 184+89.70. The drainage area will decrease from 1.959 acres to 0.220 acres. The runoff coefficient, C, will decrease from 0.58 to 0.30 due to the roadway improvements. The flow produced by the 100-year storm event will decrease from 9.7 cfs to 0.6 cfs. The velocities at the outlet produced from the 100-year event will drop from 2.5 fps to 1.4 fps.

HIGHWAY DRAINAGE AREAS

HIGHWAY DRAINAGE AREA	*S.R. 115 STATION (EXISTING OUTLET LOCATION)*	*EXISTING OUTLET DESCRIPTION*	*S.R. 115 STATION (PROPOSED OUTLET LOCATION)*	*PROPOSED OUTLET DESCRIPTION*	*PRE-DEVELOPMENT DRAINAGE AREA (ACRES)*	*POST-DEVELOPMENT DRAINAGE AREA (ACRES)*	*PRE-DEVELOPMENT Q_{100} (CFS)*	*POST-DEVELOPMENT Q_{100} (CFS)*	*PRE-DEVELOPMENT V_{100} (CFS)*	*POST-DEVELOPMENT V_{100} (CFS)*
AREA #1	118+46.93	36" RCP	118+46.93	36" RCP	16.3157	17.4307	28.3	40.3	6.8	7.6
AREA #2	121+82.12	3' X 4' BOX CULVERT	121+82.12	3' X 4' BOX CULVERT	15.7102	17.4046	27.2	32.7	6.1	6.5
AREA #3	125+84.50	36" RCP	125+84.50	36" RCP	4.8050	0.4481	10.3	1.9	4.9	3.1
AREA #4	132+94.33	4' X 4' BOX CULVERT	132+94.33	4' X 4' BOX CULVERT	35.9291	39.9301	40.5	50.3	6.7	7.1
AREA #5	122+76.06	15" CMP	123+10.63	18" RCP	0.4823	0.5645	3.3	3.9	4.2	4.4
AREA #6	134+24.73	6' X 6' BOX CULVERT	134+24.73	6' X 6' BOX CULVERT	181.6803	185.5332	198	200.9	9.8	9.9
AREA #7	135+23.60	18" RCP	135+54.75	18" RCP	0.4749	0.3112	3.3	0.5	4.1	2.4
AREA #8	158+35.55	42" CMP - OVAL	158+35.55	42" CMP - OVAL	12.6019	11.2582	30.2	32.8	6.5	6.7
AREA #9	161+47.98	4' X 4' BOX CULVERT	161+40.11	6' X 4' BOX CULVERT	48.0480	48.8629	52.7	57.9	7.2	7.5
AREA #10	RAMP 'F' 375+78.65	ROADWAY DITCH - IRREGULAR SHAPE	375+25.00	V-DITCH, 2' WIDE, 1' DEEP, GRASS LINED	0.7223	0.1779	3.8	1.4	3	4
AREA #11	182+68.10	ROADWAY DITCH - IRREGULAR SHAPE	182+81.97	V-DITCH, 8' WIDE, 2' DEEP, GRASS LINED	0.3962	1.1665	1.5	5.5	4.5	4
AREA #12	184+56.94	ROADWAY DITCH 4' WIDE, 1' DEEP, CONCRETE	184+89.70	V-DITCH, 8' WIDE, 2' DEEP, GRASS LINED	1.9593	0.2197	9.7	0.6	2.5	1.4
				TOTALS	319.13	323.31	408.8	428.7	66.3	64.60

CSX DITCH ANALYSIS

		PRE-DEVELOPED CONDITION							
CSX CHANNEL NO.	***CONTRIBUTING HIGHWAY DRAINAGE AREA***	***S.R. 115 STATION (EXISTING OUTLET LOCATION)***	***PRE-DEVELOPMENT DRAINAGE AREA (ACRES)***	***CHANNEL DESCRIPTION***	***CHANNEL SLOPE***	***CHANNEL ROUGHNESS COEFFICIENT***	***PRE-DEVELOPMENT Q_{100} (CFS)***	***PRE-DEVELOPMENT V_{100} (CFS)***	***NORMAL DEPTH***
CSX DITCH #1	AREA #1	118+46.93	16.3157	2' TRAP. DITCH, 1:1 SIDE SLOPES	4.70%	0.035	28.3	7.35	1.20
CSX DITCH #2	AREA #2	121+82.12	15.7102	10' TRAP. DITCH, 3:1 SIDE SLOPES	9.32%	0.035	27.2	6.36	0.38
CSX DITCH #3	AREA #3	125+84.50	4.8050	4' TRAP. DITCH, 2:1 SIDE SLOPES	2.82%	0.035	10.3	3.94	0.52
CSX DITCH #4	AREA #4	132+94.33	35.9291	3' TRAP. DITCH, 2:1 SIDE SLOPES	6.33%	0.035	40.5	8.15	1.00
CSX DITCH #5	AREA #5	122+76.06	0.4823	1' TRAP. DITCH, 4:1 SIDE SLOPES	10.83%	0.035	3.3	4.72	0.31
CSX DITCH #6	AREA #6	134+24.73	181.6803	10' TRAP. DITCH, 1:1 SIDE SLOPES	0.79%	0.035	198	5.84	2.68
CSX DITCH #7	AREA #7	135+23.60	0.4749	4' TRAP. DITCH, 2:1 SIDE SLOPES	11.81%	0.035	3.3	4.3	0.18
CSX DITCH #8	AREA #8	158+35.55	12.6019	THIS IS NOT A DITCH. CULVERT DOES NOT OUTLET INTO A DEFINED CHANNEL.			30.2		
CSX DITCH #9	AREA #9	161+47.98	48.0480	THIS IS NOT A DITCH. CULVERT OUTLET IS UNDER WATER.			52.7		
CSX DITCH #10	AREA #10	RAMP 'F' 375+78.65	0.7223	4' TRAP. DITCH, 2:1 SIDE SLOPES	14.10%	0.035	3.8	4.79	0.18
CSX DITCH #11	AREA #11 & #12	184+56.94	2.3555	8' TRAP. DITCH, 6:1 SIDE SLOPES	1.60%	0.035	11.2	2.58	0.41

CSX DITCH ANALYSIS

		POST-DEVELOPED CONDITION							
CSX CHANNEL NO.	CONTRIBUTING HIGHWAY DRAINAGE AREA	S.R. 115 STATION (PROPOSED OUTLET LOCATION)	POST-DEVELOPMENT DRAINAGE AREA (ACRES)	CHANNEL DESCRIPTION	CHANNEL SLOPE	CHANNEL ROUGHNESS COEFFICIENT	POST-DEVELOPMENT Q_{100} (CFS)	POST-DEVELOPMENT V_{100} (CFS)	NORMAL DEPTH
CSX DITCH #1	AREA #1	118+46.93	17.4307	2' TRAP. DITCH, 1:1 SIDE SLOPES	4.70%	0.035	40.3	8.06	1.45
CSX DITCH #2	AREA #2	121+82.12	17.4046	10' TRAP. DITCH, 3:1 SIDE SLOPES	9.32%	0.035	32.7	6.79	0.43
CSX DITCH #3	AREA #3	125+84.50	0.4481	4' TRAP. DITCH, 2:1 SIDE SLOPES	2.82%	0.035	1.9	2.23	0.19
CSX DITCH #4	AREA #4	132+94.33	39.9301	3' TRAP. DITCH, 2:1 SIDE SLOPES	6.33%	0.035	50.3	8.65	1.11
CSX DITCH #5	AREA #5	123+10.63	0.5645	1' TRAP. DITCH, 4:1 SIDE SLOPES	10.05%	0.035	3.9	4.79	0.34
CSX DITCH #6	AREA #6	134+24.73	185.5332	10' TRAP. DITCH, 1:1 SIDE SLOPES	0.79%	0.035	200.9	5.86	2.70
CSX DITCH #7	AREA #7	135+54.75	0.3112	4' TRAP. DITCH, 2:1 SIDE SLOPES	12.45%	0.035	0.5	2.15	0.06
CSX DITCH #8	AREA #8	158+35.55	11.2582	THIS IS NOT A DITCH. CULVERT DOES NOT OUTLET INTO A DEFINED CHANNEL.			32.8		
CSX DITCH #9	AREA #9	161+40.11	48.8629	THIS IS NOT A DITCH. CULVERT OUTLET IS UNDER WATER.			57.9		
CSX DITCH #10	AREA #10	375+25.00	0.1779	V-DITCH, 2' WIDE, 1' DEEP, GRASS LINED	13.57%	0.035	1.4	5.09	0.52
CSX DITCH #11	AREA #11 & #12	184+89.70	0.2197	8' TRAP. DITCH, 6:1 SIDE SLOPES	1.60%	0.035	6.1	2.12	0.29

RAILROAD CROSS DRAINS

RAILROAD CROSS DRAINS	*S.R. 115 STATION*	*CSX STATION*	*STRUCTURE SIZE*	*STRUCTURE TYPE*	*PRE-DEVELOPMENT DRAINAGE AREA (ACRES)*	*POST-DEVELOPMENT DRAINAGE AREA (ACRES)*	*PRE-DEVELOPMENT Q_{100} (CFS)*	*POST-DEVELOPMENT Q_{100} (CFS)*	*PRE-DEVELOPMENT V100 (CFS)*	*POST-DEVELOPMENT V_{100} (CFS)*	*PRE-HW/D*	*POST-HW/D*	*COMMENTS*
CSX CROSSING #1	~111+56	~513+14	24"	CIP	0.8	1.3	4.2	6.0	4.2	4.6	0.5	0.6	EXACT LOCATION UNKNOWN, ASSUMED SIZE, TYPE, INVERT ELEVATIONS, AND SLOPE
CSX CROSSING #2	117+83	519+55	24"	CIP	20.5	21.6	42.0	43.6	13.4	13.8	2.6	2.8	
CSX CROSSING #3	121+60	523+32	24"	CIP	16.3	18.0	35.7	38.4	11.4	12.2	2.2	2.4	CRUSHED OUTLET, MODELED AS FUNCTIONAL
CSX CROSSING #4	125+26	526+99	24"	CIP	13.4	10.1	31.2	25.5	9.9	8.1	1.9	1.6	
CSX CROSSING #5	133+88	535+62	7' X 5'	BOX	213.2	221.0	221.8	228.0	10.3	10.4	0.9	0.9	INLET 7' X 5' BOX, OUTLET 6' X 10' BOX, MODELED AS 7' X 5' BOX
CSX CROSSING #6	146+79	545+77	24"	CIP	6.2	5.7	18.0	16.9	5.7	5.4	1.3	1.2	
CSX CROSSING #7	~158+48	~557+94	24"	CIP	15.1	13.8	33.8	31.7	10.8	10.1	2.1	1.9	EXACT LOCATION UNKNOWN, ASSUMED SIZE, TYPE, INVERT ELEVATIONS, AND SLOPE
CSX CROSSING #8	~161+59	~561+61	24"	CIP	50.2	51.0	79.4	80.3	25.3	25.6	7.0	7.1	EXACT LOCATION UNKNOWN, ASSUMED SIZE, TYPE, INVERT ELEVATIONS, AND SLOPE
CSX CROSSING #9	181+20	580+36	24"	CIP	9.3	8.3	23.9	22.1	7.6	7.0	1.5	1.5	OUTLET ELEVATION UNKNOWN, ASSUMED INVERT ELEVATIONS AND SLOPE

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	5
CONST.	2018	STP/NH-115(27)	5

KNOX CO. S.R. 115 (ALCOA HWY)

CSX CROSSING #1
EXISTING STRUCTURE: UNRECOVERABLE.
MODELED AS 24" C.I.P
S.R. 115 STA. ~111+56
CSX STA. ~513+14
HW / D RATIO: 0.6

CSX CROSSING #2
EXISTING STRUCTURE: 24" C.I.P.
S.R. 115 STA. 117+83
CSX STA. 519+55
HW / D RATIO: 2.8

CSX CROSSING #3
EXISTING STRUCTURE: 24" C.I.P.
S.R. 115 STA. 121+60
CSX STA. 523+32
HW / D RATIO: 2.4
NOTE: COLLAPSED STRUCTURE, MODELED AS FUNCTIONAL

HIGHWAY DRAINAGE AREA #1
EXISTING STRUCTURE: 36" R.C.P.
PROPOSED STRUCTURE: 36" R.C.P.
EXISTING OUTLET LOCATION: 118+46.93
PROPOSED OUTLET LOCATION:118+46.93

HIGHWAY DRAINAGE AREA #2
EXISTING STRUCTURE: 3' X 4' BOX CULVERT
PROPOSED STRUCTURE: 3' X 4' BOX CULVERT
EXISTING OUTLET LOCATION: 121+82.12
PROPOSED OUTLET LOCATION:121+82.12

CSX DITCH #1

CSX DITCH #2

SHEET LAYOUT INDEX

EAST TOPSIDE CONNECTOR
PI 52+20.86
N 568,256.1197
E 2,573,413.5073
Δ 96° 21' 46" (RT)
D 45° 00' 00"
R 127.32
L 214.14
T 142.31
SE 0.040 FT/FT
DESIGN SPEED 20 MPH
TRANS. LENGTH 100

TOPSIDE ROAD
PI 43+66.04
N 568,198.1825
E 2,573,485.6011
Δ 36° 46' 12" (RT)
D 20° 00' 00"
R 286.48
L 183.85
T 95.22
SE 0.079 FT/FT
DESIGN SPEED 30 MPH
TRANS. LENGTH 180'

SEE SHEET 5A FOR RAILROAD EASEMENT DETAILS

S.R. 115 STA. 110+25.00 = E. TOPSIDE CONN. STA. 50+00.00
N 568354.2341
E 2573214.1811

CSX RAILROAD (26)

EAST TENNESSEE NATURAL GAS COMPANY

MARK J. MARGETTS

JOHN Y. BLACK

PAMELA A. ACCUFF

REVISED 01-24-18

REVISED THE LOCATION OF THE BUSINESS ENTRANCE SERVING TRACT 6

REVISED THE PROPOSED RIGHT-OF-WAY LINE ON TRACT 8 ALONG S.R. 115

REVISED 05-15-18

REVISED THE EAST TOPSIDE CONNECTOR ROAD ALIGNMENT

REVISED THE SLOPE LIMITS ON THE EAST TOPSIDE CONNECTOR ROAD

REVISED THE PROPOSED RIGHT-OF-WAY LINE ON TRACT 6

PRELIMINARY PLANS

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009166 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.109+00 TO STA.122+00

SCALE: 1:50'

7/3/2018 3:08:42 PM
C:\TDOT\9990\RR DRAIN XING - PLAN.SHT

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	6
CONST.	2018	STP/NH-115(27)	6

KNOX CO. S.R. 115 (ALCOA HWY)

REVISED 01-24-18

REVISED THE PROPOSED RIGHT-OF-WAY LINE ON TRACT 8 ALONG S.R. 115

CSX R.R.
PI 538+59.41
N 570,765.6455
E 2,574,359.2935
AS 34° 53' 43" (LT)

CSX CROSSING #4
EXISTING STRUCTURE: 24" C.I.P.
S.R. 115 STA. 125+26
CSX STA. 526+99
HW / D RATIO: 1.6

CSX CROSSING #5
EXISTING STRUCTURE: BOX CULVERT
7' X 5' INLET, 6' X 10' OUTLET
S.R. 115 STA. 133+88
CSX STA. 535+62
HW / D RATIO: 0.9

HIGHWAY DRAINAGE AREA #6
EXISTING STRUCTURE: 6' X 6' BOX CULVERT
PROPOSED STRUCTURE: 6' X 6' BOX CULVERT
EXISTING OUTLET LOCATION: 134+24.73
PROPOSED OUTLET LOCATION:134+24.73

CSX DITCH #6

CSX DITCH #5

CSX DITCH #3

HIGHWAY DRAINAGE AREA #3
EXISTING STRUCTURE: 36" R.C.P.
PROPOSED STRUCTURE: 36" R.C.P.
EXISTING OUTLET LOCATION: 125+84.50
PROPOSED OUTLET LOCATION:125+84.50

HIGHWAY DRAINAGE AREA #4
EXISTING STRUCTURE: 4' X 4' BOX CULVERT
PROPOSED STRUCTURE: 4' X 4' BOX CULVERT
EXISTING OUTLET LOCATION: 132+94.33
PROPOSED OUTLET LOCATION:132+94.33

HIGHWAY DRAINAGE AREA #5
PROPOSED STRUCTURE: 18" R.C.P.
PROPOSED OUTLET LOCATION:123+10.63

HIGHWAY DRAINAGE AREA #5
EXISTING STRUCTURE: 15" C.M.P.
EXISTING OUTLET LOCATION: 122+76.06
TO BE REMOVED

CSX DITCH #4

EAST TENNESSEE PILOT'S CLUB, INC.

CSXT R.O.W.

CSX RAILROAD

MARK J. MARGETTS

CALVARY CHAPEL OF KNOXVILLE

MATCHLINE STA. 122+00 SEE SHEET 5

MATCHLINE STA. 135+00 SEE SHEET 7

SHEET LAYOUT INDEX

PRELIMINARY PLANS

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009166 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA. 122+00 TO STA. 135+00

SCALE: 1:50'

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HIGHWAY DRAINAGE AREA #7
EXISTING STRUCTURE: 18" R.C.P.
EXISTING OUTLET LOCATION: 135+23.60
TO BE REMOVED.

HIGHWAY DRAINAGE AREA #10
EXISTING STRUCTURE: 4' TRAP. DITCH, 1:1 SIDE SLOPES
EXISTING OUTLET LOCATION: RAMP 'F' STA. 375+78.65
TO BE REMOVED

HIGHWAY DRAINAGE AREA #10
PROPOSED STRUCTURE: V-DITCH. 4' WIDE, 1' DEEP, GRASS LINED
PROPOSED OUTLET LOCATION: RAMP 'F' STA. 375+25.00

CSX CROSSING #6
EXISTING STRUCTURE: 24" C.I.P.
S.R. 115 STA. 146+79
CSX STA. 545+77
HW / D RATIO: 1.2

CSX DITCH #7

CSX DITCH #10

HIGHWAY DRAINAGE AREA #7
PROPOSED STRUCTURE: 18" R.C.P.
PROPOSED OUTLET LOCATION: 135+54.75

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	7
CONST.	2018	STP/NH-115(27)	7

KNOX CO. S.R. 115 (ALCOA HWY)

SHEET LAYOUT INDEX

PRELIMINARY PLANS

SEALED BY

S.R. 115 STA. 143+76.54
S.R. 168 STA. 77+62.93
N 571283.4950
E 2574801.1163

S.R. 168 STA. 79+50.01
RAMP 'AB' STA. 280+00.00
N 571247.7893
E 2574984.6398

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009166 AND TIED TO THE TDRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.135+00 TO STA.148+50
SCALE: 1:50'

MATCHLINE STA. 135+00 SEE SHEET 6
MATCHLINE STA. 148+50 SEE SHEET 10
MATCHLINE STA. 80+08.10 SEE SHEET 8

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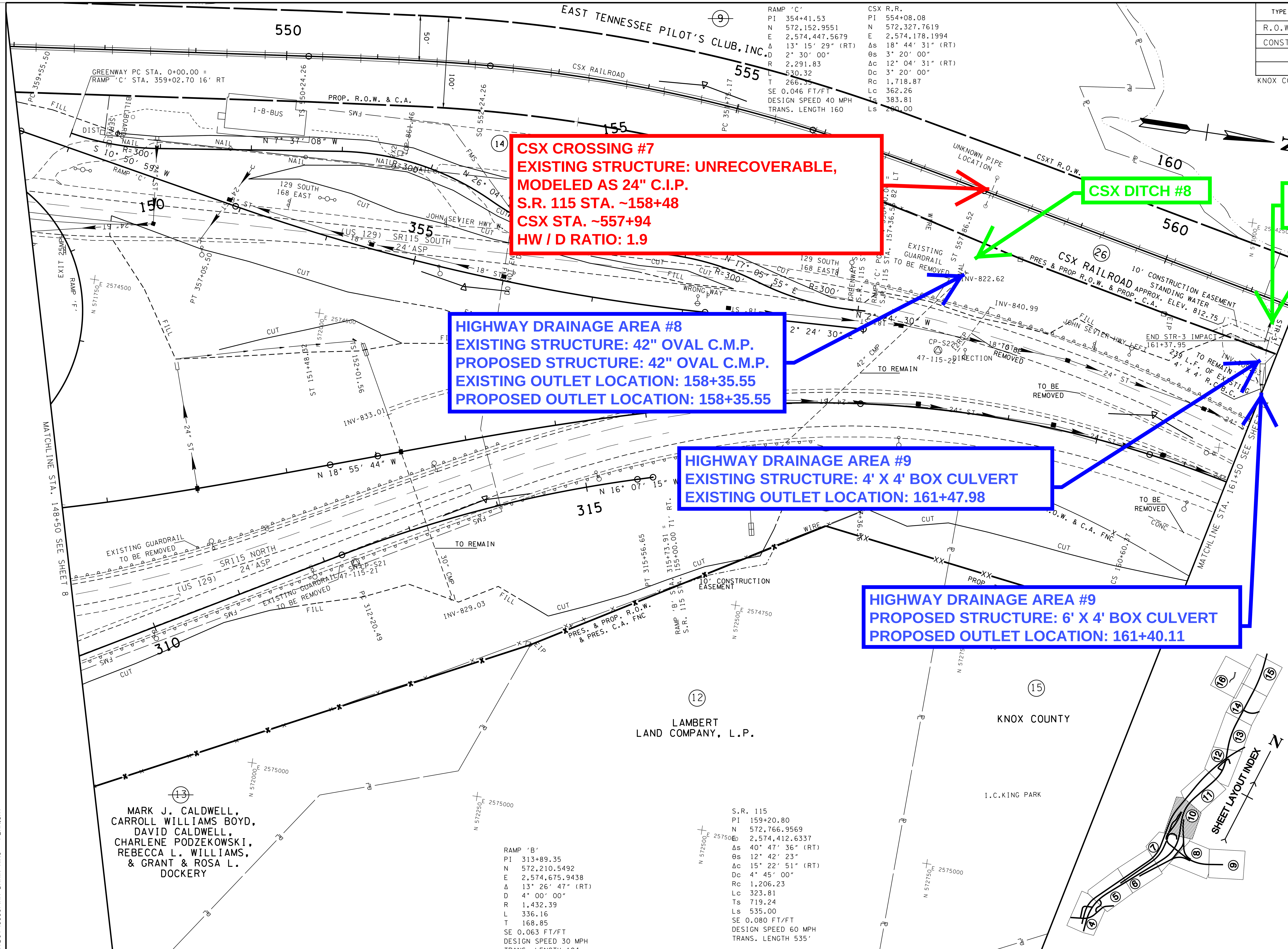
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	10
CONST.	2018	STP/NH-115(27)	10

KNOX CO. S.R. 115 (ALCOA HWY)



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PRELIMINARY PLANS

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009166 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.148+50 TO STA.161+50

SCALE: 1:50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	11
CONST.	2018	STP/NH-115(27)	11

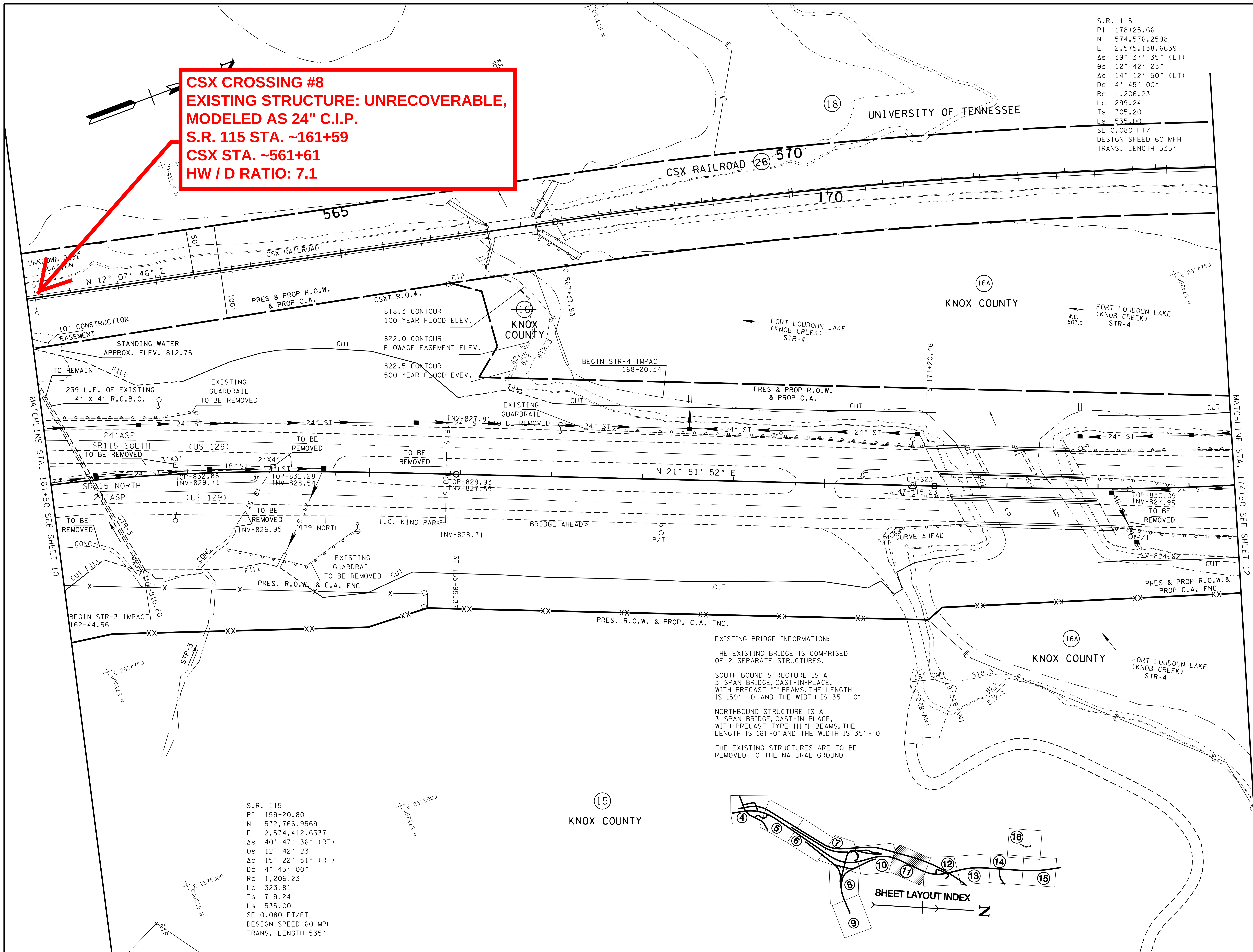
KNOX CO. S.R. 115 (ALCOA HWY)

REVISED 01-24-18

RELOCATED THE PROPERTY LINE BETWEEN TRACTS 16 AND 16A

REVISE THE SLOPE AND CONSTRUCTION EASEMENTS ON TRACTS 16 AND 16A

ADDED CONTOUR LINES FOR ELEVATIONS 818.3, 822.0, AND 822.5



CSX CROSSING #8
EXISTING STRUCTURE: UNRECOVERABLE,
MODELED AS 24" C.I.P.
S.R. 115 STA. ~161+59
CSX STA. ~561+61
HW / D RATIO: 7.1
S.R. 115
PI 178+25.66
N 574,576.2598
E 2,575,138.6639
Δs 39° 37′ 35″ (LT)
θs 12° 42′ 23″
Δc 14° 12′ 50″ (LT)
Dc 4° 45′ 00″
Rc 1,206.23
Lc 299.24
Ts 705.20
Ls 535.00
SE 0.080 FT/FT
DESIGN SPEED 60 MPH
TRANS. LENGTH 535′
UNIVERSITY OF TENNESSEE
CSX RAILROAD
565
570
170
UNKNOWN PIPE LOCATION
N 12° 07′ 46″ E
CSX RAILROAD
PRES & PROP R.O.W. & PROP C.A.
CSXT R.O.W.
10′ CONSTRUCTION EASEMENT
STANDING WATER APPROX. ELEV. 812.75
818.3 CONTOUR 100 YEAR FLOOD ELEV.
822.0 CONTOUR FLOWAGE EASEMENT ELEV.
822.5 CONTOUR 500 YEAR FLOOD EVEV.
KNOX COUNTY
FORT LOUDOUN LAKE (KNOB CREEK) STR-4
BEGIN STR-4 IMPACT 168+20.34
TO REMAIN
239 L.F. OF EXISTING 4′ X 4′ R.C.B.C.
EXISTING GUARDRAIL TO BE REMOVED
24′ ASP
SR115 SOUTH
(US 129)
SR115 NORTH
N 21° 51′ 52″ E
I.C. KING PARK
BRIDGE AHEAD
CURVE AHEAD
PRES. R.O.W. & PROP. C.A. FNC.
BEGIN STR-3 IMPACT 162+44.56
MATCHLINE STA. 161+50 SEE SHEET 10
MATCHLINE STA. 174+50 SEE SHEET 12
EXISTING BRIDGE INFORMATION:
THE EXISTING BRIDGE IS COMPRISED OF 2 SEPARATE STRUCTURES.
SOUTH BOUND STRUCTURE IS A 3 SPAN BRIDGE, CAST-IN-PLACE, WITH PRECAST "I" BEAMS. THE LENGTH IS 159′ - 0″ AND THE WIDTH IS 35′ - 0″
NORTHBOUND STRUCTURE IS A 3 SPAN BRIDGE, CAST-IN PLACE, WITH PRECAST TYPE III "I" BEAMS. THE LENGTH IS 161′-0″ AND THE WIDTH IS 35′ - 0″
THE EXISTING STRUCTURES ARE TO BE REMOVED TO THE NATURAL GROUND
S.R. 115
PI 159+20.80
N 572,766.9569
E 2,574,412.6337
Δs 40° 47′ 36″ (RT)
θs 12° 42′ 23″
Δc 15° 22′ 51″ (RT)
Dc 4° 45′ 00″
Rc 1,206.23
Lc 323.81
Ts 719.24
Ls 535.00
SE 0.080 FT/FT
DESIGN SPEED 60 MPH
TRANS. LENGTH 535′
SHEET LAYOUT INDEX

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PRELIMINARY PLANS

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.0000166 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA. 161+50 TO STA. 174+50

SCALE: 1:50′

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	STP/NH-115(27)	12
CONST.	2018	STP/NH-115(27)	12

KNOX CO. S.R. 115 (ALCOA HWY)

REVISED 01-24-18

RELOCATED THE PROPERTY LINE BETWEEN TRACTS 16 AND 16A

REVISE THE SLOPE AND CONSTRUCTION EASEMENTS ON TRACTS 16, 16A, AND 17

ADDED CONTOUR LINES FOR ELEVATIONS 818.3, 822.0, AND 822.5

CSX R.R.
PI 578+87.90
N 574,757.4703
E 2,574,700.3868
Δ 22° 41' 52" (RT)
D 1° 00' 00"
R 5,729.58
L 2,269.78
T 1,149.97

SHEET LAYOUT INDEX

TRACT 19 NOTE:

THE CONCRETE SIGN LOCATED TO THE RIGHT OF APPROXIMATE STA. 186+45.00 ON TRACT 19 IS NOT TO BE DAMAGED DURING CONSTRUCTION.

IF ANY DAMAGE OCCURS TO THE SIGN DURING CONSTRUCTION IT WILL BE THE RESPONSIBILTY OF THE CONTRACTOR TO COMPENSATE THE PROPERTY OWNER

CSX CROSSING #9
EXISTING STRUCTURE: 24" C.I.P.
S.R. 115 STA. 181+20
CSX STA. 580+36
HW / D RATIO: 1.5
OUTLET ELEVATION UNKNOWN

HIGHWAY DRAINAGE AREA #11
EXISTING STRUCTURE: IRREGULAR SHAPED ROADWAY DITCH, GRASS LINED
PROPOSED STRUCTURE: V-DITCH, 8' WIDE, 2' DEEP, GRASS LINED
EXISTING OUTLET LOCATION: 182+68.10
PROPOSED OUTLET LOCATION: 182+81.97

CSX DITCH #11

HIGHWAY DRAINAGE AREA #12
EXISTING STRUCTURE: ROADWAY DITCH, 4' WIDE, 1' DEEP, CONCRETE, TO BE REMOVED
PROPOSED STRUCTURE: V-DITCH, 8' WIDE, 2' DEEP, GRASS-LINED
EXISTING OUTLET LOCATION: 184+56.94
PROPOSED OUTLET LOCATION: 184+89.70

CSXT R.O.W.
CSX RAILROAD
UNKNOWN INVERT ELEV.
INV-815.54
EASEMENT REQUIRED FOR THE RAILROAD CROSSING IS THE UTILITIES ENGINEER BY PROVISIONS CONTAINED AGREEMENT NEGOTIATED WITH THE RAILROAD.
DOT#347587C
CSXT MILEPOST 00C-280.24
CSXT R.R. STA. 582+73.74 =
S.R. 115 STA. 183+07.42
N 575073.7861
E 2574977.6470
KNOX COUNTY
END STR-4 IMPACT 176+07.34
SEE SHEET 12A FOR RAILROAD EASEMENT DETAILS
PRES & PROP R.O.W. & PROP C.A.
EXISTING GUARDRAIL TO BE REMOVED
BRIDGE AHEAD
SR115 SOUTH 24'ASP (US 129)
SR115 NORTH 24'ASP (US 129)
T.C. KING PARK
10' CONST. EASEMENT
PERMANENT K.U.B. UTILITY EASEMENT
TEMPORARY K.U.B. CONSTRUCTION EASEMENT
TO BE RELOCATED
TO BE REMOVED
SEE NOTE REGARDING CONCRETE SIGN
LANDSCAPING & SIGN
APPROXIMATE KNOX COUNTY GREENWAY LOCATION
TIMOTHY F. NEAL & DIANE B. NEAL & CLINTON A. NEAL JR. & SHERYL S. DRAPER
CSX RAILROAD
MATCHLINE STA. 174+50 SEE SHEET 11
MATCHLINE STA. 186+50 SEE SHEET 13
818.3 CONTOUR 100 YEAR FLOOD ELEV.
822.0 CONTOUR FLOWAGE EASEMENT ELEV.
822.5 CONTOUR 500 YEAR FLOOD EVEV.
FORT LOUDOUN LAKE (KNOB CREEK) STR-4

S.R. 115
PI 178+25.66
N 574,576.2598
E 2,575,138.6639
Δs 39° 37' 35" (LT)
θs 12° 42' 23"
Δc 14° 12' 50" (LT)
Dc 4° 45' 00"
Rc 1,206.23
Lc 299.24
Ts 705.20
Ls 535.00
SE 0.080 FT/FT
DESIGN SPEED 60 MPH
TRANS. LENGTH 535'

PRELIMINARY PLANS

SEALED BY

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.174+50 TO STA.186+50

SCALE: 1:50'

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