INDEX OF SHEETS

CITY OF AUSTIN

PARKS AND RECREATION DEPARTMENT

PLANS FOR THE CONSTUCTION OF THE

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

C.I.P. NO. 5261.004

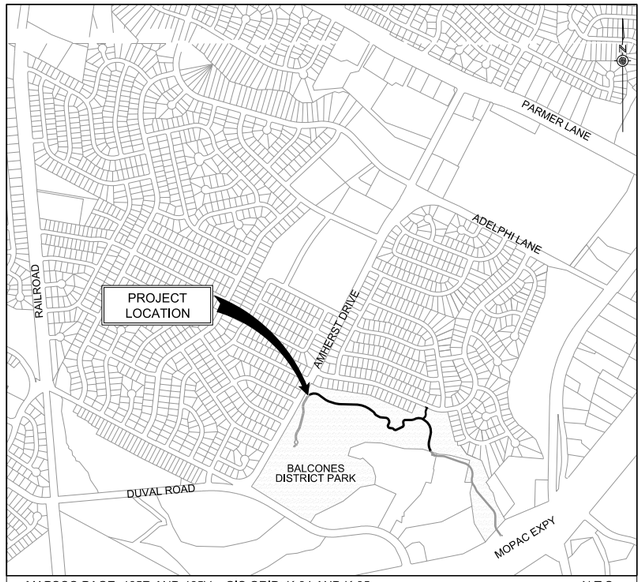
IFB NO.

MAYOR
STEVE ADLER

INTERIM
CITY MANAGER
ELAINE HART

CITY COUNCIL

ORA HOUSTON, DISTRICT 1	JIMMY FLANNIGAN, DISTRICT 6
DELIA GARZA, DISTRICT 2	LESLIE POOL, DISTRICT 7
SABINO RENTERIA, DISCTRICT 3	ELLEN TROXCLAIR, DISTRICT 8
GREGARIO CASAR, DISTRICT 4	KATHIE TOVO, DISTRICT 9
ANN KITCHEN, DISTRICT 5	ALISON ALTER, DISTRICT 10



MAPSCO PAGE: 465R AND 465V GIS GRID: K-34 AND K-35 N.T.S.

PROJECT LOCATION MAP

PROJECT INFORMATION:

STREET ADDRESS:
BALCONES DISTRICT PARK
12017 AMHERST DR
AUSTIN, TEXAS 78759

OWNER:
CITY OF AUSTIN
CLAY HARRIS, PMP
PROJECT MANAGER
PUBLIC WORKS DEPARTMENT
505 BARTON SPRINGS RD. SUITE 900
AUSTIN, TEXAS 78704
PHONE: (512) 974-7895
FAX: (512) 974-7203

SPONSORING DEPARTMENTS
* PARKS AND RECREATION DEPARTMENT

MARCH 2017

90% SUBMITTAL

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF THOMAS M.OWENS,P.E. 84764 3/23/2017 THIS DOCUMENT IS NOT INTENDED FOR BIDDING,PERMITTING AND/OR CONSTRUCTION PURPOSES

90% SUBMITTAL

SUBMITTAL PREPARED BY:

THOMAS M. OWENS, P.E. DATE

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING

1120 S. Capital of Texas Highway
CityView 2, Suite 100
Austin, Texas 78746
P - 512.338.1704 F - 512.338.1784
TBPE Firm #6535 www.kfriese.com

APPROVED BY GENERAL PERMIT HOLDER:

FOR GENERAL PERMIT HOLDER DATE
PARKS AND RECREATION DEPARTMENT

REVIEWED BY:

CITY OF AUSTIN PUBLIC WORKS DEPARTMENT DATE

CITY OF AUSTIN PARKS AND RECREATION DEPARTMENT DATE

REVIEWED FOR SITE DEVELOPMENT PERMIT:

GENERAL PERMIT PROGRAM COORDINATOR DATE
PLANNING AND DEVELOPMENT REVIEW DEPARTMENT

DEVELOPMENT PERMIT NUMBER

SUBMITTAL DATE:

NOTES:
GENERAL PERMIT PROGRAM APPROVAL DOES NOT CONSTITUTE UTILITY ALIGNMENT/ASSIGNMENT APPROVAL.

RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.

TDLR INSPECTION REQUIRED

SUBMITTAL DATE:

NOTES:

1. PROJECT LEGAL DESCRIPTION: ABS 659 SUR 19 RODGERS J ACR 51.69
2. THIS PROJECT IS LOCATED WITHIN THE WALNUT CREEK WATERSHED (CLASSIFIED AS SUBURBAN) AND SHALL BE DEVELOPED, CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH CHAPTER 25 OF THE LAND DEVELOPMENT CODE OF THE CITY OF AUSTIN.
3. A PORTION OF THIS SITE IS LOCATED WITHIN PARKLAND OR LAND USED FOR PARK PURPOSES. (DOCUMENTATION OF PARKS AND RECREATION DEPARTMENT APPROVAL IS REQUIRED AT THE TIME OF SUBMITTAL.
4. A PORTION OF THIS SITE IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN, PER CITY OF AUSTIN AND FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS, PANEL NO. 48453C0265K, EFFECTIVE JANUARY 1, 2016
5. THIS PROJECT IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE AS DEFINED BY THE CITY OF AUSTIN OR AS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).
6. THERE IS ONE CRITICAL ENVIRONMENTAL FEATURE WITHIN 150' OF THIS PROJECT, SHOWN ON THE PROJECT LAYOUT. A FIELD INVESTIGATION HAS BEEN PERFORMED AS A PART OF THIS PROJECT.
7. APPROPRIATE EASEMENTS/APPROVALS MUST BE SECURED AND DOCUMENTED FOR PROJECT AREAS LOCATED OUTSIDE OF RIGHT OF WAYS. NO WORK SHALL BE PERFORMED WITHIN THESE AREAS UNTIL ASSOCIATED RIGHT OF ENTRY HAS BEEN SECURED. ADDITIONALLY, PROJECT PORTIONS IMPACTED BY LACK OF RECORDED DOCUMENT NUMBERS WILL NOT BE CONSIDERED FOR FORMAL GPP REVIEW.
8. IF ANY VOID OR WATER FEATURE IS INTERCEPTED DURING TRENCHING, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IMMEDIATELY STOP AND NOTIFY AN ERM WPD GEOLOGIST AT 512-974-2550. THE VOID OR WATER FLOW FEATURE MUST BE DOCUMENTED AND MITIGATION MAY BE REQUIRED.
9. ADDITIONAL TEMPORARY STAGING AND STORAGE AREAS MAY BE REQUESTED BY THE CONTRACTOR AS PART OF THE PROJECT CONSTRUCTION. IF TEMPORARY STAGING AND STORAGE AREAS OUTSIDE OF THE LIMITS OF CONSTRUCTION DEEMED NECESSARY BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR NEGOTIATING AND OBTAINING THEM, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL IDENTIFY THE SPECIFIC LOCATION(S) FOR ANY ADDITIONAL STAGING AND STORAGE AREAS AND SUBMIT A PROPOSED LAYOUT(S) TO THE GENERAL PERMIT PROGRAM OFFICE FOR APPROVAL PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. THE RESULTING PERMIT CORRECTION REQUEST MUST BE INCLUDED IN THE PRE- CONSTRUCTION PROJECT SUBMITTALS AND APPROVED BY THE GENERAL PERMIT PROGRAM OFFICE PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. STAGE AND STORAGE AREAS ARE PERMITTED USES ONLY WITHIN AREAS OF THE CITY OF AUSTIN THAT ARE ZONED INDUSTRIAL.

NUMBER	DESCRIPTION	REVISE (R) ADD (A) VOID (V) SHEET Nos.	TOTAL # SHEETS IN PLAN SET	NET CHANGE IMP. COVER (sq. ft.)	TOTAL SITE IMP. COVER (sq. ft.)/%	CITY OF AUSTIN APPROVAL - DATE	DATE IMAGED

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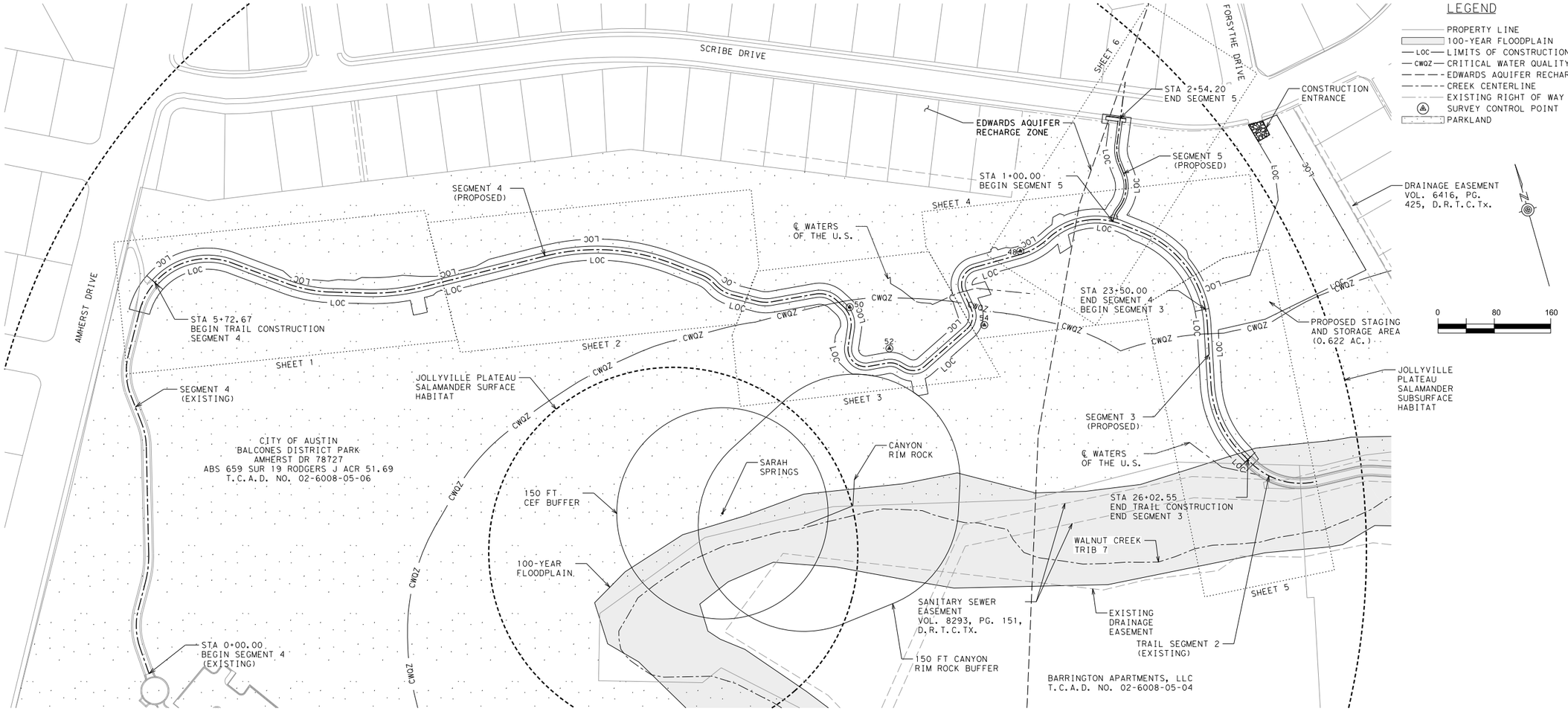

NOTES:

1. ALL UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THIS SURVEY PLAT ARE BASED ON FIELD INFORMATION AND ON THE MOST RECENT AND CURRENT INFORMATION PROVIDED BY THE UTILITY OWNER. THERE MAY BE OTHER PIPE LINES AND INSTALLATIONS IN THE AREA THAT ARE NOT SHOWN ON THIS PLAT. PRIOR TO ANY CONSTRUCTION OR EXCAVATION THE "ONE-CALL" SYSTEM SHOULD BE CONTACTED.
2. THE COORDINATES SHOWN ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD83. THE COORDINATES WERE ESTABLISHED FROM CITY OF AUSTIN REFERENCE POINT "L-35-1001" HAVING COORDINATE VALUES OF N=10,127,126.78, E=3,127,431.71. ALL COORDINATES SHOWN ARE GRID, US SURVEY FEET.
3. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF AUSTIN BENCHMARK FROM FIELD BOOK 3928, PAGE 72, LOCATED ON SCRIBE DRIVE, WEST SIDE, ±150 FEET NORTH OF PEDDLE PATH, "TRIANGLE" ON CONCRETE COLUMN AT THE EAST END OF HEADWALL ELEVATION = 710.54' (NAVD 1988).
4. BOUNDARY AND RIGHT-OF-WAY LINES ARE FOR REPRESENTATIONAL PURPOSES ONLY. MACIAS & ASSOCIATES DID NOT PERFORM A BOUNDARY SURVEY.

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	DESCRIPTION
48	10123987.27	3121570.02	723.30	60D NAIL
50	10123976.00	3121315.00	743.70	60D NAIL
52	10123904.62	3121353.42	735.41	60D NAIL
54	10123900.01	3121492.03	722.26	60D NAIL

FUEL STORAGE

NO FUEL FOR CONSTRUCTION ACTIVITIES MAY BE STORED ON THIS SITE AT ANY TIME.

REV. NO.	BY	DATE	REVISION DESCRIPTION

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90% SUBMITTAL

K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

PROJECT LAYOUT

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	2 OF 53

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GENERAL NOTES

1. ALL IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE RELEASED SITE PLAN. ANY ADDITIONAL IMPROVEMENTS WILL REQUIRE A SITE PLAN AMENDMENT AND APPROVAL FROM THE DEVELOPMENT SERVICES DEPARTMENT.
2. APPROVAL OF THIS SITE PLAN DOES NOT INCLUDE BUILDING CODE APPROVAL; FIRE CODE APPROVAL; OR BUILDING, DEMOLITION, OR RELOCATION PERMITS APPROVAL. A CITY DEMOLITION OR RELOCATION PERMIT CAN ONLY BE ISSUED ONCE THE HISTORIC REVIEW PROCESS IS COMPLETED.
3. ALL SIGNS MUST COMPLY WITH THE REQUIREMENTS OF THE CITY OF AUSTIN LAND DEVELOPMENT CODE.
4. THE OWNER IS RESPONSIBLE FOR ALL COSTS OF RELOCATION OF, OR DAMAGE TO, UTILITIES.
5. THE NOISE LEVEL OF MECHANICAL EQUIPMENT WILL NOT EXCEED 70 D.B.A. AT THE PROPERTY LINE ADJACENT TO RESIDENTIAL USES.
6. THE AUSTIN FIRE DEPARTMENT REQUIRES ASPHALT OR CONCRETE PAVEMENT PRIOR TO CONSTRUCTION AS AN "ALL-WEATHER DRIVING SURFACE."
7. ALL PERVIOUS/DECORATIVE PAVING SHALL BE ENGINEERED AND INSTALLED FOR 80,000 LB. LIVE-VEHICLE LOADS. ANY PERVIOUS/DECORATIVE PAVING WITHIN 100 FEET OF ANY BUILDING MUST BE APPROVED BY THE FIRE DEPARTMENT.
8. VERTICAL CLEARANCE REQUIRED FOR FIRE APPARATUS IS 14 FEET FOR FULL WIDTH OF ACCESS DRIVE.

AMERICANS WITH DISABILITIES ACT

THE CITY OF AUSTIN HAS REVIEWED THIS PLAN FOR COMPLIANCE WITH CITY DEVELOPMENT REGULATIONS ONLY. THE APPLICANT, PROPERTY OWNER, AND OCCUPANT OF THE PREMISES ARE RESPONSIBLE FOR DETERMINING WHETHER THE PLAN COMPLIES WITH ALL OTHER LAWS, REGULATIONS, AND RESTRICTIONS WHICH MAY BE APPLICABLE TO THE PROPERTY AND ITS USE

GENERAL CONSTRUCTION NOTES

1. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN REVIEWING THESE PLANS, THE CITY OF AUSTIN MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.
2. CONTRACTOR SHALL CALL TEXAS 811 (811 OR 1-800-344-8377) FOR UTILITY LOCATIONS PRIOR TO ANY WORK IN CITY EASEMENTS OR STREET R.O.W.
3. CONTRACTOR SHALL NOTIFY THE CITY'S SITE AND SUBDIVISION INSPECTION DIVISION AT (512) 974-6360 OR (512) 974-7034 AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET R.O.W. THE METHOD OF PLACEMENT AND COMPACTION OF BACKFILL IN THE CITY'S R.O.W. MUST BE APPROVED PRIOR TO THE START OF BACKFILL OPERATIONS.
4. FOR SLOPES OR TRENCHES GREATER THAN FIVE FEET IN DEPTH, A NOTE MUST BE ADDED STATING: "ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION." (OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 611 EAST 6TH STREET, AUSTIN TEXAS.)
5. ALL SITE WORK MUST ALSO COMPLY WITH ENVIRONMENTAL REQUIREMENTS.
6. UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS THE ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DRAINAGE, FILTRATION AND DETENTION FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLAN.
7. PURSUANT TO 14-11-131 OF THE CITY CODE, THE CONTRACTOR MAY NOT BLOCK, DIRECT, IMPEDE, OR REROUTE PEDESTRIAN OR VEHICULAR TRAFFIC, NOR PLACE A BARRICADE OR OTHER TRAFFIC CONTROL DEVICE IN A RIGHT-OF-WAY, WITHOUT FIRST OBTAINING A TEMPORARY USE OF RIGHT-OF-WAY PERMIT FROM THE DEPARTMENT OF RIGHT-OF-WAY.
8. DEVELOPER INFORMATION

AUSTIN PARKS AND RECREATION DEPARTMENT OWNER	(512) 974-6700 PHONE #
200 S LAMAR BLVD AUSTIN, TEXAS 78704 OWNER ADDRESS	
THOMAS M. OWENS, P.E., K FRIESE & ASSOCIATES, INC. OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS	(512) 338-1704 PHONE
PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE PHONE	
PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE PHONE	

FLOOD PLAIN NOTE

1. PORTIONS OF THIS PROJECT ARE LOCATED WITHIN THE 100 YEAR FLOODPLAIN AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR THE TRAVIS COUNTY, TEXAS COMMUNITY NO. 48453C0265K, EFFECTIVE JANUARY 1, 2016.

WATERSHED STATUS

1. THIS PROJECT IS LOCATED IN THE WALNUT CREEK WATERSHED, WHICH IS CLASSIFIED AS A SUBURBAN WATERSHED BY THE CITY OF AUSTIN. THE RIGHT-OF-WAY AND THE SURROUNDING SITE SHALL BE DEVELOPED, CONSTRUCTED, AND MAINTAINED IN CONFORMANCE WITH THE TERMS AND CONDITIONS OF THE CITY OF AUSTIN LAND DEVELOPMENT CODE. THIS SITE IS LOCATED OVER THE EDWARDS AQUIFER TRANSITION ZONE AS IDENTIFIED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABATEMENT PLAN

1. WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION MUST INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR AND THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
3. IF ANY SENSITIVE FEATURE IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
4. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM IS INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL, OR OTHER SENSITIVE FEATURE.
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE TEMPORARY STORM WATER SECTION OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.
6. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).
7. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.
8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).
9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.
10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.
11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
    C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE
AUSTIN, TEXAS 78753
PHONE (512) 239-6731
FAX (512) 239-4390

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

SEQUENCE OF CONSTRUCTION

1. CONTRACTOR TO SUBMIT DETAILED SUMMARY OF PROPOSED CONSTRUCTION PHASING WITH CORRESPONDING SCHEDULING PRIOR TO START OF CONSTRUCTION. SUMMARY TO DESCRIBE CONSTRUCTION EQUIPMENT AND METHODS, START AND FINISH AREAS, EXISTING WATER AND WASTEWATER LINE PROTECTION, AND RESTORATION OF DISTURBED AREAS, PAVING, ETC.
2. SECURE APPLICABLE CITY OF AUSTIN PERMITS.
3. NOTIFY GENERAL PERMIT PROGRAM (GPP) REPRESENTATIVE PRIOR TO PLACEMENT OF E/S CONTROLS AND TREE PROTECTION FENCING. ALL PROPOSED PHASING OF CONTROLS MUST BE SUBMITTED TO AND APPROVED BY THE GPP INSPECTOR PRIOR TO FIELD PRE-CONSTRUCTION CONFERENCE.
4. CONTRACTOR TO COORDINATE WITH CONSTRUCTION AND GPP INSPECTOR FOR TREE TRIMMING REQUIREMENTS PRIOR TO START OF CONSTRUCTION.
5. NOTIFY COA TRAFFIC CONTROL INSPECTOR. ALL PROPOSED PHASING OF CONTROLS MUST BE INDICATED ON APPROVED TRAFFIC CONTROL PLAN AND SEALED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER.
6. INSTALL TEMPORARY EROSION, SEDIMENTATION CONTROLS, AND TREE PROTECTION FENCING PRIOR TO INITIATING EXCAVATION. INSTALL CIP SIGN(S).
7. SCHEDULE AND ATTEND ENVIRONMENTAL PRE-CONSTRUCTION CONFERENCE ON-SITE WITH CONTRACTOR, OWNER'S REPRESENTATIVE AND GPP INSPECTOR AFTER INSTALLATION OF E/S CONTROLS AND TREE PROTECTION FENCING AND PRIOR TO EXCAVATION OPERATIONS.
8. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES ALONG PROPOSED TRAIL SEGMENTS 3 AND 4, AND CONSTRUCT CONSTRUCTION ENTRANCE.
9. CONSTRUCT PROPOSED BIKE TRAIL SEGMENTS 3 AND 4.
10. REMOVE TEMPORARY TRAFFIC CONTROL DEVICES ALONG SEGMENTS 3 AND 4, FOLLOWING CONSTRUCTION INSPECTOR APPROVAL. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES ALONG SCRIBE DRIVE FOR SEGMENT 5.
11. CONSTRUCT PROPOSED SIDEWALK SEGMENT 5.
12. REPAIR ALL DAMAGED ASPHALT AND CONCRETE SURFACES WITHIN PARK AND ALONG SCRIBE DRIVE.
13. RESTORE ALL DISTURBED AREAS AS PER PROJECT ENVIRONMENTAL SEQUENCE AND PERFORM REVEGETATION.
14. REMOVE TEMPORARY TRAFFIC CONTROLS, FOLLOWING CONSTRUCTION INSPECTOR APPROVAL.
15. SCHEDULE POST CONSTRUCTION WALK-THRU WITH GPP INSPECTOR.
16. REMOVE EROSION, SEDIMENTATION CONTROLS, AND TREE PROTECTION, FOLLOWING GPP REPRESENTATIVE APPROVAL.

REFER TO THE CITY OF AUSTIN NOTES: EROSION AND SEDIMENTATION CONTROL SHEET FOR ADDITIONAL SEQUENCE OF CONSTRUCTION NOTES.

REV. NO.	BY	DATE	REVISION DESCRIPTION

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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

GENERAL NOTES

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	
DATE	3/23/2017
SHEET NUMBER	3 OF 53

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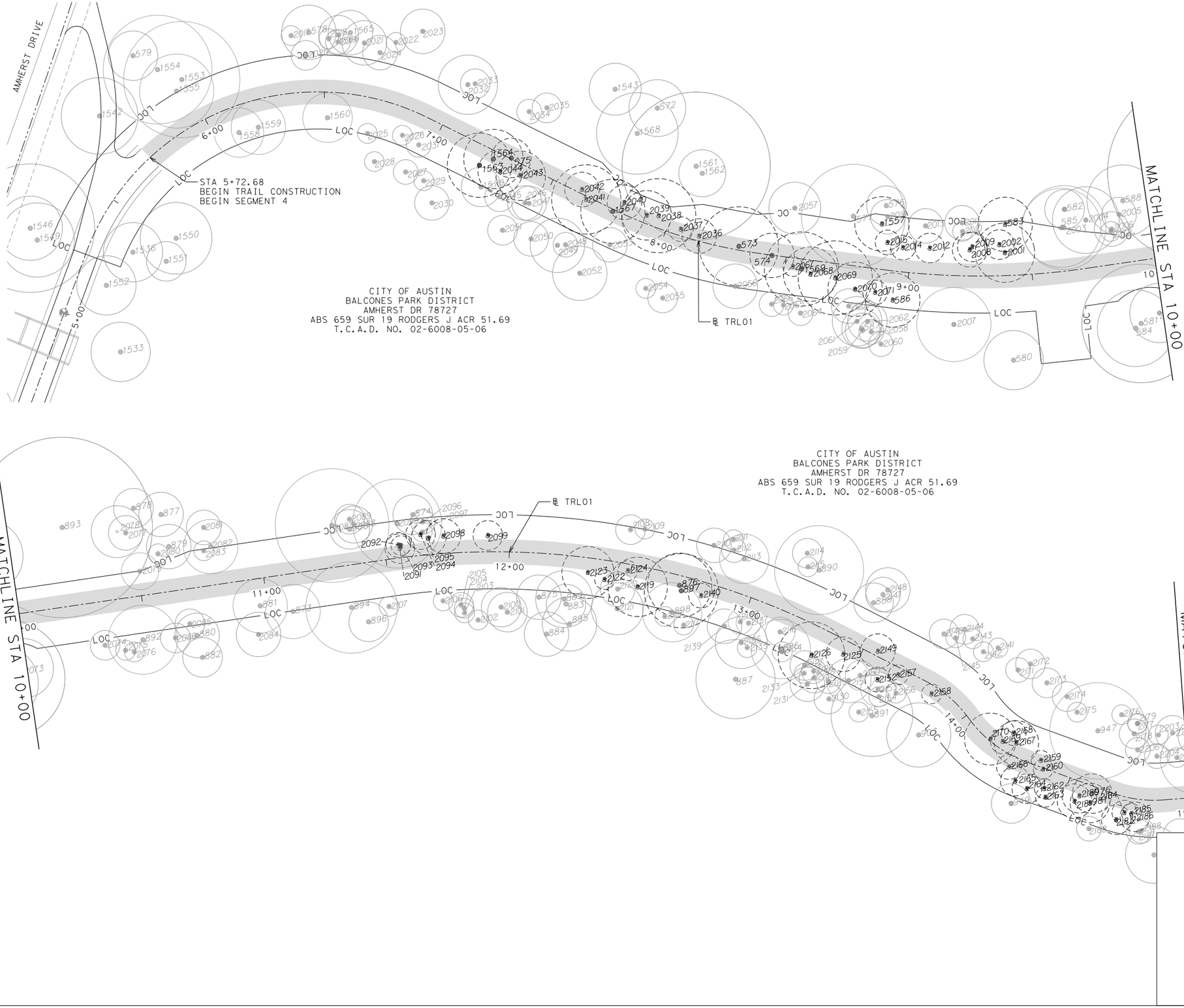

LEGEND

— LOC — LIMITS OF CONSTRUCTION
PROPOSED CONCRETE TRAIL
XXXX EXISTING TREE TO REMAIN
XXXX EXISTING TREE TO BE REMOVED

NOTES:

1. REFER TO THE TREE LIST AND MITIGATION INFORMATION SHEETS FOR LIST OF EXISTING TREES TO BE REMOVED.

N

0 20 40

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
TREE REMOVAL PLAN
BEGIN TO STA 15+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	4 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Trl_Segment_4\DGN\Sheets\0425_TREES-01.dgn modified by dcryon on 3/23/2017 - 9:33:41 AM

CITY OF AUSTIN
BALCONES PARK DISTRICT
AMHERST DR 78727
ABS 659 SUR 19 RODGERS J ACR 51.69
T.C.A.D. NO. 02-6008-05-06

MATCHLINE STA 15+00

MATCHLINE STA 20+00

℄ TRL01

LOC

16+00

17+00

18+00

20

MATCHLINE STA 20+00

℄ TRL01

21+00

22+00

STA 21+82.00
END SEGMENT 4
BEGIN SEMENT 3

STA 2+54.20
END SEGMENT 5

SCRIBE DRIVE

WW

2+00

℄ TRL05

STA 1+00.00 (TRL05)
STA 21+82.00(TRL01)
BEGIN SEGMENT 5

MATCHLINE STA 23+00

CITY OF AUSTIN
BALCONES PARK DISTRICT
AMHERST DR 78727
ABS 659 SUR 19 RODGERS J ACR 51.69
T.C.A.D. NO. 02-6008-05-06

LEGEND

LOC LIMITS OF CONSTRUCTION

PROPOSED CONCRETE TRAIL

XXXX EXISTING TREE TO REMAIN

XXXX EXISTING TREE TO BE REMOVED

NOTES:

1. REFER TO THE TREE LIST AND MITIGATION INFORMATION SHEETS FOR LIST OF EXISTING TREES TO BE REMOVED.

N

0 20 40

REV. NO.	BY	DATE	REVISION DESCRIPTION

90% SUBMITTAL

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90% SUBMITTAL

K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TREE REMOVAL PLAN
STA 15+00 TO STA 23+00

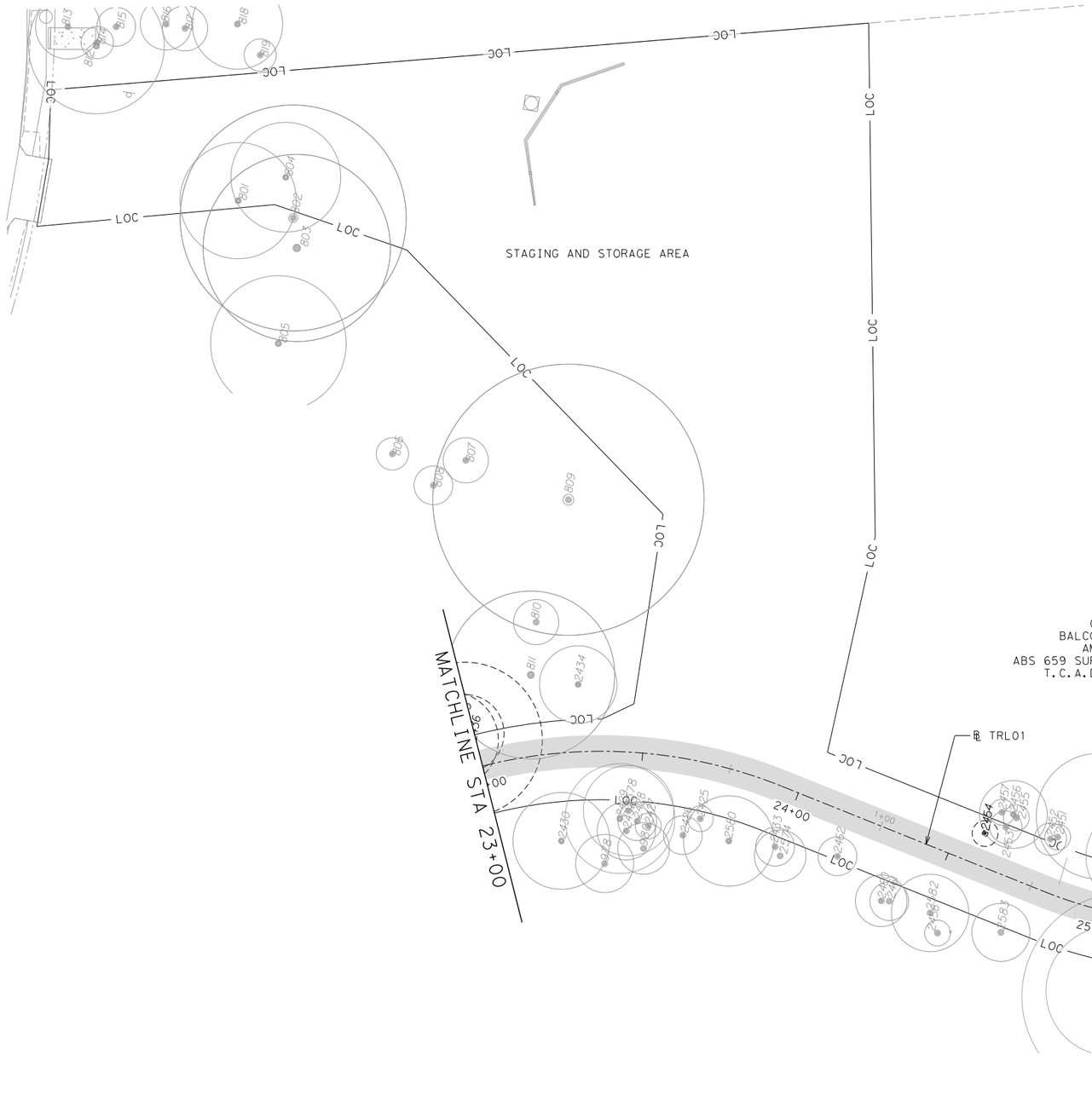
K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

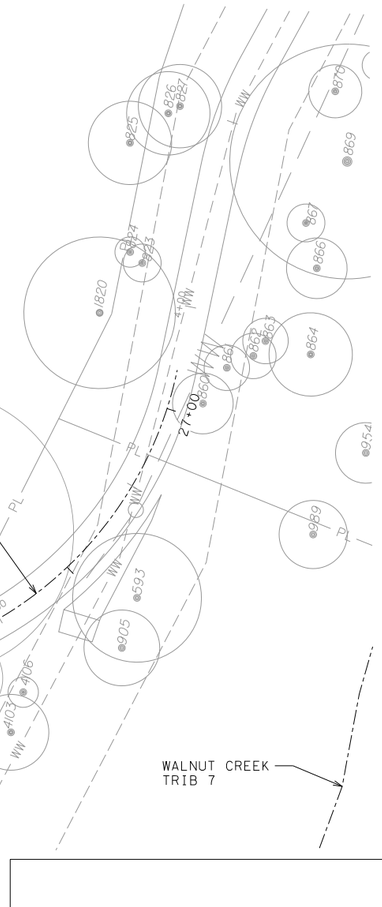
CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	5 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Trl_Segment_4\DGN\Sheets\0425_TREES-02.dgn modified by dcryan on 3/23/2017 - 9:33:43 AM





LEGEND

- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- XXXX EXISTING TREE TO REMAIN
- XXXX EXISTING TREE TO BE REMOVED

NOTES:

1. REFER TO THE TREE LIST AND MITIGATION INFORMATION SHEETS FOR LIST OF EXISTING TREES TO BE REMOVED.

0 20 40

REV. NO.	BY	DATE	REVISION DESCRIPTION

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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
TREE REMOVAL PLAN
STA 23+00 TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	6 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Tri_Segment_4\DGN\Sheets\0425_TREES-03.dgn modified by dcryan on 3/23/2017 - 9:33:44 AM

TREE NO.	DIA.	TREE TYPE
206	4"	CEDAR
207	4"	CEDAR
208	5"	CEDAR
210	4"	MT CEDAR (3",3")
213	16"	LIVE OAK (12",9")
215	4"	CEDAR
216	4"	CEDAR
217	6"	MT CEDAR (4",3")
218	6"	CEDAR
223	30"	LIVE OAK (11",11",10",10",10")
227	5"	MT CEDAR (3",3",2")
228	8"	DEAD
230	5"	CEDAR
232	6"	CEDAR
234	5"	CEDAR
235	4"	CEDAR
237	4"	CEDAR
238	4"	CEDAR
242	5"	MT CEDAR (4",3")
243	5"	CEDAR
244	4"	CEDAR
246	5"	CEDAR
249	4"	CEDAR
250	6"	MT CEDAR (4",4")
251	4"	CEDAR
252	4"	CEDAR
255	5"	CEDAR
257	4"	CEDAR
260	6"	CEDAR
261	4"	CEDAR
262	4"	CEDAR
263	5"	MT CEDAR (4",3")
264	5"	MT CEDAR (4",3")
265	4"	CEDAR
266	4"	CEDAR
271	4"	CEDAR
272	5"	CEDAR
278	4"	CEDAR
~~285~~	~~6"~~	~~MT CEDAR (5",2")~~
~~291~~	~~5"~~	~~CEDAR~~
293	4"	CEDAR
294	5"	MT CEDAR (4",2")
296	6"	CEDAR
297	5"	CEDAR
~~298~~	~~4"~~	~~CEDAR~~
~~299~~	~~4"~~	~~CEDAR~~
303	4"	CEDAR
305	7"	MT CEDAR (5",4")
306	4"	CEDAR
~~308~~	~~6"~~	~~MT CEDAR (5",2")~~
~~309~~	~~4"~~	~~CEDAR~~
310	5"	CEDAR
311	4"	CEDAR
312	6"	CEDAR
313	4"	CEDAR
314	4"	CEDAR
~~317~~	~~8"~~	~~CEDAR~~
~~318~~	~~4"~~	~~CEDAR~~
~~319~~	~~5"~~	~~MT CEDAR (4",3")~~
~~320~~	~~4"~~	~~MT CEDAR (3",2")~~
~~321~~	~~4"~~	~~LIVE OAK~~
~~322~~	~~7"~~	~~LIVE OAK~~
~~323~~	~~4"~~	~~LIVE OAK~~
~~324~~	~~10"~~	~~LIVE OAK (9",3")~~
~~326~~	~~4"~~	~~CEDAR~~
~~327~~	~~4"~~	~~CEDAR~~
~~328~~	~~6"~~	~~CEDAR~~
334	5"	MT CEDAR (4",3")
340	4"	CEDAR
343	4"	CEDAR
344	5"	MT CEDAR (4",3")
345	4"	CEDAR
348	6"	MT CEDAR (5",3")
349	4"	CEDAR
350	5"	CEDAR
~~351~~	~~6"~~	~~CEDAR~~
352	8"	CEDAR (5",5")
355	4"	CEDAR
356	4"	CEDAR
~~359~~	~~4"~~	~~CEDAR~~
364	5"	CEDAR
~~370~~	~~5"~~	~~MT CEDAR (4",3")~~
~~374~~	~~4"~~	~~CEDAR~~
~~376~~	~~5"~~	~~CEDAR~~
~~377~~	~~4"~~	~~MT CEDAR (3",3")~~
381	4"	CEDAR
382	5"	CEDAR
383	8"	CEDAR
~~387~~	~~4"~~	~~CEDAR~~
401	5"	CEDAR
403	8"	CEDAR (6",5")
404	10"	CEDAR
407	4"	CEDAR
408	4"	DEAD
410	6"	MT CEDAR (4",4")
413	4"	CEDAR
415	24"	LIVE OAK (16",16")
418	4"	CEDAR
420	6"	MT CEDAR (5",2")
421	5"	CEDAR
422	6"	MT CEDAR (5",3")
423	4"	CEDAR
424	7"	MT CEDAR (6",2")
425	6"	CEDAR
426	4"	CEDAR
~~433~~	~~5"~~	~~MT CEDAR (4",2")~~
~~434~~	~~5"~~	~~CEDAR~~
~~435~~	~~4"~~	~~CEDAR~~
~~436~~	~~6"~~	~~CEDAR~~

TREE NO.	DIA.	TREE TYPE
437	6"	CEDAR
~~438~~	~~4"~~	~~CEDAR~~
439	5"	MT CEDAR (3",2")
440	4"	CEDAR
446	19"	RED OAK (13",11")
447	5"	CEDAR
450	8"	CEDAR
452	4"	CEDAR
453	5"	CEDAR
454	5"	MT CEDAR (4",3")
457	5"	CEDAR
458	4"	CEDAR
459	7"	MT CEDAR (6",3")
460	4"	CEDAR
461	10"	CEDAR
~~463~~	~~6"~~	~~CEDAR~~
466	5"	CEDAR
467	4"	CEDAR
~~468~~	~~4"~~	~~CEDAR~~
469	4"	CEDAR
470	4"	CEDAR
473	5"	CEDAR
474	4"	MT CEDAR (3",3")
476	4"	CEDAR
480	4"	CEDAR
483	6"	CEDAR
484	4"	CEDAR
485	6"	MT CEDAR (4",2",2")
486	4"	CEDAR
487	10"	CEDAR (6",4",2",2")
488	9"	CEDAR (8",2")
490	6"	MT CEDAR (5",2")
491	4"	CEDAR
494	5"	MT CEDAR (4",2")
496	7"	MT CEDAR (5",4")
497	4"	CEDAR
498	6"	MT CEDAR (5",3")
499	5"	MT CEDAR (4",3")
500	4"	CEDAR
501	6"	MT CEDAR (5",2")
503	4"	CEDAR
504	5"	MT CEDAR (3",3",2")
505	4"	CEDAR
506	5"	CEDAR
508	4"	DEAD
510	11"	LIVE OAK (8",7")
515	6"	CEDAR
516	15"	LIVE OAK
517	18"	LIVE OAK
~~518~~	~~4"~~	~~CEDAR~~
~~519~~	~~8"~~	~~CEDAR ELM~~
521	5"	CEDAR
~~523~~	~~5"~~	~~LIVE OAK~~
~~529~~	~~5"~~	~~CEDAR~~
531	4"	CEDAR
533	4"	CEDAR
535	4"	CEDAR
536	4"	MT CEDAR (2",2",2")
537	22"	LIVE OAK
538	5"	CEDAR
540	6"	CEDAR
541	4"	CEDAR
542	4"	CEDAR
543	8"	MT CEDAR (6",4")
544	4"	MT CEDAR (3",2")
545	9"	CEDAR
546	5"	CEDAR
547	13"	RED OAK (8",7",5")
548	8"	CEDAR ELM (10",2")
551	8"	CEDAR (6",2")
552	7"	CEDAR
553	6"	LIVE OAK
554	5"	LIVE OAK
555	4"	CEDAR
556	8"	CEDAR
557	4"	CEDAR
558	5"	CEDAR
559	11"	CEDAR (8",4",2")
561	6"	LIVE OAK
562	4"	CEDAR
565	4"	CEDAR
567	6"	LIVE OAK
568	8"	LIVE OAK
569	10"	LIVE OAK (7",6")
570	10"	LIVE OAK (5",5",4")
571	4"	CEDAR
572	11.5"	CEDAR
~~573~~	~~16"~~	~~CEDAR~~
~~574~~	~~9"~~	~~CEDAR~~
~~575~~	~~8"~~	~~CEDAR~~
576	8"	CEDAR
577	21"	CEDAR
578	11"	CEDAR ELM
579	10"	CEDAR ELM
580	12"	CEDAR ELM
581	24"	CEDAR
582	8"	CEDAR ELM
~~583~~	~~11"~~	~~CEDAR ELM~~
584	15.5"	CEDAR
585	16"	CEDAR
~~586~~	~~11"~~	~~CEDAR ELM~~
587	8"	CEDAR ELM
588	14.5"	CEDAR
589	11"	CEDAR ELM
590	24"	LIVE OAK
591	7"	MT CEDAR (5",4")
592	5"	MT CEDAR (3",2",2")
593	17"	CEDAR ELM
594	5"	CEDAR

TREE NO.	DIA.	TREE TYPE
595	5"	CEDAR
596	5"	CEDAR
597	11"	Spanish Oak
598	37.5"	Live Oak
599	5"	CEDAR
600	7"	DEAD
602	9"	LIVE OAK (8",3")
~~605~~	~~7"~~	~~CEDAR ELM~~
~~606~~	~~4"~~	~~CEDAR~~
~~609~~	~~6"~~	~~CEDAR ELM~~
615	7"	LIVE OAK
616	8"	LIVE OAK
617	7"	LIVE OAK
618	7"	LIVE OAK
621	5"	MT CEDAR (4",3")
622	5"	MT DEAD (4",2")
623	7"	MT CEDAR (4",4",3")
625	6"	MT CEDAR (5",2")
626	4"	CEDAR
627	17"	LIVE OAK (12",11")
628	4"	CEDAR
629	6"	CEDAR
630	4"	MT CEDAR (3",2")
632	9"	CEDAR (6",4",3")
635	5"	CEDAR
638	5"	CEDAR
639	4"	CEDAR
640	8"	MT CEDAR (6",5")
641	5"	CEDAR
642	7"	MT CEDAR (6",3")
643	9"	CEDAR (5",5",3",2")
644	6"	CEDAR
645	6"	CEDAR
647	6"	CEDAR
648	5"	CEDAR
649	8"	CEDAR (6",4")
650	6"	CEDAR
651	4"	CEDAR
660	4"	CEDAR
661	6"	CEDAR
662	4"	CEDAR
663	6"	CEDAR
664	6"	CEDAR
665	7"	CEDAR
666	7"	CEDAR
667	6"	CEDAR
668	7"	CEDAR
669	9"	CEDAR
670	6"	CEDAR
671	8"	CEDAR
673	13"	LIVE OAK
674	7"	CEDAR
675	6"	LIVE OAK
676	6"	CEDAR
677	14"	CEDAR
678	14"	CEDAR
681	4"	CEDAR
682	4"	CEDAR
684	7"	CEDAR
686	4"	CEDAR
687	6"	CEDAR
688	5"	CEDAR
689	10"	DEAD
~~690~~	~~5"~~	~~DEAD~~
691	6"	CEDAR
693	6"	CEDAR
694	4"	CEDAR
695	12"	CEDAR
696	5"	CEDAR
697	6"	DEAD
~~703~~	~~4"~~	~~CEDAR~~
~~704~~	~~4"~~	~~CEDAR~~
~~709~~	~~4"~~	~~DEAD~~
710	5"	CEDAR
~~711~~	~~6"~~	~~CEDAR~~
~~712~~	~~7"~~	~~CEDAR~~
~~713~~	~~7"~~	~~CEDAR~~
~~714~~	~~5"~~	~~CEDAR~~
715	5"	CEDAR
716	7"	CEDAR
717	6"	CEDAR
718	11"	CEDAR
719	5"	CEDAR
720	8"	CEDAR
721	6"	MT CEDAR (5",2")
~~722~~	~~6"~~	~~CEDAR~~
723	4"	CEDAR
~~724~~	~~7"~~	~~CEDAR~~
~~725~~	~~6"~~	~~CEDAR~~
~~726~~	~~20"~~	~~CEDAR (9",7",5",5",5")~~
727	10"	CEDAR
728	7"	CEDAR
731	8"	CEDAR
732	8"	CEDAR
733	21"	LIVE OAK
~~734~~	~~8"~~	~~CEDAR~~
~~735~~	~~6"~~	~~CEDAR~~
~~736~~	~~8"~~	~~CEDAR~~
~~737~~	~~5"~~	~~CEDAR~~
~~738~~	~~6"~~	~~CEDAR~~
~~741~~	~~5"~~	~~CEDAR~~
~~742~~	~~4"~~	~~CEDAR~~
~~743~~	~~7"~~	~~CEDAR~~
~~744~~	~~5"~~	~~CEDAR~~
745	8"	CEDAR
746	5"	CEDAR
~~747~~	~~6"~~	~~CEDAR~~
~~748~~	~~6"~~	~~CEDAR~~
~~749~~	~~6"~~	~~CEDAR~~

TREE NO.	DIA.	TREE TYPE
~~752~~	~~6"~~	~~CEDAR~~
~~753~~	~~6"~~	~~CEDAR~~
~~754~~	~~8"~~	~~CEDAR~~
~~755~~	~~5"~~	~~CEDAR~~
~~756~~	~~10"~~	~~CEDAR~~
~~757~~	~~5"~~	~~CEDAR~~
~~759~~	~~6"~~	~~CEDAR~~
761	4"	CEDAR
762	4"	CEDAR
764	6"	CEDAR
765	6"	CEDAR
766	4"	CEDAR
767	7"	CEDAR
768	4"	CEDAR
769	4"	CEDAR
770	6"	CEDAR
~~771~~	~~12"~~	~~CEDAR~~
~~772~~	~~5"~~	~~CEDAR~~
~~773~~	~~4"~~	~~CEDAR~~
779	15"	CEDAR (8",8",6")
780	5"	MT CEDAR (3",3")
783	4"	CEDAR
785	6"	CEDAR
786	6"	CEDAR
787	4"	CEDAR
~~789~~	~~4"~~	~~CEDAR~~
~~790~~	~~4"~~	~~CEDAR~~
~~791~~	~~5"~~	~~CEDAR~~
~~792~~	~~10"~~	~~CEDAR (4",4",4",3")~~
793	4"	CEDAR
794	8"	CEDAR
795	11"	CEDAR
~~796~~	~~7"~~	~~CEDAR~~
~~797~~	~~4"~~	~~CEDAR~~
~~798~~	~~6"~~	~~CEDAR~~
~~800~~	~~6"~~	~~CEDAR~~
801	28"	LIVE OAK
802	35"	LIVE OAK (16",9",12",11",7",4")
803	29"	LIVE OAK (14",12",11",9")
804	17"	CEDAR ELM (9",8",8")
805	27"	LIVE OAK (17",11",9")
~~808~~	~~6"~~	~~CEDAR~~
809	42"	LIVE OAK (29", 26")
810	7"	RED OAK
811	26"	CEDAR (11",11",9",7",7",5",4",4",3",3")
812	21"	WILLOW (13",7",9")
813	10"	HACKBERRY
814	9"	LIVE OAK
815	9"	LIVE OAK
816	8"	ASH
817	4"	CEDAR
818	14"	HACKBERRY
819	9"	CEDAR (7",5")
820	10"	CEDAR (6",4",3",3")
822	6"	MT CEDAR (5",3")
823	9"	CEDAR (5",4",4")
824	5"	CEDAR
~~826~~	~~16"~~	~~CEDAR (13",4",3")~~
~~827~~	~~17"~~	~~CEDAR (10",8",4",3")~~
~~828~~	~~20.5"~~	~~CEDAR (8",8",6",4",4",3")~~
829	18"	CEDAR (8",7",6",4",4")
831	9"	MT CEDAR (6",4",3")
832	5"	CEDAR
834	6"	MT CEDAR (5",2")
835	5"	MT CEDAR (4",2")
836	6"	CEDAR
837	6"	CEDAR
860	8"	HACKBERRY
873	11"	CEDAR
874	8"	CEDAR
875	9"	LIVE OAK
~~876~~	~~13"~~	~~LIVE OAK~~
877	9"	CEDAR ELM
878	8"	CEDAR
879	9"	CEDAR
880	9"	CEDAR
881	11"	CEDAR
882	8"	CEDAR
883	8"	LIVE OAK
884	9"	CEDAR ELM
885	12"	CEDAR
887	16"	LIVE OAK
888	8"	CEDAR
889	11.5"	LIVE OAK
890	18"	LIVE OAK
891	16.5"	LIVE OAK
892	14"	CEDAR
893	36.5"	LIVE OAK
894	18.5"	LIVE OAK
895	11"	LIVE OAK
896	8"	CEDAR
~~897~~	~~15"~~	~~LIVE OAK~~
898	12"	LIVE OAK
900	8"	CEDAR
903	13"	LIVE OAK
905	10"	CHINABERRY
906	8"	SPANISH OAK
909	15"	LIVE OAK
910	16"	CEDAR ELM
915	19.5"	CEDAR ELM
918	8"	CEDAR ELM
945	8"	CEDAR
946	9"	CEDAR
947	19.5"	LIVE OAK
949	8"	LIVE OAK
950	10"	CEDAR
954	8"	CEDAR ELM
959	10"	LIVE OAK
960	11"	CEDAR

NOTES:

1. TREES CROSSED OUT ARE PROPOSED TO BE REMOVED AS PART OF THIS PROJECT.
2. SEE SHEET 53 FOR MITIGATION CALCULATIONS.

REVI. NO.	BY	DATE	REVISION DESCRIPTION

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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TREE LIST

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	
DATE	3/23/2017
SHEET NUMBER	7 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Trl_Segment_4\DGN\Sheets\0425_TREES_LIST-01.dgn modified by dcryan on 3/23/2017 - 9:33:44 AM

TREE NO.	DIA.	TREE TYPE
961	14"	LIVE OAK
964	11"	CEDAR (8",6")
966	11.5"	LIVE OAK
967	9"	LIVE OAK
968	11.5"	LIVE OAK
970	13.5"	LIVE OAK
971	10"	CEDAR
973	20"	LIVE OAK
~~975~~	~~8"~~	~~LIVE OAK~~
976	10"	LIVE OAK
977	11"	CEDAR
978	9"	CEDAR
979	27"	LIVE OAK (14",14",13")
980	8"	CEDAR
~~981~~	~~8"~~	~~LIVE OAK~~
989	9"	CEDAR ELM
1501	4"	CEDAR
1502	8"	CEDAR
1503	8"	CEDAR
1504	10"	CEDAR
1505	7"	CEDAR
1506	5"	MT CEDAR (3",3")
~~1509~~	~~5"~~	~~MT CEDAR (3",3")~~
1533	12"	CEDAR ELM
1536	12"	CEDAR ELM
1537	11"	LIVE OAK
1539	24.5"	LIVE OAK
1542	15.5"	CEDAR ELM
1543	10.5"	CEDAR ELM
1546	26"	LIVE OAK
1549	15"	CEDAR ELM
1550	14..5"	CEDAR ELM
1551	8"	CEDAR
1552	12"	CEDAR ELM
1553	23.5"	LIVE OAK
1554	22"	LIVE OAK
1555	15"	LIVE OAK
~~1557~~	~~11"~~	~~CEDAR~~
1558	10"	CEDAR ELM
1559	11"	LIVE OAK
1560	10"	CEDAR ELM
1561	30"	LIVE OAK
1562	9.5"	CEDAR ELM
~~1563~~	~~13"~~	~~CEDAR~~
~~1564~~	~~12"~~	~~CEDAR~~
1565	9"	LIVE OAK
1566	8"	CEDAR ELM
~~1567~~	~~13"~~	~~CEDAR~~
1568	16.5"	CEDAR
~~1569~~	~~15"~~	~~CEDAR~~
1570	8"	CEDAR
1811	12"	LIVE OAK (10",5")
1820	20"	CEDAR ELM
~~2001~~	~~8"~~	~~ELM TWIN~~
~~2002~~	~~6"~~	~~ELM~~
2003	17"	CEDAR MS
2004	9"	CEDAR TWIN
2005	7"	CEDAR
2006	7"	CEDAR
2007	15"	CEDAR
~~2008~~	~~7"~~	~~ELM~~
~~2009~~	~~6"~~	~~CEDAR~~
2010	4"	ELM DEAD
2011	7"	CEDAR
~~2012~~	~~6"~~	~~ELM~~
2013	7"	ELM
~~2014~~	~~5"~~	~~ELM~~
~~2015~~	~~5"~~	~~ELM~~
2016	7"	ELM DEAD
2017	4"	CEDAR
2018	4"	CEDAR
2019	5"	CEDAR
2020	6"	CEDAR
2021	9"	CEDAR
2022	4"	CEDAR
2023	9"	CEDAR
2024	7"	CEDAR
2025	4"	CEDAR
2026	4"	CEDAR
2027	5"	CEDAR
2028	4"	CEDAR
2029	4"	CEDAR
2030	7"	CEDAR
2031	5"	ELM
2032	12"	CEDAR MS
2033	6"	CEDAR
2034	5"	CEDAR
2035	6"	CEDAR MS
~~2036~~	~~7"~~	~~CEDAR~~
~~2037~~	~~5"~~	~~ELM~~
~~2038~~	~~15"~~	~~CEDAR MS~~
~~2039~~	~~10"~~	~~CEDAR MS~~
~~2040~~	~~7"~~	~~CEDAR~~
~~2041~~	~~14"~~	~~CEDAR MS~~
~~2042~~	~~7"~~	~~CEDAR~~
~~2043~~	~~10"~~	~~CEDAR MS~~
~~2044~~	~~6"~~	~~CEDAR TWIN~~
2045	6"	CEDAR MS
2046	7"	CEDAR MS
2047	7"	CEDAR MS
2048	5"	CEDAR
2049	11"	CEDAR MS
2050	7"	CEDAR
2051	6"	CEDAR
2052	11"	ELM DEAD
2053	7"	LIGUSTRUM MS
2054	4"	CEDAR
2055	6"	LIGUSTRUM MS
2056	9"	CEDAR MS

TREE NO.	DIA.	TREE TYPE
2057	7"	ELM TWIN
2058	5"	LIGUSTRUM MS
2059	7"	LIVE OAK DEAD
2060	5"	ELM
2061	10"	LIVE OAK MS DEAD
2062	8"	ELM MS DEAD
2063	7"	LIGUSTRUM MS
2064	5"	ELM
2065	4"	ELM
2066	5"	CEDAR
~~2067~~	~~4"~~	~~ELM~~
~~2068~~	~~11"~~	~~CEDAR MS~~
~~2069~~	~~15"~~	~~CEDAR MS~~
~~2070~~	~~11"~~	~~CEDAR MS~~
~~2071~~	~~5"~~	~~ELM~~
2072	4"	LIGUSTRUM MS
2073	12"	LIGUSTRUM MS
2074	6"	CEDAR
2075	4"	CEDAR
2076	4"	CEDAR
2077	7"	CEDAR
2078	7"	ELM TWIN
2079	5"	CEDAR TWIN
2080	4"	ELM
2081	7"	ELM
2082	11"	CEDAR TWIN
2083	4"	CEDAR
2084	9"	CEDAR MS HALF DEAD
2085	6"	CEDAR
2086	6"	ELM
2087	23"	CEDAR MS
2088	5"	ELM TWIN
2089	6"	CEDAR
2090	16"	CEDAR MS
~~2091~~	~~6"~~	~~CEDAR~~
~~2092~~	~~5"~~	~~CEDAR~~
~~2093~~	~~4"~~	~~CEDAR~~
~~2094~~	~~6"~~	~~LIVE OAK~~
~~2095~~	~~7"~~	~~LIVE OAK~~
2096	5"	CEDAR
2097	4"	LIVE OAK
~~2098~~	~~7"~~	~~ELM DEAD~~
~~2099~~	~~6"~~	~~ELM DEAD~~
2100	8"	CEDAR MS
2101	8"	CEDAR MS
2102	4"	ELM
2103	4"	ELM DEAD
2104	4"	ELM
2105	5"	ELM
2106	4"	CEDAR MS
2107	4"	ELM
2108	6"	CEDAR
2109	4"	CEDAR
2110	7"	CEDAR TWIN
2111	4"	CEDAR
2112	5"	LIVE OAK
2113	10"	CEDAR TWIN
2114	6"	LIVE OAK
2115	4"	CEDAR
2116	6"	ELM MS
2117	4"	CEDAR
2118	4"	CEDAR
~~2119~~	~~8"~~	~~CEDAR TWIN~~
2120	7"	CEDAR
2121	7"	CEDAR TWIN
~~2122~~	~~4"~~	~~CEDAR~~
~~2123~~	~~7"~~	~~CEDAR TWIN~~
~~2124~~	~~4"~~	~~CEDAR~~
~~2125~~	~~7"~~	~~CEDAR~~
~~2126~~	~~9"~~	~~CEDAR TWIN~~
2127	6"	LIVE OAK
2128	5"	LIVE OAK
2129	5"	CEDAR
2130	6"	ELM
2131	7"	ELM
2132	6"	CEDAR MS
2133	4"	CEDAR
2134	4"	CEDAR
2135	4"	CEDAR
2136	7"	CEDAR TWIN
2137	5"	CEDAR
2138	5"	CEDAR
2139	7"	ELM MS
~~2140~~	~~5"~~	~~LIGUSTRUM MS~~
2141	4"	CEDAR
2142	4"	CEDAR
2143	4"	CEDAR
2144	6"	CEDAR
2145	4"	CEDAR
2146	6"	CEDAR TWIN
2147	7"	CEDAR
2148	9"	CEDAR TWIN
~~2149~~	~~7"~~	~~CEDAR~~
2150	6"	CEDAR
2151	6"	CEDAR TWIN
~~2152~~	~~5"~~	~~CEDAR~~
2153	7"	CEDAR
2154	4"	CEDAR
2155	4"	ELM
2156	4"	CEDAR
~~2157~~	~~4"~~	~~CEDAR~~
~~2158~~	~~4"~~	~~CEDAR~~
~~2159~~	~~4"~~	~~CEDAR~~
~~2160~~	~~4"~~	~~CEDAR~~
~~2162~~	~~4"~~	~~CEDAR~~
~~2163~~	~~4"~~	~~CEDAR~~
~~2164~~	~~6"~~	~~CEDAR~~
~~2165~~	~~6"~~	~~CEDAR~~
~~2166~~	~~5"~~	~~CEDAR~~

TREE NO.	DIA.	TREE TYPE
~~2167~~	~~9"~~	~~CEDAR~~
~~2168~~	~~5"~~	~~CEDAR~~
~~2169~~	~~5"~~	~~CEDAR~~
~~2170~~	~~7"~~	~~CEDAR TWIN~~
2171	5"	CEDAR
2172	6"	CEDAR
2173	6"	CEDAR
2174	6"	CEDAR
2175	4"	CEDAR
2176	4"	CEDAR
2177	4"	CEDAR
2178	6"	CEDAR
2179	4"	CEDAR
~~2180~~	~~7"~~	~~LIVE OAK~~
~~2181~~	~~7"~~	~~LIVE OAK~~
2182	5"	LIVE OAK
~~2183~~	~~6"~~	~~CEDAR~~
~~2184~~	~~5"~~	~~CEDAR~~
~~2185~~	~~4"~~	~~CEDAR~~
~~2186~~	~~4"~~	~~CEDAR TWIN~~
2187	5"	LIVE OAK
2188	5"	LIGUSTRUM MS
2189	7"	CEDAR
2190	5"	CEDAR
~~2191~~	~~6"~~	~~CEDAR~~
~~2192~~	~~8"~~	~~CEDAR MS~~
2193	4"	CEDAR
2194	6"	CEDAR TWIN
2195	6"	CEDAR
2196	4"	CEDAR
~~2197~~	~~5"~~	~~CEDAR~~
2198	4"	CEDAR
2199	5"	CEDAR
2200	5"	CEDAR
2201	7"	CEDAR
2202	7"	CEDAR TWIN
2203	4"	CEDAR
2204	5"	CEDAR
2205	4"	CEDAR
2206	5"	CEDAR
2207	5"	CEDAR
2208	4"	CEDAR
2209	5"	CEDAR
2210	6"	CEDAR
2211	7"	CEDAR
2212	5"	CEDAR TWIN
2213	4"	CEDAR
2214	6"	CEDAR MS
2215	5"	CEDAR TWIN
2216	4"	CEDAR
~~2217~~	~~4"~~	~~CEDAR~~
2218	5"	CEDAR
~~2219~~	~~5"~~	~~CEDAR~~
~~2220~~	~~4"~~	~~CEDAR~~
2221	4"	CEDAR
~~2222~~	~~4"~~	~~CEDAR~~
~~2223~~	~~4"~~	~~CEDAR~~
~~2224~~	~~4"~~	~~CEDAR MS~~
~~2225~~	~~5"~~	~~CEDAR~~
2226	4"	LIVE OAK
~~2227~~	~~5"~~	~~CEDAR~~
~~2228~~	~~5"~~	~~CEDAR~~
2229	6"	LIVE OAK TWIN
2230	6"	CEDAR MS
2231	6"	CEDAR MS
2232	27"	CEDAR MS
2233	6"	LIVE OAK
~~2234~~	~~15"~~	~~LIVE OAK~~
2235	5"	CEDAR TWIN
2236	4"	MESQUITE TWIN
~~2237~~	~~6"~~	~~LIVE OAK~~
~~2238~~	~~17"~~	~~CEDAR MS~~
2239	20"	Live Oak
2240	8"	Live Oak
2241	7"	CEDAR
2297	4"	CEDAR
2298	5"	CEDAR
2299	5"	CEDAR
2300	7"	CEDAR
2301	6"	CEDAR TWIN
2302	5"	CEDAR
2303	7"	CEDAR
2304	6"	CEDAR
2305	4"	CEDAR
2306	8"	CEDAR
2307	8"	CEDAR
2308	4"	CEDAR TWIN
2309	5"	CEDAR
2310	4"	CEDAR
2311	7"	CEDAR
2312	4"	CEDAR
2313	4"	CEDAR
2314	4"	CEDAR
2315	4"	CEDAR
2316	7"	LIVE OAK
2317	4"	CEDAR
2318	7"	CEDAR TWIN
2319	7"	CEDAR
2320	4"	ELM
2321	4"	CEDAR
2322	7"	CEDAR TWIN
2323	6"	CEDAR
2324	6"	CEDAR
2325	7"	LIVE OAK
2326	4"	CEDAR
2327	4"	CEDAR TWIN
2328	8"	CEDAR
2329	7"	CEDAR
2330	4"	CEDAR

TREE NO.	DIA.	TREE TYPE
2331	5"	LIVE OAK
2332	5"	CEDAR
2333	4"	CEDAR
2334	7"	CEDAR
2335	4"	CEDAR
2336	4"	CEDAR TWIN
2337	6"	CEDAR
2338	7"	CEDAR
2339	5"	CEDAR
2340	6"	CEDAR
2341	5"	CEDAR
2342	8"	CEDAR
2343	9"	CEDAR MS
2344	4"	CEDAR
~~2345~~	~~7"~~	~~CEDAR~~
2346	6"	CEDAR
2347	5"	CEDAR
2348	7"	CEDAR
~~2349~~	~~7"~~	~~CEDAR~~
~~2350~~	~~4"~~	~~CEDAR~~
~~2351~~	~~5"~~	~~CEDAR~~
~~2352~~	~~5"~~	~~CEDAR~~
~~2353~~	~~5"~~	~~CEDAR~~
~~2354~~	~~4"~~	~~CEDAR~~
~~2355~~	~~6"~~	~~CEDAR TWIN~~
~~2356~~	~~7"~~	~~CEDAR~~
2357	4"	CEDAR TWIN
2358	4"	CEDAR
2359	7"	CEDAR
2360	7"	CEDAR
2361	17"	CEDAR MS
~~2362~~	~~7"~~	~~CEDAR~~
~~2363~~	~~7"~~	~~CEDAR~~
~~2364~~	~~6"~~	~~CEDAR MS~~
2365	8"	CEDAR
~~2366~~	~~5"~~	~~CEDAR~~
~~2367~~	~~6"~~	~~CEDAR MS~~
~~2368~~	~~7"~~	~~CEDAR~~
~~2369~~	~~17"~~	~~CEDAR MS~~
~~2370~~	~~32"~~	~~CEDAR MS~~
2371	4"	CHINABERRY
2372	8"	LIVE OAK
2373	4"	CEDAR
2374	4"	CEDAR
2409	16"	CEDAR MS
2410	6"	CEDAR
2411	6"	CEDAR
2412	16"	CEDAR MS
2413	4"	CEDAR
2414	7"	CEDAR
~~2415~~	~~4"~~	~~CEDAR~~
~~2416~~	~~8"~~	~~CEDAR TWIN~~
2417	5"	CEDAR
2418	10"	CEDAR MS
2419	12"	CEDAR MS
2420	6"	CEDAR MS
2421	7"	CEDAR MS
2422	7"	CEDAR MS
~~2423~~	~~8"~~	~~CEDAR MS~~
2424	7"	CEDAR MS
2425	4"	MESQUITE
2426	6"	HACKBERRY
2427	4"	CEDAR
2428	6"	CEDAR
2429	17"	CEDAR MS
2430	15"	CEDAR MS
2431	4"	ELM TWIN
2432	6"	CEDAR TWIN
2433	4"	CHINABERRY TWIN
2434	12"	CEDAR MS
~~2435~~	~~12"~~	~~LIGUSTRUM MS~~
~~2436~~	~~24"~~	~~CEDAR MS~~
~~2437~~	~~15"~~	~~CEDAR MS~~
2438	9"	CEDAR MS
2439	17"	CEDAR MS
~~2440~~	~~9"~~	~~CEDAR MS~~
~~2441~~	~~16"~~	~~CEDAR MS~~
~~2442~~	~~5"~~	~~CEDAR~~
2443	10"	CEDAR MS
2444	17"	CEDAR MS
2445	6"	CEDAR MS
2446	4"	LIGUSTRUM
2447	6"	CEDAR MS
2448	4"	CEDAR MS
2449	6"	ELM
2450	4"	CEDAR
2451	4"	CHINABERRY
2452	5"	CHINABERRY
2453	5"	LIVE OAK
~~2454~~	~~4"~~	~~LIVE OAK~~
2455	4"	LIVE OAK
2456	7"	LIVE OAK TWIN
2457	4"	LIVE OAK
2458	4"	CEDAR
~~2459~~	~~4"~~	~~CEDAR~~
2460	8"	CEDAR
2461	6"	CEDAR TWIN
2462	4"	LIVE OAK TWIN
~~2567~~	~~10"~~	~~LIVE OAK~~
2568	27"	Live OAK
~~2569~~	~~8"~~	~~CEDAR~~
~~2570~~	~~14"~~	~~CEDAR~~
2572	27.5"	LIVE OAK
~~2573~~	~~11"~~	~~CEDAR~~
2574	8"	CEDAR
2575	26.5"	LIVE OAK
2576	9"	LIVE OAK
2578	14"	CEDAR
2580	14"	CEDAR

TREE NO.	DIA.	TREE TYPE
2582	12"	Cedar
2583	9"	Cedar
2584	22"	Live Oak
4103	10"	CHINABERRY
4106	4"	ASH
4108	11"	LIVE OAK
4109	9"	PECAN
4110	9"	HACKBERRY
4114	7"	MT ASH (5",4")
~~4115~~	~~6"~~	~~ASH~~
4117	7"	CEDAR
~~4118~~	~~6"~~	~~CEDAR~~
~~4119~~	~~8"~~	~~ASH~~
~~4120~~	~~19"~~	~~SPANISH OAK~~
~~4121~~	~~5"~~	~~CEDAR ELM~~
4122	5"	CEDAR
4123	6"	MT ORNAMENTAL CHERRY (4",4")
~~4124~~	~~5"~~	~~POST OAK~~
4129	7"	MT CEDAR(5",5")
4130	32"	POST OAK (19",16",6")
4132	20"	POST OAK
4234	4"	CEDAR
4239	32"	CEDAR MS
~~4240~~	~~26"~~	~~CEDAR MS~~
~~4573~~	~~4"~~	~~CEDAR~~
~~4575~~	~~5"~~	~~CEDAR~~
~~4577~~	~~4"~~	~~CEDAR~~
~~4578~~	~~5"~~	~~CEDAR~~
~~4579~~	~~9"~~	~~LIVE OAK~~
~~4580~~	~~6"~~	~~CEDAR~~
4583	5"	CEDAR
4584	4"	CEDAR
4586	5"	CEDAR
4587	4"	CEDAR
4588	4"	CEDAR
4589	4"	CEDAR
4590	10"	MT CEDAR (7",2",2",2")
4593	4"	CEDAR
4598	6"	CEDAR
4801	4"	MT CEDAR (3",3")
~~4803~~	~~4"~~	~~CEDAR~~
~~4804~~	~~7"~~	~~CEDAR~~
~~4805~~	~~5"~~	~~CEDAR~~
~~4809~~	~~6"~~	~~MT CEDAR (4",4")~~
~~4810~~	~~4"~~	~~CEDAR~~
4811	12"	MT LIVE OAK (10",5")
4812	4"	LIVE OAK
4813	4"	LIVE OAK
4814	9"	LIVE OAK
4815	9"	LIVE OAK
4816	4"	CEDAR
4818	4"	CEDAR

NOTES:

TREES CROSSED OUT ARE PROPOSED TO BE REMOVED AS PART OF THIS PROJECT.

REV. NO.	BY	DATE	REVISION DESCRIPTION

90% SUBMITTAL

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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TREE LIST

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	8 OF 53

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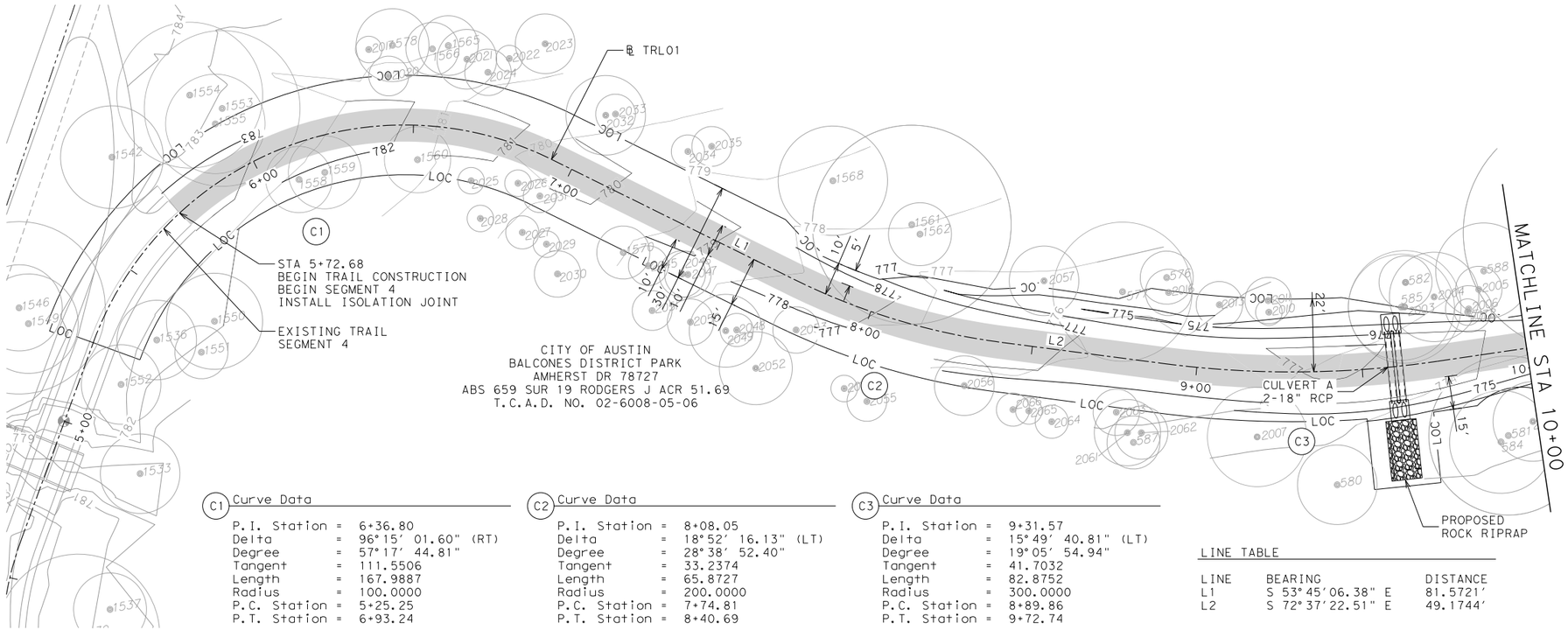


C1 Curve Data

P.I. Station	=	6+36.80
Delta	=	96°15′ 01.60" (RT)
Degree	=	57°17′ 44.81"
Tangent	=	111.5506
Length	=	167.9887
Radius	=	100.0000
P.C. Station	=	5+25.25
P.T. Station	=	6+93.24

C2 Curve Data

P.I. Station	=	8+08.05
Delta	=	18°52′ 16.13" (LT)
Degree	=	28°38′ 52.40"
Tangent	=	33.2374
Length	=	65.8727
Radius	=	200.0000
P.C. Station	=	7+74.81
P.T. Station	=	8+40.69

C3 Curve Data

P.I. Station	=	9+31.57
Delta	=	15°49′ 40.81" (LT)
Degree	=	19°05′ 54.94"
Tangent	=	41.7032
Length	=	82.8752
Radius	=	300.0000
P.C. Station	=	8+89.86
P.T. Station	=	9+72.74

LINE TABLE

LINE	BEARING	DISTANCE
L1	S 53°45′06.38" E	81.5721′
L2	S 72°37′22.51" E	49.1744′

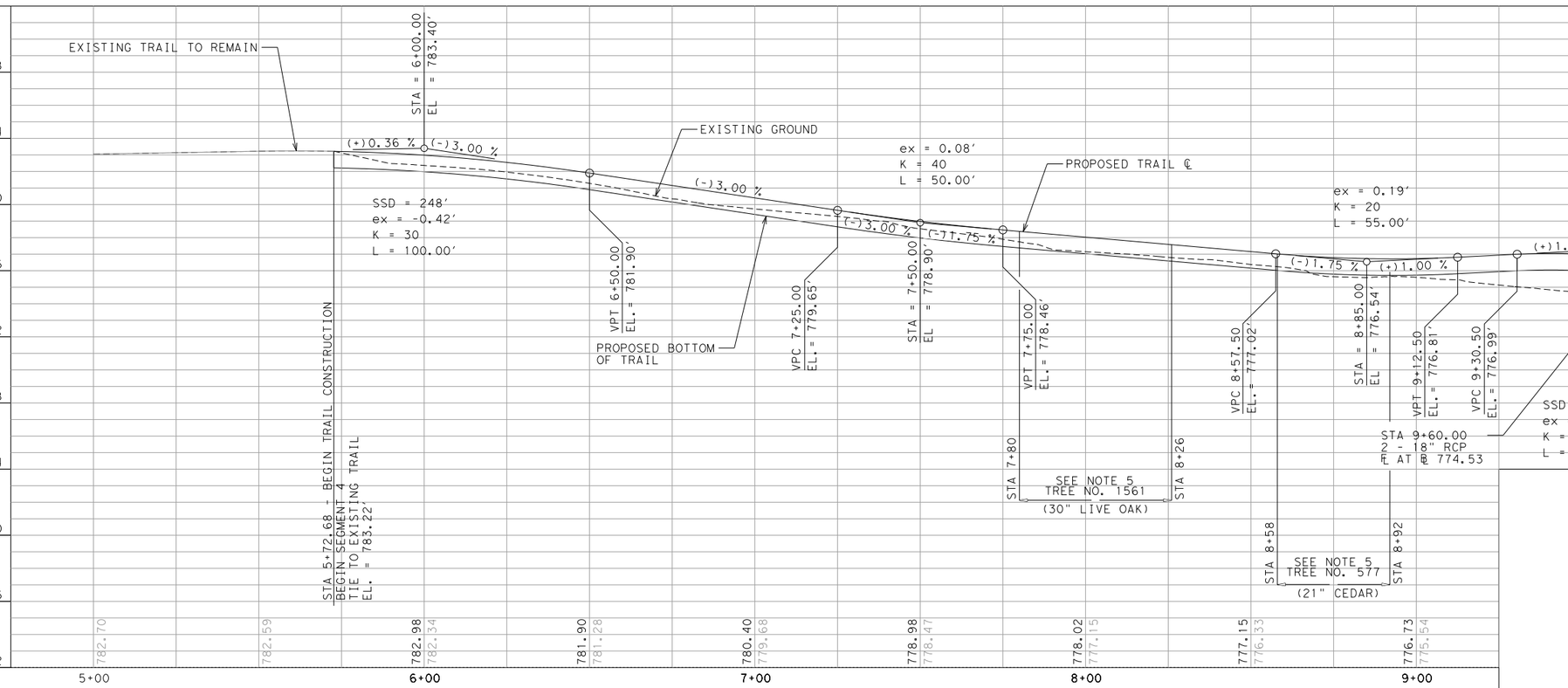
LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- 780 EXISTING GROUND CONTOUR
- 780 PROPOSED GROUND CONTOUR
- PROPOSED RETAINING WALL
- EXIST TREE TO REMAIN

NOTES:

1. JOINTED PLAIN CONCRETE PAVEMENT WITH JOINTS SPACED AT 10 FEET.
2. SEE SHEETS 4 TO 8 FOR TREE REMOVALS.
3. SEE SHEETS 46 TO 48 FOR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN.
4. SEE SHEETS 50 TO 52 FOR PERMANENT REVEGETATION PLAN.
5. AS INDICATED ON PLANS, EXCAVATE AND POUR SLAB ONLY. DO NOT CEMENT STABILIZE BASE. COMPLETE EXCAVATION WITH AIR SPADE WITHIN CRZ OF TREE.
6. SEE SHEETS 46 THRU 48 FOR LIMITS OF CONSTRUCTION DEFINITION.
7. SEE SHEETS 30 THRU 36 FOR RETAINING WALL DESIGN INFORMATION.

0 20 40



REV. NO.	BY	DATE	REVISION DESCRIPTION

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
PLAN AND PROFILE
BEGIN TO STA 10+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	9 OF 53

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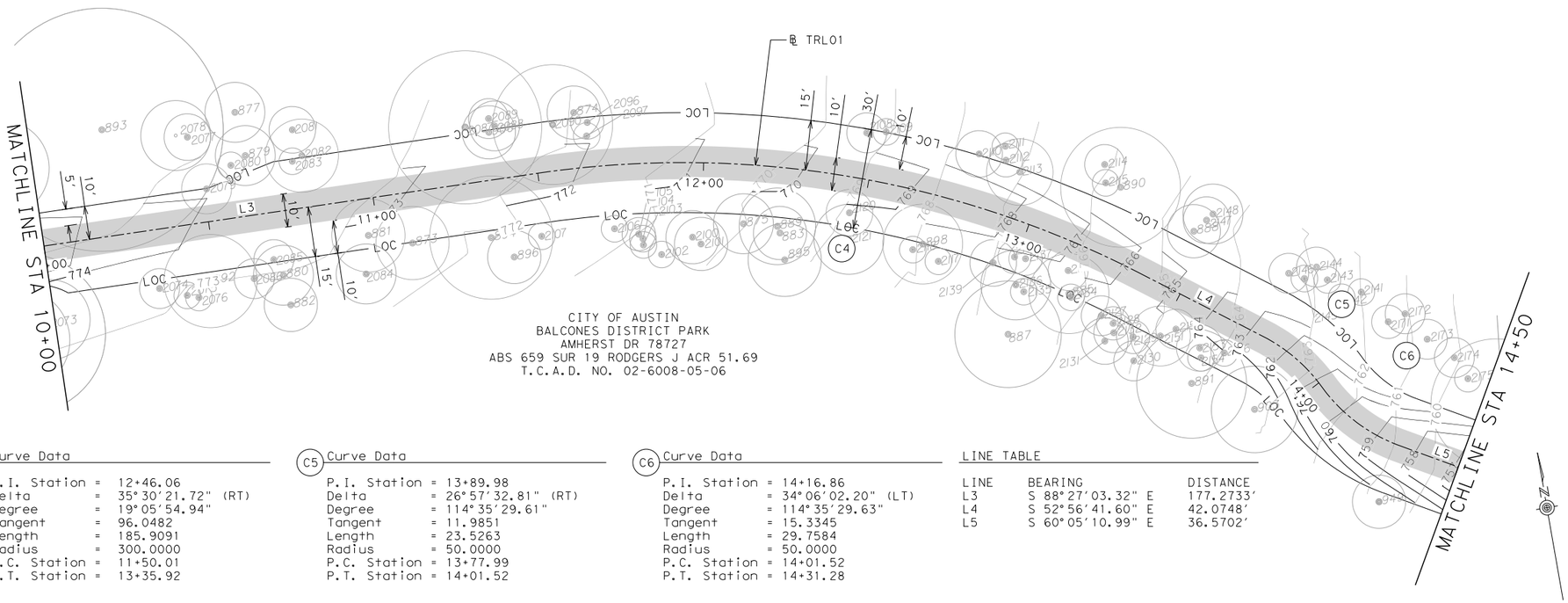


LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- 780 EXISTING GROUND CONTOUR
- 780 PROPOSED GROUND CONTOUR
- PROPOSED RETAINING WALL
- EXIST TREE TO REMAIN

NOTES:

1. JOINTED PLAIN CONCRETE PAVEMENT WITH JOINTS SPACED AT 10 FEET.
2. SEE SHEETS 4 TO 8 FOR TREE REMOVALS.
3. SEE SHEETS 46 TO 48 FOR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN.
4. SEE SHEETS 50 TO 52 FOR PERMANENT REVEGETATION PLAN.
5. AS INDICATED ON PLANS, EXCAVATE AND POUR SLAB ONLY. DO NOT CEMENT STABILIZE BASE. COMPLETE EXCAVATION WITH AIR SPADE WITHIN CRZ OF TREE.
6. SEE SHEETS 46 THRU 48 FOR LIMITS OF CONSTRUCTION DEFINITION.
7. SEE SHEETS 30 THRU 36 FOR RETAINING WALL DESIGN INFORMATION.

0 20 40

C4 Curve Data

P.I. Station	=	12+46.06
Delta	=	35°30'21.72" (RT)
Degree	=	19°05'54.94"
Tangent	=	96.0482
Length	=	185.9091
Radius	=	300.0000
P.C. Station	=	11+50.01
P.T. Station	=	13+35.92

C5 Curve Data

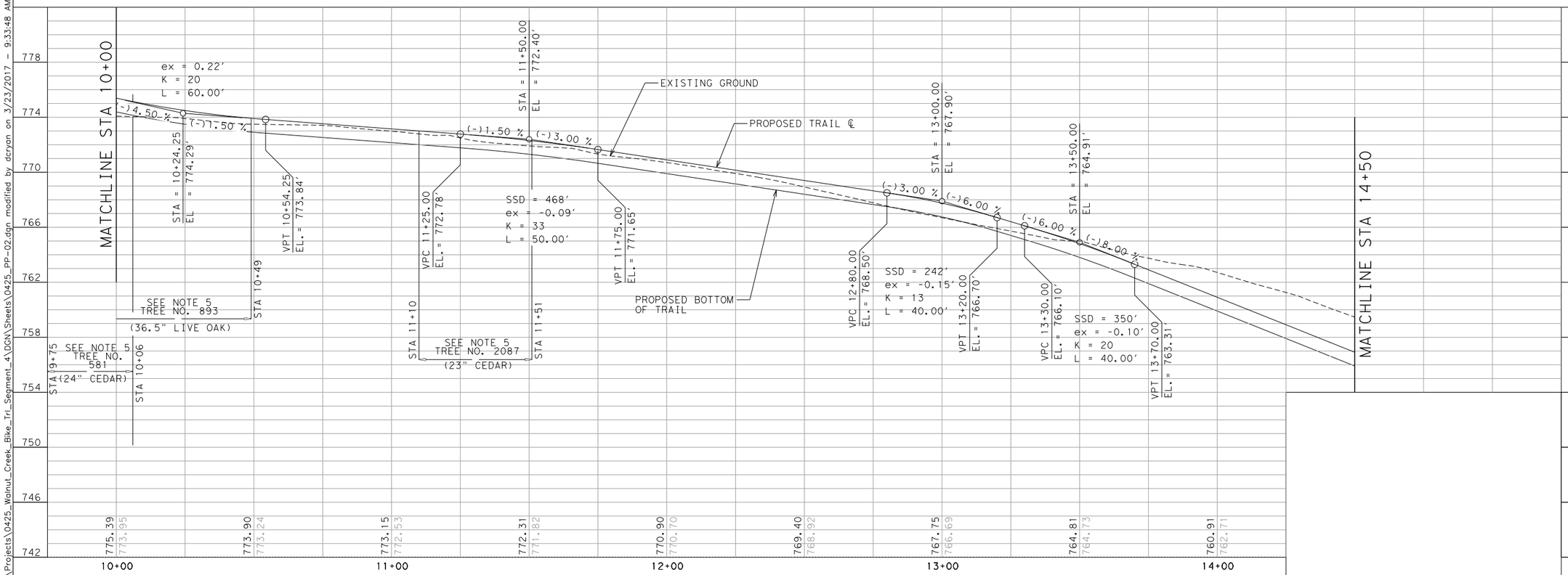
P.I. Station	=	13+89.98
Delta	=	26°57'32.81" (RT)
Degree	=	114°35'29.61"
Tangent	=	11.9851
Length	=	23.5263
Radius	=	50.0000
P.C. Station	=	13+77.99
P.T. Station	=	14+01.52

C6 Curve Data

P.I. Station	=	14+16.86
Delta	=	34°06'02.20" (LT)
Degree	=	114°35'29.63"
Tangent	=	15.3345
Length	=	29.7584
Radius	=	50.0000
P.C. Station	=	14+01.52
P.T. Station	=	14+31.28

LINE TABLE

LINE	BEARING	DISTANCE
L3	S 88°27'03.32" E	177.2733'
L4	S 52°56'41.60" E	42.0748'
L5	S 60°05'10.99" E	36.5702'



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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
PLAN AND PROFILE
STA 10+00 TO STA 14+50

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	10 OF 53

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CITY OF AUSTIN
BALCONES DISTRICT PARK
AMHERST DR 78727
ABS 659 SUR 19 RODGERS J ACR 51.69
T.C.A.D. NO. 02-6008-05-06

MATCHLINE STA 14+50

℄ TRL01

℄ WATERS OF THE U.S.

MATCHLINE STA 18+50

CULVERT B
4'X 2' CBC

PROPOSED ROCK RIPRAP

LINE TABLE

LINE	BEARING	DISTANCE
L6	S 84°18'43.92" E	62.397'
L7	S 31°49'35.50" E	13.1967'
L8	S 24°26'35.14" W	25.9036'
L9	S 84°21'16.36" E	26.6965'
L10	S 44°34'25.66" E	8.9590'
L11	N 64°17'56.37" E	79.1981'

C7 Curve Data

P.I. Station = 14+78.58
Delta = 24°13'32.94" (LT)
Degree = 114°35'29.61"
Tangent = 10.7309
Length = 21.1410
Radius = 50.0000
P.C. Station = 14+67.85
P.T. Station = 14+88.99

C8 Curve Data

P.I. Station = 15+68.64
Delta = 52°29'08.42" (RT)
Degree = 163°42'08.02"
Tangent = 17.2547
Length = 32.0617
Radius = 35.0000
P.C. Station = 15+51.39
P.T. Station = 15+83.45

C9 Curve Data

P.I. Station = 16+15.36
Delta = 56°16'10.64" (RT)
Degree = 163°42' 08.02"
Tangent = 18.7156
Length = 34.3732
Radius = 35.0000
P.C. Station = 15+96.65
P.T. Station = 16+31.02

C10 Curve Data

P.I. Station = 16+91.84
Delta = 108°47'51.49" (LT)
Degree = 229°10'59.22"
Tangent = 34.9181
Length = 47.4719
Radius = 25.0000
P.C. Station = 16+56.92
P.T. Station = 17+04.39

C11 Curve Data

P.I. Station = 17+40.14
Delta = 39°46'50.69" (RT)
Degree = 229°10'59.22"
Tangent = 9.0451
Length = 17.3576
Radius = 25.0000
P.C. Station = 17+31.09
P.T. Station = 17+48.45

C12 Curve Data

P.I. Station = 17+75.28
Delta = 71°07'37.97" (LT)
Degree = 229°10'59.22"
Tangent = 17.8742
Length = 31.0351
Radius = 25.0000
P.C. Station = 17+57.41
P.T. Station = 17+88.44

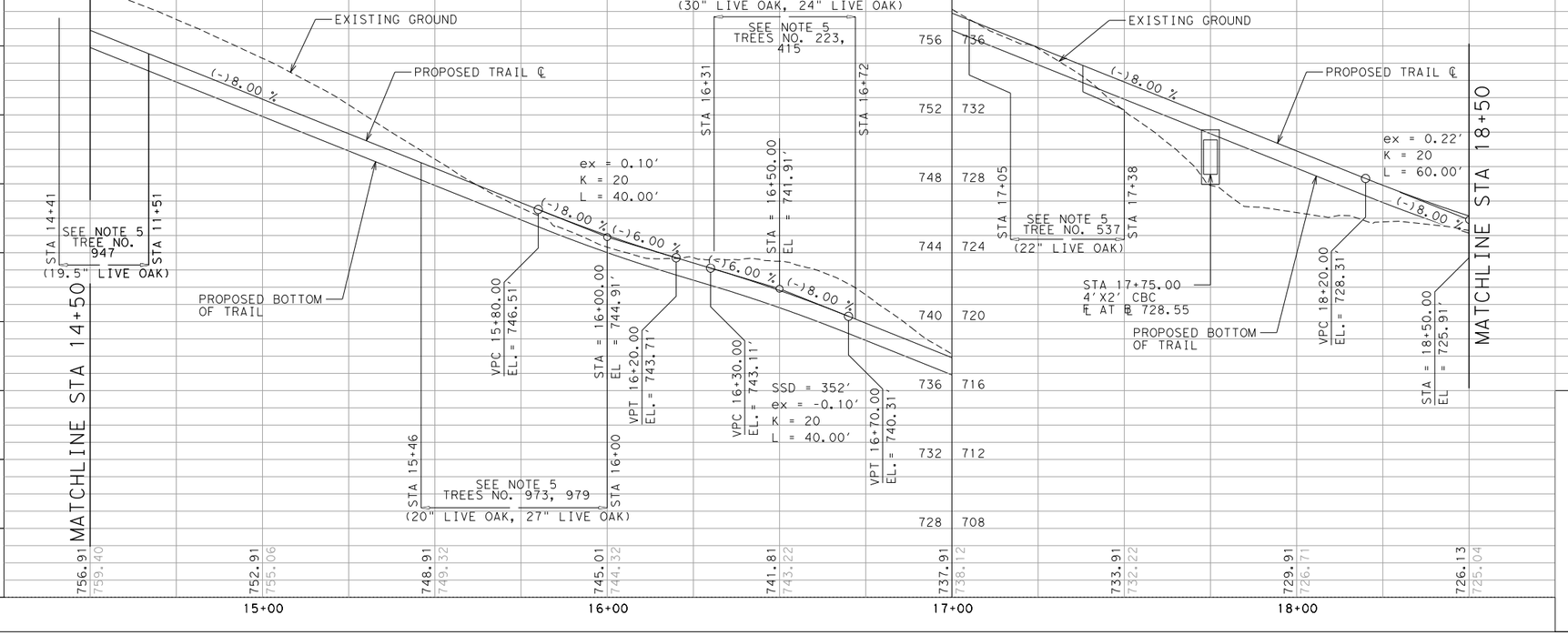
LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- 780 EXISTING GROUND CONTOUR
- 780 PROPOSED GROUND CONTOUR
- PROPOSED RETAINING WALL
- EXIST TREE TO REMAIN

NOTES:

1. JOINTED PLAIN CONCRETE PAVEMENT WITH JOINTS SPACED AT 10 FEET.
2. SEE SHEETS 4 TO 8 FOR TREE REMOVALS.
3. SEE SHEETS 46 TO 48 FOR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN.
4. SEE SHEETS 50 TO 52 FOR PERMANENT REVEGETATION PLAN.
5. AS INDICATED ON PLANS, EXCAVATE AND POUR SLAB ONLY. DO NOT CEMENT STABILIZE BASE. COMPLETE EXCAVATION WITH AIR SPADE WITHIN CRZ OF TREE.
6. SEE SHEETS 46 THRU 48 FOR LIMITS OF CONSTRUCTION DEFINITION.
7. SEE SHEETS 30 THRU 36 FOR RETAINING WALL DESIGN INFORMATION.

0 20 40



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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

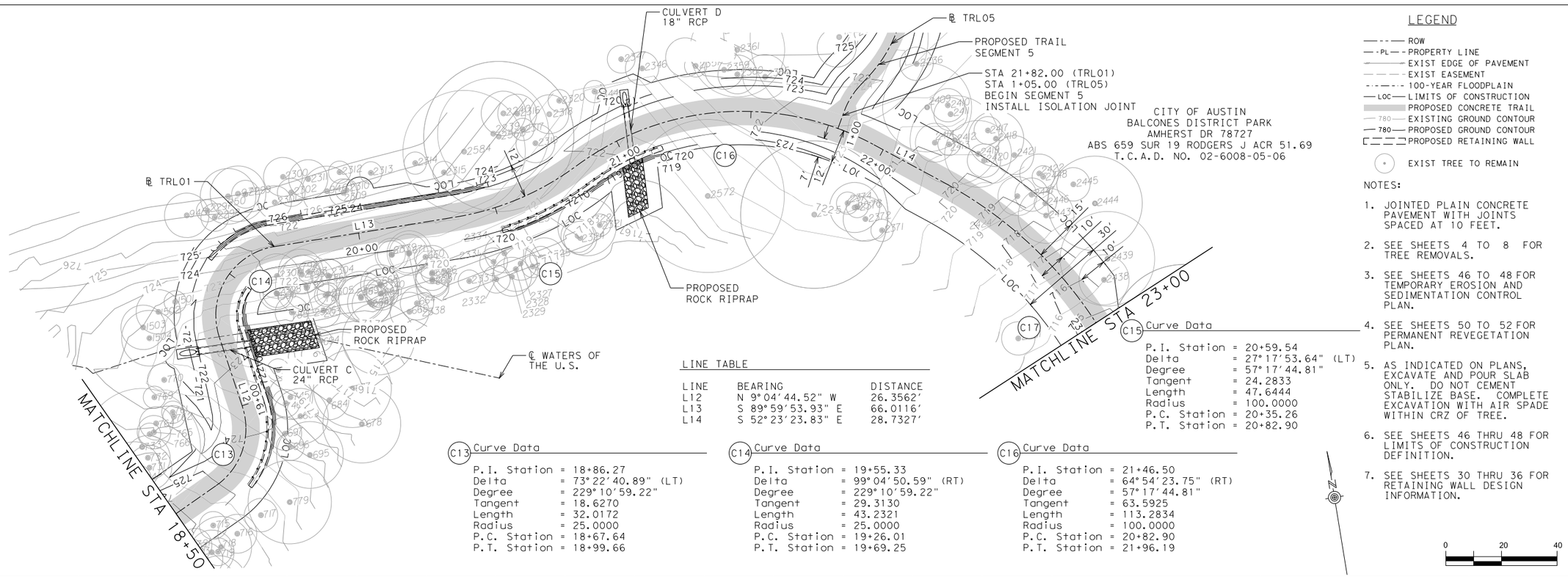
CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
PLAN AND PROFILE
STA 14+50 TO STA 18+50

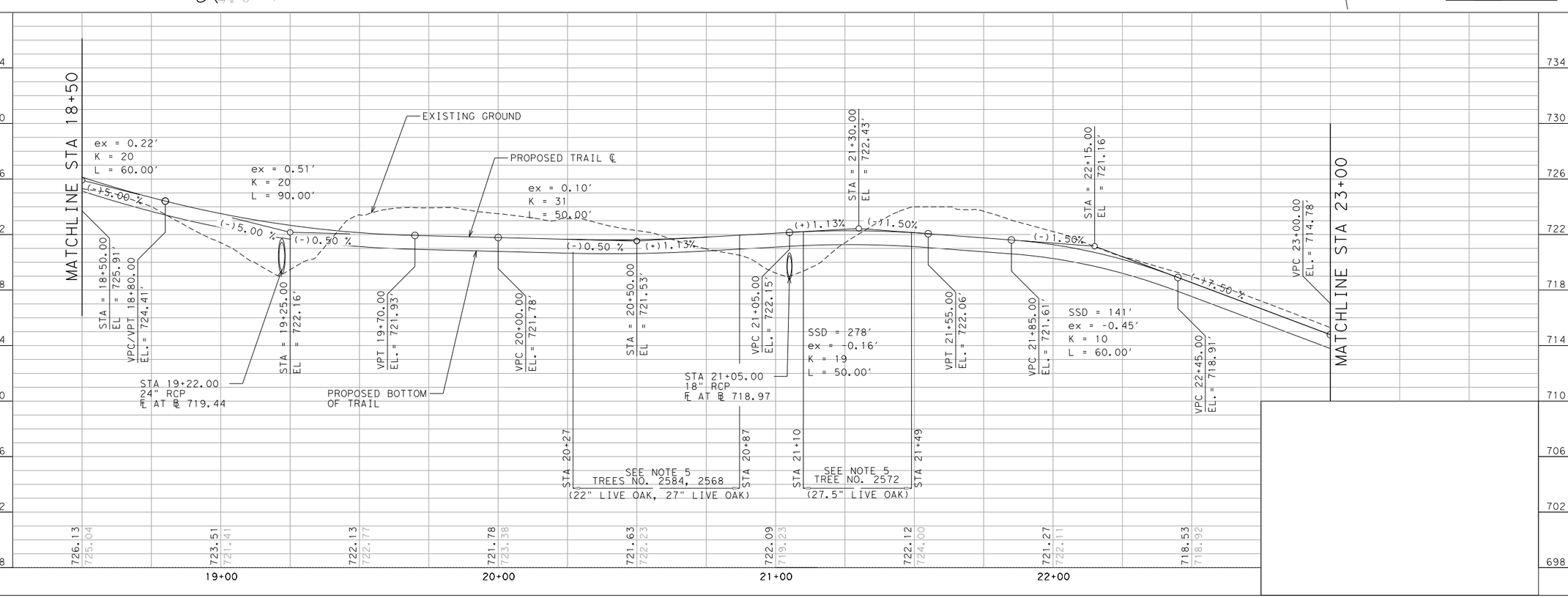
K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	11 OF 53





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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

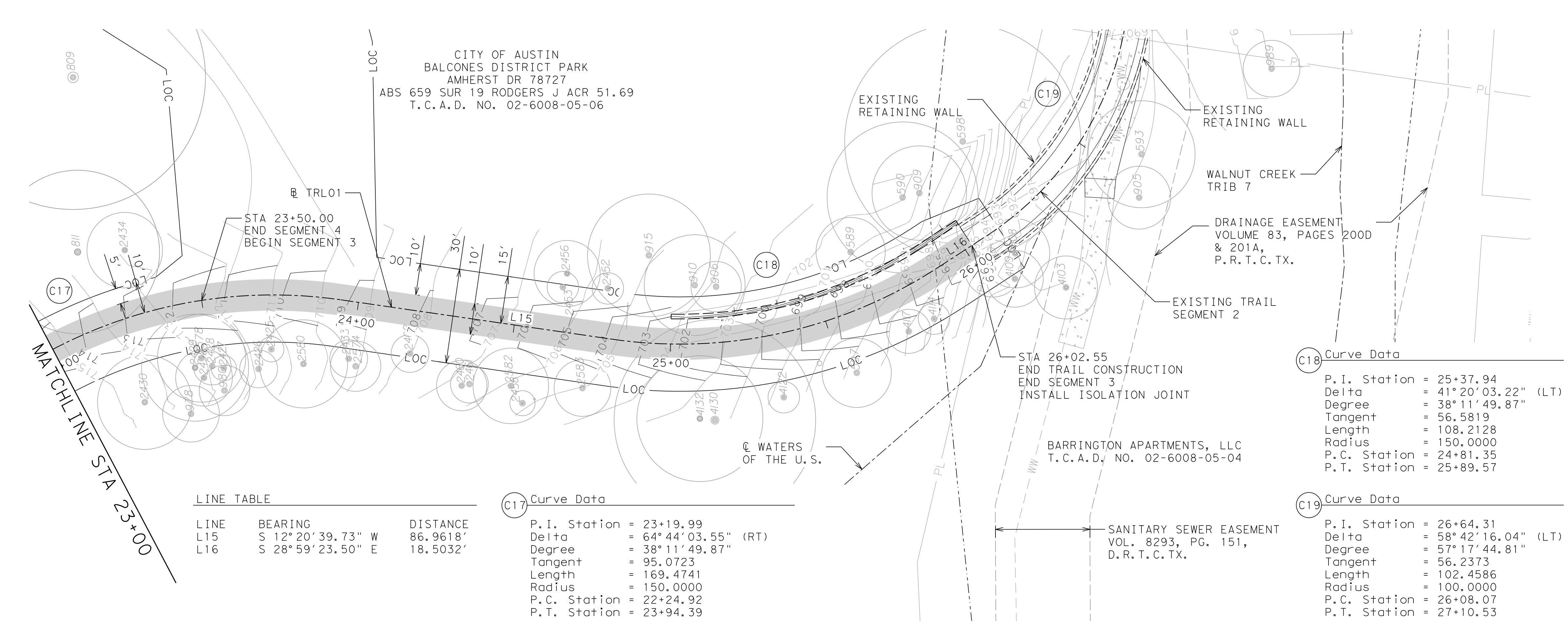
PLAN AND PROFILE
STA 18+50 TO STA 23+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	12 OF 53



CITY OF AUSTIN
BALCONES DISTRICT PARK
AMHERST DR 78727
ABS 659 SUR 19 RODGERS J ACR 51.69
T.C.A.D. NO. 02-6008-05-06
EXISTING RETAINING WALL
EXISTING RETAINING WALL
WALNUT CREEK TRIB 7
DRAINAGE EASEMENT VOLUME 83, PAGES 200D & 201A, P.R.T.C.TX.
EXISTING TRAIL SEGMENT 2
℄ TRL01
STA 23+50.00
END SEGMENT 4
BEGIN SEGMENT 3
STA 26+02.55
END TRAIL CONSTRUCTION
END SEGMENT 3
INSTALL ISOLATION JOINT
℄ WATERS OF THE U.S.
BARRINGTON APARTMENTS, LLC
T.C.A.D. NO. 02-6008-05-04
SANITARY SEWER EASEMENT
VOL. 8293, PG. 151,
D.R.T.C.TX.
MATCHLINE STA 23+00
C17
C18
C19
L15
L16
24+00
25+00
26+00
LOC

LINE TABLE

LINE	BEARING	DISTANCE
L15	S 12°20'39.73" W	86.9618'
L16	S 28°59'23.50" E	18.5032'

C17 Curve Data

P.I. Station	= 23+19.99
Delta	= 64°44'03.55" (RT)
Degree	= 38°11'49.87"
Tangent	= 95.0723
Length	= 169.4741
Radius	= 150.0000
P.C. Station	= 22+24.92
P.T. Station	= 23+94.39

C18 Curve Data

P.I. Station	= 25+37.94
Delta	= 41°20'03.22" (LT)
Degree	= 38°11'49.87"
Tangent	= 56.5819
Length	= 108.2128
Radius	= 150.0000
P.C. Station	= 24+81.35
P.T. Station	= 25+89.57

C19 Curve Data

P.I. Station	= 26+64.31
Delta	= 58°42'16.04" (LT)
Degree	= 57°17'44.81"
Tangent	= 56.2373
Length	= 102.4586
Radius	= 100.0000
P.C. Station	= 26+08.07
P.T. Station	= 27+10.53

LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- EXISTING GROUND CONTOUR
- PROPOSED GROUND CONTOUR
- PROPOSED RETAINING WALL
- EXIST TREE TO REMAIN

NOTES:

1. JOINTED PLAIN CONCRETE PAVEMENT WITH JOINTS SPACED AT 10 FEET.
2. SEE SHEETS 4 TO 8 FOR TREE REMOVALS.
3. SEE SHEETS 46 TO 48 FOR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN.
4. SEE SHEETS 50 TO 52 FOR PERMANENT REVEGETATION PLAN.
5. AS INDICATED ON PLANS, EXCAVATE AND POUR SLAB ONLY. DO NOT CEMENT STABILIZE BASE. COMPLETE EXCAVATION WITH AIR SPADE WITHIN CRZ OF TREE.
6. SEE SHEETS 46 THRU 48 FOR LIMITS OF CONSTRUCTION DEFINITION.
7. SEE SHEETS 30 THRU 36 FOR RETAINING WALL DESIGN INFORMATION.

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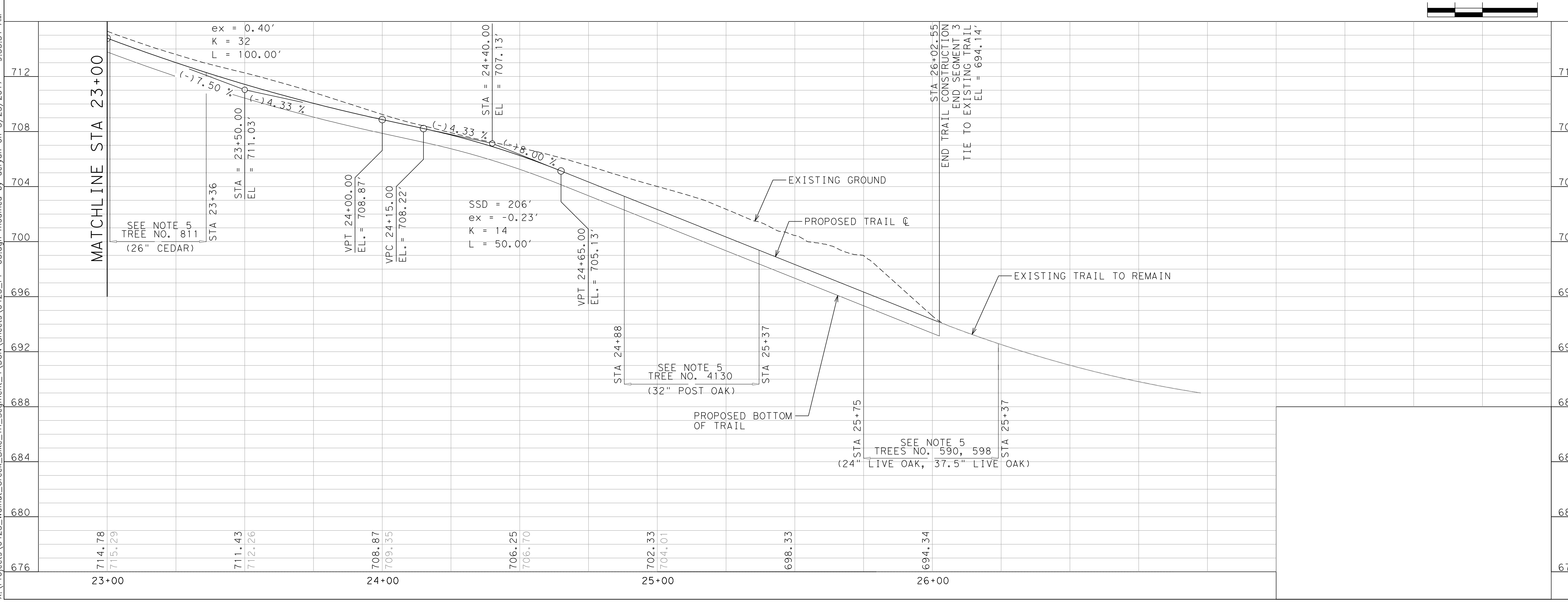

ex = 0.40'
K = 32
L = 100.00'
(-)7.50 %
(-)4.33 %
(-)4.33 %
(-)8.00 %
STA = 24+40.00
EL = 707.13'
STA = 23+50.00
EL = 711.03'
VPT 24+00.00
EL. = 708.87'
VPC 24+15.00
EL. = 708.22'
VPT 24+65.00
EL. = 705.13'
SSD = 206'
ex = -0.23'
K = 14
L = 50.00'
STA 26+02.55
END TRAIL CONSTRUCTION
END SEGMENT 3
TIE TO EXISTING TRAIL
EL = 694.14'
EXISTING GROUND
PROPOSED TRAIL ℄
EXISTING TRAIL TO REMAIN
PROPOSED BOTTOM OF TRAIL
MATCHLINE STA 23+00
SEE NOTE 5
TREE NO. 811
(26" CEDAR)
STA 23+36
STA 24+88
SEE NOTE 5
TREE NO. 4130
(32" POST OAK)
STA 25+37
STA 25+75
SEE NOTE 5
TREES NO. 590, 598
(24" LIVE OAK, 37.5" LIVE OAK)
STA 25+37
712
708
704
700
696
692
688
684
680
676
714.78
715.29
711.43
712.26
708.87
709.35
706.25
706.70
702.33
704.01
698.33
694.34
23+00
24+00
25+00
26+00

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

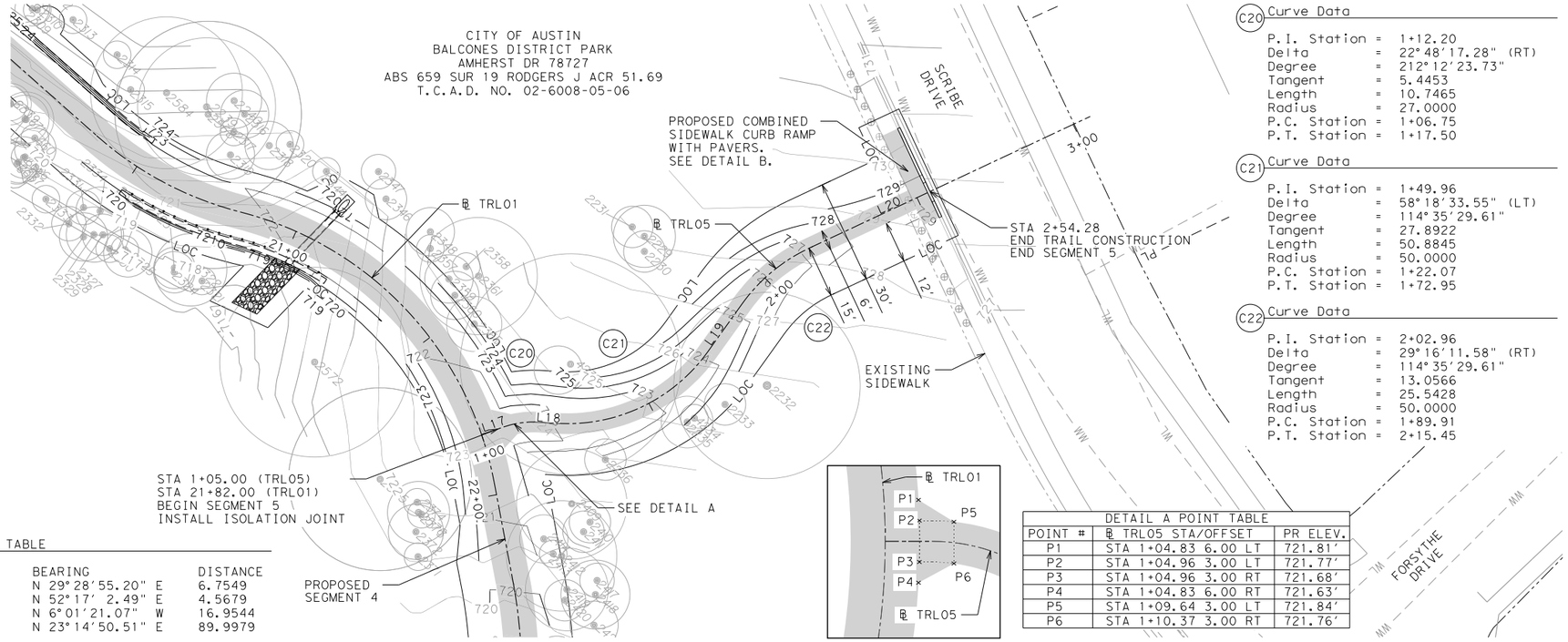
CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
PLAN AND PROFILE STA 23+00 TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	13 OF 53

CITY OF AUSTIN
BALCONES DISTRICT PARK
AMHERST DR 78727
ABS 659 SUR 19 RODGERS J ACR 51.69
T.C.A.D. NO. 02-6008-05-06



C20 Curve Data

P.I. Station	=	1+12.20
Delta	=	22°48'17.28" (RT)
Degree	=	212°12'23.73"
Tangent	=	5.4453
Length	=	10.7465
Radius	=	27.0000
P.C. Station	=	1+06.75
P.T. Station	=	1+17.50

C21 Curve Data

P.I. Station	=	1+49.96
Delta	=	58°18'33.55" (LT)
Degree	=	114°35'29.61"
Tangent	=	27.8922
Length	=	50.8845
Radius	=	50.0000
P.C. Station	=	1+22.07
P.T. Station	=	1+72.95

C22 Curve Data

P.I. Station	=	2+02.96
Delta	=	29°16'11.58" (RT)
Degree	=	114°35'29.61"
Tangent	=	13.0566
Length	=	25.5428
Radius	=	50.0000
P.C. Station	=	1+89.91
P.T. Station	=	2+15.45

LINE TABLE

LINE	BEARING	DISTANCE
L17	N 29°28'55.20" E	6.7549
L18	N 52°17' 2.49" E	4.5679
L19	N 6°01'21.07" W	16.9544
L20	N 23°14'50.51" E	89.9979

DETAIL A

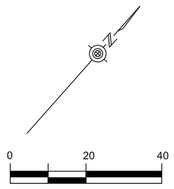
DETAIL A POINT TABLE		
POINT #	℄ TRL05 STA/OFFSET	PR ELEV.
P1	STA 1+04.83 6.00 LT	721.81'
P2	STA 1+04.96 3.00 LT	721.77'
P3	STA 1+04.96 3.00 RT	721.68'
P4	STA 1+04.83 6.00 RT	721.63'
P5	STA 1+09.64 3.00 LT	721.84'
P6	STA 1+10.37 3.00 RT	721.76'

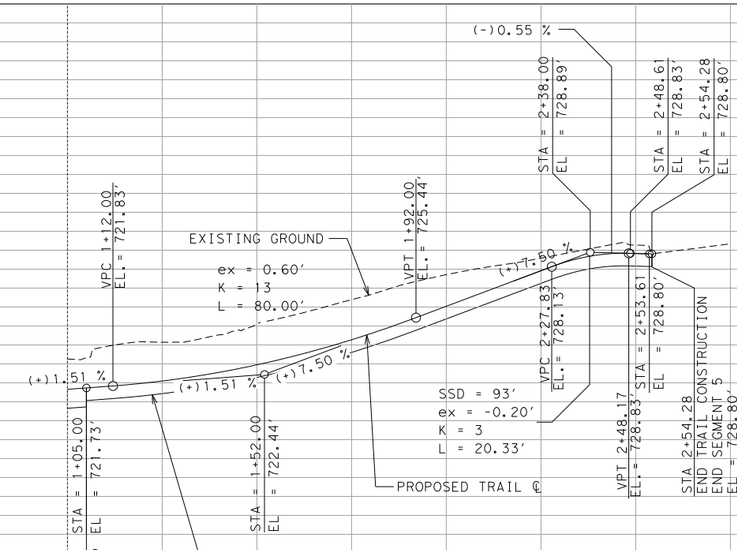
LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- 780 EXISTING GROUND CONTOUR
- 780 PROPOSED GROUND CONTOUR
- PROPOSED RETAINING WALL
- EXIST TREE TO REMAIN

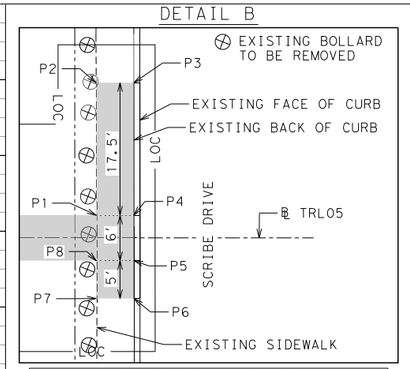
NOTES:

1. SEE SHEETS 4 TO 8 FOR TREE REMOVALS.
2. SEE SHEETS 46 TO 48 FOR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN.
3. SEE SHEETS 50 TO 52 FOR PERMANENT REVEGETATION PLAN.
4. SEE SHEETS 46 THRU 48 FOR LIMITS OF CONSTRUCTION DEFINITION.





DETAIL B



DETAIL B POINT TABLE		
POINT #	℄ TRL05 STA/OFFSET	PR ELEV.
P1	STA 2+48.40 3.00' LT	728.83'
P2	STA 2+48.38 20.50' LT	730.27'
P3	STA 2+53.40 20.50' LT	730.26'
P4	STA 2+53.40 3.00' LT	728.80'
P5	STA 2+53.40 3.00' RT	728.80'
P6	STA 2+53.40 8.00' RT	728.88'
P7	STA 2+48.40 8.00' RT	728.91'
P8	STA 2+48.40 3.00' RT	728.83'

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
SEGMENT 5 PLAN AND PROFILE
BEGIN TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40' H 1" = 4' V
DATE	3/23/2017
SHEET NUMBER	14 OF 53

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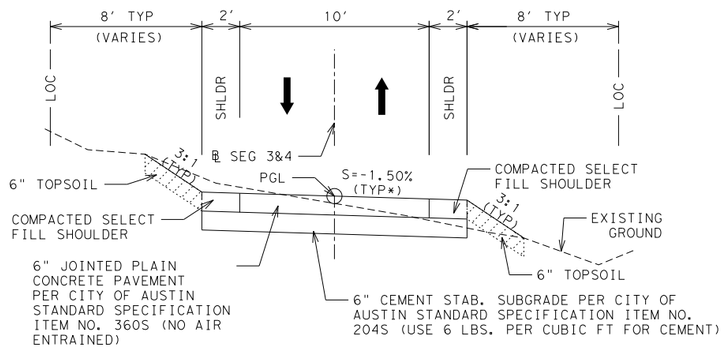
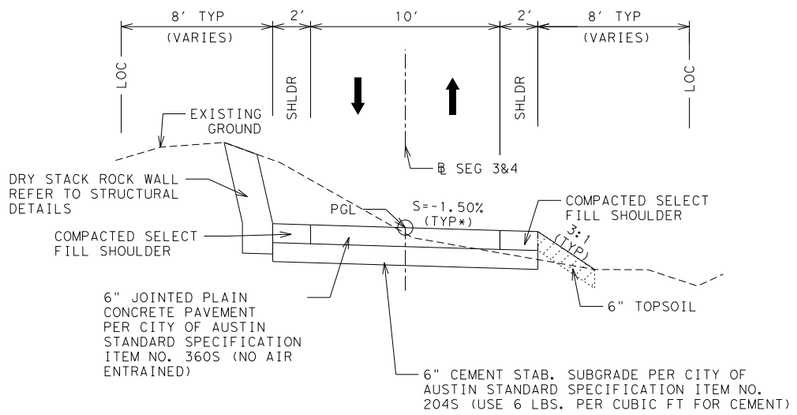


NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3 & 4
(N.T.S.)
*NOTE: SEE TABLE OF CROSS SLOPES



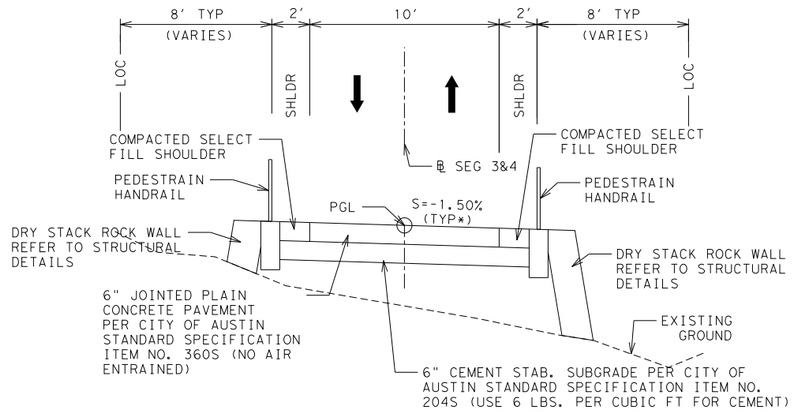
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3 & 4
(N.T.S.)
*NOTE: SEE TABLE OF CROSS SLOPES
STA 19+50 TO 20+50

NOTES:

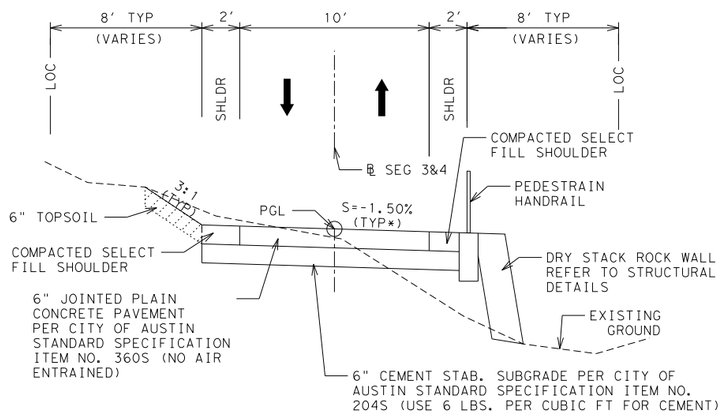
1. CONTRACTION JOINTS ARE REQUIRED AT 10-FEET INTERVALS USING A PRE-FORMED CONTRACTION JOINT MATERIAL (ZIP STRIP OR APPROVED EQUIVALENT).
2. THE NEW JOINT FORMED SHALL BE BROOM FINISHED OVER THE TOP OF THE JOINT.
3. RECOMMENDED SLIP FORM PAVER AND A RECLAIMER FOR THE SUB-GRADE MIXING.
4. SEE SHEETS 30 TO 36 FOR RETAINING WALL DESIGN INFORMATION.

TABLE OF PROPOSED CROSS SLOPES

STA	WALNUT CREEK TRAIL SEGMENTS 4 & 3	
	SLOPE LT (%)	SLOPE RT (%)
05+72.67	-1.50%	-1.50%
-	-	-
15+50.00	-1.50%	-1.50%
15+55.00	-1.26%	-1.26%
15+60.00	-0.54%	-0.54%
15+65.00	0.54%	0.54%
15+70.00	1.26%	1.26%
15+75.00	1.50%	1.50%
-	-	-
16+75.00	1.50%	1.50%
16+80.00	1.26%	1.26%
16+85.00	0.54%	0.54%
16+90.00	-0.54%	-0.54%
16+95.00	-1.26%	-1.26%
17+00.00	-1.50%	-1.50%
-	-	-
17+25.00	-1.50%	-1.50%
17+30.00	-1.26%	-1.26%
17+35.00	-0.54%	-0.54%
17+40.00	0.54%	0.54%
17+45.00	1.26%	1.26%
17+50.00	1.50%	1.50%
-	-	-
19+50.00	1.50%	1.50%
19+55.00	1.26%	1.26%
19+60.00	0.54%	0.54%
19+65.00	-0.54%	-0.54%
19+70.00	-1.26%	-1.26%
19+75.00	-1.50%	-1.50%
-	-	-
26+02.55	-1.50%	-1.50%



NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3 & 4
(N.T.S.)
*NOTE: SEE TABLE OF CROSS SLOPES
STA 17+50.00 TO STA 18+00.00



NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3 & 4
(N.T.S.)
*NOTE: SEE TABLE OF CROSS SLOPES
STA 18+00 TO 18+50, STA 18+75 TO 19+50, STA 20+50 TO 21+15

NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3 & 4
(N.T.S.)
*NOTE: SEE TABLE OF CROSS SLOPES
STA 19+50 TO 20+50

NORTHERN WALNUT CREEK BIKE TRAIL SEGMENT 5
(N.T.S.)

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TYPICAL SECTIONS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	15 OF 53

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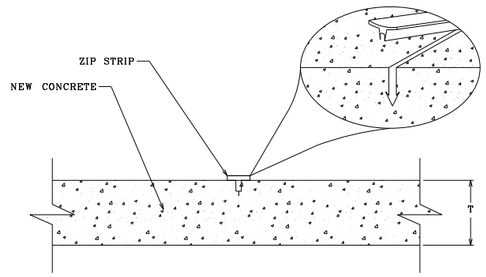
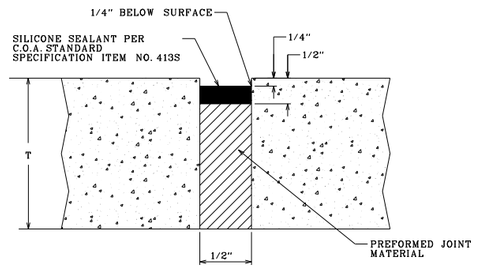


TANSVERSE CONTRACTION JOINT

SLAB THICKNESS IN INCHES (T)	JOINT DEPTH
6" TO 8"	1½"
MORE THAN 8" THICK	2"

NOTES:
1. A STRAIGHT EDGE OR OTHER TYPE OF THIN BLADED MATERIAL SHALL BE USED TO SEPARATE THE AGGREGATE IN THE FRESHLY POURED CONCRETE. THE AGGREGATE CAN BE SEPARATED BY USING A BACK AND FORTH MOTION APPROXIMATELY 2-INCHES DEEP.
2. THE ZIP STRIP SHALL BE INSERTED INTO THE CONCRETE WHEN THE CONCRETE IS STILL WET.
3. THE TOP PORTION OF THE ZIP STRIP SHALL BE REMOVED LEAVING THE VERTICAL PORTION IN THE CONCRETE.
4. THE NEW JOINT FORMED SHALL BE BROOM FINISHED OVER THE TOP OF THE JOINT.
5. THE ZIP STRIP SPACING IN FEET SHALL BE 2T (2 x SLAB THICKNESS IN INCHES) OR AS APPROVED BY THE ENGINEER.

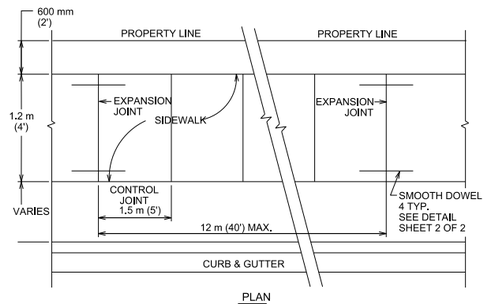
	CONTRACTION JOINT DETAIL	



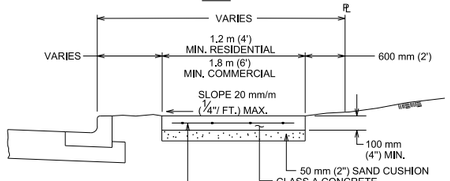
ISOLATION JOINT

NOTES:
1. THE LOCATION OF JOINTS SHALL BE SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER.
2. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATION ITEM NO. 413/S: CLEANING AND/OR SEALING JOINTS AND CRACKS (PORTLAND CEMENT CONCRETE)

	ISOLATION JOINT DETAIL	



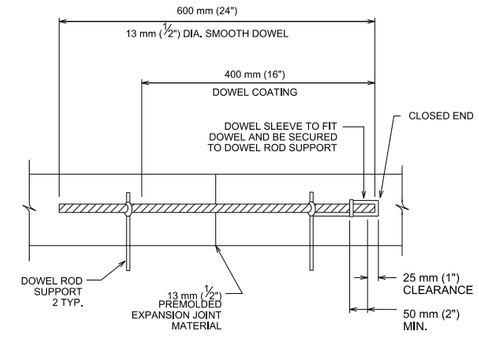
PLAN



POLYPROPYLENE FIBRILLATED FIBERS, OR 150 mm X 150 mm X MW9 X MW9 (6" X 6" X W1.4 X W1.4) WELDED WIRE FABRIC OR ONE LAYER 10M (#3) BARS PLACED NOT MORE THAN 450 mm (18") C.C. BOTH DIRECTIONS.
REINFORCEMENT SHALL ACCURATELY PLACED AT SLAB MID-DEPTH AND HELD FIRMLY IN PLACE BY MEANS OF BAR SUPPORTS OF ADEQUATE STRENGTH AND NUMBER THAT WILL PREVENT DISPLACEMENT AND KEEP THE STEEL AT ITS PROPER POSITION DURING THE PLACEMENT OF THE P.C. CONCRETE. IN NO INSTANCE SHALL THE STEEL BE PLACED DIRECTLY ON THE SUBGRADE OR SAND CUSHION LAYER.

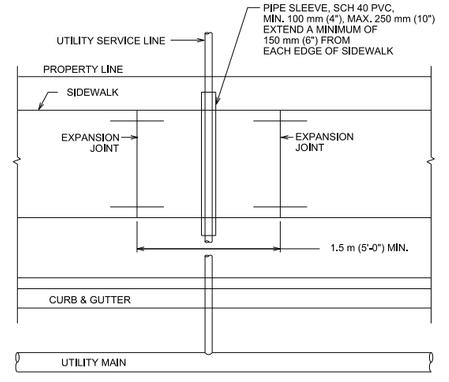
SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 1 OF 3

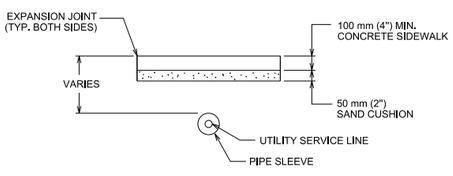


DOWEL DETAIL

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 2 OF 3



SIDEWALK OVER UTILITY SERVICE LINE PLAN



SECTION OF SIDEWALK OVER UTILITY SERVICE LINES

NOTES:
1. THIS STANDARD APPLIES TO THE INSTALLATION OF NEW UTILITIES OR UTILITIES BEING REPLACED BY A NEW LINE.
2. NO JOINTS IN UTILITY SERVICE PIPE TO BE LOCATED INSIDE PVC PIPE SLEEVE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 3 OF 3

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TYPICAL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	
DATE	3/23/2017
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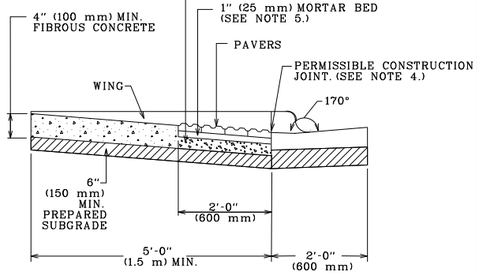
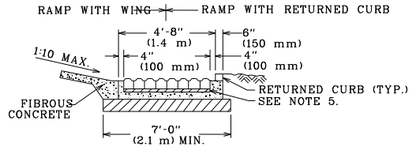


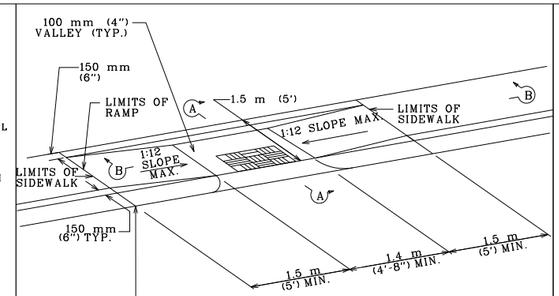
CROSS SECTION

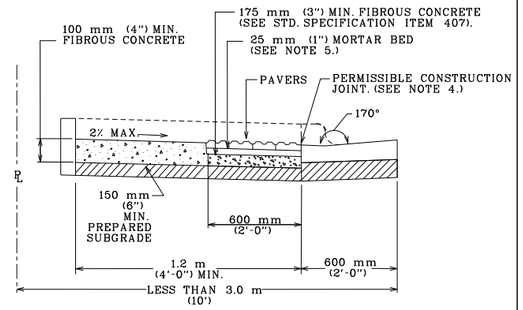


FRONT END VIEW

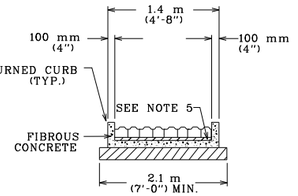
GENERAL NOTES:

1. THIS STANDARD IS APPLICABLE FOR RAMP CONSTRUCTION ON CITY PROPERTY AND EASEMENT AREAS ONLY.
2. PAVERS ARE REQUIRED FOR ALL CURB RAMP INSTALLATIONS.
3. PAVERS WILL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9" (23 mm), A NOMINAL HEIGHT OF 0.2" (5 mm) AND A NOMINAL CENTER TO CENTER SPACING OF 2.35" (60 mm) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT (Re: ADAAG SECTION 4.29.2). MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. PAVER PATTERN SHALL BE BASKET WEAVE UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
4. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE TRANSPORTATION CRITERIA MANUAL FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIS.
5. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE PAVERS AND THE ADJOINING SURFACE SHALL BE LIMITED TO ¼" (6 mm) JOINT SIZE. GAPS LARGER THAN ¼" (6 mm) MUST BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. ALL JOINTS BETWEEN BRICKS AND ADJOINING SURFACE SHALL BE MORTAR FILLED UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
6. MORTAR SHALL CONFORM TO STD. SPECIFICATION ITEM SECTION 403S.3.5, MORTAR AND GROUT. ALL OTHER CONCRETE SHALL CONFORM TO STD. SPECIFICATION ITEM 403S, CONCRETE FOR STRUCTURES, UNLESS OTHERWISE NOTED.
7. CURB RAMPS WITH RETURNED CURB MAY ONLY BE USED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK DIAGONALLY ACROSS THE RAMP.





SECTION A-A



SECTION B-B

GENERAL NOTES:

1. THIS STANDARD IS APPLICABLE FOR RAMP CONSTRUCTION WITHIN RIGHT-OF-WAY OR EASEMENT ONLY.
2. PAVERS WILL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 23 mm (0.9"), A NOMINAL HEIGHT OF 5 mm (0.2") AND A NOMINAL CENTER TO CENTER SPACING OF 60 mm (2.35") AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT (Re: ADAAG SECTION 4.29.2). MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. A BASKET WEAVE PAVER PATTERN SHALL BE USED UNLESS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. PAVER PATTERN VARIES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO STANDARD DETAIL 432S-5 FOR PAVER BASE PREPARATION DETAILS.
3. THE CURB, GUTTER AND RAMP SYSTEM SHALL BE CONFIGURED TO MAINTAIN ALL RUNOFF FROM A 25 YEAR FREQUENCY STORM WITHIN THE RIGHT-OF-WAY (DRAINAGE CRITERIA MANUAL SECTION 1.2.2.B).
4. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE TRANSPORTATION CRITERIA MANUAL FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIC REQUIREMENTS.
5. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE PAVERS AND THE ADJOINING SURFACE SHALL BE LIMITED TO 6 mm (¼") JOINT SIZE. GAPS LARGER THAN 6 mm (¼") MUST BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. ALL JOINTS BETWEEN BRICKS AND ADJOINING SURFACE SHALL BE MORTAR FILLED UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
6. MORTAR SHALL CONFORM TO STD. SPECIFICATION ITEM SECTION 403S.3.5, MORTAR AND GROUT. ALL OTHER CONCRETE SHALL CONFORM TO STD. SPECIFICATION ITEM 403S, CONCRETE FOR STRUCTURES, UNLESS OTHERWISE NOTED.
7. CURB RAMPS WITH 100 mm (4") CONCRETE VALLEY MAY ONLY BE USED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK DIAGONALLY ACROSS THE RAMP.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	DETECTABLE WARNING-PAVER (CITY PROPERTY/EASEMENTS)		
RECORD COPY SIGNED BY BILL GARDNER — 06/21/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-2A	1 OF 2

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	DETECTABLE WARNING-PAVER (CITY PROPERTY/EASMENTS)		
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CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	COMBINED SIDEWALK CURB RAMP WITH PAVERS WITHIN LIMITED ROW ONLY		
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CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	COMBINED SIDEWALK CURB RAMP WITH PAVERS WITHIN LIMITED ROW ONLY		
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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TYPICAL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

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SCALE	
DATE	3/23/2017
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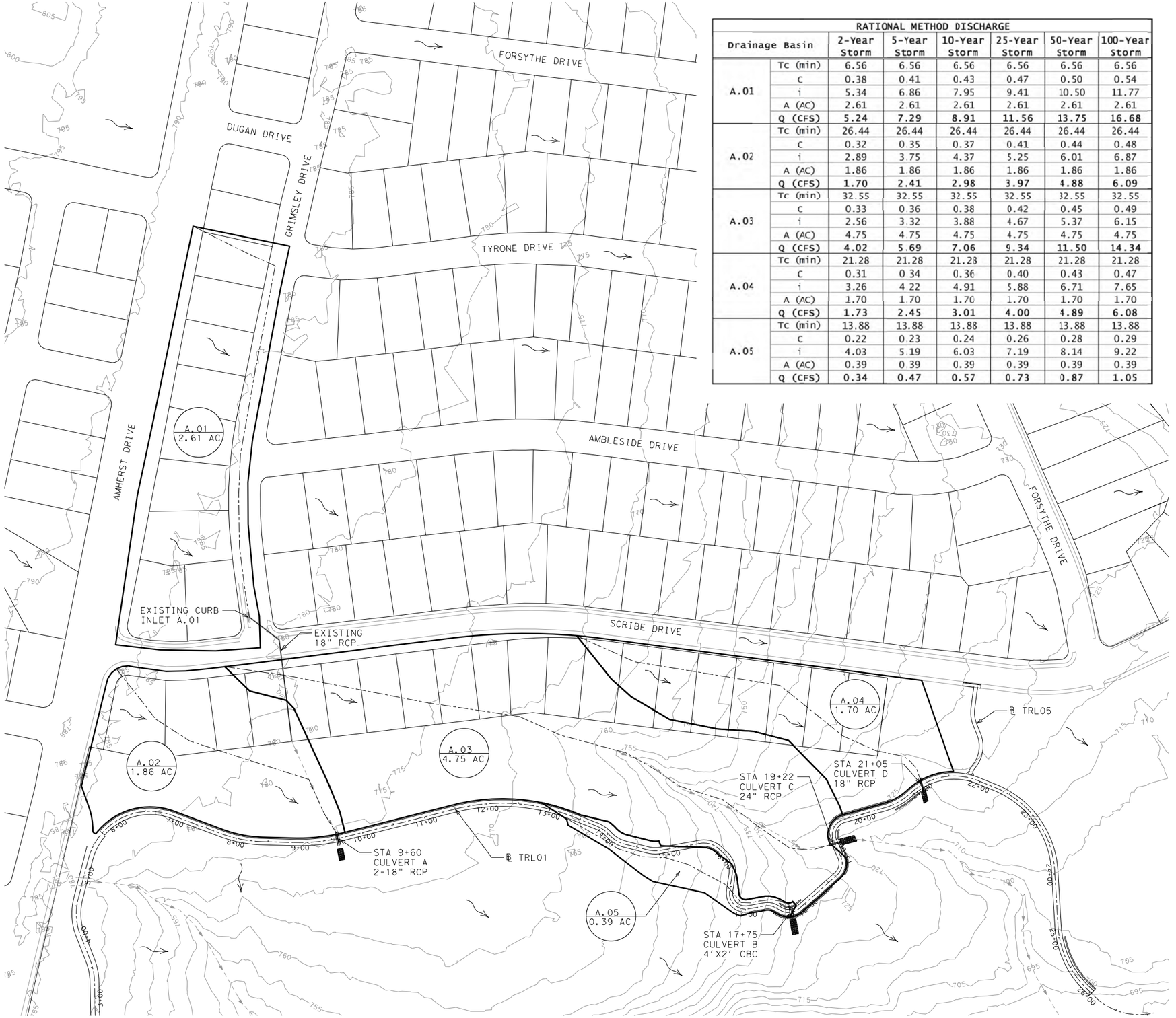

RATIONAL METHOD DISCHARGE							
Drainage Basin		2-Year Storm	5-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm	100-Year Storm
A.01	Tc (min)	6.56	6.56	6.56	6.56	6.56	6.56
	C	0.38	0.41	0.43	0.47	0.50	0.54
	i	5.34	6.86	7.95	9.41	10.50	11.77
	A (AC)	2.61	2.61	2.61	2.61	2.61	2.61
	Q (CFS)	**5.24**	**7.29**	**8.91**	**11.56**	**13.75**	**16.68**
A.02	Tc (min)	26.44	26.44	26.44	26.44	26.44	26.44
	C	0.32	0.35	0.37	0.41	0.44	0.48
	i	2.89	3.75	4.37	5.25	6.01	6.87
	A (AC)	1.86	1.86	1.86	1.86	1.86	1.86
	Q (CFS)	**1.70**	**2.41**	**2.98**	**3.97**	**4.88**	**6.09**
A.03	Tc (min)	32.55	32.55	32.55	32.55	32.55	32.55
	C	0.33	0.36	0.38	0.42	0.45	0.49
	i	2.56	3.32	3.88	4.67	5.37	6.15
	A (AC)	4.75	4.75	4.75	4.75	4.75	4.75
	Q (CFS)	**4.02**	**5.69**	**7.06**	**9.34**	**11.50**	**14.34**
A.04	Tc (min)	21.28	21.28	21.28	21.28	21.28	21.28
	C	0.31	0.34	0.36	0.40	0.43	0.47
	i	3.26	4.22	4.91	5.88	6.71	7.65
	A (AC)	1.70	1.70	1.70	1.70	1.70	1.70
	Q (CFS)	**1.73**	**2.45**	**3.01**	**4.00**	**4.89**	**6.08**
A.05	Tc (min)	13.88	13.88	13.88	13.88	13.88	13.88
	C	0.22	0.23	0.24	0.26	0.28	0.29
	i	4.03	5.19	6.03	7.19	8.14	9.22
	A (AC)	0.39	0.39	0.39	0.39	0.39	0.39
	Q (CFS)	**0.34**	**0.47**	**0.57**	**0.73**	**0.87**	**1.05**

LEGEND

- PROPOSED DRAINAGE AREA BOUNDARY
- PROPOSED FLOW PATH
- EXISTING PARCEL
- 780 EXISTING 5-FT CONTOUR
- EXISTING CHANNEL
- FLOW ARROW

0 80 160

NOTES:

1. THE RATIONAL METHOD WAS UTILIZED TO CALCULATE RUNOFF. RUNOFF COEFFICIENTS USED WERE OBTAINED FROM TABLE 2-1 OF THE CITY OF AUSTIN DRAINAGE CRITERIA MANUAL.
2. PRECIPITATION DEPTHS WERE OBTAINED BY UTILIZING THE AUSTIN AREA INTENSITY-DURATION-FREQUENCY CURVE COEFFICIENTS OBTAINED FROM THE CITY OF AUSTIN DRAINAGE CRITERIA MANUAL TABLE 2-5.
3. NO INCREASE IN IMPERVIOUS COVER IN DRAINAGE AREAS. FLOW IS ASSUMED TO REMAIN CONSTANT FOR EXISTING AND PROPOSED CONDITIONS.

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

DRAINAGE AREA MAP

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 160'
DATE	3/23/2017
SHEET NUMBER	18 OF 53

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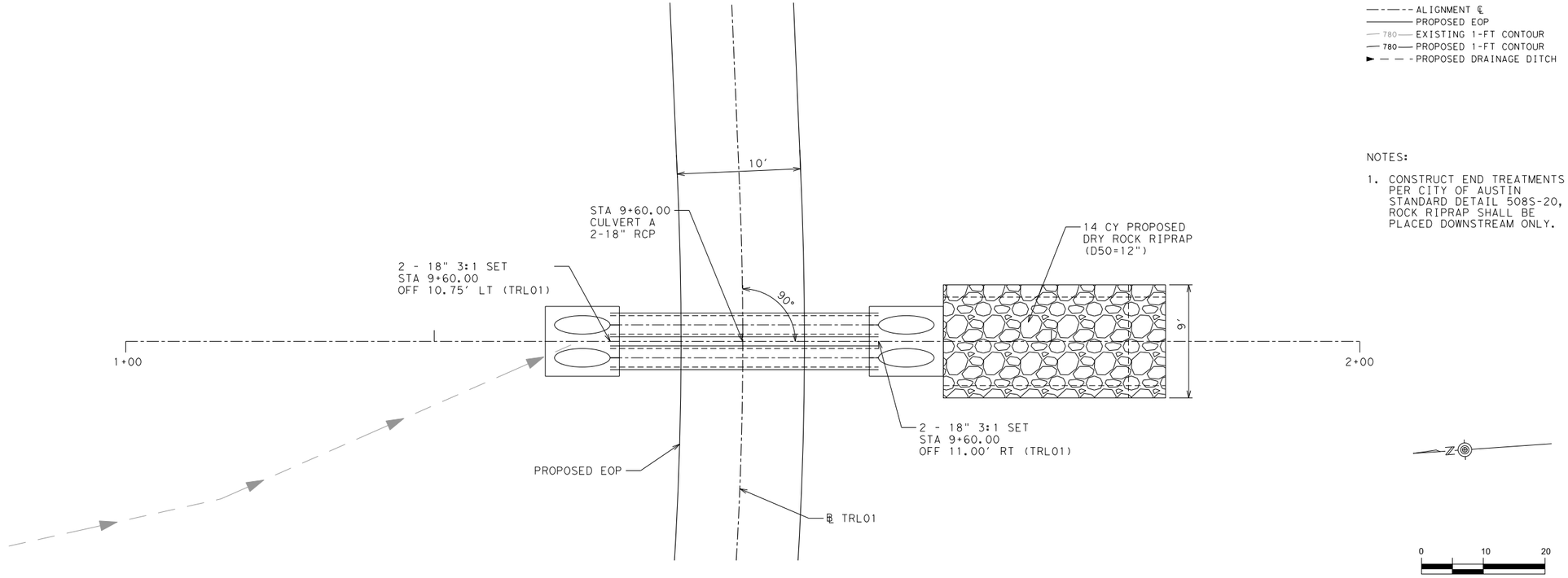
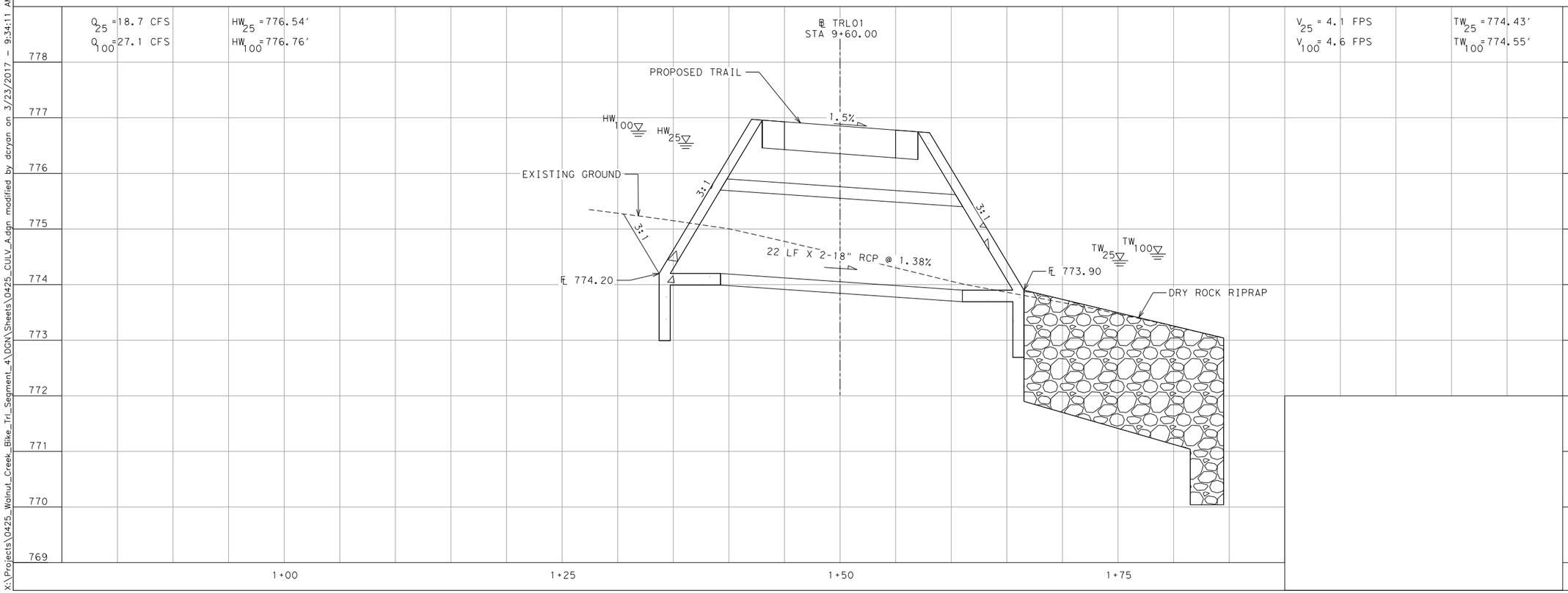
LEGEND

- ALIGNMENT ℄
- PROPOSED EOP
- 780 EXISTING 1-FT CONTOUR
- 780 PROPOSED 1-FT CONTOUR
- PROPOSED DRAINAGE DITCH

NOTES:

1. CONSTRUCT END TREATMENTS PER CITY OF AUSTIN STANDARD DETAIL 508S-20, ROCK RIPRAP SHALL BE PLACED DOWNSTREAM ONLY.





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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT LAYOUT
CULVERT A

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 10' H 1" = 2' V
DATE	3/23/2017
SHEET NUMBER	19 OF 53

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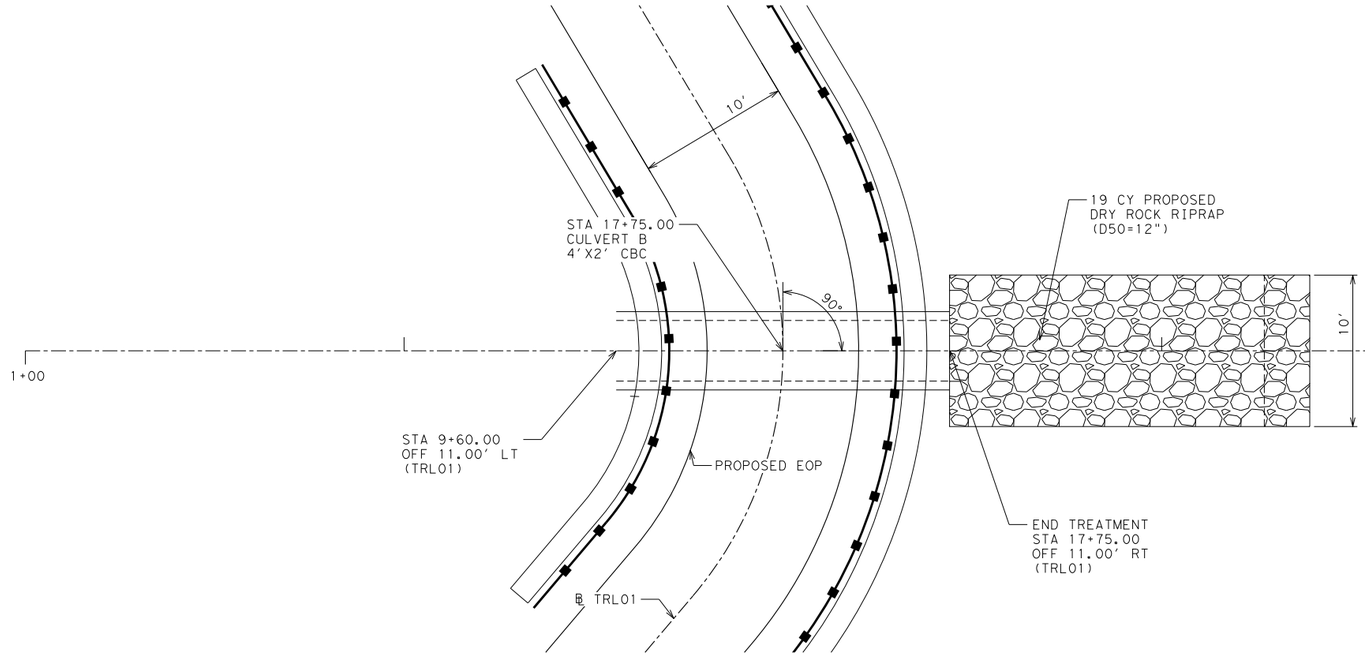
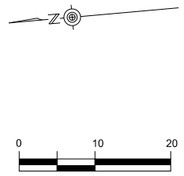
LEGEND

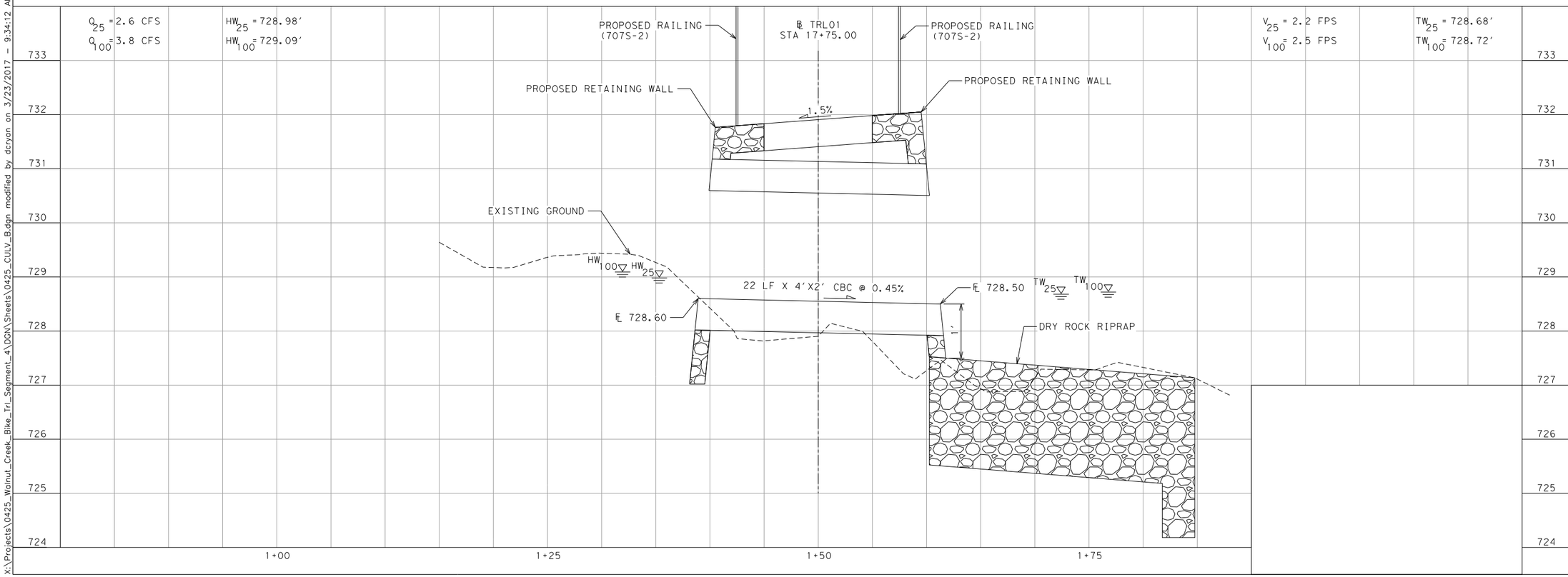
- ALIGNMENT ℄
- PROPOSED EOP
- 780 EXISTING 1-FT CONTOUR
- 780 PROPOSED 1-FT CONTOUR
- PROPOSED DRAINAGE DITCH

NOTES:

1. CONSTRUCT END TREATMENTS PER CITY OF AUSTIN STANDARD DETAIL 508S-19, ROCK RIPRAP SHALL BE PLACED DOWNSTREAM ONLY.







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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT LAYOUT
CULVERT B

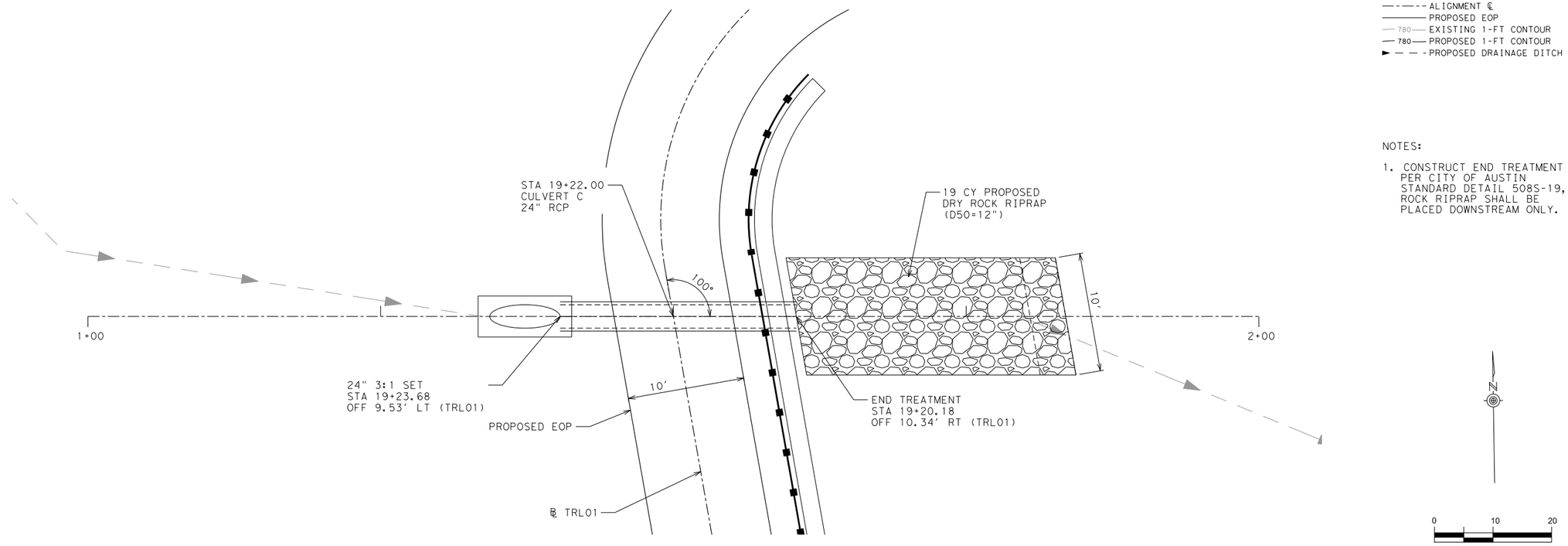
K FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 10' H 1" = 2' V
DATE	3/23/2017
SHEET NUMBER	20 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Trl_Segment_4\DGN\Sheets\0425_CULV_B.dgn modified by dcryan on 3/23/2017 - 9:34:12 AM



LEGEND

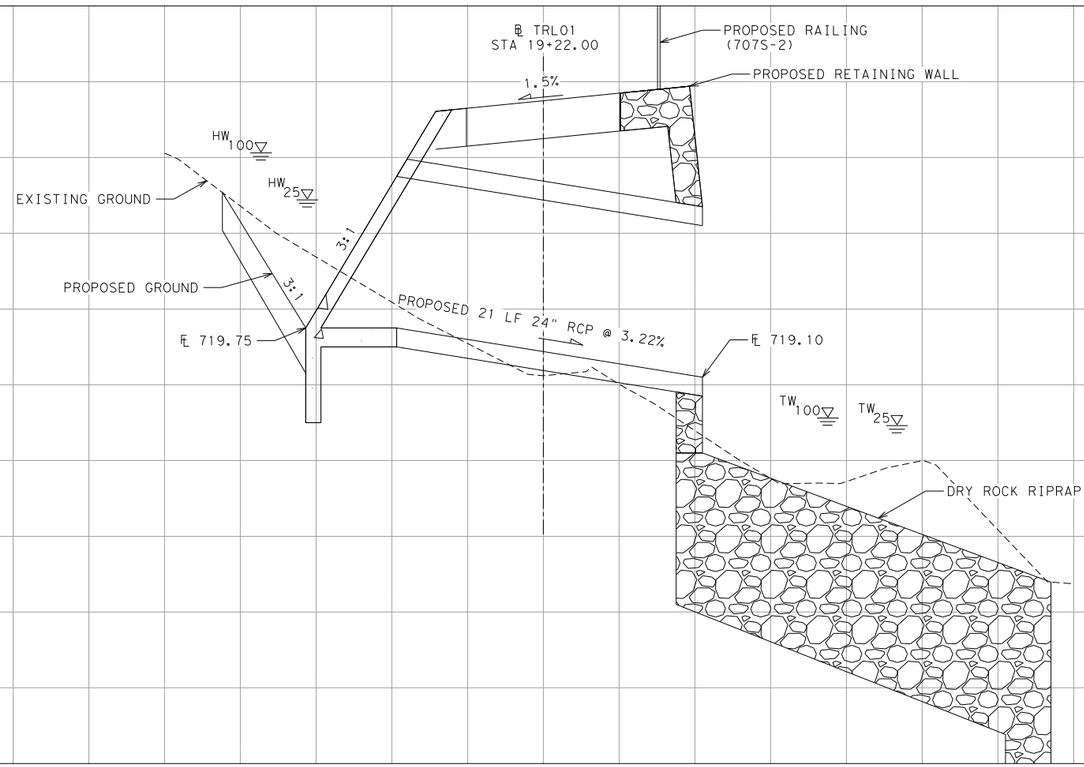
- ALIGNMENT ℄
- PROPOSED EOP
- 780 EXISTING 1-FT CONTOUR
- 780 PROPOSED 1-FT CONTOUR
- PROPOSED DRAINAGE DITCH

NOTES:

1. CONSTRUCT END TREATMENT PER CITY OF AUSTIN STANDARD DETAIL 508S-19, ROCK RIPRAP SHALL BE PLACED DOWNSTREAM ONLY.

N

0 10 20



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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT LAYOUT
CULVERT C

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 10' H 1" = 2' V
DATE	3/23/2017
SHEET NUMBER	21 OF 53

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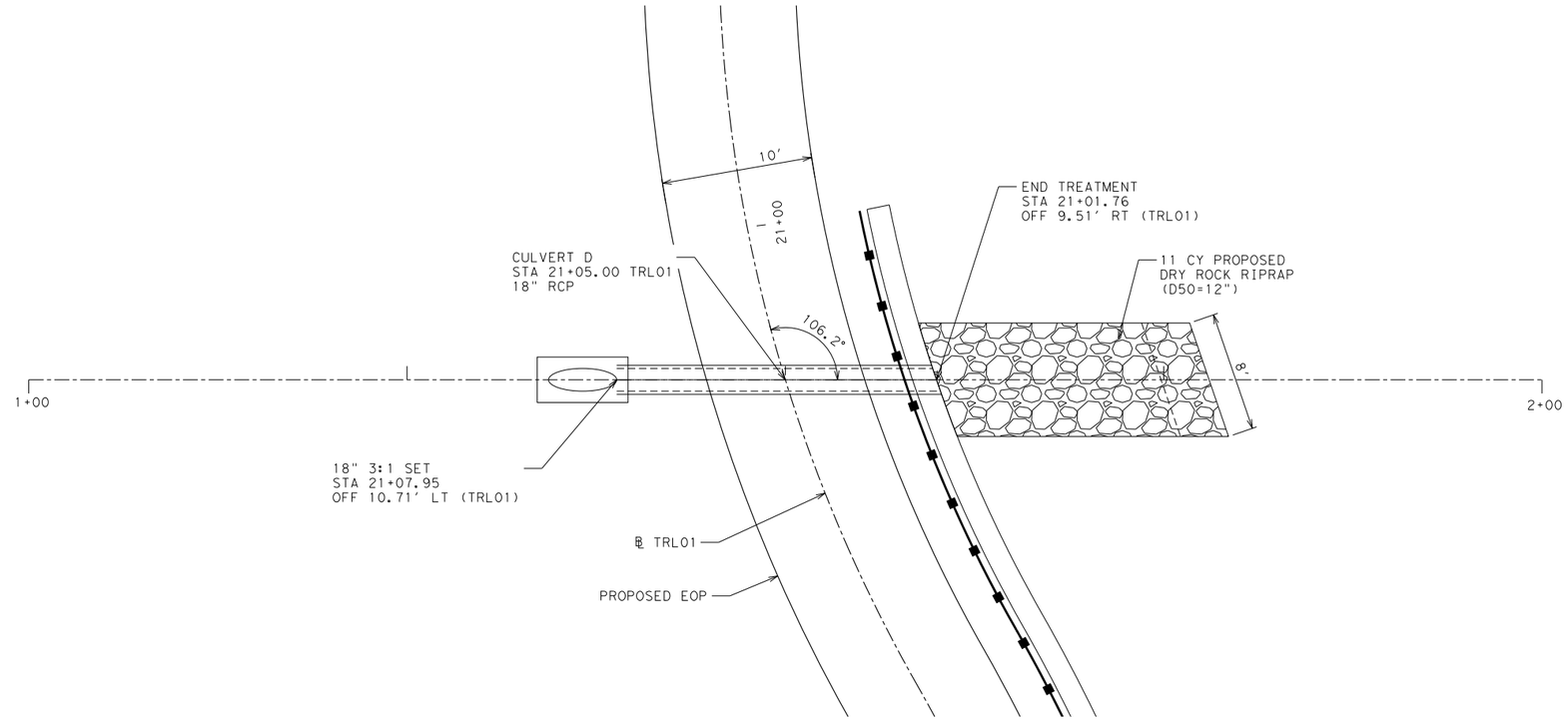


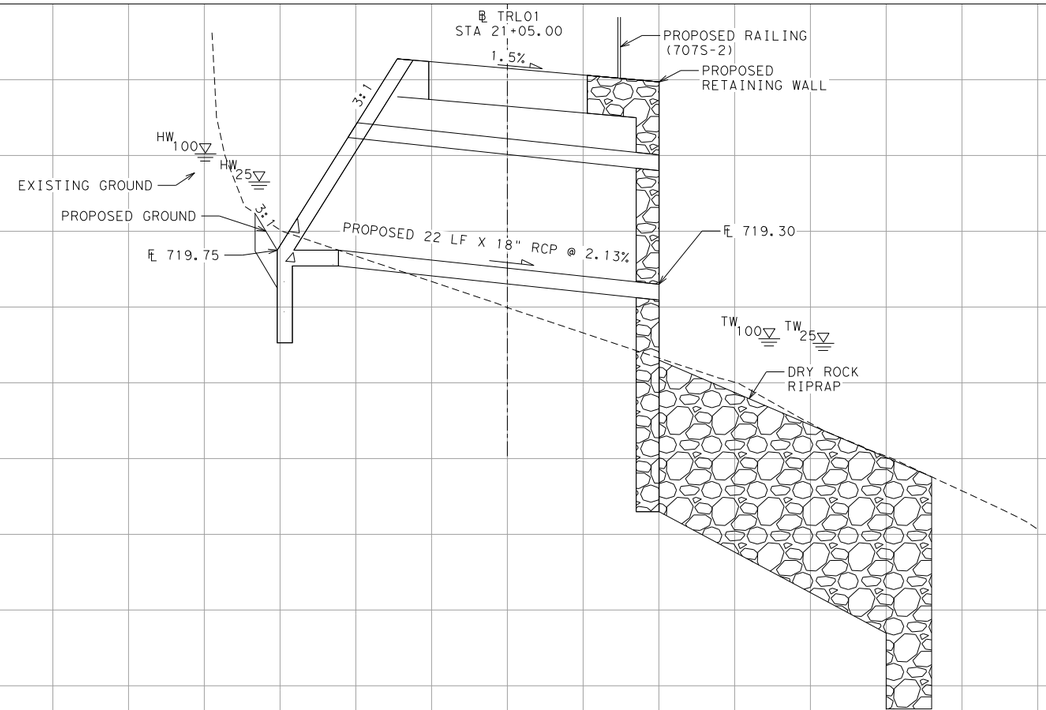
LEGEND

- ALIGNMENT ℄
- PROPOSED EOP
- 780 EXISTING 1-FT CONTOUR
- 780 PROPOSED 1-FT CONTOUR
- PROPOSED DRAINAGE DITCH

NOTES:

1. CONSTRUCT END TREATMENTS PER CITY OF AUSTIN STANDARD DETAIL 508S-19, ROCK RIPRAP SHALL BE PLACED DOWNSTREAM ONLY.

0 10 20



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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT LAYOUT
CULVERT D

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 10' H 1" = 2' V
DATE	3/23/2017
SHEET NUMBER	22 OF 53

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Roadway Data

Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.0	777.00
1	38.5	776.60
2	71.6	776.63
3	105.7	777.12
4	144.5	776.80

Roadway Surface: Paved
Roadway Top Width: 10.00 ft

Tailwater Channel Data

Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 7.20 ft
Side Slope (H:V): 3.00 (_:1)
Channel Slope: 0.0450
Channel Manning's n: 0.0450
Channel Invert Elevation: 773.90 ft

Site Data

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 774.20 ft
Outlet Station: 21.75 ft
Outlet Elevation: 773.90 ft
Number of Barrels: 2

Culvert Data

Barrel Shape: Circular
Barrel Diameter: 1.50 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope
Inlet Depression: NONE

SUMMARY OF FLOWS AT CROSSING

	Headwater Elevation (ft)	Total Discharge (cfs)	Existing Discharge (cfs)	Roadway Discharge (cfs)
	775.26	6.9	6.9	0.0
	775.43	8.9	8.9	0.0
	775.60	10.9	10.9	0.0
	775.80	13.0	13.0	0.0
	776.03	15.0	15.0	0.0
	776.29	17.0	17.0	0.0
*	776.54	18.7	18.7	0.0
	776.60	19.1	19.1	0.0
	776.67	21.0	19.5	1.4
	776.71	23.1	19.7	3.3
**	776.74	25.1	19.9	5.1
	776.76	27.1	20.1	7.0

DOWNSTREAM CHANNEL RATING CURVE

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
	6.9	774.20	0.30	2.88	0.83	0.98
	8.9	774.24	0.34	3.15	0.97	1.01
	10.9	774.29	0.39	3.38	1.09	1.02
	13.0	774.33	0.43	3.58	1.20	1.04
	15.0	774.36	0.46	3.76	1.30	1.05
	17.0	774.40	0.50	3.92	1.40	1.06
*	18.7	774.43	0.53	4.05	1.48	1.07
	21.0	774.46	0.56	4.20	1.58	1.08
	23.1	774.49	0.59	4.33	1.66	1.09
	25.1	774.52	0.62	4.45	1.75	1.09
** | 27.1 | 774.55 | 0.65 | 4.56 | 1.82 | 1.10 |

CULVERT SUMMARY TABLE

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
	6.9	6.9	775.26	1.06	0.53	1-S2n	0.52	0.71	0.55	0.30	5.87	2.88
	8.9	8.9	775.43	1.23	0.71	1-S2n	0.59	0.81	0.64	0.34	6.23	3.15
	10.9	10.9	775.60	1.40	0.90	1-S2n	0.67	0.90	0.72	0.39	6.56	3.38
	13.0	13.0	775.80	1.60	1.11	5-S2n	0.74	0.98	0.79	0.43	6.84	3.58
	15.0	15.0	776.03	1.83	1.33	5-S2n	0.80	1.06	0.87	0.46	7.09	3.76
	17.0	17.0	776.29	2.10	1.56	5-S2n	0.87	1.13	0.94	0.50	7.34	3.92
*	18.7	18.7	776.54	2.34	1.93	5-S2n	0.92	1.18	0.99	0.53	7.53	4.05
	21.0	19.5	776.67	2.47	2.02	5-S2n	0.95	1.20	1.02	0.56	7.64	4.20
	23.1	19.7	776.71	2.51	2.04	5-S2n	0.96	1.21	1.03	0.59	7.67	4.33
	25.1	19.9	776.74	2.54	2.06	5-S2n	0.96	1.22	1.03	0.62	7.68	4.45
** | 27.1 | 20.1 | 776.76 | 2.56 | 2.08 | 5-S2n | 0.97 | 1.22 | 1.04 | 0.65 | 7.70 | 4.56 |

* 25-YR DESIGN FLOW
** 100-YR DESIGN FLOW

REV. NO.	BY	DATE	REVISION DESCRIPTION

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT HYDRAULIC CALCULATIONS
CULVERT A

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	23 OF 53

X:\Projects\0425_Walnut_Creek_Bike_Trl_Segment_4\DGN\Sheets\0425_CULV_A_HYD.dgn modified by dcryan on 3/23/2017 - 9:34:14 AM

Roadway Data

Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.0	730.00
1	7.6	729.30
2	13.8	730.10
3	14.4	731.19
4	63.59	733.72

Roadway Surface: Paved
Roadway Top Width: 10.00 ft

Tailwater Channel Data

Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 6.00 ft
Side Slope (H:V): 3.00 (_:1)
Channel Slope: 0.0500
Channel Manning's n: 0.0450
Channel Invert Elevation: 728.50 ft

Site Data

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 728.60 ft
Outlet Station: 22.00 ft
Outlet Elevation: 728.50 ft
Number of Barrels: 1

Culvert Data

Barrel Shape: Concrete Box
Barrel Span: 4.00 ft
Barrel Rise: 2.00 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: 1:1 Bevel Headwall
Inlet Depression: NONE

SUMMARY OF FLOWS AT CROSSING

	Headwater Elevation (ft)	Total Discharge (cfs)	Proposed Discharge (cfs)	Roadway Discharge (cfs)
	728.79	0.9	0.9	0.0
	728.83	1.2	1.2	0.0
	728.86	1.5	1.5	0.0
	728.90	1.8	1.8	0.0
	728.93	2.1	2.1	0.0
	728.96	2.4	2.4	0.0
*	728.98	2.6	2.6	0.0
	729.02	2.9	2.9	0.0
	729.04	3.2	3.2	0.0
	729.07	3.5	3.5	0.0
**	729.09	3.8	3.8	0.0
	729.30	6.4	6.4	0.0

DOWNSTREAM CHANNEL RATING CURVE

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
	0.9	728.60	0.10	1.50	0.30	0.87
	1.2	728.61	0.11	1.66	0.35	0.89
	1.5	728.63	0.13	1.80	0.40	0.91
	1.8	728.64	0.14	1.93	0.45	0.93
	2.1	728.66	0.16	2.04	0.49	0.94
	2.4	728.67	0.17	2.14	0.53	0.95
*	2.6	728.68	0.18	2.22	0.56	0.96
	2.9	728.69	0.19	2.31	0.60	0.97
	3.2	728.70	0.20	2.39	0.63	0.98
	3.5	728.71	0.21	2.47	0.67	0.98
**	3.8	728.72	0.22	2.54	0.70	0.99

CULVERT SUMMARY TABLE

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
	0.9	0.9	728.79	0.19	0.02	1-S2n	0.09	0.12	0.09	0.10	2.53	1.50
	1.2	1.2	728.83	0.23	0.04	1-S2n	0.12	0.14	0.12	0.11	2.53	1.66
	1.5	1.5	728.86	0.26	0.06	1-S2n	0.15	0.16	0.15	0.13	2.53	1.80
	1.8	1.8	728.90	0.30	0.08	1-S2n	0.18	0.18	0.18	0.14	2.53	1.93
	2.1	2.1	728.93	0.33	0.10	1-S2n	0.19	0.20	0.19	0.16	2.68	2.04
	2.4	2.4	728.96	0.36	0.12	1-S2n	0.21	0.22	0.21	0.17	2.84	2.14
*	2.6	2.6	728.98	0.38	0.14	1-S2n	0.22	0.24	0.22	0.18	2.97	2.22
	2.9	2.9	729.02	0.42	0.16	1-S2n	0.24	0.26	0.24	0.19	3.11	2.32
	3.2	3.2	729.04	0.44	0.18	1-S2n	0.25	0.27	0.25	0.20	3.23	2.39
	3.5	3.5	729.07	0.47	0.19	1-S2n	0.26	0.29	0.26	0.21	3.33	2.47
**	3.8	3.8	729.09	0.49	0.21	1-S2n	0.28	0.30	0.28	0.22	3.42	2.54

* 25-YR DESIGN FLOW
** 100-YR DESIGN FLOW

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT HYDRAULIC CALCULATIONS
CULVERT B

K FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	24 OF 53

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Roadway Data

Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	5.0	723.61
1	10.4	722.20
2	57.9	723.53
3	91.4	724.80

Roadway Surface: Paved
Roadway Top Width: 10.00 ft

Tailwater Channel Data

Tailwater Channel Option: Trapezoidal Channel
Bottom Wicth: 4.50 ft
Side Slope (H:V): 3.00 (_:1)
Channel Slope: 0.1000
Channel Manning's n: 0.0450
Channel Invert Elevation: 718.10 ft

Site Data

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 719.75 ft
Outlet Station: 20.18 ft
Outlet Elevation: 719.10 ft
Number of Barrels: 1

Culvert Data

Barrel Shape: Circular
Barrel Diameter: 2.00 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope
Inlet Depression: NONE

SUMMARY OF FLOWS AT CROSSING

	Headwater Elevation (ft)	Total Discharge (cfs)	Proposed Discharge (cfs)	Roadway Discharge (cfs)
	720.66	3.1	3.1	0.0
	720.83	4.2	4.2	0.0
	720.98	5.3	5.3	0.0
	721.11	6.5	6.5	0.0
	721.24	7.6	7.6	0.0
	721.36	8.7	8.7	0.0
*	721.44	9.4	9.4	0.0
	721.61	10.9	10.9	0.0
	721.75	12.1	12.1	0.0
	721.90	13.2	13.2	0.0
**	722.05	14.3	14.3	0.0
	722.20	15.3	15.3	0.0

DOWNSTREAM CHANNEL RATING CURVE

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
	3.1	718.29	0.19	3.20	1.19	1.36
	4.2	718.33	0.23	3.56	1.43	1.40
	5.3	718.36	0.26	3.86	1.63	1.43
	6.5	718.39	0.29	4.12	1.82	1.45
	7.6	718.42	0.32	4.34	2.00	1.47
	8.7	718.45	0.35	4.54	2.16	1.48
*	9.4	718.46	0.36	4.66	2.26	1.49
	10.9	718.49	0.39	4.89	2.46	1.51
	12.1	718.52	0.42	5.04	2.60	1.52
	13.2	718.54	0.44	5.19	2.73	1.53
**	14.3	718.56	0.46	5.32	2.86	1.54

CULVERT SUMMARY TABLE

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
	3.1	3.1	720.66	0.91	0.0*	1-S2n	0.36	0.61	0.39	0.19	7.19	3.20
	4.2	4.2	720.83	1.08	0.12	1-S2n	0.41	0.72	0.47	0.23	7.46	3.56
	5.3	5.3	720.98	1.23	0.25	1-S2n	0.46	0.81	0.54	0.26	7.88	3.86
	6.5	6.5	721.11	1.36	0.38	1-S2n	0.51	0.90	0.60	0.29	8.14	4.12
	7.6	7.6	721.24	1.49	0.50	1-S2n	0.56	0.98	0.66	0.32	8.40	4.34
	8.7	8.7	721.36	1.61	0.63	1-S2n	0.60	1.05	0.71	0.35	8.65	4.54
*	9.4	9.4	721.44	1.69	0.71	1-S2n	0.62	1.09	0.75	0.36	8.80	4.66
	10.9	10.9	721.61	1.86	0.89	1-S2n	0.68	1.18	0.82	0.39	9.05	4.89
	12.1	12.1	721.75	2.00	1.03	1-S2n	0.71	1.24	0.87	0.42	9.24	5.04
	13.2	13.2	721.90	2.15	1.18	5-S2n	0.75	1.30	0.91	0.44	9.42	5.19
**	14.3	14.3	722.05	2.30	1.32	5-S2n	0.78	1.36	0.96	0.46	9.59	5.32

* 25-YR DESIGN FLOW
** 100-YR DESIGN FLOW

REV. NO.	BY	DATE	REVISION DESCRIPTION

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT HYDRAULIC CALCULATIONS
CULVERT C

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	25 OF 53

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Roadway Data

Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.0	722.29
1	19.0	722.37
2	32.3	722.34
3	106.3	721.72
4	143.7	721.88

Roadway Surface: Paved
Roadway Top Width: 10.00 ft

Tailwater Channel Data

Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 4.50 ft
Side Slope (H:V): 3.00 (_:1)
Channel Slope: 0.1000
Channel Manning's n: 0.0450
Channel Invert Elevation: 718.30 ft

Site Data

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 719.75 ft
Outlet Station: 21.15 ft
Outlet Elevation: 719.30 ft
Number of Barrels: 1

Culvert Data

Barrel Shape: Circular
Barrel Diameter: 1.50 ft
Barrel Material: Concrete
Embedment: 0.00 in
Barrel Manning's n: 0.0120
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope
Inlet Depression: NONE

SUMMARY OF FLOWS AT CROSSING

	Headwater Elevation (ft)	Total Discharge (cfs)	Proposed Discharge (cfs)	Roadway Discharge (cfs)
	720.40	1.4	1.4	0.0
	720.51	1.9	1.9	0.0
	720.61	2.3	2.3	0.0
	720.70	2.8	2.8	0.0
	720.78	3.3	3.3	0.0
	720.86	3.8	3.8	0.0
*	720.91	4.0	4.0	0.0
	721.02	4.7	4.7	0.0
	721.11	5.2	5.2	0.0
	721.19	5.6	5.6	0.0
**	721.28	6.1	6.1	0.0
	721.72	8.0	8.0	0.0

DOWNSTREAM CHANNEL RATING CURVE

	Flow (cfs)	Water Surface Elevation (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
	1.4	718.42	0.12	2.41	0.75	1.27
	1.9	718.44	0.14	2.67	0.89	1.30
	2.3	718.46	0.16	2.90	1.01	1.33
	2.8	718.48	0.18	3.09	1.13	1.35
	3.3	718.50	0.20	3.26	1.23	1.37
	3.8	718.51	0.21	3.42	1.33	1.38
*	4.0	718.52	0.22	3.50	1.38	1.39
	4.7	718.54	0.24	3.69	1.52	1.41
	5.2	718.56	0.26	3.82	1.60	1.42
	5.6	718.57	0.27	3.93	1.68	1.43
**	6.1	718.58	0.28	4.04	1.76	1.44

CULVERT SUMMARY TABLE

	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
	1.4	1.4	720.40	0.65	0.01	1-S2n	0.29	0.44	0.31	0.12	5.52	2.41
	1.9	1.9	720.51	0.76	0.10	1-S2n	0.33	0.51	0.36	0.14	5.73	2.67
	2.3	2.3	720.61	0.86	0.18	1-S2n	0.38	0.57	0.41	0.16	6.08	2.90
	2.8	2.8	720.70	0.95	0.27	1-S2n	0.42	0.64	0.45	0.18	6.39	3.09
	3.3	3.3	720.78	1.03	0.35	1-S2n	0.45	0.69	0.49	0.20	6.52	3.26
	3.8	3.8	720.86	1.12	0.43	1-S2n	0.48	0.74	0.53	0.21	6.74	3.42
*	4.0	4.0	720.91	1.16	0.48	1-S2n	0.50	0.77	0.55	0.22	6.84	3.50
	4.7	4.7	721.02	1.27	0.60	1-S2n	0.55	0.83	0.60	0.24	7.07	3.69
	5.2	5.2	721.11	1.36	0.69	1-S2n	0.57	0.87	0.64	0.26	7.23	3.82
	5.6	5.6	721.19	1.44	0.78	1-S2n	0.60	0.91	0.67	0.27	7.37	3.93
**	6.1	6.1	721.28	1.53	0.87	5-S2n	0.63	0.95	0.70	0.28	7.51	4.04

* 25-YR DESIGN FLOW
** 100-YR DESIGN FLOW

REV. NO.	BY	DATE	REVISION DESCRIPTION

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
CULVERT HYDRAULIC CALCULATIONS
CULVERT D

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	26 OF 53

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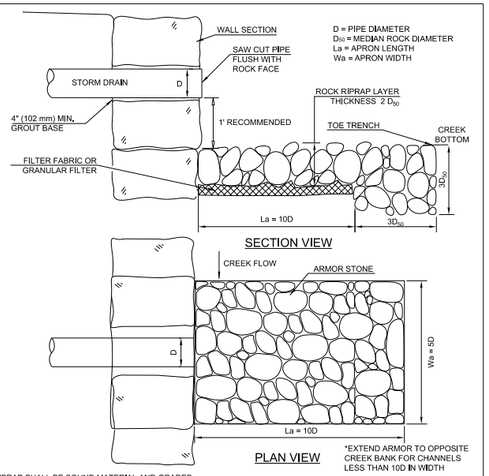
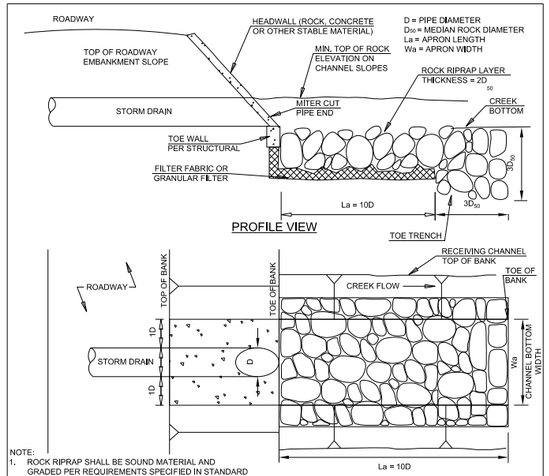


NOTE:
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 591S.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE ECM 1.4.6.D PERMANENT STRUCTURAL PRACTICES, STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP D_{50} AND FILTER TYPE SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 620S.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 403, AGGREGATE SIZE CLASSIFICATION/GRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION WALL PENETRATION	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-19



NOTE:
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 591S.
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CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
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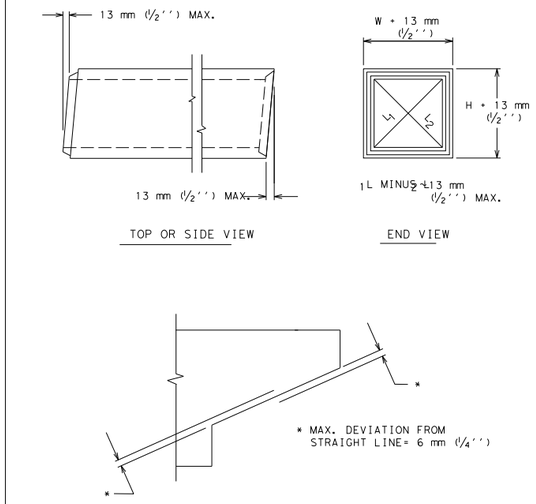

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	FABRICATION TOLERANCES FOR PRECAST BOX CULVERT	
RECORD COPY SIGNED BY LEON BARBA 9/17/01 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 559S-1

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TYPICAL DRAINAGE DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	27 OF 53

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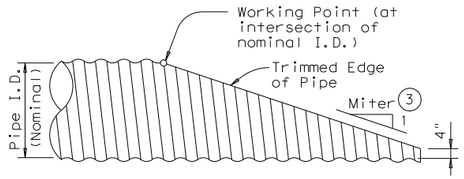
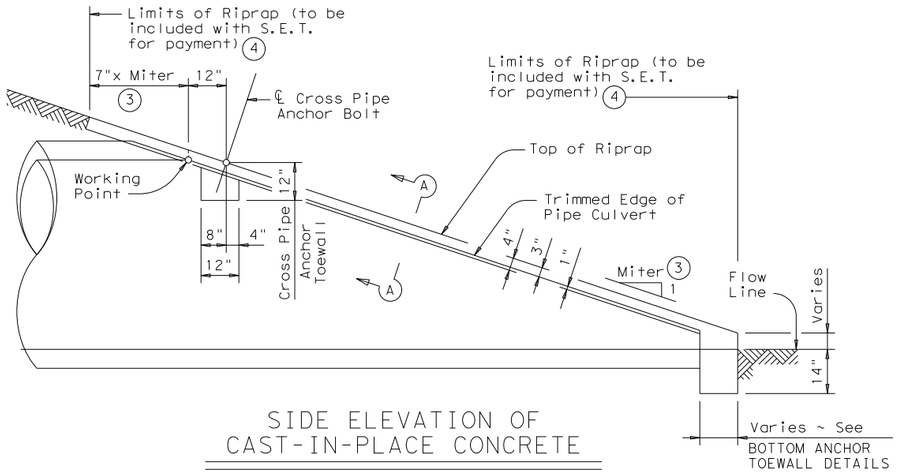


NOTE: All Pipe Runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

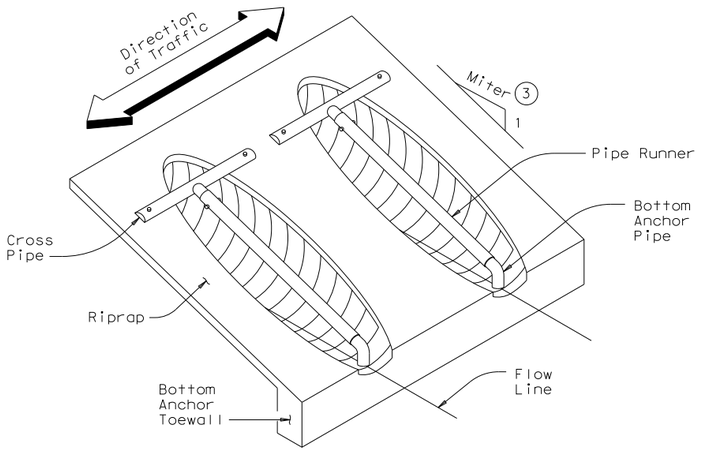
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.
Details of Concrete Pipe Culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert.
Details of Corrugated Metal Pipe Culvert are similar.
Pipe Runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS & 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" to 60"	Always required	Always required

STANDARD PIPE SIZES & 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) Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES 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 Pipe Culvert End

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

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.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.
				28

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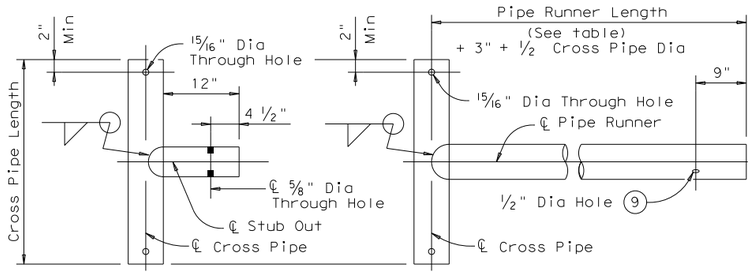
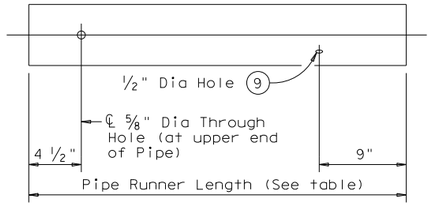


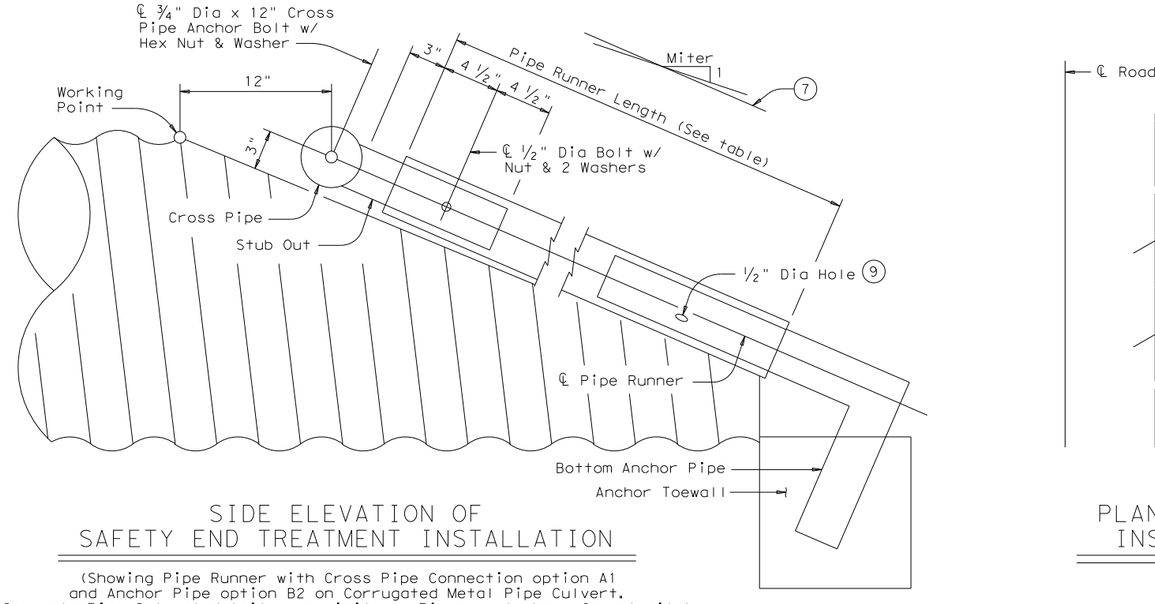
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



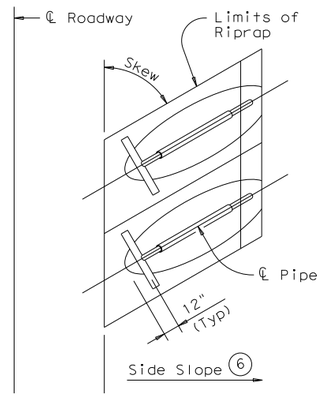
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

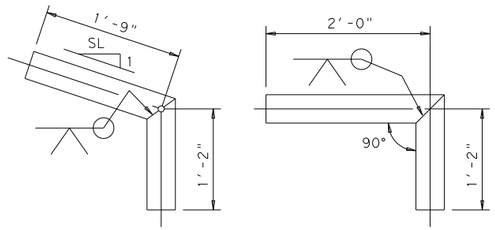


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and Anchor Pipe option B2 on Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)

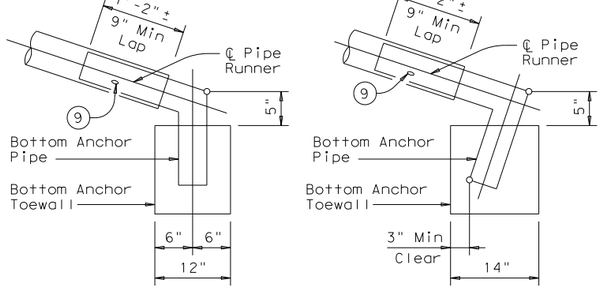


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

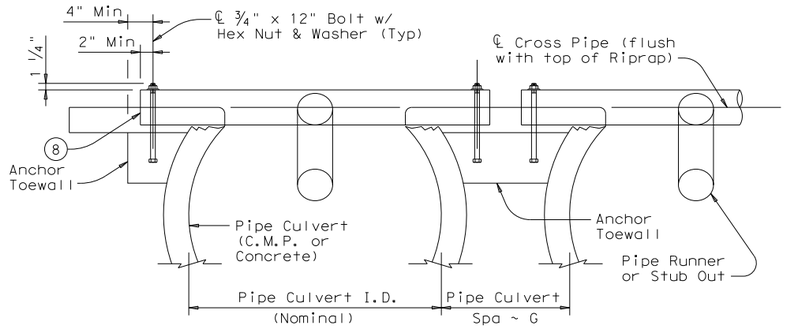
BOTTOM ANCHOR PIPE DETAILS (10)



OPTION B1 OPTION B2

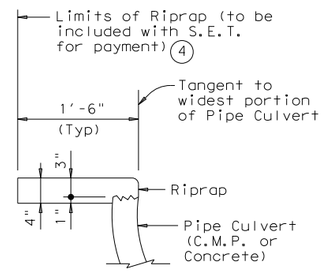
BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL

SECTION A-A



SHOWING TYPICAL PIPE CULVERT & RIPRAP

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.

(8) Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:

Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

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.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.
				29

GENERAL NOTES

THESE GENERAL NOTES SHALL APPLY UNLESS OTHERWISE SPECIFICALLY NOTED ON PLANS AND DETAILS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, NEW AND/OR EXISTING, AND SHALL COORDINATE ALL STRUCTURAL PLANS AND DETAILS WITH CIVIL DRAWINGS BEFORE STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. DESIGN, CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE, CITY OF AUSTIN STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL CHECK AND VERIFY ALL SHOP DRAWINGS BEFORE SUBMITTING TO THE CONSULTANTS.

DESIGN CRITERIA:

LIVE LOADS:

PEDESTRIAN LIVE LOAD: . . . . 90 PSF

VEHICLE LIVE LOAD: . . . . H–5 TRUCK, PER AASHTO

LATERAL EARTH PRESSURES:

ALLOWABLE SUBGRADE BEARING: . . . . . . 2,500 PSF

COEFFICENT OF SLIDDING RESISTANCE: . . 0.4

FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT PREPARED BY TERRACON CONSULTANTS, INC., DATED OCTOBER 2, 2012, REPORT NO. 96125057, REVISION 1 & ADDENDUM 2.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS, ITEM 403S CONCRETE FOR STRUCTURES.
2. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE A.C.I. "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", A.C.I. #315, LATEST EDITION.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:

   TRAIL SLABS, TRAIL SLAB UPTURNS & DOWNTURNS RETAINING WALLS . . . . CLASS S, 4000 PSI
4. CONTROLLED LOW STRENGTH MATERIAL SHALL CONFORM TO CITY OF AUSTIN STANDARD SPECIFICATION ITEM 420S.
5. REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A–615, GRADE 60.
6. STANDARD PROTECTIVE COVER OF REINFORCING BARS UNLESS OTHERWISE NOTED SHALL BE:

   WHERE CAST AGAINST DIRT OR FILL . . . . 3 IN.

   EXPOSED TO EARTH OR WEATHER
   #6 OR LARGER BARS . . . . .2 IN.
   #3, #4, #5 BARS .1 1/2 IN.
7. ALL ACCESSORIES SHALL BE IN ACCORDANCE WITH THE A.C.I. "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", A.C.I. #315, LATEST EDITION.
8. BARS SCHEDULED AND DETAILED "CONT" SHALL BE LAPPED 48 BAR DIAMETERS UNLESS OTHERWISE NOTED.
9. SHOP DRAWINGS SHALL BE PREPARED FOR ALL REINFORCING STEEL AND SUBMITTED FOR REVIEW BY ENGINEER. ENGINEERING DRAWINGS SHALL NOT BE REPRODUCED AND USED AS SHOP DRAWINGS.
10. WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED, UNLESS APPROVED BY ENGINEER.
11. DURING PLACEMENT OF CONCRETE, USE TREMIE OR OTHER MEANS TO LIMIT FREE–FALL OF CONCRETE TO 5'–0".

FOUNDATION NOTES FOR RETAINING WALLS:

THE FOLLOWING NOTES ARE EXCERPTS FROM SECTION "6.10 EARTWORK" ON PAGE 35 OF THE GEOTECHNICAL REPORT:

1. AFTER EXCAVATING THE EXISTING SOIL TO THE PROPER GRADE, THE EXPOSED SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH TxDOT TEST METHOD TEX–113–E. SOIL MOISTURE SHALL BE WITHIN 3% OF OPTIMUM.
2. ALL FILL SHOULD BE PLACED ON PREPARED SURFACES IN LIFTS NOT TO EXCEED EIGHT INCHES LOOSE MEASURE, WITH COMPACTED THICKNESS NOT TO EXCEED SIX INCHES. ALL FILL SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE TEX–113–E MAXIMUM DRY DENSITY AT A MOISTURE CONTENT RANGING BETWEEN –3 AND +3 PERCENT OF OPTIMUM MOISTURE CONTENT. IMPORTED FILL TO BE USED FOR GRADE ADJUSTMENTS IN PAVEMENT, LANDSCAPE, OR GENERAL AREAS, SHOULD MEET THE REQUIREMENTS OF A CLASS B BORROW MATERIAL AS OUTLINED IN ITEM 130 OF THE COA STANDARD SPECIFICATIONS.
3. ON–SITE SOILS THAT ARE FREE OF ORGANICS, DEBRIS, AND LARGE ROCKS MAY BE USED FOR GRADE ADJUSMENTS IN PAVEMENT, LANDSCAPE, OR GENERAL AREAS. THE ON–SITE SOILS SHOULD BE COMPACTED AND MOISTURE CONDITIONED TO THE DENSITY AND MOISTURE LEVELS STATED ABOVE FOR SELECT FILL SOILS UNLESS NOTED OTHERWISE. IN GENERAL, THE MORE CLAYEY SOILS (TYPICALLY DARK BROWN TO BROWN TO GRAY IN COLOR) SHOULD BE MOISTURE CONDITIONED TO BETWEEN OPTIMUM AND +4 PERCENT OF OPTIMUM AND COMPACTED TO THE DENSITY STATED ABOVE FOR SELECT FILL.
4. DUE TO ALIGNMENT OF TRAIL, GEOTECHNICAL BORINGS WERE NOT LOCATED IN THE VICINITY OF THE TRAIL. THE MOST CONSERVATIVE SOIL PROPERTIES WERE USED IN THE DESIGN OF THE RETAINING STRUCTURES.

THE FOLLOWING IS SUBGRADE PREPARATION CONFORMING TO THE CITY OF AUSTIN STREET & BRIDGE DIVSION GUIDELINE FOR LIME STABILIZED SUBGRADE (LSS) OR CEMENT STABILIZED SUBGRADE (CSS):

1. LIME OR CEMENT STABILIZED SUBGRADE FOR EXPANSIVE SOIL. SELECTION OF STABILIZATION TYPE WILL BE BASED ON IN–SITU TESTING DURING CONSTRUCTION BASED ON GEOTECHNICAL INFORMATION AND/OR SOIL TYPE.
2. APPROPRIATE THICKNESS OF LSS OR CSS WILL BE BASED ON GEOTECHNICAL INFORMATION AND/OR SOIL TYPE. AT A MINIMUM, USE 6"OF STABILIZED SUBGRADE.
3. WIDEN STABILIZED SUBGRADE A MINIMUM OF 2–FEET PAST THE EDGE OF PROPOSED TRAIL PAVEMENT.

ADHESIVE ANCHORS:

1. THREADED RODS SHALL BE GRADE A36, SIZED AS SHOWN IN DETAILS.
2. ADHESIVE SHALL BE HILTI HIT–HY 200 SAFE SET OR APPROVED EQUAL.
3. ALL ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

HIGH–STRENGTH GROUT:

1. GROUT SHALL BE NON–SHRINK SIKAGROUT 212 OR APPROVED EQUAL. MIXING AND PLACEMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

SPECIAL INSPECTIONS:

1. INSPECTION OF FABRICATORS: WHERE FABRICATION OF STRUCTURAL LOAD–BEARING MEMBERS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE REQUIRED BY THE 2012 IBC AND THE BUILDING OFFICIAL.
2. CONCRETE CONSTRUCTION: THE SPECIAL INSPECTIONS AND VERIFICATIONS FOR CONCRETE CONSTRUCTION SHALL BE AS REQUIRED BY THE 2012 IBC AND THE BUILDING OFFICIAL.
3. SOILS: SPECIAL INSPECTIONS FOR FILL PLACEMENT SHALL BE AS REQUIRED BY THE 2012 IBC AND THE BUILDING OFFICIAL. THE APPROVED SOILS REPORT, REQUIRED BY SECTION 1802.2, AND THE DOCUMENTS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHANGE SHALL BE USED TO DETERMINE COMPLIANCE. DURING FILL PLACEMENT, THE SPECIAL INSPECTOR SHALL DETERMINE THAT PROPER MATERIALS AND PROCEDURES ARE USED IN ACCORDANCE WITH THE PROVISIONS AND THE APPROVED SOILS REPORT, AS SPECIFIED IN SECTION 1803.5.
4. SPECIAL CASES: SPECIAL INSPECTIONS SHALL BE REQUIRED FOR PROPOSED WORK THAT IS, IN THE OPINION OF THE BUILDING OFFICIAL, UNUSUAL IN ITS NATURE, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING EXAMPLES:
   - 4.1. CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS PRESCRIBED BY THE IBC.
   - 4.2. UNUSUAL DESIGN APPLICATIONS OF MATERIALS DESCRIBED IN THE IBC.
   - 4.3. MATERIALS AND SYSTEMS REQUIRED TO BE INSTALLED IN ACCORDANCE WITH ADDITIONAL MANUFACTURER'S INSTRUCTIONS THAT PRESCRIBE REQUIREMENTS NOT CONTAINED IN THIS CODE OR IN STANDARDS REFERENCED BY THE IBC.
5. ALL INSPECTIONS SHOULD BE CONDUCTED PER REQUIREMENTS OF IBC CHAPTER 17, STRUCTURAL TESTS AND SPECIAL INSPECTIONS, INCLUDING THE FOLLOWING ITEMS:
   - 5.1. EARTHWORK – 1705.6
     - 5.1.1. DURING COMPACTION.
   - 5.2. REINFORCING STEEL – 1706.2.2
     - 5.2.1. DURING THE PLACEMENT OF REINFORCING STEEL.
   - 5.3. CONCRETE – 1705.3
     - 5.3.1. DURING THE TAKING OF SPECIMENS.
     - 5.3.2. DURING THE PLACEMENT OF REINFORCED CONCRETE.

ENCOTECH
ENGINEERING CONSULTANTS
TBPE Firm 1141
8500 Bluffstone Cove, Suite B-103
Austin, Texas 78759 | 512.338.1101
Project No.: 14114.AUS.AS1

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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5

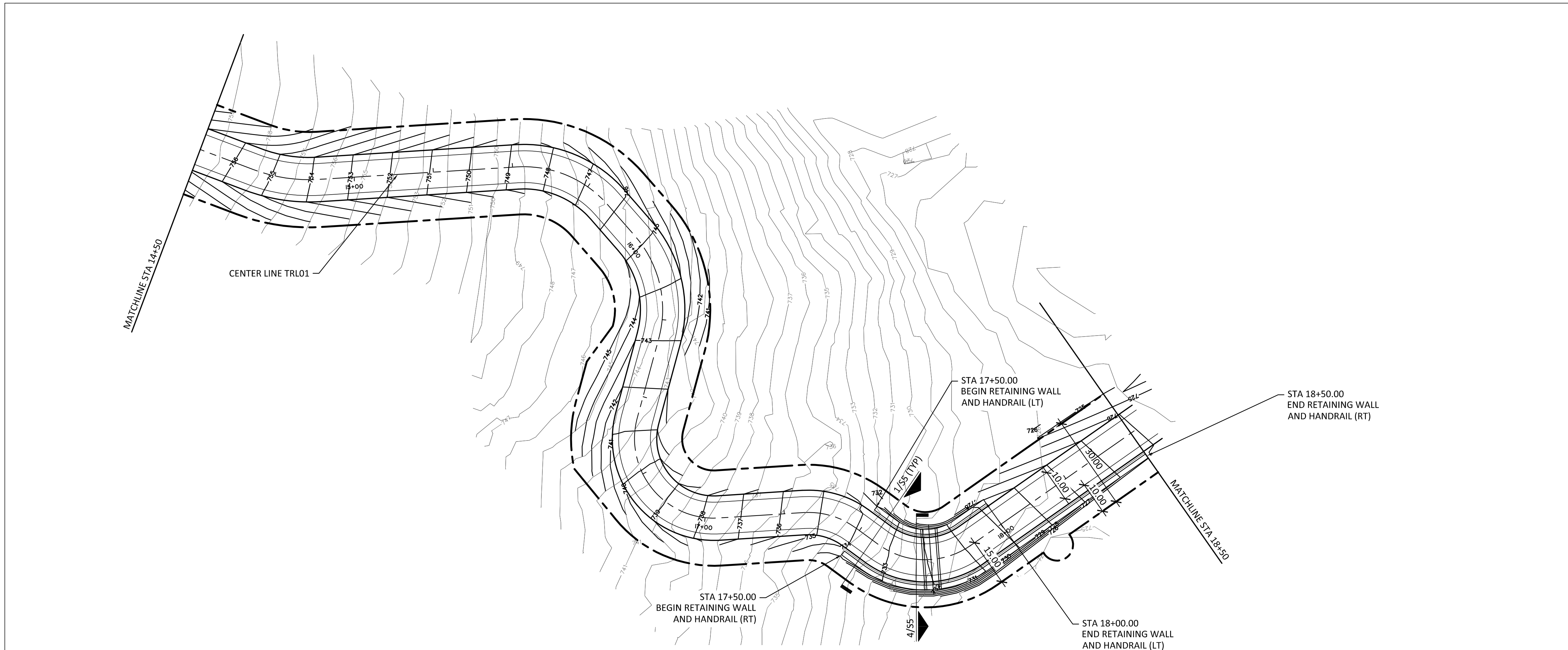
S1 - STRUCTURAL NOTES

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # ______________

SCALE	1" = 40'
DATE	03/07/2017
SHEET NUMBER	30 OF 53



LEGEND

- ROW
- PL — PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION
- 780 — EXISTING GROUND CONTOUR
- 780 — PROPOSED GROUND CONTOUR
- EXIST TREE TO REMAIN
- EXIST TREE TO BE REMOVED

NOTES:

1. REFERENCE CIVIL PLAN AND PROFILE SHEETS FOR TREES, HORIZONTAL CURVE DATA, PROPERTY INFORMATION AND "WATERS OF THE U.S. LOCATION.

ENCOTECH
ENGINEERING CONSULTANTS
TBPE Firm 1141
8500 Bluffstone Cove, Suite B-103
Austin, Texas 78759 | 512.338.1101
Project No.: 14114.AUS.AS1

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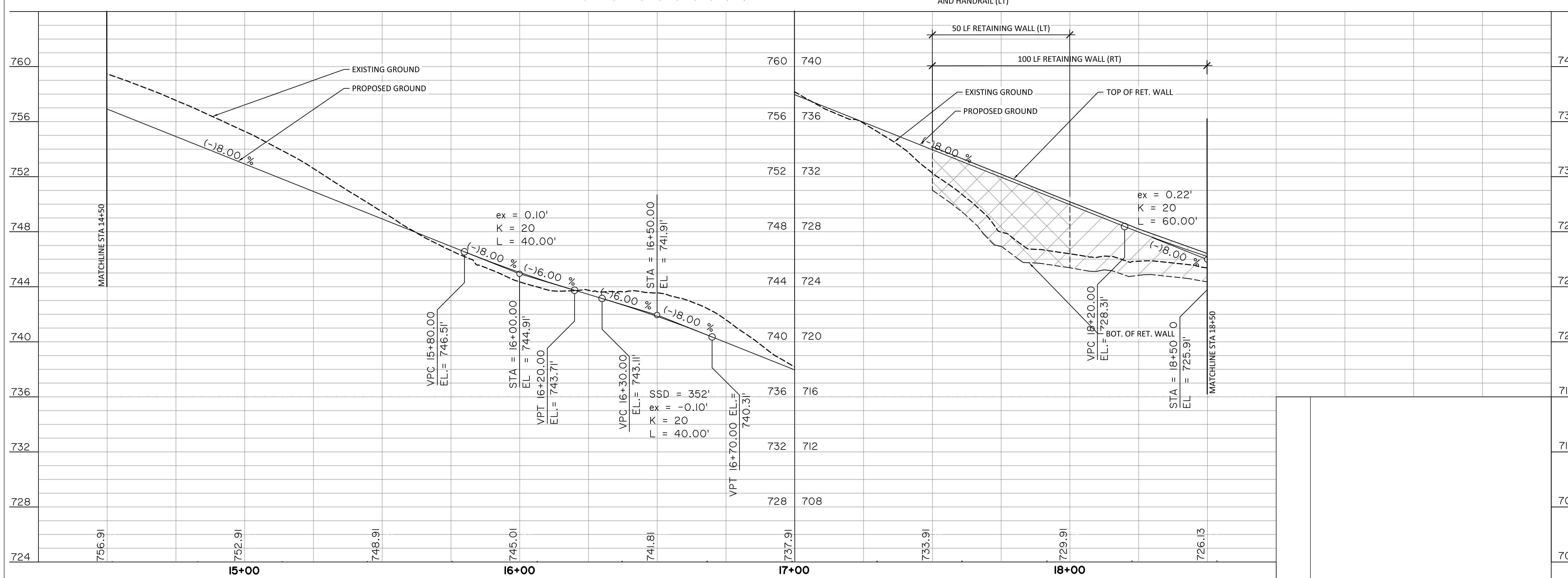

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN

NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5

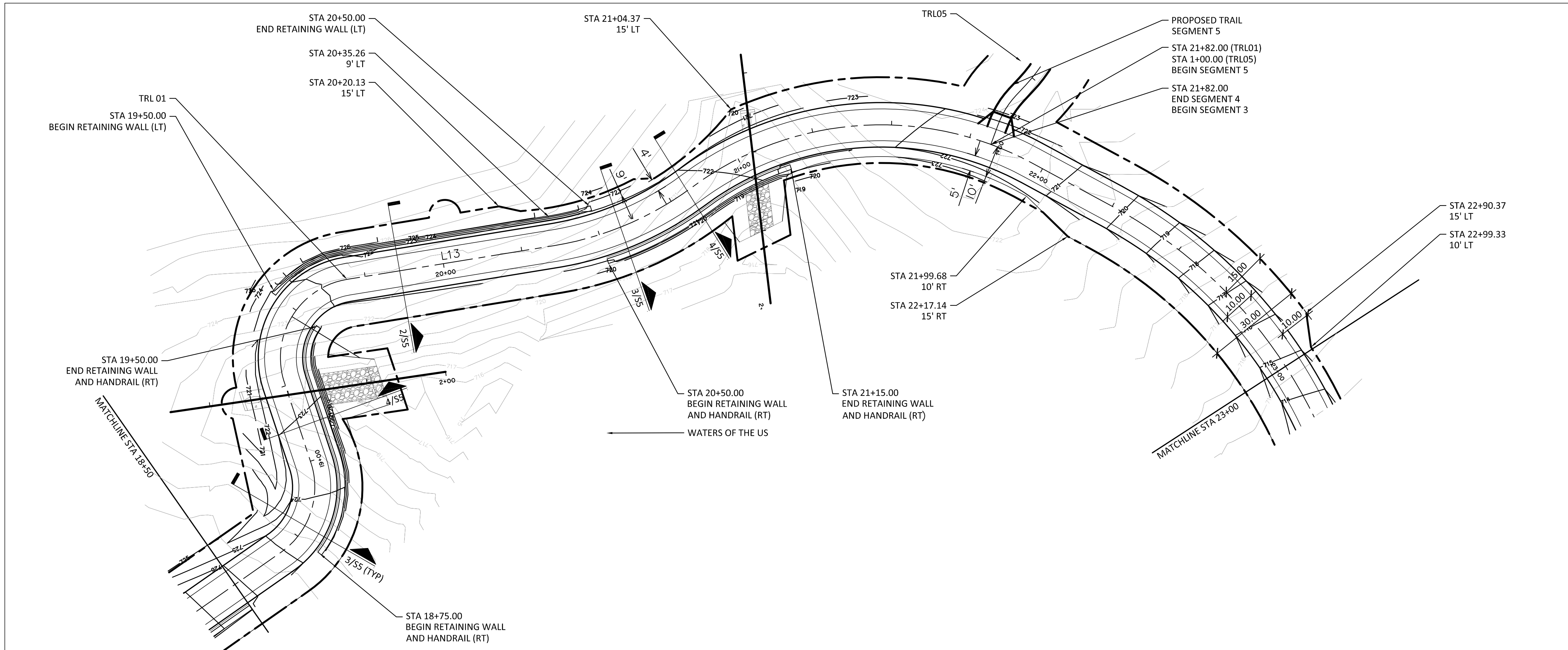
S2 - STRUCTURAL P & P STA 14+50 TO STA 18+50

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN FOUNDED 1839

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40'
DATE	03/07/2017
SHEET NUMBER	31 OF 53



LEGEND

- ROW
- PL — PROPERTY LINE
- EXIST EDGE OF PAVEMENT
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- 100-YEAR FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION
- 780 — EXISTING GROUND CONTOUR
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- EXIST TREE TO REMAIN
- EXIST TREE TO BE REMOVED

NOTES:

1. REFERENCE CIVIL PLAN AND PROFILE SHEETS FOR TREES, HORIZONTAL CURVE DATA, PROPERTY INFORMATION AND "WATERS OF THE U.S. LOCATION.

ENCOTECH
ENGINEERING CONSULTANTS
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8500 Bluffstone Cove, Suite B-103
Austin, Texas 78759 | 512.338.1101
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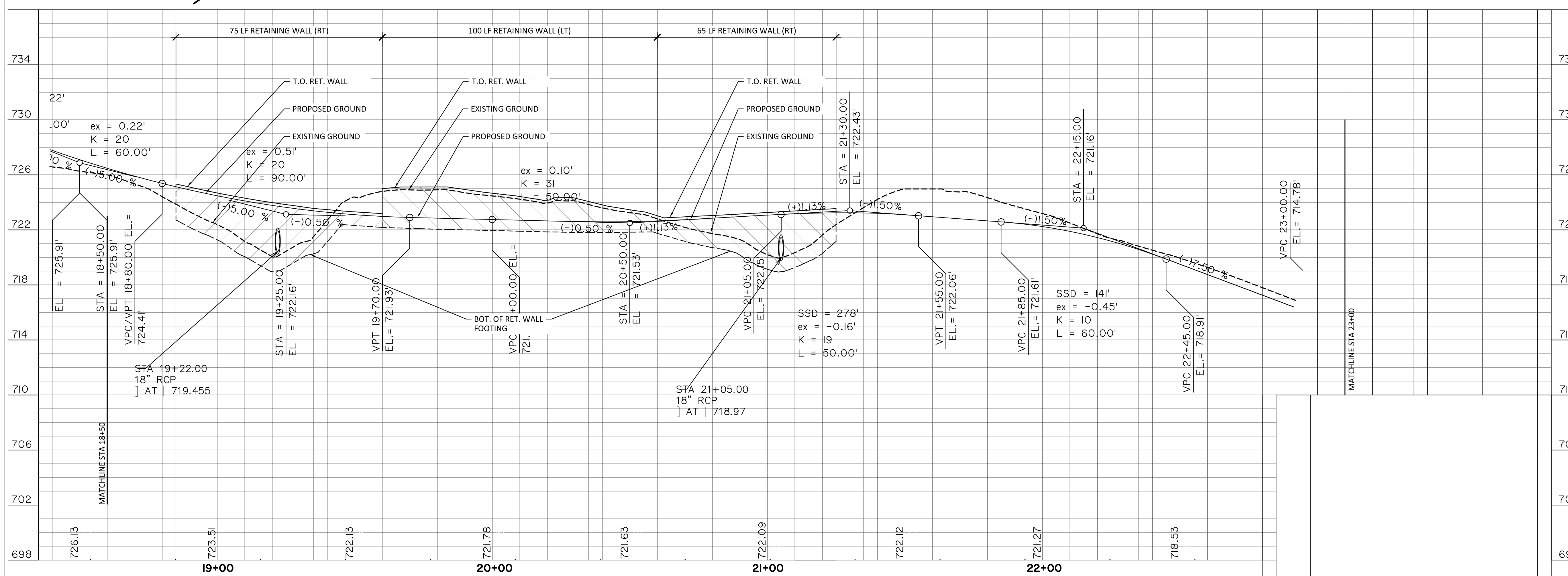
0 20 40



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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5
S3 - STRUCTURAL P & P STA 18+50 TO STA 23+00

K FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
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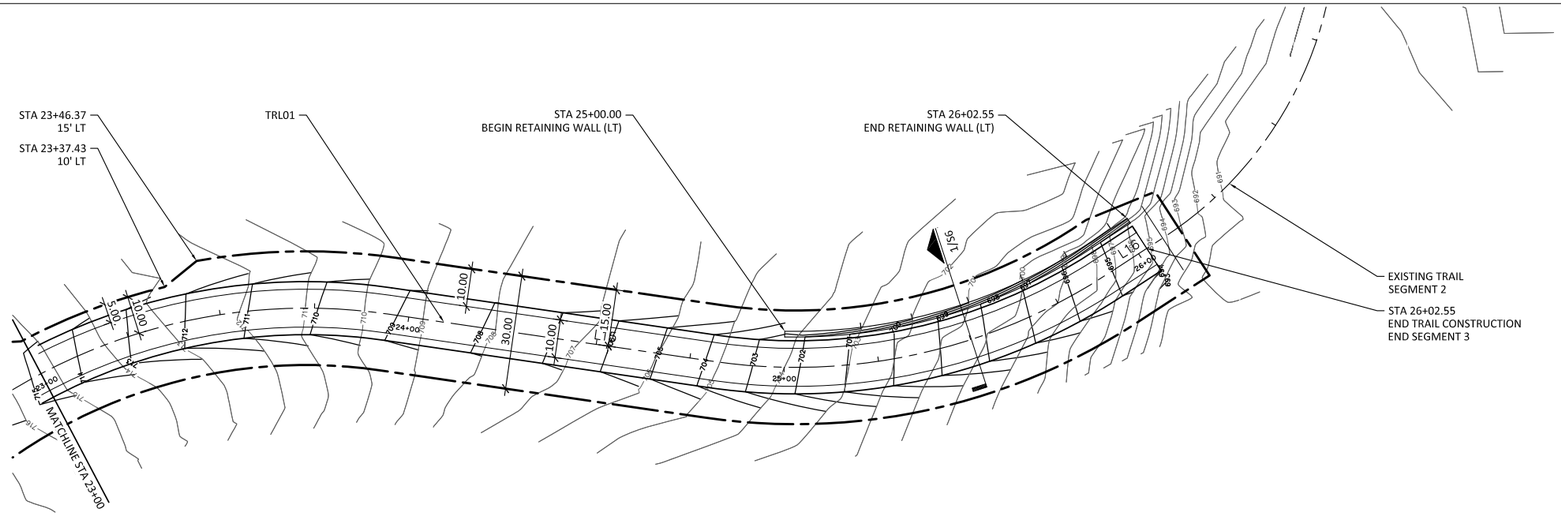

LEGEND

- ROW
- PL — PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION
- 780 — EXISTING GROUND CONTOUR
- 780 — PROPOSED GROUND CONTOUR
- EXIST TREE TO REMAIN
- EXIST TREE TO BE REMOVED

NOTES:

1. REFERENCE CIVIL PLAN AND PROFILE SHEETS FOR TREES, HORIZONTAL CURVE DATA, PROPERTY INFORMATION AND "WATERS OF THE U.S. LOCATION.

ENCOTECH ENGINEERING CONSULTANTS
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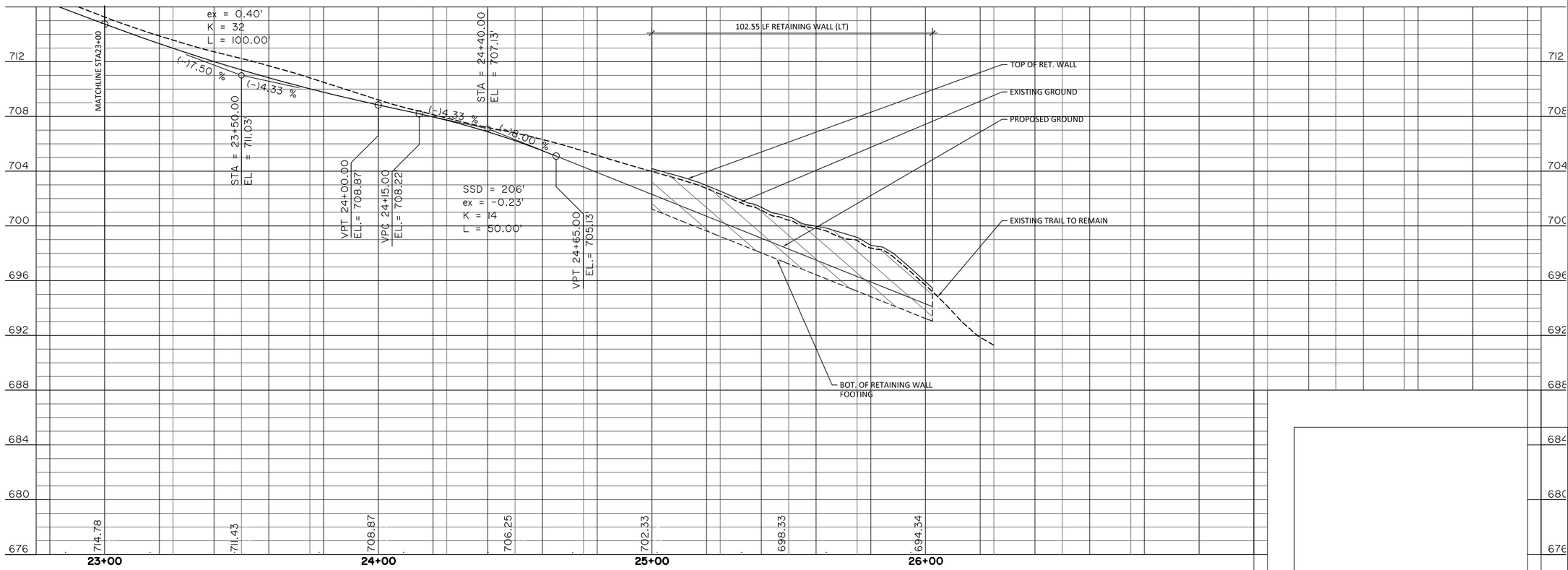

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5
S4 - STRUCTURAL P & P STA 23+00 TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

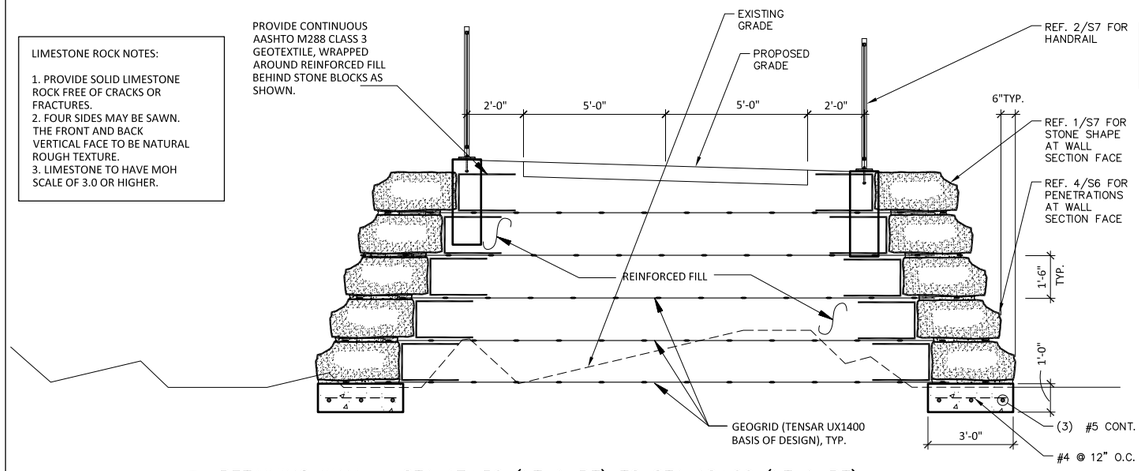
CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	03/07/2017
SHEET NUMBER	33 OF 53

LIMESTONE ROCK NOTES:

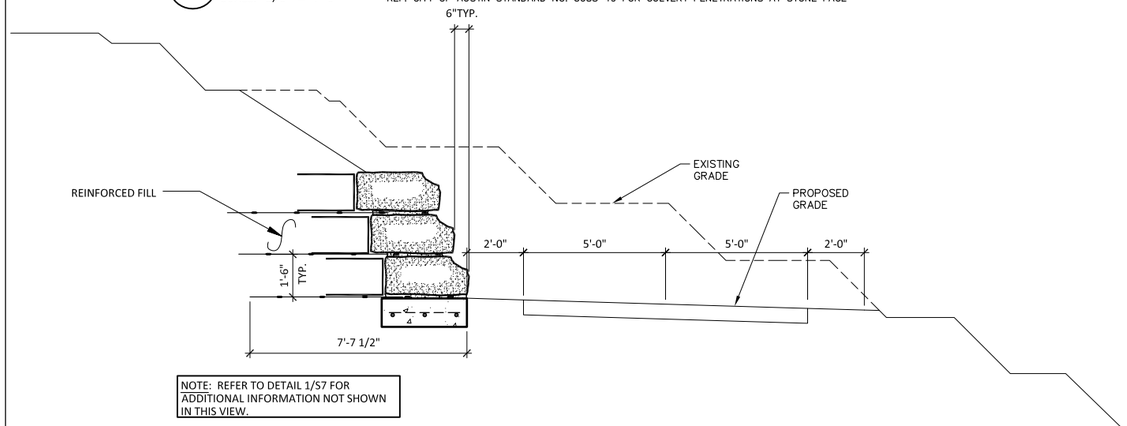
1. PROVIDE SOLID LIMESTONE ROCK FREE OF CRACKS OR FRACTURES.
2. FOUR SIDES MAY BE SAWN. THE FRONT AND BACK VERTICAL FACE TO BE NATURAL ROUGH TEXTURE.
3. LIMESTONE TO HAVE MOH SCALE OF 3.0 OR HIGHER.



1 RETAINING WALL – STA 17+50 (LT & RT) TO STA 18+00 (LT & RT)

SCALE: 3/8" = 1–0"

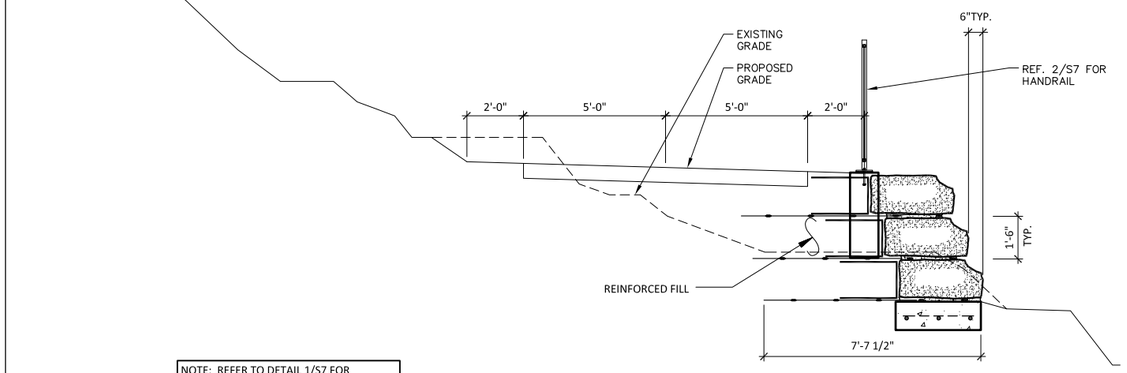
NOTE: USE TYPE "S" MORTAR.
COLOR OF MORTAR LAYERED BETWEEN BLOCKS AND UNDER BLOCKS TO MATCH LIMESTONE VENEER IN COLOR, TEXTURE AND APPEARANCE.



NOTE: REFER TO DETAIL 1/S7 FOR ADDITIONAL INFORMATION NOT SHOWN IN THIS VIEW.

2 RETAINING WALL – STA 19+50 TO 20+50 (LT)

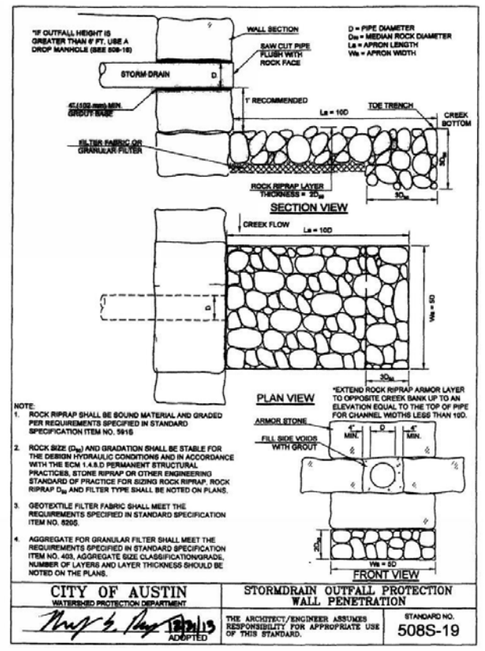
SCALE: 3/8" = 1–0"



NOTE: REFER TO DETAIL 1/S7 FOR ADDITIONAL INFORMATION NOT SHOWN IN THIS VIEW.

3 RETAINING WALL – STA 18+00 TO STA 18+50 (RT); STA 18+75 TO STA 19+50 (RT); STA 20+50 TO STA 21+15 (RT)

SCALE: 3/8" = 1–0"



4 CITY OF AUSTIN STANDARD DETAIL 508S–19

N.T.S

ENCOTECH ENGINEERING CONSULTANTS
TBPE Firm 1141 | 8500 Bluffstone Cove, Suite B-103 Austin, Texas 78759 | 512.338.1101
Project No.: 14114.AUS.AS1

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5

S5 - STRUCTURAL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

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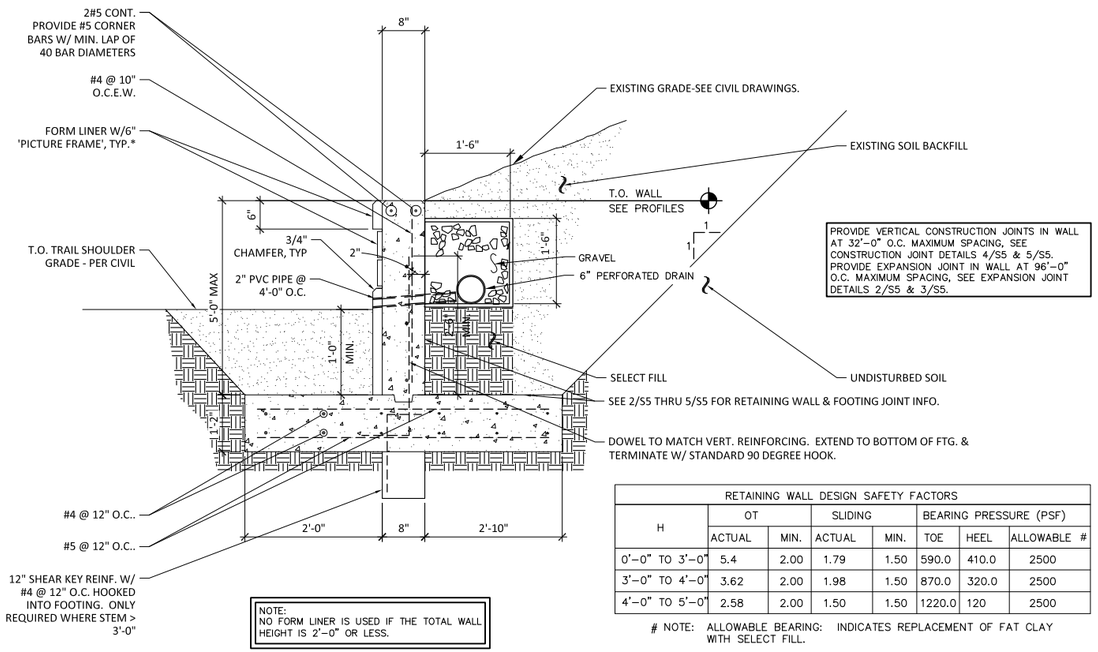
DATE	03/07/2017
SHEET NUMBER	34 OF 53



NOTE:
NO FORM LINER IS USED IF THE TOTAL WALL HEIGHT IS 2'-0" OR LESS.

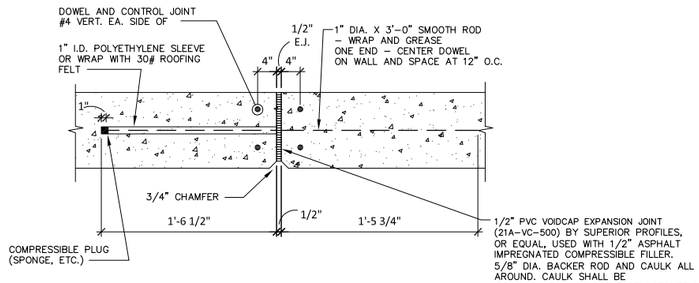
PROVIDE VERTICAL CONSTRUCTION JOINTS IN WALL AT 32'-0" O.C. MAXIMUM SPACING, SEE CONSTRUCTION JOINT DETAILS 4/S5 & 5/S5. PROVIDE EXPANSION JOINT IN WALL AT 96'-0" O.C. MAXIMUM SPACING, SEE EXPANSION JOINT DETAILS 2/S5 & 3/S5.

RETAINING WALL DESIGN SAFETY FACTORS							
H	OT		SLIDING		BEARING PRESSURE (PSF)		
	ACTUAL	MIN.	ACTUAL	MIN.	TOE	HEEL	ALLOWABLE #
0'-0" TO 3'-0"	5.4	2.00	1.79	1.50	590.0	410.0	2500
3'-0" TO 4'-0"	3.62	2.00	1.98	1.50	870.0	320.0	2500
4'-0" TO 5'-0"	2.58	2.00	1.50	1.50	1220.0	120	2500

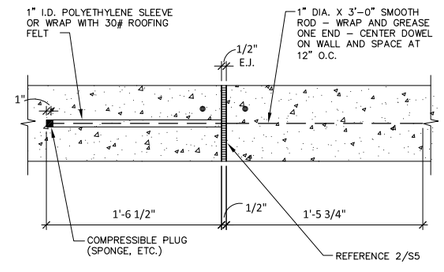
NOTE: ALLOWABLE BEARING: INDICATES REPLACEMENT OF FAT CLAY WITH SELECT FILL.

* INDICATES FORM LINER: USE ASHLAR STONE PATTERN NO. 330 WITH A 2 RUB FINISH. REFERENCE SPECIAL PROVISION SP411.

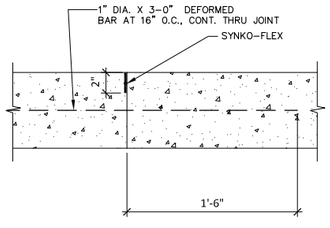
1 RETAINING WALL – STA 25+00 (LT) TO STA 26+02.55 (LT)
SCALE: NTS



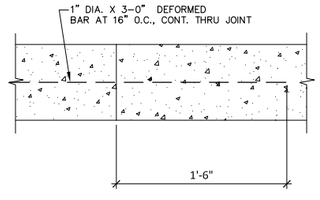
2 RETAINING WALL – EXPANSION JOINT
SCALE: 1 1/2" = 1'-0"



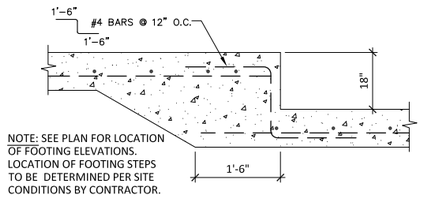
3 RETAINING WALL FOOTING – EXPANSION JOINT
SCALE: 1 1/2" = 1'-0"



4 RETAINING WALL – CONSTRUCTION JOINT
SCALE: 1 1/2" = 1'-0"



5 RETAINING WALL FOOTING – CONSTRUCTION JOINT
SCALE: 1 1/2" = 1'-0"



NOTE: SEE PLAN FOR LOCATION OF FOOTING ELEVATIONS. LOCATION OF FOOTING STEPS TO BE DETERMINED PER SITE CONDITIONS BY CONTRACTOR.

6 TYPICAL CONCRETE FOOTING STEP
SCALE: 3/4" = 1'-0"

STRUCTURAL DETAILS

REV. NO.	BY	DATE	REVISION DESCRIPTION

PROGRESS PRINT
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ENCOTECH ENGINEERING CONSULTANTS
TBPE Firm 1141 | 8500 Bluffstone Cove, Suite B-103 Austin, Texas 78759 | 512.338.1101
Project No.: 14114.AUS.AS1

K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

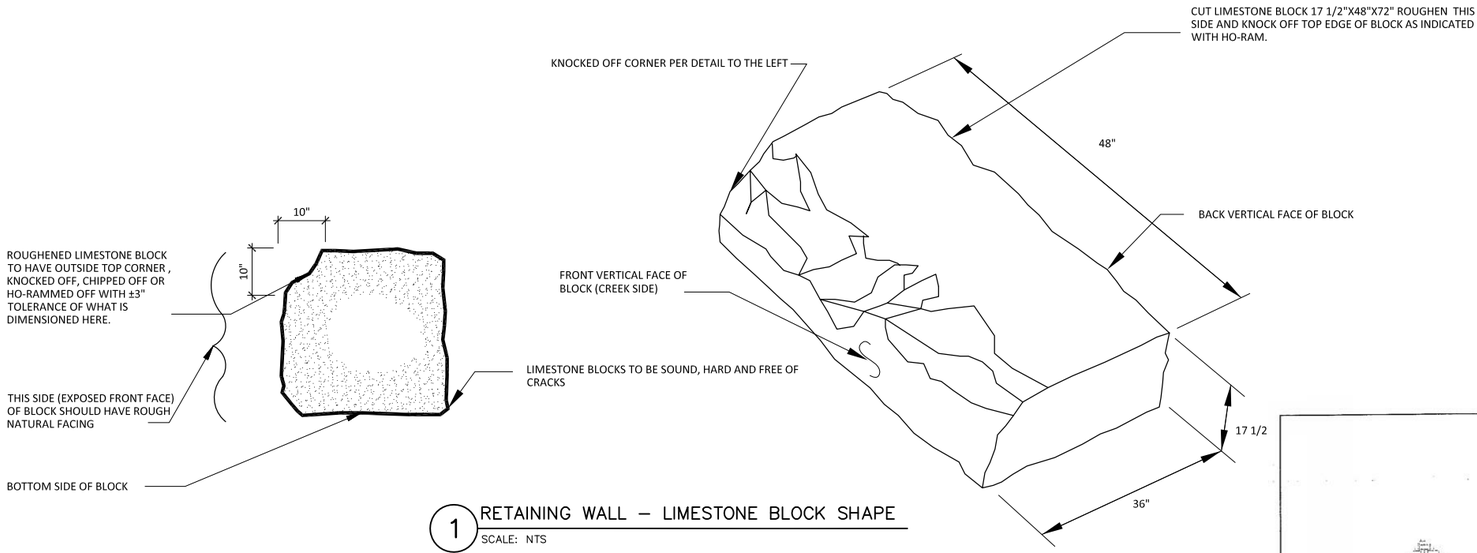
CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5
S6 - STRUCTURAL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

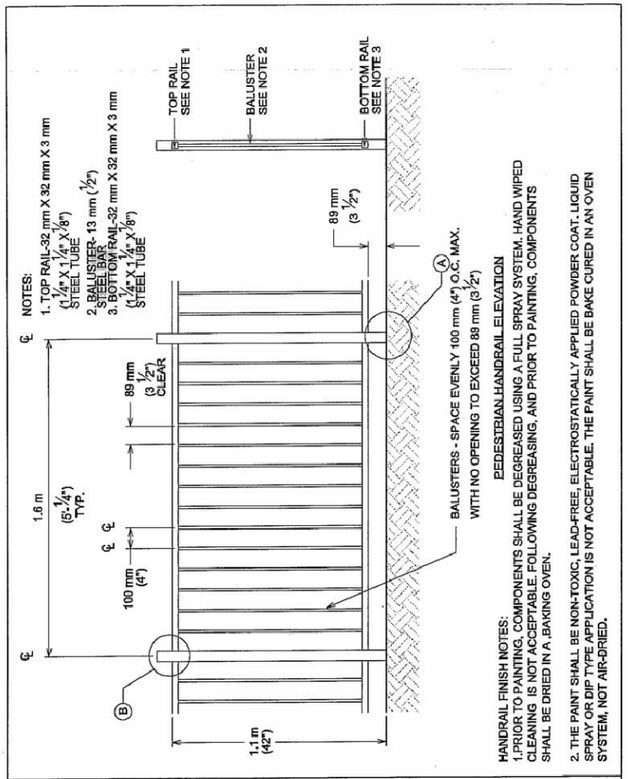
PERMIT # _____

SCALE	1" = 40'
DATE	03/07/2017
SHEET NUMBER	35 OF 53

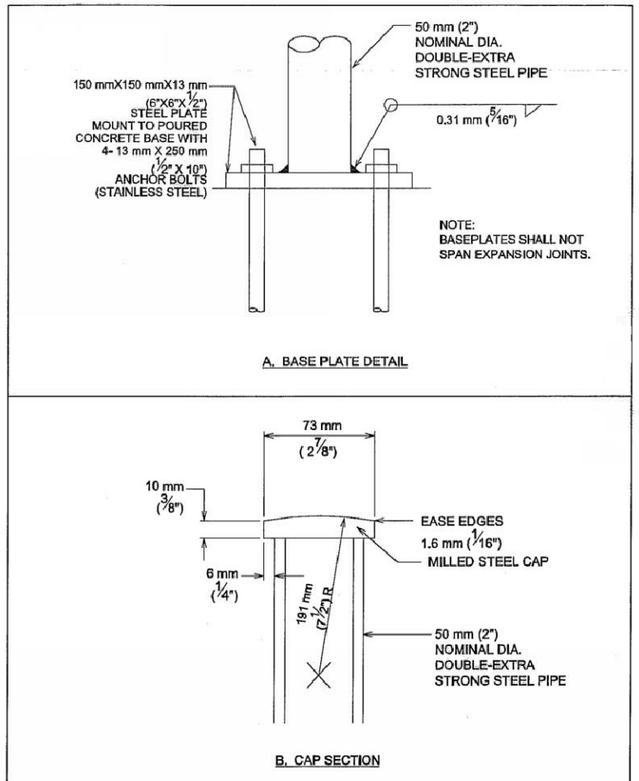


1 RETAINING WALL – LIMESTONE BLOCK SHAPE

SCALE: NTS



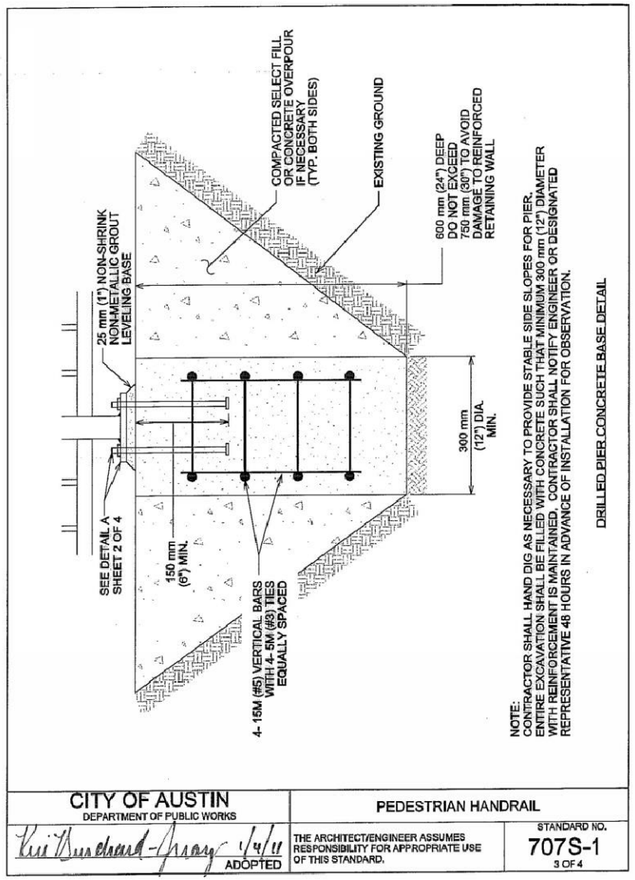
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	PEDESTRIAN HANDRAIL	
Kui Burchard-Geary 1/4/11 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 707S-1 1 OF 4



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	PEDESTRIAN HANDRAIL	
Kui Burchard-Geary 1/4/11 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 707S-1 2 OF 4

2 CITY OF AUSTIN STANDARD DETAIL 707S

N.T.S



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	PEDESTRIAN HANDRAIL	
Kui Burchard-Geary 1/4/11 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 707S-1 3 OF 4

CITY OF AUSTIN STANDARD DETAIL 707S

N.T.S

STRUCTURAL DETAILS

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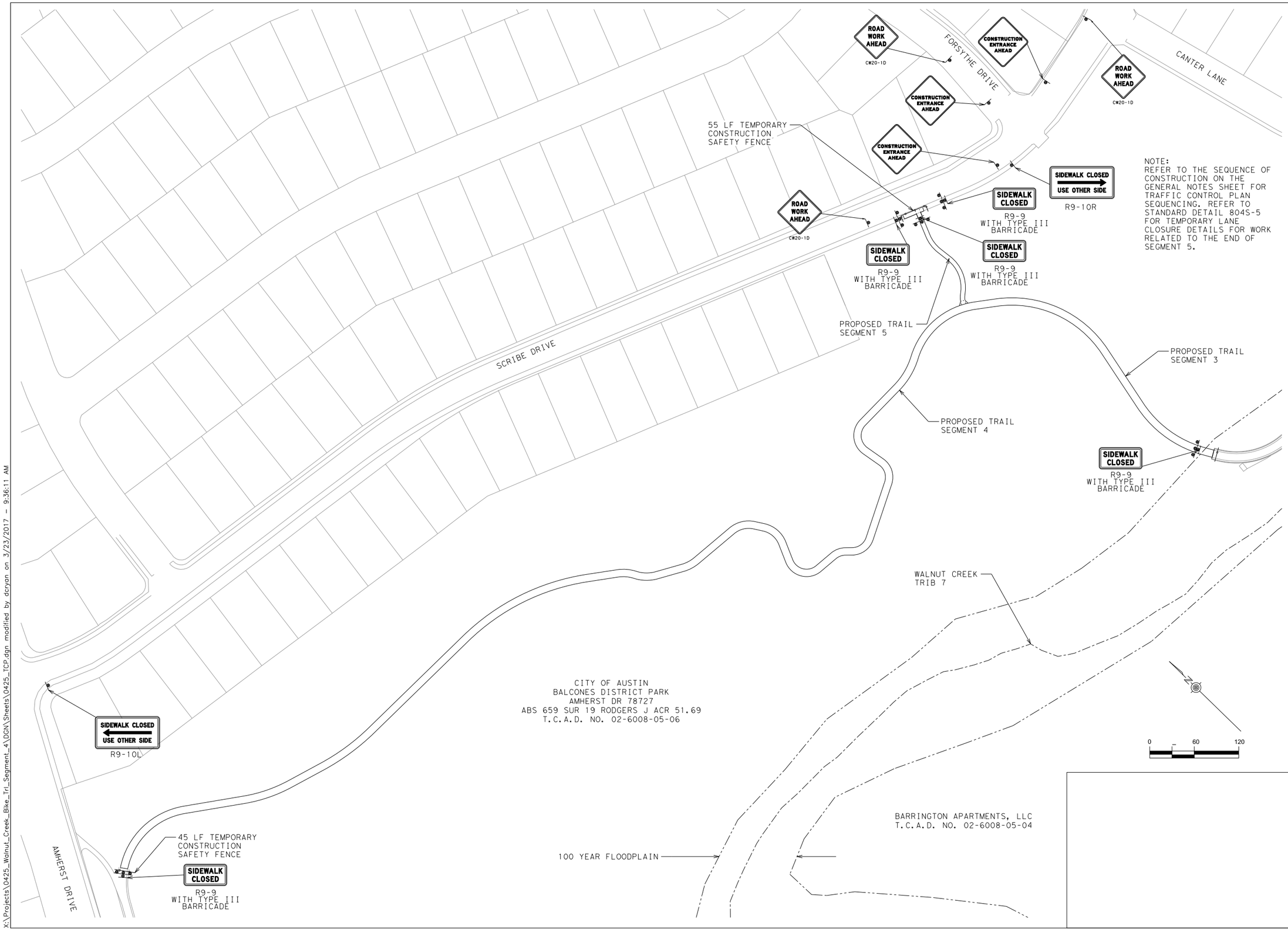
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE TRAIL SEGMENTS 3, 4, & 5
S7 - STRUCTURAL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40'
DATE	03/07/2017
SHEET NUMBER	36 OF 53



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REV. NO.	BY	DATE	REVISION DESCRIPTION

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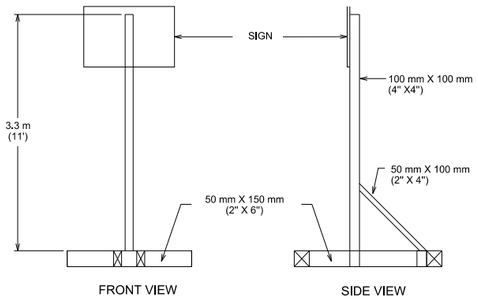
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

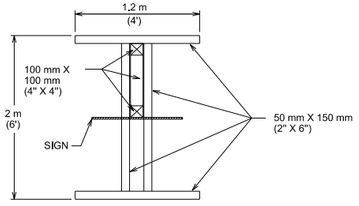
CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
TRAFFIC CONTROL PLAN

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	1" = 120'
SCALE	
DATE	3/23/2017
SHEET NUMBER	37 OF 53

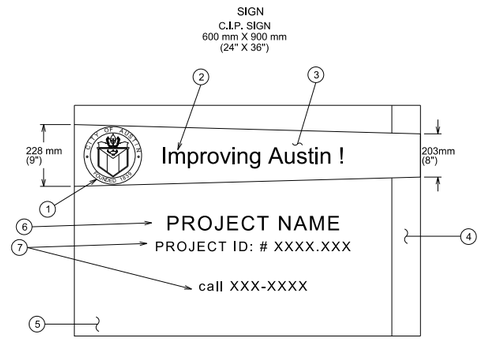




NOTES:

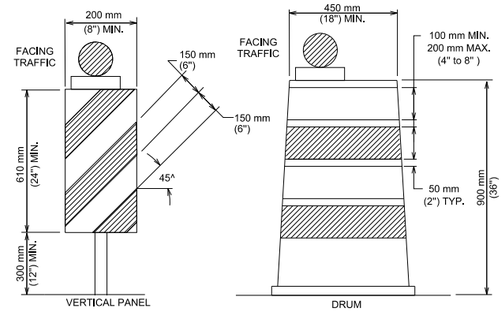
1. ALL MATERIALS SHALL BE FURNISHED BY THE CONTRACTOR.
2. LUMBER DIMENSIONS ARE NOMINAL.
3. SIGN MUST BE IN COLOR.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		600mmx900mm (24"x36") C. I. P.MOVABLE SIGN TYPE II	
RECORD COPY SIGNED BY KERI JUAREZ	01/04/11 DATE	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 802S-2 1 OF 2

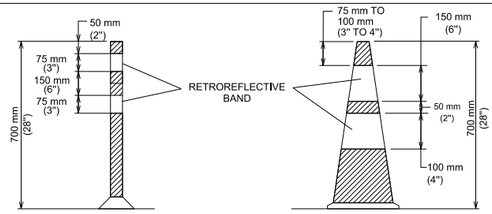


1. 225 mm (9") CITY SEAL (4 COLOR PROCESS)
2. 50 mm (2")- WHITE LETTERS
3. TRANSPARENT BLUE PAINT
4. 75 mm (3") WIDE- TRANSPARENT YELLOW PAINT STRIPE
5. HIGH INTENSITY WHITE REFLECTIVE SHEETING, .080 ALUMINUM 2290, 3M CO. OR EQUAL
6. 63 mm (2 1#2")- BLUE LETTERS
7. 25 mm (1")-BLUE LETTERS

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		600mmx900mm (24"x36") C. I. P.MOVABLE SIGN TYPE II	
RECORD COPY SIGNED BY KERI JUAREZ	01/04/11 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 802S-2 2 OF 2



LONG TERM AND INTERMEDIATE TERM STATIONARY WORK



SHORT TERM AND SHORT DURATION WORK

SEE STANDARD 804S-5
SHEET 12 OF 13 AND SHEET 13 OF 13
FOR GENERAL NOTES AND DEVICE SPACING.

CHANNELIZING DEVICES

1. ALL CHANNELIZING DEVICES SHALL HAVE WARNING LIGHTS OR LARGE REFLECTORS WHEN USED AT NIGHT. FLASHING WARNING LIGHTS MAY BE PLACED ON CHANNELIZING DEVICES USED SINGULARLY OR IN GROUPS TO MARK A SPOT CONDITION. WARNING LIGHTS ON CHANNELIZING DEVICES USED IN A SERIES SHALL BE STEADY-BURN. CHANNELIZING DEVICES IN TAPERS AT NIGHT SHALL HAVE TYPE C WARNING LIGHTS.
2. THE RETROREFLECTIVE MATERIAL USED ON CHANNELIZING DEVICES SHALL HAVE A SMOOTH, SEALED OUTER SURFACE.
3. THE NAME AND TELEPHONE NUMBER OF THE AGENCY, CONTRACTOR OR SUPPLIER SHALL BE SHOWN ON THE NON-RETROREFLECTIVE SURFACE OF ALL CHANNELIZING DEVICES. THE LETTERS AND NUMBERS SHALL BE A NON-RETROREFLECTIVE COLOR AND NOT OVER 50 mm (2") IN HEIGHT.
4. PARTICULAR ATTENTION SHOULD BE GIVEN TO ASSURE THAT CHANNELIZING DEVICES ARE MAINTAINED AND KEPT CLEAN, VISIBLE AND PROPERLY POSTITIONED AT ALL TIMES. DEVICES SHALL BE REPLACED THAT ARE DAMAGED AND HAVE LOST A SIGNIFICANT AMOUNT OF THEIR RETROREFLECTIVITY AND EFFECTIVENESS.

CONES

CONES SHALL PREDOMINANTLY BE ORANGE, FLUORESCENT RED-ORANGE, OR FLUORESCENT YELLOW-ORANGE IN COLOR, NOT LESS THAN 70 mm (28") IN HEIGHT, AND SHALL BE MADE OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING VEHICLES ON IMPACT. FOR NIGHT TIME USE, CONES SHALL BE RETROREFLECTIVE OR EQUIPPED WITH LIGHTING DEVICES FOR MAXIMUM VISIBILITY. RETROREFLECTION OF CONES SHALL BE PROVIDED BY A WHITE BOND 150 mm (6") WIDE, NO MORE THAN 75 TO 100 mm (3 TO 4") FROM THE TOP OF THE CONE, AND AN ADDITIONAL 100 mm (4") WHITE BAND A MINIMUM OF 50 mm (2") BELOW THE 150 mm (6") BAND. TRAFFIC CONES ARE NORMALLY USED FOR SHORT-TERM STATIONARY AND SHORT DURATION WORK, HOWEVER, CONES MAY BE USED FOR INTERMEDIATE-TERM STATIONARY WORK AT NIGHT, IF THE SITE IS CONTINUOUSLY MANNED.

TUBULAR MARKERS

TUBULAR MARKERS SHALL PREDOMINANTLY BE ORANGE IN COLOR, NOT LESS THAN 700 mm (28") IN HEIGHT . A MINIMUM 50 mm (2") WIDE WHEN FACING TRAFFIC AND MADE OF A MATERIAL THAT CAN BE STRUCK WITHOUT DAMAGING VEHICLES. FOR NIGHT TIME USE, TUBULAR MARKERS SHALL BE RETROREFLECTIVE PROVIDED BY TWO (2) 75 mm (3") WIDE WHITE BANDS PLACED A MAXIMUM OF 50 mm (2") FROM THE TOP, WITH A MAXIMUM OF 150 mm (6") BETWEEN BANDS. TUBULAR MARKERS ARE NORMALLY USED FOR SHORT-TERM STATIONARY AND SHORT DURATION WORK, HOWEVER, TUBULAR MARKERS MAY BE USED FOR INTERMEDIATE-TERM STATIONARY WORK AT NIGHT, IF THE SITE IS CONTINUOUSLY MANNED.

VERTICAL PANELS

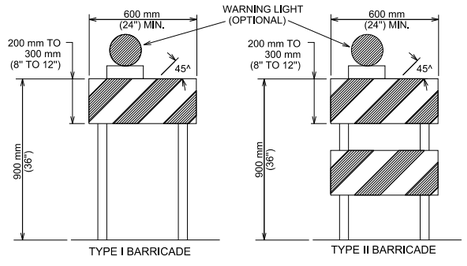
VERTICAL PANELS SHALL BE 200 TO 300 mm (8 TO 12") WIDE AND AT LEAST 600 mm (24") IN HEIGHT, THEY SHALL HAVE ORANGE AND WHITE STRIPES, AND BE RETROREFLECTIVE. PANEL STRIPE WIDTHS SHALL BE 150 mm (6") EXCEPT WHERE PANEL HEIGHTS ARE LESS THAN 900 mm (36"), WHEN 100 mm (4") STRIPES MAY BE USED. IF USED FOR TWO-WAY TRAFFIC, BACK-TO-BACK PANELS SHALL BE USED.

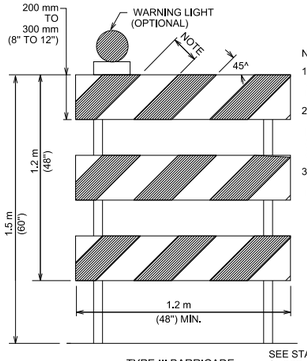
DRUMS

1. DRUMS USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE CONSTRUCTED OF LIGHT-WEIGHT FLEXIBLE AND DEFORMABLE MATERIALS AND BE A MINIMUM OF 900 mm (36") IN HEIGHT, AND HAVE AT LEAST 450 mm (18") MINIMUM WIDTH, REGARDLESS OF OREINTATION. STEEL DRUMS SHALL NOT BE USED. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUNFERENTIAL, ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES 100 TO 200 mm (4 TO 8") WIDE. EACH DRUM SHALL HAVE A MINIMUM OF TWO (2) ORANGE AND TWO (2) WHITE STRIPES. ANY NON-RETROREFLECTIVE SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, SHALL NOT EXCEED 50 mm (2") WIDE. DRUMS SHALL HAVE CLOSED TOPS THAT WILL NOT ALLOW COLLECTION OF ROADWORK OR OTHER DEBRIS.
2. DRUMS SHOULD NOT BE WEIGHTED WITH SAND, WATER OR ANY MATERIAL TO AN EXTENT THAT WOULD MAKE THE HAZARDOUS TO MOTORISTS, PEDESTRIANS OR WORKERS. WHEN THEY ARE USED IN REGIONS SUSCEPTIBLE TO FREEZING, THEY SHOULD HAVE DRAINAGE HOLES IN THE BOTTOM SO WATER WILL NOT ACCUMULATE AND FREEZE,CAUSING A HAZARD IF STRUCK BY A MOTORIST. BALLAST SHALL NOT BE PLACED ON TOP OF THE DRUM.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		CHANNELIZING DEVICES	
RECORD COPY SIGNED BY SAM ANGOORI	*01/04/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 1 OF 13

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		CHANNELIZING DEVICES	
RECORD COPY SIGNED BY SAM ANGOORI	*01/04/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 2 OF 13





NOTES:

1. NOMINAL LUMBER DIMENSIONS ARE SATISFACTORY FOR BARRICADE RAIL WIDTH DIMENSIONS.
2. RAIL STRIPE WIDTHS SHALL BE 150 mm (6") EXCEPT WHERE RAIL LEGNTHS ARE LESS THAN 900 mm (36"), THEN 100 mm (4") WIDE STRIPES MAY BE USED.
3. THE SIDE OF BARRICADES FACING TRAFFIC SHALL HAVE RETRO-REFLECTIVE RAIL FACES.

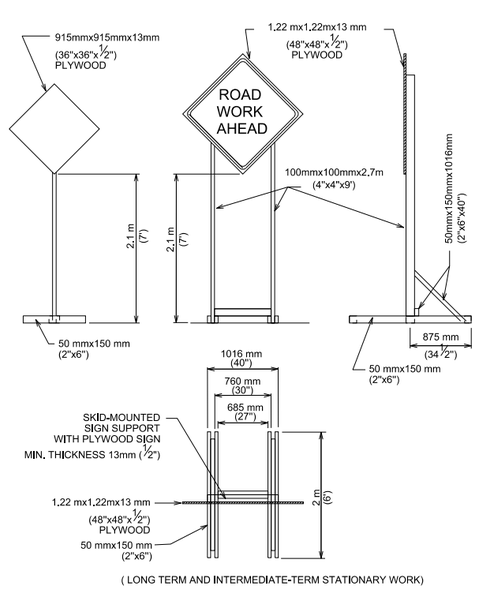
SEE STANDARD 804S-5
SHEET 12 OF 13 AND SHEET 13 OF 13
FOR GENERAL NOTES AND DEVICE SPACING.

BARRICADES

1. BARRICADES SHALL BE OF THREE TYPES: TYPE I, TYPE II OR TYPE III.
2. STRIPES ON BARRICADE RAILS SHALL BE ALTERNATING ORANGE AND WHITE RETRO-REFLECTIVE STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS). THE STRIPES SHALL BE 150 mm (6") WIDE, EXCEPT WHERE RAIL LENGTHS ARE LESS THAN 900 mm (36"), WHEN 100 mm (4") WIDE STRIPES MAY BE USED.
3. WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, THE SURFACE STRIPES SHOULD SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN. WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, THE STRIPES MAY SLOPE DOWN-WARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE OR BARRICADES. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.
4. BARRICADE RAILS SHOULD BE SUPPORTED IN A MANNER THAT WILL ALLOW THEM TO BE SEEN BY THE MOTORIST AND PROVIDE A STABLE SUPPORT NOT EASILY BLOWN OVER BY THE WIND OR TRAFFIC. FOR TYPE I BARRICADES, THE SUPPORT MAY INCLUDE OTHER UNSTRIPED HORIZONTAL PANELS NECESSARY TO PROVIDE STABILITY.
5. BARRICADES ARE LOCATED ADJACENT TO TRAFFIC AND ARE THEREFORE SUBJECT TO IMPACT WITH ERRANT VEHICLES. BECAUSE OF THEIR VULNERABLE POSITION AND THE HAZARD THEY COULD CREATE, THEY SHOULD BE CONSTRUCTED OF LIGHTWEIGHT MATERIALS AND HAVE NO RIGID STAY BRACING FOR A-FRAME DESIGNS. ALL BARRICADE SYSTEMS SHOULD BE CRASHWORTHY.
6. ON HIGH-SPEED EXPRESSWAYS OR IN OTHER SITUATION WHERE BARRICADES MAY BE SUSCEPTIBLE TO OVERTURING IN THE WIND, SANDBAGS SHOULD BE USED FOR BALLASTING. SANDBAGS MAY BE PLACED ON PARTS OF THE FRAME OR STAYS TO PROVIDE THE REQUIRED BALLAST BUT SHALL NOT BE PLACED ON TOP OF ANY STRIPED RAIL. BARRICADES SHALL NOT BE BALLASTED BY HEAVY OBJECTS SUCH AS ROCKS OR CHUNKS OF CONCRETE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		BARRICADES	
RECORD COPY SIGNED BY SAM ANGOORI	*01/04/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 3 OF 13

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		BARRICADES	
RECORD COPY SIGNED BY SAM ANGOORI	*01/04/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 4 OF 13



(LONG TERM AND INTERMEDIATE-TERM STATIONARY WORK)

TEMPORARY SIGN SUPPORT

SEE STANDARD 804S-5
SHEET 12 OF 13 AND SHEET 13 OF 13
FOR GENERAL NOTES AND DEVICE SPACING.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TRAFFIC CONTROL SIGNS	
RECORD COPY SIGNED BY SAM ANGOORI	*01/04/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 5 OF 13

REV. NO.	BY	DATE	REVISION DESCRIPTION

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TRAFFIC CONTROL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	
DATE	3/23/2017
SHEET NUMBER	38 OF 53

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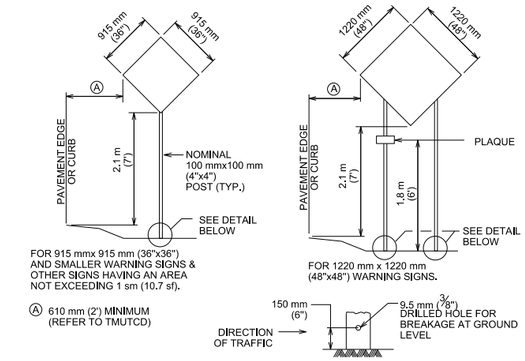
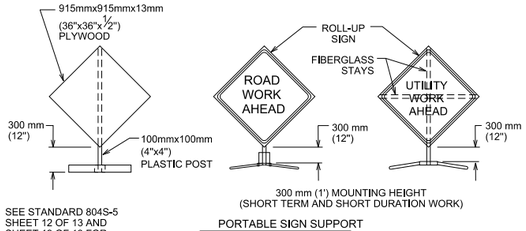


WOOD POST SIGN SUPPORT USED AS FIXED SIGN SUPPORTS



PORTABLE SIGN SUPPORT

SEE STANDARD 804S-5 SHEET 12 OF 13 AND SHEET 13 OF 13 FOR GENERAL NOTES AND DEVICE SPACING.

1. WARNING SIGNS SHALL BE ORANGE, FLUORESCENT RED-ORANGE OR FLUORESCENT YELLOW-ORANGE IN COLOR. THE FLUORESCENT VERSIONS OF ORANGE PROVIDE HIGHER CONSPICUITY THAN STANDARD ORANGE, ESPECIALLY DURING TWILIGHT. ALL SIGNS USED AT NIGHT SHALL BE EITHER RETRORE-FLECTIVE, WITH A MATERIAL THAT HAS A SMOOTH, SEALED OUTER SURFACE, OR ILLUMINATED TO SHOW SIMILAR SHAPE AND COLOR BOTH DAY AND NIGHT. SIGN ILLUMINATION MAY BE EITHER IN-TERNAL OR EXTERNAL. ROADWAY LIGHTING DOES NOT MEET THE REQUIREMENTS FOR SIGN ILLUMINATION.
2. TYPE A FLASHING WARNING LIGHTS MAY BE USED IN CONJUNCTION WITH SIGNS AT NIGHT. STANDARD ORANGE FLAGS MAY BE USED FOR DAY TIME OPERATIONS. HOWEVER, NEITHER LIGHTS NOR FLAGS MAY BLOCK THE SIGN LEGEND.
3. SIGNS SHOULD BE LOCATED ON THE RIGHT-HAND SIDE OF THE ROADWAY. WHEN SPECIAL EMPHASIS IS NEEDED, SIGNS MAY BE PLACE ON BOTH THE LEFT AND RIGHT SIDES OF ROADWAY. SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF ONE-WAY OR DIVIDED ROADWAYS. SIGNS USED FOR LONG-TERM STATIONARY AND INTERMEDIATE-TERM STATIONARY WORK SHALL BE MOUNTED AT A HEIGHT OF AT LEAST 2.1 m (7'), MEASURED FROM THE BOTTOM OF THE SIGN. THE HEIGHT TO THE BOTTOM OF A SECONDARY SIGN MOUNTED BELOW ANOTHER SIGN MAY BE 0.3 m (1') LESS THAN THE APPROPRIATE HEIGHT ABOVE.
4. SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, MOBILE CON-DITIONS AND EMERGENCIES. SIGNS MOUNTED ON PORTABLE SUPPORTS SHALL BE AT A HEIGHT OF AT LEAST 0.3 m (1'), MEASURED FROM THE BOTTOM OF THE SIGN.
5. ALL SIGN SYSTEMS SHOULD BE CRASHWORTHY. NO SIGN MOUNTS SHALL BLOCK OR IMPEDE SIDEALKS UNLESS NO OTHER OPTION IS AVAILABLE. ONLY SANDBAGS SHOULD BE USED FOR BALLASTING SIGN MOUNTS.

TABLE VI-3 TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

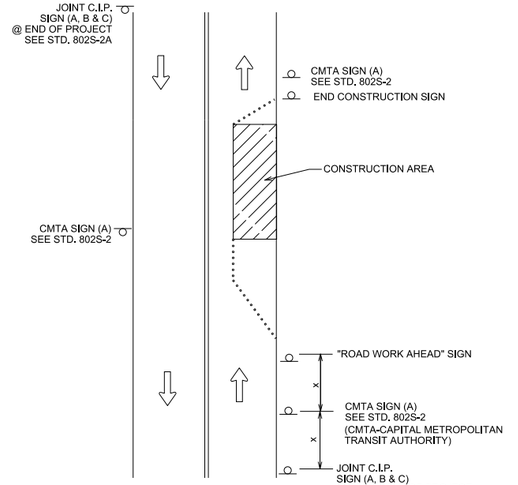
Roadway Classi fication	Posted Speed	Sign Spacing ★	Long-term Stationary Or Intermediate-term Stationary Approaching Warning Signs CW20 Series And CW22-1 Sign		Short-term Stationary Or Short Duration Approach Warning Signs CW22 Series		Other Warning Signs
			Standard	Minimum[4]	Standard	Minimum[4]	Standard
Conven.	KPH (MPH)	meter (feet)	mm (Inches)	mm (Inches)	mm (Inches)	mm (Inches)	mm (Inches)
	50 (30)	40 (120)	1220x1220 (48x48)	915x915 (36x36)			
	55 (35)	50 (160)			915x915 (36x36)		915x915 (36x36)
	65 (40)	75 (240)					
	70 (45)	100 (320)		Use Standard Size		Use Standard Size	
	80 (50)	120 (400)					
	90 (55)	150 (500) 2					
	100 (60)	180 (600) 2			1220x1220 (48x48)		1220x1220 (48x48)
	105 (65)	210 (700) 2					
	115 (70)	240 (800) 2					
Exp. or Fwy	★★	★★ 3			★★★	★★★	★★★

★ MINIMUM DISTANCE FROM WORK TO 1st ADVANCE WARNING SIGN AND/OR DISTANCE BETWEEN EACH ADDITIONAL SIGN.
★★ FOR TYPICAL SIGN SPACINGS ON EXPRESSWAYS AND FREEWAYS, REFER TO THE CURRENT ADDITION OF TMUTCD.
★★★ SMALLER SIGN SIZES MAY BE USED WHERE SIGN DESIGNS HAVE NOT BEEN INCLUDED IN THE "STANDARD HIGHWAY SIGNS DESIGN MANUAL".

1. SPECIAL OR LARGER SIZE SIGNS MAY BE USED AS NECESSARY.
2. DISTANCE BETWEEN SIGNS SHOULD BE INCREASED AS REQUIRED TO HAVE 450 m (1500') OR MORE ADVANCE WARNING.
3. DISTANCE BETWEEN SIGNS SHOULD BE INCREASED AS REQUIRED TO HAVE A 0.8 km (½ MILE) OR MORE ADVANCE WARNING.
4. FOR USE ONLY ON SECONDARY ROADS OR CITY STREETS WHERE SPEEDS ARE LOW.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TRAFFIC CONTROL SIGNS	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 6 OF 13

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TRAFFIC CONTROL SIGNS	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 7 OF 13

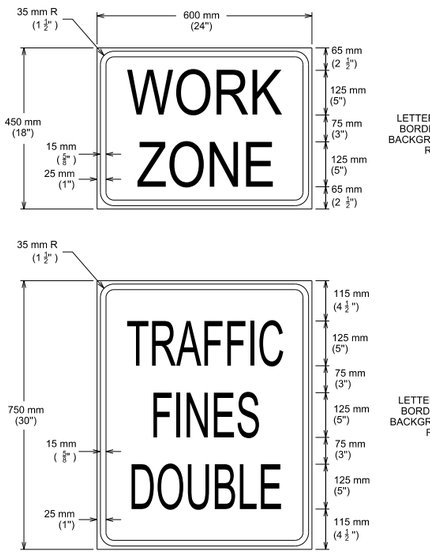


NOTES:

1. OTHER REQUIRED SIGNS NOT SHOWN FOR CLARITY.
2. "X" DISTANCES SAME AS STANDARD TABLE SHOWN ON SHEET 13 OF 13.

SEE STANDARD 804S-5 SHEET 12 OF 13 AND SHEET 13 OF 13 FOR GENERAL NOTES AND DEVICE SPACING.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL CMTA/C.I.P. SIGN LOCATIONS	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 8 OF 13



SEE STANDARD DETAIL 804S-5 SHEET 5 OF 13 FOR SKID-MOUNTED SIGN SUPPORT.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SPECIAL WORK ZONE SIGNS	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 9 OF 13

1. ALL TRAFFIC CONTROL DEVICES, SIGNS, BARRICADES AND WARNING SIGNS SHALL BE FURNISHED, PLACED, CONSTRUCTED AND MAINTAINED IN THE APPROPRIATE TYPES AND SIZES AND FLAGGER OPERATIONS EXECUTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL ON UNIFORM CONTROL DEVICES (TMUTCD), THE CITY OF AUSTIN STANDARD SPECIFICATIONS SERIES 800 AND THE CITY OF AUSTIN TRANS-PORTATION CRITERIA MANUAL, OR AS DIRECTED BY THE ENGINEER OR DESIGNATED RE-PRESENTATIVE. IF A CONFLICT ARISES THEN THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL SHALL CONTROL UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
2. THE CONTRACTOR SHALL NOTIFY THE TRANSPORTATION DIVISION OF THE DEPARTMENT OF PUBLIC WORKS AT 974-7024 NO LATER THAN THE MONDAY OF THE WEEK DURING WHICH THE CONTRACTOR INTENDS TO SET UP BARRICADES TO START CONSTRUCTION.
3. PROPOSED CONSTRUCTION TRAFFIC MOVEMENTS MAY REQUIRE EXISTING SIGNAL HEADS TO BE RELOCATED. THE CITY OF AUSTIN WILL REVIEW SIGNAL HEAD LOCATIONS DURING CONSTRUCTION AND PERFORM THE REQUIRED ADJUSTMENTS. THE CONTRACTOR SHALL CONTACT THE TRANSPORTATION DIVISION OF THE DEPARTMENT OF PUBLIC WORKS AT 974-7024, THREE (3) DAYS PRIOR TO PLACMENT ANY TRAFFIC CONTROLS WHICH MAY REQUIRE SIGNAL HEAD ADJUSTMENTS/RELOCATION.
4. THE CONTRACTOR SHALL PROVIDE ONE (1) FULL-TIME OFF-DUTY, UNIFORMED AUSTIN POLICE DEPARTMENT CERTIFIED PEACE OFFICER AND ONE (1) VEHICLE OF THE TYPE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE FOR TEMPORARY LANE CLOSURES WHEN UNDERSEALING, MILLING, PAVING AND WHEN WORKING IN INTERSECTIONS AS PART OF THE TRAFFIC CONTROL OPERATIONS. THE PEACE OFFICER SHALL BE ABLE TO SHOW PROOF OF CERTIFICATION BY THE TEXAS COMMISSION ON LAW ENFORCEMENT OFFICER STANDARDS.
5. THE CONTRACTOR SHALL NOTIFY ALL OTHER GOVERNMENTAL AGENCIES WHOSE RIGHTS-OF-WAY ARE AFFECTED BY HIS WORK ACTIVITIES. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL TRAFFIC CONTROL DEVICES THAT THEY MAY NEED.
6. THE CONTRACTOR SHALL MAINTAIN ONE (1) DUST-FREE LANE OF TRAFFIC IN EACH DIRECTION AT ALL TIMES, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED THE ENGINEER OR DESIGNATED REPRESENTATIVE.
7. THERE SHALL BE A MINIMUM OF THREE (3) METERS (10 FEET) CLEAR WIDTH FOR EACH LANE OF TRAFFIC IN CHANNELIZED AREAS, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
8. THE CONTRACTOR SHALL MAINTAIN DRIVEWAY ACCESS AT ALL TIMES. IF ACCESS CANNOT BE MAINTAINED, THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER OR DESIGNATED REPRESENTATIVE SHALL PROVIDE AT LEAST 24 HOUR WRITTEN NOTICE OF LIMITED ACCESS TO AFFECTED PROPERTY OWNERS. THE CONTRACTOR SHALL PROVIDE BUSINESS ACCESS SIGNS AS NEEDED TO NFORM DRIVERS OF THE LOCATIONS OF ALL DRIVEWAYS.
9. TEMPORARY LANE CLOSURES IN THE CENTRAL BUSINESS DISTRICT (CBD) OR ON ARTERIAL STREETS SHALL NOT BE PERMITTED DURING THE HOURS OF 7 AM TO 9 AM AND 4 PM TO 6PM MONDAY THROUGH FRIDAY UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE TRANSPORTATION DIVISION.
10. TRAFFIC CONTROL SHOWN ON STANDARD DETAILS IS TYPICAL. ADDITIONAL SIGNING AND/OR BARRICADING, AS WELL AS TEMPORARY PAVEMENT MARKINGS AND OBLITERATION/RESTORATION OF EXISTING PAVEMENT MARKINGS, MAY BE REQUIRED DEPENDING ON FIELD CONDITIONS. FIELD ADJUSTMENTS TO TRAFFIC CONTROLS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM NO. 803S "BARRICADES, SIGNS AND TRAFFIC HANDLING".
11. THE CONTRACTOR SHALL DESIGNATE A COMPETENT PERSON FOR TRAFFIC CONTROL. THE COMPETENT PERSON SHALL MAKE INSPECTIONS OF THE TRAFFIC CONTROL DEVICES AT LEAST TWO (2) TIMES A DAY (ONCE AT THE BEGINNING OF THE DAY AND ONCE AT THE END OF THE DAY), INCLUDING NON-WORKING DAYS, ENSURING THAT ALL DEVICES ARE IN THEIR PROPER PLACE AND ARE IN WORKING ORDER.
12. ALL DEVICES SHALL BE MADE USING MATERIALS LISTED ON THE TxDOT APPROVED PRODUCTS LIST.
13. ALL PERSONS WORKING WITHIN THE RIGHT-OF-WAY SHALL WEAR A BRIGHTLY COLORED SAFETY VEST. FOR NIGHTTIME WORK THE VEST SHALL BE RETROREFLECTIVE.
14. WHEN AN INTERSECTION IS CLOSED FOR CONSTRUCTION, THE CONTRACTOR SHALL PROCEED WITH CONSTRUCTION IN SUCH A MANNER THAT THE CLOSURE TIME IS MINIMIZED.
15. THE CONTRACTOR SHALL NOTIFY THE CAPITAL METRO DISPATCHER AT 385-4295 ONE (1) WEEK PRIOR TO LANE CLOSURES ADJACENT TO BUS STOPS.

DURATION OF WORK

WORK DURATION IS A MAJOR FACTOR IN DETERMINING THE NUMBER AND TYPES OF DEVICES USED IN TEMPORARY TRAFFIC ZONES. THE FIVE (5) CATEGORIES OF WORK DURATION AND THEIR TIME AT A LOCATION ARE AS FOLLOWS:

- LONG-TERM STATIONARY-WORK THAT OCCUPIES A LOCATION FOR MORE THAN 3 DAYS.
- INTERMEDIATE-TERM STATIONARY-WORK THAT OCCUPIES A LOCATION FROM OVERNIGHT TO 3 DAYS.
- SHORT-TERM STATIONARY-DAYTIME WORK THAT OCCUPIES A LOCATION FROM 1 TO 12 HOURS.
- SHORT-DURATION WORK THAT OCCUPIES A LOCATION UP TO 1 HOUR.
- MOBILE-WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY.

Typical Transition Lengths and Suggested Maximum Spacing of Devices

Posted Speed KPH (MPH)	Formula	Minimum Desirable Taper Lengths (L) Meters (Feet) 3.0(10) Offset Meters (feet)	3.3(11) Offset Meters (feet)	3.6(12) Offset Meters (feet)	Suggested Max. Device Spacing On a taper Meters (feet)	On a tangent Meters (feet)	Suggested Sign Spacing Meters (Feet) "X" Dimension
50 (30)	L=WS²/60	45 (150)	50 (165)	55 (180)	9 (30)	15-20 (60-75)	40 (120)
55 (35)		65 (205)	70 (225)	75 (245)	10 (35)	25-25 (70-90)	50 (160)
65 (40)		80 (265)	90 (295)	100 (320)	12 (40)	25-30 (80-100)	75 (240)
70 (45)	L=WS	135 (450)	(495)	165 (540)	13 (45)	25-30 (90-110)	100 (320)
80 (50)		150 (500)	165 (550)	180 (600)	15 (50)	30-35 (100-125)	120 (400)
90 (55)		165 (550)	185 (605)	200 (660)	16 (55)	35-40 (110-140)	150 (500)
100 (60)		180 (600)	200 (660)	220 (720)	18 (60)	40-45 (120-150)	180 (600)
105 (65)		195 (650)	215 (715)	235 (780)	19 (65)	40-50 (130-165)	210 (700)
115 (70)		215 (700)	235 (770)	255 (840)	21 (70)	45-55 (140-175)	240 (800)

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		GENERAL TRAFFIC CONTROL NOTES	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 12 OF 13

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		GENERAL TRAFFIC CONTROL NOTES	
RECORD COPY SIGNED BY SAM ANGOORI	01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S-5 13 OF 13

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

TRAFFIC CONTROL DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	
DATE	3/23/2017
SHEET NUMBER	39 OF 53

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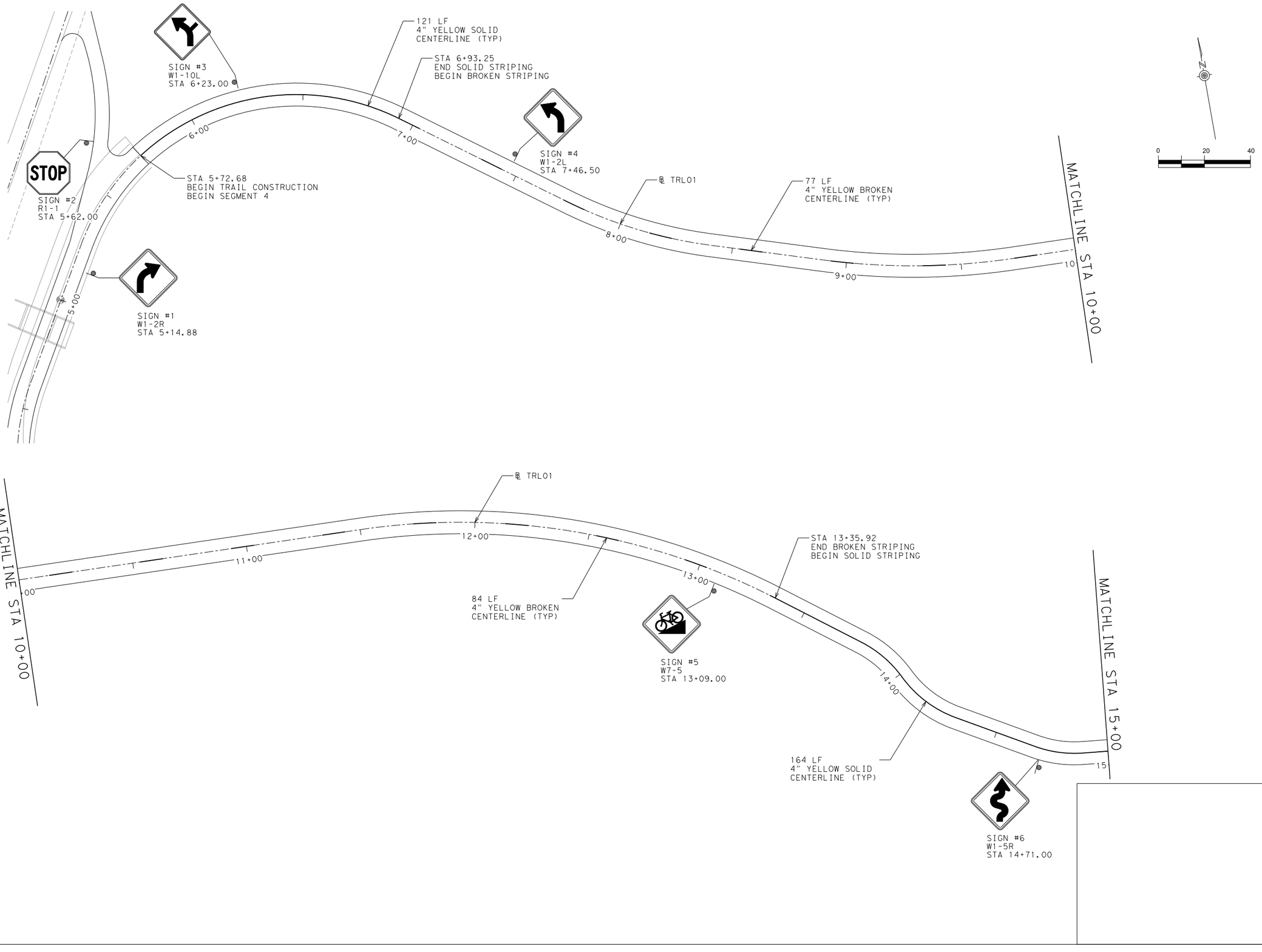

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
SIGNING AND PAVEMENT MARKING PLAN
BEGIN TO STA 15+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	40 OF 53

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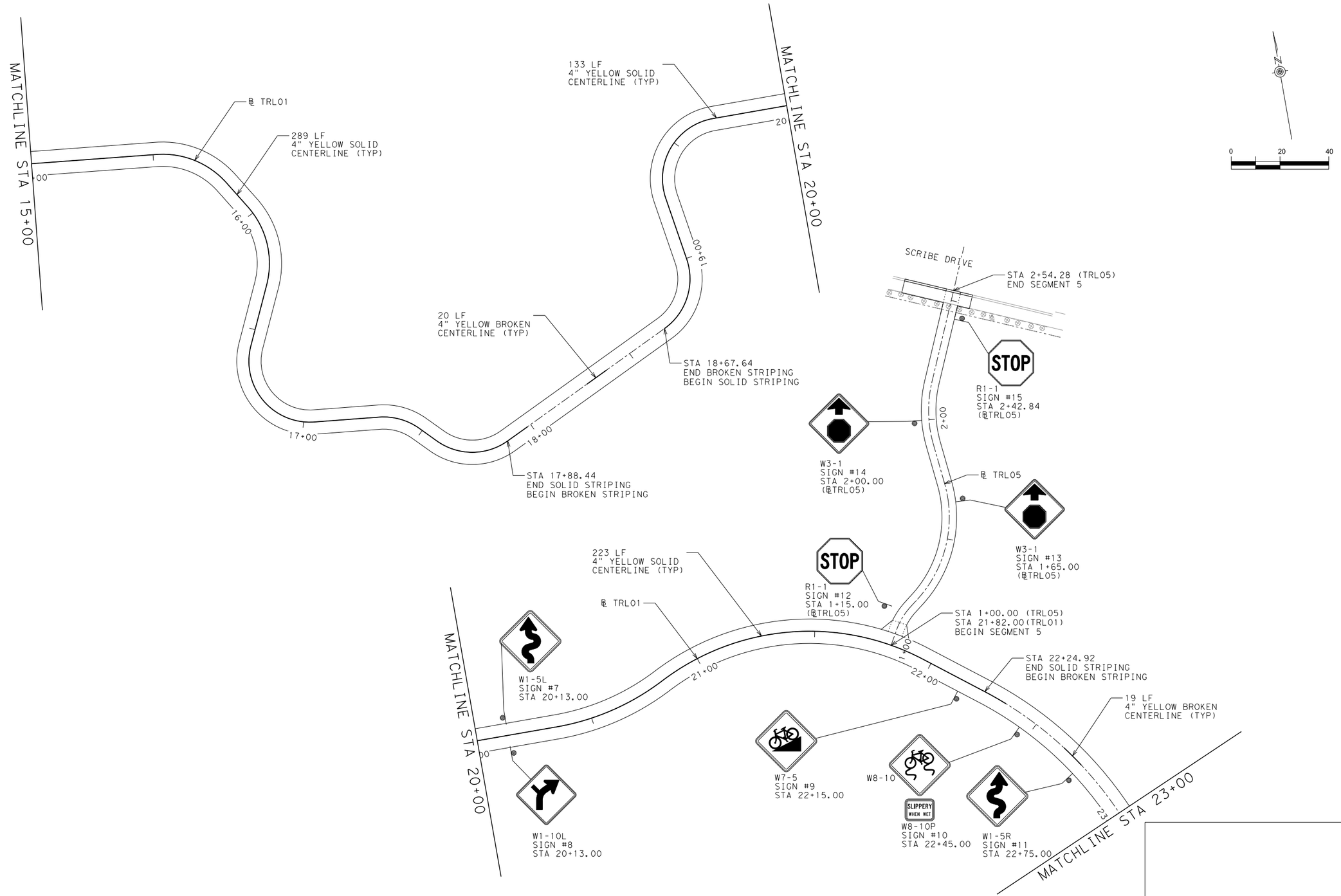

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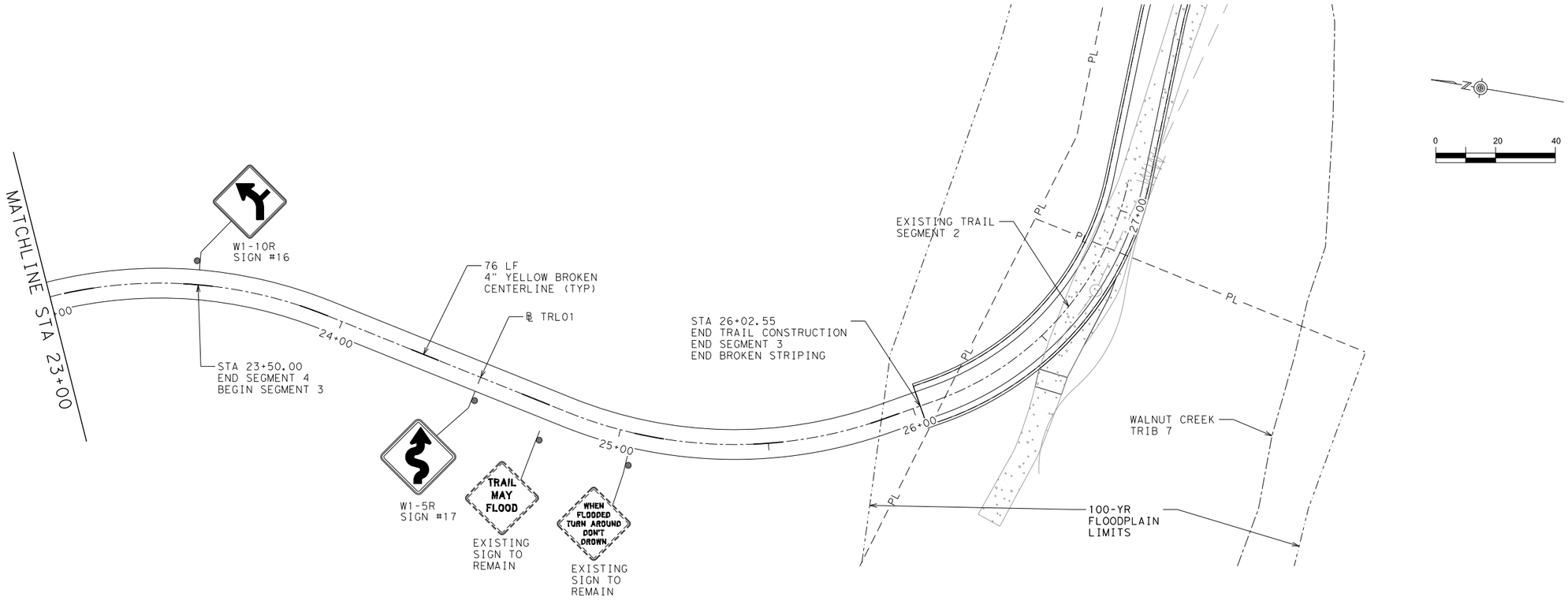
CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
SIGNING AND PAVEMENT MARKING PLAN
STA 15+00 TO STA 23+00

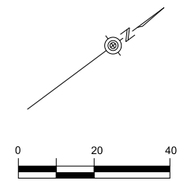
K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	41 OF 53





REV. NO.	BY	DATE	REVISION DESCRIPTION

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

SIGNING AND PAVEMENT MARKING PLAN
STA 23+00 TO END & SEGMENT 5 BEGIN TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	42 OF 53

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
40	1	W1-2R	(CURVE)	18 X 18	X		TWT	1	UA	P	-	-
	2	R1-1	STOP	18 X 18	X		TWT	1	UA	P	-	-
	3	W1-10L	(CURVE) WITH INTERSECTION	18 X 18	X		TWT	1	UA	P	-	-
	4	W1-2L	(CURVE)	18 X 18	X		TWT	1	UA	P	-	-
	5	W7-5	(BICYCLE DOWNHILL)	18 X 18	X		TWT	1	UA	P	-	-
	6	W1-5R	(S CURVE)	18 X 18	X		TWT	1	UA	P	-	-
41	7	W1-5L	(S CURVE)	18 X 18	X		TWT	1	UA	P	-	-
	8	W1-10L	(CURVE WITH INTERSECTION)	18 X 18	X		TWT	1	UA	P	-	-
	9	W7-5	(BICYCLE DOWNHILL)	18 X 18	X		TWT	1	UA	P	-	-
	10	W8-10	(SLIPPERY WHEN WET)	18 X 18	X		TWT	1	UA	P	-	-
		W8-10P	SLIPPERY WHEN WET	12X9	X							
	11	W1-5R	(S CURVE)	18 X 18	X		TWT	1	UA	P	-	-
	12	R1-1	STOP	18 X 18	X		TWT	1	UA	P	-	-
	13	W3-1	(STOP AHEAD)	18 X 18	X		TWT	1	UA	P	-	-
	14	W3-1	(STOP AHEAD)	18 X 18	X		TWT	1	UA	P	-	-
	15	R1-1	STOP	18 X 18	X		TWT	1	UA	P	-	-
42	16	W1-10R	(CURVE WITH INTERSECTION)	18 X 18	X		TWT	1	UA	P	-	-
	17	W1-5R	(S CURVE)	18 X 18	X		TWT	1	UA	P	-	-

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

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DATE:
FILE:

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-16	DIST	COUNTY		SHEET NO.
8-16				43

18

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

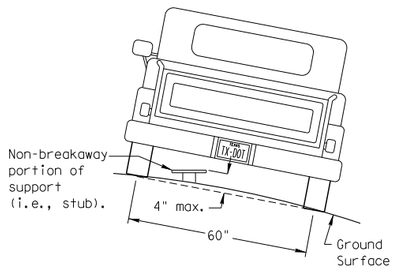
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

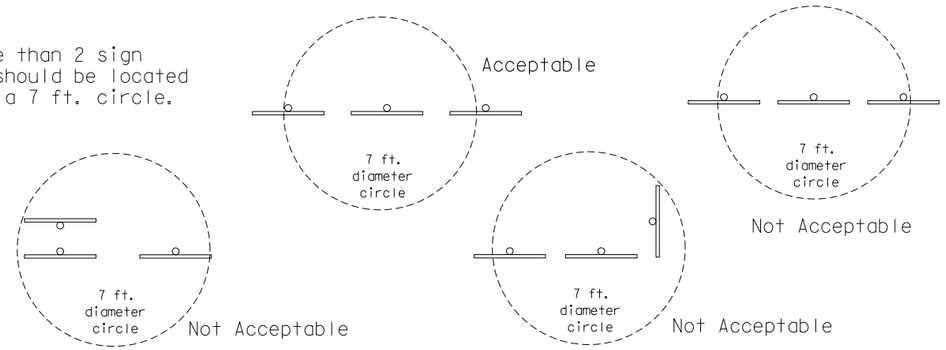
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



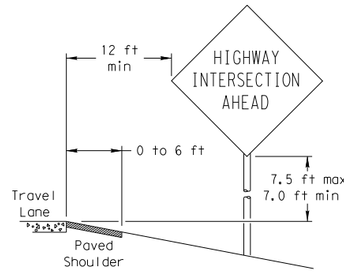
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



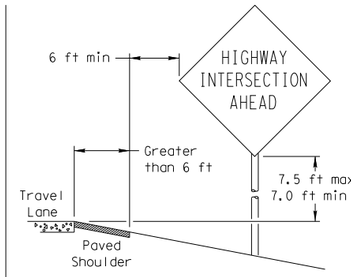
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

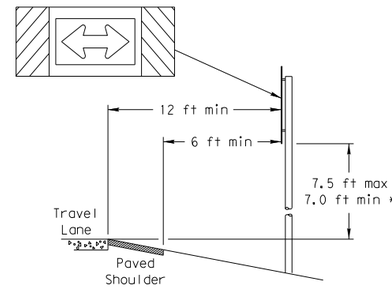
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



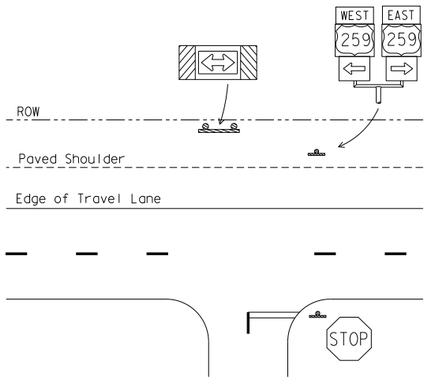
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

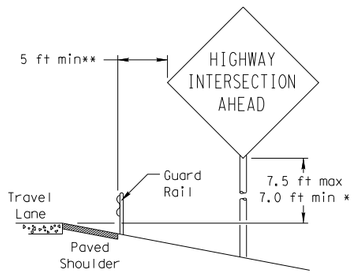
T-INTERSECTION



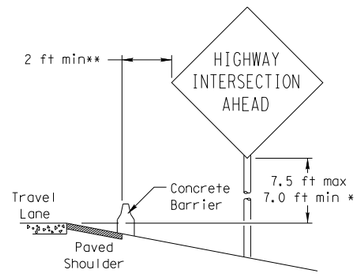
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

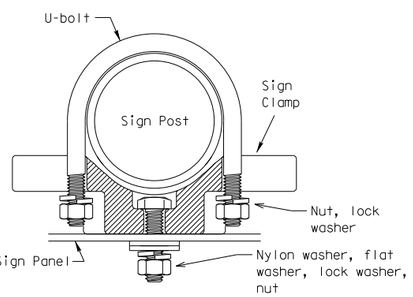
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

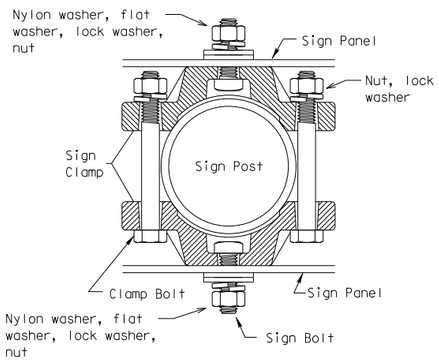
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



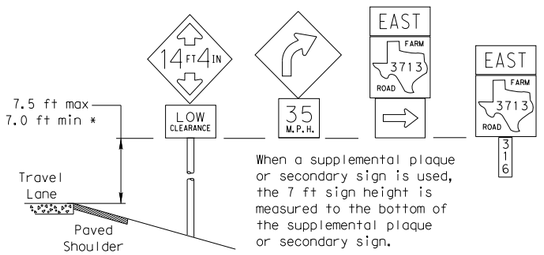
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

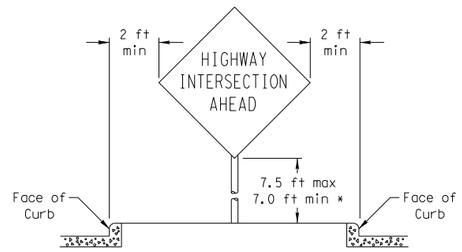
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



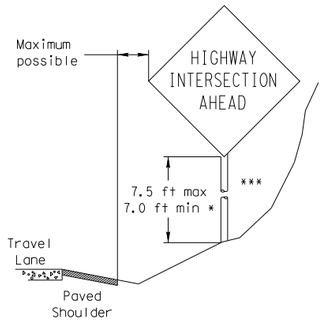
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.
			44

9-08 REVISIONS

DATE:
FILE:

26A

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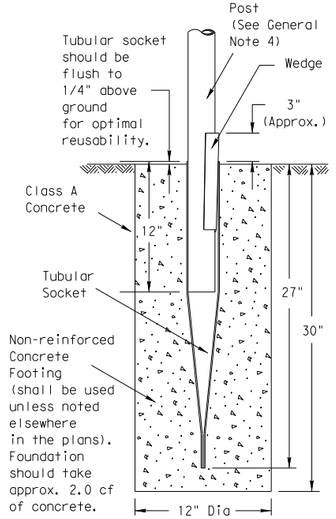
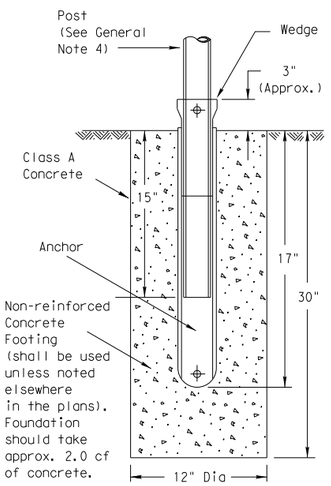
DATE:
FILE:

Wedge Anchor Steel System



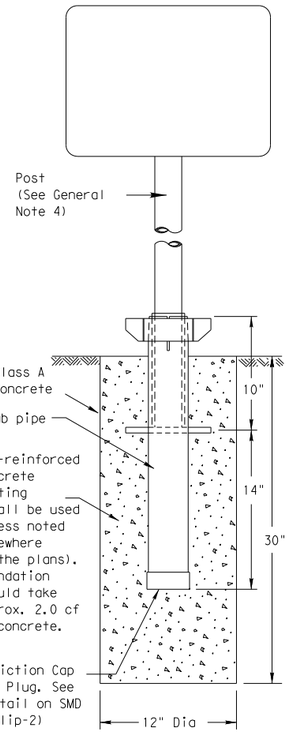
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

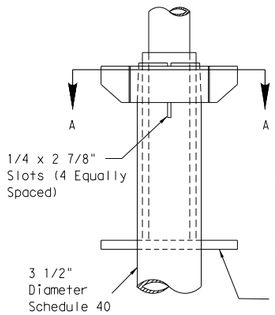


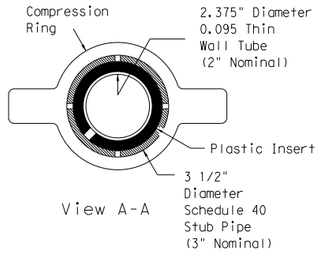
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



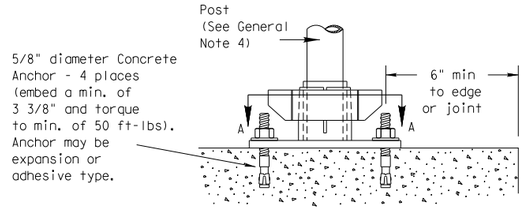
SM RD SGN ASSM TY TWT(X)UA(P)



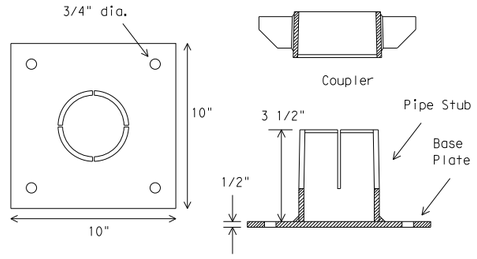


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

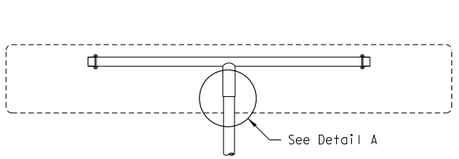


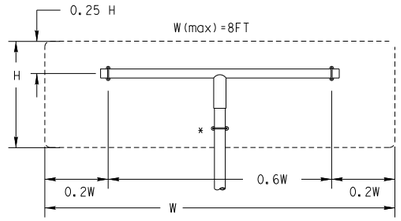
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)UB(P)

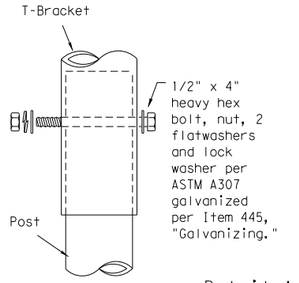
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)

(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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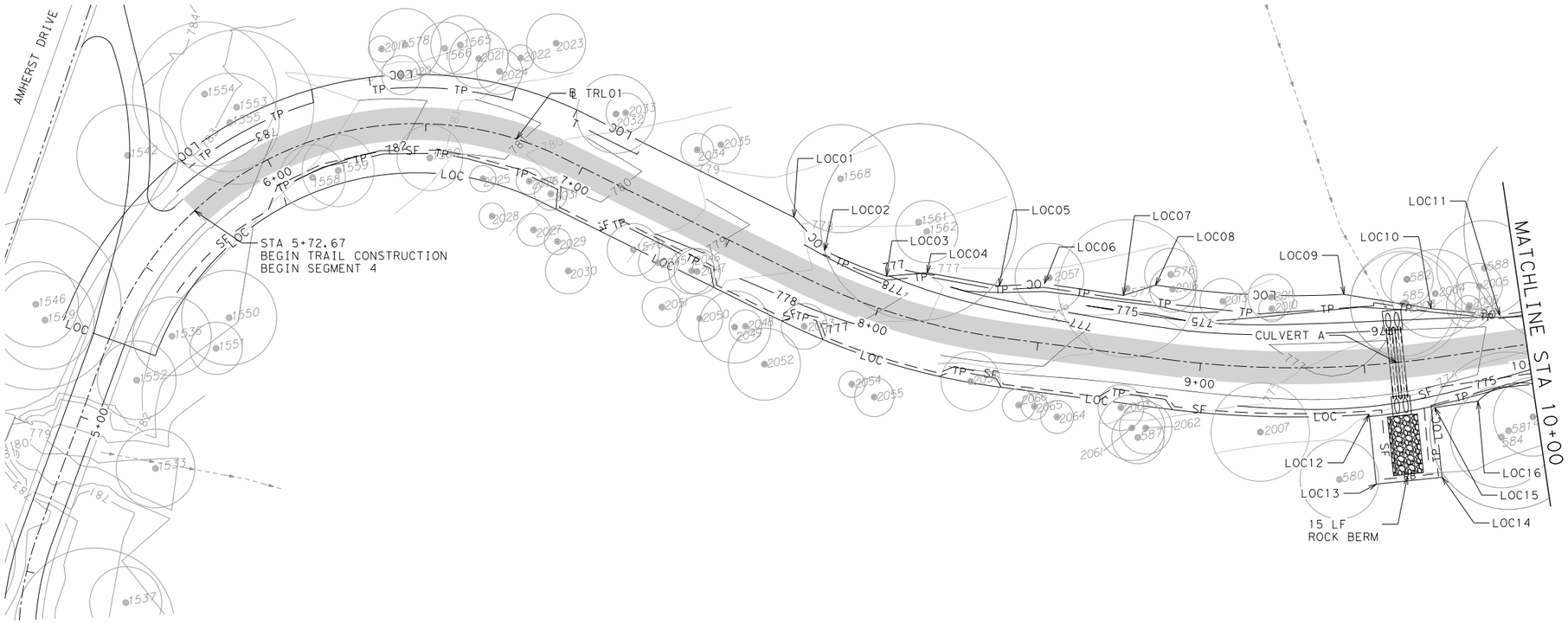
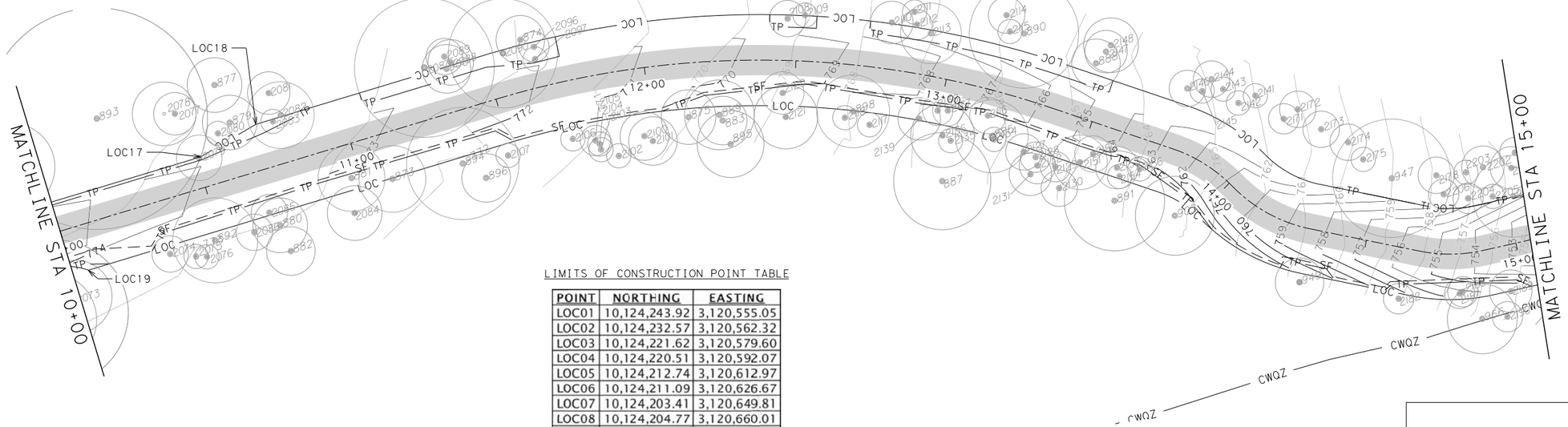
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
				45

26E





LEGEND

- ROW
- PL — PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
- CWQZ — CRITICAL WATER QUALITY ZONE
- SF — SILT FENCE
- RB — ROCK BERM
- CHAIN LINK FENCE
- GATE
- TP — TREE PROTECTION FENCE
- EXIST TREE TO REMAIN

NOTE:
LIMIT OF CONSTRUCTION IS 15-FT OFFSET FROM TRAIL ALIGNMENT UNLESS OTHERWISE NOTED IN THE LIMITS OF CONSTRUCTION POINT TABLE.

0 20 40

LIMITS OF CONSTRUCTION POINT TABLE

POINT	NORTHING	EASTING
LOC01	10,124,243.92	3,120,555.05
LOC02	10,124,232.57	3,120,562.32
LOC03	10,124,221.62	3,120,579.60
LOC04	10,124,220.51	3,120,592.07
LOC05	10,124,212.74	3,120,612.97
LOC06	10,124,211.09	3,120,626.67
LOC07	10,124,203.41	3,120,649.81
LOC08	10,124,204.77	3,120,660.01
LOC09	10,124,192.11	3,120,716.12
LOC10	10,124,183.24	3,120,741.56
LOC11	10,124,177.69	3,120,761.84
LOC12	10,124,154.75	3,120,717.35
LOC13	10,124,133.39	3,120,715.86
LOC14	10,124,131.99	3,120,735.98
LOC15	10,124,153.35	3,120,737.46
LOC16	10,124,152.98	3,120,750.77
LOC17	10,124,086.56	3,120,351.99
LOC18	10,124,093.99	3,120,371.66
LOC19	10,124,056.17	3,120,309.11

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
EROSION AND SEDIMENTATION CONTROL PLAN
BEGIN TO STA 15+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	46 OF 53

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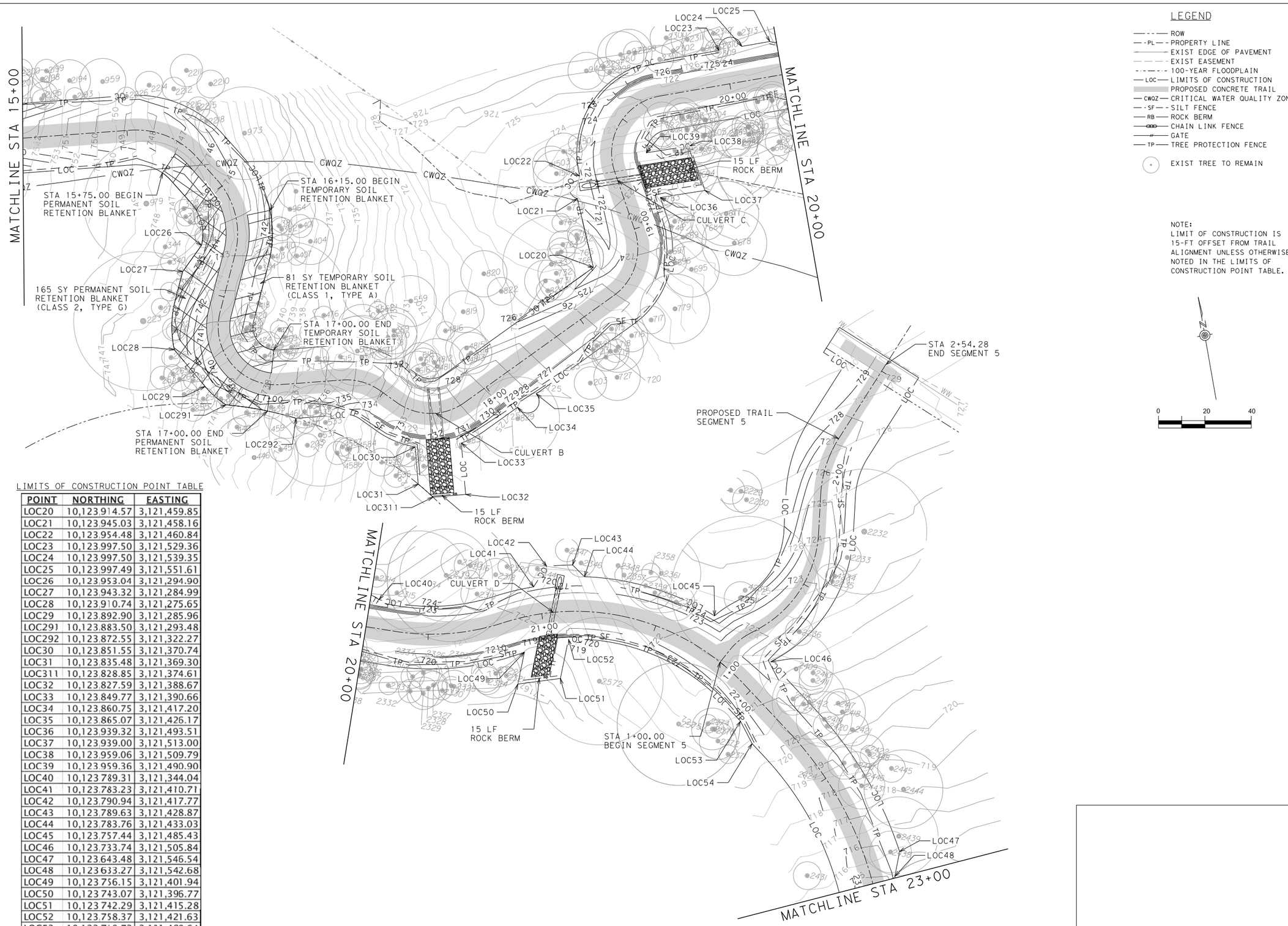

LIMITS OF CONSTRUCTION POINT TABLE

POINT	NORTHING	EASTING
LOC20	10,123,914.57	3,121,459.85
LOC21	10,123,945.03	3,121,458.16
LOC22	10,123,954.48	3,121,460.84
LOC23	10,123,997.50	3,121,529.36
LOC24	10,123,997.50	3,121,539.35
LOC25	10,123,997.49	3,121,551.61
LOC26	10,123,953.04	3,121,294.90
LOC27	10,123,943.32	3,121,284.99
LOC28	10,123,910.74	3,121,275.65
LOC29	10,123,892.90	3,121,285.96
LOC291	10,123,883.50	3,121,293.48
LOC292	10,123,872.55	3,121,322.27
LOC30	10,123,851.55	3,121,370.74
LOC31	10,123,835.48	3,121,369.30
LOC311	10,123,828.85	3,121,374.61
LOC32	10,123,827.59	3,121,388.67
LOC33	10,123,849.77	3,121,390.66
LOC34	10,123,860.75	3,121,417.20
LOC35	10,123,865.07	3,121,426.17
LOC36	10,123,939.32	3,121,493.51
LOC37	10,123,939.00	3,121,513.00
LOC38	10,123,959.06	3,121,509.79
LOC39	10,123,959.36	3,121,490.90
LOC40	10,123,789.31	3,121,344.04
LOC41	10,123,783.23	3,121,410.71
LOC42	10,123,790.94	3,121,417.77
LOC43	10,123,789.63	3,121,428.87
LOC44	10,123,783.76	3,121,433.03
LOC45	10,123,757.44	3,121,485.43
LOC46	10,123,733.74	3,121,505.84
LOC47	10,123,643.48	3,121,546.54
LOC48	10,123,633.27	3,121,542.68
LOC49	10,123,756.15	3,121,401.94
LOC50	10,123,743.07	3,121,396.77
LOC51	10,123,742.29	3,121,415.28
LOC52	10,123,758.37	3,121,421.63
LOC53	10,123,710.73	3,121,488.64
LOC54	10,123,700.33	3,121,491.87

LEGEND

- ROW
- PROPERTY LINE
- EXIST EDGE OF PAVEMENT
- EXIST EASEMENT
- 100-YEAR FLOODPLAIN
- LOC — LIMITS OF CONSTRUCTION
- PROPOSED CONCRETE TRAIL
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- CHAIN LINK FENCE
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- TP — TREE PROTECTION FENCE
- EXIST TREE TO REMAIN

NOTE:
LIMIT OF CONSTRUCTION IS 15-FT OFFSET FROM TRAIL ALIGNMENT UNLESS OTHERWISE NOTED IN THE LIMITS OF CONSTRUCTION POINT TABLE.

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CITY OF AUSTIN
NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A
EROSION AND SEDIMENTATION CONTROL PLAN
STA 15+00 TO STA 23+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	47 OF 53

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LIMITS OF CONSTRUCTION POINT TABLE

POINT	NORTHING	EASTING
LOC55	10,123,975.09	3,121,233.70
LOC56	10,123,978.01	3,121,244.20
LOC57	10,124,034.35	3,121,263.20
LOC58	10,124,128.64	3,121,199.15
LOC59	10,124,149.54	3,121,161.20
LOC60	10,124,154.50	3,121,091.67
LOC61	10,124,175.55	3,121,094.75
LOC62	10,124,196.51	3,121,099.11
LOC63	10,124,173.22	3,121,352.12
LOC64	10,124,016.22	3,121,326.71
LOC65	10,123,952.89	3,121,300.62
LOC66	10,123,894.18	3,121,463.73
LOC67	10,123,893.74	3,121,483.42
LOC68	10,123,867.75	3,121,487.78

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CITY OF AUSTIN

NORTHERN WALNUT CREEK HIKE AND BIKE TRAIL PHASE 1-A

EROSION AND SEDIMENTATION CONTROL PLAN
STA 23+00 TO END & SEGMENT 5 BEGIN TO END

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PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	1" = 40'
DATE	3/23/2017
SHEET NUMBER	48 OF 53

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CITY OF AUSTIN – STANDARD NOTES EROSION AND SEDIMENTATION CONTROL (MODIFIED FOR USE ON GENERAL PERMIT PROJECTS)

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR EXCAVATION).

2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE ENVIRONMENTAL CRITERIA MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.

3. THE PLACEMENT OF TREE/NATURAL AREA PROTECTIVE FENCING SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION AND THE APPROVED GRADING/TREE AND NATURAL AREA PLAN.

4. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, PERMIT APPLICANT, AND GENERAL PERMIT PROGRAM REPRESENTATIVE AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND THE TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK. THE CONTRACTOR SHALL NOTIFY THE GENERAL PERMIT PROGRAM OFFICE AT 512/974-6330, AT LEAST 3 DAYS PRIOR TO THE MEETING DATE.

5. ANY SIGNIFICANT VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS MUST BE APPROVED BY THE REVIEWING ENGINEER AND THE GENERAL PERMIT PROGRAM REPRESENTATIVE.

6. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT DAILY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES. SILT ACCUMULATION AT INLET DEVICES SHOULD BE REMOVED WHEN THE DEPTH REACHES TWO (2) INCHES.

7. PRIOR TO FINAL ACCEPTANCE BY THE CITY, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.

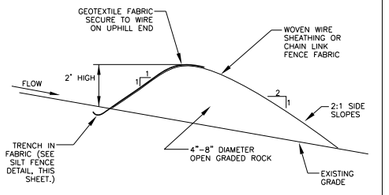
8. ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS ONE SQUARE FOOT OR LARGER IN TOTAL AREA, BLOWS AIR FROM WITHIN THE SUBSTRATE, AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME, IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT THE GENERAL PERMIT PROGRAM REPRESENTATIVE FOR FURTHER INVESTIGATION.

9. FIELD REVISIONS TO THE EROSION/SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES. ANY REVISIONS TO THE PERMITTED PLAN MUST BE APPROVED BY THE GENERAL PERMIT PROGRAM OFFICE OF THE PLANNING AND DEVELOPMENT REVIEW DEPARTMENT.

10. PERMANENT EROSION/SEDIMENTATION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WHERE THE CRITERIA MANUAL AND CONTRACT DOCUMENTS DIFFER THE MOST ENVIRONMENTALLY BENEFICIAL MATERIALS/METHOD SHALL BE REQUIRED UNLESS OTHERWISE APPROVED BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE.

11. DEVELOPER INFORMATION:

OWNER:
COMPANY: CITY OF AUSTIN
CONTACT: CLAY HARRIS
ADDRESS: 505 BARTON SPRINGS RD
AUSTIN, TX 78704 PHONE: 512/974-7895 E-MAIL: CLAY.HARRIS@AUSTINTEXAS.GOV
OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:
COMPANY: K. FRIESE & ASSOCIATES, INC.
CONTACT: THOMAS M. OWENS, P.E., V.P. ADDRESS: 1120 S. CAPITAL OF TX HWY, CITYVIEW 2, #100 AUSTIN, TX 78746
PHONE: 512/338-1704 E-MAIL: TOWENS@KFRIESE.COM
PARTY RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE: COMPANY: CONTRACTOR
PARTY RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE:
COMPANY: CONTRACTOR 12. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE GENERAL PERMIT PROGRAM REPRESENTATIVE, AT 974-6330, AT LEAST 48 HOURS PRIOR TO THE SPOILS REMOVAL. THIS NOTIFICATION SHALL INCLUDE THE DISPOSAL LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL. 13. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY PRIOR TO STREET WORK, AND WILL BE REMOVED AS SOON AS THE GENERAL PERMIT PROGRAM

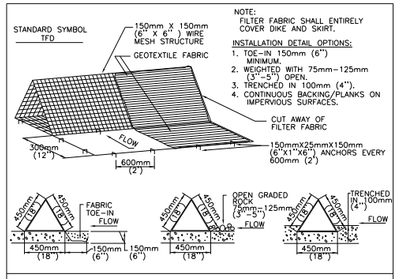


NOTES:
1. USE ONLY OPEN GRADED ROCK, 4-8 INCH DIAMETER, FOR STREAM FLOW CONDITION. USE OPEN GRADED ROCK, 3-5 INCH DIAMETER, FOR OTHER CONDITIONS.
2. ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN WIRE SHEATHING 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 THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

FABRIC COVERED (SEVERE SERVICE) ROCK BERM

DESCRIPTION: CREATED BY WATERSHED PROTECTION AND DEVELOPMENT REVIEW DEPARTMENT
REV. DATE:

CoA GENERAL PERMIT PROGRAM
APPROVED
SCALE: N.T.S.

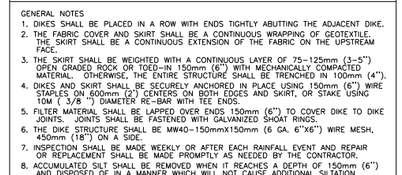


NOTE:
FILTER FABRIC SHALL ENTIRELY COVER DIKE AND SKIRT.

INSTALLATION DETAIL OPTIONS:
1. TOE-IN 150mm (6") MINIMUM.
2. WEIGHTED WITH 75mm-125mm (3"-5") OPEN.
3. TRENCHED IN 100mm (4").
4. CONTINUOUS BACKING/PLANKS ON IMPERVIOUS SURFACES.

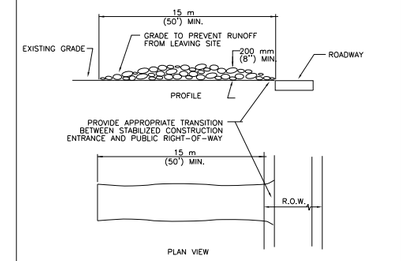
GENERAL NOTES
1. DIKES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT DIKE.
2. THE FABRIC COVER AND SKIRT SHALL BE A CONTINUOUS WRAPPING OF GEOTEXTILE. THE SKIRT SHALL BE A CONTINUOUS EXTENSION OF THE FABRIC ON THE UPSTREAM FACE.
3. THE SKIRT SHALL BE WEIGHTED WITH A CONTINUOUS LAYER OF 75-125mm (3-5") OPEN GRADED ROCK OR TOED-IN 150mm (6") WITH MECHANICALLY COMPACTED MATERIAL. OTHERWISE, THE ENTIRE STRUCTURE SHALL BE TRENCHED IN 100mm (4").
4. DIKES AND SKIRT SHALL BE SECURELY ANCHORED IN PLACE USING 150mm (6") WIRE STAPLES ON 600mm (2') CENTERS ON BOTH EDGES AND SKIRT, OR STAKE USING 10M (3/8 ") DIAMETER RE-BAR WITH TEE ENDS.
5. FILTER MATERIAL SHALL BE LAPPED OVER ENDS 150mm (6") TO COVER DIKE TO DIKE JOINTS. JOINTS SHALL BE FASTENED WITH GALVANIZED SHOAT RINGS.
6. THE DIKE STRUCTURE SHALL BE MW40-150mmX150mm (6 GA. 6"X6") WIRE MESH, 450mm (18") ON A SIDE.
7. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
8. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6") AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.
9. AFTER THE DEVELOPMENT SITE IS COMPLETELY STABILIZED, THE DIKES AND ANY REMAINING SILT SHALL BE REMOVED. SILT SHALL BE DISPOSED OF AS INDICATED IN GENERAL NOTE 8 ABOVE.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
RECORD COPY SIGNED BY J. PATRICK MURPHY 3/27/00 ADOPTED
TRIANGULAR SEDIMENT FILTER DIKE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 628S



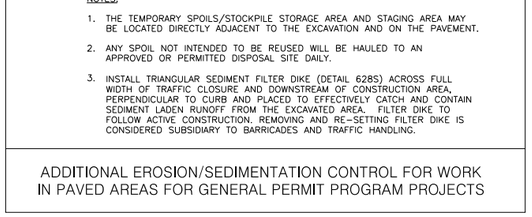
NOTES:
1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIA FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
RECORD COPY SIGNED BY MORGAN BYARS 8/24/2010 ADOPTED
ROCK BERM
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 639S-1



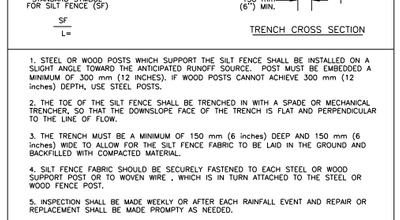
NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED
STABILIZED CONSTRUCTION ENTRANCE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 641S-1



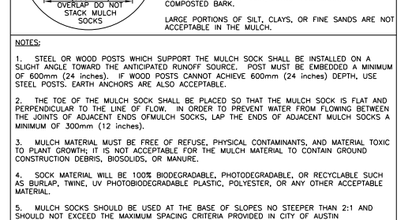
NOTES:
1. THE TEMPORARY SPOILS/STOCKPILE STORAGE AREA AND STAGING AREA MAY BE LOCATED DIRECTLY ADJACENT TO THE EXCAVATION AND ON THE PAVEMENT.
2. ANY SPOIL NOT INTENDED TO BE REUSED WILL BE HAULED TO AN APPROVED OR PERMITTED DISPOSAL SITE DAILY.
3. INSTALL TRIANGULAR SEDIMENT FILTER DIKE (DETAIL 628S) ACROSS FULL WIDTH OF TRAFFIC CLOSURE AND DOWNSTREAM OF CONSTRUCTION AREA, PERPENDICULAR TO CURB AND PLACED TO EFFECTIVELY CATCH AND CONTAIN SEDIMENT LADEN RUNOFF FROM THE EXCAVATED AREA. FILTER DIKE TO FOLLOW ACTIVE CONSTRUCTION. REMOVING AND RE-SETTING FILTER DIKE IS CONSIDERED SUBSIDIARY TO BARRICADES AND TRAFFIC HANDLING.

ADDITIONAL EROSION/SEDIMENTATION CONTROL FOR WORK IN PAVED AREAS FOR GENERAL PERMIT PROGRAM PROJECTS



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. 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.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED
SILT FENCE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 642S-1



MULCH SOCK MATERIAL

USE UNTREATED WOOD CHIPS PRODUCED FROM A 3 (THREE) INCH MINUS SCREENING PROCESS (EQUIVALENT TO TXDOT ITEM 161, COMPOST, SECTION 1.6.2.B, WOOD CHIP REQUIREMENTS).

MULCH CONSISTS PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, OR COMPOSTED BARK.

LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MULCH.

NOTES:
1. STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.
2. THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OFMULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).
3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.
4. SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.
5. MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.
6. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN — WATERSHED PROTECTION DEPARTMENT
RECORD COPY SIGNED BY MORGAN BYARS 09/24/2010 ADOPTED
MULCH SOCK
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 648S-1

CITY OF AUSTIN

GENERAL PERMIT PROGRAM

GENERAL PERMIT OFFICE
EROSION/SEDIMENTATION CONTROL
CITY OF AUSTIN STANDARD NOTES AND DETAILS

REVISIONS

NO.	BY	DATE	REMARKS
1	AKYA	01/26/16	MODIFICATIONS TO RESOLVE CoA GMD REVIEW COMMENTS, 4.5
---			REVIEWED AND APPROVED BY GPP COORDINATOR

SHEET INFORMATION
DATE 3/23/2017
SHEET 49 OF 53
CAD REF. NO.

PERMIT #_____

GENERAL PERMIT PROGRAM (GPP)
STANDARD ENVIRONMENTAL NOTES:

ADDITIONAL AREAS:

1. ANY ADDITIONAL AREAS REQUIRED FOR CONSTRUCTION OF THIS PROJECT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR MUST SECURE CITY OF AUSTIN APPROVAL OF PROPOSED ADDITIONAL AREAS PRIOR TO USE. APPROVAL OF "CORRECTION REQUEST" MUST BE SECURED FROM THE GENERAL PERMIT PROGRAM OFFICE OF THE PLANNING AND DEVELOPMENT REVIEW DEPARTMENT.

2. ALL ASSOCIATED PERMITS AND FEES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

3. IN ORDER TO SECURE APPROVAL FOR USE OF ADDITIONAL AREAS, CONTRACTOR MUST PROVIDE COMPLETE "CORRECTION REQUEST" SUBMITTAL TO GENERAL PERMIT PROGRAM OFFICE AND ALLOW A ONE WEEK COMMENT PERIOD FOR EACH REVIEW. CONTRACTOR SHOULD REQUEST INFORMATION ON THE ELEMENTS REQUIRED TO BE INCLUDED IN THE SUBMITTAL FROM THE OWNER'S REPRESENTATIVE OR THE GENERAL PERMIT PROGRAM OFFICE.

4. CONTRACTOR MUST INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTION FOR ALL SUCH AREAS IN ACCORDANCE WITH THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL AND AS INCLUDED IN THE APPROVED SUBMITTAL OR DIRECTED IN THE FIELD BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE.

5. A SIGNED COPY OF THE PLANS PERMITTED THROUGH THE GENERAL PERMIT PROGRAM MUST BE KEPT ON SITE AND ACCESSIBLE AT ALL TIMES DURING PROJECT CONSTRUCTION.

DEWATERING:

CONTRACTOR IS RESPONSIBLE FOR DEWATERING OF WORK AREA. CONTRACTOR MUST SECURE CITY OF AUSTIN APPROVAL OF PROPOSED DEWATERING PROCEDURES PRIOR TO INSTALLATION OR USE. APPROVAL MUST BE SECURED FROM THE GENERAL PERMIT PROGRAM (GPP) OFFICE OF THE PLANNING AND DEVELOPMENT REVIEW DEPARTMENT. CONTRACTOR MUST PROVIDE COMPLETE SUBMITTAL TO GPP OFFICE AND ALLOW AN ONE WEEK (MIN.) COMMENT PERIOD FOR EACH REVIEW. CONTACT THE GPP OFFICE FOR SUBMITTAL REQUIREMENTS.

FUEL STORAGE:

FUEL STORAGE IS PROHIBITED ON THIS PROJECT. ADDITIONALLY, THE CONTRACTOR IS REQUIRED TO NOTIFY THE GENERAL PERMIT PROGRAM OFFICE IMMEDIATELY FOLLOWING ANY SPILL OF FUEL OR OTHER TOXIC MATERIAL. CONTRACTOR IS REQUIRED TO FOLLOW-UP WITH WRITTEN DOCUMENTATION, INCLUDING A COMPLETE DESCRIPTION OF THE INCIDENT, MATERIAL SPILLED, AND ACTIONS TAKEN TO CONTAIN AND CLEAN-UP MATERIAL.

FUGITIVE DUST CONTROL:

ALL PROJECTS APPROVED THROUGH THE GENERAL PERMIT PROGRAM (GPP) MUST COMPLY WITH THE CODE OF THE CITY OF AUSTIN AND THE ENVIRONMENTAL CRITERIA MANUAL REQUIREMENTS TO CONTROL AIRBORNE DUST. COMPLIANCE IS REQUIRED FOR ENTIRE PROJECT SITE AS WELL AS ASSOCIATED OPERATIONS. CONTACT THE GPP OFFICE FOR RECOMMENDED CONTROL METHODS.

SPOILS STORAGE:

NO SPOILS STORAGE IS ALLOWED WITHIN A CRITICAL WATER QUALITY ZONE, A 100-YEAR FLOODPLAIN, OR ON A SLOPE WITH A GRADIENT OF MORE THAN 15 PERCENT.

E/S CONTROLS FOR BORE / RECEIVING PIT LOCATIONS:

TEMPORARY E/S CONTROLS MUST SURROUND THE ENTIRETY OF BORING OPERATIONS, INCLUDING PIT, EQUIPMENT, ETC. FOR LOCATIONS WITHIN IMPERVIOUS AREAS, TEMPORARY CONTROL WILL BE TRIANGULAR FILTER DIKE (COA STANDARD DETAIL #628S). DIKE FLAP WILL BE CONTINUOUSLY WEIGHTED DOWN THROUGH THE USE OF 1" BY 4" WOOD STRIPS NAILED TO THE PAVEMENT, EXCEPT FOR THE ACCESS POINT. PLACEMENT OF TEMPORARY E/S CONTROLS ACROSS ACCESS POINT WILL BE REQUIRED WHENEVER THE SITE IS NOT ACTIVELY USED. FOR LOCATIONS WITHIN PERVIOUS AREAS, TEMPORARY CONTROL WILL BE SILT FENCE (COA STANDARD DETAIL #642S-1) OR MULCH SOCKS (COA STANDARD DETAIL #648S-1), AS INDICATED ON APPROVED PLANS.

SOIL RETENTION BLANKET:

UNLESS OTHERWISE INDICATED IN THE PROJECT DOCUMENTS, INSTALLATION OF SOIL RETENTION BLANKET WILL BE REQUIRED FOR ALL IMPACTED SLOPES GREATER THAN 3:1 AND ALL IMPACTED AREAS WITHIN DRAINAGE CONVEYANCES. (CITY OF AUSTIN STANDARD SPECIFICATION ITEM 605S) SOIL RETENTION BLANKET SUBMITTAL MUST BE APPROVED BY PROJECT ENGINEER AND GENERAL PERMIT PROGRAM (GPP) REPRESENTATIVE PRIOR TO USE AND MUST INCLUDE PRODUCT AND INSTALLATION DETAILS PROVIDED BY MANUFACTURER. FINISH GRADING MUST BE INSPECTED AND APPROVED BY GPP INSPECTOR PRIOR TO BLANKET INSTALLATION. INSTALLATION MUST BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND MUST BE INSPECTED AND APPROVED BY GPP REPRESENTATIVE PRIOR TO ACCEPTANCE.

SOD INSTALLATION:

REVEGETATION WITHIN MANAGED TURF AREAS MUST BE ACCOMPLISHED THROUGH THE INSTALLATION OF SOLID BLOCK GRASS SOD. SOD TYPE MUST MATCH ADJACENT GRASS TYPE. QUESTIONS REGARDING SOD TYPE WILL BE RESOLVED BY THE GENERAL PROGRAM PERMIT REPRESENTATIVE. REFER TO CITY OF AUSTIN STANDARD SPECIFICATION ITEM NO. 602S: SODDING FOR EROSION CONTROL, UNLESS OTHERWISE NOTED ON THE APPROVED PLANS.

TxDOT RIGHTS-OF-WAY:

TOPSOIL (TxDOT ITEM NO. 160), SOIL RETENTION BLANKET (TxDOT ITEM NO. 169), AND REVEGETATION (TxDOT ITEM NO. 164) INSTALLED WITHIN TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT) RIGHT-OF-WAY SHALL COMPLY WITH "REQUIREMENTS FOR INSTALLATION OF UTILITIES WITHIN THE STATE RIGHT-OF-WAY, AUSTIN DISTRICT".

PROJECT SEQUENCE:
(REFER TO FULL PLAN SET FOR PROJECT-SPECIFIC ADDITIONS, IF APPLICABLE.)

PRIOR TO CONSTRUCTION:

1. SECURE APPLICABLE COA PERMITS, INCLUDING APPROVAL UNDER GENERAL PERMIT PROGRAM AND RIGHT-OF-WAY EXCAVATION PERMIT.

2. NOTIFY GENERAL PERMIT PROGRAM REPRESENTATIVE PRIOR TO PLACEMENT OF E/S CONTROLS AND TREE PROTECTION FENCING. ALL PROPOSED PHASING OF CONTROLS MUST BE SUBMITTED TO AND APPROVED BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE PRIOR TO THE FIELD PRE-CONSTRUCTION CONFERENCE.

3. NOTIFY COA TEMPORARY TRAFFIC CONTROL REPRESENTATIVE PRIOR TO PLACEMENT OF TEMPORARY TRAFFIC CONTROLS. ALL PROPOSED PHASING OF CONTROLS MUST BE INDICATED ON APPROVED TEMPORARY TRAFFIC CONTROL PLAN AND SEALED BY PROFESSIONAL ENGINEER.

4. PLACE TEMPORARY E/S CONTROLS AND TREE PROTECTION FENCING PRIOR TO BEGINNING ANY EXCAVATION. INSTALL C.I.P. SIGN, IF APPLICABLE.

5. HOLD ENVIRONMENTAL PRE-CONSTRUCTION CONFERENCE ON SITE WITH THE CONTRACTOR, OWNER'S REPRESENTATIVE, AND GENERAL PERMIT PROGRAM REPRESENTATIVE AFTER INSTALLATION OF E/S CONTROLS AND TREE PROTECTION FENCING AND PRIOR TO ANY TRENCHING OPERATIONS.

6. PLACE TEMPORARY TRAFFIC CONTROL DEVICES.

PROJECT CONSTRUCTION:

1. BEGIN CONSTRUCTION. NOTIFY GENERAL PERMIT PROGRAM REPRESENTATIVE A MINIMUM OF 48 HOURS IN ADVANCE OF TRANSITION BETWEEN PHASES.

2. CONTACT GENERAL PERMIT OFFICE TO SCHEDULE FIELD INSPECTION PRIOR TO BEGINNING INSTALLATION OF PERMANENT E/S CONTROLS.

3. COMPLETE RESTORATION OF ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES FOR THIS PROJECT. (PERMANENT E/S CONTROLS)

4. REMOVE TEMPORARY TRAFFIC CONTROL DEVICES RELATED TO WORK AREAS OUTSIDE OF THE STREET.

5. HOLD ENVIRONMENTAL POST-CONSTRUCTION CONFERENCE ON SITE WITH THE CONTRACTOR, OWNER'S REPRESENTATIVE, AND GENERAL PERMIT PROGRAM REPRESENTATIVE. ALL PERMANENT E/S CONTROLS MUST BE ACCEPTED BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE. PERMANENT CONTROLS SHALL CONSIST OF REVEGETATION PER DETAILS 602, 604S, AND 609S AS INDICATED ON APPROVED PLANS.

6. FOLLOWING FINAL ACCEPTANCE OF PERMANENT E/S CONTROLS BY THE GENERAL PERMIT PROGRAM REPRESENTATIVE, REMOVE TEMPORARY E/S CONTROLS. CLEAN EXISTING STORM DRAINAGE SYSTEMS AS NECESSARY DUE TO CONSTRUCTION OPERATIONS.

7. DRESS-UP AND RESTORE ANY AREAS DISTURBED BY REMOVAL OF TEMPORARY E/S CONTROLS DESCRIBED ABOVE.

REQUIRED SUBMITTALS:

SUBMITTALS REQUIRED TO BE APPROVED BY GENERAL PERMIT PROGRAM REPRESENTATIVE INCLUDE: SUBMITTALS TRIGGERED BY CITY OF AUSTIN SERIES 600 SPECIFICATIONS AND RELATED SPECIAL PROVISIONS/SPECIFICATIONS, CONSTRUCTION SCHEDULE, TREE PROTECTION, P-6 AND OTHER ROOT ZONE PROTECTION/MITIGATION MEASURES, DEWATERING PLAN, WATERING SCHEDULE FOR REVEGETATION AREAS, AND ANY VEGETATIVE REPLACEMENT PROPOSALS, IF NOT ALREADY PART OF THE PERMITTED PLAN SET.

CITY OF AUSTIN - STANDARD NOTES
TREE AND NATURAL AREA PROTECTION
(MODIFIED FOR USE ON GENERAL PERMIT PROJECTS)

1. ALL TREES AND NATURAL AREAS SHOWN ON PLAN TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY MEASURES.

2. PROTECTIVE MEASURES SHALL BE INSTALLED ACCORDING TO CITY OF AUSTIN STANDARDS FOR TREE PROTECTION.

3. PROTECTIVE MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING), AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE PROJECT.

4. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD-UP, COMPACTION OR CUTTING OF CRITICAL ROOT ZONE WITHIN TREE DRIP LINES.

5. TREE PROTECTION SHALL COMPLETELY SURROUND THE TREES OR GROUP OF TREES AND WILL BE LOCATED AT THE OUTERMOST LIMIT OF BRANCHES (DRIP LINE). FOR NATURAL AREAS, PROTECTIVE MEASURES SHALL FOLLOW THE LIMIT OF CONSTRUCTION LINE, IN ORDER TO PREVENT THE FOLLOWING:

A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR
TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS;

B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 6 INCHES CUT OR FILL) OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE GENERAL PERMIT PROGRAM OFFICE OF THE PLANNING AND DEVELOPMENT REVIEW DEPARTMENT;

C. WOUNDS TO EXPOSED ROOTS, TRUNK OR LIMBS BY MECHANICAL EQUIPMENT;

D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING, AND FIRES.

6. EXCEPTIONS TO INSTALLING PROTECTIVE FENCES AT CRITICAL ROOT ZONES MAY BE PERMITTED IN THE FOLLOWING CASES:

A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT, ERECT THE FENCE APPROXIMATELY 2 FEET BEYOND THE AREA DISTURBED;

B. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA

C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN 6 FEET TO THE BUILDING

D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE GENERAL PERMIT PROGRAM OFFICE AT 974-6330 TO DISCUSS ALTERNATIVES.

SPECIAL NOTE: FOR THE PROTECTION OF NATURAL AREAS, NO EXCEPTIONS TO INSTALLING FENCES AT THE LIMIT OF CONSTRUCTION LINE WILL BE PERMITTED.

WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE 5 FEET OR CLOSER TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF 8 FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE REDUCED FENCING.

7. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN AREAS OF UNPROTECTED ROOT ZONES, THOSE AREAS SHOULD BE COVERED WITH 12 INCHES OF ORGANIC MULCH TO MINIMIZE SOIL COMPACTION DURING CONSTRUCTION. FILTER FABRIC UNDERLAYMENT MAY BE REQUIRED AT DIRECTION OF GENERAL PERMIT PROGRAM REPRESENTATIVE BASED ON SITE CONDITIONS AND CONSTRUCTION ACTIVITIES. MAXIMUM FOUR (4) INCHES DEPTH MAY BE LEFT IN PLACE AFTER CONSTRUCTION WITH APPROVAL FROM THE GENERAL PERMIT PROGRAM REPRESENTATIVE.

8. ALL GRADING WITHIN PROTECTED ROOT ZONE AREAS SHALL BE DONE BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE ROOT DAMAGE. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCES TO 2 FEET BEHIND THE GRADE CHANGE AREA.

9. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN 2 DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.

10. PRIOR TO EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINES, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT TO MINIMIZE DAMAGE TO REMAINING ROOTS.

11. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.

12. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.

13. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 4 INCHES SHALL BE PERMITTED WITHIN THE DRIPLINE OF TREES. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.

14. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS. SEE NOTE THREE (3) OF SUPPLEMENTAL TREE PROTECTION NOTES FOR ADDITIONAL REQUIREMENTS.

15. ALL FINISHED PRUNING MUST BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES AVAILABLE ON REQUEST FROM THE GENERAL PERMIT PROGRAM OFFICE).

16. DEVIATIONS FROM THE ABOVE NOTES MAY BE CONSIDERED ORDINANCE VIOLATIONS IF THERE IS SUBSTANTIAL NONCOMPLIANCE OR IF A TREE SUSTAINS DAMAGE AS A RESULT.

17. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.

SUPPLEMENTAL TREE PROTECTION NOTES

1. ALL TREE PROTECTION MUST COMPLY WITH CITY OF AUSTIN REQUIREMENTS AS OUTLINED IN THE ENVIRONMENTAL CRITERIA MANUAL AND AS INDICATED BY STANDARD COA NOTES AND DETAILS INCLUDED WITHIN THIS DOCUMENT SET. CONTRACTOR SHALL INSTALL PROTECTION PRIOR TO PRE-CONSTRUCTION CONFERENCE, MAKE ADJUSTMENTS TO PROTECTION AS DIRECTED BY THE GPP REPRESENTATIVE, AND MAINTAIN PROTECTION UNTIL PROJECT IS COMPLETE.

2. TYPE AND LOCATION OF ALL TREE PROTECTION MUST BE APPROVED IN THE FIELD BY THE GENERAL PERMIT PROGRAM (GPP) REPRESENTATIVE PRIOR TO CONSTRUCTION.

3. WALK-THROUGH: CONTRACTOR SHALL CONDUCT WALK-THROUGH MEETING WITH GENERAL PERMIT PROGRAM REPRESENTATIVE PRIOR TO PERFORMING ANY PRUNING ACTIVITIES ON TREES IN PROJECT AREA. PURPOSE OF WALK-THROUGH WILL BE TWOFOLD. ONE PURPOSE WILL BE TO DETERMINE THE MINIMUM AMOUNT OF PRUNING NECESSARY TO ALLOW CONSTRUCTION WORK TO BE COMPLETED. SECOND PURPOSE WILL BE TO DETERMINE AREAS OF PROJECT IN WHICH EXHAUST DIVERTERS WILL BE REQUIRED ON CONSTRUCTION EQUIPMENT TO PREVENT SCORCHING OF EXISTING TREES.

4. ALL PRUNING MUST BE PERFORMED IN ACCORDANCE WITH ANSI A300 (PART 1) - 2001 AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS (PRUNING), OR LATEST APPROVED VERSION. THIS DOCUMENT MAY BE OBTAINED ONLINE FOR A FEE AT WWW.ANSI.ORG.

5. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS. TO PREVENT BARK TEARS, THE WEIGHT OF THE BRANCH SHALL BE REMOVED BEFORE MAKING FINAL PRUNING CUT.

6. ALL PRUNING SHALL PRESERVE THE NATURAL CHARACTER OF THE TREE.

7. ONLY COLLAR CUTS ARE ACCEPTABLE. NO FLUSH CUTS OR STUB CUTS WILL BE ALLOWED.

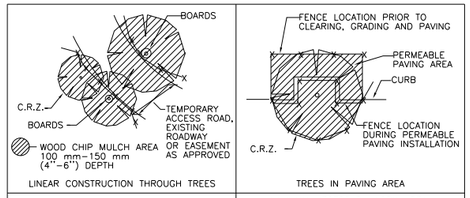
8. ALL BRANCHES THAT ARE BROKEN OR DAMAGED DURING CONSTRUCTION SHALL BE REMOVED.

9. PRUNING CUTS OR DAMAGED AREAS ON AN OAK TREE SHALL BE PAINTED WITHIN FIVE MINUTES WITH A STANDARD TREE WOUND DRESSING. TREE WOUND DRESSING SHALL BE EITHER TREEKOTE AEROSOL OR TANGLEFOOT PRUNING SEALER (OR APPROVED EQUAL). THIS ALSO APPLIES TO WOUNDS CREATED BY CONSTRUCTION VEHICLES OR EQUIPMENT. ALL PRUNING MUST BE IN ACCORDANCE WITH COA OAK WILT PREVENTION POLICY.

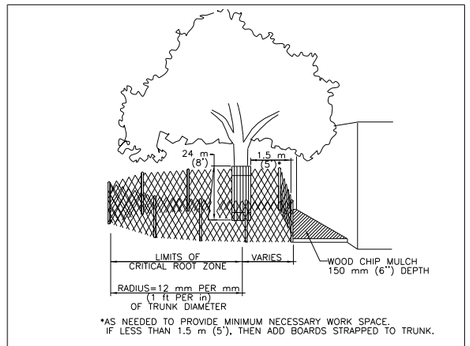
10. ANY TREE ROOTS THAT ARE EXPOSED, CUT, OR TORN DURING CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SURROUNDING SOIL. (REFER ALSO TO NUMBER 9 OF THE TREE AND NATURAL AREA PROTECTION NOTES INCLUDED IN THIS PLAN SET.)

11. ALL TRENCHING WITHIN THE CRITICAL ROOT ZONE OF A TREE TO BE PRESERVED WILL BE SAW CUT OR EXCAVATED BY HAND, AS APPROVED BY THE GENERAL PERMIT PROGRAM ARBORIST.

12. REFER TO ENVIRONMENTAL CRITERIA MANUAL APPENDIX P-6 FOR FURTHER REMEDIAL TREE CARE REQUIREMENTS. P-6 REMEDIAL TREE CARE WILL BE COORDINATED WITH AND APPROVED BY THE GENERAL PERMIT PROGRAM ARBORIST FOR PROJECTS PERMITTED THROUGH THE GENERAL PERMIT PROGRAM.



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROTECTION FENCE LOCATIONS
RECORD COPY SIGNED BY J. PATRICK MURPHY	11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
		STANDARD NO. 610S-1



CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROTECTION FENCE MODIFIED TYPE A - CHAIN LINK
RECORD COPY SIGNED BY J. PATRICK MURPHY	11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
		STANDARD NO. 610S-4

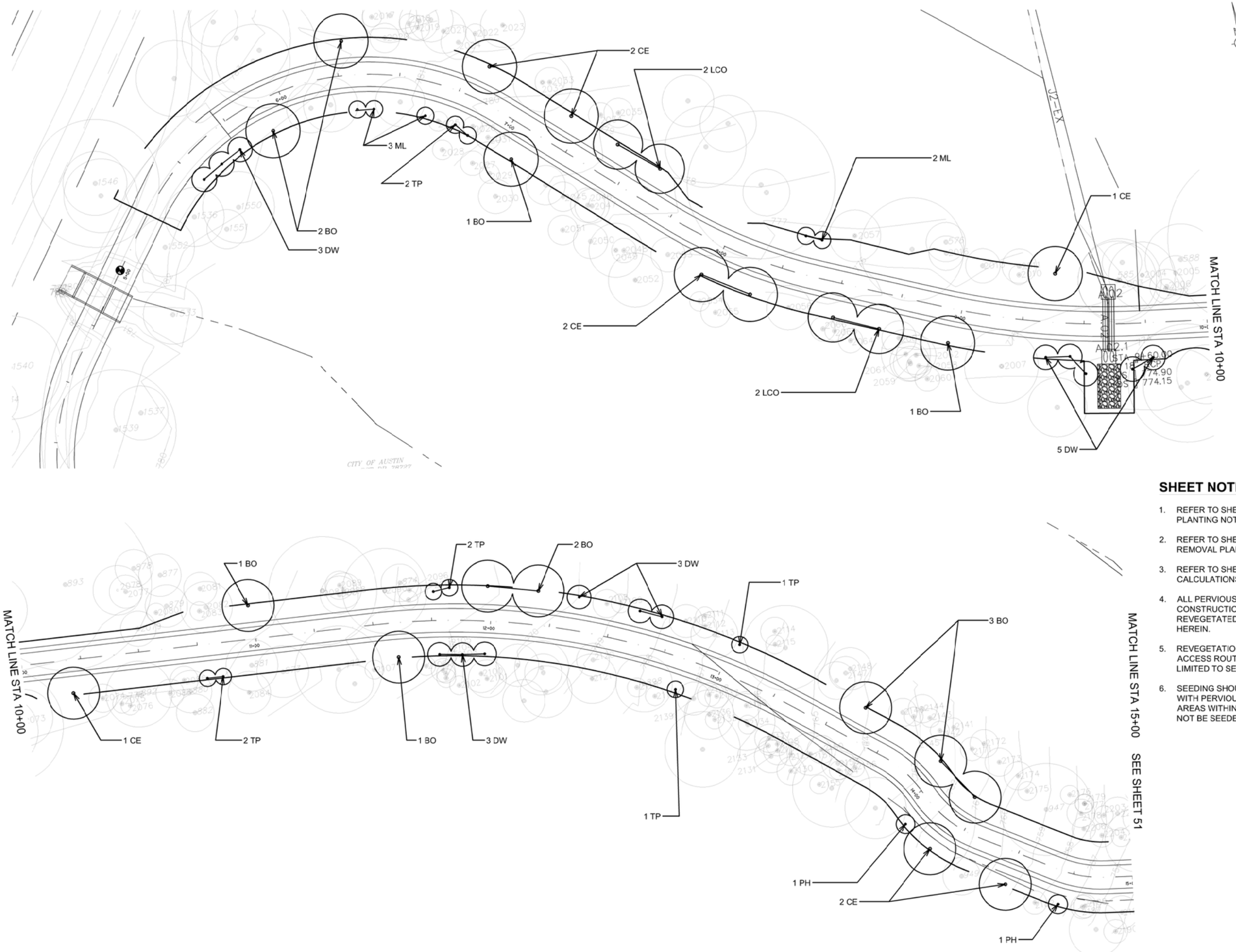
CITY OF AUSTIN APPROVED 1999

GENERAL PERMIT OFFICE
TREE PROTECTION
AND ENVIRONMENTAL NOTES
CITY OF AUSTIN STANDARD NOTES AND DETAILS

GENERAL PERMIT PROGRAM

NO.	BY	DATE	REVISIONS REMARKS

SHEET INFORMATION
DATE APRIL 25, 2011
SHEET 49A OF 53
CAD REF. NO. TP-ENVIRO.DWG



SHEET NOTES

1. REFER TO SHEET 53 FOR PLANT MATERIALS, PLANTING NOTES AND DETAILS, ETC.
2. REFER TO SHEETS 4 THROUGH 8 FOR TREE REMOVAL PLAN AND COMPREHENSIVE TREE LIST.
3. REFER TO SHEET 53 FOR MITIGATION CALCULATIONS.
4. ALL PERVIOUS AREAS IMPACTED BY CONSTRUCTION OF THIS PROJECT WILL BE REVEGETATED UNLESS OTHERWISE NOTED HEREIN.
5. REVEGETATION REQUIRED WITHIN REMAINDER OF ACCESS ROUTE AND THE STAGING AREA IS LIMITED TO SEEDING.
6. SEEDING SHOULD TAKE PLACE ONLY IN AREAS WITH PERVIOUS SURFACES. SOME SURFACE AREAS WITHIN THE L.O.C. ARE ROCK AND SHOULD NOT BE SEEDED.

AK YOUNG ASSOCIATES

Post Office Box 201255
Austin, Texas 78720-1255
512/476-0056

REV NO.	BY	DATE	REVISION DESCRIPTION

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1092
MARCH 24, 2017
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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

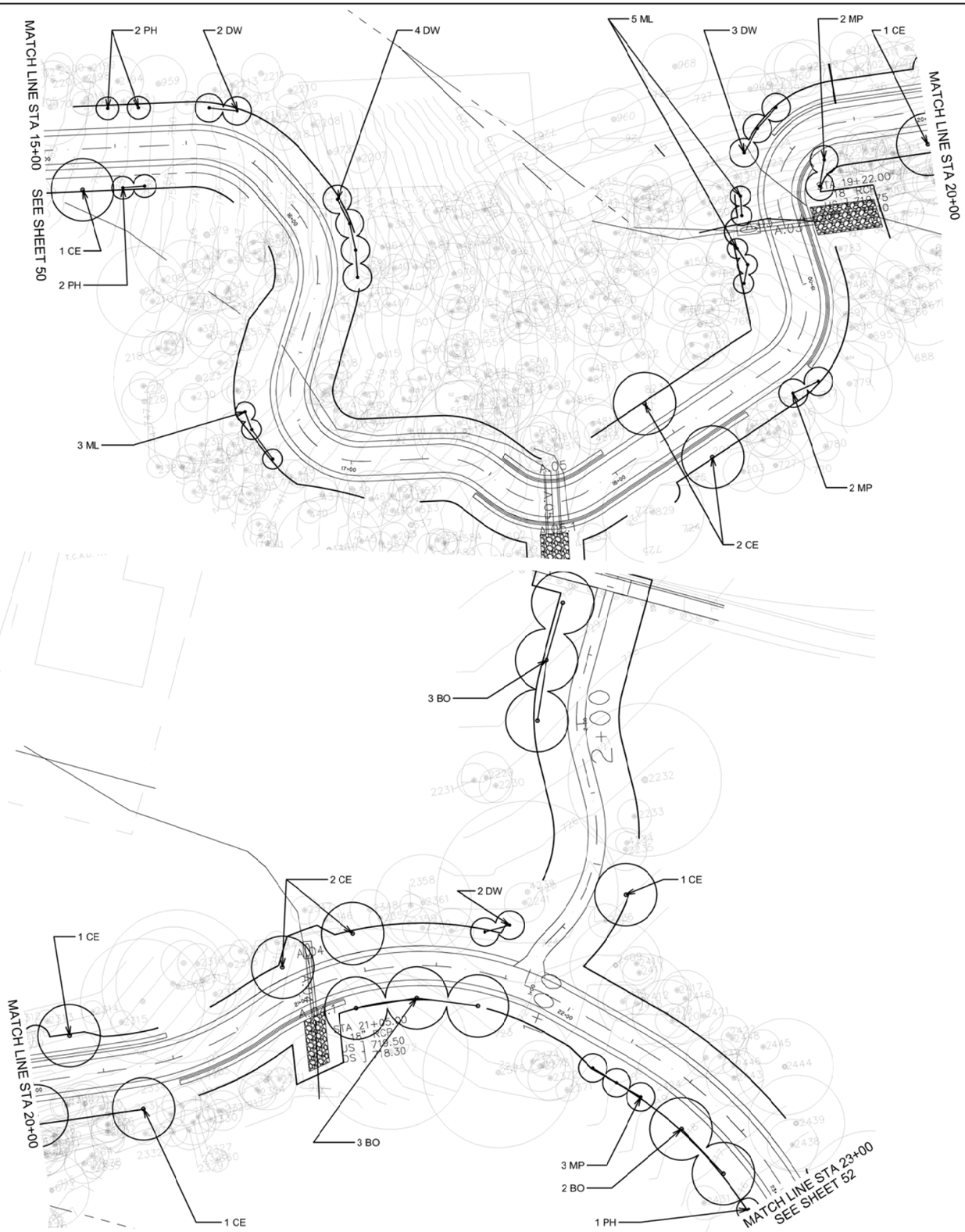
CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE AND TRAIL PHASE 1-A
REVEGETATION PLAN (1 of 3)
BEGINNING TO STA 15+00

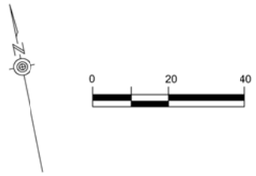
K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40'
DATE	
SHEET NUMBER	50 OF 53

$INFO$





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512/476-0656

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CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE AND TRAIL PHASE 1-A
REVEGETATION PLAN (2 of 3)
STA 15+00 TO STA 23+00

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40'
DATE	
SHEET NUMBER	51 OF 53

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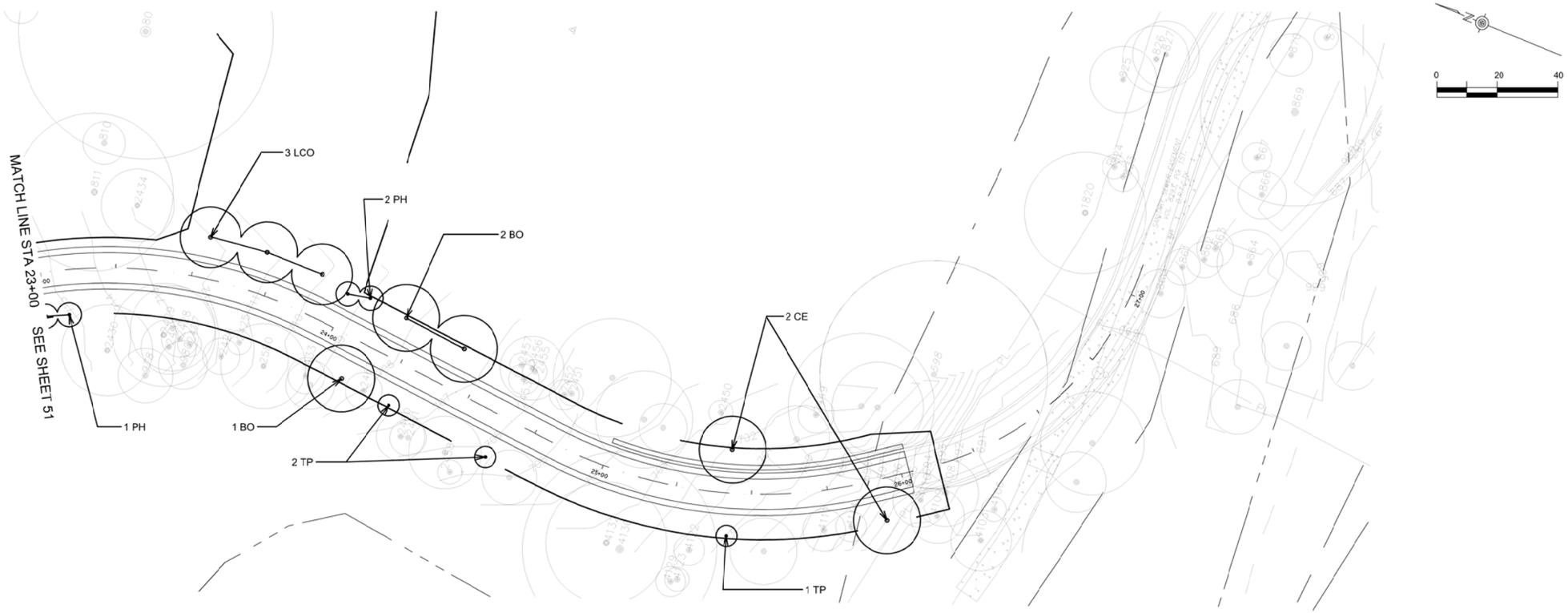

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AK YOUNG ASSOCIATES

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512/476-0606

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1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE AND TRAIL PHASE 1-A
REVEGETATION PLAN (3 of 3)
STA 23+00 TO END

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT #	
SCALE	1" = 40'
DATE	
SHEET NUMBER	52 OF 53

PLAN NOTES

1. ALL QUESTIONS REGARDING THESE REVEGETATION PLANS SHOULD BE REFERRED TO THE LANDSCAPE ARCHITECT, A. K. YOUNG ASSOCIATES, AT 512/476-6686.
2. THE PLANS ARE NOT TO BE CONSIDERED FINAL UNTIL APPROVED BY THE CITY AND/OR OTHER GOVERNMENTAL AGENCY WITH JURISDICTION. CHANGES MAY BE REQUIRED PRIOR TO APPROVAL.
3. REFER TO ENGINEERING DOCUMENTS FOR FULL SCOPE OF PROJECT, INCLUDING DIMENSIONS, LOCATIONS, AND PROJECT INFORMATION.
4. REFER TO FULL PROJECT DOCUMENTS PRIOR TO BIDDING OR CONSTRUCTION, INCLUDING SPECIFICATIONS IN THE PROJECT MANUAL AND PROJECT DOCUMENTS FOR RELATED PIPELINE PROJECT.
5. ALL REVEGETATION ELEMENTS ARE TO BE INSTALLED WITHIN THE LIMITS OF CONSTRUCTION APPROVED IN SITE DEVELOPMENT PERMIT DOCUMENTS. ALL REVEGETATION ACTIVITIES ARE TO BE CONTAINED WITHIN THE LIMITS OF CONSTRUCTION APPROVED IN SITE DEVELOPMENT PERMIT DOCUMENTS.
6. LOCATION OF PLANT MATERIALS SHOULD BE AS SHOWN ON THE REVEGETATION PLAN. ANY DISCREPANCY BETWEEN FIELD CONDITIONS AND THE PROJECT DOCUMENTS WHICH LIMIT THE CONTRACTOR SHOULD BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO PLANT MATERIAL INSTALLATION.
7. ALL PERVIOUS PROJECT AREAS IMPACTED DURING CONSTRUCTION WILL BE HYDROMULCHED WITH A NATIVE SEED MIX (604S.6) UNLESS OTHERWISE INDICATED IN THE PROJECT DOCUMENTS.

TREE MATERIALS

BO
Bur Oak - Quercus macrocarpa
3" cal., single straight trunk, container grown

CE
Cedar Elm - Ulmus crassifolia
3" cal. min., single straight trunk, container grown

DW
Desert Willow - Chilopsis linearis "Bubba"
2" cal., container grown

LCO
Lacey Oak - Quercus glaudoides (Q. laceyi)
2" cal., single straight trunk, container grown

ML
Mountain Laurel - Sophora secundiflora
1.5" cal., multi-trunk, container grown

MP
Mexican Plum - Prunus mexicana
2" cal., single straight trunk, container grown

PH
Possumhaw, Deciduous Holly - Ilex decidua
1.5" cal., multi-trunk

TP
Texas Persimmon - Diospyros texana
1.5" cal., multi-trunk acceptable

SEED
Native Mix:
CoA Item No. 604S.6,
Table 4

BASE SPECIFICATIONS INCLUDE:

CITY OF AUSTIN STANDARD SPECIFICATION
ITEM NO. 604S - SEEDING FOR EROSION CONTROL 01-04-16

CITY OF AUSTIN STANDARD SPECIFICATION
ITEM NO. 608S - PLANTING 9-26-12

APPENDIX P-6
REMEDIAL TREE CARE FOR TREES WITHIN CONSTRUCTION AREAS
(SPECIAL PROVISION TO ITEM NO. 610S)

MITIGATION RATES

APPENDIX F
SURVEYED TREE TYPES:
ASH, CEDAR, ELM, OAK

19" DIAMETER AND ABOVE
100%

BELOW 19" DIAMETER
50%

UNDESIRABLE / INVASIVE
SURVEYED TREE TYPES:
LIGUSTRUM

ALL DIAMETERS
NO MITIGATION REQUIRED

MITIGATION TALLY

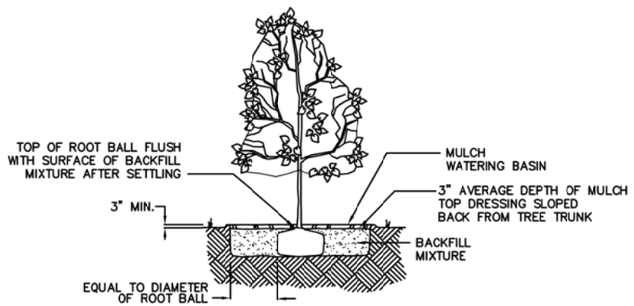
APPENDIX F
TOTAL REQUIRED: 832"

19" DIAMETER AND ABOVE
141.5" @ 100%
141.5" TOTAL

BELOW 19" DIAMETER
1381" @ 50%
690.5" TOTAL

NON-APPENDIX F
NONE SURVEYED
N/A

UNDESIRABLE / INVASIVE
NO MITIGATION REQUIRED



TREE PLANTING DETAIL
NO SCALE

NOTE:
COVER INDIVIDUAL TREE OR SHRUB PLANTINGS WITH THREE INCH DEPTH OF MULCH BEGINNING AT TOP OF ROOTBALL ADJACENT TO THE TRUNK, THEN SLOPED GENTLY BACK FROM CONTACT WITH THE TRUNK. AVOID CONTACT WITH TRUNK. EACH BASIN SHALL HAVE A CLEAN, ROUND, EDGED OUTLINE.

NOTES:

1. REFER TO SHEETS 4 THROUGH 8 FOR TREE INFORMATION, INCLUDING PROPOSED REMOVALS AND COMPLETE TREE LIST.
2. FOR FINAL RESTORATION WITHIN STAGING AREA, REFER TO PROJECT DOCUMENTS FOR SITE DEVELOPMENT PERMITS:
GPP-2016-0029.AWU AND GPP-2016-0030.PAR
3. REFER TO SHEETS 46 THROUGH 49 FOR EROSION AND SEDIMENTATION CONTROL PLANS AND DETAILS.
4. USE OF RECLAIMED WATER FOR IRRIGATION OF REVEGETATION IS PROHIBITED ON THIS PROJECT.
5. PRESERVED TREES WITHIN THE LIMITS OF CONSTRUCTION ARE SUBJECT TO TREATMENT ACCORDING TO CoA ENVIRONMENTAL CRITERIA MANUAL APPENDIX P-6.

MITIGATION TOTALS

MITIGATION REQUIRED

TOTAL CALIPER INCHES REMOVED 1530.5"
(EXCLUDING UNDESIRABLE, INVASIVE, DEAD)

REQUIRED MITIGATION 836"
(REFER TO MITIGATION TALLY, THIS SHEET)

MITIGATION PROPOSED
TOTAL MITIGATION PROVIDED THROUGH PROPOSED TREES 252"

22 BO @ 3" = 66"
19 CE @ 3" = 57"
25 DW @ 2" = 50"
7 LCO @ 2" = 14"
13 ML @ 1.5" = 19.5"
7 MP @ 2" = 14"
10 PH @ 1.5" = 15"
11 TP @ 1.5" = 16.5"

** REMAINDER OF REQUIRED MITIGATION WILL BE PROVIDED THROUGH ENHANCED MAINTENANCE OF EXISTING TREES IMPACTED BY CONSTRUCTION OF THIS PROJECT AND PAYMENT TO TREE FUND DESIGNATED BY CoA REVIEW STAFF.

AK YOUNG ASSOCIATES
Post Office Box 201266
Austin, Texas 78720-1266
512/476-6686

REV NO.	BY	DATE	REVISION DESCRIPTION

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1092
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K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HIGHWAY, CITYVIEW II, SUITE 100, AUSTIN, TEXAS 78746

CITY OF AUSTIN
NORTHERN WALNUT CREEK BIKE AND TRAIL PHASE 1-A

REMOVED TREE MITIGATION,
PLANTING NOTES AND DETAILS

K·FRIESE + ASSOCIATES
PUBLIC PROJECT ENGINEERING
(FIRM # 6535)

CITY OF AUSTIN

PERMIT # _____

SCALE	N/A
DATE	
SHEET NUMBER	53 OF 53

$INFO$