

DRAINAGE CHART						
AREA	C _f runoff coefficient	C runoff coefficient	I ₁₀₀ rainfall intensity	A acres	Q ₁₀₀ cfs	DESCRIPTION
1	1.25	0.85	8.82	0.21	1.85	TO WESTGROVE DR.
2	1.25	0.85	8.82	0.43	3.79	OFFSITE TO NORTH
3	1.25	0.85	8.82	0.09	0.79	TO WAYPOINT DR.
4	1.25	0.85	8.82	2.11	18.61	TO DETENTION BASIN
5	1.25	0.85	8.82	0.23	2.03	OFFSITE TO WEST
6	1.25	0.85	8.82	0.14	1.23	OFFSITE TO SOUTH

DETECTION CALCULATIONS

DEVELOPMENT DATA:
 DRAINAGE AREA = 3.20 ac.
 RESIDENTIAL C = 0.55
 RESIDENTIAL T_{CR} = 15 min.
 DEVELOPED C_p = 0.85
 DEVELOPED T_{CP} = 10 min.
 C_f = 1.25

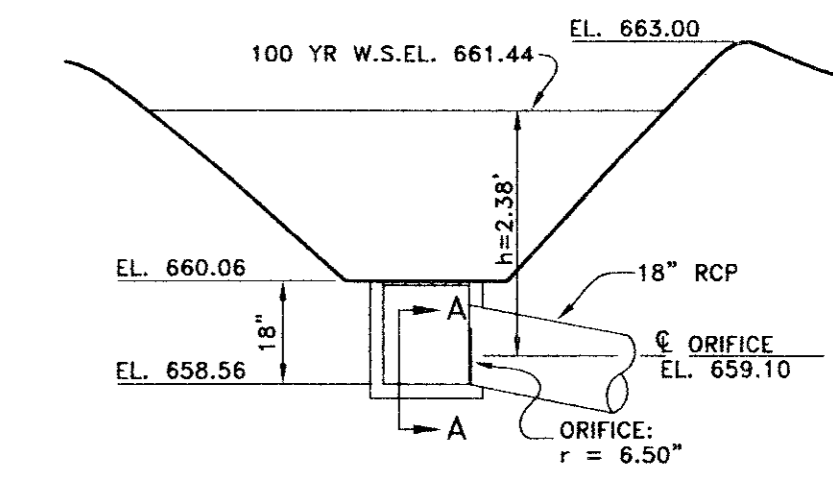
NOTE: C_f * C CANNOT EXCEED 1.
 FOR THE 100-YEAR STORM:
 I_{RES} = 7.52 in./hr.
 I_P = 8.82 in./hr.
 Q_E = Q_D = (1.25)(0.55)(7.52)(3.20) = 28.22 cfs
 Q_P = (1.25)(0.85)(8.82)(3.20) = 33.97 cfs

ORIFICE CALCULATIONS

Q_{ALLOW} = 16.54 - AREA 1 - AREA 2
 = AREA 3 - AREA 5 - AREA 6
 = 6.85 cfs
 $Q = CA(2gh)^{1/2}$
 g = 32.2
 h = 2.38 ASSUME r = 6.5" (ORIFICE)
 $6.85 = 0.6A(64.4)(2.38)^{1/2}$
 6.85 = 0.6A(12.38)
 0.6A = 0.54
 A = 0.92 sq. ft.
 $0.92 = \pi r^2$
 $0.54 = r^2$
 r = 0.54 ft. = 6.50 in.
 6.50 = 1.00; WITHIN 2%
 6.50 = 1.00; WITHIN 2%

$I_D = \frac{Q_D}{(C_p A) C_f} = \frac{16.54}{(0.80)(3.20)(1.25)} = 5.17$ in./hr.
 T_D = 37 min.
 V = 60 $\left(\frac{16.54}{2}\right) (37-10)$
 = 13,397 cu. ft.
 ELEVATION @ 13,397 cu. ft. = 661.44
 VOLUME PROVIDED = 14,696 cu. ft. AT ELEV. 661.50
 FREEBOARD = 1.50'

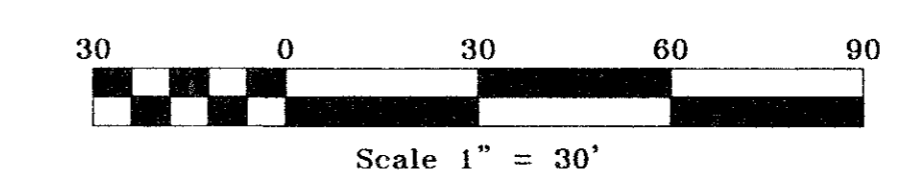
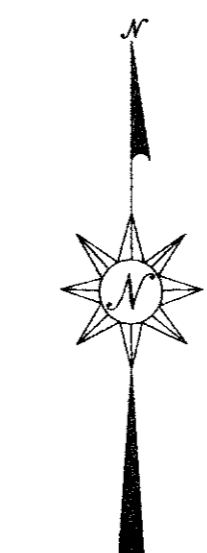
ELEVATION	AREA (sq. ft.)	VOLUME (cu. ft.)	CUMULATIVE VOLUME (cu. ft.)
660.06	0	4541	0
661.00	9,093	10,155	49
661.50	31,528	14,696	



LEGEND

PROPOSED DETENTION AREA

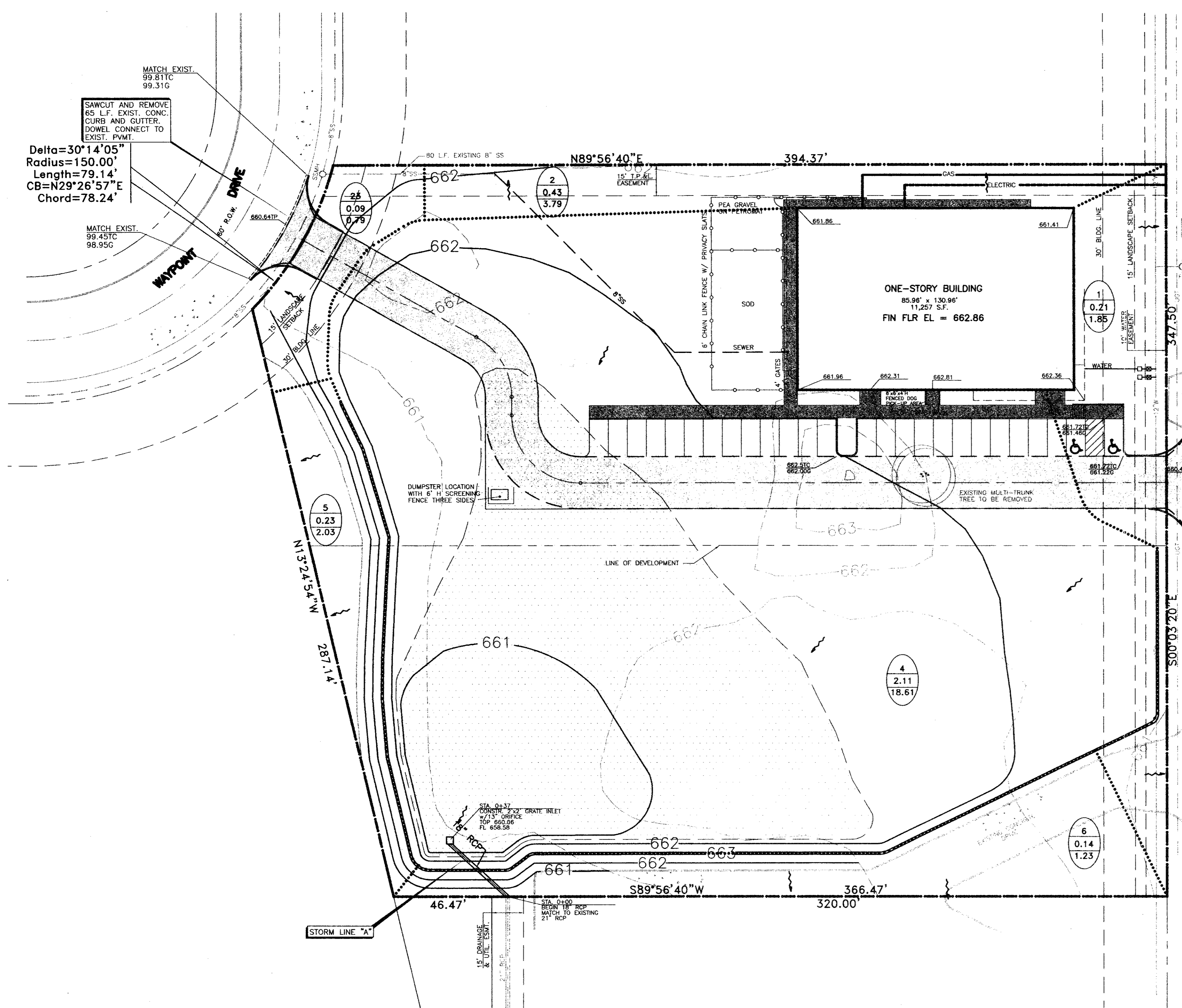
4
2.11
18.61
DRAINAGE AREA
AREA SIZE (AC.)
Q (cfs)



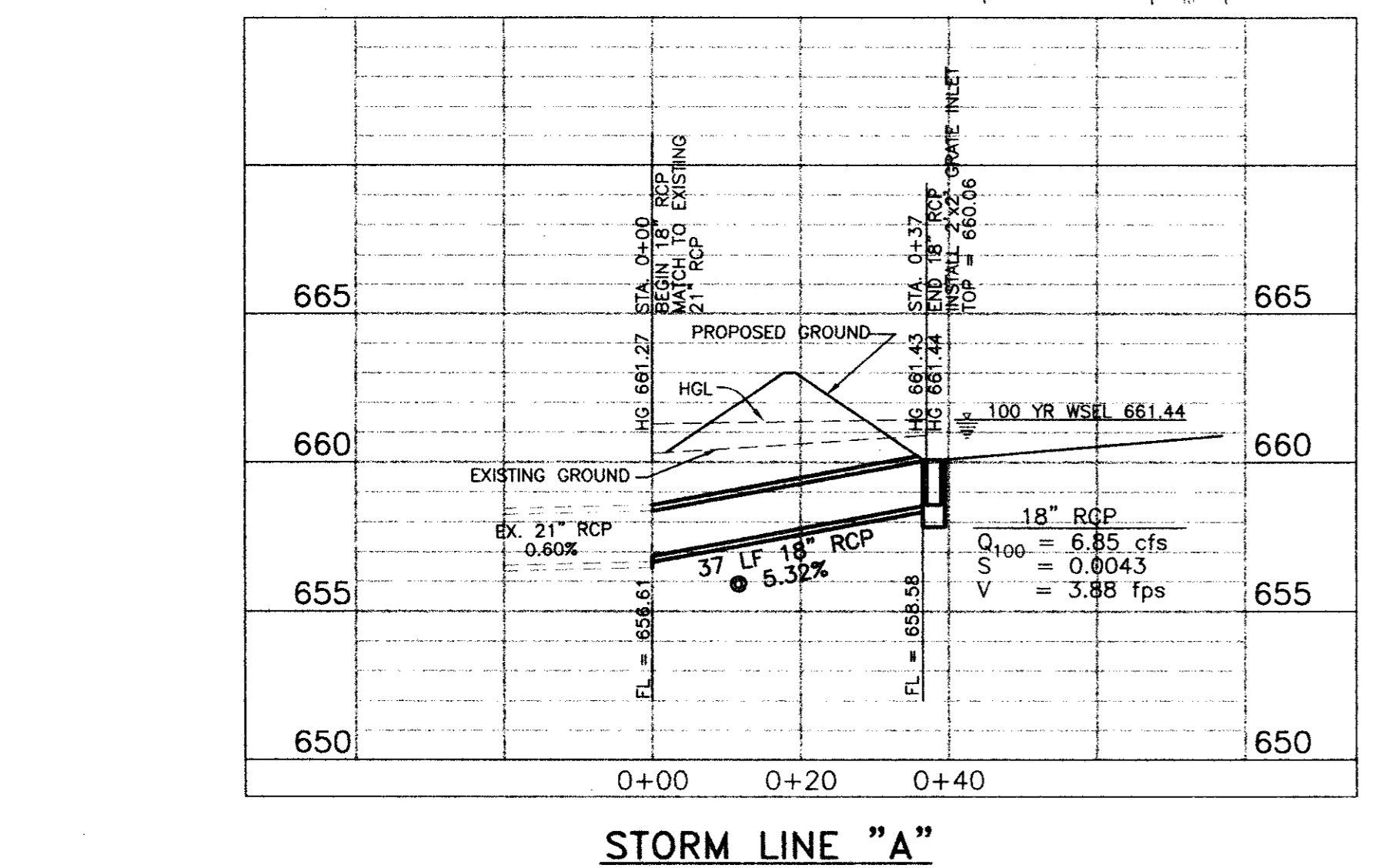
SECTION A-A

GENERAL NOTES

- ALL WORK WITHIN RIGHT-OF-WAY SHALL CONFORM TO THE CITY OF CARROLLTON STANDARDS AND DETAILS.
- EXISTING UTILITIES SHOWN ARE FROM AVAILABLE RECORDS. LOCATIONS SHOWN ARE GENERALLY SCHEMATIC IN NATURE AND MAY NOT ACCURATELY REFLECT THE SIZE AND LOCATION OF EACH PARTICULAR UTILITY. SOME UTILITY LINES MAY NOT BE SHOWN. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ACTUAL FIELD LOCATION AND PROTECTION OF EXISTING UTILITIES WHETHER SHOWN OR NOT. CONTRACTOR SHALL ALSO ASSUME RESPONSIBILITY FOR REPAIRS TO EXISTING UTILITIES, WHETHER SHOWN OR NOT, DAMAGED BY CONTRACTOR'S ACTIVITIES. DIFFERENCES IN HORIZONTAL OR VERTICAL LOCATIONS EXISTING UTILITIES SHALL NOT BE A BASIS FOR ADDITIONAL EXPENSES.
- TRAFFIC FLOW AND ACCESS SHALL BE MAINTAINED DURING ALL PHASES OF THE CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC SAFETY MEASURES FOR WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
- THE CONTRACTOR SHALL PROVIDE MATERIAL AND QUALITY CONTROL TESTING AS REQUIRED BY OWNER. TESTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
 - DENSITY TESTS FOR GENERAL SITE FILL. (MINIMUM ONE TEST PER LIFT PER 10,000 S.F. FILL)
 - DENSITY TESTS FOR UTILITY TRENCH BACKFILL (MINIMUM ONE TEST PER 100 L.F. ON EVERY OTHER LIFT)
 - CONCRETE CYLINDER TESTS. (MINIMUM 4 CYLINDERS PER 100 C.Y. OF MATERIAL)
- CONTRACTOR SHALL MAINTAIN DRAINAGE AT ALL TIMES DURING CONSTRUCTION. PONDING OF WATER IN STREETS, DRIVES, TRUCK COURTS, TRENCHES, ETC. WILL NOT BE ALLOWED.
- PAVEMENT REMOVAL AND REPAIR SHALL CONFORM TO THE CITY OF CARROLLTON GENERAL CONSTRUCTION GUIDELINES. ALL SAWCUTS SHALL BE FULL DEPTH CUTS. CONTRACTOR SHALL MAKE EFFORTS TO PROTECT CONCRETE EDGES. ANY LARGE SPALLED OR BROKEN EDGES SHALL BE REMOVED BY SAWCUTTING PAVEMENT PRIOR TO REPLACEMENT. REFERENCE CONSTRUCTION JOINT DETAIL, SHEET C-7, FOR CONNECTION TO EXISTING PAVEMENT.
- EARTHWORK OPERATIONS SHALL BE PERFORMED UNDER THE SUPERVISION OF QUALIFIED PERSONNEL WORKING IN CONJUNCTION WITH THE PROJECT GEOTECHNICAL ENGINEER.
- CONCRETE CURB TO BE CONSTRUCTED PER CITY OF CARROLLTON STANDARDS AND SHALL CONTAIN 100% GASOLINE & ETHANOL RESISTANT EXPANSION MATERIAL.
- THE ELEVATIONS AS DESIGNED DO NOT REPRESENT A CONSISTENT SLAB REVEAL. THE SLAB REVEAL VARIES. SEE SPECIFIC SPOT ELEVATIONS TO DETERMINE EXACT AMOUNT OF SLAB REVEAL IN SOME CIRCUMSTANCES THE SLAB REVEAL IS 0.
- IN AREAS WHERE REAR PORCHES ARE ADJACENT TO SIDEWALKS, RETAINING WALLS OR EXPOSED PORCH GRADE BEAMS MAY BE REQUIRED WHERE SLOPES ARE EXCESSIVE. CONTRACTOR TO VERIFY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS.
- CONTRACTOR SHOULD ATTEMPT TO MAINTAIN A MINIMUM 8" SLAB REVEAL IN ALL AREAS WHERE GRADING IS ALLOWED.



Delta = 30°14'05"
 Radius = 150.00'
 Length = 79.14'
 CB = N29°26'57"E
 Chord = 78.24'



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 CARROLLTON, TEXAS
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 FORT WORTH, TEXAS 76106

SCALE: AS SHOWN
 DATE: JUNE 1999
 DRAWN BY: A.B.C.
 CHK'D BY: M.H.H.
 JOB NO: 8001-73
 FILE: 800173SP.DWG
 DATE SUBMITTED: 06/23/99(3)

REVISION	DATE	DESCRIPTION