COTTON BELT REGIONAL RAIL
VELOWEB HIKE AND BIKE TRAIL
CITY OF RICHARDSON

CONTRACT NO. C - 2033270 - 01

60% DESIGN
SEPTEMBER 19, 2022

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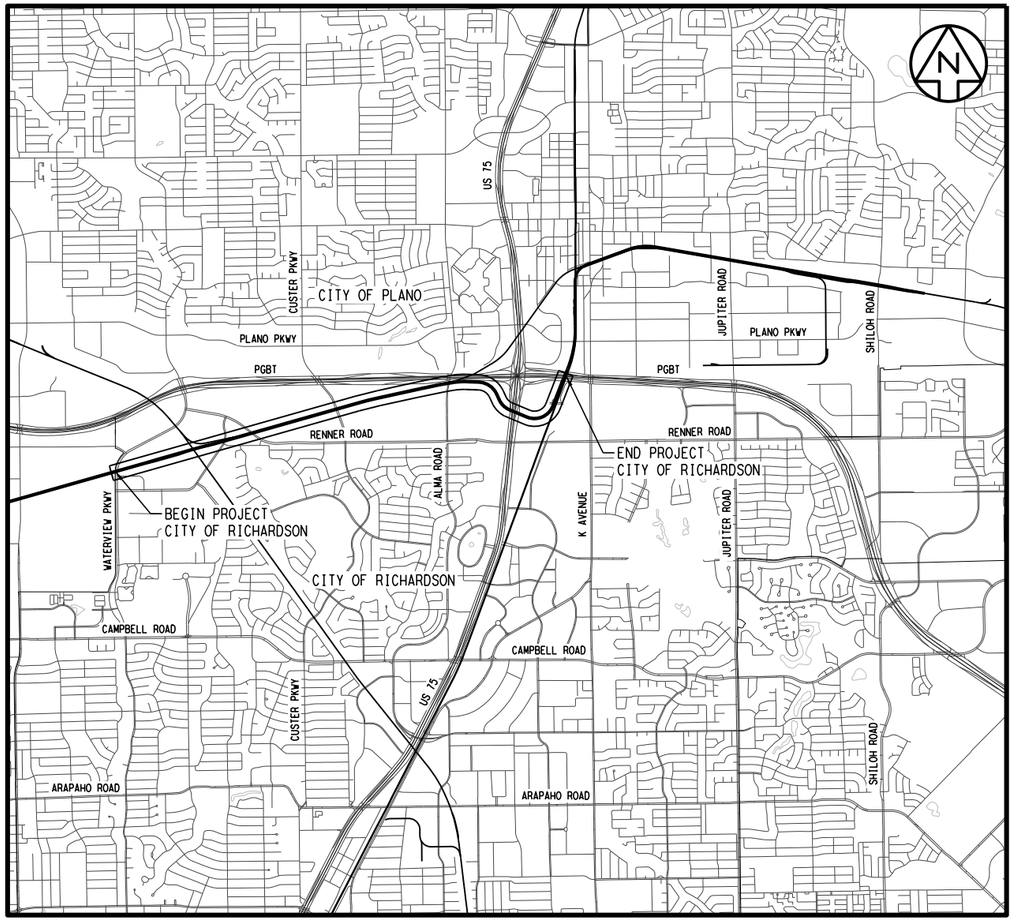
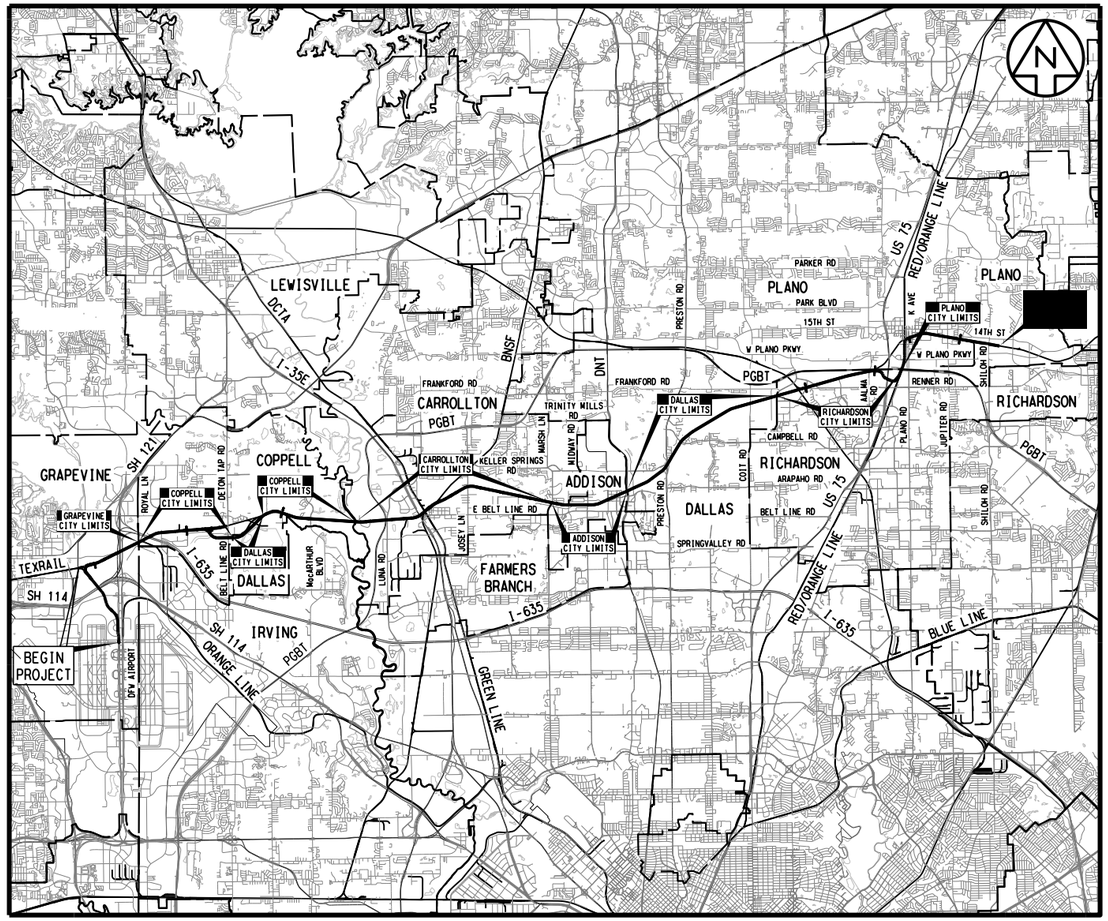


VICINITY MAP
NO SCALE



KEY MAP
VELOWEB HIKE AND BIKE TRAIL
NO SCALE

COTTON BELT REGIONAL RAIL
VELOWEB HIKE AND BIKE TRAIL
CITY OF RICHARDSON

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CONTRACT SHEET No. 2 OF 221

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
TITLE SHEET

CONTRACT	DWG No.	REV
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DWG No. GC2-0171

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2	B	GC1-7602	CITY OF RICHARDSON TITLE SHEET
3	B	GC2-0171	INDEX OF DRAWINGS SHEET 1 OF 4
4	B	GC2-0172	INDEX OF DRAWINGS SHEET 2 OF 4
5	B	GC2-0173	INDEX OF DRAWINGS SHEET 3 OF 4
6	B	GC2-0174	INDEX OF DRAWINGS SHEET 4 OF 4
7	B	GC3-7603	CITY OF RICHARDSON SYMBOLS
8	B	GC3-7604	CITY OF RICHARDSON ABBREVIATIONS
9	B	GC4-7611	CITY OF RICHARDSON PEDESTRIAN TRAIL KEYMAP SHEET 1 OF 2
10	B	GC4-7612	CITY OF RICHARDSON PEDESTRIAN TRAIL KEYMAP SHEET 2 OF 2
11	B	GC5-7630	CITY OF RICHARDSON BID ITEMS SUMMARY
12	B	CC1-3301	CITY OF RICHARDSON HORIZONTAL ALIGNMENT DATA SHEET 1 OF 5
13	B	CC1-3302	CITY OF RICHARDSON HORIZONTAL ALIGNMENT DATA SHEET 2 OF 5
14	B	CC1-3303	CITY OF RICHARDSON HORIZONTAL ALIGNMENT DATA SHEET 3 OF 5
15	B	CC1-3401	CITY OF RICHARDSON HORIZONTAL ALIGNMENT DATA SHEET 4 OF 5
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18	B	SC2-3411	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) FOUNDATION PLAN
19	B	SC8-3401	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) TYPICAL SECTION
20	B	SC8-3411	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) SUBSTRUCTURE SCHEDULE
21	B	SC8-3416	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) ABUTMENT 1
22	B	SC8-3417	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) ABUTMENT 1 DETAILS
23	B	SC8-3418	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) ABUTMENT 3
24	B	SC8-3419	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) ABUTMENT 3 DETAILS
25	B	SC8-3426	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) PIER 2
26	B	SC8-3427	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) PIER 2 DETAILS
27	B	SC8-3436	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) PREFABRICATED BRIDGE END AND BEARING DETAILS
28	B	SC8-3446	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) GEOMETRY CONTROL PLAN SHEET 1 OF 2
29	B	SC8-3447	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) GEOMETRY CONTROL PLAN SHEET 2 OF 2
30	B	SC3-3401	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) SLAB REINFORCING PLAN
31	B	SC8-3451	CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) TYPICAL SLAB SECTION
32	B	SC8-3491	CITY OF RICHARDSON BRIDGE STANDARD DRAWINGS PEDESTRIAN BRIDGE (#34P) REQUIREMENTS AND NOTES

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CIVIL DRAWINGS			
33	B	CC7-3393	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 1 OF 6
34	B	CC7-3394	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 2 OF 6
35	B	CC7-3395	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 3 OF 6
36	B	CC7-3398	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 4 OF 6
37	B	CC7-3399	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 5 OF 6
38	B	CC7-3400	CITY OF RICHARDSON HIKE & BIKE TRAIL TYPICAL SECTIONS SHEET 6 OF 6
39	B	CC1-8550	CITY OF RICHARDSON PLAN & PROFILE STA 3255+00 TO STA 3265+00 SHEET 1 OF 19
40	B	CC1-8551	CITY OF RICHARDSON PLAN & PROFILE STA 3265+00 TO STA 3275+00 SHEET 2 OF 19
41	B	CC1-8552	CITY OF RICHARDSON PLAN & PROFILE STA 3275+00 TO STA 3277+00 SHEET 3 OF 19
42	B	CC1-8553	CITY OF RICHARDSON PLAN & PROFILE STA 3280+00 TO STA 3287+00 SHEET 4 OF 19
43	B	CC1-8554	CITY OF RICHARDSON PLAN & PROFILE STA 3287+00 TO STA 3297+00 SHEET 5 OF 19
44	B	CC1-8555	CITY OF RICHARDSON PLAN & PROFILE STA 3297+00 TO STA 3307+00 SHEET 6 OF 19
45	B	CC1-8556	CITY OF RICHARDSON PLAN & PROFILE STA 3307+00 TO STA 3317+00 SHEET 7 OF 19
46	B	CC1-8557	CITY OF RICHARDSON PLAN & PROFILE STA 3317+00 TO STA 3327+00 SHEET 8 OF 19
47	B	CC1-8558	CITY OF RICHARDSON PLAN & PROFILE STA 3327+00 TO STA 3337+00 SHEET 9 OF 19
48	B	CC1-8559	CITY OF RICHARDSON PLAN & PROFILE STA 3337+00 TO STA 3347+00 SHEET 10 OF 19
49	B	CC1-8560	CITY OF RICHARDSON PLAN & PROFILE STA 3347+00 TO STA 3357+00 SHEET 11 OF 19

SHEET NO.	REV NO.	DWG NO.	DRAWING TITLE
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50	B	CC1-8561	CITY OF RICHARDSON PLAN & PROFILE STA 3357+00 TO STA 3367+00 SHEET 12 OF 19
51	B	CC1-8562	CITY OF RICHARDSON PLAN & PROFILE STA 3367+00 TO STA 3375+00 SHEET 13 OF 19
52	B	CC1-8563	CITY OF RICHARDSON PLAN & PROFILE STA 3375+00 TO STA 3414+00 SHEET 14 OF 19
53	B	CC1-8584	CITY OF RICHARDSON PLAN & PROFILE STA 3414+00 TO STA 3423+00 SHEET 15 OF 19
54	B	CC1-8585	CITY OF RICHARDSON PLAN & PROFILE STA 3423+00 TO STA 3432+00 SHEET 16 OF 19
55	B	CC1-8586	CITY OF RICHARDSON PLAN & PROFILE STA 3432+00 TO STA 3439+00 SHEET 17 OF 19
56	B	CC1-8587	CITY OF RICHARDSON PLAN & PROFILE STA 3439+50 TO END SHEET 18 OF 19
57	B	CC1-8588	CITY OF RICHARDSON PLAN & PROFILE RED MOON WAY SHEET 19 OF 19
58	B	CC1-8589	CITY OF RICHARDSON CITY LINE CONCEPT EXHIBIT
59	B	CC1-8590	CITY OF RICHARDSON PGBT PARKING LAYOUT
60	B	CC1-7000	CITY OF RICHARDSON CROSS SECTIONS SHEET 1 OF 67
61	B	CC1-7001	CITY OF RICHARDSON CROSS SECTIONS SHEET 2 OF 67
62	B	CC1-7002	CITY OF RICHARDSON CROSS SECTIONS SHEET 3 OF 67
63	B	CC1-7003	CITY OF RICHARDSON CROSS SECTIONS SHEET 4 OF 67
64	B	CC1-7004	CITY OF RICHARDSON CROSS SECTIONS SHEET 5 OF 67
65	B	CC1-7005	CITY OF RICHARDSON CROSS SECTIONS SHEET 6 OF 67
66	B	CC1-7006	CITY OF RICHARDSON CROSS SECTIONS SHEET 7 OF 67

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

INDEX OF DRAWINGS
SHEET 1 OF 4

CONTRACT	DWG No.	REV
C-2033270-01	GC2-0171	B

CB05-GC2-0171.001

DWG No. GC2-0172

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68	B	CC1-7008	CITY OF RICHARDSON CROSS SECTIONS SHEET 9 OF 67
69	B	CC1-7009	CITY OF RICHARDSON CROSS SECTIONS SHEET 10 OF 67
70	B	CC1-7010	CITY OF RICHARDSON CROSS SECTIONS SHEET 11 OF 67
71	B	CC1-8000	CITY OF RICHARDSON CROSS SECTIONS SHEET 12 OF 67
72	B	CC1-8001	CITY OF RICHARDSON CROSS SECTIONS SHEET 13 OF 67
73	B	CC1-8002	CITY OF RICHARDSON CROSS SECTIONS SHEET 14 OF 67
74	B	CC1-8003	CITY OF RICHARDSON CROSS SECTIONS SHEET 15 OF 67
75	B	CC1-8004	CITY OF RICHARDSON CROSS SECTIONS SHEET 16 OF 67
76	B	CC1-8005	CITY OF RICHARDSON CROSS SECTIONS SHEET 17 OF 67
77	B	CC1-8006	CITY OF RICHARDSON CROSS SECTIONS SHEET 18 OF 67
78	B	CC1-8007	CITY OF RICHARDSON CROSS SECTIONS SHEET 19 OF 67
79	B	CC1-8008	CITY OF RICHARDSON CROSS SECTIONS SHEET 20 OF 67
80	B	CC1-8009	CITY OF RICHARDSON CROSS SECTIONS SHEET 21 OF 67
81	B	CC1-8010	CITY OF RICHARDSON CROSS SECTIONS SHEET 22 OF 67
82	B	CC1-8011	CITY OF RICHARDSON CROSS SECTIONS SHEET 23 OF 67
83	B	CC1-8012	CITY OF RICHARDSON CROSS SECTIONS SHEET 24 OF 67
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85	B	CC1-8014	CITY OF RICHARDSON CROSS SECTIONS SHEET 26 OF 67
86	B	CC1-8015	CITY OF RICHARDSON CROSS SECTIONS SHEET 27 OF 67
87	B	CC1-8016	CITY OF RICHARDSON CROSS SECTIONS SHEET 28 OF 67
88	B	CC1-8017	CITY OF RICHARDSON CROSS SECTIONS SHEET 29 OF 67
89	B	CC1-8018	CITY OF RICHARDSON CROSS SECTIONS SHEET 30 OF 67
90	B	CC1-8019	CITY OF RICHARDSON CROSS SECTIONS SHEET 31 OF 67
91	B	CC1-8020	CITY OF RICHARDSON CROSS SECTIONS SHEET 32 OF 67
92	B	CC1-8021	CITY OF RICHARDSON CROSS SECTIONS SHEET 33 OF 67
93	B	CC1-8022	CITY OF RICHARDSON CROSS SECTIONS SHEET 34 OF 67
94	B	CC1-8023	CITY OF RICHARDSON CROSS SECTIONS SHEET 35 OF 67
95	B	CC1-8024	CITY OF RICHARDSON CROSS SECTIONS SHEET 36 OF 67
96	B	CC1-8025	CITY OF RICHARDSON CROSS SECTIONS SHEET 37 OF 67
97	B	CC1-8026	CITY OF RICHARDSON CROSS SECTIONS SHEET 38 OF 67
98	B	CC1-8027	CITY OF RICHARDSON CROSS SECTIONS SHEET 39 OF 67
99	B	CC1-8028	CITY OF RICHARDSON CROSS SECTIONS SHEET 40 OF 67
100	B	CC1-8029	CITY OF RICHARDSON CROSS SECTIONS SHEET 41 OF 67
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103	B	CC1-8032	CITY OF RICHARDSON CROSS SECTIONS SHEET 44 OF 67
104	B	CC1-9000	CITY OF RICHARDSON CROSS SECTIONS SHEET 45 OF 67
105	B	CC1-9001	CITY OF RICHARDSON CROSS SECTIONS SHEET 46 OF 67
106	B	CC1-9002	CITY OF RICHARDSON CROSS SECTIONS SHEET 47 OF 67
107	B	CC1-9003	CITY OF RICHARDSON CROSS SECTIONS SHEET 48 OF 67
108	B	CC1-9004	CITY OF RICHARDSON CROSS SECTIONS SHEET 49 OF 67
109	B	CC1-9005	CITY OF RICHARDSON CROSS SECTIONS SHEET 50 OF 67
110	B	CC1-9006	CITY OF RICHARDSON CROSS SECTIONS SHEET 51 OF 67
111	B	CC1-9007	CITY OF RICHARDSON CROSS SECTIONS SHEET 52 OF 67
112	B	CC1-9008	CITY OF RICHARDSON CROSS SECTIONS SHEET 53 OF 67
113	B	CC1-9009	CITY OF RICHARDSON CROSS SECTIONS SHEET 54 OF 67
114	B	CC1-9010	CITY OF RICHARDSON CROSS SECTIONS SHEET 55 OF 67
115	B	CC1-9011	CITY OF RICHARDSON CROSS SECTIONS SHEET 56 OF 67
116	B	CC1-9012	CITY OF RICHARDSON CROSS SECTIONS SHEET 57 OF 67
117	B	CC1-9013	CITY OF RICHARDSON CROSS SECTIONS SHEET 58 OF 67
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119	B	CC1-9015	CITY OF RICHARDSON CROSS SECTIONS SHEET 60 OF 67
120	B	CC1-9016	CITY OF RICHARDSON CROSS SECTIONS SHEET 61 OF 67
121	B	CC1-9017	CITY OF RICHARDSON CROSS SECTIONS SHEET 62 OF 67
122	B	CC1-9018	CITY OF RICHARDSON CROSS SECTIONS SHEET 63 OF 67
123	B	CC1-9019	CITY OF RICHARDSON CROSS SECTIONS SHEET 64 OF 67
124	B	CC1-9020	CITY OF RICHARDSON CROSS SECTIONS SHEET 65 OF 67
125	B	CC1-9021	CITY OF RICHARDSON CROSS SECTIONS SHEET 66 OF 67
126	B	CC1-9022	CITY OF RICHARDSON CROSS SECTIONS SHEET 67 OF 67
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127	B	CC1-7879	CITY OF RICHARDSON GRADE CROSSING DETAIL SHEET 1 OF 2
128	B	CC1-7880	CITY OF RICHARDSON GRADE CROSSING DETAIL SHEET 2 OF 2
129	B	SC5-7881	CITY OF RICHARDSON CIVIL DETAILS
130	B	CS9-7877	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT ONE LAYER STEEL BAR PLACEMENT T - 7 TO 13 INCHES CRCP (1) - 20 SHEET 1 OF 2
131	B	CS9-7878	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT ONE LAYER STEEL BAR PLACEMENT T - 7 TO 13 INCHES CRCP (1) - 20 SHEET 2 OF 2
132	B	CS9-7882	CONCRETE RIPRAP AND SHOULDER DRAINS EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)
133	B	CC6-3401	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 1 OF 6

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SHEET 2 OF 4

CONTRACT	DWG No.	REV
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DWG No. GC2-0173

INDEX OF DRAWINGS

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DRAINAGE (CONT'D)			
134	B	CC6-3601	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 2 OF 6
135	B	CC6-3402	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 3 OF 6
136	B	CC6-3606	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 4 OF 6
137	B	CC6-3403	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 5 OF 6
138	B	CC6-3603	CITY OF RICHARDSON DRAINAGE CALCULATIONS SHEET 6 OF 6
139	B	CC6-3425	CITY OF RICHARDSON DRAINAGE AREA MAP STA 3251+00 TO STA 3292+00 SHEET 1 OF 5
140	B	CC6-3426	CITY OF RICHARDSON DRAINAGE AREA MAP STA 3292+00 TO STA 3337+00 SHEET 2 OF 5
141	B	CC6-3427	CITY OF RICHARDSON DRAINAGE AREA MAP STA 3337+00 TO STA 3373+50 SHEET 3 OF 5
142	B	CC6-3626	CITY OF RICHARDSON DRAINAGE AREA MAP STA 3373+50 TO STA 3418+00 SHEET 4 OF 5
143	B	CC6-3627	CITY OF RICHARDSON DRAINAGE AREA MAP STA 3424+00 TO STA 3463+00 SHEET 5 OF 5
144	B	CC6-3446	CITY OF RICHARDSON DRAINAGE PLAN STA 3252+50 TO STA 3260+00 SHEET 1 OF 18
145	B	CC6-3447	CITY OF RICHARDSON DRAINAGE PLAN STA 3260+00 TO STA 3270+00 SHEET 2 OF 18
146	B	CC6-3448	CITY OF RICHARDSON DRAINAGE PLAN STA 3270+00 TO STA 3280+00 SHEET 3 OF 18
147	B	CC6-3449	CITY OF RICHARDSON DRAINAGE PLAN STA 3280+00 TO STA 3287+00 SHEET 4 OF 18
148	B	CC6-3450	CITY OF RICHARDSON DRAINAGE PLAN STA 3287+00 TO STA 3297+00 SHEET 5 OF 18
149	B	CC6-3451	CITY OF RICHARDSON DRAINAGE PLAN STA 3297+00 TO STA 3307+00 SHEET 6 OF 18
150	B	CC6-3452	CITY OF RICHARDSON DRAINAGE PLAN STA 3307+00 TO STA 3317+00 SHEET 7 OF 18
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151	B	CC6-3453	CITY OF RICHARDSON DRAINAGE PLAN STA 3317+00 TO STA 3327+00 SHEET 8 OF 18
152	B	CC6-3454	CITY OF RICHARDSON DRAINAGE PLAN STA 3327+00 TO STA 3337+00 SHEET 9 OF 18
153	B	CC6-3455	CITY OF RICHARDSON DRAINAGE PLAN STA 3337+00 TO STA 3347+00 SHEET 10 OF 18
154	B	CC6-3456	CITY OF RICHARDSON DRAINAGE PLAN STA 3347+00 TO STA 3357+00 SHEET 11 OF 18
155	B	CC6-3457	CITY OF RICHARDSON DRAINAGE PLAN STA 3357+00 TO STA 3367+00 SHEET 12 OF 18
156	B	CC6-3458	CITY OF RICHARDSON DRAINAGE PLAN STA 3367+00 TO STA 3377+00 SHEET 13 OF 18
157	B	CC6-3459	CITY OF RICHARDSON DRAINAGE PLAN STA 3377+00 TO STA 3379+00 SHEET 14 OF 18
158	B	CC6-3654	CITY OF RICHARDSON DRAINAGE PLAN STA 3412+50 TO STA 3422+50 SHEET 15 OF 18
159	B	CC6-3655	CITY OF RICHARDSON DRAINAGE PLAN STA 3422+50 TO STA 3432+50 SHEET 16 OF 18
160	B	CC6-3656	CITY OF RICHARDSON DRAINAGE PLAN STA 3432+50 TO STA 3439+50 SHEET 17 OF 18
161	B	CC6-3657	CITY OF RICHARDSON DRAINAGE PLAN STA 3439+50 TO STA 3449+50 SHEET 18 OF 18
162	B	CC6-3510	CITY OF RICHARDSON CULVERT B-3 AT STA 3268+00
163	B	CC6-3512	CITY OF RICHARDSON CULVERT C-1 AT STA 3310+14
164	B	CC6-3513	CITY OF RICHARDSON CULVERT C-5 AT STA 3351+29
165	B	CC6-3514	CITY OF RICHARDSON CULVERT C-6 AT STA 3359+43
166	B	CC6-3516	CITY OF RICHARDSON CULVERT C-2 AT STA 3361+90
167	B	CC6-3517	CITY OF RICHARDSON CULVERT C-3 AT STA 3372+42
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COTTON BELT REGIONAL RAIL
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CONTRACT	DWG No.	REV
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SYMBOLS

- PROFILE GRADE LINE / ELEVATION CONTROL POINT
- DIRECTION OF FLOW
- C OR B CENTERLINE OR BASELINE
- FUTURE OR NOT IN CONTRACT
- ℄ CENTERLINE
- ℄ BASELINE
- ℙ PROPERTY LINE
- DIMENSION LINE CONTINUES
- MATCH LINE
- 510 CONTOUR LINE
- TRACK (TRANSIT) CENTER LINE
- EXISTING FENCE LINE
- PROPOSED FENCE LINE
- STRUCTURE OUTLINE
- RAILROAD TRACKS
- CO CLEANOUT
- MH MANHOLE
- SIDEWALK AND MISC. LINES
- DROP INLET, CATCH BASIN OR DRAIN
- CULVERT HEADWALLS
- + 543.5 SPOT ELEVATION
- CURB LINE
- EXISTING BARRIER/RETAINING WALL
- PROPOSED RETAINING WALL
- PROPOSED BALLAST WALL
- PROPOSED SIDEWALK WALL
- NOISE IMPACT AREA
- GUARD RAIL
- HAND RAIL
- UNPAVED ROAD
- CONCRETE GUARD FENCE
- VEGETATION LINE
- (T) TREE
- (S) SHRUB
- POLE

- UTILITY POLE
- SS SANITARY (DIRECTION OF FLOW) , PLUG
- GRID OF THE STATE PLANE COORDINATE SYSTEM
- BILLBOARD
- TOTAL CENTRAL ANGLE OF SPIRAL AND CIRCULAR CURVES
- C1 SUFFIX (1) AT THE SYMBOL DENOTES DATA FOR THE FIRST CIRCULAR CURVE OF A COMPOUND CURVE
- C2 SUFFIX (2) AT THE SYMBOL DENOTES DATA FOR THE SECOND CIRCULAR CURVE OF A COMPOUND CURVE
- Θ_S CENTRAL ANGLE OF SPIRAL OR SPIRAL ANGLE
- Θ_{AC} CENTRAL ANGLE OF COMPOUND SPIRAL OR COMPOUND ANGLE (CS1 TO CS2)
- Θ_{AT} TOTAL CENTRAL ANGLE OF COMPOUND SPIRAL OR TOTAL COMPOUND SPIRAL ANGLE (FROM SPO TO SC2)
- WWMH WASTEWATER MANHOLE
- SMH STORM SEWER MANHOLE
- EMH, TMH, WUMH ELECTRICAL, TELEPHONE, OR WESTERN UNION MANHOLE
- REDUCER
- WM WATER METER
- WV WATER VALVE
- FH FIRE HYDRANT
- CAP OR PLUG
- GV GAS VALVE
- GM GAS METER
- PB PULL BOX OR SPLICING CHAMBER
- LIGHT POLE
- FS FIRE SERVICE STAND PIPE
- EXISTING TRAFFIC SIGN
- PROPOSED TRAFFIC SIGN
- POLE GUY AND ANCHOR
- TRANSMISSION LINE TOWER
- TRAFFIC CONTROL GATE
- CANTILEVERED RAILROAD CROSSING SIGNAL
- TEST BORING LOCATION
- (O/H) OVERHEAD LINES
- (O/H) E OVERHEAD ELECTRIC LINES
- POINT NUMBER DART PRIMARY CONTROL POINT

- OTHER SURVEY MONUMENTS
- T (UG) UNDERGROUND TELEPHONE LINE
- UG(E) UNDERGROUND ELECTRIC LINE
- OH AERIAL UTILITY
- UTILITY FACILITY LESS THAN 24"
- MAJOR UTILITY FACILITY 24" OR LARGER IN PLAN VIEW
- FACILITY TO BE ABANDONED
- DOUBLE CROSSOVER
- POINT OF SWITCH
- EXISTING DITCH
- DITCH PROPOSED SPECIAL DITCH
- STM STORM DRAIN/CULVERT
- UD UNDERDRAIN
- WW WASTEWATER
- W WATER LINE
- G GAS LINE
- TS TRAFFIC SIGNALIZATION LINE
- E ELECTRIC POWER LINE
- ESL ELECTRIC LINE, STREET LIGHTING
- T TELEPHONE LINE
- TG TELEGRAPH LINE
- TV CABLEVISION LINE
- PROPOSED CASING
- PROPOSED STREET CLOSING
- PROPOSED STREET CONSTRUCTION
- EXISTING STREET/RAILROAD RIGHT-OF-WAY LINE
- EXISTING PROPERTY LINE
- DART PROPOSED RIGHT-OF-WAY LINE
- EXISTING EASEMENT LINE
- DART PROPOSED EASEMENT LINE
- EXIST ○ SET ● COPPER, IRON PIN, PIPE IRON ROD MARKERS OR ANY PROPERTY CORNER
- □ ■ RIGHT-OF-WAY, CONTROL MONUMENT OR MARKERS
- EXISTING INTERSECTION OF PROPERTY LINES
- INTERSECTION OF PROPOSED DART RIGHT-OF-WAY LINES

- PROPOSED DART RIGHT-OF-WAY MONUMENT
- DB SYSTEMS DUCTBANK
- POINT OF SWITCH
- LEFT HAND TURNOUT
- RIGHT HAND TURNOUT
- DERAIL SWITCH
- CENTERLINE
- GAUGE LINE
- LEFT HAND CURVE
- RIGHT HAND CURVE
- SINGLE CROSSOVER,LH SHOWN
- CONTINUOUS WELDED RAIL
- PI/PVI/PITO
- NON-INSULATED JOINT
- INSULATED RAIL JOINT-BOTH RAILS
- INSULATED RAIL JOINT - L RAIL
- INSULATED RAIL JOINT - R RAIL
- INSULATED RAIL JOINT
- RESTRAINING RAIL
- PRE-CURVED RAIL
- STANDARD RAIL,GIRDER RAIL
- PREMIUM RAIL
- (F) SWITCH NUMBERING "F" INDICATES FUTURE
- 136#/115# TRANSITION RAIL
- NE3-A CURVE NUMBER
- BLUE FLAG
- BUMPING POST
- EQUILATERAL TURNOUT
- POWER POINT POLE
- FH PROPOSED FIRE HYDRANT
- REMOVE AND REPLACE MANHOLE
- RAILROAD GATE/CANTILEVER LOCATION
- HW 100 HEADWATER ELEVATION
- TW 100 TAILWATER ELEVATION
- CORROSION CONTROL TEST STATION
- (235) CONDUIT RUN NUMBER

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
SYMBOLS

CONTRACT	DWG No.	REV
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ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AAR PLATE	ASSOCIATION OF AMERICAN RAILWAY PLATE
ABUT	ABUTMENT
ABV	ABOVE
ACI	AMERICAN CONCRETE INSTITUTE
AD	AREA DRAIN
ADD	ADDENDUM
ADJ	ADJACENT
A/E	ARCHITECT/ENGINEER
AFF	ABOVE FINISHED FLOOR
A/G	AT GRADE
AGG	AGGREGATE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC
AISI	AMERICAN IRON AND STEEL INSTITUTE
AL	ALUMINUM
ALT	ALTERNATE
ANC	ANCHOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APP	APPROACH
ARCH.	ARCHITECT, ARCHITECTURE
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTAINANCE OF WAY ASSOCIATION
ASA	AMERICAN STANDARDS ASSOCIATION
ASPH	ASPHALT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATR	ABOVE TOP OF RAIL
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
BAS	BRIDGE APPROACH SLAB
B/B	BACK TO BACK
B/C	BACK OF CURB
BD	BOARD, BALLAST DRAIN
BEG.	BEGINNING
BF	BOTH FACES
BH	BORED HOLE
BIT.	BITUMINOUS
BJF	BITUMINOUS JOINT FILLER
BK	BACK
BKF	BACKFILL
BKWL	BACKWALL
B/L	BUILDING LINE
BLDG	BUILDING
BLKG	BLOCKING
BLVD	BOULEVARD
BM	BEAM
BMCS	BRIDGE MOUNTED CLEARANCE SIGN
B.M.	BENCH MARK
BOT	BOTTOM
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
BPA	BRIDGE PROTECTIVE ASSEMBLY
BRG	BEARING
BRKT	BRACKET
BS	BOTH SIDES
B/S	BOTTOM OF SLOPE
BTWN	BETWEEN
BVL	BEVELED
BW	BOTH WAYS, BOTTOM WIDTH
C_X_	AMERICAN STANDARD CHANNEL, X = SIZE BY WEIGHT
	RUNOFF COEFFICIENT
CAB.	CABINET
CALC	CALCULATED
CANT	CANTILEVER
CAT.	CATENARY
CATF	CATENARY FOUNDATION
CATP	CATENARY POLE
CB	CATCH BASIN
CC	CENTER OF CURVE
CDC	CORRIDOR DEVELOPMENT CERTIFICATE
C TO C	CENTER TO CENTER
CEM	CEMENT
CF	CUBIC FEET
CFA	CONTINUOUS FLIGHT AUGER
CFL	COUNTERFLASHING
CFS	CUBIC FEET PER SECOND
CG	CONCRETE GUTTER
C & G	CURB AND GUTTER
C/G	CORNER GUARD
CHAM	CHAMFER
CHD	CHORD
CI	CAST IRON, CURB INLET
CIH	CENTRAL INSTRUMENT HOUSE
CIP	CAST-IN-PLACE, CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CL	CLASS, CURVE LENGTH, CENTERLINE
C/L	CURB LINE
CLF	CHAIN LINK FENCE
CLR	CLEARANCE, CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COD	CITY OF DALLAS
COI	CITY OF IRVING
COL	COLUMN
COMB	COMBINATION
COMM	COMMUNICATIONS
COMP	COMPRESSED, COMPRESSIVE
CON	CONSTRUCTION LINES
CONC	CONCRETE
CONN	CONNECT, CONNECTOR, CONNECTION
CONST	CONSTRUCTION, CONSTRUCT
CONT	CONTINUATION, CONTINUOUS
CORR	CORRUGATED
COV	COVER
CRS	COLD ROLLED STEEL
CS	CURVE TO SPIRAL POINT
CTB	CEMENT TREATED BASE, CONCRETE TRAFFIC BARRIER
CTR	CENTER
CULV	CULVERT
CWR	CONTINUOUS WELDED RAIL
CY	CUBIC YARD
D, DEG	DEGREE OF CURVE
DART	DALLAS AREA RAPID TRANSIT
DCURD	DALLAS COUNTY UTILITY & RECLAMATION DISTRICT
DEFL	DEFLECTION
DEG	DEGREE
DEP	DEPRESSED
DET	DETAIL
DFW	DALLAS/FORT WORTH
DF	DIRECT FIXATION
DG	DOWNGUY
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIM.	DIMENSION
DIP	DUCTILE IRON PIPE
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DP	DAMPPROOFING
DPL	DALLAS POWER & LIGHT COMPANY
DR	DOOR, DRIVE, DERAILMENT LOAD
DRN	DRAIN, DRAINAGE
DRWY	DRIVEWAY
DS	DOWNSPOUT
D.S.	DRILLED SHAFT
DWG	DRAWING
DWU	DALLAS WATER UTILITY
E	EXPANSION BEAM END, EAST, ELECTRIC
Ea	SUPERELEVATION IN INCHES
EA	EACH
EB	EAST BOUND
EBFR	EAST BOUND FRONTAGE ROAD
EBML	EAST BOUND MAINLINE
EF	EACH FACE
EFC	EXPOSED FINISH CONCRETE
E.G.	FOR EXAMPLE
EL., ELEV	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
EMBED	EMBEDMENT
E/P	EDGE OF PAVEMENTS
EQ	EQUAL
EQUIV	EQUIVALENT
E/S	EDGE OF SHOULDER
ESMT	EASEMENT
EST	ESTIMATE
ETC	ET CETERA
EW	EACH WAY
EWEF	EACH WAY, EACH FACE
EXIST	EXISTING
EXP	EXPANSION
EXPJT	EXPANSION JOINT
EXPO	EXPOSED
EXT	EXTERIOR
EXPWY	EXPRESSWAY
F	FIXED BEAM END, FAHRENHEIT
F/C	FACE OF CURVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR, FAR FACE
FFBW	FRONT FACE BACKWALL
FG	FINISH GRADE
FH	FIRE HYDRANT
FIN.	FINISH
FL	FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
FOF	FACE OF FINISH
FPU	PRESTRESSING STEEL TENSILE STRENGTH
FRWY	FREEWAY
FS	FAR SIDE
FT	FOOT OR FEET
FTG	FOOTING
FURN	FURNISH
FUT	FUTURE
FWD	FORWARD
FW	FORT WORTH
G	GAS (NATURAL)
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEC	GENERAL ENGINEERING CONSULTANT
GEN	GENERAL
GI	GALVANIZED IRON, GRATE INLET
G/L	GROUND LINE
GM	GAS METER
GND	GROUND
GP	GAUGE PLATE, GRAND PRAIRIE
GR	GRADE
G/R	GUARD RAIL
GRAN	GRANITE, GRANULAR
G/R PL	GUARD RAIL PLATE
GRTG	GRATING
GV	GAS VALVE
GV	GATE VALVE
GVL	GRAVEL
H	HEIGHT
H/D	HEAVY DUTY
HDWL	HEADWALL
HEX	HEXAGONAL
HH	HAND HOLE
HMAC	HOT MIX ASPHALTIC CONCRETE
HORIZ	HORIZONTAL
HP_X_	BEARING PILE SHAPE, _X_ = SIZE BY WEIGHT
HPT	HIGH POINT
HSB	HIGH STRENGTH BOLT
HSS_X_X_	HOLLOW STRUCTURAL SHAPE X_(X_) = DIMENSION X DIMENSION X THICKNESS
HR	HOUR
HSS	HIGH STRENGTH STEEL
HWL	HIGH WATER LINE
HWY	HIGHWAY
ID	INSIDE DIAMETER
IF.	INSIDE FACE
IH	INTERSTATE HIGHWAY
IJ	INSULATED JOINT
IN.	INCH, INCHES
INC	INCORPORATED
INCL	INCLUDE
INT	INTERIOR
INV	INVERT
IRR.	IRRIGATION
JT	JOINT
K	KIP, RATE OF VERTICAL CURVATURE
L	TOTAL CURVE LENGTH, LENGTH, LEFT (DEFLECTION)
LB	POUND
LF	LINEAR FEET
LG	LENGTH, LONG
LIN	LINEAR, LINEAL
LL	LIVE LOAD
LN	LANE
LOC	LOCATION
LONG.	LONGITUDINAL
LPT	LOW POINT
LRT	LIGHT RAIL TRANSIT
LTD	LIMITED
LSG	LONE STAR GAS
LTL	LINTEL
LVC	LENGTH OF VERTICAL CURVE
LVL	LEVEL
LT	LEFT
M X	MISCELLANEOUS PILE SHAPE, _X_ = SIZE BY WEIGHT
MATL	MATERIAL
MAX	MAXIMUM
MBGF	METAL BEAM GUARD FENCE
MBR	MEMBER
MC_X_	MISCELLANEOUS CHANNEL, _X_ = SIZE BY WEIGHT
MCI	MCI TELECOMMUNICATIONS
MEAS	MEASURE
MEMB	MEMBRANE
MET.	METAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINUTES, MINIMUM
MISC	MISCELLANEOUS
MKT	MISSOURI-KANSAS-TEXAS RAILROAD COMPANY
ML	MAINLINE
MOD	MODULAR, MODIFIED
MON	MONUMENT
MSE	MECHANICALLY STABILIZED EARTH
MT	MOUNTED
MTG	MOUNTING
MULT	MULTIPLE
N	NORTH
N/A	NOT APPLICABLE
NAT	NATURAL
NB	NORTHBOUND
NBFR	NORTHBOUND FRONTAGE ROAD
NBML	NORTHBOUND MAINLINE
NCTCOG	NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS
NF	NEAR FACE
NIC	NOT IN CONTRACT
No.	NUMBER
Nos	NUMBERS
NOM	NOMINAL
NS	NEAR SIDE
N/S	NORTH/SOUTH
NTMWD	NORTH TEXAS MUNICIPAL WATER DISTRICT
NTS	NOT TO SCALE
NTTA	NORTH TEXAS TOLLWAY AUTHORITY
OC	ON CENTERS
OCEW	ON CENTER EACH WAY
OCS	OVERHEAD CATENARY SYSTEM
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OFF	OFFSET
OH	OVERHEAD
O TO O	OUT TO OUT
OPNG	OPENING
OPP	OPPOSITE
PC	POINT OF CURVE
PCC	POINT OF CURVE TO CURVE
P/C	PRECAST
PED	PEDESTRIAN
PEJ	PREFORMED EXPANSION JOINT
PERF	PERFORATED
PERM	PERMANENT
PERMISS	PERMISSIBLE
PERP	PERPENDICULAR
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PLATE, PROPERTY LINE
PLAT.	PLATFORM
PMDF	PERMANENT METAL DECK FORMS
P/O	PART OF
POB	POINT OF BEGINNING
POC	POINT OF CURVE
POE	POINT OF ENDING
POLY	POLYETHYLENE
POS	POINT OF SPIRAL
POT	POINT OF TANGENT
PREM	PREMOLDED
PROJ.	PROJECTION
PROP	PROPOSED
PROT	PROTECTION
P/S	PRE-STRESSED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENT
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVC	POLY VINYL CHLORIDE, POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
Q	STORM WATER DISCHARGE
QTY	QUANTITY
R	RADIUS
R1	RIGHT (DEFLECTION)
RC	REINFORCED CONCRETE
RCB	REINFORCED CONCRETE BOX CULVERT
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCE, REINFORCED, REINFORCING, REINFORCEMENT
REQD	REQUIRED
REV	REVISE, REVISION
RH	RIGHT HAND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RAILROAD
RT	RIGHT
S	SOUTH, SLOPE
S_X_	I SHAPE, _X_ = SIZE BY WEIGHT
SB	SOUTHBOUND
SBFR	SOUTHBOUND FRONTAGE ROAD
SBML	SOUTHBOUND MAINLINE
SC	SPIRAL TO CURVE
SCHED	SCHEDULE
SCR	SCREW
SD	STORM DRAIN
SDWK	SIDEWALK
SEJ	SEALED EXPANSION JOINT
SEL	SELECT
SH	STATE HIGHWAY
S/H	STRUCTURAL HEIGHT
SHLD	SHOULDER
SHT	SHEET
SIM	SIMILAR
SL	STREET LIGHT, SLAB
SLV	SLEEVE
SM	SMOOTH
SMH	SEWER MANHOLE
SP	SOUTHERN PACIFIC TRANS. CORP.
SPA	SPACE
SPEC(S)	SPECIFICATION, SPECIFICATIONS
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET, SPIRAL TO TANGENT POINT
STA	STATION, STATIONING
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STM	STORM
STRGTH	STRENGTH
STRUCT	STRUCTURE, STRUCTURAL
SURF.	SURFACE
SWR	SEWER
SY	SQUARE YARD
SYM	SYMMETRICAL
SYS	SYSTEM
T/	TOP OF
T & B	TOP AND BOTTOM
TBM	TEMPORARY BENCH MARK
T/C	TOP OF CURB
T/D	TOP OF DITCH
TCP	TRAFFIC CONTROL PLAN
TEM	TEMPORARY
TEMP	TEMPERATURE
TEN	TENSION
TES	TRACTION ELECTRIFICATION SYSTEM
THRU	THROUGH
THK	THICK, THICKNESS
TL	TRAFFIC LIGHT
TMH	TELECOM MANHOLE
TO	TURNOUT
TOC	TOP OF CONCRETE
TP	TOP OF PAVEMENT
TPSS	TRACTION POWER SUBSTATION
T/R	TOP OF RAIL
TRA	TRINITY RIVER AUTHORITY
TRAF SIG	TRAFFIC SIGNAL
TRK	TRACK
T/S	TOP OF SLOPE
T/STL	TOP OF STEEL
T/W	TOP OF WALL
TxDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TWC	TIME WARNER CABLE
TYP	TYPICAL
UD	UNDERDRAIN
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UP	UNION PACIFIC RAILWAY
US	UNITED STATES
USC&GS	U.S. COAST & GEODETIC SURVEY
USGS	UNITED STATES GEOLOGICAL SURVEY
UTIL	UTILITY
V	VELOCITY
VAR	VARIABLE, VARIES
VERT	VERTICAL
VOL	VOLUME
VPI	VERTICAL POINT OF INTERSECTION
W	WEST, WATER
W/	WITH
WB	WESTBOUND
WBFR	WESTBOUND FRONTAGE ROAD
WBML	WESTBOUND MAINLINE
W_X_	WIDE FLANGE SHAPE, X = SIZE BY WEIGHT
WI	WROUGHT IRON
W/O	WITHOUT
WP	WORK POINT
W/P	WEATHERPROOF
WS	WATER SURFACE
WT	WATERTIGHT, WEIGHT
WTR	WATER
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
WSEL	WATER SURFACE ELEVATION
X-ING	CROSSING
X-SECT	CROSS SECTION

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CONTRACT SHEET No. 8 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
ABBREVIATIONS

CONTRACT	DWG No.	REV
C-2033270-01	GC3-7604	B

CB05-GC3-7604.001

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CB05-GC3-7604.001

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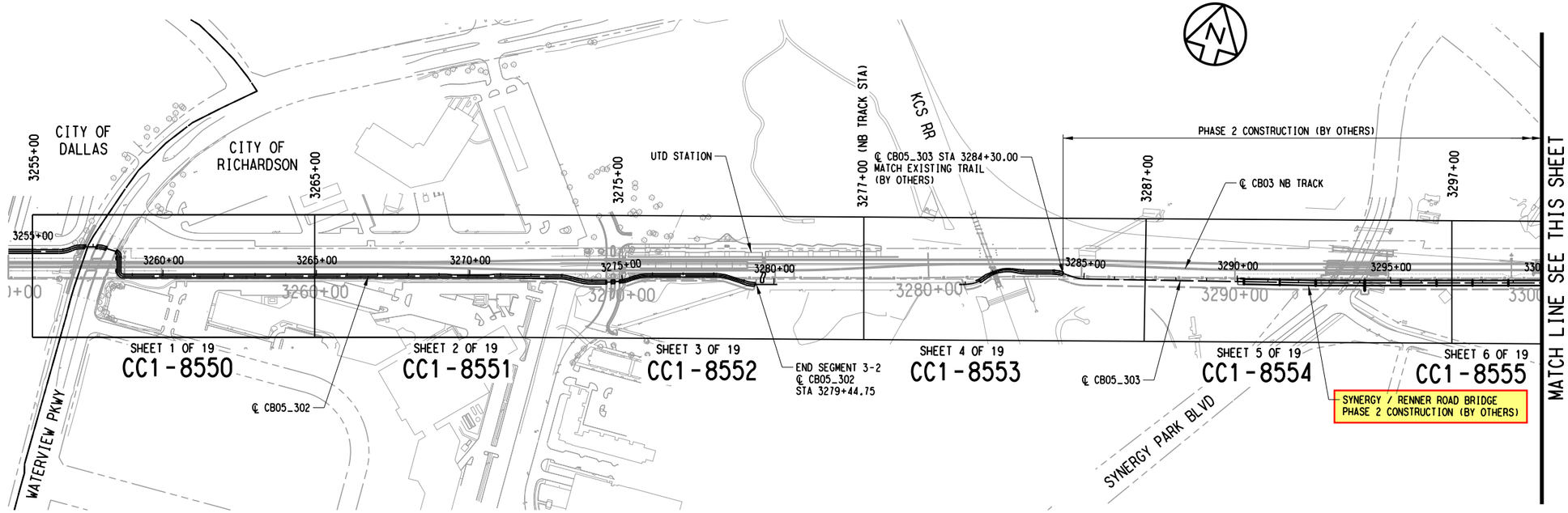
DWG No. GC4-7611



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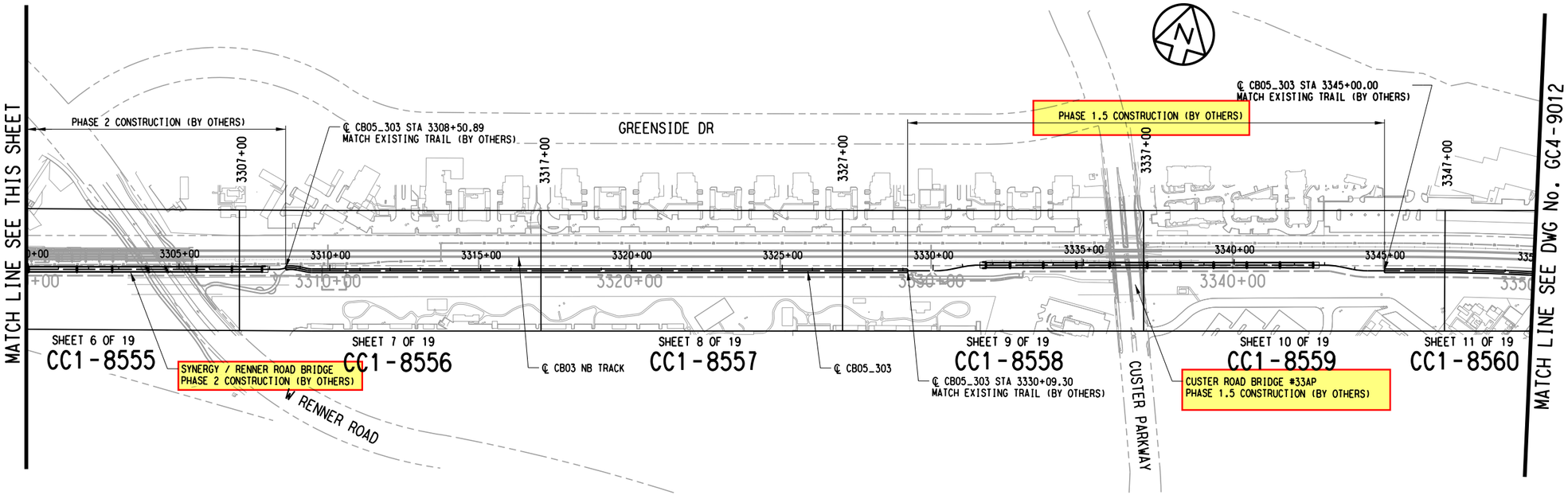

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CONTRACT SHEET No. 9 OF 221

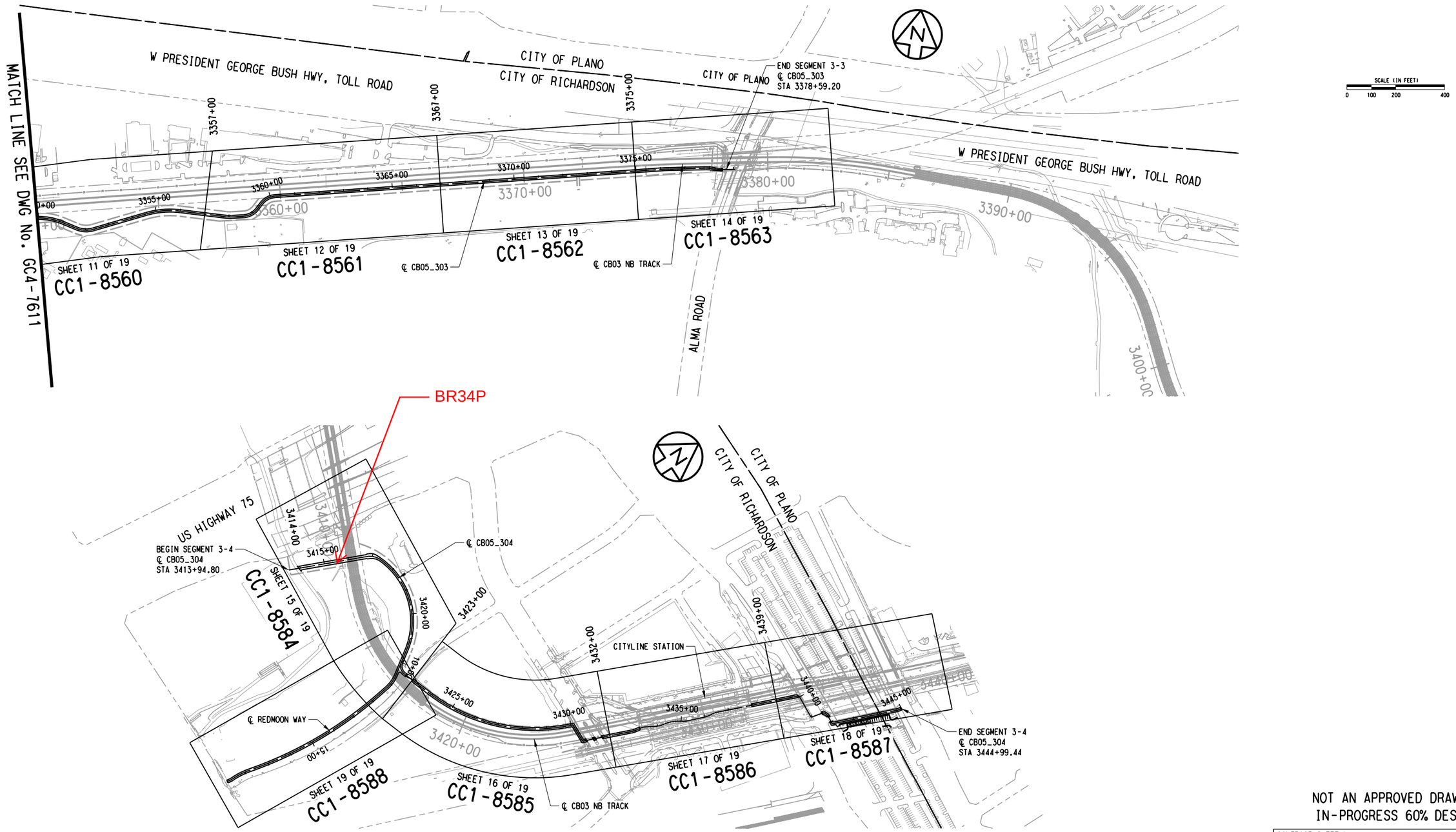
COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON PEDESTRIAN TRAIL KEYMAP SHEET 1 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	GC4-7611	B

CB05-GC4-7611.200

DWG No. GC4-7612



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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN TRAIL KEYMAP
SHEET 2 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	GC4-7612	B

CB05-GC4-7612.200

TRAFFIC CONTROL BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
216	6001	PROOF ROLLING	HR
403	6001	TEMPORARY SPL SHORING	SF
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO
512	6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF
512	6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF
545	6019	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA
662	6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF
662	6061	WK ZN PAV MRK REMOV (W)4"(DOT)	LF
662	6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF
662	6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF
6001	6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA

STRUCTURAL BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
400	6001	STRUCT EXCAV	CY
400	6005	CEM STABIL BKFL	CY
403	6001	TEMPORARY SPL SHORING	SF
416	6004	DRILL SHAFT (36")	LF
416	6005	DRILL SHAFT (42")	LF
420	6013	CL C CONC (ABUT)	CY
420	6029	CL C CONC (CAP)	CY
420	6037	CL C CONC (COL)	CY
422	6001	REINF CONC SLAB	SF
422	6015	APPROACH SLAB	CY
432	6031	RIPRAP (STONE PROTECTION)(12 IN)	CY
442	6007	STR STEEL (MISC NON - BRIDGE)	LB
442	6008	STR STEEL (MISCELLANEOUS BRIDGE)	LB
552	6004	WIRE FENCE (TY D)	LF

NOTES:

1. BID ITEMS LISTED ARE FOR INFORMATION ONLY.

ROADWAY BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
100	6002	PREPARING ROW	STA
104	6017	REMOVING CONC (DRIVEWAYS)	SY
104	6022	REMOVING CONC (CURB AND GUTTER)	LF
110	6001	EXCAVATION (ROADWAY)	CY
132	6007	EMBANKMENT (FINAL)(ORD COMP)(TY D)	CY
161	6017	COMPOST MANUF TOPSOIL (4")	SY
162	6002	BLOCK SODDING	SY
360	6002	CONC PVMT (CONT REINF - CRCP) (8")	SY
400	6006	CUT & RESTORING PAV	SY
432	6001	RIPRAP (CONC)(4 IN)	CY
432	6058	BEDDING MATERIAL (VARIABLE)	CY
450	6103	RAIL (TY PR11)	LF
479	6001	ADJUSTING MANHOLES	EA
529	6005	CONC CURB (MONO) (TY II)	LF
530	6004	DRIVEWAYS (CONC)	SY
531	6001	CONC SIDEWALKS (4")	SY
531	6004	CURB RAMPS (TY 1)	EA
531	6004	CURB RAMPS (TY 2)	EA
531	6004	CURB RAMPS (TY 3)	EA
531	6004	CURB RAMPS (TY 6)	EA
531	6004	CURB RAMPS (TY 7)	EA
531	6004	CURB RAMPS (TY 21)	EA
531	6057	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	SF
536	6001	CONC MEDIAN	LF
550	6008	CHAIN LINK FENCE (INSTALL) (8')	LF
999	0002	BOARDWALK	SF
D-02476	0001	GRADE CROSSING PANELS (CONC)	LF

DRAINAGE BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
462	6045	CONC BOX CULV (3 FT X 2 FT)(EXTEND)	LF
464	6059	RC PIPE (CL V)(30 IN)	LF
COR		(5.2 FT X1.5 FT) DOUBLE GRATE INLET	EA
466	6105	HEADWALL (CH-PW-0) (DIA=60")	EA
464	XXXX	84" CL V RCP	LF
464	XXXX	60" CL V RCP	LF
496	6006	REMOVE STR (HEADWALL)	EA
466	6108		EA
7166	X001	UNDERDRAIN CLEANOUT	EA
		UNDERDRAIN TERMINAL CLEANOUT	EA
556	60XX	PIPE UNDERDRAIN (TYPE 8) (12")	LF
556	6013	PIPE UNDERDRAIN (TYPE 8) (8")	LF
556	60XX	PIPE UNDERDRAIN (TYPE 8) (10")	LF
556	60XX	PIPE UNDERDRAIN (TYPE 8) (15")	LF
464	6071	2 - RC PIPE (ARCH) (CL IV) (DES 4)	LF
466	6111	2 - HEADWALL (CH-PW-A-0) (DES=4)	EA
465	6275	MANH	EA
464	6005	RC PIPE (CL III)(24 IN)	LF
465	6202	INLET (COMPL)(DROP)(TY Y-1)	EA
432	6044	RIPRAP (CONC)(FLUME)	CY
104	6031	REMOVING CONC (HEADWALL)	CY
544	6003	GUARDRAIL END TREATMENT (REMOVE)	EA
420	6071	CL C CONC (COLLAR)	EA
464	6026	24" CL V RCP	LF
432	6003	RIPRAP (CONC)(6 IN)	CY
466	6101	HEADWALL (CH - PW - 0) (DIA= 36 IN)	EA
496	6004	REMOV STR (SET)	EA

*COR = City of Richardson Bid Item

RETAINING WALL BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
403	6001	TEMPORARY SPL SHORING	SF
423	6001	RETAINING WALL (MSE)	SF
450	6103	RAIL (TY PR11)	LF
556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF

SW3P BID ITEM TABLE

ITEM NUMBER	CODE NUMBER	ITEM DESCRIPTION	BID UNIT
506	6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF
506	6034	CONSTRUCTION PERIMETER FENCE	LF
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	LF

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CONTRACT SHEET No. 11 OF 221

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
BID ITEMS SUMMARY

CONTRACT	DWG No.	REV
C-2033270-01	GC5-7630	B

CB05-GC5-7630.010

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DWG No. CC1-3301

CHAIN CB05_302 (HIKE & BIKE TRAIL)

Chain CB05_302 contains:
CUR C1437 CUR C1438 CUR C1439 CUR C1440 1817 1818 1819 1820 CUR C1441 CUR C1442
CUR C1443 1821 CUR C1444 CUR C1445 CUR C1446 CUR C1447 1822

Beginning chain CB05_302 description
==========

Curve Data

Curve C1437
P.I. Station 3221+37.12 X 2,499,963.6868 Y 7,049,413.1619
Delta = 13° 15' 41.31" (RT)
Degree = 76° 23' 39.74"
Tangent = 8.7186
Length = 17.3592
Radius = 75.0000
External = 0.5051
Long Chord = 17.3205
Mid. Ord. = 0.5017
P.C. Station 3221+28.40 X 2,499,956.0672 Y 7,049,408.9246
P.T. Station 3221+45.76 X 2,499,972.0753 Y 7,049,415.5384
C.C. X 2,499,992.5182 Y 7,049,343.3782
Back = N 60° 55' 16.04" E
Ahead = N 74° 10' 57.35" E
Chord Bear = N 67° 33' 06.69" E

Course from PT C1437 to PC C1438 N 74° 10' 57.35" E Dist 3,440.8052

Curve Data

Curve C1438
P.I. Station 3256+08.07 X 2,503,303.2776 Y 7,050,359.2740
Delta = 24° 15' 57.21" (LT)
Degree = 57° 17' 44.81"
Tangent = 21.4983
Length = 42.3520
Radius = 100.0000
External = 2.2848
Long Chord = 42.0362
Mid. Ord. = 2.2337
P.C. Station 3255+86.57 X 2,503,282.5953 Y 7,050,353.4072
P.T. Station 3256+28.92 X 2,503,319.7215 Y 7,050,373.1222
C.C. X 2,503,255.3059 Y 7,050,449.6117
Back = N 74° 09' 48.57" E
Ahead = N 49° 53' 51.36" E
Chord Bear = N 62° 01' 49.97" E

Curve Data

Curve C1439
P.I. Station 3256+45.06 X 2,503,332.0645 Y 7,050,383.5169
Delta = 24° 17' 06.00" (RT)
Degree = 76° 23' 39.74"
Tangent = 16.1368
Length = 31.7890
Radius = 75.0000
External = 1.7163
Long Chord = 31.5516
Mid. Ord. = 1.6779
P.C. Station 3256+28.92 X 2,503,319.7215 Y 7,050,373.1222
P.T. Station 3256+60.71 X 2,503,347.5902 Y 7,050,387.9153
C.C. X 2,503,368.0332 Y 7,050,315.7552
Back = N 49° 53' 51.36" E
Ahead = N 74° 10' 57.36" E
Chord Bear = N 62° 02' 24.36" E

Course from PT C1439 to PC C1440 N 74° 10' 57.36" E Dist 57.0703

Curve Data

Curve C1440
P.I. Station 3257+25.24 X 2,503,409.6738 Y 7,050,405.5035
Delta = 16° 57' 51.35" (RT)
Degree = 114° 35' 29.61"
Tangent = 7.4566
Length = 14.8041
Radius = 50.0000
External = 0.5530
Long Chord = 14.7501
Mid. Ord. = 0.5469
P.C. Station 3257+17.78 X 2,503,402.4996 Y 7,050,403.4711
P.T. Station 3257+32.58 X 2,503,417.1289 Y 7,050,405.3543
C.C. X 2,503,416.1282 Y 7,050,355.3643
Back = N 74° 10' 57.36" E
Ahead = S 88° 51' 11.29" E
Chord Bear = N 82° 39' 53.03" E

Course from PT C1440 to 1817 S 88° 51' 11.29" E Dist 45.6375

Point 1817 X 2,503,462.7572 Y 7,050,404.4409 Sta 3257+78.22

Course from 1817 to 1818 S 60° 49' 02.64" E Dist 12.0332

Point 1818 X 2,503,473.2631 Y 7,050,398.5735 Sta 3257+90.25

Course from 1818 to 1819 S 15° 49' 03.19" E Dist 62.9392

Point 1819 X 2,503,490.4187 Y 7,050,338.0176 Sta 3258+53.19

Course from 1819 to 1820 S 61° 08' 55.06" E Dist 12.0241

Point 1820 X 2,503,500.9503 Y 7,050,332.2155 Sta 3258+65.22

Course from 1820 to PC C1441 N 74° 11' 02.29" E Dist 1,253.6080

Curve Data

Curve C1441
P.I. Station 3271+20.49 X 2,504,708.7037 Y 7,050,674.3287
Delta = 0° 22' 53.55" (RT)
Degree = 11° 27' 32.96"
Tangent = 1.6648
Length = 3.3296
Radius = 500.0000
External = 0.0028
Long Chord = 3.3296
Mid. Ord. = 0.0028
P.C. Station 3271+18.83 X 2,504,707.0990 Y 7,050,673.8857
P.T. Station 3271+22.16 X 2,504,710.3114 Y 7,050,674.7610
C.C. X 2,504,840.1489 Y 7,050,191.9129
Back = N 74° 34' 03.65" E
Ahead = N 74° 56' 57.20" E
Chord Bear = N 74° 45' 30.42" E

Course from PT C1441 to PC C1442 N 74° 56' 57.20" E Dist 170.8666

Curve Data

Curve C1442
P.I. Station 3273+07.60 X 2,504,889.3908 Y 7,050,722.9153
Delta = 13° 18' 01.62" (RT)
Degree = 45° 50' 11.84"
Tangent = 14.5740
Length = 29.0171
Radius = 125.0000
External = 0.8467
Long Chord = 28.9520
Mid. Ord. = 0.8410
P.C. Station 3272+93.02 X 2,504,875.3167 Y 7,050,719.1308
P.T. Station 3273+22.04 X 2,504,903.9580 Y 7,050,723.3604
C.C. X 2,504,907.7760 Y 7,050,598.4188
Back = N 74° 56' 57.20" E
Ahead = N 88° 14' 58.81" E
Chord Bear = N 81° 35' 58.01" E

Course from PT C1442 to PC C1443 N 88° 14' 58.81" E Dist 38.6928

Curve Data

Curve C1443
P.I. Station 3273+79.24 X 2,504,961.1301 Y 7,050,725.1075
Delta = 14° 03' 59.05" (LT)
Degree = 38° 11' 49.87"
Tangent = 18.5059
Length = 36.8258
Radius = 150.0000
External = 1.1373
Long Chord = 36.7333
Mid. Ord. = 1.1287
P.C. Station 3273+60.73 X 2,504,942.6328 Y 7,050,724.5423
P.T. Station 3273+97.56 X 2,504,978.9353 Y 7,050,730.1515
C.C. X 2,504,938.0511 Y 7,050,874.4723
Back = N 88° 14' 58.81" E
Ahead = N 74° 10' 59.76" E
Chord Bear = N 81° 12' 59.29" E

Course from PT C1443 to 1821 N 74° 10' 59.76" E Dist 49.8709

Point 1821 X 2,505,026.9180 Y 7,050,743.7444 Sta 3274+47.43

Course from 1821 to PC C1444 N 70° 57' 32.86" E Dist 47.2652

Curve Data

Curve C1444
P.I. Station 3275+06.95 X 2,505,083.1871 Y 7,050,763.1643
Delta = 17° 25' 35.83" (LT)
Degree = 71° 37' 11.04"
Tangent = 12.2607
Length = 24.3321
Radius = 80.0000
External = 0.9341
Long Chord = 24.2385
Mid. Ord. = 0.9233
P.C. Station 3274+94.69 X 2,505,071.5972 Y 7,050,759.1643
P.T. Station 3275+19.03 X 2,505,093.0471 Y 7,050,770.4517
C.C. X 2,505,045.4978 Y 7,050,834.7872
Back = N 70° 57' 32.86" E
Ahead = N 53° 31' 57.03" E
Chord Bear = N 62° 14' 44.94" E

Course from PT C1444 to PC C1445 N 53° 31' 57.03" E Dist 12.7368

Curve Data

Curve C1445
P.I. Station 3275+59.09 X 2,505,125.2663 Y 7,050,794.2643
Delta = 20° 38' 59.79" (RT)
Degree = 38° 11' 49.87"
Tangent = 27.3272
Length = 54.0614
Radius = 150.0000
External = 2.4689
Long Chord = 53.7693
Mid. Ord. = 2.4289
P.C. Station 3275+31.76 X 2,505,103.2900 Y 7,050,778.0220
P.T. Station 3275+85.82 X 2,505,151.5587 Y 7,050,801.7130
C.C. X 2,505,192.4450 Y 7,050,657.3929
Back = N 53° 31' 57.03" E
Ahead = N 74° 10' 56.81" E
Chord Bear = N 63° 51' 26.92" E

Course from PT C1445 to PC C1446 N 74° 10' 56.81" E Dist 227.7963

Curve Data

Curve C1446
P.I. Station 3278+29.38 X 2,505,385.8962 Y 7,050,868.1014
Delta = 17° 54' 59.20" (RT)
Degree = 57° 17' 44.81"
Tangent = 15.7637
Length = 31.2701
Radius = 100.0000
External = 1.2348
Long Chord = 31.1428
Mid. Ord. = 1.2198
P.C. Station 3278+13.62 X 2,505,370.7294 Y 7,050,863.8046
P.T. Station 3278+44.89 X 2,505,401.6494 Y 7,050,867.5241
C.C. X 2,505,397.9869 Y 7,050,767.5912
Back = N 74° 10' 56.81" E
Ahead = S 87° 54' 03.99" E
Chord Bear = N 83° 08' 26.41" E

Course from PT C1446 to PC C1447 S 87° 54' 03.99" E Dist 63.0758

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CONTRACT SHEET No. 12 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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CHECKED	J. HASLER
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
HORIZONTAL ALIGNMENT DATA
SHEET 1 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC1-3301	B

CB05-CC1-3301.001

15-SEP-2022 13:52
CB05-CC1-3301.001

JEGSVCPW001
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CHAIN CB05_302 (HIKE & BIKE TRAIL) CONT'D

Curve Data

Curve C1447
P.I. Station = 3279+23.70 X = 2,505,480.4065 Y = 7,050,864.6377
Delta = 17° 53' 00.26" (LT)
Degree = 57° 17' 44.81"
Tangent = 15.7342
Length = 31.2124
Radius = 100.0000
External = 1.2303
Long Chord = 31.0859
Mid. Ord. = 1.2153
P.C. Station = 3279+07.97 X = 2,505,464.6829 Y = 7,050,865.2140
P.T. Station = 3279+39.18 X = 2,505,495.5473 Y = 7,050,868.9177
C.C. X = 2,505,468.3453 Y = 7,050,965.1469
Back = S 87° 54' 03.99" E
Ahead = N 74° 12' 55.75" E
Chord Bear = N 83° 09' 25.88" E

Course from PT C1447 to 1822 N 74° 12' 55.75" E Dist 72.0766

Point 1822 X = 2,505,564.9060 Y = 7,050,888.5240 Sta = 3280+11.26

==========
Ending chain CB05_302 description

CHAIN CB05_303 (HIKE & BIKE TRAIL)

Chain CB05_303 contains:
1755 CUR C1373 CUR C1374 CUR C1375 CUR C1376 CUR C1377 CUR C1378 CUR C1379 1756-1757 CUR C1380 CUR C1381 CUR C1382 CUR C1383 CUR C1384 CUR C1385 CUR C1386 CUR-C1387 CUR C1388 CUR C1389 CUR C1390 CUR C1391 CUR C1392 CUR C1393 CUR C1394 CU-R C1395 1762 1763

Beginning chain CB05_303 description
==========

Point 1755 N = 7,051,050.0429 E = 2,506,135.5895 Sta = 3280+79.94

Course from 1755 to PC C1373 N 74° 13' 09.06" E Dist 11.5696

Curve Data

Curve C1373
P.I. Station = 3281+10.87 N = 7,051,058.4567 E = 2,506,165.3612
Delta = 14° 23' 48.51" (LT)
Degree = 37° 21' 46.87"
Tangent = 19.3681
Length = 38.5322
Radius = 153.3489
External = 1.2183
Long Chord = 38.4310
Mid. Ord. = 1.2087
P.C. Station = 3280+91.50 N = 7,051,053.1894 E = 2,506,146.7231
P.T. Station = 3281+30.04 N = 7,051,068.1927 E = 2,506,182.1044
C.C. N = 7,051,200.7584 E = 2,506,105.0186
Back = N 74° 13' 09.06" E
Ahead = N 59° 49' 20.55" E
Chord Bear = N 67° 01' 14.81" E

Curve Data

Curve C1374
P.I. Station = 3281+43.88 N = 7,051,075.1522 E = 2,506,194.0728
Delta = 20° 55' 03.63" (LT)
Degree = 76° 23' 39.74"
Tangent = 13.8447
Length = 27.3812
Radius = 75.0000
External = 1.2671
Long Chord = 27.2294
Mid. Ord. = 1.2461
P.C. Station = 3281+30.04 N = 7,051,068.1927 E = 2,506,182.1044
P.T. Station = 3281+57.42 N = 7,051,085.9260 E = 2,506,202.7676
C.C. N = 7,051,133.0281 E = 2,506,144.4032
Back = N 59° 49' 20.55" E
Ahead = N 38° 54' 16.93" E
Chord Bear = N 49° 21' 48.74" E

Course from PT C1374 to PC C1375 N 38° 54' 16.93" E Dist 16.3776

Curve Data

Curve C1375
P.I. Station = 3281+83.60 N = 7,051,106.3040 E = 2,506,219.2133
Delta = 14° 54' 07.55" (RT)
Degree = 76° 23' 39.74"
Tangent = 9.8088
Length = 19.5068
Radius = 75.0000
External = 0.6387
Long Chord = 19.4519
Mid. Ord. = 0.6333
P.C. Station = 3281+73.80 N = 7,051,098.6709 E = 2,506,213.0532
P.T. Station = 3281+93.30 N = 7,051,112.0962 E = 2,506,227.1293
C.C. N = 7,051,051.5689 E = 2,506,271.4175
Back = N 38° 54' 16.93" E
Ahead = N 53° 48' 24.48" E
Chord Bear = N 46° 21' 20.70" E

Course from PT C1375 to PC C1376 N 53° 48' 24.48" E Dist 20.3052

Curve Data

Curve C1376
P.I. Station = 3282+40.93 N = 7,051,140.2191 E = 2,506,265.5640
Delta = 30° 33' 37.24" (RT)
Degree = 57° 17' 44.81"
Tangent = 27.3197
Length = 53.3379
Radius = 100.0000
External = 3.6647
Long Chord = 52.7078
Mid. Ord. = 3.5351
P.C. Station = 3282+13.61 N = 7,051,124.0866 E = 2,506,243.5162
P.T. Station = 3282+66.95 N = 7,051,142.9007 E = 2,506,292.7518
C.C. N = 7,051,043.3835 E = 2,506,302.5672
Back = N 53° 48' 24.48" E
Ahead = N 84° 22' 01.72" E
Chord Bear = N 69° 05' 13.10" E

Course from PT C1376 to PC C1377 N 84° 22' 01.72" E Dist 20.9642

Curve Data

Curve C1377
P.I. Station = 3283+01.08 N = 7,051,146.2512 E = 2,506,326.7224
Delta = 10° 02' 10.86" (LT)
Degree = 38° 11' 49.87"
Tangent = 13.1712
Length = 26.2751
Radius = 150.0000
External = 0.5772
Long Chord = 26.2415
Mid. Ord. = 0.5749
P.C. Station = 3282+87.91 N = 7,051,144.9584 E = 2,506,313.6147
P.T. Station = 3283+14.18 N = 7,051,149.8085 E = 2,506,339.4042
C.C. N = 7,051,294.2341 E = 2,506,298.8917
Back = N 84° 22' 01.72" E
Ahead = N 74° 19' 50.86" E
Chord Bear = N 79° 20' 56.29" E

Course from PT C1377 to PC C1378 N 74° 19' 50.86" E Dist 78.3130

Curve Data

Curve C1378
P.I. Station = 3284+17.78 N = 7,051,177.7877 E = 2,506,439.1491
Delta = 19° 08' 02.54" (RT)
Degree = 38° 11' 49.87"
Tangent = 25.2818
Length = 50.0928
Radius = 150.0000
External = 2.1156
Long Chord = 49.8604
Mid. Ord. = 2.0862
P.C. Station = 3283+92.50 N = 7,051,170.9595 E = 2,506,414.8068
P.T. Station = 3284+42.59 N = 7,051,176.2598 E = 2,506,464.3847
C.C. N = 7,051,026.5340 E = 2,506,455.3193
Back = N 74° 19' 50.86" E
Ahead = S 86° 32' 06.59" E
Chord Bear = N 83° 53' 52.13" E

Course from PT C1378 to PC C1379 S 86° 32' 06.59" E Dist 17.3192

Curve Data

Curve C1379
P.I. Station = 3284+84.11 N = 7,051,173.7505 E = 2,506,505.8282
Delta = 18° 19' 46.82" (LT)
Degree = 38° 11' 49.87"
Tangent = 24.2002
Length = 47.9870
Radius = 150.0000
External = 1.9396
Long Chord = 47.7826
Mid. Ord. = 1.9149
P.C. Station = 3284+59.91 N = 7,051,175.2131 E = 2,506,481.6722
P.T. Station = 3285+07.90 N = 7,051,179.9588 E = 2,506,529.2186
C.C. N = 7,051,324.9389 E = 2,506,490.7376
Back = S 86° 32' 06.59" E
Ahead = N 75° 08' 06.58" E
Chord Bear = N 84° 17' 59.99" E

Course from PT C1379 to 1756 N 75° 08' 06.58" E Dist 514.1771

Point 1756 N = 7,051,311.8657 E = 2,507,026.1881 Sta = 3290+22.07

Course from 1756 to 1757 N 75° 11' 58.00" E Dist 234.0000

Point 1757 N = 7,051,371.6422 E = 2,507,252.4242 Sta = 3292+56.07

Course from 1757 to PC C1380 N 74° 10' 56.87" E Dist 1,570.1061

Curve Data

Curve C1380
P.I. Station = 3308+33.72 N = 7,051,801.6684 E = 2,508,770.3310
Delta = 11° 28' 47.95" (LT)
Degree = 76° 23' 39.74"
Tangent = 7.5389
Length = 15.0273
Radius = 75.0000
External = 0.3779
Long Chord = 15.0021
Mid. Ord. = 0.3760
P.C. Station = 3308+26.18 N = 7,051,799.6134 E = 2,508,763.0776
P.T. Station = 3308+41.21 N = 7,051,805.1258 E = 2,508,777.0304
C.C. N = 7,051,871.7735 E = 2,508,742.6345
Back = N 74° 10' 56.87" E
Ahead = N 62° 42' 08.92" E
Chord Bear = N 68° 26' 32.89" E

Course from PT C1380 to PC C1381 N 62° 42' 08.92" E Dist 10.9470

Equation: Sta 3308+52.15 (BK) = Sta 3308+50.89 (AH) End Region 1 / Begin Region 2

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CONTRACT SHEET No. 13 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	B. ALLDREDGE
CHECKED	J. HASLER
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
HORIZONTAL ALIGNMENT DATA
SHEET 2 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC1-3302	B

CB05-CC1-3302.001

15-SEP-2022 13:41
CB05-CC1-3302.001

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CHAIN CB05_303 (HIKE & BIKE TRAIL) CONT'D

Curve Data					
Curve C1381					
P.I. Station	3308+71.16	N	7,051,819.4427	E	2,508,804.7718
Delta =	22° 55' 05.92" (RT)				
Degree =	57° 17' 44.81"				
Tangent =	20.2710				
Length =	40.0000				
Radius =	100.0000				
External =	2.0339				
Long Chord =	39.7339				
Mid. Ord. =	1.9933				
P.C. Station	3308+50.89	N	7,051,810.1462	E	2,508,786.7583
P.T. Station	3308+90.89	N	7,051,820.9905	E	2,508,824.9836
C.C.		N	7,051,721.2825	E	2,508,832.6194
Back = N 62° 42' 08.92" E					
Ahead = N 85° 37' 14.84" E					
Chord Bear = N 74° 09' 41.88" E					

Course from PT C1381 to PC C1382 N 85° 37' 14.84" E Dist 34.6193

Curve Data					
Curve C1382					
P.I. Station	3309+33.02	N	7,051,824.2074	E	2,508,866.9898
Delta =	11° 26' 10.08" (LT)				
Degree =	76° 23' 39.74"				
Tangent =	7.5099				
Length =	14.9699				
Radius =	75.0000				
External =	0.3751				
Long Chord =	14.9450				
Mid. Ord. =	0.3732				
P.C. Station	3309+25.51	N	7,051,823.6340	E	2,508,859.5019
P.T. Station	3309+40.48	N	7,051,826.2541	E	2,508,874.2154
C.C.		N	7,051,898.4150	E	2,508,853.7751
Back = N 85° 37' 14.84" E					
Ahead = N 74° 11' 04.76" E					
Chord Bear = N 79° 54' 09.80" E					

Course from PT C1382 to PC C1383 N 74° 11' 04.76" E Dist 2,068.8214

Curve Data					
Curve C1383					
P.I. Station	3330+34.39	N	7,052,396.9240	E	2,510,888.8604
Delta =	11° 27' 40.86" (LT)				
Degree =	22° 55' 05.92"				
Tangent =	25.0885				
Length =	50.0096				
Radius =	250.0000				
External =	1.2557				
Long Chord =	49.9262				
Mid. Ord. =	1.2494				
P.C. Station	3330+09.30	N	7,052,390.0864	E	2,510,864.7217
P.T. Station	3330+59.31	N	7,052,408.4217	E	2,510,911.1592
C.C.		N	7,052,630.6227	E	2,510,796.5872
Back = N 74° 11' 04.76" E					
Ahead = N 62° 43' 23.91" E					
Chord Bear = N 68° 27' 14.33" E					

Course from PT C1383 to PC C1384 N 62° 43' 23.91" E Dist 44.1634

Curve Data					
Curve C1384					
P.I. Station	3331+28.56	N	7,052,440.1568	E	2,510,972.7063
Delta =	11° 27' 32.96" (RT)				
Degree =	22° 55' 05.92"				
Tangent =	25.0837				
Length =	50.0000				
Radius =	250.0000				
External =	1.2552				
Long Chord =	49.9167				
Mid. Ord. =	1.2490				
P.C. Station	3331+03.47	N	7,052,428.6613	E	2,510,950.4118
P.T. Station	3331+53.47	N	7,052,446.9940	E	2,510,996.8401
C.C.		N	7,052,206.4604	E	2,511,064.9838
Back = N 62° 43' 23.91" E					
Ahead = N 74° 10' 56.87" E					
Chord Bear = N 68° 27' 10.39" E					

Course from PT C1384 to PC C1385 N 74° 10' 56.87" E Dist 1,146.4820

Curve Data					
Curve C1385					
P.I. Station	3343+25.04	N	7,052,766.3332	E	2,512,124.0440
Delta =	11° 27' 32.96" (RT)				
Degree =	22° 55' 05.92"				
Tangent =	25.0837				
Length =	50.0000				
Radius =	250.0000				
External =	1.2552				
Long Chord =	49.9167				
Mid. Ord. =	1.2490				
P.C. Station	3342+99.95	N	7,052,759.4960	E	2,512,099.9102
P.T. Station	3343+49.95	N	7,052,768.2395	E	2,512,149.0552
C.C.		N	7,052,518.9624	E	2,512,168.0538
Back = N 74° 10' 56.87" E					
Ahead = N 85° 38' 29.83" E					
Chord Bear = N 79° 54' 43.35" E					

Course from PT C1385 to PC C1386 N 85° 38' 29.83" E Dist 44.4393

Curve Data					
Curve C1386					
P.I. Station	3344+19.48	N	7,052,773.5228	E	2,512,218.3771
Delta =	11° 27' 32.96" (LT)				
Degree =	22° 55' 05.92"				
Tangent =	25.0837				
Length =	50.0000				
Radius =	250.0000				
External =	1.2552				
Long Chord =	49.9167				
Mid. Ord. =	1.2490				
P.C. Station	3343+94.39	N	7,052,771.6166	E	2,512,193.3659
P.T. Station	3344+44.39	N	7,052,780.3600	E	2,512,242.5109
C.C.		N	7,053,020.8937	E	2,512,174.3672
Back = N 85° 38' 29.83" E					
Ahead = N 74° 10' 56.87" E					
Chord Bear = N 79° 54' 43.35" E					

Course from PT C1386 to PC C1387 N 74° 11' 04.76" E Dist 225.2069

Curve Data					
Curve C1387					
P.I. Station	3347+92.23	N	7,052,875.1601	E	2,512,577.1852
Delta =	2° 28' 52.68" (RT)				
Degree =	1° 00' 42.55"				
Tangent =	122.6349				
Length =	245.2315				
Radius =	5,662.6500				
External =	1.3278				
Long Chord =	245.2123				
Mid. Ord. =	1.3275				
P.C. Station	3346+69.60	N	7,052,841.7374	E	2,512,459.1926
P.T. Station	3349+14.83	N	7,052,903.4431	E	2,512,696.5141
C.C.		N	7,047,393.4468	E	2,514,002.4795
Back = N 74° 11' 04.76" E					
Ahead = N 76° 39' 57.44" E					
Chord Bear = N 75° 25' 31.10" E					

Course from PT C1387 to PC C1388 N 76° 39' 57.44" E Dist 65.8646

Curve Data					
Curve C1388					
P.I. Station	3350+42.01	N	7,052,932.7746	E	2,512,820.2664
Delta =	27° 33' 40.60" (RT)				
Degree =	22° 55' 05.92"				
Tangent =	61.3163				
Length =	120.2588				
Radius =	250.0000				
External =	7.4096				
Long Chord =	119.1026				
Mid. Ord. =	7.1963				
P.C. Station	3349+80.70	N	7,052,918.6333	E	2,512,760.6031
P.T. Station	3351+00.95	N	7,052,917.7050	E	2,512,879.7021
C.C.		N	7,052,675.3728	E	2,512,818.2601
Back = N 76° 39' 57.44" E					
Ahead = S 75° 46' 21.96" E					
Chord Bear = S 89° 33' 12.26" E					

Course from PT C1388 to PC C1389 S 75° 46' 21.96" E Dist 63.0424

Curve Data					
Curve C1389					
P.I. Station	3351+99.25	N	7,052,893.5461	E	2,512,974.9866
Delta =	38° 50' 32.21" (LT)				
Degree =	57° 17' 44.81"				
Tangent =	35.2570				
Length =	67.7926				
Radius =	100.0000				
External =	6.0333				
Long Chord =	66.5018				
Mid. Ord. =	5.6900				
P.C. Station	3351+64.00	N	7,052,902.2112	E	2,512,940.8109
P.T. Station	3352+31.79	N	7,052,908.2314	E	2,513,007.0397
C.C.		N	7,052,999.1440	E	2,512,965.3877
Back = S 75° 46' 21.96" E					
Ahead = N 65° 23' 05.83" E					
Chord Bear = N 84° 48' 21.93" E					

Course from PT C1389 to PC C1390 N 65° 23' 05.83" E Dist 226.2074

Curve Data					
Curve C1390					
P.I. Station	3355+29.97	N	7,053,032.4287	E	2,513,278.1221
Delta =	23° 14' 23.46" (RT)				
Degree =	16° 22' 12.80"				
Tangent =	71.9715				
Length =	141.9642				
Radius =	350.0000				
External =	7.3232				
Long Chord =	140.9930				
Mid. Ord. =	7.1732				
P.C. Station	3354+58.00	N	7,053,002.4512	E	2,513,212.6909
P.T. Station	3355+99.96	N	7,053,034.1560	E	2,513,350.0730
C.C.		N	7,052,684.2568	E	2,513,358.4727
Back = N 65° 23' 05.83" E					
Ahead = N 88° 37' 29.29" E					
Chord Bear = N 77° 00' 17.56" E					

Course from PT C1390 to PC C1391 N 88° 37' 29.29" E Dist 228.8396

Curve Data					
Curve C1391					
P.I. Station	3358+83.40	N	7,053,040.9583	E	2,513,633.4266
Delta =	59° 46' 16.30" (LT)				
Degree =	60° 18' 40.85"				
Tangent =	54.5957				
Length =	99.1044				
Radius =	95.0000				
External =	14.5705				
Long Chord =	94.6713				
Mid. Ord. =	12.6329				
P.C. Station	3358+28.80	N	7,053,039.6480	E	2,513,578.8467
P.T. Station	3359+27.91	N	7,053,088.7762	E	2,513,659.7730
C.C.		N	7,053,134.6207	E	2,513,576.5667
Back = N 88° 37' 29.29" E					
Ahead = N 28° 51' 12.99" E					
Chord Bear = N 58° 44' 21.14" E					

Course from PT C1391 to PC C1392 N 28° 51' 12.99" E Dist 31.5605

Curve Data					
Curve C1392					
P.I. Station	3359+93.51	N	7,053,146.2337	E	2,513,691.4306
Delta =	48° 49' 29.24" (RT)				
Degree =	76° 23' 39.74"				
Tangent =	34.0411				
Length =	63.9115				
Radius =	75.0000				
External =	7.3638				
Long Chord =	61.9952				
Mid. Ord. =	6.7054				
P.C. Station	3359+59.47	N	7,053,116.4187	E	2,513,675.0033
P.T. Station	3360+23.38	N	7,053,153.4980	E	2,513,724.6875
C.C.		N	7,053,080.2257	E	2,513,740.6924
Back = N 28° 51' 12.99" E					
Ahead = N 77° 40' 42.23" E					
Chord Bear = N 53° 15' 57.61" E					

Course from PT C1392 to PC C1393 N 77° 40' 42.23" E Dist 1,539.8245

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CONTRACT SHEET No. 14 OF 221

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
HORIZONTAL ALIGNMENT DATA
SHEET 3 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC1-3303	B

CB05-CC1-3303.001

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CHAIN CB05_303 (HIKE & BIKE TRAIL) CONT'D

Curve Data

Curve C1393
P.I. Station = 3375+81.28 N 7,053,485.9527 E 2,515,246.7050
Delta = 2° 45' 42.23" (RT)
Degree = 7° 38' 21.97"
Tangent = 18.0790
Length = 36.1510
Radius = 750.0000
External = 0.2179
Long Chord = 36.1475
Mid. Ord. = 0.2178
P.C. Station = 3375+63.20 N 7,053,482.0947 E 2,515,229.0425
P.T. Station = 3375+99.35 N 7,053,488.9552 E 2,515,264.5329
C.C. N 7,052,749.3708 E 2,515,389.0915
Back = N 77° 40' 42.23" E
Ahead = N 80° 26' 24.46" E
Chord Bear = N 79° 03' 33.35" E

Course from PT C1393 to PC C1394 N 80° 26' 24.90" E Dist 189.4076

Curve Data

Curve C1394
P.I. Station = 3378+00.37 N 7,053,522.3660 E 2,515,462.7553
Delta = 8° 51' 08.48" (RT)
Degree = 38° 11' 49.87"
Tangent = 11.6108
Length = 23.1754
Radius = 150.0000
External = 0.4487
Long Chord = 23.1524
Mid. Ord. = 0.4474
P.C. Station = 3377+88.76 N 7,053,520.4113 E 2,515,451.3102
P.T. Station = 3378+11.94 N 7,053,522.5363 E 2,515,474.3648
C.C. N 7,053,372.5524 E 2,515,476.5638
Back = N 80° 18' 27.70" E
Ahead = N 89° 09' 36.17" E
Chord Bear = N 84° 44' 01.93" E

Course from PT C1394 to PC C1395 N 89° 09' 36.17" E Dist 21.0204

Curve Data

Curve C1395
P.I. Station = 3378+40.96 N 7,053,522.9618 E 2,515,503.3876
Delta = 6° 06' 35.77" (LT)
Degree = 38° 11' 49.87"
Tangent = 8.0055
Length = 15.9958
Radius = 150.0000
External = 0.2135
Long Chord = 15.9882
Mid. Ord. = 0.2132
P.C. Station = 3378+32.96 N 7,053,522.8444 E 2,515,495.3830
P.T. Station = 3378+48.95 N 7,053,523.9304 E 2,515,511.3343
C.C. N 7,053,672.8283 E 2,515,493.1841
Back = N 89° 09' 36.17" E
Ahead = N 83° 03' 00.40" E
Chord Bear = N 86° 06' 18.29" E

Course from PT C1395 to 1762 N 83° 03' 00.40" E Dist 10.2513

Point 1762 N 7,053,525.1709 E 2,515,521.5103 Sta 3378+59.20

Course from 1762 to 1763 N 80° 26' 18.36" E Dist 51.4804

Point 1763 N 7,053,533.7221 E 2,515,572.2755 Sta 3379+10.68

==========
Ending chain CB05_303 description

CHAIN CB05_304 (HIKE & BIKE TRAIL)

Chain CB05_304 contains:
1466 CUR C985 CUR C986 CUR C987 CUR C988 1467 1468 CUR C989 CUR C990 CUR C991 CUR C992 CUR C993 CUR C994 CUR C995 1469 1470 1471 1472 1473 1474 1475

Beginning chain CB05_304 description
==========

Point 1466 N 7,052,138.3026 E 2,518,222.6072 Sta 3413+53.43

Course from 1466 to PC C985 N 22° 44' 17.77" E Dist 323.2691

Curve Data

Curve C985
P.I. Station = 3417+08.12 N 7,052,465.4270 E 2,518,359.7031
Delta = 45° 27' 47.55" (RT)
Degree = 76° 23' 39.74"
Tangent = 31.4218
Length = 59.5112
Radius = 75.0000
External = 6.3162
Long Chord = 57.9622
Mid. Ord. = 5.8256
P.C. Station = 3416+76.70 N 7,052,436.4473 E 2,518,347.5579
P.T. Station = 3417+36.21 N 7,052,477.0953 E 2,518,388.8781
C.C. N 7,052,407.4582 E 2,518,416.7289
Back = N 22° 44' 17.77" E
Ahead = N 68° 12' 05.32" E
Chord Bear = N 45° 28' 11.54" E

Curve Data

Curve C986
P.I. Station = 3419+83.71 N 7,052,569.0013 E 2,518,618.6765
Delta = 77° 12' 20.93" (RT)
Degree = 18° 28' 57.03"
Tangent = 247.4955
Length = 417.7237
Radius = 310.0000
External = 86.6787
Long Chord = 386.8299
Mid. Ord. = 67.7385
P.C. Station = 3417+36.21 N 7,052,477.0953 E 2,518,388.8781
P.T. Station = 3421+53.94 N 7,052,365.2609 E 2,518,759.1894
C.C. N 7,052,189.2618 E 2,518,503.9947
Back = N 68° 12' 05.32" E
Ahead = S 34° 35' 33.75" E
Chord Bear = S 73° 11' 44.22" E

Course from PT C986 to PC C987 S 34° 35' 33.75" E Dist 52.2985

Curve Data

Curve C987
P.I. Station = 3422+37.06 N 7,052,296.8286 E 2,518,806.3848
Delta = 75° 14' 48.68" (LT)
Degree = 143° 14' 22.02"
Tangent = 30.8302
Length = 52.5322
Radius = 40.0000
External = 10.5025
Long Chord = 48.8375
Mid. Ord. = 8.3184
P.C. Station = 3422+06.23 N 7,052,322.2083 E 2,518,788.8813
P.T. Station = 3422+58.77 N 7,052,307.2920 E 2,518,835.3851
C.C. N 7,052,344.9178 E 2,518,821.8096
Back = S 34° 35' 33.75" E
Ahead = N 70° 09' 37.58" E
Chord Bear = S 72° 12' 58.09" E

Course from PT C987 to PC C988 N 70° 09' 37.58" E Dist 126.7043

Curve Data

Curve C988
P.I. Station = 3426+97.72 N 7,052,456.2659 E 2,519,248.2815
Delta = 47° 21' 33.77" (LT)
Degree = 8° 02' 49.78"
Tangent = 312.2452
Length = 588.5229
Radius = 712.0000
External = 65.4581
Long Chord = 571.9114
Mid. Ord. = 59.9468
P.C. Station = 3423+85.47 N 7,052,350.2938 E 2,518,954.5691
P.T. Station = 3429+73.99 N 7,052,744.1110 E 2,519,369.2866
C.C. N 7,053,020.0342 E 2,518,712.9252
Back = N 70° 09' 37.58" E
Ahead = N 22° 48' 03.81" E
Chord Bear = N 46° 28' 50.69" E

Course from PT C988 to 1467 N 22° 48' 03.81" E Dist 35.3523

Point 1467 N 7,052,776.7008 E 2,519,382.9868 Sta 3430+09.35

Course from 1467 to 1468 S 88° 20' 21.37" E Dist 77.0376

Point 1468 N 7,052,774.4681 E 2,519,459.9920 Sta 3430+86.38

Course from 1468 to PC C989 N 21° 24' 47.02" E Dist 204.1966

Curve Data

Curve C989
P.I. Station = 3433+03.27 N 7,052,976.3807 E 2,519,539.1738
Delta = 14° 27' 39.07" (LT)
Degree = 57° 17' 44.81"
Tangent = 12.6869
Length = 25.2389
Radius = 100.0000
External = 0.8016
Long Chord = 25.1720
Mid. Ord. = 0.7952
P.C. Station = 3432+90.58 N 7,052,964.5695 E 2,519,534.5419
P.T. Station = 3433+15.82 N 7,052,988.9743 E 2,519,540.7094
C.C. N 7,053,001.0785 E 2,519,441.4447
Back = N 21° 24' 47.02" E
Ahead = N 6° 57' 07.95" E
Chord Bear = N 14° 10' 57.49" E

Course from PT C989 to PC C990 N 6° 57' 07.96" E Dist 9.5700

Curve Data

Curve C990
P.I. Station = 3433+41.55 N 7,053,014.5169 E 2,519,543.8240
Delta = 23° 51' 47.85" (RT)
Degree = 74° 54' 44.31"
Tangent = 16.1618
Length = 31.8550
Radius = 76.4838
External = 1.6889
Long Chord = 31.6252
Mid. Ord. = 1.6524
P.C. Station = 3433+25.39 N 7,052,998.4739 E 2,519,541.8678
P.T. Station = 3433+57.24 N 7,053,028.3970 E 2,519,552.1033
C.C. N 7,052,989.2162 E 2,519,617.7892
Back = N 6° 57' 07.95" E
Ahead = N 30° 48' 55.80" E
Chord Bear = N 18° 53' 01.88" E

Course from PT C990 to PC C991 N 30° 48' 55.80" E Dist 30.6366

Curve Data

Curve C991
P.I. Station = 3434+03.78 N 7,053,068.3593 E 2,519,575.9403
Delta = 19° 35' 27.12" (LT)
Degree = 62° 13' 59.67"
Tangent = 15.8950
Length = 31.4797
Radius = 92.0662
External = 1.3620
Long Chord = 31.3266
Mid. Ord. = 1.3422
P.C. Station = 3433+87.88 N 7,053,054.7083 E 2,519,567.7977
P.T. Station = 3434+19.36 N 7,053,083.9503 E 2,519,579.0344
C.C. N 7,053,101.8716 E 2,519,488.7293
Back = N 30° 48' 55.80" E
Ahead = N 11° 13' 28.68" E
Chord Bear = N 21° 01' 12.24" E

Course from PT C991 to PC C992 N 11° 13' 28.68" E Dist 18.7115

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DATE	19 SEP 22

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
HORIZONTAL ALIGNMENT DATA
SHEET 4 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC1-3401	B

CB05-CC1-3401.001

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DWG No. CC1-3402

CHAIN CB05_304 (HIKE & BIKE TRAIL) CONT'D

Curve Data

Curve C992
P.I. Station 3434+65.90 N 7,053,129.6008 E 2,519,588.0938
Delta = 23° 59' 22.48" (RT)
Degree = 43° 44' 32.20"
Tangent = 27.8293
Length = 54.8430
Radius = 130.9849
External = 2.9237
Long Chord = 54.4433
Mid. Ord. = 2.8599
P.C. Station 3434+38.07 N 7,053,102.3039 E 2,519,582.6767
P.T. Station 3434+92.92 N 7,053,152.3374 E 2,519,604.1412
C.C. N 7,053,076.8069 E 2,519,711.1561
Back = N 11° 13' 28.68" E
Ahead = N 35° 12' 51.16" E
Chord Bear = N 23° 13' 09.92" E

Course from PT C992 to PC C993 N 35° 12' 51.16" E Dist 9.4477

Curve Data

Curve C993
P.I. Station 3435+15.44 N 7,053,170.7368 E 2,519,617.1273
Delta = 14° 53' 45.78" (LT)
Degree = 57° 17' 44.81"
Tangent = 13.0730
Length = 25.9985
Radius = 100.0000
External = 0.8509
Long Chord = 25.9254
Mid. Ord. = 0.8437
P.C. Station 3435+02.36 N 7,053,160.0561 E 2,519,609.5890
P.T. Station 3435+28.36 N 7,053,182.9964 E 2,519,621.6667
C.C. N 7,053,217.7196 E 2,519,527.8888
Back = N 35° 12' 51.16" E
Ahead = N 20° 19' 05.38" E
Chord Bear = N 27° 45' 58.27" E

Course from PT C993 to PC C994 N 20° 19' 05.38" E Dist 66.7596

Curve Data

Curve C994
P.I. Station 3436+08.27 N 7,053,257.9297 E 2,519,649.4124
Delta = 14° 58' 39.87" (LT)
Degree = 57° 17' 44.81"
Tangent = 13.1455
Length = 26.1411
Radius = 100.0000
External = 0.8603
Long Chord = 26.0667
Mid. Ord. = 0.8530
P.C. Station 3435+95.12 N 7,053,245.6021 E 2,519,644.8478
P.T. Station 3436+21.26 N 7,053,271.0181 E 2,519,650.6359
C.C. N 7,053,280.3254 E 2,519,551.0699
Back = N 20° 19' 05.38" E
Ahead = N 5° 20' 25.51" E
Chord Bear = N 12° 49' 45.44" E

Course from PT C994 to PC C995 N 5° 20' 25.51" E Dist 10.1541

Curve Data

Curve C995
P.I. Station 3436+41.84 N 7,053,291.5030 E 2,519,652.5508
Delta = 15° 49' 10.12" (RT)
Degree = 76° 23' 39.74"
Tangent = 10.4201
Length = 20.7076
Radius = 75.0000
External = 0.7204
Long Chord = 20.6419
Mid. Ord. = 0.7135
P.C. Station 3436+31.42 N 7,053,281.1281 E 2,519,651.5809
P.T. Station 3436+52.12 N 7,053,301.2205 E 2,519,656.3121
C.C. N 7,053,274.1476 E 2,519,726.2554
Back = N 5° 20' 25.51" E
Ahead = N 21° 09' 35.63" E
Chord Bear = N 13° 15' 00.57" E

Course from PT C995 to 1469 N 21° 09' 35.63" E Dist 342.6621

Point 1469 N 7,053,620.7792 E 2,519,780.0035 Sta 3439+94.79

Course from 1469 to 1470 S 86° 50' 58.89" E Dist 101.0460

Point 1470 N 7,053,615.2261 E 2,519,880.8968 Sta 3440+95.83

Course from 1470 to 1471 N 12° 16' 14.65" E Dist 54.6822

Point 1471 N 7,053,668.6591 E 2,519,892.5185 Sta 3441+50.51

Course from 1471 to 1472 N 65° 19' 10.29" E Dist 18.1675

Point 1472 N 7,053,676.2451 E 2,519,909.0264 Sta 3441+68.68

Course from 1472 to 1473 S 86° 31' 11.10" E Dist 41.1880

Point 1473 N 7,053,673.7448 E 2,519,950.1385 Sta 3442+09.87

Course from 1473 to 1474 N 20° 39' 00.46" E Dist 276.9158

Point 1474 N 7,053,932.8691 E 2,520,047.7957 Sta 3444+86.79

Course from 1474 to 1475 N 6° 18' 52.67" E Dist 14.4006

Point 1475 N 7,053,947.1823 E 2,520,049.3796 Sta 3445+01.19

==========
Ending chain CB05_304 description

CHAIN 304REDMW_CL (HIKE & BIKE TRAIL)

Chain 304REDMW_CL contains:
1321 CUR C747 CUR C748 CUR C749 CUR C750

Beginning chain 304REDMW_CL description
==========

Point 1321 N 7,052,322.2083 E 2,518,788.8813 Sta 10+00.00

Course from 1321 to PC C747 S 34° 35' 33.75" E Dist 54.9949

Curve Data

Curve C747
P.I. Station 10+89.68 N 7,052,248.3790 E 2,518,839.7988
Delta = 26° 02' 35.92" (RT)
Degree = 38° 11' 49.87"
Tangent = 34.6899
Length = 68.1812
Radius = 150.0000
External = 3.9591
Long Chord = 67.5958
Mid. Ord. = 3.8573
P.C. Station 10+54.99 N 7,052,276.9360 E 2,518,820.1040
P.T. Station 11+23.18 N 7,052,214.0745 E 2,518,844.9559
C.C. N 7,052,191.7752 E 2,518,696.6227
Back = S 34° 35' 33.75" E
Ahead = S 8° 32' 57.83" E
Chord Bear = S 21° 34' 15.79" E

Course from PT C747 to PC C748 S 8° 32' 57.83" E Dist 47.5575

Curve Data

Curve C748
P.I. Station 14+79.41 N 7,051,861.8025 E 2,518,897.9088
Delta = 21° 50' 19.41" (RT)
Degree = 3° 34' 51.55"
Tangent = 308.6722
Length = 609.8522
Radius = 1,600.0000
External = 29.5025
Long Chord = 606.1673
Mid. Ord. = 28.9684
P.C. Station 11+70.73 N 7,052,167.0455 E 2,518,852.0259
P.T. Station 17+80.59 N 7,051,561.3971 E 2,518,826.9500
C.C. N 7,051,929.2116 E 2,517,269.8012
Back = S 8° 32' 54.52" E
Ahead = S 13° 17' 24.88" W
Chord Bear = S 2° 22' 15.18" W

Curve Data

Curve C749
P.I. Station 18+20.37 N 7,051,522.6821 E 2,518,817.8051
Delta = 15° 06' 24.66" (LT)
Degree = 19° 05' 54.94"
Tangent = 39.7804
Length = 79.0993
Radius = 300.0000
External = 2.6260
Long Chord = 78.8704
Mid. Ord. = 2.6032
P.C. Station 17+80.59 N 7,051,561.3971 E 2,518,826.9500
P.T. Station 18+59.69 N 7,051,482.9217 E 2,518,819.0662
C.C. N 7,051,492.4319 E 2,519,118.9154
Back = S 13° 17' 24.86" W
Ahead = S 1° 48' 59.80" E
Chord Bear = S 5° 44' 12.53" W

Curve Data

Curve C750
P.I. Station 18+71.55 N 7,051,471.0630 E 2,518,819.4423
Delta = 17° 58' 44.12" (RT)
Degree = 76° 23' 39.74"
Tangent = 11.8647
Length = 23.5344
Radius = 75.0000
External = 0.9327
Long Chord = 23.4379
Mid. Ord. = 0.9212
P.C. Station 18+59.69 N 7,051,482.9217 E 2,518,819.0662
P.T. Station 18+83.22 N 7,051,459.6672 E 2,518,816.1397
C.C. N 7,051,480.5442 E 2,518,744.1039
Back = S 1° 48' 59.80" E
Ahead = S 16° 09' 44.33" W
Chord Bear = S 7° 10' 22.27" W

==========
Ending chain 304REDMW_CL description

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CHECKED	J. HASLER
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

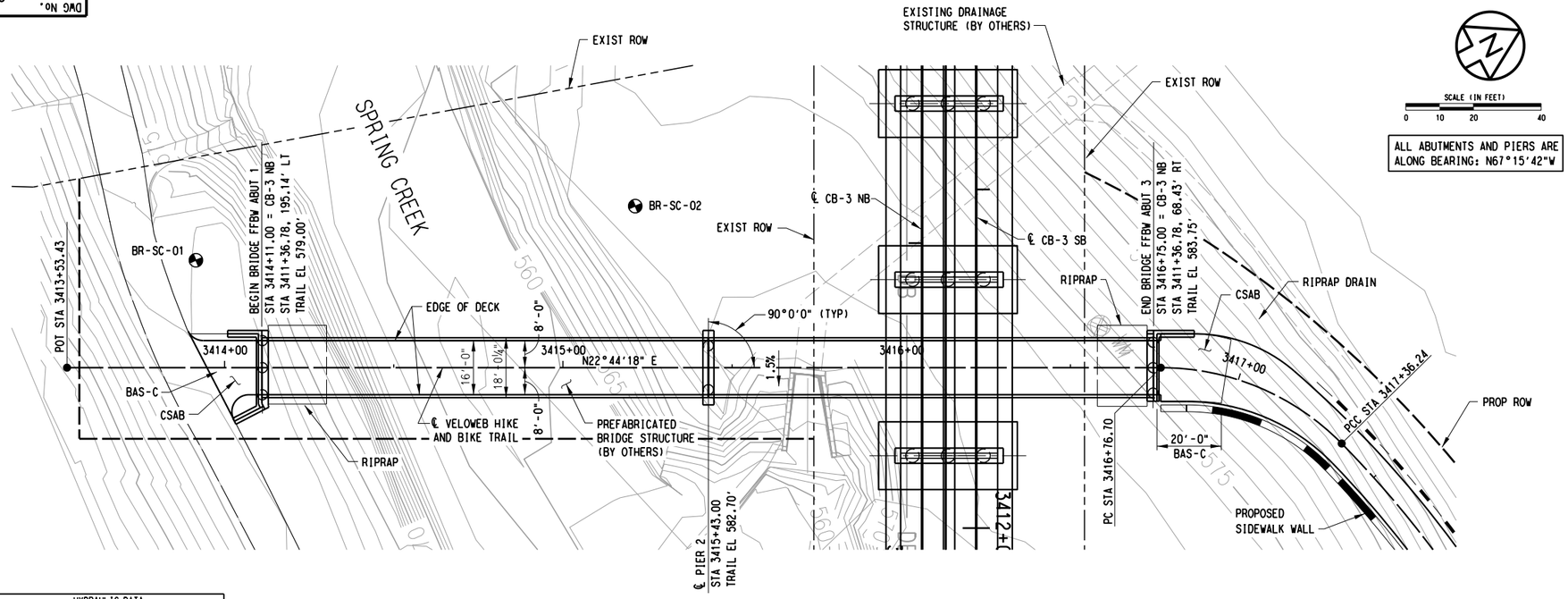
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
HORIZONTAL ALIGNMENT DATA
SHEET 5 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC1-3402	B

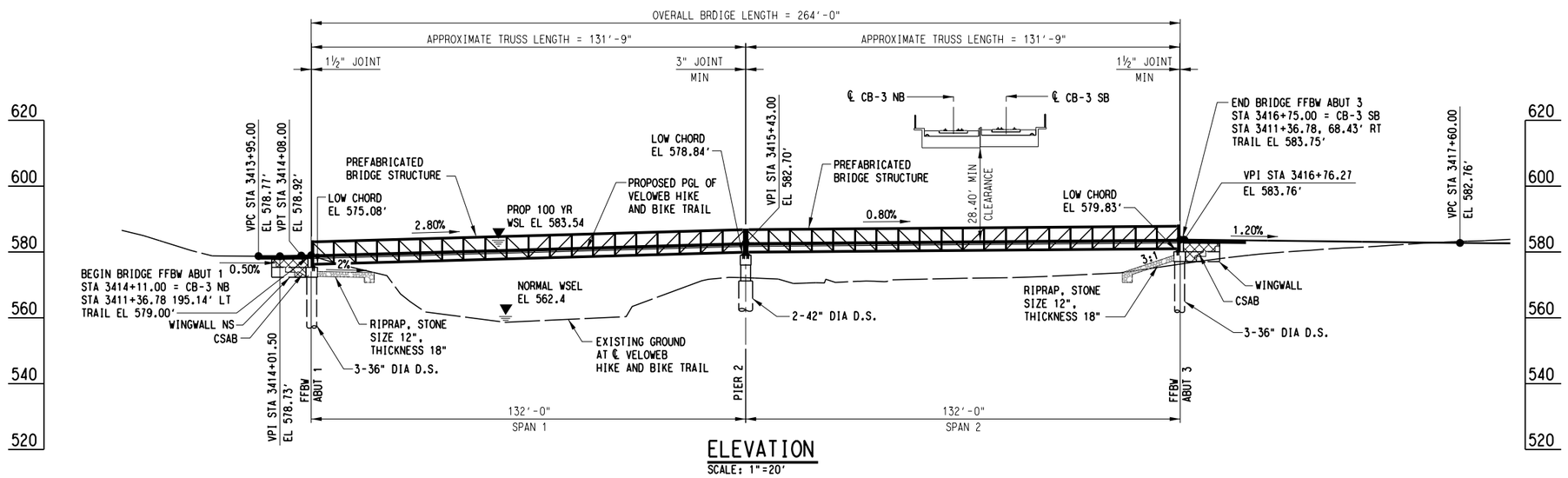
CB05-CC1-3402.001

DWG No. SC2-3401



HYDRAULIC DATA		
100-yr FLOW (CFS)	WATER SURFACE ELEV.	VELOCITY (FPS)
22,900	583.54	5.34

PLAN
SCALE: 1"=20'



ELEVATION
SCALE: 1"=20'

NOTES:

1. DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 8TH EDITION, 2017.
2. SPAN LENGTH STATIONING AND VERTICAL PROFILE ARE SHOWN ALONG THE CENTERLINE OF THE TRAIL. TOP OF DECK IS THE CONTROL AND PROFILE GRADE LINE.
3. FOR PEDESTRIAN TRAIL PLAN AND PROFILE, SEE VELOWEB HIKE AND BIKE PLAN AND PROFILE SHEETS.
4. FOR OTHER TRAIL DETAILS INCLUDING STRIPING AND FENCE, SEE CIVIL PLANS.
5. FOR UTILITY LOCATIONS AND RELOCATION SEE UTILITY DRAWINGS.
6. FOR DRAINAGE ELEMENTS, SEE DRAINAGE PLANS.
7. FOR EXACT LOCATIONS OF BORING LOGS AND SOIL PARAMETERS, SEE GEOTECHNICAL REPORT.
8. DESIGN PEDESTRIAN LIVE LOAD IS 90 PSF AND DESIGN VEHICULAR LIVE LOAD IS H-10.
9. TEMPORARY OR PERMANENT CASING MAY BE USED AT THE ABUTMENTS AND PIERS AS REQUIRED.
10. FOR SLOPE PROTECTION, SEE STANDARD DRAWING NO. TXDOT SRR STANDARD.
11. FOR CEMENT STABILIZED ABUTMENT BACKFILL DETAILS, SEE TxDOT CSAB STANDARD.
12. FOR BRIDGE APPROACH SLAB DETAILS, SEE TxDOT BAS-C STANDARD.
13. FOR RAILING AT ENDS OF BRIDGE SEE TXDOT TYPE PR11 STANDARD.
14. FOR PREFABRICATED BRIDGE TRUSS REQUIREMENTS AND NOTES, SEE STANDARD DRAWING NO. SC8-3491.
15. PREFABRICATED BRIDGE SUPERSTRUCTURE, DECK FORM, SIDE DAMS, BEARING ASSEMBLIES, EXPANSION JOINTS, AND EXPANSION JOINT COVER PLATES ARE TO BE PROVIDED BY THE PREFABRICATED BRIDGE VENDOR.
16. PREFABRICATED BRIDGE STRUCTURES AND ESTIMATED DIMENSIONS BASED ON THE PIONEER TRAILBLAZER BRIDGE TYPE. ALL SUPERSTRUCTURE DIMENSIONS AND FINAL LOADINGS SHALL BE PROVIDED BY THE VENDOR.
17. JOINT OPENING SIZES ARE MINIMUM, REFER TO PREFABRICATED BRIDGE MANUFACTURER PLANS FOR OPENING SIZE.
18. THE PROPOSED STEEL TRUSSES SHALL BE WEATHERING STEEL.
19. THE DISTANCE FROM PROFILE GRADE TO LOW CHORD IS ASSUMED TO BE 3'-11". THE DISTANCE FROM PROFILE GRADE TO TOP OF CAP IS ASSUMED TO BE 4'-0". ASSUMED DEPTHS SHALL BE VERIFIED BY PREFABRICATED BRIDGE VENDOR.

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JEGSVCPW001
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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP
△								

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18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161
ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	1"=20'
DRAWN	S. KAEMMERER
DESIGNED	W. WUENKS
CHECKED	R. RILEY
IN CHARGE	J. FINKE
DATE	19 SEP 22

CONTRACT SHEET No. 17 OF 221

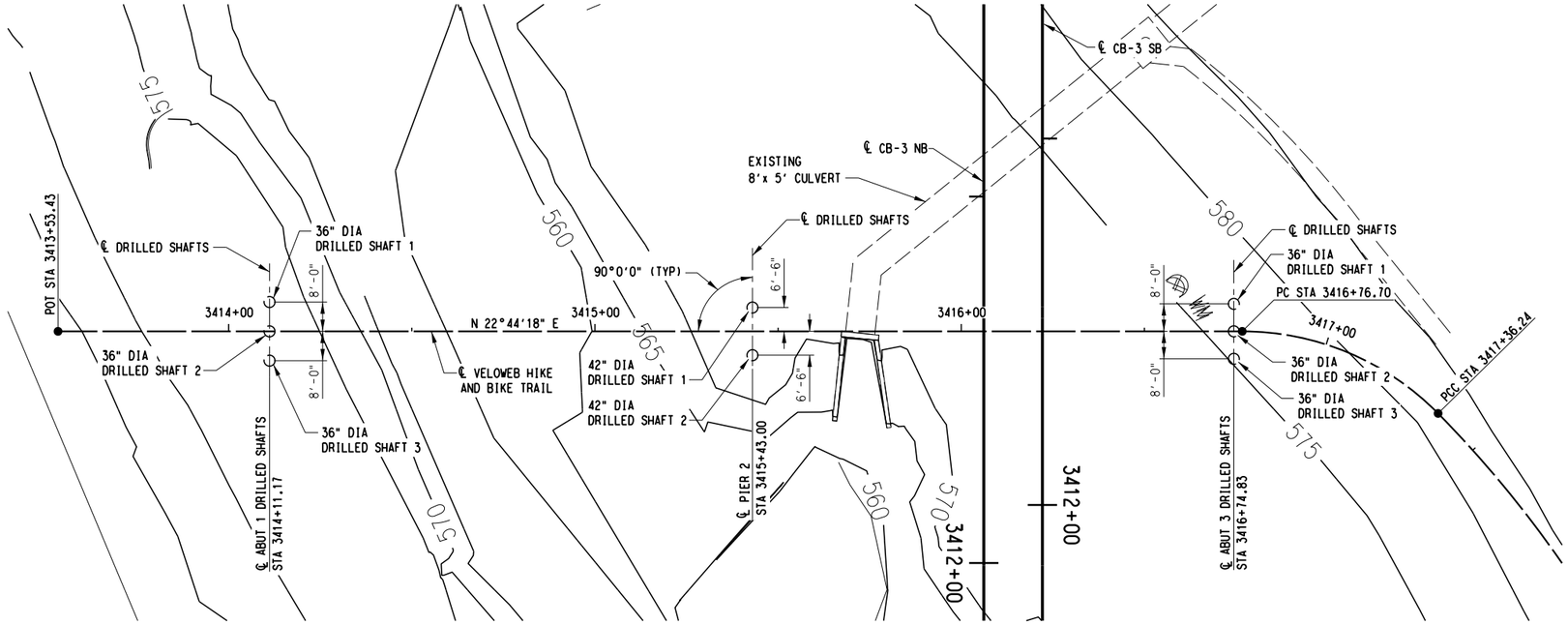
COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON PEDESTRIAN BRIDGE (#34P) PLAN AND ELEVATION

CONTRACT	DWG No.	REV
C-2033270-01	SC2-3401	B

CB05-SC2-3401.020

DWG No. SC2-3411



PLAN
SCALE: 1"=20'

SCALE (IN FEET)
0 10 20 40

ALL ABUTMENTS AND PIERS ARE ALONG BEARING: N67°15'42"W

NOTES:

1. ALL DIMENSIONS ARE HORIZONTAL UNLESS NOTED OTHERWISE.
2. FOR GEOMETRY INFORMATION, SEE GEOMETRY CONTROL PLAN DWG Nos SC8-3446 & SC8-3447.
3. FOR BORING LOG INFORMATION, SEE GEOTECHNICAL DESIGN REPORT.
4. FOUNDATIONS SHALL BE FOUNDED AS SHOWN IN THE SUBSTRUCTURE SCHEDULE ON DWG No. SC8-3411.
5. FOR UTILITY LOCATIONS AND RELOCATION SEE UTILITY DRAWINGS.

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CONTRACT SHEET No. 18 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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SCALE	1"=20'
DRAWN	S.KAEMMERER
DESIGNED	R. RILEY
CHECKED	W. WUENKS
IN CHARGE	J. FINKE
DATE	19 SEP 22

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
FOUNDATION PLAN

CONTRACT	DWG No.	REV
C-2033270-01	SC2-3411	B

CB05-SC2-3411.020

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CB05-SC2-3411.020

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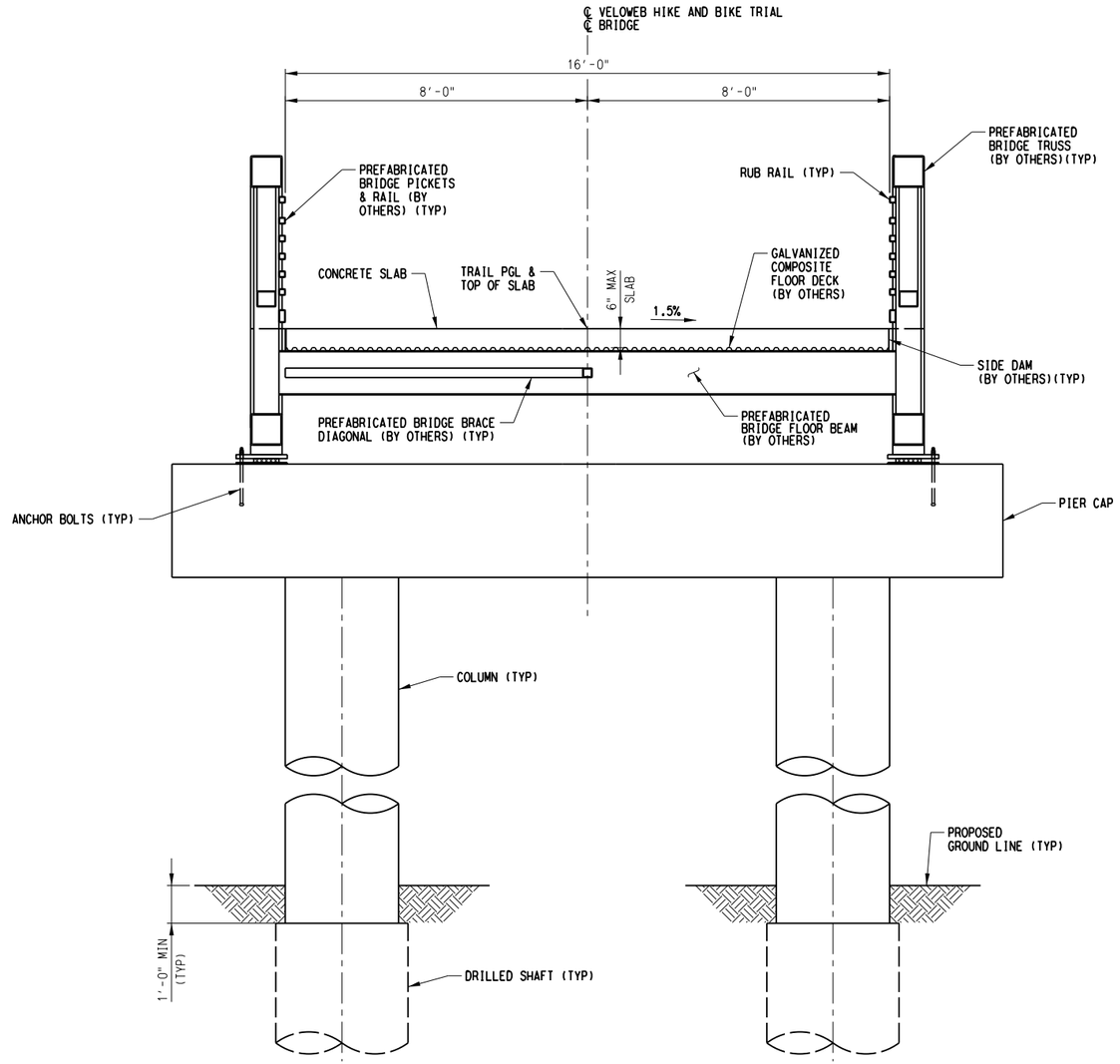
DWG No. SC8-3401



TYPICAL SECTION 1/-

NO SCALE

LOOKING AHEAD STATION

NOTES:

1. REFER TO DRAWING SC2-3401 FOR NOTES.
2. HANDRAIL SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO PREFABRICATED BRIDGE VENDOR DETAILS FOR DETAILS.

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CONTRACT SHEET No. 19 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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SCALE	NO SCALE
DRAWN	M. MEYER
DESIGNED	M. MUENKS
CHECKED	S. HOFFMANN
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
TYPICAL SECTION

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3401	B

CB05-SC8-3401.008

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DWG No. SC8-3411

NOTES:

1. FOR SUBSURFACE INFORMATION. SEE GENERAL NOTES AND GEOTECHNICAL REPORT.
2. FOUND DRILLED SHAFTS AT THE LENGTH SHOWN OR DEEPER TO OBTAIN MINIMUM EMBEDMENT INTO UNWEATHERED LIMESTONE.

* REFER TO THE PREFABRICATED BRIDGE PLANS FOR BEARING SEAT ELEVATIONS.

ABUTMENT SUBSTRUCTURE SCHEDULE

ABUT No.	ABUT STATION WP	SURFACE COORDINATES AT WP		BEARING	PGL AT FF BKWL EL "A" (FT)	TOP OF BKWL EL "B" (FT)	TOP OF BKWL EL "C" (FT)	TOP OF CAP EL "D" (FT)	BOTT OF CAP\ TOP OF D.S. EL "E" (FT)	TOP OF BEARING SEAT EL "F" (FT)	TOP OF BEARING SEAT EL "G" (FT)	APPROXIMATE DRILLED SHAFT LENGTH (FEET)(UNO)	SIZE OF D.S. (IN)	MINIMUM EMBEDMENT SEE NOTE 2 (FT)
		NORTHING	EASTING											
1	3414+11.00	7052191.3983	2518244.8593	N 67°15'42" W	579.00	578.07	577.76	574.88	572.38	*	*	9	36	7
3	3416+75.00	7052434.4837	2518346.7349	N 67°15'42" W	583.76	582.83	582.53	579.64	577.14	*	*	23	36	7

PIER SUBSTRUCTURE SCHEDULE

PIER No.	PIER STATION WP	SURFACE COORDINATES AT WP		BEARING	BEARING SEAT LOCATION BK\FWD	BEARING SEAT EL "A" (FT)	BEARING SEAT "B" (FT)	TOP OF CAP EL "C" (FT)	"BOTT OF CAP/ TOP OF COLUMN EL "D" (FT)	COLUMN	BOT OF COL EL "E" (FT)	COLUMN HEIGHT (FT)	APPROXIMATE DRILLED SHAFT LENGTH (FT)	SIZE OF D.S. (IN)	MINIMUM EMBEDMENT SEE NOTE 2 (FT)
		NORTHING	EASTING												
2	3415+43.00	7052313.1393	2518295.8802	N 67°15'42" W	BK	*	*	578.66	575.66	1	570.66	5	21	42	9
					FWD	*	*			2	570.66	5	21	42	9

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CONTRACT SHEET No. 20 OF 221

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DRAWN	E. KRACK
DESIGNED	W. WUENKS
CHECKED	R. RILEY
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

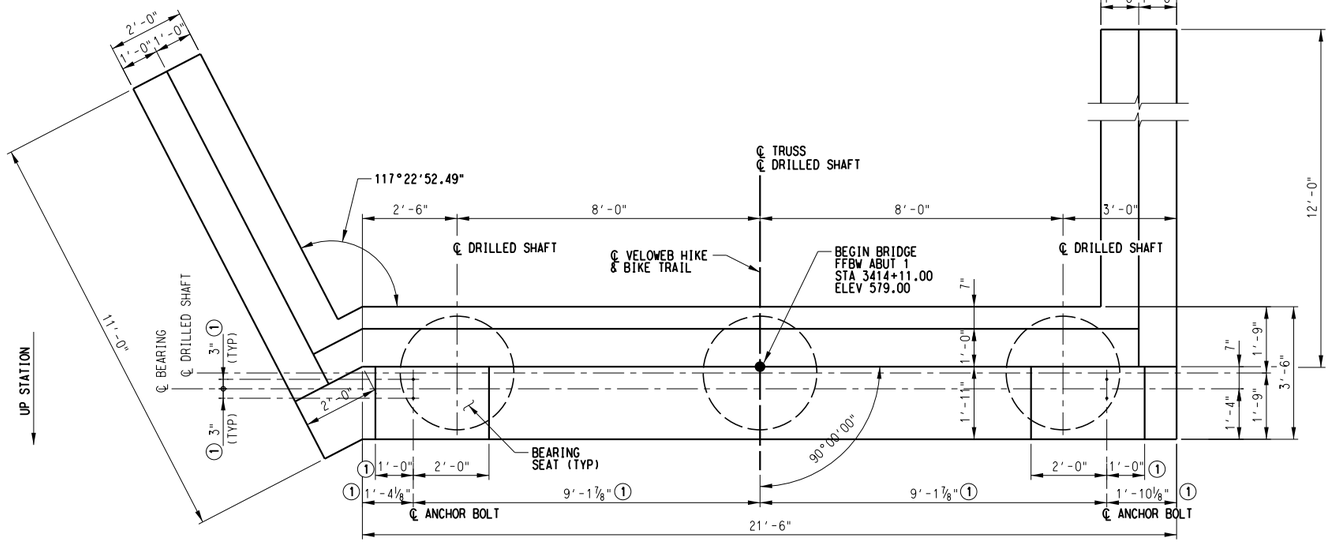
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
SUBSTRUCTURE SCHEDULE

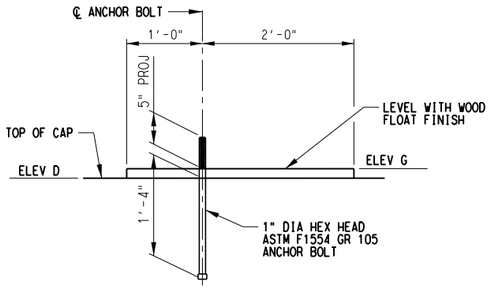
CONTRACT	DWG No.	REV
C-2033270-01	SC8-3411	B

CB05-SC8-3411.008

DWG No. SC8-3416

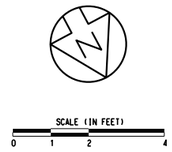


PLAN
SCALE: ½"=1'-0"



BEARING SEAT DETAIL 1
SCALE: 1"=1'-0"

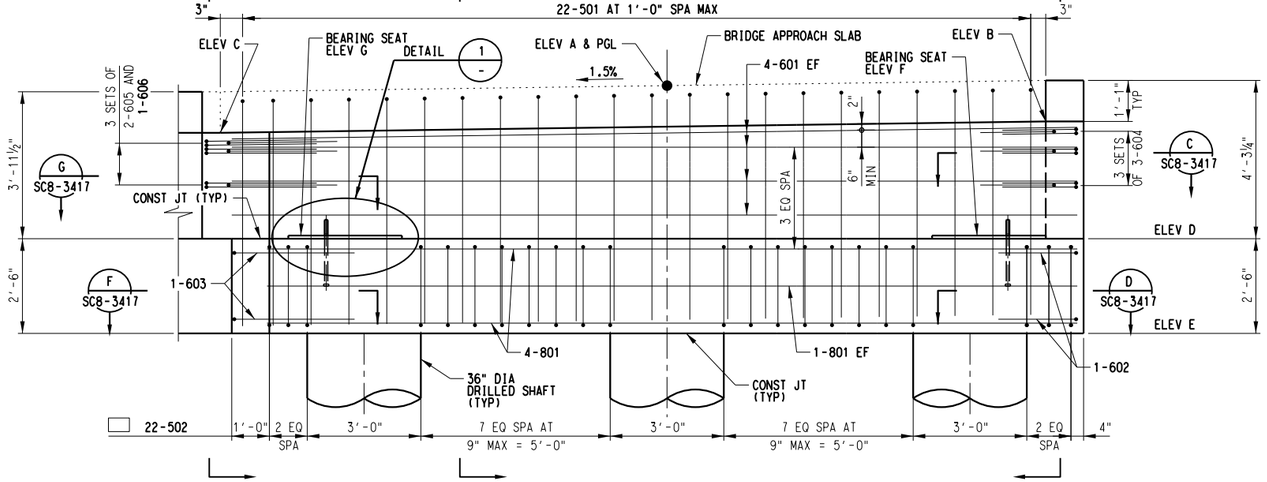
(SEE PLAN FOR ORIENTATION)
(BEARING SURFACE SHALL BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING ASSEMBLY)



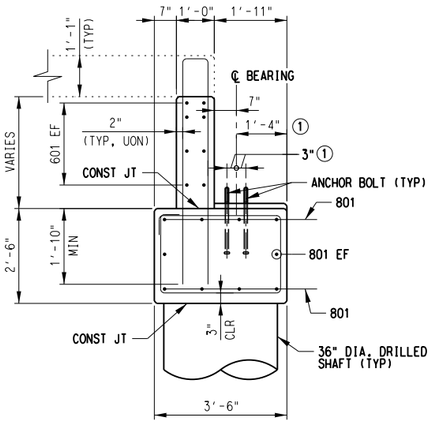
NOTES:

1. FOR FOUNDATION PLAN, SEE DRAWING No SC2-3411.
2. FOR SCHEDULE OF ELEVATIONS AND DRILLED SHAFT LENGTHS, SEE SUBSTRUCTURE SCHEDULE DRAWING No SC8-3411.
3. FOR GEOMETRY CONTROL PLANS, SEE DRAWING Nos SC8-3446 AND SC8-3447.
4. CONCRETE FOR ABUTMENT AND DRILLED SHAFTS SHALL BE CLASS "C" WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI.
5. ALL EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE CHAMFERED ¾ INCH.
6. REINFORCEMENT SHALL MEET THE REQUIREMENTS OF THE CURRENT ASTM DESIGNATION: A615 OR A706, GRADE 60.
7. BAR DIMENSIONS ARE OUT-TO-OUT.
8. MINIMUM CONCRETE COVER ON REINFORCEMENT SHALL BE TWO (2) INCHES UNLESS OTHERWISE NOTED.
9. FOR NOTES AND STANDARDS NOT SHOWN, SEE GENERAL NOTES OF THE BRIDGE STANDARD DRAWINGS.
10. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE, CROSS-SLOPE, AND/OR SUPERELEVATION.
11. ANCHOR BOLTS SHALL BE HEX HEAD ASTM F1554 GRADE 105.

① LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.



ELEVATION
SCALE: ½"=1'-0"



SECTION B
SCALE: ½"=1'-0"

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SCALE	NO SCALE
DRAWN	M.MEYER
DESIGNED	S. HOFFMANN
CHECKED	W. WUENKS
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
ABUTMENT 1

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3416	B

CB05-SC8-3416.008

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CB05-SC8-3416.008
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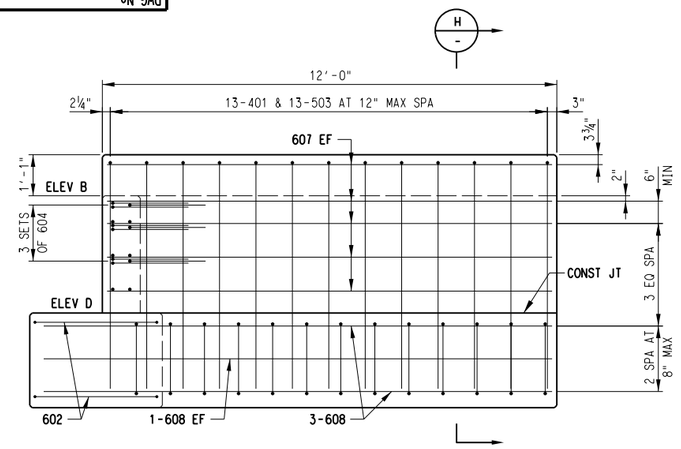
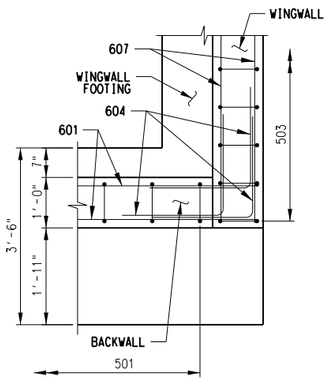
DWG No. SC8-3417



SECTION — SCALE: ½"=1'-0" — A — SC8-3416



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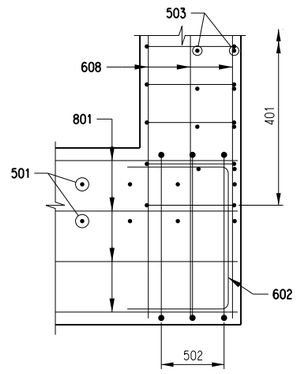
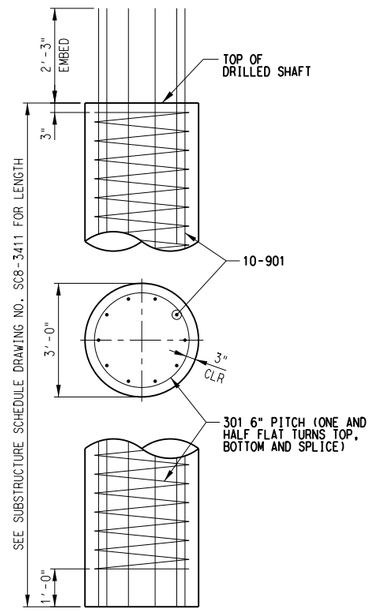


SECTION — SCALE: NO SCALE — D — SC8-3416

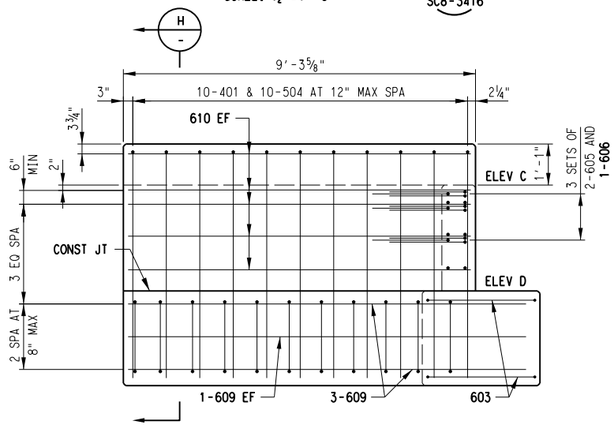


36" DRILLED SHAFT DETAIL — SCALE: ½"=1'-0" — -

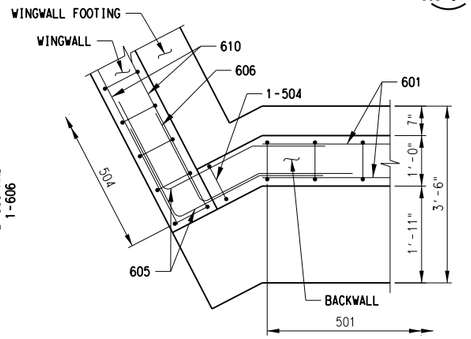
NOTE:

1. SEE DRAWING NO. SC8-3416 FOR NOTES.

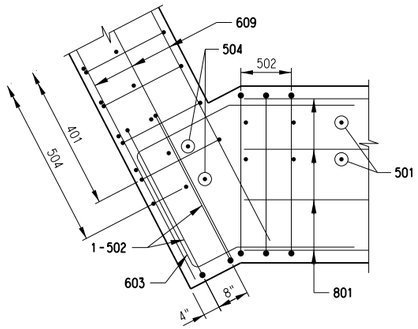
(1) LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.



SECTION — SCALE: ½"=1'-0" — E — SC8-3416



SECTION — SCALE: NO SCALE — G — SC8-3416



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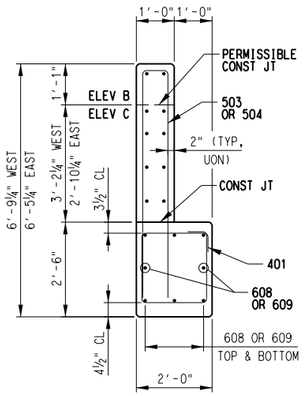
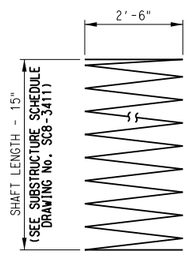
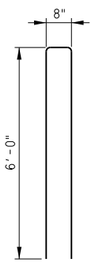


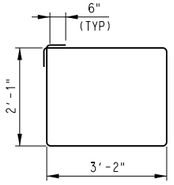
SECTION — SCALE: ½"=1'-0" — H — -



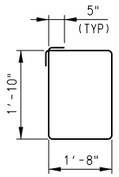
BARS 301



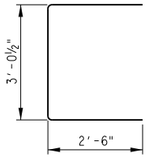
BAR 501, 503, 504



BAR 502



BAR 401



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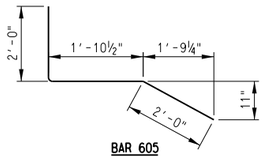

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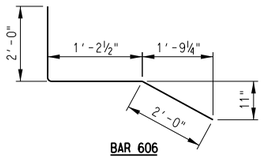

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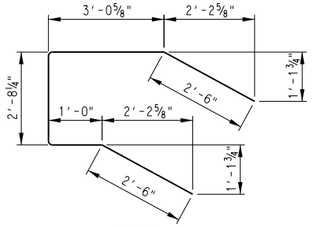

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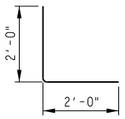

BAR 604

NOT AN APPROVED DRAWING
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CONTRACT SHEET No. 22 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	AS NOTED
DRAWN	M. MEYER
DESIGNED	S. HOFFMANN
CHECKED	W. MUENKS
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

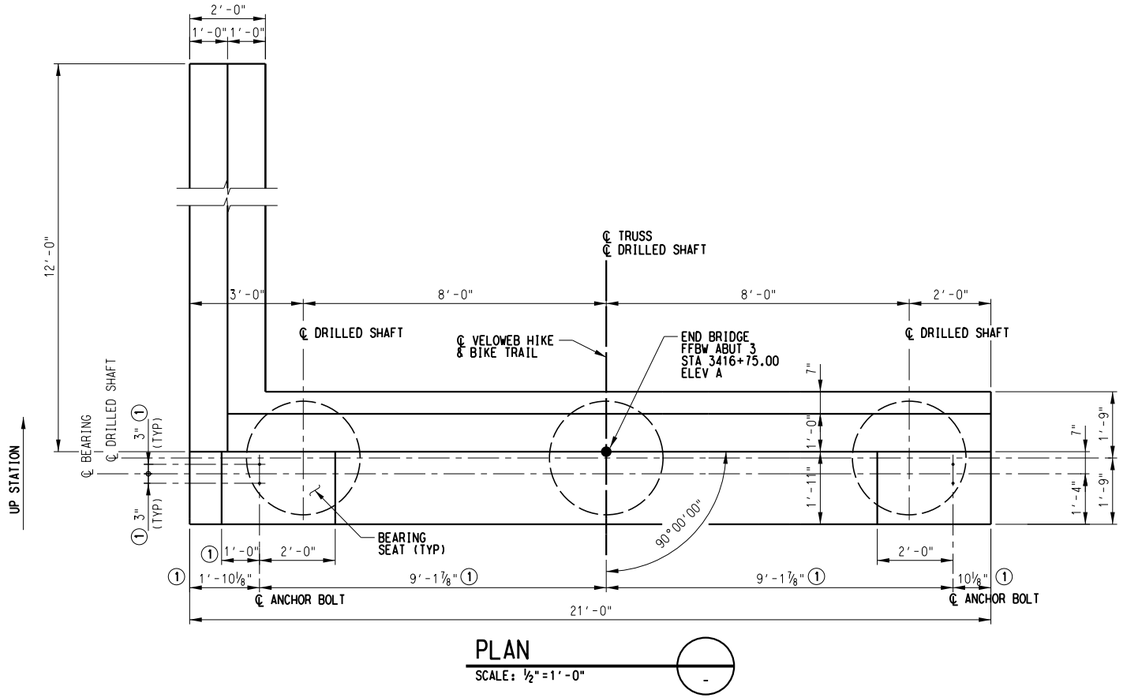
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
ABUTMENT 1 DETAILS

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3417	B

CB05-SC8-3417.008

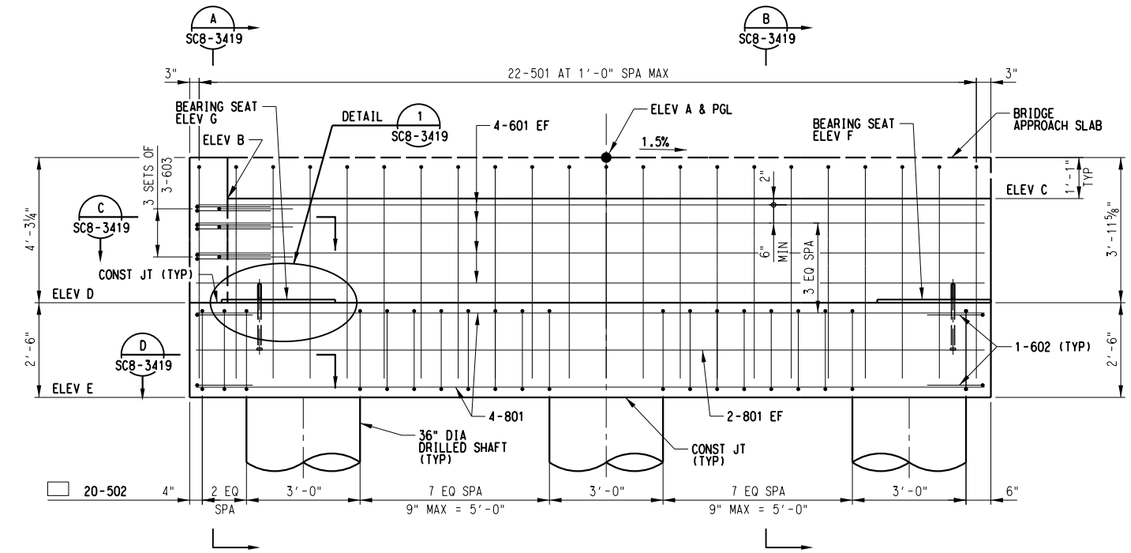
15-SEP-2022 14:12
CB05-SC8-3417.008
JEGSVCPW01
Default

DWG No. SC8-3418



PLAN

SCALE: ½"=1'-0"



ELEVATION

SCALE: ½"=1'-0"

NOTES:

1. FOR FOUNDATION PLAN, SEE DRAWING No SC2-3411.
2. FOR SCHEDULE OF ELEVATIONS AND DRILLED SHAFT LENGTHS, SEE SUBSTRUCTURE SCHEDULE DRAWING No SC8-3411.
3. FOR GEOMETRY CONTROL PLANS, SEE DRAWING Nos SC8-3446 AND SC8-3447.
4. FOR BEARING SEAT AND ANCHOR BOLT LAYOUT AND INFORMATION, SEE DRAWING No SC8-3419.
5. CONCRETE FOR ABUTMENT AND DRILLED SHAFTS SHALL BE CLASS "C" WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI.
6. ALL EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE CHAMFERED ¾ INCH.
7. REINFORCEMENT SHALL MEET THE REQUIREMENTS OF THE CURRENT ASTM DESIGNATION: A615 OR A706, GRADE 60.
8. BAR DIMENSIONS ARE OUT-TO-OUT.
9. MINIMUM CONCRETE COVER ON REINFORCEMENT SHALL BE TWO (2) INCHES UNLESS OTHERWISE NOTED.
10. FOR NOTES AND STANDARDS NOT SHOWN, SEE GENERAL NOTES OF THE BRIDGE STANDARD DRAWINGS.
11. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE, CROSS-SLOPE, AND/OR SUPERELEVATION.
12. ANCHOR BOLTS SHALL BE HEX HEAD ASTM F1554 GRADE 105. SEE SHEET No SC8-3419 FOR MORE DETAILS.

① LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.

NOT AN APPROVED DRAWING
IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 23 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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Phone: +1 (214) 884-4253
Firm Registration: F-10161
ARCHER WESTERN HERZOG

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SCALE	NO SCALE
DRAWN	E. KRACK
DESIGNED	S. HOFFMANN
CHECKED	W. MUENKS
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

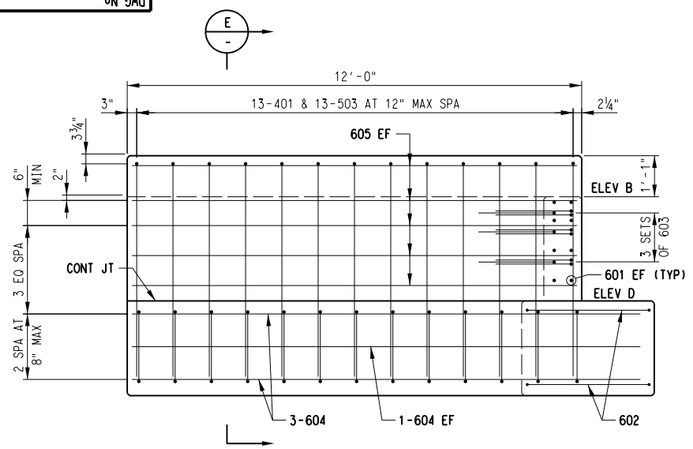
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
ABUTMENT 3

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3418	B

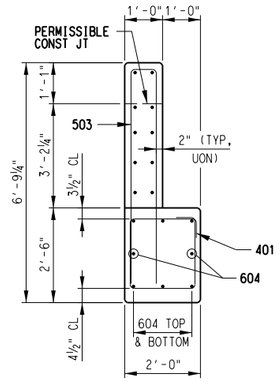
CB05-SC8-3418.008

15-SEP-2022 14:08
CB05-SC8-3418.008
JEGSVCPW001
Default

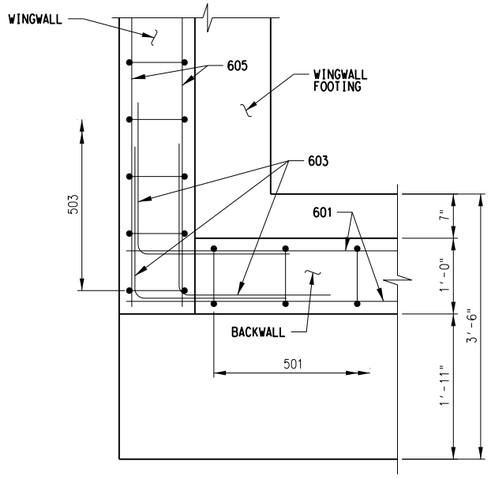
DWG No. SC8-3419



SECTION
SCALE: ½"=1'-0"
A SC8-3418



SECTION
SCALE: ½"=1'-0"
E -



SECTION
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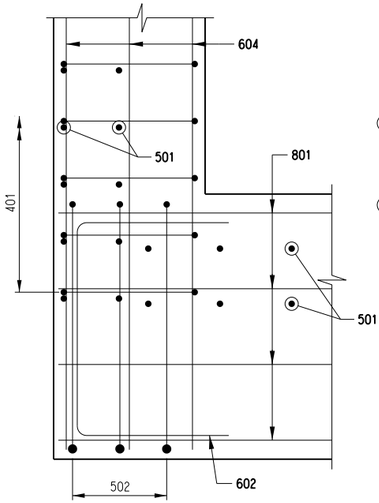
C SC8-3418



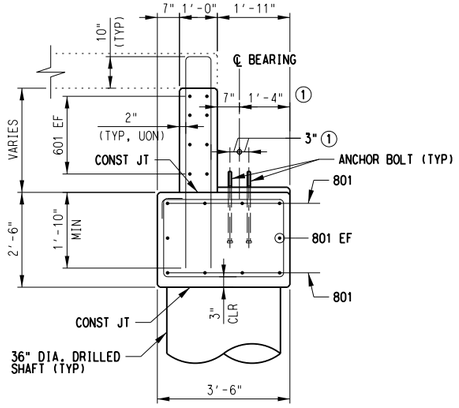
SECTION
SCALE: ½"=1'-0"
D SC8-3418

NOTE:

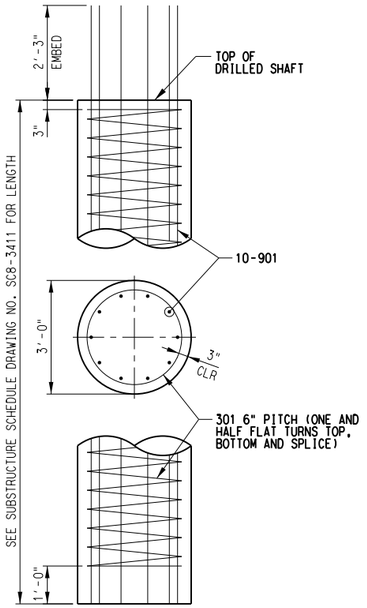
1. SEE DRAWING NO. SC8-3418 FOR NOTES.

① LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.

② SEE PLAN VIEW ON DRAWING NO. SC8-3418 FOR DIMENSIONS.



SECTION
SCALE: ½"=1'-0"
B SC8-3418



36" DRILLED SHAFT DETAIL
SCALE: ½"=1'-0"
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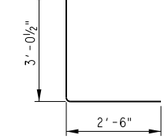
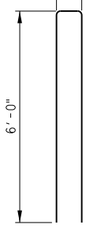
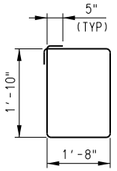


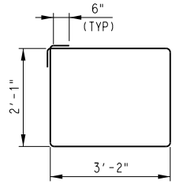
BAR 602



BAR 501, 503



BAR 401



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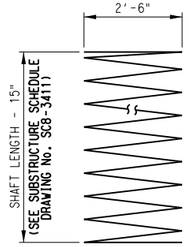
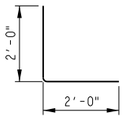


BARS 301



BAR 603

BEARING SEAT DETAIL
SCALE: 1"=1'-0"
1 SC8-3418

(SEE DRAWING No. SC8-3418 FOR ORIENTATION)
(BEARING SURFACE SHALL BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING ASSEMBLY)

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IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 24 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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FIRM REGISTRATION No. F-2966

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Firm Registration: F-10161

ARCHER WESTERN HERZOG

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SCALE	AS NOTED
DRAWN	E. KRACK
DESIGNED	S. HOFFMANN
CHECKED	W. WUENKS
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

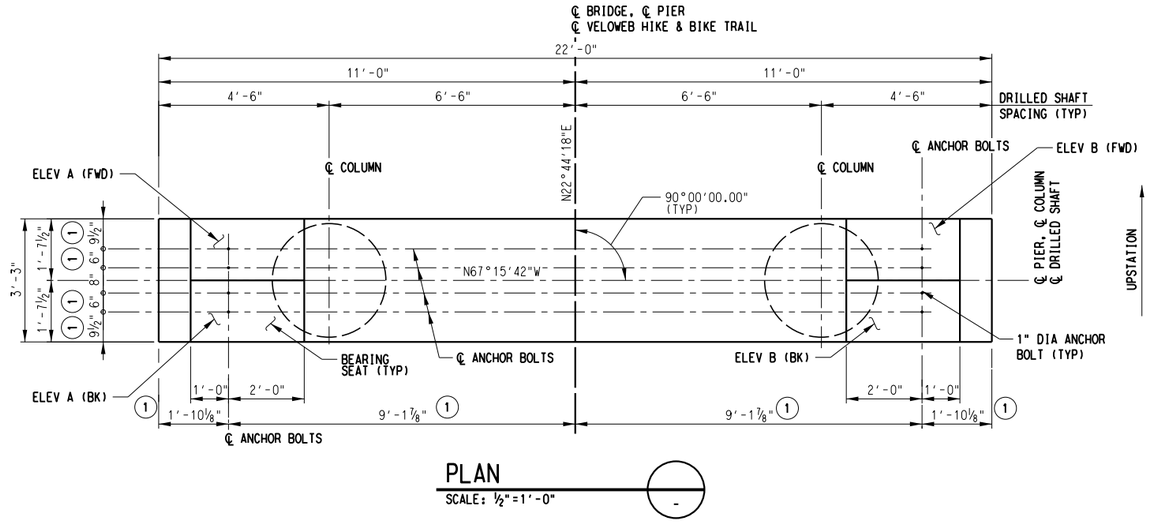
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
ABUTMENT 3 DETAILS

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3419	B

CB05-SC8-3419.008

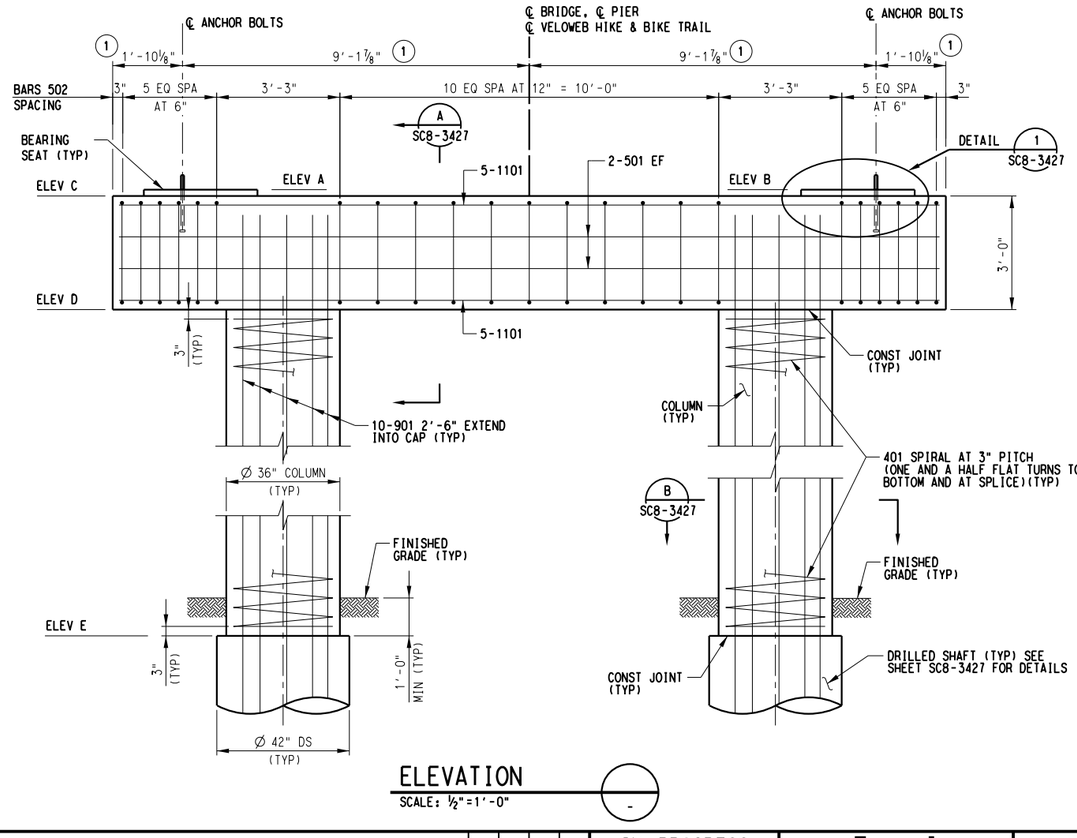
15-SEP-2022 14:14
CB05-SC8-3419.008
JEGSVCPWU01
Default

DWG No. SC8-3426



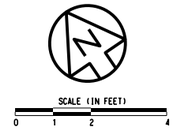
PLAN

SCALE: ½"=1'-0"



ELEVATION

SCALE: ½"=1'-0"



NOTES:

1. FOR FOUNDATION PLAN, SEE DRAWING No SC2-3411.
2. FOR SCHEDULE OF ELEVATIONS AND DRILLED SHAFT LENGTHS, SEE SUBSTRUCTURE SCHEDULE DRAWING No. SC8-3411.
3. FOR GEOMETRY CONTROL PLANS, SEE DRAWING Nos SC8-3446 AND SC8-3447.
4. FOR ADDITIONAL BEARING SEAT AND ANCHOR BOLT LAYOUT AND INFORMATION, SEE DRAWING No. SC8-3427.
5. CONCRETE FOR PIER, COLUMN AND DRILLED SHAFTS SHALL BE CLASS "C" WITH MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3600 PSI.
6. ALL EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE CHAMFERED ¾ INCH.
7. REINFORCEMENT SHALL MEET THE REQUIREMENTS OF THE CURRENT ASTM DESIGNATION: A615 OR A706, GRADE 60.
8. BAR DIMENSIONS ARE OUT-TO-OUT.
9. MINIMUM CONCRETE COVER ON REINFORCEMENT SHALL BE TWO (2) INCHES UNLESS OTHERWISE NOTED.
10. FOR NOTES AND STANDARDS NOT SHOWN, SEE GENERAL NOTES OF THE BRIDGE STANDARD DRAWINGS.
11. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE, CROSS-SLOPE, AND/OR SUPERELEVATION.
12. ANCHOR BOLTS SHALL BE HEX HEAD ASTM F1554 GRADE 105. SEE SHEET SC8-3427 FOR MORE DETAILS.

① LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.

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CONTRACT SHEET No. 25 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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ARCHER WESTERN HERZOG

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SCALE	NO SCALE
DRAWN	E. KRACK
DESIGNED	S. HOFFMANN
CHECKED	M. MUENKS
IN CHARGE	J.FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

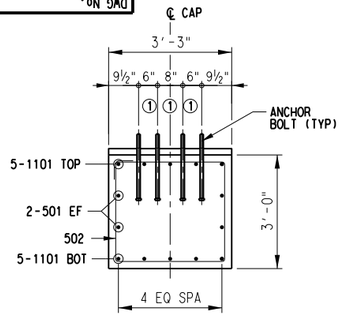
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
PIER 2

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3426	B

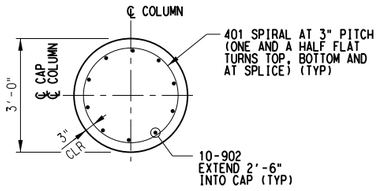
CB05-SC8-3426.008

15-SEP-2022 14:11
CB05-SC8-3426.008

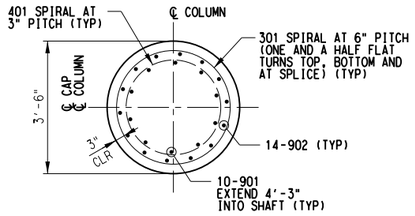
JEGSVCPWJ01
Default



SECTION A
SCALE: ½"=1'-0"
SC8-3426



COLUMN SECTION B
SCALE: ½"=1'-0"
SC8-3426



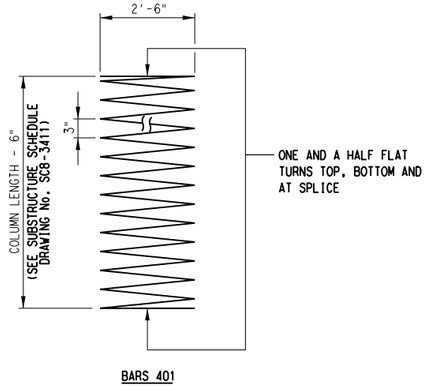
COLUMN AND DRILLED SHAFT INTERFACE C
SCALE: ½"=1'-0"

NOTES:

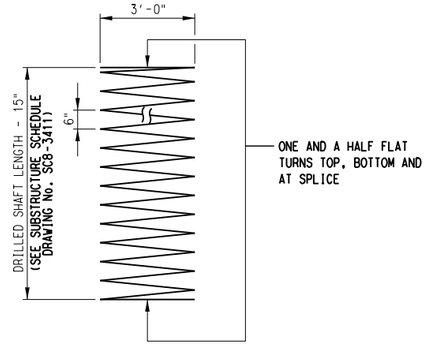
1. SEE DRAWING No. SC8-3426 FOR SHEET NOTES.

① LOCATIONS OF ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE PLANS BY OTHERS FOR FINAL ANCHOR BOLT LOCATIONS.

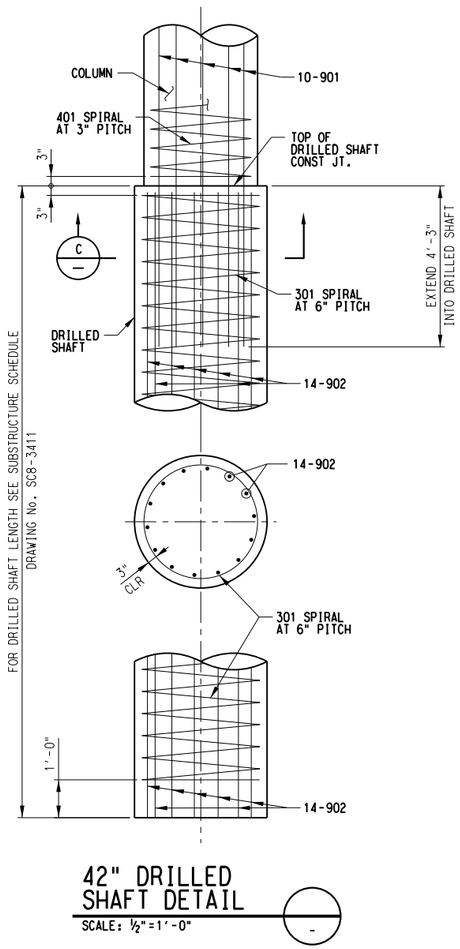
② SEE PLAN VIEW ON DRAWING No. SC8-3426 FOR DIMENSIONS.



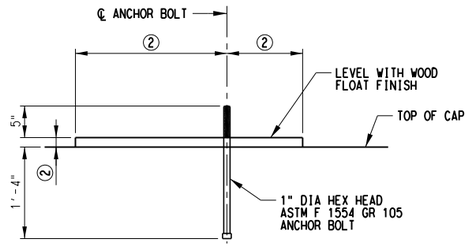
BARS 401



BARS 301

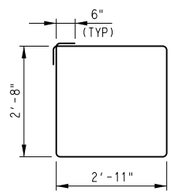


42" DRILLED SHAFT DETAIL
SCALE: ½"=1'-0"



BEARING SEAT DETAIL 1
SCALE: 1"=1'-0"
SC8-3426

(SEE DRAWING No. SC8-3426 FOR ORIENTATION)
(BEARING SURFACE SHALL BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING ASSEMBLY)



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IN CHARGE	J. FINKE
DATE	19 SEP 22

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
PIER 2 DETAILS

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3427	B

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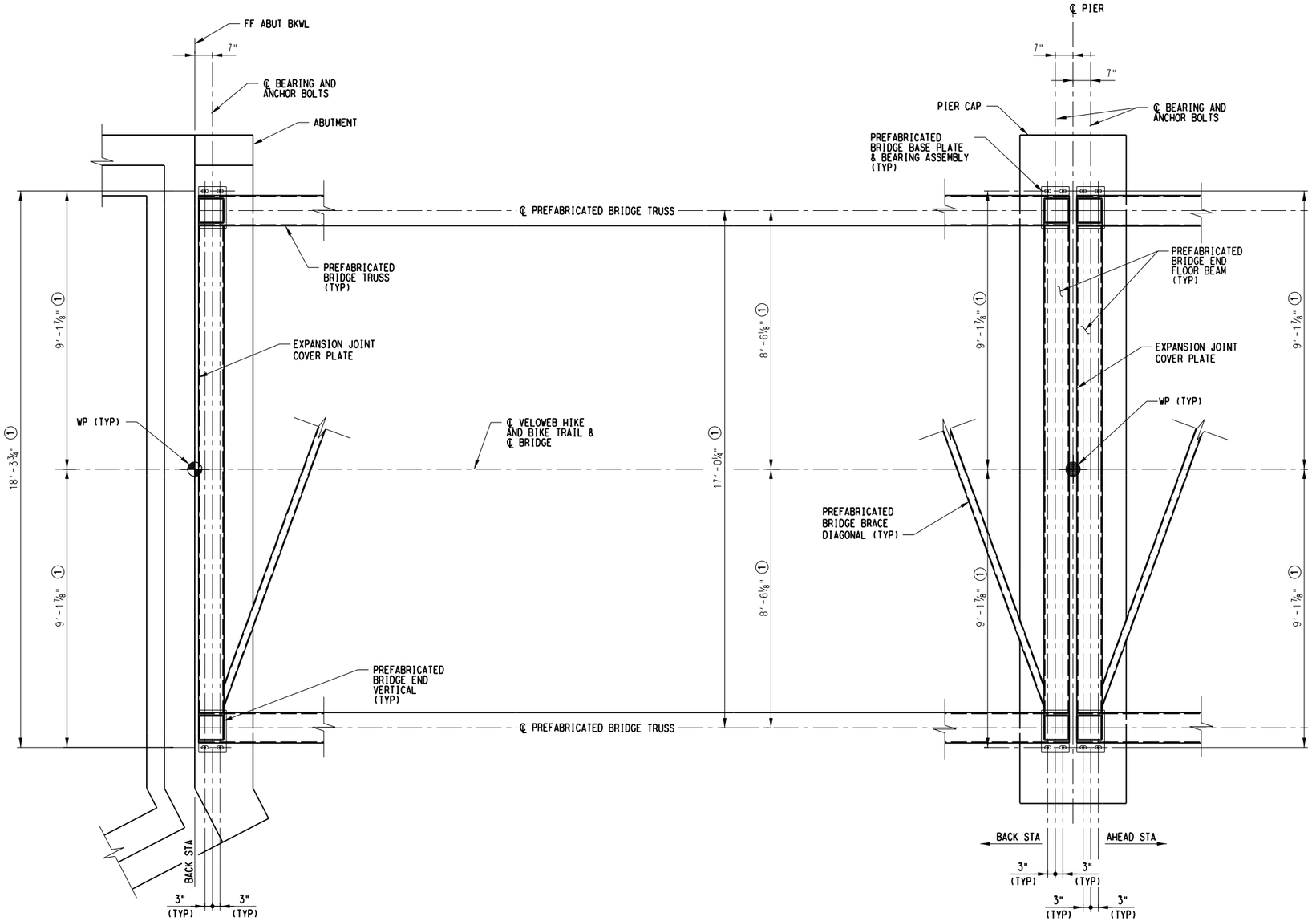
DWG No. SC8-3436



NOTES:

1. SHOP DRAWINGS FOR APPROVAL ARE REQUIRED.
2. A BEARING LAYOUT WHICH IDENTIFIES LOCATION AND ORIENTATION OF ALL BEARINGS MUST BE DEVELOPED BY THE BEARING FABRICATOR. PERMANENTLY MARK EACH BEARING IN ACCORDANCE WITH THE BEARING LAYOUT. A COPY OF THE BEARING LAYOUT IS TO BE PROVIDED TO THE ENGINEER.
3. TRUSS LAYOUT IS FOR ILLUSTRATION ONLY. SEE PREFABRICATED BRIDGE VENDOR'S PLANS FOR DETAILS.
4. PREFABRICATED SUPERSTRUCTURE, DECK FORM, SIDE DAMS, BEARING ASSEMBLIES, EXPANSION JOINTS, AND EXPANSION JOINT COVER PLATES ARE TO BE PROVIDED BY PREFABRICATED BRIDGE VENDOR.

① LOCATIONS OF BEARINGS AND ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE VENDOR'S PLANS FOR FINAL LOCATIONS.

TYPICAL DETAIL OF TRUSS ENDS AT ABUTMENTS — 1 / -

NO SCALE

ABUTMENT 1 SHOWN, ABUTMENT 3 SIMILAR

TYPICAL DETAIL OF TRUSS ENDS AT PIER — 3 / -

NO SCALE

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IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
PREFABRICATED BRIDGE
END AND BEARING DETAILS

CONTRACT	DWG No.	REV
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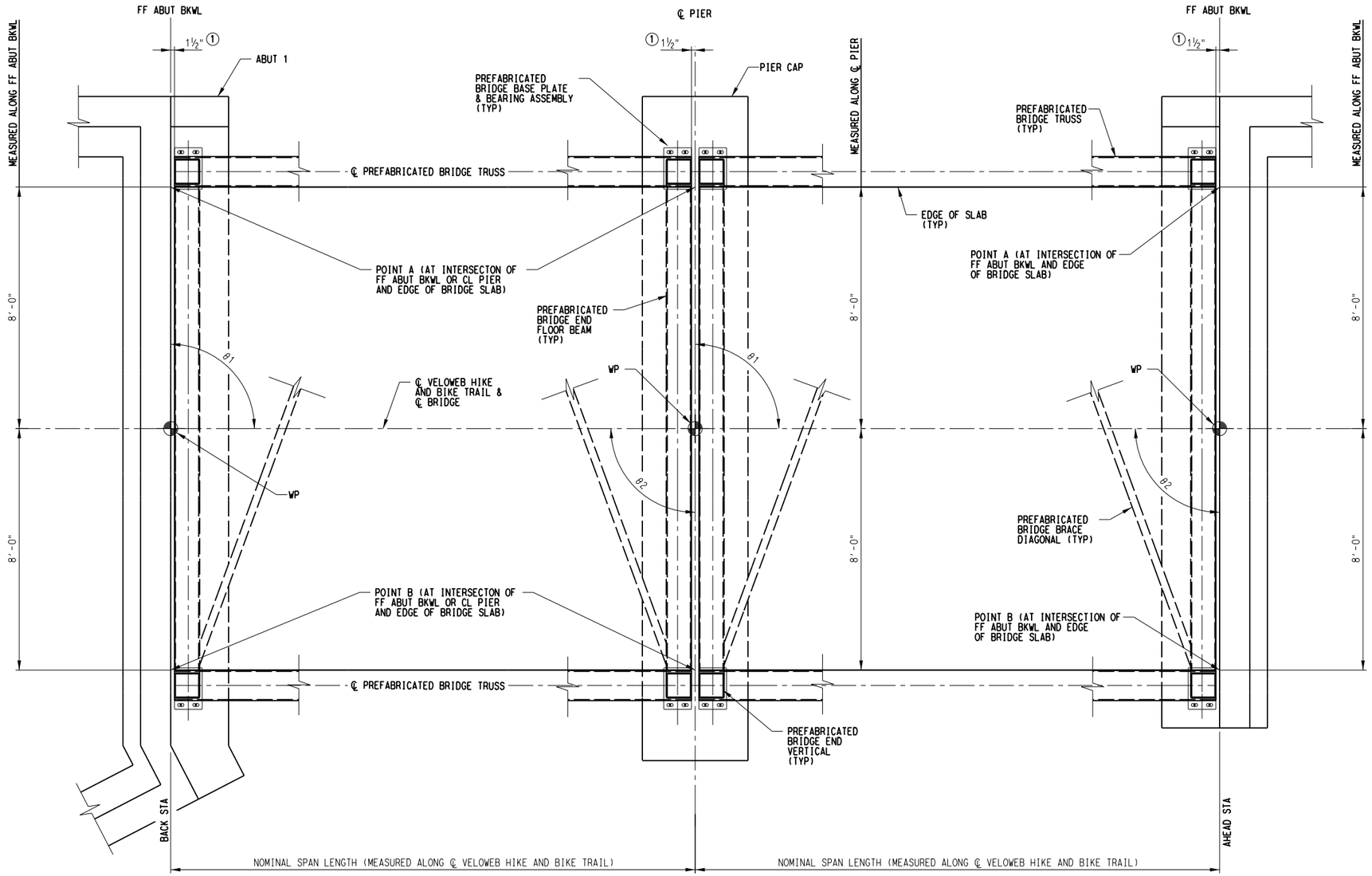
DWG No. SC8-3446



GEOMETRY CONTROL PLAN

NO SCALE

1 / -

NOTES:

1. FOR PLAN AND ELEVATION, SEE DRAWING No SC2-3401.
2. FOR TYPICAL SECTIONS, SEE DRAWING No SC8-3401.
3. FOR PEDESTRIAN TRAIL PLAN AND PROFILE, SEE HIKE AND BIKE TRAIL SHEETS.
4. FOR WORKING POINT COORDINATES SEE DRAWING No SC8-3411.
5. ALL DIMENSIONS SHOWN ARE HORIZONTALLY PROJECTED DIMENSIONS. THE LENGTHS SHALL BE ADJUSTED BY VERTICAL ELEVATION DIFFERENCE BETWEEN WORKING POINTS.
6. TRUSS LAYOUT IS FOR ILLUSTRATION ONLY. SEE PREFABRICATED BRIDGE VENDOR'S PLANS FOR DETAILS.

① LOCATIONS OF BEARINGS AND ANCHOR BOLTS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED VENDOR'S PLANS FOR FINAL LOCATIONS.

DIMENSIONS SHOWN ARE ASSUMED DIMENSIONS USED FOR THE PURPOSE OF VERIFYING ADEQUATE SUBSTRUCTURE MEMBER SIZES HAVE BEEN PROVIDED. REFER TO THE PREFABRICATED BRIDGE VENDOR'S PLANS FOR FINAL DIMENSIONS.

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
GEOMETRY CONTROL PLAN
SHEET 1 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3446	B

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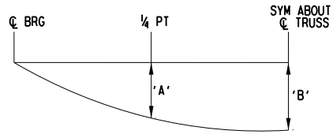
DWG No. SC8-3447

ABUT / PIER No.	ABUT / PIER STATION	WORKING POINT PGL EL AT CL	ABUT / PIER BEARING	SPAN No.	NOMINAL SPAN LENGTH (WP TO WP)	ASSUMED TRUSS DIMENSIONS						
						TRUSS LENGTH	CL BRG TO CL BRG	DEFL 'A' (INCH)	DEFL 'B' (INCH)	TRUSS BEARING	ANGLE FROM TRUSS TO BACK ABUT @1	ANGLE FROM AHEAD PIER TO ABUT @2
1	3414+11.00	579.00	N 67°15'42" W	1	132'-0"	131'-9"	130'-10"	*	*	N 22°44'18" E	90°00'00"	- - -
2	3415+43.00	582.70	N 67°15'42" W					*	*	N 22°44'18" E	90°00'00"	90°00'00"
3	3416+75.00	583.75	N 67°15'42" W	2	132'-0"	131'-9"	130'-10"	*	*	N 22°44'18" E	- - -	90°00'00"



NOTES: DEFLECTIONS SHOWN ARE DUE TO PREFABRICATED BRIDGE SUPERSTRUCTURE, CAST-IN-PLACE CONCRETE SLAB AND ALL OTHER SUPERIMPOSED DEAD LOADS. DEFLECTIONS SHOWN ARE INSTANT DEFLECTIONS. ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

DEAD LOAD DEFLECTIONS DIAGRAM

NO SCALE

1
-

NOTES:

1. SEE NOTES ON DRAWING No. SC8-3446.

* ANTICIPATED DEAD LOAD DEFLECTIONS SHALL BE PROVIDED BY THE PREFABRICATED BRIDGE MANUFACTURER. DEFLECTIONS SHALL BE DUE TO PREFABRICATED BRIDGE SUPERSTRUCTURE, CAST-IN-PLACE CONCRETE SLAB AND ALL OTHER SUPERIMPOSED DEAD LOADS. DEFLECTIONS SHALL BE INSTANT DEFLECTIONS.

TOP OF SLAB ELEVATIONS						
ABUT / PIER No.	POINT	STATION	PGL EL (FT)	OFFSET (FT)	SLOPE %	TOP OF SLAB EL (FT)
1	A	3414+11.00	579.00	8.00	1.50%	579.12
	B	3414+11.00		-8.00	1.50%	578.88
2	A	3415+43.00	582.70	8.00	1.50%	582.82
	B	3415+43.00		-8.00	1.50%	582.58
3	A	3416+75.00	583.76	8.00	1.50%	583.88
	B	3416+75.00		-8.00	1.50%	583.64

NOTES: TOP OF DECK/SLAB ELEVATIONS SHOWN ARE MEASURED ALONG THE FRONT FACE OF ABUTMENT BACKWALLS AND ALONG THE CL OF PIERS. ELEVATIONS ARE TAKEN AT THE EDGE OF DECK.

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
GEOMETRY CONTROL PLAN
SHEET 2 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3447	B

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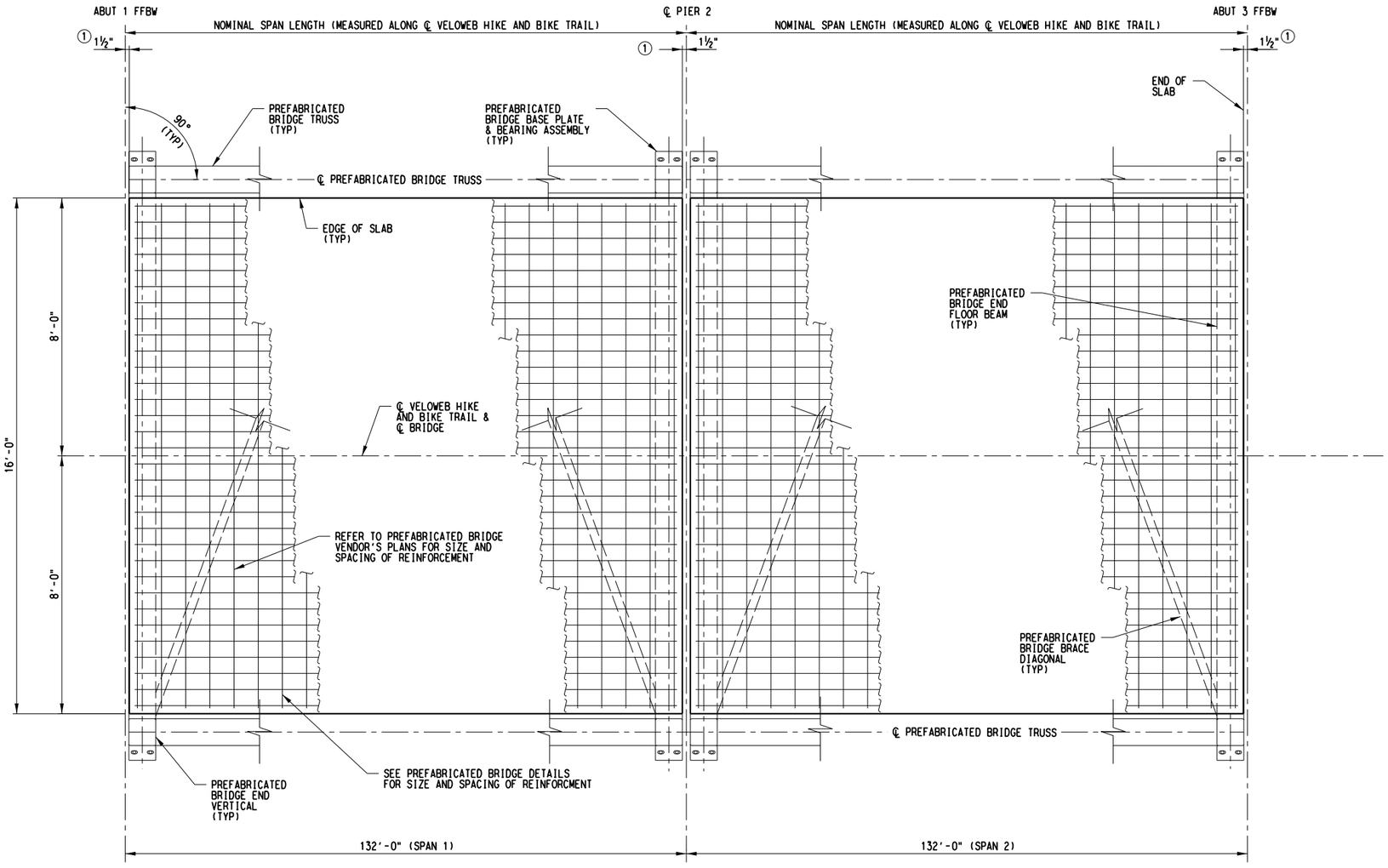
DWG No. SC3-3401



SLAB REINFORCING PLAN

NO SCALE

1 / -

NOTES:

1. SLAB DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
2. ALL CONCRETE SHALL BE TxDOT CLASS S CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
3. ALL SLAB REINFORCING BARS SHALL BE ASTM A615, GRADE 60 AND EPOXY COATED.
4. FOR TYPICAL SLAB SECTION, SEE DRAWING No SC8-3451.
5. PREFABRICATED BRIDGE SUPERSTRUCTURE, DECK FORM, SIDE DAMS, BEARING ASSEMBLIES, EXPANSION JOINTS, AND EXPANSION JOINT COVER PLATES ARE TO BE PROVIDED BY THE PREFABRICATED BRIDGE VENDOR.
6. FOR ADDITIONAL DETAILS, SEE GEOMETRY CONTROL PLANS, DRAWING Nos SC8-3446 AND SC8-3447.
7. FOR SECTION CONTROL LINE, SEE PLAN AND ELEVATION SHEET, DRAWING No SC2-3401, AND TYPICAL SECTIONS SHEET, DRAWING No SC8-3401.
8. TRUSS LAYOUT IS FOR ILLUSTRATION ONLY. SEE PREFABRICATED BRIDGE VENDOR'S PLANS FOR DETAILS.
9. FOR THE FINAL SURFACE TEXTURE, A ROUGHENED BROOM FINISH SHALL BE PROVIDED AS A NON-SKID FINISH.
10. CONTROL JOINTS SHALL BE PROVIDED AT EVERY FLOOR BEAM. REFER TO THE PREFABRICATED BRIDGE VENDOR'S PLANS FOR FLOOR BEAM LOCATIONS.
11. EDGE OF SLAB ARE PARALLED TO TRUSS BEARINGS UNLESS NOTED OTHERWISE.

① TRUSS DIMENSIONS ARE SUBJECT TO CHANGE. REFER TO THE PREFABRICATED BRIDGE VENDOR'S PLANS FOR FINAL TRUSS DIMENSIONS.

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
SLAB REINFORCING PLAN

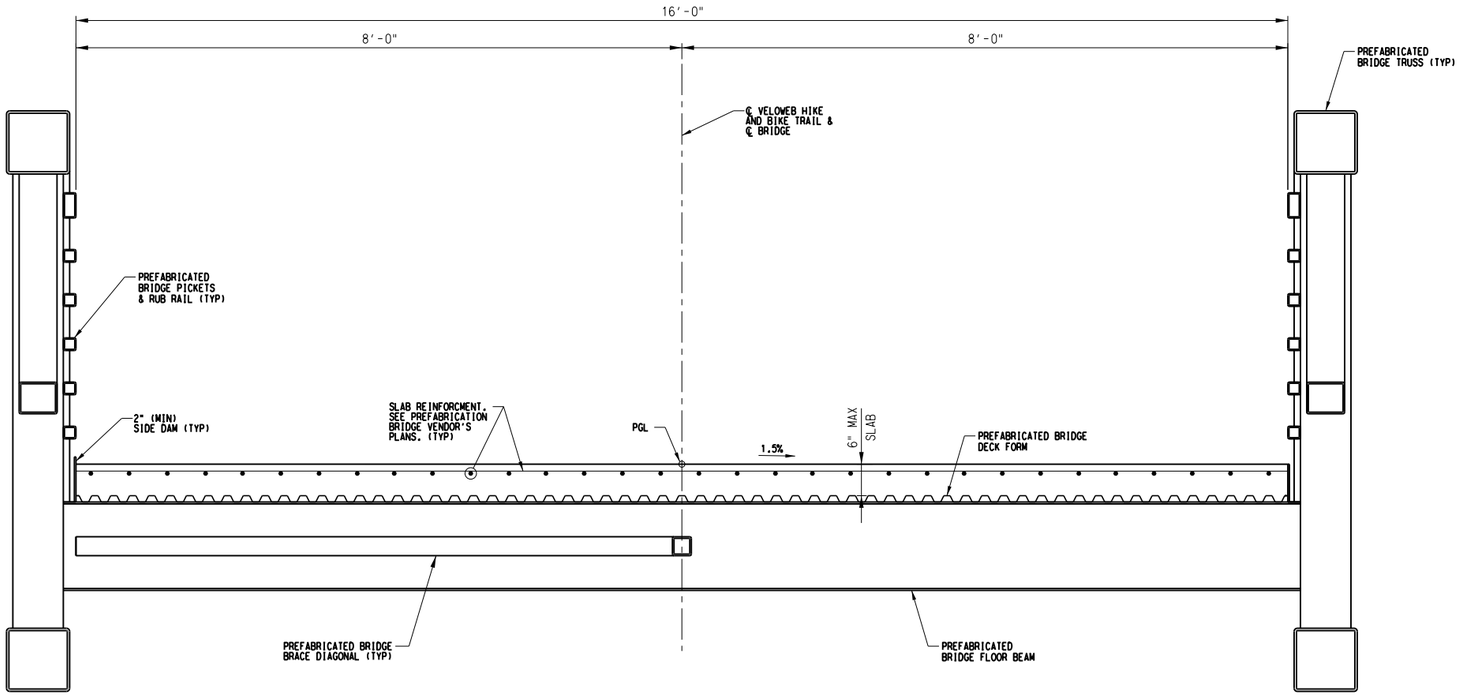
CONTRACT	DWG No.	REV
C-2033270-01	SC3-3401	B

CB05-SC3-3401.008

DWG No. SC8-3451

NOTES:

1. FOR NOTES SEE DRAWING NO. SC8-3491.
2. RUB RAIL AND HORIZONTAL PICKETS ARE FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO PREFABRICATED BRIDGE VENDOR DRAWINGS FOR DETAILS.



TYPICAL TRANSVERSE SECTION 1/-
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LOOKING UPSTATION

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PEDESTRIAN BRIDGE (#34P)
TYPICAL SLAB SECTION

CONTRACT	DWG No.	REV
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DWG No. SC8-3491

PREFABRICATED BRIDGE REQUIREMENTS AND NOTES

BRIDGE GEOMETRY AND DESIGN REQUIREMENTS

1. THE PREFABRICATED STRUCTURE SPAN LENGTHS FROM CENTERLINE TO CENTERLINE OF PIER OR TO FRONT FACE OF BACKWALL SHALL BE AS AS SHOWN ON THE PLAN AND ELEVATIONS. SPAN LENGTHS SHOWN ARE HORIZONTAL AND MUST ADJUSTED FOR GRADE.
2. THE CLEAR WIDTH OF THE BRIDGE (INSIDE OF HANDRAIL TO INSIDE OF HANDRAIL) SHALL BE 16'-0".
3. THE ELEVATION DIFFERENCE BETWEEN PIERS IS NOTED ON THE INCLUDED PLAN AND ELEVATION SHEET.
4. LIVE LOAD DEFLECTION SHALL NOT EXCEED 1/360 OF THE SPAN LENGTH. HORIZONTAL DEFLECTIONS UNDER UNFACTORED WIND LOADING SHALL NOT EXCEED 1/360 OF THE SPAN LENGTH.
5. VIBRATIONS SHALL BE INVESTIGATED AS A SERVICE LIMIT STATE USING LOAD COMBINATION SERVICE I IN TABLE 3.4.1-1 OF AASHTO LRFD AND SHALL MEET THE CRITERIA SPECIFIED IN SECTION 6 OF THE LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES. VIBRATION OF THE STRUCTURE SHALL NOT CAUSE DISCOMFORT OR CONCERN TO USERS OF THE BRIDGE.
6. PREFABRICATED BRIDGE SHALL BE CONSTRUCTED OF UNPAINTED WEATHERING STEEL.
7. THE PREFABRICATED STRUCTURE SHALL INCLUDE RAILING WITH RUB RAILS. RAILINGS SHALL MEET THE REQUIRMENTS AS SPECIFIED IN AASHTO "GUIDE FOR BICYCLE FACILITIES" 4TH EDITION, 2012. REFER TO AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS" 8TH EDITIONS FOR LOADING AND DESIGN REQUIREMENTS.
8. REFER TO THE BRIDGE PLAN AND ELEVATION SHEET FOR ASSUMED DEPTH FOR LOW CHORD AND TOP OF CAP DEPTHS.
9. MAINTAIN A FLUSH DECK WITH THE APPROACH SLABS ON EITHER END.
10. THE PREFABRICATED STRUCTURE SHALL BE ADA COMPLIANT.
11. THE PREFABRICATED STRUCTURE SHALL INCLUDE DESIGN, DETAILS AND MATERIALS FOR THE PREFABRICATED SUPERSTRUCTURE, BEARING ASSEMBLIES, EXPANSION JOINTS, EXPANSION JOINT COVER PLATES, WIRE MESH, RAILINGS, CLEARANCE SIGN SUPPORT BRACKETS, DRIP PANS AND ANCHOR BOLT LOCATIONS.
12. FABRICATOR SHALL PROVIDE IPA WOODEN RUB RAILS.

DESIGN LOADS (UNFACTORED)

DEAD LOADS:

IN ADDITION TO THE SELF-WEIGHT OF THE PREFABRICATED STRUCTURE AND ANY OTHER MISC DEAD LOADS REQUIRED BY THE PRECEEDING SPECIFICATIONS AND STANDARDS, THE PREFABRICATED STRUCTURE SHALL ALSO BE DESIGNED FOR THE FOLLOWING DEAD LOADS:

1. 16'-0" WIDE BY 6" THICK (MINIMUM) CONCRETE DECK WITH A CROSS SLOPE AS IDENTIFIED IN THE LAYOUT SHEET. MINIMUM UNIT WEIGHT FOR CONCRETE SHALL BE 150 PCF

LIVE LOADS:

IN ACCORDANCE WITH THE PRECEEDING SPECIFICATIONS AND STANDARDS, THE PREFABRICATED STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LIVE LOADS:

1. PEDESTRIAN LIVE LOAD = 90 PSF
2. VEHICULAR LIVE LOAD = H10 LOADING

THE ABOVE LOADING IS NOT ALL-INCLUSIVE. THE PREFABRICATED STRUCTURE SHALL ALSO BE DESIGNED FOR ANY ADDITIONAL LOADS AS REQUIRED BY THE PRECEEDING SPECIFICATIONS (SUCH AS WIND LOAD, THERMAL, ETC.).

DESIGN SPECIFICATIONS AND STANDARDS

(IN ORDER OF PRECEDENCE)

1. DART COTTON BELT DESIGN CRITERIA MANUAL.
2. TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES (2014) AND SPECIAL PROVISIONS THERETO.
3. TxDOT GEOTECHNICAL MANUAL (2020).
4. AWS D1.5 BRIDGE WELDING CODE (LATEST VERSION).
5. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRIDGE DESIGN SPECIFICATIONS 8TH EDITION (2017).
6. LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES (2009) WITH 2015 INTERIM REVISIONS.
7. AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS 1ST EDITION (2015) AND ALL INTERIM REVISIONS THERETO.
8. "ANNUAL BOOK OF ASTM STANDARDS" OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
9. "STANDARD SPECIFICATIONS FOR TRANSPORTATION MATERIALS AND METHODS OF SAMPLING AND TESTING" OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (2018).

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CHECKED	R. RILEY
IN CHARGE	J. FINKE
DATE	19 SEP 22

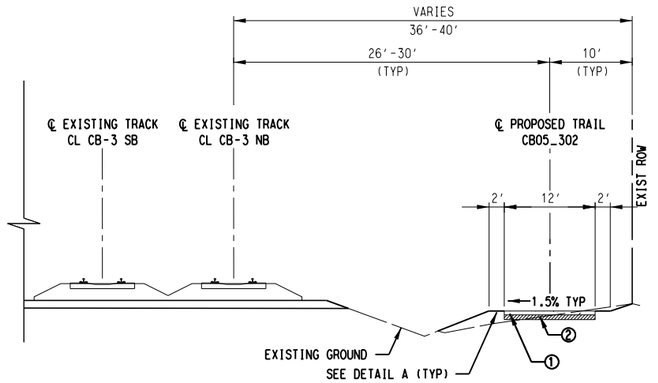
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
BRIDGE STANDARD DRAWINGS
PEDESTRIAN BRIDGE (#34P)
REQUIREMENTS AND NOTES

CONTRACT	DWG No.	REV
C-2033270-01	SC8-3491	B

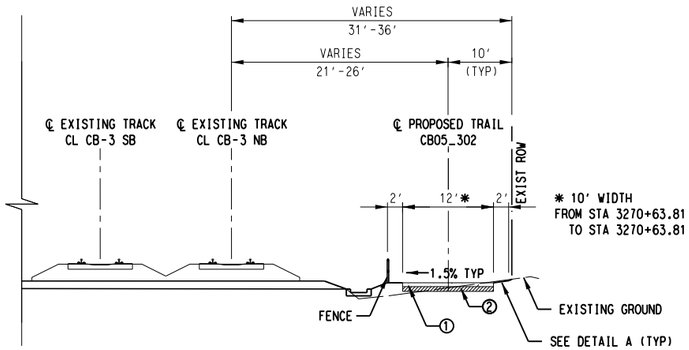
CB05-SC8-3491.008

DWG No. CC7-3393



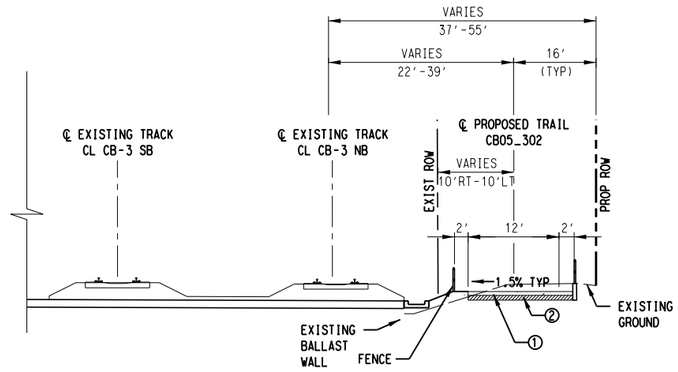
TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_302 STA. 3258+65.22 TO 3269+24.81

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_302 STA. 3269+24.81 TO 3270+83.81

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_302 STA. 3270+83.81 TO 3273+60.73

NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

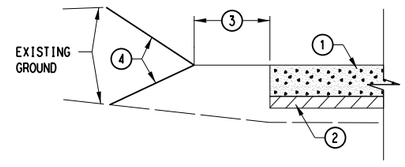
LEGEND

(1) 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

(2) 1" SAND CUSHION @ 95% STANDARD PROCTOR.

(3) DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

(4) MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM



15-SEP-2022 13:54
CB05-CC7-3393.010

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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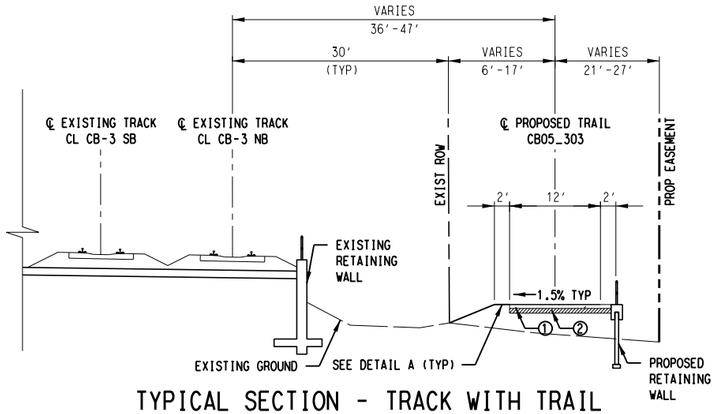
CONTRACT SHEET No. 33 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 1 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3393	B

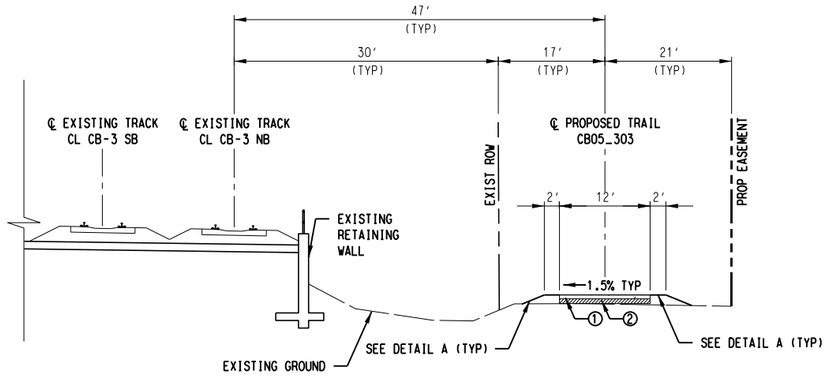
CB05-CC7-3393.010

DWG No. CC7-3394



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3308+52.24 TO 3310+78.25

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3310+78.25 TO 3312+64.25

NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

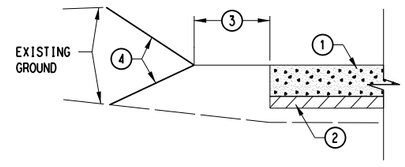
LEGEND

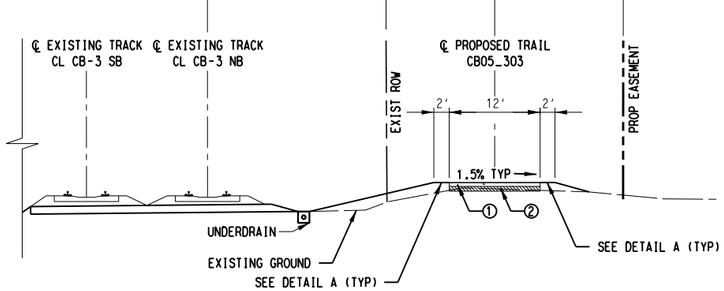
(1) 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

(2) 1" SAND CUSHION @ 95% STANDARD PROCTOR.

(3) DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

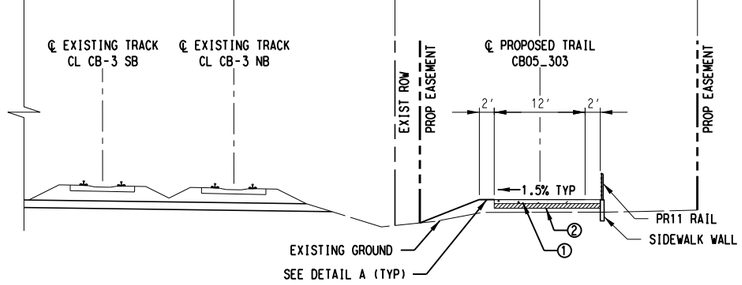
(4) MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM





TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3312+64.25 TO 3329+25.84
CL CB05_303 STA. 3345+00.00 TO 3350+40.83

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3350+40.83 TO 3352+81.99

NO SCALE

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CONTRACT SHEET No. 34 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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IN CHARGE	B. ALLDREDGE
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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 2 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3394	B

CB05-CC7-3394.010

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CB05-CC7-3394.010

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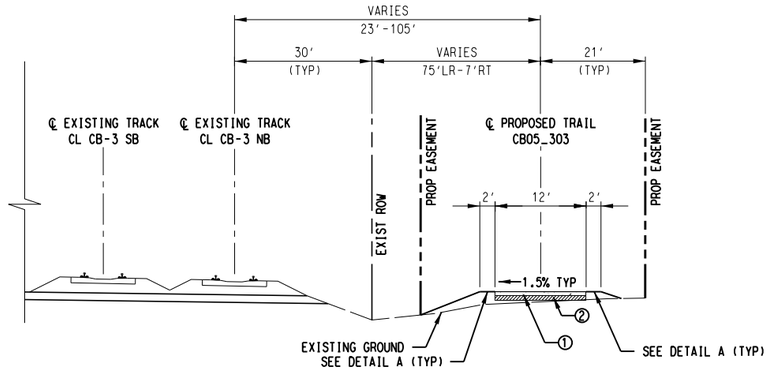
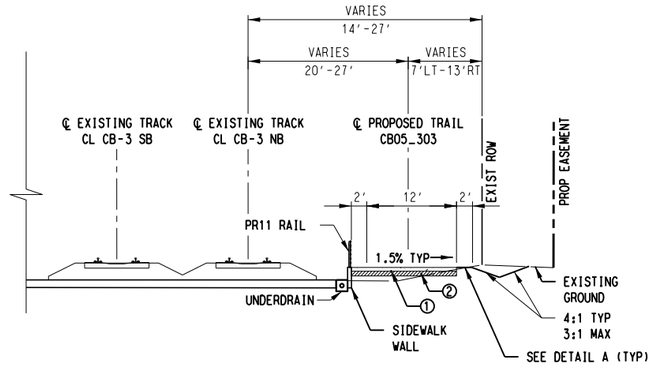


TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3552+81.99 TO 3353+74.09
CL CB05_303 STA. 3556+38.08 TO 3360+70.46

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3360+70.46 TO 3370+66.46
CL CB05_303 STA. 3373+36.46 TO 3378+55.55

NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

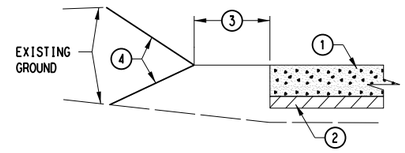
LEGEND

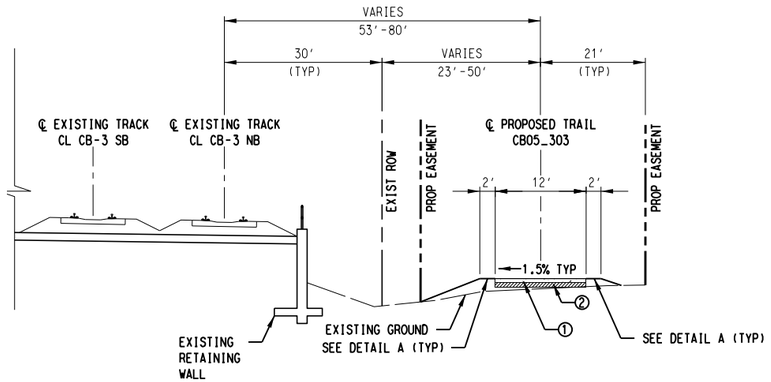
(1) 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

(2) 1" SAND CUSHION @ 95% STANDARD PROCTOR.

(3) DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

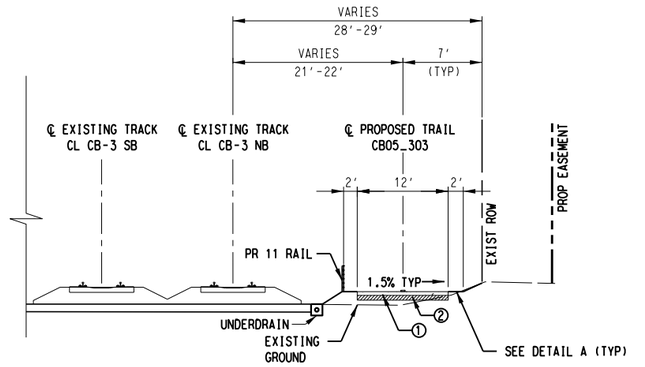
(4) MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM





TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3353+74.09 TO 3356+38.08

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_303 STA. 3370+66.46 TO 3373+36.46

NO SCALE

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IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 35 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP
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DESIGNED	A. ENSOR
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 3 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3395	B

CB05-CC7-3395.010

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CB05-CC7-3395.010
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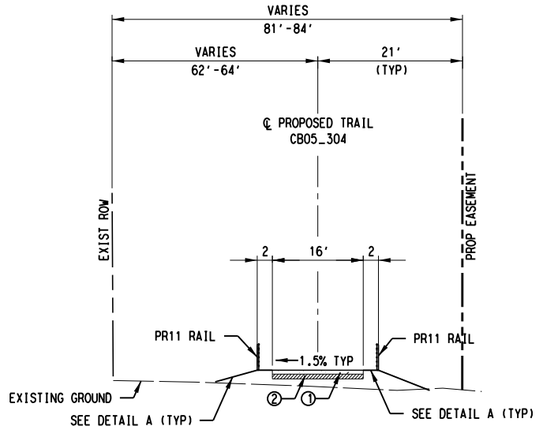
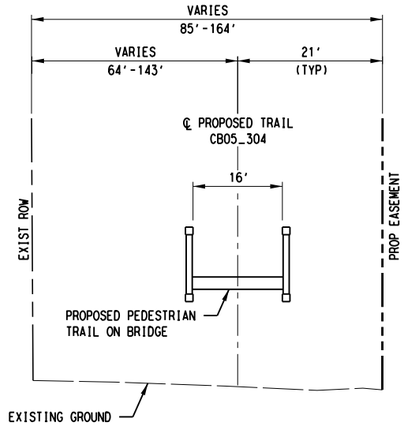
DWG No. CC7-3398



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3413+94.80 TO 3414+11.00
NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3414+11.00 TO 3416+74.57
NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

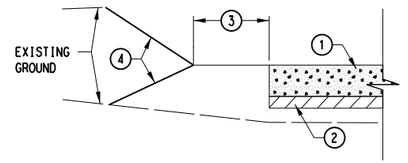
LEGEND

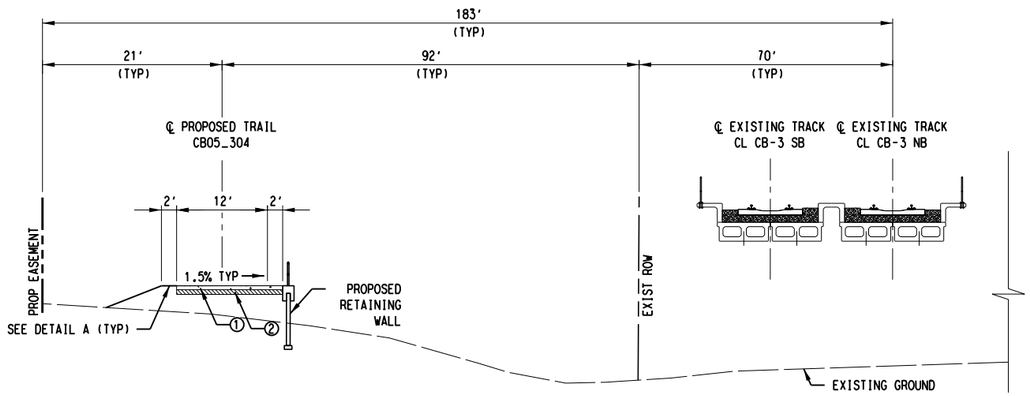
(1) 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

(2) 1" SAND CUSHION @ 95% STANDARD PROCTOR.

(3) DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

(4) MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM





TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3416+74.57 TO 3417+27.33
NO SCALE

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CONTRACT SHEET No. 36 OF 221

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DESIGNED	A. ENSOR
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 4 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3398	B

CB05-CC7-3398.010

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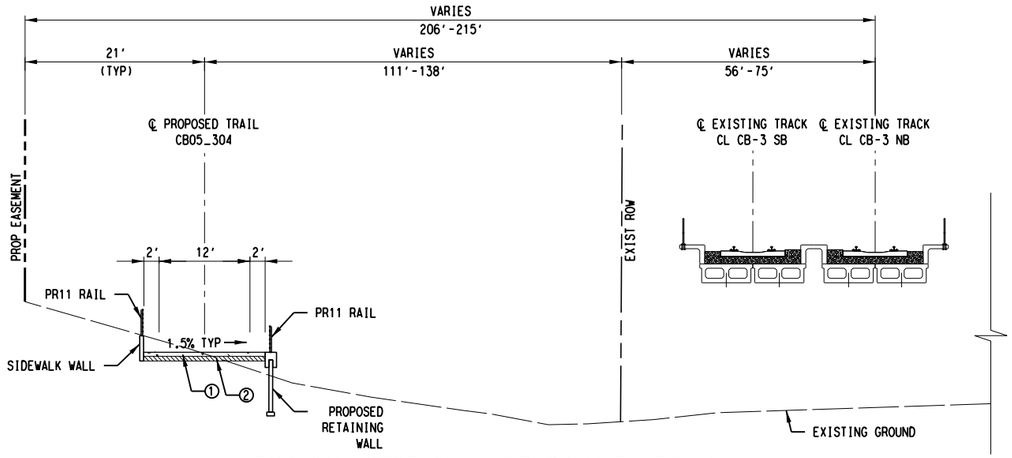
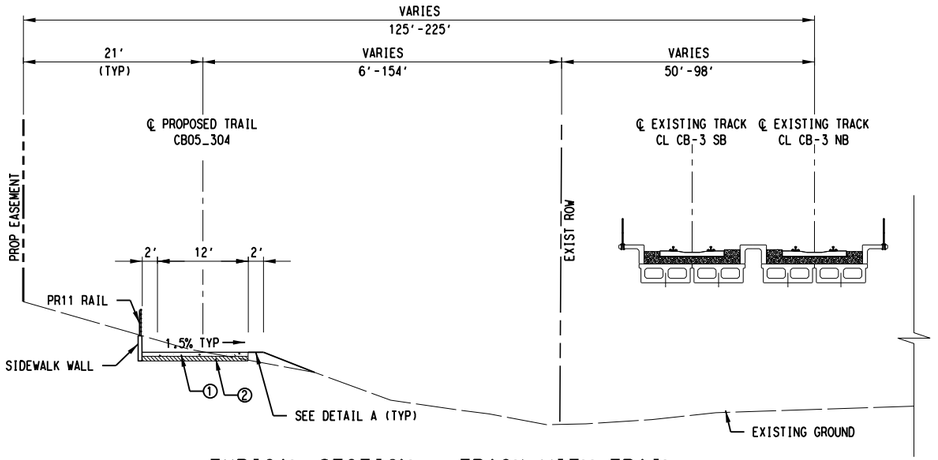
DWG No. CC7-3399



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3417+27.33 TO 3418+00.00

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3418+00.00 TO 3422+70.05

NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

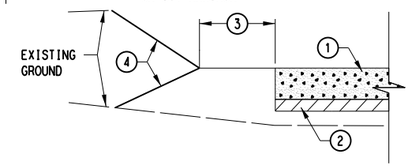
LEGEND

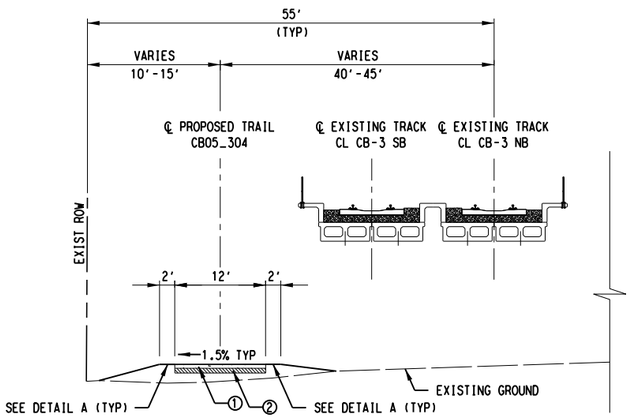
① 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

② 1" SAND CUSHION @ 95% STANDARD PROCTOR.

③ DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

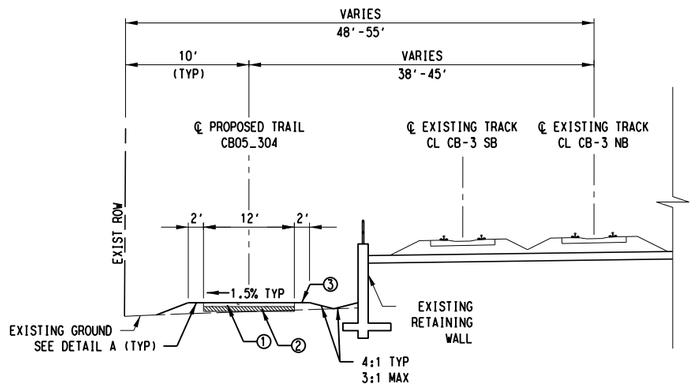
④ MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM





TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3423+00.00 TO 3423+90.00

NO SCALE



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3423+90.00 TO 3430+09.35

NO SCALE

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DESIGNED	A. ENSOR
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 5 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3399	B

CB05-CC7-3399.010

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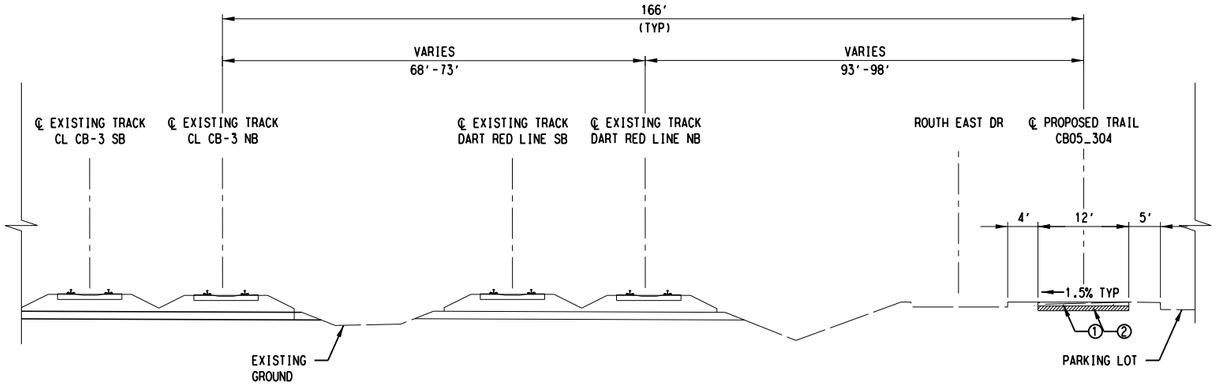
DWG No. CC7-3400



TYPICAL SECTION - TRACK WITH TRAIL
CL CB05_304 STA. 3423+00.00 TO 3445+00.00

NO SCALE

NOTES:

1. SEE TRAIL PLAN AND PROFILE SHEETS FOR FENCE LIMITS. FENCING IS REQUIRED WHERE TRAIL EDGE IS WITHIN 35' OF TRACK AND NO BARRIER STRUCTURE IS IN PLACE.
2. SEE HIKE AND BIKE TRAIL P&P SHEETS FOR SIDEWALK WALL LOCATIONS AND LIMITS.
3. SEE BRIDGE LAYOUT SHEETS FOR BRIDGE LOCATIONS AND LIMITS.
4. SEE RETAINING WALL LAYOUT SHEETS FOR RETAINING WALL LIMITS.

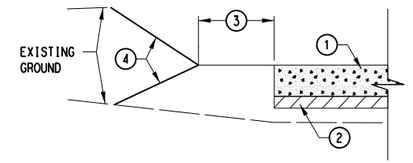
LEGEND

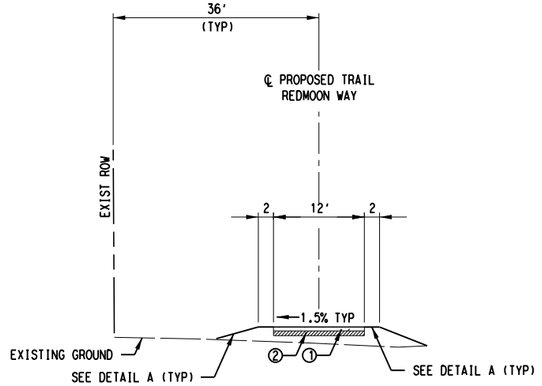
(1) 8" THICK REINFORCED CONCRETE TRAIL PAVEMENT; REFERENCE TXDOT STANDARD CRCP(1)-17.

(2) 1" SAND CUSHION @ 95% STANDARD PROCTOR.

(3) DISTANCE = 2' TYPICAL @ 1.5% MAXIMUM

(4) MATCH EXISTING GROUND AT 4:1 TYPICAL OR 3:1 MAXIMUM





TYPICAL SECTION - TRACK WITH TRAIL
CL REDMOON WAY STA. 10+00.00 TO 18+83.22

NO SCALE

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IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 38 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	A. ENSOR
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
HIKE & BIKE TRAIL
TYPICAL SECTIONS
SHEET 6 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC7-3400	B

CB05-CC7-3400.010

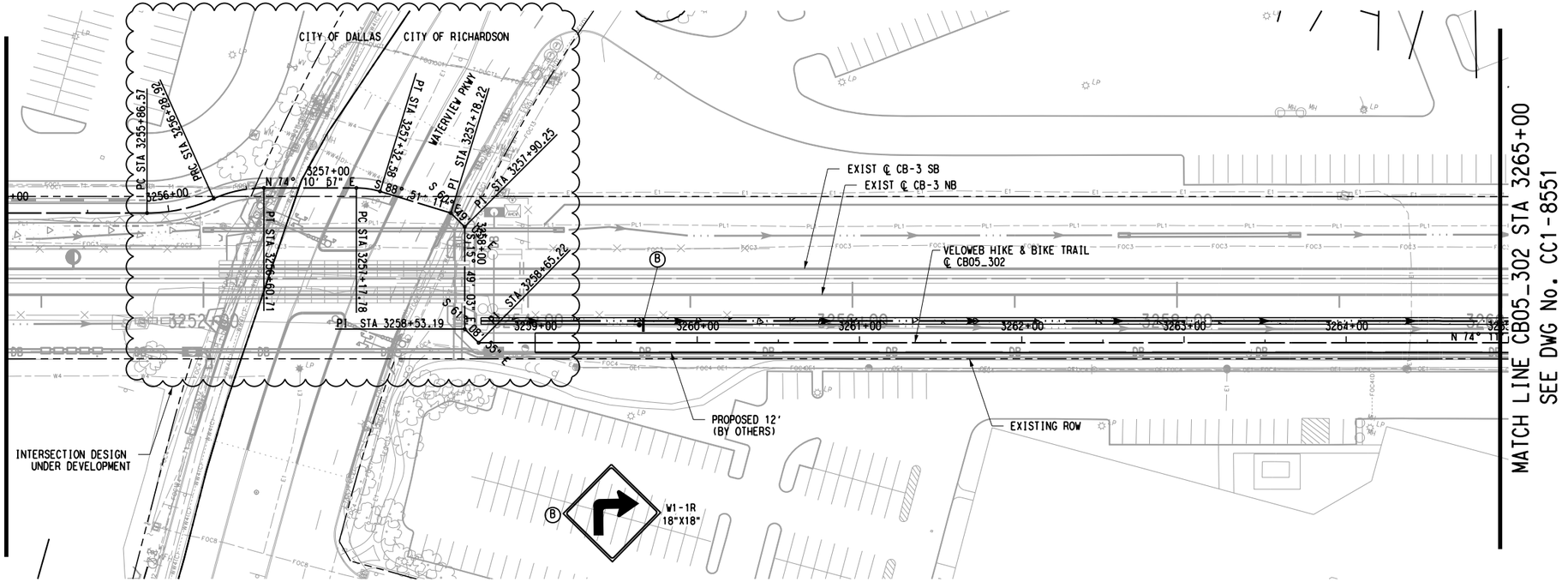
15-SEP-2022 13:51
CB05-CC7-3400.010

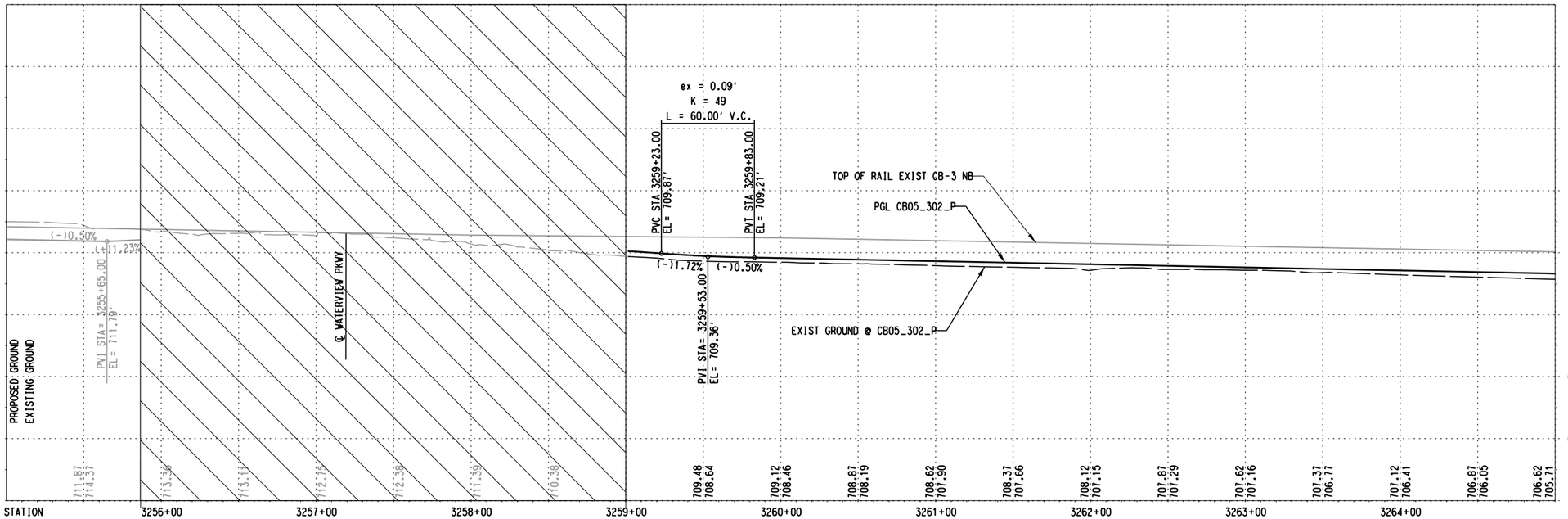
JEGSVCPW001
Default

DWG No. CC1-8550

SEE DWG No. CC1-8549
MATCH LINE CB05_302 STA 3255+00

MATCH LINE CB05_302 STA 3265+00
SEE DWG No. CC1-8551





SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 39 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	J. HASLER
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3255+00 TO STA 3265+00
SHEET 1 OF 19

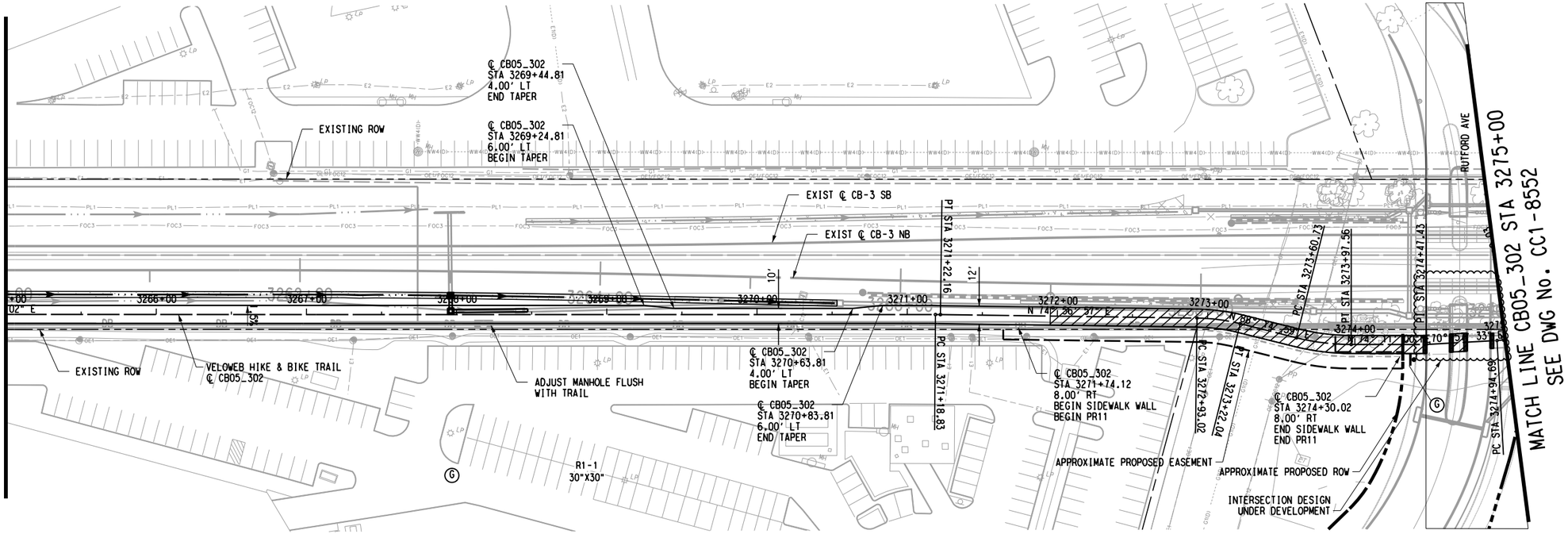
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8550	B

CB05-CC1-8550.040

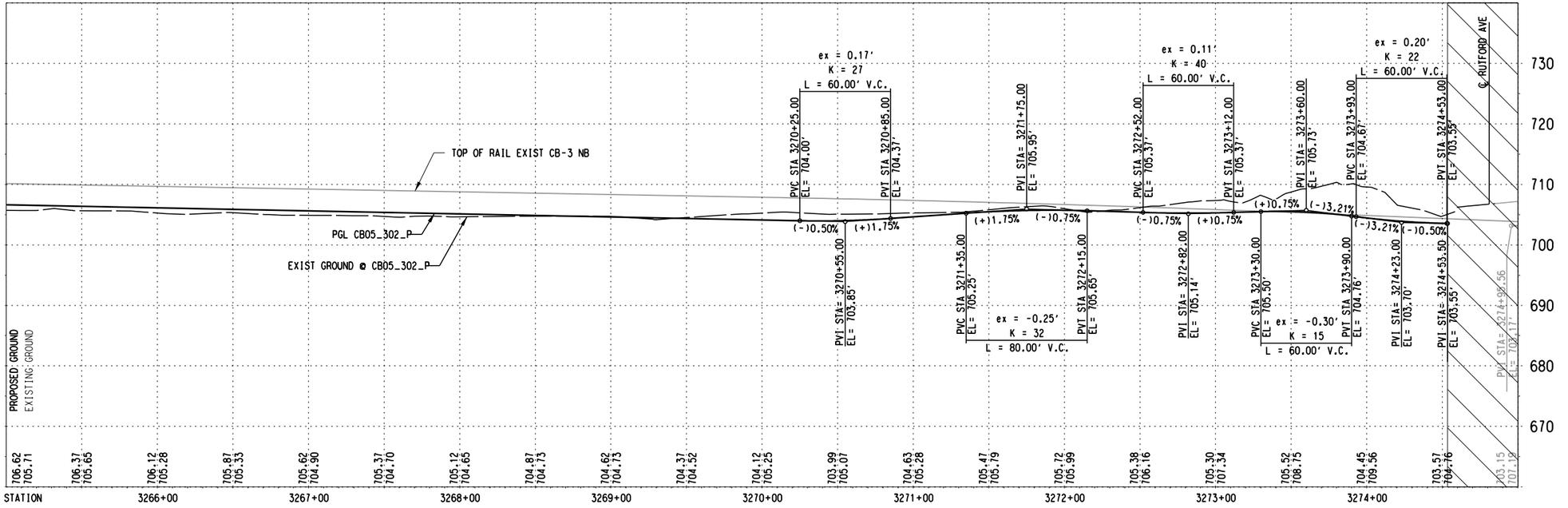
20-SEP-2022 09:58
CB05-CC1-8550.040
JRapier
NB Plan 1 [Sheet]
WFXD6101

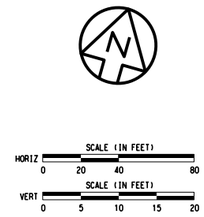
DWG No. CC1-8551

SEE DWG No. CC1-8550
MATCH LINE CB05_302 STA 3265+00



SEE DWG No. CC1-8552
MATCH LINE CB05_302 STA 3275+00





LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

CONTRACT SHEET No. 40 OF 221

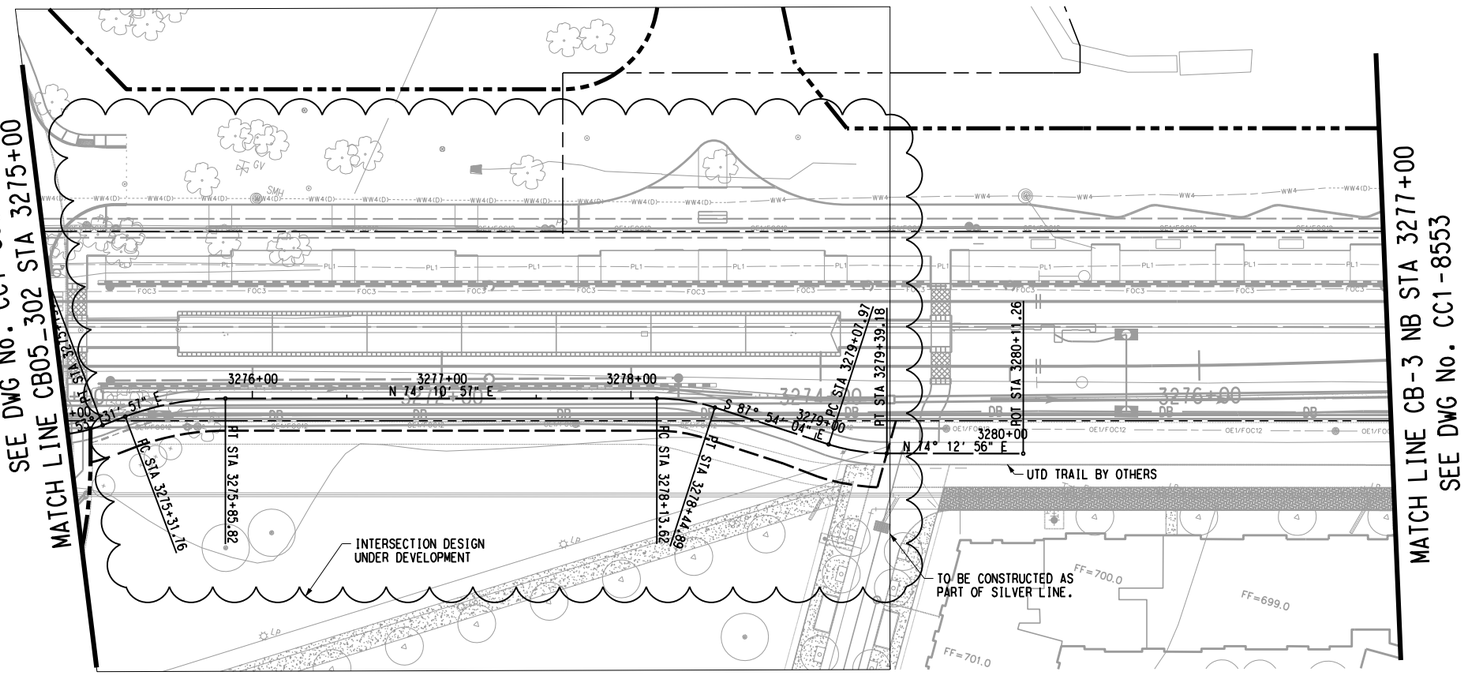
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3265+00 TO STA 3275+00
SHEET 2 OF 19

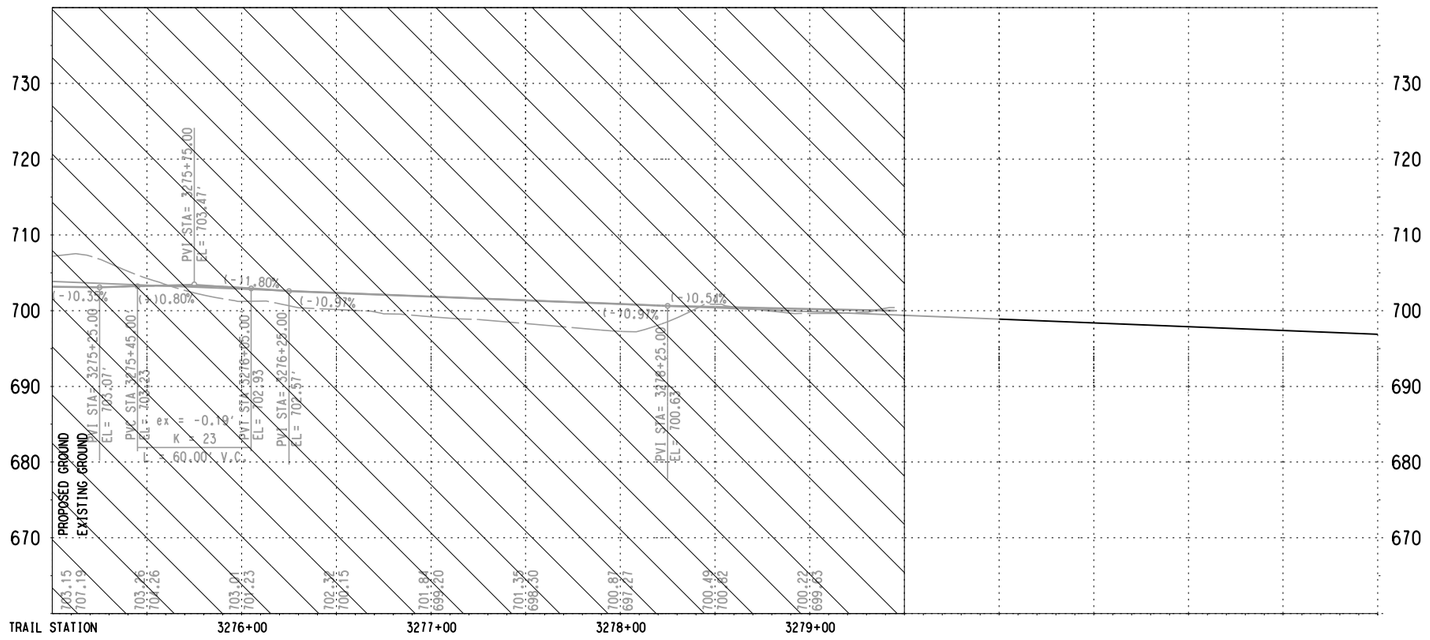
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8551	B

CB05-CC1-8551.040

20-SEP-2022 09:39
CB05-CC1-8551.040
JRapier
NB Plan 2 [Sheet]

DWG No. CC1-8552





LEGEND:

- TRAIL PAVEMENT
- TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

HORIZ SCALE (IN FEET) 0 20 40 80

VERT SCALE (IN FEET) 0 5 10 15 20

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IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 41 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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IN CHARGE	B. ALLDREDGE
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CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3275+00 TO STA 3277+00
SHEET 3 OF 19

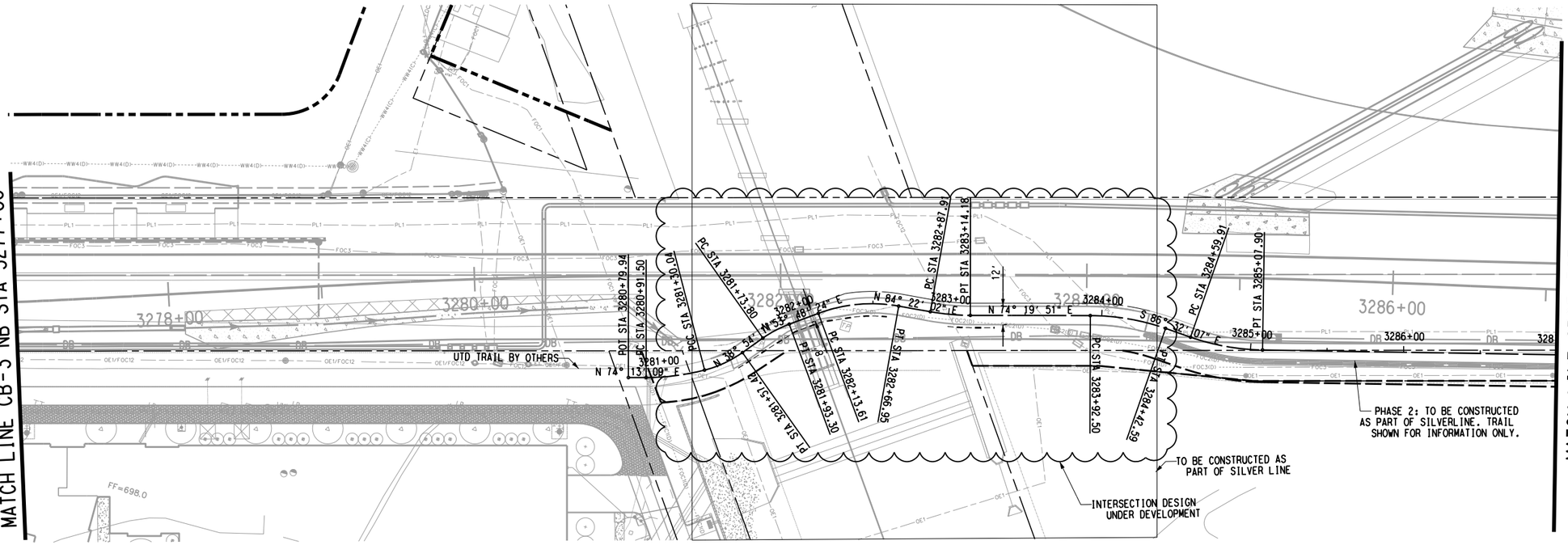
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8552	B

CB05-CC1-8552.040

20-SEP-2022 10:19
CB05-CC1-8552.040
JRapier
NB Plan 3 [Sheet]

DWG No. CC1-8553

SEE DWG No. CC1-8552
MATCH LINE CB-3 NB STA 3277+00



MATCH LINE CB05_303 STA 3287+00
SEE DWG No. CC1-8554

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
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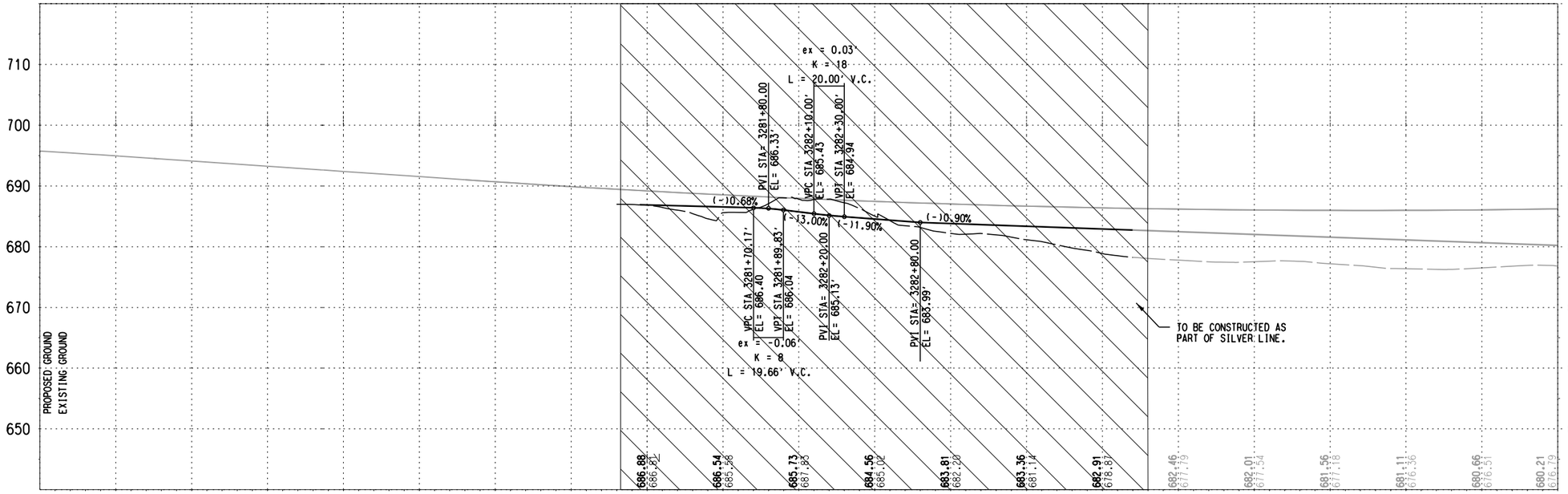

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CONTRACT SHEET No. 42 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

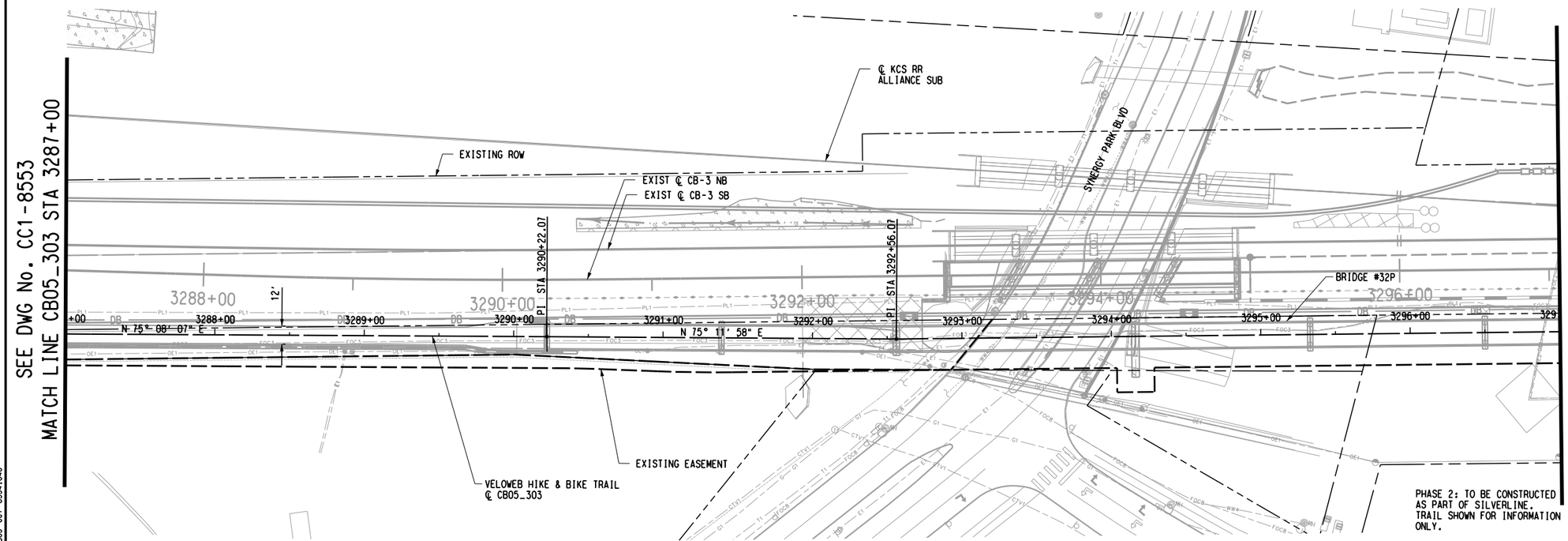
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3280+00 TO STA 3287+00
SHEET 4 OF 19

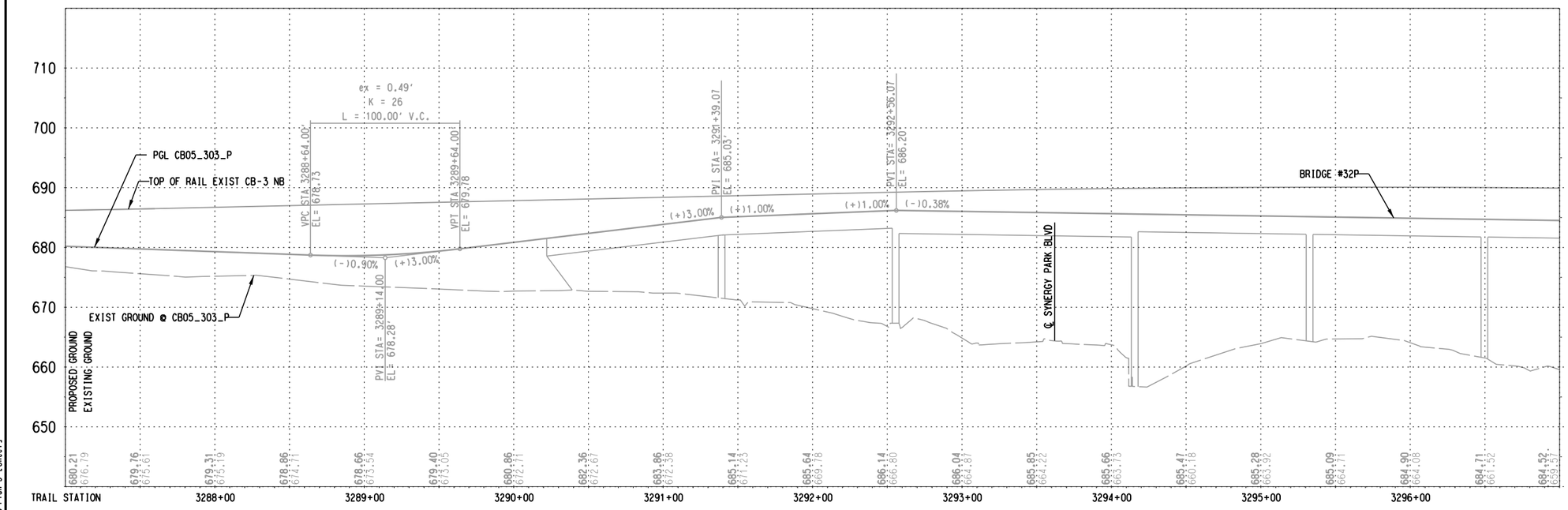
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8553	B

CB05-CC1-8553.040

20-SEP-2022 10:32
CB05-CC1-8553.040
JRapier
NB Plan 4 [Sheet]

DWG No. CC1-8554





SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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DATE	19 SEP 22

CONTRACT SHEET No. 43 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3287+00 TO STA 3297+00
SHEET 5 OF 19

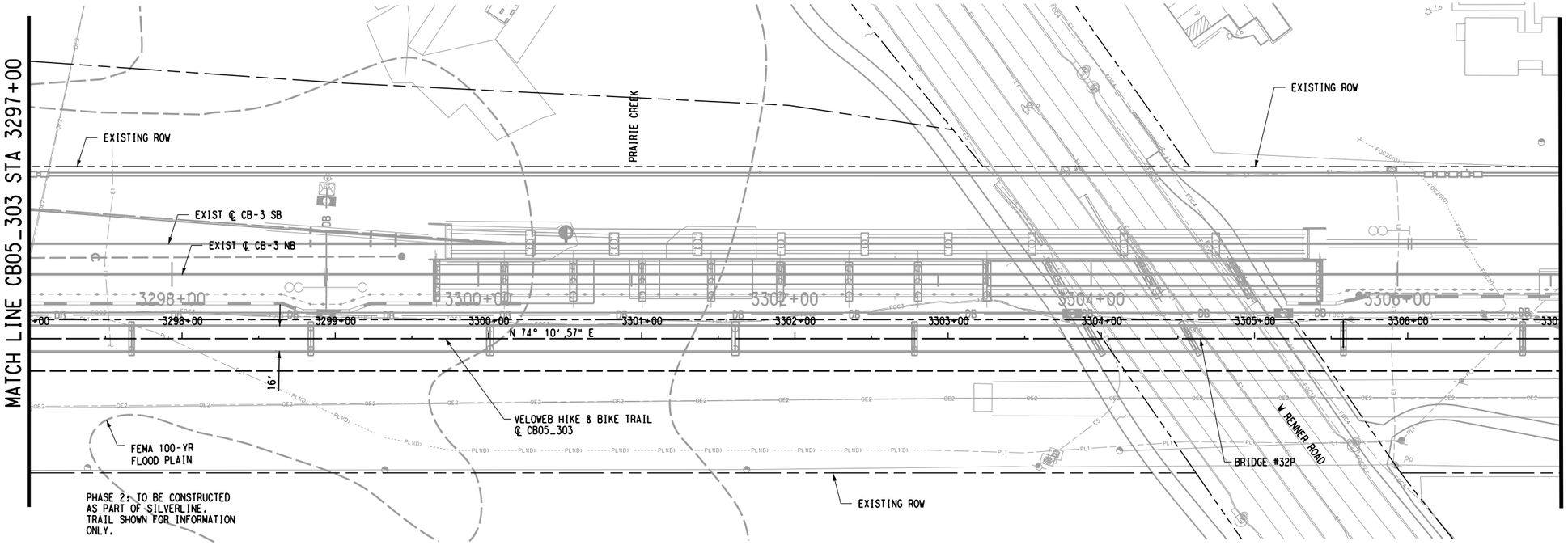
CONTRACT C-2033270-01 | DWG No. CC1-8554 | REV B

CB05-CC1-8554.040

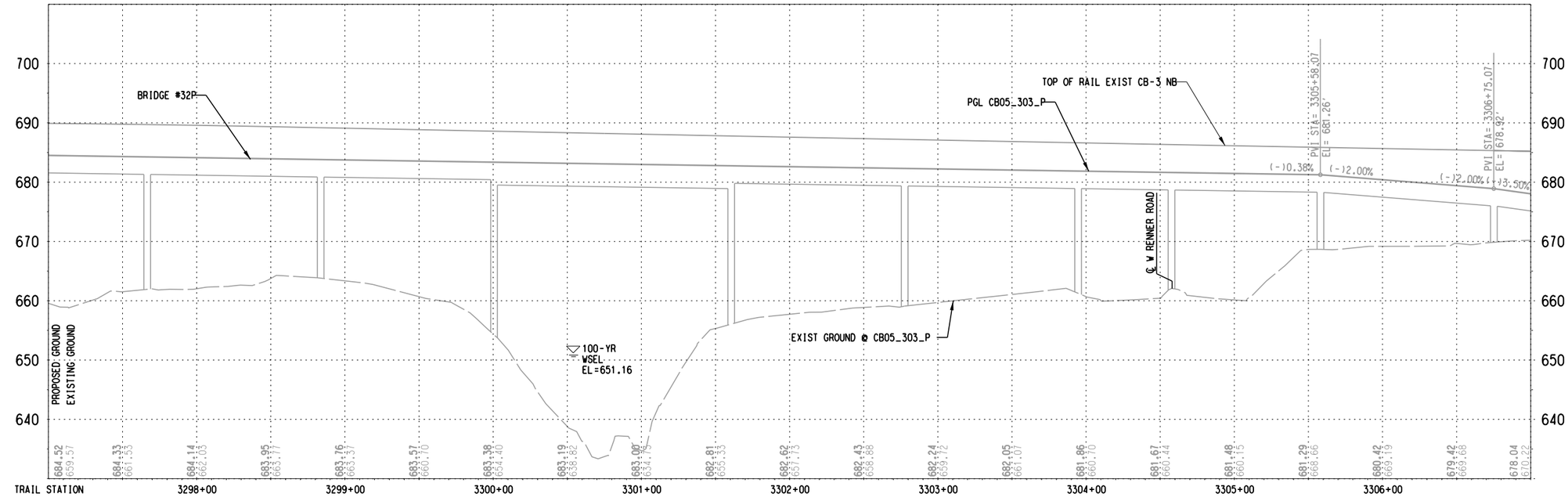
15-SEP-2022 13:37
CB05-CC1-8554.040
JEGSYCPW001
NB Plan 5 [Sheet]

DWG No. CC1-8555

SEE DWG No. CC1-8554
MATCH LINE CB05_303 STA 3297+00



MATCH LINE CB05_303 STA 3307+00
SEE DWG No. CC1-8556



SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3297+00 TO STA 3307+00
SHEET 6 OF 19

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8555	B

CB05-CC1-8555.040

15-SEP-2022 13:54
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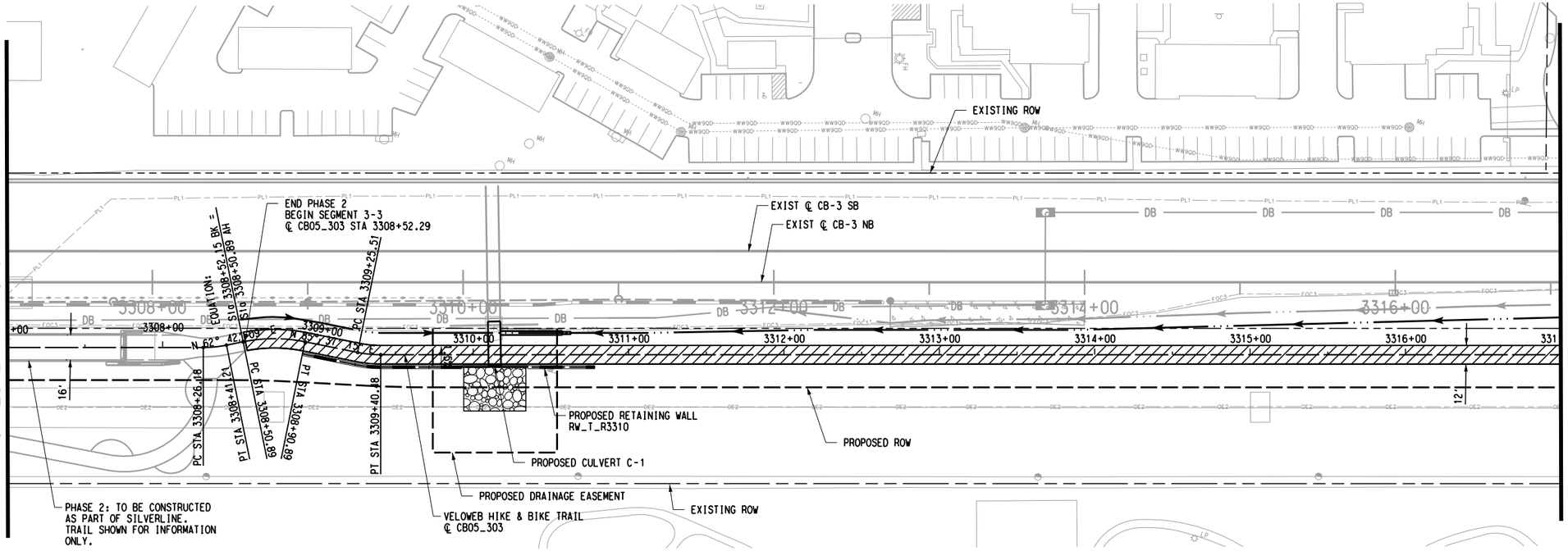
JEGSVCPW001
NB Plan 6 [Sheet]

DWG No. CC1-8556

SEE DWG No. CC1-8555
MATCH LINE CB05_303 STA 3307+00

MATCH LINE CB05_303 STA 3317+00
SEE DWG No. CC1-8557



SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
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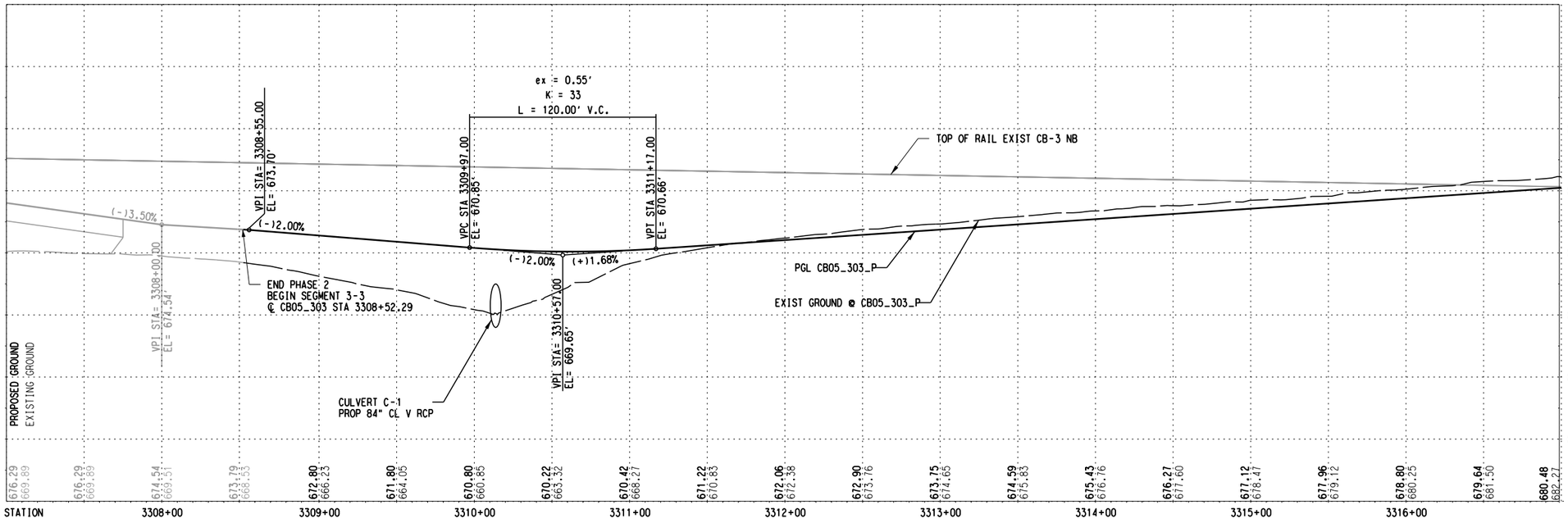

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CONTRACT SHEET No. 45 OF 221

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DESIGNED	J. HASLER
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3307+00 TO STA 3317+00
SHEET 7 OF 19

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8556	B

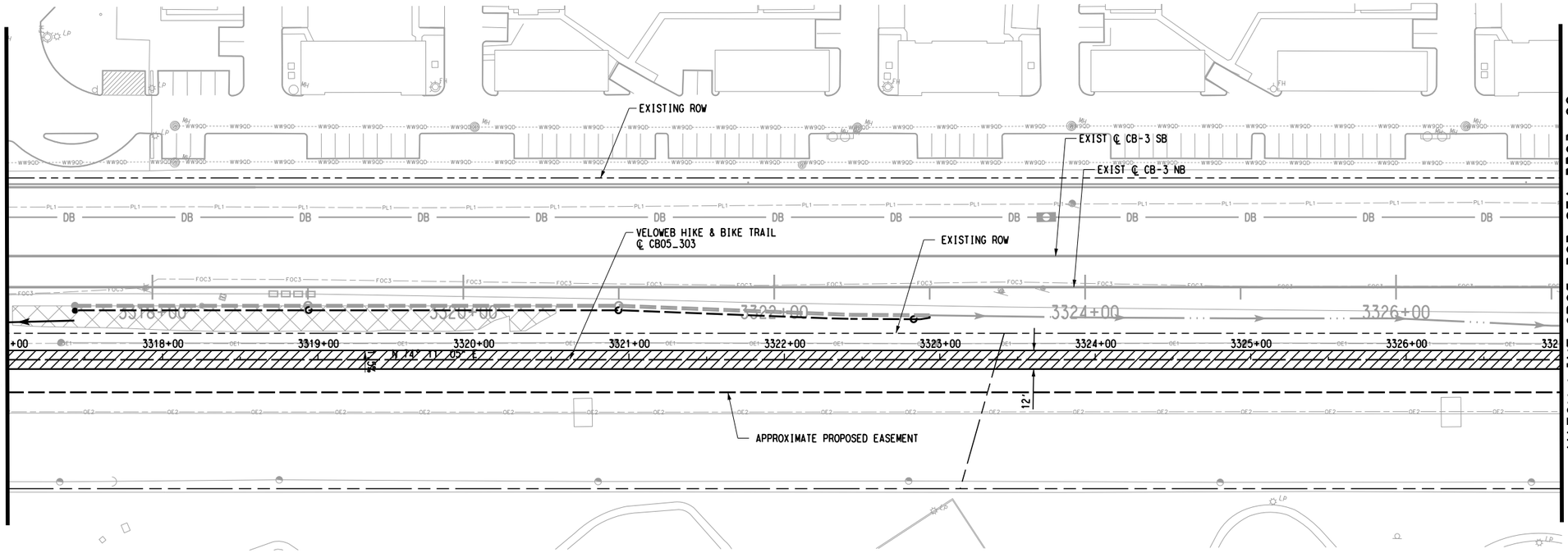
CB05-CC1-8556.040

15-SEP-2022 13:36
CB05-CC1-8556.040

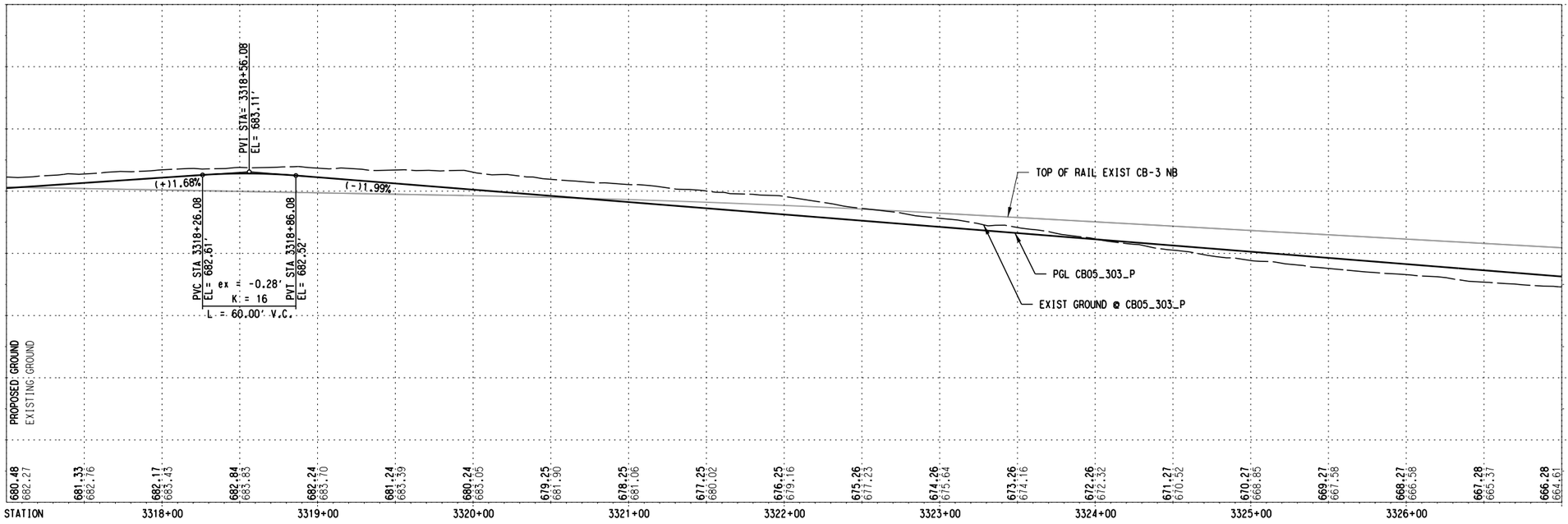
JEGSVCPW001
NB Plan 7 [Sheet]

DWG No. CC1-8557

SEE DWG No. CC1-8556
MATCH LINE CB05_303 STA 3317+00



MATCH LINE CB05_303 STA 3327+00
SEE DWG No. CC1-8558



SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 46 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	J. HASLER
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3317+00 TO STA 3327+00
SHEET 8 OF 19

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8557	B

CB05-CC1-8557.040

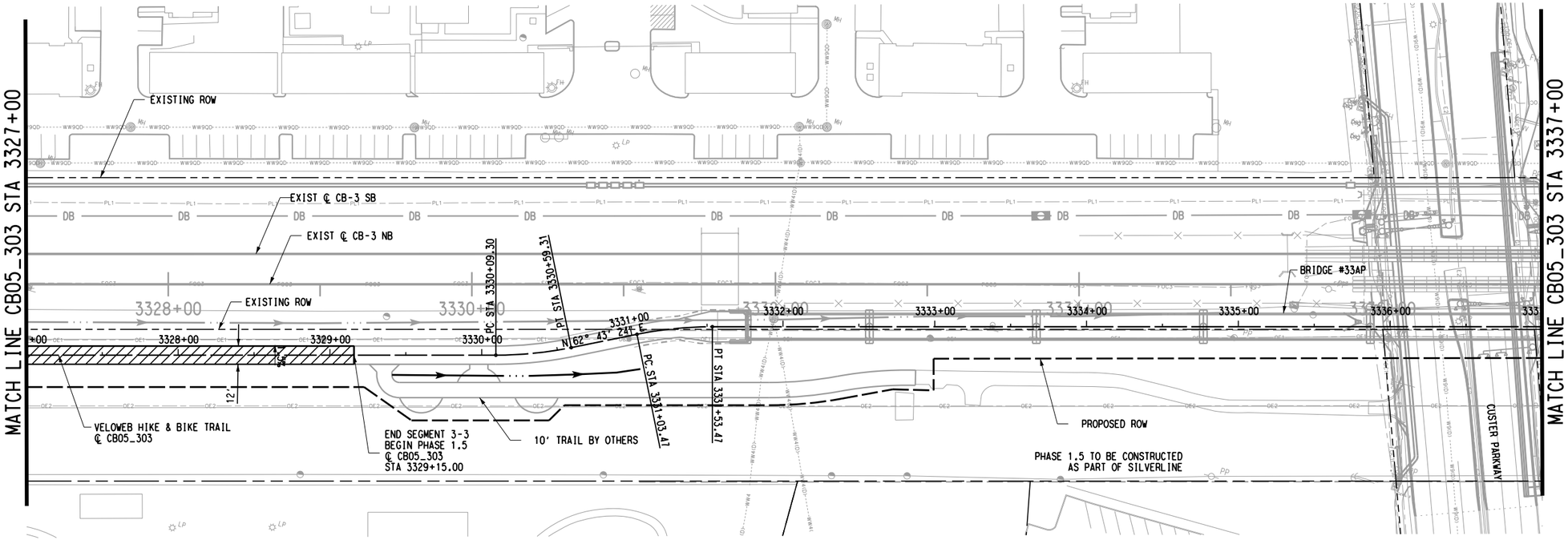
15-SEP-2022 13:55
CB05-CC1-8557.040

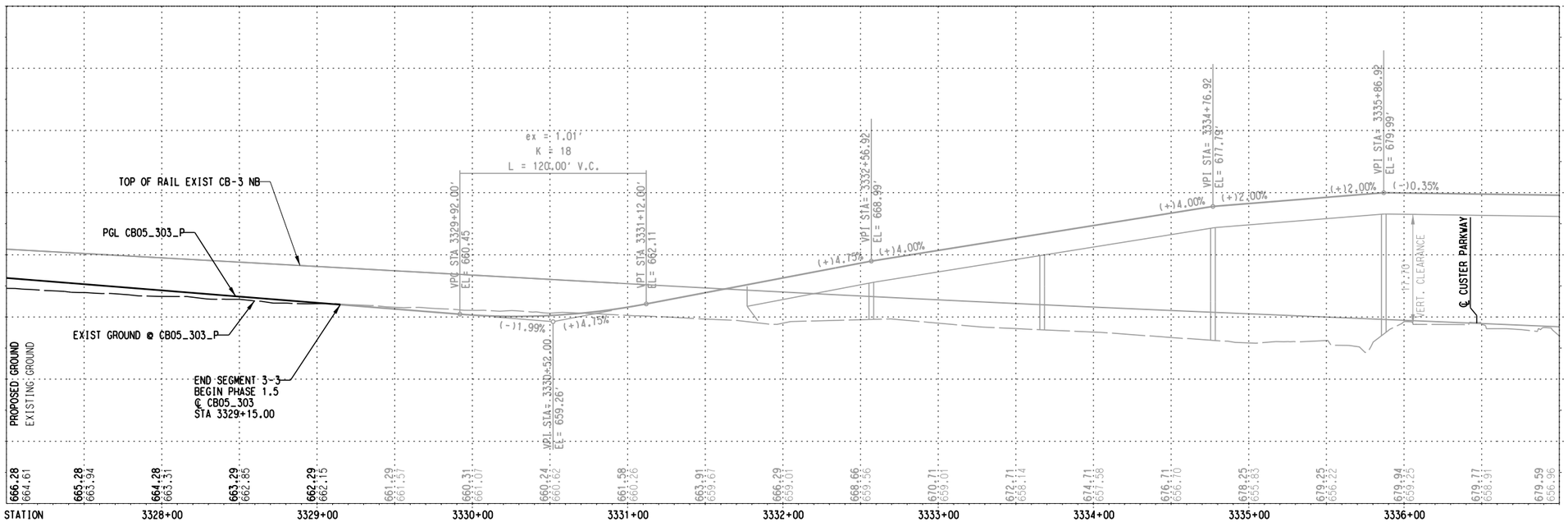
JEGSVCPW001
NB Plan 8 [Sheet]

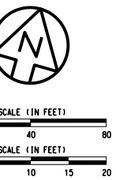
DWG No. CC1-8558

SEE DWG No. CC1-8557
MATCH LINE CB05_303 STA 3327+00

MATCH LINE CB05_303 STA 3337+00
SEE DWG No. CC1-8559







LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3327+00 TO STA 3337+00
SHEET 9 OF 19

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8558	B

CB05-CC1-8558.040

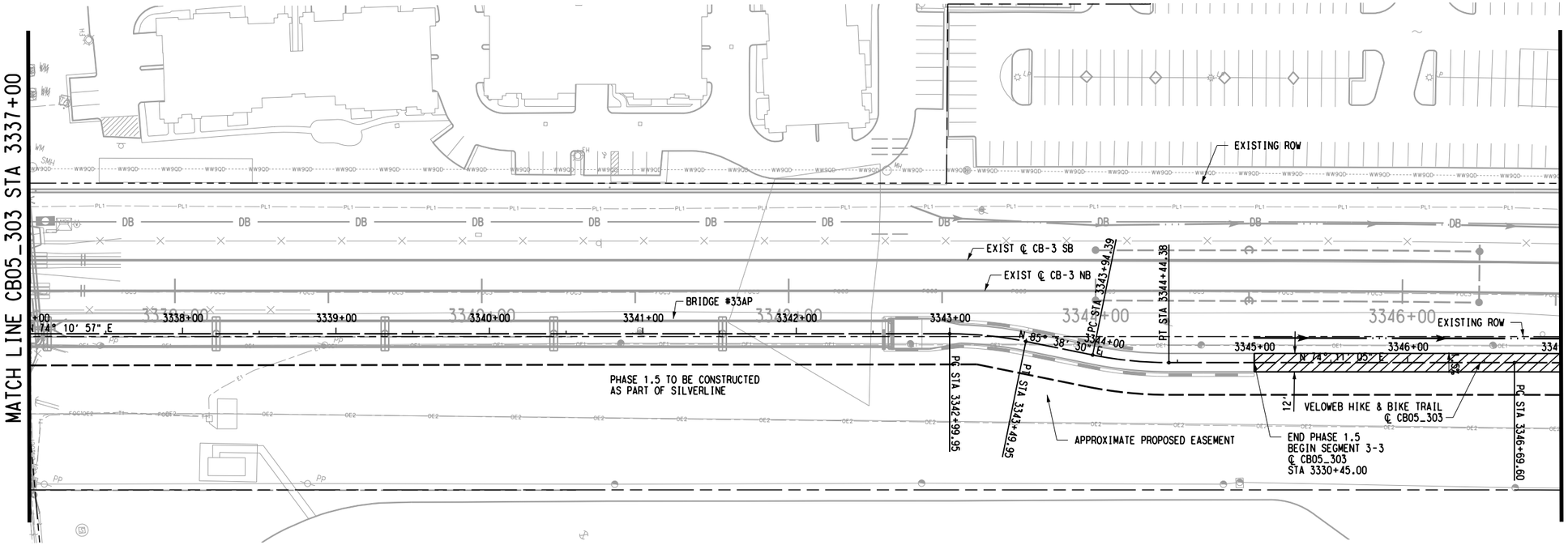
15-SEP-2022 13:56
CB05-CC1-8558.040

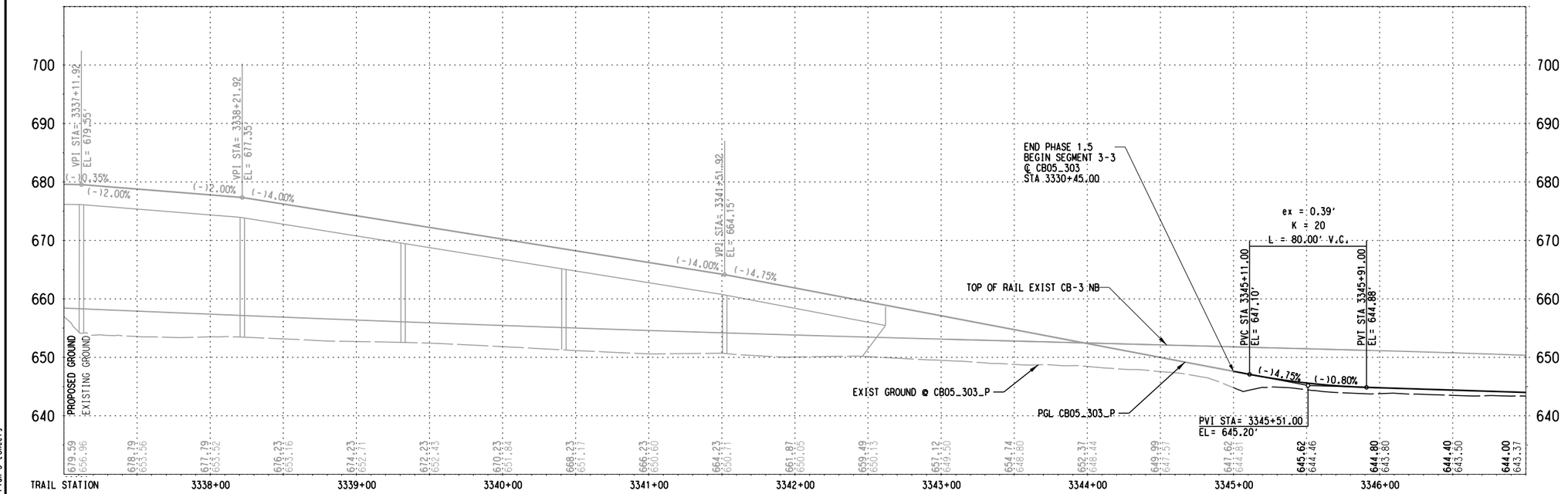
JEGSVCPW01
NB Plan 10

DWG No. CC1-8559

SEE DWG No. CC1-8558
MATCH LINE CB05_303 STA 3337+00

MATCH LINE CB05_303 STA 3347+00.00
SEE DWG No. CC1-8560





SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CITY OF RICHARDSON
PLAN & PROFILE
STA 3337+00 TO STA 3347+00
SHEET 10 OF 19

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8559	B

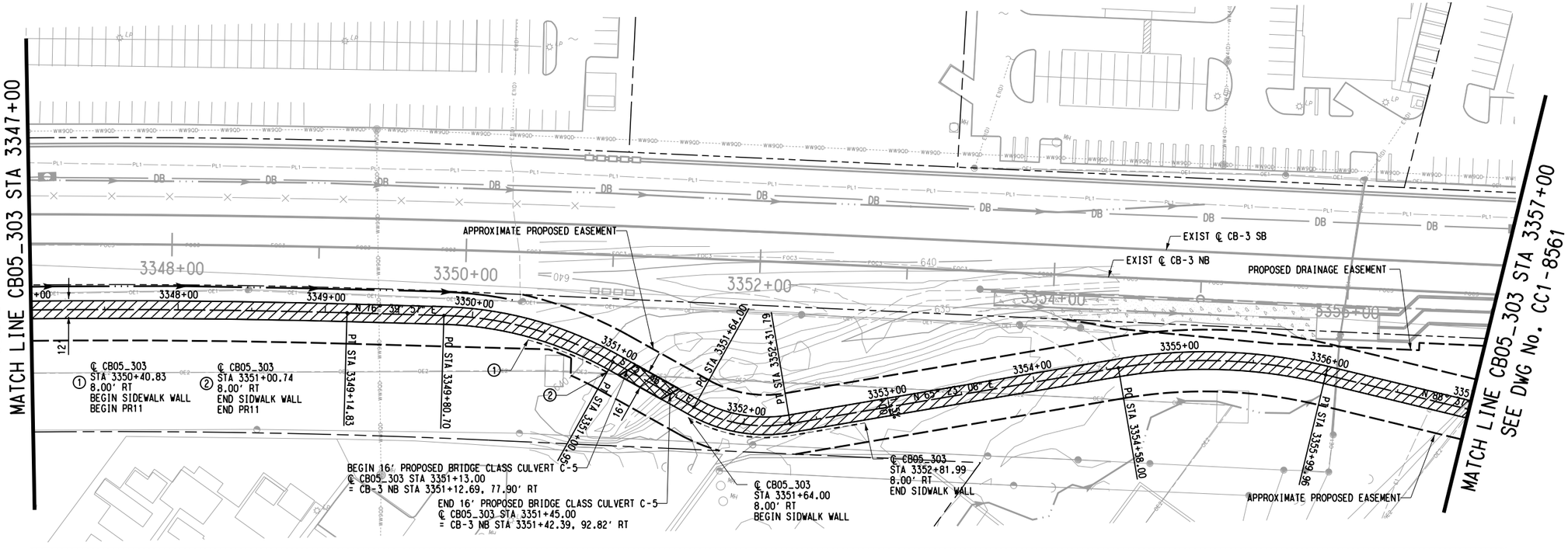
CB05-CC1-8559.040

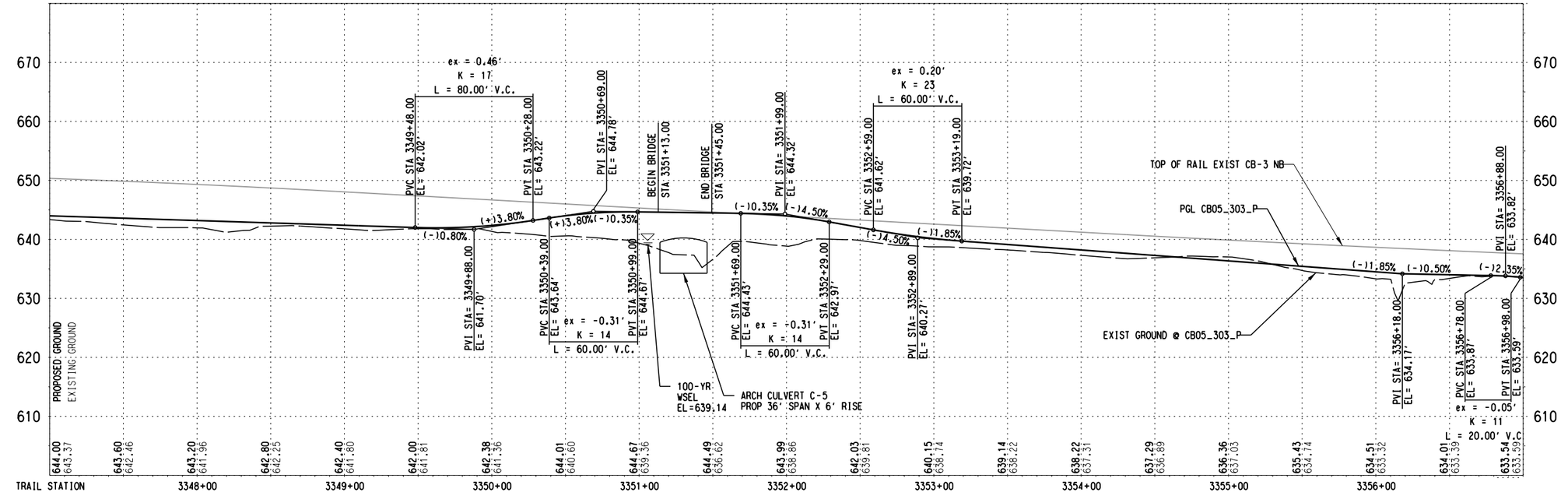
15-SEP-2022 13:56
CB05-CC1-8559.040
JEGSVCPW001
NB Plan 5 [Sheet]

DWG No. CC1-8560

SEE DWG No. CC1-8559
MATCH LINE CB05_303 STA 3347+00

MATCH LINE CB05_303 STA 3357+00
SEE DWG No. CC1-8561





LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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IN CHARGE	B. ALLDREDGE
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CAES

CONTRACT SHEET No. 49 OF 221

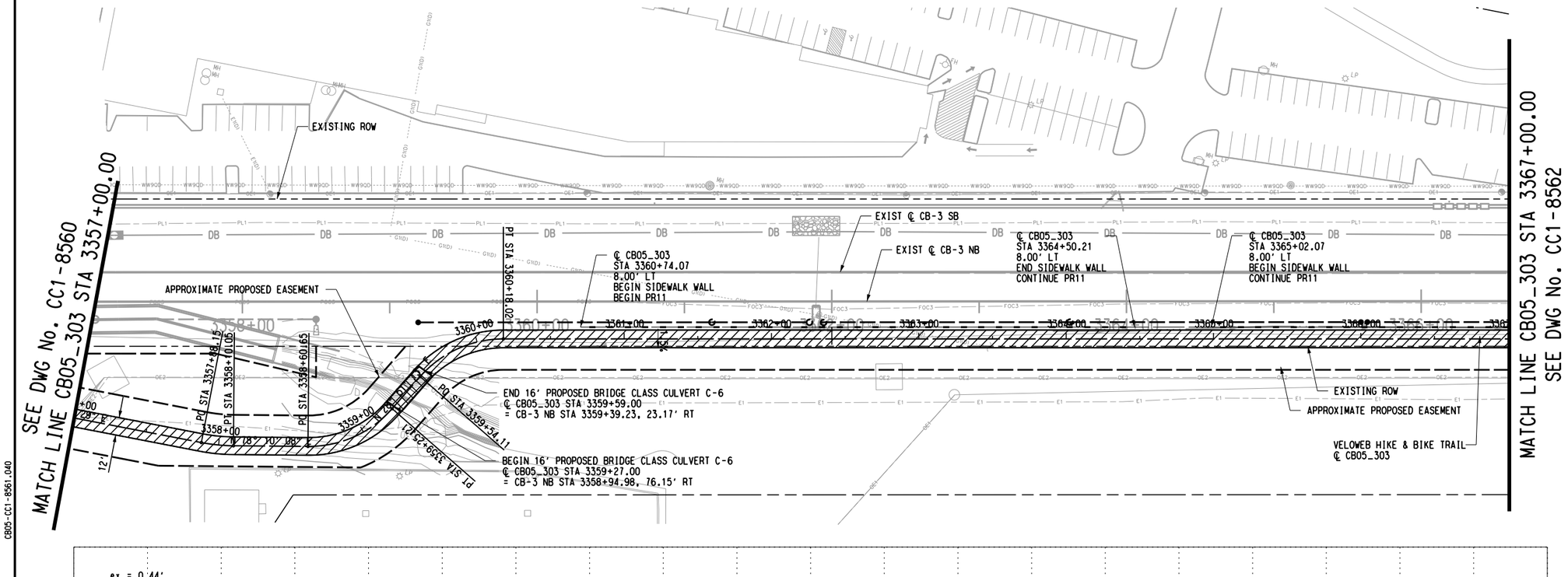
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3347+00 TO STA 3357+00
SHEET 11 OF 19

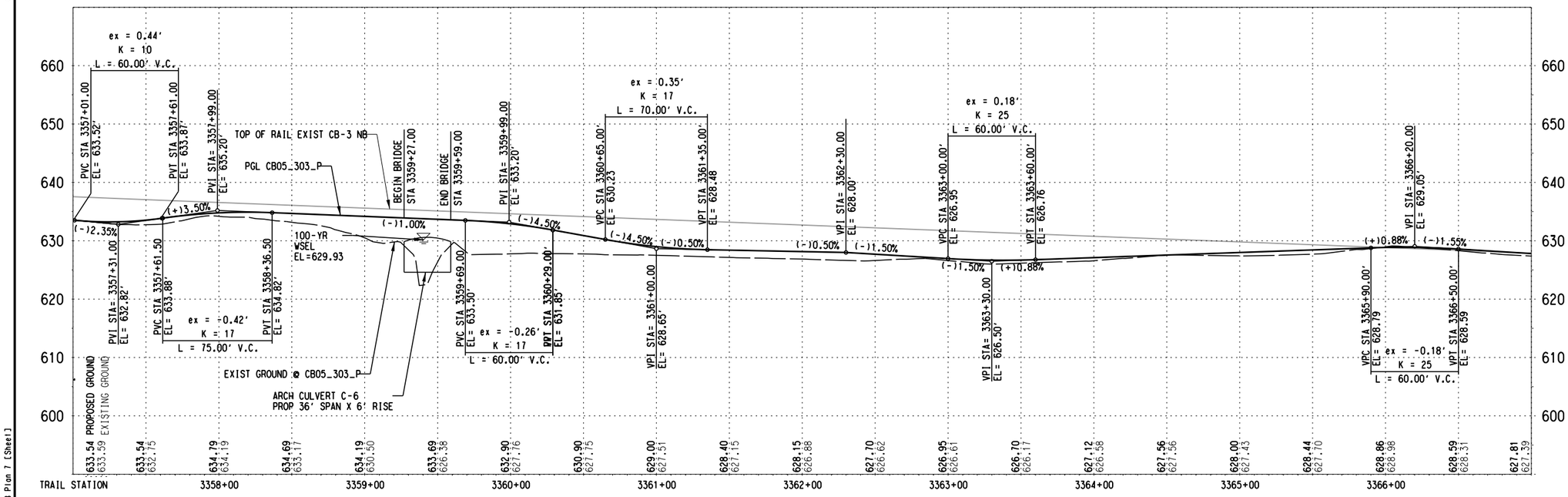
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8560	B

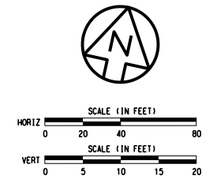
CB05-CC1-8560.040

15-SEP-2022 13:39
CB05-CC1-8560.040
JEGSVCPW001
NB Plan 6 [Sheet]

DWG No. CC1-8561







LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 50 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3357+00 TO STA 3367+00
SHEET 12 OF 19

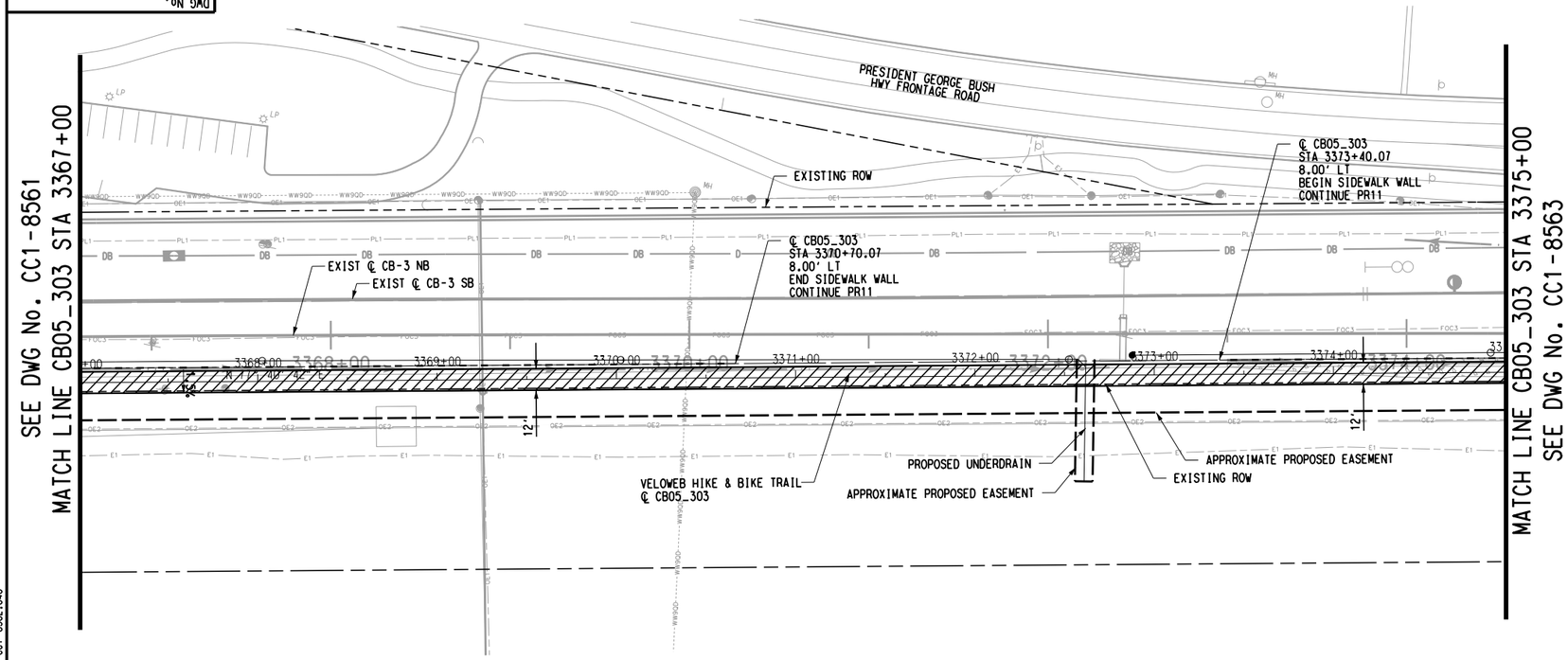
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8561	B

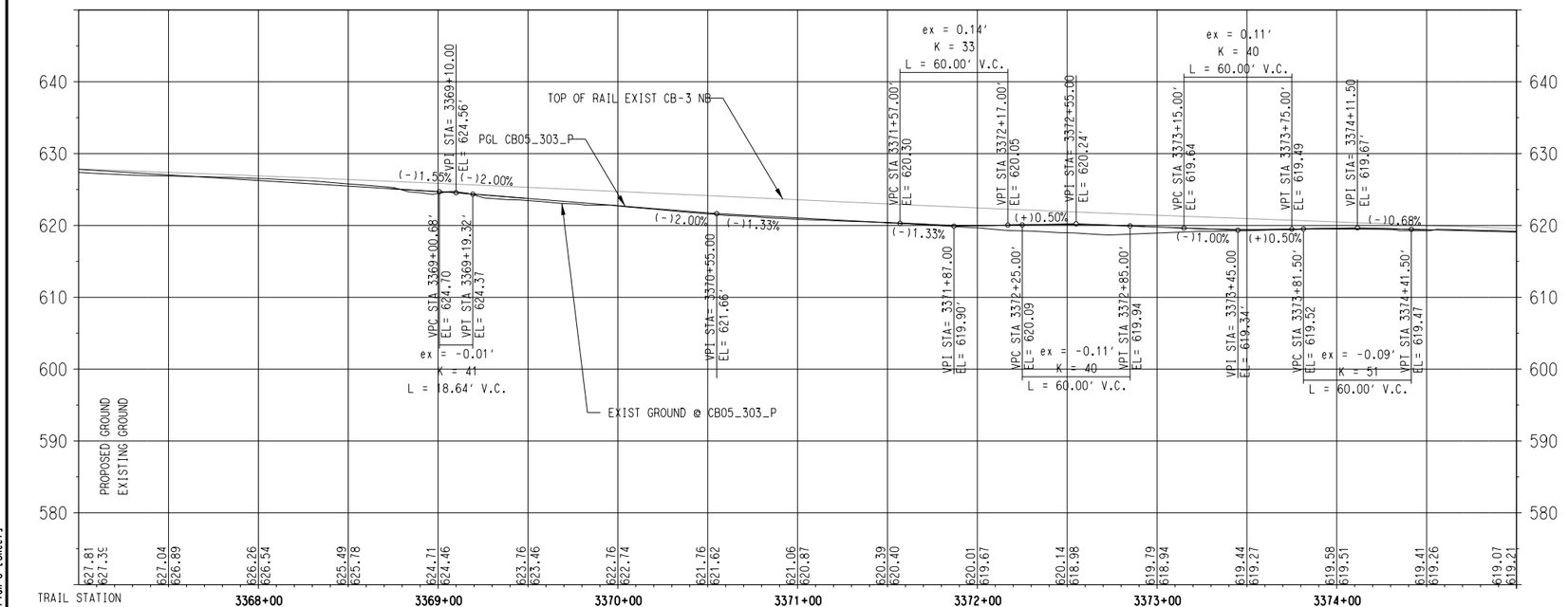
CB05-CC1-8561.040

15-SEP-2022 13:58
CB05-CC1-8561.040

JEGSVCPW001
NB Plan 7 [Sheet]

DWG No. CC1-8562





LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

CONTRACT SHEET No. 51 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3367+00 TO STA 3375+00
SHEET 13 OF 19

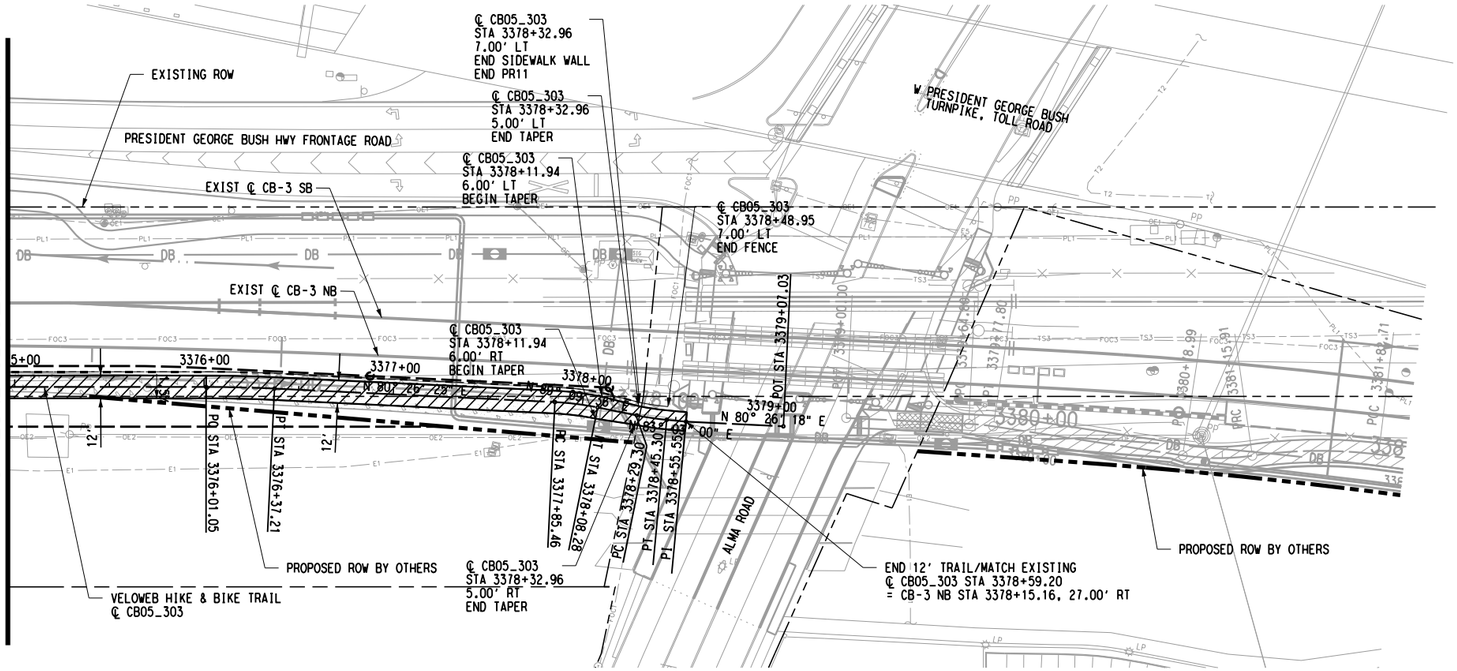
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8562	B

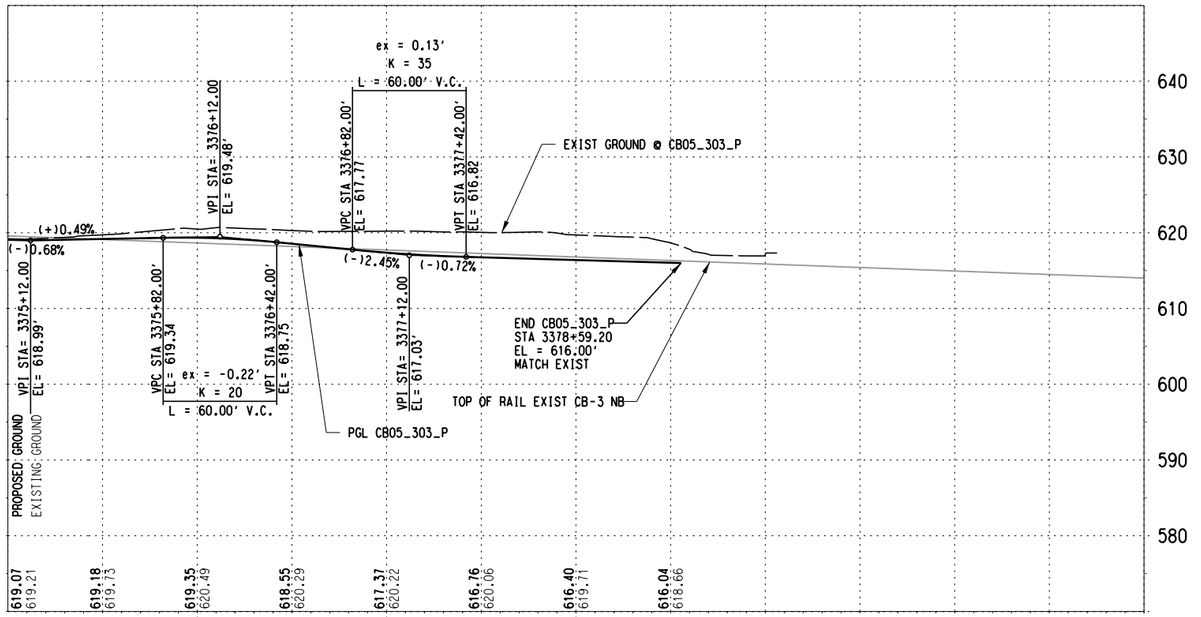
CB05-CC1-8562.040

15-SEP-2022 13:43
CB05-CC1-8562.040
JEGSVCPW001
NB Plan 8 [Sheet]

DWG No. CC1-8563

SEE DWG No. CC1-8562
MATCH LINE CB05_303 STA 3375+00





LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 52 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	J. HASLER
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3375+00 TO STA 3414+00
SHEET 14 OF 19

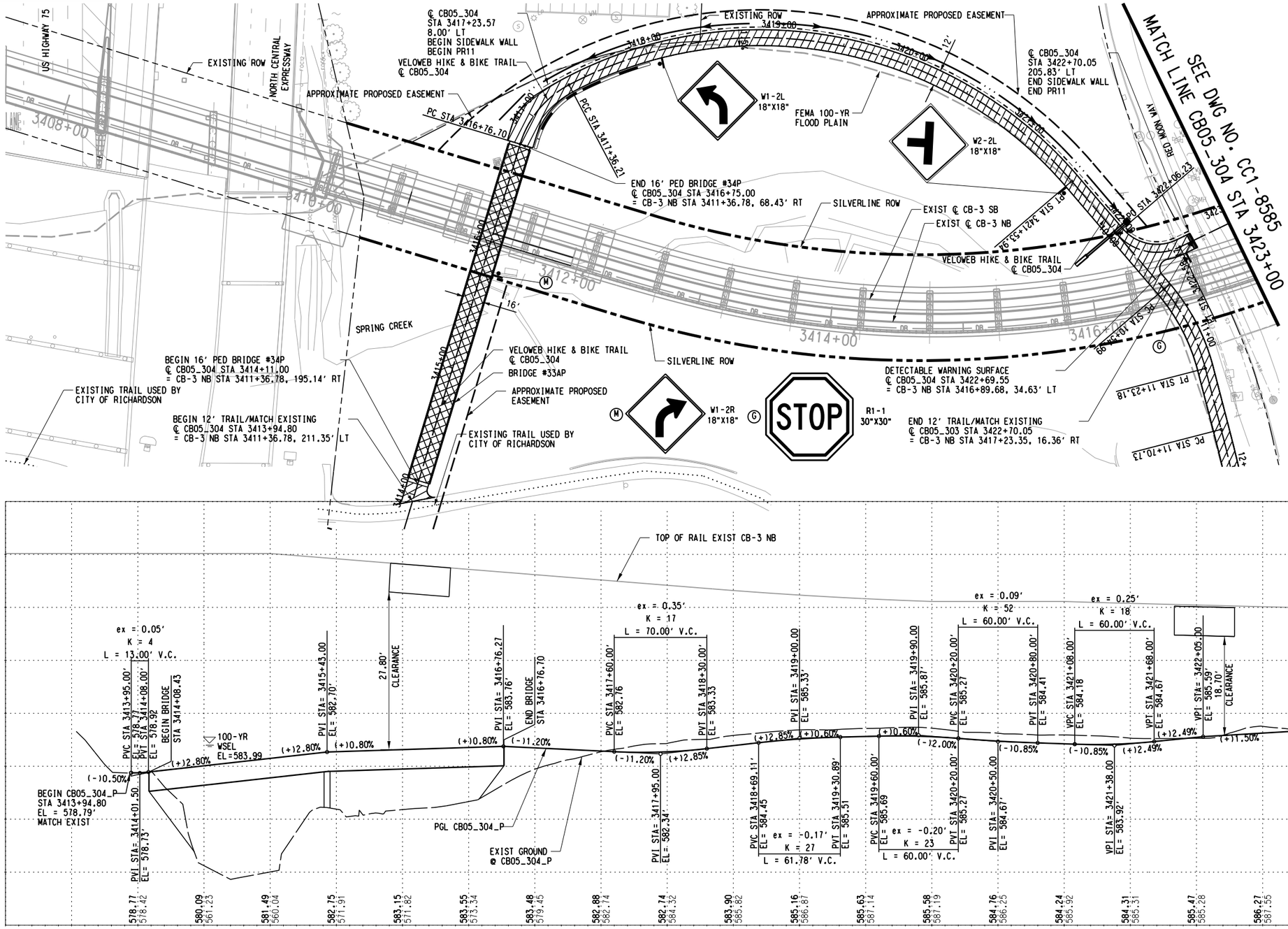
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8563	B

CB05-CC1-8563.040

15-SEP-2022 13:44
CB05-CC1-8563.040

JEGSVCPW001
NB Plan 8 [Sheet]

DWG No. CC1-8584



SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
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3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
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IN CHARGE	B. ALLDREDGE
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PLAN & PROFILE
STA 3414+00 TO STA 3423+00
SHEET 15 OF 19

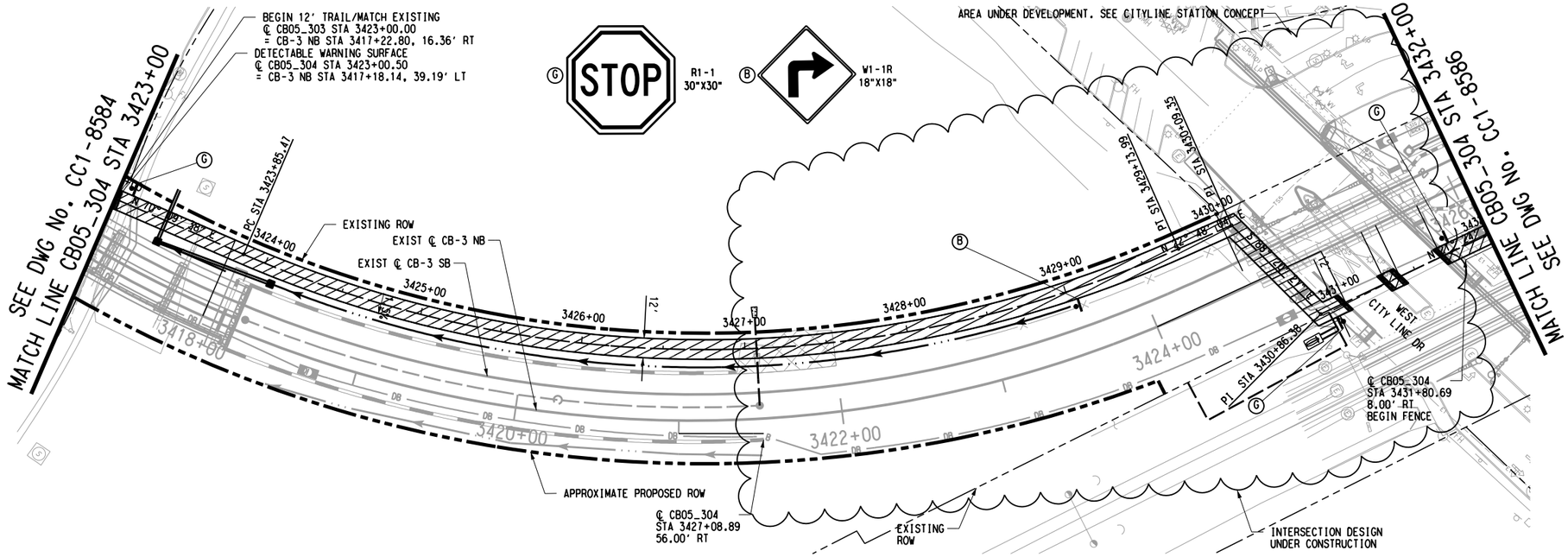
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8584	B

CB05-CC1-8584.040

15-SEP-2022 13:45
CB05-CC1-8584.040

JEGSVCPW001
NB Plan 12

DWG No. CC1-8585



SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 5 10 15 20

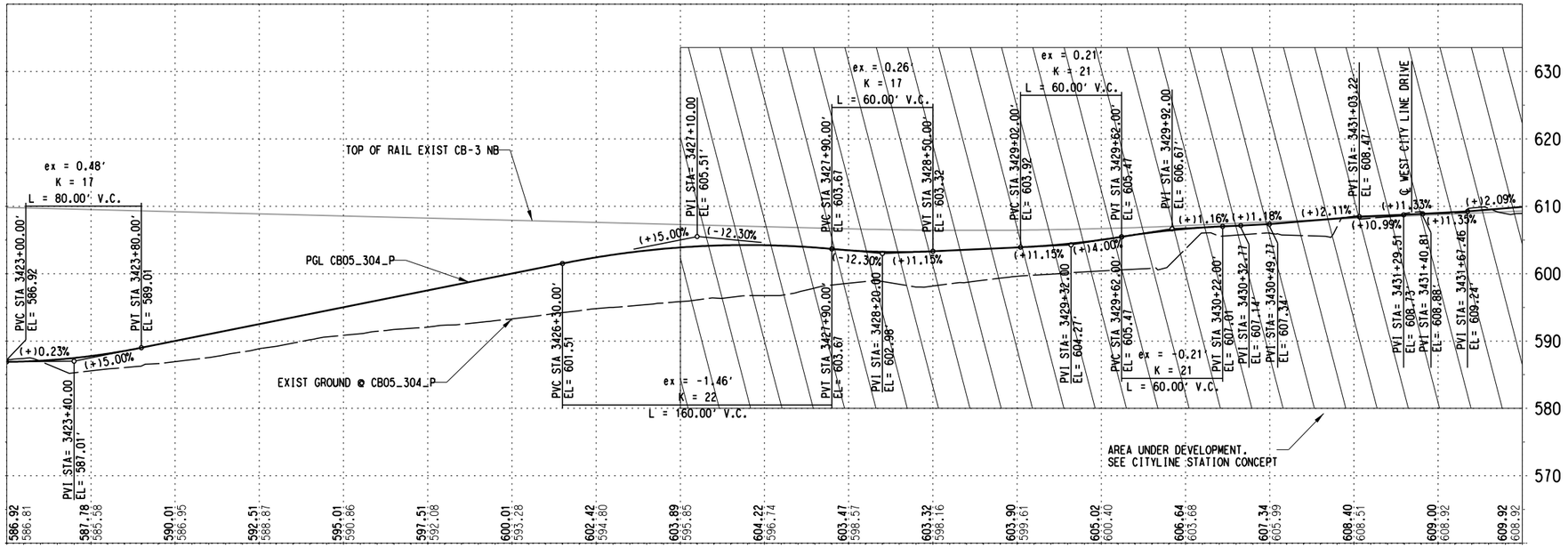
LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.



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CONTRACT SHEET No. 54 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	J. HASLER
CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

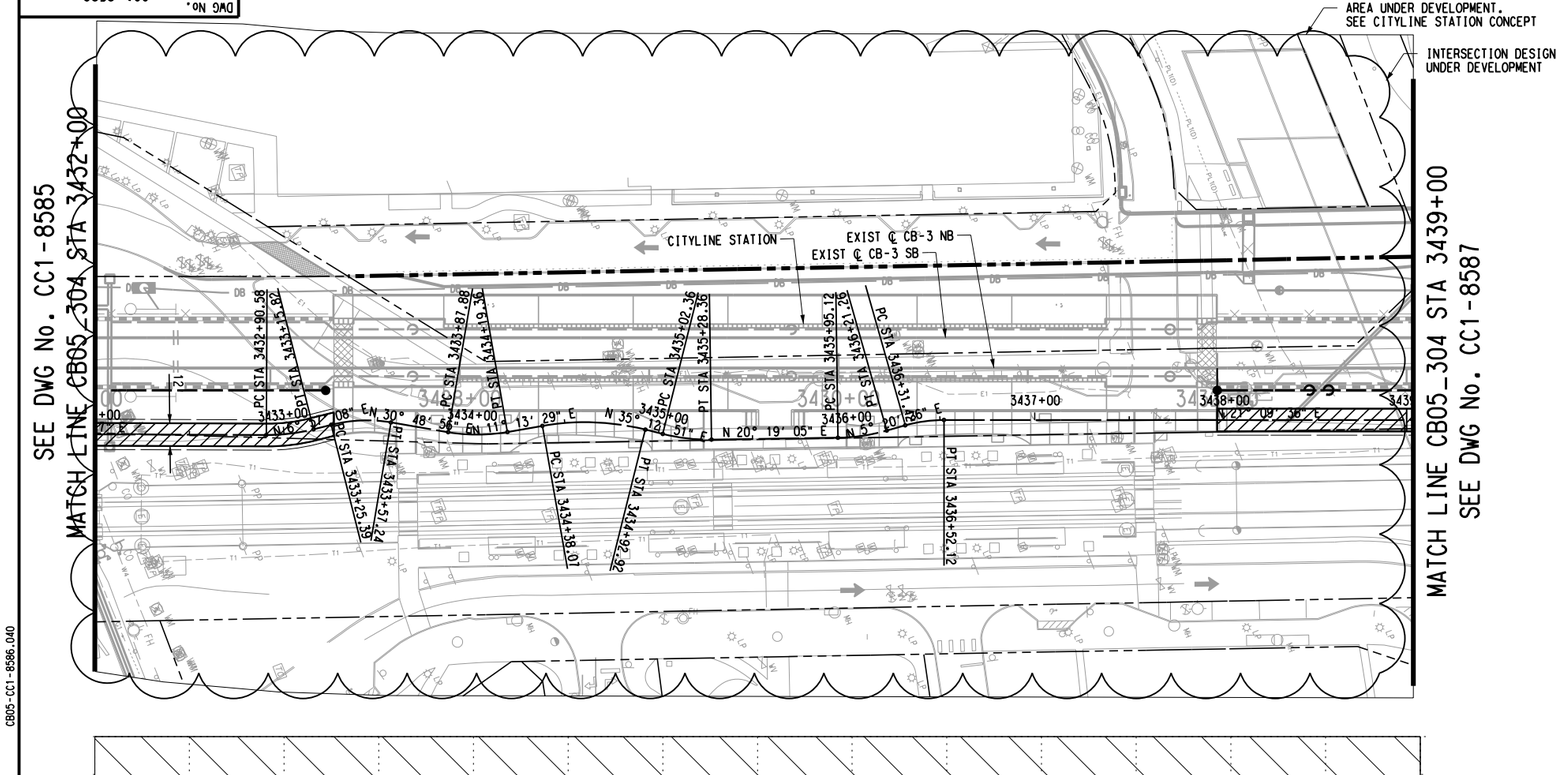
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3423+00 TO STA 3432+00
SHEET 16 OF 19

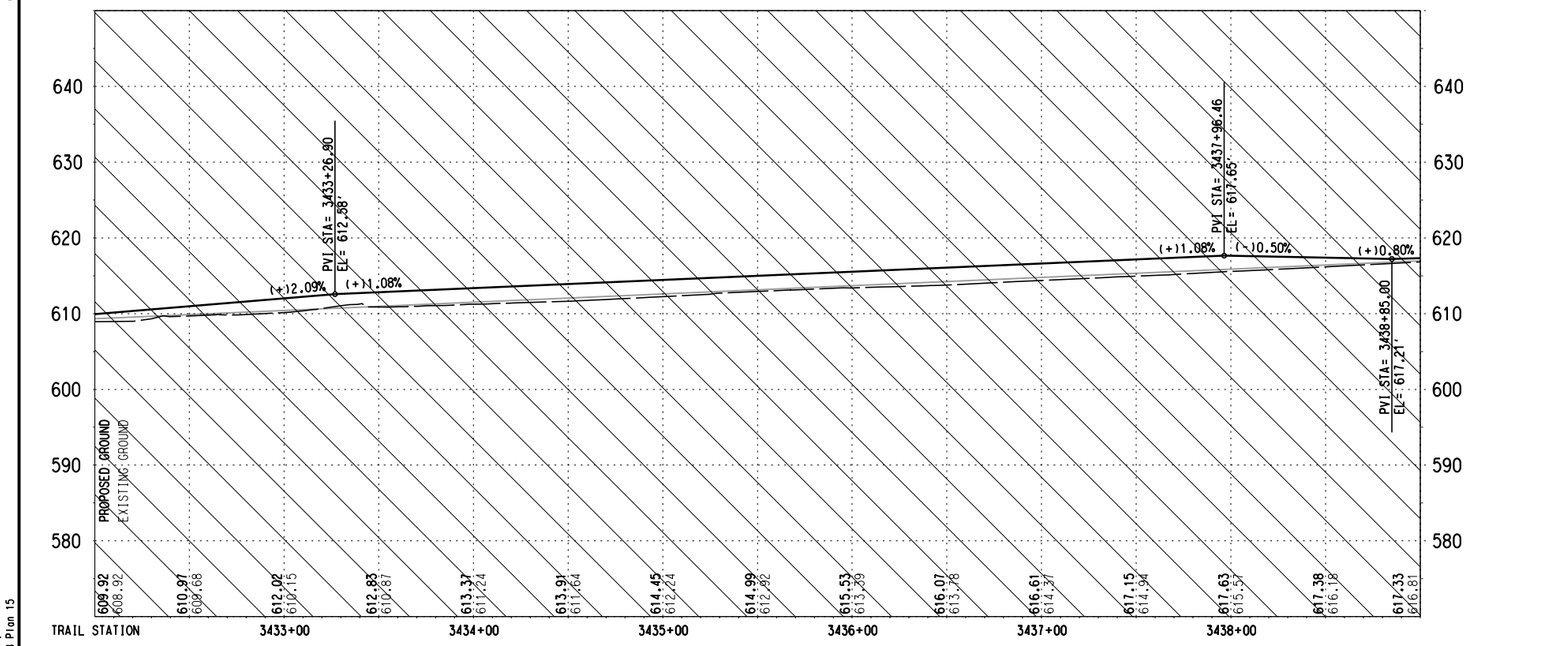
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8585	B

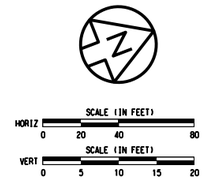
CB05-CC1-8585.040

20-SEP-2022 10:58
CB05-CC1-8585.040
JRapier
NB Plan 14

DWG No. CC1-8586







LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 55 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3432+00 TO STA 3439+00
SHEET 17 OF 19

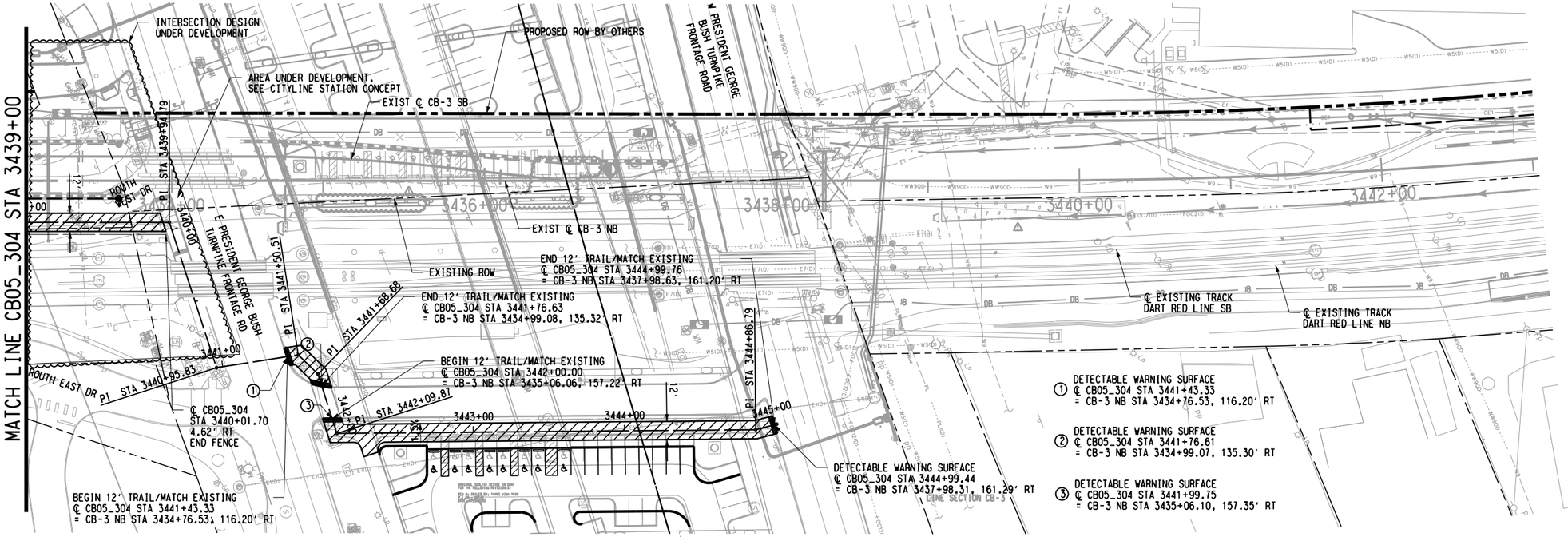
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8586	B

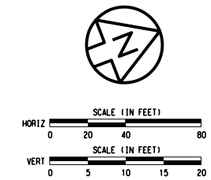
CB05-CC1-8586.040

20-SEP-2022 11:07
CB05-CC1-8586.040
JRapier
NB Plan 15

DWG No. CC1-8587

SEE DWG No. CC1-8586
MATCH LINE CB05_304 STA 3439+00





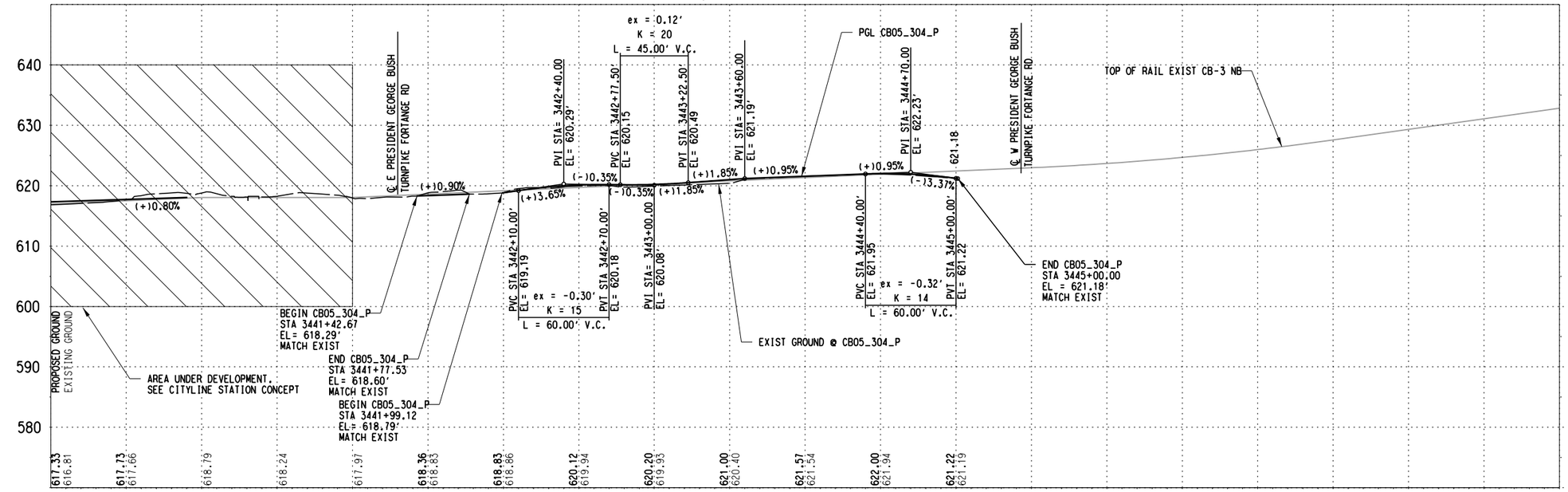
LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.



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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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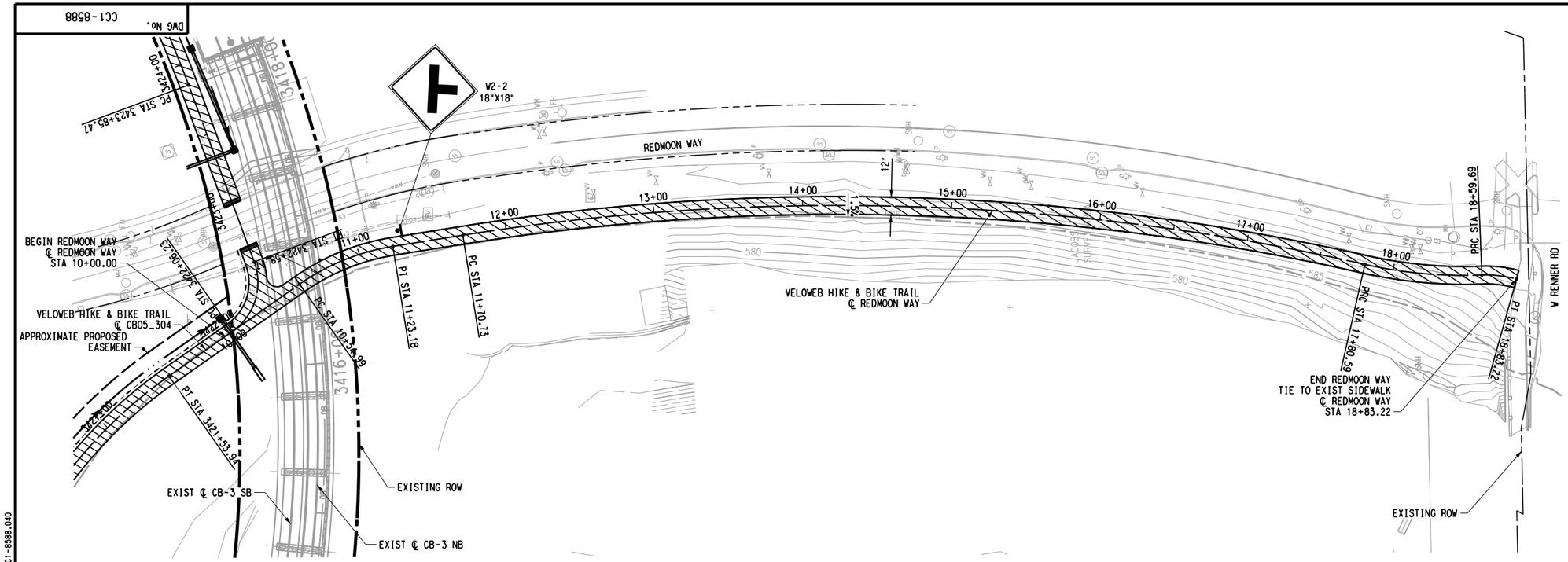
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
STA 3439+50 TO END
SHEET 18 OF 19

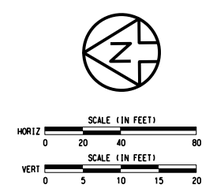
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8587	B

CB05-CC1-8587.040

20-SEP-2022 11:25
CB05-CC1-8587.040
JRapier
NB Plan 16

DWG No. CC1-8588





LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
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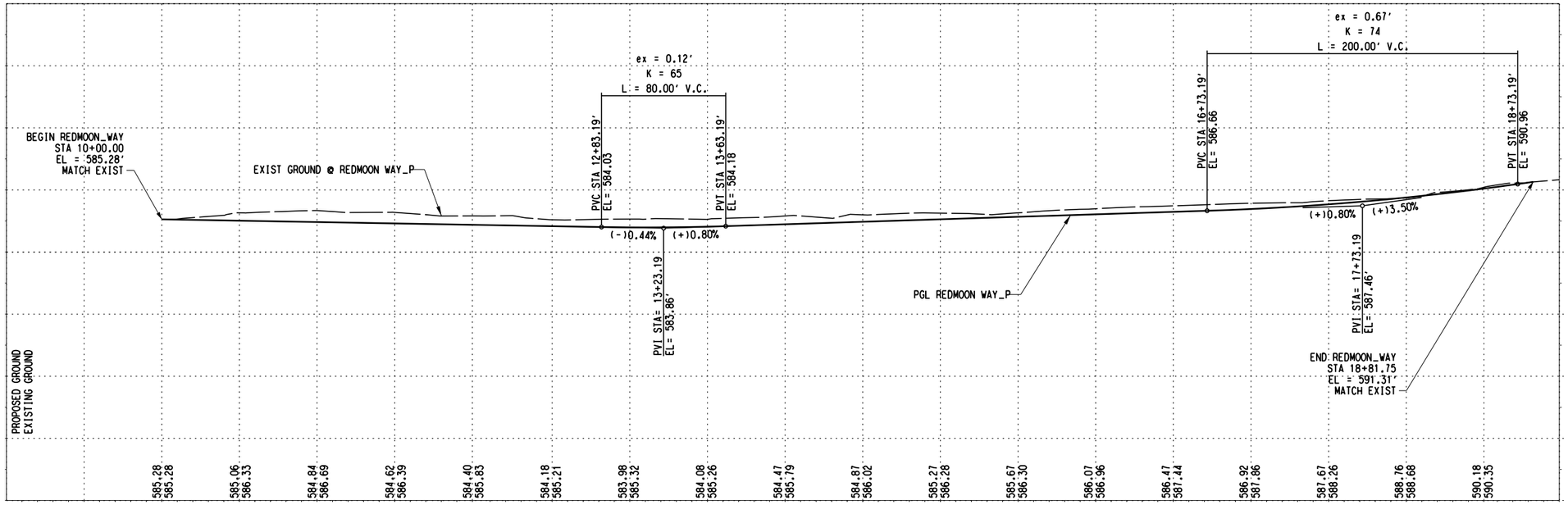
5. SEE BRIDGE LAYOUT SHEETS FOR ADDITIONAL PEDESTRIAN BRIDGE INFORMATION.
6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.



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CONTRACT SHEET No. 57 OF 221

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
PLAN & PROFILE
RED MOON WAY
SHEET 19 OF 19

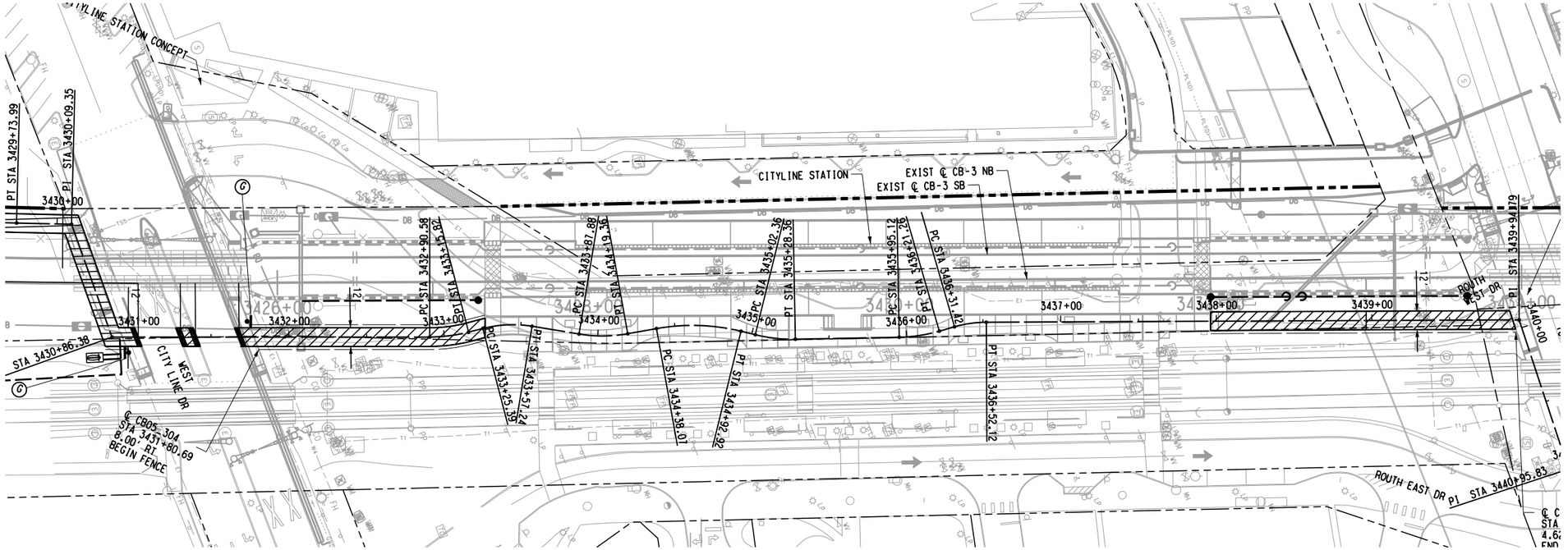
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8588	B

CB05-CC1-8588.040

15-SEP-2022 13:52
CB05-CC1-8588.040

JEGSVCPW01
NB Plan 14

DWG No. CC1-8589



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CONTRACT SHEET No. 58 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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VELOWEB HIKE & BIKE TRAIL

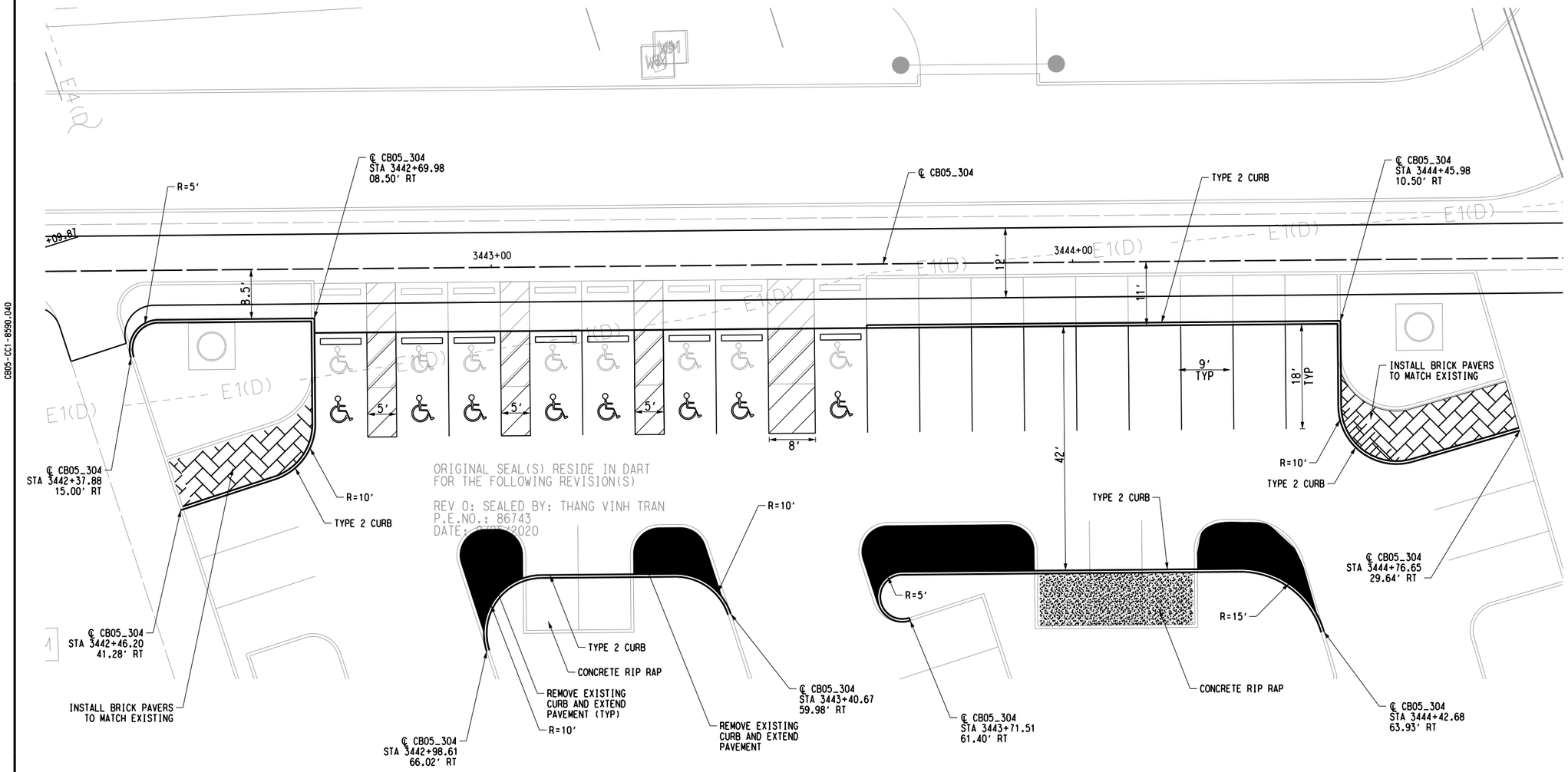
CITY OF RICHARDSON
CITY LINE CONCEPT EXHIBIT

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8589	B

CB05-CC1-8589.040

17-SEP-2022 13:37
CB05-CC1-8589.040
mjahn
NB Plan 15

DWG No. CC1-8590



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FOR THE FOLLOWING REVISION(S)

REV 0: SEALED BY: THANG VINH TRAN
P.E.NO.: 86743
DATE: [illegible]2020

LEGEND:

TRAIL PAVEMENT

TRAIL BRIDGE

NOTES:

1. PROPOSED ROW AND EASEMENTS ARE APPROXIMATE.
2. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
3. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
4. SEE RETAINING WALL LAYOUT SHEETS FOR ADDITIONAL INFORMATION.
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6. SEE TYPICAL SECTION SHEETS FOR ADDITIONAL INFORMATION.

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CONTRACT SHEET No. 59 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
PGBT PARKING LAYOUT

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8590	B

CB05-CC1-8590.040

17-SEP-2022 10:21
CB05-CC1-8590.040

JEGSVCPW001
NB Plan 16

DWG No. CC1-7000

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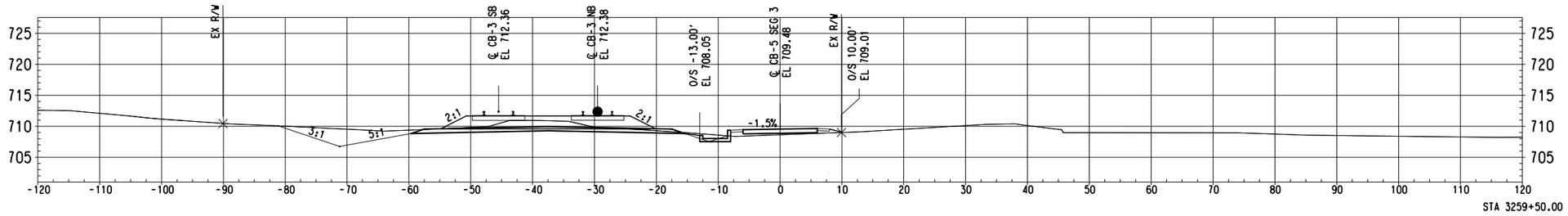
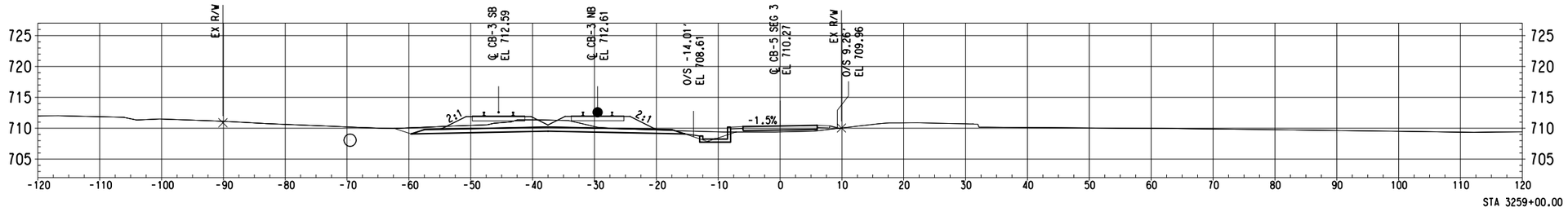
SCALE (IN FEET)
VERT 0 5 10 15 20



STA 3259+50.00



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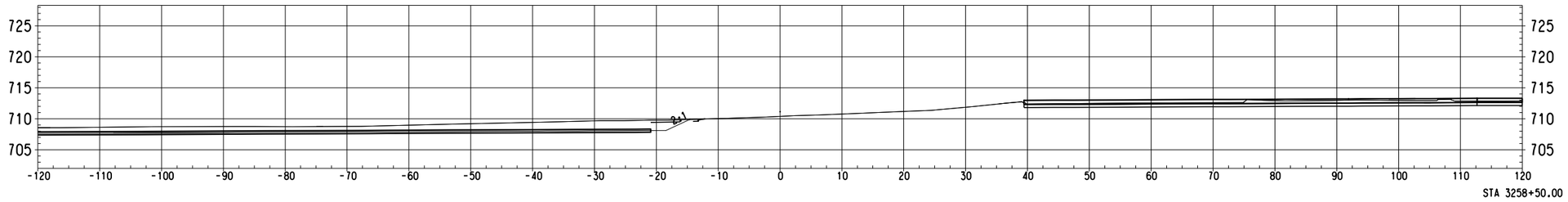

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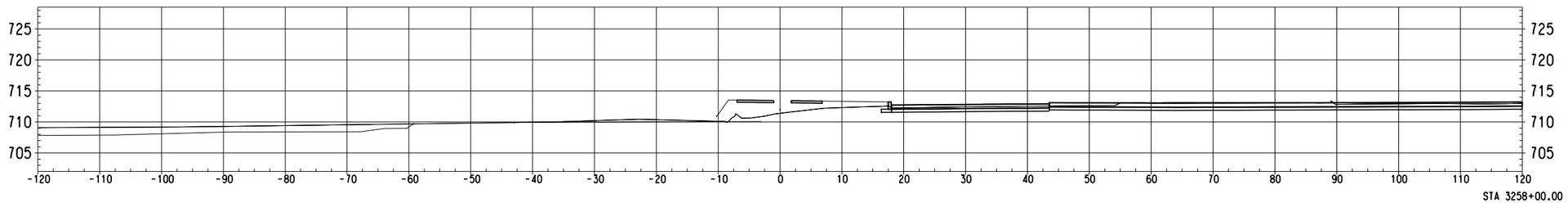

STA 3258+00.00

21-SEP-2022 19:57
CB05-CC1-7000.000

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

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CONTRACT SHEET No. 60 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 1 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7000	B

CB05-CC1-7000.000

DWG No. CC1 - 7001

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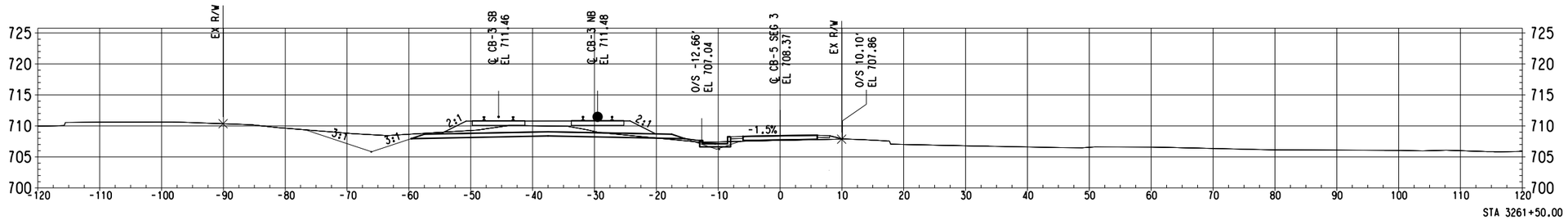
SCALE (IN FEET)
VERT 0 5 10 15 20



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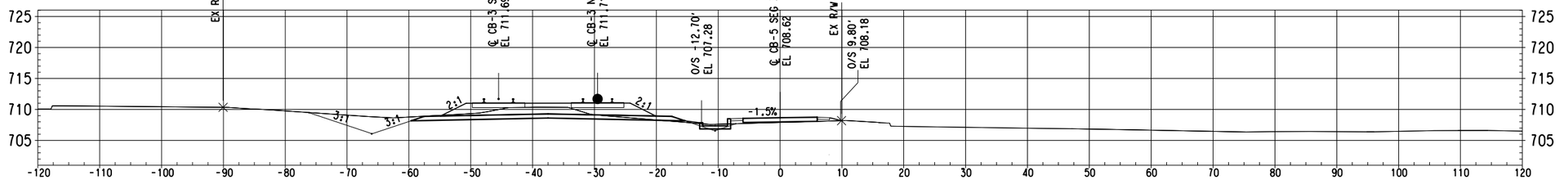

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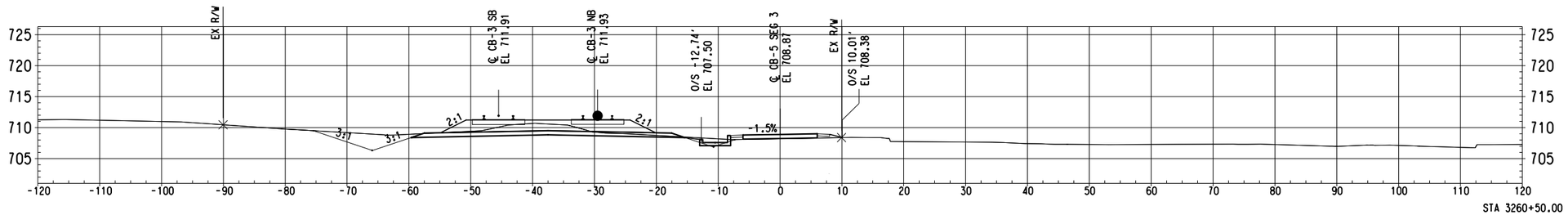

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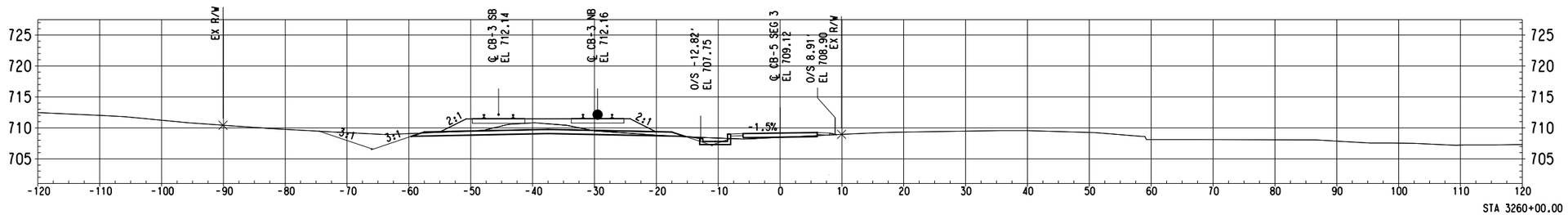

STA 3260+00.00

21-SEP-2022 19:57
CB05-CC1-7001.000

tlockett
CB05_302_RICH - 3260+00.00

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

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CONTRACT SHEET No. 61 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 2 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7001	B

CB05-CC1-7001.000

DWG No. CC1-7002

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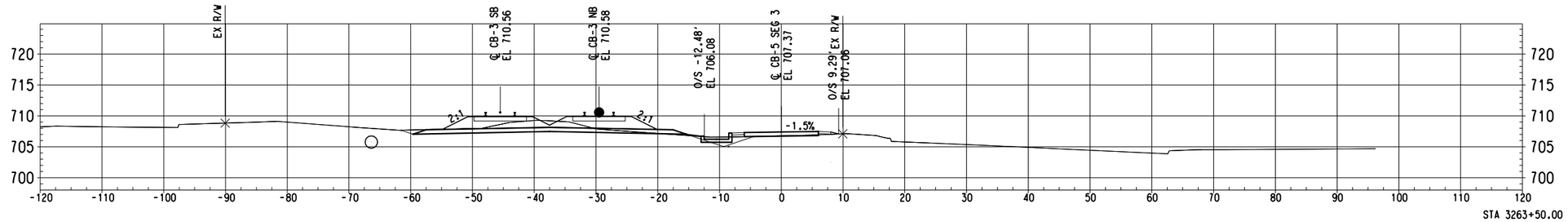

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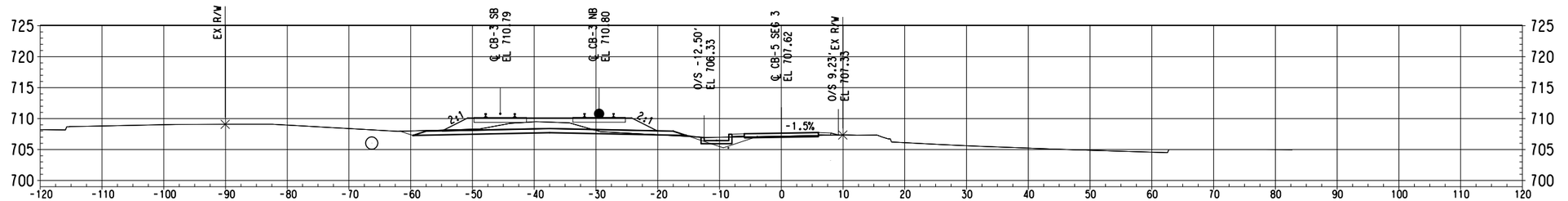

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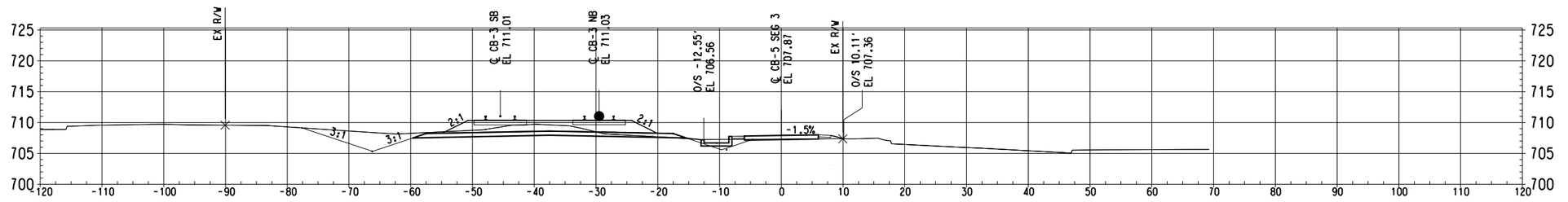

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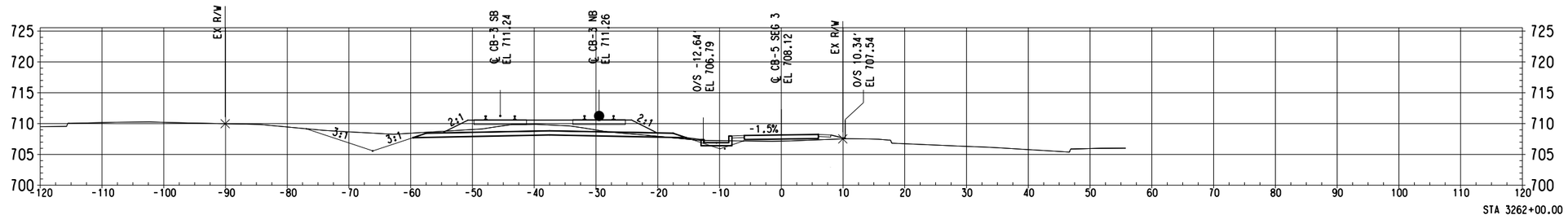

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CONTRACT SHEET No. 62 OF 221

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 3 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7002	B

CB05-CC1-7002.000

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DWG No. CC1-7003

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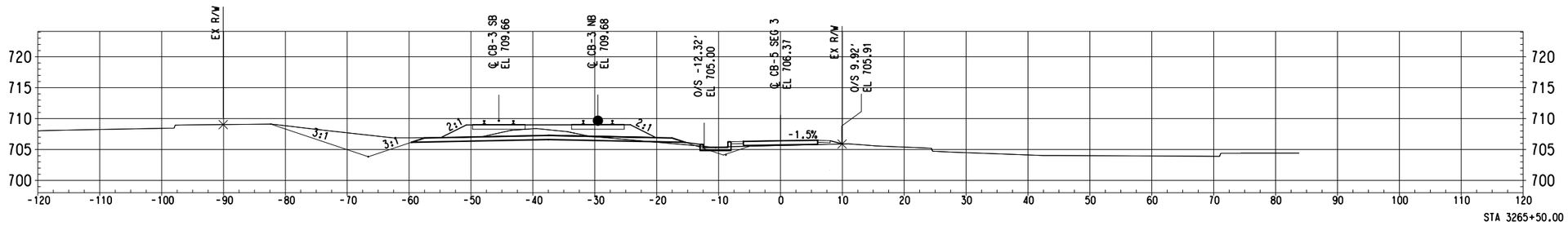

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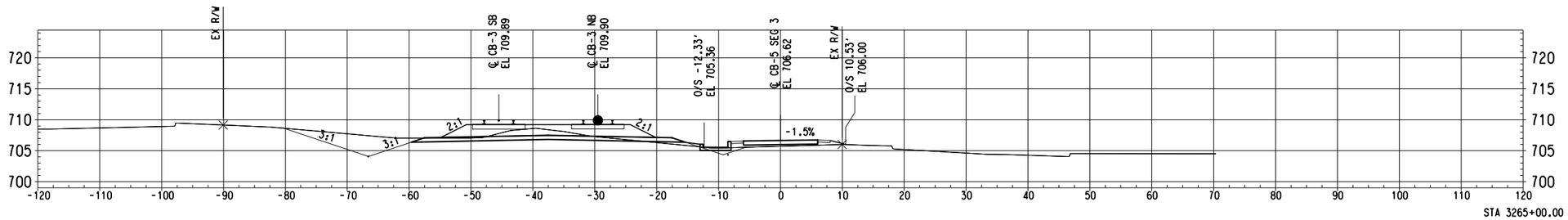

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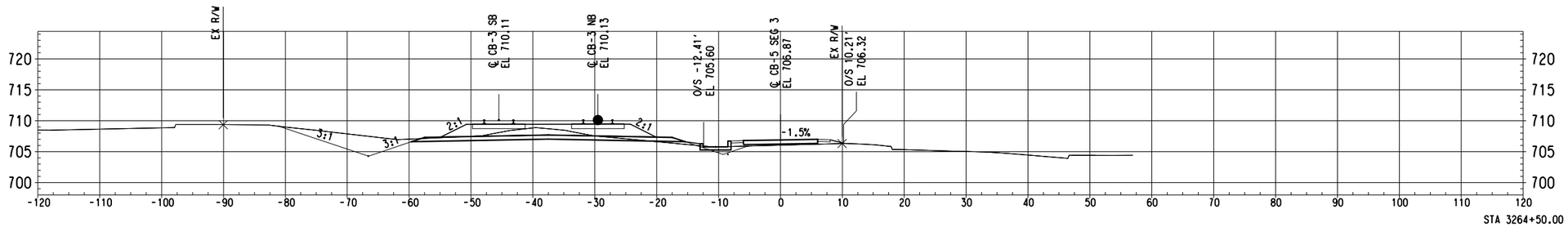

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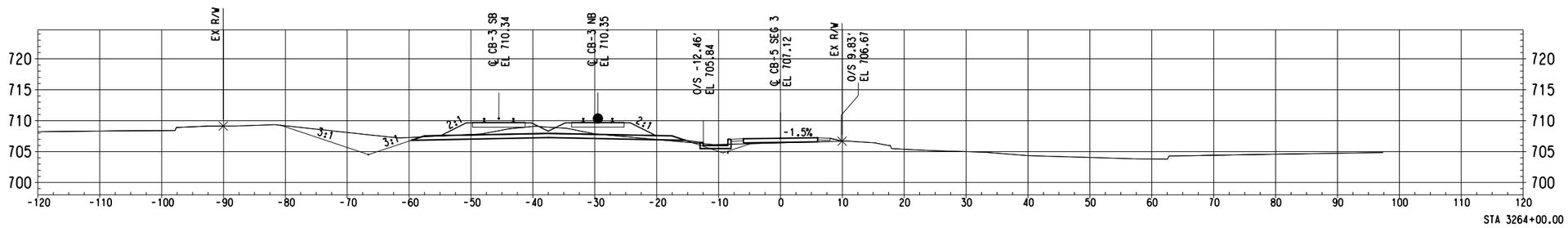

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 4 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7003	B

CB05-CC1-7003.000

DWG No. CC1-7004

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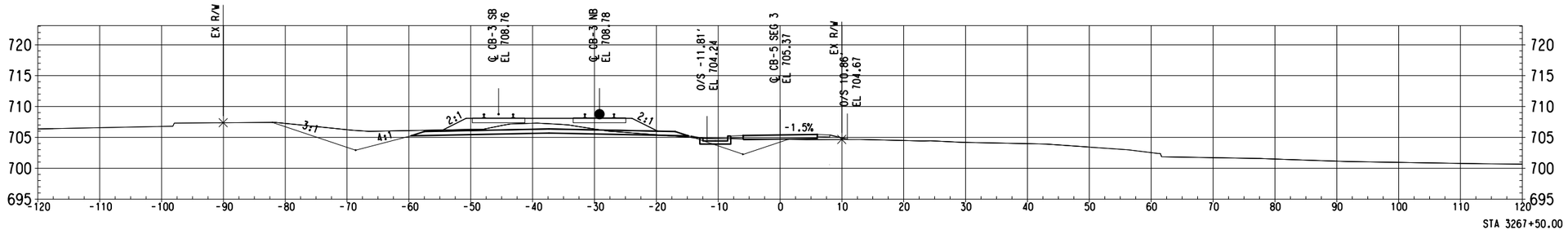

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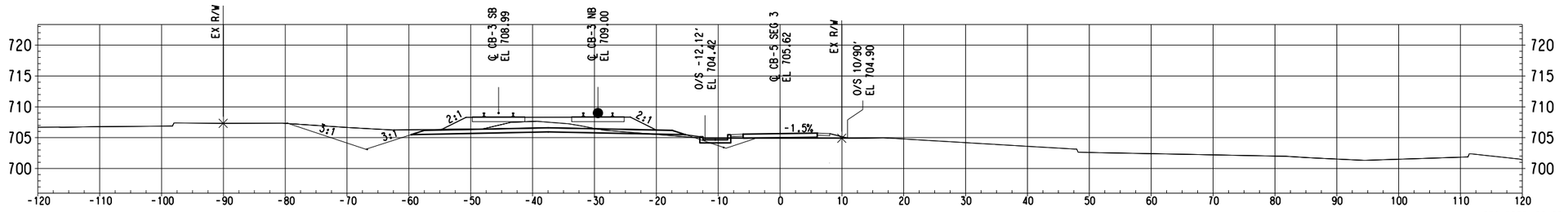

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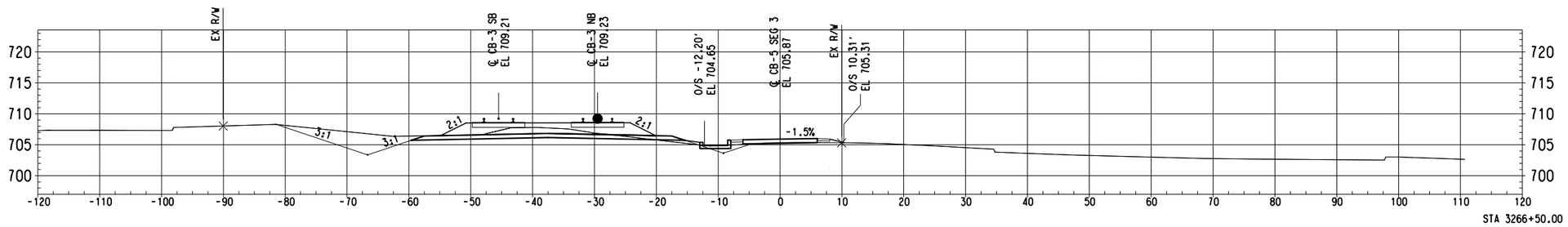

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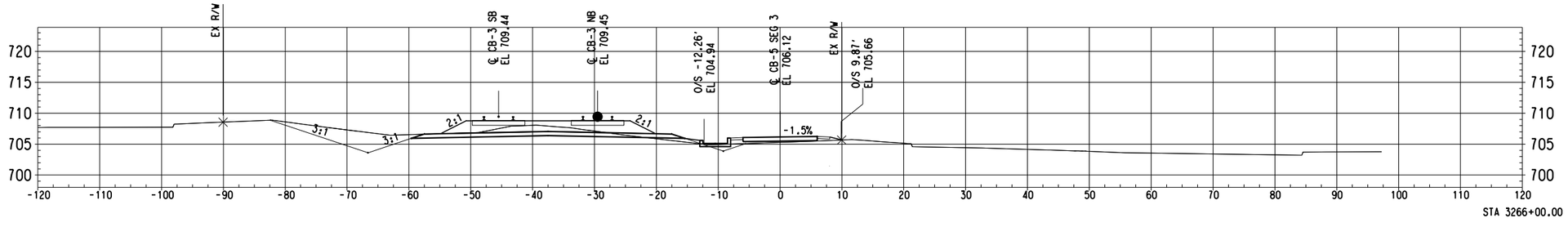

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COTTON BELT REGIONAL RAIL
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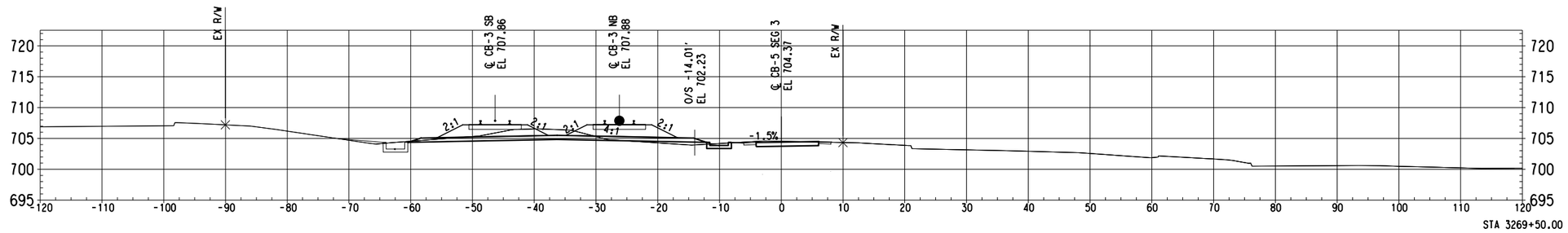
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 5 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7004	B

CB05-CC1-7004.000

DWG No. CC1-7005



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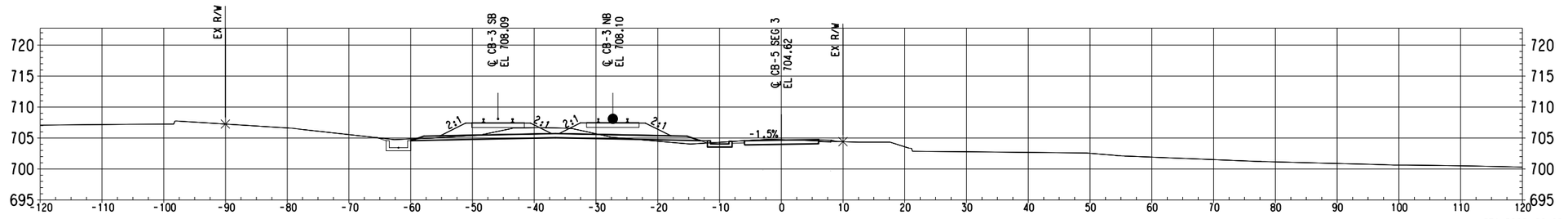

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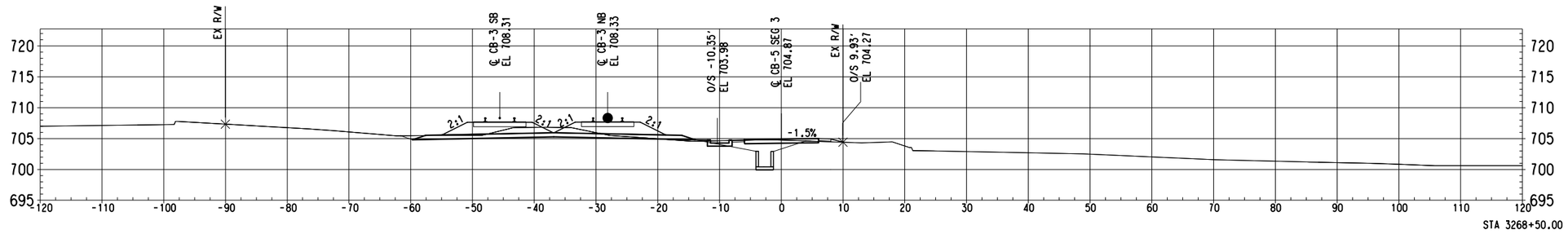

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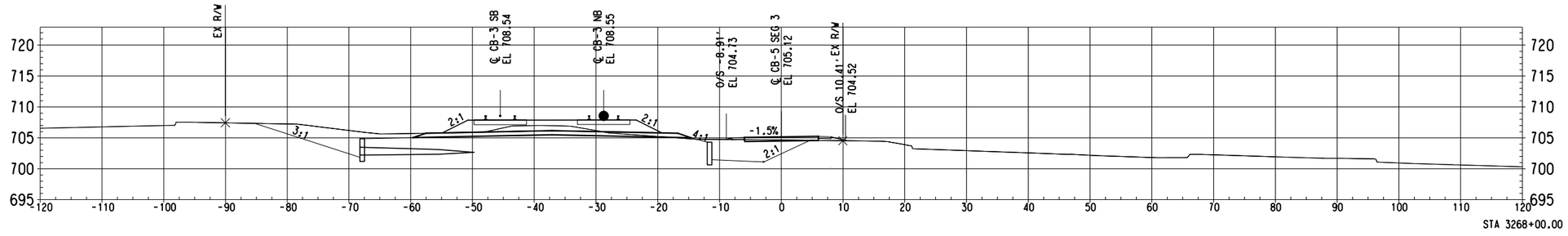

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CONTRACT SHEET No. 65 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 6 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7005	B

CB05-CC1-7005.000

21-SEP-2022 20:00
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DWG No. CC1-7006

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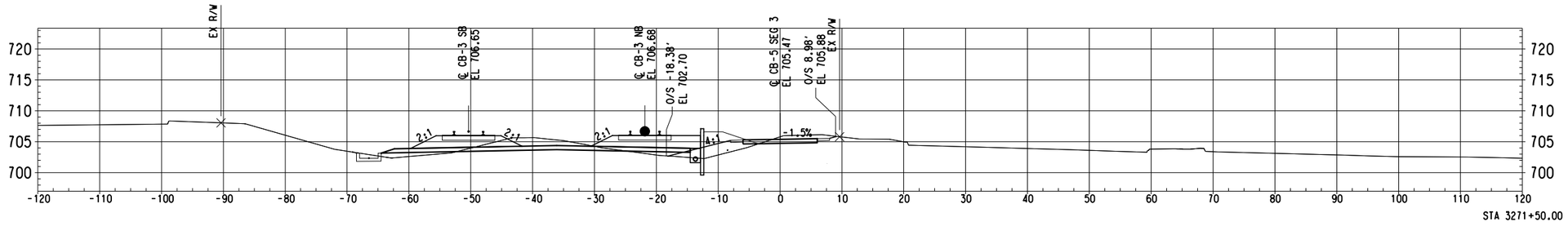

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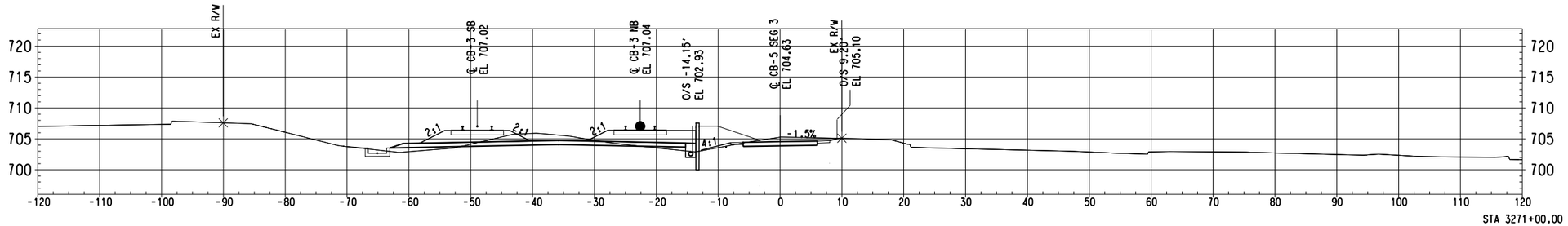

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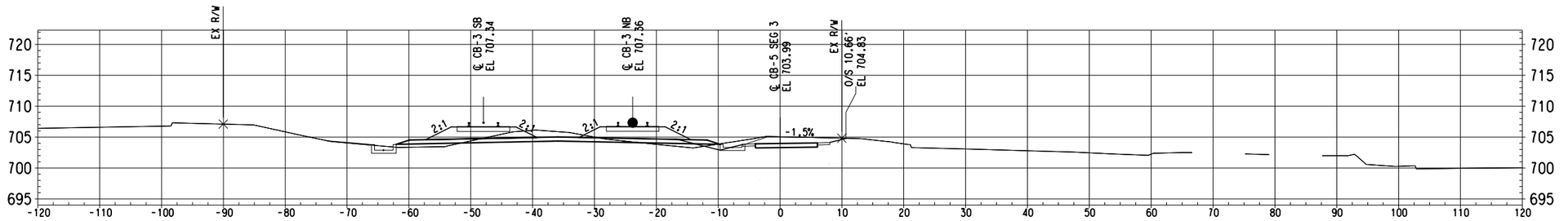

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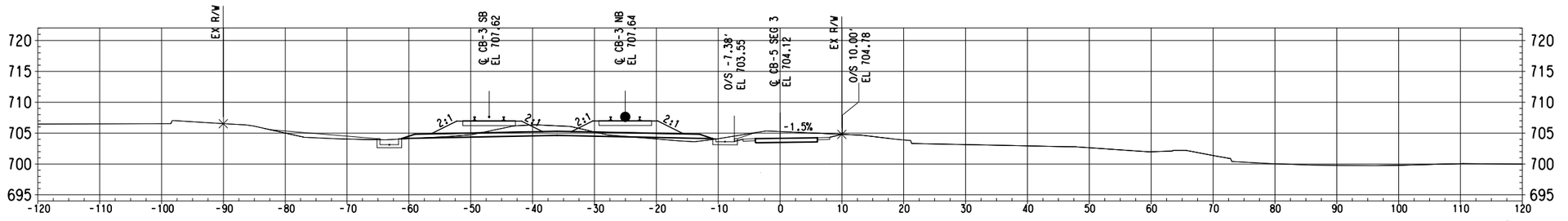

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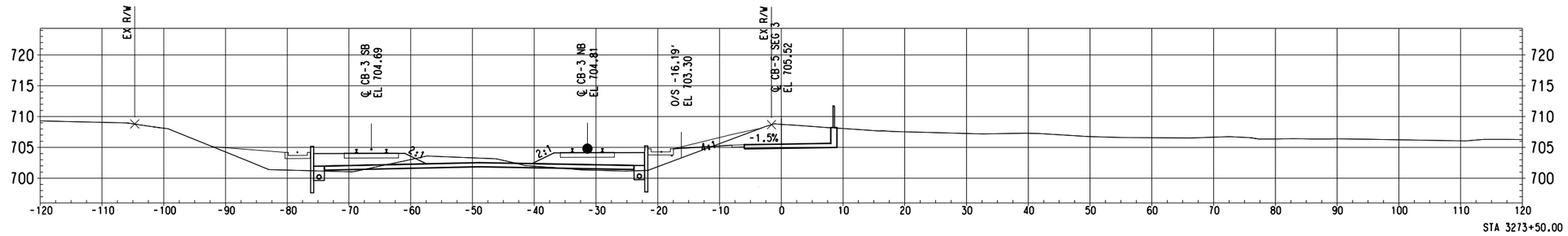
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

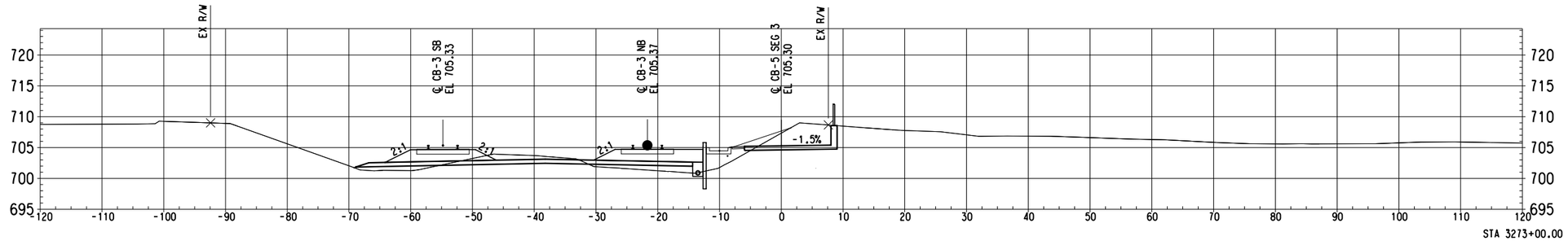
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 7 OF 67

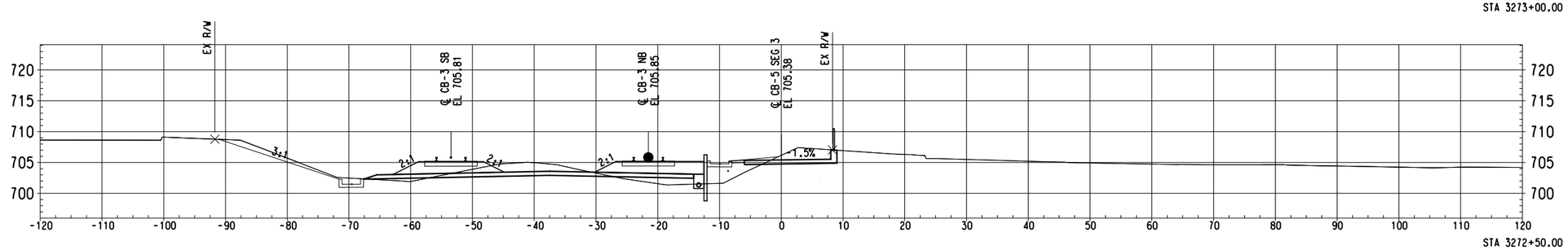
CONTRACT	DWG No.	REV
C-2033270-01	CC1-7006	B

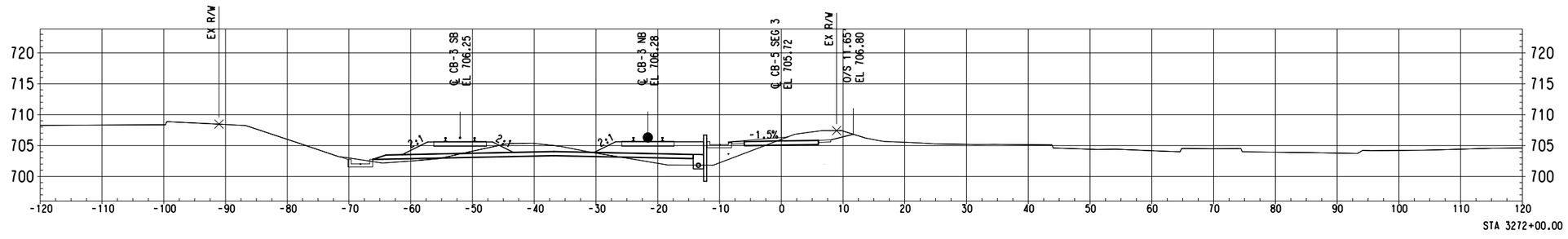
CB05-CC1-7006.000

DWG No. CC1-7007









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CONTRACT SHEET No. 67 OF 221

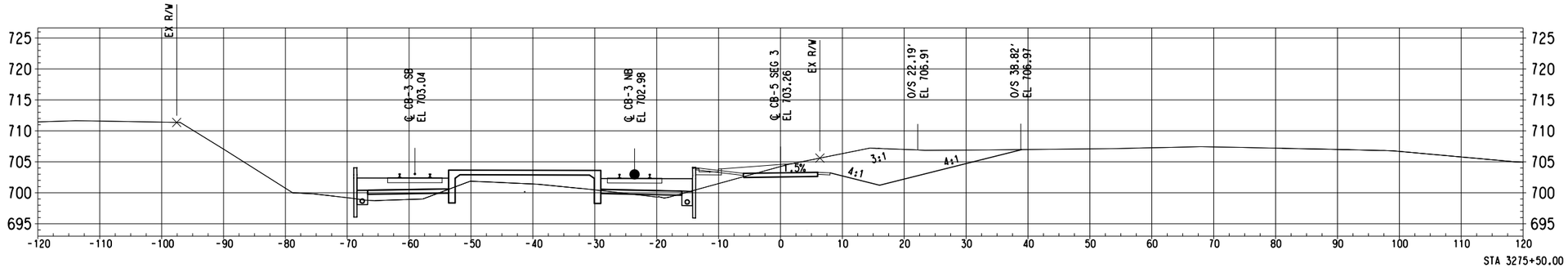
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 8 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7007	B

CB05-CC1-7007.000

DWG No. CC1-7008



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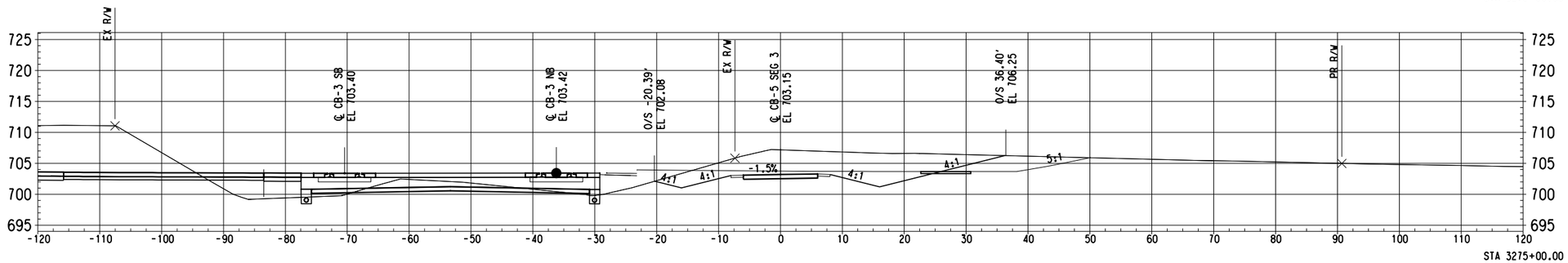

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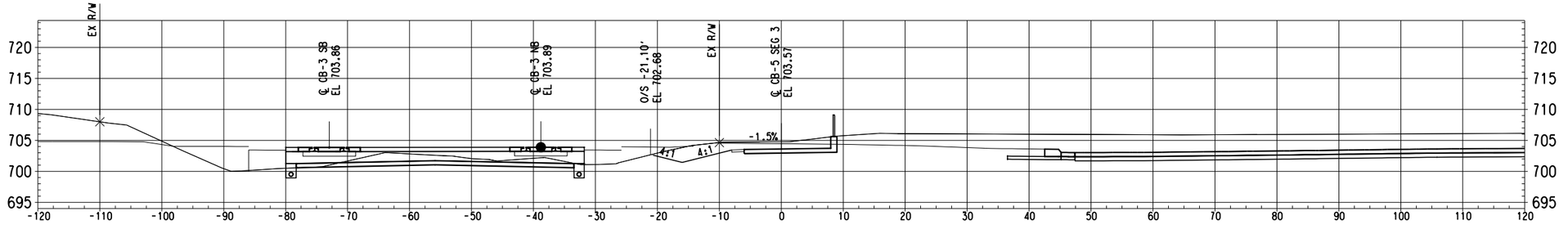

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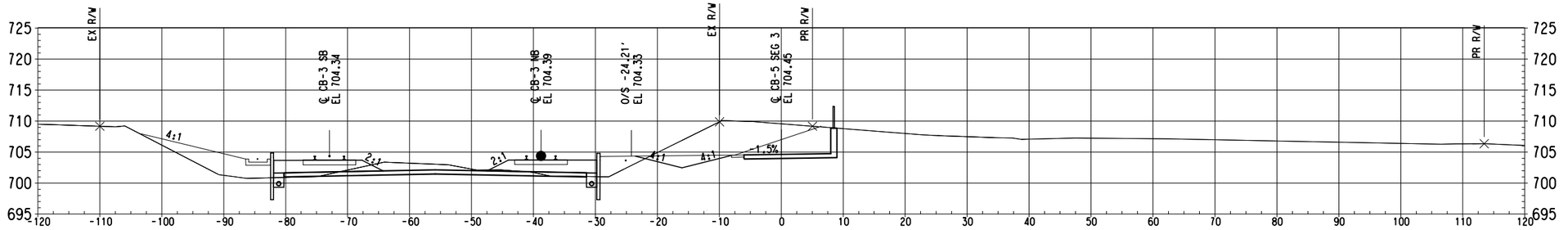

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 9 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7008	B

CB05-CC1-7008.000

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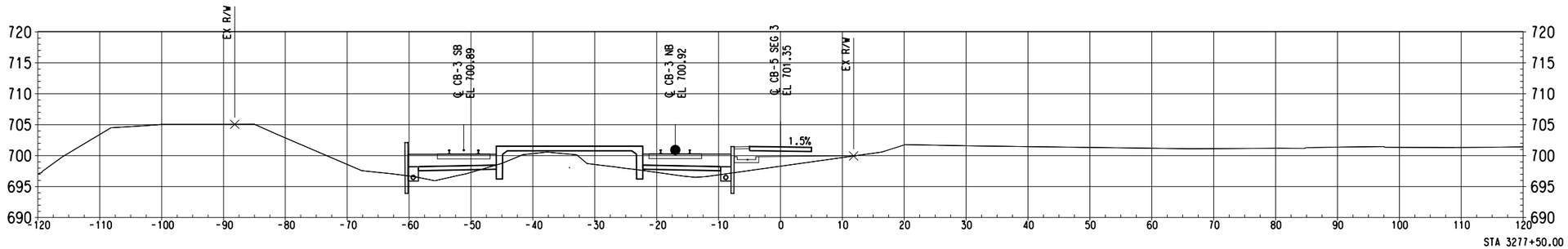
DWG No. CC1-7009



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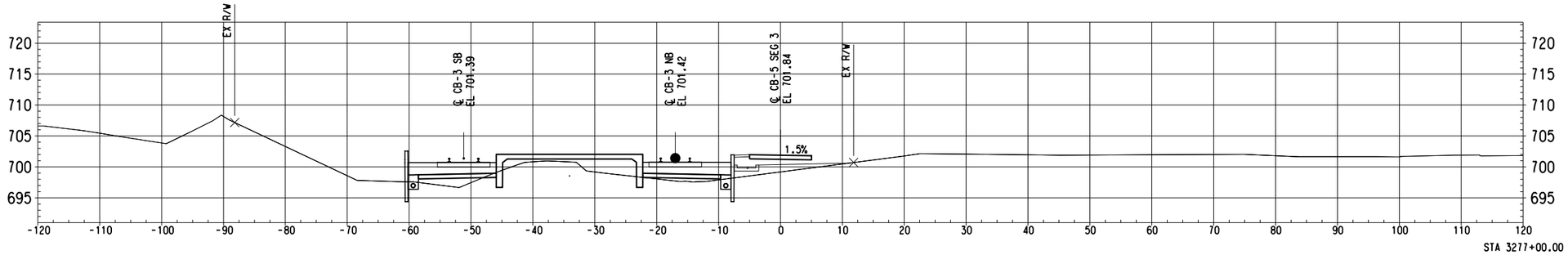

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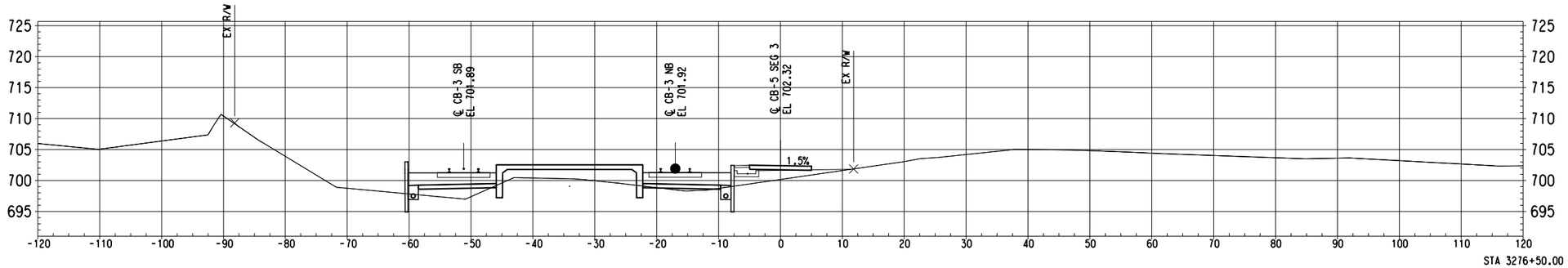

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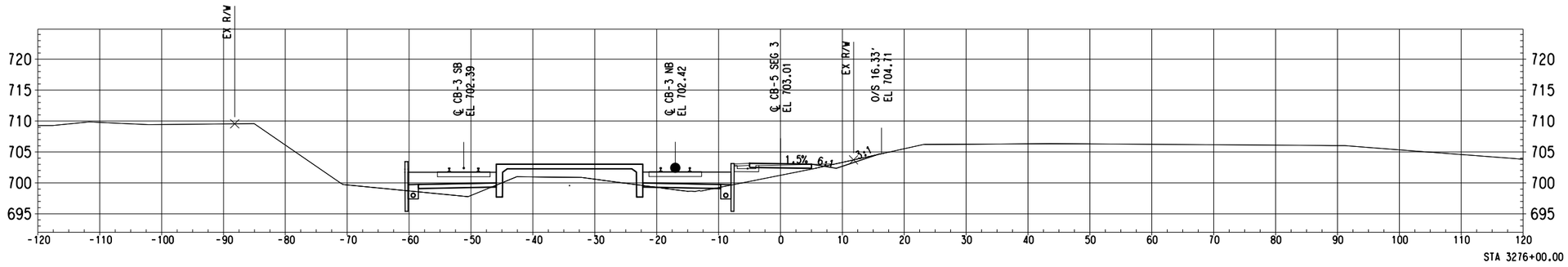

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SCALE (IN FEET)
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CONTRACT SHEET No. 69 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 10 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7009	B

CB05-CC1-7009.000

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CB05-CC1-7009.000

llocket1
CB05_302_RICH - 3276+00.00

DWG No. CC1-7010

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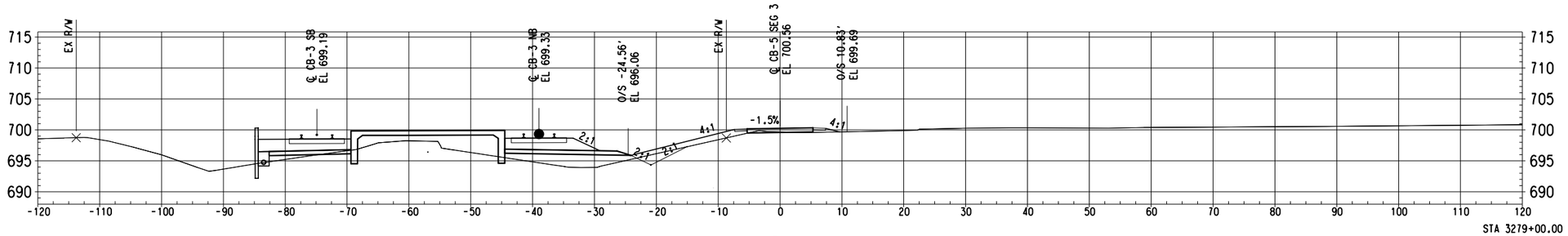
SCALE (IN FEET)
VERT 0 5 10 15 20



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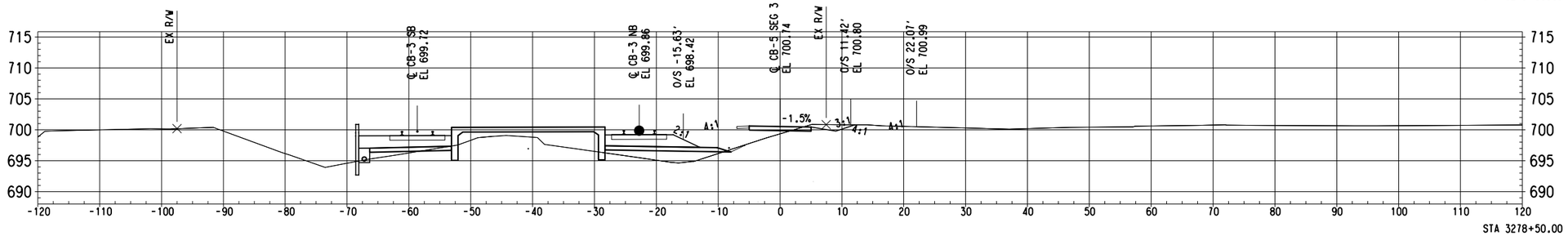

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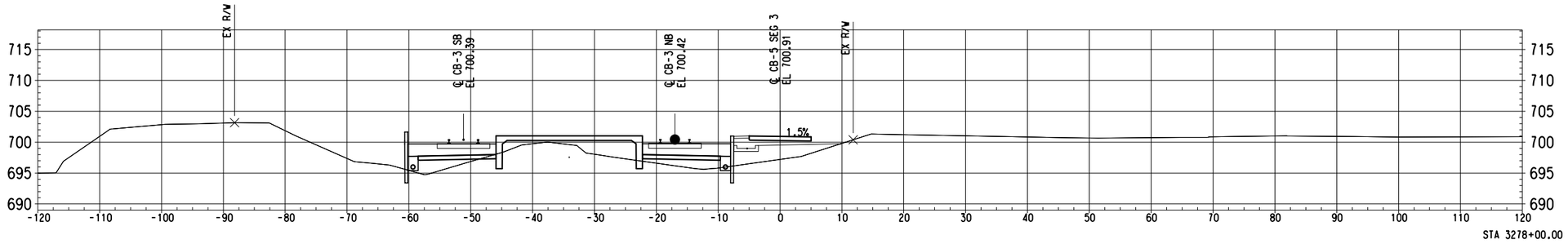

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CAES

CONTRACT SHEET No. 70 OF 221

COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 11 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7010	B

CB05-CC1-7010.000

DWG No. CC1-8000

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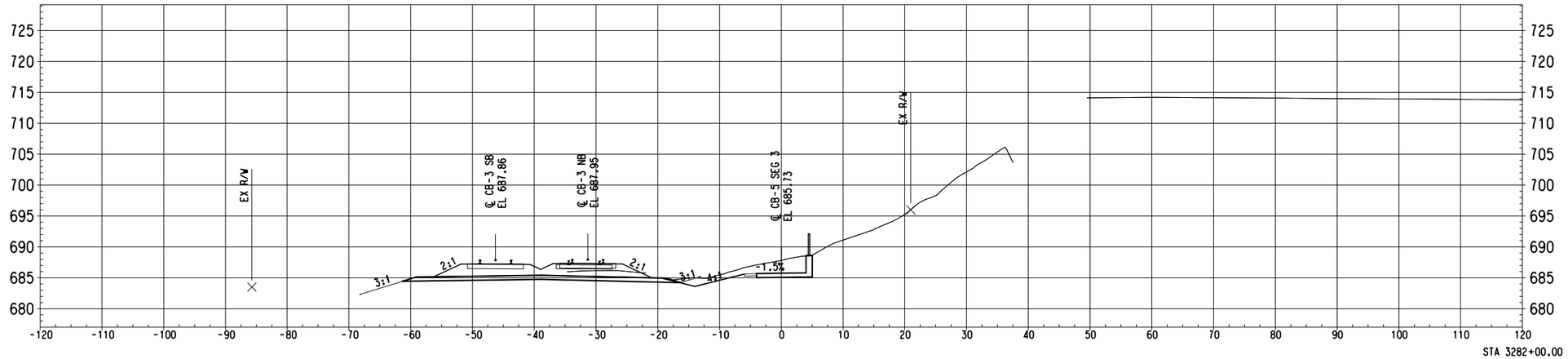

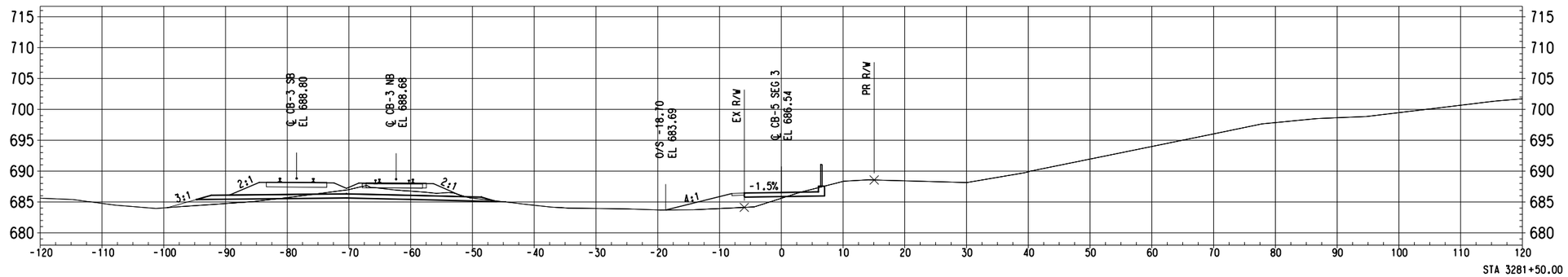

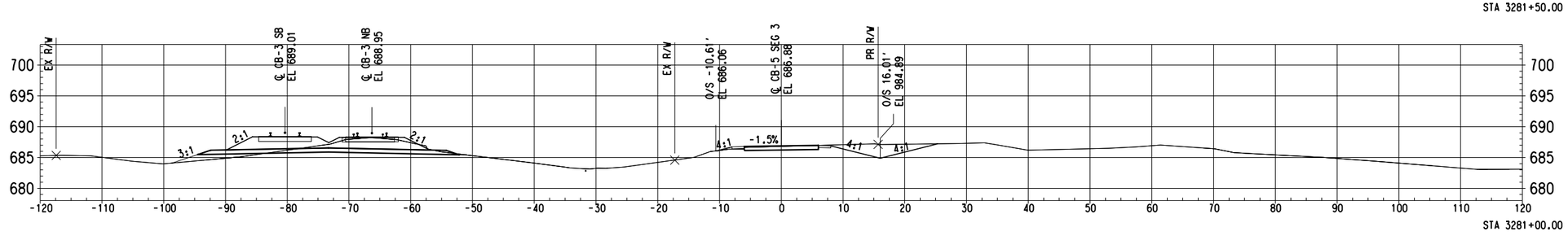

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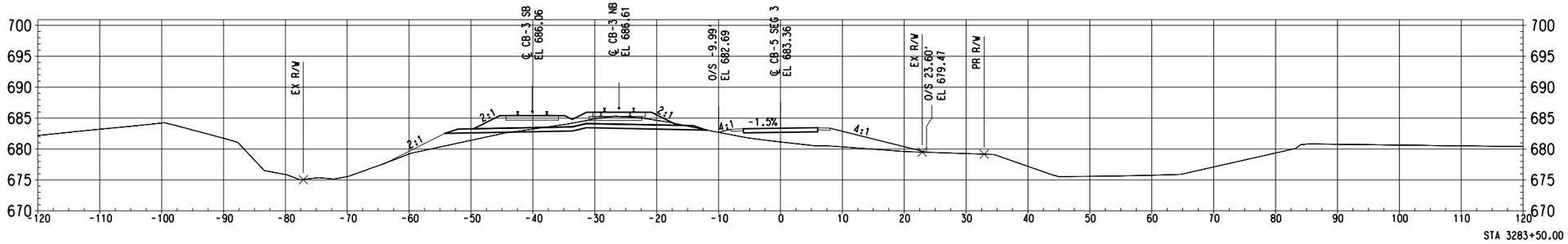
CONTRACT SHEET No. 71 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 12 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8000	B

DWG No. CC1-8001



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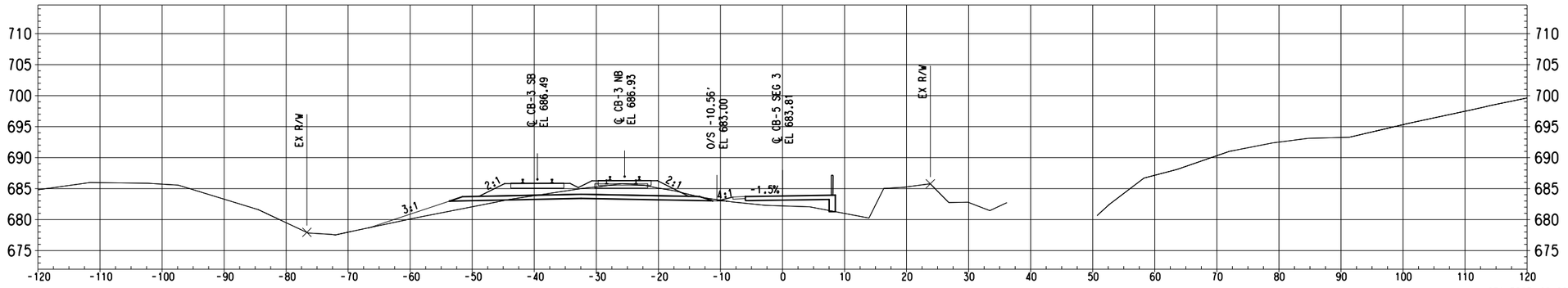

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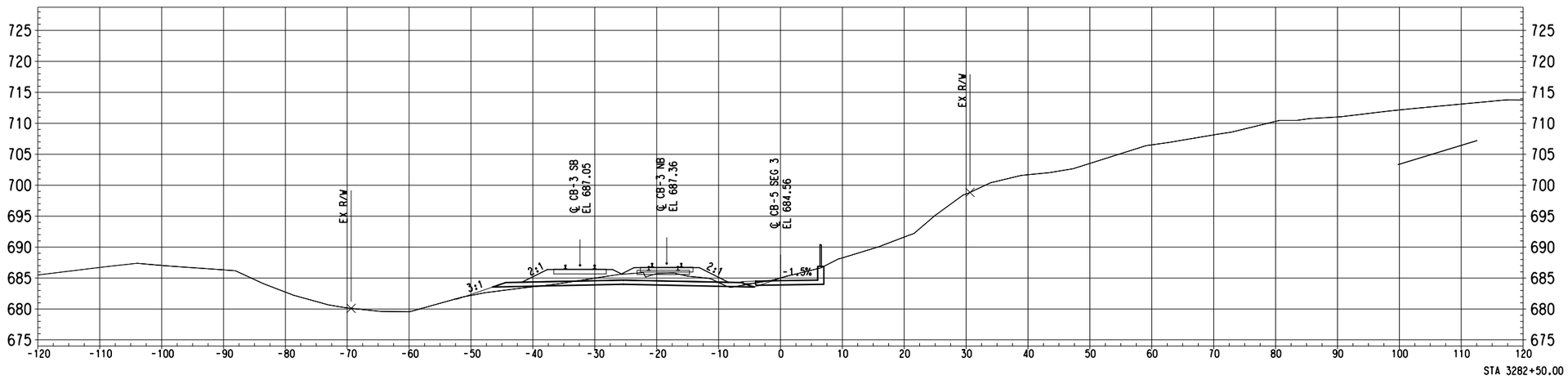

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CONTRACT SHEET No. 72 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 13 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8001	B

CB05-CC1-8001.000

DWG No. CC1-8002

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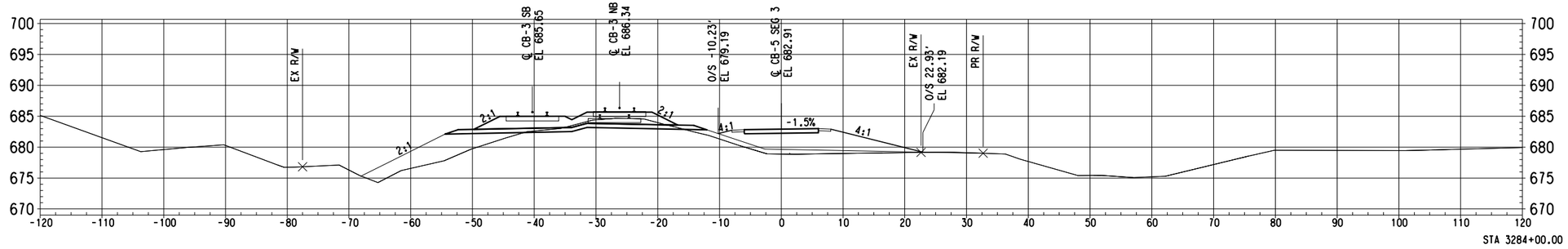

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CONTRACT SHEET No. 73 OF 221

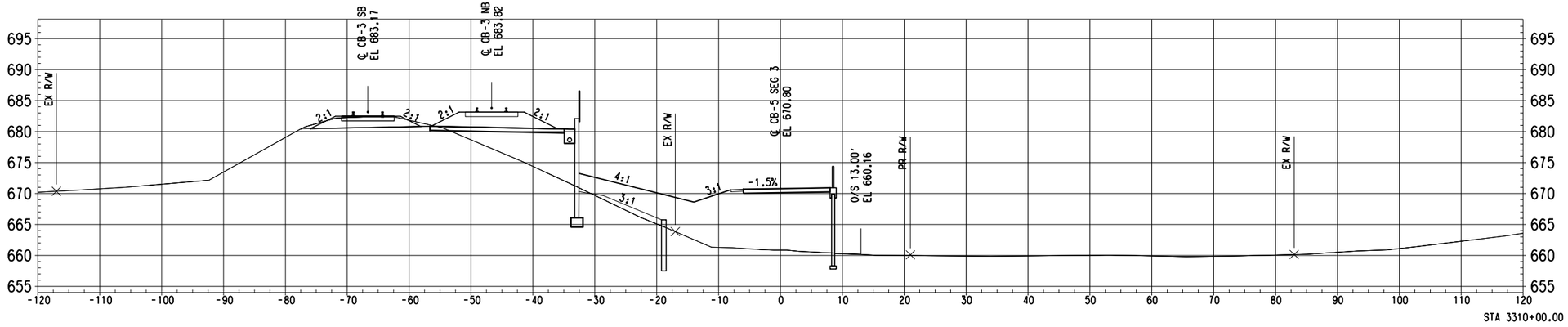
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

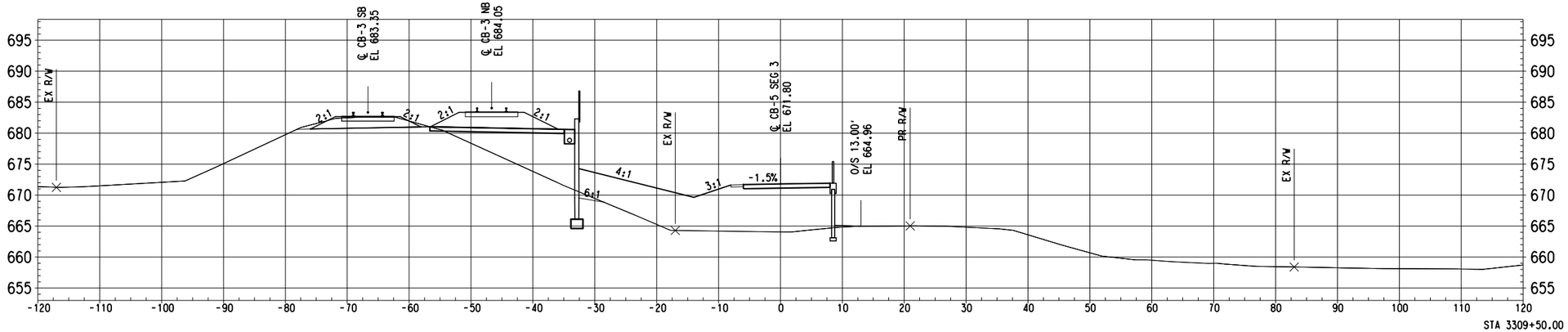
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 14 OF 67

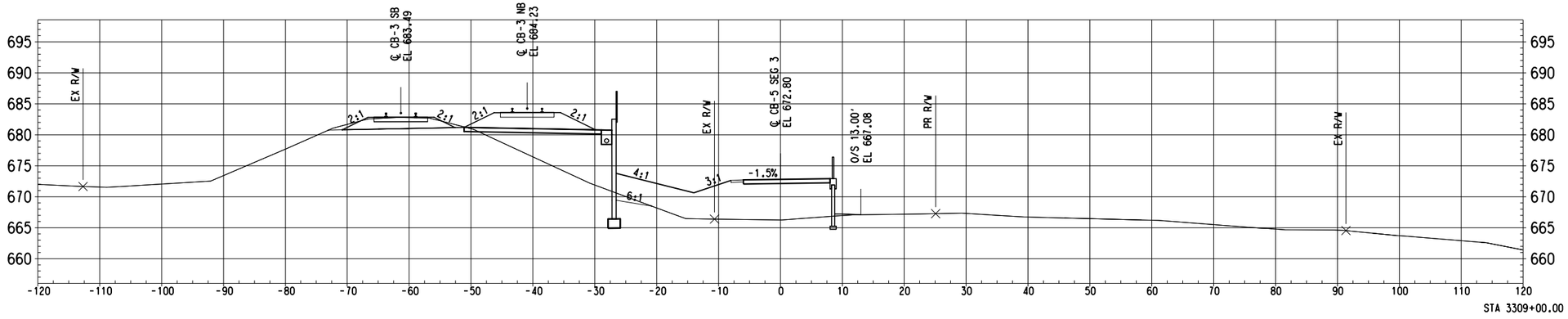
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8002	B

CB05-CC1-8002.000

DWG No. CC1-8003







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VERT 0 5 10 15 20

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CONTRACT SHEET No. 74 OF 221

COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 15 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8003	B

CB05-CC1-8003.000

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DWG No. CC1-8004

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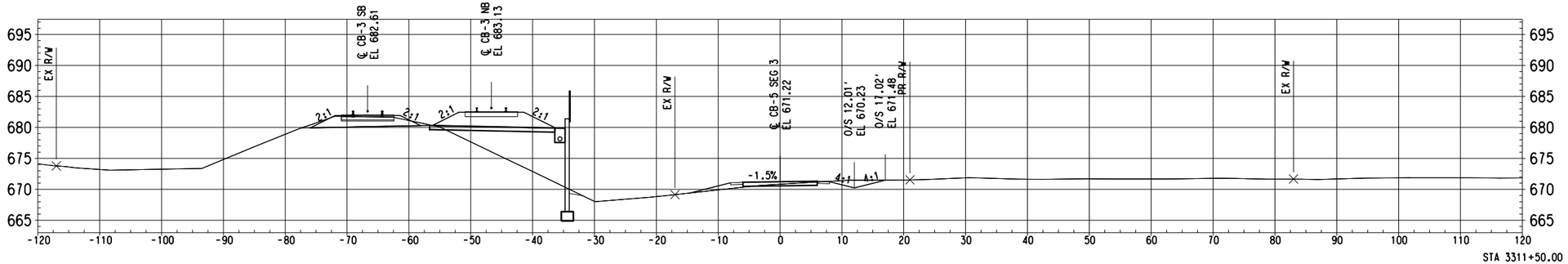

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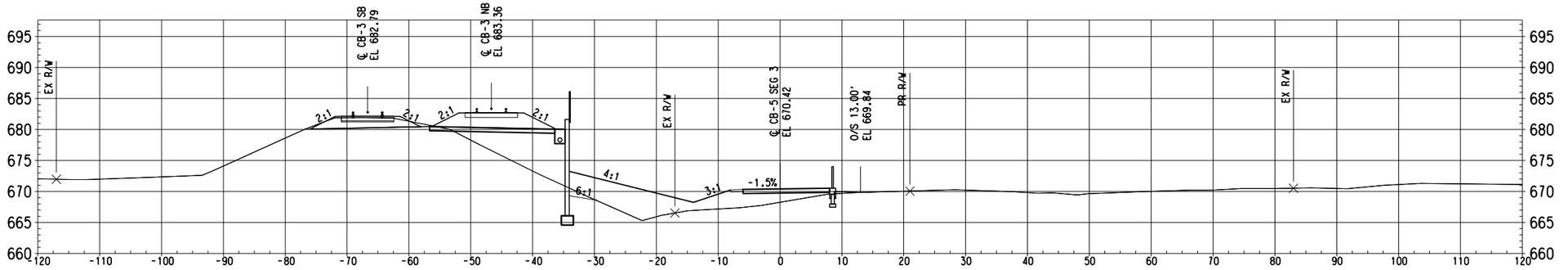

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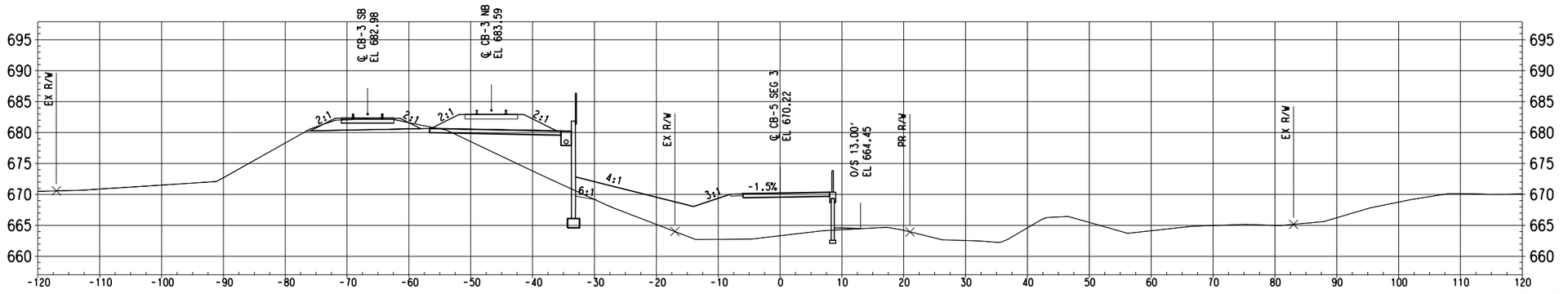

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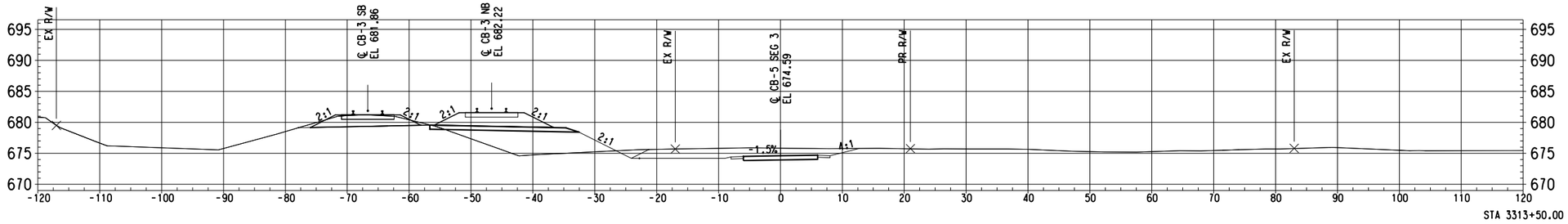
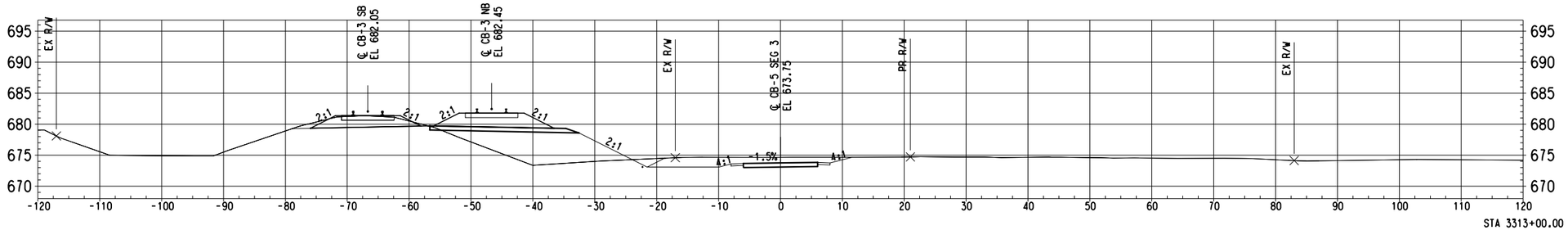
VELOWEB HIKE & BIKE TRAIL

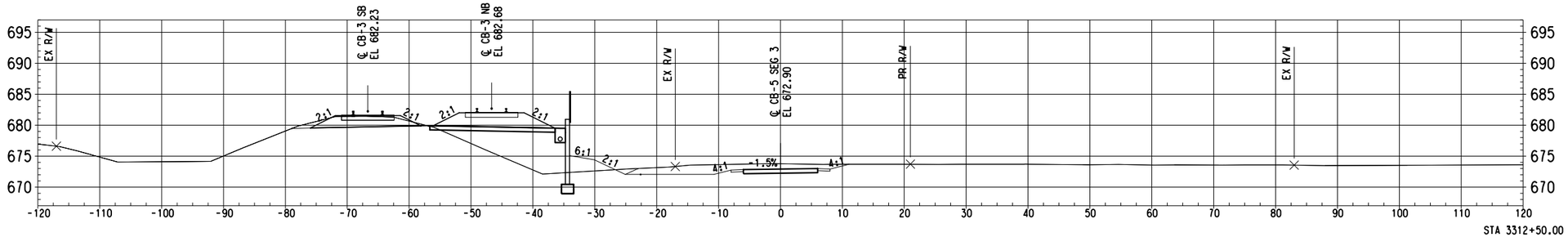
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 16 OF 67

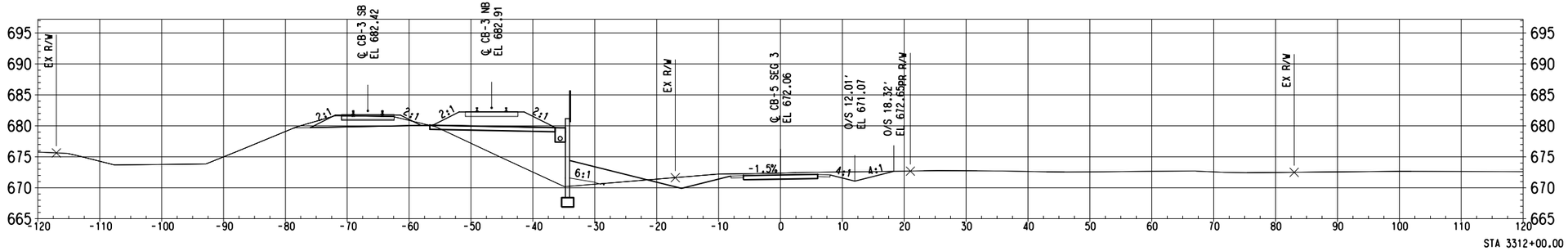
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8004	B

CB05-CC1-8004.000









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CONTRACT SHEET No. 76 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 17 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8005	B

CB05-CC1-8005.000

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303_RICH_2 - 3312+00.00 R2

DWG No. CC1-8006

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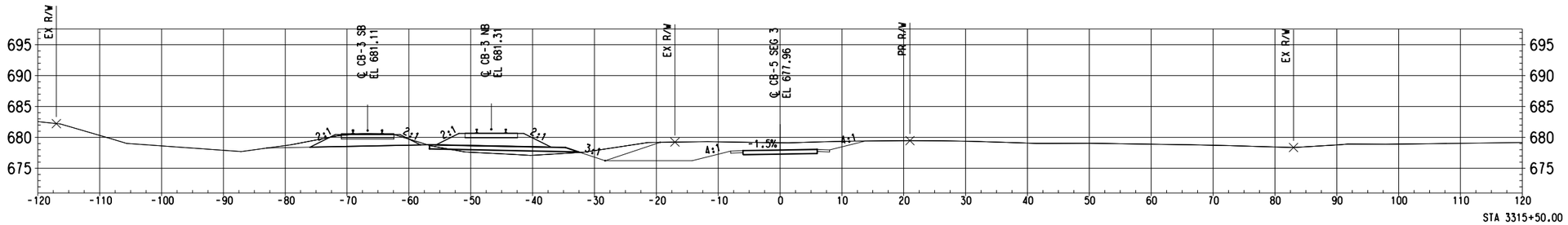

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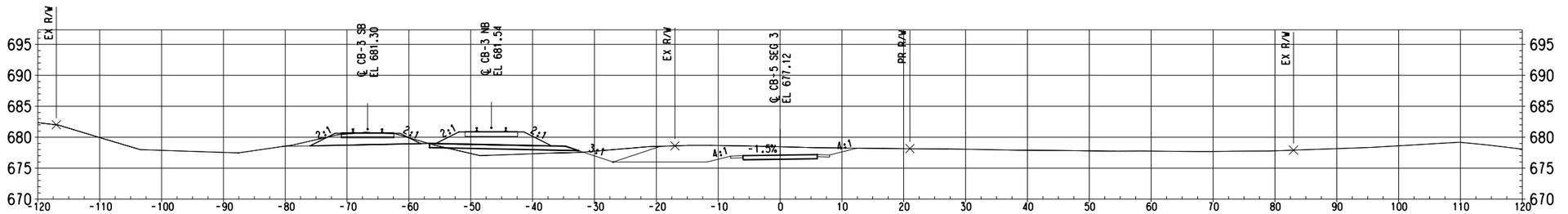

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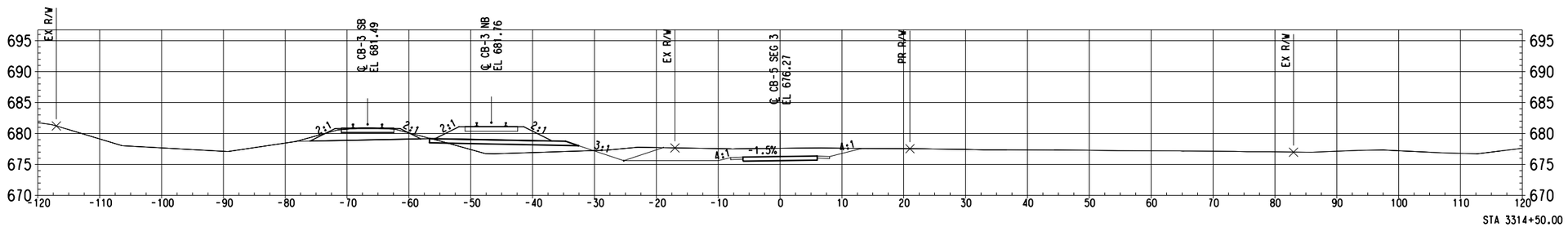

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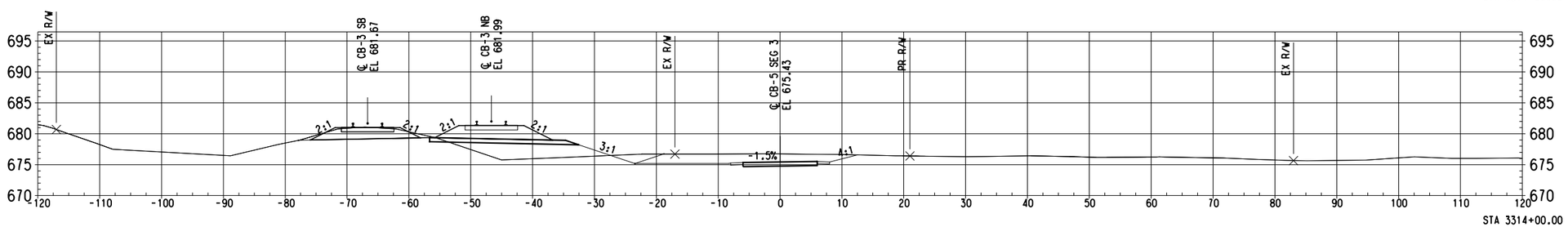

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CONTRACT SHEET No. 77 OF 221

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 18 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8006	B

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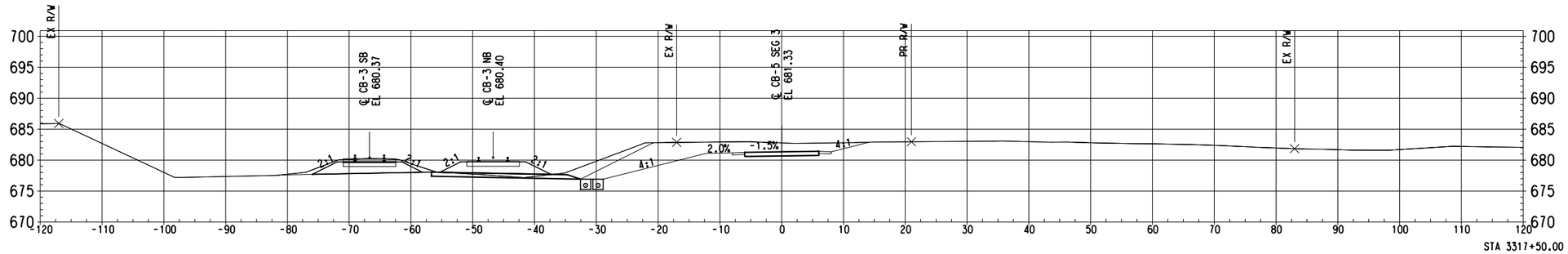
DWG No. CC1-8007



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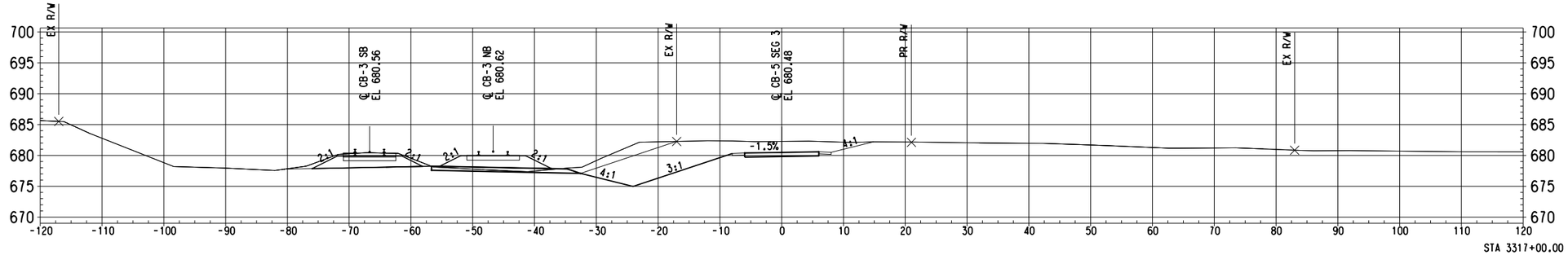

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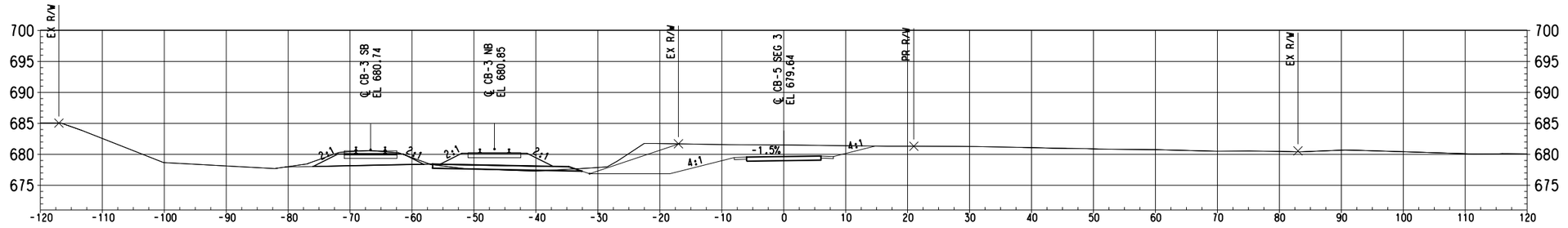

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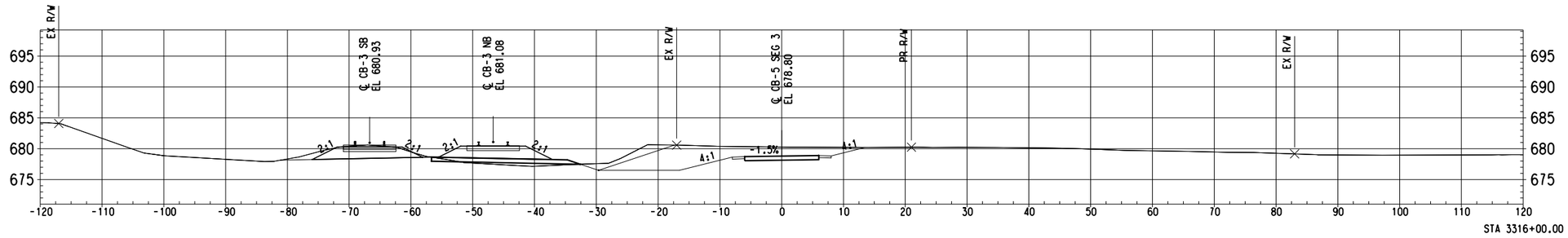

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CONTRACT SHEET No. 78 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 19 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8007	B

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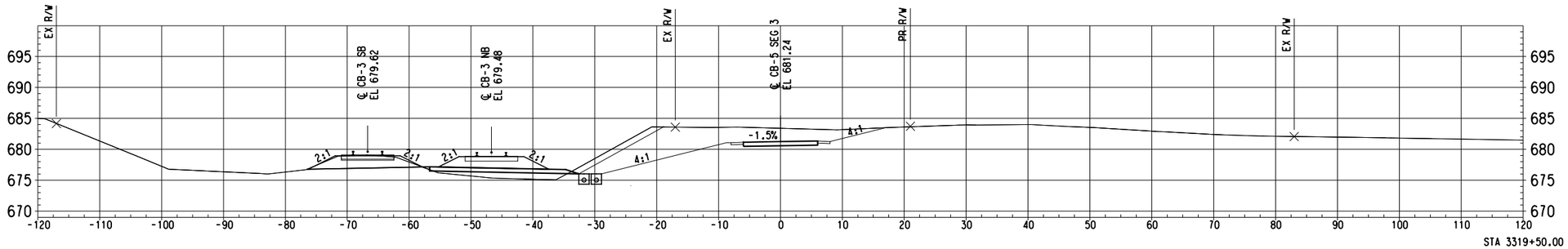
DWG No. CC1-8008



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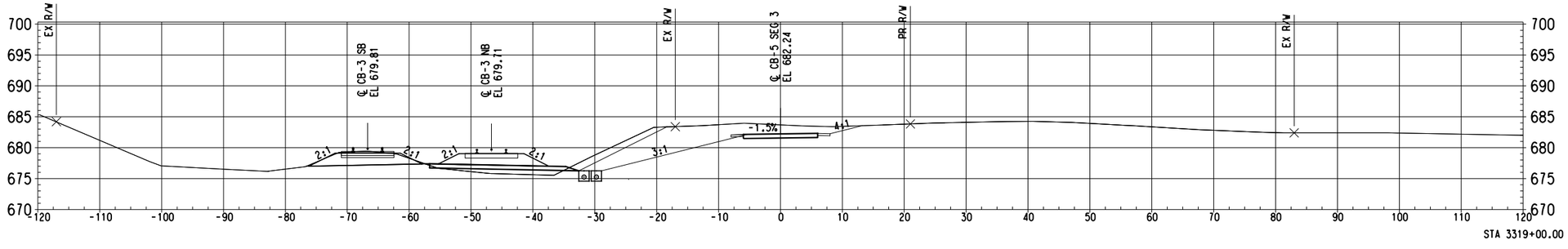

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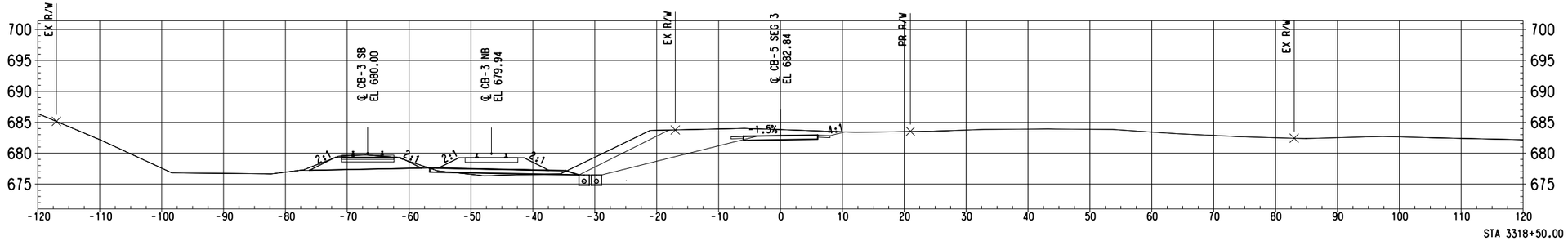

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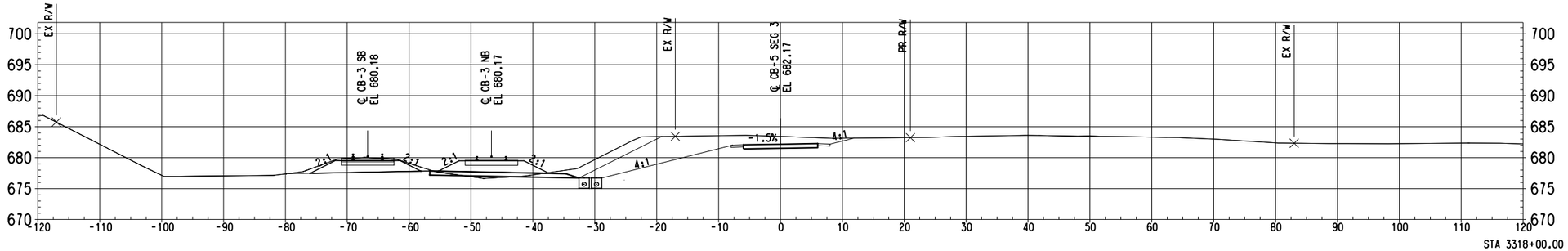

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CONTRACT SHEET No. 79 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 20 OF 67

CONTRACT	DWG No.	REV
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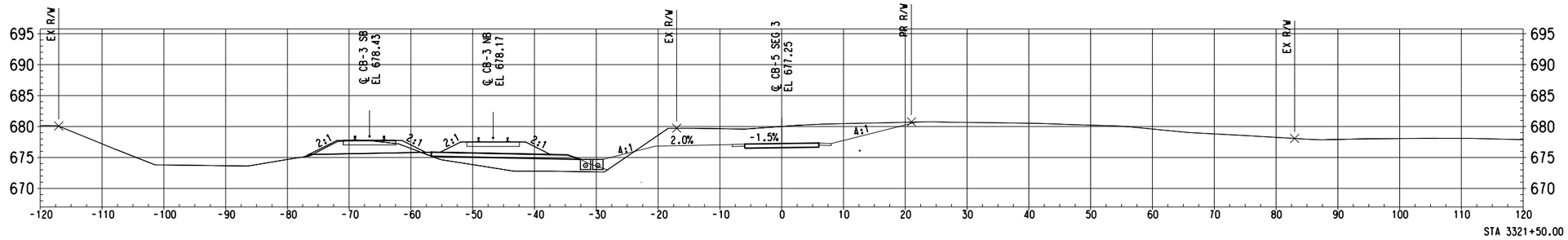
DWG No. CC1-8009



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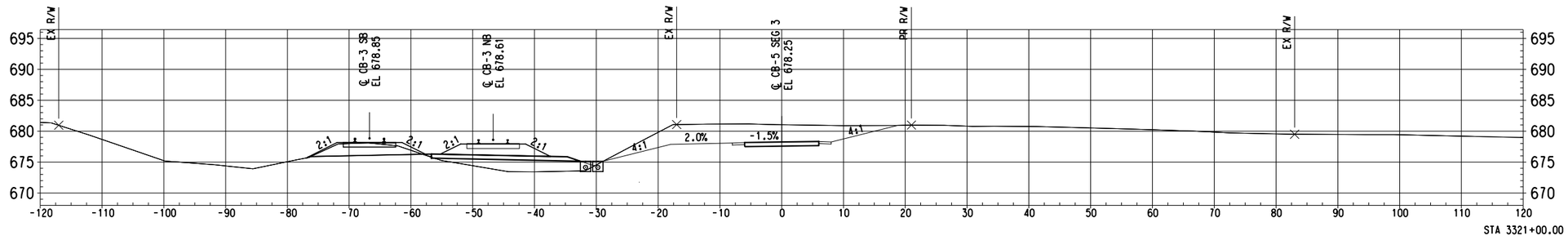

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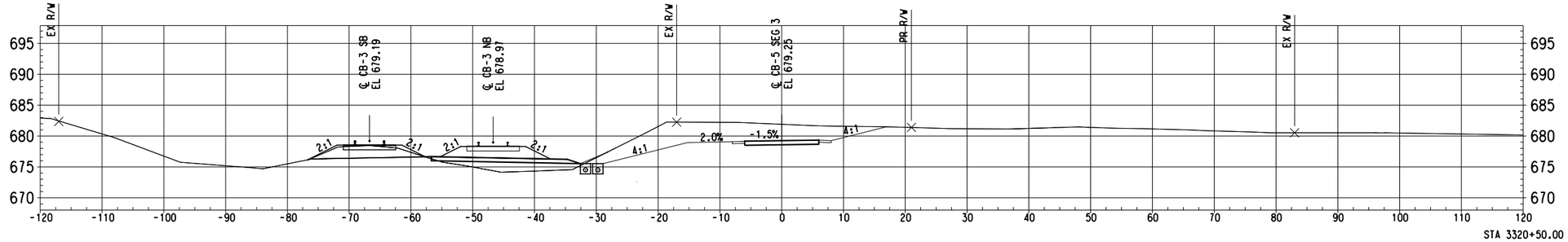

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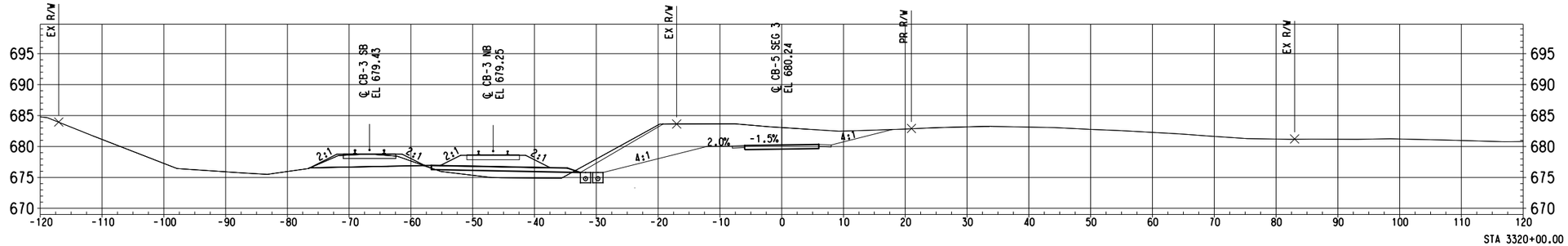

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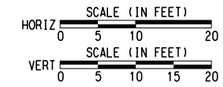

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP
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CONTRACT SHEET No. 80 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 21 OF 67

CONTRACT	DWG No.	REV
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DWG No. CC1-8010

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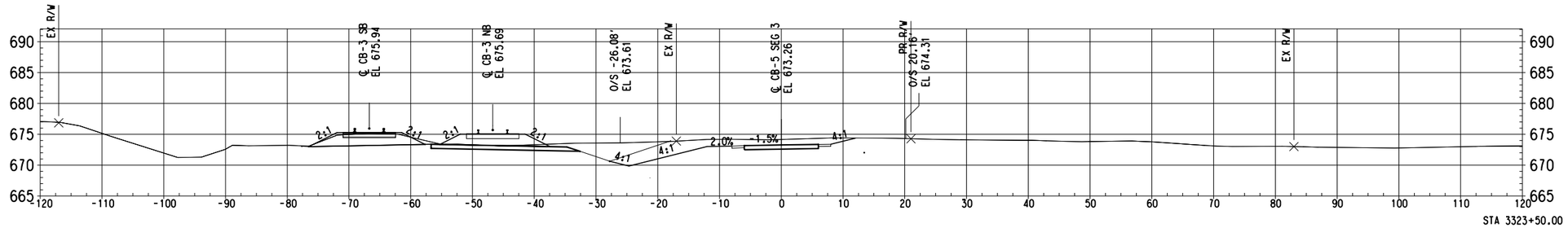

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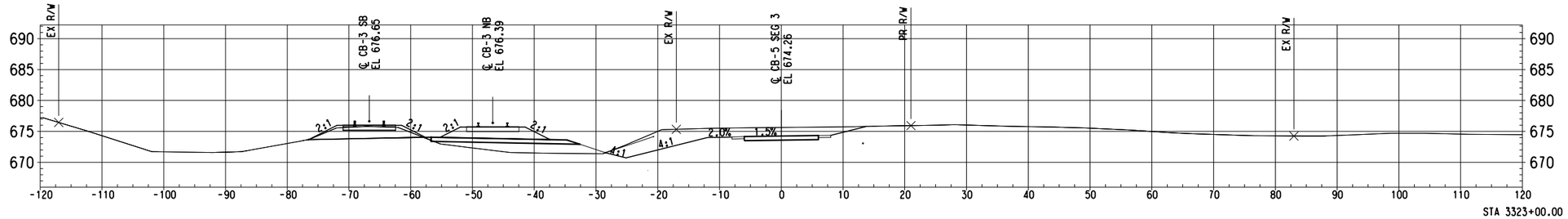

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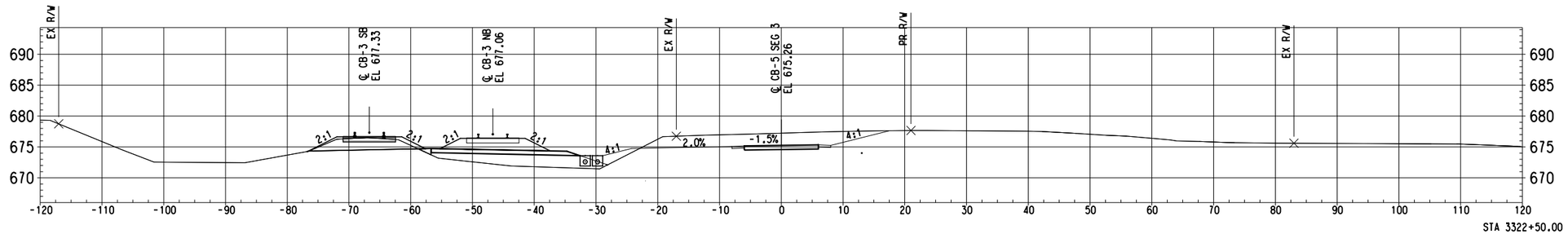

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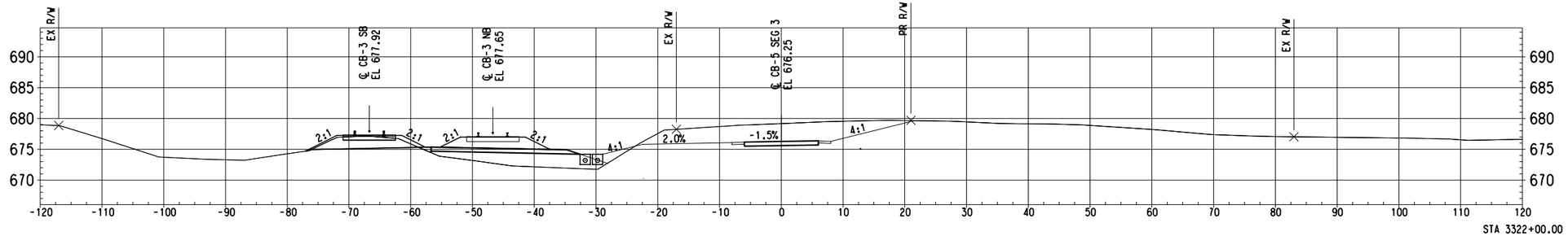

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 22 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8010	B

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DWG No. CC1-8011

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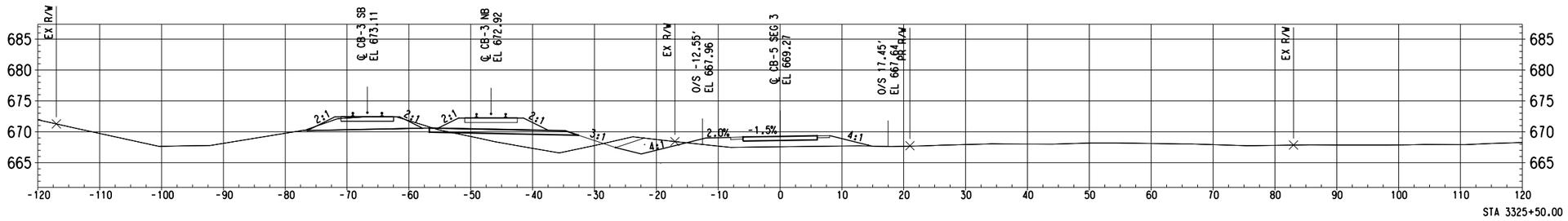

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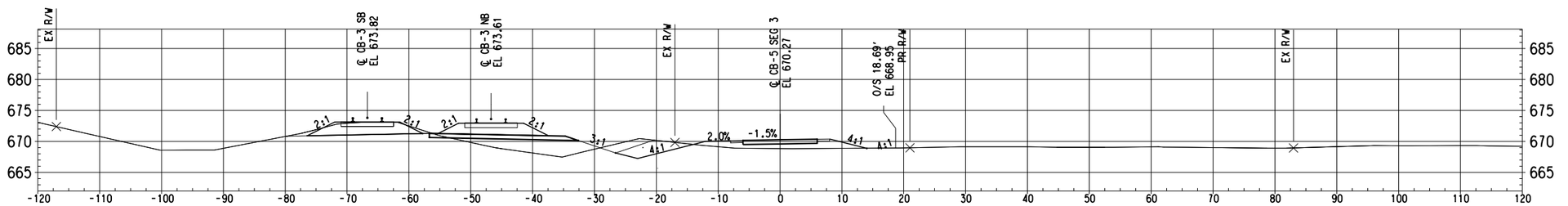

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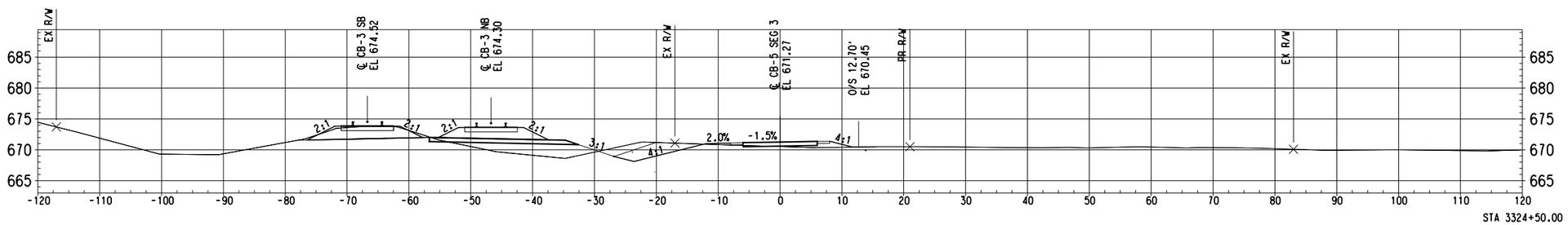

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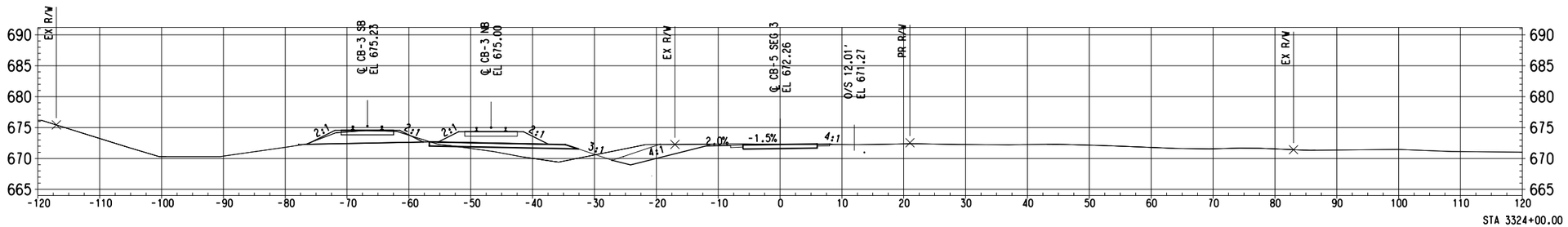

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 23 OF 67

CONTRACT	DWG No.	REV
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DWG No. CC1-8012

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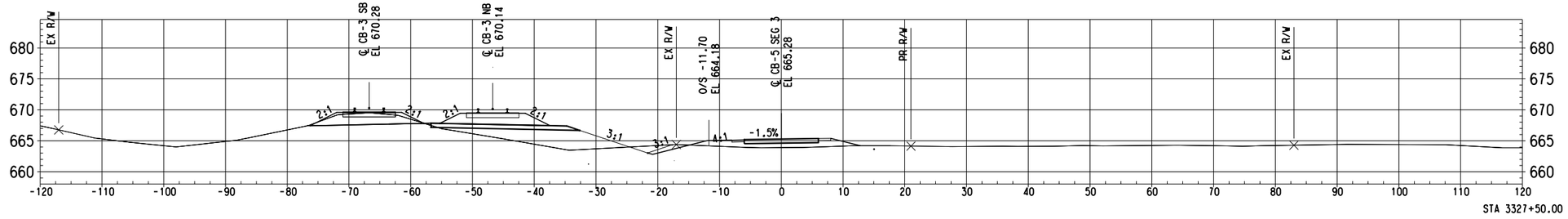

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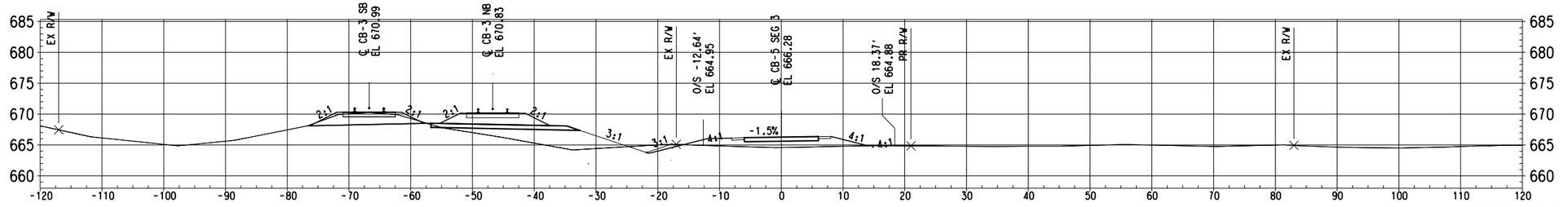

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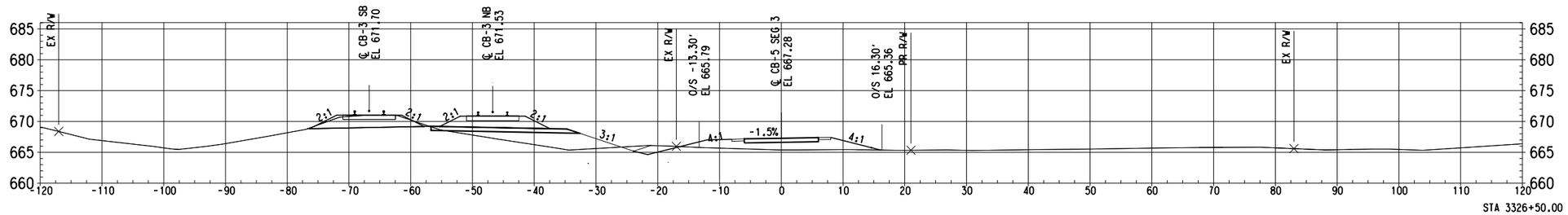

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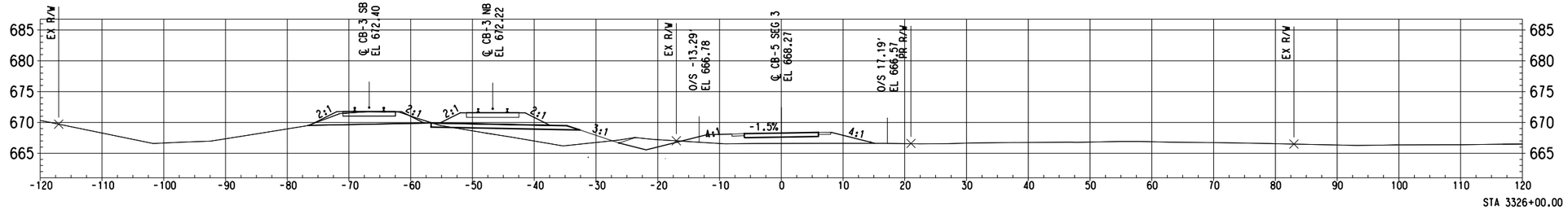

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CONTRACT SHEET No. 83 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 24 OF 67

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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CONTRACT	DWG No.	REV
C-2033270-01	CC1-8012	B

CB05-CC1-8012.000

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DWG No. CC1-8013

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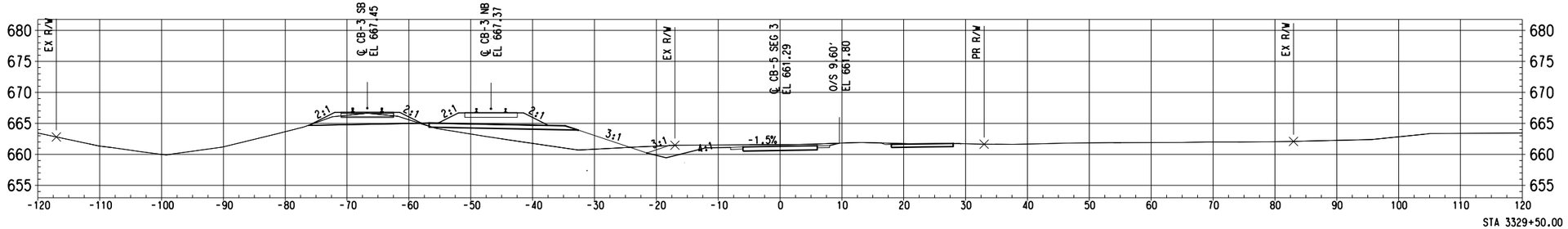

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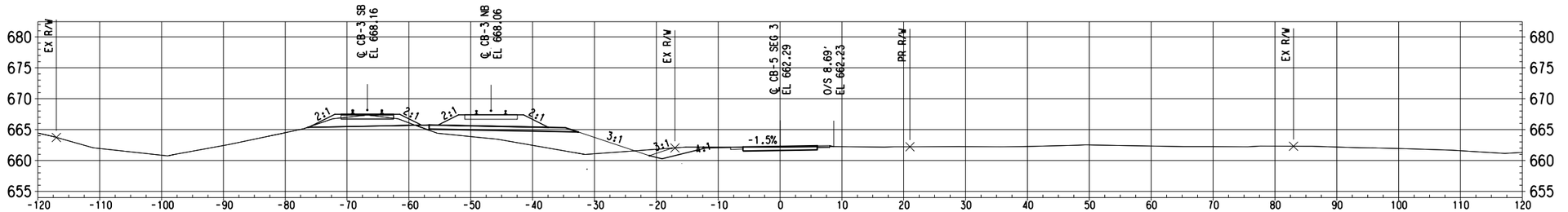

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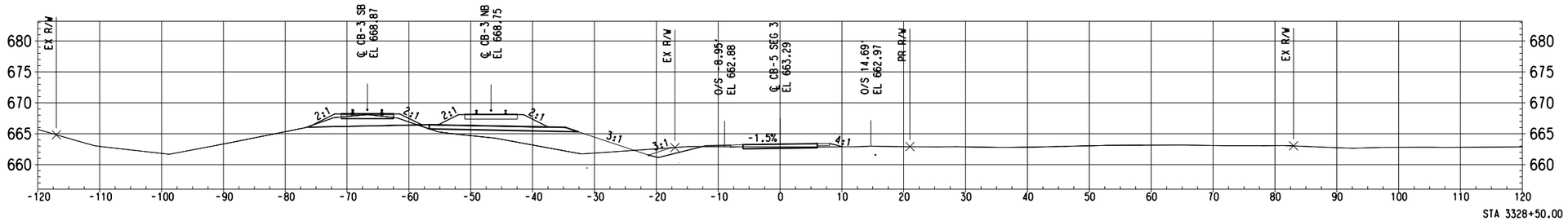

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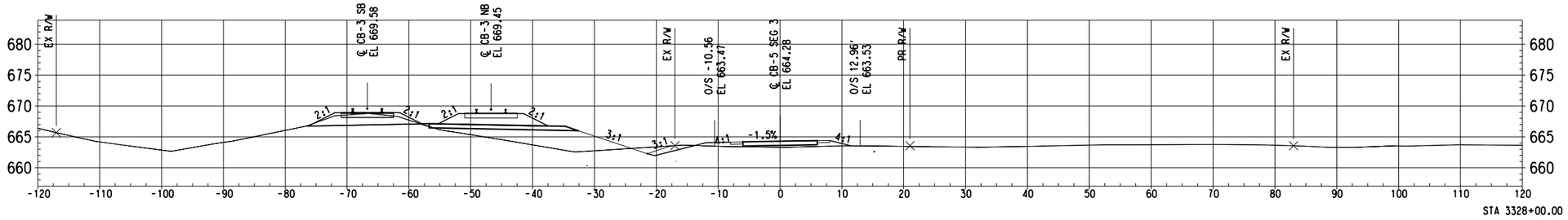

STA 3328+00.00

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CB05-CC1-8013.000

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303_RICH_2 - 3328+00.00 R2

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IN CHARGE	B. ALLDREDGE
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CAES

CONTRACT SHEET No. 84 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 25 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8013	B

CB05-CC1-8013.000

DWG No. CC1-8014

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SCALE (IN FEET)
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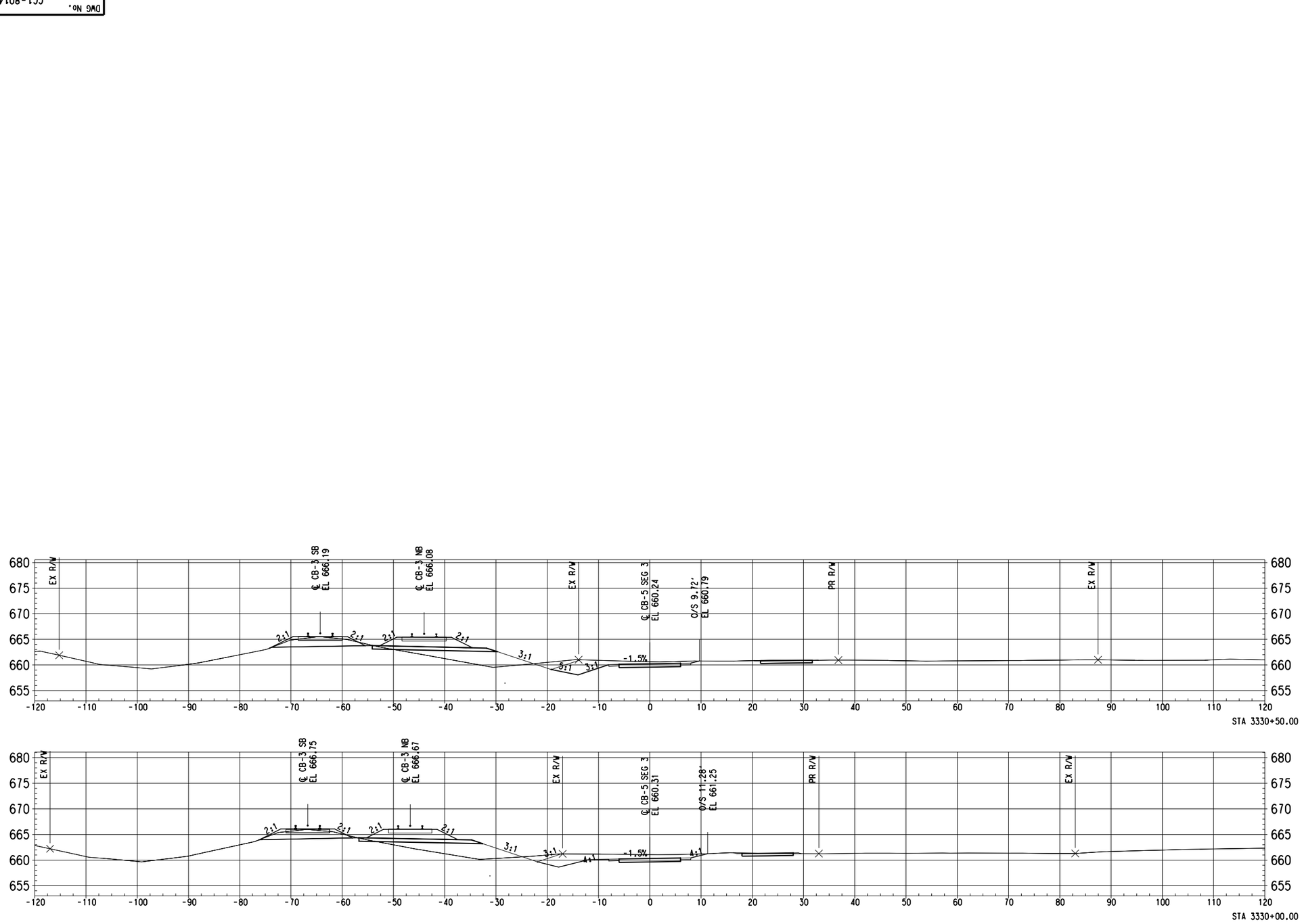

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CONTRACT SHEET No. 85 OF 221

COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 26 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8014	B

CB05-CC1-8014.000

DWG No. CC1-8015

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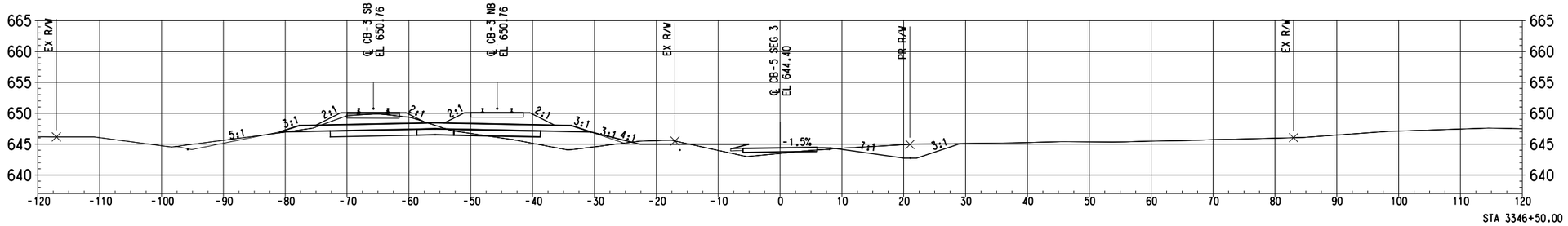

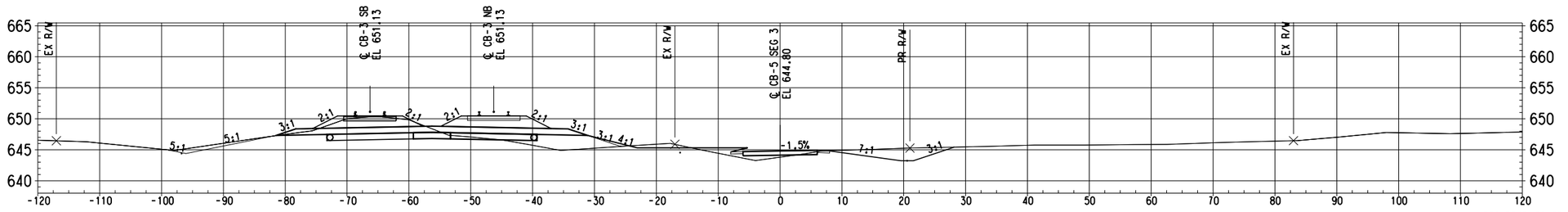

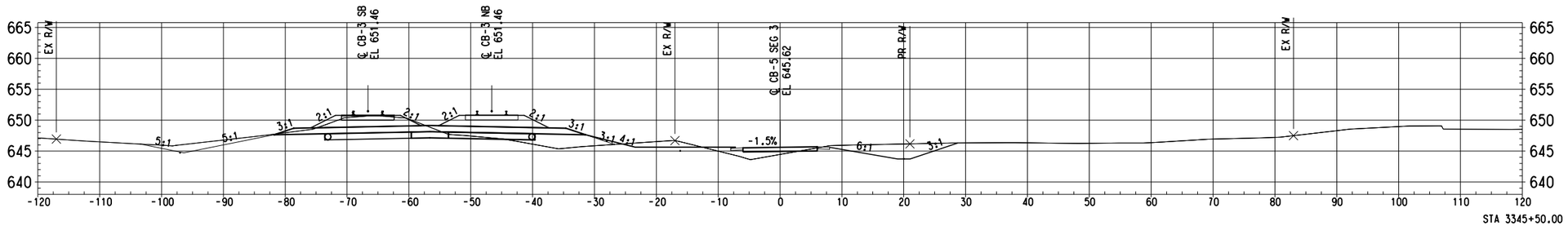

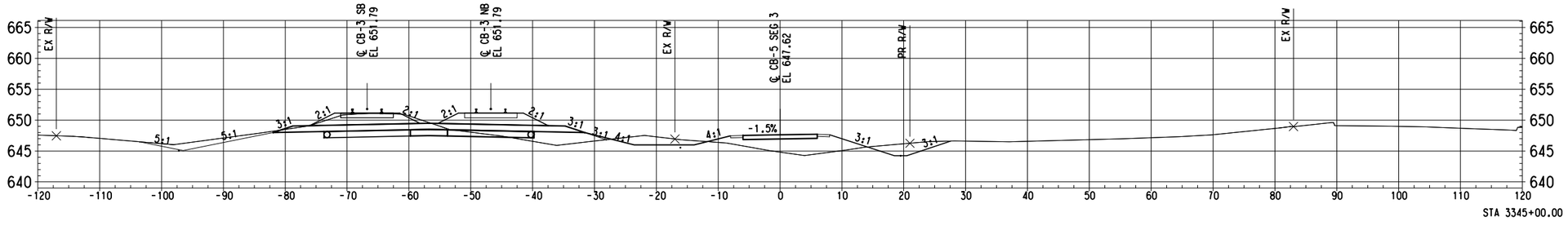

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CAES

CONTRACT SHEET No. 86 OF 221

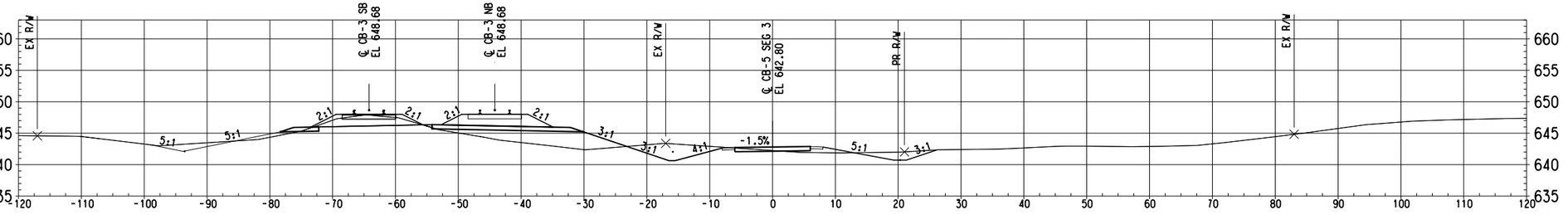
COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 27 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8015	B

CB05-CC1-8015.000

DWG No. CC1-8016



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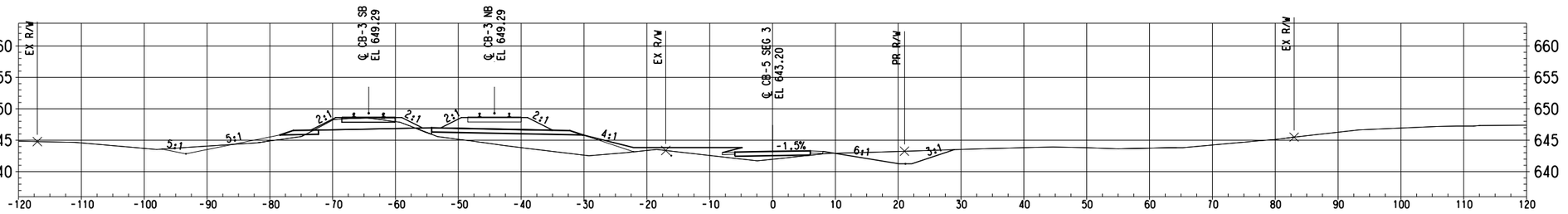

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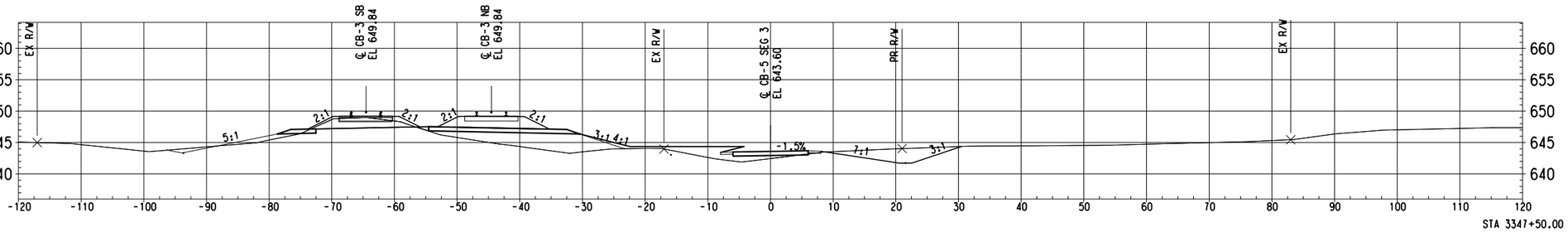

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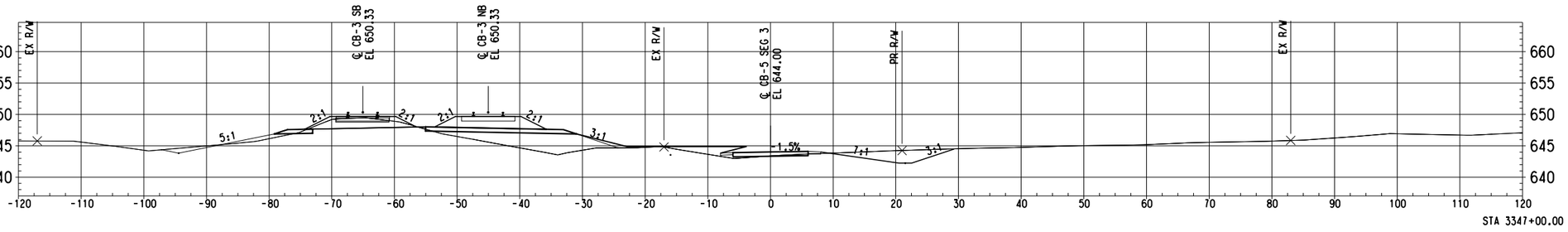

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HORIZ SCALE (IN FEET) 0 5 10 20

VERT SCALE (IN FEET) 0 5 10 15 20

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 28 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8016	B

CB05-CC1-8016.000

21-SEP-2022 20:12
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DWG No. CC1-8017

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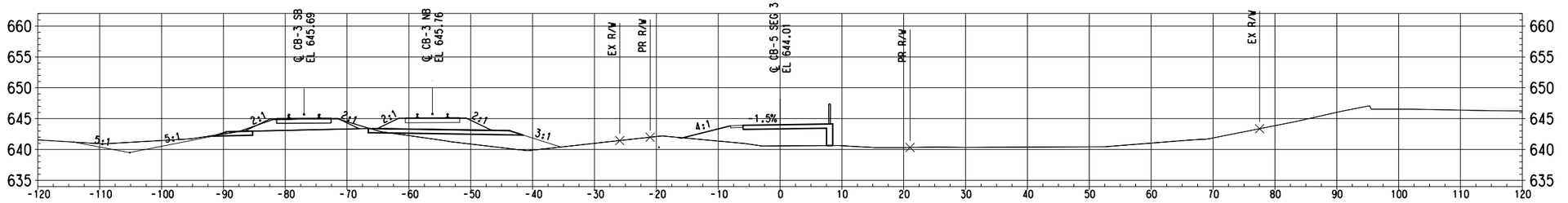

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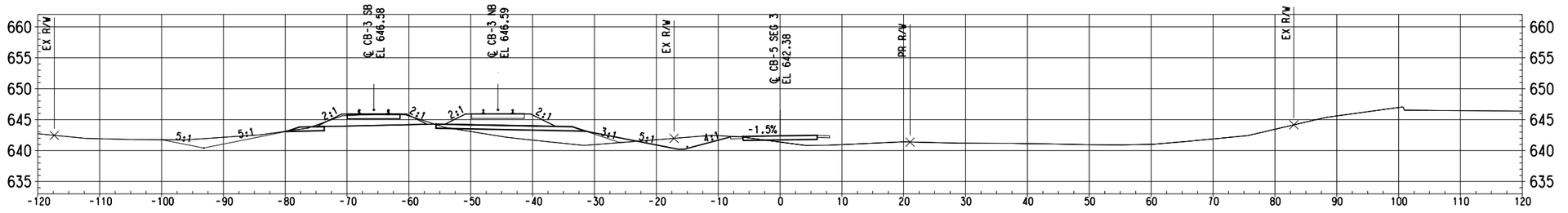

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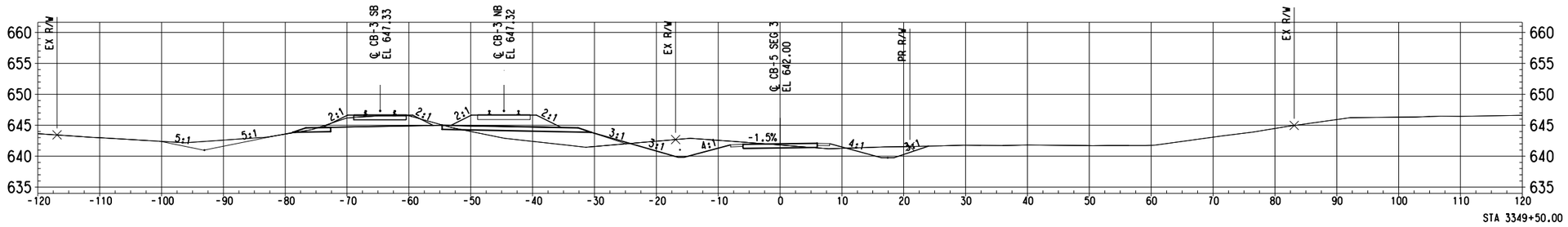

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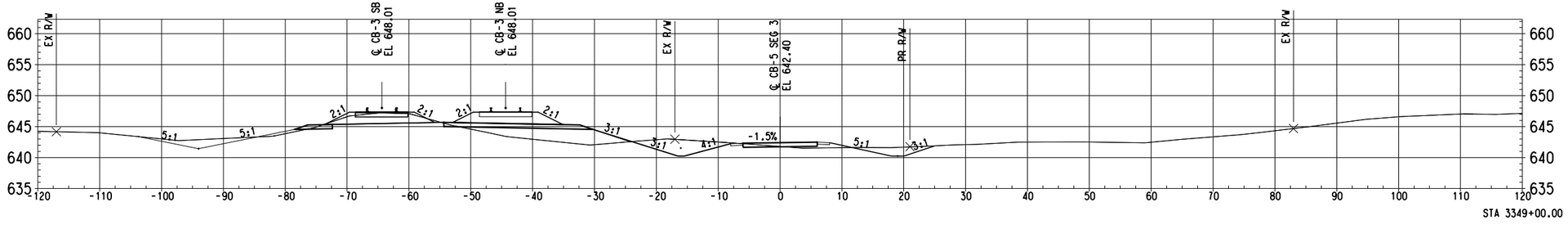

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CONTRACT SHEET No. 88 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 29 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8017	B

CB05-CC1-8017.000

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CB05-CC1-8017.000

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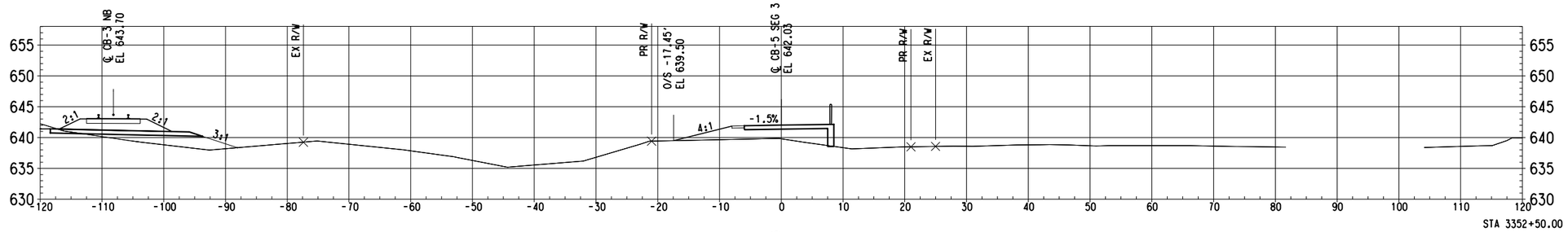
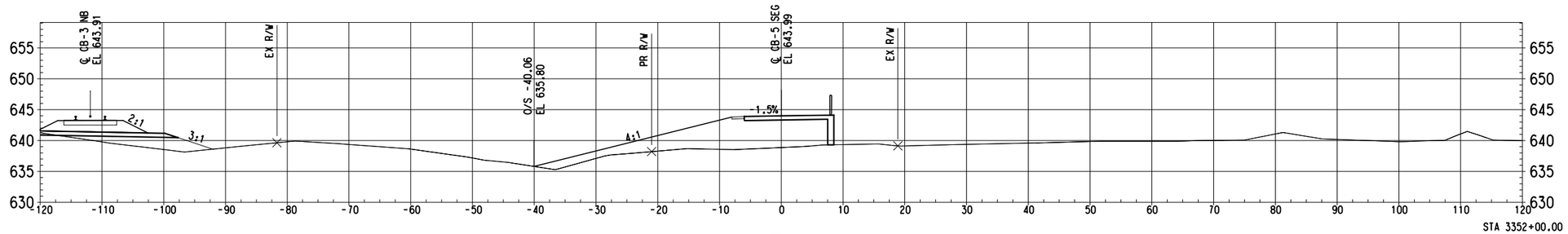
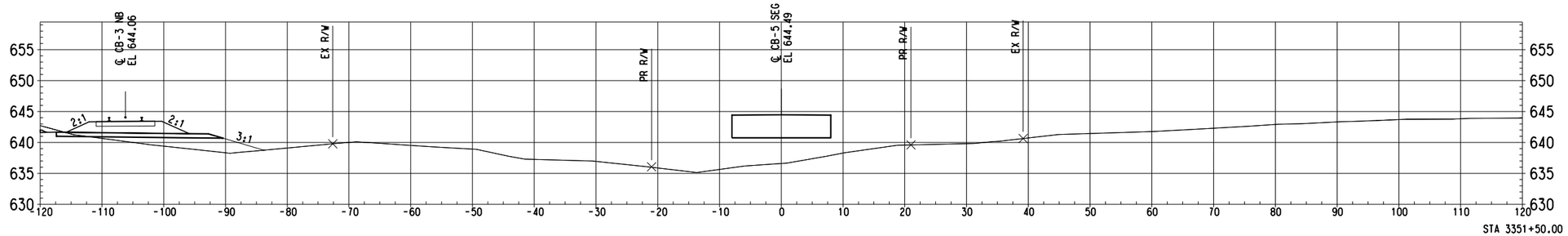
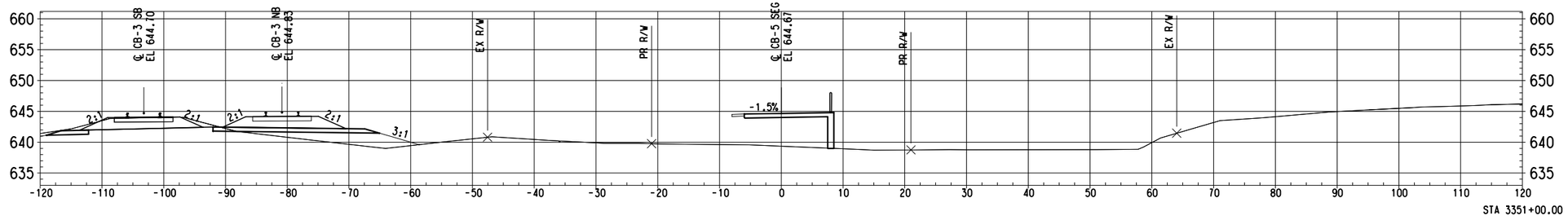
DWG No. CC1-8018









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SCALE (IN FEET)
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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP
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CONTRACT SHEET No. 89 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 30 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8018	B

CB05-CC1-8018.000

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DWG No. CC1-8019

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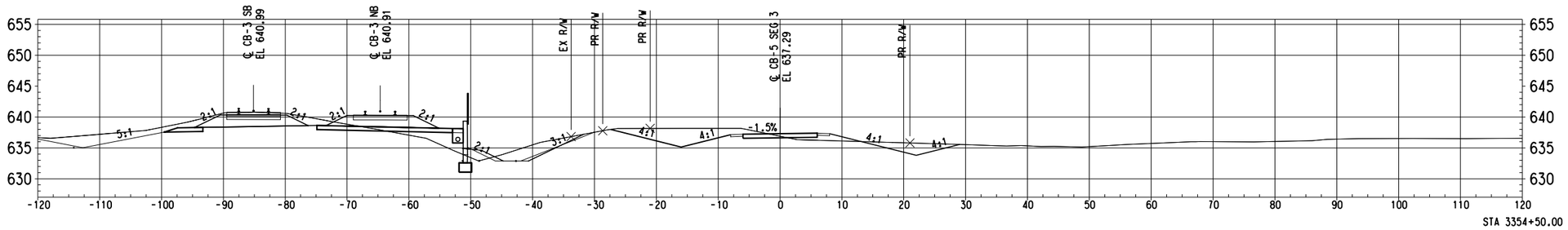

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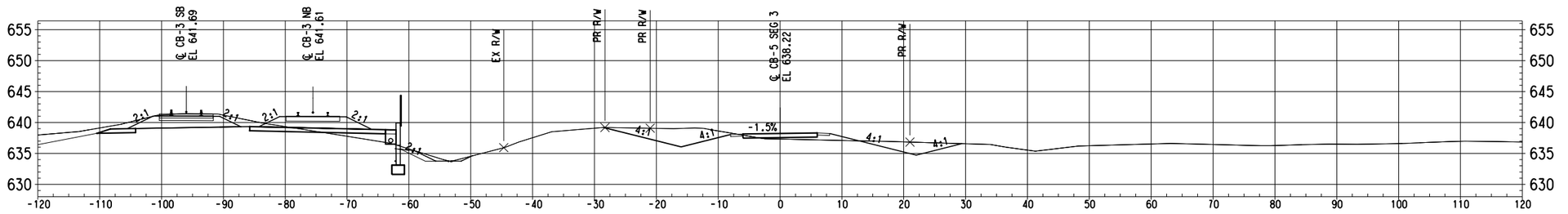

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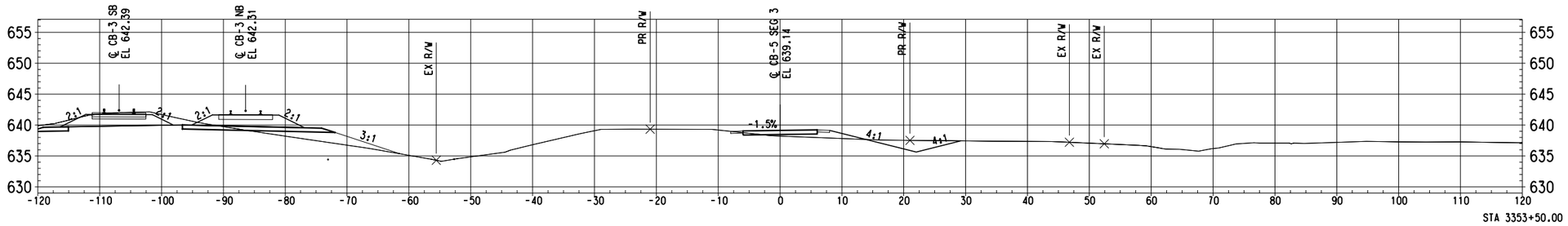

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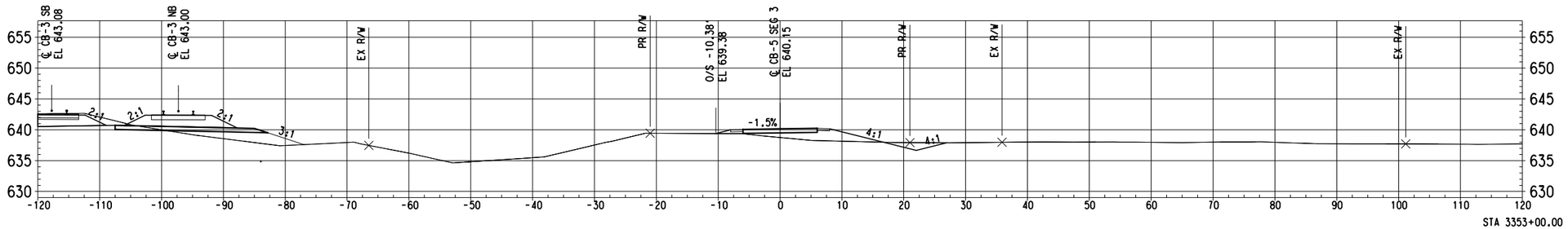

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CONTRACT SHEET No. 90 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 31 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8019	B

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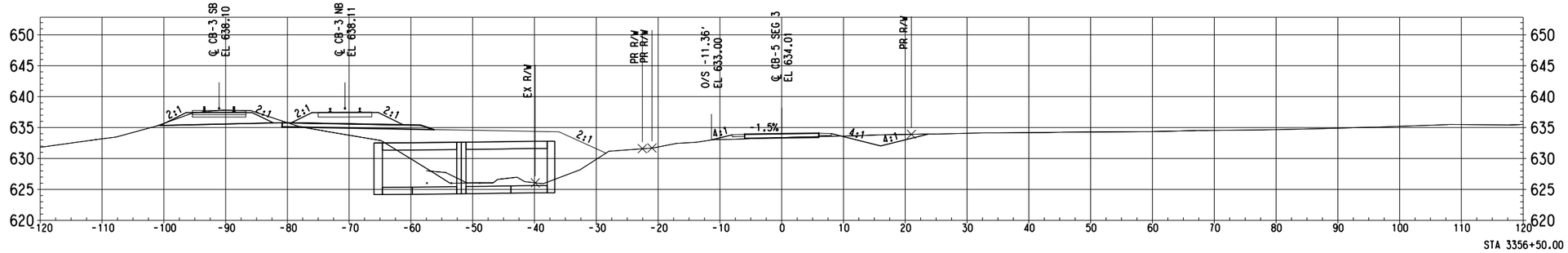
DWG No. CC1-8020



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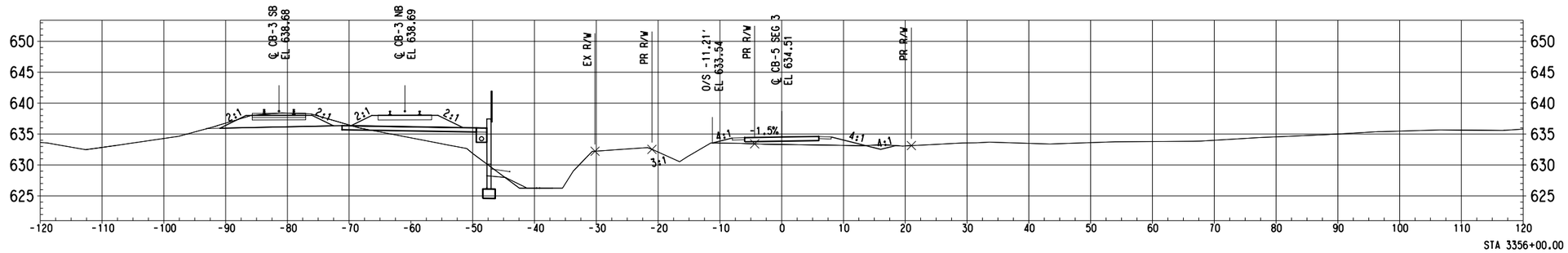

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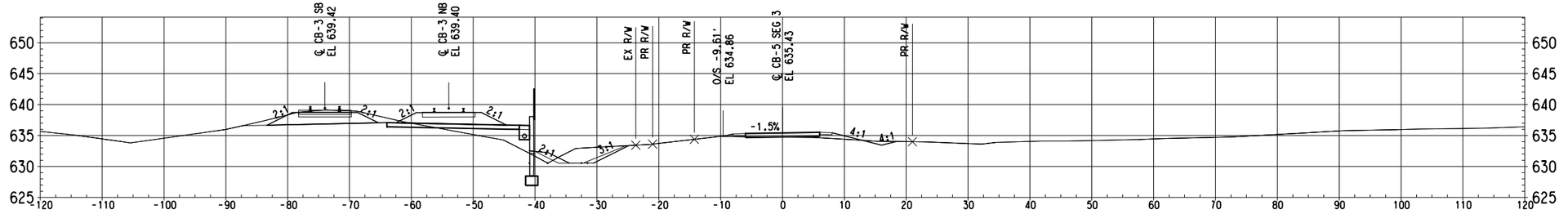

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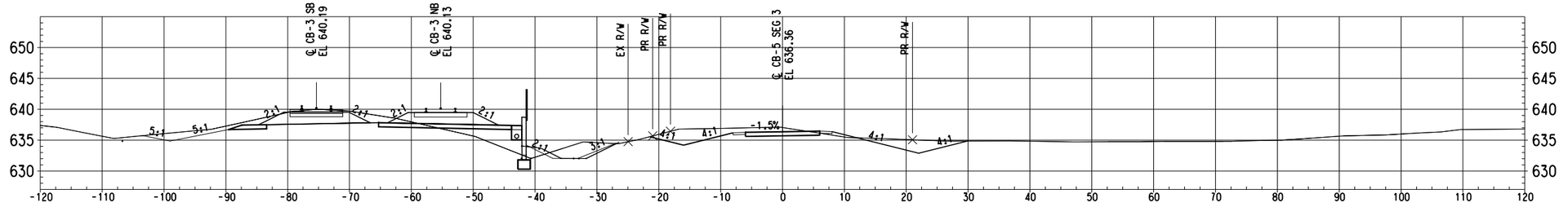

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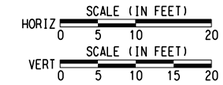

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CAES

CONTRACT SHEET No. 91 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 32 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8020	B

CB05-CC1-8020.000

21-SEP-2022 20:14
CB05-CC1-8020.000

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DWG No. CC1-8021

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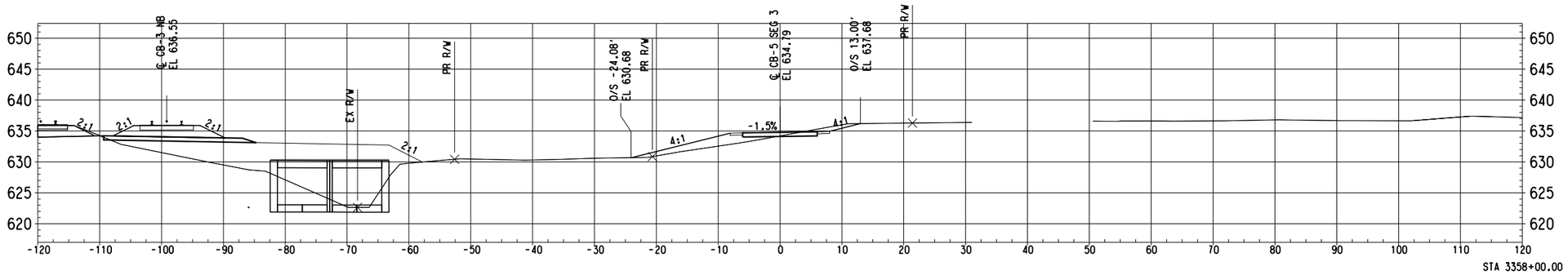

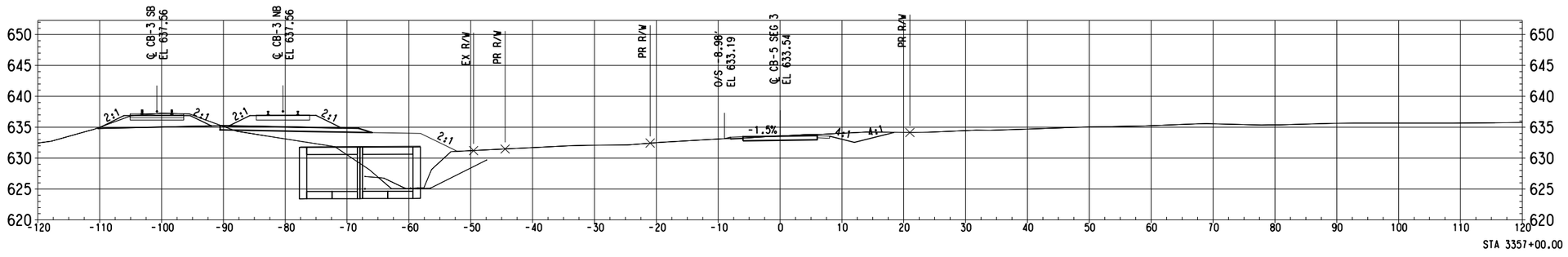

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CONTRACT SHEET No. 92 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP
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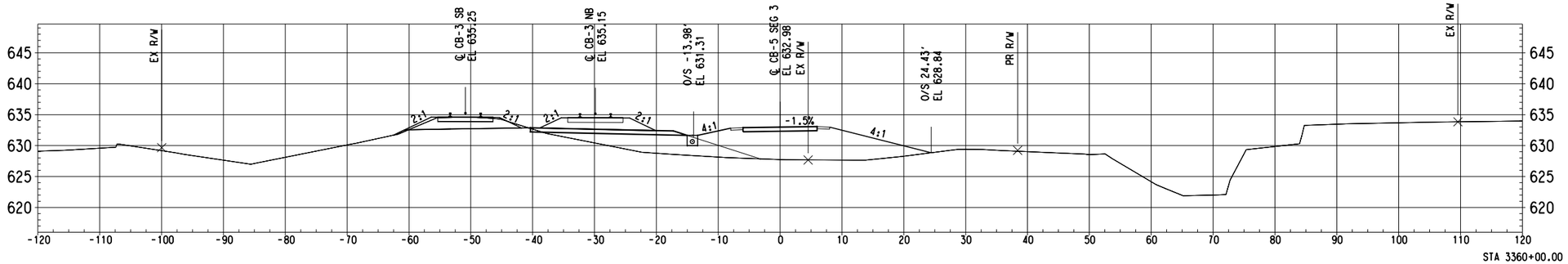
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

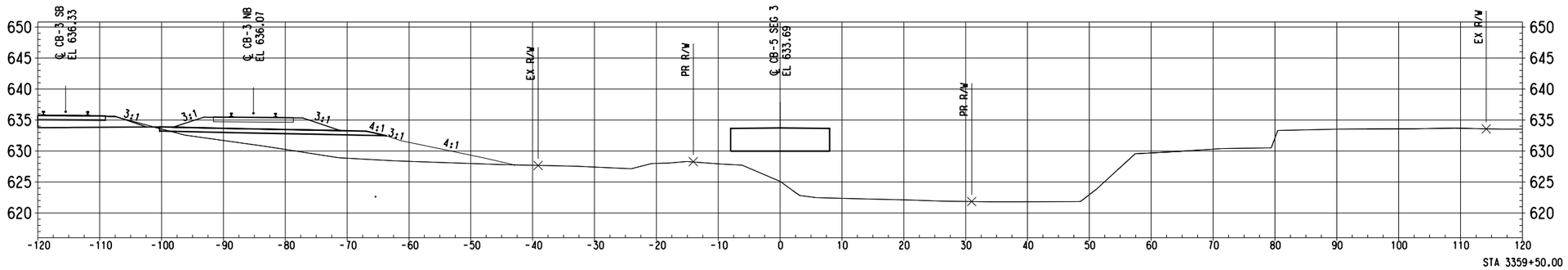
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 33 OF 67

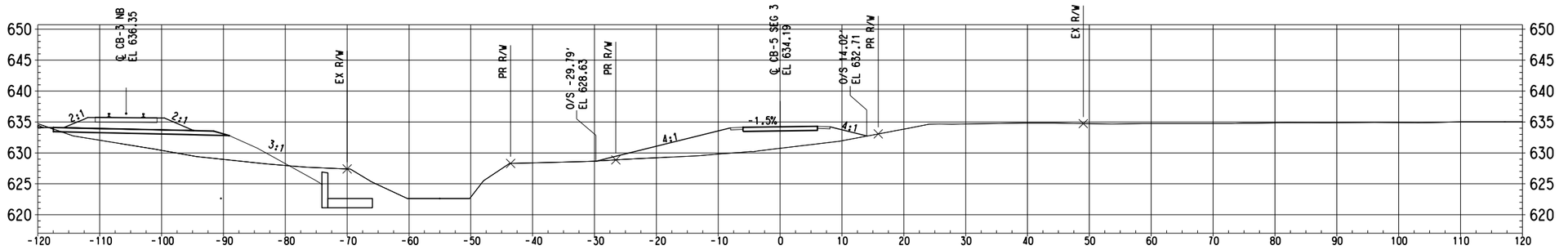
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8021	B

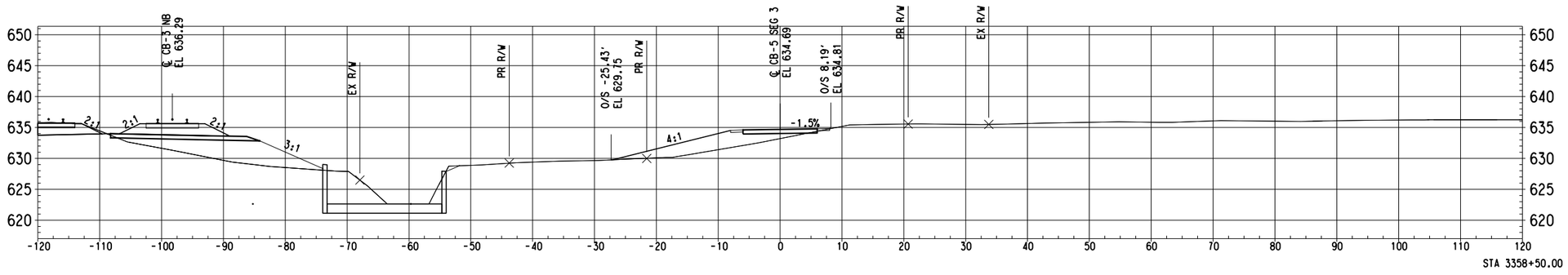
CB05-CC1-8021.000

DWG No. CC1-8022









HORIZ SCALE (IN FEET) 0 5 10 20

VERT SCALE (IN FEET) 0 5 10 15 20

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CONTRACT SHEET No. 93 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 34 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8022	B

CB05-CC1-8022.000

21-SEP-2022 20:15
CB05-CC1-8022.000

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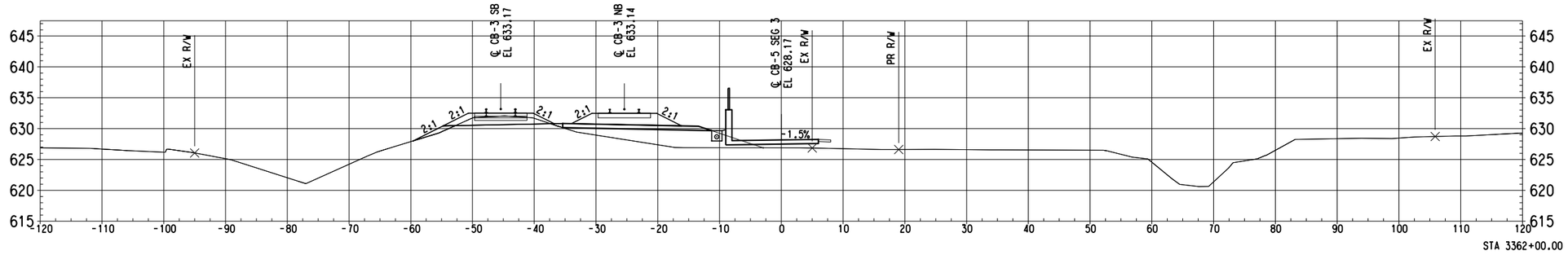
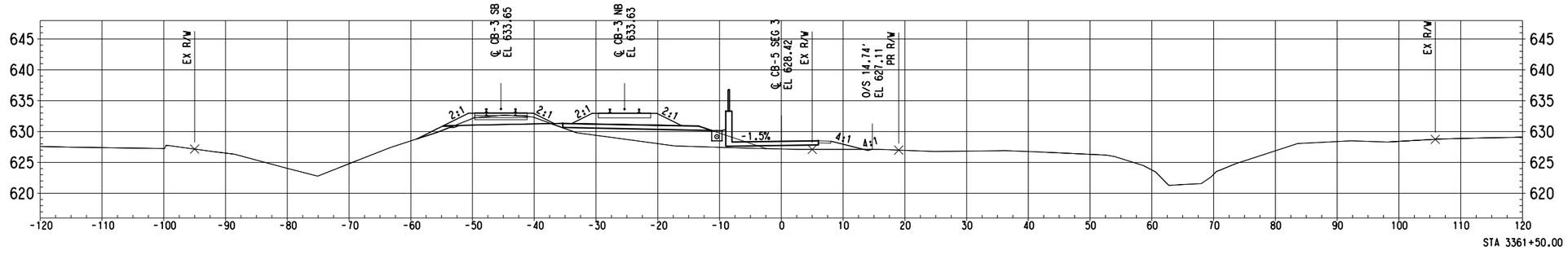
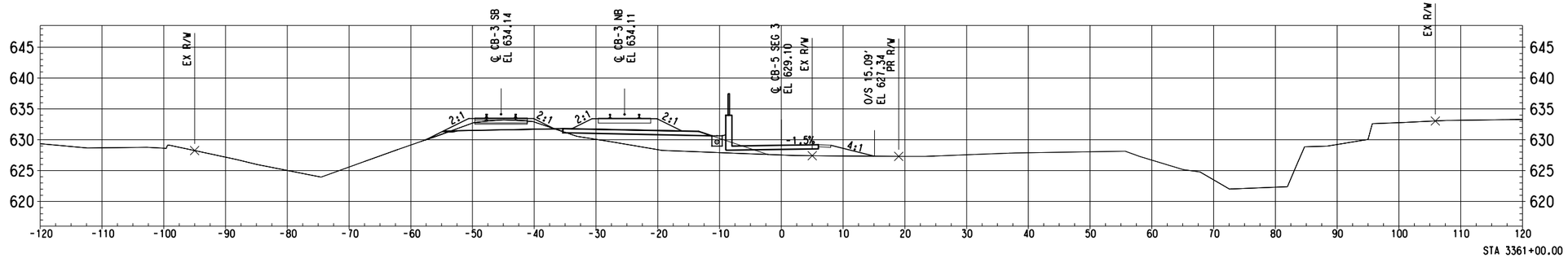
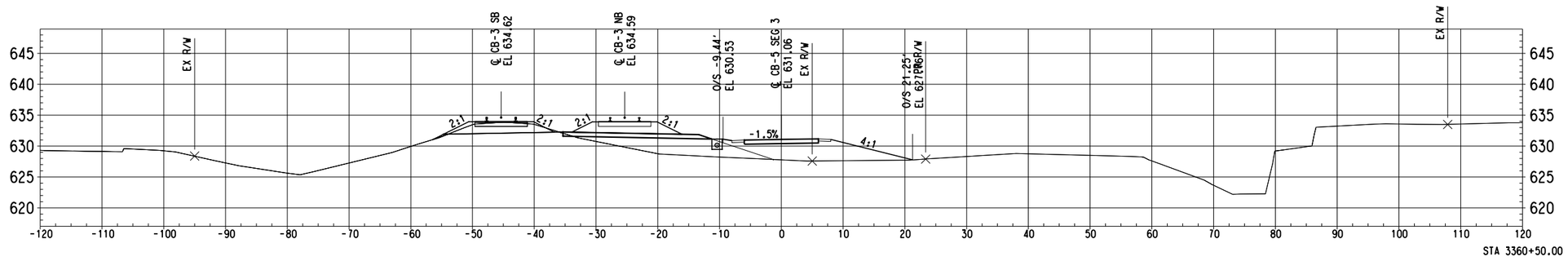
DWG No. CC1-8023









HORIZ SCALE (IN FEET) 0 5 10 20

VERT SCALE (IN FEET) 0 5 10 15 20

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CONTRACT SHEET No. 94 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 35 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8023	B

CB05-CC1-8023.000

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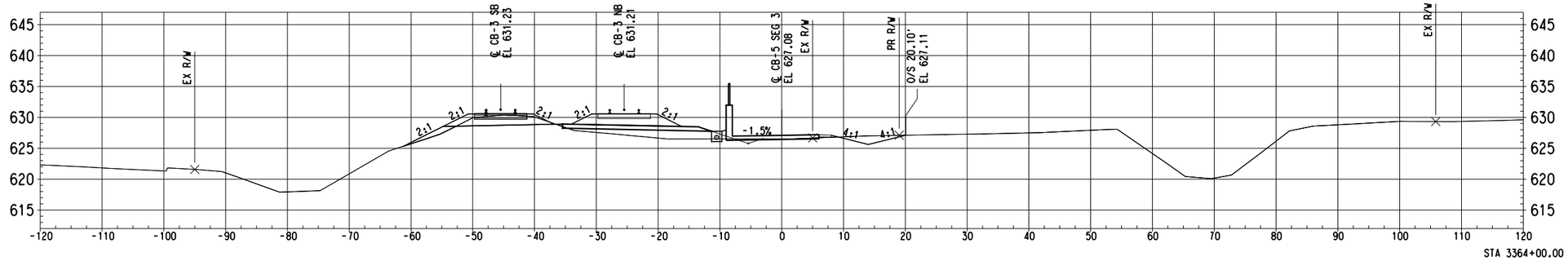
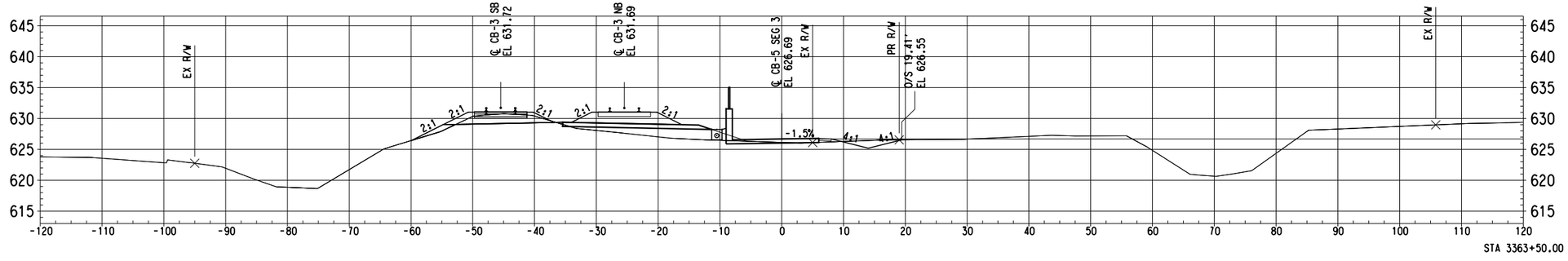
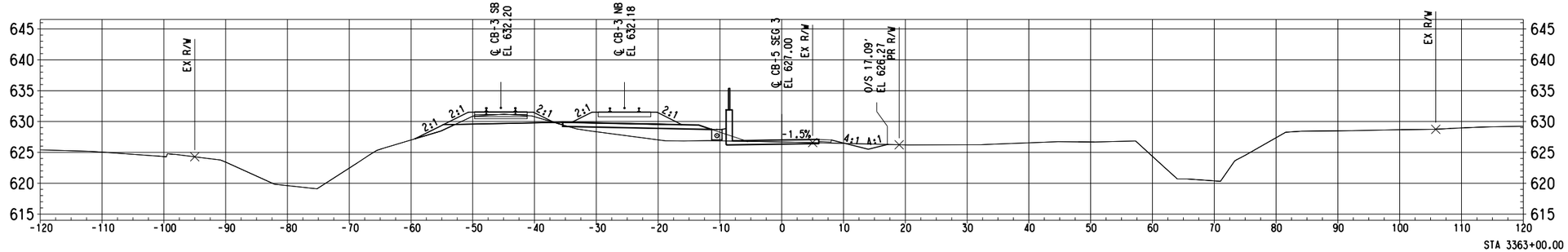
CB05-CC1-8023.000

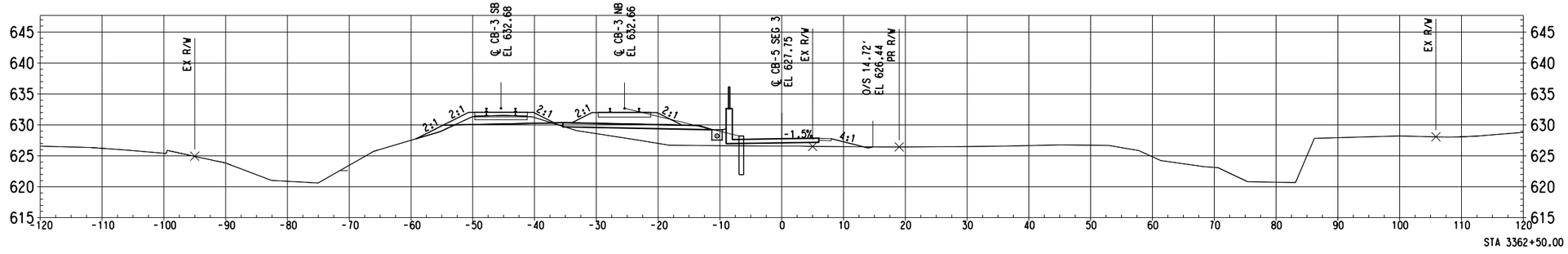
llocke!!
303_RICH_3 - 3360+50.00 R2

DWG No. CC1-8024









SCALE (IN FEET)
HORIZ 0 5 10 20
SCALE (IN FEET)
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CONTRACT SHEET No. 95 OF 221

COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 36 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8024	B

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CB05-CC1-8024.000

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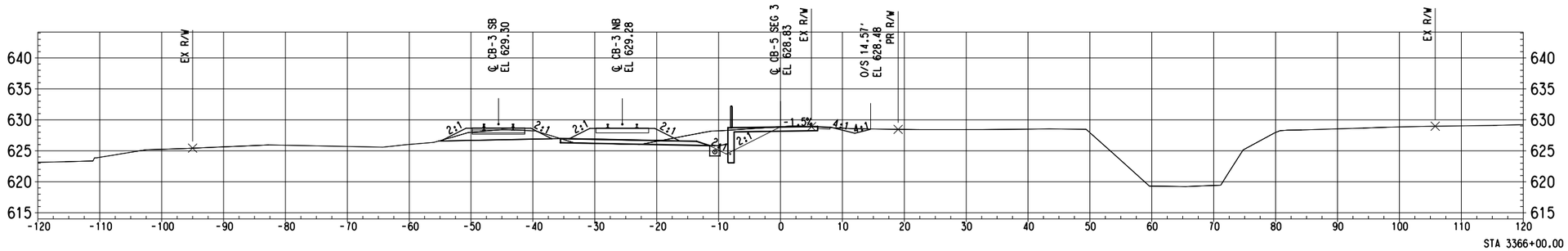
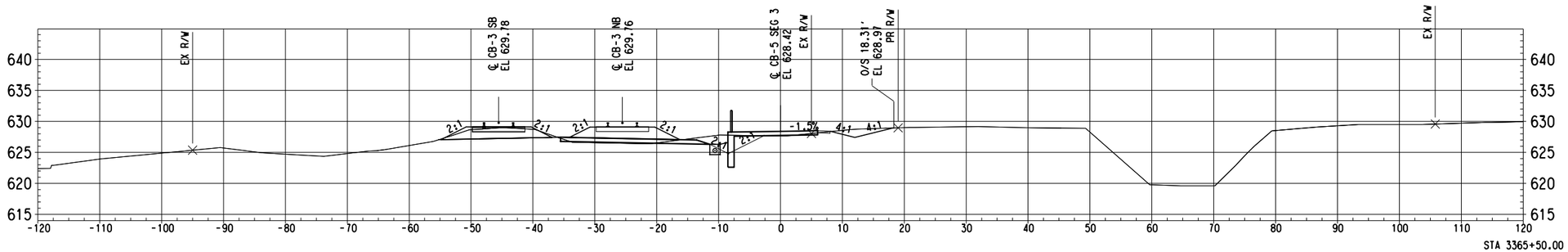
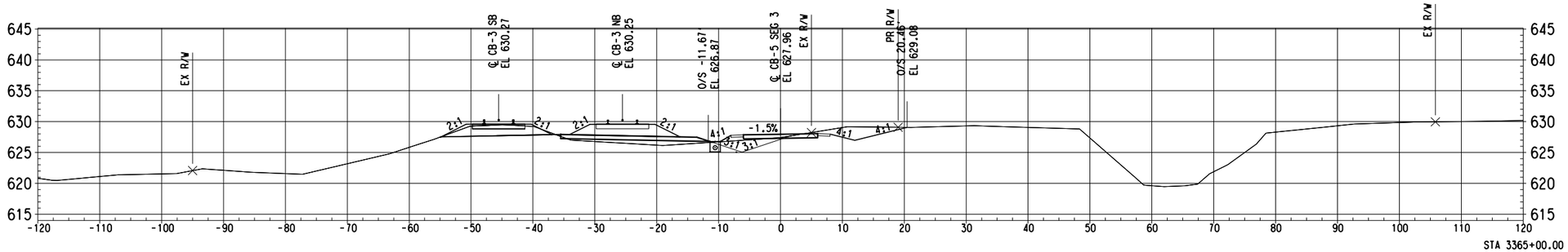
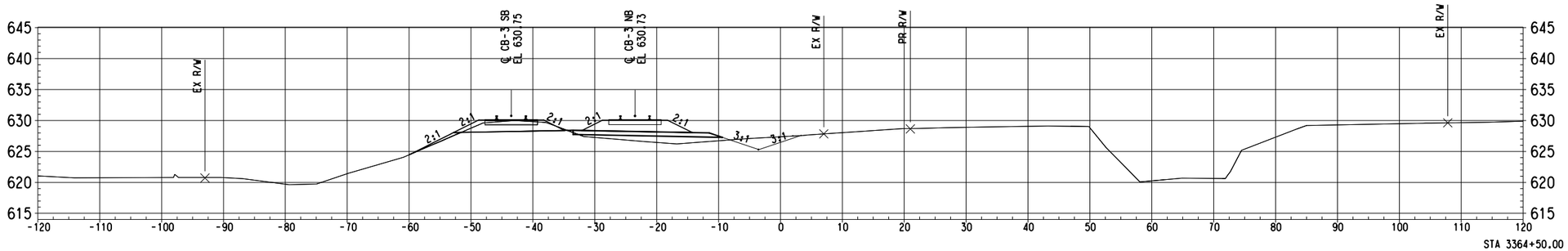
DWG No. CC1-8025









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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 37 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8025	B

CB05-CC1-8025.000

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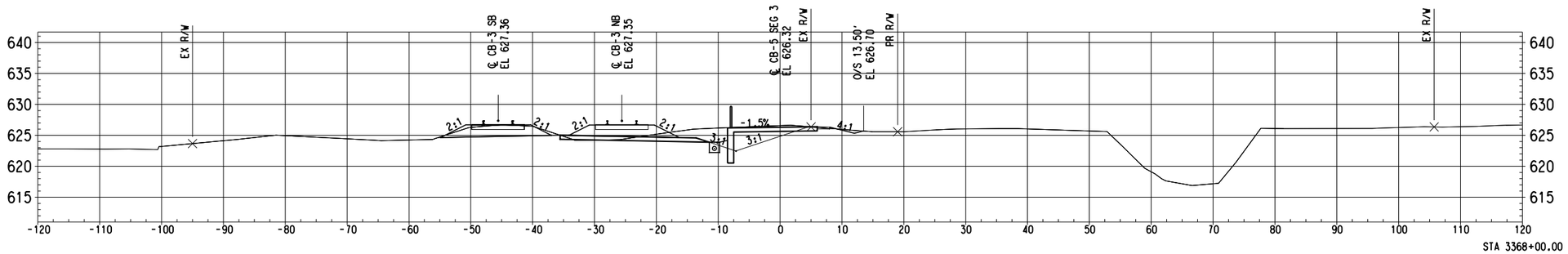
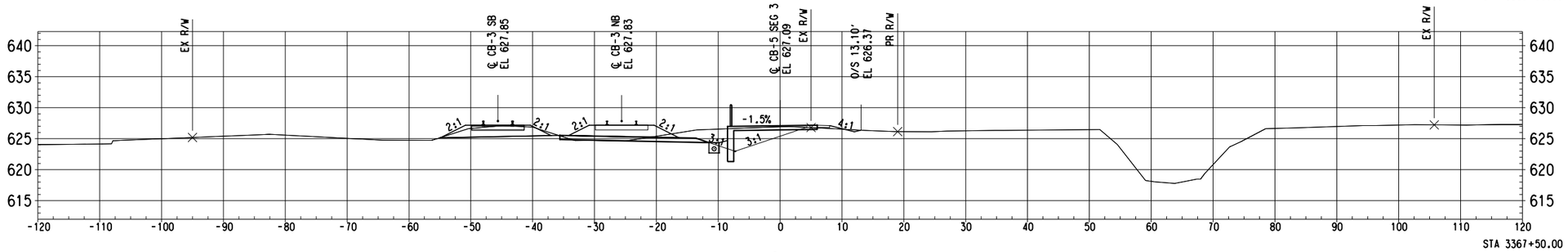
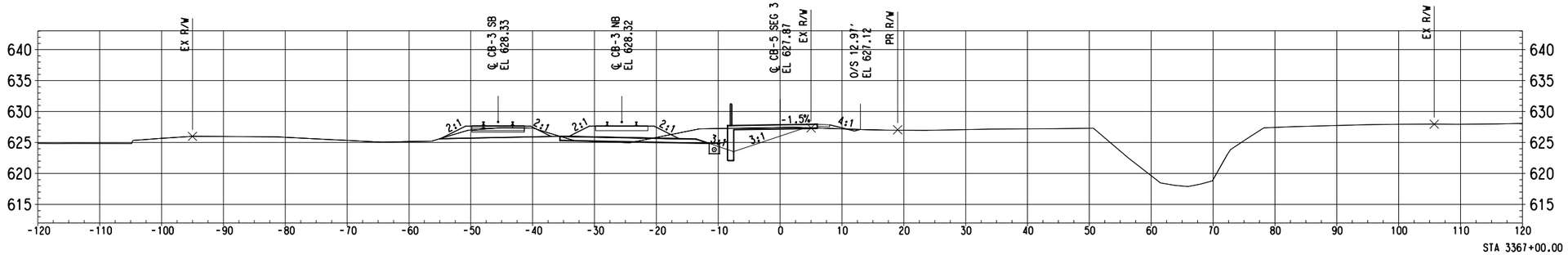
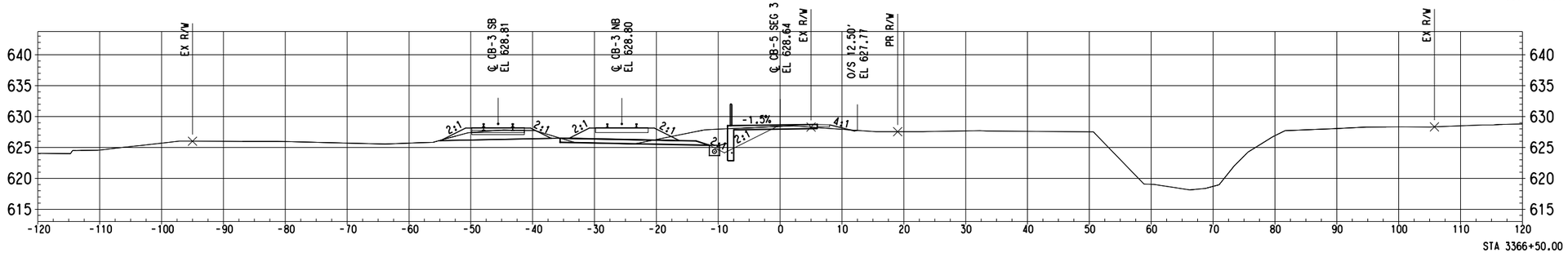
DWG No. CC1-8026









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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 38 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8026	B

CB05-CC1-8026.000

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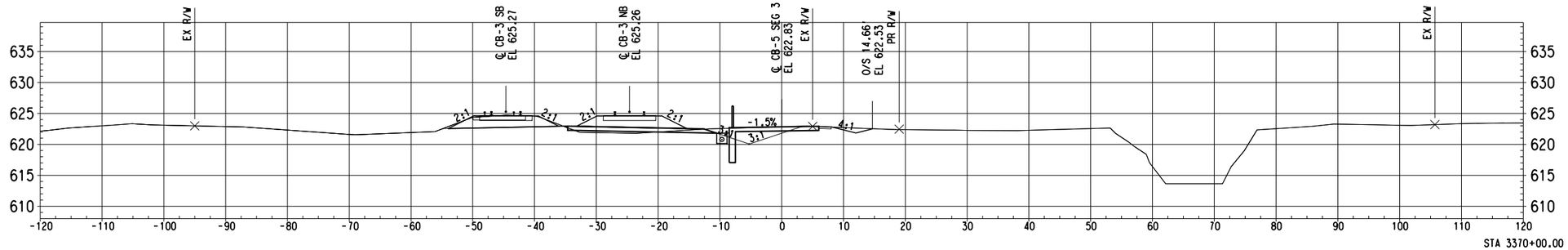

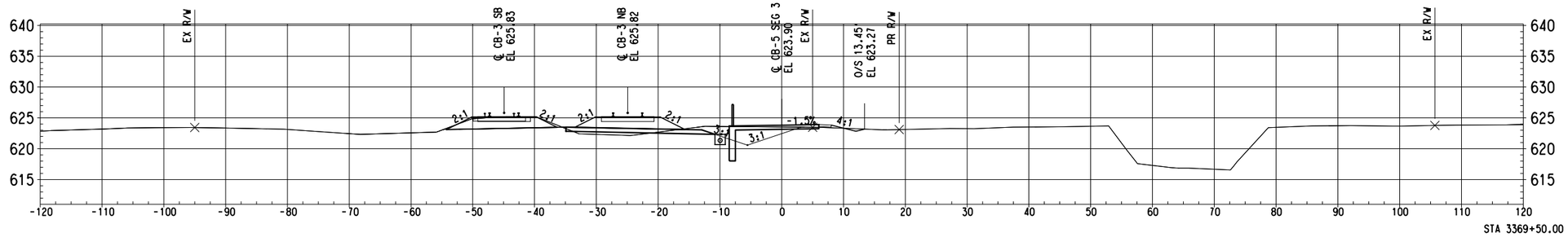

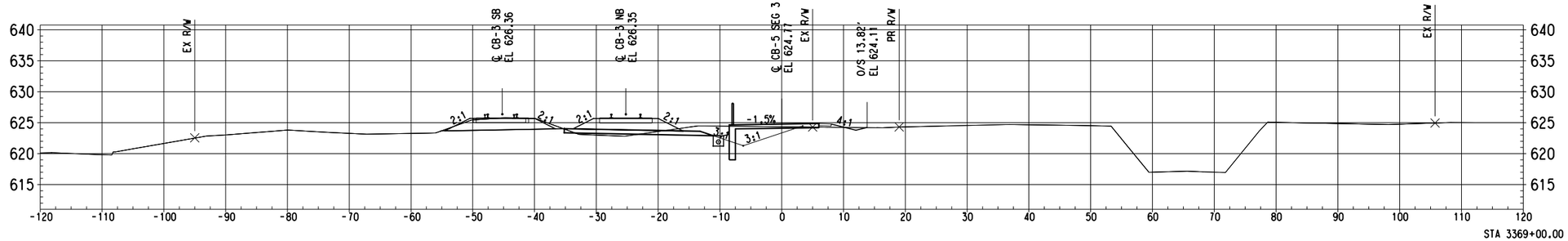

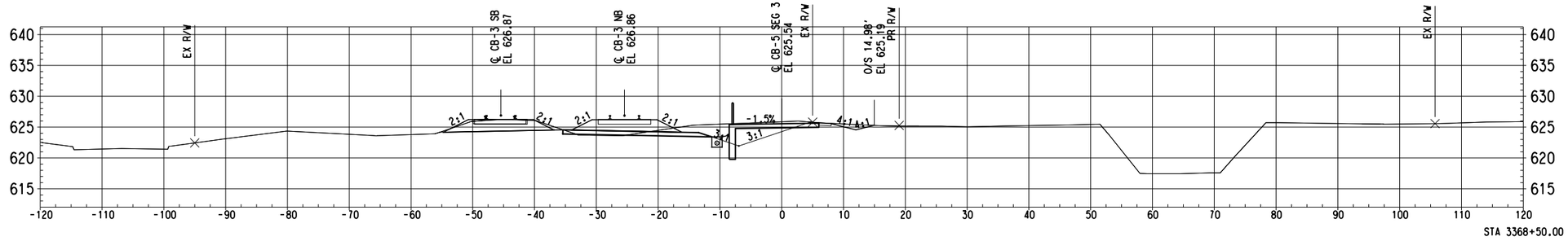

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VERT 0 5 10 15 20

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 39 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8027	B

CB05-CC1-8027.000

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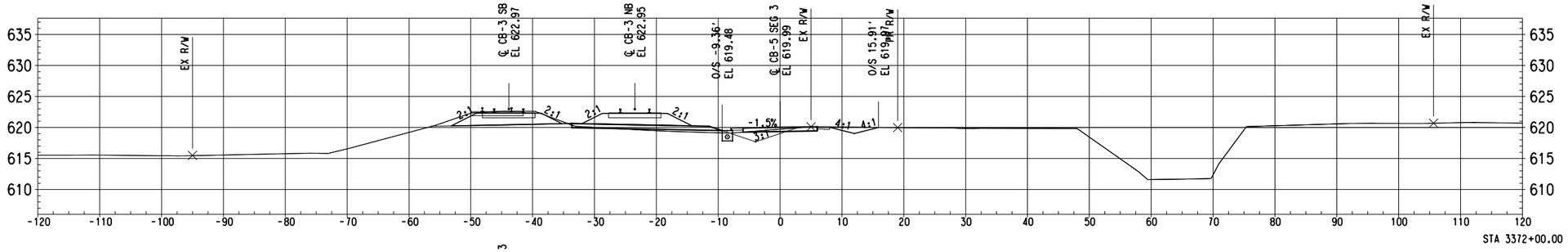
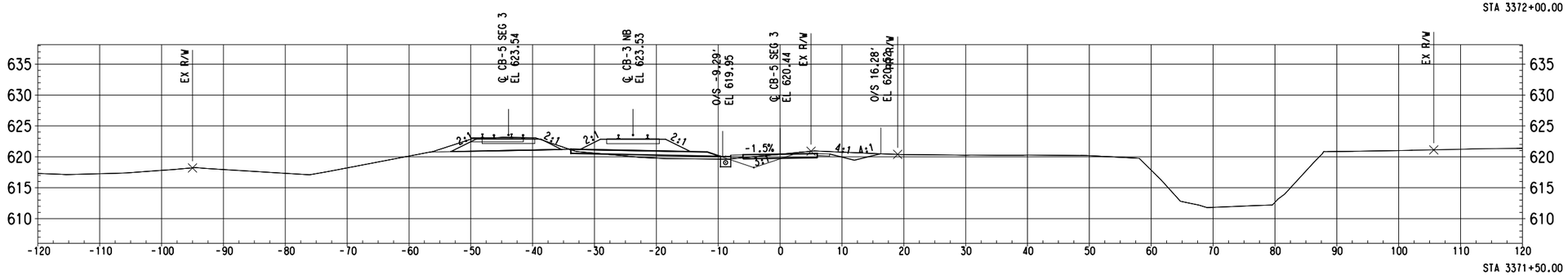
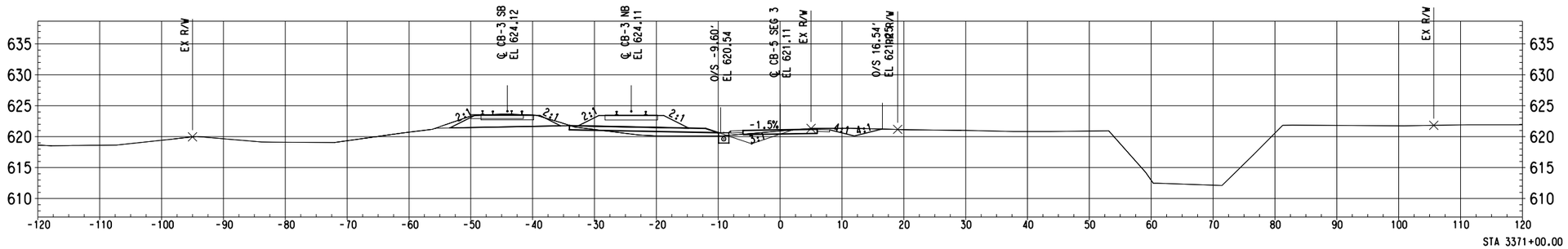
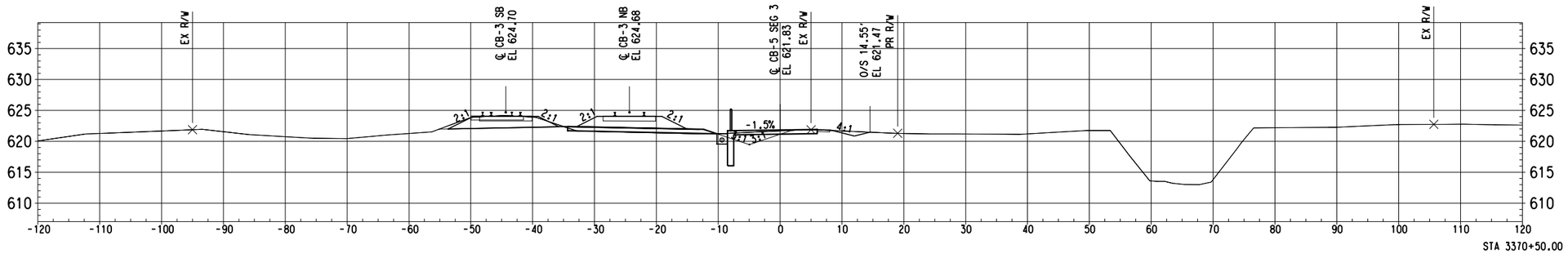
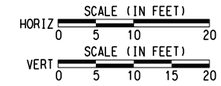
DWG No. CC1-8028











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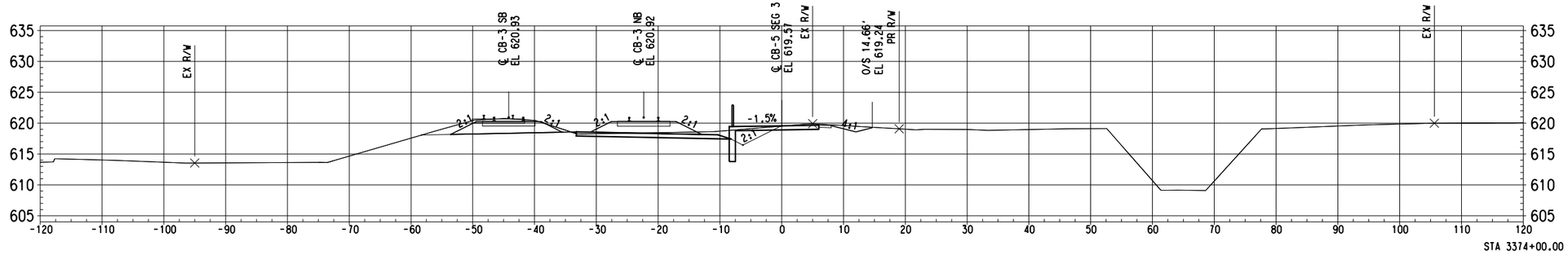
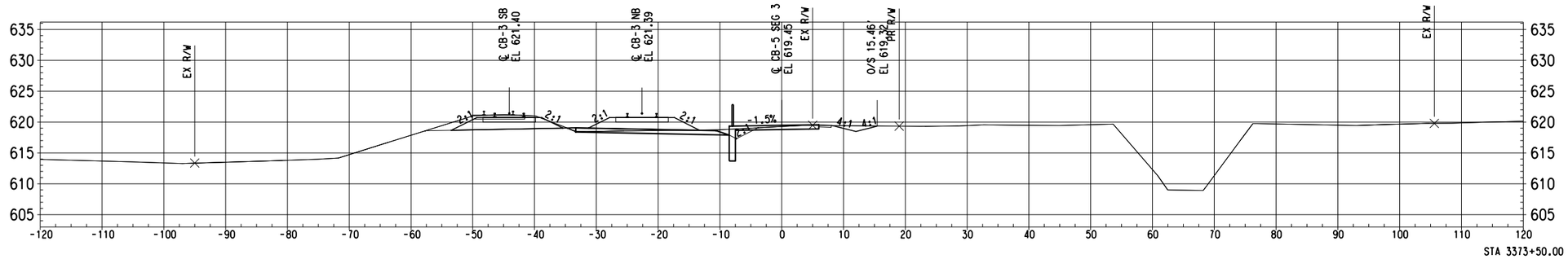
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

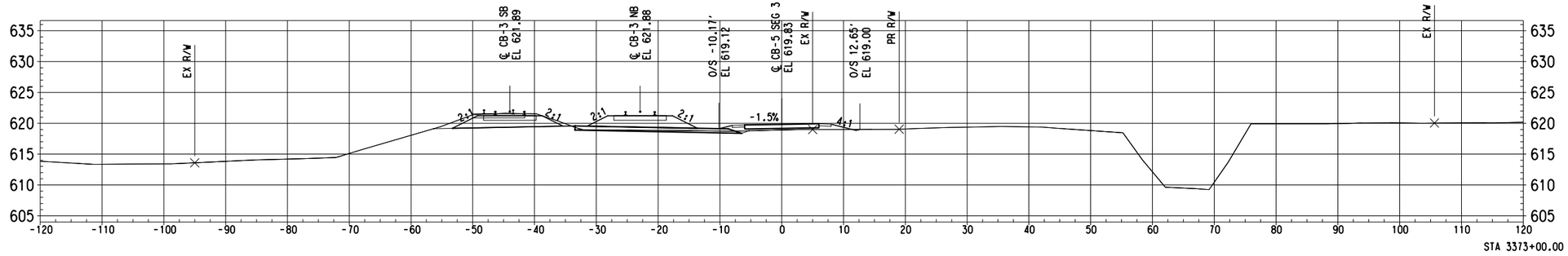
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 40 OF 67

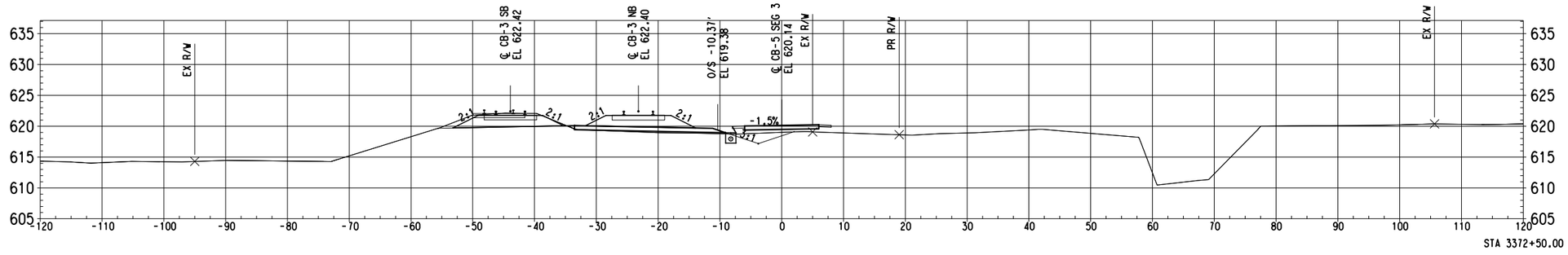
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8028	B

DWG No. CC1-8029









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llocke!!
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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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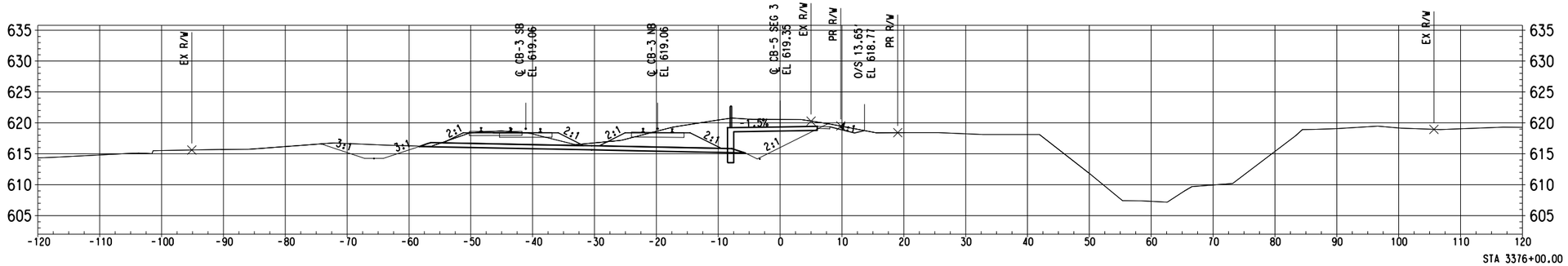
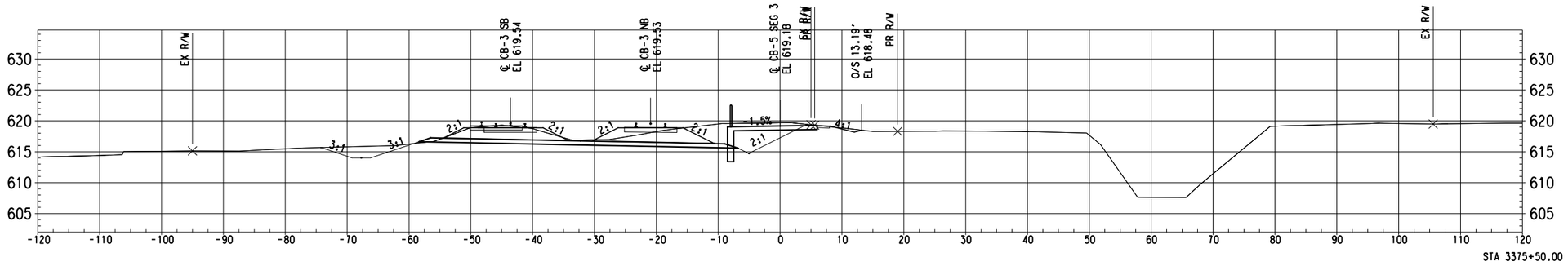
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

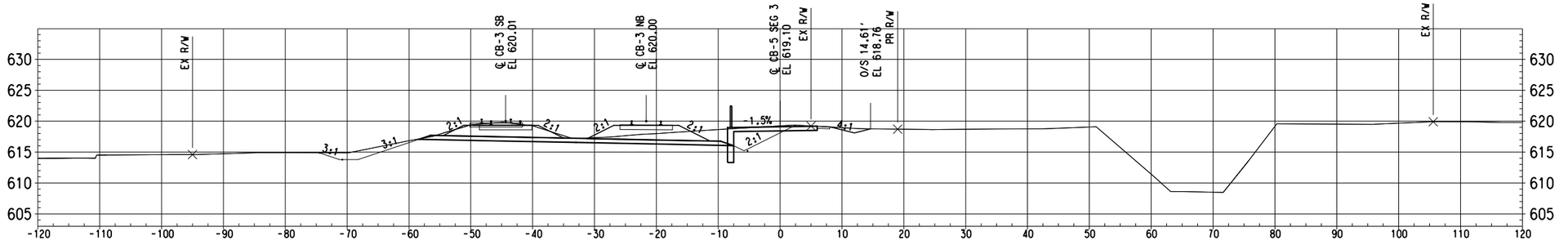
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 41 OF 67

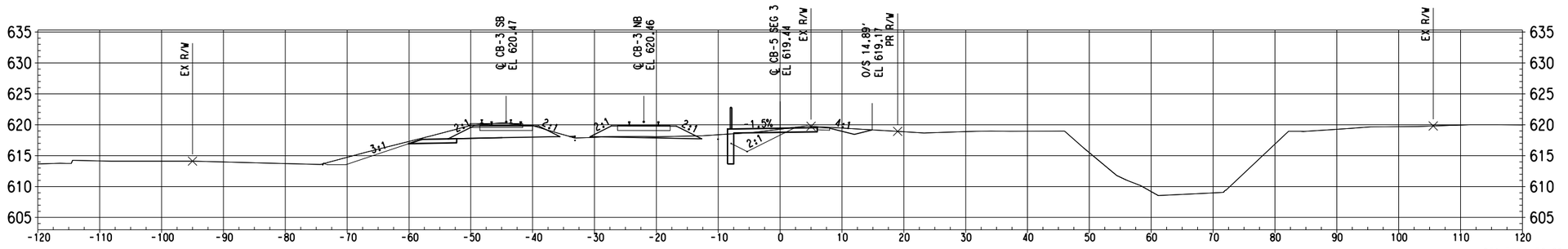
CONTRACT	DWG No.	REV
C-2033270-01	CC1-8029	B

DWG No. CC1-8030









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SCALE (IN FEET)
VERT 0 5 10 15 20

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 42 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8030	B

CB05-CC1-8030.000

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DWG No. CC1-8031

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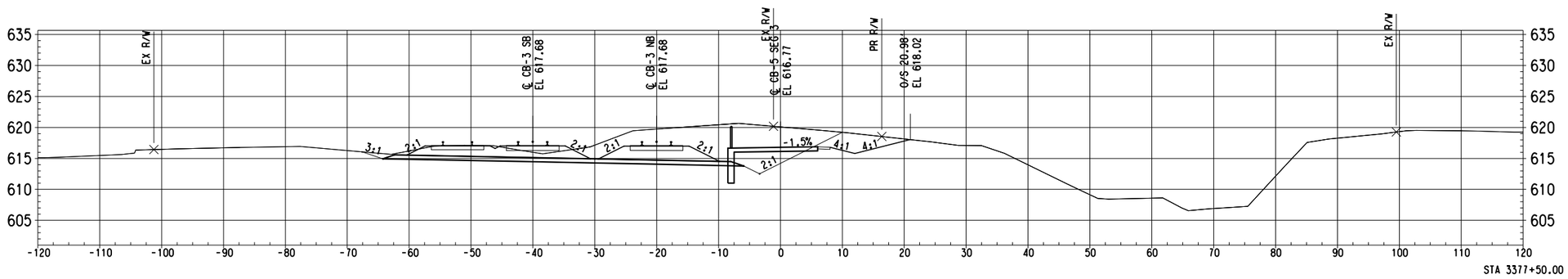
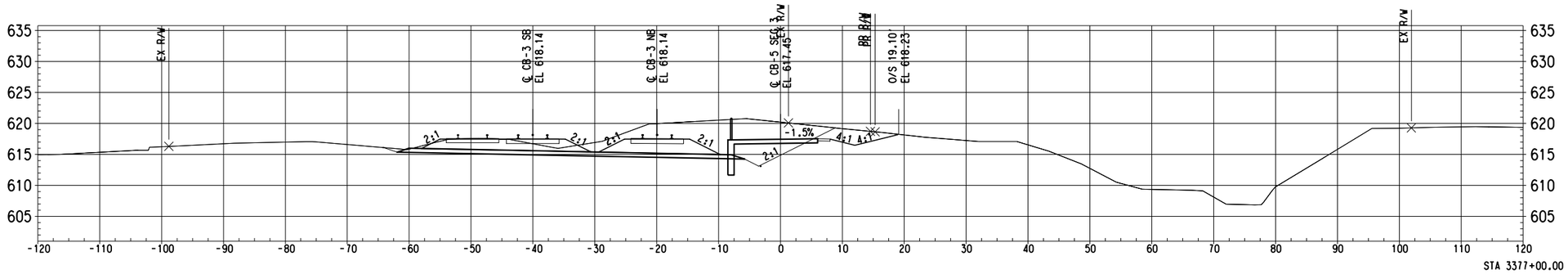
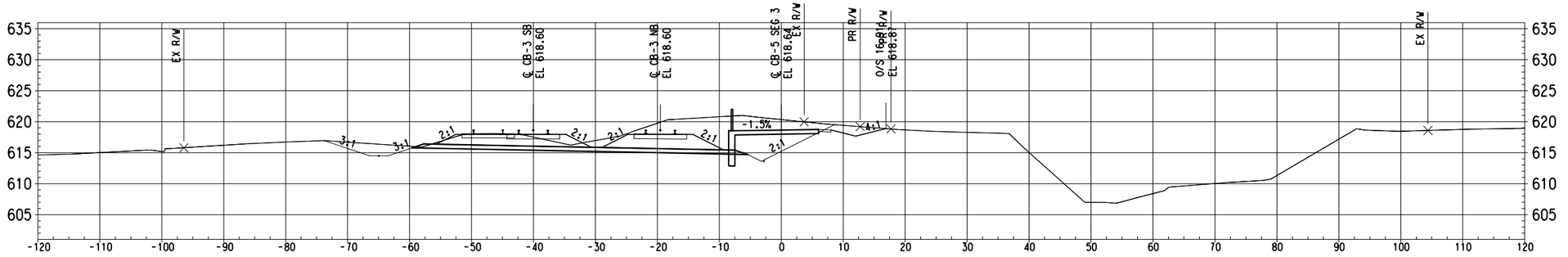
SCALE (IN FEET)
VERT 0 5 10 15 20







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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 43 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8031	B

CB05-CC1-8031.000

DWG No. CC1-8032

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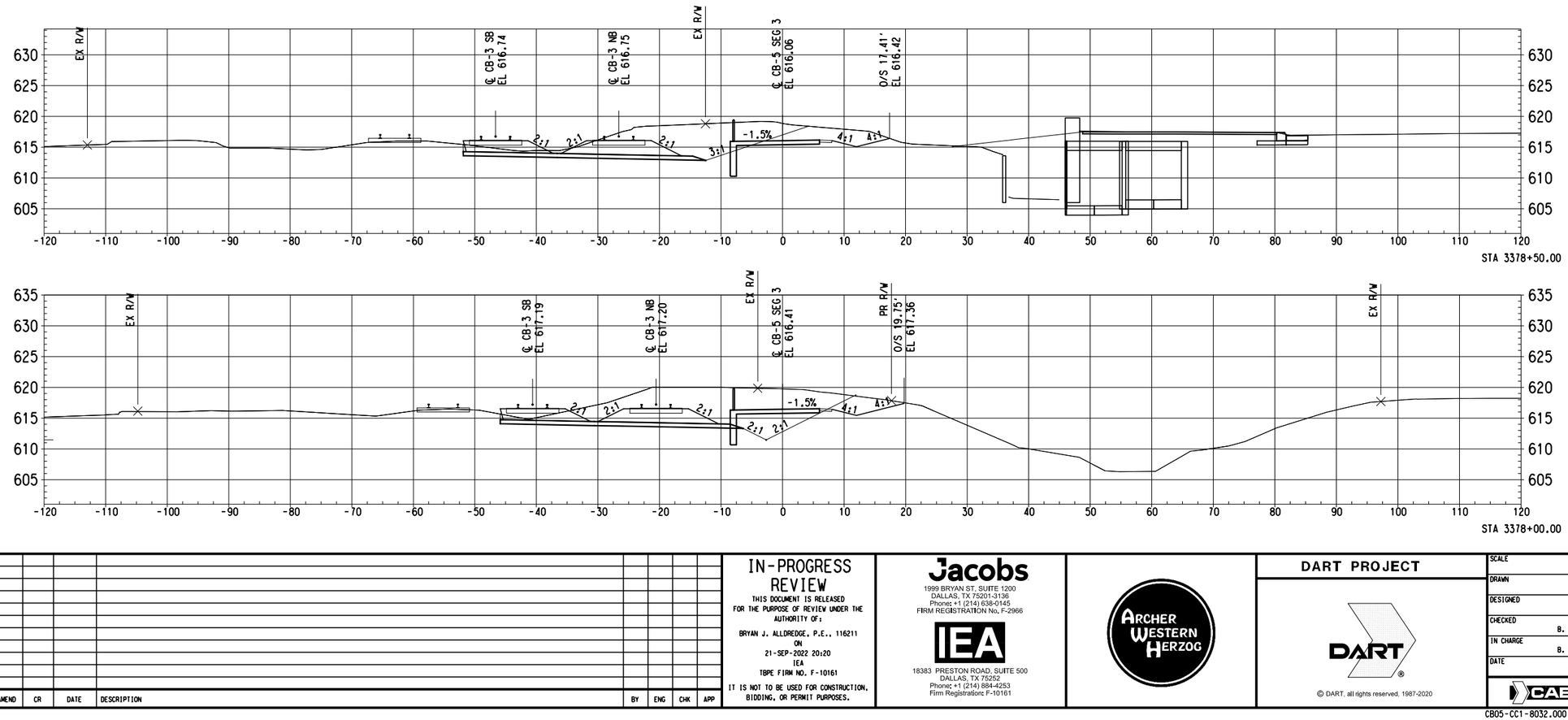
VERT 0 5 10 15 20



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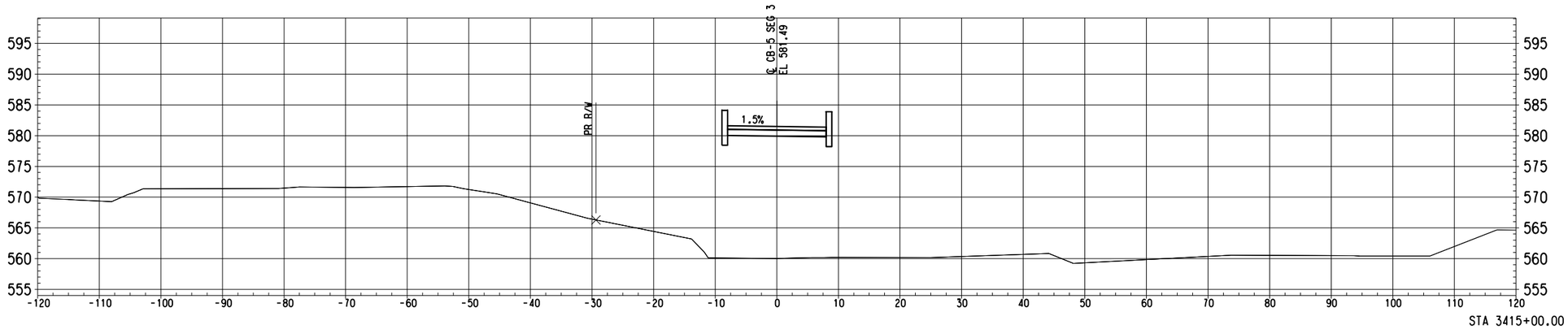
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 44 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-8032	B

CB05-CC1-8032.000

DWG No. CC1-9000



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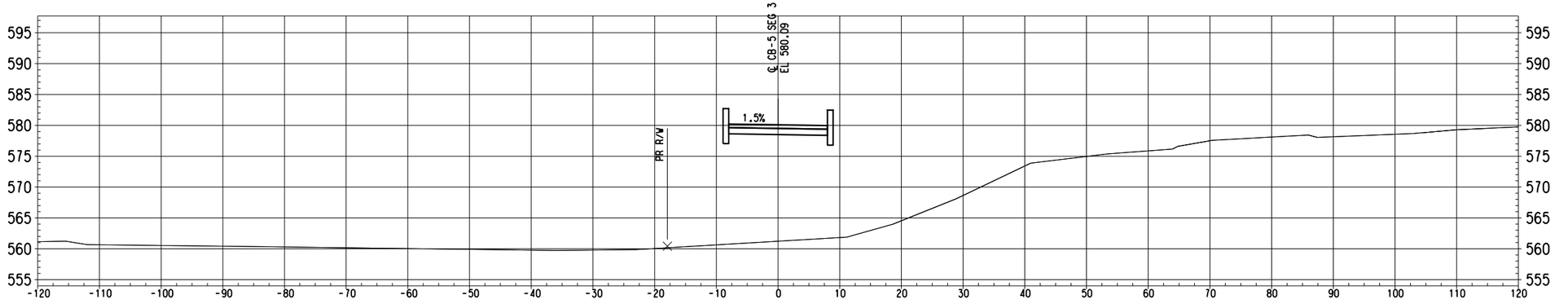

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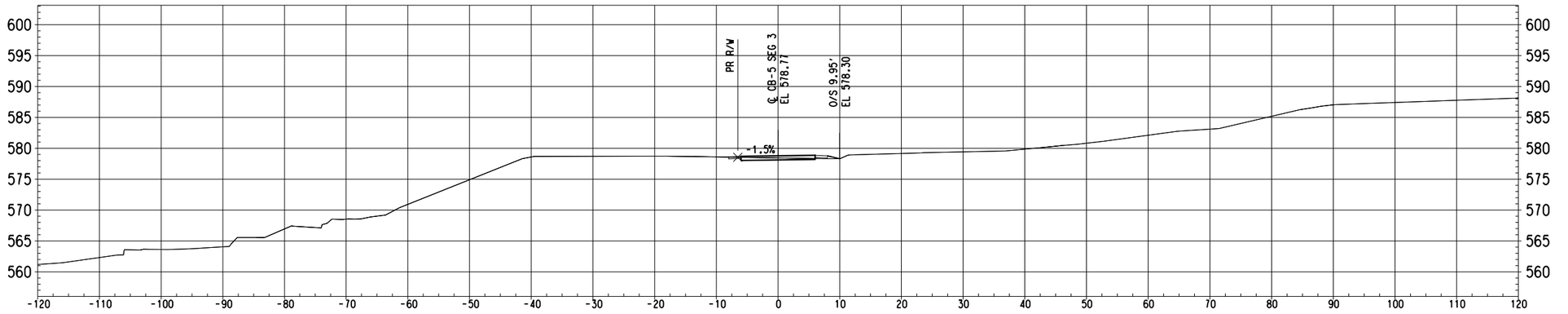

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 45 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9000	B

DWG No. CC1-9001

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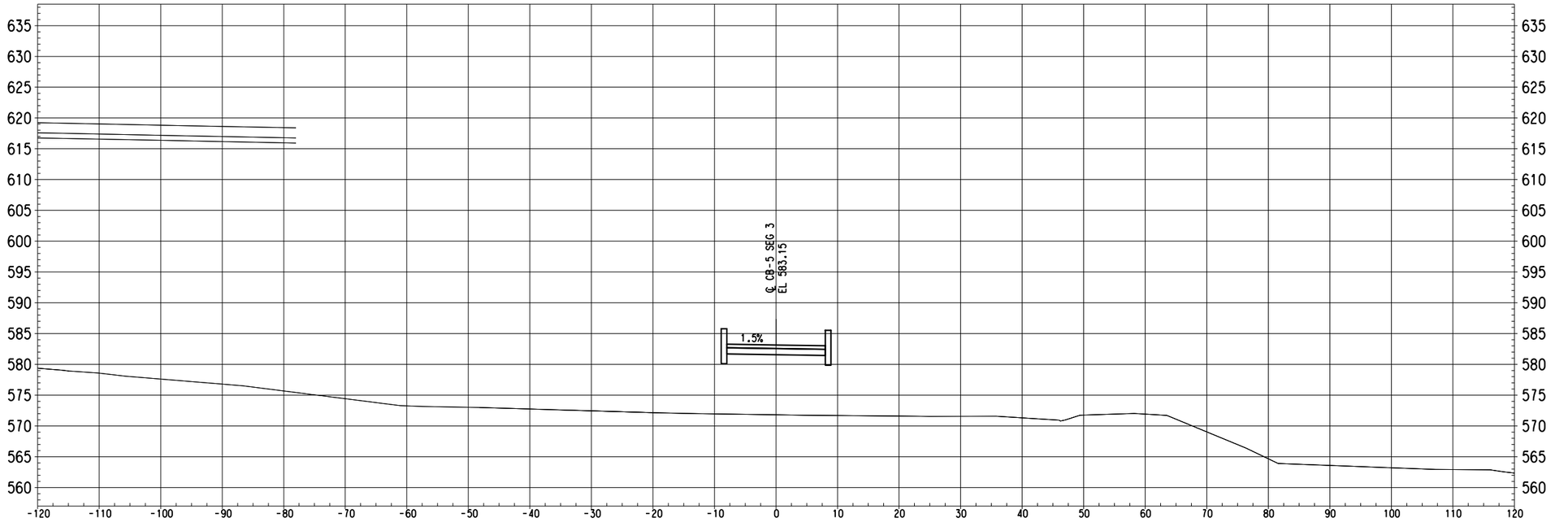
SCALE (IN FEET)
VERT 0 5 10 15 20



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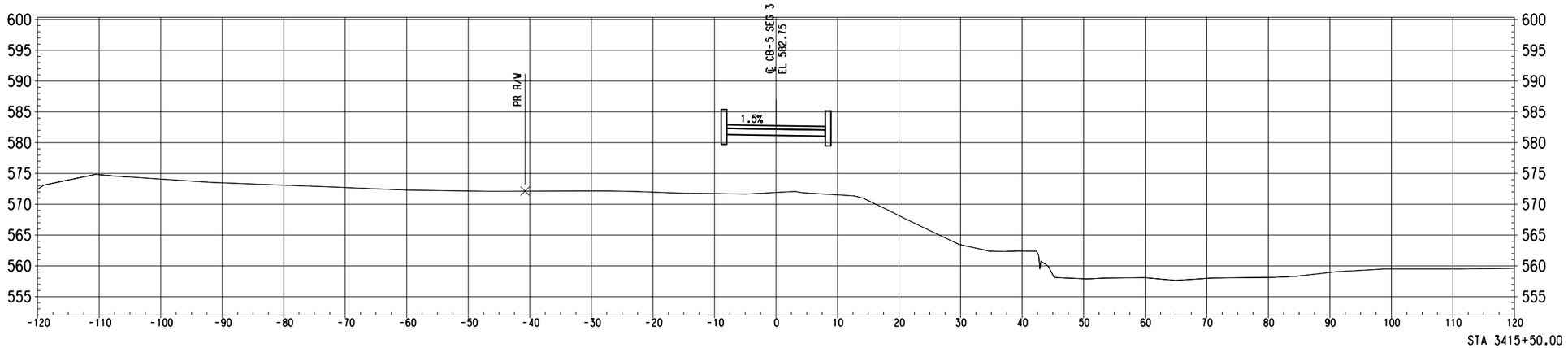

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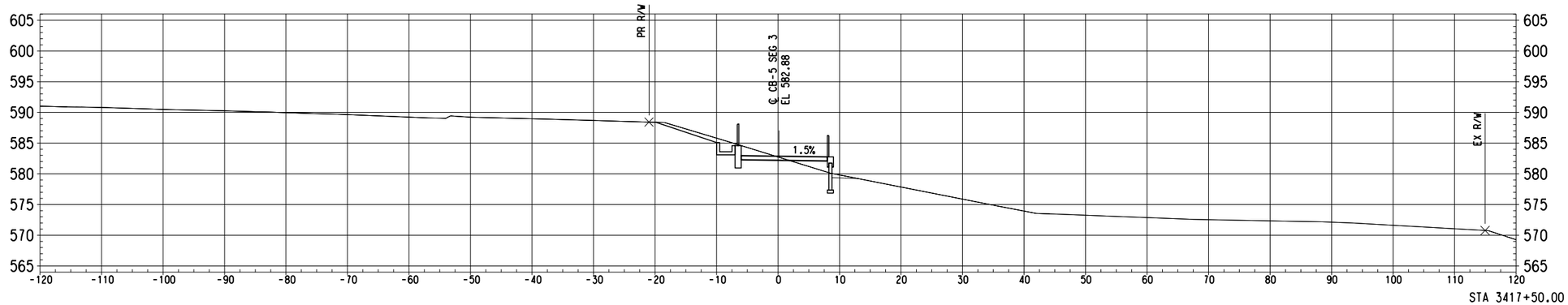
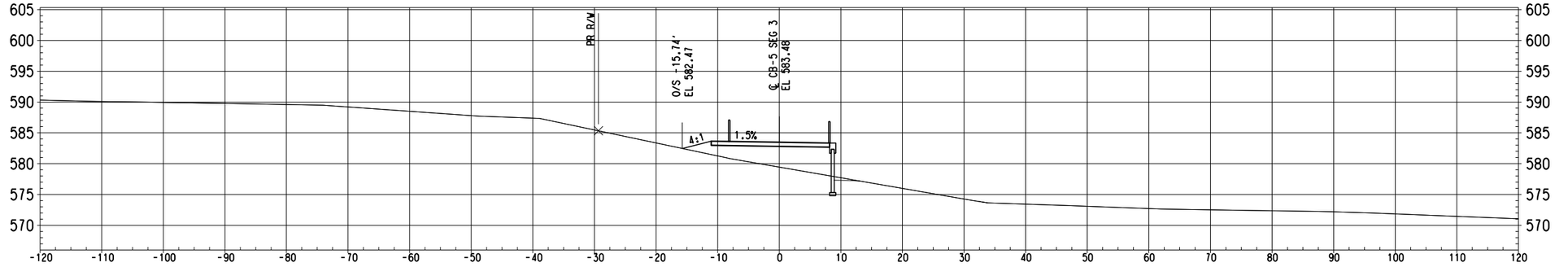
VELOWEB HIKE & BIKE TRAIL

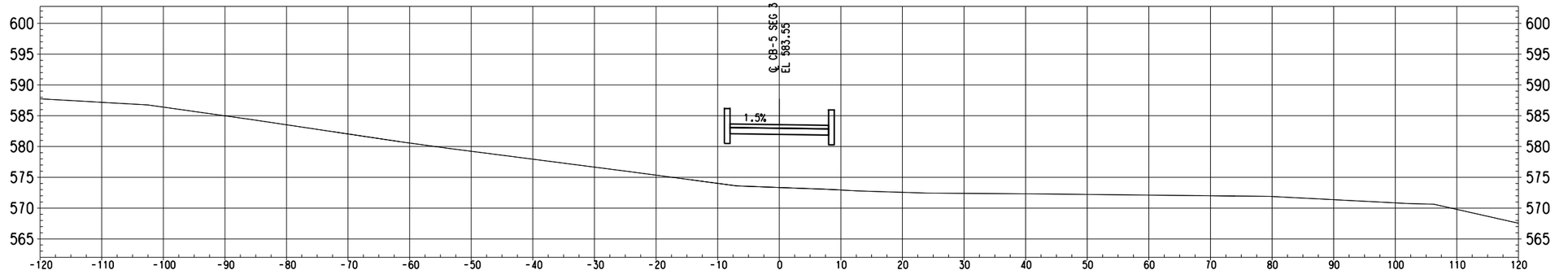
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 46 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9001	B

DWG No. CC1-9002







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VERT 0 5 10 15 20

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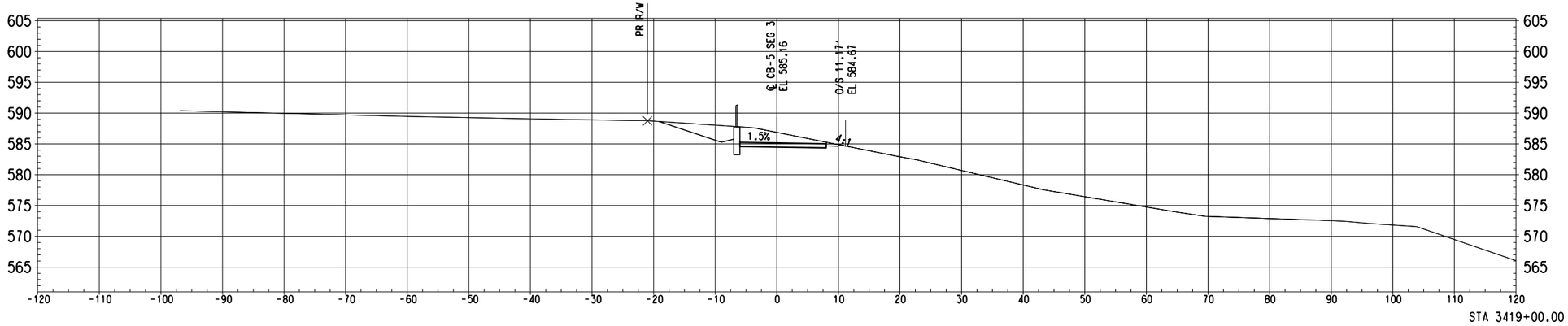
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 47 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9002	B

DWG No. CC1-9003



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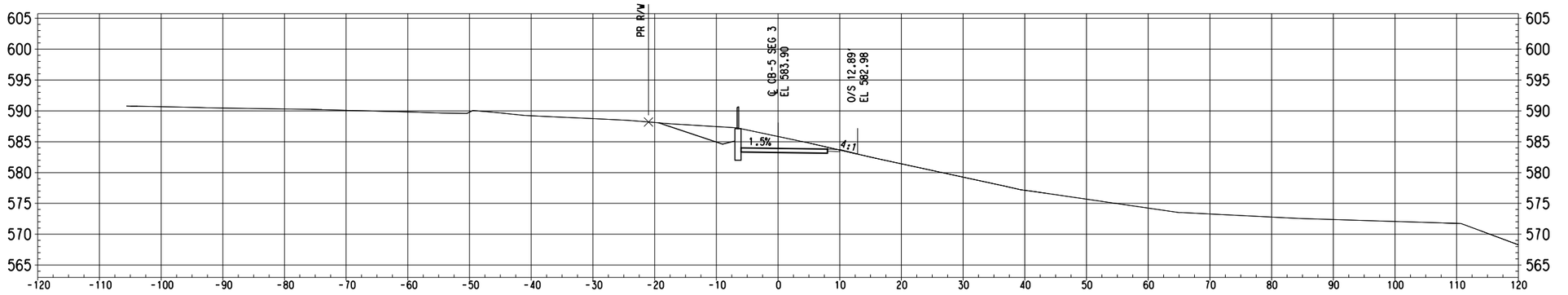

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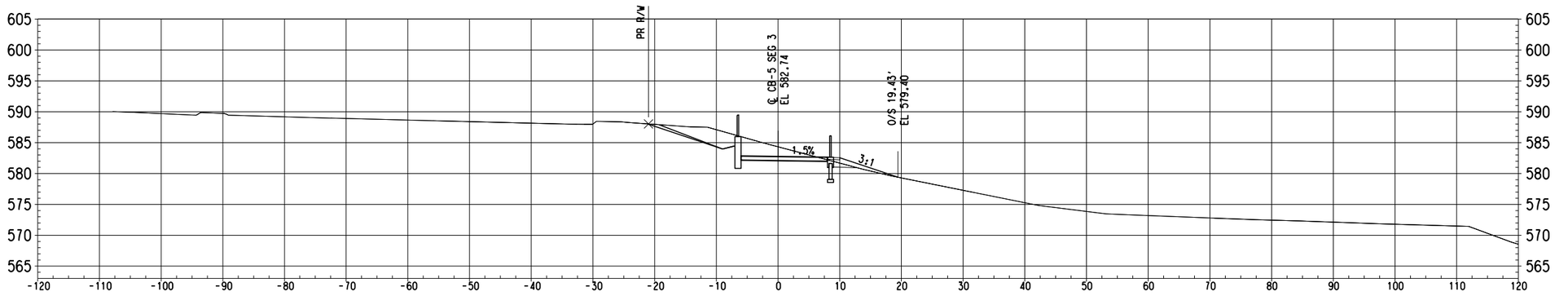

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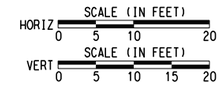

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CONTRACT SHEET No. 107 OF 221

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CHECKED	B. ALLDREDGE
IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 48 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9003	B

DWG No. CC1-9004

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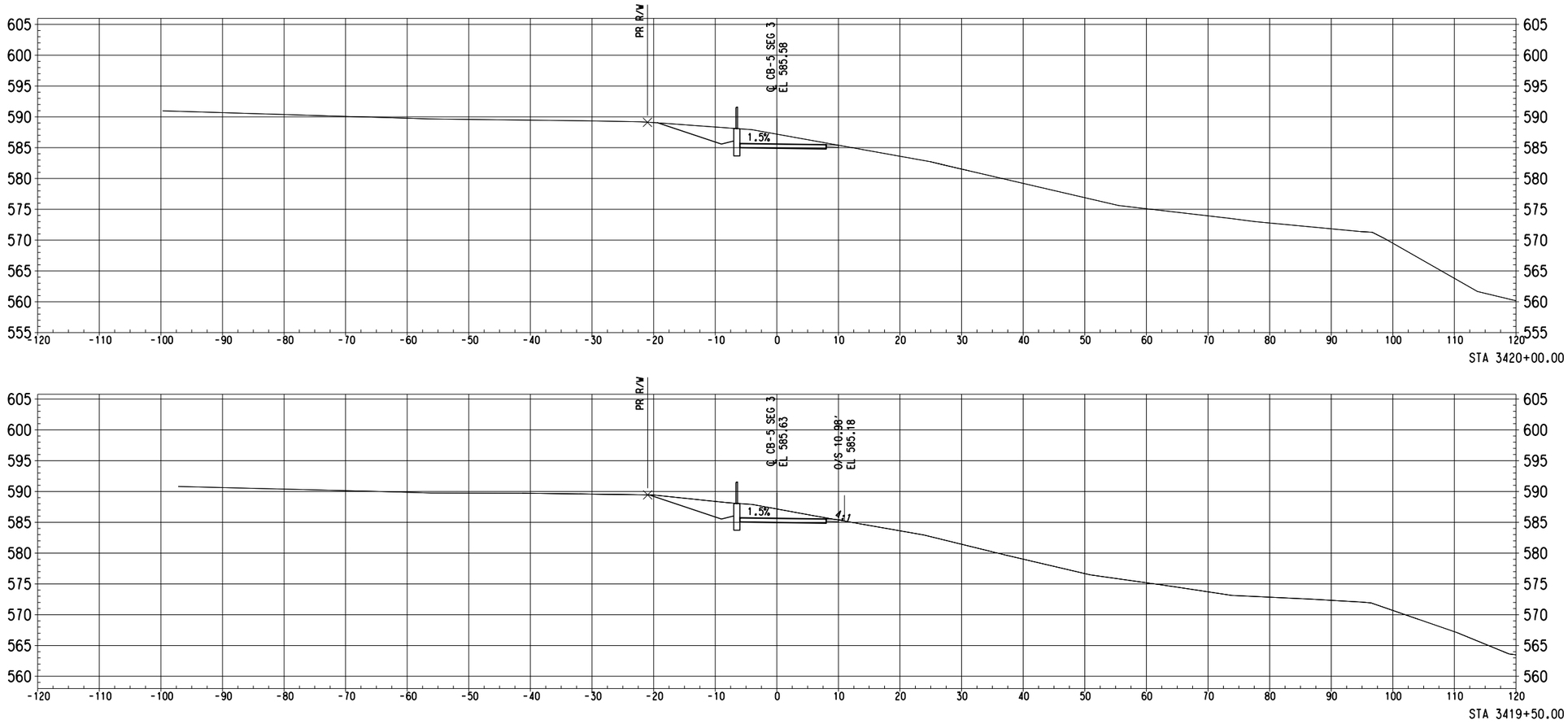

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 49 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9004	B

DWG No. CC1-9005

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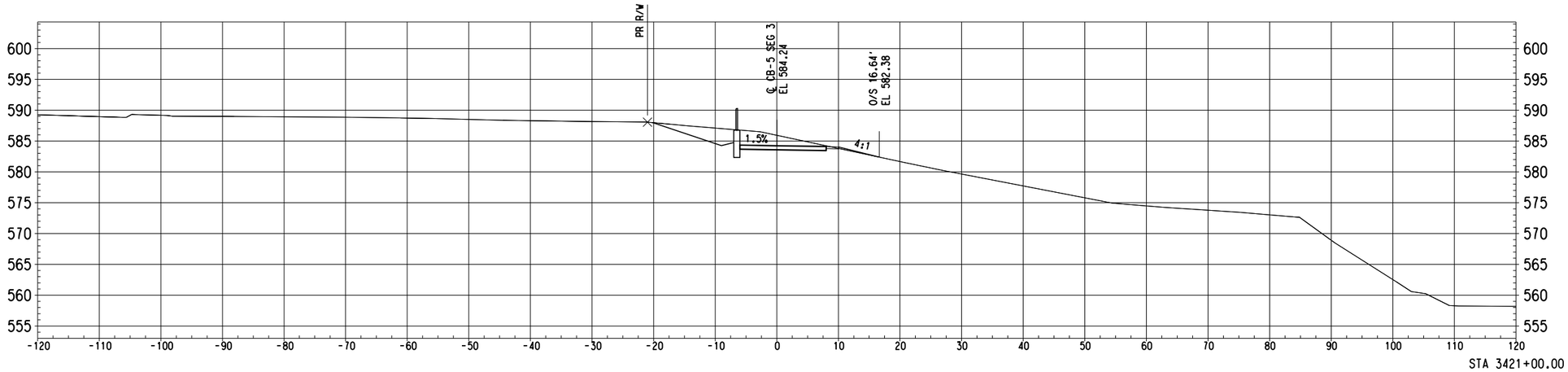

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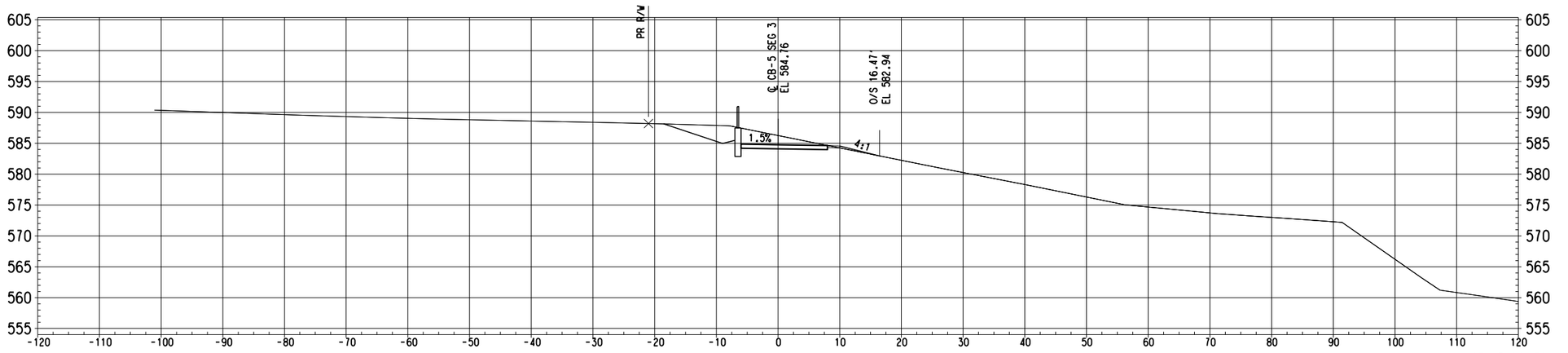

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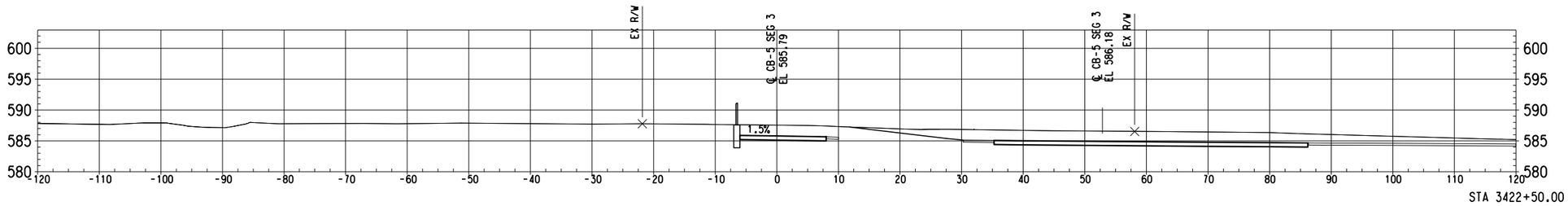
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 50 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9005	B

DWG No. CC1-9006



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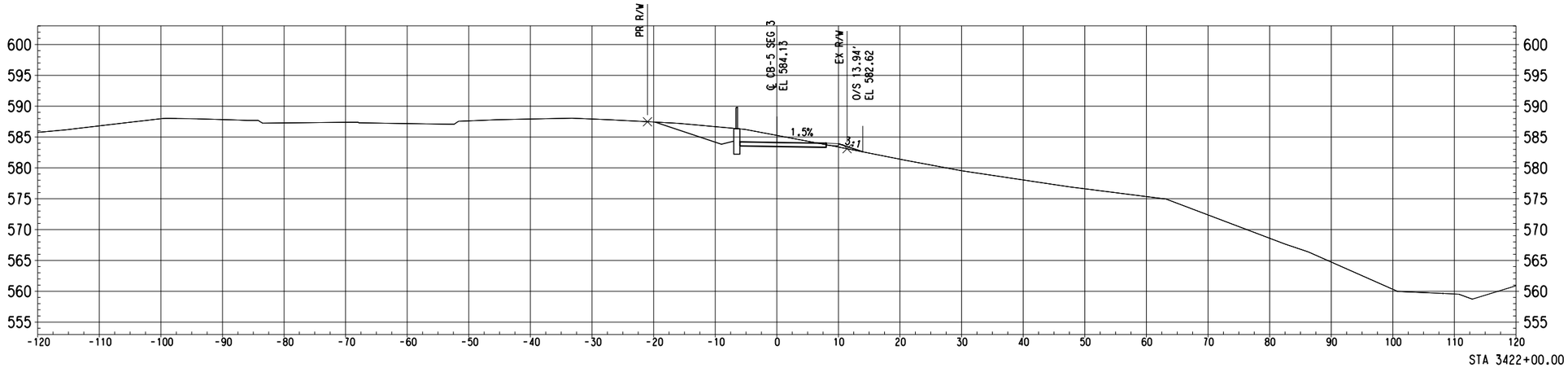

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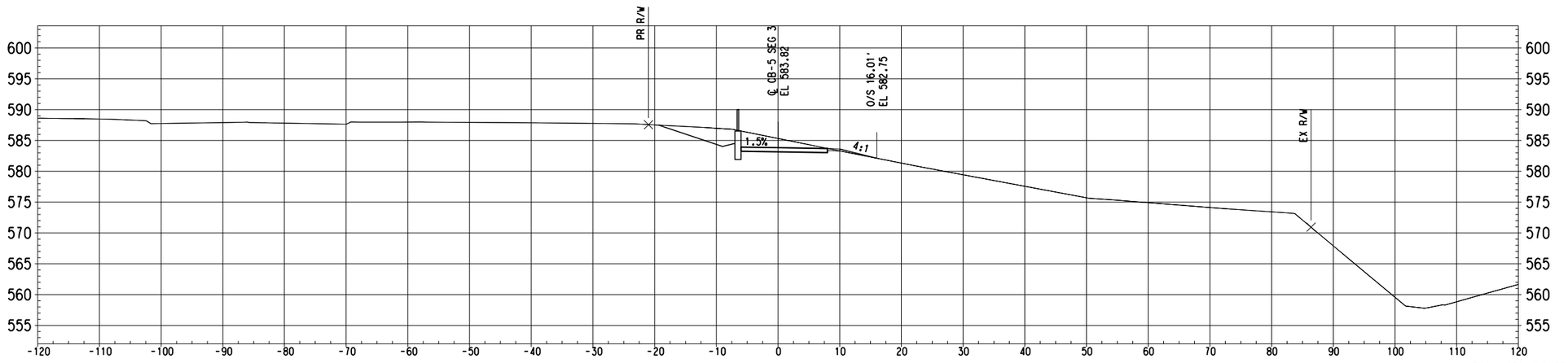

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HORIZ 0 5 10 20
SCALE (IN FEET)
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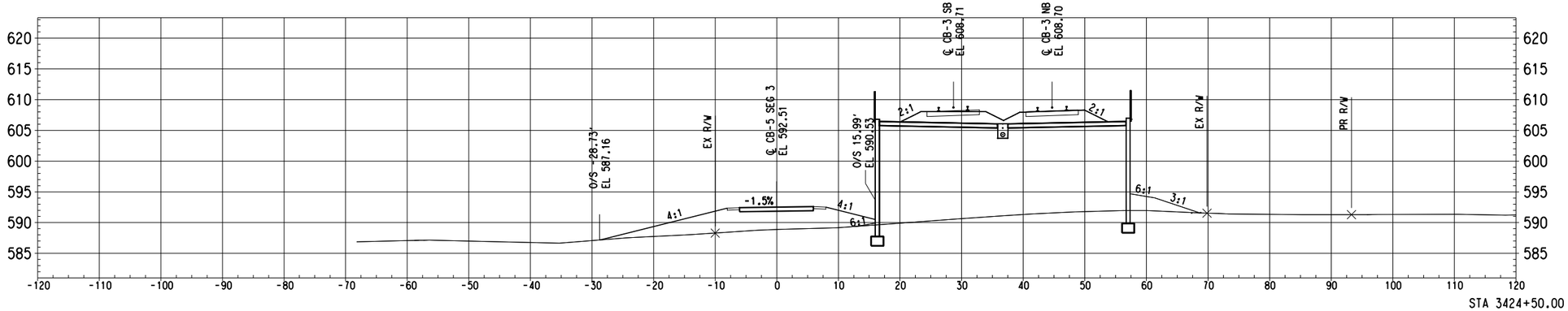
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 51 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9006	B

DWG No. CC1-9007



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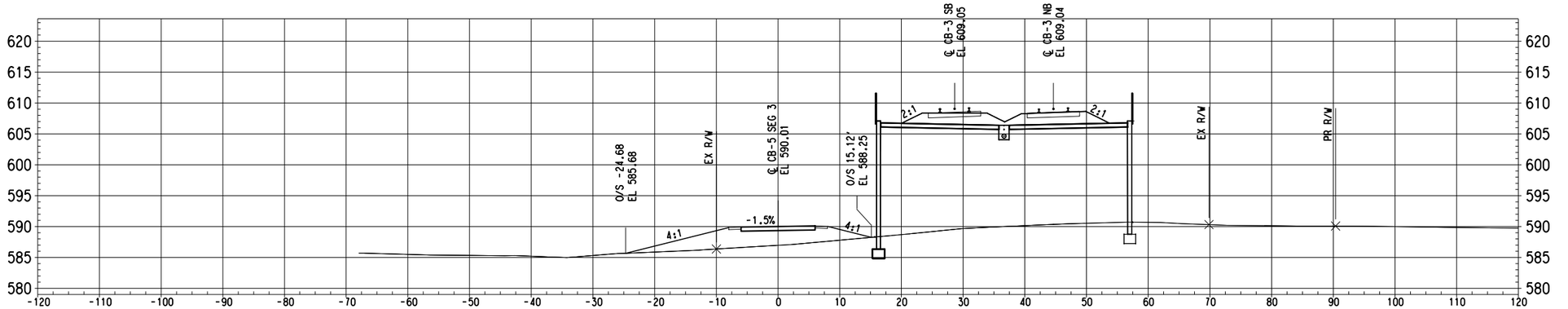

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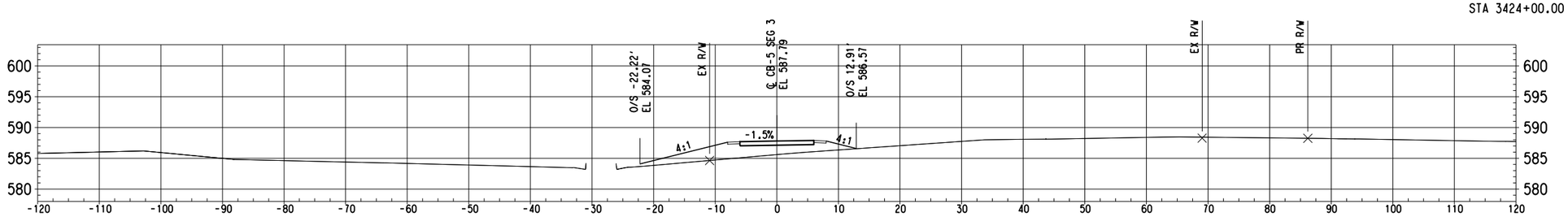

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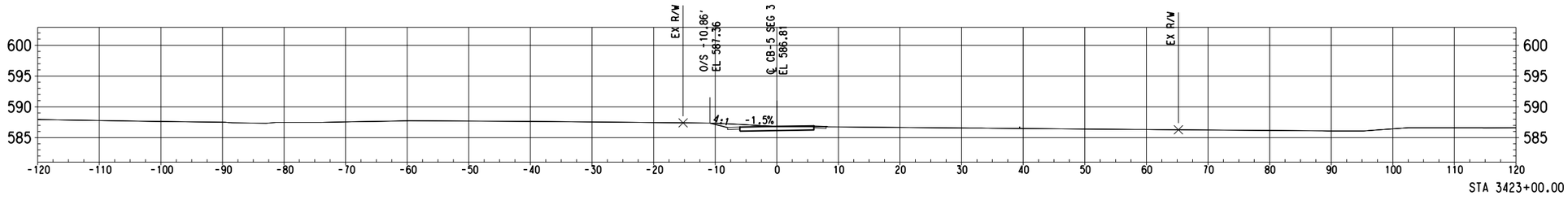

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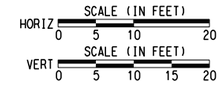

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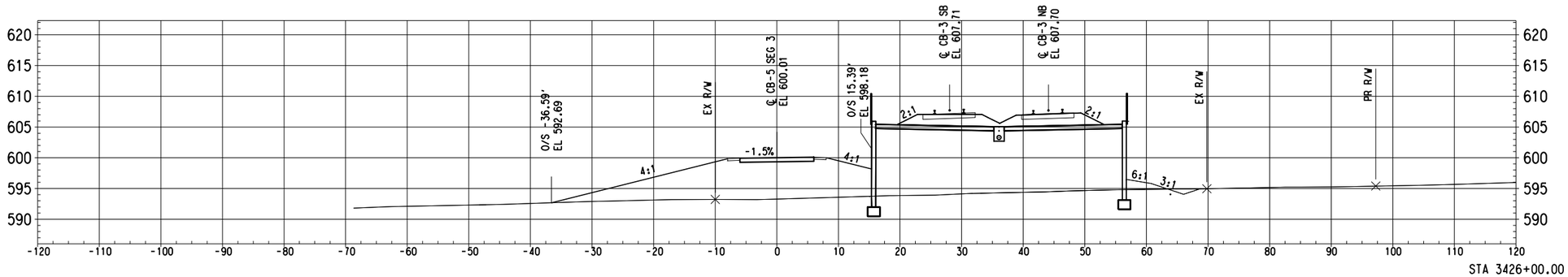
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 52 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9007	B

DWG No. CC1-9008

SCALE (IN FEET)
HORIZ 0 5 10 20
SCALE (IN FEET)
VERT 0 5 10 15 20



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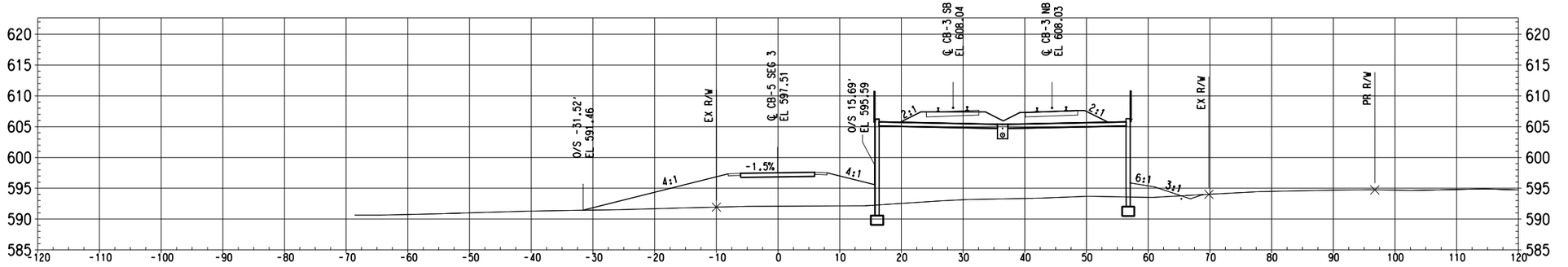

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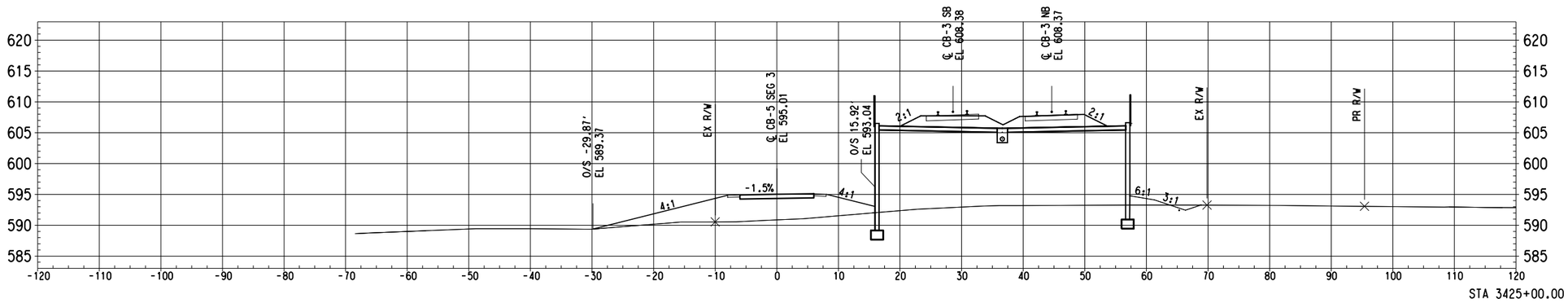

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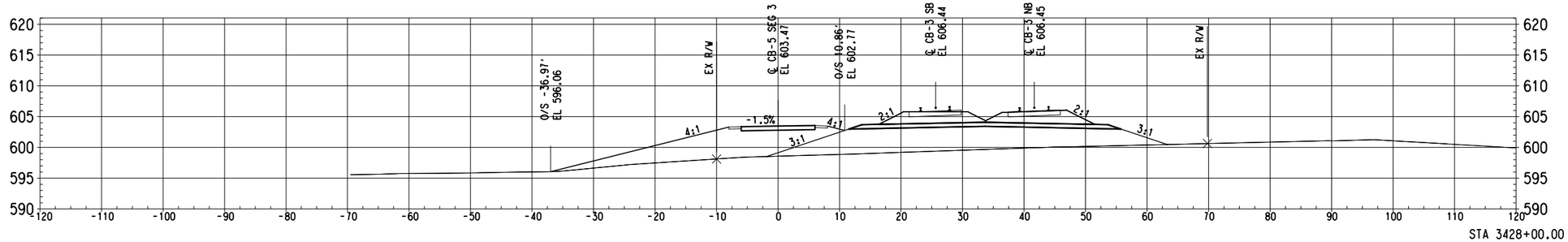
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 53 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9008	B

DWG No. CC1-9009



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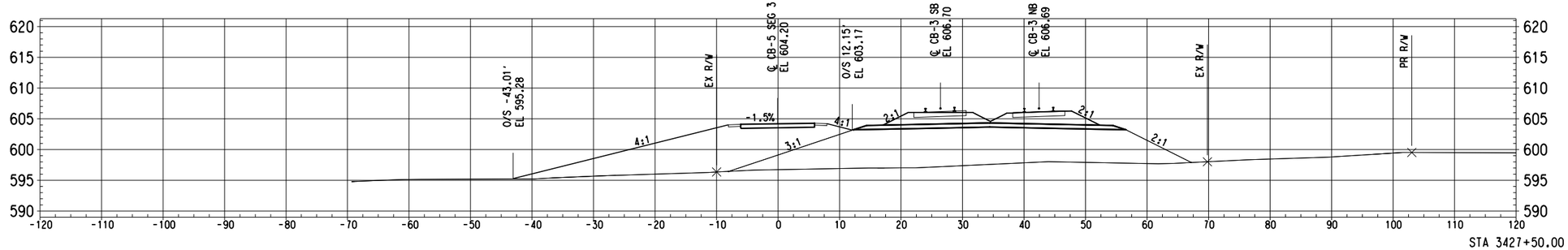

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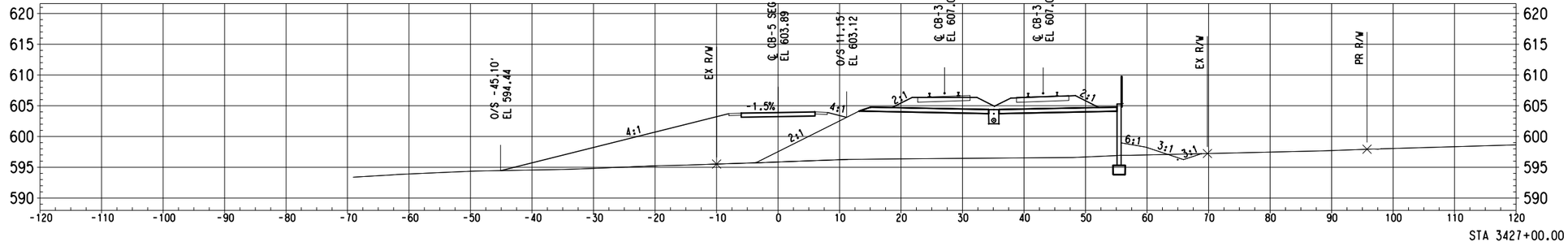

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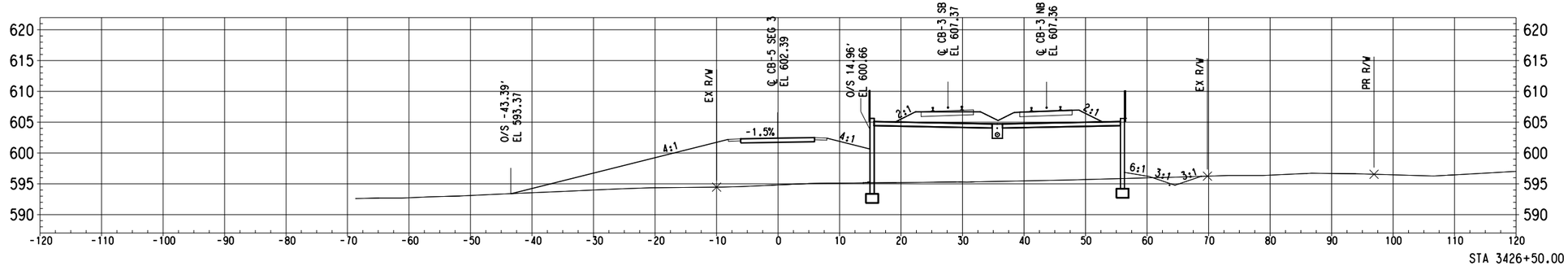

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HORIZ SCALE (IN FEET) 0 5 10 20

VERT SCALE (IN FEET) 0 5 10 15 20

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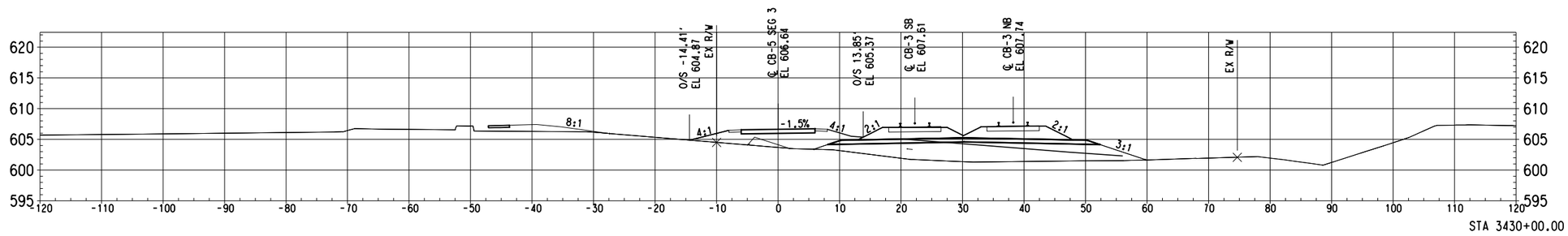
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 54 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9009	B

DWG No. CC1-9010



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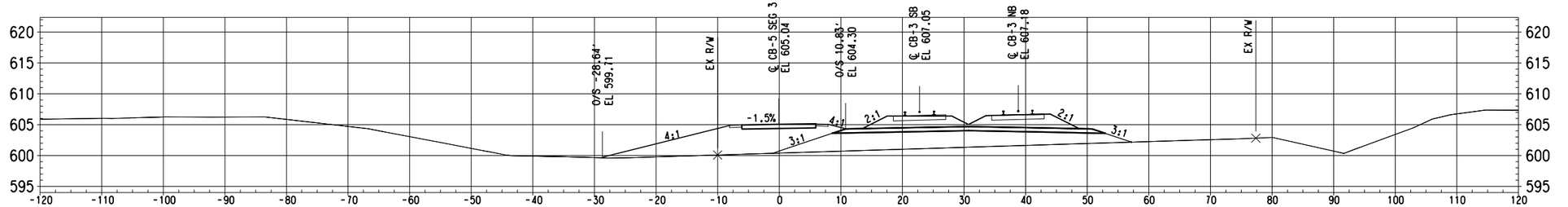

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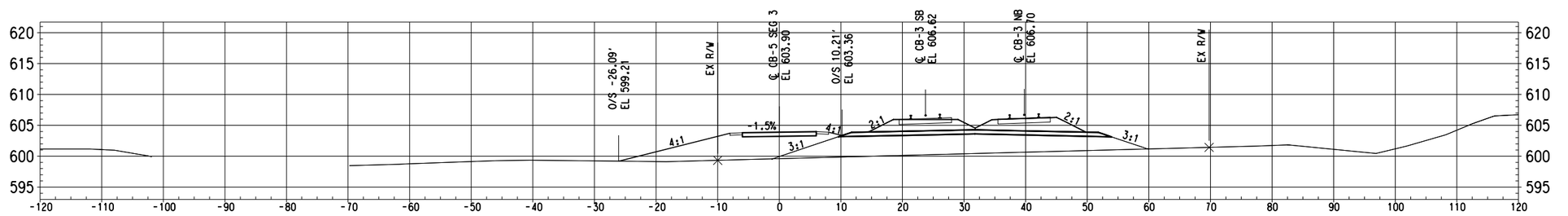

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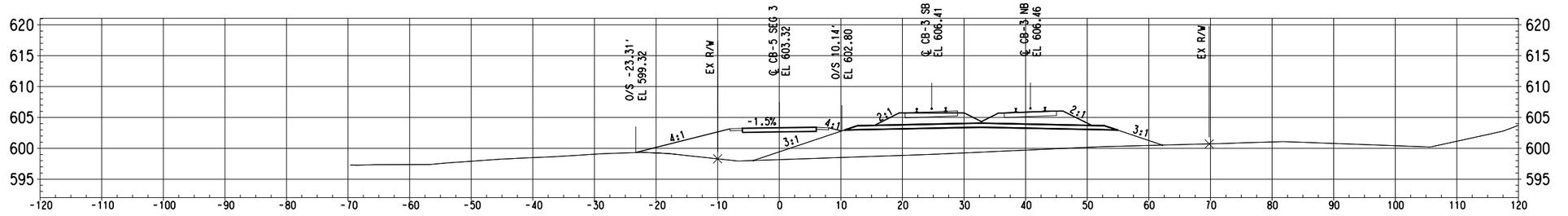

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VERT 0 5 10 15 20

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CONTRACT SHEET No. 114 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 55 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9010	B

CB05-CC1-9010.000

DWG No. CC1-9011

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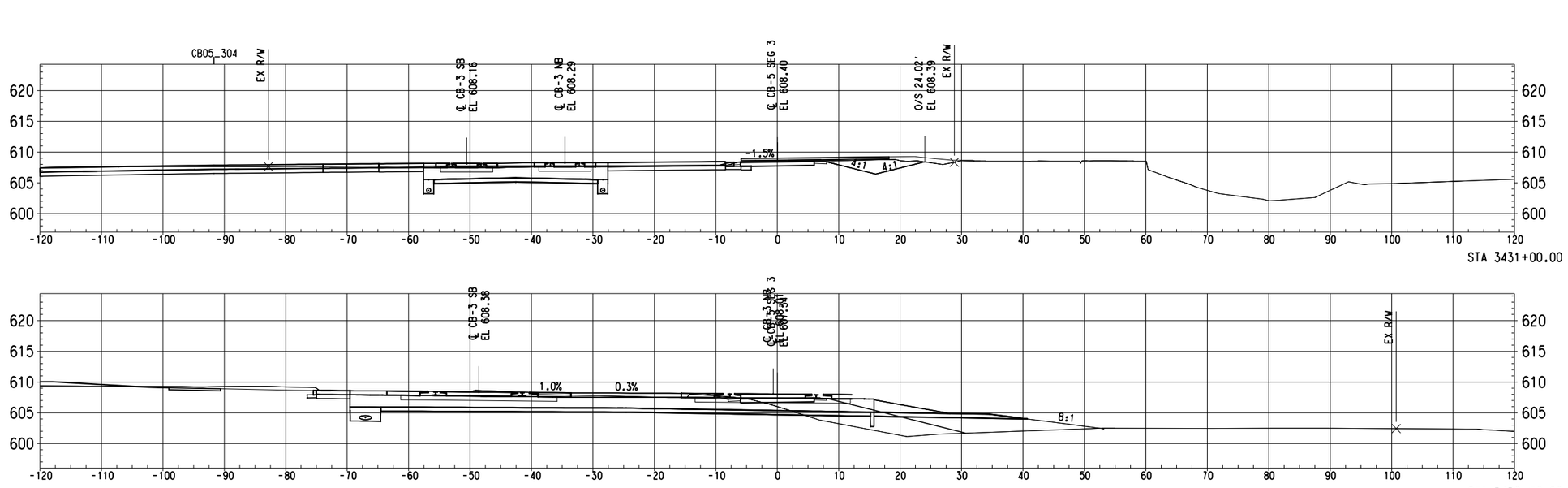

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CB05-CC1-9011.000

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CONTRACT SHEET No. 115 OF 221

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 56 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9011	B

CB05-CC1-9011.000

DWG No. CC1-9012

SCALE (IN FEET)
HORIZ 0 5 10 20
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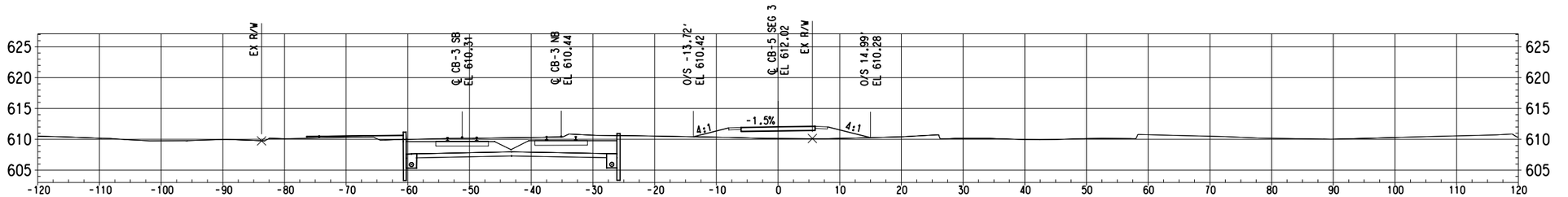

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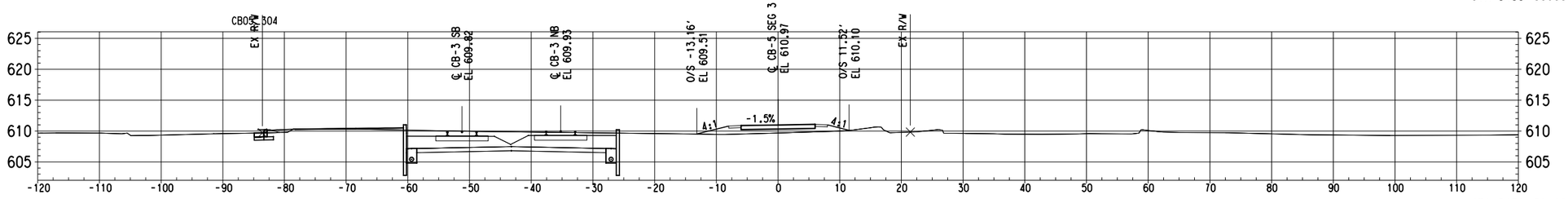

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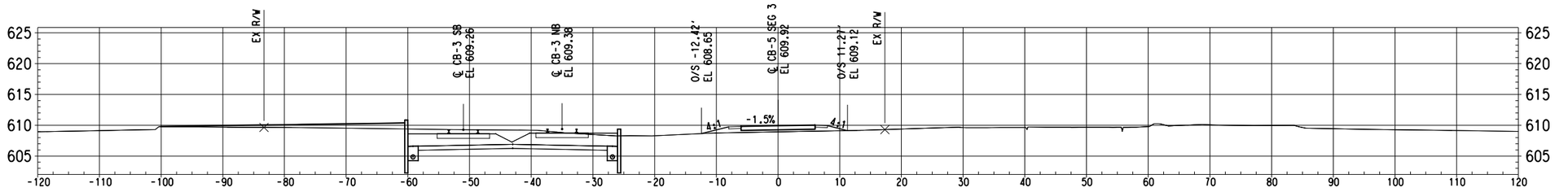

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CONTRACT SHEET No. 116 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 57 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9012	B

CB05-CC1-9012.000

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CB05-CC1-9012.000

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DWG No. CC1-9013

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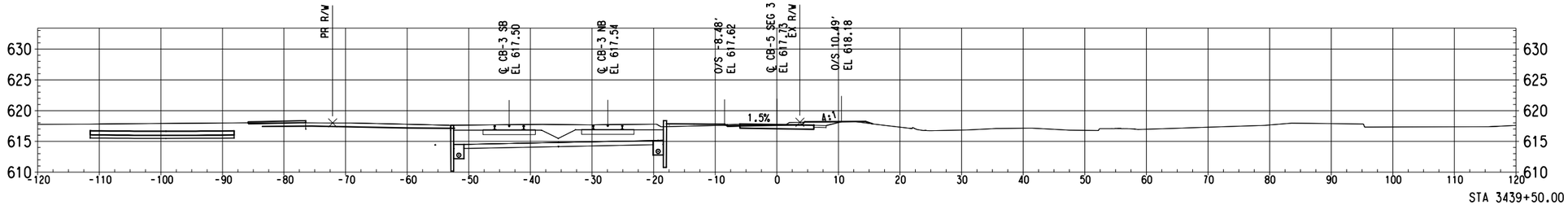

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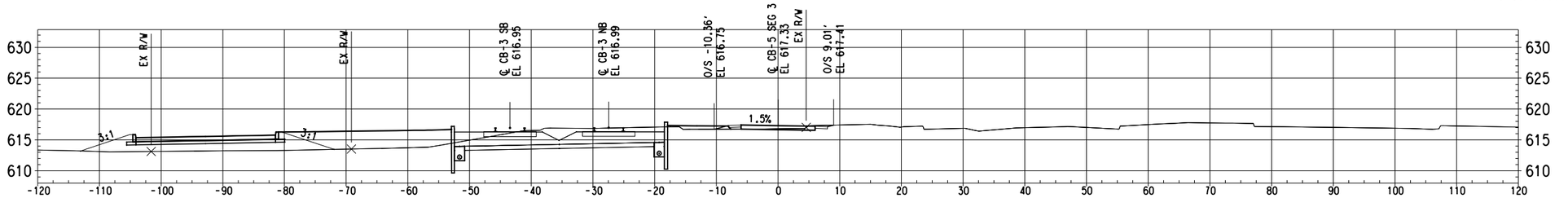

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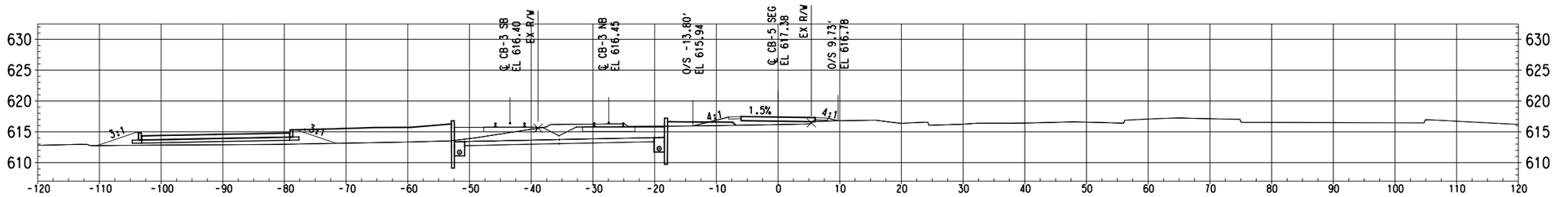

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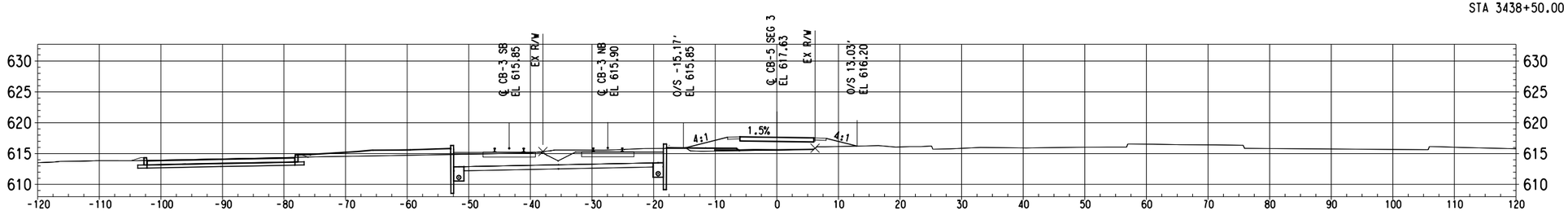

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CONTRACT SHEET No. 117 OF 221

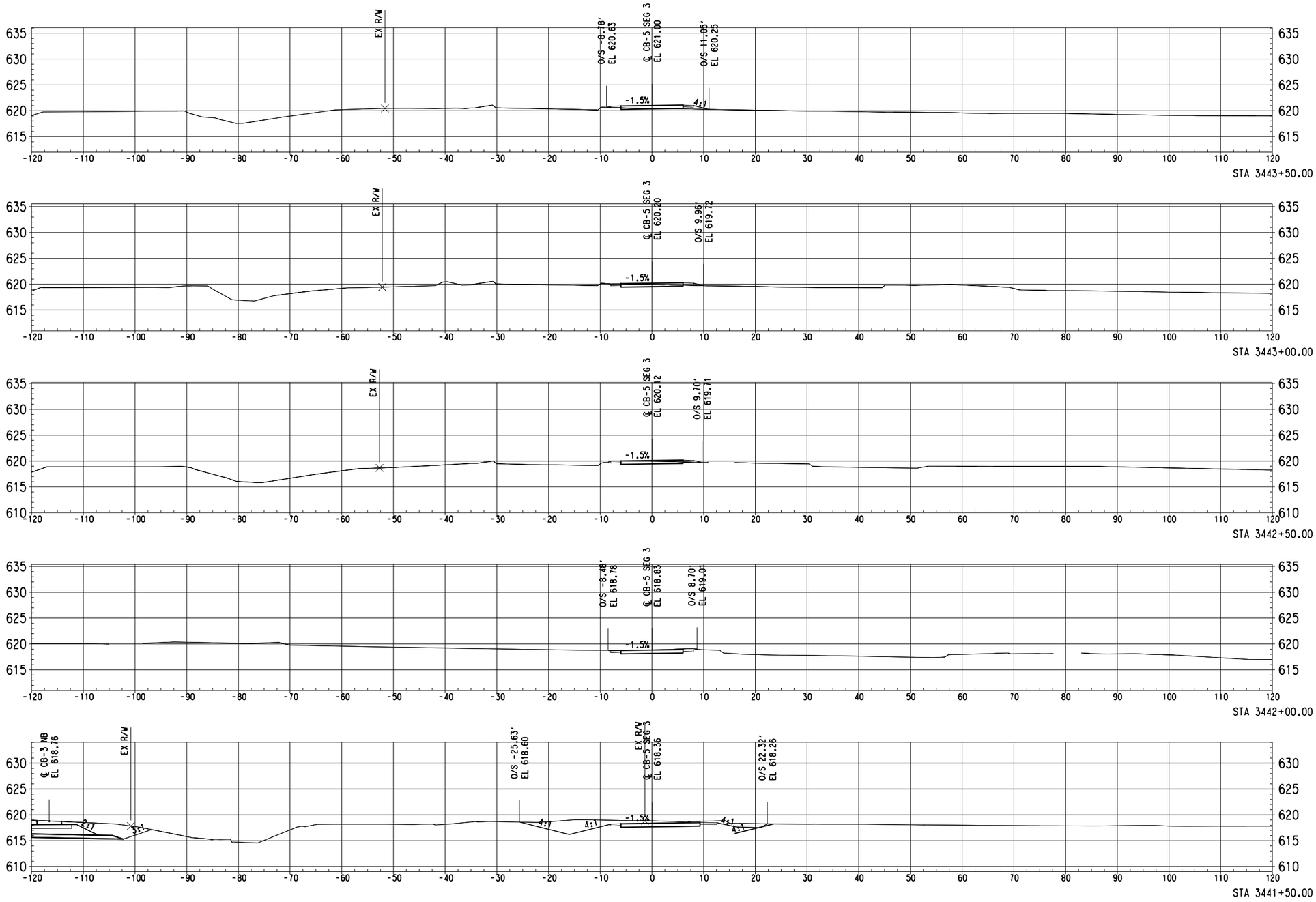
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 58 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9013	B

CB05-CC1-9013.000

DWG No. CC1-9014



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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 59 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9014	B

CB05-CC1-9014.000

DWG No. CC1-9015

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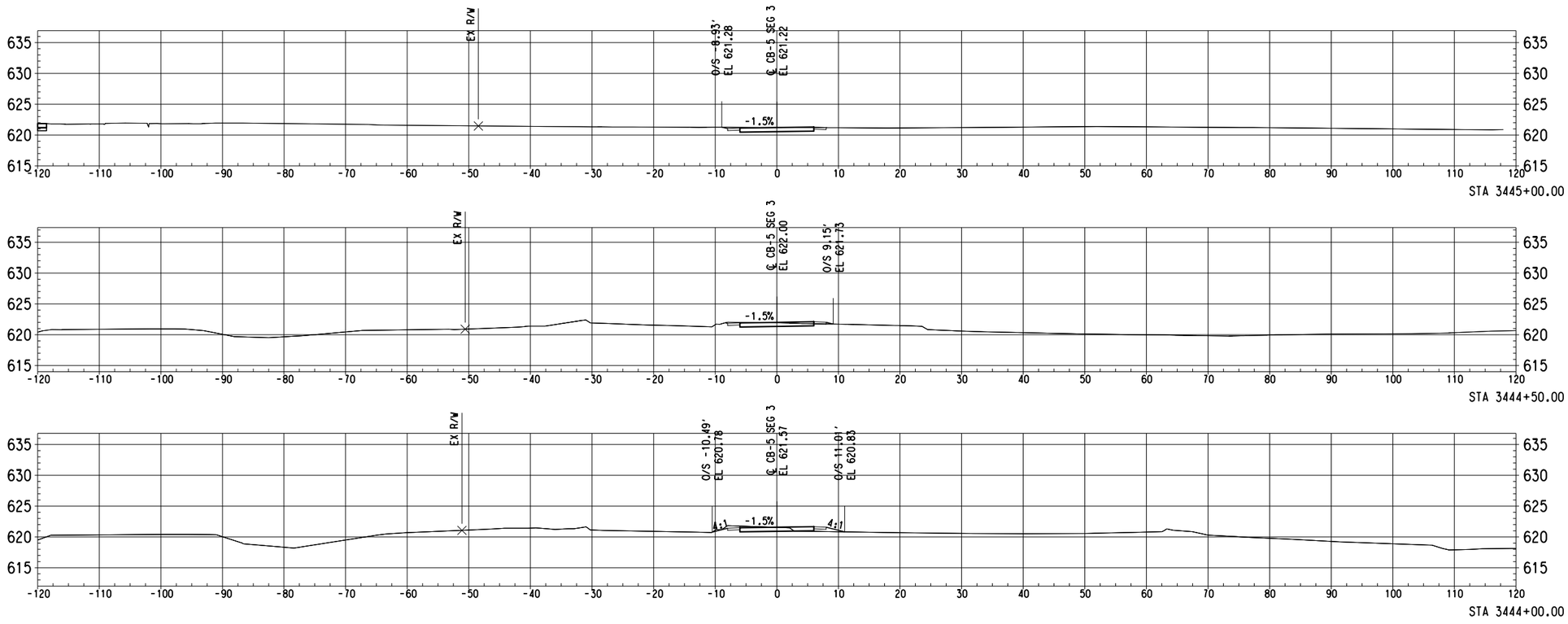

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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CITY OF RICHARDSON
CROSS SECTIONS
SHEET 60 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9015	B

DWG No. CC1-9016

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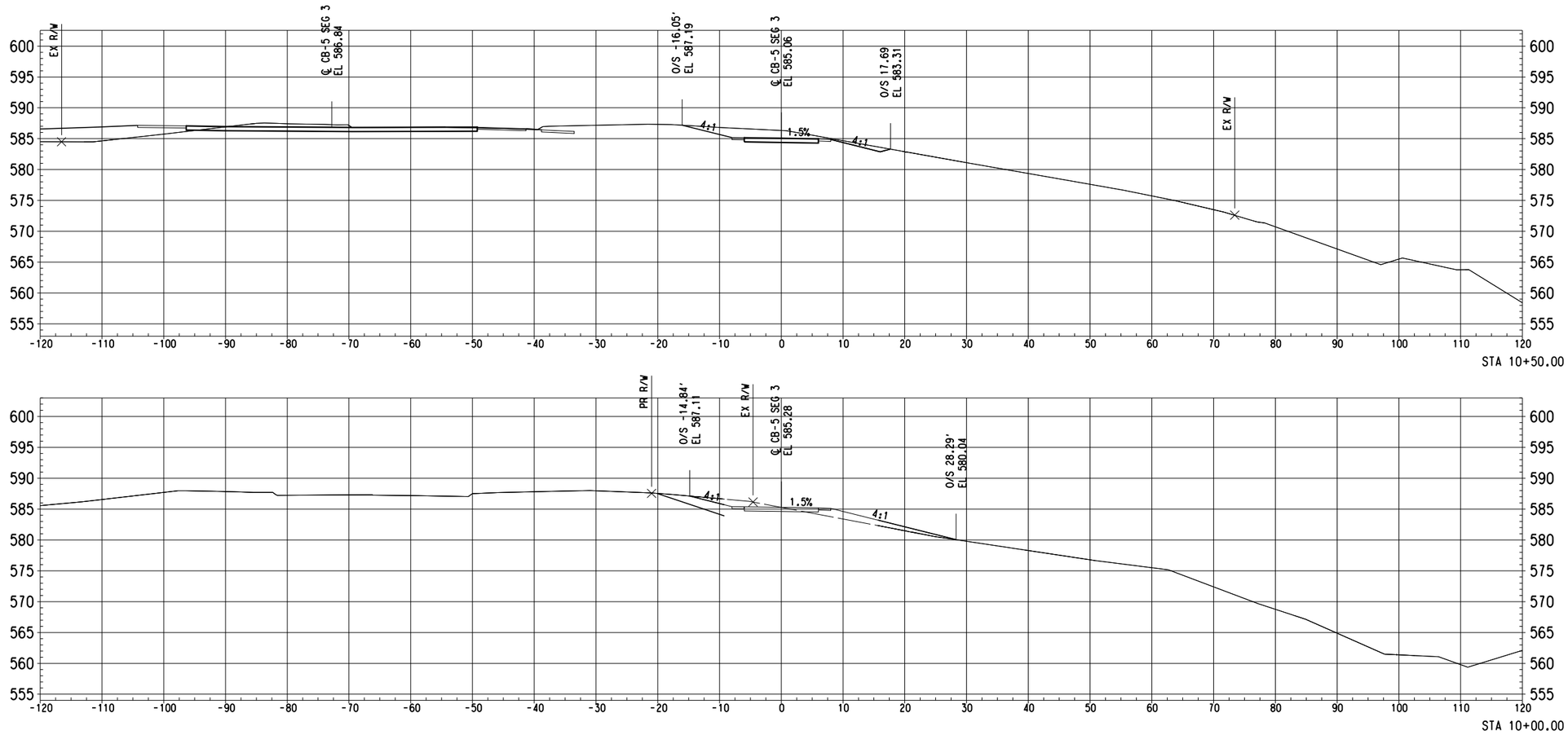

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 61 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9016	B

CB05-CC1-9016.000

DWG No. CC1-9016

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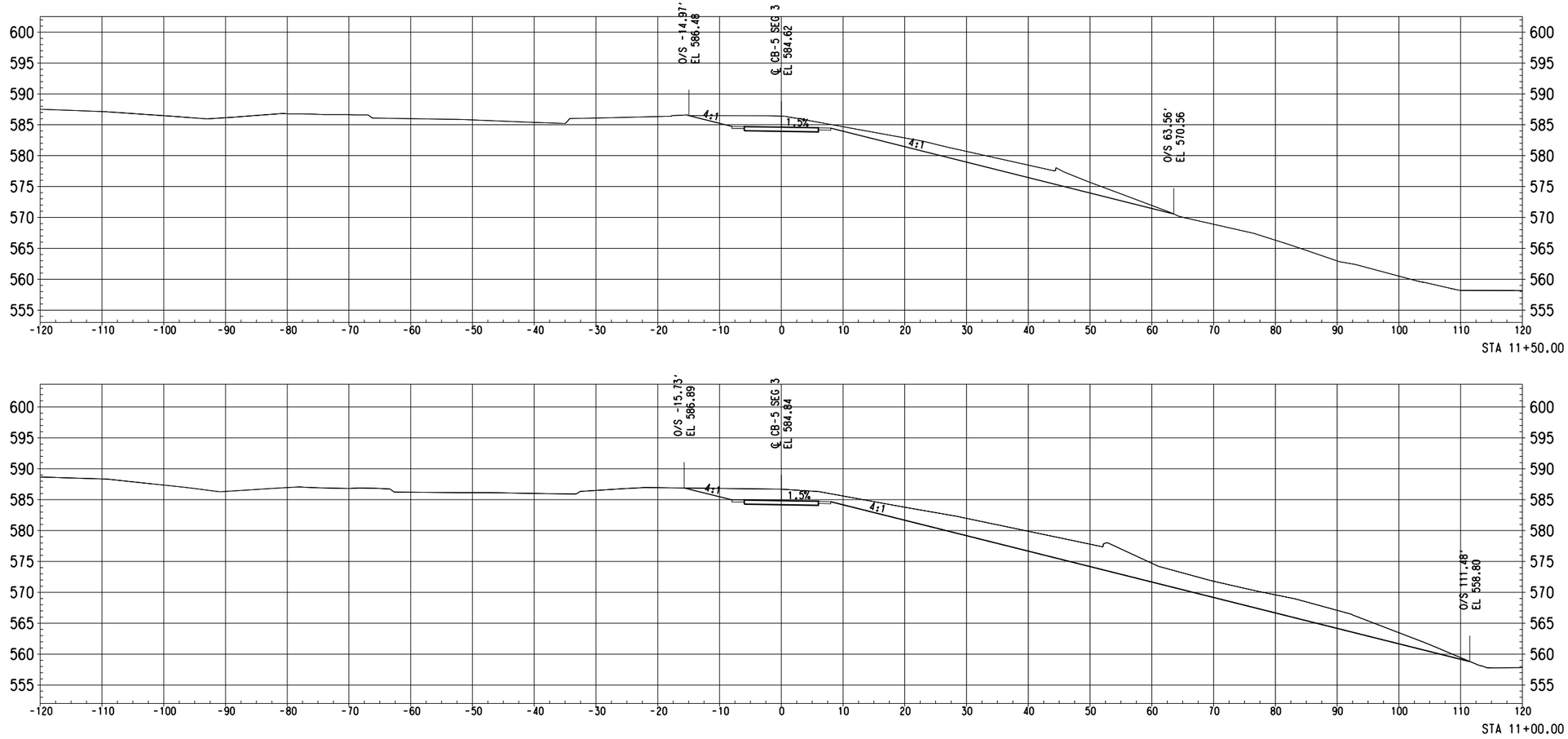

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CONTRACT SHEET No. 120 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 61 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9016	B

DWG No. CC1-9018

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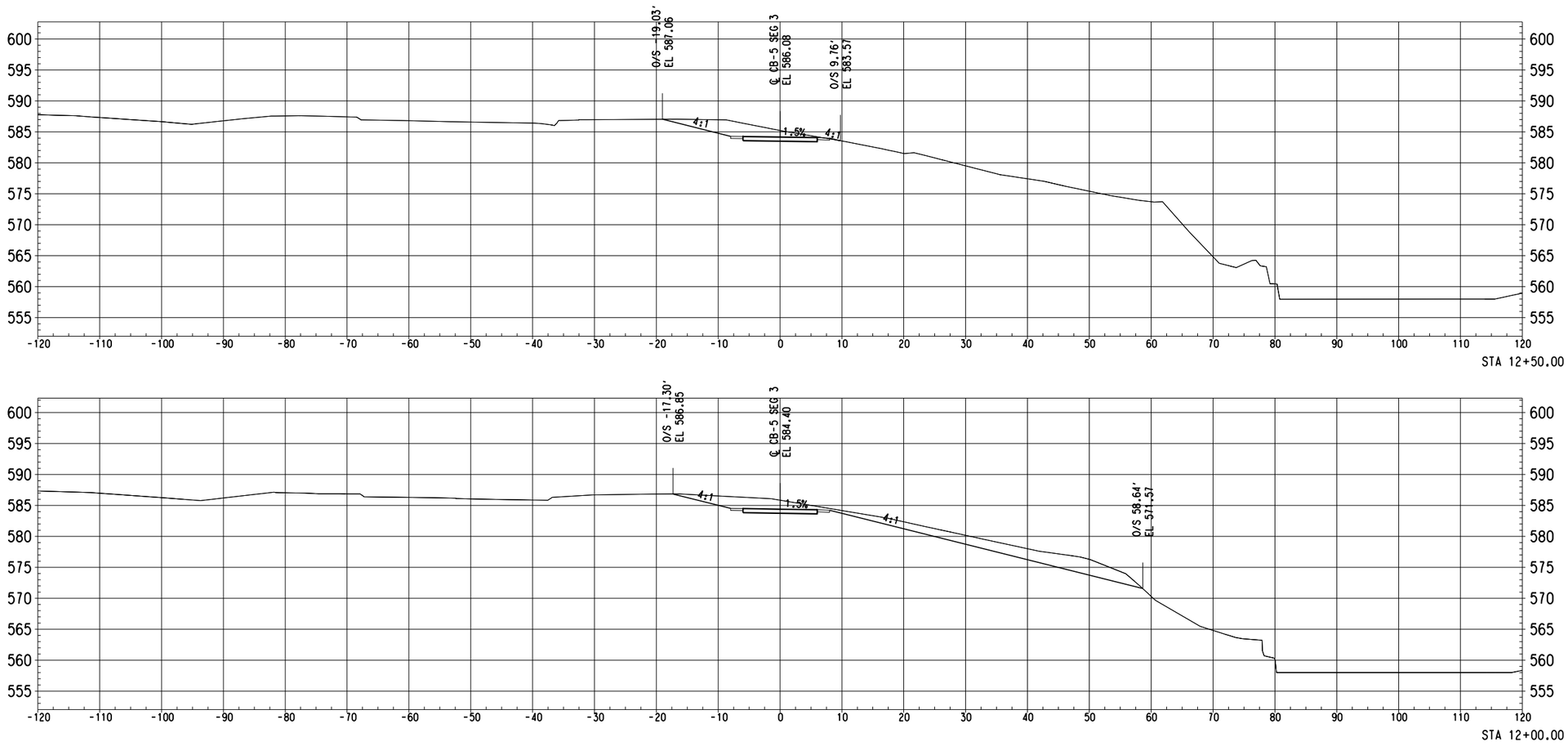

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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 63 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9018	B

DWG No. CC1-9019

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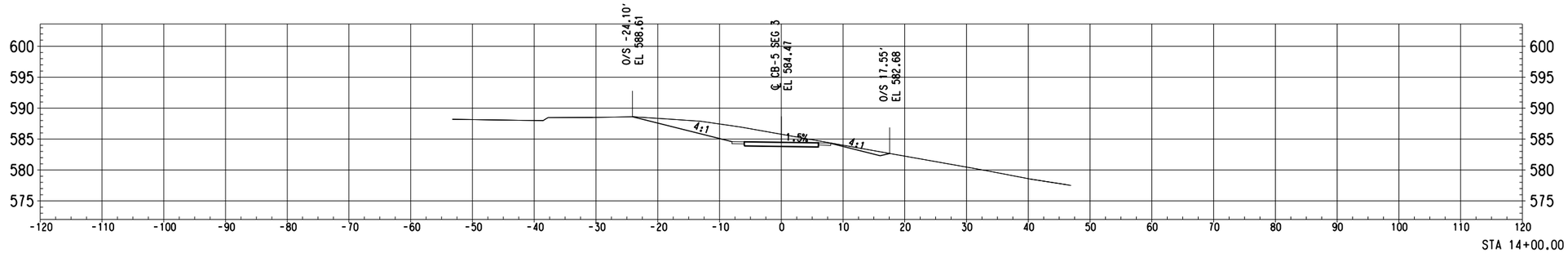

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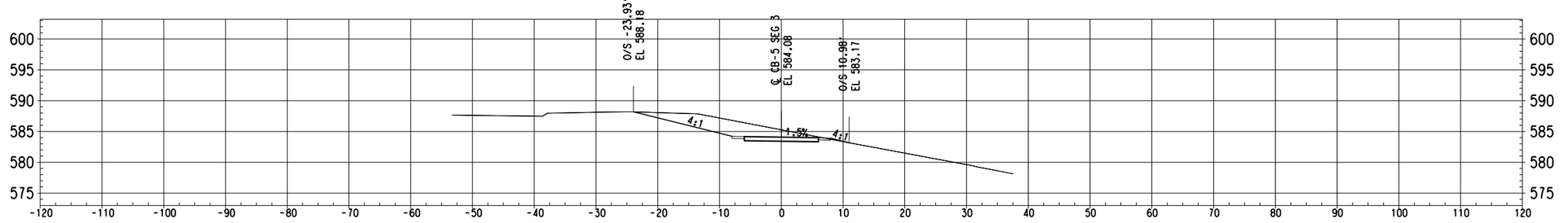

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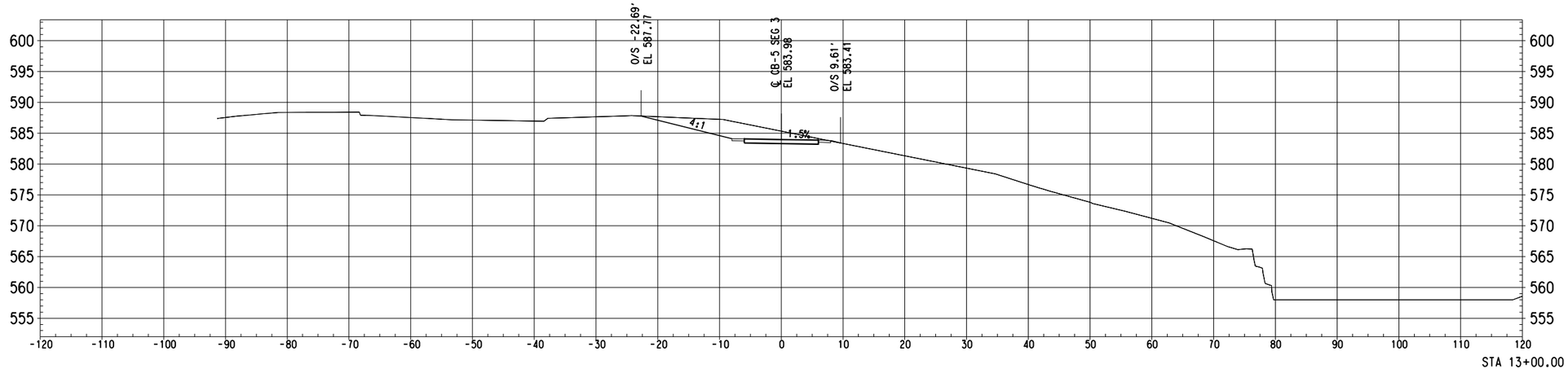

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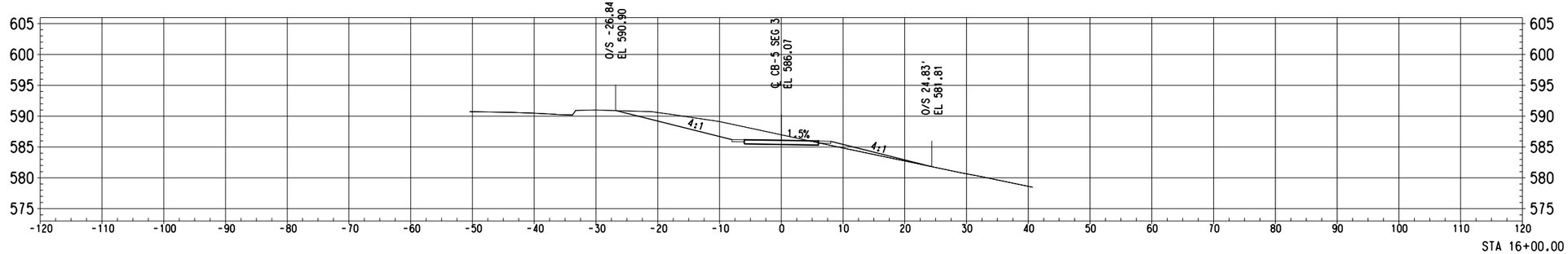
CONTRACT SHEET No. 123 OF 221

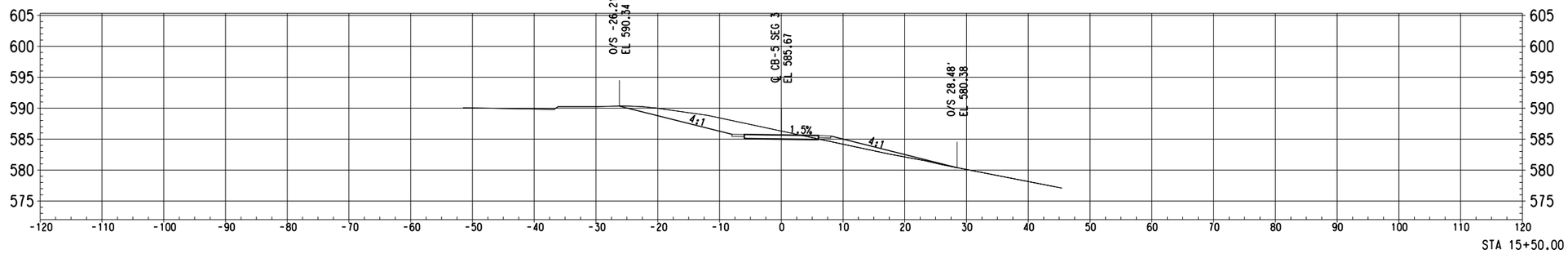
COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

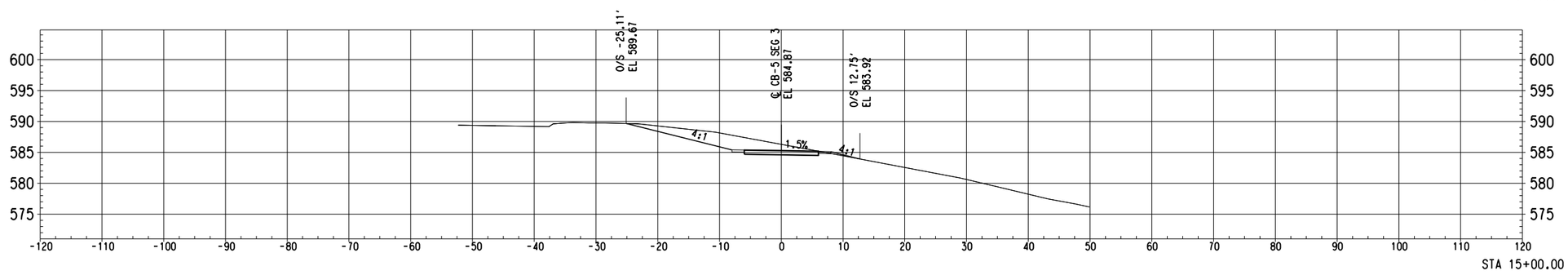
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 64 OF 67

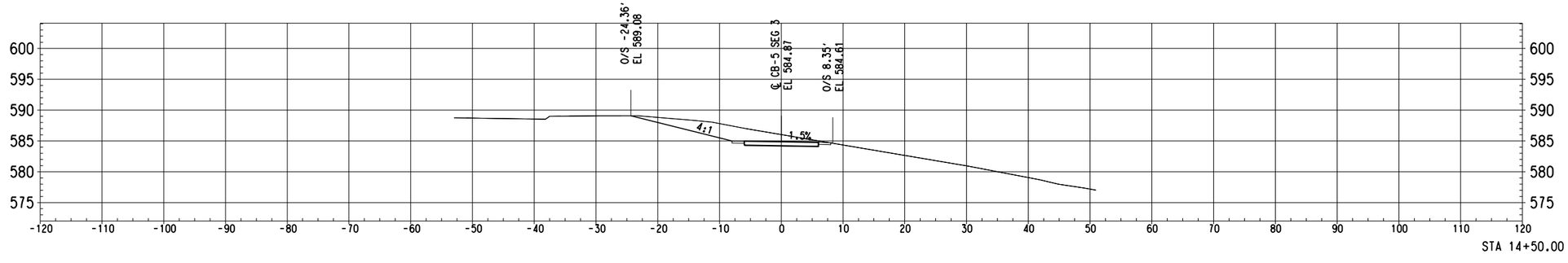
CONTRACT	DWG No.	REV
C-2033270-01	CC1-9019	B

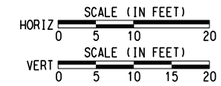
DWG No. CC1-9020











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VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 65 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9020	B

DWG No. CC1-9021

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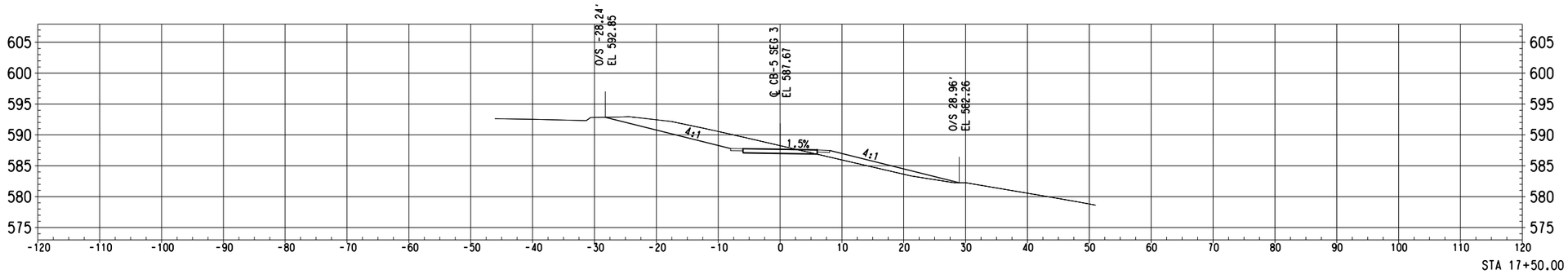

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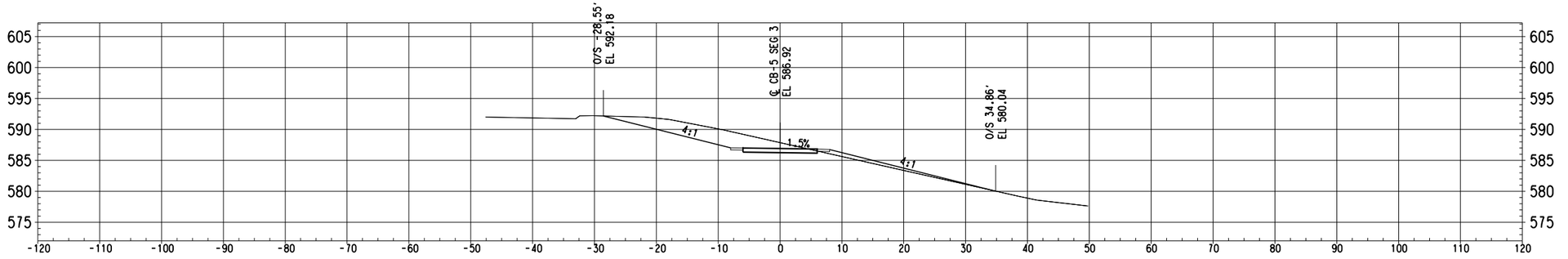

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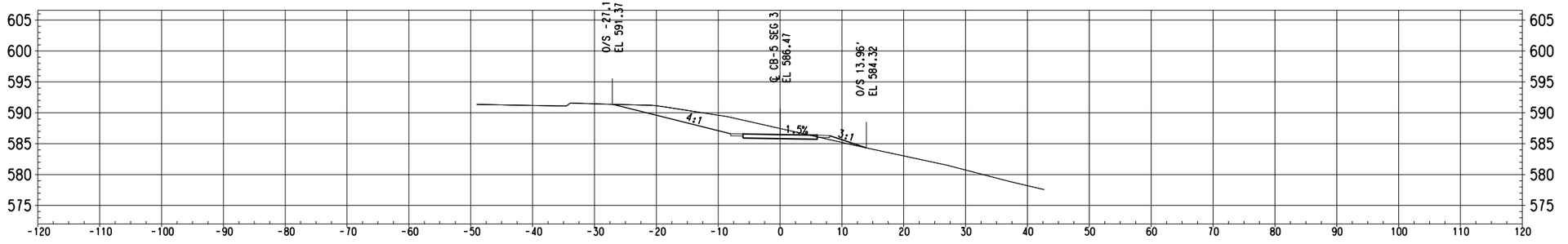

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CROSS SECTIONS
SHEET 66 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9021	B

DWG No. CC1-9022

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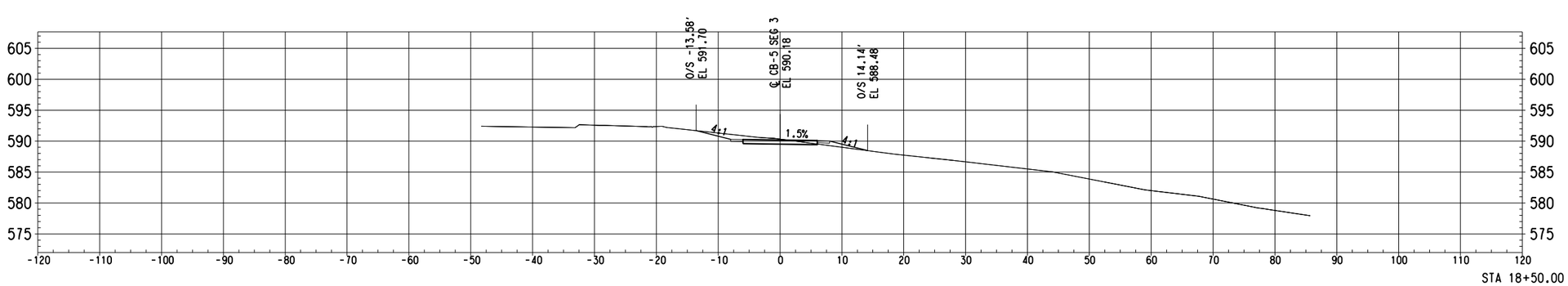
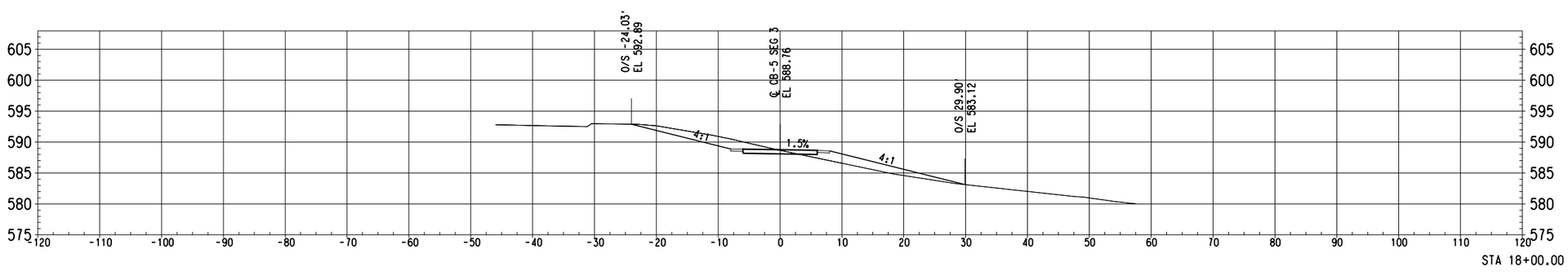
VERT 0 5 10 15 20





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CAES

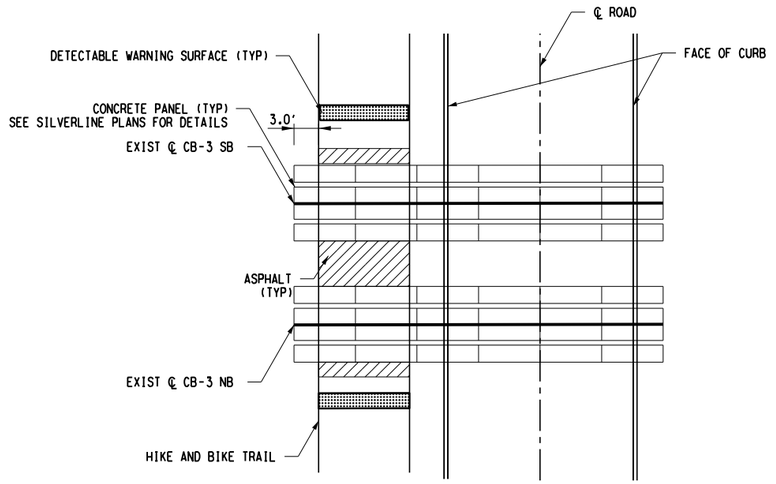
CONTRACT SHEET No. 126 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

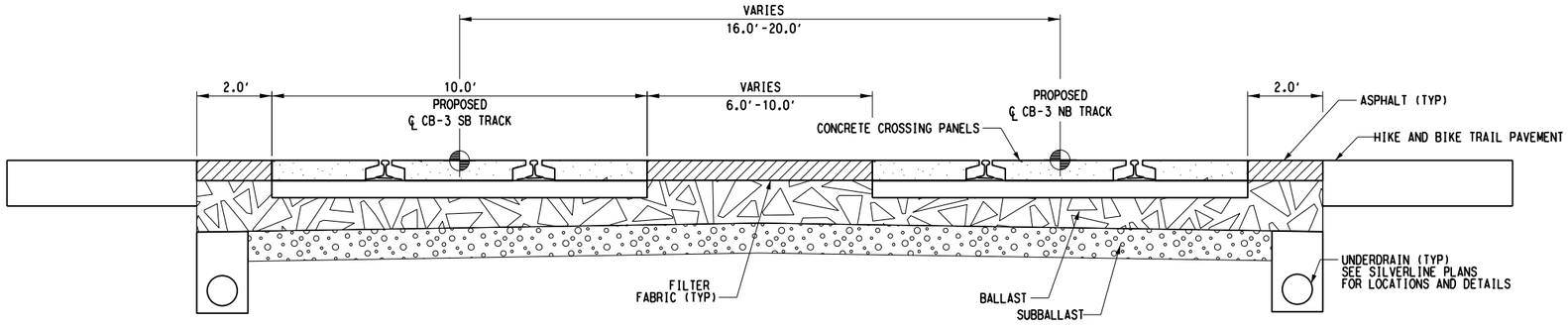
CITY OF RICHARDSON
CROSS SECTIONS
SHEET 67 OF 67

CONTRACT	DWG No.	REV
C-2033270-01	CC1-9022	B

DWG No. CC1-7879



① GRADE CROSSING - VELOWEB HIKE AND BIKE TRAIL
NO SCALE



② GRADE CROSSING - VELOWEB HIKE AND BIKE TRAIL
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CONTRACT SHEET No. 127 OF 221

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IN CHARGE	B. ALLDREDGE
DATE	19 SEP 22

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COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
GRADE CROSSING DETAIL
SHEET 1 OF 2

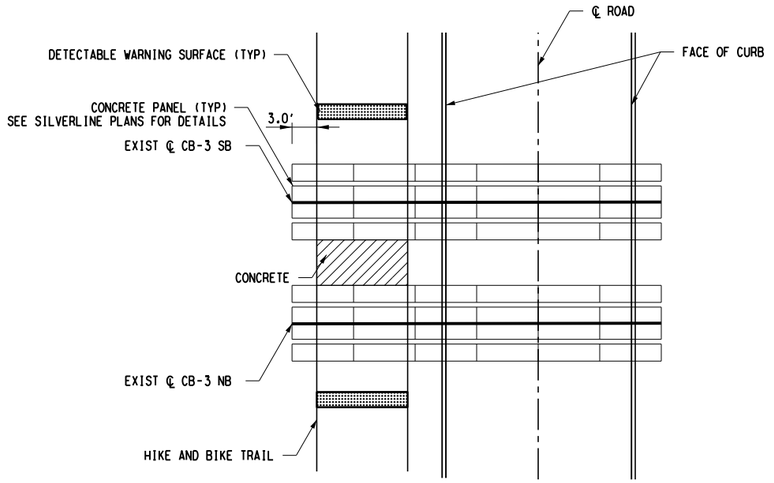
CONTRACT	DWG No.	REV
C-2033270-01	CC1-7879	B

CB05-CC1-7879.040

17-SEP-2022 13:45
CB05-CC1-1879.040

mjohn
Plan 2

DWG No. CC1-7880



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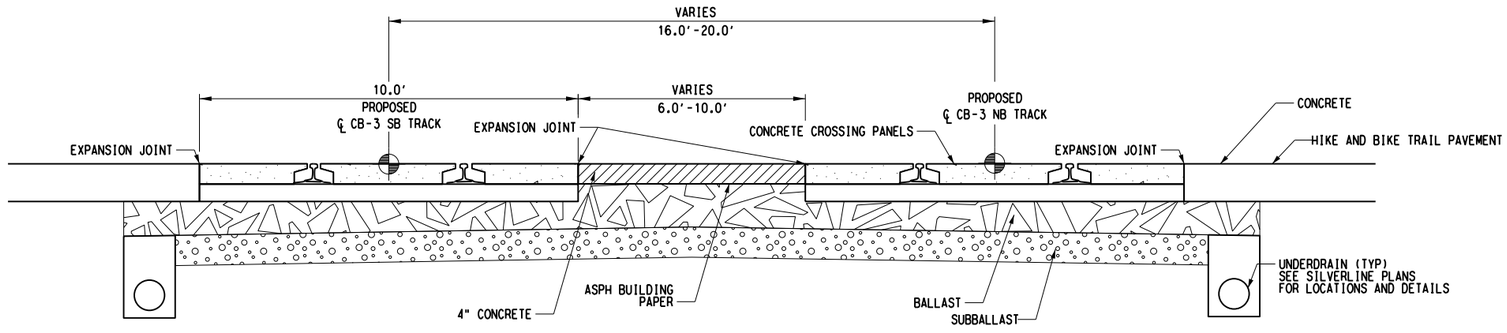
NO SCALE



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② GRADE CROSSING - VELOWEB HIKE AND BIKE TRAIL

NO SCALE

NOTES:

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
GRADE CROSSING DETAIL
SHEET 2 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	CC1-7880	B

CB05-CC1-7880.040

15-SEP-2022 14:09
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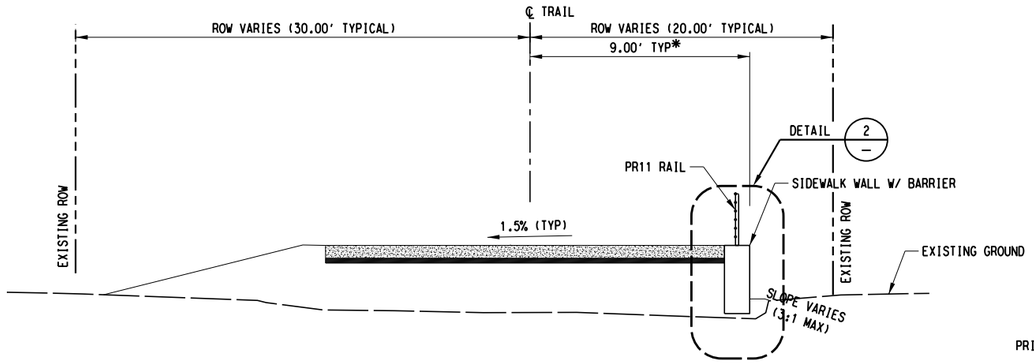
JEGSVCPW001
Plan 2
WFXO06101

DWG No. SC5-7881



SIDEWALK WALL DETAIL 1
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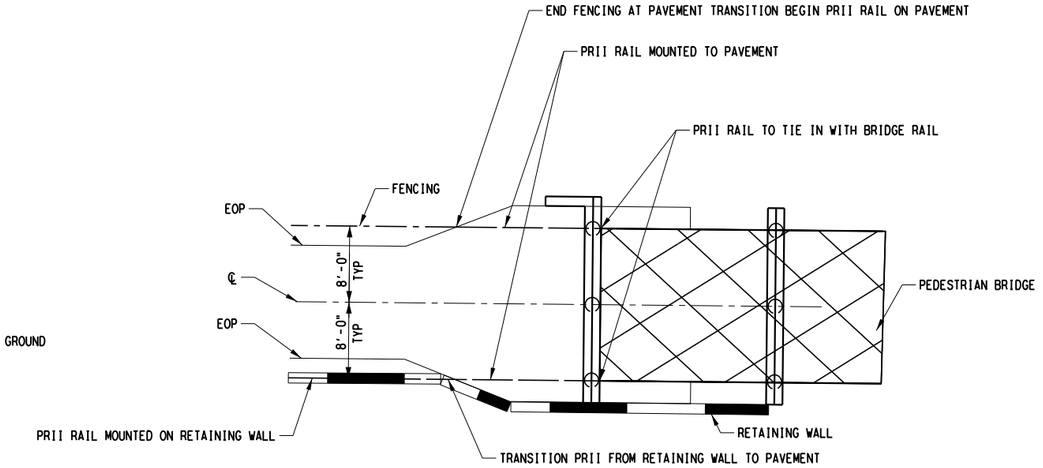


TYPICAL RAIL TREATMENT AT BRIDGE APPROACH
NO SCALE

GENERAL NOTES:

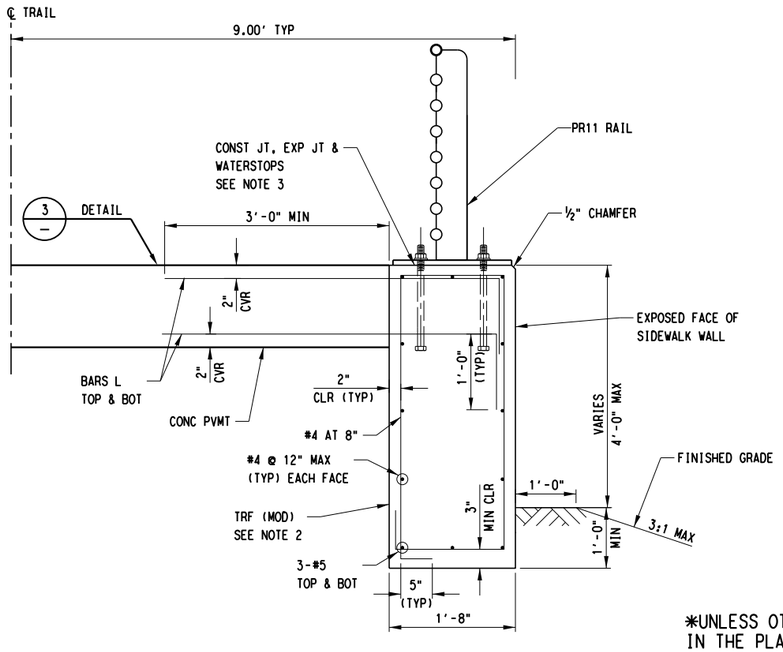
① PEDESTRIAN RAIL PR11 (TXDOT STANDARD PEDESTRIAN RAIL TYPE PR11).

② SEE TXDOT STD TRF FOR ADDITIONAL DETAILS.

③ SEE TXDOT STD DWG RW 2 FOR CONSTRUCTION JOINT, EXPANSION JOINT AND WATERSTOP DETAILS. PROVIDE CONSTRUCTION JOINTS AT 32' SPACING AND EXPANSION JOINTS AT 96' SPACING.

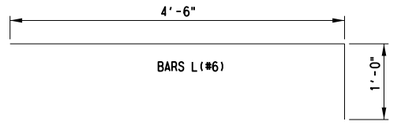
④ CLASS "C" CONCRETE: MIN F'C = 3,600 PSI.

⑤ REINFORCING STEEL GRADE 60.



*UNLESS OTHERWISE NOTED IN THE PLANS

SIDEWALK WALL DETAIL 2
NO SCALE



SIDEWALK WALL DETAIL 3
NO SCALE

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CIVIL DETAILS

CONTRACT	DWG No.	REV
C-2033270-01	SC5-7881	B

CB05-SC5-7881.040

15-SEP-2022 14:09
CB05-SC5-7881.040

JEGSVCPW001
RW Plan 11

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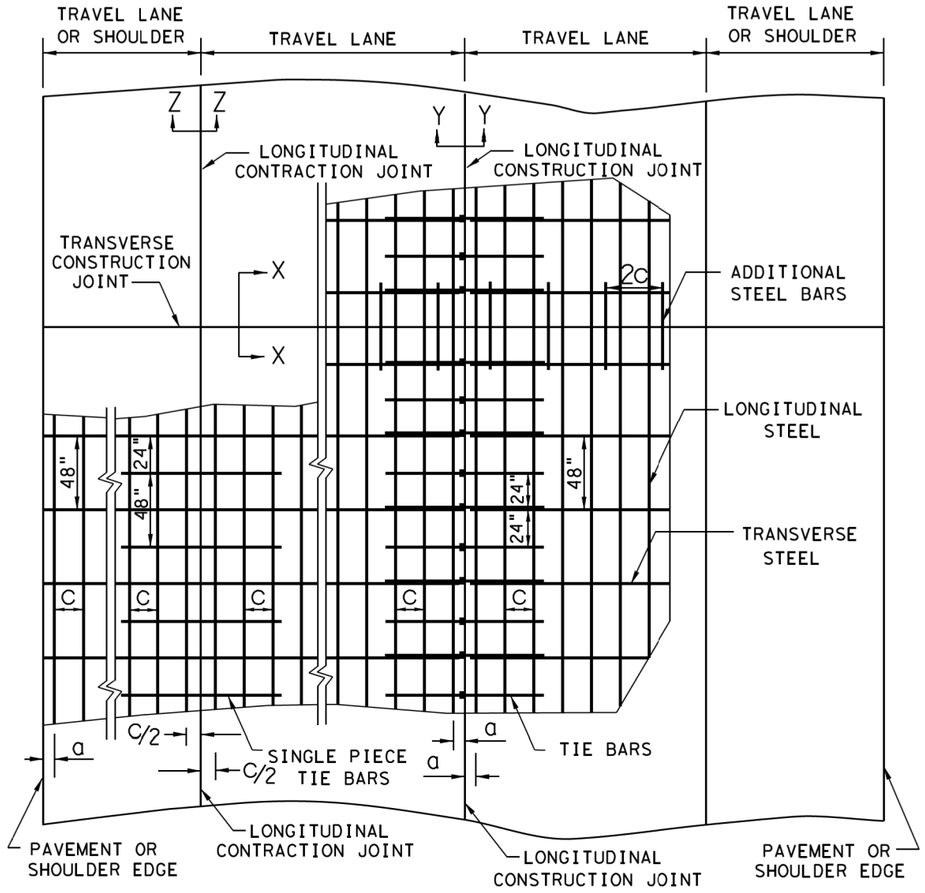
TABLE NO. 1 LONGITUDINAL STEEL

SLAB THICKNESS AND BAR SIZE		REGULAR STEEL BARS	FIRST SPACING AT EDGE OR JOINT	ADDITIONAL STEEL BARS AT TRANSVERSE CONSTRUCTION JOINT (SECTION X-X)	
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	SPACING 2 X C (IN.)	LENGTH L (IN.)
7.0	#5	6.5	3 TO 4	13	50
7.5	#5	6.0	3 TO 4	12	50
8.0	#6	9.0	3 TO 4	18	50
8.5	#6	8.5	3 TO 4	17	50
9.0	#6	8.0	3 TO 4	16	50
9.5	#6	7.5	3 TO 4	15	50
10.0	#6	7.0	3 TO 4	14	50
10.5	#6	6.75	3 TO 4	13.5	50
11.0	#6	6.5	3 TO 4	13	50
11.5	#6	6.25	3 TO 4	12.5	50
12.0	#6	6.0	3 TO 4	12	50
12.5	#6	5.75	3 TO 4	11.5	50
13.0	#6	5.5	3 TO 4	11	50

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS

SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5	48	#5	48	#5	24
8.0 - 13.0	#5	48	#6	48	#6	24

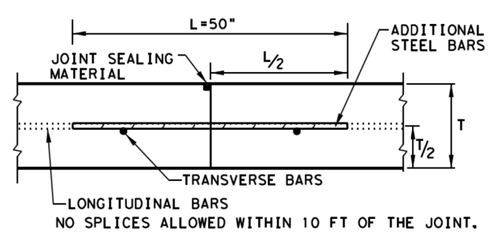


TYPICAL PAVEMENT LAYOUT

PLAN VIEW (NOT TO SCALE)

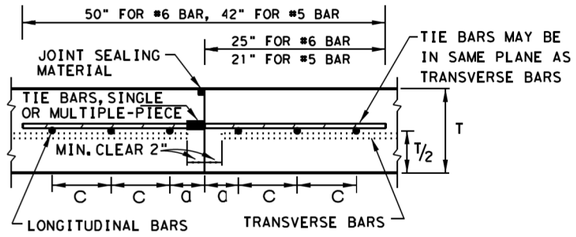
GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO. 1 AND TABLE NO. 2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO. 1
5. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
6. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
7. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
8. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
9. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
10. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25 IN. STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



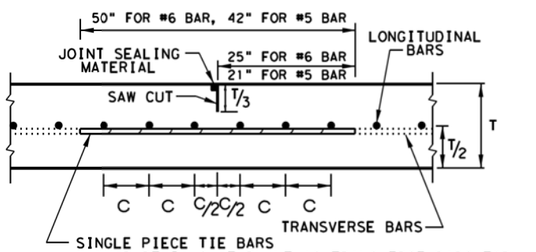
TRANSVERSE CONSTRUCTION JOINT

SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT

SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT

SECTION Z - Z

VELOWEB HIKE & BIKE TRAIL
VELOWEB HIKE & BIKE TRAIL
SHEET NO. 130 OF 221
DWG NO. CS9-7877
CONTRACT NO. C-2033270-01

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT T - 7 to 13 INCHES

CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10/10/2011 ADD GN #12				
04/09/2013 REMOVE 6" AND 6.5" ADD CTE REQUIREMENTS	DIST	COUNTY		SHEET NO.
05/05/2017 CoTE AS RATED 4.3				

DATE: 15-SEP-2022 14:13
FILE: STD5-CS9-7877.001

STD5-CS9-7877.001

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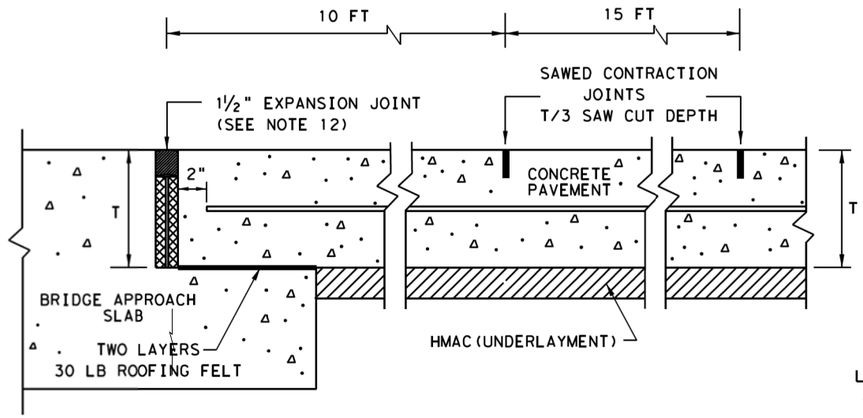
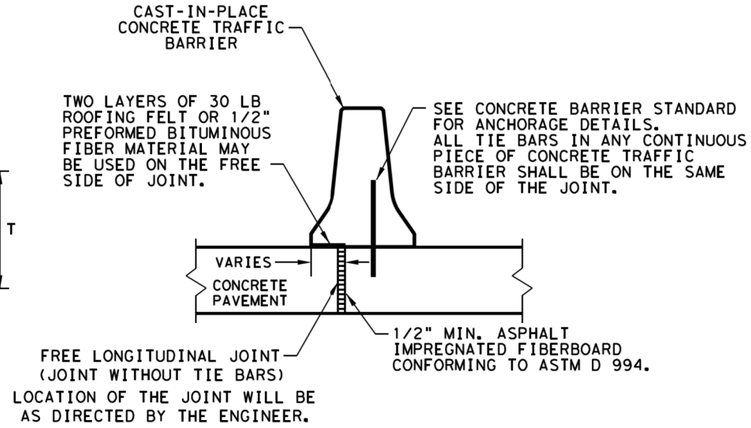
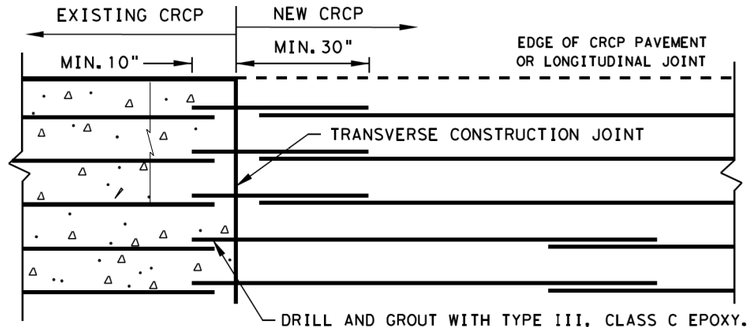


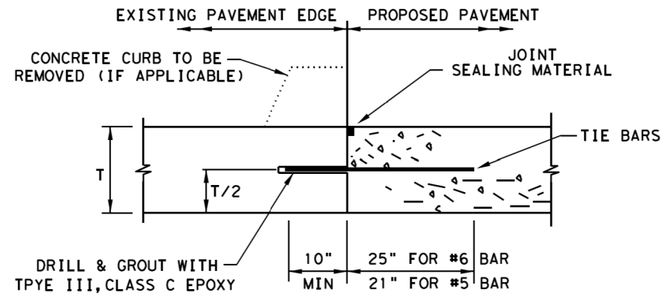
TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



FREE LONGITUDINAL JOINT DETAIL

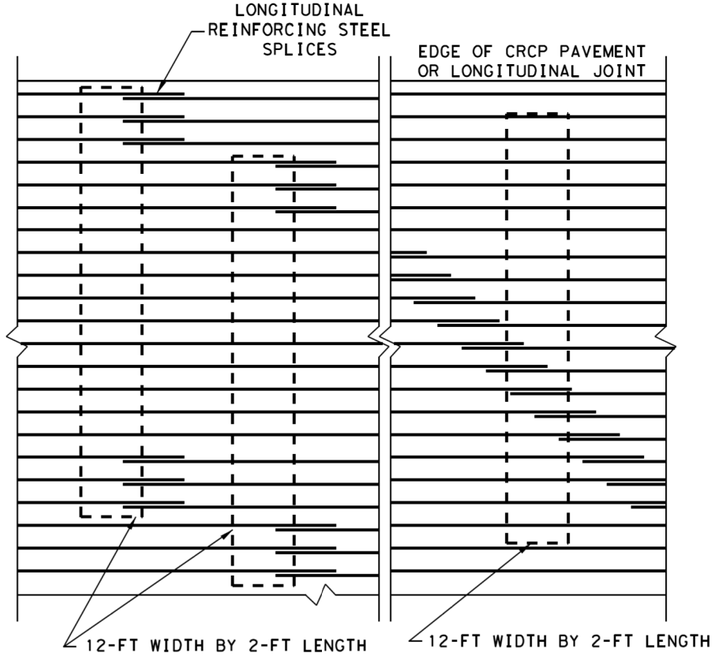


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



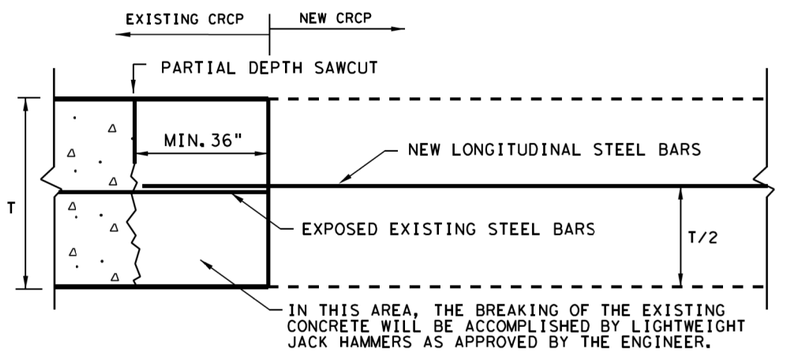
1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER SLABS, USE #5 TIE BARS FOR LESS THAN 8" THICK SLABS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
EXISTING CRCP TO NEW CRCP

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES
CRCP(1)-20

VELOWEB HIKE & BIKE TRAIL
VELOWEB HIKE & BIKE TRAIL
SHEET NO. 131 OF 221
DWG NO. CS9-7878
CONTRACT NO. C-2033270-01

FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 03/16/2020 REMOVED TABLE 1A				
	DIST	COUNTY		SHEET NO.

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FILE: STD5-CS9-7878.001

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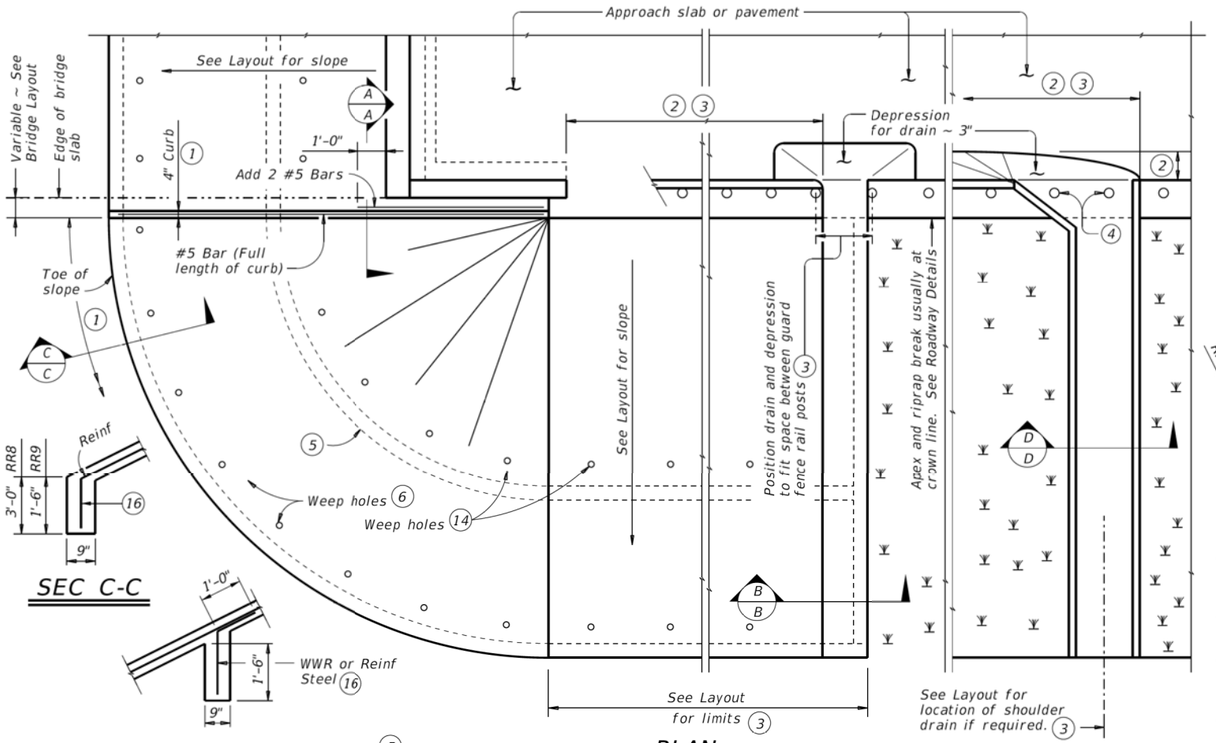
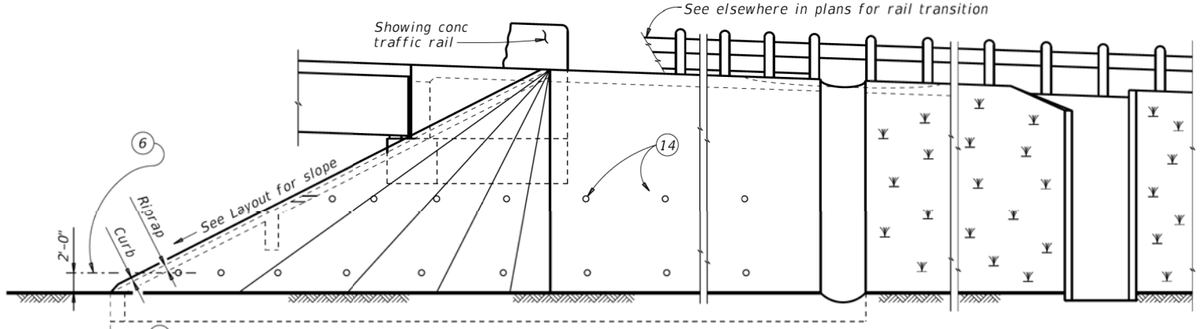


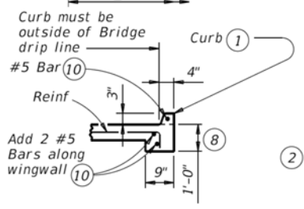
PLAN

SEC C-C

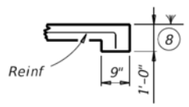
INTERMEDIATE TOEWALL



ELEVATION

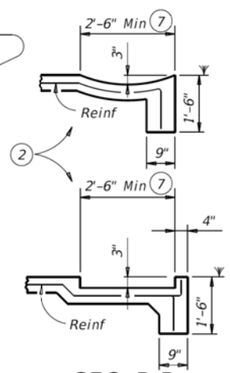


SEC A-A



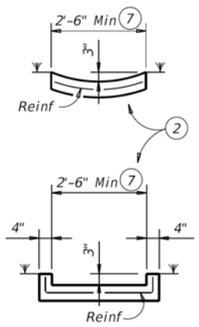
SEC B-B

(No drain)



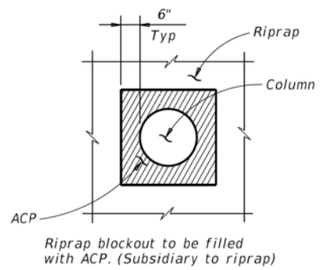
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

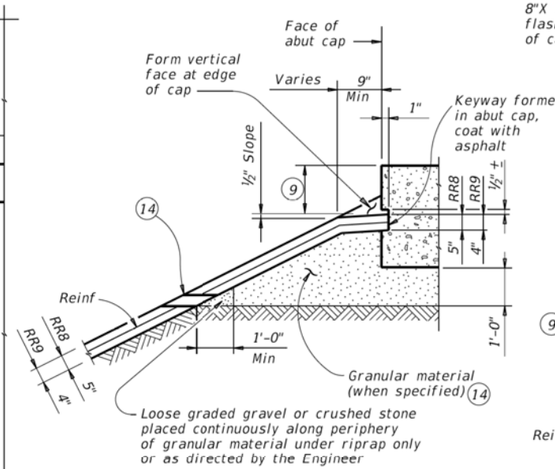
(Shoulder drain)



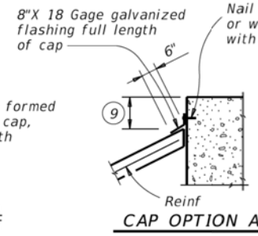
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

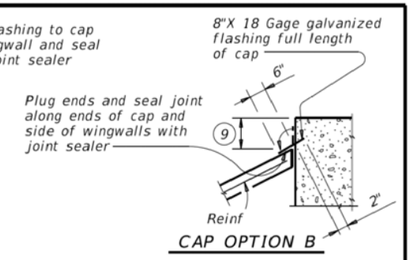
(As directed by the Engineer)



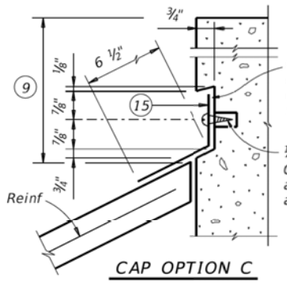
SHOWING KEYWAY OPTION



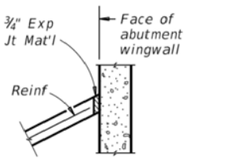
CAP OPTION A



CAP OPTION B



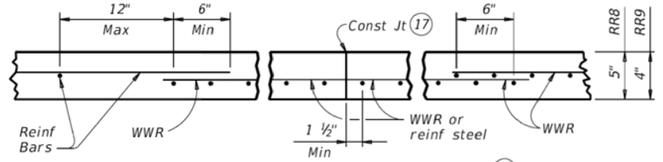
CAP OPTION C



SECT THRU RIPRAP AT WINGWALL

SECTIONS THRU RIPRAP AT CAP

1. When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.
2. Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.
3. Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
4. See details elsewhere in plans for installation of guard fence posts through concrete riprap.
5. Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.
6. Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.
7. Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.
8. Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.
9. Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.
10. #5 bars shown are required even when synthetic fiber reinforcing option is selected.
11. Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.
12. Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.
13. Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.
14. If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.
15. 8" x 18 Gage Galv Sheet Metal
16. Provide WWR or #3 bars, with 1'-0" extension into slope.
17. WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.



REINFORCEMENT DETAILS

See General Notes for optional synthetic fiber reinforcement.

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064. unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

FILE: crrstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

VELOWEB HIKE & BIKE TRAIL
VELOWEB HIKE & BIKE TRAIL
SHEET NO. 132 OF 221
DWG NO. CS9-7882
CONTRACT NO. C-2033270-01

DATE: 15-SEP-2022 14:08
FILE: STD5-CS9-7882.001

DWG No. CC6-3401

DRAINAGE AREA CALCULATIONS

DRAINAGE AREA CALCULATIONS (LESS THAN 200 ACRES)																
	AREA BY ZONING								RATIONAL METHOD Q=CIA							
	GRASS (ACRES) 0.40	SINGLE FAMILY (ACRES) 0.65	INDUSTRIAL (ACRES) 0.90	PAVEMENT (ACRES) 0.95	MULTI FAM (ACRES) 0.80	PARKS (ACRES) 0.40	BALLAST (ACRES) 0.90	COMMERCIAL (ACRES) 0.85	AREA (ACRES)	Tc (MIN)	RUNOFF "C"	INTENSITY_50yr (IN/HR)	Q50 (CFS)	INTENSITY_100yr (IN/HR)	Q100 (CFS)	COMMENTS
B 3-1a	0.25			0.15			0.23		0.62	10.00	0.47	8.16	2.38	8.88	2.59	
B 3-1 b	0.15			0.10			0.17		0.42	10.00	0.48	8.16	1.65	8.88	1.79	TO EXIST CROSS CULVERT B-3
BP-11a	0.37			0.37			0.57		1.31	10.00	0.48	8.16	5.12	8.88	5.57	TO PROP FLUME THEN TO EXISTING FLUME THEN TO EXIST. SS
BP-11b	1.09			0.07			0.12		1.28	10.00	0.42	8.16	4.38	8.88	4.77	TO SPRING CREEK
BP-11 (TOTAL)	-	-	-	-	-	-	-	-	2.59	10.00	0.45	8.16	9.50	8.88	10.33	TO SPRING CREEK
C-1	9.60			1.95	18.37		0.15		30.18	15.00	0.68	6.96	142.84	7.56	155.15	TO CULVERT C-1
CP-4	0.13			0.17			1.68		1.97	10.00	0.87	8.16	14.00	8.88	15.24	TO CULVERT C-1
C-1 (TOTAL)	-	-	-	-	-	-	-	-	32.15	15.00	0.69	6.96	154.78	7.56	168.12	FLOW AT CULVERT C-1
C-2	0.25			0.17			0.38		0.80	10.00	0.75	8.16	4.90	8.88	5.33	TO CULVERT C-2
C-3	0.07			0.25			0.40		0.72	10.00	0.87	8.16	5.11	8.88	5.56	TO CULVERT C-3
C-4a	6.06			4.84	18.19			11.75	40.84	10.00	0.77	8.16	256.61	8.88	279.25	TO EXISTING OFFSITE SYSTEM UNDER CUSTER OUTFALLS TO CULVERT C-5
C-4b								28.18	28.18	10.00	0.85	8.16	195.46	8.88	212.70	TO CULVERT C-5
C-4d	3.80			0.24			0.34	0.47	4.85	10.00	0.51	8.16	20.18	8.88	21.96	TO CULVERT C-5
CP-2	1.12			0.40			0.58		2.09	10.00	0.64	8.16	10.90	8.88	11.86	TO EXISTING 18" RCP UNDER CUSTER THEN TO CULVERT C-5
CP-2b	0.43			0.33			0.23		0.99	10.00	0.70	8.16	5.65	8.88	6.15	TO EXISTING 18" RCP UNDER CUSTER THEN TO CULVERT C-5
C-5 (TOTAL)	-	-	-	-	-	-	-	-	76.95	10.00	0.78	8.16	488.80	8.88	531.93	FLOW AT CULVERT C-5
C-4e	0.46			0.22			0.13		0.81	10.00	0.63	8.16	4.16	8.88	4.53	TO EXISTING CULVERT C-4
C-4f	1.08			0.27			0.22		1.57	10.00	0.56	8.16	7.17	8.88	7.81	TO EXISTING CULVERT C-4
C-4c	7.38		4.68	0.78					12.84	10.00	0.62	8.16	64.96	8.88	70.69	TO EXISTING CULVERT C-4
C-4 (TOTAL)	-	-	-	-	-	-	-	-	92.17	10.00	0.77	8.16	581.09	8.88	632.37	FLOW AT EXISTING CULVERT C-4
C-6 (TOTAL)	-	-	-	-	-	-	-	-	92.17	10.00	0.77	8.16	581.09	8.88	632.37	FLOW AT CULVERT C-6 (TOTAL FROM C-4)

CULVERT CALCULATIONS

CULVERT INPUT DATA (HY-8)
MINOR CULVERTS

STATION/ID	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	INLET STATION (FT)	INLET ELEV (FT)	UPPER-BREAK STATION (FT)	UPPER-BREAK ELEV (FT)	LOWER-BREAK STATION (FT)	LOWER-BREAK ELEV (FT)	OUTLET STATION (FT)	OUTLET ELEV (FT)	TAILWATER DATA
STA 3310+13 (C-1)	TRACK	1-84" CL V RCP	C-1, CP-4	0.00	658.27	N/A	N/A	N/A	N/A	118.00	657.27	TW CONDITION SET TO TRAPEZOIDAL CHANNEL WITH 3:1 SIDE SLOPES, 7-FT BASE, 3.00% CHANNEL SLOPE, MANNING N = 0.030, CHANNEL INVERT EL=
STA 3362+34 (C-2)	TRACK	1-60" CL V RCP	C-2, C-2a	0.00	621.97	N/A	N/A	N/A	N/A	76.40	618.06	TW CONDITION SET TO TRAPEZOIDAL CHANNEL WITH 3:1 SIDE SLOPES, 5-FT BASE, 2.00% CHANNEL SLOPE, MANNING N = 0.020, CHANNEL INVERT EL= 618.06-FT
STA 3372+86 (C-3)	TRACK	1-3'X2' (E80 LOADING) RCB	C-3	0.00	616.65	N/A	N/A	N/A	N/A	67.30	613.46	TW CONDITION SET TO TRAPEZOIDAL CHANNEL WITH 3:1 SIDE SLOPES, 3-FT BASE, 0.50% CHANNEL SLOPE, MANNING N = 0.020, CHANNEL INVERT EL=

CULVERT HYDRAULIC DATA
MINOR CULVERTS

STATION/ID	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	100 YEAR (DESIGN STORM FREQUENCY) FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)	COMMENTS
STA 3310+13 (C-1)	TRACK	1-84" CL V RCP	C-1, CP-4	682.32	168.00	663.78	5.00	658.85	1.58	9.17	9.09	
STA 3362+34 (C-2)	TRACK	1-60" CL V RCP	C-2	631.70	5.33	622.50	0.82	618.31	0.25	10.25	3.77	
STA 3372+86 (C-3)	TRACK	1-3'X2' (E80 LOADING) RCB	C-3	621.93	5.56	617.60	0.77	613.79	0.33	9.17	4.25	

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7, JANUARY 31, 2003.
2. MINOR CULVERT COMPUTATIONS HAVE BEEN PERFORMED USING FHWA HY-8 SOFTWARE.
3. DESIGN STORM FOR DRAINAGE SYSTEMS CONVEYING FLOWS FROM TRAIL AND TRACK IS 100-YR.
4. DESIGN STORM FOR DRAINAGE SYSTEMS CONVEYING FLOWS FROM TRAIL ONLY IS 50-YR.

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CONTRACT SHEET No. 133 OF 221

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ARCHER WESTERN HERZOG

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DESIGNED	U. POUDEL
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 1 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3401	B

CB05-CC6-3401.010

DWG No. CC6-3601

DRAINAGE AREA CALCULATIONS

DRAINAGE AREA CALCULATIONS (LESS THAN 200 ACRES)																
AREA NUMBER	AREA BY ZONING								RATIONAL METHOD Q=CIA							COMMENTS
	GRASS (ACRES) 0.40	SINGLE FAMILY (ACRES) 0.65	INDUSTRIAL (ACRES) 0.90	PAVEMENT (ACRES) 0.95	MULTI FAM (ACRES) 0.80	PARKS (ACRES) 0.40	BALLAST (ACRES) 0.90	COMMERCIAL (ACRES) 0.85	AREA (ACRES)	Tc (MIN)	RUNOFF "C"	INTENSITY_50YR (IN/HR)	Q50 (CFS)	INTENSITY_100YR (IN/HR)	Q100 (CFS)	
DP-1	0.05			0.14			0.46		0.67	10.00	0.87	8.16	4.76	8.88	5.18	WEST OF ALMA RD, OUTFALLS TO EXIST 18" RCP
DP-2a	0.26			0.07			0.03		0.36	10.00	0.55	8.16	1.62	8.88	1.76	WEST OF ALMA RD, OUTFALLS TO EXIST INLET
DP-2b	0.16			0.05					0.21	10.00	0.53	8.16	0.91	8.88	0.99	WEST OF ALMA RD, OUTFALLS TO EXIST INLET
D-1a							0.32		0.32	10.00	0.90	8.16	2.35	8.88	2.56	SHEET FLOW FROM PARKING LOT AND TRACK NUMBER PGBT, CAPTURE BY UD D-U-6
D-1b	0.11			0.09			0.13		0.33	10.00	0.75	8.16	2.02	8.88	2.20	NB EXIST DITCH UNDER PGBT, OUTFALLS TO EXIST 36" RCP
D-1c	0.07			0.05					0.12	10.00	0.63	8.16	0.62	8.88	0.67	CITYLINE STATION AREA DRAIN TO PROP TYPE-Y INLET CITYLINE_Y_01
D-1d	0.09								0.09	10.00	0.40	8.16	0.29	8.88	0.32	CITYLINE STATION AREA DRAIN TO PROP TYPE-Y INLET CITYLINE_Y_02
D-1e	0.06			0.15					0.21	10.00	0.79	8.16	1.35	8.88	1.47	AREA EAST OF CITYLINE AND NORTH OF TRACK TO EXIST DRIVEWAY CURB INLET
D-1f	0.07			0.04					0.11	11.00	0.60	8.16	0.54	8.88	0.59	CITYLINE BUSH STATION
D-1g				0.54			0.65		1.19	10.00	0.92	8.16	8.93	8.88	9.72	CITYLINE BUSH STATION
D-1h	0.05			0.05					0.10	10.00	0.68	8.16	0.55	8.88	0.60	CITYLINE BUSH STATION
D-2	0.82						0.26		1.08	10.00	0.52	8.16	4.58	8.88	4.99	SB DITCH D-2, OUTFALLS TO PROP CULVERT D-2 STA 3438+31
D-2a	0.51								0.51	10.00	0.40	8.16	1.66	8.88	1.81	
D-2b	0.09			0.06					0.15	10.00	0.62	8.16	0.76	8.88	0.83	OUTFALLS INTO EXISTING DART SH 190 STATION 5' CURB INLET THEN TO EXIST 8'X8' BOX CULVERT
D-2e	0.05			0.05					0.10	10.00	0.68	8.16	0.55	8.88	0.60	
D-3	0.30						0.61		0.91	10.00	0.74	8.16	5.49	8.88	5.98	
D-4	0.20			0.29			0.47		0.97	10.00	0.81	8.16	6.40	8.88	6.96	
D-4a	0.12			0.02					0.15	10.00	0.49	8.16	0.58	8.88	0.64	SB DITCH D-5, OUTFALLS TO PROP INLET D-4A STA 3423+33.79
D-4b	0.10			0.17			0.48		0.75	10.00	0.84	8.16	5.17	8.88	5.62	SB DITCH D-6, OUTFALLS TO PROP INLET D-4B STA 3424+07.45
D-11a	1.31								1.31	68.00	0.40	3.41	1.78	3.78	1.98	SB DITCH D-3, OUTFALLS TO PROP INLET D-4B STA 3424+07.46
D-11b	1.28								1.28	58.00	0.40	3.70	1.89	4.08	2.09	SB DITCH D-4, OUTFALLS TO PROP INLET D-4B STA 3424+07.47

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7 JANUARY 31, 2003.
2. DESIGN STORM FOR DRAINAGE SYSTEMS CONVEYING FLOWS FROM THE TRAIL AND TRACK IS 100-YR.
3. DESIGN STORM FOR DRAINAGE SYSTEMS CONVEYING FLOWS FROM TRAIL ONLY IS 50-YR.

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DRAWN	D. ESCALANTE
DESIGNED	U. POUDEL
CHECKED	H. MU
IN CHARGE	H. MU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 2 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3601	B

CB05-CC6-3601.010

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DWG No. CC6-3402

UNDERDRAIN CALCULATIONS

UD3.1.001
STA 3317+43 TO STA 3322+93 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH	SIZE	SLOPE	Q
STA	FL	STA	FL	(FEET)	(INCHES)	(FT/FT)	(CFS)
3317+43	674.90	3318+93	673.95	150	15	0.006	1.78
3318+93	673.95	3320+93	672.69	200	15	0.006	3.57
3320+93	672.69	3322+93	671.74	200	15	0.006	3.96

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3317+43	674.90	
CLEAN OUT	3318+93	673.95	
CLEAN OUT	3320+93	672.69	
CLEAN OUT/OUTFALL	3322+93	671.74	OUTFALLS TO EXISTING UNDERDRAIN OUTFALL AT FL = 671.74'

UD3.1.002
STA 3359+63 TO STA 3362+34 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH	SIZE	SLOPE	Q
STA	FL	STA	FL	(FEET)	(INCHES)	(FT/FT)	(CFS)
3359+63	628.90	3361+63	626.96	200	8	0.010	0.93
3361+63	626.96	3362+34	626.27	71	10	0.010	1.20

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3359+63	628.90	
CLEAN OUT	3361+63	626.96	
CLEAN OUT/OUTFALL	3362+34	626.27	OUTFALLS TO CULVERT C-2 AT FL = 623.64'

UD3.1.003
STA 3366+05 TO STA 3362+36 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH	SIZE	SLOPE	Q
STA	FL	STA	FL	(FEET)	(INCHES)	(FT/FT)	(CFS)
3366+05	622.76	3364+05	622.26	200	10	0.003	0.86
3364+05	622.26	3362+36	621.84	169	12	0.003	1.60

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3366+05	622.76	
CLEAN OUT	3364+05	622.26	
CLEAN OUT/OUTFALL	3362+36	621.84	OUTFALLS TO CULVERT C-2 AT FL = 621.84'

UD3.1.004
STA 3366+06 TO STA 3372+15 RIGHT

UNDERDRAIN PIPE							
FROM		TO		LENGTH	SIZE	SLOPE	Q
STA	FL	STA	FL	(FEET)	(INCHES)	(FT/FT)	(CFS)
3366+06	622.76	3368+06	620.82	200	8	0.010	0.87
3368+06	620.82	3370+06	618.62	200	10	0.011	1.74
3370+06	618.62	3372+06	616.42	200	12	0.011	2.61
3372+06	616.42	3372+15	616.05	75	15	0.005	2.61

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3366+06	622.76	
CLEAN OUT	3368+06	620.82	
CLEAN OUT	3370+06	618.62	
CLEAN OUT	3372+06	616.42	
OUTFALL	3372+15	616.05	OUTFALLS TO SPRING CREEK CHANNEL AT FL= 616.05'

UD3.1.005
STA 3372+91.37 TO STA 3374+91.37 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH	SIZE	SLOPE	Q
STA	FL	STA	FL	(FEET)	(INCHES)	(FT/FT)	(CFS)
3372+91.37	617.75	3374+91.37	614.13	200	8	0.018	0.85
3374+91.37	614.13	3376+90.84	612.32	200	15	0.009	3.15
3376+90.84	612.32	3378+19.67	608.25	124	15	0.033	2.01

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3372+91.37	617.75	
CLEAN OUT	3374+91.37	614.13	
CLEAN OUT	3376+90.84	612.32	
CLEAN OUT	3378+19.67	608.25	OUTFALLS TO EXIST 18" RCP

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7 JANUARY 31, 2003.

INLET CALCULATIONS

INLET NO.	STATION/OFFSET				INLET TYPE	GRATE PERIMETER	GRATE AREA	LONGITUDINAL SLOPE	CROSS SLOPE	DESIGN FREQ.	DISCHARGE	BYPASS FLOW	BYPASS TO	INLET CURB LENGTH	ALLOWABLE PONDED WIDTH	ACTUAL PONDED WIDTH	PONDED DEPTH	ALLOWABLE DEPTH	NO. GRATES	REMARKS
						(FT)	(SQ FT)	(%)	(%)	(YRS)	(CFS)	(CFS)		(FT)	(FT)	(FT)	(FT)	(FT)	(EA)	
C-1	CB05 NB	3310+60	16.02	RT	DOUBLE GRATE INLET	13.40	7.80	-	25.00	100	16.35	-	-	-	8.00	4.81	1.20	2.00	2	

PIPE CALCULATIONS

PIPE CALCULATIONS																			
PIPE ID.	FROM	TO	DESIGN FREQUENCY	CUMULATIVE DISCHARGE	CAPACITY	LENGTH	SIZE	UPSTREAM FL	DOWNSTREAM FL	MANNING'S N	PIPE SLOPE	FRICTION SLOPE	CRITICAL DEPTH	NORMAL DEPTH	ACTUAL DOWNSTREAM DEPTH	HGL UPSTREAM	HGL DOWNSTREAM	ACTUAL VELOCITY	NO. OF BARRELS	REMARKS
			(YR)	(CFS)	(CFS)	(FT)	(IN)	(FT)	(FT)		(%)	(%)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT/S)		
P-1	3310+60	3310+17.80	100	16.35	29	39.90	30	659.97	659.78	0.013	0.50	0.49	1.37	1.36	2.00	661.34	661.14	5.97	1	

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CONTRACT SHEET No. 135 OF 221

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 3 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3402	B

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DWG No. CC6-3606

UNDERDRAIN CALCULATIONS

UD3.4.010

STA 3433+26.74 TO STA 3432+8.64 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH (FEET)	SIZE (INCHES)	SLOPE (FT/FT)	Q (CFS)
STA	FL	STA	FL				
3433+26.74	604.26	3432+8.64	603.67	118	8	0.005	0.59

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3433+26.74	604.26	
CLEAN OUT/OUTFALL	3432+8.64	603.67	OUTFALLS TO EXISTING CULVERT D-1 AT FL = 602.80

UD3.4.020

STA 3437+96.44 TO STA 3438+48.85 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH (FEET)	SIZE (INCHES)	SLOPE (FT/FT)	Q (CFS)
STA	FL	STA	FL				
3437+96.44	609.81	3438+48.85	609.75	52.4	8	0.010	0.16

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3437+96.44	609.81	
CLEAN OUT/OUTFALL	3438+48.85	609.75	OUTFALLS TO EXISTING CULVERT D-3 AT FL = 609.29

UD3.4.030

STA 3439+61.44 TO STA 3438+50.97 LEFT

UNDERDRAIN PIPE							
FROM		TO		LENGTH (FEET)	SIZE (INCHES)	SLOPE (FT/FT)	Q (CFS)
STA	FL	STA	FL				
3439+61.44	611.61	3438+50.97	611.10	110.46	8	0.010	0.43

END TREATMENTS			
ITEM	STA	CONNECTION FL	COMMENTS
TERMINAL CLEAN OUT	3439+61.44	611.61	
CLEAN OUT/OUTFALL	3438+50.97	611.10	OUTFALLS TO EXISTING CULVERT D-3 AT FL = 609.29

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7 JANUARY 31, 2003.

INLET CALCULATIONS

INLET CALCULATIONS																			
INLET NO.	STATION/OFFSET				INLET TYPE	GRATE PERIMETER	GRATE AREA	LONGITUDINAL SLOPE	CROSS SLOPE	DESIGN FREQ.	DISCHARGE	BYPASS FLOW	BYPASS TO	INLET CURB LENGTH	ALLOWABLE PONDED WIDTH	ACTUAL PONDED WIDTH	PONDED DEPTH	ALLOWABLE DEPTH	NO. GRATES	REMARKS
						(FT)	(SQ FT)	(%)	(%)	(YRS)	(CFS)	(CFS)		(FT)	(FT)	(FT)	(FT)	(FT)	(EA)	
D-4A	CB05 NB	3423+33	13.66	RT	SINGLE GRATE INLET	12.00	9.00	-	25.00	100	0.64	-	-	-	4.00	4	0.50	0.50	1	
D-4B	CB05 NB	3424+07	10.42	RT	SINGLE GRATE INLET	12.00	9.00	-	50.00	100	5.62	-	-	-	4.00	3.66	0.91	0.91	1	

INLET CALCULATIONS

PIPE CALCULATIONS																			
PIPE ID.	FROM	TO	DESIGN FREQUENCY	CUMULATIVE DISCHARGE	CAPACITY	LENGTH	SIZE	UPSTREAM FL	DOWNSTREAM FL	MANNING'S N	PIPE SLOPE	FRICTION SLOPE	CRITICAL DEPTH	NORMAL DEPTH	ACTUAL DOWNSTREAM DEPTH	HGL UPSTREAM	HGL DOWNSTREAM	ACTUAL VELOCITY	NO. OF BARRELS	REMARKS
			(YR)	(CFS)	(CFS)	(FT)	(IN)	(FT)	(FT)		(%)	(%)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT/S)		
D-4A	3424+06	3423+35	100	5.67	24.51	33.00	18	579.49	579.14	0.012	1.00	0.29	0.97	0.79		581.73	581.34	6.44	1	
D-4B	3424+06	3423+35	100	6.27	11.38	113.00	18	580.23	579.49	0.012	1.00	0.74	0.92	0.75		580.98	580.80	6.60	1	

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CONTRACT SHEET No. 136 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 4 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3606	B

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DITCH CALCULATIONS

DITCH CP-4									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3308+52	STA 3310+59	0.018	3.88	0.030	3.00	0.00	3.00	2.64	0.70
STA 3310+59	STA 3317+42	0.008	9.86	0.030	3.00	0.00	3.00	2.72	1.10

DITCH CP-2b									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3329+500	STA 3331+00	0.005	6.15	0.03	3.00	0.00	3.00	2.05	1.00

DITCH C-4e									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3345+00	STA 3350+00	0.005	4.53	0.03	4.00	8.00	4.00	1.64	0.30

FLUME BP-11a									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3258+72	STA 3268+00	0.005	7.55	0.014	0.00	4.00	0.00	3.78	0.50

FLUME BP-11b									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3267+98	STA 3269+00	0.006	1.70	0.014	0.00	3.00	0.00	1.13	0.50
STA 3269+00	STA 3271+00	0.006	0.91	0.014	0.00	3.00	0.00	2.02	0.15

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7 JANUARY 31, 2003.

CULVERT CALCULATIONS

CULVERT INPUT DATA (HEC-RAS)														
STATION/ID	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	DIST. TO UPSTREAM XS (FT)	ENT LOSS COEFF.	EXIT LOSS COEFF.	CULV MANNING'S "n"	UPSTREAM INVERT ELEV (FT)	DOWNSTREAM INVERT ELEV (FT)	DOWNSTREAM BOUNDARY CONDITIONS		MANNING'S "n" VALUE		
												LOB	CHANNEL	ROB
3351+36 (C-5)	ROADWAY	32 'x 6 ' ARCH CULVERT	C-4a, C-4b, C-4d, CP-2,	33	0.40	1.00	0.012	636.34	636.14	KNOWN WSE	588.95'	0.025	0.035	0.025
3359+50 (C-6)	ROADWAY	33 'x 6 ' ARCH CULVERT	C-4a, C-4b, C-4d, CP-2, CP-2b, C-4e,	26	0.40	1.00	0.012	624.66	624.57	KNOWN WSE	588.95'	0.050	0.035	0.025

CULVERT OUTPUT DATA (HEC-RAS) MAJOR BRIDGE-CLASS CULVERTS												
STATION/ID	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER DEPTH (FT)	100 YEAR (DESIGN STORM FREQUENCY)							COMMENTS
					FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)	
3351+36 (C-5)	ROADWAY	32 'x 6 ' ARCH CULVERT	C-4a, C-4b, C-4d, CP-2, CP-2b	644.36	532.00	639.86	3.52	639.14	3.00	5.73	4.40	
3359+50 (C-6)	ROADWAY	33 'x 6 ' ARCH CULVERT	C-4a, C-4b, C-4d, CP-2, CP-2b, C-4e, C-4f, C-4c	633.5	633	629.93	5.27	629.13	4.56	4.39	7.51	

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 5 OF 6

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3403	B

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CULVERT CALCULATIONS

CULVERT INPUT DATA (HY-8)								
STATION	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	INLET STATION (FT)	INLET ELEV (FT)	OUTLET STATION (FT)	OUTLET ELEV (FT)	TAILWATER DATA
3438+31	TRACK	PROPOSED 24" RCP	D-2	0	616.52	51	615.55	REC CH, BOT WIDTH=4 FT, CH S=0.005 FT/FT, "n"= 0.035, CH INVERT EL= 615.06
3466+87	ROADWAY	PROPOSED 24" RCP	D-8A, D-9A, D-9B	0	644.18	339	643.05	TRIANG CH, SS=2:1, CH S=0.015 FT/FT, "n"= 0.015, CH INVERT EL= 646.03

CULVERT HYDRAULIC DATA												
					100 YEAR (DESIGN STORM FREQUENCY)							
STATION	TRACK OR ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)	COMMENTS
3438+31	TRACK	PROPOSED 24" RCP	D-2	621.77	4.99	617.61	1.09	616.21	0.66	7.11	1.88	
3466+87	ROADWAY	PROPOSED 24" RCP	D-8A, D-9A, D-9B	649.26	17.57	647.20	2.58	644.11	7.48	6.91	7.48	

NOTES:

1. RUNOFF COMPUTATIONS HAVE BEEN PERFORMED ACCORDING TO DAR DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA, CHAPTER 7 JANUARY 31, 2003.
2. COMPUTATION HAVE BEEN PERFORMED WITH FHWA HY-8 SOFTWARE.

DITCH CALCULATIONS

DITCH D-3									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3412+84	STA 3411+16	0.032	2.23	0.035	4.00	0.00	4.00	2.75	0.50

DITCH D-4									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 2413+06	STA 3416+32	0.004	2.62	0.035	4.00	0.00	4.00	1.34	0.70

DITCH D-5									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3418+02	STA 3417+56	0.032	2.96	0.035	4.00	0.00	4.00	2.96	0.50

DITCH D-6									
NB RAIL STATION		SLOPE (FT/FT)	Q100 (CFS)	MANNINGS 'n'	DITCH SECTION (FS)	DITCH SECTION (BW)	DITCH SECTION (BS)	VELOCITY (FT/S)	DEPTH OF FLOW (FT)
FROM	TO								
STA 3423+54	STA 3418+33	0.023	7.53	0.035	4.00	0.00	4.00	3.77	1.00

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CITY OF RICHARDSON
DRAINAGE CALCULATIONS
SHEET 6 OF 6

CONTRACT	DWG No.	REV
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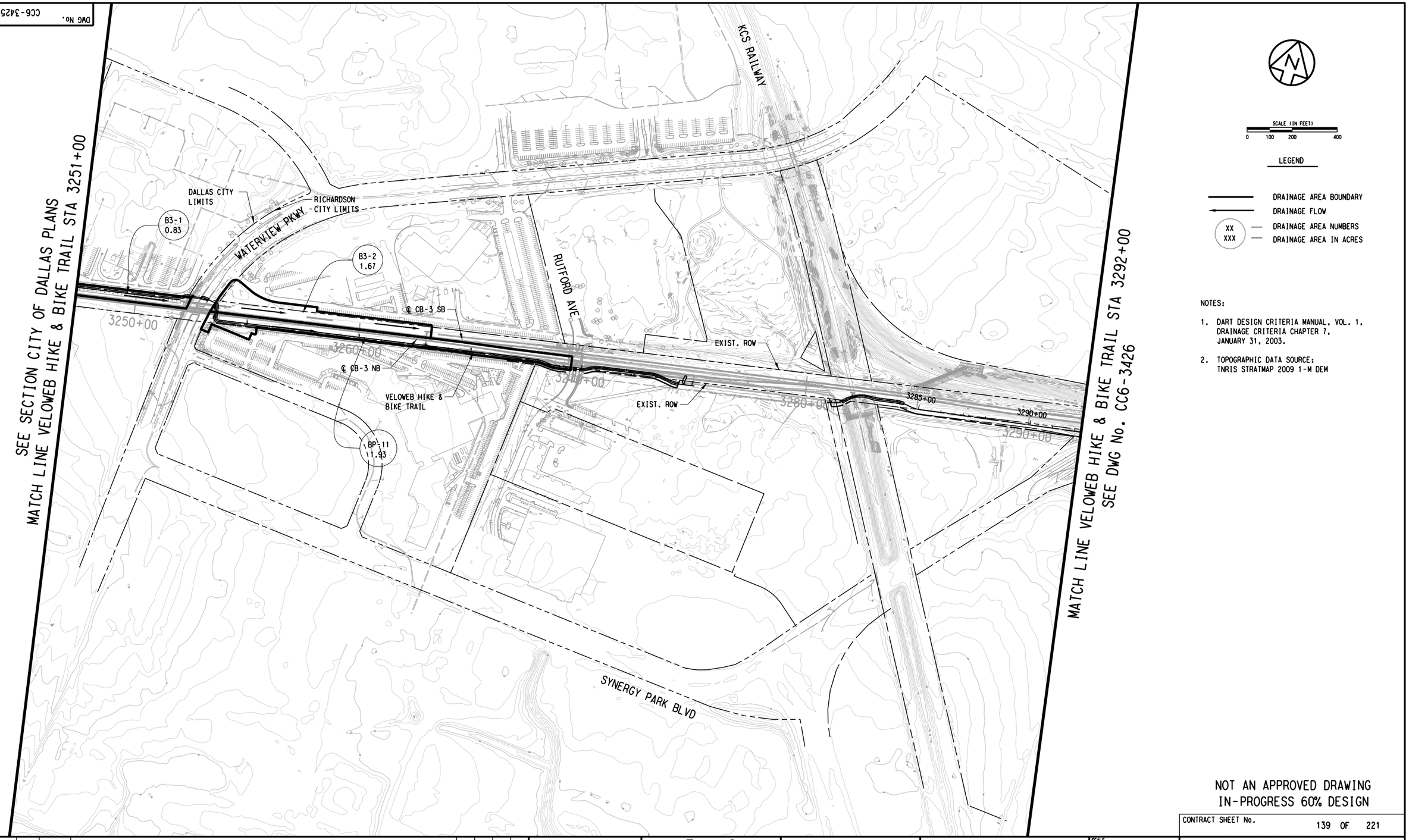

SCALE (IN FEET)
0 100 200 400

LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW
- XX / XXX — DRAINAGE AREA NUMBERS / DRAINAGE AREA IN ACRES

NOTES:

1. DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA CHAPTER 7, JANUARY 31, 2003.
2. TOPOGRAPHIC DATA SOURCE: TNRIS STRATMAP 2009 1-M DEM

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ARCHER WESTERN HERZOG

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DRAWN	D. ESCALANTE
DESIGNED	U. POUDEL
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE AREA MAP
STA 3251+00 TO STA 3292+00
SHEET 1 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3425	B

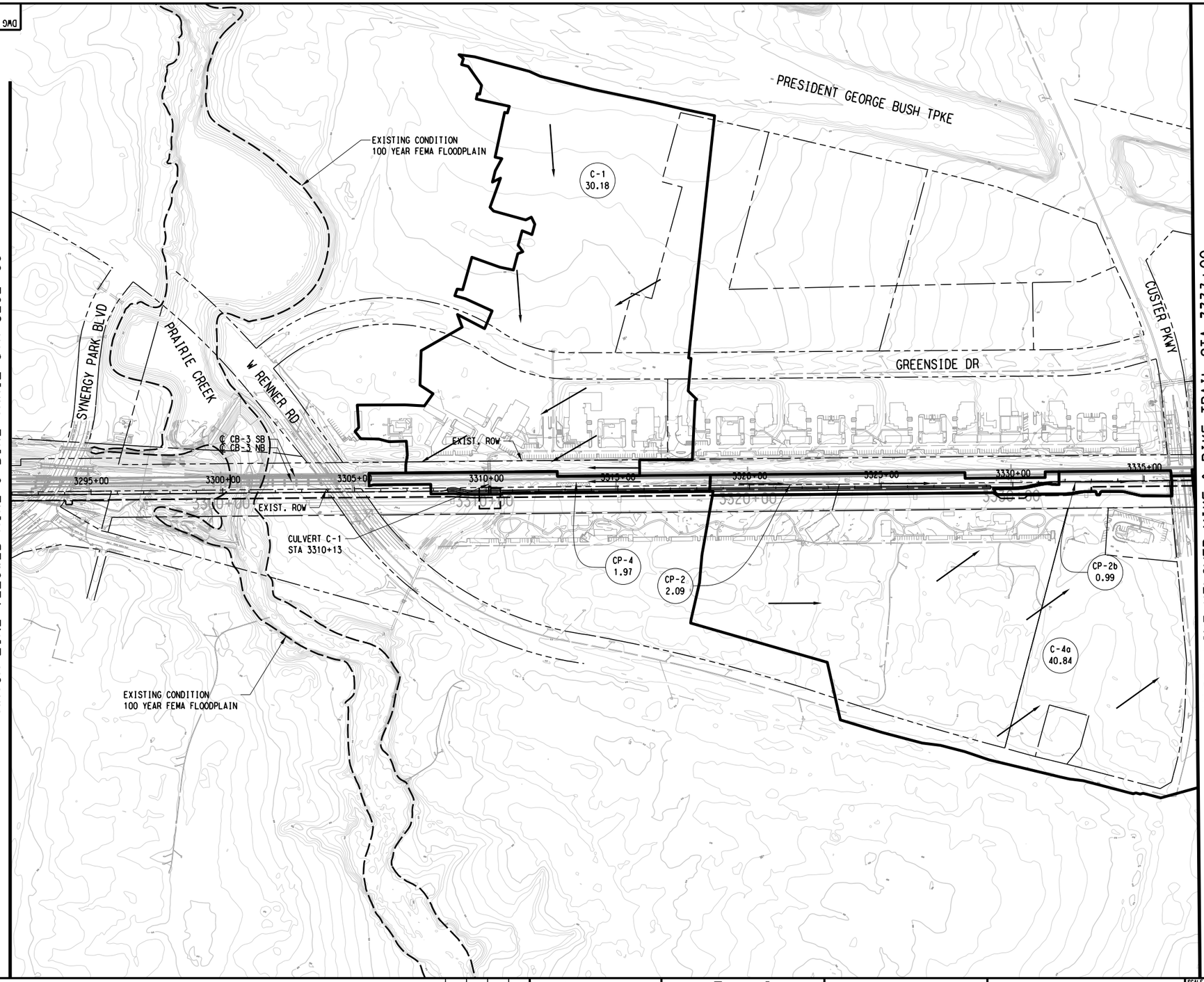
CB05-CC6-3425.200

16-SEP-2022 13:35
CB05-CC6-3425.200
JEGSVCPWU01
Default

DWG No. CC6-3426

SEE DWG No. CC6-3425
MATCH LINE VELOWEB HIKE & BIKE TRAIL STA 3292+00

MATCH LINE VELOWEB HIKE & BIKE TRAIL STA 3337+00
SEE DWG No. CC6-3427



SCALE (IN FEET)
0 100 200 400

LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW
- XX / XXX — DRAINAGE AREA NUMBERS / DRAINAGE AREA IN ACRES

REFERENCES:

1. DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA CHAPTER 7, JANUARY 31, 2003.
2. TOPOGRAPHIC DATA SOURCE: TNRIS STRATMAP 2009 1-M DEM

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CAES

CONTRACT SHEET No. 140 OF 221

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE AREA MAP
STA 3292+00 TO STA 3337+00
SHEET 2 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3426	B

CB05-CC6-3426.200

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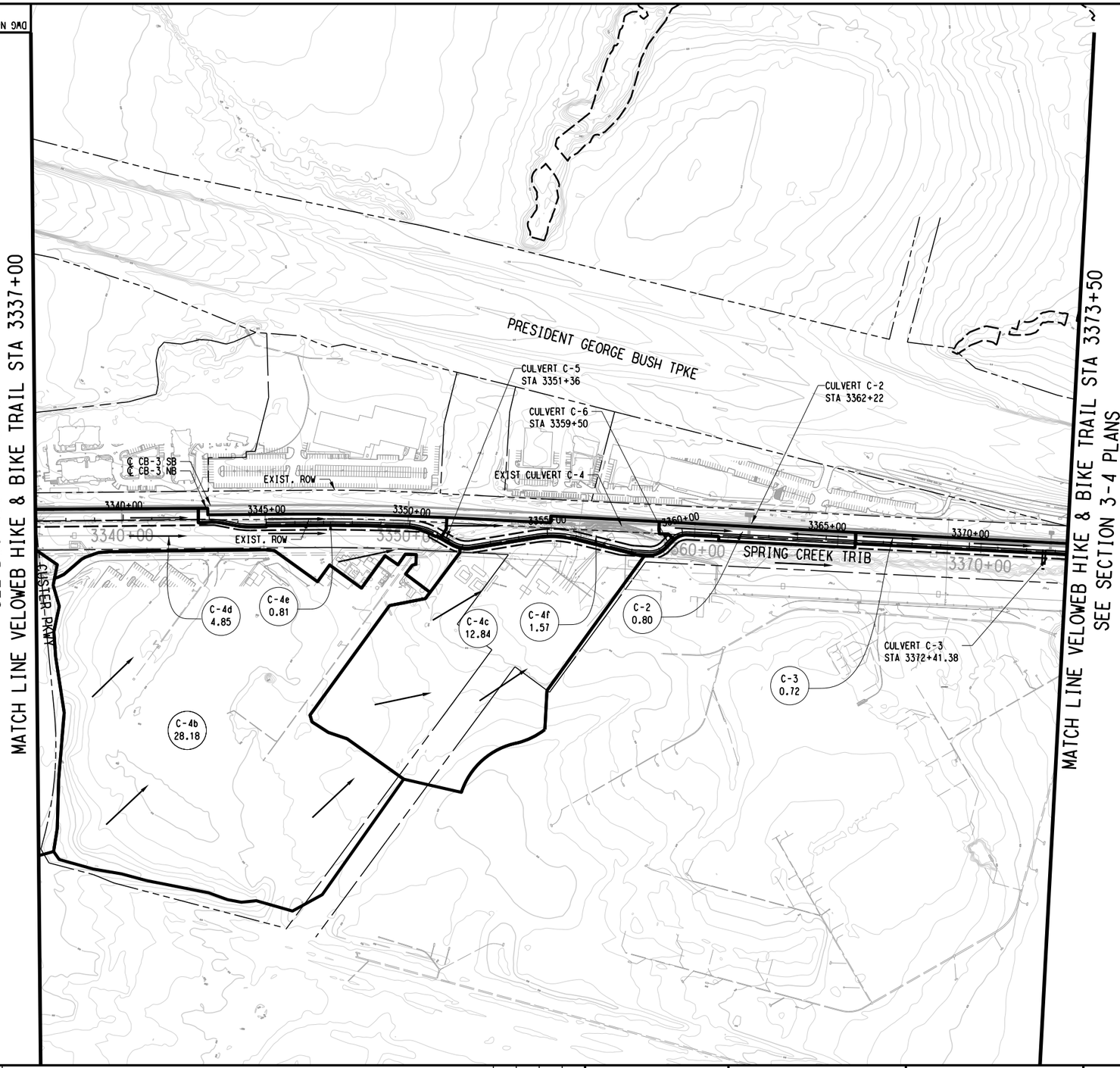
DWG No. CC6-3427



SCALE (IN FEET)
0 100 200 400

LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW
- XX / XXX — DRAINAGE AREA NUMBERS / DRAINAGE AREA IN ACRES

REFERENCES:

1. DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA CHAPTER 7, JANUARY 31, 2003.
2. TOPOGRAPHIC DATA SOURCE: TNRIS STRATMAP 2009 1-M DEM

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CONTRACT SHEET No. 141 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE AREA MAP
STA 3337+00 TO STA 3373+50
SHEET 3 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3427	B

CB05-CC6-3427.200

16-SEP-2022 13:35
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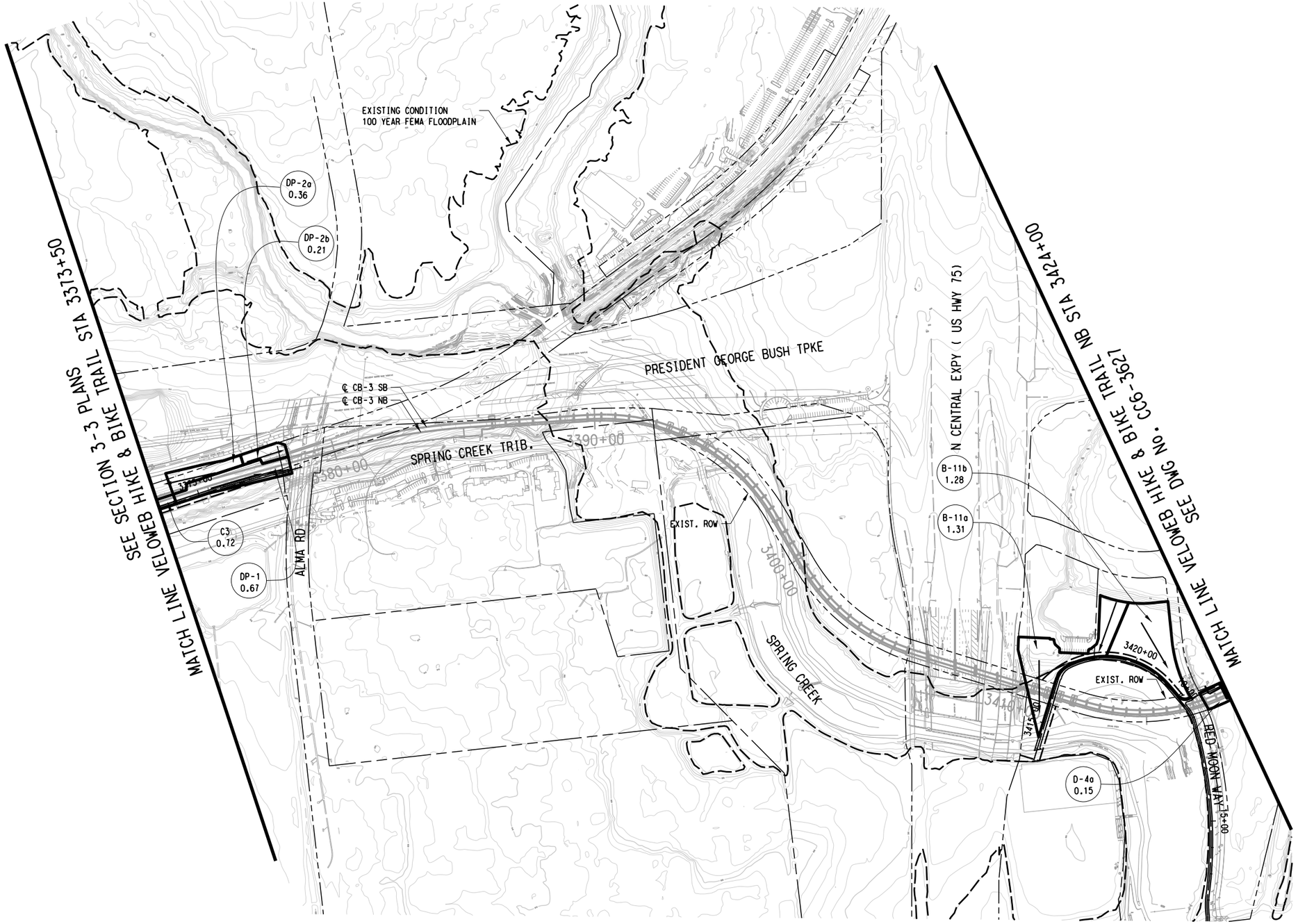
DWG No. CC6-3626



SCALE (IN FEET)
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LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW
- XX — DRAINAGE AREA NUMBERS
- XXX — DRAINAGE AREA IN ACRES

NOTES:

1. DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA CHAPTER 7, JANUARY 31, 2003.
2. TOPOGRAPHIC DATA SOURCE: TNRIS STRATMAP 2009 1-M DEM

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE AREA MAP
STA 3373+50 TO STA 3418+00
SHEET 4 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3626	B

CB05-CC6-3626.200

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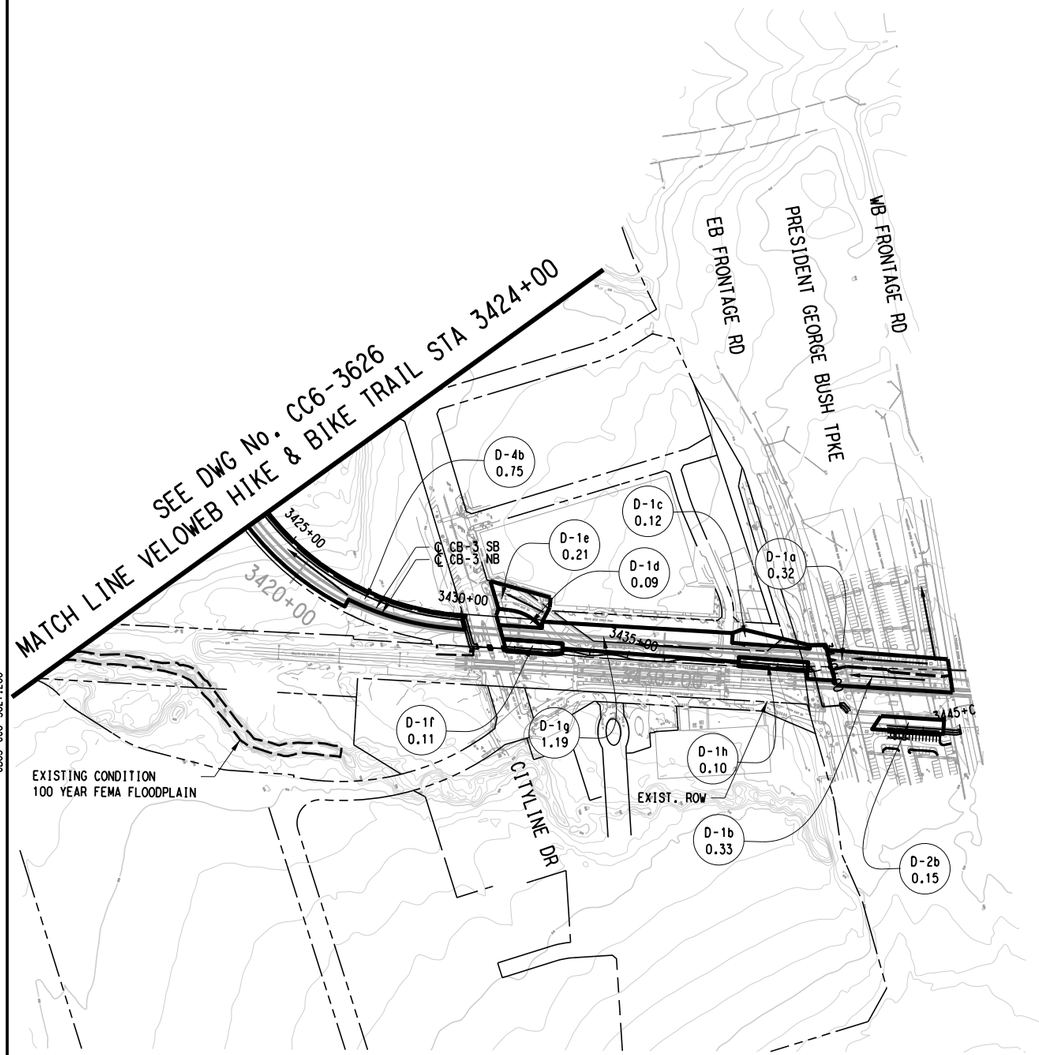
DWG No. CC6-3627



SCALE (IN FEET)
0 100 200 400

LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE FLOW
- XX / XXX — DRAINAGE AREA NUMBERS / DRAINAGE AREA IN ACRES

NOTES:

1. DART DESIGN CRITERIA MANUAL, VOL. 1, DRAINAGE CRITERIA CHAPTER 7, JANUARY 31, 2003.
2. TOPOGRAPHIC DATA SOURCE: TNRIS STRATMAP 2009 1-M DEM
3. NO HYDRAULIC ANALYSIS WAS PERFORMED. PROPOSED CONDITIONS DO NOT IMPACT EXISTING CULVERT/STORM SYSTEM.

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE AREA MAP
STA 3424+00 TO STA 3463+00
SHEET 5 OF 5

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3627	B

CB05-CC6-3627.200

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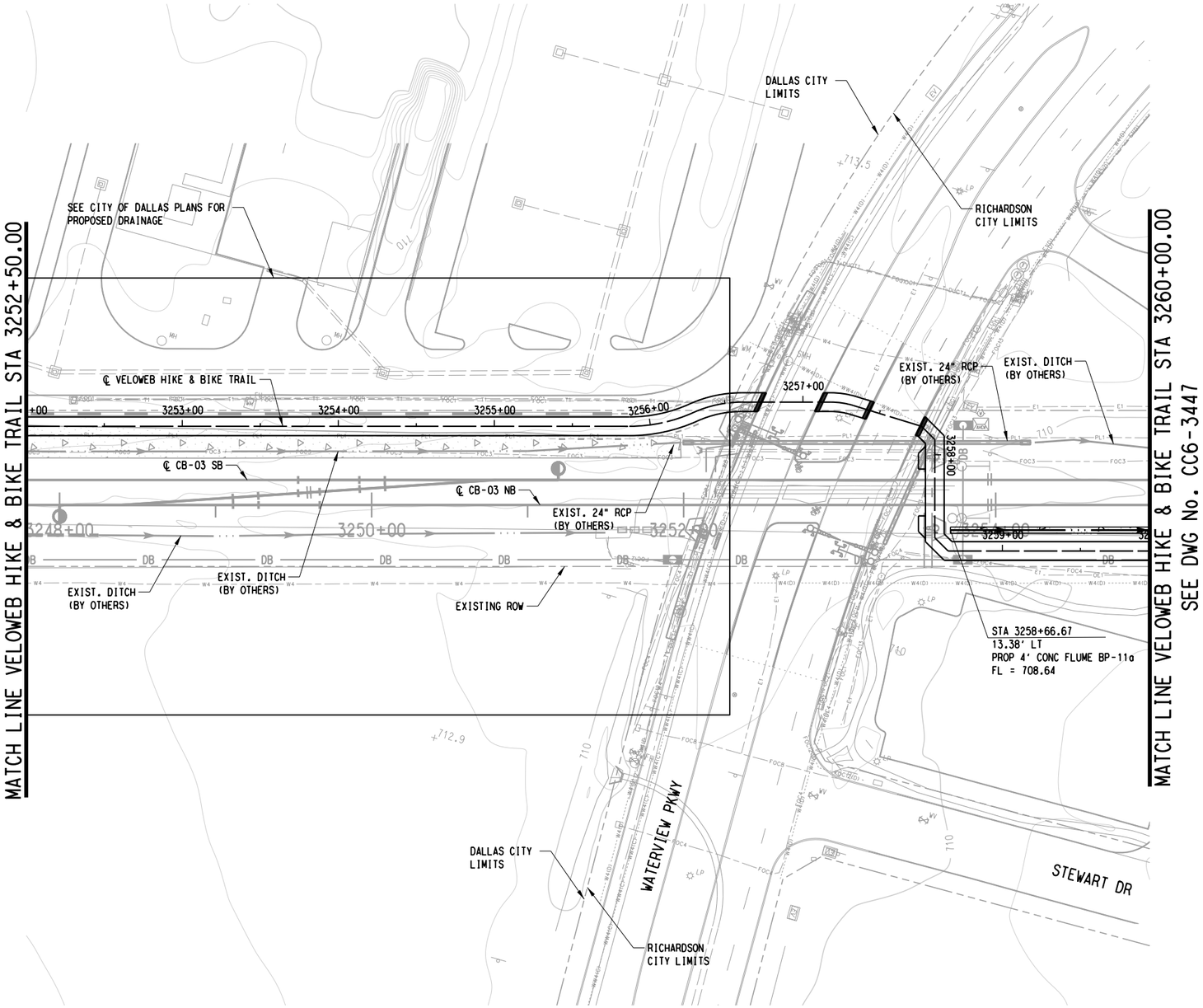
DWG No. CC6-3446



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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CB05-CC6-3446.040

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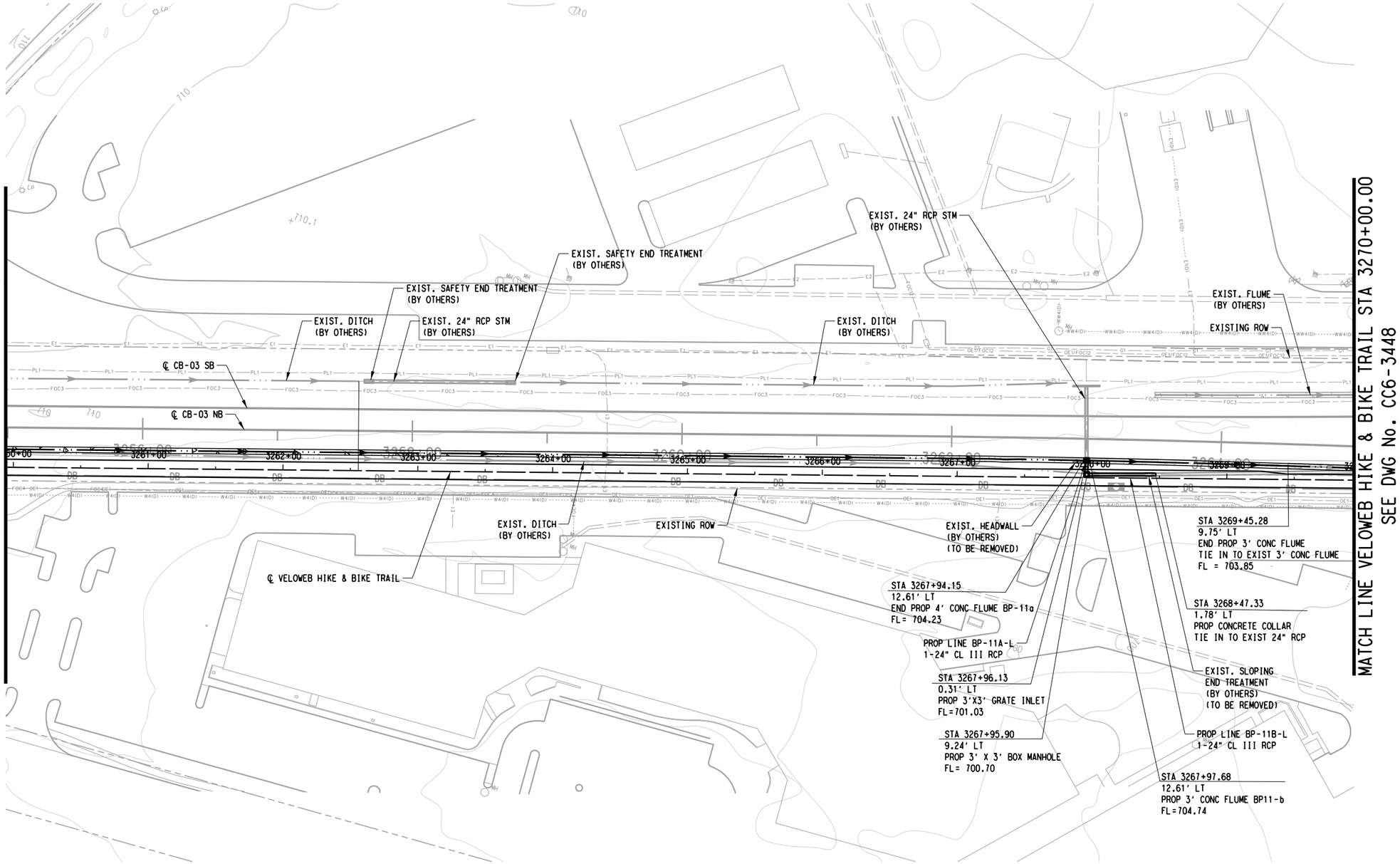
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3252+50 TO STA 3260+00
SHEET 1 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3446	B

CB05-CC6-3446.040

DWG No. CC6-3447



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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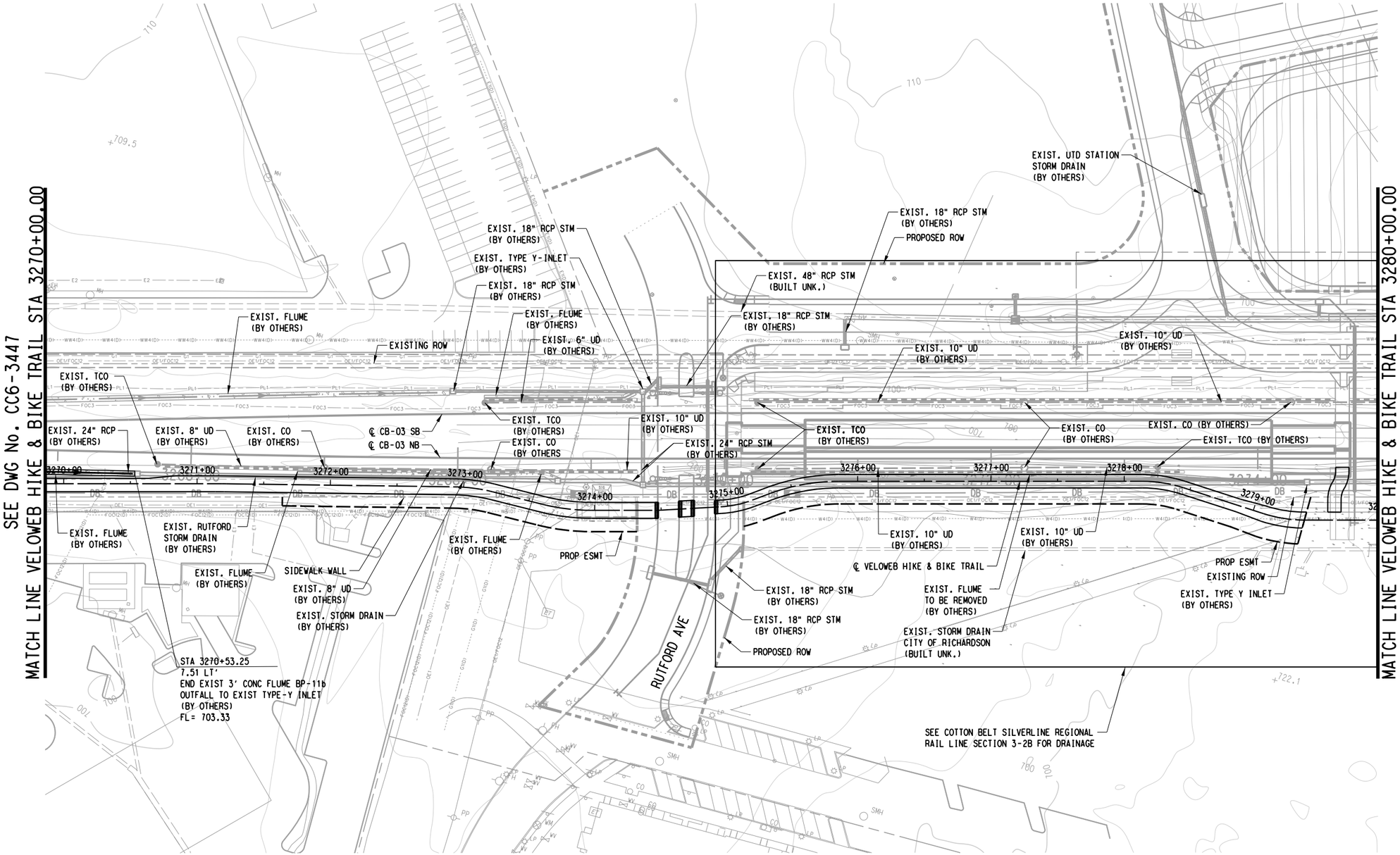
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3260+00 TO STA 3270+00
SHEET 2 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3447	B

CB05-CC6-3447.040

DWG No. CC6-3448



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3270+00 TO STA 3280+00
SHEET 3 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3448	B

CB05-CC6-3448.040

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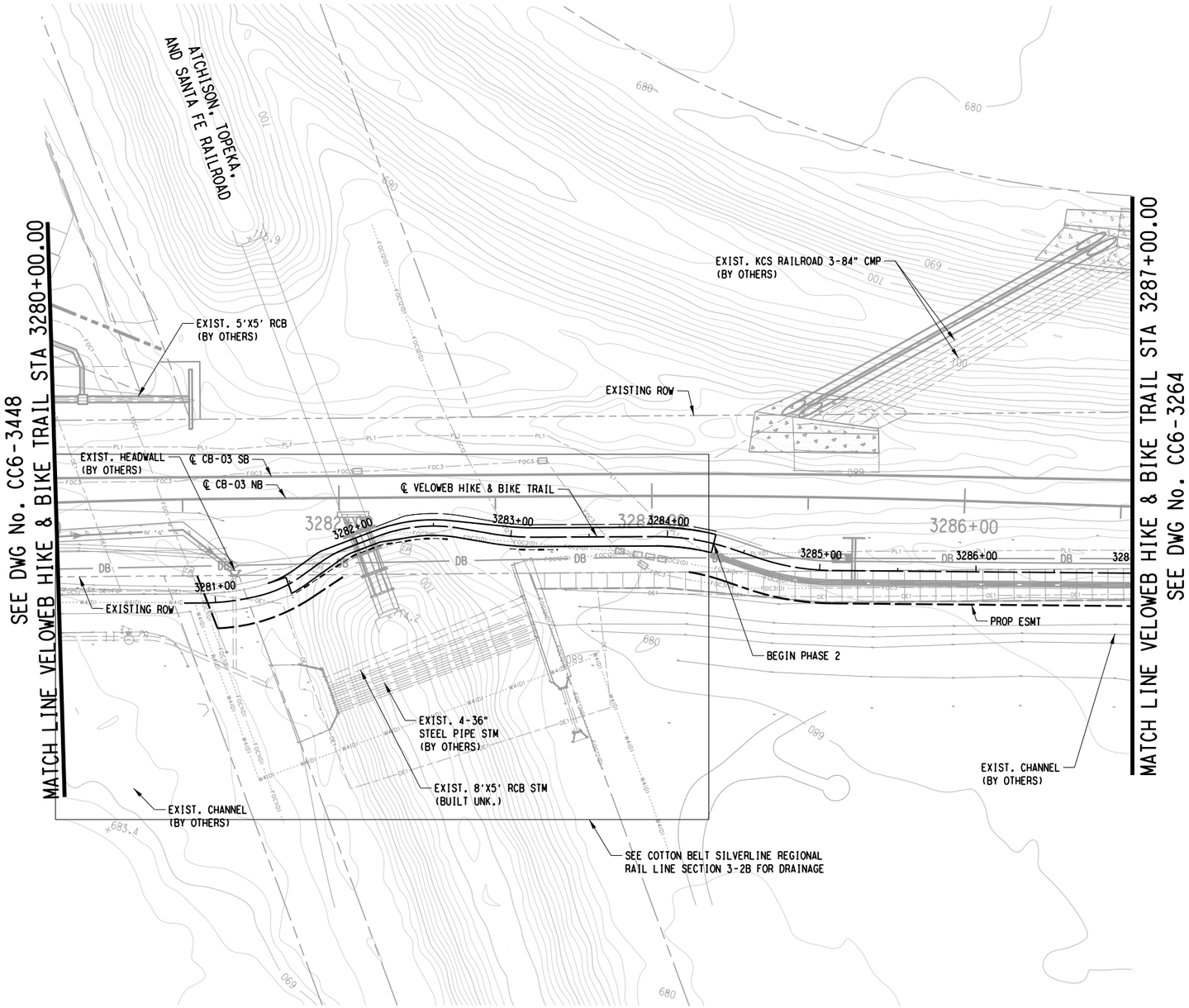
DWG No. CC6-3449



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
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6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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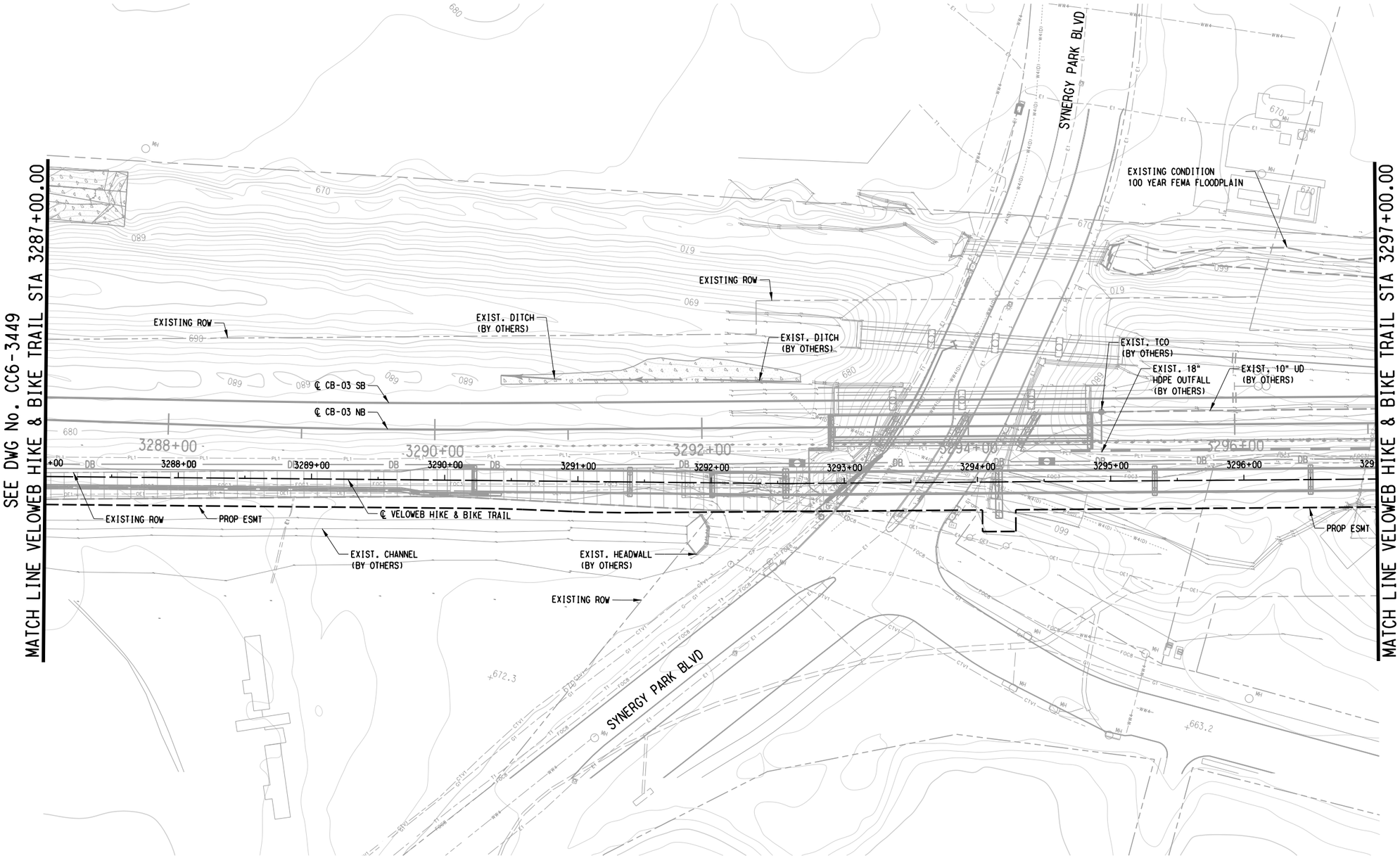
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3280+00 TO STA 3287+00
SHEET 4 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3449	B

CB05-CC6-3449.040

DWG No. CC6-3450



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
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6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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IN CHARGE	H. NU
DATE	19 SEP 22

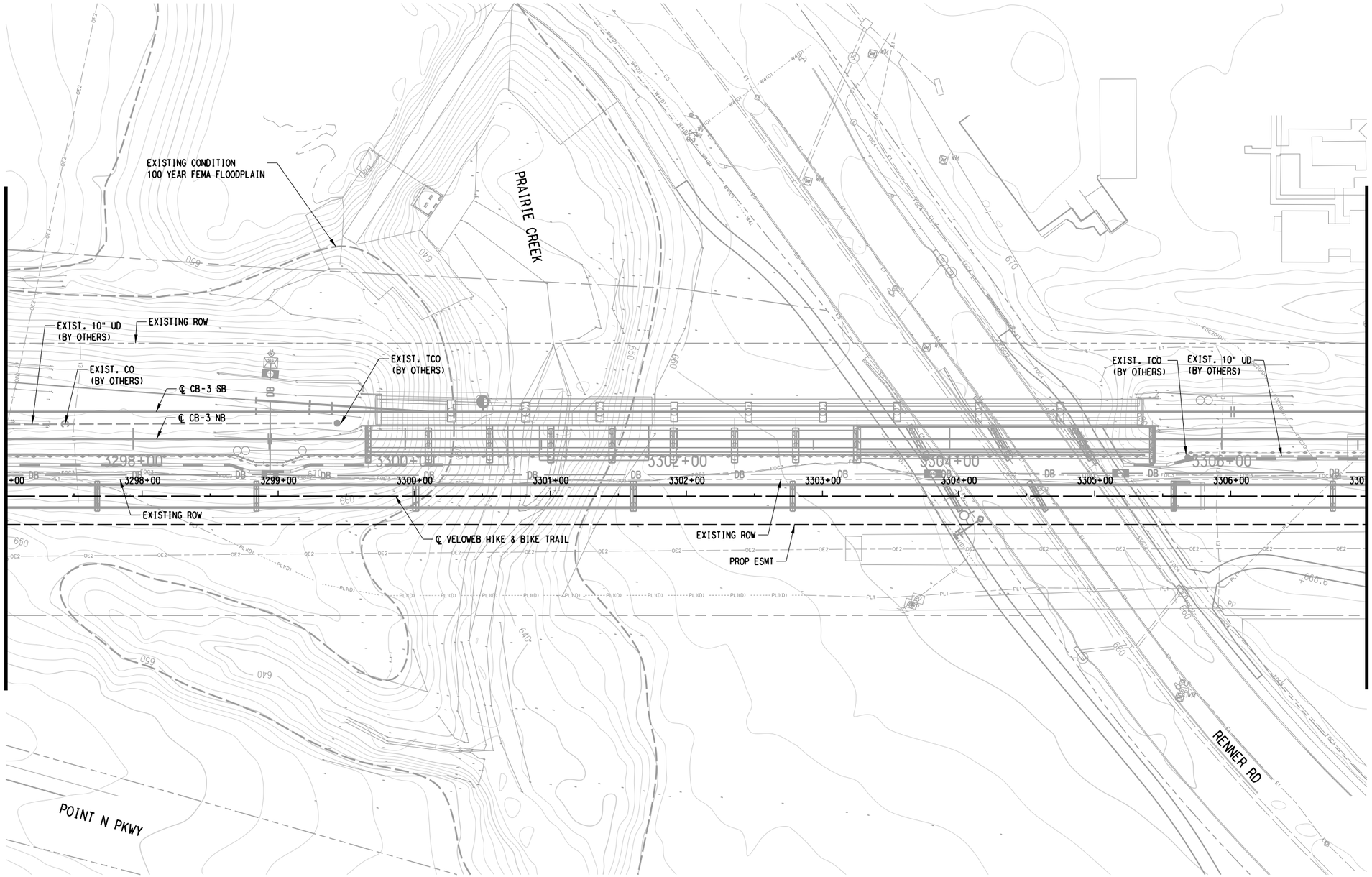
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3287+00 TO STA 3297+00
SHEET 5 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3450	B

CB05-CC6-3450.040

DWG No. CC6-3451



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
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5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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CONTRACT SHEET No. 149 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	S. REYNA
CHECKED	H. MU
IN CHARGE	H. MU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3297+00 TO STA 3307+00
SHEET 6 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3451	B

CB05-CC6-3451.040

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CB05-CC6-3451.040

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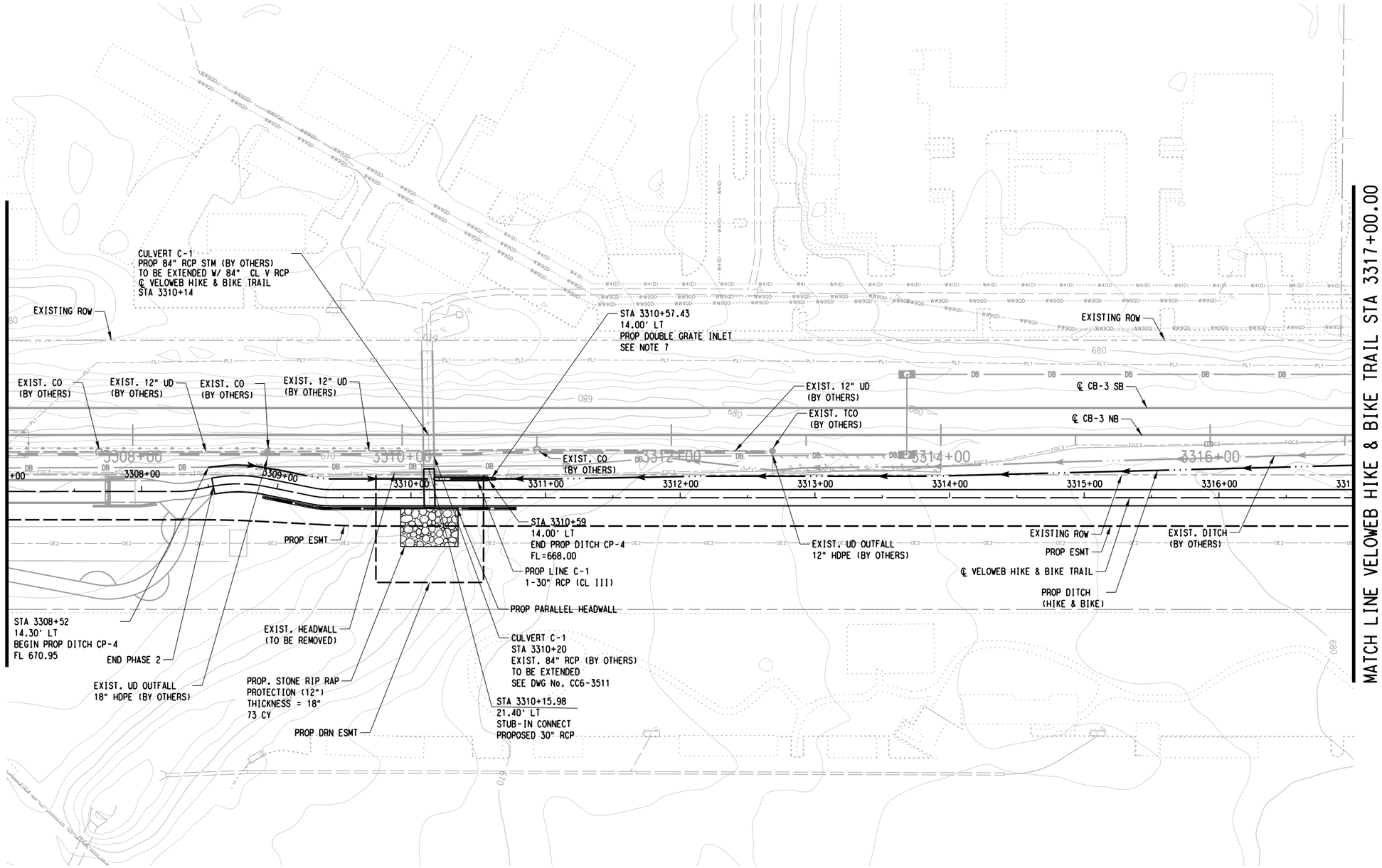
DWG No. CC6-3452



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
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7. SEE SHEET C-9, CITY OF RICHARDSON DRAINAGE STANDARD FOR INLET DETAILS.

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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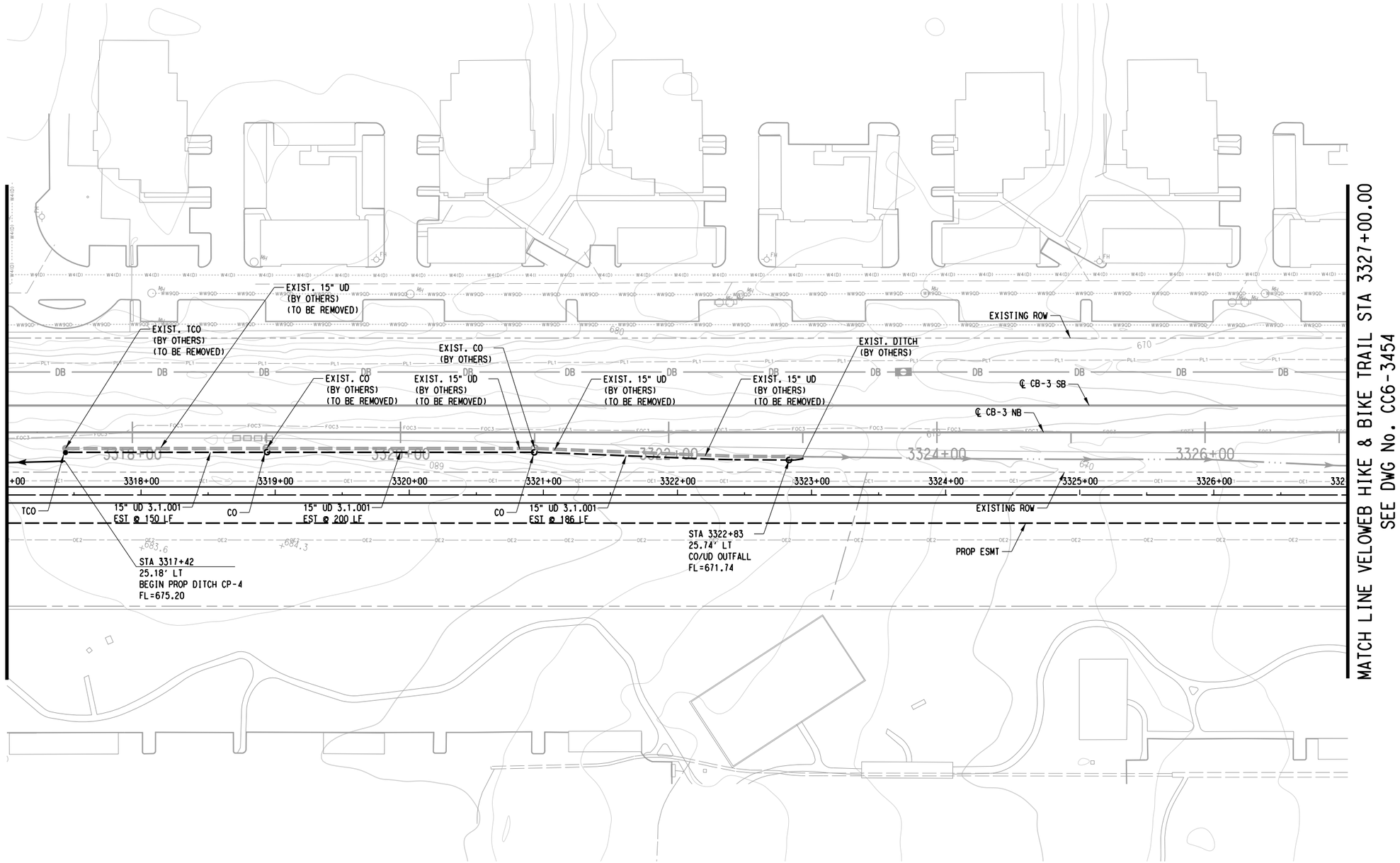
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3307+00 TO STA 3317+00
SHEET 7 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3452	B

CB05-CC6-3452.040

DWG No. CC6-3453



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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CONTRACT SHEET No. 151 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3317+00 TO STA 3327+00
SHEET 8 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3453	B

CB05-CC6-3453.040

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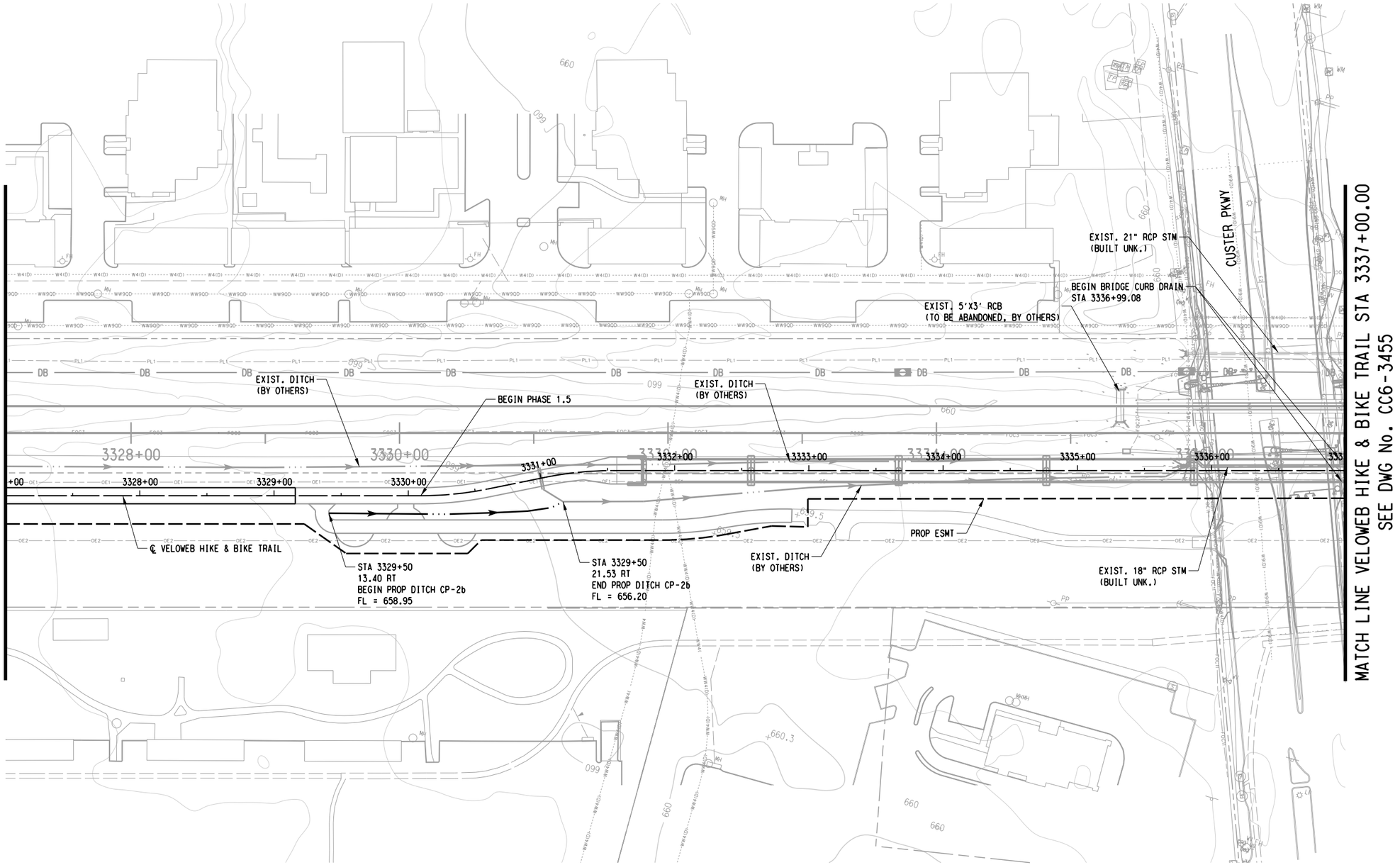
DWG No. CC6-3454



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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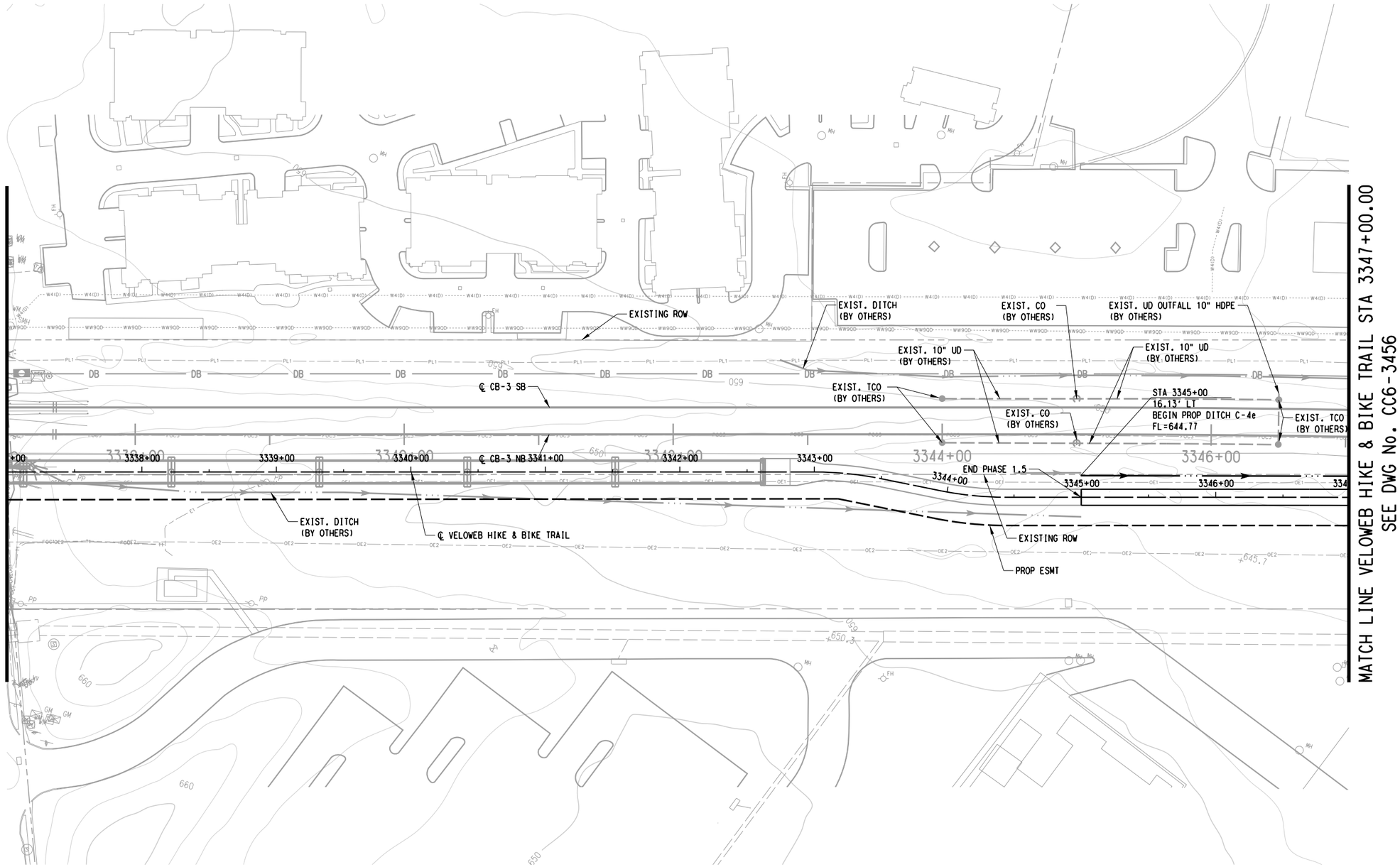
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3327+00 TO STA 3337+00
SHEET 9 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3454	B

CB05-CC6-3454.040

DWG No. CC6-3455



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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CONTRACT SHEET No. 153 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3337+00 TO STA 3347+00
SHEET 10 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3455	B

CB05-CC6-3455.040

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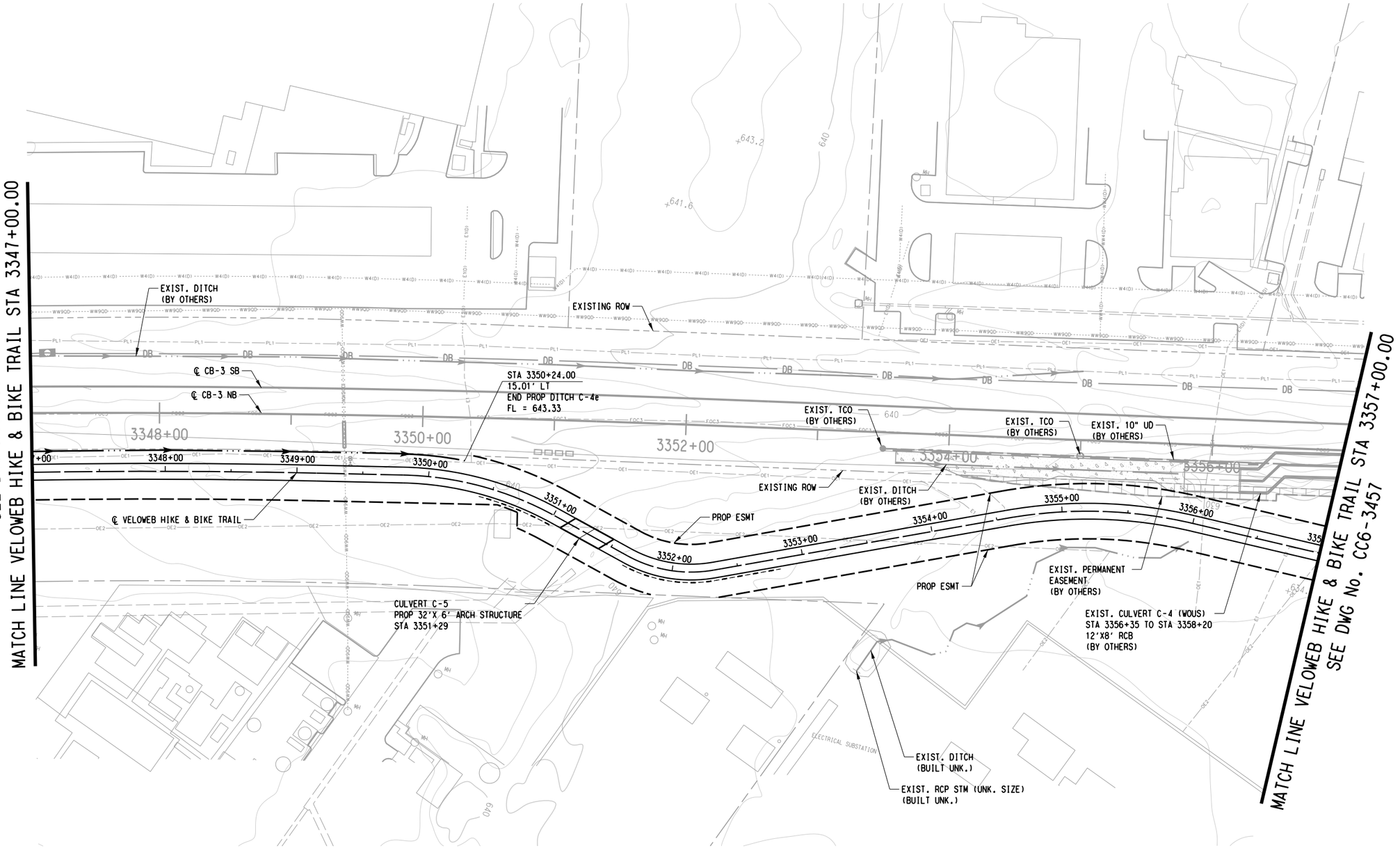
DWG No. CC6-3456



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3347+00 TO STA 3357+00
SHEET 11 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3456	B

CB05-CC6-3456.040

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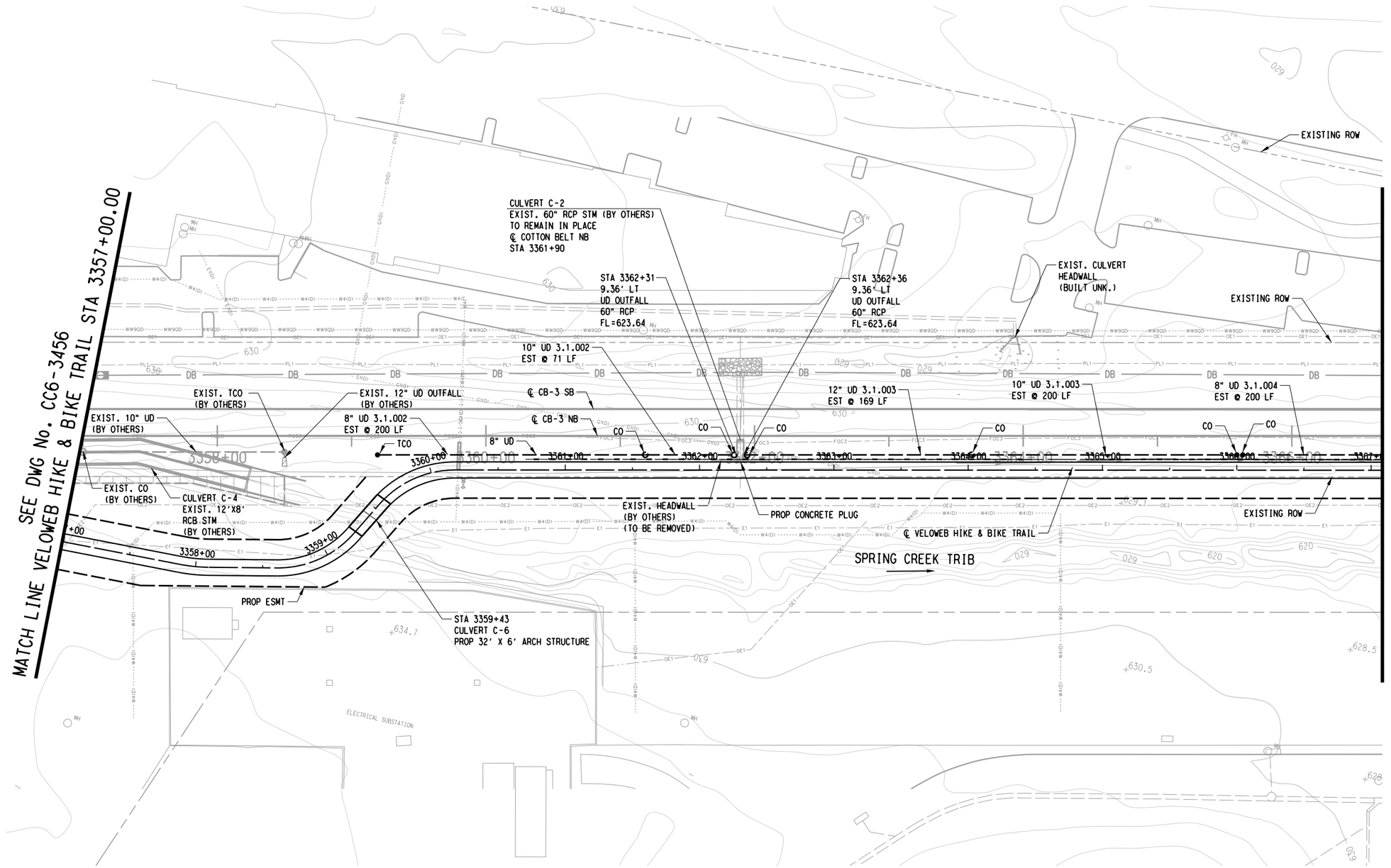
DWG No. CC6-3457



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3357+00 TO STA 3367+00
SHEET 12 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3457	B

CB05-CC6-3457.040

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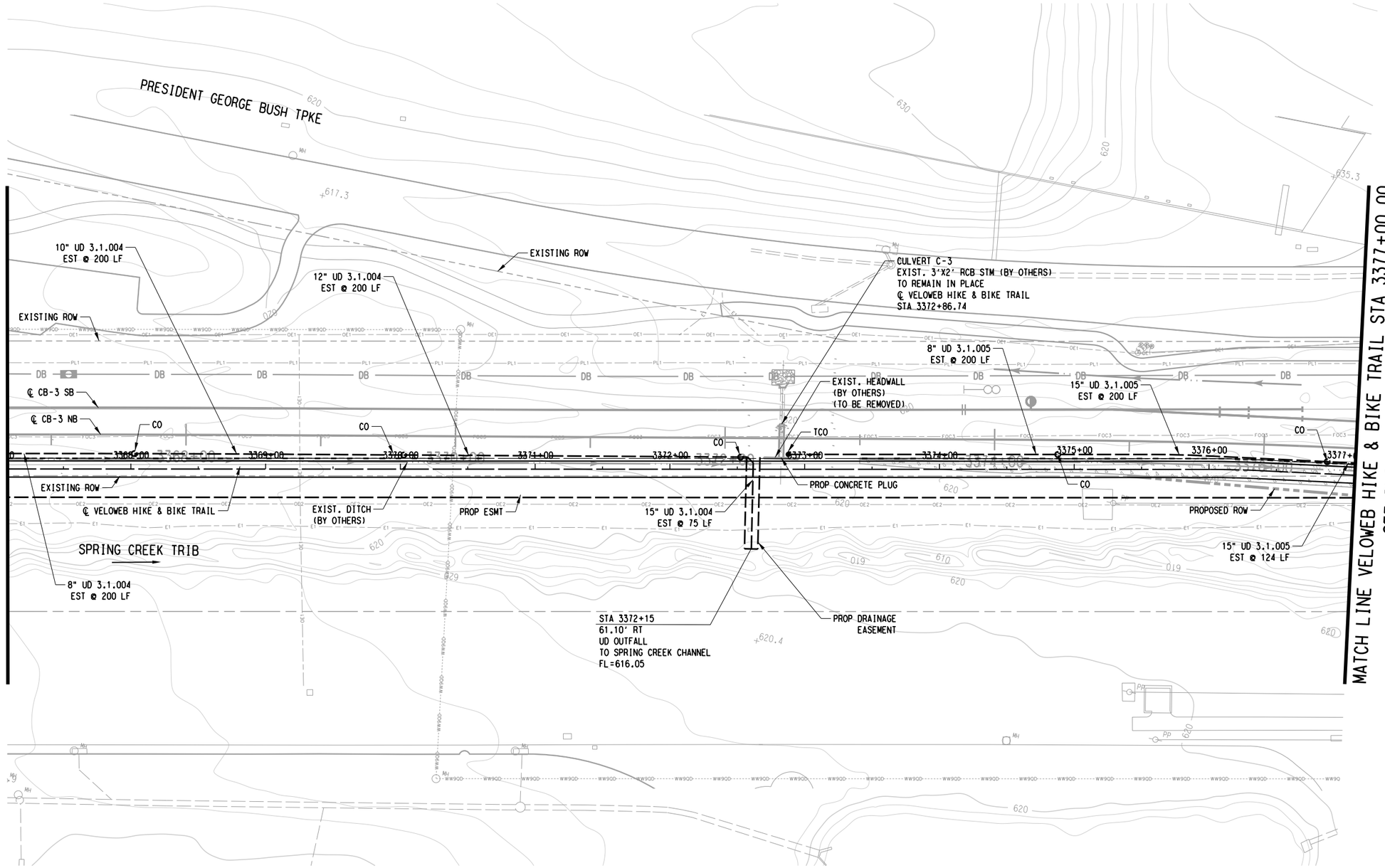
DWG No. CC6-3458



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3367+00 TO STA 3377+00
SHEET 13 OF 18

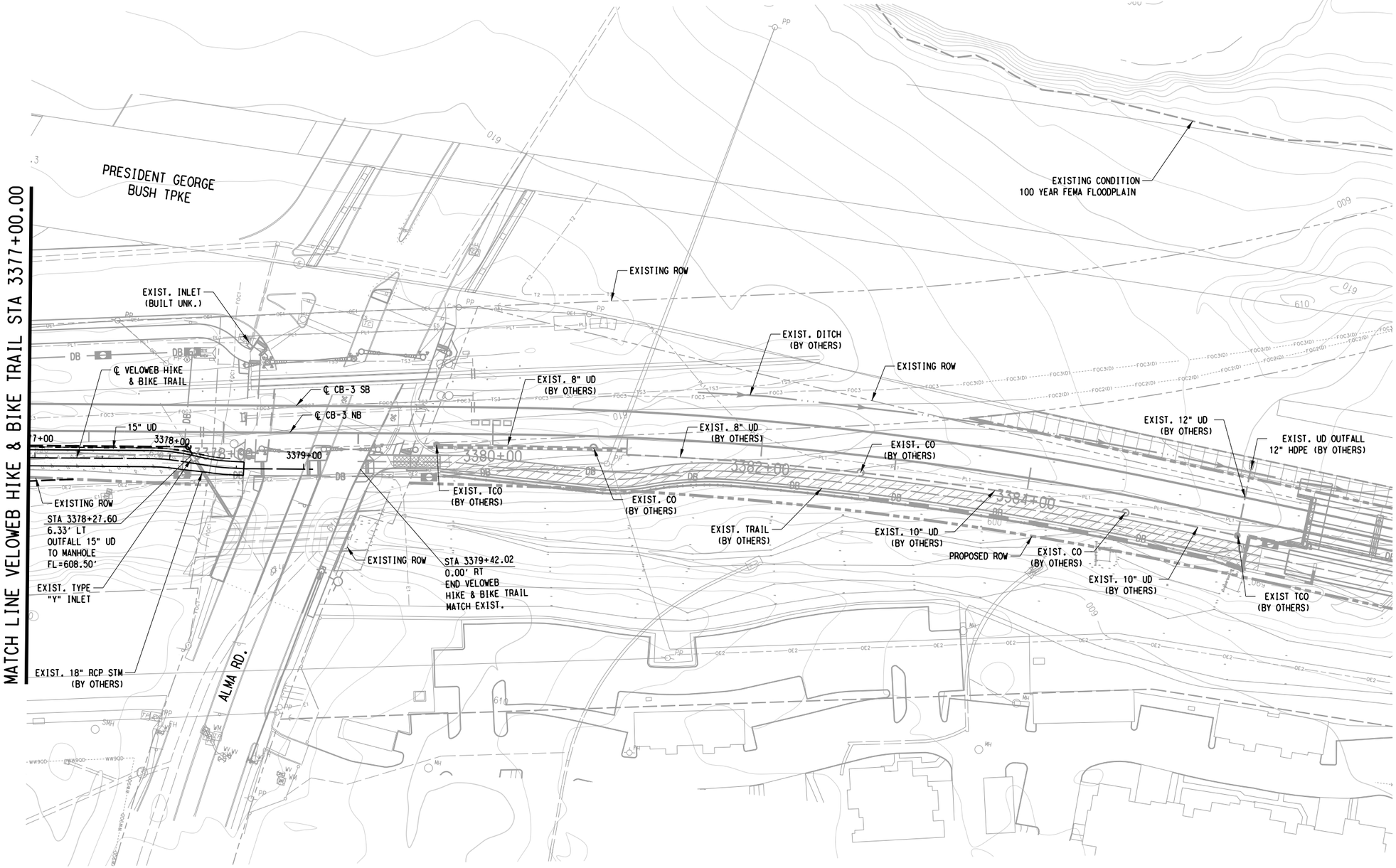
CONTRACT	DWG No.	REV
C-2033270-01	CC6-3458	B

CB05-CC6-3458.040

DWG No. CC6-3459

SEE DWG No. CC6-3458

MATCH LINE VELOWEB HIKE & BIKE TRAIL STA 3377+00.00



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

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DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3377+00 TO STA 3379+00
SHEET 14 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3459	B

CB05-CC6-3459.040

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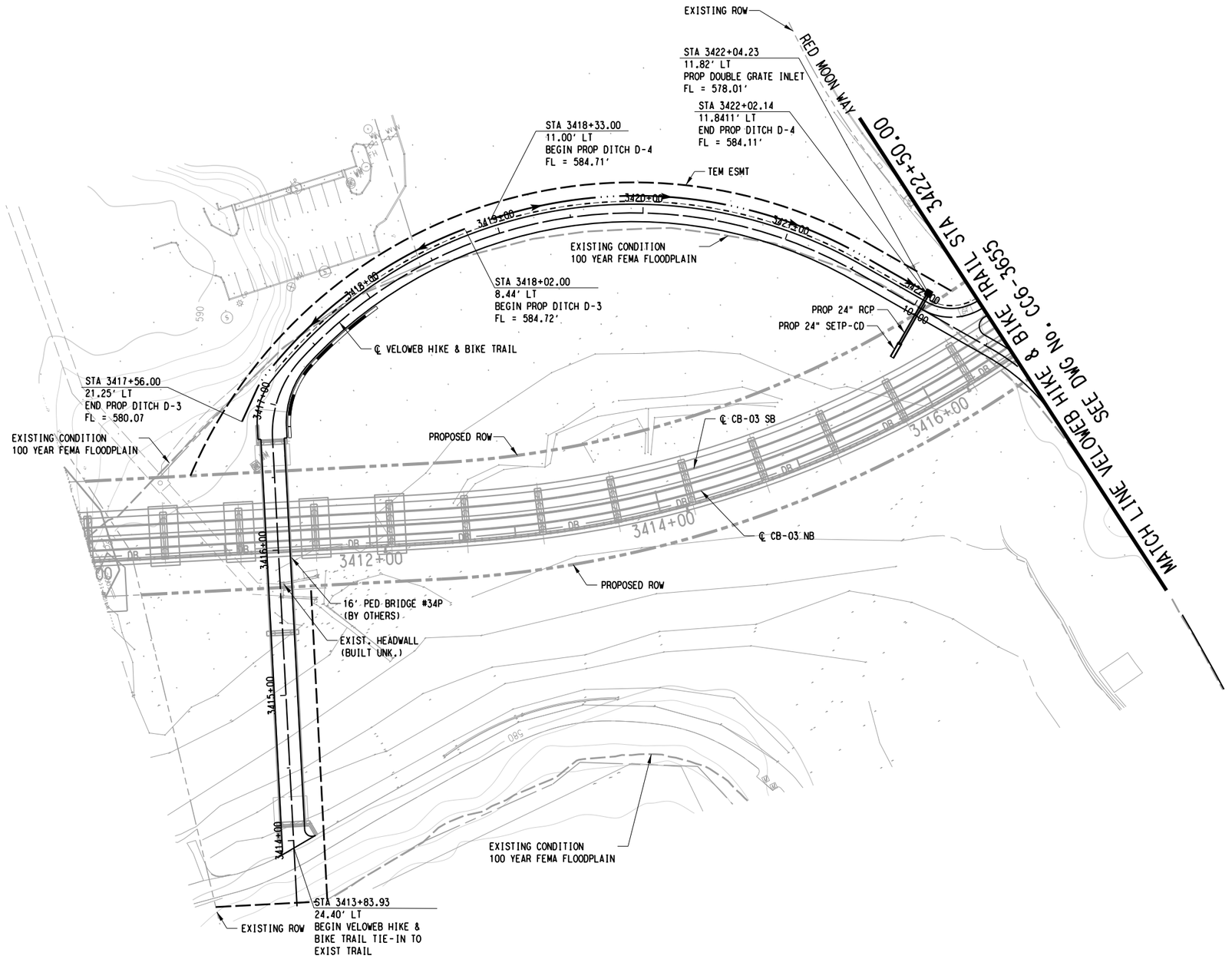

SCALE (IN FEET)
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ARCHER WESTERN HERZOG

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CAES

SCALE	1"=40'
DRAWN	D. ESCALANTE
DESIGNED	S. REYNA
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3412+50 TO STA 3422+50
SHEET 15 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3654	B

CB05-CC6-3654.040

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CB05-CC6-3654.040
JEGSVCPW001
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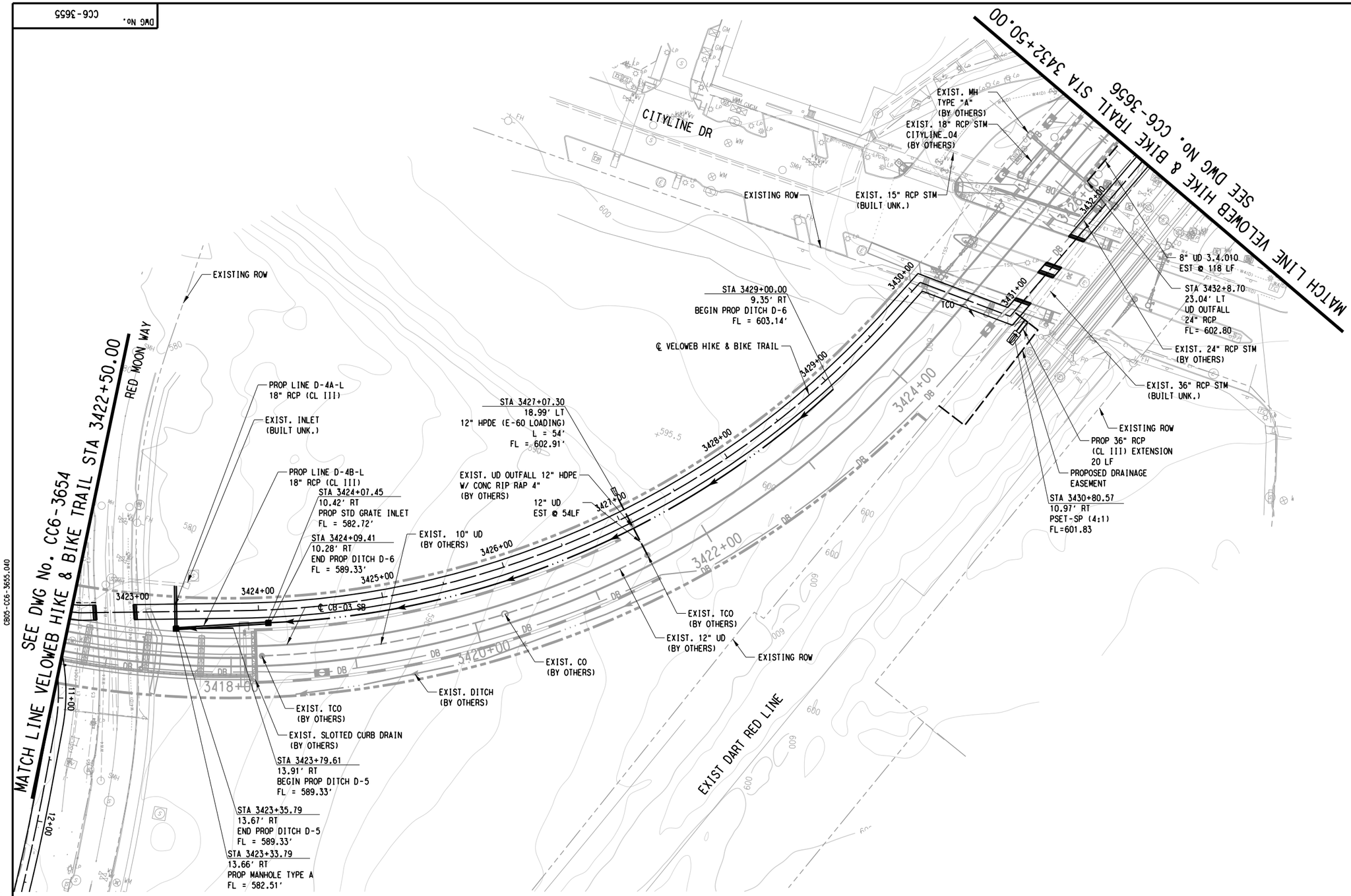
DWG No. CC6-3655



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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CONTRACT SHEET No. 159 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DRAWN	D. ESCALANTE
DESIGNED	J. RODRIGUEZ
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3422+50 TO STA 3432+50
SHEET 16 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3655	B

CB05-CC6-3655.040

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CB05-CC6-3655.040
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DWG No. CC6-3656

SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	C. SEGURA
CHECKED	H. MU
IN CHARGE	H. MU
DATE	19 SEP 22

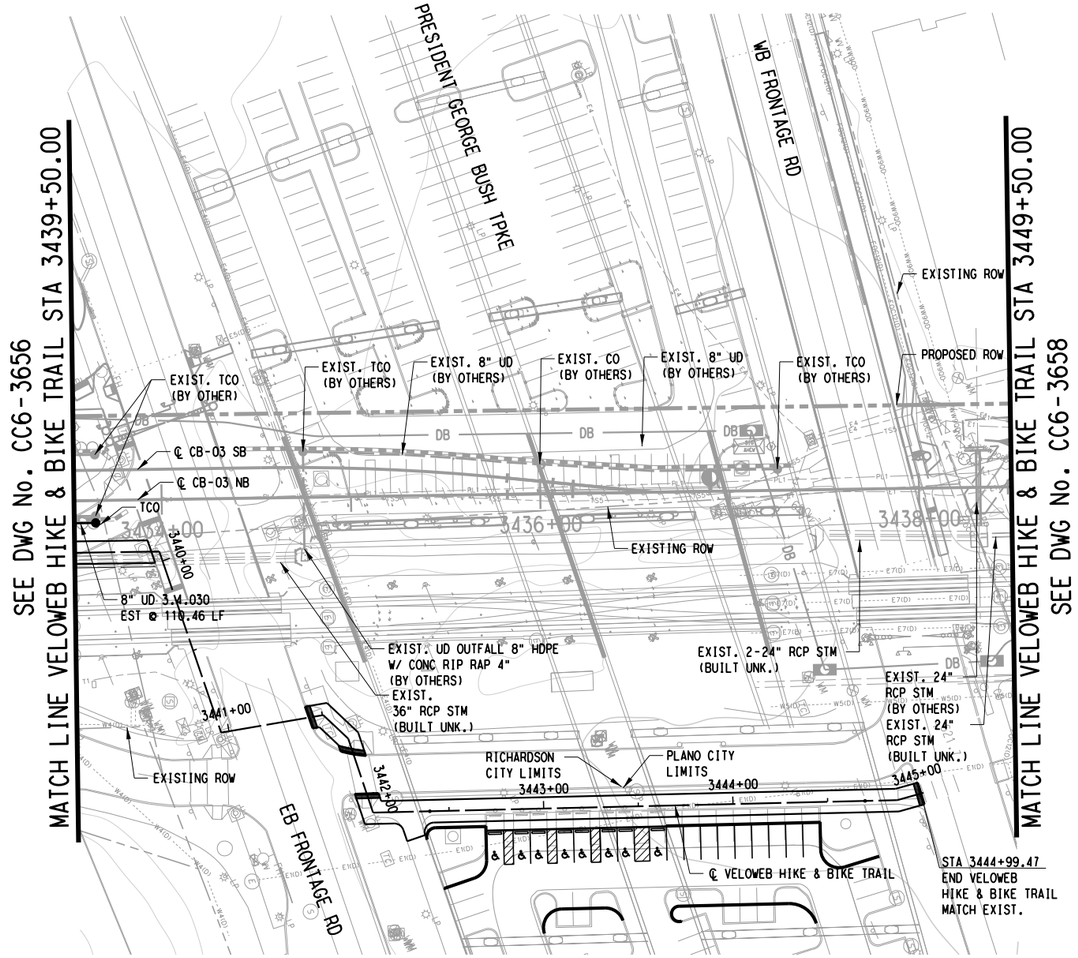
CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3432+50 TO STA 3439+50
SHEET 17 OF 18

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3656	B

CB05-CC6-3656.040

DWG No. CC6-3657



SCALE (IN FEET)
0 20 40 80

LEGEND

CENTERLINE OF SPECIAL DITCH

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V, UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING, UNLESS NOTED OTHERWISE.

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CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

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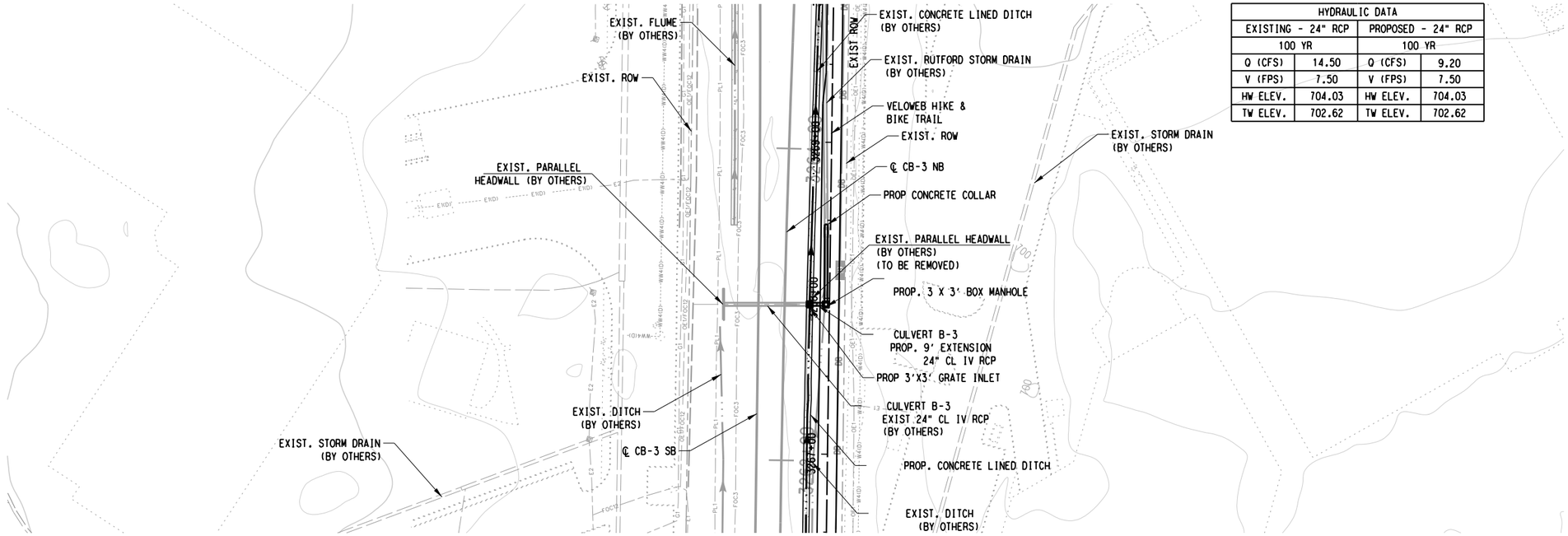
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
DRAINAGE PLAN
STA 3439+50 TO STA 3449+50
SHEET 18 OF 18

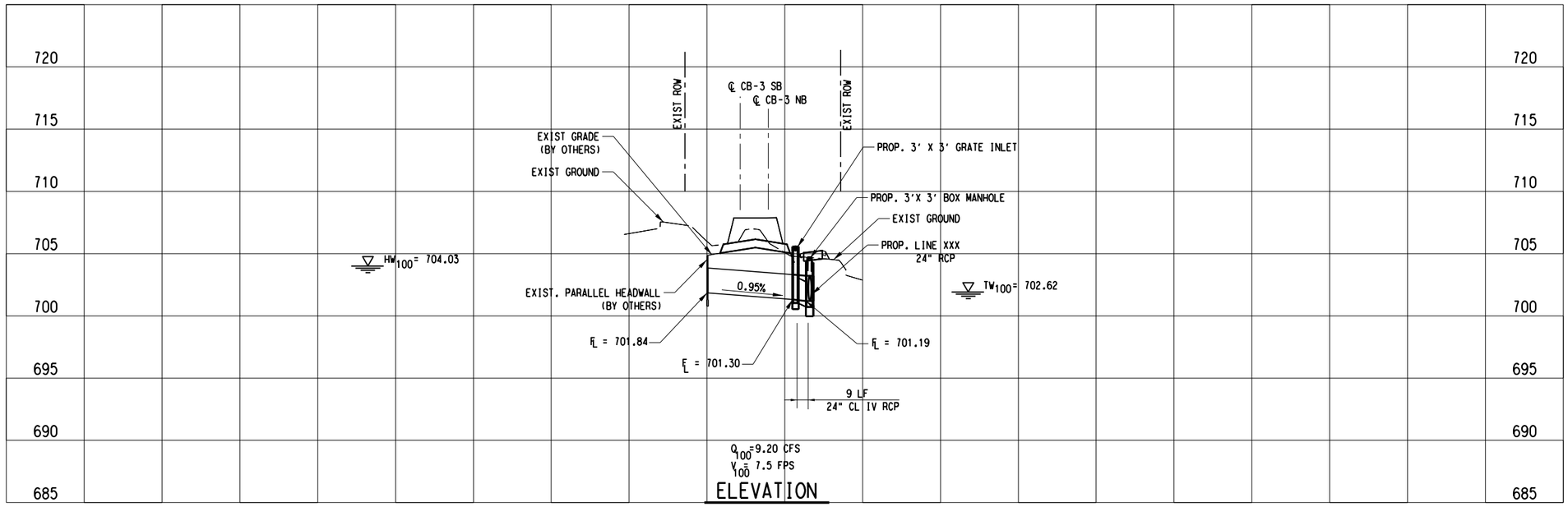
CONTRACT	DWG No.	REV
C-2033270-01	CC6-3657	B

CB05-CC6-3657.040

DWG No. CC6-3510



PLAN



ELEVATION

HYDRAULIC DATA			
EXISTING - 24" RCP		PROPOSED - 24" RCP	
100 YR		100 YR	
Q (CFS)	14.50	Q (CFS)	9.20
V (FPS)	7.50	V (FPS)	7.50
HW ELEV.	704.03	HW ELEV.	704.03
TW ELEV.	702.62	TW ELEV.	702.62

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE DWG No. CS6-3576 FOR CH-PW-0 HEADWALL DETAILS.

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CONTRACT SHEET No. 162 OF 221

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DRAWN	U.POUDEL
DESIGNED	U.POUDEL
CHECKED	H.WU
IN CHARGE	H.WU
DATE	19 SEP 22

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT B-3
AT STA 3268+00

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3510	B

CB05-CC6-3510.040

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CB05-CC6-3510.040
UPoudel
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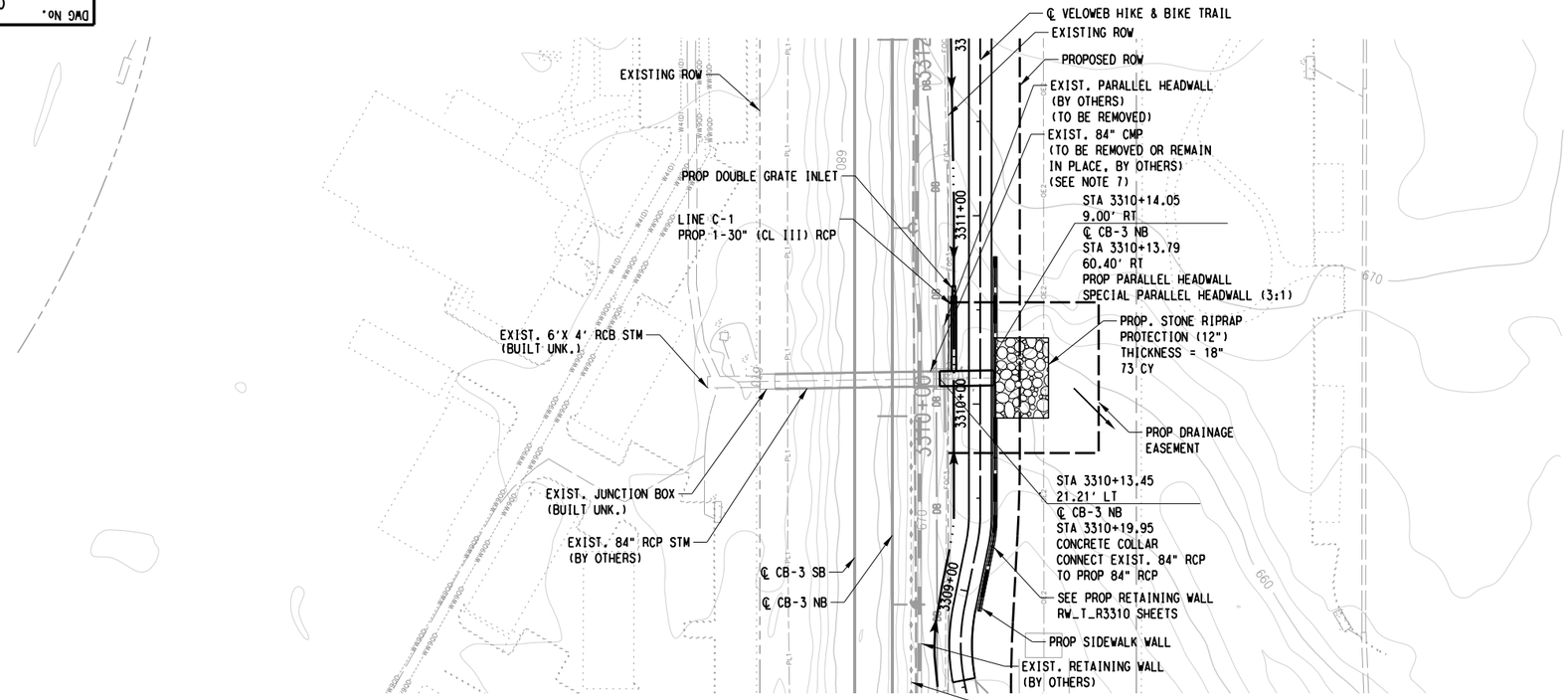
DWG No. CC6-3512



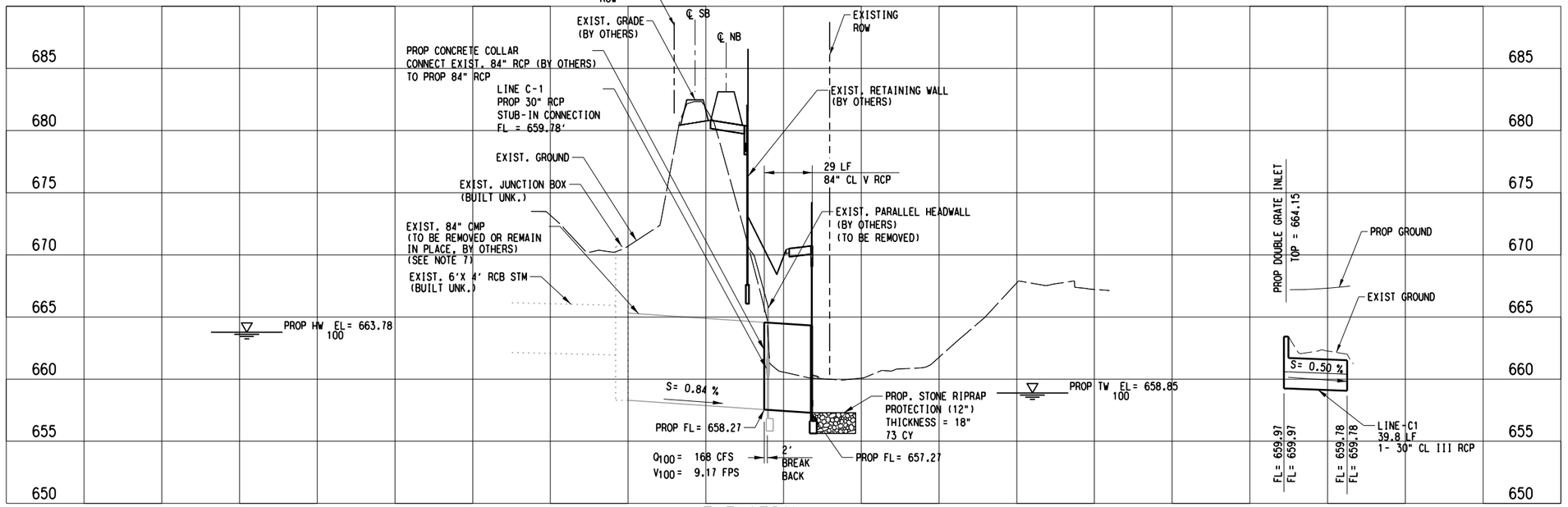
PLAN

HYDRAULIC DATA			
EXISTING 84" CMP		PROPOSED 84" RCP	
100 YR		100 YR	
Q (CFS)	151.70	Q (CFS)	168.00
V (FPS)	11.43	V (FPS)	9.17
HW ELEV.	662.88	HW ELEV.	663.78
TW ELEV.	659.01	TW ELEV.	658.85

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS OTHERWISE NOTED.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS OTHERWISE NOTED.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING UNLESS OTHERWISE NOTED.
7. CONTRACTOR TO EVALUATE THE CONDITION AND STRUCTURAL INTEGRETY OF THE EXISTING CULVERT C-1 (84" CMP).IT IS UNKNOWN IF THE EXISTING CULVERT CAN HANDLE THE E-80 LOADING. CONTRACTOR MAY EXTEND THE EXISTING CULVERT IF IT IS IN GOOD CONDITION AND CAN HANDLE E-80 LOADING.



ELEVATION

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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT C-1
AT STA 3310+14

SCALE	AS NOTED
DRAWN	D. ESCALANTE
DESIGNED	U.POUDEL
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

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CONTRACT	DWG No.	REV
C-2033270-01	CC6-3512	B

CB05-CC6-3512.040

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CB05-CC6-3512.040
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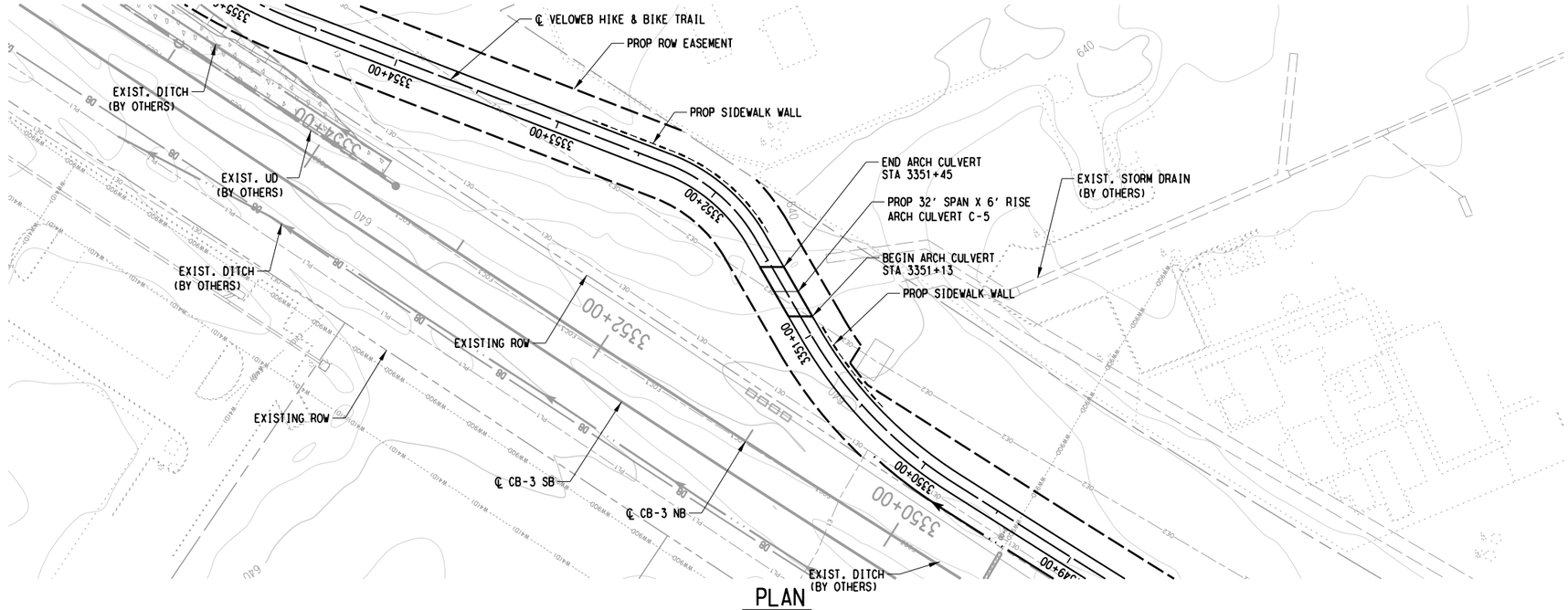
DWG No. CC6-3513



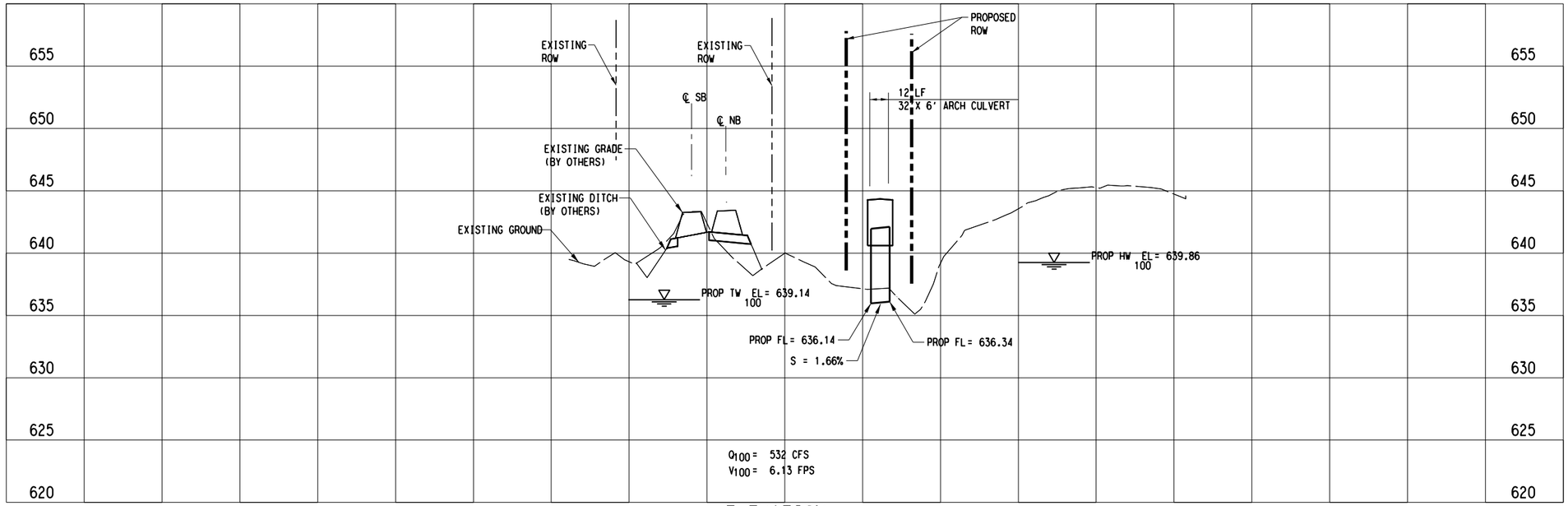
PLAN

HYDRAULIC DATA	
PROPOSED 32'X 6' ARCH CULVERT	
100 YR	
Q (CFS)	532.00
V (FPS)	6.13
HW ELEV.	639.86
TW ELEV.	639.14

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS OTHERWISE NOTED.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS OTHERWISE NOTED.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING UNLESS OTHERWISE NOTED.



ELEVATION

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CONTRACT SHEET No. 164 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	U.POUDEL
CHECKED	H.WU
IN CHARGE	H.WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT C-5
AT STA 3351+29

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3513	B

CB05-CC6-3513.040

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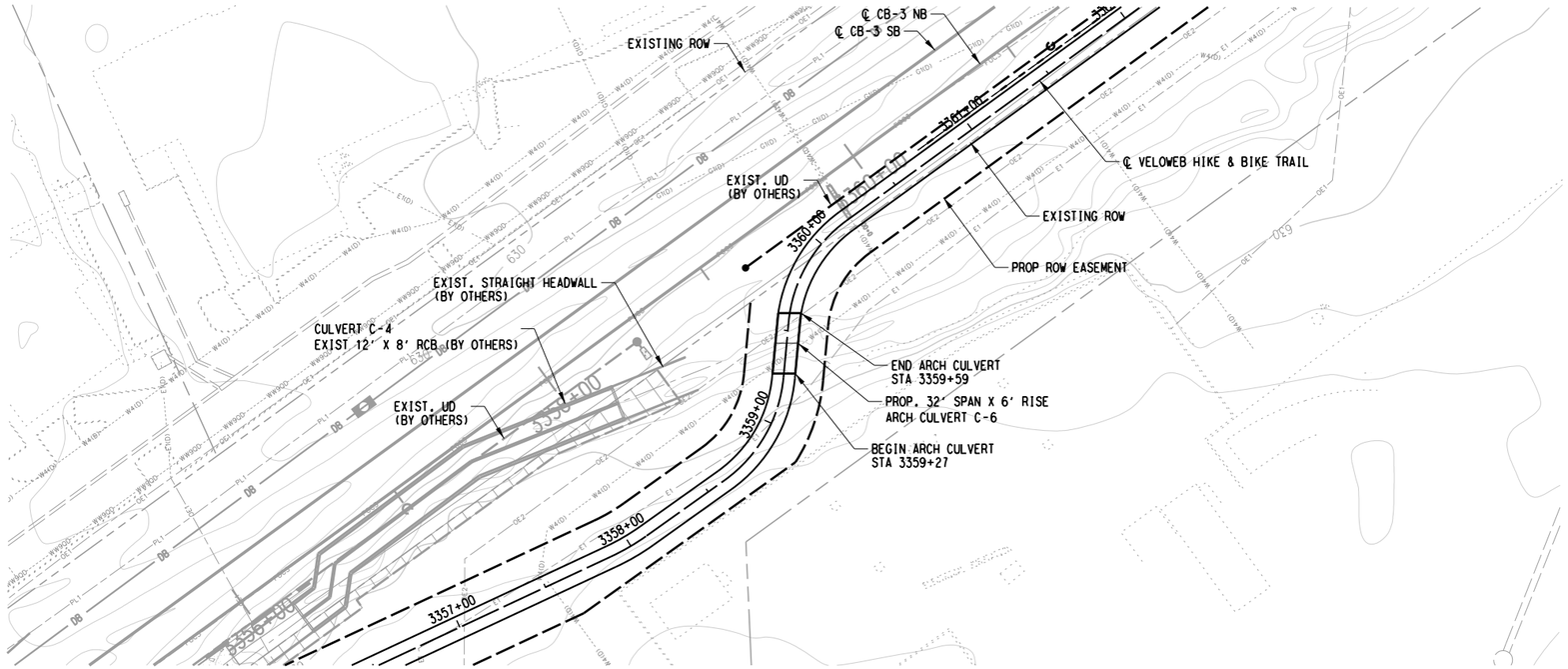
DWG No. CC6-3514



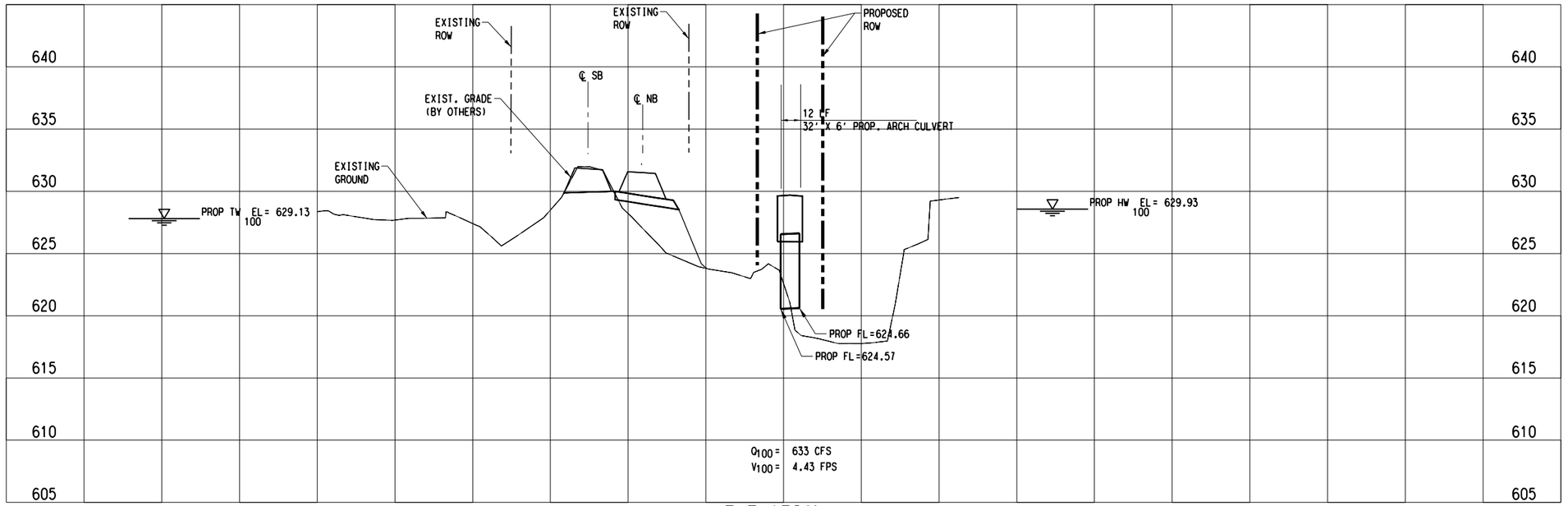
HYDRAULIC DATA	
PROPOSED 32'X 6' ARCH CULVERT	
100 YR	
Q (CFS)	633.00
V (FPS)	4.43
HW ELEV.	629.93
TW ELEV.	629.13

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS OTHERWISE NOTED.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS OTHERWISE NOTED.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING UNLESS OTHERWISE NOTED.

PLAN



Q_{100} = 633 CFS
V_{100} = 4.43 FPS

ELEVATION

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CONTRACT SHEET No. 165 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DRAWN	U.POUDEL
DESIGNED	U.POUDEL
CHECKED	H.WU
IN CHARGE	H.WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT C-6
AT STA 3359+43

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3514	B

CB05-CC6-3514.040

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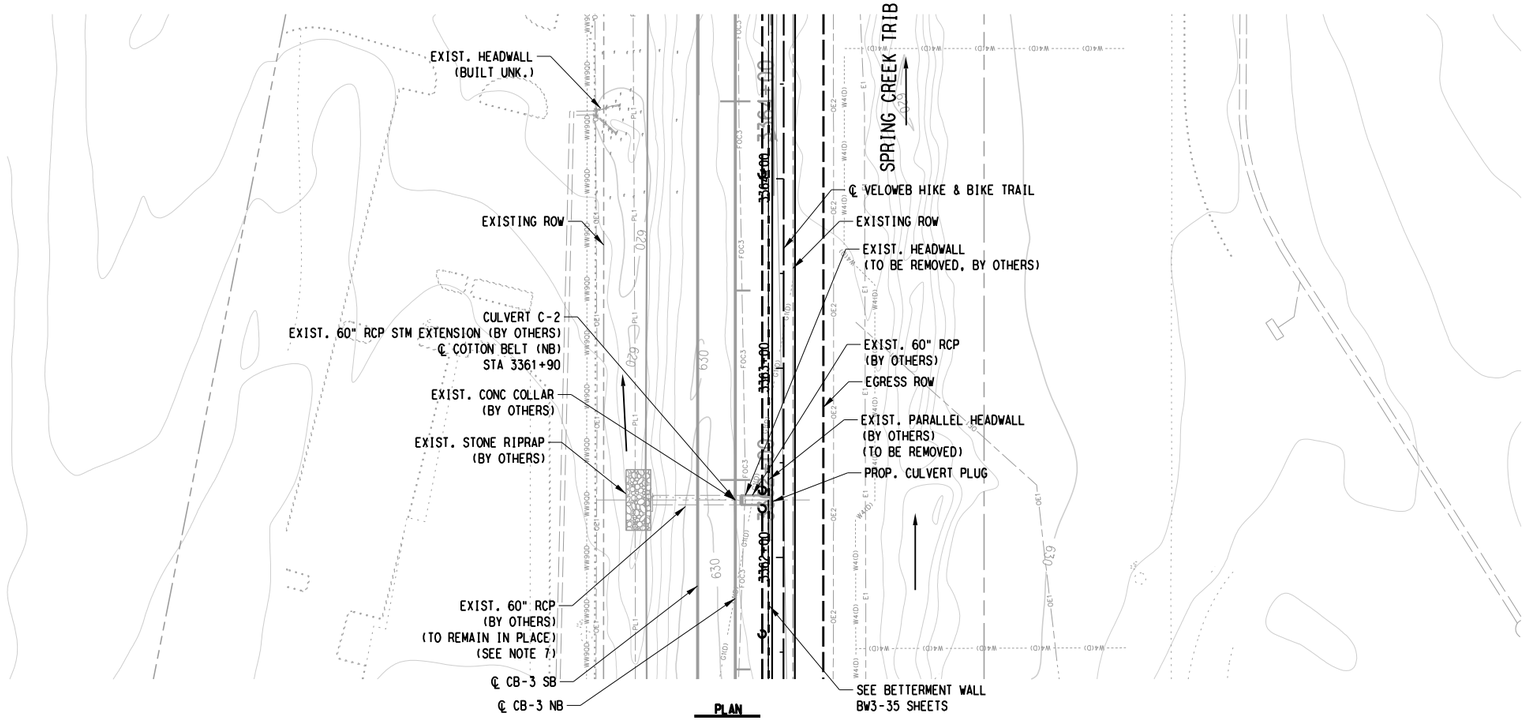
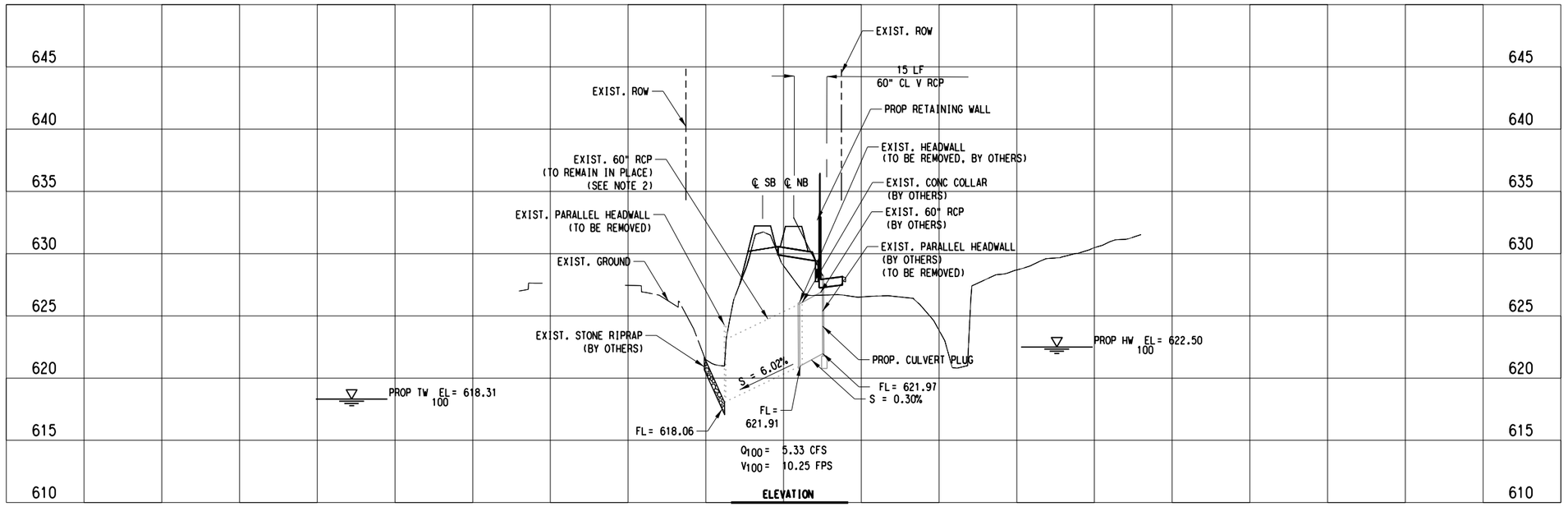
DWG No. CC6-3516





HYDRAULIC DATA		HYDRAULIC DATA	
EXISTING 60" RCP		PROPOSED 60" RCP	
100 YR		100 YR	
Q (CFS)	1.97	Q (CFS)	5.33
V (FPS)	7.34	V (FPS)	10.25
HW ELEV.	622.46	HW ELEV.	622.50
TW ELEV.	618.20	TW ELEV.	618.31

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS OTHERWISE NOTED.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS OTHERWISE NOTED.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING UNLESS OTHERWISE NOTED.
7. CONTRACTOR TO EVALUATE THE CONDITION AND STRUCTURAL INTEGRITY OF THE DRAINAGE SYSTEMS. IT IS UNKNOWN IF EXISTING PIPES CAN HANDLE E-80 LOADING AND ARE CLASS V. CONTRACTOR MAY MAINTAIN CULVERTS IF THEY ARE IN GOOD CONDITION AND CAN HANDLE THE E-80 LOADING.

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1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
FIRM REGISTRATION No. F-2966
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

DART®

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SCALE	AS NOTED
DRAWN	D. ESCALANTE
DESIGNED	U.POUDEL
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

CAES

CONTRACT SHEET No. 166 OF 221

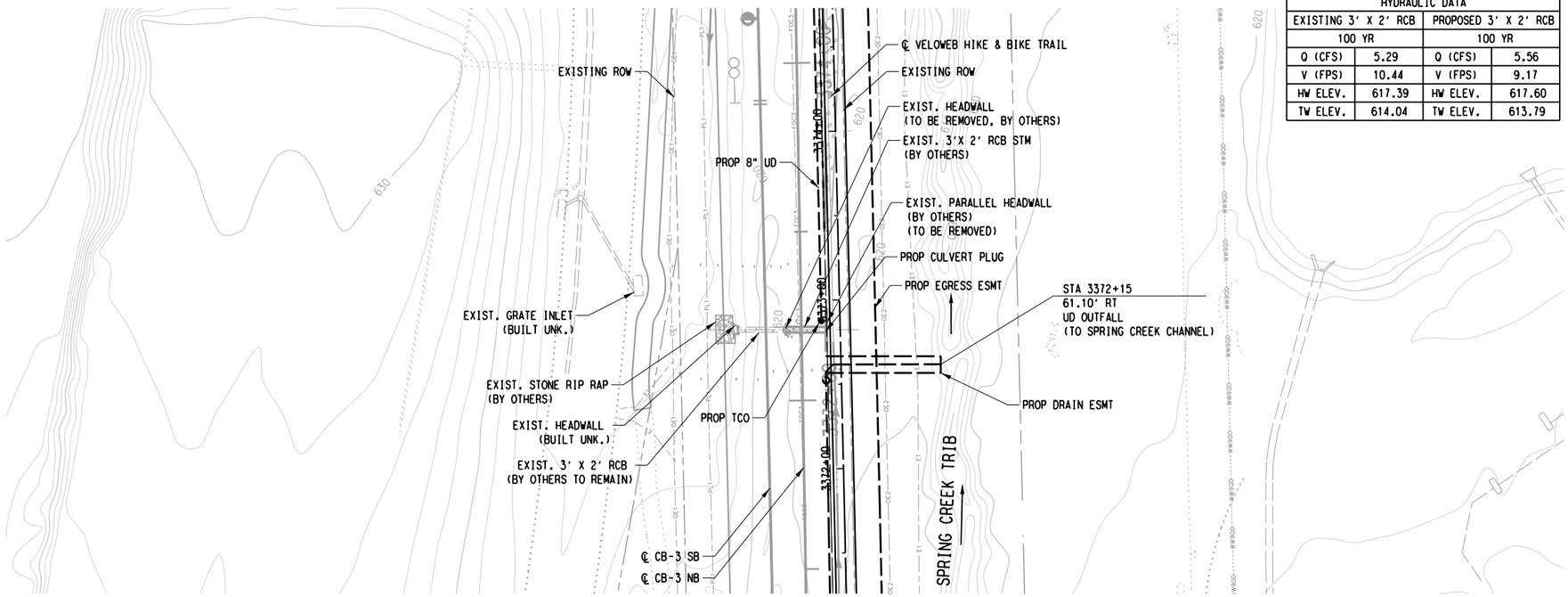
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT C-2
AT STA 3361+90

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3516	B

CB05-CC6-3516.040

DWG No. CC6-3517



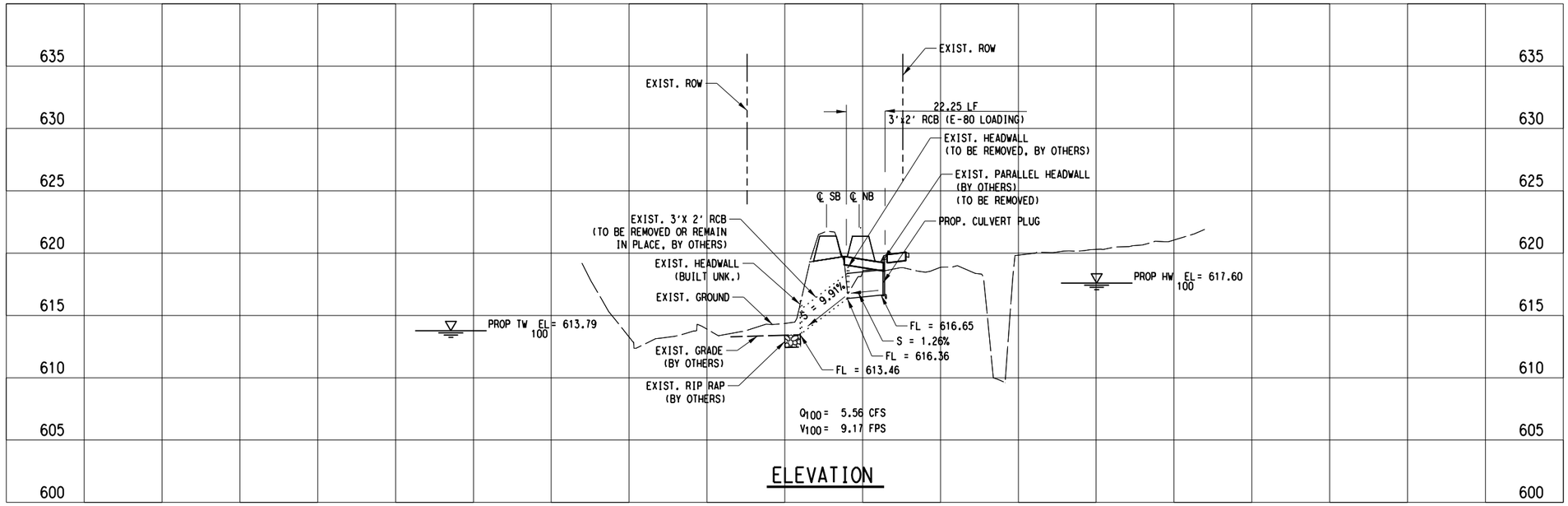
PLAN

HYDRAULIC DATA			
EXISTING 3' X 2' RCB		PROPOSED 3' X 2' RCB	
100 YR		100 YR	
Q (CFS)	5.29	Q (CFS)	5.56
V (FPS)	10.44	V (FPS)	9.17
HW ELEV.	617.39	HW ELEV.	617.60
TW ELEV.	614.04	TW ELEV.	613.79

SCALE (IN FEET)
HORIZ 0 20 40 80
SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE CB-3 NB CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS V UNLESS NOTED OTHERWISE.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS OTHERWISE NOTED.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS OTHERWISE NOTED.
6. CONTOURS SHOWN IN PLAN VIEW ARE EXISTING UNLESS OTHERWISE NOTED.



ELEVATION

NOT AN APPROVED DRAWING
IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 167 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

IN-PROGRESS REVIEW
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF:
HAORAN WU, P.E., 138748
ON
21-SEP-2022 15:14
IEA
TBPE FIRM NO. F-10161
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Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
FIRM REGISTRATION No. F-2966
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

DART®

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SCALE	AS NOTED
DRAWN	D. ESCALANTE
DESIGNED	U.POUDEL
CHECKED	H. WU
IN CHARGE	H. WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
CULVERT C-3
AT STA 3372+42

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3517	B

CB05-CC6-3517.040

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CB05-CC6-3517.040
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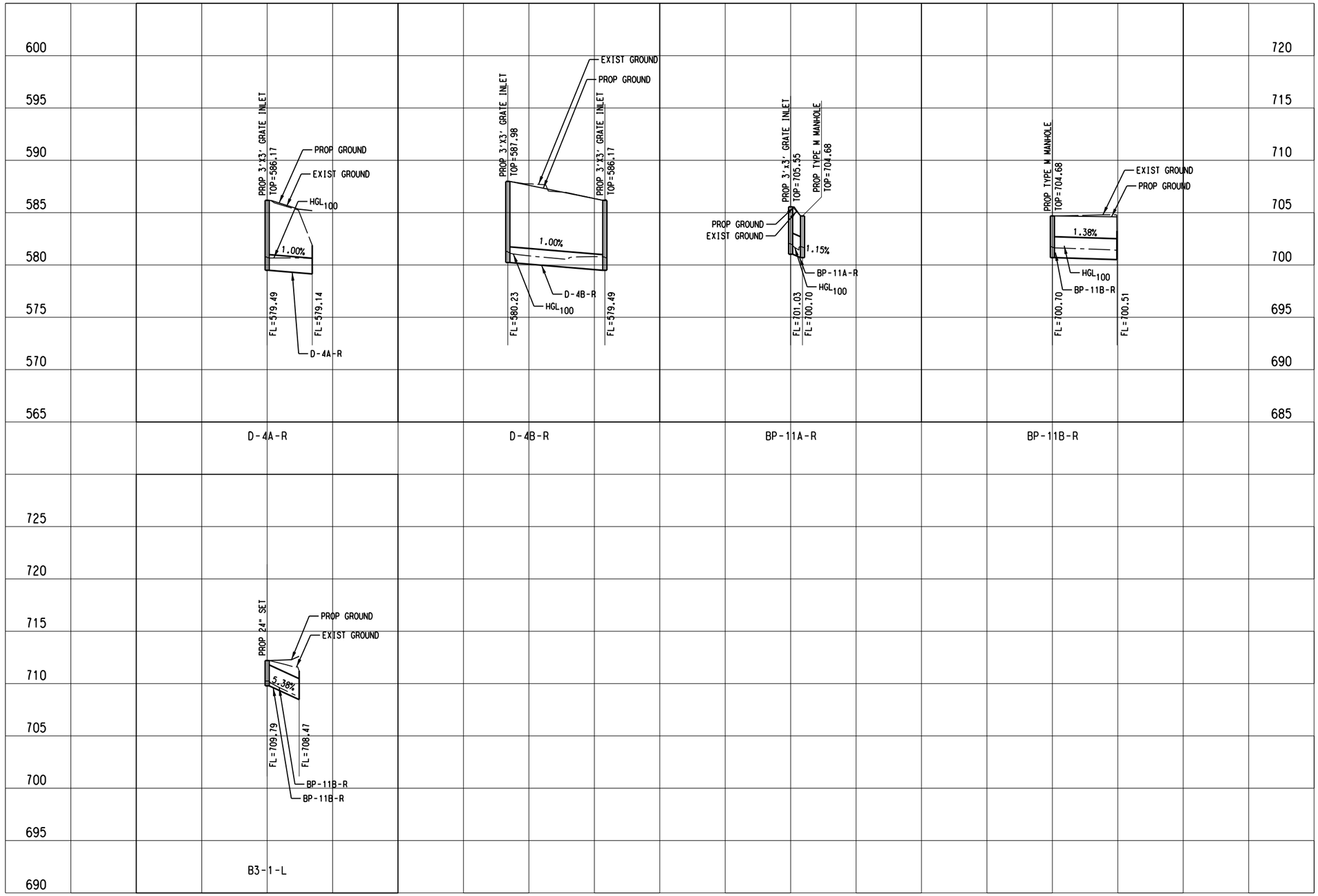
Default

DWG No. CC6-3770



SCALE (IN FEET)
HORIZ 0 20 40 80

SCALE (IN FEET)
VERT 0 2.5 5 7.5 10

NOTES:

1. ALL STATION CALLOUTS ARE IN REFERENCE TO THE VELOWEB HIKE & BIKE TRAIL CENTERLINE, UNLESS NOTED OTHERWISE.
2. SEE UTILITY MODIFICATION SHEET FOR UTILITY MODIFICATIONS.
3. ALL STORM DRAIN PIPES AND CULVERT CROSSINGS NB AND SB TRACK SHALL BE CLASS III, UNLESS H&B DRAINAGE IMPROVEMENTS ARE SUBJECTED TO E80 LOADING ENVELOP.
4. DISTURBED AREAS REQUIRING GROUND COVER SHALL BE SEEDED BY HYDROMULCHING, UNLESS NOTED OTHERWISE.
5. ALL DITCH SIDE SLOPES SHALL BE 3:1 MAX, UNLESS NOTED OTHERWISE.

NOT AN APPROVED DRAWING
IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 168 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

IN-PROGRESS REVIEW
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF:
HAORAN WU, P.E., 138748
ON
17-SEP-2022 10:17
IEA
TBPE FIRM NO. F-10161
IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
FIRM REGISTRATION No, F-2966

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

DART®

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SCALE	1"=40'
DRAWN	J.RODRIGUEZ
DESIGNED	J. RODRIGUEZ
CHECKED	H.WU
IN CHARGE	H.WU
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

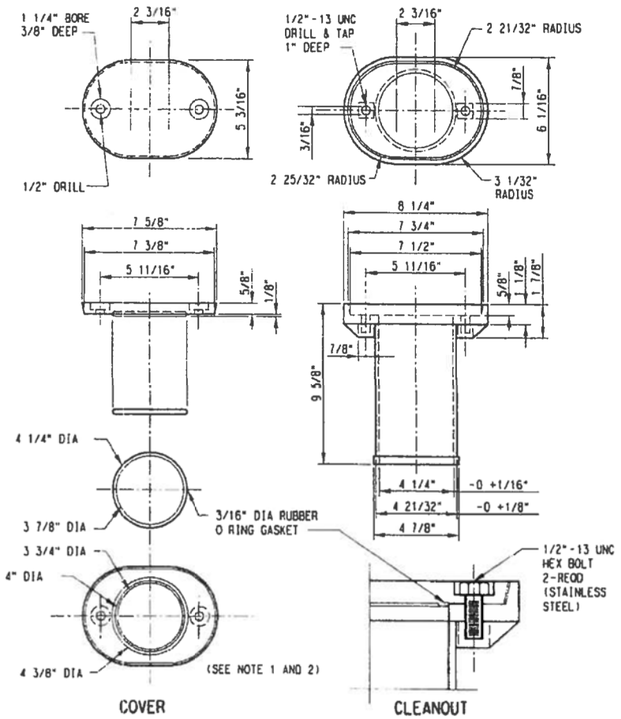
CITY OF RICHARDSON
DRAINAGE PROFILE

CONTRACT	DWG No.	REV
C-2033270-01	CC6-3770	B

CB05-CC6-3770.040

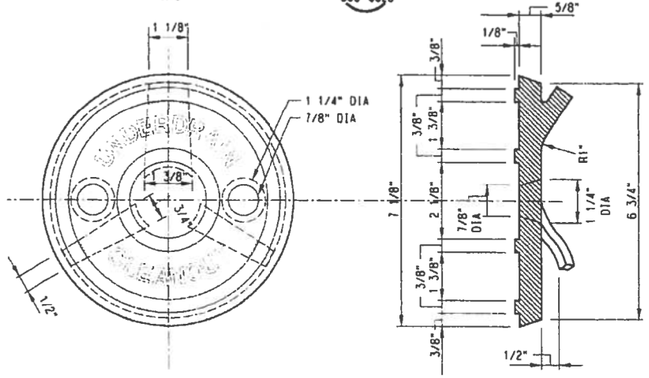
17-SEP-2022 10:17
CB05-CC6-3770.040
JEGSVCPW001
Default

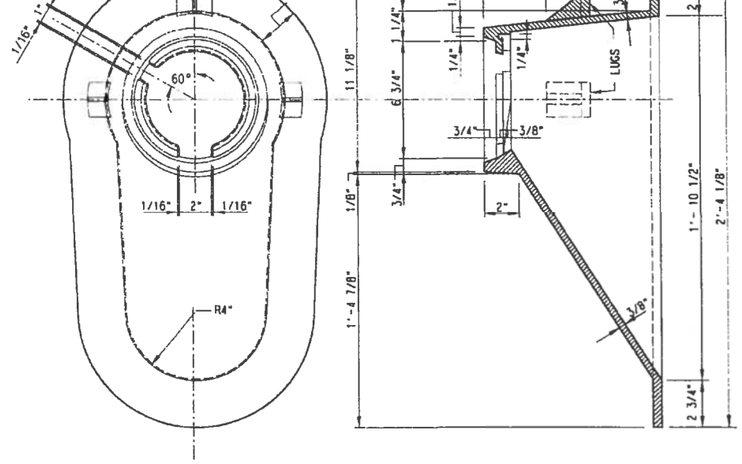
DWG No. CS6-0021



4" CLEANOUT CASTING DETAIL 1

NTS CS6-0023





CLEANOUT CASTING DETAIL 2

NTS CS6-0023

NOTES:

1. THE WORDS "UNDERDRAIN CLEANOUT" OR "CLEANOUT" SHALL BE CAST INTO TOP OF COVER ALONG WITH DART LOGO AS SHOWN ON DETAIL 4 SHEET CSG-0008. LOGO SHALL HAVE A DIAMETER OF 2".
2. PIPE MATERIAL TO BE PVC PLASTIC.
3. PIPE EMBEDMENT CLASSES FOR CLEANOUTS AND MIX M-1 CONCRETE SPECIFIED ON THIS SHEET ARE DESCRIBED IN THE STANDARD SPECIFICATIONS.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 169 OF 221
DWG NO. CC6-3570
CONTRACT NO. C-2033270-01

CONTRACT SHEET No. 35 OF 307

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

STATE OF TEXAS
B. N. REDDY CHIDAMANDI
58001
LICENSED
PROFESSIONAL ENGINEER
12/22/05

CARTER BURGESS
JACOBS CIVIL INC
STV INCORPORATED
KAI ALLIANCE

DART PROJECT

SCALE	NO SCALE
DRAWN	B. SKINNER
DESIGNED	T. WILLIAMS
CHECKED	G. CELERIER
IN CHARGE	B.N. REDDY CHIDAMANDI
DATE	30 NOV 05

CAES

CIVIL STANDARD

UNDERDRAIN DETAILS
SHEET 1 OF 4

CONTRACT	DWG No.	REV
	CS6-0021	0

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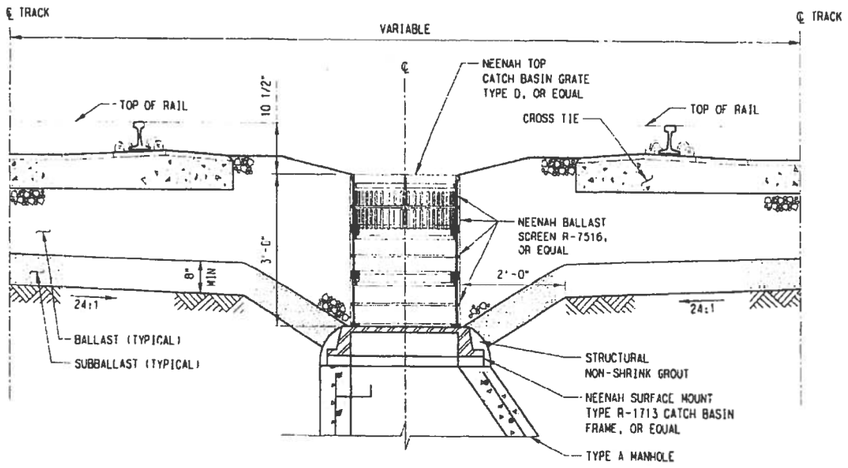
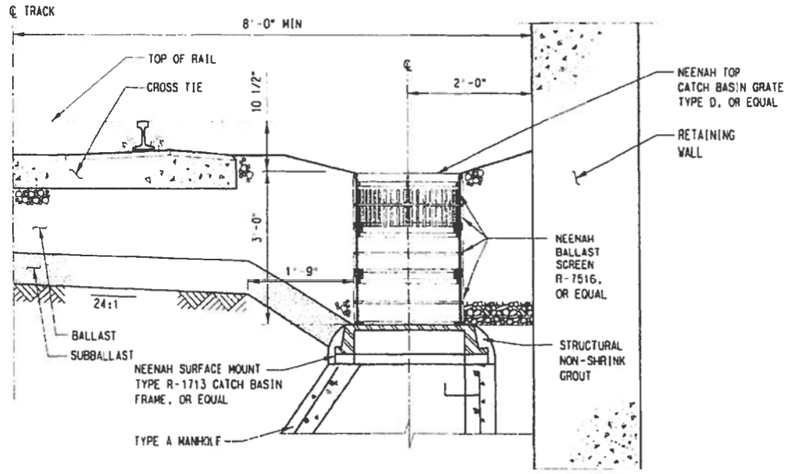
DWG No. CS6-0022



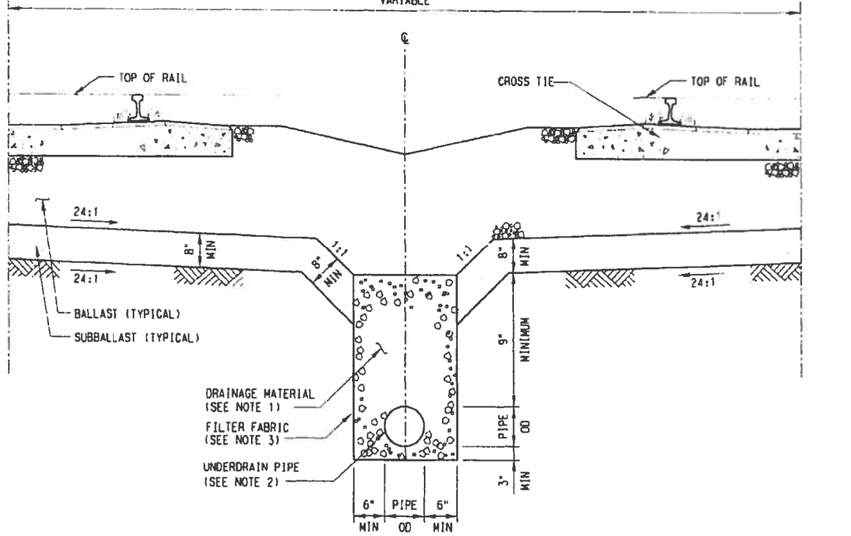
BETWEEN TRACK
BALLAST SCREEN DETAILS 1



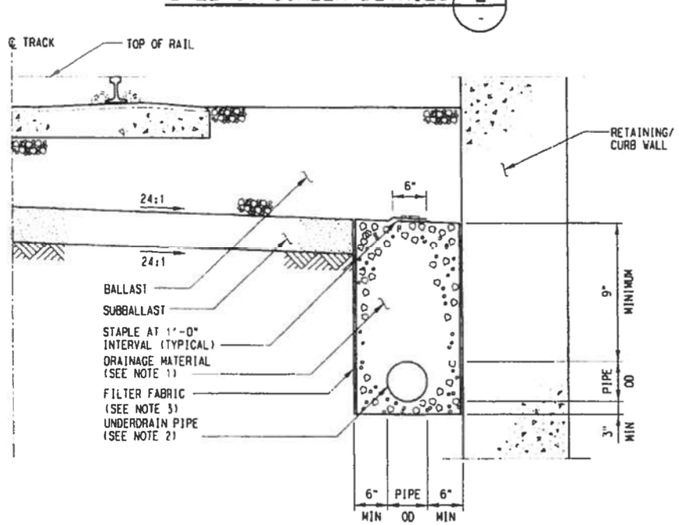
ADJACENT TO WALL
BALLAST SCREEN DETAILS 2

NOTES:

1. DRAINAGE MATERIAL SHALL CONSIST OF CLEAN, CRUSHED, ROCK, GRAVEL, WITH 1 1/2" MAXIMUM PARTICLE SIZE AND MAXIMUM 2 PERCENT BY WEIGHT PASSING SIZE 4 SIEVE.
2. UNDERDRAIN PIPE SHALL BE 8" MIN DIAMETER PERFORATED PIPE. SEE SECTION 02700 OF THE STANDARD SPECIFICATIONS. UNDERDRAIN PIPE SHALL BE INSTALLED WITH PERFORATIONS FACING DOWN. UNDERDRAIN SHALL BE WRAPPED IN GEOTEXTILE FABRIC.
3. NON-WOVEN FILTER FABRIC SEE SECTION 02700 OF THE STANDARD SPECIFICATIONS.



BETWEEN TRACK
UNDERDRAIN DETAILS 3



ADJACENT TO WALL
UNDERDRAIN DETAILS 4

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 170 OF 221
DWG NO. CC6-3571
CONTRACT NO. C-2033270-01

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

STATE OF TEXAS
B. N. REDDY CHIDANANDA
58001
LICENSED PROFESSIONAL ENGINEER
12/23/05

CARTER BURGESS
JACOBS CIVIL INC
STV INCORPORATED
KAI ALLIANCE

DART PROJECT

CONTRACT SHEET No. 36 OF 307

SCALE	NO SCALE
DRAWN	G. SKINNER
DESIGNED	T. WILLIAMS
CHECKED	G. GELERIER
IN CHARGE	B.N. REDDY CHIDANANDA
DATE	30 NOV 05

CIVIL STANDARD

UNDERDRAIN DETAILS
SHEET 2 OF 4

CONTRACT | DWG No. CS6-0022 | REV 0

CAES

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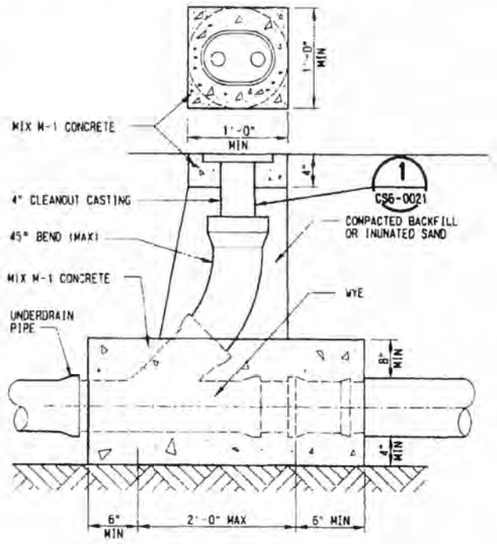
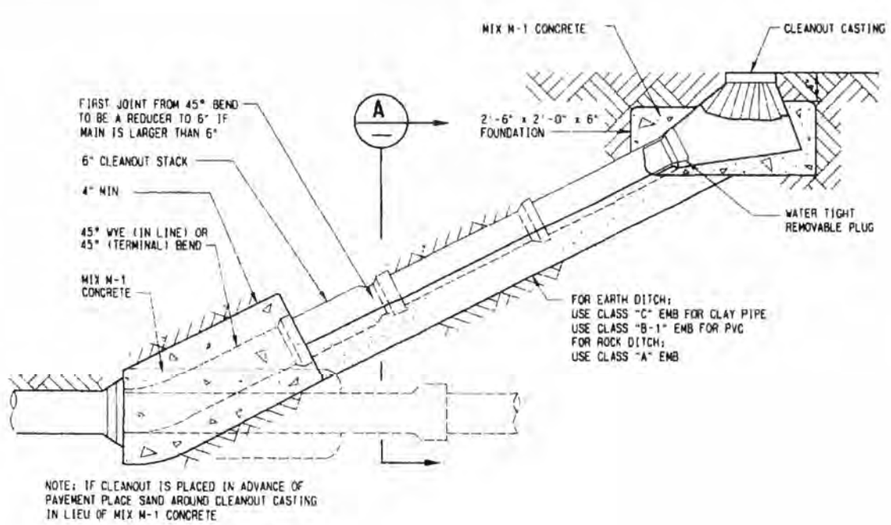
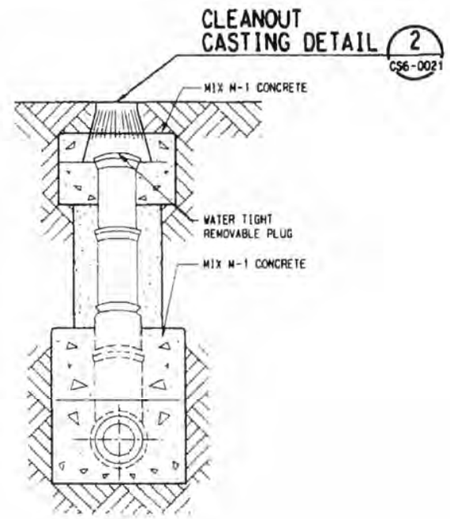
DWG No. CS6-0023



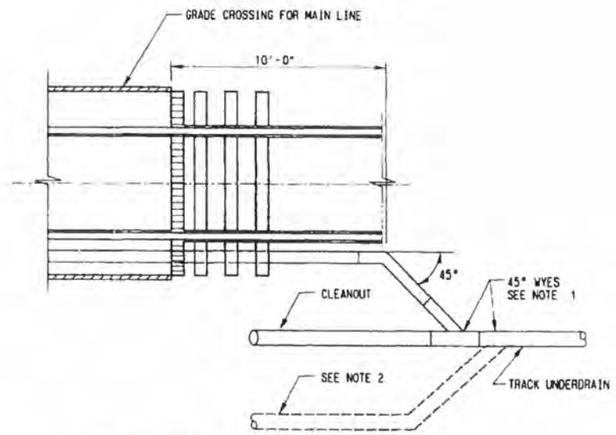
UNDERDRAIN CLEANOUT VERTICAL RISER DETAIL 1
NTS



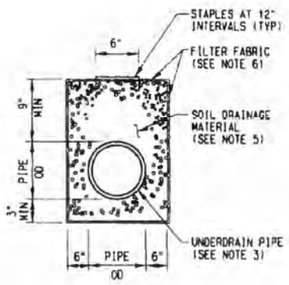
UNDERDRAIN CLEANOUT IN-LINE AND TERMINAL DETAIL 2
NTS



SECTION A
NTS



GRADE CROSING UNDERDRAIN TIE TO TRACK UNDERDRAIN 3
NTS



UNDERDRAIN DETAIL 4
NTS

(SEE NOTE 4)

NOTES:

1. CONTRACTOR TO CONNECT GRADE CROSSING UNDERDRAINS TO TRACK UNDERDRAINS AS SHOWN ON THIS SHEET.
2. WHEN THE TRACK UNDERDRAIN IS BETWEEN THE TRACKS, TWO 45° WYES WILL BE REQUIRED TO CONNECT THE GRADE CROSSING UNDERDRAINS. THEREFORE THE GRADE CROSSING UNDERDRAINS WILL BE DIFFERENT LENGTHS TO STAGGER THE CONNECTIONS.
3. UNDERDRAIN PIPE SHALL BE 8" MINIMUM DIAMETER PERFORATED PIPE. SEE SECTION 02700 OF THE STANDARD SPECIFICATIONS. PIPE SHALL BE WRAPPED IN FILTER FABRIC MATERIAL AND INSTALLED WITH PERFORATIONS DOWN.
4. THIS DETAIL TO BE USED FOR ALL UNDERDRAINS UNLESS NOTED OTHERWISE.
5. SOIL DRAINAGE MATERIAL SHALL CONSIST OF CLEAN, CRUSHED ROCK AND GRAVEL WITH 1 1/2" MAX PARTICLE SIZE AND MAX 2 PERCENT BY WEIGHT PASSING No.4 SIEVE. BALLAST DRAIN SHALL BE WRAPPED IN GEOTEXTILE FABRIC. OVERLAY FABRIC AT TOP AND PIN.
6. FILTER FABRIC SHALL BE NON-WOVEN GEOTEXTILE FABRIC AS DESCRIBED IN SPECIFICATION 02700.
7. SEE CASTING DETAILS SHEET CS6-0021.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 171 OF 221
DWG NO. CC6-3572
CONTRACT NO. C-2033270-01

REV	AMEND	CR	DATE	DESCRIPTION	BY	CHG	CHK	APP

STATE OF TEXAS — B. N. REDDY CHIDAMANDA — 59001 — LICENSED PROFESSIONAL ENGINEER — 12/23/05

CARTER BURGESS
JACOBS CIVIL INC
STV INCORPORATED
KAI ALLIANCE

DART PROJECT

SCALE	NO SCALE
DRAWN	B. SKINNER
DESIGNED	T. WILLIAMS
CHECKED	G. CELERIER
IN CHARGE	B.N. REDDY CHIDAMANDA
DATE	30 NOV 05

CONTRACT SHEET No. 37 OF 307

CIVIL STANDARD

UNDERDRAIN DETAILS
SHEET 3 OF 4

CONTRACT | DWG No. CS6-0023 | REV 0

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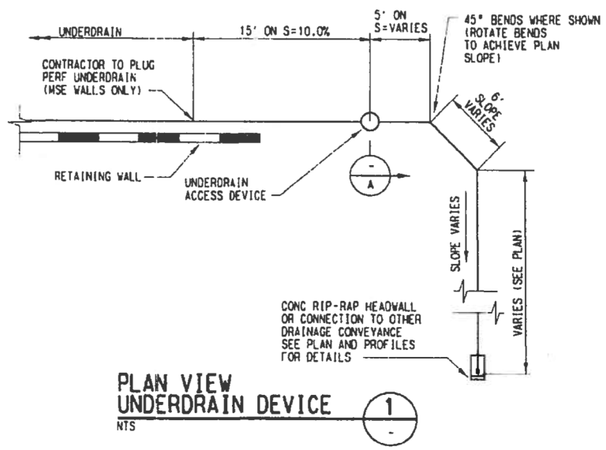
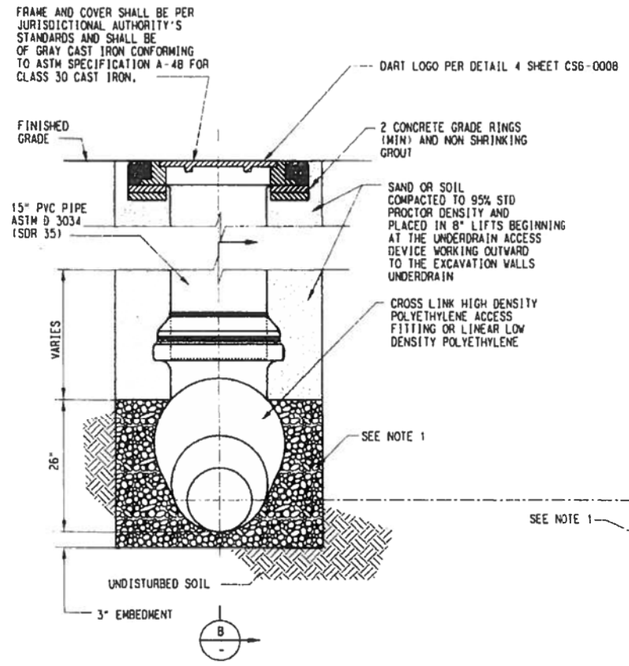
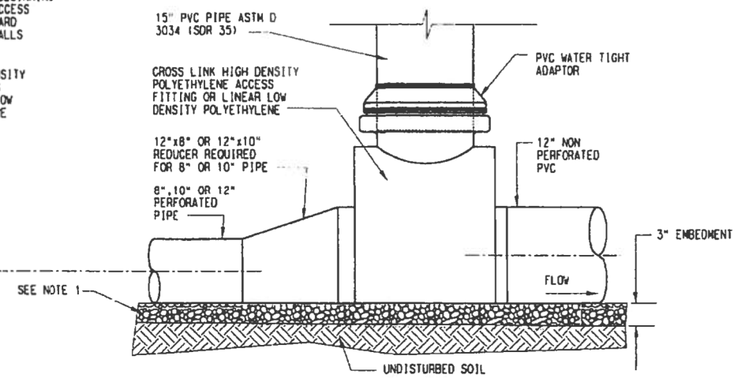
DWG No. CS6-0024



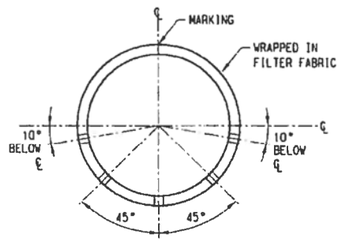
PLAN VIEW
UNDERDRAIN DEVICE (1)
NTS



SECTION (A)
NTS



SECTION VIEW (B)
NTS



NOMINAL DIAMETER IN.	MINIMUM ROWS OF PERFORATIONS	HOLE SIZE IN.	HOLE SPACING IN.
8 & 10	4	3/8	3
12	6	3/8	3
15	6	3/8	3

UNDERDRAIN PERFORATION SCHEDULE (3)
NTS

NOTE:
1. FREE DRAINING CLEAN & CRUSHED ROCK OR GRAVEL WITH 1½INCH MAXIMUM PARTICLE SIZE. NO MORE THAN FIVE PERCENT BY WEIGHT MAY PASS A⅜-INCH SIEVE. CRUSHED LIMESTONE SHALL NOT BE USED.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 172 OF 221
DWG NO. CC6-3573
CONTRACT NO. C-2033270-01

CONTRACT SHEET No. 38 OF 307

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

STATE OF TEXAS
B. N. REDDY CHIDANANDA
58001
LICENSED PROFESSIONAL ENGINEER
12/23/05

ACT 21
CARTER BURGESS
JACOBS CIVIL INC
STV INCORPORATED
KAI ALLIANCE

DART PROJECT

SCALE	NO SCALE
Drawn	B. SKINNER
DESIGNED	T. WILLIAMS
CHECKED	G. CELERIER
IN CHARGE	B.N. REDDY CHIDANANDA
DATE	30 NOV 05

CAES

CIVIL STANDARD

UNDERDRAIN DETAILS
SHEET 4 OF 4

CONTRACT	DWG No.	REV
	CS6-0024	0

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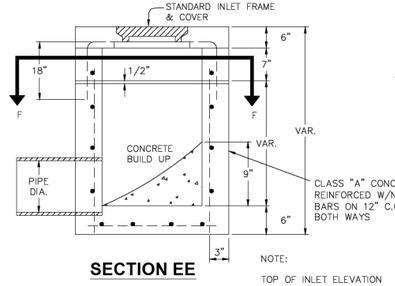
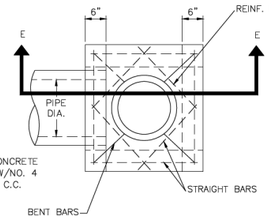


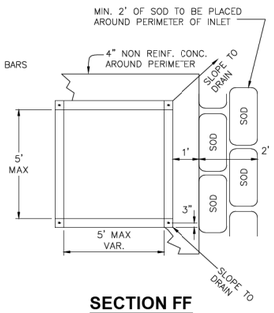
SECTION EE

NOTE:

TOP OF INLET ELEVATION SHALL BE AT OR BELOW THE LOWEST ADJACENT CURB.



PLAN



SECTION FF

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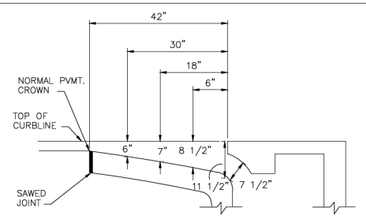
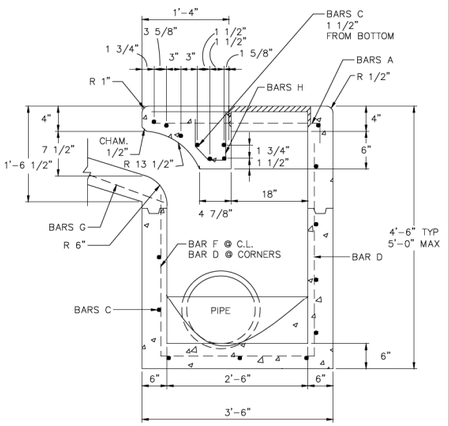
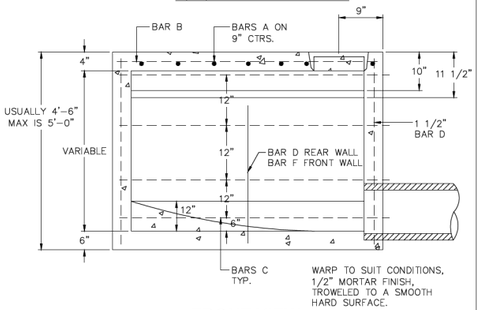


INLET THROAT DETAIL



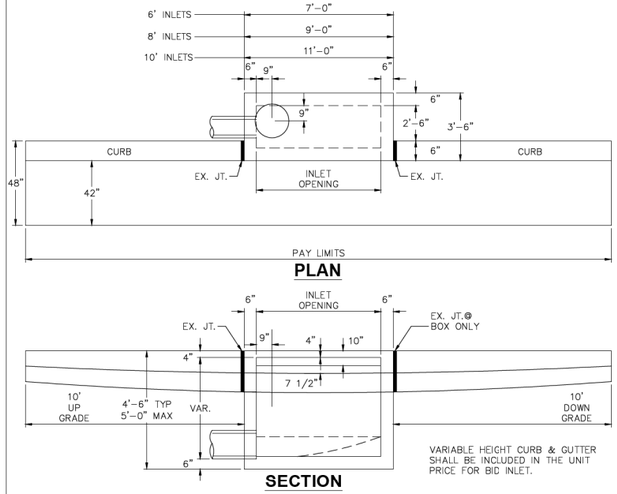
END VIEW

6, 8, & 10 FT. INLETS



FRONT VIEW

6, 8, & 10 FOOT INLETS



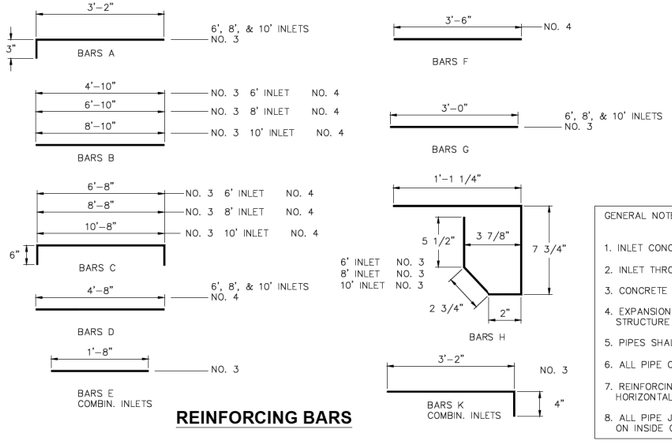
PLAN

VARIABLE HEIGHT CURB & GUTTER SHALL BE INCLUDED IN THE UNIT PRICE FOR BID INLET.

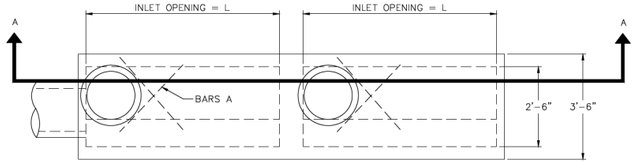
SECTION

6, 8, & 10 FT. INLETS

(SEE INLET THROAT DETAIL)



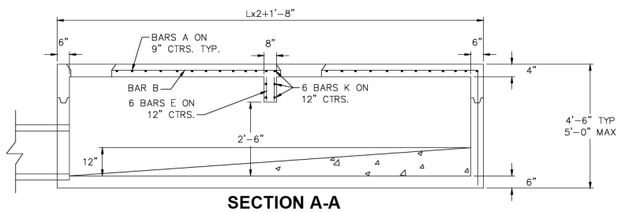
REINFORCING BARS



PLAN

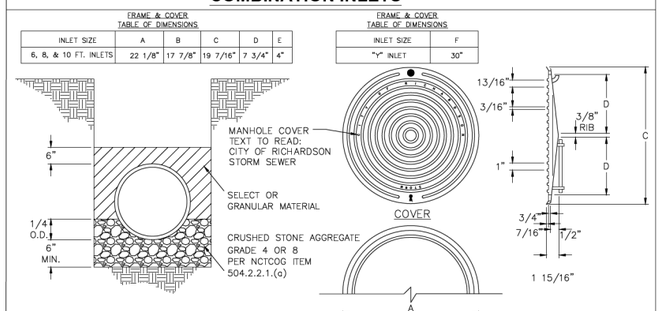
COMBINATION INLETS

TO BE USED IN CONSTRUCTING 12', 14', 16', 18' & 20' INLETS



SECTION A-A

COMBINATION INLETS

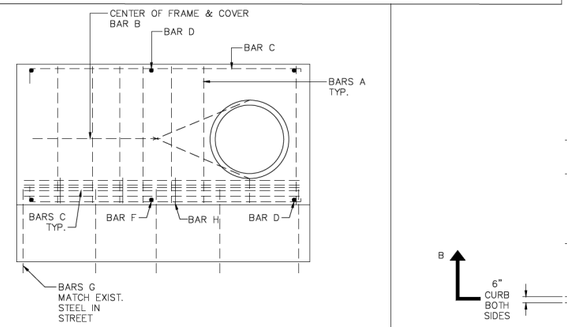


EMBEDMENT

NOTE:

MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE USED PLUS 16" FOR PIPE WITH 33" DIA. OR SMALLER. FOR PIPES LARGER THAN 33" SHALL BE THE O.D. PLUS 24".

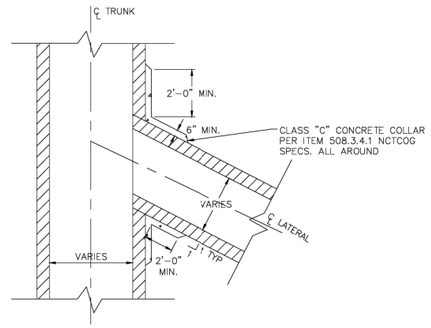
INLET FRAME & COVER (LOCKING TYPE)



REINFORCING PLAN

GENERAL NOTES

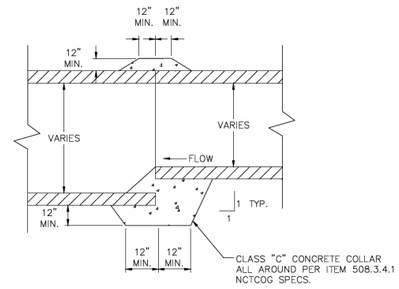
1. INLET CONCRETE SHALL BE CLASS "A".
2. INLET THROAT CONCRETE SHALL BE CLASS "C".
3. CONCRETE SHALL HAVE A TROWEL AND BRUSH FINISH.
4. EXPANSION JOINT MATERIAL SHALL BE PLACED BETWEEN INLET STRUCTURE AND CURB.
5. PIPES SHALL ONLY CONNECT TO THE ENDS OR SIDES OF INLETS.
6. ALL PIPE CONNECTIONS 48" AND SMALLER SHALL BE FACTORY WYES.
7. REINFORCING STEEL– NO. 3 12" O.C.E.W. EQUALLY SPACED HORIZONTALLY IN INLET FOOTINGS.
8. ALL PIPE JOINTS SHALL SHOW EVIDENCE OF JOINT MATERIAL 360° ON INSIDE OF PIPE.
9. NO PRECAST STRUCTURES ALLOWED FOR STORM SEWER.
10. SEE SHEET C-10 FOR STORM SEWER MANHOLE DETAILS.
11. SEE C-9 FOR ALLEY INLETS.



NOTE:

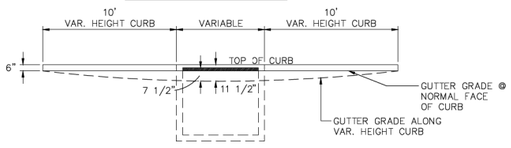
ALL PIPE CONNECTIONS 48" AND SMALLER SHALL BE FACTORY WYES

CONCRETE COLLAR FOR WYE CONNECTION

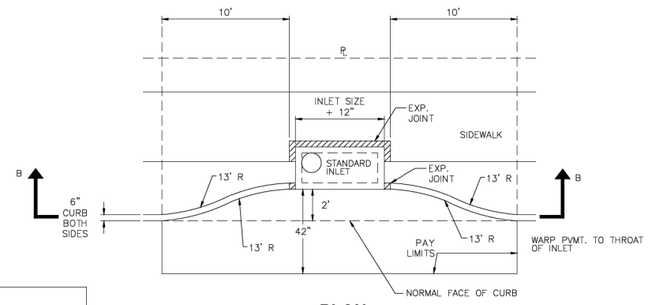


CONCRETE COLLAR FOR PIPE TO PIPE CONNECTION

RECESSED INLETS



SECTION B-B



PLAN

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 173 OF 221
DWG NO. CC6-3574
CONTRACT NO. C-2033270-01

Revisions:

City of Richardson
411 W. Arapaho Road
Suite 204
Richardson, Texas 75080
voice: 972 744-4280
fax: 972 744-5804

Drawn By: RGB
Checked By: COR

RICHARDSON TEXAS

STANDARD DETAILS

City of Richardson, Texas

NO ADDITIONS OR CHANGES TO STANDARD DETAIL SHEETS UNLESS APPROVED BY CITY OF RICHARDSON

24"x36" Scale: NTS
11"x17" Scale: NTS
Vertical Scale: NA
Project Number: XXX
Issue Date: 03 MAY 18

Sheet Title: **STORM SEWER**

Sheet No.: **C-5**

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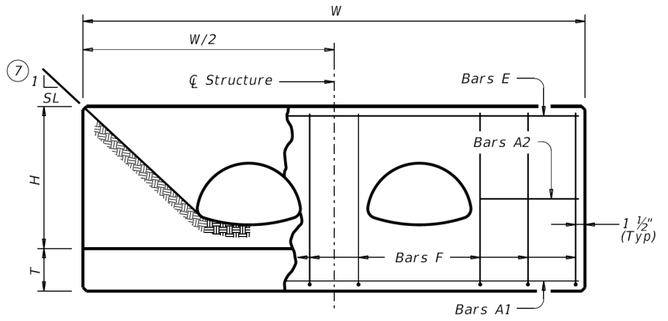
DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Design	Size of Pipe Arch Span	Size of Pipe Arch Rise	15° Skew: Values for One Pipe W	15° Skew: Values for One Pipe Reinf (Lbs) (1)	15° Skew: Values for One Pipe Conc (CY) (2)	15° Skew: Values To Be Added for Each Addt'l Pipe W	15° Skew: Values To Be Added for Each Addt'l Pipe Reinf (Lbs)	15° Skew: Values To Be Added for Each Addt'l Pipe Conc (CY) (2)	30° Skew: Values for One Pipe W	30° Skew: Values for One Pipe Reinf (Lbs) (1)	30° Skew: Values for One Pipe Conc (CY) (2)	30° Skew: Values To Be Added for Each Addt'l Pipe W	30° Skew: Values To Be Added for Each Addt'l Pipe Reinf (Lbs)	30° Skew: Values To Be Added for Each Addt'l Pipe Conc (CY) (2)	45° Skew: Values for One Pipe W	45° Skew: Values for One Pipe Reinf (Lbs) (1)	45° Skew: Values for One Pipe Conc (CY) (2)	45° Skew: Values To Be Added for Each Addt'l Pipe W	45° Skew: Values To Be Added for Each Addt'l Pipe Reinf (Lbs) (1)	45° Skew: Values To Be Added for Each Addt'l Pipe Conc (CY) (2)
2:1	1	17"	13"	10' – 1"	131	1.2	2' – 6"	28	0.2	11' – 3"	153	1.3	2' – 9 ¾"	30	0.3	13' – 9"	180	1.6	3' – 5"	33	0.4
	2	21"	15"	11' – 2"	142	1.3	3' – 0"	33	0.3	12' – 5"	164	1.5	3' – 4 ¼"	35	0.4	15' – 2"	195	1.8	4' – 1 ¾"	39	0.4
	3	28"	20"	13' – 6"	187	1.9	3' – 10 ¼"	44	0.5	15' – 0"	214	2.1	4' – 4"	45	0.5	18' – 5"	252	2.5	5' – 3 ¾"	59	0.7
	4	35"	24"	15' – 5"	253	2.3	4' – 9"	51	0.6	17' – 3"	287	2.6	5' – 3 ½"	63	0.7	21' – 1"	335	3.2	6' – 5 ¾"	69	0.9
	5	42"	29"	17' – 9"	315	3.3	5' – 7 ¼"	70	0.9	19' – 10"	355	3.7	6' – 3"	73	1.0	24' – 3"	411	4.5	7' – 8"	80	1.2
	6	49"	33"	19' – 9"	348	3.9	6' – 5 ½"	78	1.1	22' – 0"	388	4.3	7' – 2 ½"	82	1.2	27' – 0"	474	5.3	8' – 10"	102	1.5
	7	57"	38"	22' – 2"	447	4.9	7' – 5"	87	1.4	24' – 9"	495	5.4	8' – 3 ¼"	93	1.6	30' – 3"	597	6.6	10' – 1 ¾"	115	1.9
	8	64"	43"	24' – 6"	515	5.8	8' – 5 ½"	112	1.7	27' – 4"	568	6.4	9' – 5 ¼"	117	1.9	33' – 6"	711	7.9	11' – 6 ½"	141	2.3
	9	71"	47"	26' – 6"	585	6.7	9' – 4 ¾"	121	2.1	29' – 6"	643	7.5	10' – 6"	127	2.3	36' – 2"	794	9.2	12' – 10 ¼"	153	2.8
3:1	1	17"	13"	14' – 5"	185	1.7	2' – 6"	29	0.3	16' – 1"	209	1.9	2' – 9 ¾"	30	0.3	19' – 8"	257	2.3	3' – 5"	34	0.4
	2	21"	15"	15' – 9"	213	1.9	3' – 0 ¼"	34	0.3	17' – 7"	240	2.1	3' – 4 ¼"	35	0.4	21' – 7"	278	2.6	4' – 1 ¾"	39	0.4
	3	28"	20"	19' – 0"	273	2.7	3' – 10 ¾"	43	0.5	21' – 2"	301	3.0	4' – 4"	46	0.5	25' – 11"	366	3.6	5' – 3 ¾"	59	0.7
	4	35"	24"	21' – 8"	363	3.3	4' – 9"	51	0.6	24' – 2"	402	3.7	5' – 3 ½"	62	0.7	29' – 7"	481	4.5	6' – 5 ¾"	69	0.9
	5	42"	29"	24' – 10"	441	4.7	5' – 7 ¼"	70	0.9	27' – 9"	506	5.2	6' – 3"	73	1.0	33' – 11"	599	6.4	7' – 8"	82	1.2
	6	49"	33"	27' – 6"	507	5.5	6' – 5 ½"	78	1.1	30' – 8"	578	6.2	7' – 2 ½"	83	1.2	37' – 7"	703	7.6	8' – 10"	102	1.5
	7	57"	38"	30' – 10"	666	6.9	7' – 5"	88	1.4	34' – 4"	725	7.7	8' – 3 ¼"	93	1.6	42' – 1"	876	9.4	10' – 1 ¾"	115	1.9
	8	64"	43"	34' – 0"	754	8.2	8' – 5 ½"	112	1.7	37' – 11"	847	9.1	9' – 5 ¼"	117	1.9	46' – 5"	1,013	11.1	11' – 6 ½"	141	2.3
	9	71"	47"	36' – 8"	841	9.5	9' – 4 ¾"	121	2.1	40' – 11"	942	10.6	10' – 6"	127	2.3	50' – 1"	1,149	13.0	12' – 10 ¼"	153	2.8
4:1	1	17"	13"	18' – 9"	240	2.2	2' – 6"	29	0.3	20' – 11"	267	2.4	2' – 9 ¾"	30	0.3	25' – 7"	324	3.0	3' – 5"	33	0.4
	2	21"	15"	20' – 5"	272	2.5	3' – 0 ¼"	33	0.3	22' – 10"	302	2.7	3' – 4 ¼"	35	0.4	27' – 11"	362	3.4	4' – 1 ¾"	38	0.4
	3	28"	20"	24' – 6"	358	3.5	3' – 10 ¾"	43	0.5	27' – 4"	391	3.9	4' – 4"	45	0.5	33' – 6"	480	4.7	5' – 3 ¾"	59	0.7
	4	35"	24"	27' – 10"	468	4.3	4' – 9"	51	0.6	31' – 1"	533	4.8	5' – 3 ½"	62	0.7	38' – 1"	646	5.9	6' – 5 ¾"	69	0.9
	5	42"	29"	31' – 11"	587	6.0	5' – 7 ¼"	70	0.9	35' – 7"	639	6.7	6' – 3"	74	1.0	43' – 7"	788	8.3	7' – 8"	82	1.2
	6	49"	33"	35' – 3"	664	7.2	6' – 5 ½"	79	1.1	39' – 4"	744	8.0	7' – 2 ½"	83	1.2	48' – 2"	910	9.8	8' – 10"	102	1.5
	7	57"	38"	39' – 5"	860	8.9	7' – 5"	88	1.4	44' – 0"	956	9.9	8' – 3 ¼"	93	1.6	53' – 10'	1,156	12.2	10' – 1 ¾"	114	1.9
	8	64"	43"	43' – 6"	994	10.6	8' – 5 ½"	112	1.7	48' – 6"	1,097	11.8	9' – 5 ¼"	117	1.9	59' – 5"	1,344	14.4	11' – 6 ½"	141	2.3
	9	71"	47"	46' – 10"	1,096	12.3	9' – 4 ¾"	122	2.1	52' – 3"	1,211	13.7	10' – 6"	127	2.3	64' – 0"	1,509	16.8	12' – 10 ¼"	152	2.8
6:1	1	17"	13"	27' – 4"	361	3.2	2' – 6"	29	0.3	30' – 6"	396	3.6	2' – 9 ¾"	30	0.3	37' – 4"	478	4.4	3' – 5"	33	0.3
	2	21"	15"	29' – 9"	402	3.6	3' – 0 ¼"	33	0.3	33' – 2"	437	4.0	3' – 4 ¼"	36	0.4	40' – 8"	542	4.9	4' – 1 ¾"	39	0.5
	3	28"	20"	35' – 7"	513	5.1	3' – 10 ¾"	43	0.5	39' – 8"	570	5.6	4' – 4"	46	0.5	48' – 7"	694	6.9	5' – 3 ¾"	60	0.7
	4	35"	24"	40' – 3"	685	6.3	4' – 9"	51	0.6	44' – 11"	759	7.0	5' – 3 ½"	64	0.7	55' – 0"	935	8.6	6' – 5 ¾"	70	0.9
	5	42"	29"	46' – 1"	857	8.8	5' – 7 ¼"	72	0.9	51' – 5"	944	9.8	6' – 3"	74	1.0	62' – 11"	1,180	12.0	7' – 8"	80	1.3
	6	49"	33"	50' – 10"	981	10.5	6' – 5 ½"	79	1.1	56' – 8"	1,101	11.7	7' – 2 ½"	82	1.2	69' – 5"	1,357	14.3	8' – 10"	101	1.5
	7	57"	38"	56' – 8"	1,273	13.0	7' – 5"	88	1.4	63' – 3"	1,408	14.5	8' – 3 ¼"	92	1.6	77' – 5"	1,724	17.7	10' – 1 ¾"	114	1.9
	8	64"	43"	62' – 6"	1,457	15.3	8' – 5 ½"	111	1.7	69' – 8"	1,611	17.1	9' – 5 ¼"	116	1.9	85' – 4"	1,993	21.0	11' – 6 ½"	140	2.3
	9	71"	47"	67' – 2"	1,623	17.9	9' – 4 ¾"	120	2.1	75' – 0"	1,820	20.0	10' – 6"	126	2.3	91' – 10'	2,198	24.4	12' – 10 ¼"	152	2.8



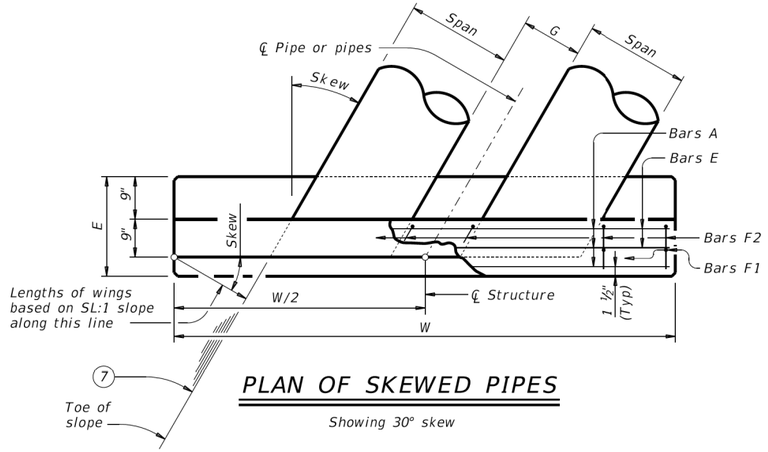
ELEVATION

TABLE OF CONSTANT DIMENSIONS

Design	Size of Pipe Arch Span	Size of Pipe Arch Rise	G	K (5)	H	T	E
1	17"	13"	1' – 0"	1' – 0"	2' – 7"	0' – 10"	1' – 6"
2	21"	15"	1' – 2"	1' – 0"	2' – 9"	0' – 10"	1' – 6"
3	28"	20"	1' – 5"	1' – 0"	3' – 2"	0' – 10"	1' – 10"
4	35"	24"	1' – 8"	1' – 0"	3' – 6"	0' – 10"	2' – 0"
5	42"	29"	1' – 11"	1' – 0"	3' – 11"	1' – 0"	2' – 4"
6	49"	33"	2' – 2"	1' – 0"	4' – 3"	1' – 0"	2' – 6"
7	57"	38"	2' – 5"	1' – 0"	4' – 8"	1' – 0"	2' – 10"
8	64"	43"	2' – 10"	1' – 0"	5' – 1"	1' – 0"	3' – 0"
9	71"	47"	3' – 2"	1' – 0"	5' – 5"	1' – 0"	3' – 4"

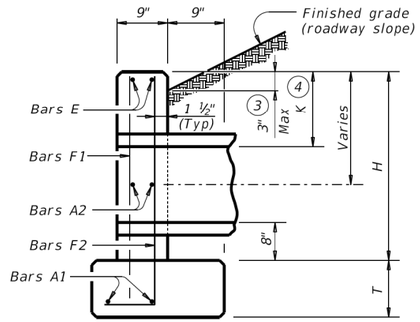
TABLE OF (6) REINFORCING STEEL

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' – 6"	~
E	#5	~	2
F	#5	1' – 0"	~



PLAN OF SKEWED PIPES

Showing 30° skew

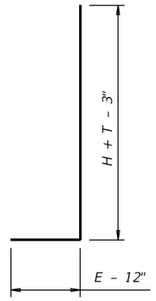


SECTION AT CENTER OF PIPE

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



BARS F2

(1) Total quantities include one 3'-1" lap for bars over 60 ft in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(4) K is measure from top of curb to inside face of pipe.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

(7) Indicated slope is perpendicular to centerline pipe or pipes.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 174 OF 221
DWG NO. CC6-3575
CONTRACT NO. C-2033270-01

Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS
WITH PARALLEL WINGS FOR SKEWED ARCH PIPE CULVERTS

CH-PW-A-S

FILE: chpasste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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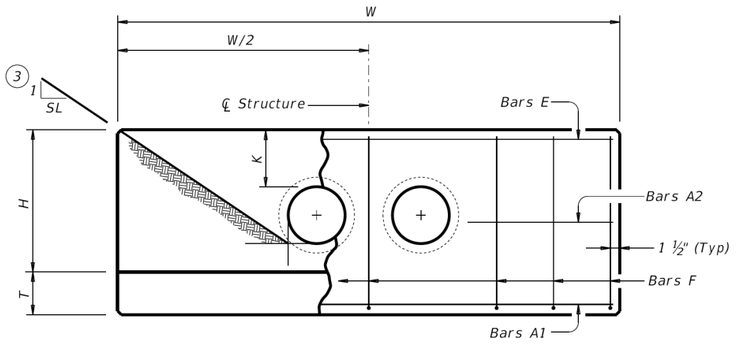
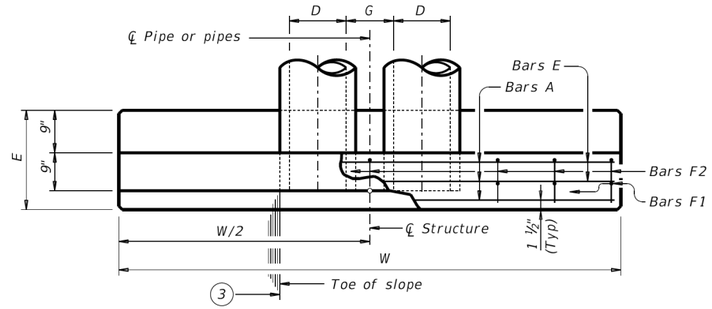
DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

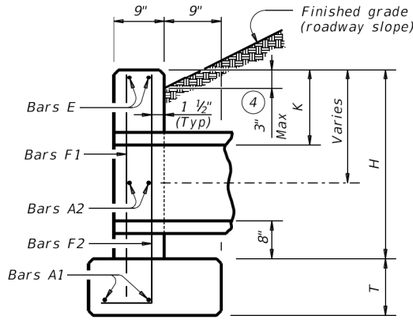
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	24"	14' – 0"	217	2.1	3' – 7"	34	0.4
	27"	15' – 3"	254	2.4	3' – 11"	37	0.5
	30"	16' – 6"	272	2.7	4' – 4"	40	0.6
	33"	17' – 9"	314	3.1	4' – 8"	43	0.6
	36"	19' – 0"	371	3.9	5' – 1"	46	0.8
	42"	21' – 6"	442	4.9	5' – 10"	52	1.0
	48"	25' – 0"	569	6.4	6' – 7"	59	1.3
	54"	27' – 6"	701	7.5	7' – 6"	82	1.6
	60"	30' – 0"	794	8.8	8' – 3"	90	1.8
	66"	32' – 6"	894	10.2	8' – 9"	96	2.0
	72"	35' – 0"	1,055	11.7	9' – 4"	103	2.3
3:1	12"	13' – 0"	175	1.6	1' – 9"	14	0.2
	15"	14' – 9"	193	1.9	2' – 2"	17	0.2
	18"	16' – 6"	228	2.2	2' – 8"	19	0.3
	21"	18' – 3"	299	2.6	3' – 1"	31	0.4
	24"	20' – 0"	323	3.0	3' – 7"	33	0.4
	27"	21' – 9"	371	3.5	3' – 11"	37	0.5
	30"	23' – 6"	415	4.0	4' – 4"	40	0.5
	33"	25' – 3"	469	4.6	4' – 8"	43	0.6
	36"	27' – 0"	556	5.7	5' – 1"	46	0.8
	42"	30' – 6"	675	7.1	5' – 10"	52	1.0
	48"	35' – 6"	837	9.2	6' – 7"	59	1.3
	54"	39' – 0"	1,015	11.0	7' – 6"	84	1.6
	60"	42' – 6"	1,171	12.9	8' – 3"	91	1.8
	66"	46' – 0"	1,298	14.9	8' – 9"	98	2.0
	72"	49' – 6"	1,561	17.1	9' – 4"	103	2.3
4:1	12"	17' – 0"	229	2.0	1' – 9"	15	0.2
	15"	19' – 3"	266	2.4	2' – 2"	17	0.2
	18"	21' – 6"	308	2.9	2' – 8"	19	0.3
	21"	23' – 9"	382	3.5	3' – 1"	31	0.3
	24"	26' – 0"	430	3.9	3' – 7"	34	0.4
	27"	28' – 3"	486	4.7	3' – 11"	37	0.5
	30"	30' – 6"	539	5.2	4' – 4"	40	0.6
	33"	32' – 9"	603	6.0	4' – 8"	42	0.6
	36"	35' – 0"	738	7.5	5' – 1"	47	0.8
	42"	39' – 6"	881	9.3	5' – 10"	52	1.0
	48"	46' – 0"	1,102	12.1	6' – 7"	61	1.3
	54"	50' – 6"	1,364	14.4	7' – 6"	84	1.6
	60"	55' – 0"	1,547	16.9	8' – 3"	91	1.8
	66"	59' – 6"	1,741	19.5	8' – 9"	98	2.0
	72"	64' – 0"	2,077	22.4	9' – 4"	102	2.3
6:1	12"	25' – 0"	336	3.0	1' – 9"	14	0.2
	15"	28' – 3"	384	3.6	2' – 2"	17	0.2
	18"	31' – 6"	452	4.2	2' – 8"	19	0.3
	21"	34' – 9"	581	5.1	3' – 1"	31	0.4
	24"	38' – 0"	644	5.8	3' – 7"	34	0.4
	27"	41' – 3"	737	6.9	3' – 11"	37	0.5
	30"	44' – 6"	807	7.7	4' – 4"	39	0.6
	33"	47' – 9"	912	8.9	4' – 8"	44	0.6
	36"	51' – 0"	1,108	11.0	5' – 1"	48	0.8
	42"	57' – 6"	1,318	13.7	5' – 10"	54	1.0
	48"	67' – 0"	1,682	17.9	6' – 7"	59	1.3
	54"	73' – 6"	2,072	21.3	7' – 6"	83	1.6
	60"	80' – 0"	2,351	24.9	8' – 3"	89	1.8
	66"	86' – 6"	2,643	28.9	8' – 9"	96	2.0
	72"	93' – 0"	3,121	33.1	9' – 4"	101	2.3



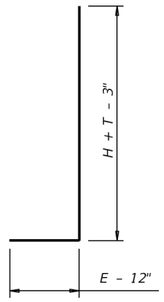
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(1) Total quantities include one 3'-1" lap for bars over 60' in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' – 9"	1' – 0"	2' – 8"	0' – 9"	1' – 9"
15"	0' – 11"	1' – 0"	2' – 11"	0' – 9"	1' – 9"
18"	1' – 2"	1' – 0"	3' – 2"	0' – 9"	1' – 9"
21"	1' – 4"	1' – 0"	3' – 5"	0' – 9"	2' – 0"
24"	1' – 7"	1' – 0"	3' – 8"	0' – 9"	2' – 0"
27"	1' – 8"	1' – 0"	3' – 11"	0' – 9"	2' – 3"
30"	1' – 10"	1' – 0"	4' – 2"	0' – 9"	2' – 3"
33"	1' – 11"	1' – 0"	4' – 5"	0' – 9"	2' – 6"
36"	2' – 1"	1' – 0"	4' – 8"	1' – 0"	2' – 6"
42"	2' – 4"	1' – 0"	5' – 2"	1' – 0"	2' – 9"
48"	2' – 7"	1' – 3"	5' – 11"	1' – 0"	3' – 0"
54"	3' – 0"	1' – 3"	6' – 5"	1' – 0"	3' – 3"
60"	3' – 3"	1' – 3"	6' – 11"	1' – 0"	3' – 6"
66"	3' – 3"	1' – 3"	7' – 5"	1' – 0"	3' – 9"
72"	3' – 4"	1' – 3"	7' – 11"	1' – 0"	4' – 0"

TABLE OF REINFORCING STEEL (6)

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' – 6"	~
E	#5	~	2
F	#5	1' – 0"	~

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 175 OF 221
DWG NO. CCG-3576
CONTRACT NO. C-2033270-02

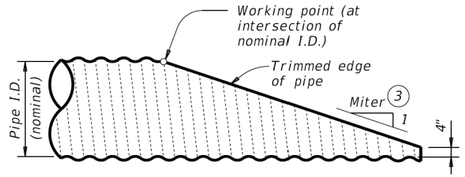
Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

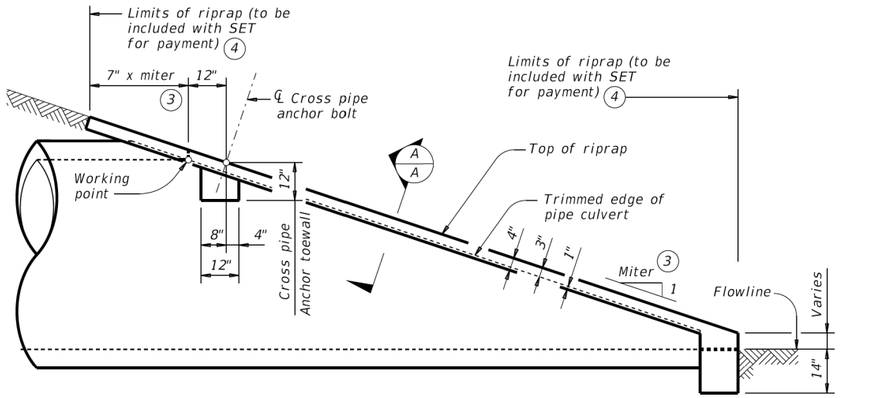
FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.



NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

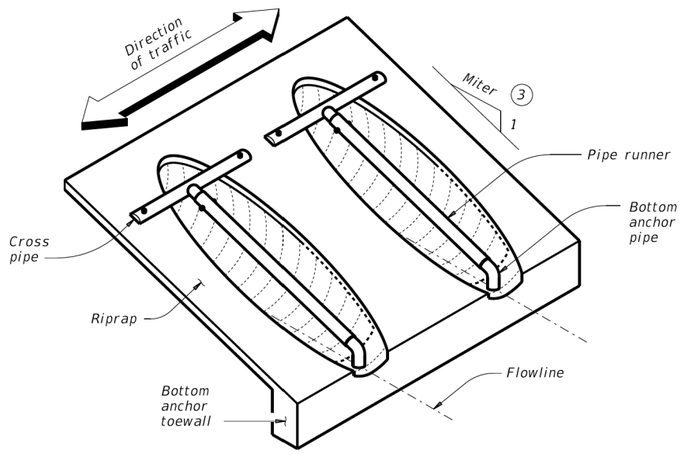
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert.
Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert.
Details of corrugated metal pipe (CMP) culvert
are similar. Pipe runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS (1) (2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1' – 7"	3' – 5"	N/A	N/A	N/A	5' – 10"	N/A	N/A	N/A	8' – 1"	N/A	N/A	N/A	12' – 9"
27"	1' – 8"	3' – 8"	N/A	N/A	5' – 5"	6' – 11"	N/A	N/A	7' – 7"	9' – 7"	N/A	N/A	11' – 11"	14' – 11"
30"	1' – 10"	3' – 11"	N/A	N/A	6' – 4"	8' – 0"	N/A	N/A	8' – 9"	11' – 0"	N/A	N/A	13' – 8"	17' – 0"
33"	1' – 11"	4' – 2"	6' – 2"	6' – 5"	7' – 3"	9' – 1"	8' – 6"	8' – 10"	10' – 0"	12' – 5"	13' – 3"	13' – 9"	15' – 5"	19' – 2"
36"	2' – 1"	4' – 5"	6' – 11"	7' – 3"	8' – 2"	10' – 2"	9' – 6"	9' – 11"	11' – 2"	13' – 10"	14' – 9"	15' – 3"	17' – 2"	21' – 3"
42"	2' – 4"	4' – 11"	8' – 6"	8' – 10"	9' – 11"	12' – 4"	11' – 7"	12' – 0"	13' – 6"	16' – 8"	17' – 9"	18' – 5"	20' – 8"	25' – 7"
48"	2' – 7"	5' – 5"	10' – 1"	10' – 5"	11' – 9"	N/A	13' – 7"	14' – 2"	15' – 10"	N/A	20' – 9"	21' – 6"	24' – 2"	N/A
54"	3' – 0"	5' – 11"	11' – 8"	12' – 1"	N/A	N/A	15' – 8"	16' – 3"	N/A	N/A	23' – 10"	24' – 8"	N/A	N/A
60"	3' – 3"	6' – 5"	13' – 3"	N/A	N/A	N/A	17' – 9"	N/A	N/A	N/A	26' – 10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' – 0"
4" STD	4.500"	4.026"	19' – 8"
5" STD	5.563"	5.047"	34' – 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

(3) Miter = slope of mitered end of pipe culvert.

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 176 OF 221
DWG NO. CC6-3577
CONTRACT NO. C-2033270-03

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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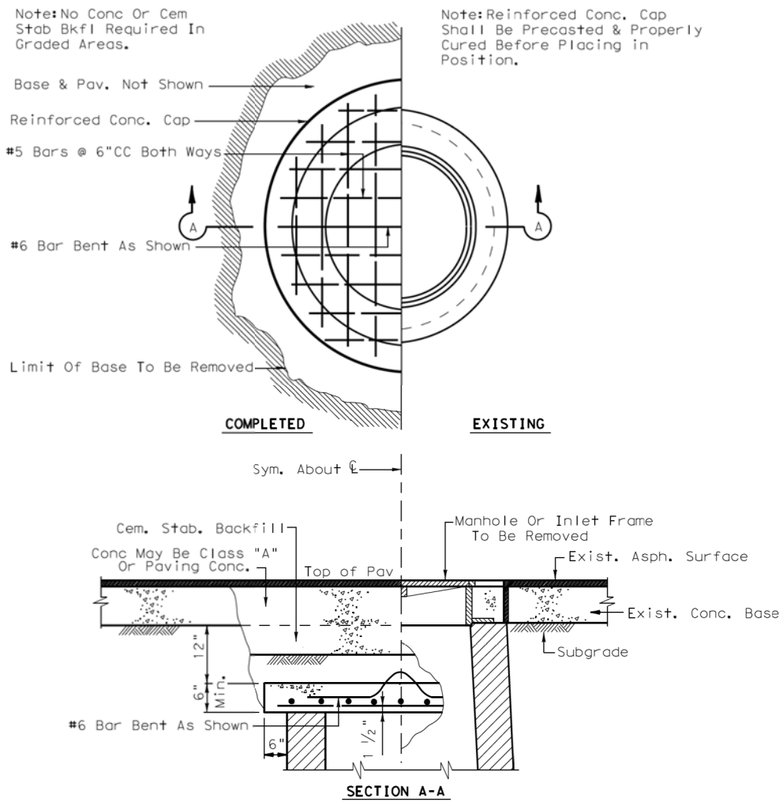
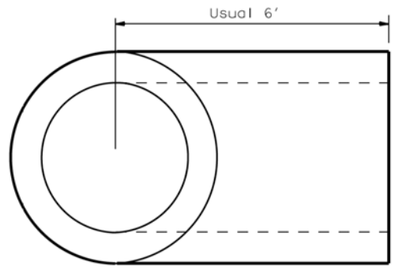
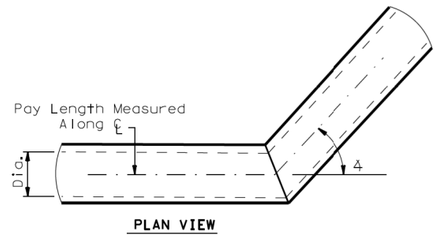


DETAIL SHOWING METHOD OF CAPPING ABANDONED MANHOLES OR INLETS (GRADED OR PAVED AREAS)



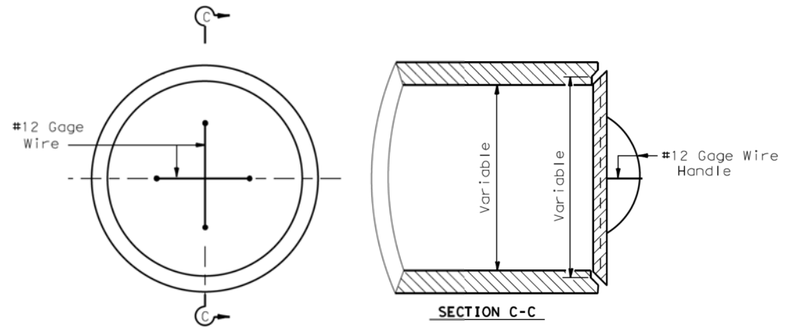
Note: Jointing Material Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Material For Tees Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Payment For Tee To Be In Accordance With Item "Reinforced Concrete Pipe."

PRECAST STORM SEWER TEE



BENDING DETAIL

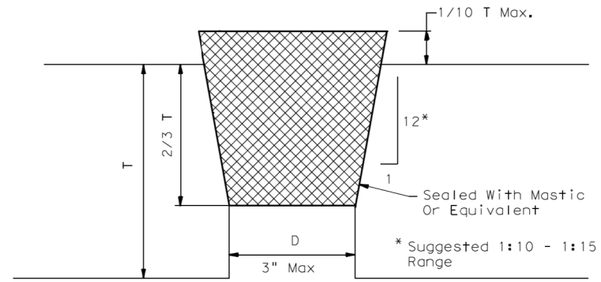
Note: Bending Of Proposed Pipe Sewer Or RCP In A Vertical & /Or Horizontal Plane Shall Be Accomplished By The Use Of A "Pipe Collar" Or A "Precast Elbow", As Approved By The Engineer.
Price Of "Pipe Collar" Or, "Precast Elbow" Shall Be Subsidiary To The Unit Prices Bid For Item Reinforced Concrete Pipe.
Pay Length Measurement To Be Along Horizontal ℄ & Horizontal Plane Of Pipes.



Note: The Price Of Plug Shall Be Subsidiary To The Unit Bid Price For Pipe Sewer Or RCP. Mortar Joints To Be Used As Directed By The Engineer. Removal Of The Existing Plugs For Storm Sewer Or RCP Conns. Shall Be Considered Incidental To Item "Excavation And Backfill For Structures."

Concrete Plug For End Of Pipe Culvert Or Sewer

CONCRETE PLUG FOR PIPE

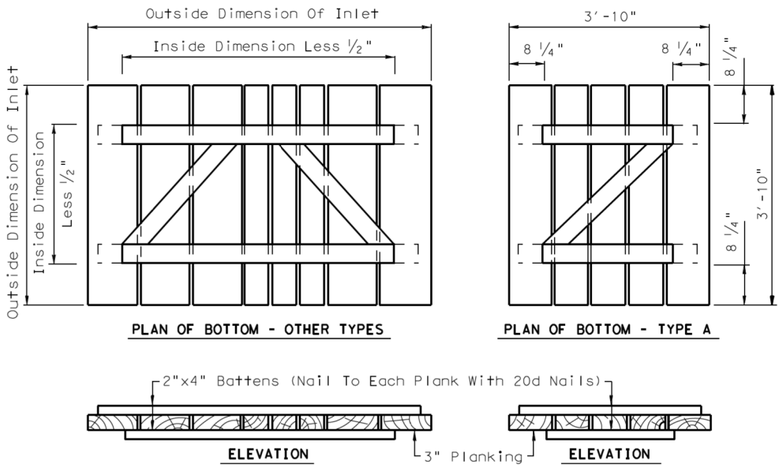


T = Wall Thickness On Top Of Box Or Pipe
D = Diameter Of Lifting Hole

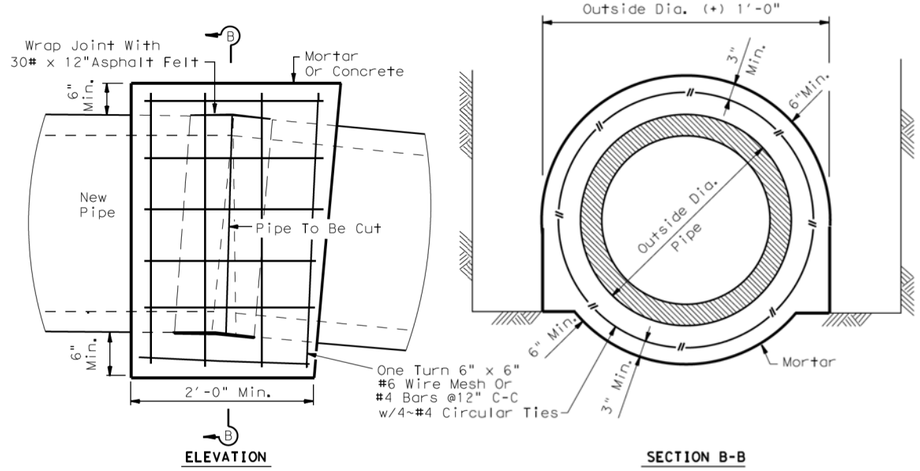
Minimum Length Of Plug Is 2/3 T +/-
Minimum Diameter At Bottom Of Plug = D - ⅛"
Maximum 1/10 T Of Plug Not Seated In Lifting Hole

Note: The Plug Shall Be Cast With The Same Taper As The Lifting Hole.

DETAIL OF PLUG FOR LIFTING HOLES IN RCB AND RCP



TEMPORARY COVERS FOR ALL TYPES OF INLETS



PIPE COLLAR DETAIL

For Horizontal Or Vertical Placement

d = Diameter
R = Radius

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 177 OF 221
DWG NO. CC6-3578
CONTRACT NO. C-2033270-01

Texas Department of Transportation
Houston District (Bridge)

MISCELLANEOUS SEWER DETAILS

MSD

FILE: STDD11.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK:
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REVISIONS 3/2015 2014 Specs	COUNTY	CONTROL	SECT	JOB	HIGHWAY

STDD11.DGN

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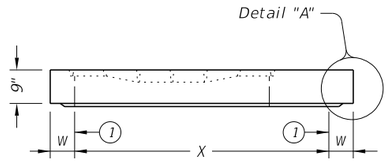
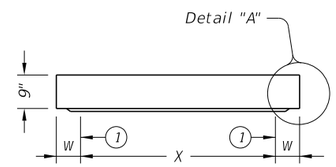
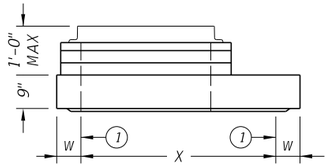


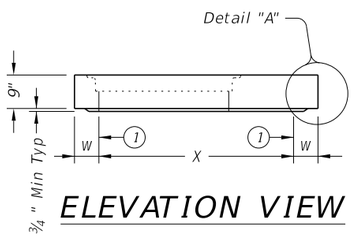
STYLE 'FG'



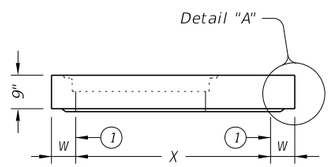
ELEVATION VIEW



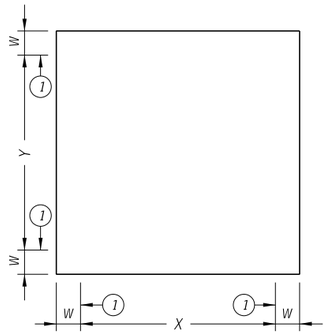
ELEVATION VIEW



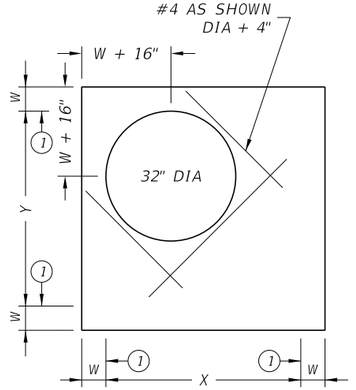
ELEVATION VIEW



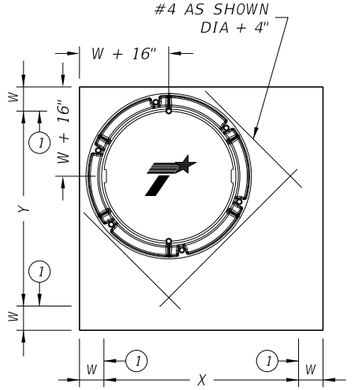
ELEVATION VIEW



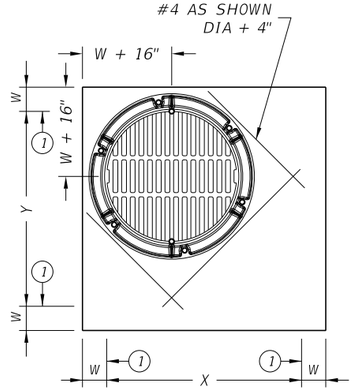
PLAN VIEW
NO OPENINGS
STYLE 'SL'



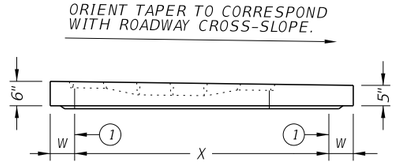
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



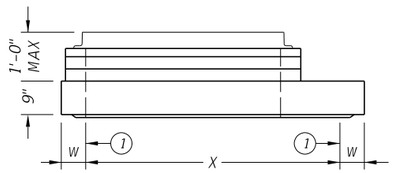
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



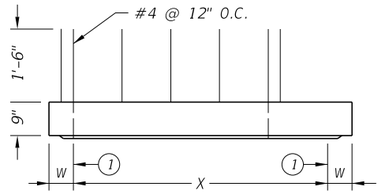
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



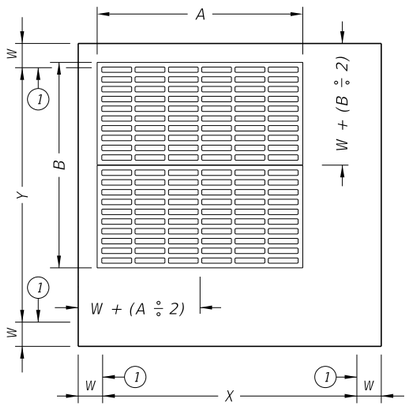
STYLE 'SFG'
ELEVATION VIEW



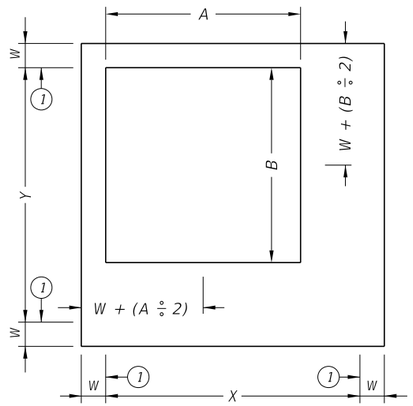
ELEVATION VIEW



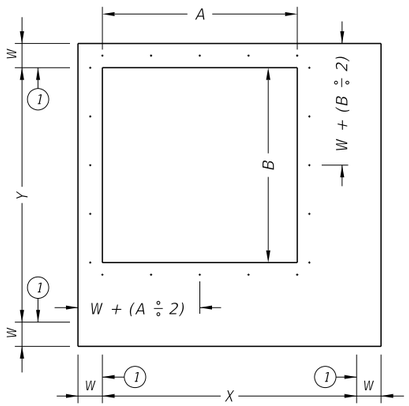
ELEVATION VIEW



PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



PLAN VIEW
EXPOSED REBAR
STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 178 OF 221
DWG NO. CC6-3579
CONTRACT NO. C-2033270-05

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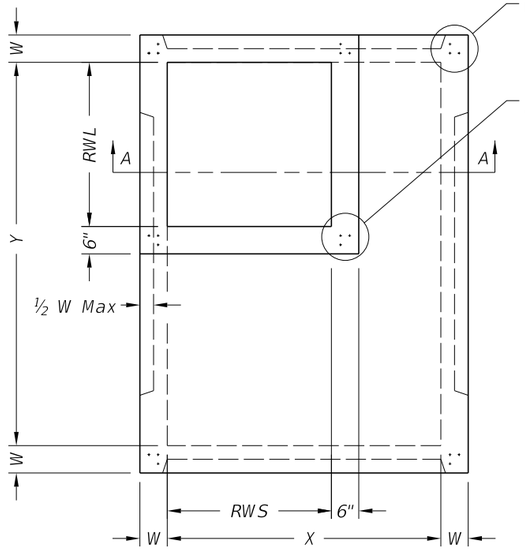
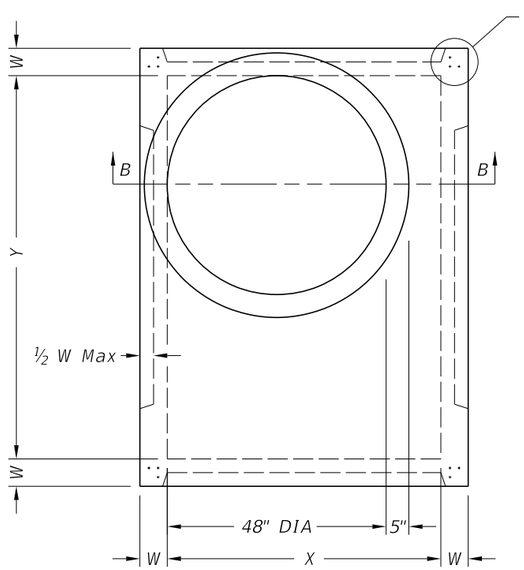


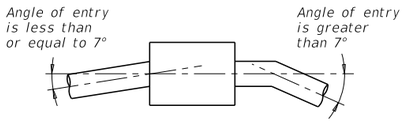
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



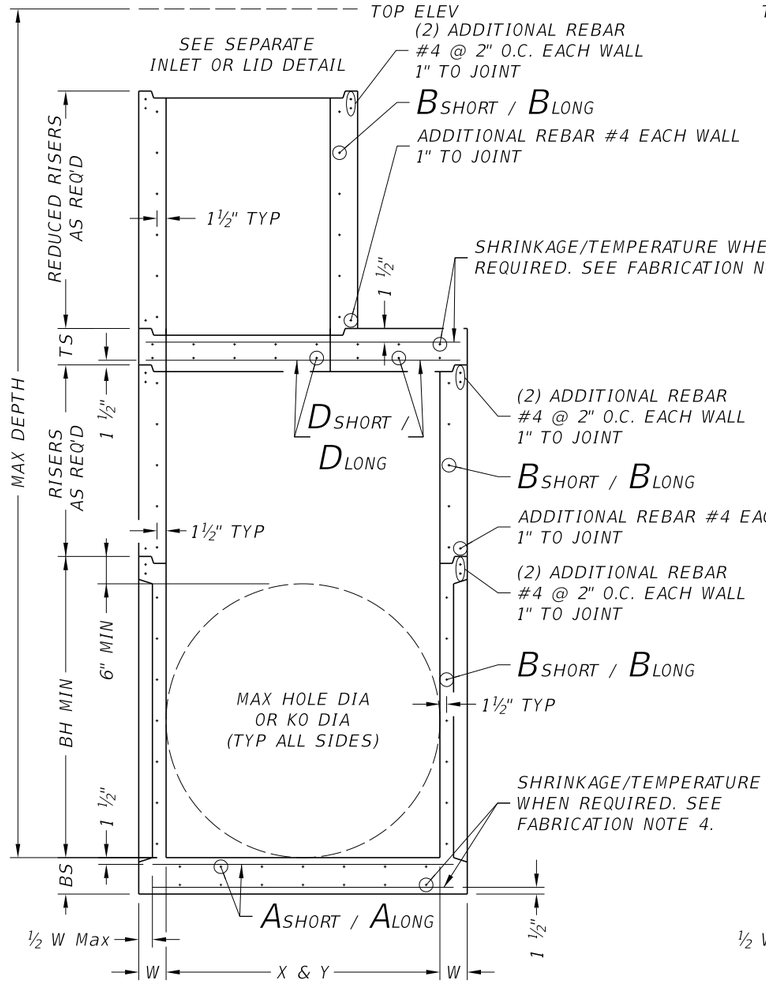
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



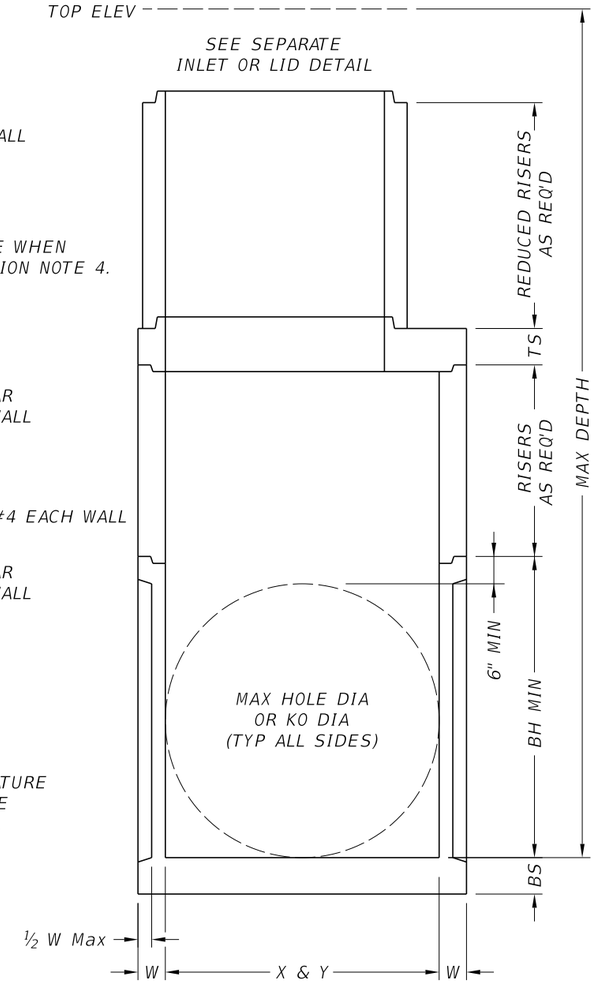
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to speci ed inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For exible pipe, consult boot/seal Manufacturer's speci cation for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's speci cation.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the speci ed inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 179 OF 221
DWG NO. CC6-3580
CONTRACT NO. C-2033270-06

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

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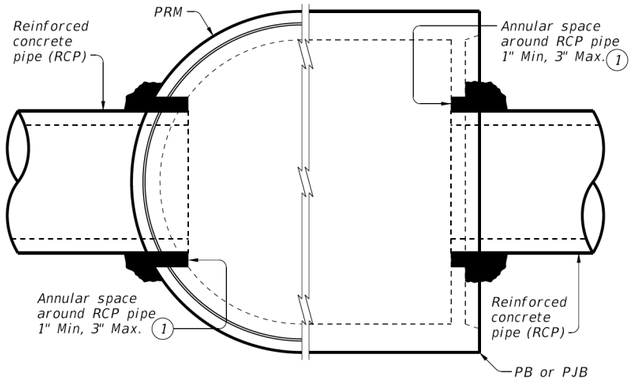
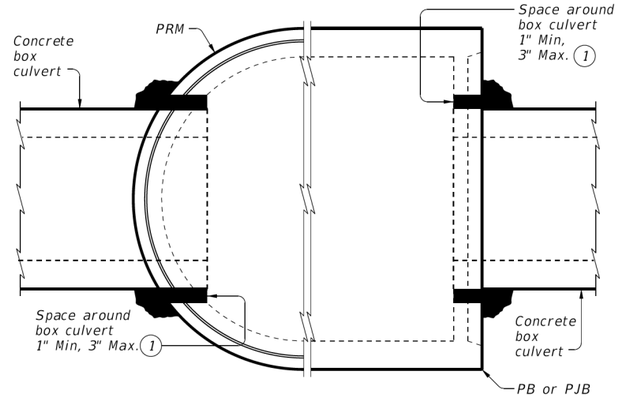


PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

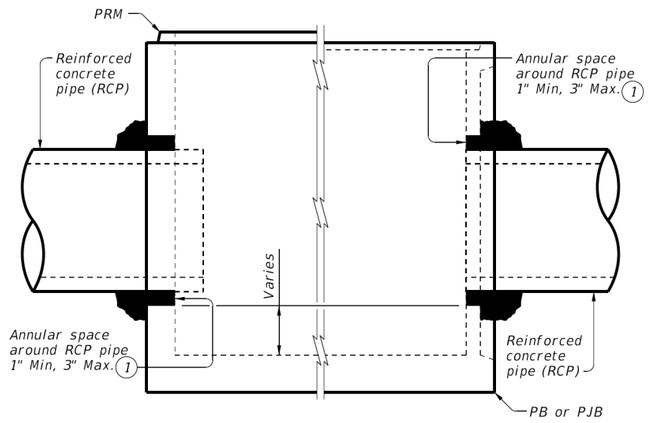
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

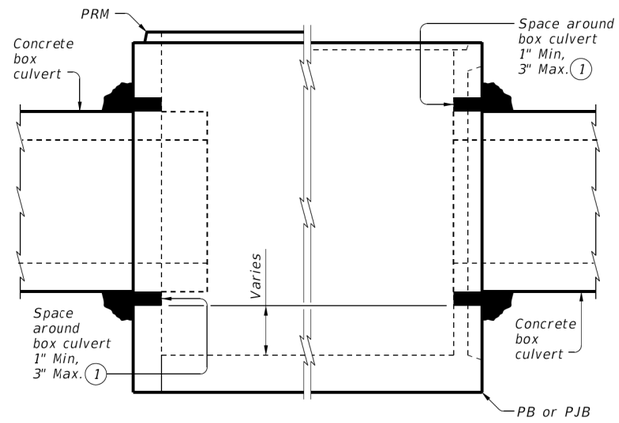
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

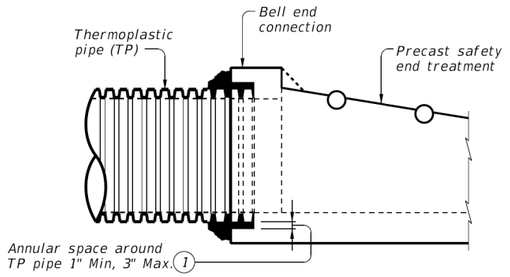
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

(1) Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without manufacturer's recommendations.

Do not use bricks, masonry blocks, adobe, or similar materials in conjunction with grouted connections when filling voids spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

GENERAL NOTES:

See applicable standards for notes and details not shown:

Precast Base (PB)
Precast Junction Box (PJB)
Precast Round Manhole (PRM)
Precast Safety End Treatment Square (PSET-SC)
Precast Safety End Treatment Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains".

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe".

Provide Thermoplastic Pipe (TP) in accordance with Special Specification "Thermoplastic Pipe".

Payment for grouted connections is considered subsidiary to other bid items.

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 180 OF 221
DWG NO. CC6-3581
CONTRACT NO. C-2033270-07

Texas Department of Transportation

Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

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	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 181 OF 221
DWG NO. CC6-3582
CONTRACT NO. C-2033270-08

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

NOTES:

1. CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE PUBLIC WORKS CONSTRUCTION STANDARDS, NORTH CENTRAL TEXAS.
2. ALL JOINTS SHALL BE CONSIDERED SUBSIDIARY TO ALL PAVING ITEMS.
3. FOR PLACING OF CONCRETE PAVEMENT REFER TO ITEM 303.5.5.
4. FOR MAXIMUM SLUMP OF CONCRETE FOR PAVEMENT REFER TO ITEM 303.4.4.

PORTLAND CEMENT CONCRETE PAVEMENT

1. STANDARD SPECIFICATIONS ITEM 303.2.1.3 – 'COARSE AGGREGATES' SHALL BE AMENDED THE FIRST SENTENCE IS DELETED AND REPLACED AS FOLLOWS "COARSE AGGREGATES SHALL BE 100% CRUSHED STONE"
2. STANDARD SPECIFICATIONS ITEM 303 SHALL BE AMENDED AS FOLLOWS:
   A. ITEM 303.2.4. FLY ASH IS ALLOWED MAX 20% BY WEIGHT
   B. ITEM 303.2.5 SHALL BE DELETED. NO MINERAL FILLER IS ALLOWED
   C. ITEM 303.2.6 SHALL BE DELETED. NO FIBROUS REINFORCEMENT ALLOWED
3. STANDARD SPECIFICATIONS ITEM 303 SHALL BE AMENDED TO INCLUDE THE FOLLOWING:

A. ALL EQUIPMENT NECESSARY TO CONSTRUCT CONCRETE PAVEMENT SHALL BE APPROVED BY THE OWNER PRIOR TO STARTING THE PAVING OPERATION. PAVING EQUIPMENT REQUIREMENTS ARE AS FOLLOWS:

1. SIDEWALKS LESS THAN 8' IN WIDTH

   NO PAVING MACHINE REQUIRED. STINGER VIBRATORS AND METAL STRAIGHT EDGES SHALL BE USED TO CONSOLIDATE THE CONCRETE.

2. SIDEWALKS 8' IN WIDTH OR WIDER

   VIBRATING SCREED WITH TWO HAND HELD STINGER VIBRATORS SHALL BE USED TO CONSOLIDATE THE CONCRETE.

B. CONCRETE FINISH

SIDEWALK TO BE LIGHT BROOM FINISH.

CONCRETE TEMPERATURES

MAY 1 THROUGH SEPTEMBER 30

1. ALL MIXES AND MIX DESIGNS SHALL INCLUDE A RETARDING AGENT.
2. CONCRETE TEMPERATURE PRIOR TO PLACEMENT SHALL NOT EXCEED 95°F, (35°C).
3. THE TIME INTERVAL (FROM ADDITION OF INITIAL WATER):

AGITATED CONCRETE

90°F OR ABOVE	(32.2°C)	45 MINUTES
75°F TO 89°F	(23.9° TO 31.6°C)	60 MINUTES
35°F TO 74°F	(1.6° TO 23.3°C)	90 MINUTES

NON AGITATED CONCRETE

80°F OR ABOVE	(26.6°C)	15 MINUTES
35°F TO 79°F	(1.6° TO 26.1°C)	30 MINUTES

OCTOBER 1 THROUGH APRIL 30

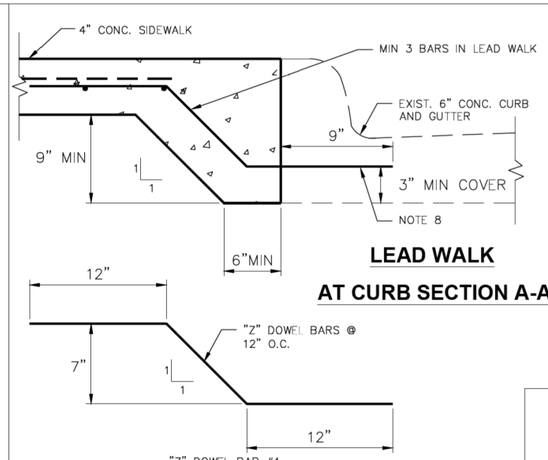
1. CONCRETE TEMPERATURE PRIOR TO PLACEMENT SHALL NOT EXCEED 95°F, (35°C).
2. THE TIME INTERVAL (FROM ADDITION OF INITIAL WATER):

AGITATED CONCRETE

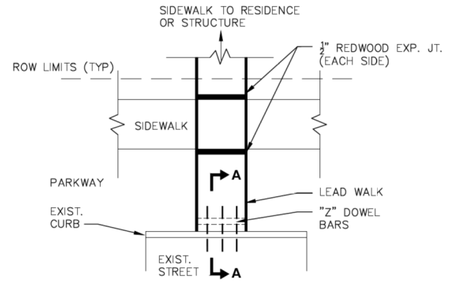
90°F OR ABOVE	(32.2°C)	45 MINUTES
75°F TO 89°F	(23.9° TO 31.6°C)	60 MINUTES
35°F TO 74°F	(1.6° TO 23.3°C)	90 MINUTES

NON AGITATED CONCRETE

80°F OR ABOVE	(26.6°C)	15 MINUTES
35°F TO 79°F	(1.6° TO 26.1°C)	30 MINUTES



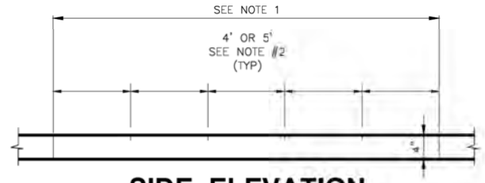
LEAD WALK AT CURB SECTION A-A



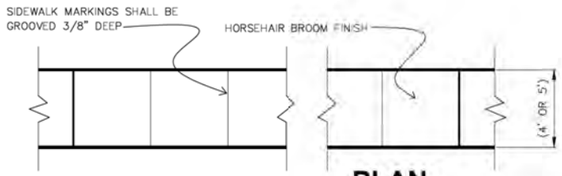
LEAD WALK REPLACEMENT PLAN

1. 1/2" EXPANSION JOINTS SHALL BE SPACED AT 30' MAXIMUM INTERVALS, OR AS OTHERWISE SPECIFIED. JOINTS SHALL BE REDWOOD WITH THREE (3) #3 2' SLIP DOWELS WITH END CAPS AT EQUAL SPACING.
2. TOOL GROOVE EVERY 5' ON 5' WALKS AND EVERY 4' ON 4' WALKS.
3. SIDEWALKS SHALL BE CLASS "A" CONCRETE.
4. WHEN CONCRETE WALK IS ADJACENT TO EXISTING CONCRETE, DEPTH OF BITUMINOUS EXPANSION JOINT FILLER SHALL BE SUFFICIENT TO PREVENT CONCRETE TO CONCRETE CONTACT BETWEEN WALK AND CONCRETE. WHEN SIDEWALK IS LOCATED AT THE BACK OF CURB THE NO. 3 REBAR AT 24" O.C. FOR THE SIDEWALK SHOULD EXTEND TO A DEPTH OF APPROXIMATELY 3" INTO THE BACK OF THE CURB AND SHOULD BE ANCHORED IN PLACE WITH EPOXY RESIN.
5. SIDEWALK SUBGRADE SHALL BE COMPACTED TO MINIMUM 95% STANDARD PROCTOR DENSITY.
6. A MAXIMUM OF 1" OF SAND MAY BE USED FOR LEVEL UP ONLY.
7. NO "WHIRLEY BIRD" TYPE FINISHING MACHINES WILL BE ALLOWED.
8. EPOXY DOWELS IN PLACE. DRILLED HOLE SHALL BE 1/8" LARGER THAN DOWEL. USE MECHANICAL DRILL AND INSTALL DOWELS HORIZONTAL INTO EXISTING PAVEMENT. CLEAN AND DRY DRILL HOLES PRIOR TO APPLYING EPOXY.

CONCRETE SIDEWALK DETAIL

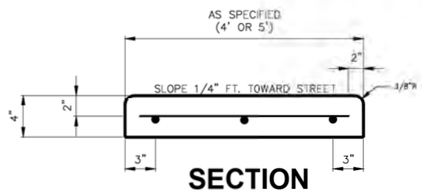


SIDE ELEVATION



NO. 3 BARS 24" O.C. EACH WAY MAXIMUM SPACING

PLAN

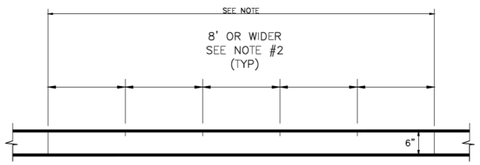


SECTION

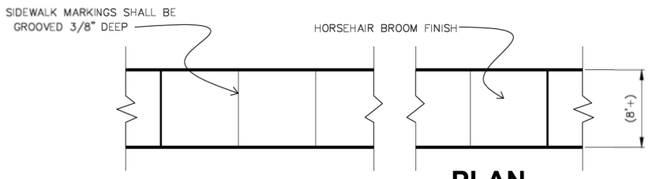
SEE SHEET C-12 FOR BARRIER FREE RAMP DETAILS

CONCRETE SIDEWALK DETAIL FOR SIDEWALKS 8' OR WIDER

1. 1/2" EXPANSION JOINTS SHALL BE SPACED AT 60' MAXIMUM INTERVALS, OR AS OTHERWISE SPECIFIED. JOINTS SHALL BE REDWOOD WITH FIVE (5) #3 2' SLIP DOWELS WITH END CAPS AT EQUAL SPACING.
2. TOOL GROOVE EVERY 8' ON 8' WALKS.
3. SIDEWALKS SHALL BE CLASS "A" CONCRETE.
4. WHEN CONCRETE WALK IS ADJACENT TO EXISTING CONCRETE, DEPTH OF BITUMINOUS EXPANSION JOINT FILLER SHALL BE SUFFICIENT TO PREVENT CONCRETE TO CONCRETE CONTACT BETWEEN WALK AND CONCRETE. WHEN SIDEWALK IS LOCATED AT THE BACK OF CURB THE NO. 3 REBAR AT 24" O.C. FOR THE SIDEWALK SHOULD EXTEND TO A DEPTH OF APPROXIMATELY 3" INTO THE BACK OF THE CURB AND SHOULD BE ANCHORED IN PLACE WITH EPOXY RESIN.
5. SIDEWALK SUBGRADE SHALL BE COMPACTED TO MINIMUM 95% STANDARD PROCTOR DENSITY.
6. A MAXIMUM OF 1" OF SAND MAY BE USED FOR LEVEL UP ONLY.
7. NO "WHIRLEY BIRD" TYPE FINISHING MACHINES WILL BE ALLOWED.
8. SEAL ALL JOINTS WITH GRAY RUBBERIZED SEALANT.

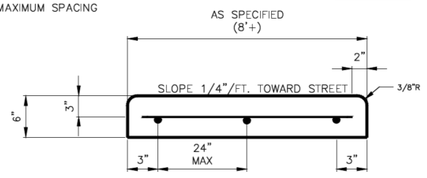


SIDE ELEVATION



NO. 3 BARS 24" O.C. EACH WAY MAXIMUM SPACING

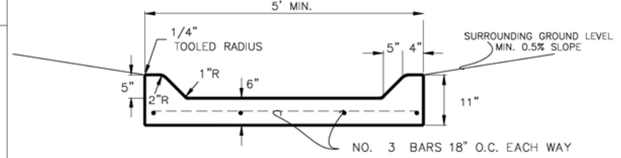
PLAN

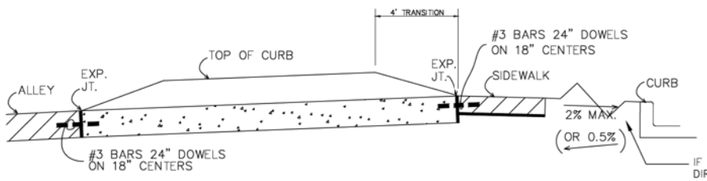


SECTION

FLUME DETAIL

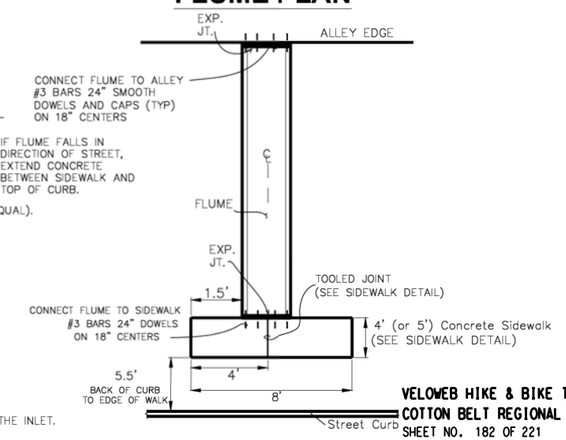
(FOR POSITIVE OVERFLOW)





1. FLUMES LOCATED BETWEEN RESIDENTIAL LOTS SHALL TIE TO ALLEY AND SIDEWALK.
2. FLUMES SHALL BE CLASS "A" CONCRETE WITH EXPOSED AGGREGATE FINISH (1" – #4 LATTIMORE RIVER GRAVEL OR EQUAL).
3. 1/2" EXPANSION JOINTS SHALL BE SPACED 40' MAX. INTERVALS, OR AS SPECIFIED AND JOINTS SHALL BE REDWOOD WITH THREE (3) #3 2' SLIP DOWELS WITH THE END CAPS AT EQUAL SPACING AND SEALED.
4. FLUME AND SIDEWALK SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
5. 1/4" SAW JOINTS SHALL BE SPACED AT 20' MAX. INTERVALS.
6. AN 8' LONG SECTION OF 4' (or 5') WIDE SIDEWALK WILL BE CONSTRUCTED, AND CONNECTED, WITH THE FLUME THE SIDEWALK WILL HAVE A STANDARD SIDEWALK FINISH (NOT EXPOSED AGGREGATE).
7. FLUMES ARE TO BE CONSTRUCTED TO PROVIDE POSITIVE OVERFLOW DRAINAGE ACCORDING TO THE FOLLOWING:
   LOW POINT INLET IN STREET: FLUME TO SLOPE FROM STREET TO ALLEY.
   LOW POINT INLET IN ALLEY: FLUME TO SLOPE FROM ALLEY TO STREET.
8. MINIMUM SLOPE OF FLUME TO BE 0.5% (REFER TO DRAINAGE PLAN).
9. WHERE INLETS ARE CLOSER THAN 6 INCHES FROM SIDEWALK, THE SIDEWALK SHOULD BE WIDENED TO ABUT AGAINST THE INLET.

FLUME PLAN



VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 182 OF 221
DWG NO. CC6-3583
CONTRACT NO. C-2033270-09

Revisions:

City of Richardson
411 W. Arapaho Road
Suite 204
Richardson, Texas 75080
voice: 972 744-4280
fax: 972 744-5804

Drawn By: RGB
Checked By: COR

RICHARDSON TEXAS

STANDARD DETAILS
City of Richardson, Texas

NO ADDITIONS OR CHANGES TO STANDARD DETAIL SHEETS UNLESS APPROVED BY CITY OF RICHARDSON

24"x36" Scale:	NTS
11"x17" Scale:	NTS
Vertical Scale:	NA
Project Number:	XXX
Issue Date:	03 MAY 18

Sheet Title: **SIDEWALK/ FLUME**

Sheet No.: **C-11**

DWG No. OC1 - 7651

STORM WATER POLLUTION PREVENTION PLAN

COTTON BELT REGIONAL RAIL DESIGN BUILD VELOWEB HIKE AND BIKE TRAIL CITY OF RICHARDSON FLOODPLAIN LOCATIONS

I. SITE DESCRIPTION

PROJECT DESCRIPTION: Proposed 26-mile Cotton Belt Corridor that extends between DFW Airport in Tarrant County through Dallas County and Shiloh Road in Plano in Collin County. The alignment traverses seven cities: Grapevine, Coppell, Dallas, Carrollton, Addison, Richardson, and Plano.

PROJECT LIMITS: DFW Airport in Tarrant County to east of Shiloh Road in Plano in Collin County.

CITY OF RICHARDSON LIMITS: West of Waterview Pkwy to President George Bush Turnpike

LATITUDE: 32°59'59" LONGITUDE: 96°44'06"

The Standard industrial classification for this project is: 1629.

NATURE OF THE CONSTRUCTION ACTIVITY:
FOR SUB SEGEMENT: Construction of approximately 2.58 miles of 12-foot wide concrete Hike & Bike Trail and associated structures, storm drainage systems and existing street modifications.

POTENTIAL POLLUTANTS AND SOURCES: Potential pollutants include slurries from concrete cutting and coring, sediments associated with earthwork, hydrocarbons (grease, oil, gasoline, etc.) from fuels, lubricants associated with construction equipment, waste concrete and other solid waste (including floatable) from daily contractor operations, paint, concrete curing compounds, and other common pollutants associated with construction activities of this scope and nature. Reference appendix 19 of the approved AWH NOI SW3P document for details related to Containment of Chemical Storage and Spill Response Plan.

INTENDED SEQUENCE OF MAJOR SITE ACTIVITIES: See approved AWH NOI SW3P document Section 1.3 for detailed sequence of activities.

NOTE: Contractor will attach its construction schedule if its activities differ in order or scope from those provided above.

CITY OF RICHARDSON @ TOTAL PROJECT AREA:

Overall site: (West of Waterview Pkwy to President George Bush Turnpike) – 10.82 ACRES

SOILS LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION: ERODIBILITY ("K") FACTORS

Austin Silty Clay	0.20
Houston Black Clay	0.32

RUNOFF COEFFICIENT: Before Construction ~0.62 After Construction ~ 0.76

NAME OF RECEIVING WATERS: Spring Creek, Prairie Creek

NAME OF ADJACENT WETLANDS: Spring Creek, Prairie Creek

II. EROSION AND SEDIMENT CONTROLS

The erosion and sediment controls presented in the baseline SW3P have been designed to retain sediment on-site to the greatest extent practicable based on the anticipated type and sequence of construction activities, topography, soil type, and rainfall.

The Contractor is responsible for ensuring that controls are installed as depicted. A log indicating the date of BMP installation shall be included in the SW3P. If controls fail to perform as originally intended, it is the responsibility of the Contractor to develop, propose, and install alternate controls that will better limit the off-site transport of sediment. The Contractor is also responsible for ensuring that litter, construction debris, and construction materials are not transferred from the site.

Should any dewatering of site utility trenches become necessary during the duration of the project, it shall be the responsibility of the contractor to provide filtering devices for the prevention of downstream siltation in accordance with all North Central Texas Council of Governments (NCTCOG), TCEQ, EPA, and other applicable requirements.

The following temporary soil stabilization practices will be used on the project site. The Contractor may propose additional measures to improve stabilization:

- _X_ Seeding;
- _X_ Mulching;
- _X_ Sodding;
- _X_ Tree protection;
- _X_ Vegetative Buffer Strips;
- _X_ Erosion Control Matting;
- _X_ Wattles;
- _X_ Silt Fencing;
- _X_ Pavement sweeping;

Disturbed areas of the site where construction activities have either temporarily or permanently ceased will be stabilized within 14 days unless activities are scheduled to resume within 21 days. One of the "temporary soil stabilization practices" indicated above must be used.

The following permanent soil stabilization practices will be used on the project site. The Contractor may propose additional measures to improve stabilization:

- _X_ Seeding;
- _X_ Mulching of Hydromulching;
- _X_ Sodding;
- ___ Placement of Riprap;
- ___ Use of Gabions;
- _X_ Installation of Geotextile fabrics;
- _X_ Grass/native vegetation;
- ___ Asphalt/concrete parking lots, driveways, walkways, slab foundation, entrances, etc.;
- _X_ Concrete curbing;

The contractor must indicate the location and date of installation of any seeding, mulching, sodding, or erosion control matting on the site map.

The following structural best management practices (BMPs) will be used on the project site. The Contractor may propose additional measures to be used on site:

- _X_ Silt fence;
- _X_ Rock berms;
- _X_ Storm sewer inlet protection;
- _X_ Construction entrance stabilization;

NOTE: Sediment basins are not appropriate based on the size of this site.

III. SITE HOUSEKEEPING BEST MANAGEMENT PRACTICES

TEMPORARY STOCKPILES: The Contractor is responsible for all soil stockpiles. Stockpiles used for the temporary storage of topsoil, fill soils, or other material will be located in such a manner as to prevent erosion by storm water. In addition, silt fence or other filtration device will be placed downgradient to prevent storm water from transporting the material off-site. The contractor must include and update as needed the location of stockpiles, borrows, and fills material of both on-site and off-site material storage areas on the site map contained in the SW3P.

OFF-SITE VEHICLE TRACKING: Off-site tracking of construction site sediments or other substances will be minimized. Stabilized construction entrances and frequent sweeping of adjacent streets will be used to control and minimize off-site vehicle tracking of sediment and dust generation.

HAZARDOUS AND REGULATED MATERIALS: Any products or materials in the following categories will be considered as potentially hazardous or toxic: fuels, lubricants, solvents, paints, fertilizers, pesticides, herbicides, mortar mixes, concrete or cement mixes, asphaltic products, chemical additives for soil stabilization, concrete curing compounds and additives, and other unspecified chemicals. If any of these products, materials, or chemicals are maintained on-site, they will be stored in a manner that protects them from exposure to storm water and facilitates containment. Absorbent materials will be kept on-site for use in the event of a spill.

The contractor must maintain in the SW3P a list of hazardous and/or regulated material kept on-site. The location of all listed materials and spill clean-up supplies shall be shown on the site map. Per Appendix 18 of the approved AWH NOI SW3P document, the SDS database is maintained by AWH safety.

SPILLS: See appendix 19 of the approved AWH NOI SW3P document for Containment of Chemical Storage and Spill Response. The SW3P must contain a log of spills at the site as well as the contact information of appropriate personnel to be called in the event of a spill.

If a spill of hazardous and/or regulated products, materials, or chemicals does occur, the Contractor shall, after containment and cleanup of the spill, notify all proper regulatory authorities as required by the nature of the spill. The Contractor shall file in the SW3P a report that describes the nature, quantity, location, and cause of the spill, and the actions taken to prevent similar spills in the future. The Authority and DART's contracting officer shall be contacted immediately in the event of a spill.

STABILIZED CONSTRUCTION ENTRANCE: Construction traffic should enter and exit the site at a stabilized construction entrance.

CONSTRUCTION STORAGE: Construction staging areas, haul roads, jobsite office trailers location, and vehicle and/or equipment parking areas that have more than 25 vehicle trips per day will be graveled as well as monitored for vehicle tracking and fugitive dust generation.

ECS Revision Date: 05/22/2009

20-SEP-2022 19:29
CB05-OC1-7651.001

tcharakupa
Default

NOT AN APPROVED DRAWING
IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 183 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

IN-PROGRESS REVIEW
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF:
JUSTIN C. TOONE, P.E., 121959
ON
20-SEP-2022 19:29
IEA
TBPE FIRM NO. F-10161
IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
FIRM REGISTRATION No. F-2966

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

DART®

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SCALE	NO SCALE
DRAWN	C. ALTAMERO
DESIGNED	F. CHARAKUPA
CHECKED	J. TOONE
IN CHARGE	J. TOONE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
STORM WATER POLLUTION PREVENTION PLAN
SW3P NOTES AND NOI
SHEET 1 OF 2

CONTRACT	DWG No.	REV
C-2033270-01	OC1-7651	B

CB05-OC1-7651.001

CONTROL OF DUST AND DEBRIS: Fugitive dust, including dust generated from soil stabilization operations or vehicle tracking, will be controlled by using water. Any excess or runoff water used to control dust will first be routed to a sediment trapping device before leaving the site. Concrete slurry resulting from concrete sawing shall be removed to reduce dust and contamination of runoff. Upon completion of construction activities, the site shall be stabilized to reduce dust.

CONTROL OF SEDIMENTS: Sediment that accumulates in sediment trapping devices, such as silt fence, inlet protection, and detention basins, shall be removed as necessary to prevent storm water from carrying it off-site.

EQUIPMENT MAINTENANCE AND REPAIR: Both on- and off-site equipment maintenance and repair areas must be described in the SW3P and depicted on the site map. On-site activities will be restricted to areas that either drain into a sump pit or other pollutant-trapping device, or are not exposed to storm water.

SOLID WASTE: The Contractor must develop controls to limit the off-site transport of litter, construction debris, and construction materials. All such materials shall be removed from the site at the completion of the project.

SANITARY WASTE: All sanitary waste will be collected on-site in portable units placed at locations convenient for construction site personnel. The location of portable units will be depicted on the site map. Portable units will be maintained and sanitary waste property disposed of by a licensed sanitary waste management contractor as required by local regulations.

IV. MAINTENANCE PROCEDURES

Reference section 6.1 of the approved AWH NOI SW3P document for BMP maintenance requirements. All erosion and sediment controls will be maintained in good working order. If repair, replacement, or cleaning of a structural practice or control is required, it will be addressed as soon as practicable before the next expected rainfall event, and no later than 7 days following the observation. The SW3P shall contain a log of all maintenance activities such as repair, replacement, cleaning of controls, and the execution of BMPs i.e., sweep of parking lots, etc.

Locations on the site adjacent to surface waterways, wetlands, or other environmentally sensitive areas, or off-site areas subject to vehicle tracking of sediments will receive the highest maintenance priority, followed by the protection of drainage ways and storm sewer inlets and outfalls.

Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected by the Contractor immediately upon discovery.

V. INSPECTION PROCEDURES

Refer to section 4.0, 7.6, and appendix 5 of the approved AWH NOI SW3P document for more info related to inspection procedures. The Contractor must conduct inspections at least once every seven (7) days. The inspection must occur on a specifically defined day, regardless of whether or not there has been a rainfall event since the previous inspection.

The Contractor's Environmental Compliance Manager must inspect all disturbed areas of the construction site that have not reached final stabilization. The inspection shall cover all areas where materials are stored and stockpiled, areas where vehicles enter or exit the site, and areas where temporary and permanent soil stabilization practices have been implemented, but have not yet reached final stabilization. All structural erosion and sediment control practices and Best Management Practices (BMP) shall be inspected to ensure that they have been installed correctly, are operating properly, and are sufficient in reducing sediments from traveling off-site.

Reference section 6.1 of the approved AWH NOI SW3P document for BMP maintenance requirements. The Contractor shall install all controls and conduct maintenance as is necessary to ensure compliance with the TPDES General Permit number TXR150000.

The Contractor, as the operator with day-to-day control of the site, shall be delegated the responsibility of making all modifications to the SW3P. Modifications will be based on the results of inspections and are intended to better prevent pollutants from being carried off-site by runoff. Revision of the SW3P must be completed within seven (7) calendar days following the inspection.

A report summarizing the scope of the inspection, names and qualifications of personnel making the inspection, the dates of the inspection, and major observations relating to the implementation of the SW3P will be made and retained as part of the SW3P. Major observations will include:

- The locations of discharges of sediment or other pollutants from the site;
- Locations of BMPs that need to be maintained;
- Locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and
- The locations where additional BMPs are needed.

Action taken as a result of inspections must be described and retained as part of the SW3P. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the site is in compliance with the SW3P and the TCEQ TPDES General Permit TXR150000. The inspection report must be signed by the Contractors Environmental Compliance Manager, who has been delegated signatory authority as required in 30 TAC §305.128 (relating to signatories to reports).

VI. NON-STORM WATER DISCHARGES

The following indicated non-storm water discharges might occur on this project. Care will be exercised to prevent sediment or other pollutants from being released off-site as part of these discharges.

- Uncontaminated water used to control dust;
- Water for removing dirt from vehicles or equipment to reduce off-site tracking;
- Potable water sources including waterline flushings (not including hyperchlorinated water);
- Irrigation system drainage.

The following non-storm water discharges will not be released from the construction site. They will be discharged on-site into a sump pit, sediment trap, or otherwise into an area with protected storm sewer inlets.

- Standing water from the sight
- Discharge of uncontaminated ground or spring water
- Concrete truck mixer and delivery chute washout;
- Concrete slurry from pavement sawing, cutting, or grinding;

VII. THREATENED AND ENDANGERED SPECIES INFORMATION

The proposed construction project would have a minimal to negligible effect on any of the endangered and threatened species listed for Dallas, Tarrant, and Collin Counties. The construction project is on current DART owned property and will have minimal disturbed area with the major scope of work involving building renovation.

HISTORIC PROPERTIES INFORMATION

The Texas Historical Commission has review and approved the plans for this project.

VIII. BASELINE PLAN

See approved AWH NOI SW3P document for BMP for details related to the baseline plan

IX. CERTIFICATION STATEMENT

In accordance with the signatory requirements of the TPDES General Permit number TXR150000, which authorizes storm water discharges from construction activities, the following certification statement is executed by the individual whose name, title, and signature is affixed below. This certification is valid only for the baseline plan documents listed in PART IX above or as otherwise revised by DART.

TPDES Stormwater Construction General Permit Number: TXR15753W; Coverage Effective Date: April 15, 2019.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

_____ _____

Deanna Leggett, CMQ/OE, AICP — Date
Executive Vice President - Growth and Regional Development
Dallas Area Rapid Transit

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IN CHARGE	J. TOONE
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STORM WATER POLLUTION PREVENTION PLAN
SW3P NOTES AND NOI
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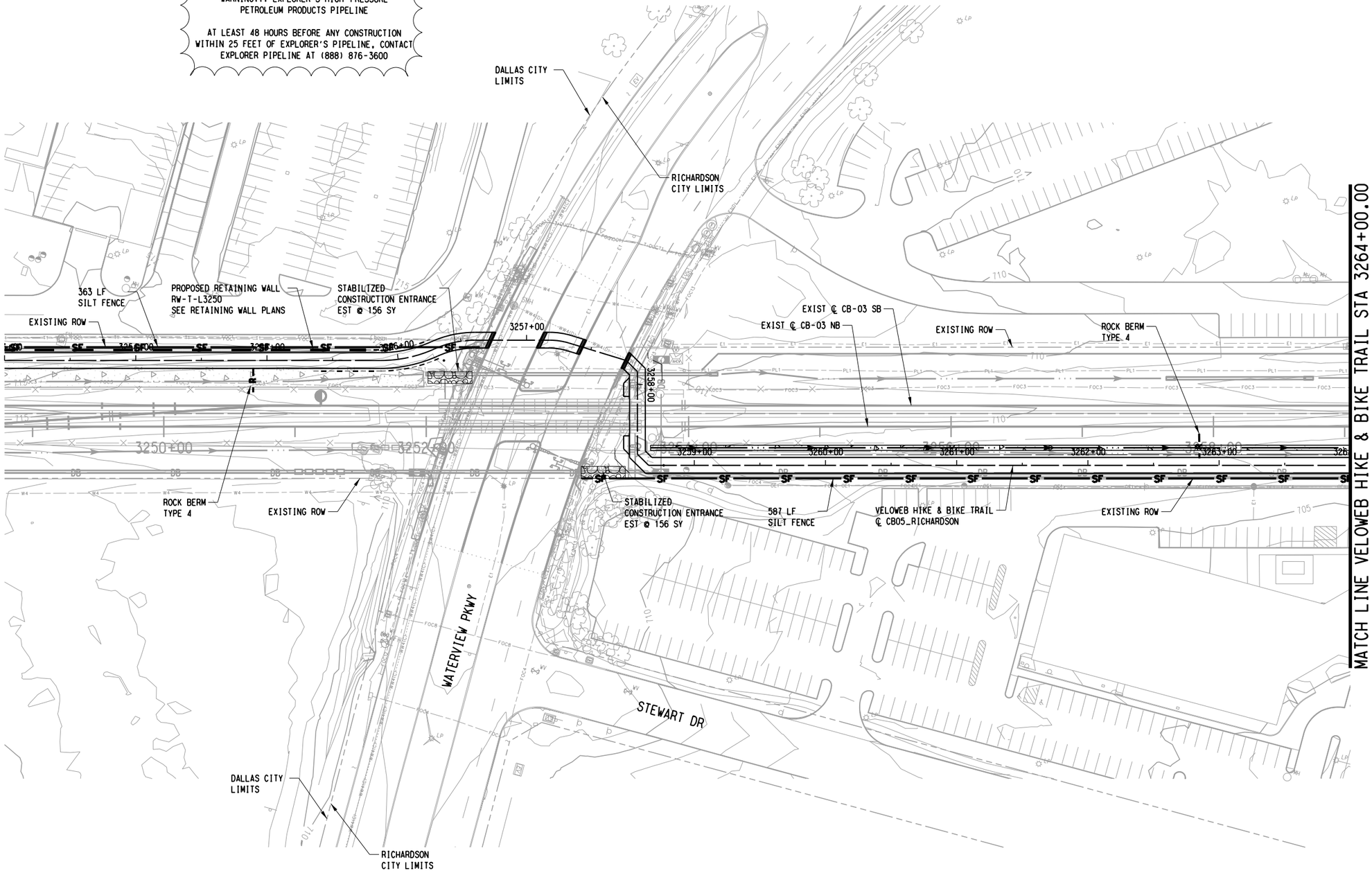

MATCH LINE VELOWEB HIKE & BIKE TRAIL STA 3264+00.00
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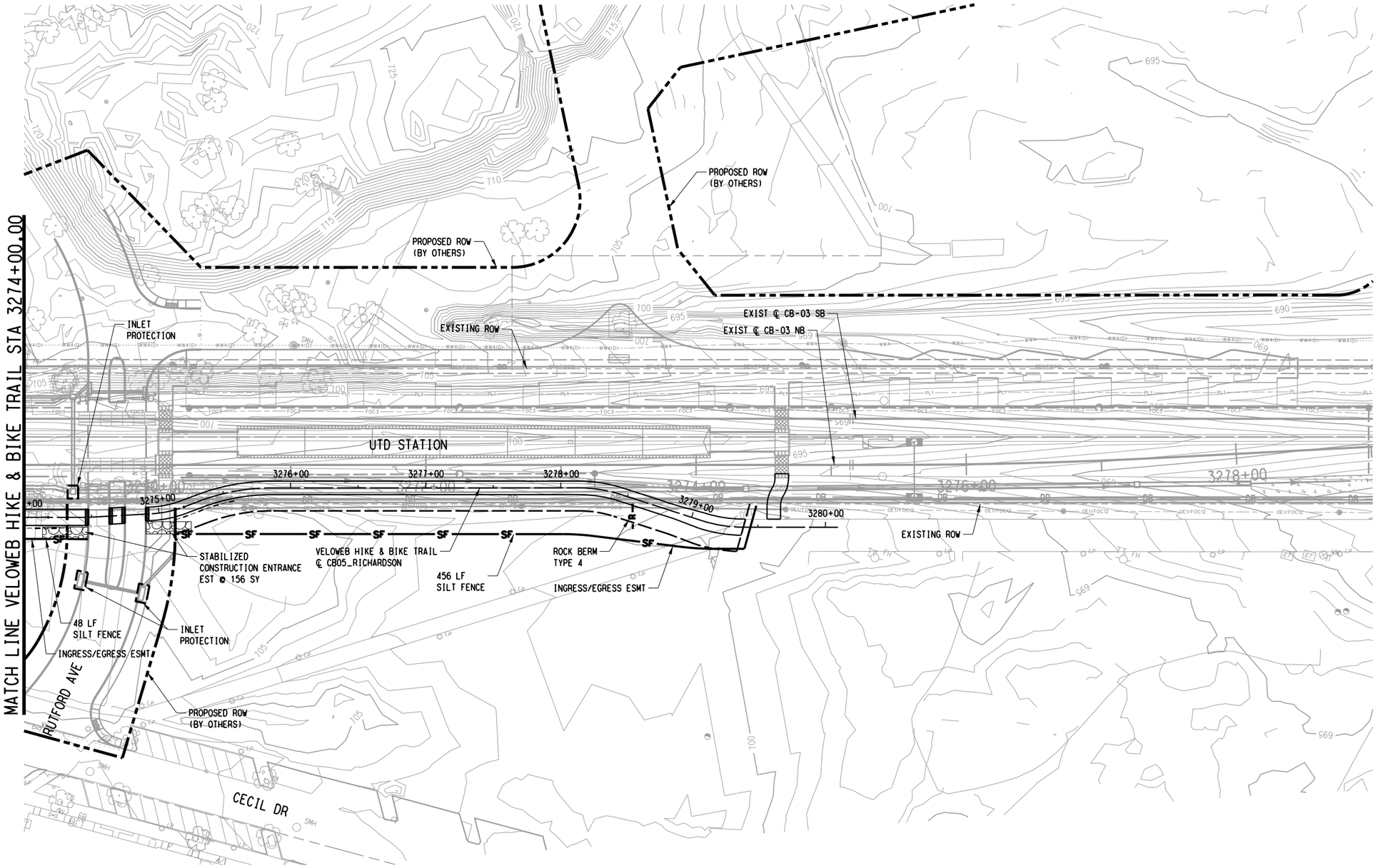

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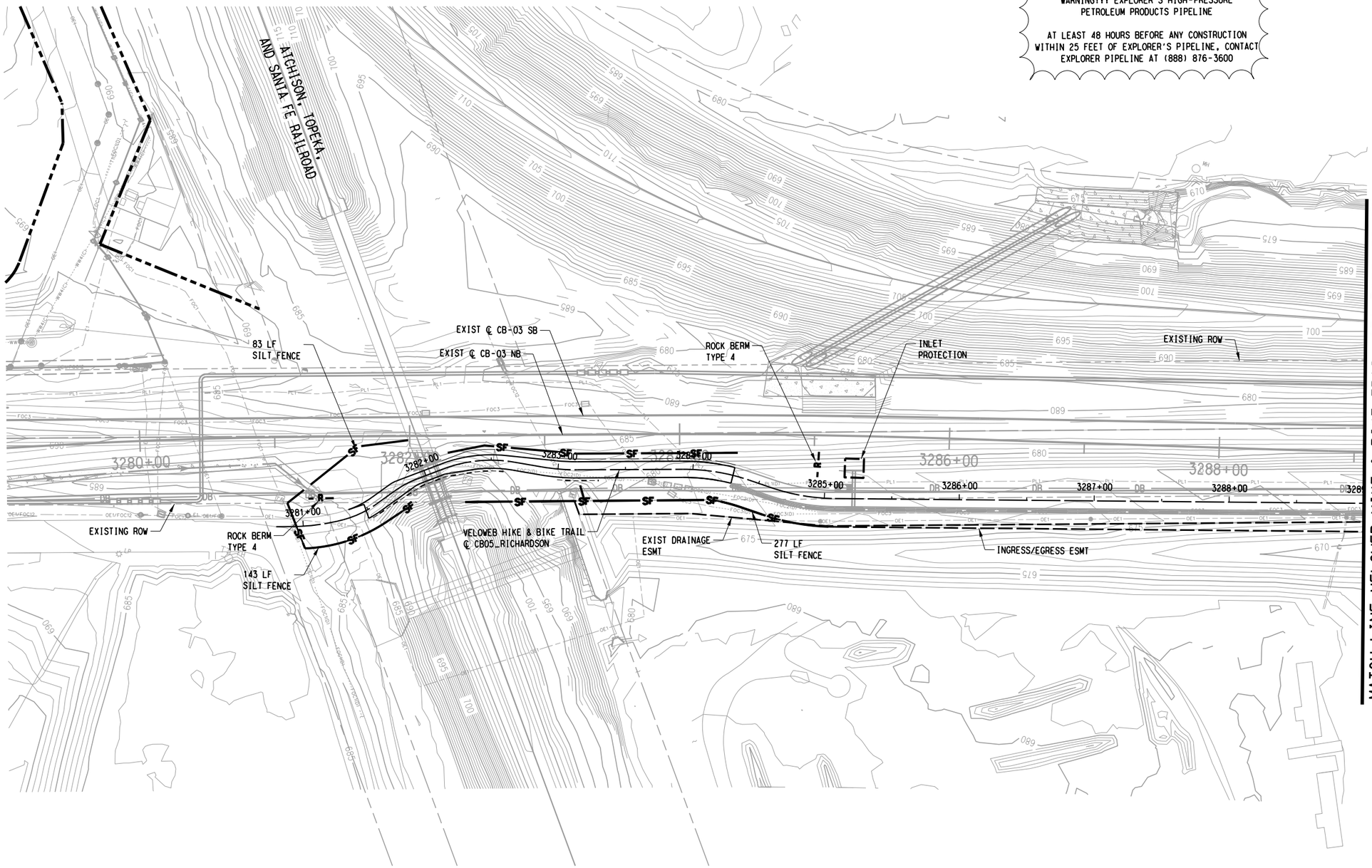

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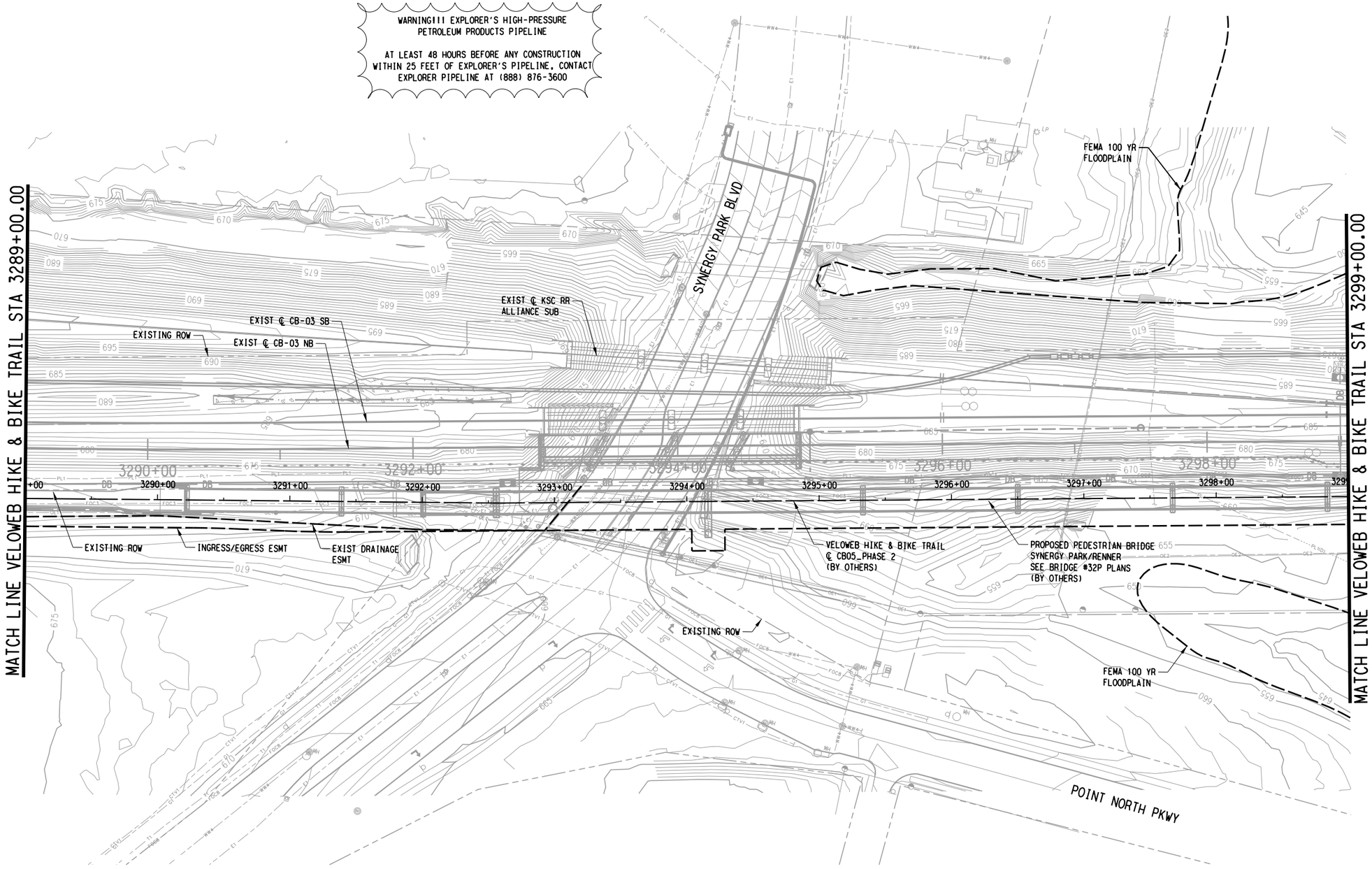

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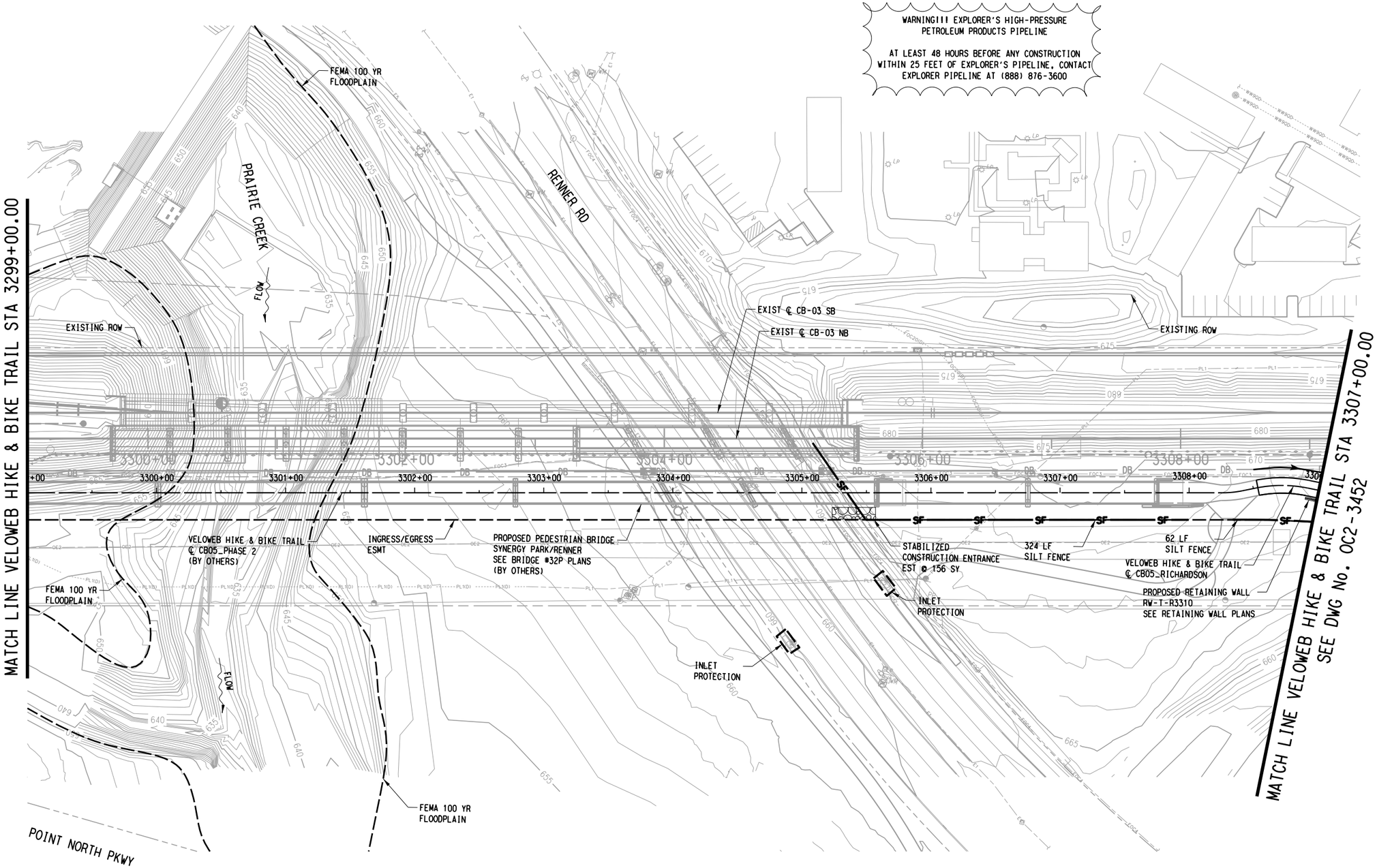

SCALE (IN FEET)
0 20 40 80

LEGEND

- SF — SILT FENCE
- R — ROCK BERM
- DITCH CHECK
- SILT FENCE OR GRAVEL (STANDARD) INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDING OR RELOCATING TEMPORARY EROSION MEASURES WHEN NECESSARY. SEE TEMPORARY EROSION CONTROL TYPICAL INSTALLATION SHEETS IN THE NCTCOG PUBLIC WORKS CONSTRUCTION STANDARDS MANUAL FOR MORE INFORMATION.
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6. FOR DETAILS, REFERENCE DART EROSION AND SEDIMENT CONTROL DETAIL DRAWING NUMBERS: OS1-0001, OS1-0004, AND OS1-0005.

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CONTRACT SHEET No. 190 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	F. CHARAKUPA
CHECKED	J. TOONE
IN CHARGE	J. TOONE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3299+00 TO STA 3309+00
SHEET 6 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3451	B

CB05-OC2-3451.040

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CB05-OC2-3451.040
JEGSVCPW001
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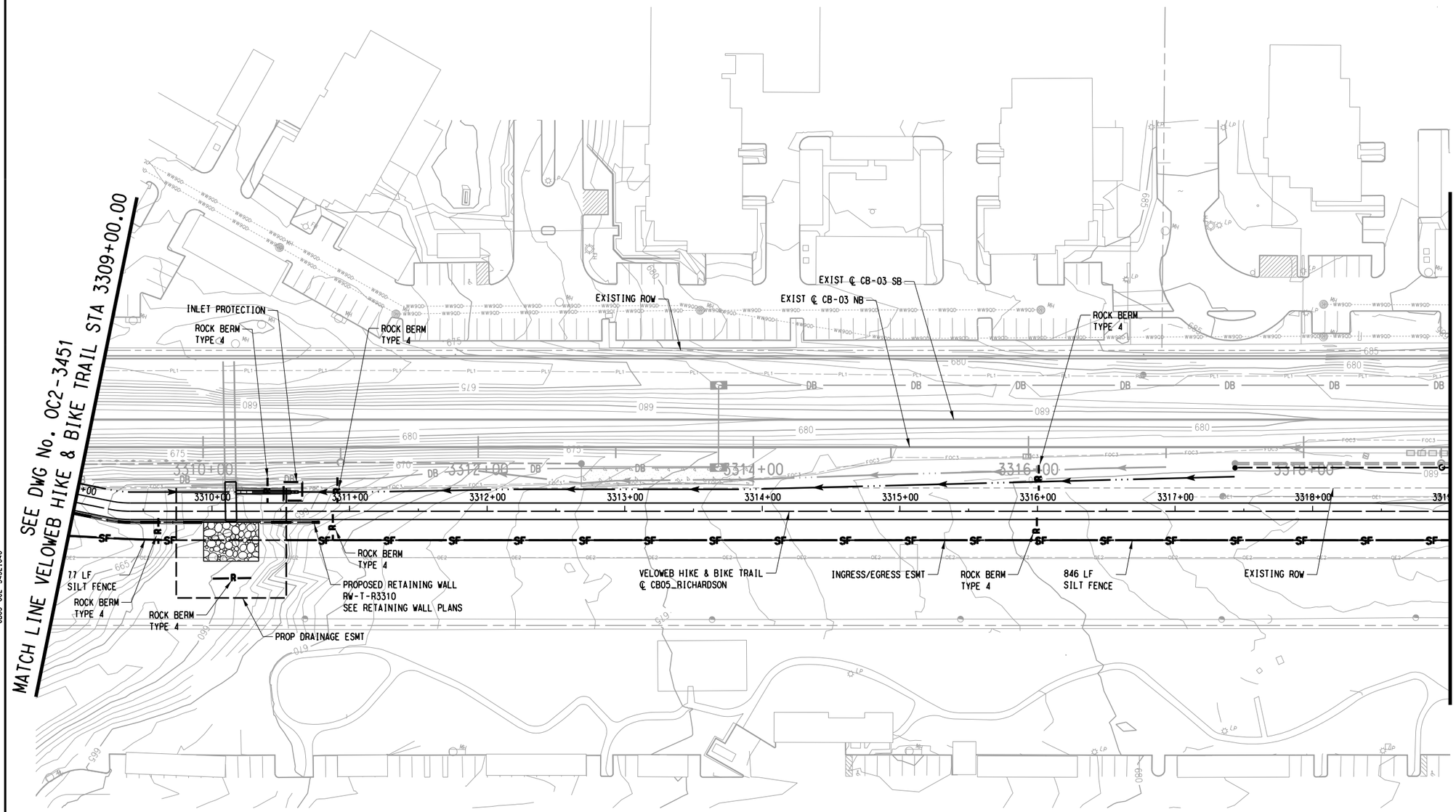
DWG No. OC2-3452



SCALE (IN FEET)
0 20 40 80

LEGEND

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CONTRACT SHEET No. 191 OF 221

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3309+00 TO STA 3319+00
SHEET 7 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3452	B

CB05-OC2-3452.040

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JEGSVCPW001
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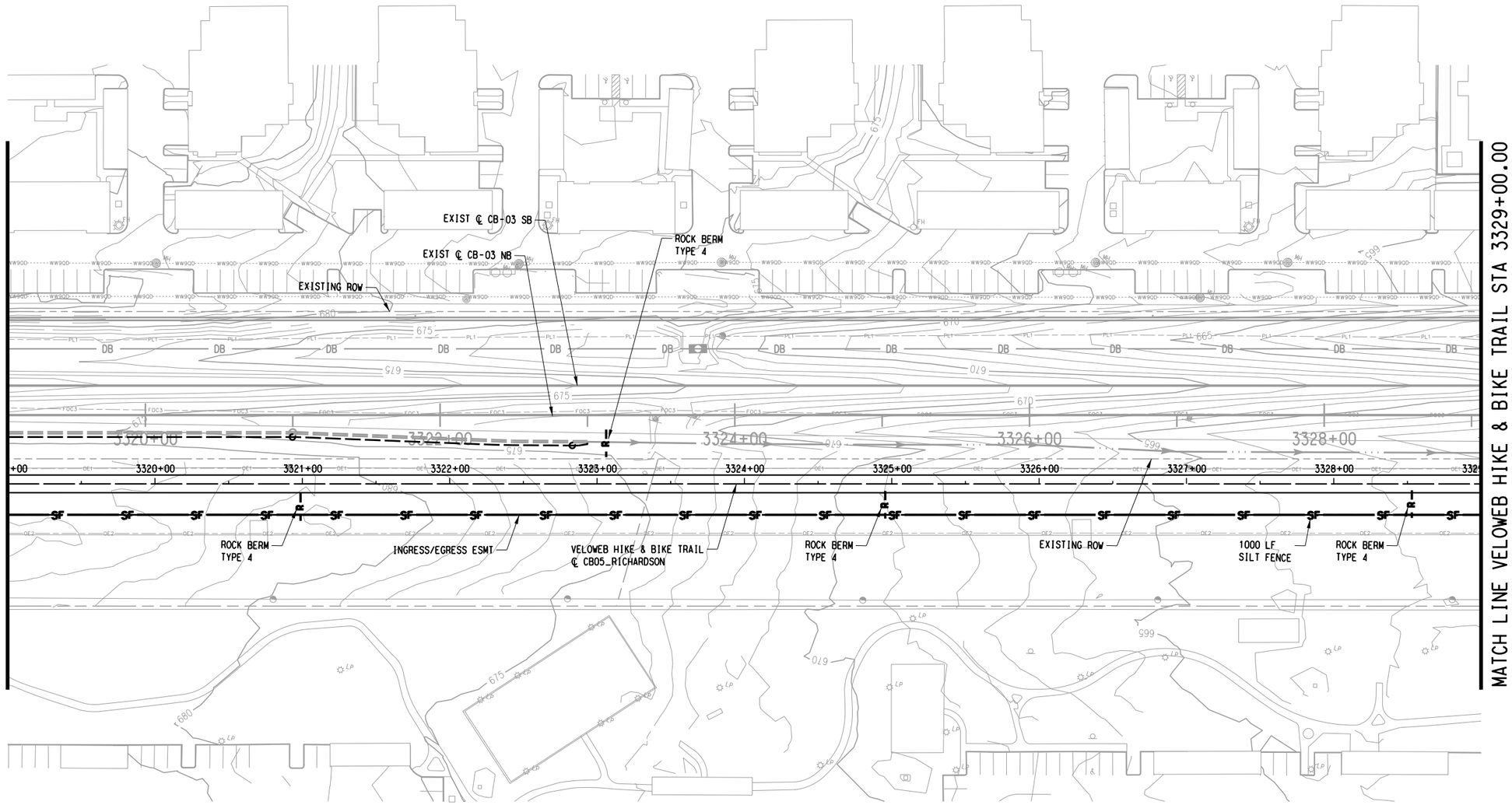
DWG No. OC2-3453



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CONTRACT SHEET No. 192 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	F. CHARAKUPA
CHECKED	J. TOONE
IN CHARGE	J. TOONE
DATE	19 SEP 22

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3319+00 TO STA 3329+00
SHEET 8 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3453	B

CB05-OC2-3453.040

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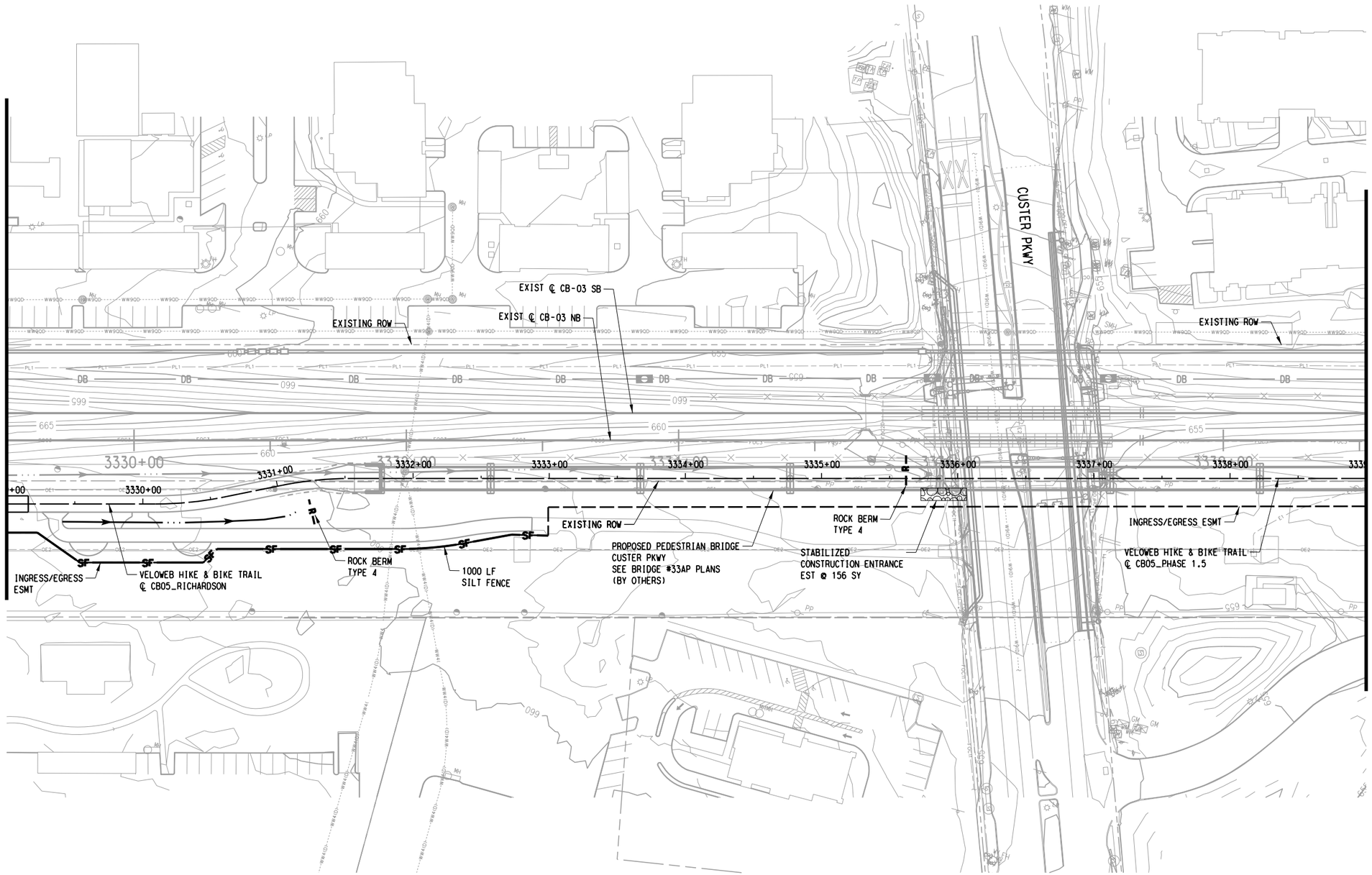
DWG No. OC2-3454



SCALE (IN FEET)
0 20 40 80

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CONTRACT SHEET No. 193 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	F. CHARAKUPA
CHECKED	J. TOONE
IN CHARGE	J. TOONE
DATE	19 SEP 22

CAES

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3329+00 TO STA 3339+00
SHEET 9 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3454	B

CB05-OC2-3454.040

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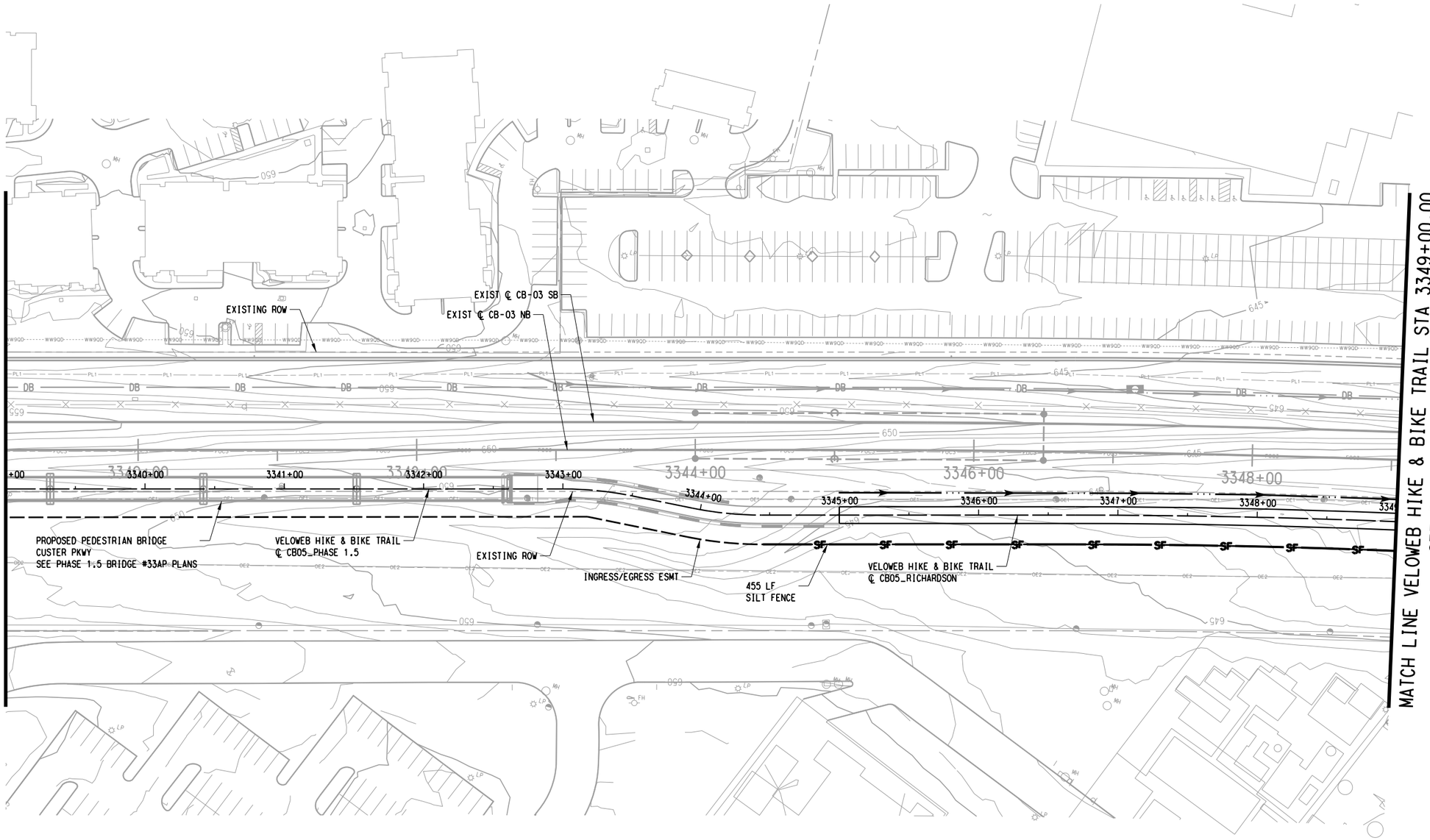
DWG No. OC2-3455



SCALE (IN FEET)
0 20 40 80

LEGEND

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CONTRACT SHEET No. 194 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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DESIGNED	F. CHARAKUPA
CHECKED	J. TOONE
IN CHARGE	J. TOONE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3339+00 TO STA 3349+00
SHEET 10 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3455	B

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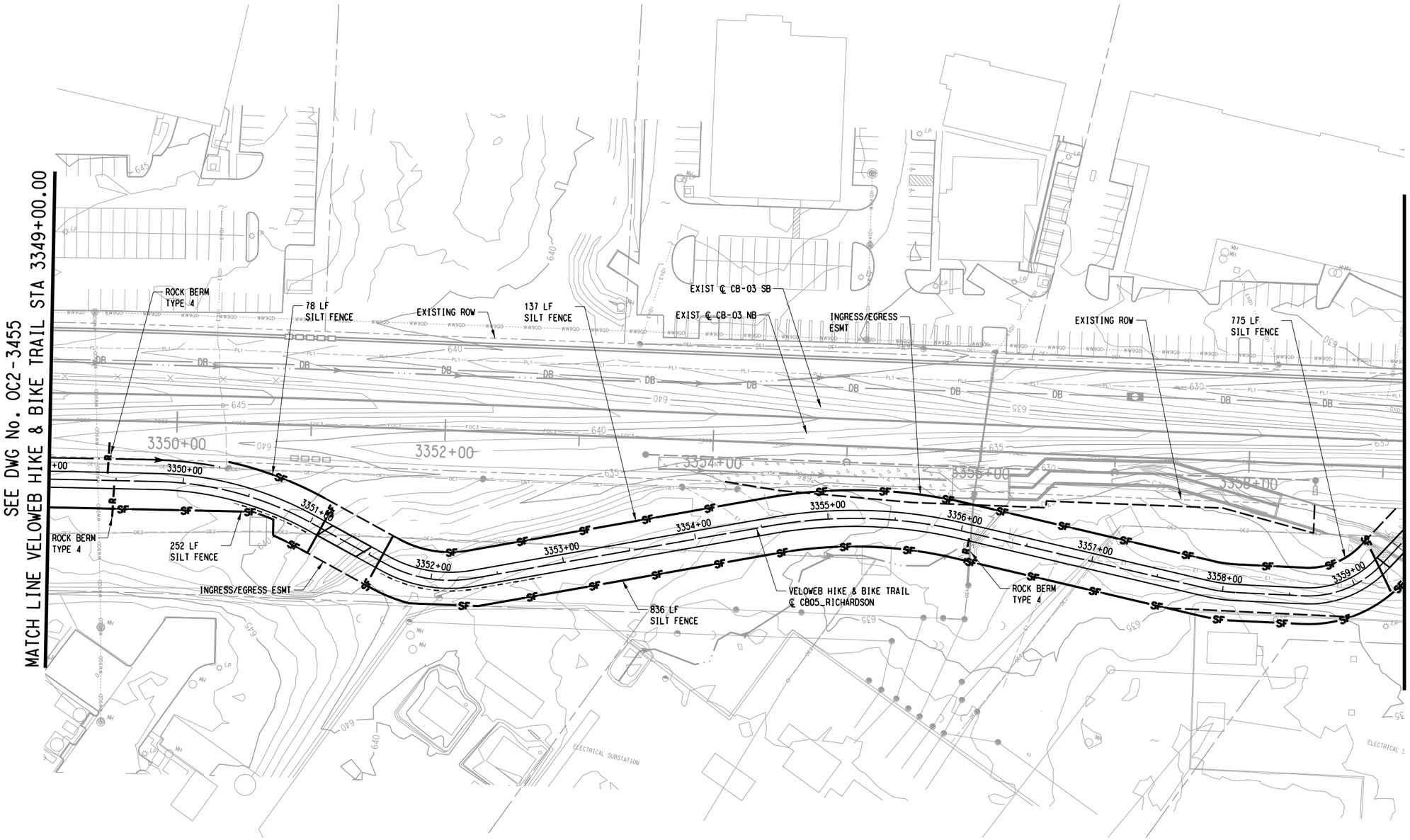
DWG No. OC2-3456



SCALE (IN FEET)
0 20 40 80

LEGEND

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3349+00 TO STA 3359+50
SHEET 11 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3456	B

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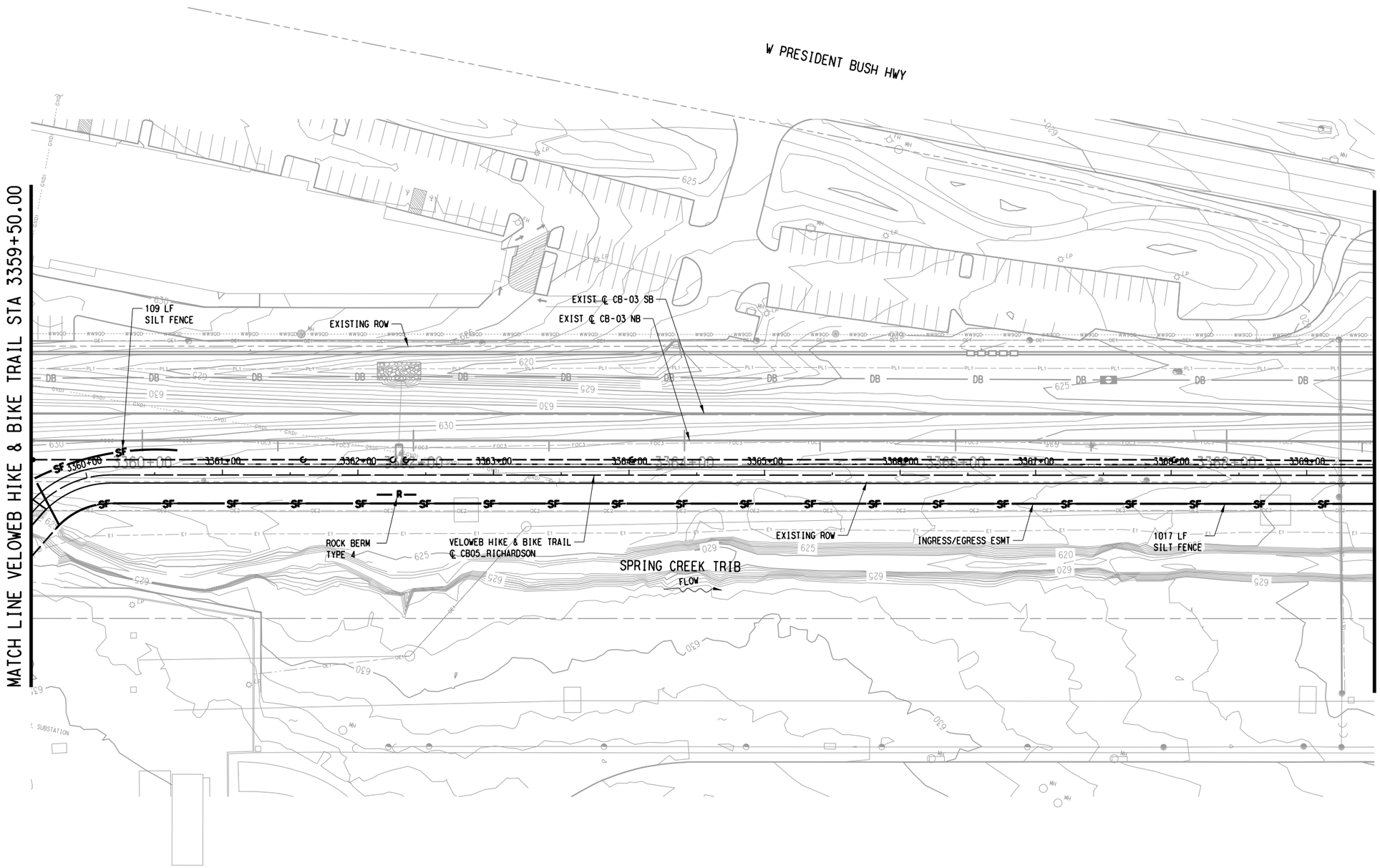

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3359+50 TO STA 3369+50
SHEET 12 OF 17

CONTRACT	DWG No.	REV
C-2033270-01	OC2-3457	B

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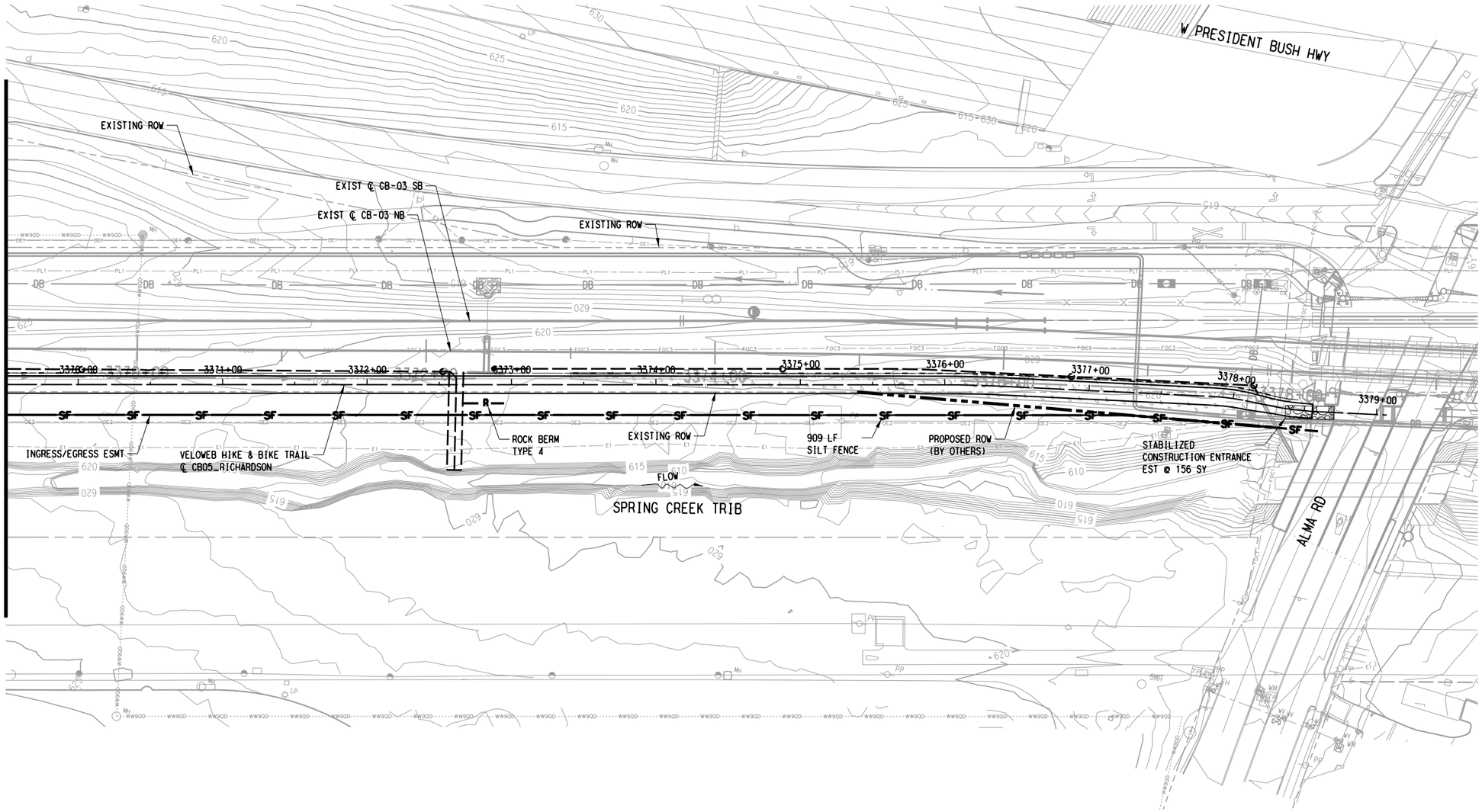

SCALE (IN FEET)
0 20 40 80

LEGEND

- SF — SILT FENCE
- R — ROCK BERM
- DITCH CHECK
- SILT FENCE OR GRAVEL(STANDARD) INLET PROTECTION
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CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3369+50 TO STA 3379+00
SHEET 13 OF 17

CONTRACT	DWG No.	REV
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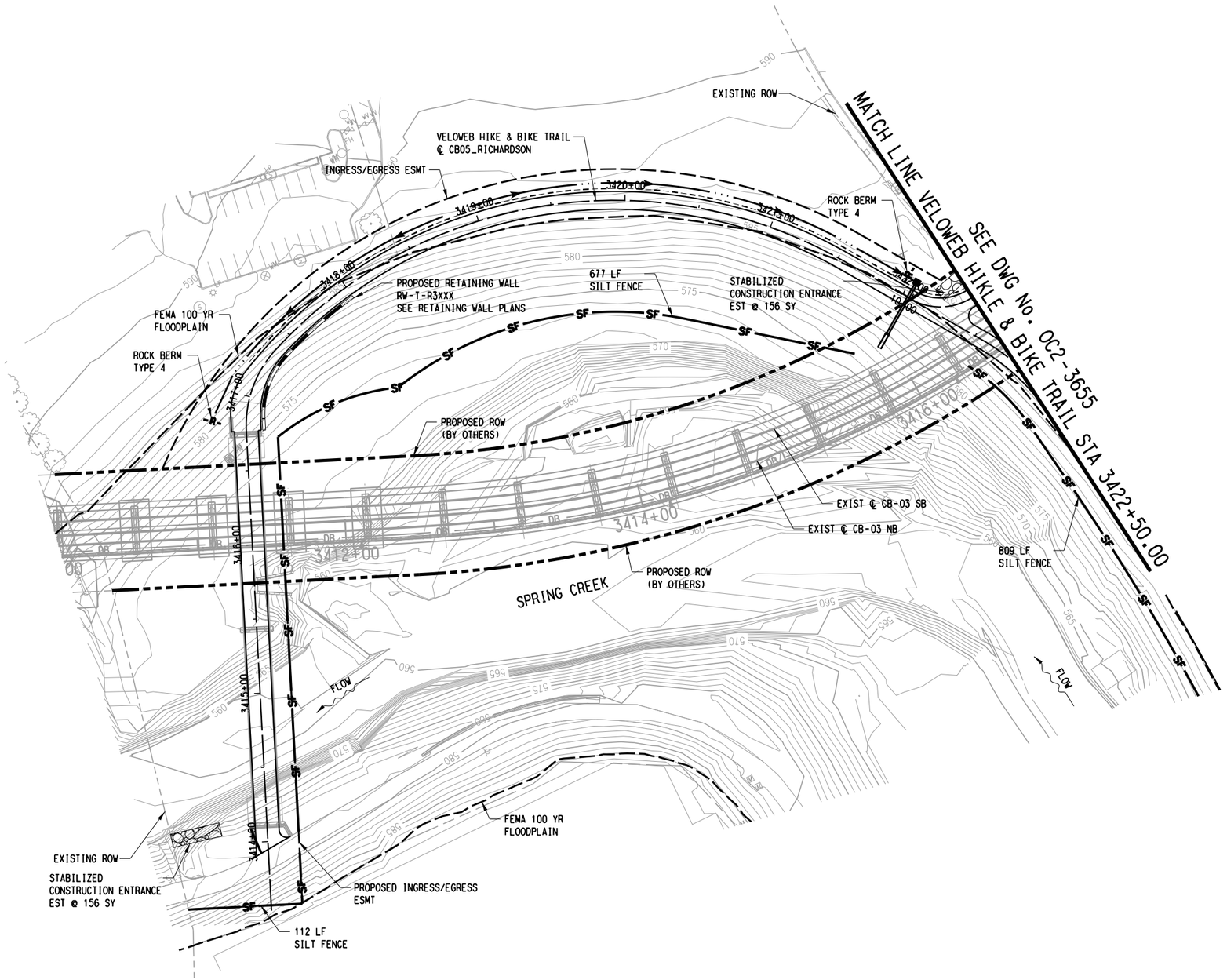

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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3412+50 TO STA 3422+50
SHEET 14 OF 17

CONTRACT	DWG No.	REV
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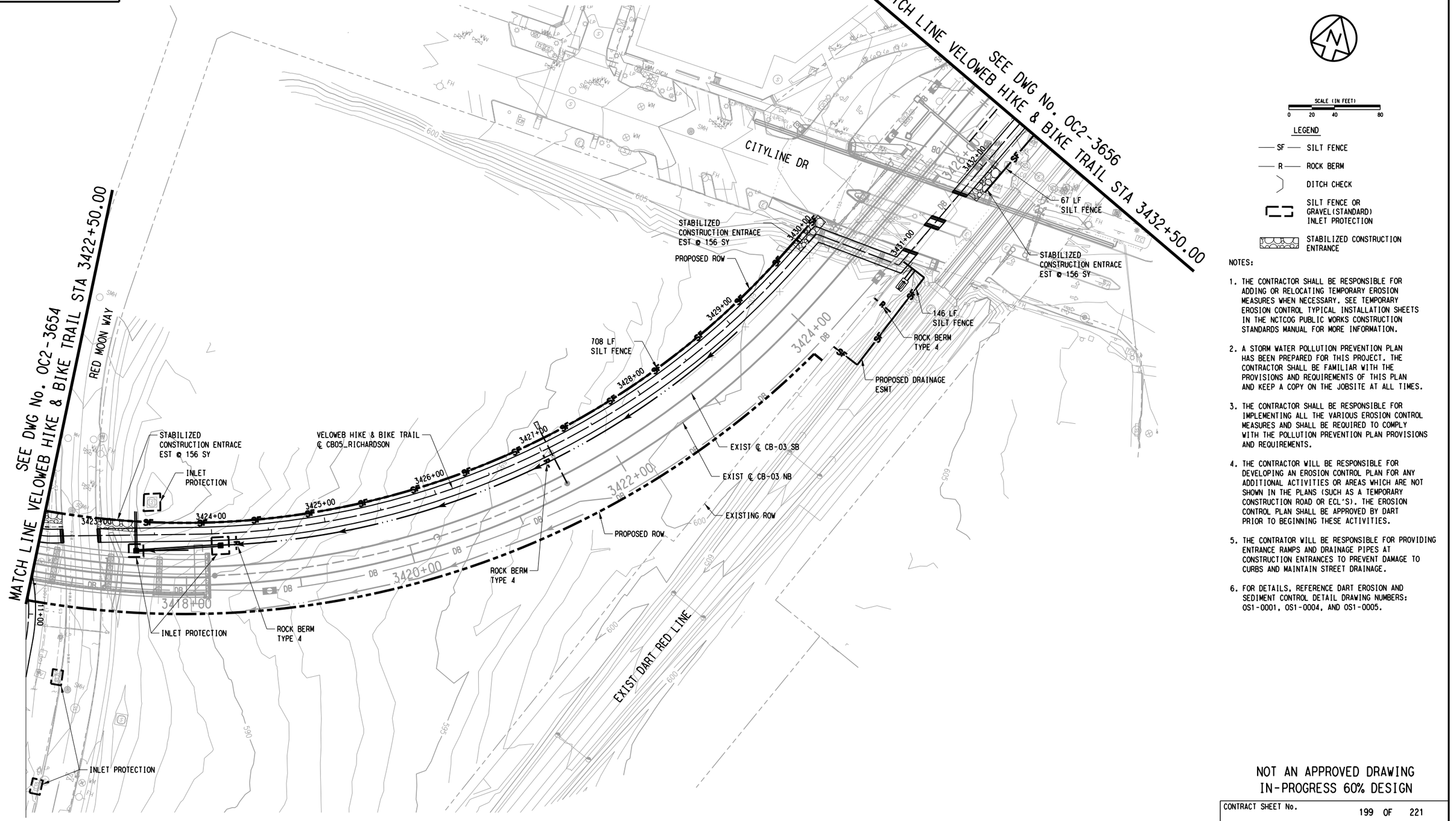

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LEGEND

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- R — ROCK BERM
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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3422+50 TO STA 3432+50
SHEET 15 OF 17

CONTRACT	DWG No.	REV
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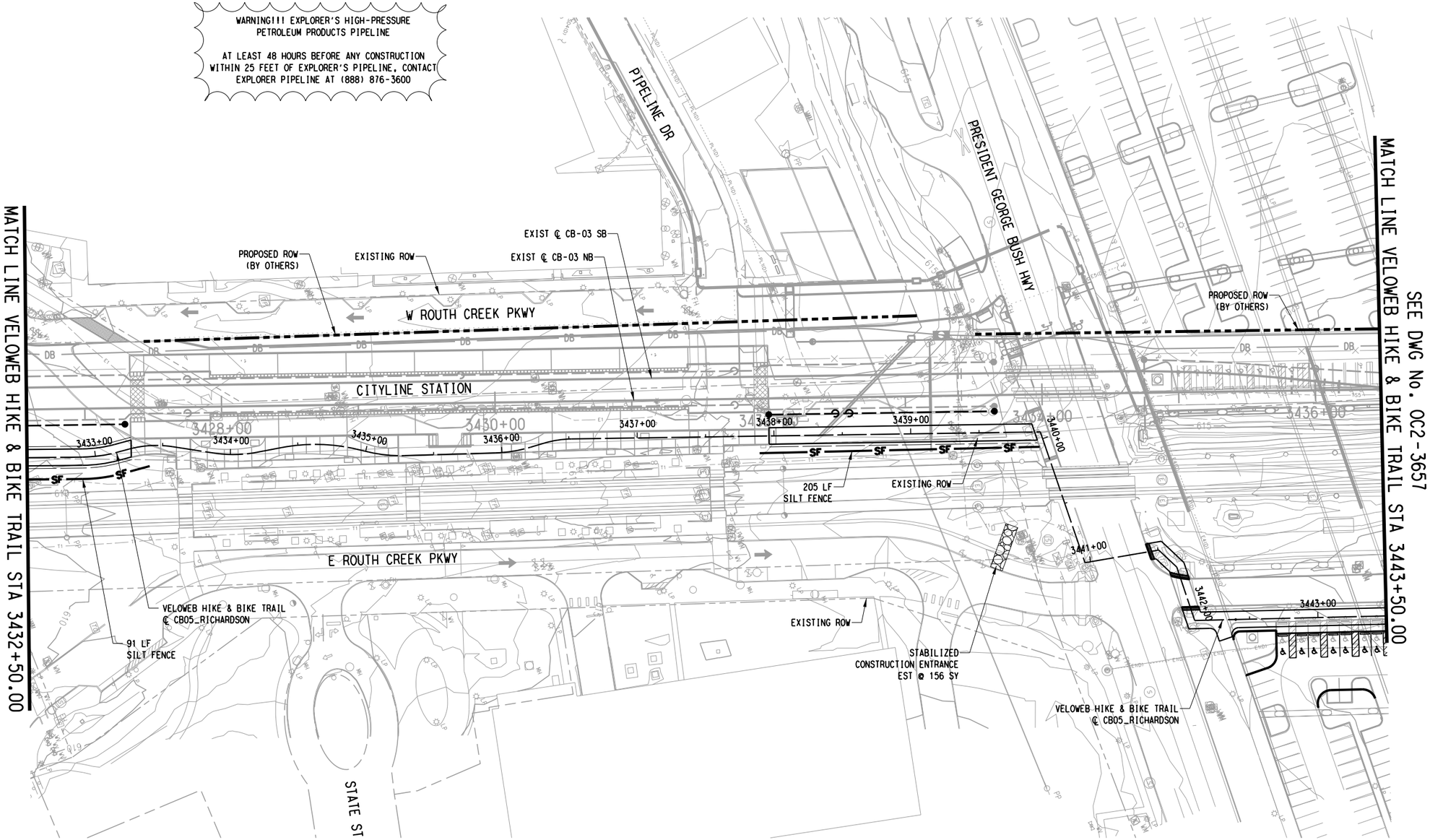
AT LEAST 48 HOURS BEFORE ANY CONSTRUCTION WITHIN 25 FEET OF EXPLORER'S PIPELINE, CONTACT EXPLORER PIPELINE AT (888) 876-3600



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CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3432+50 TO STA 3443+50
SHEET 16 OF 17

CONTRACT	DWG No.	REV
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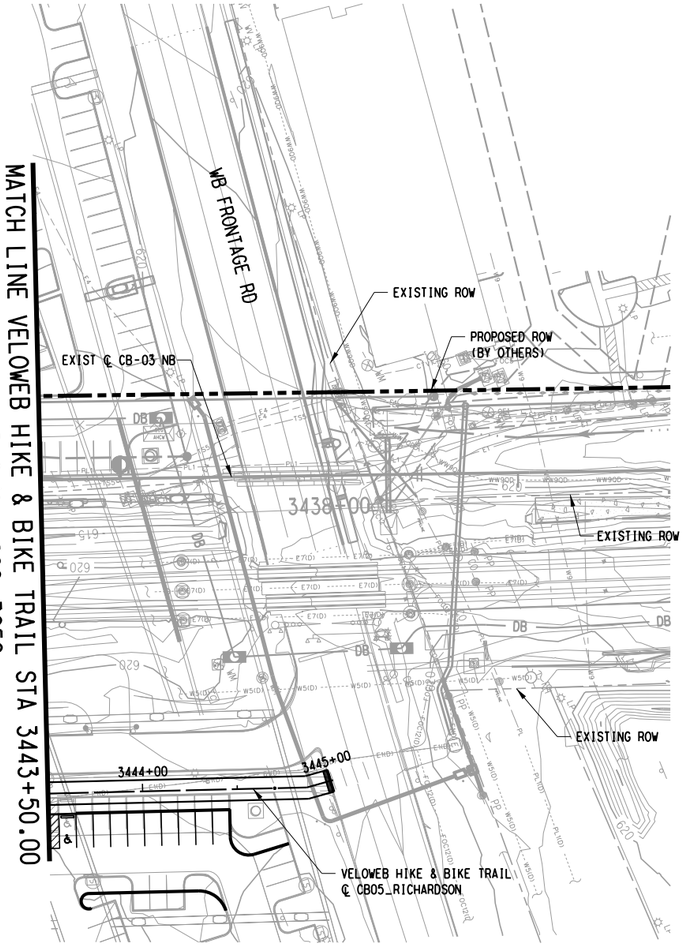

SCALE (IN FEET)
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VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
TEMPORARY EROSION CONTROL
STA 3443+50 TO STA 3445+00
SHEET 17 OF 17

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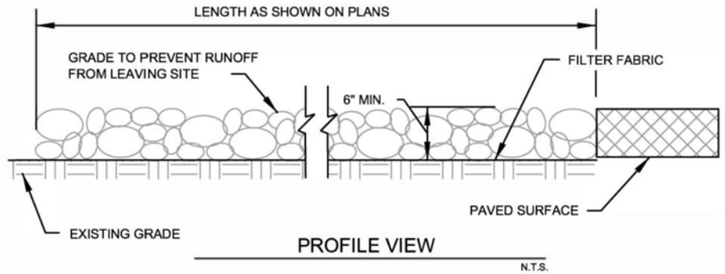

PROFILE VIEW

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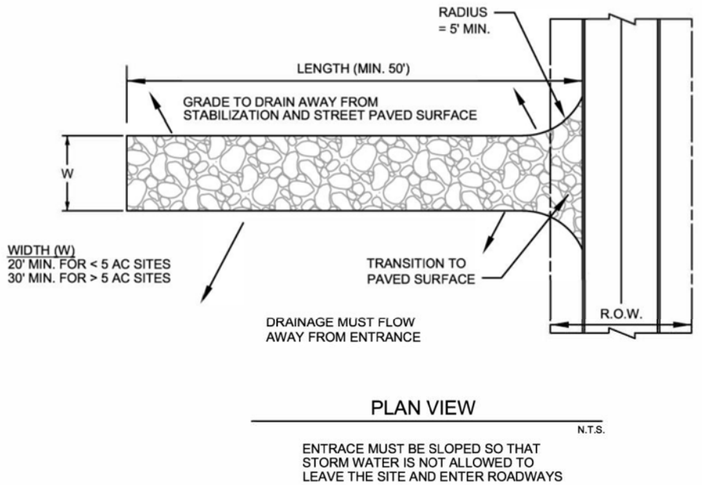

PLAN VIEW

N.T.S.

ENTRACE MUST BE SLOPED SO THAT STORM WATER IS NOT ALLOWED TO LEAVE THE SITE AND ENTER ROADWAYS

Revised 2018

Figure 3.32 Schematics of Stabilized Construction Exit

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STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. SEE NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.11

2. THE THICKNESS SHALL NOT BE LESS THAN 6 INCHES.

3. STONE SHALL BE 3 TO 5 INCH DIAMETER COURSE AGGREGATE, NO CRUSHED PORTLAND CEMENT CONCRETE ALLOWED.

4. LENGTH SHALL BE SHOWN ON PLANS, WITH A MINIMUM LENGTH OF 50 FEET.

5. THE WIDTH SHALL BE NO LESS THAN 20' FOR SITES LESS THAN 5 AC, AND 30' FOR SITES GREATER THAN 5 AC, AT ALL POINTS OF INGRESS OR EGRESS.

6. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.

8. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

9. INSPECTION SHALL BE SPECIFIED IN THE SWPPP.

Revised 2018

Figure 3.33 Stabilized Construction Entrance General Notes

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 202 OF 221
DWG NO. OC9-3658
CONTRACT NO. C-2033270-01

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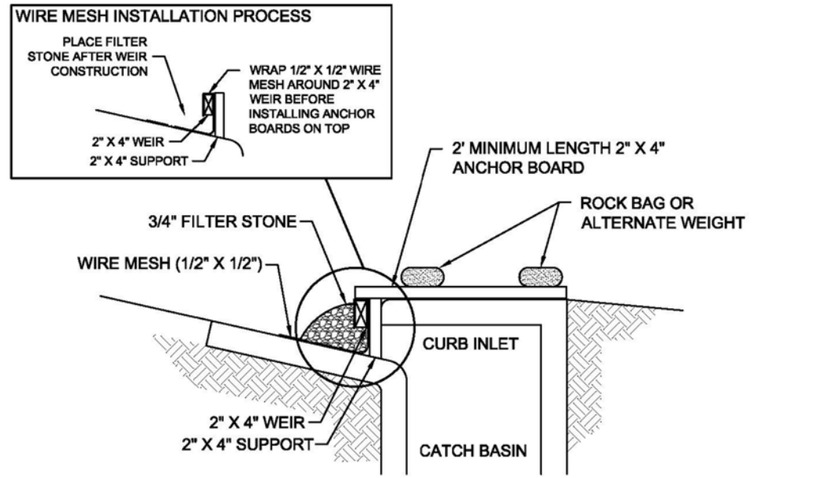

2" X 4" WEIR CURB INLET PROTECTION CROSS SECTION
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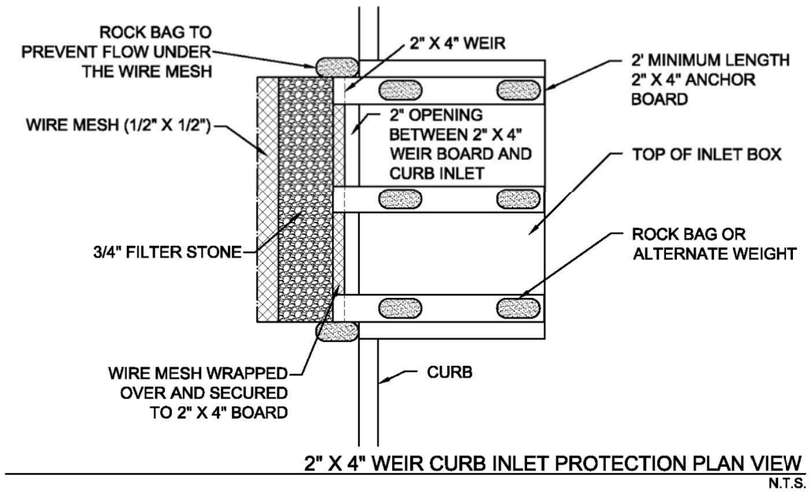

2" X 4" WEIR CURB INLET PROTECTION PLAN VIEW
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NOTE: THIS CONTROL WILL DECREASE THE CAPACITY OF THE INLET. IT SHALL ONLY BE USED WHEN AN ENGINEER HAS DETERMINED THERE IS ADEQUATE STORAGE OR POSITIVE OVERFLOW.

Figure 3.5 Schematics of 2"x4" Weir Curb Inlet Protection
(Source: Modified from Washington Suburban Sanitary Commission Detail SC-16.0)

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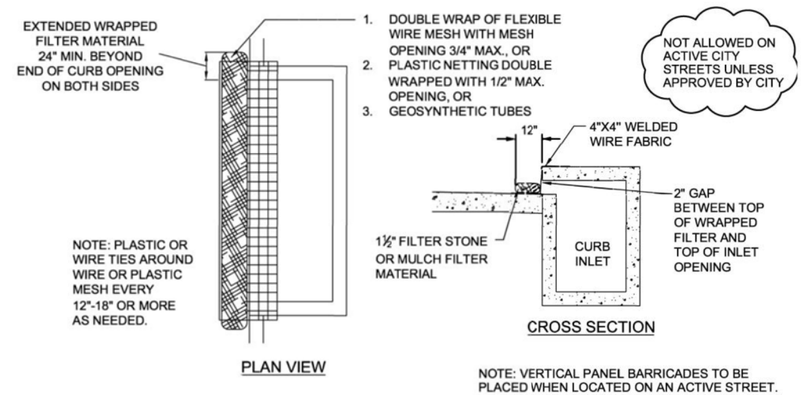
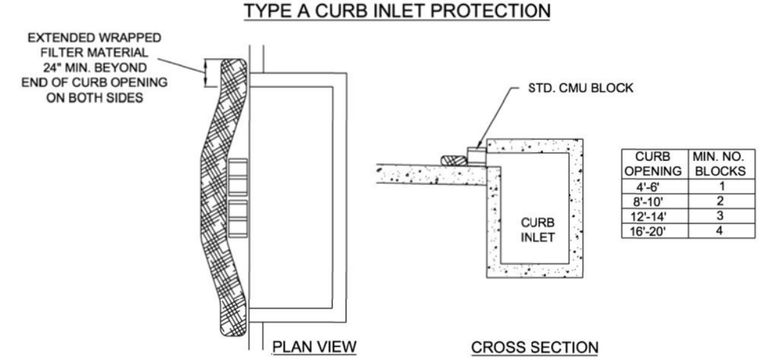


TYPE A CURB INLET PROTECTION



NOTE: SEE NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.14 AND 202.18

ALTERNATIVE FORM FOR TYPE A CURB INLET PROTECTION

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Figure 3.6 Schematics of Organic Filter Tube Curb Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 203 OF 221
DWG NO. 0C9-3659
CONTRACT NO. C-2033270-01

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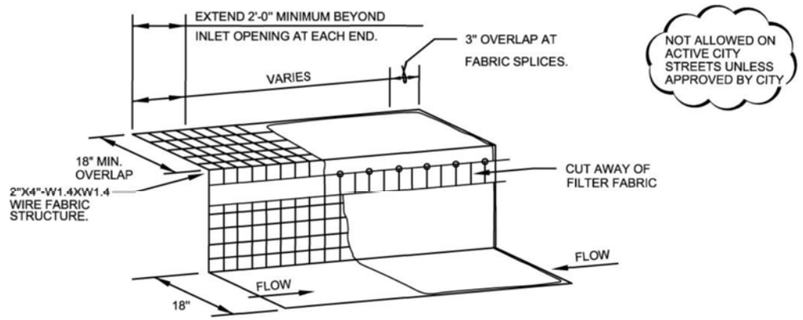

HOG WIRE WEIR CURB INLET PROTECTION ISOMETRIC VIEW

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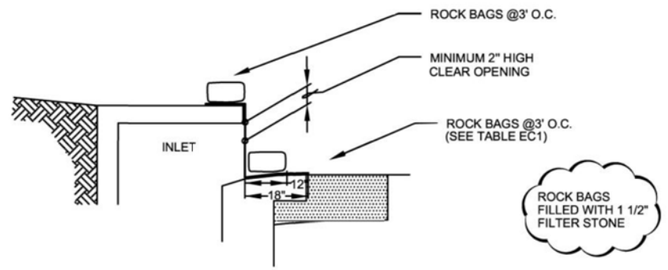

HOG WIRE WEIR CURB INLET PROTECTION CROSS SECTION

N.T.S.

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REFERENCE: NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.14

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Figure 3.7 Schematics of Hog Wire Weir Curb Inlet Protection
(Source: Modified from City of Round Rock Detail E-03)

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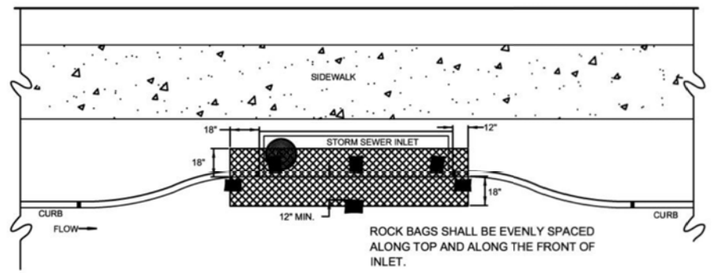

HOG WIRE WEIR CURB INLET PROTECTION PLAN VIEW

N.T.S.

TABLE EC1

INLET OPENING	MINIMUM NUMBER OF ROCK BAGS	
	TOP	FRONT
5'	2	3
10'	3	3
15'	3	4
20'	4	4

NOTES:
1. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL TO PROVIDE A 2" MINIMUM CLEAR OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
2. INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
3. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

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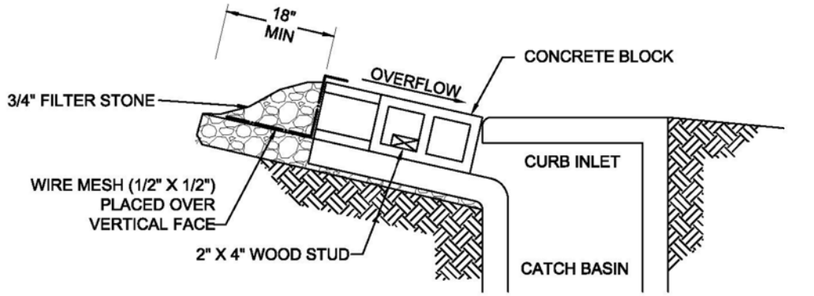
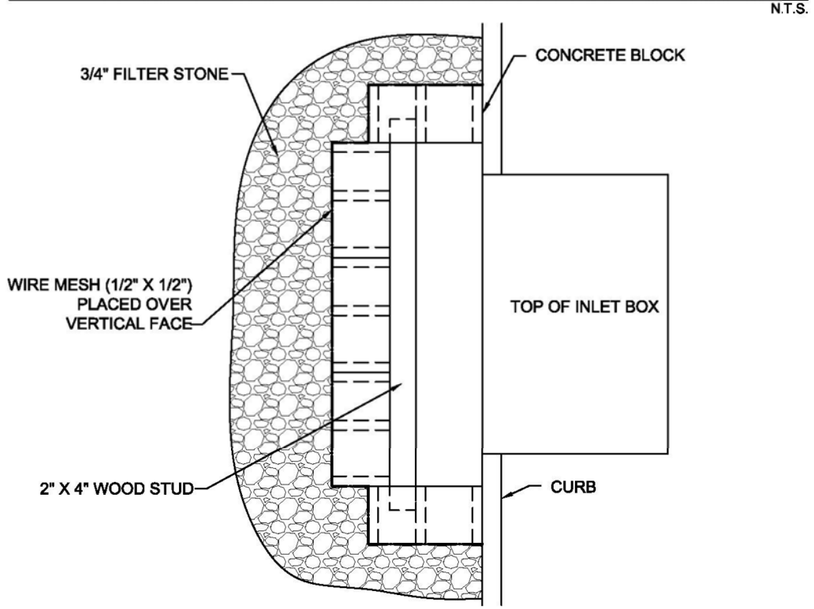
Figure 3.8 Hog Wire Weir Curb Inlet Protection

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 204 OF 221
DWG NO. 0C9-3660
CONTRACT NO. C-2033270-01

STD5-0C9-3660.001



BLOCK AND GRAVEL FILTER CURB INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL FILTER CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTES:
1. DO NOT INSTALL ON INLETS IN A PUBLIC STREET OR OTHER ACTIVE TRAVEL LANE. BLOCK AND GRAVEL FILTER IS INTENDED FOR USE ON LOW POINT (SUMP) INLETS IN PARKING LOTS AND OTHER PAVEMENT THAT IS NOT AN ACTIVE TRAVEL LANE. THIS INLET PROTECTION METHOD ALLOWS FOR FULL USE OF THE INLET DESIGN CAPACITY.
2. INSTALL TRAFFIC CONES AS NEEDED TO MINIMIZE THE POTENTIAL FOR CARS HITTING THE BLOCK AND GRAVEL.

Figure 3.9 Schematics of Block and Gravel Filter Curb Inlet Protection

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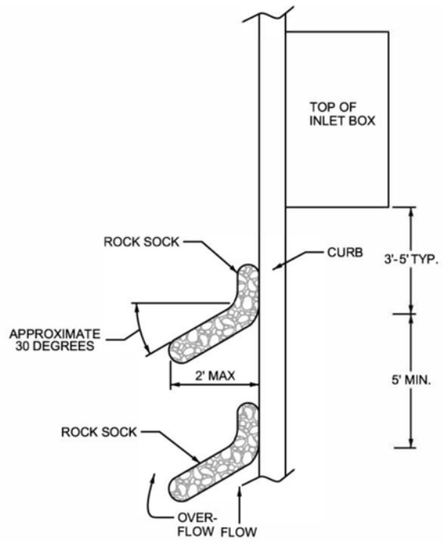
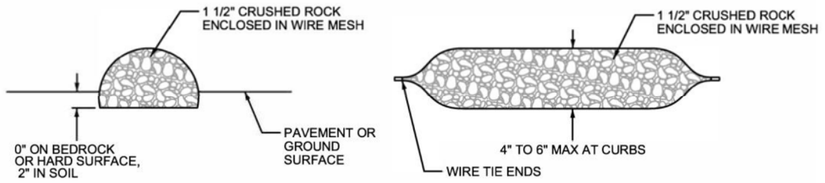
VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 205 OF 221
DWG NO. 0C9-3661
CONTRACT NO. C-2033270-01

STD5-0C9-3661.001



CURB ROCK SOCK ON-GRADE CURB INLET PROTECTION DETAIL

N.T.S.



ROCK SOCK SECTION

N.T.S.

ROCK SOCK PLAN

N.T.S.

Revised 2018

Figure 3.10 Schematic of Organic Filter Tube On-Grade Curb Inlet Protection

CURB ROCK SOCK ON-GRADE CURB INLET PROTECTION GENERAL NOTES:

1. THIS DETAIL IS INTENDED FOR USE WITH ON-GRADE INLETS (NOT A LOW POINT) TO TRAP SEDIMENT.
2. DO NOT INSTALL ON INLETS WHERE THE ROCK SOCKS WOULD EXTEND INTO AN ACTIVE TRAVEL LANE.
3. ROCK SOCKS MAY BE USED ON PAVED OR UNPAVED SURFACES.
4. MAXIMUM ROCK SOCK DIAMETER 4" TO 6".
5. MINIMUM OF 2 CURB ROCK SOCKS.

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Figure 3.11 Organic Filter Tube On-Grade Curb Inlet Protection General Notes

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 206 OF 221
DWG NO. OC9-3662
CONTRACT NO. C-2033270-01

STD5-OC9-3662.001

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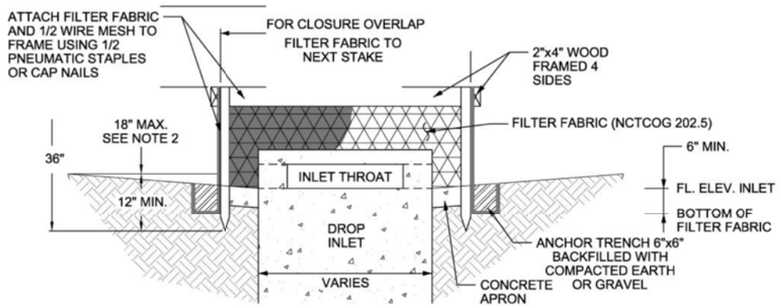
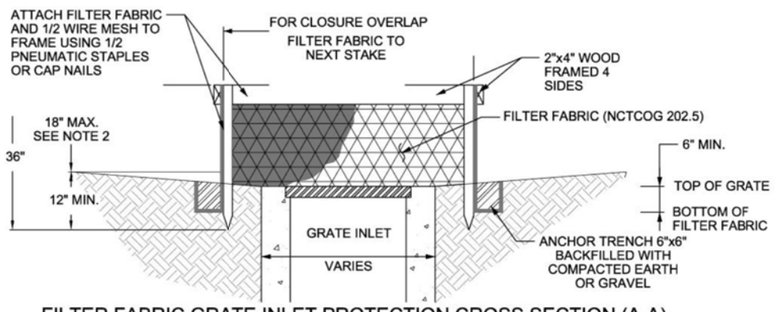


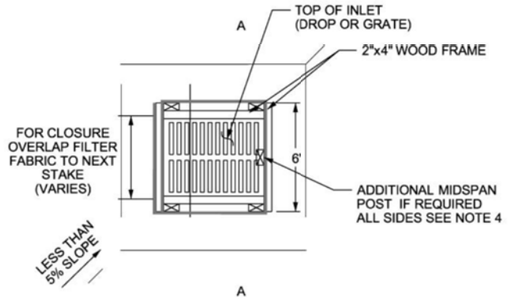
FILTER FABRIC DROP INLET PROTECTION CROSS SECTION (A-A)

N.T.S.



FILTER FABRIC GRATE INLET PROTECTION CROSS SECTION (A-A)

N.T.S.



NOTE:
1. STAKES SHALL CONFORM TO SPECIFICATIONS SECTION 202.5.2.2
2. HEIGHT OF INLET PROTECTION SURROUNDING THE INLET SHALL BE SHOWN ON THE PLANS AND MUST BE CHECKED TO VERIFY PONDING WATER WILL NOT CAUSE FLOODING OF PROPERTY OR DAMAGE.
3. CONCENTRATED DITCH FLOW COMING FROM ONE OR MORE SIDES TOWARD THE INLET MAY REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED ON ONE SIDE OF THE INLET.
4. POST SHALL BE INSTALLED AT EACH CORNER AND BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 6' BETWEEN CORNER POSTS.

AREA INLET PROTECTION FILTER BARRIER PLAN VIEW

N.T.S.

Revised 2019

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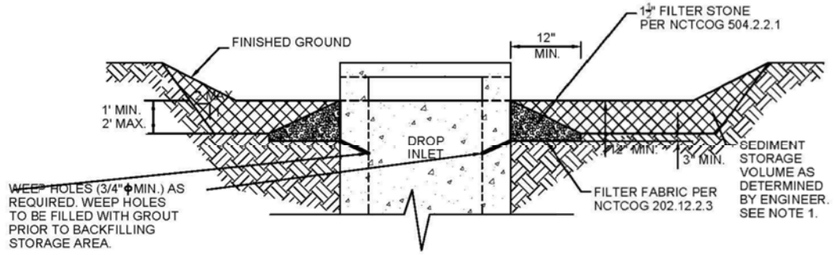
Figure 3.12 Schematics of Filter Fabric Area Inlet Protection
(Source: City of Plano BMP SP-4)



EXCAVATED INLET PROTECTION "Y" INLET SECTION A-A

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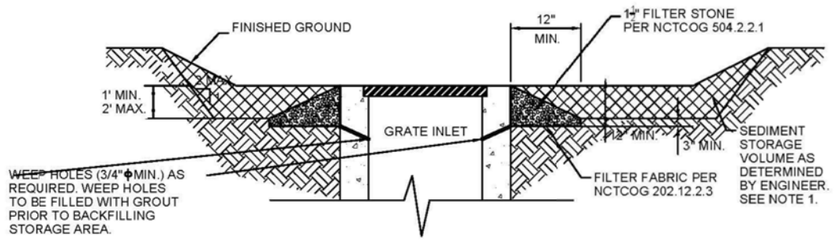

EXCAVATED INLET PROTECTION GRATE INLET SECTION A-A

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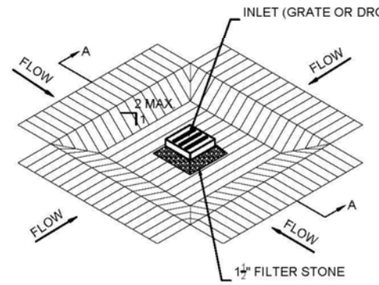


NOTE:
1. STORAGE VOLUME SHALL BE DESIGN STORM VOLUME OR 3,600 CUBIC FEET PER ACRE DISTURBED.
2. CONCENTRATED DITCH FLOW COMING FROM ONE OR MORE SIDES TOWARD THE INLET MAY REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED ON ONE SIDE OF THE INLET.

EXCAVATED INLET PROTECTION PLAN VIEW

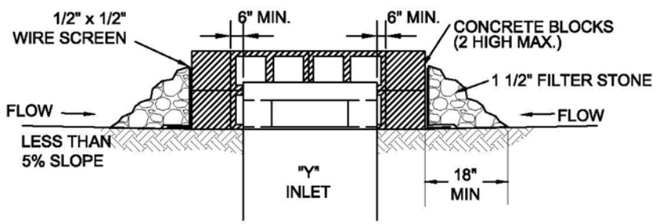
N.T.S.

Revised 2019

Figure 3.13 Schematics of Excavated Impoundment Area Inlet Protection

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 207 OF 221
DWG NO. OC9-3663
CONTRACT NO. C-2033270-01

STD5-OC9-3663.001



BLOCK AND GRAVEL "Y" INLET PROTECTION CROSS SECTION
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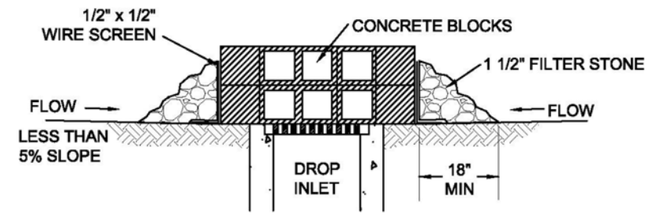

BLOCK AND GRAVEL DROP INLET PROTECTION CROSS SECTION
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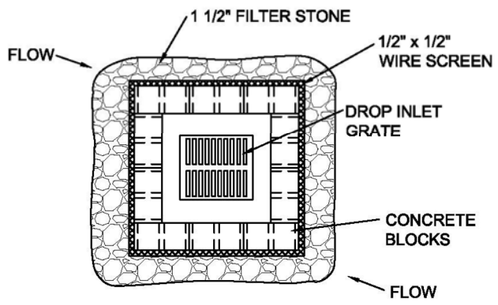

BLOCK AND GRAVEL AREA INLET PROTECTION PLAN VIEW
N.T.S.

Figure 3.14 Schematics of Block and Gravel Area Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

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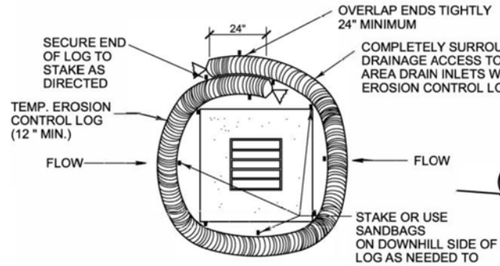
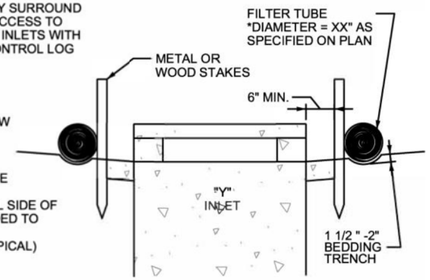


FILTER TUBE AREA
INLET PROTECTION PLAN VIEW
N.T.S.



FILTER TUBE "Y" INLET
PROTECTION CROSS SECTION
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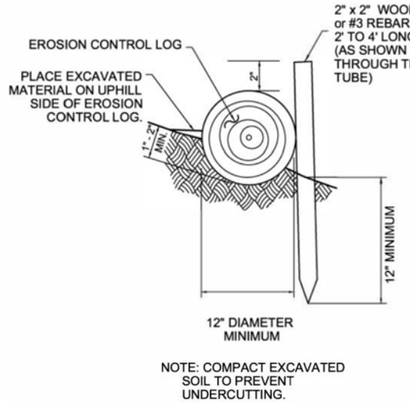
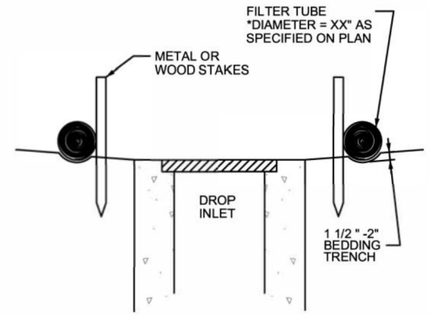


NOTE: COMPACT EXCAVATED
SOIL TO PREVENT
UNDERCUTTING.

EMBEDMENT EXAMPLE
FOR FILTER TUBE
N.T.S.



FILTER TUBE DROP INLET
PROTECTION CROSS SECTION
N.T.S.

NOTE: SEE NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.18

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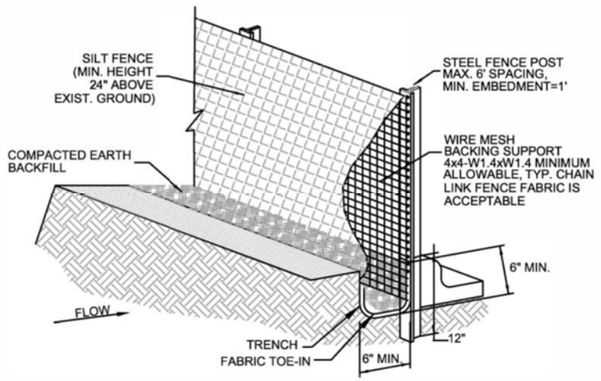
Figure 3.15 Schematics of Organic Filter Tube Area Inlet Protection

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 208 OF 221
DWG NO. 0C9-3664
CONTRACT NO. C-2033270-01

STD5-0C9-3664.001



ISOMETRIC PLAN VIEW

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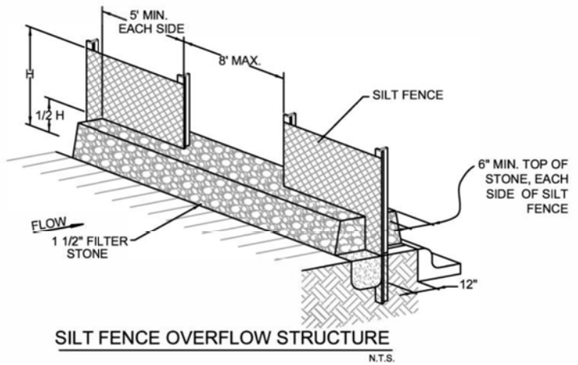

SILT FENCE OVERFLOW STRUCTURE

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Figure 3.30 Schematics of Silt Fence

SILT FENCE GENERAL NOTES:

1. DESIGN SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE OVERFLOW STRUCTURES SHALL BE INSTALLED. OVERFLOW STRUCTURES ARE REQUIRED AT ALL LOW POINTS AND AT A SPACING OF APPROXIMATELY 300 FEET WHERE NO LOW POINT IS APPARENT.

2. DESIGNER SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE SILT FENCE IS TO BE TURNED UPSLOPE AT THE ENDS. UPSLOPE LENGTHS SHALL BE A MINIMUM OF 10 FEET.

3. POST WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

4. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

5. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

6. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

7. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

8. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

9. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

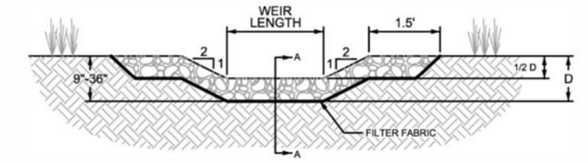
10. SEE NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.5

Revised 2018

Figure 3.31 Silt Fence General Notes

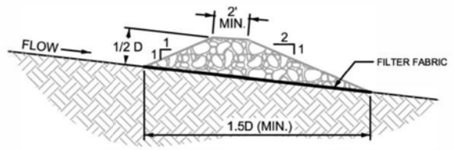
VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 209 OF 221
DWG NO. OC9-3665
CONTRACT NO. C-2033270-01

STD5-OC9-3665.001



ROCK CHECK DAM VIEW LOOKING UPSTREAM

N.T.S.



CROSS SECTION A-A

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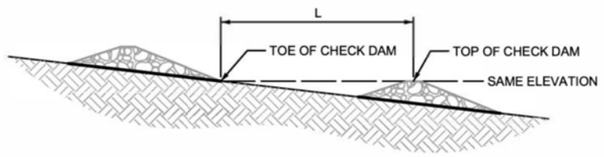

SPACE BETWEEN ROCK CHECK DAMS

N.T.S.

NOTES:
ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAM.

-HEIGHT OF CHECK DAMS (D) BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS

-SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT THE SAME ELEVATION AS TOE OF UPSTREAM DAM

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Figure 2.1 Schematics of Rock Check Dams
(Source: Modified from Stormwater Management Manual for Western Washington)

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ROCK CHECK DAM GENERAL NOTES:

1. SEE NCTCOG STANDARD SPECIFICATIONS (2017), SECTION 202.9 CHECK DAM (ROCK).

2. STONE SHALL BE WELL GRADED WITH SIZE RANGE FROM 1 1/2 TO 3 1/2 INCHES IN DIAMETER DEPENDING ON EXPECTED FLOWS.

3. THE CHECK DAM SHALL BE INSPECTED AS SPECIFIED IN THE SWPPP AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE CHECK DAM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

5. WHEN THE SITE HAS ACHIEVED FINAL STABILIZATION OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED, THE CHECK DAM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

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Figure 2.2 Rock Check Dams Schematic General Notes
(Source: Modified from Stormwater Management Manual for Western Washington)

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 210 OF 221
DWG NO. OC2-3666
CONTRACT NO. C-2033270-01

STD5-0C9-3666.001

DWG No. CC4-9130

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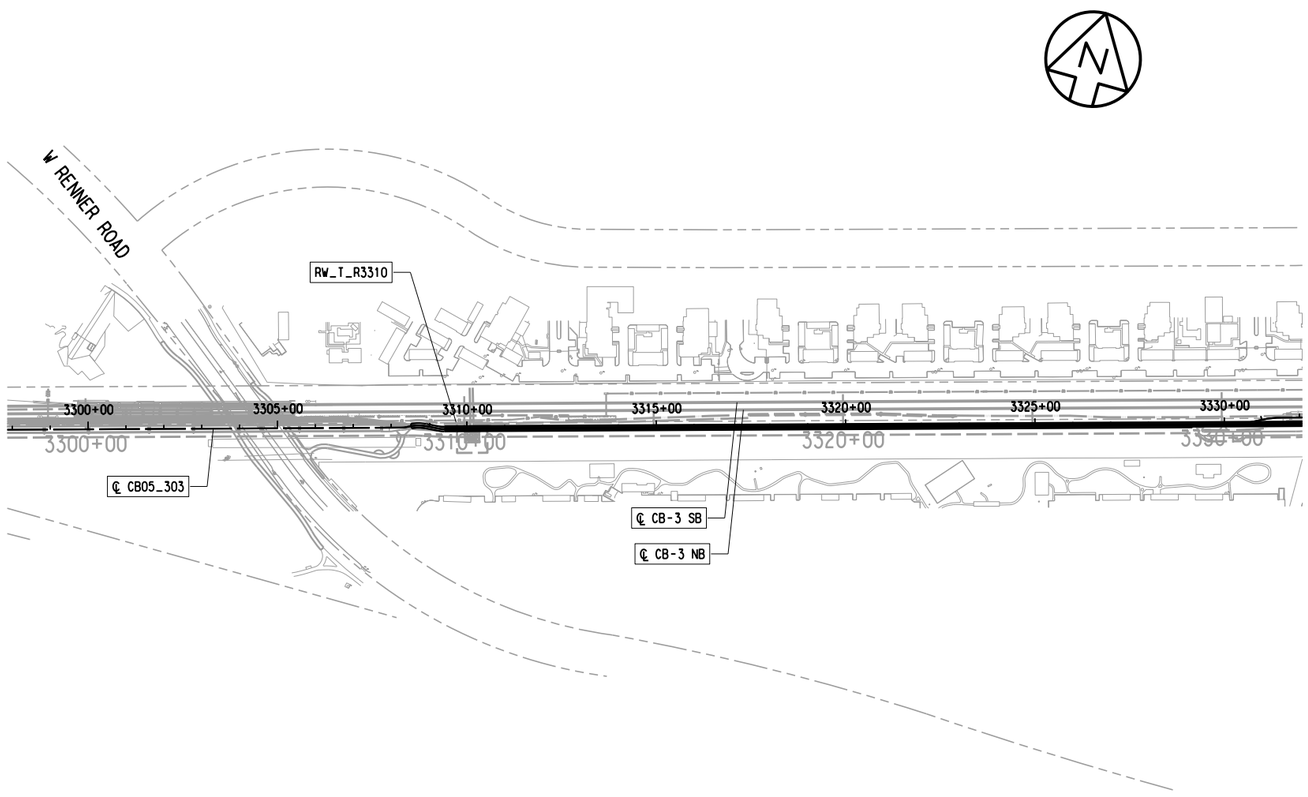

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ARCHER WESTERN HERZOG

DART PROJECT

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CAES

SCALE	1"=200'
DRAWN	J. RAPIER
DESIGNED	J. SHEPHERD
CHECKED	B. ALLDREDGE
IN CHARGE	J. SHEPHERD
DATE	19 SEP 22

COTTON BELT REGIONAL RAIL VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON RETAINING WALL KEYMAP

CONTRACT	DWG No.	REV
C-2033270-01	CC4-9130	B

CB05-CC4-9130.200

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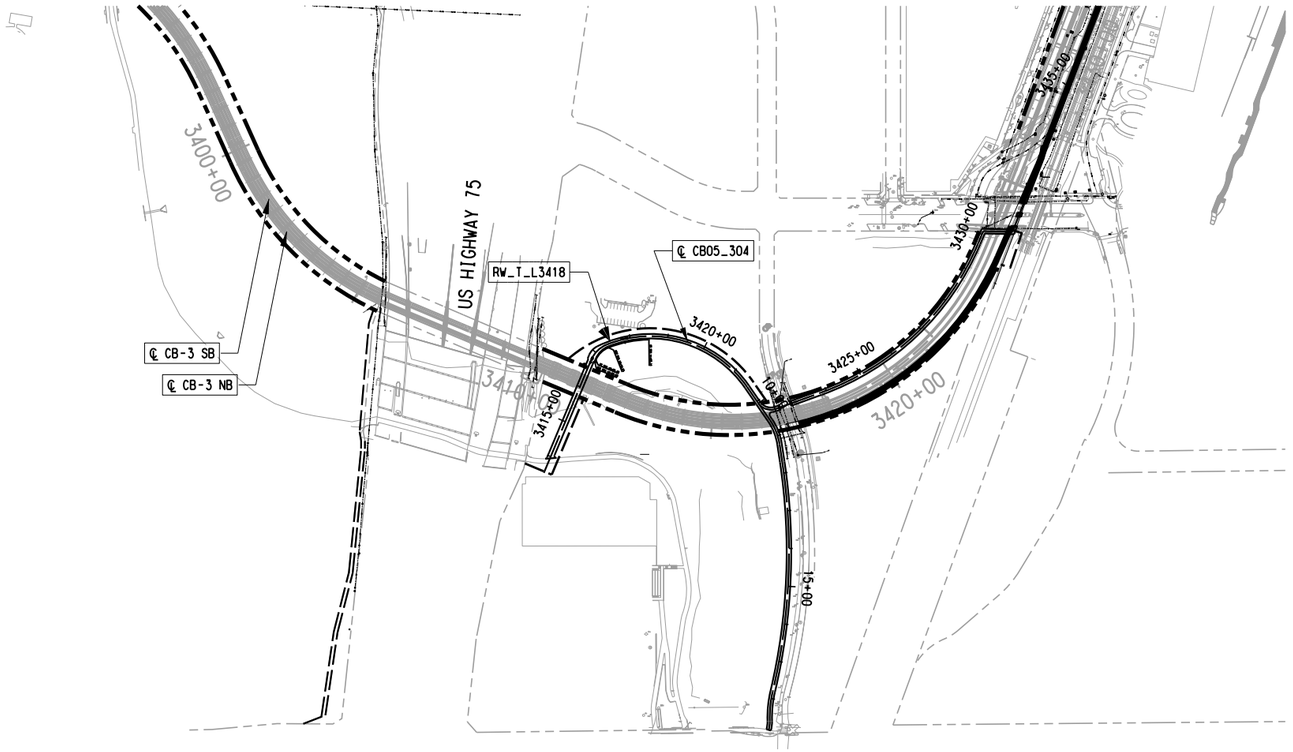
DWG No. CC4-9140



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REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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FIRM REGISTRATION No. F-2966

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	1"=200'
DRAWN	L. WEAVER
DESIGNED	L. WEAVER
CHECKED	R. BAUM
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

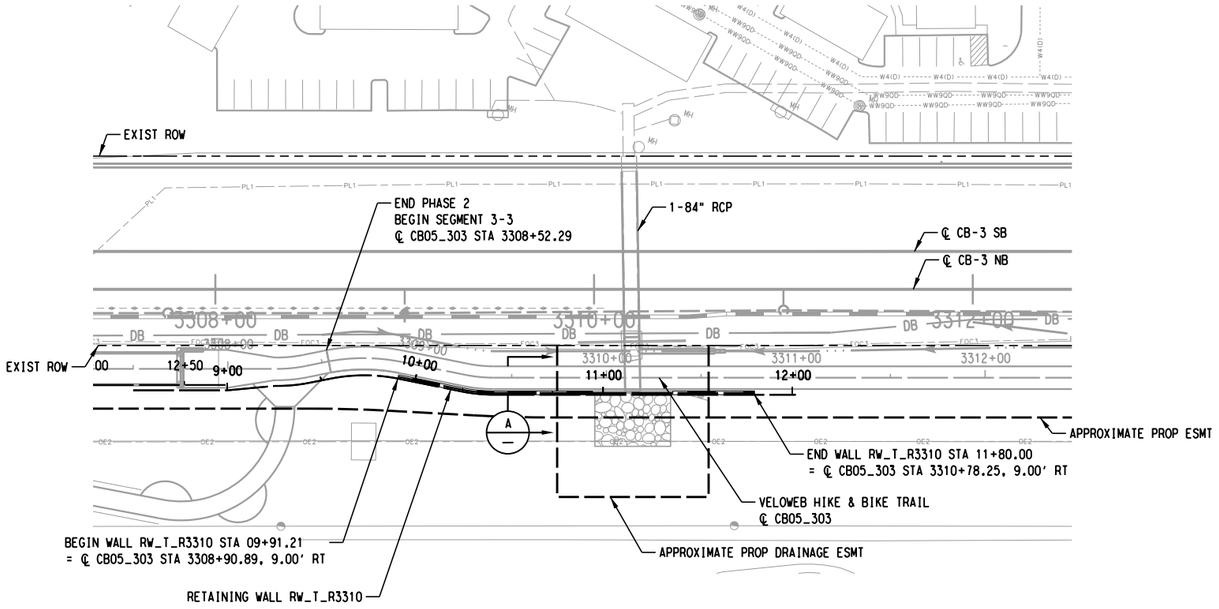
COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
RETAINING WALL KEYMAP

CONTRACT	DWG No.	REV
C-2033270-01	CC4-9140	B

CB05-CC4-9140.200

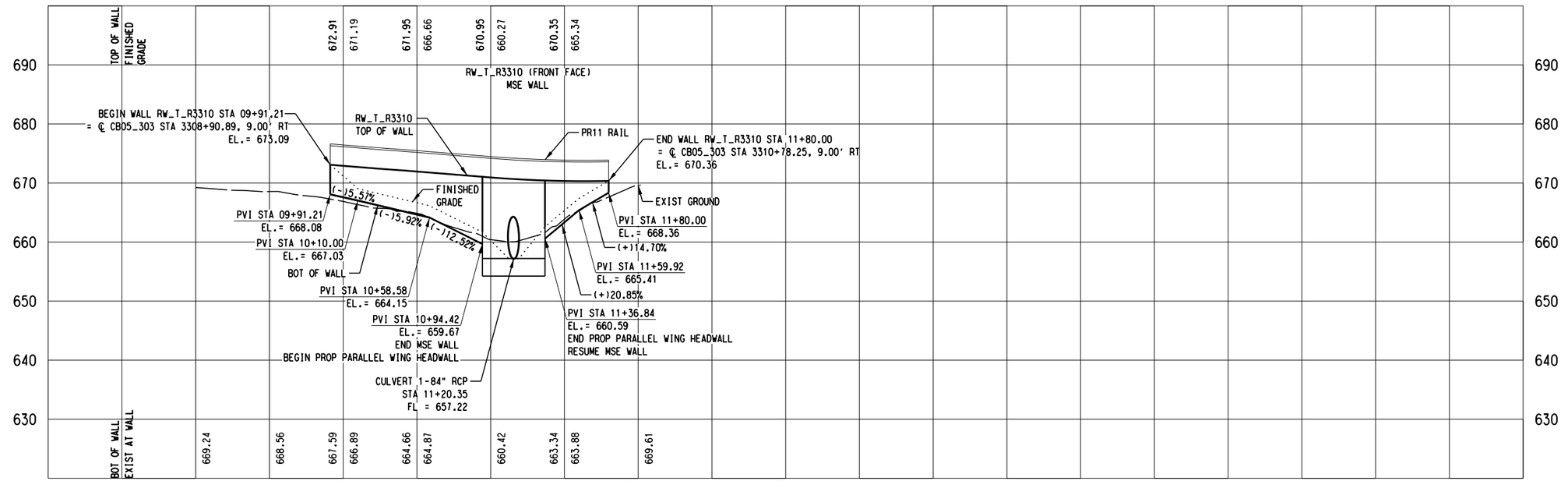
DWG No. SC1-3325



RW_T_R3310
SECTION A

RW_T_R3310 STA 10+50.00
NO SCALE

A
-



NOTES:

1. SEE TXDOT STANDARDS RW(MSE), RW(EM) AND RW(MSE)DD FOR MSE WALL REQUIREMENTS.
2. SEE RETAINING WALL HORIZONTAL ALIGNMENT DATA SHEET
3. SEE RIGHT-OF-WAY PLANS FOR EASEMENT AND RIGHT-OF-WAY REQUIREMENTS.
4. SEE UTILITY MODIFICATION SHEETS FOR UTILITY MODIFICATIONS.
5. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.
6. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.
7. MSE WALL LOADING = H10
8. FOR PED RAIL DETAIL SEE TXDOT STANDARD PR11.
9. FOR DUCTBANK DETAILS REFER TO SYSTEMS SHEETS.
10. FOR BORING LOG INFORMATION, BACKFILL AND DRAINAGE REQUIREMENTS SEE GEOTECHNICAL DESIGN MEMORANDUM (GDM).
11. SEE SC5-5512 FOR MISC RETAINING WALL DETAILS.
12. MATCH SILVERLINE WALL AESTHETIC PACKAGE UNLESS OTHERWISE INDICATED IN THE PLANS: RECO BUSH HAMMER FINISH TY 1607 PANELS, SMOOTH FINISH COPING.

HORIZ SCALE (IN FEET) 0 20 40 80
VERT SCALE (IN FEET) 0 5 10 15 20

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IN-PROGRESS 60% DESIGN

CONTRACT SHEET No. 213 OF 221

REV	AMEND	CR	DATE	DESCRIPTION	BY	ENG	CHK	APP

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ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	AS NOTED
DRAWN	J. RAPIER
DESIGNED	J. SHEPHERD
CHECKED	B. ALLDREDGE
IN CHARGE	J. SHEPHERD
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
RETAINING WALL RW_T_R3310
LAYOUT

CONTRACT	DWG No.	REV
C-2033270-01	SC1-3325	B

CB05-SC1-3325.040

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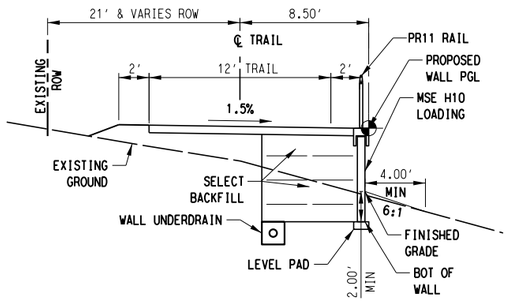
CB05-SC1-3325.040

JEGSVCPW001
RW Plan 15

DWG No. SC1-3486



RW_T_R3418
SECTION A — A

RW_T_R3418
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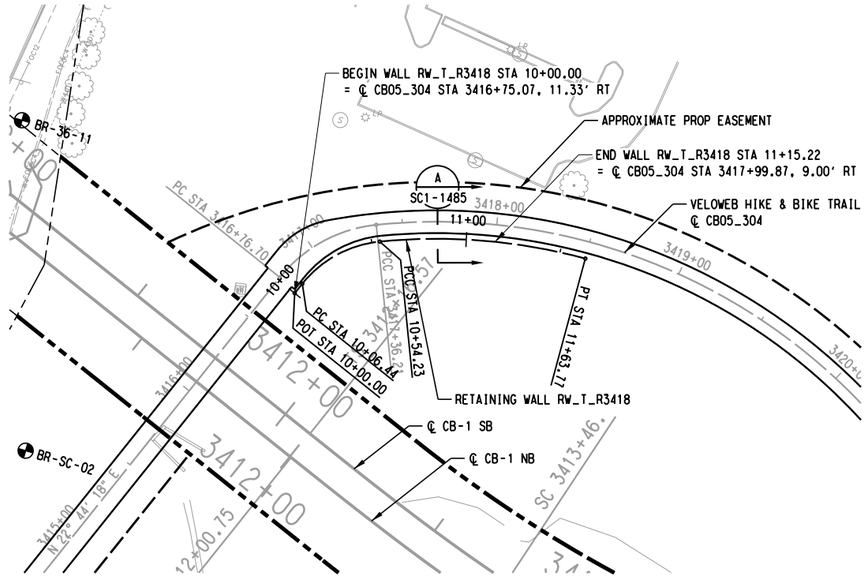
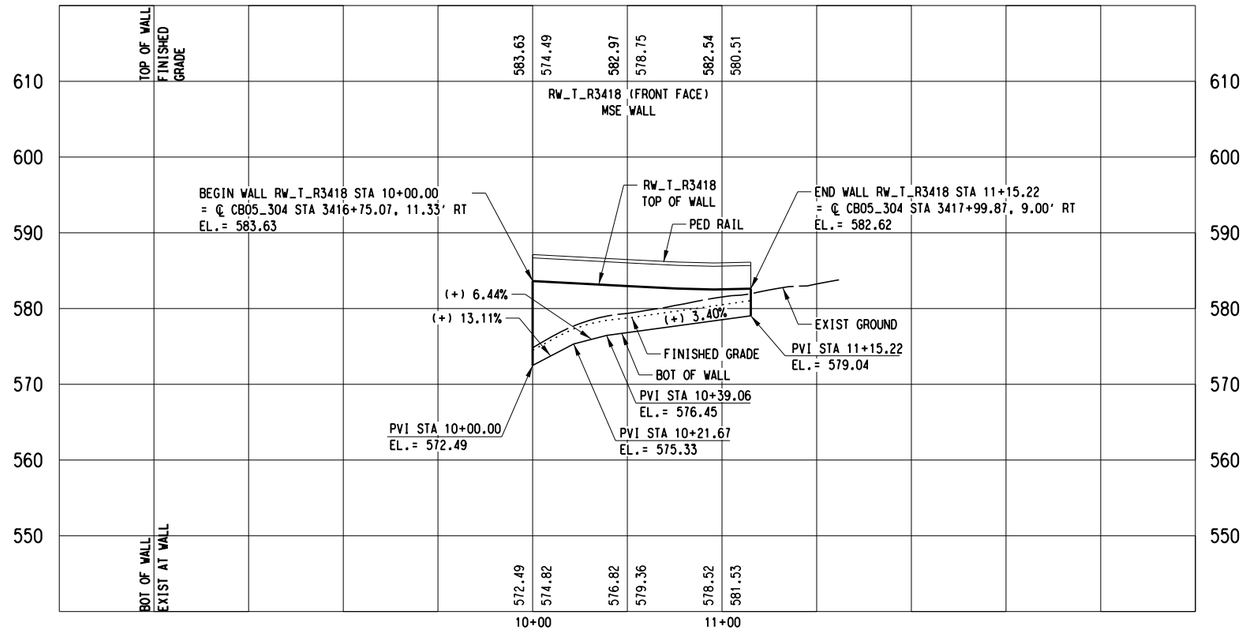
NO SCALE





NOTES:

1. SEE TXDOT STANDARDS RW(MSE)DD, RW(MSE) AND RW(EM) FOR MSE WALL REQUIREMENTS

2. SEE RETAINING WALL HORIZONTAL ALIGNMENT DATA SHEET

3. SEE RIGHT-OF-WAY PLANS FOR EASEMENT AND RIGHT-OF-WAY REQUIREMENTS.

4. SEE UTILITY MODIFICATION SHEETS FOR UTILITY MODIFICATIONS.

5. SEE SURVEY CONTROL SHEETS FOR BENCHMARK LOCATIONS.

6. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR TRAIL DRAINAGE DESIGN.

7. MSE WALL LOADING = H10

8. FOR PED RAIL DETAIL SEE TXDOT STANDARD PR11.

9. FOR DUCTBANK DETAILS REFER TO SYSTEMS SHEETS.

10. FOR BORING LOG INFORMATION, BACKFILL AND DRAINAGE REQUIREMENTS SEE GEOTECHNICAL DESIGN MEMORANDUM (GDM):

11. SEE MISC RETAINING WALL DETAILS.

12. MATCH SILVERLINE WALL AESTHETIC PACKAGE UNLESS OTHERWISE INDICATED IN THE PLANS: RECO BUSH HAMMER FINISH TY 1607 PANELS, SMOOTH FINISH COPING.

HORIZ SCALE (IN FEET) 0 20 40 80
VERT SCALE (IN FEET) 0 5 10 15 20

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CONTRACT SHEET No. 214 OF 221

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ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	1"=40'
DRAWN	L. WEAVER
DESIGNED	L. WEAVER
CHECKED	R. BAUM
IN CHARGE	J. FINKE
DATE	19 SEP 22

CAES

COTTON BELT REGIONAL RAIL
VELOWEB HIKE & BIKE TRAIL
CITY OF RICHARDSON
RETAINING WALL RW_T_R3418
LAYOUT &
TYPICAL WALL SECTIONS

CONTRACT	DWG No.	REV
C-2033270-01	SC1-3486	B

CB05-SC1-3486.040

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CB05-SC1-3486.040
JEGSVCPW001
RW Plan 16

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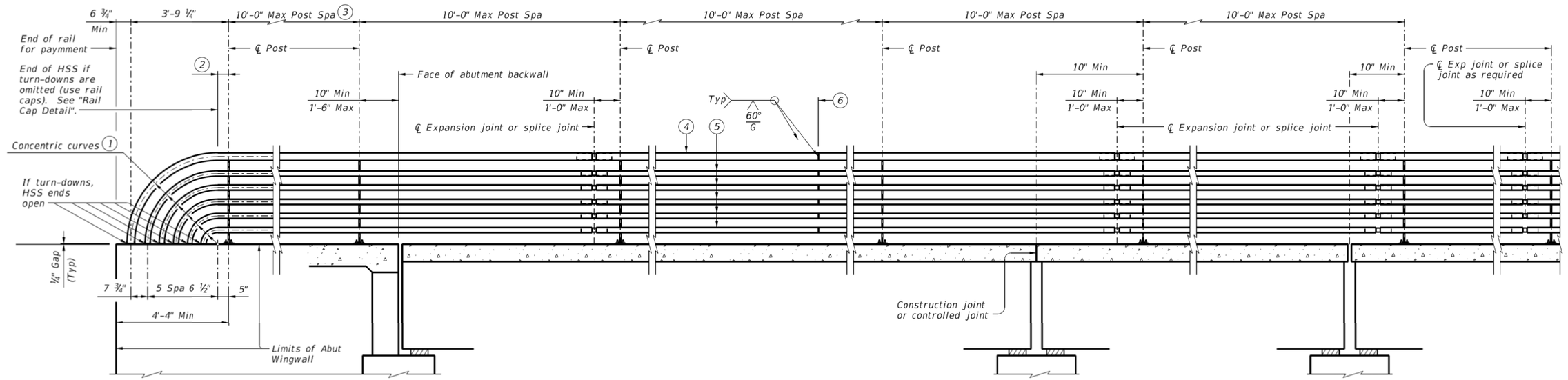
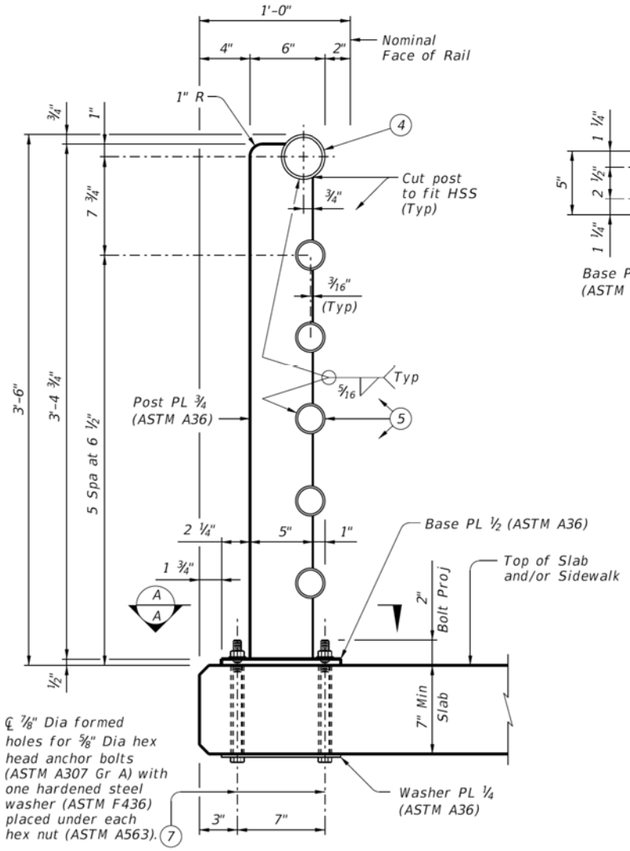


AT ABUTMENTS

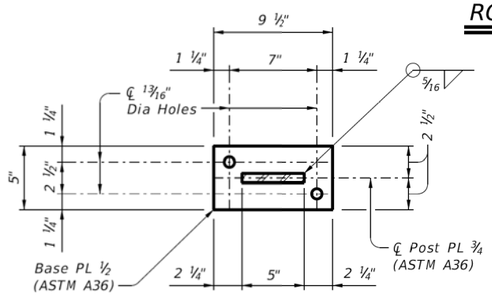
AT BENTS WITHOUT SLAB EXP JOINTS

AT BENTS WITH SLAB EXP JOINTS

ROADWAY ELEVATION OF RAIL

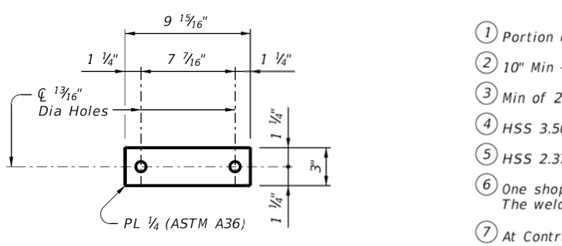


ON BRIDGE SLAB

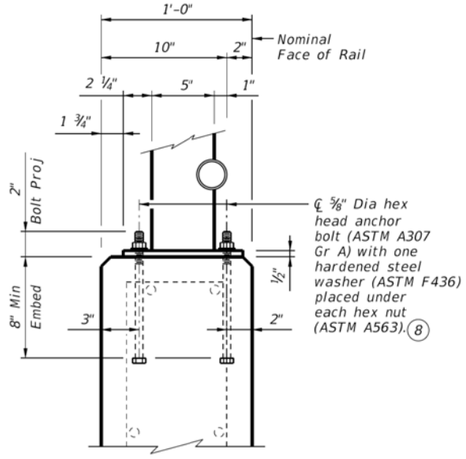


SECTION A-A

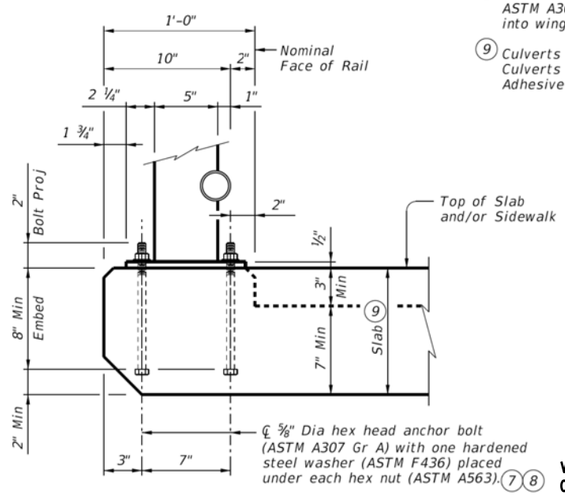
Showing base plate detail.



WASHER PLATE DETAIL



ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



ON CULVERTS WITH OR WITHOUT CURBS

Used with 1'-0" Min thick parallel wings on culverts.

SECTIONS THRU RAIL

(1) Portion of railing with turn-downs to be used or omitted as indicated on Bridge Layout.

(2) 10" Min ~ 1'-6" Max if turn-downs are omitted.

(3) Min of 2 posts required on wingwall.

(4) HSS 3.500 x 0.216 (Rail Member)

(5) HSS 2.375 x 0.154 (Rail Member)

(6) One shop splice per panel is permitted (with minimum 85 percent penetration). The weld may be square groove or single vee groove. Grind smooth.

(7) At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 5" into slabs or culverts without curbs. See "Material Notes" for adhesive anchor requirements.

(8) At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 7" into wingwalls or culverts with curbs. See "Material Notes" for adhesive anchor requirements.

(9) Culverts without curbs for cast-in-place anchor bolts require a 10" Min slab thickness. Culverts with curbs for cast-in-place anchor bolts require a curb plus slab thickness of 10" Min. Adhesive anchors may be used with a 7" Min slab thickness or culverts with curbs.

Texas Department of Transportation

Bridge Division Standard

PEDESTRIAN RAIL

TYPE PR11

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 215 OF 221
DWG NO. CS9-0915
CONTRACT NO. C-2033270-14

FILE:	rlstd028-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
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REVISIONS					
		DIST	COUNTY		SHEET NO.

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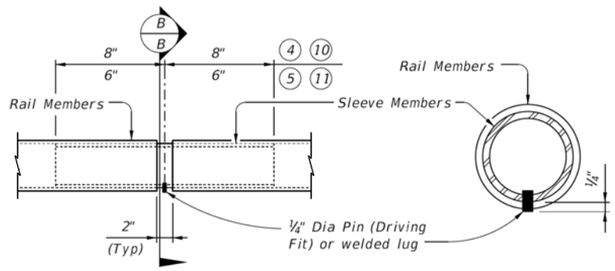
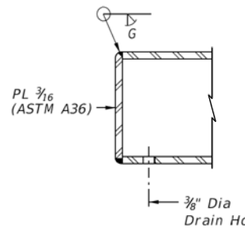


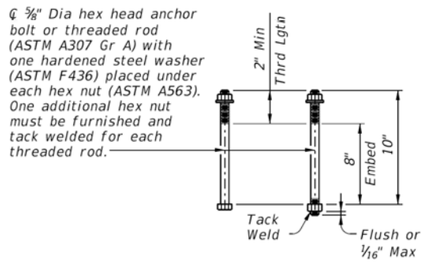
AT SPLICES OR EXP JTS

SECTION B-B

PIPE SPLICE DETAIL



RAIL CAP DETAIL



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

4 HSS 3.500 x 0.216 (Rail Member)

5 HSS 2.375 x 0.154 (Rail Member)

10 HSS 2.875 x 0.203 (Sleeve Member)

11 HSS 1.900 x 0.145 (Sleeve Member)

CONSTRUCTION NOTES:

Panel lengths of railing must be attached to a minimum of three posts except at abutment wingwalls.

At the Contractor's option anchor bolts may be an adhesive anchorage system. See "Material Notes".

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

Face of rail and posts must be vertical transversely unless otherwise approved. Posts must be perpendicular to adjacent roadway grade. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.

For curved railing applications, fabricate the HSS rail to the radius when the radius is 600' or less. Submit shop drawings for approval when tubes are required to be fabricated to a radius. Shop drawings must be submitted to the Engineer for approval.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

MATERIAL NOTES:

Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.

Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.

Anchor bolts must be ⅝" Dia ASTM A307 Gr A with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rods with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.

Optional adhesive anchorage system must be ⅝" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into slab, wingwalls, or culvert curbs using a Type III, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength in tension, Na, of a single anchor of 10 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

For all rails, submit erection drawings showing section lengths, splice locations, rail post spacing and anchor bolt setting for approval.

Average weight of railing is 30 plf.

Texas Department of Transportation

Bridge Division Standard

PEDESTRIAN RAIL

TYPE PR11

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 216 OF 221
DWG NO. CS9-0916
CONTRACT NO. C-2033270-15

FILE:	r1std028-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
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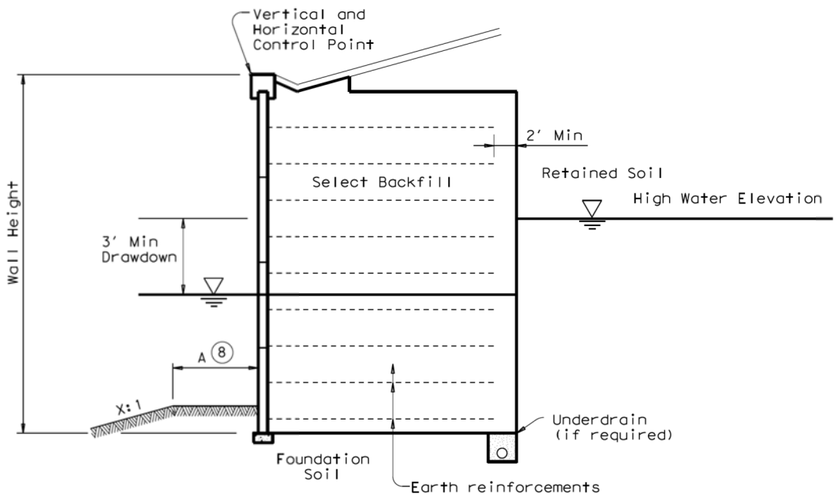
		DIST	COUNTY		SHEET NO.

DATE: 15-SEP-2022 14:14
FILE: STD5-CS9-0916.001

WALL SUMMARY

MSE Retaining Wall	Begin Station (1)	End Station (1)	Retained Soil Friction Angle (2)	Foundation Soil Friction Angle (2)	Ground Improvement (3)	Min Earth Reinforcement Length (4)	Min Wall Embedment (7)	Underdrain Required (5)	Drawdown Analysis (6)	Bench Width (8)
RW_T_R3310	09+91.21	11+80.00	-	-	-	-	-	-	-	-



TYPICAL SECTION
(RAPID DRAWDOWN CONDITION)

(1) Indicate limits for which the stated soil design requirements/assumptions are applicable.

(2) Retained and Foundation friction angle listed should be based on local experience or measured/correlated long term strength values.

(3) Indicate if ground improvement is required or not required. If shown as required, refer to Ground Improvement Detail(s) for additional information.

(4) Indicate on table minimum length and length ratio required. The minimum default length of earth reinforcements shall be either 8'-0" or 70% of the wall height, whichever is greater. Wall height and design wall height may differ depending on project geometry and loading conditions. Note: Wall height at bridge abutments is equal to the distance between the top of leveling pad and finished grade at the bridge abutment backwall.

(5) Indicate if underdrain is required or not required.

(6) Indicate if rapid drawdown analysis is required.

(7) Guidance to wall designer of record for determination of minimum wall embedment: Unless noted elsewhere in the plans, the minimum embedment provided from the top of leveling pad to finish grade shall be 1' for level ground where there is no potential for erosion or future excavation or 2' for sloping ground (4.0H:1.0V or steeper) or where there is potential for removal of soil in front of the wall.

(8) Horizontal Bench width at base of wall varies. Use the following criteria to establish base width.
A = 2.0' Min for X $\geq$ 4. or
A = 4.0' Min for X $\leq$ 4.
Applicable to both drawdown and dry condition.

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VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 217 OF 221
DWG NO. CS9-0907
CONTRACT NO. C-2033270-16

Texas Department of Transportation — Bridge Division Standard

MECHANICALLY STABILIZED EARTH RETAINING WALL DESIGN DATA

RW(MSE)DD

FILE: rwstde16.dgn	DN: TxDOT	CK: MJG	DW: JTR	CK: MJG
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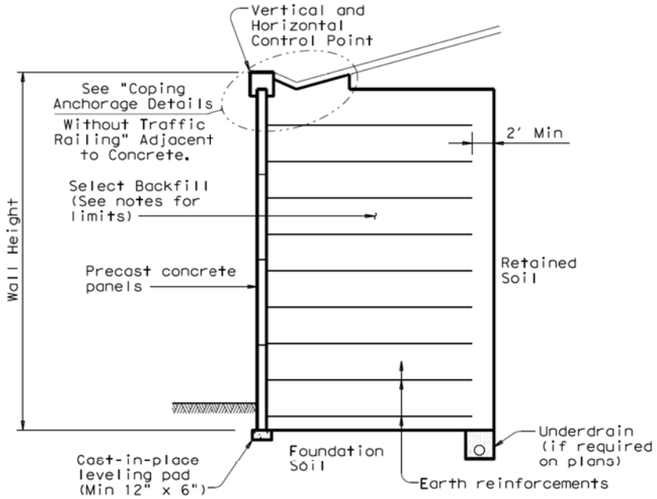
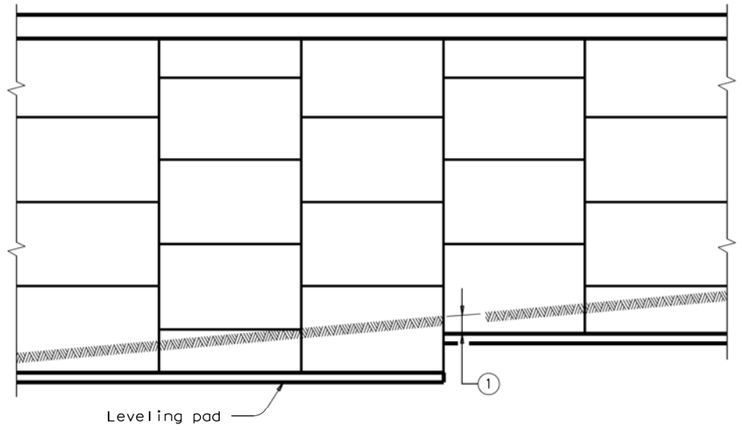
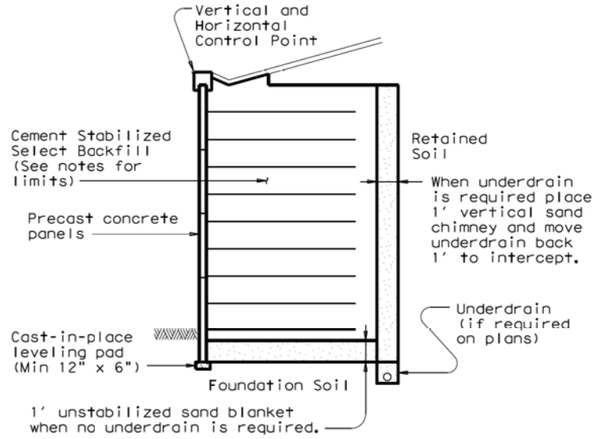


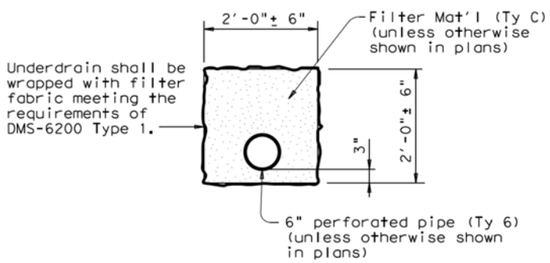
TYPICAL SECTION
(Wall at bottom of slope)



ELEVATION



SPECIAL DRAINAGE PROVISIONS
(When cement stabilized backfill is used)



UNDERDRAIN DETAIL

MAP OF TEXAS EMBLEM ②

① Minimum embedment conforming to values given on the RW(MSE)DD standard.

② Map of Texas emblem shall be formed into a wall panel next to each bridge abutment. The exact location of each emblem shall be approved by the Engineer. The cost of forming the emblems will not be paid for directly, but shall be incidental to the Item "Retaining Wall". The map of Texas shall be inset a minimum of 3/4" into the face of the panel, and shall receive a smooth finish. The inset area shall be finished in a contrasting color as approved by the Engineer.

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VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 218 OF 221
DWG NO. CS9-0925
CONTRACT NO. C-2033270-17

Texas Department of Transportation — Bridge Division Standard

MECHANICALLY STABILIZED EARTH RETAINING WALL

RW(MSE) (MOD)

FILE: rwstde01.dgn	DN: TxDOT	CK: TxDOT	DW: JGD	CK: MJG
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REVISIONS 07-22: Omitted 'Map of Texas' emblem detail and note.	DIST	COUNTY		SHEET NO.

STD5-CS9-0925.001

DATE: 15-SEP-2022 13:58
FILE: STD5-CS9-0925.001

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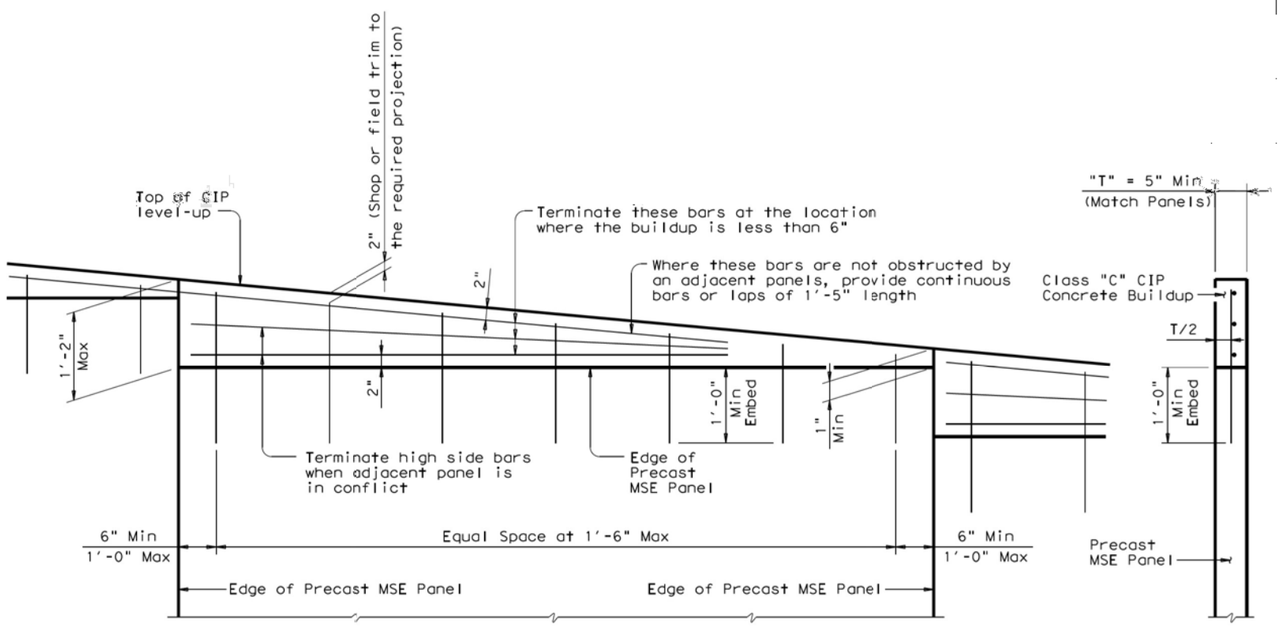


ELEVATION **SECTION**

LEVEL UP DETAIL (5)

Provide Grade 50 (#4) Reinforcement

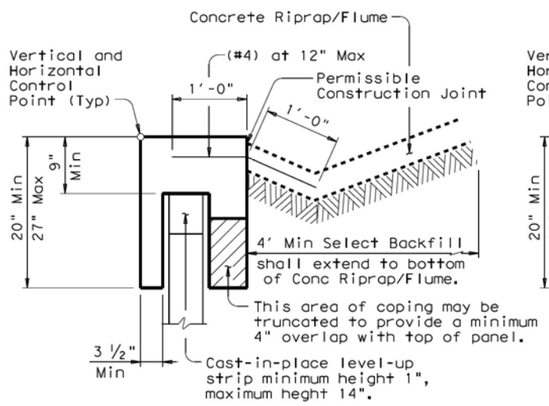
(3) Precast coping shall be anchored to prevent rotation or displacement. Use these details to develop custom anchorage for precast copings. Details shall include coping reinforcement. Concrete flume (if required) shall be paid for separately from Item 423.

(4) Soil design parameter must be based on long term soil strength. Design parameters must be listed on the RW(MSE)DD standard.

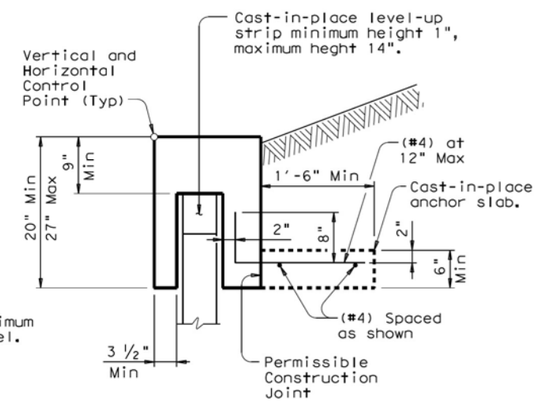
(5) Cast vertical bars into the top of panels. At contractor's option vertical bars may be embedded 4" with a Type III Clac C epoxy anchorage system. Follow manufacturer's directions for installing the epoxied vertical bars.

(6)

SELECT BACKFILL UNIT WEIGHT			
Type AS, BS & DS	Unit Weight	Inernal Stability	External Stability
	105 PCF	Pullout	Sliding, Overturning, Eccentricity
	125 PCF	Rupture	Bearing



ADJACENT TO CONCRETE
(Excluding Concrete Pavement)



ADJACENT TO SOIL

COPING ANCHORAGE DETAILS WITHOUT TRAFFIC RAILING (3)

DESIGN PARAMETERS:

Design of retaining walls shall be based on the following design parameters unless stated elsewhere in the plans:

Retained Soil	Unit Weight = 125 pcf Ø = (4) C = 0 psf
Foundation Soil	Ø = (4) C = 0 psf
Select Backfill	Unit Weight = See Table (6) Ø = 34 C = 0 psf
Cement Stabilized Select Backfill	Unit Weight = 125 pcf Ø = 45 C = 0 psf

Stress in steel and concrete shall be in accordance with current AASHTO Standard and Interim Specifications. The minimum length of earth reinforcements are as shown on the RW(MSE)DD standard.

STABILITY CRITERIA:

Stability criteria applies to both dry and drawdown analysis.
Factor of safety in sliding along the base of the structure shall be greater than or equal to 1.5.
Factor of safety in overturning shall be greater than or equal to 2.0.
The base pressure resultant shall fall within the middle third of the retaining wall.
The factor of safety against pullout of the earth reinforcements shall be greater than or equal to 1.5 at each level. Pullout resistance shall be determined from test data evaluated at ¾ inch strain.

CORROSION CRITERIA:

The earth reinforcement elements shall be designed to have a minimum design life of 75 years, using current AASHTO corrosion rates.
Stress calculations (rupture) shall be done on the calculated earth reinforcement section remaining after 75 years. Pullout calculations may be based on non-corroded section.

PRECAST COPINGS:

Wall supplier is to maximize lengths of precast coping. Precast coping is to be provided in 10' minimum lengths (typical). To optimize coping lengths at radiuses, end of runs or other wall geometric conditions favorable to shorter coping sections, shorter lengths may be used pending approval by the Engineer. This applies only to coping without railing.

JOINT SEALER:

The joints between coping segments must be sealed in accordance with the DMS-6310 "Joint Sealant's and Fillers", joint sealing material, Class 4. The joint must be sealed 3" below and 6" above the adjoining pavement surface, or as directed by the Engineer. The purpose of the joint sealing is to contain surface drainage and prevent infiltration into the retaining wall backfill.

GENERAL NOTES:

Section and elevation shown is for informational purposes only. Specific geometry is to be determined based on wall layouts and other plan information.
The select backfill specified for use within the mechanically stabilized earth volume shall extend horizontally from the back of the panels to a minimum 2' beyond the end of the earth reinforcements. The select backfill shall extend vertically from the top of the leveling pad or 4" below the lowest earth reinforcement, whichever is lower, to the top of panels.
The uppermost earth reinforcements shall be no more than 3.0' below the top of wall.
The lowest level of earth reinforcements shall be no more than 2.0' above the top of the leveling pad.
Minimum wire size for earth reinforcements shall be W7.0. If different longitudinal and cross wires are used in an earth reinforcement mesh, the smaller wire shall have at least 50% of the cross sectional area of the larger wire.
A maximum of four wire mesh configurations (wire sizes) will be allowed on a project. Each mesh configuration shall have a unique transverse bar spacing, differing from other configurations by a minimum of 3". Earth reinforcement lengths shall be stepped in increments no finer than 12".
Standard precast concrete panels shall have a maximum height of 6', and a maximum surface area of 50 sq ft. Top and bottom panels may exceed these limitations as necessary to achieve required wall grades. Maximum height of any panel shall be 7'-6". Minimum panel thickness shall be 5". Panels shall be arranged to provide offset horizontal joints.
An open joint shall be provided around the perimeter of the concrete panels. The joint configuration shall be such that 1) the filter fabric and/or pad materials are not exposed at the wall face and 2) the design opening is between ⅜" and ¾".
A one-piece corner panel shall be provided for wall angle changes of greater than 30 degrees. Butting of chamfered panels will be allowed for angle changes of 30 degrees or less.
Concrete coping shall be provided along the top of wall, at the vertical steps at bridge backwalls, and at other vertical steps along the top of wall. The joints between all coping segments shall be sealed to prevent infiltration of water into the retaining wall backfill. Sealing shall be in accordance with the DMS-6310 "Joint Sealants and Fillers", using Class 4 joint sealant.
When obstructions (inlets, drilled shafts, piling, etc.) prevent placement of soil reinforcements in their normal locations, provide details and calculations that establish support for the affected panels. Furnish the same earth reinforcement coverage as that required in the absence of the obstruction. For skewed (rotated) earth reinforcements no adjustment in length is needed for skew angles between 1 and 10 degrees. For skew angles greater than 10 degrees adjust the length of earth reinforcement to provide a cosine length of the reinforcement equivalent to the stated design length for the section of wall. Provide calculations that justify any alterations made to the soil reinforcements or modifications to their normal placement. Do not use panels without any soil reinforcements connected to them unless they cre connected with galvanized hardware to adjacent panels which do have supporting Soil reinforcements attached to them and as approved by the Engineer.
Reinforced concrete must be Class "C", Precast concrete Class "H", Unreinforced concrete Class "A".
All reinforcing steel must be Grade 60.
Coping and anchor slabs are considered subsidiary to the Item "Retaining Wall".
These details are to be used in conjunction with the retaining wall layout, standard RW(MSE)DD and other applicable standards.

Texas Department of Transportation

Bridge Division Standard

MECHANICALLY STABILIZED EARTH RETAINING WALL

RW(MSE)

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 219 OF 221
DWG NO. CS9-0926
CONTRACT NO. C-2033270-18

FILE: rwstde01.dgn	DN: TxDOT	CK: TxDOT	DW: JGD	CK: MJG
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS 04-11: Added Table & Corrosion Criteria. 01-13: Wall embed, (WS) table, retained fill, soil strength.	DIST	COUNTY		SHEET NO.

DATE: 20-SEP-2022 15:46
FILE: STD5-CS9-0926.001

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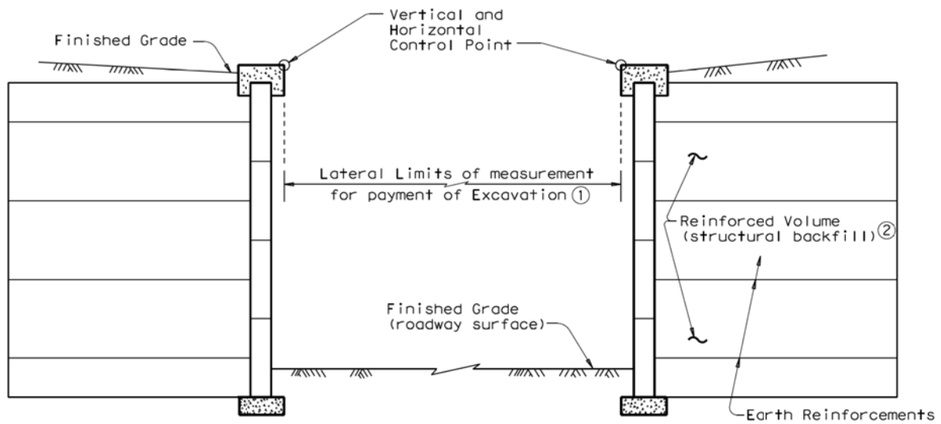
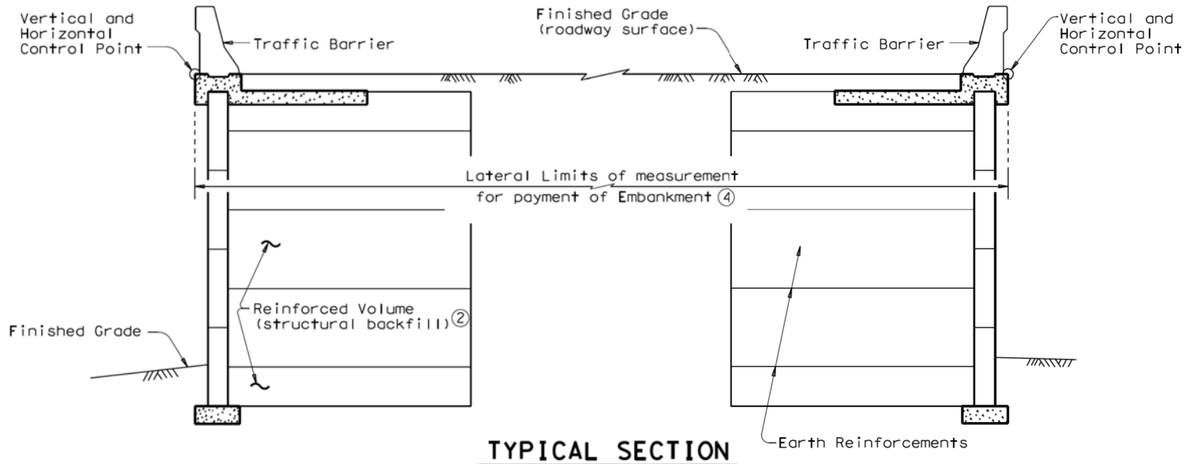
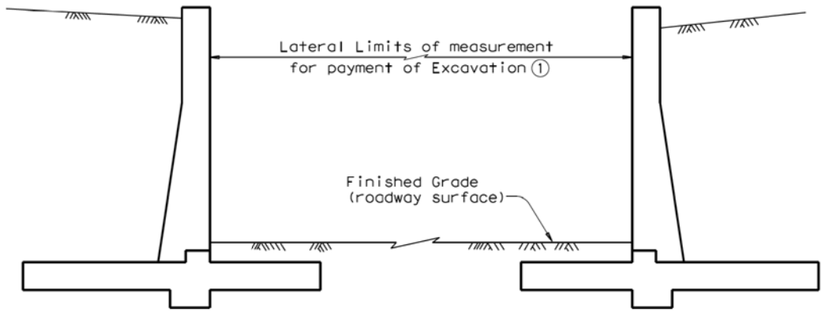


TYPICAL SECTION
Excavation Between MSE Retaining Walls ③



TYPICAL SECTION
Embankment Between MSE Retaining Walls ③



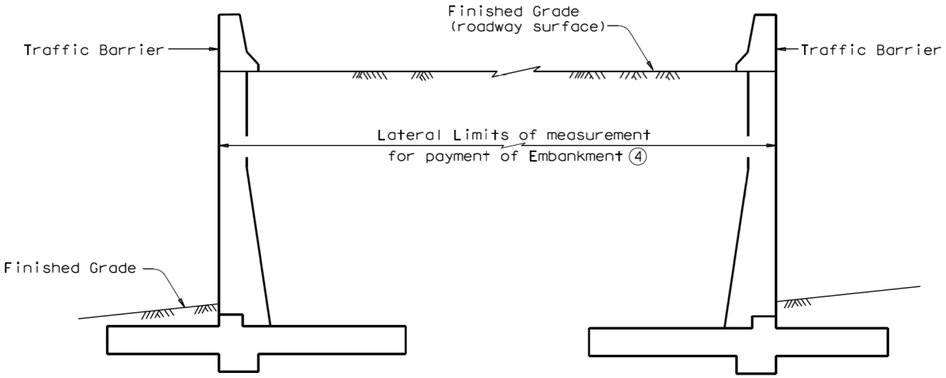
TYPICAL SECTION
Excavation Between Conventional Retaining Walls

① Only the Excavation above the proposed subgrade elevation will be measured for payment.

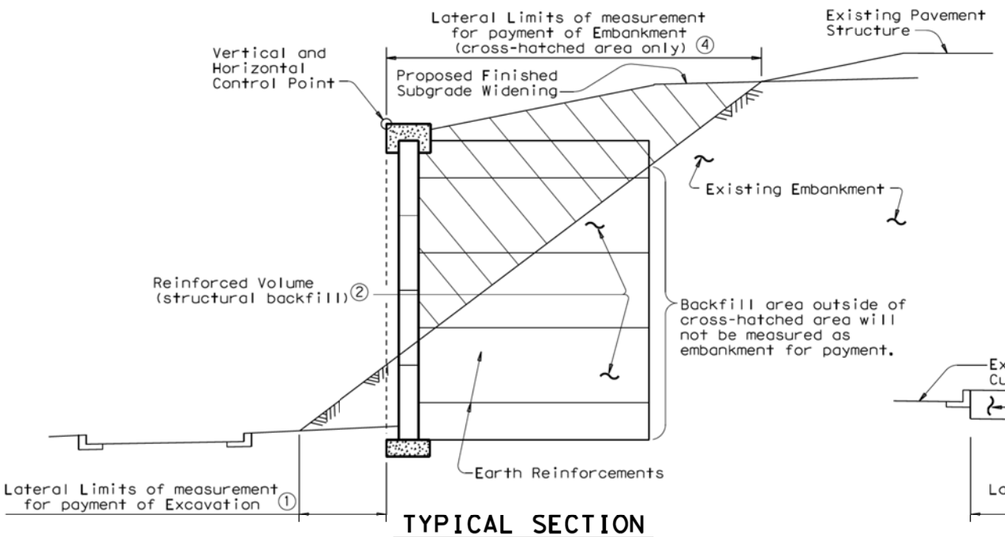
② Meeting requirements of Retaining-Wall Item.

③ Earthwork measurement with other designs of retaining walls will be made to the outside finished face in the same manner.

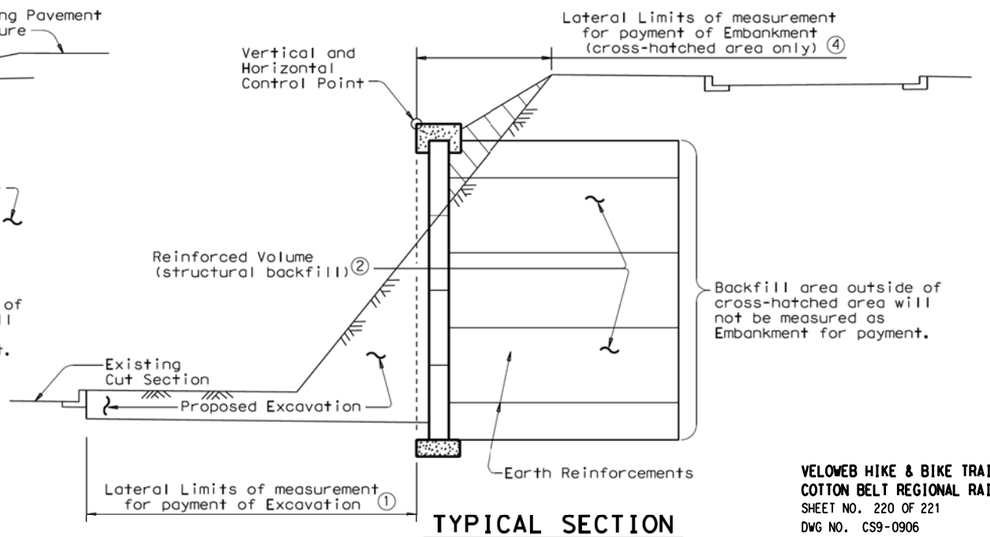
④ Only the Embankment above the existing ground line will be measured for payment.



TYPICAL SECTION
Embankment Between Conventional Retaining Walls



TYPICAL SECTION
Widening Embankment with MSE Retaining Walls ③



TYPICAL SECTION
Widening Cut Section with MSE Retaining Walls ③

VELOWEB HIKE & BIKE TRAIL
COTTON BELT REGIONAL RAIL
SHEET NO. 220 OF 221
DWG NO. CS9-0906
CONTRACT NO. C-2033270-19

Texas Department of Transportation

Bridge Division Standard

EARTHWORK MEASUREMENT AT RETAINING WALLS

RW(EM)

FILE: rwstde12.dgn	DN: TxDOT	CK: TxDOT	DW: BWH	CK: JMH
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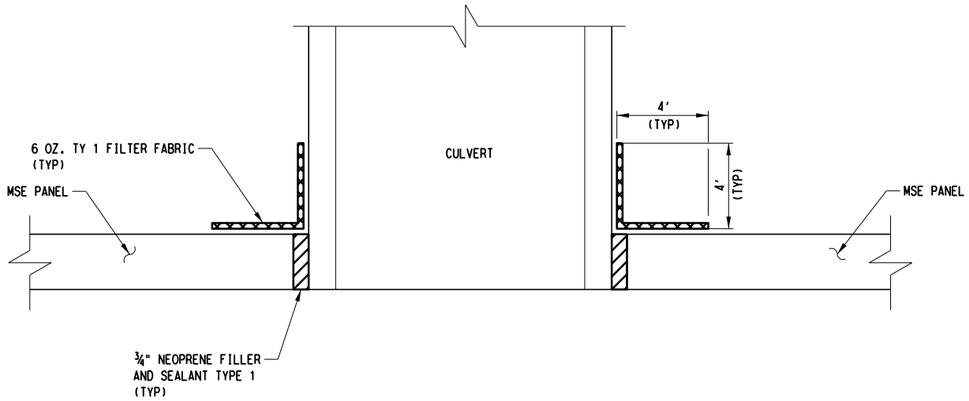
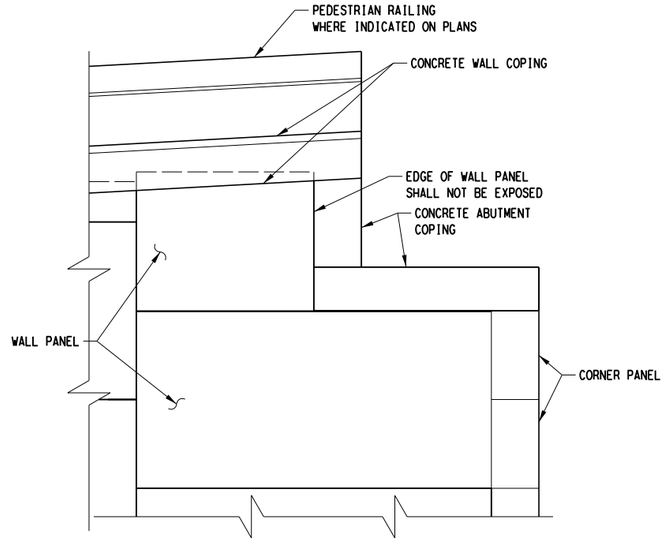
REVISIONS				
	DIST	COUNTY		SHEET NO.

DATE: 15-SEP-2022 14:14
FILE: STD5-CS9-0906.001

DWG No. SC5-5816



WALL / SIDES OF CULVERT JOINT DETAIL
NO SCALE



ABUTMENT COPING DETAIL
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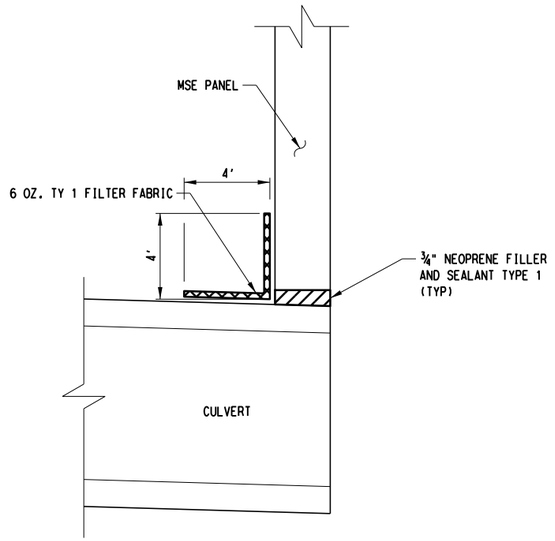

WALL / TOP OF CULVERT JOINT DETAIL
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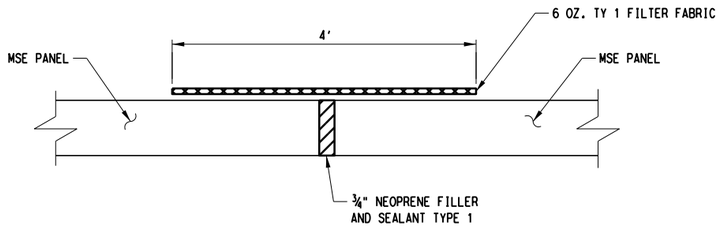

SLIP JOINT DETAIL
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ARCHER WESTERN HERZOG

DART PROJECT

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SCALE	NO SCALE
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DESIGNED	J. SHEPHERD
CHECKED	B. ALLDREDGE
IN CHARGE	J. SHEPHERD
DATE	19 SEP 22

CAES

CONTRACT SHEET No. 221 OF 221

VELOWEB HIKE & BIKE TRAIL
VELOWEB HIKE & BIKE TRAIL

CITY OF RICHARDSON
RETAINING WALL
MISCELLANEOUS DETAILS

CONTRACT	DWG No.	REV
C-2033270-01	SC5-5816	B

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