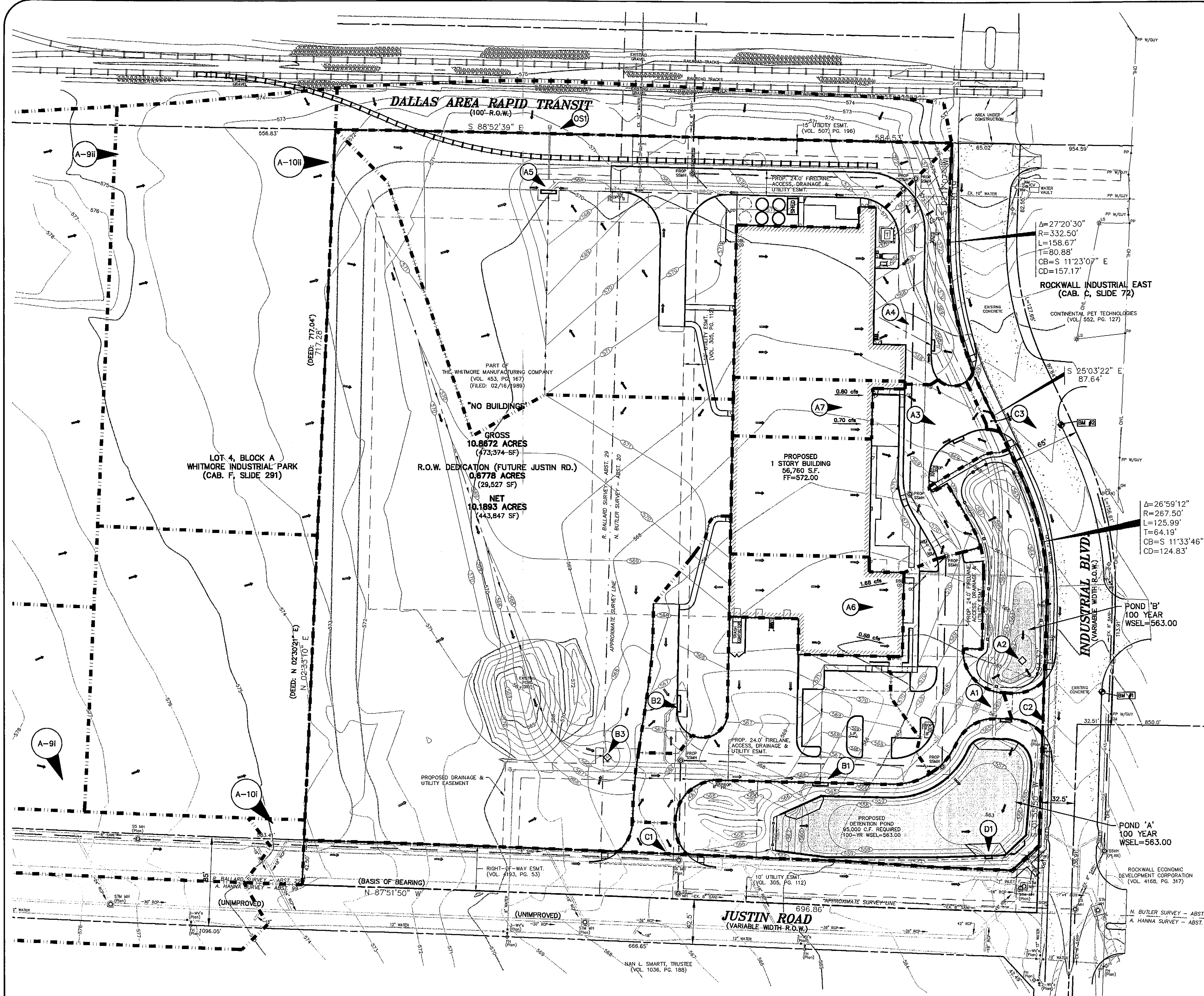
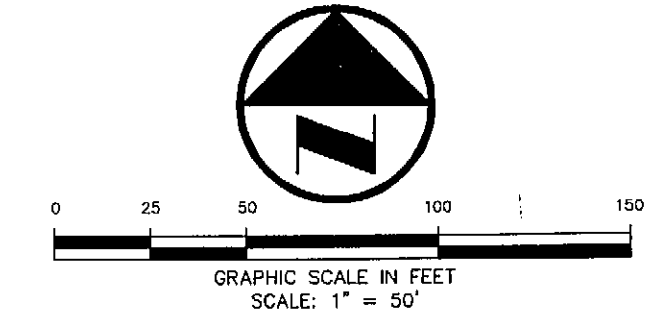


05/01/2008 - A.SPPM
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DA #	AREA	C	Q100	Q100DEV	Q100UNDEV	Q100UNDEVE	REMARKS
A1	0.32	0.90	9.80	2.82	8.25	0.92	10' CURB INLET/ST-1A'
A2	0.33	0.90	9.80	2.91	8.25	0.95	4'X4' DROP INLET/ST-1B'
A3	0.71	0.90	9.80	6.26	8.25	2.05	10' CURB INLET/ST-10'
A4	0.78	0.90	9.80	6.88	8.25	2.25	10' CURB INLET/ST-1C'
A5	2.08	0.90	9.80	18.35	8.25	6.01	10' CURB INLET/ST-1E'
A6	0.29	0.90	9.80	2.56	8.25	0.84	ROOF DRAIN TO ST-1'
A7	0.17	0.90	9.80	1.50	8.25	0.49	ROOF DRAIN TO ST-1'
B1	0.64	0.90	9.80	5.64	8.25	1.85	10' CURB INLET/ST-2A'
B2	0.31	0.90	9.80	2.73	8.25	0.90	14' CURB INLET/ST-2B'
B3	3.70	0.90	9.80	32.63	8.25	10.68	4'X4' DROP INLET/ST-2C'
C1	0.03	0.90	9.80	0.26	8.25	0.09	TO JUSTIN ROAD STORM SEWER
C2	0.02	0.90	9.80	0.18	8.25	0.06	TO INDUSTRIAL BLVD. STORM SEWER
C3	0.01	0.90	9.80	0.09	8.25	0.03	TO INDUSTRIAL BLVD. STORM SEWER
D1	0.70	0.90	9.80	6.17	8.25	2.02	TO DETENTION POND/ST-3'
OS1	0.60	0.35	-	-	8.25	1.73	GRATE INLET/STORM LINE BY OTHER PLANS
A-9i	2.85	0.35	-	-	8.25	8.23	4'X4' DROP INLET/TO 24" STORM IN JUSTIN ROAD IN FUTURE
A-9ii	4.49	0.35	-	-	8.25	12.96	4'X4' DROP INLET/FUTURE 'ST-2'
A-10i	1.31	0.35	-	-	8.25	3.78	4'X4' DROP INLET/TO 18" STORM IN JUSTIN ROAD IN FUTURE
A-10ii	2.07	0.35	-	-	8.25	5.98	4'X4' DROP INLET/FUTURE 'ST-2'

*DRAINAGE AREAS A-9i, A-10i, & A-10ii ARE TAKEN FROM THE CONSTRUCTION PLANS FOR THE JUSTIN ROAD EXTENSION, PREPARED BY WIER & ASSOCIATES, DATED 09-07-06.



LEGEND	
B	BOLLARD
EM	ELECTRIC METER
LP	POWER POLE
LS	LIGHT STANDARD
WM	WATER METER
WV	WATER VALVE
ICV	IRRIGATION CONTROL VALVE
FD	FIRE DEPARTMENT CONNECTION
FD	FIRE HYDRANT
FC	FIRE DEPARTMENT CONNECTION
CO	CLEAN OUT
MH	MANHOLE
GM	GAS METER
TSC	TRAFFIC SIGNAL CONTROL
TSP	TRAFFIC SIGNAL POLE
SIGL	TRAFFIC SIGN
TELE	TELEPHONE BOX
TV	TV BOX
FP	FLAG POLE
L.A.	LANDSCAPE AREA
---	PROPERTY LINE
---	O.H. POWER LINES
---	U/G TELEPHONE LINES
---	U/G WATER LINE
---	U/G GAS LINE
---	FENCE
---	EXISTING CONTOURS
---	EXISTING SPOT GRADES
(C.M.)	CONTROLLING MONUMENT
SIR	5/8-INCH IRON ROD WITH "POQUE ENG & DEV" CAP SET
---	PROPOSED CONTOURS
---	PROPOSED SPOT GRADES
---	PROPOSED EROSION CONTROL
---	PROPOSED DRAINAGE DIVIDES

DRAINAGE CALCULATIONS: (100-YR)
 $Q_{100} = CA$
 $T_c = 20$ MIN. (PRE-DEVELOPED)
 $I_{100} = 8.25$ (N/HR) PRE-DEVELOPED
 $C = 0.35$ PRE-DEVELOPED
 $T_c = 10$ MIN. (DEVELOPED)
 $I_{100} = 9.80$ (N/HR) DEVELOPED
 $C = 0.90$ DEVELOPED
 $A =$ DRAINAGE BASIN (OFF-SITE) = (OS1 + A-9i + A-9ii + A-10i + A-10ii) = 11.32 ACRES
 Q PASS THROUGH (TO=20 MIN; C=0.35) = 32.69 CFS
 $A =$ DRAINAGE BASIN (SITE) = 10.19 ACRES
 Q DEVELOPED = 89.88 CFS
 Q PRE-DEVELOPED = 28.42 CFS
 A (BYPASS) = (C1 + C2 + C3) = 0.06 ACRES
 Q DEVELOPED (BYPASS) = 0.53 CFS
 BYPASS AREA IS ON-SITE AREA THAT DOES NOT ROUTE THROUGH POND
 Q ALLOWED TO RELEASE AT DETENTION POND = Q
 $Q_r = Q$ PRE-DEV + Q DEV (BYPASS) + Q PASS THROUGH
 $Q_r = 28.42 + 0.53 + 32.69 = 61.58$ CFS
 VOLUME REQUIRED = 94,406 CF

OUTLET CONTROL (ORIFICE) 100-YR
 $Q = CA \times (2gh)$
 $Q_r = Q$ ALLOWED (CFS) = 61.58 CFS
 $C = 0.66$
 $A =$ ORIFICE AREA (SF)
 $g =$ GRAVITATIONAL CONSTANT = 32.2 FT/S²
 $H =$ HYDRAULIC HEAD (FT)
 $H = 563.00 - 556.00 = 7.00$
 $A = 4.3944$ SF
 USE 23"X23" RECTANGULAR OPENING
 & 9.25"X9" RECTANGULAR OPENING
 & 4.5"X4.5" RECTANGULAR OPENING
 AT OUTLET STRUCTURE
 $A = 4.3924$ SF, WITHIN 1% TOLERANCE

POND VOLUME CALCULATIONS:
 POND 'A' VOLUME PROVIDED = 92,804 CF
 POND 'B' VOLUME PROVIDED = 2,210 CF
 TOTAL VOLUME PROVIDED = 95,014 CF
 ** WSEL = 563.00
 $Q_r = 61.58$ CFS

DRAINAGE CALCULATIONS: (50-YR)
 $Q_{100} = CA$
 $T_c = 20$ MIN. (PRE-DEVELOPED)
 $I_{100} = 7.30$ (N/HR) PRE-DEVELOPED
 $C = 0.35$ PRE-DEVELOPED
 $T_c = 10$ MIN. (DEVELOPED)
 $I_{100} = 9.00$ (N/HR) DEVELOPED
 $C = 0.90$ DEVELOPED
 $A =$ DRAINAGE BASIN (OFF-SITE) = (OS1 + A-9i + A-9ii + A-10i + A-10ii) = 11.32 ACRES
 Q PASS THROUGH (TO=20 MIN; C=0.35) = 28.92 CFS
 $A =$ DRAINAGE BASIN (SITE) = 10.19 ACRES
 Q DEVELOPED = 62.54 CFS
 Q PRE-DEVELOPED = 26.04 CFS
 A (BYPASS) = (C1 + C2 + C3) = 0.06 ACRES
 Q DEVELOPED (BYPASS) = 0.49 CFS
 BYPASS AREA IS ON-SITE AREA THAT DOES NOT ROUTE THROUGH POND
 Q ALLOWED TO RELEASE AT DETENTION POND = Q
 $Q_r = Q$ PRE-DEV + Q DEV (BYPASS) + Q PASS THROUGH
 $Q_r = 26.04 + 0.49 + 28.92 = 54.47$ CFS
 VOLUME REQUIRED = 77,090 CF

OUTLET CONTROL (ORIFICE) 50-YR
 $Q = CA \times (2gh)$
 $Q_r = Q$ ALLOWED (CFS) = 54.47 CFS
 $C = 0.66$
 $A =$ ORIFICE AREA (SF)
 $g =$ GRAVITATIONAL CONSTANT = 32.2 FT/S²
 $H =$ HYDRAULIC HEAD (FT)
 $H = 561.85 - 556.00 = 5.85$
 $A = 4.2620$ SF
 USE 23"X23" RECTANGULAR OPENING
 & 9.25"X9" RECTANGULAR OPENING
 AT OUTLET STRUCTURE
 $A = 4.2617$ SF, WITHIN 1% TOLERANCE

POND VOLUME CALCULATIONS:
 POND 'A' VOLUME PROVIDED = 77,122 CF
 POND 'B' VOLUME PROVIDED = 708 CF
 TOTAL VOLUME PROVIDED = 77,830 CF
 ** WSEL = 561.85
 $Q_r = 54.47$ CFS

DRAINAGE CALCULATIONS: (25-YR)
 $Q_{100} = CA$
 $T_c = 20$ MIN. (PRE-DEVELOPED)
 $I_{100} = 6.70$ (N/HR) PRE-DEVELOPED
 $C = 0.35$ PRE-DEVELOPED
 $T_c = 10$ MIN. (DEVELOPED)
 $I_{100} = 8.25$ (N/HR) DEVELOPED
 $C = 0.90$ DEVELOPED
 $A =$ DRAINAGE BASIN (OFF-SITE) = (OS1 + A-9i + A-9ii + A-10i + A-10ii) = 11.32 ACRES
 Q PASS THROUGH (TO=20 MIN; C=0.35) = 26.55 CFS
 $A =$ DRAINAGE BASIN (SITE) = 10.19 ACRES
 Q DEVELOPED = 75.66 CFS
 Q PRE-DEVELOPED = 23.90 CFS
 A (BYPASS) = (C1 + C2 + C3) = 0.06 ACRES
 Q DEVELOPED (BYPASS) = 0.45 CFS
 BYPASS AREA IS ON-SITE AREA THAT DOES NOT ROUTE THROUGH POND
 Q ALLOWED TO RELEASE AT DETENTION POND = Q
 $Q_r = Q$ PRE-DEV + Q DEV (BYPASS) + Q PASS THROUGH
 $Q_r = 23.90 + 0.45 + 26.55 = 50.90$ CFS
 VOLUME REQUIRED = 68,167 CF

OUTLET CONTROL (ORIFICE) 25-YR
 $Q = CA \times (2gh)$
 $Q_r = Q$ ALLOWED (CFS) = 50.00 CFS
 $C = 0.66$
 $A =$ ORIFICE AREA (SF)
 $g =$ GRAVITATIONAL CONSTANT = 32.2 FT/S²
 $H =$ HYDRAULIC HEAD (FT)
 $H = 561.40 - 556.00 = 5.40$
 $A = 4.0824$ SF
 USE 23"X23" RECTANGULAR OPENING
 & 9.25"X9" RECTANGULAR OPENING
 AT OUTLET STRUCTURE
 $A = 4.0824$ SF, WITHIN 1% TOLERANCE

POND VOLUME CALCULATIONS:
 POND 'A' VOLUME PROVIDED = 68,384 CF
 POND 'B' VOLUME PROVIDED = 50 CF
 TOTAL VOLUME PROVIDED = 68,434 CF
 ** WSEL = 561.40
 $Q_r = 50.00$ CFS

DRAINAGE CALCULATIONS: (10-YR)
 $Q_{100} = CA$
 $T_c = 20$ MIN. (PRE-DEVELOPED)
 $I_{100} = 5.80$ (N/HR) PRE-DEVELOPED
 $C = 0.35$ PRE-DEVELOPED
 $T_c = 10$ MIN. (DEVELOPED)
 $I_{100} = 7.20$ (N/HR) DEVELOPED
 $C = 0.90$ DEVELOPED
 $A =$ DRAINAGE BASIN (OFF-SITE) = (OS1 + A-9i + A-9ii + A-10i + A-10ii) = 11.32 ACRES
 Q PASS THROUGH (TO=20 MIN; C=0.35) = 22.98 CFS
 $A =$ DRAINAGE BASIN (SITE) = 10.19 ACRES
 Q DEVELOPED = 66.03 CFS
 Q PRE-DEVELOPED = 20.69 CFS
 A (BYPASS) = (C1 + C2 + C3) = 0.06 ACRES
 Q DEVELOPED (BYPASS) = 0.39 CFS
 BYPASS AREA IS ON-SITE AREA THAT DOES NOT ROUTE THROUGH POND
 Q ALLOWED TO RELEASE AT DETENTION POND = Q
 $Q_r = Q$ PRE-DEV + Q DEV (BYPASS) + Q PASS THROUGH
 $Q_r = 20.69 + 0.39 + 22.98 = 43.28$ CFS
 VOLUME REQUIRED = 59,194 CF

OUTLET CONTROL (ORIFICE) 10-YR
 $Q = CA \times (2gh)$
 $Q_r = Q$ ALLOWED (CFS) = 43.28 CFS
 $C = 0.66$
 $A =$ ORIFICE AREA (SF)
 $g =$ GRAVITATIONAL CONSTANT = 32.2 FT/S²
 $H =$ HYDRAULIC HEAD (FT)
 $H = 560.90 - 556.00 = 4.90$
 $A = 3.6915$ SF
 USE 23"X23" RECTANGULAR OPENING
 AT OUTLET STRUCTURE
 $A = 3.6736$ SF, WITHIN 1% TOLERANCE

POND VOLUME CALCULATIONS:
 POND 'A' VOLUME PROVIDED = 60,013 CF
 POND 'B' VOLUME PROVIDED = 0 CF
 TOTAL VOLUME PROVIDED = 60,013 CF
 ** WSEL = 560.90
 $Q_r = 43.28$ CFS

CAUTION!!!
 UNDERGROUND UTILITIES ARE LOCATED IN THIS AREA. 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTACT LINE LOCATES FOR FRANCHISE UTILITY INFO. CALL BEFORE YOU DIG!
 TEXAS EXCAVATION SAFETY SYSTEM (TESS)
 1-800-344-8377
 TEXAS ONE CALL SYSTEMS
 1-800-245-4545
 LONE STAR NOTIFICATION CENTER
 1-800-669-8344 EXT. 5
BEFORE YOU DIG...

RECORD DRAWINGS:
 IT WAS THE INTENT THAT THE IMPROVEMENTS SHOWN BE CONSTRUCTED ACCORDING TO THESE PLANS AS APPROVED BY THE CITY. THE LINES AND GRADES WERE SET ON THE GROUND FOR CONSTRUCTION ACCORDING TO SAID PLANS. THE CITY INSPECTED THE CONSTRUCTION. THE ENGINEER DID NOT VERIFY LINES OR GRADES AFTER CONSTRUCTION. WE ARE NOT AWARE OF ANY CHANGES OR REVISIONS TO THESE PLANS DURING CONSTRUCTION OTHER THAN THOSE SHOWN.
 RANDALL P. POGUE, P.E.
 TX LIC. NO. 84780
 DATE: FEBRUARY 25, 2008

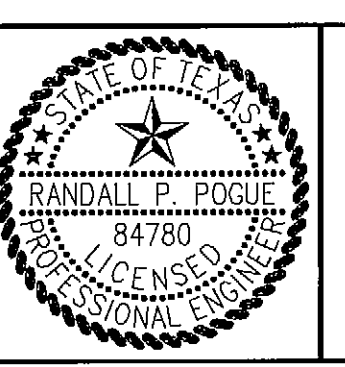
NO.	DATE	REVISION / DESCRIPTION
02-25-08		RECORD DRAWINGS
04-12-07		FIRE HYDRANT DETAILS REVISIONS
03-12-07		CITY WATER MAIN RELOCATION
02-26-07		SITE PLAN REVISIONS
02-09-07		NORTHERNMOST ACCESS DRIVE & FIRE HYDRANT REVISIONS

DESIGN	DRAWN	DATE	SCALE	NOTES
RPP	BEC	01-29-2007	AS SHOWN	-

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 P.O. BOX 9300
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 (972) 722-2108 FAX

DEVELOPER
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 5720 SPERLING, SUITE 630
 DALLAS, TEXAS 75240
 MR. STEVEN ROSENBERG
 (214) 862-8680 PHONE
 (972) 385-0279 FAX

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RANDALL P. POGUE, P.E. 84780 ON 01-23-2007. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.
 RANDALL P. POGUE, P.E.
 TX LIC. NO. 84780
 DATE: FEBRUARY 25, 2008



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DRAINAGE AREA MAP
 SPR PACKAGING
 BLOCK A, LOT 1, SPR PACKAGING ADDITION
 NWC OF INDUSTRIAL BLVD. @ JUSTIN ROAD
 CITY OF ROCKWALL, TEXAS

SHEET NO. C2.01