

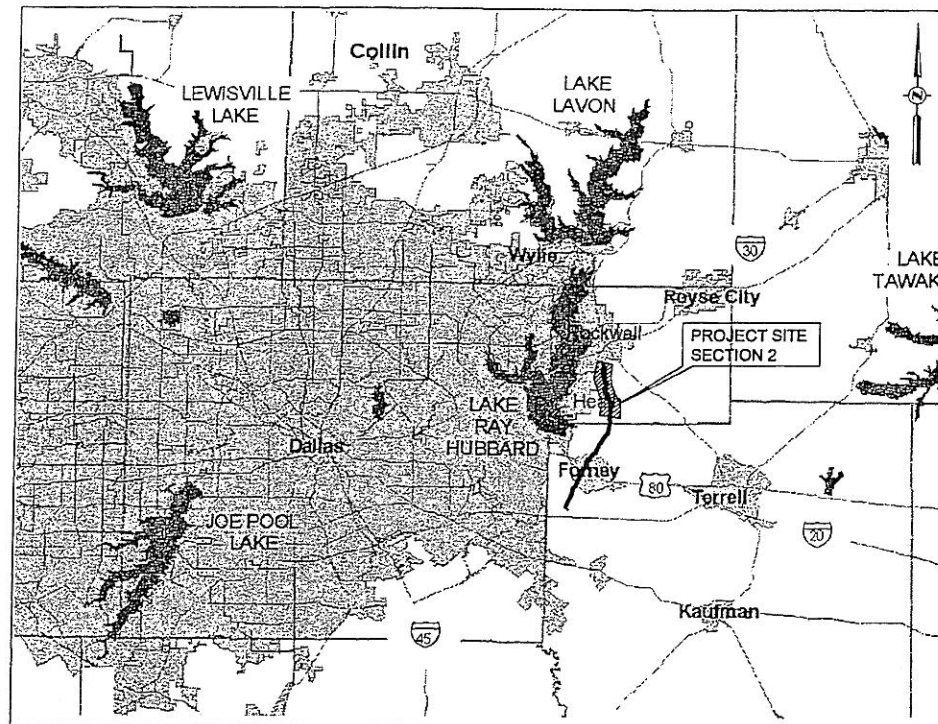
NORTH TEXAS MUNICIPAL WATER DISTRICT

CONSTRUCTION PLANS FOR
ROCKWALL - HEATH TRANSFER SEWER

RHCF 01-1

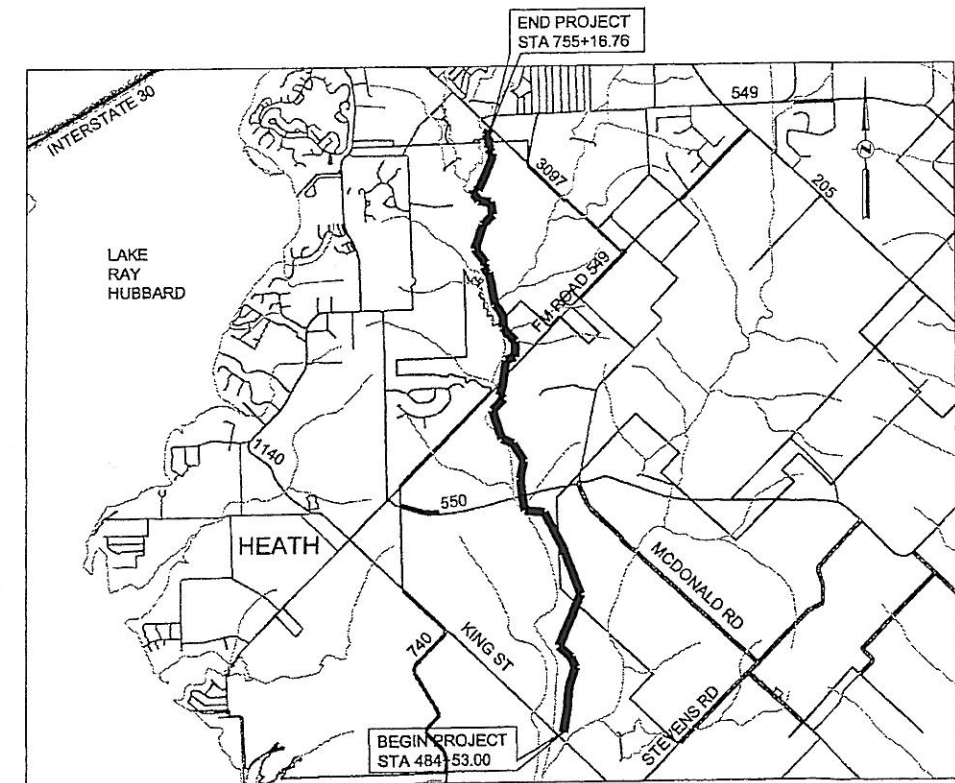
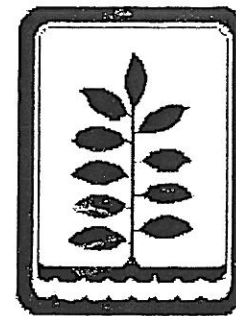
SECTION 2

STA 484+37.93 TO STA 755+16.76



PROJECT VICINITY MAP

NTS



PROJECT LOCATION MAP

NTS

DECEMBER 8, 2003

KELLOGG BROWN & ROOT, INC.

KBR

Engineered by KBR Technical Services, Inc.



ISSUED FOR BIDS

GENERAL PROJECT NOTES



SYMBOL	LINE DESCRIPTION
--------	------------------

● PP
● LP
△ 303
● 2114
IR

- 
- A triangle with the letter 'A' inside it.

- 

PIPELINE MARKER

1. PIPELINE MARKERS SHALL BE LOCATED ON BOTH SIDES OF ALL ROADS AND RAILROADS AT THE R.O.W. LINES OVER THE CENTER OF THE PIPELINE. SEE DETAIL ON SHEET 16.

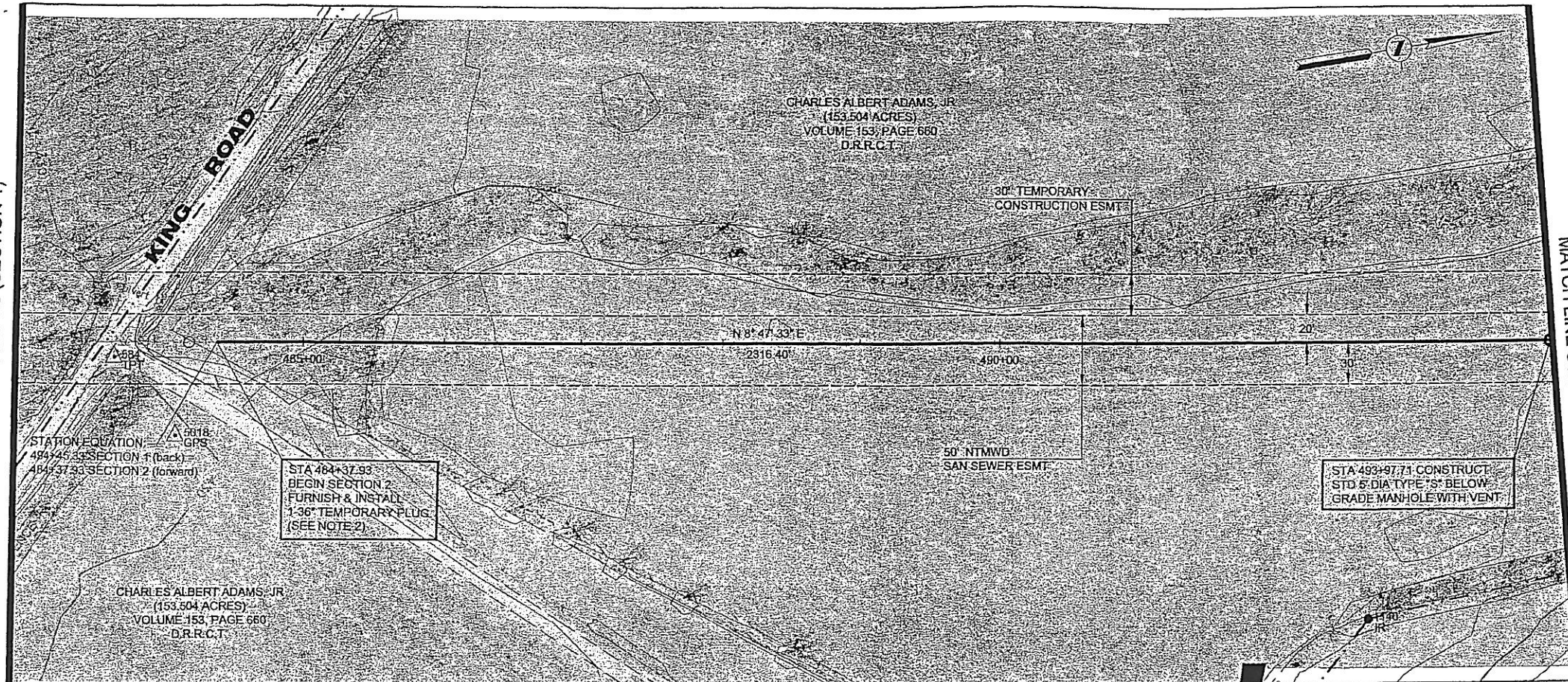
GROUNDWATER CONTROL

1. IF CONTRACTOR ENCOUNTERS GROUNDWATER ON THE PROJECT, HE SHALL PROVIDE ADEQUATE MEASURES FOR DEWATERING THE TRENCH. ALL COST FOR PUMPS AND/OR OTHER RELATED APPURTENANCES SHALL BE INCLUDED IN THE APPROPRIATE ITEM OF THE BID SCHEDULE.
2. PLACEMENT OF DEWATERING SYSTEM (HEADERS, WELLS, ETC.) WHERE APPLICABLE SHALL BE SUCH THAT PEDESTRIAN AND VEHICULAR TRAFFIC ARE NOT ADVERSELY IMPACTED.
3. WATER DISCHARGED FROM THE DEWATERING SYSTEM SHALL NOT BE ALLOWED TO CREATE A WATER NUISANCE ON THE PROPERTY OR ADJACENT PROPERTY.

GEOTECHNICAL BORINGS

1. A GEOTECHNICAL INVESTIGATION REPORT SHOWING THE LOCATION AND LOGS OF BORINGS TAKEN AT THE RAILROAD CROSSING, HWY 80 CROSSING, FM 740 CROSSING, KING ROAD CROSSING, FM 550 CROSSING AND FM 549 CROSSING IS ATTACHED TO THE BACK OF THE SPECIFICATIONS.

MATCH LINE STA 493+00 (SECTION 1)

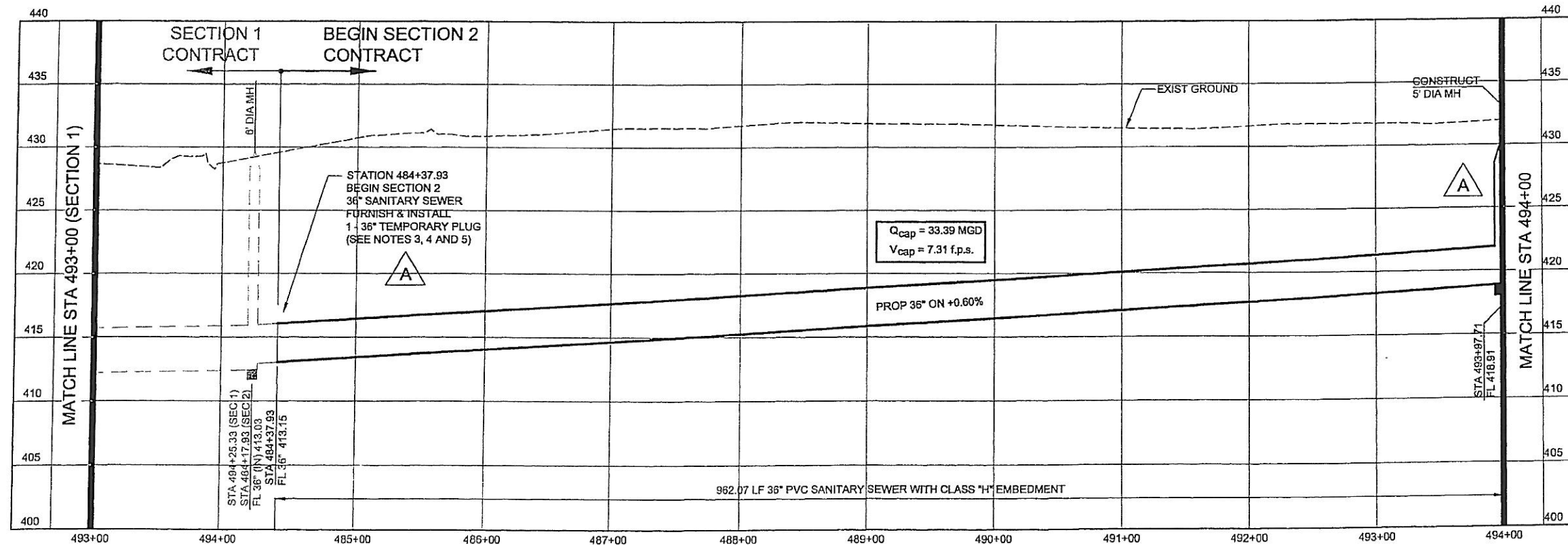


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
BEGIN SEC 2			
484+37.93	6986844.92	2598317.70	-
493+97.71	6987793.42	2598464.40	4' 14" 18" LT

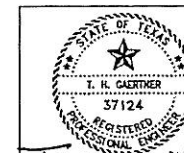
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
584	6986769.70	2598316.76	429.36
1140 (IR)	6987632.57	2598641.52	432.50
5018	6986805.85	2598379.30	429.84

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- IF 36" SANITARY SEWER IN SECTION 1 CONTRACT IS ALREADY INSTALLED WHEN SECTION 2 CONSTRUCTION BEGINS, THEN REMOVE AND DISPOSE OF THE TEMPORARY PLUG INSTALLED UNDER SECTION 1 CONTRACT AND CONNECT SECTION 2 PIPE TO THE EXISTING 36" SANITARY SEWER.
- IF 36" SANITARY SEWER IN SECTION 1 CONTRACT IS NOT ALREADY INSTALLED WHEN SECTION 2 CONSTRUCTION BEGINS, THEN INSTALL A 36" TEMPORARY PLUG AT THE BEGINNING OF THE SECTION 2 SANITARY SEWER.
- CONTRACTOR SHALL COORDINATE WITH SECTION 1 CONTRACTOR TO ENSURE SAME PIPE SIZE, TYPE, AND MATERIAL IS USED TO CONNECT SECTION 2 TO SECTION 1 AT MANHOLE AT STA. 494+25.33 (SEC 1).
- RIM ELEVATION OF MANHOLES SHOWN ON THIS SHEET TO BE CONSTRUCTED IN THIS CONTRACT SHALL BE 24" BELOW FINISHED GRADE OF GROUND SURFACE.



NORTH TEXAS MUNICIPAL
WATER DISTRICT
ROCKWALL-HEATH
TRANSFER SEWER
RHC# 01-1, SECTION 2
SANITARY SEWER
PLAN AND PROFILE
BEGIN PROJECT TO 494+00

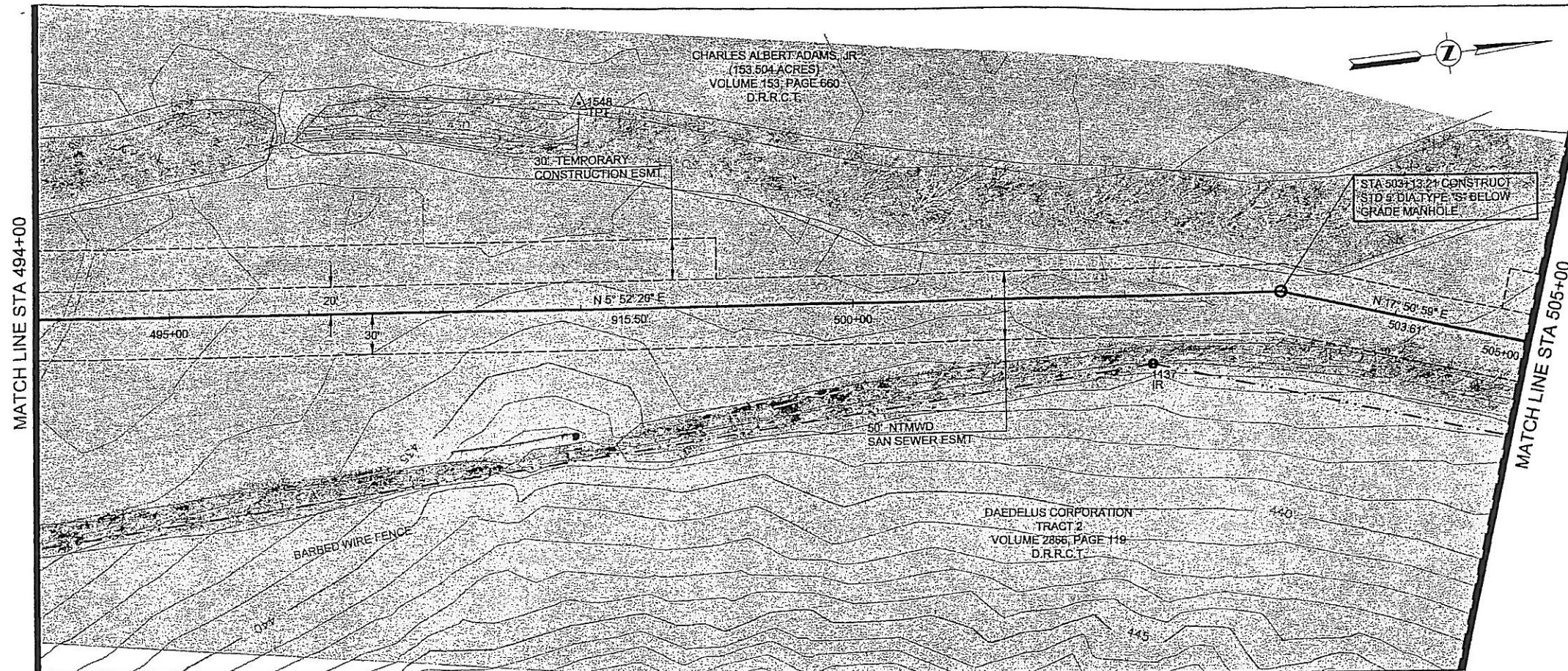


NO	DATE	REVISIONS	MADE/CKD
A	11/5/03	Revised Horizontal Control Data	THG THG
A	11/5/03	Fixed profile to show MH at Sta. 493+97.71	THG THG
A	11/5/03	Added notes 5 and 6.	THG THG
A	11/5/03	Modified note in profile re: Sta 484+37.93	THG THG

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	3 OF 36

CADD DWG FILE NO: PP2-03.DWG

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

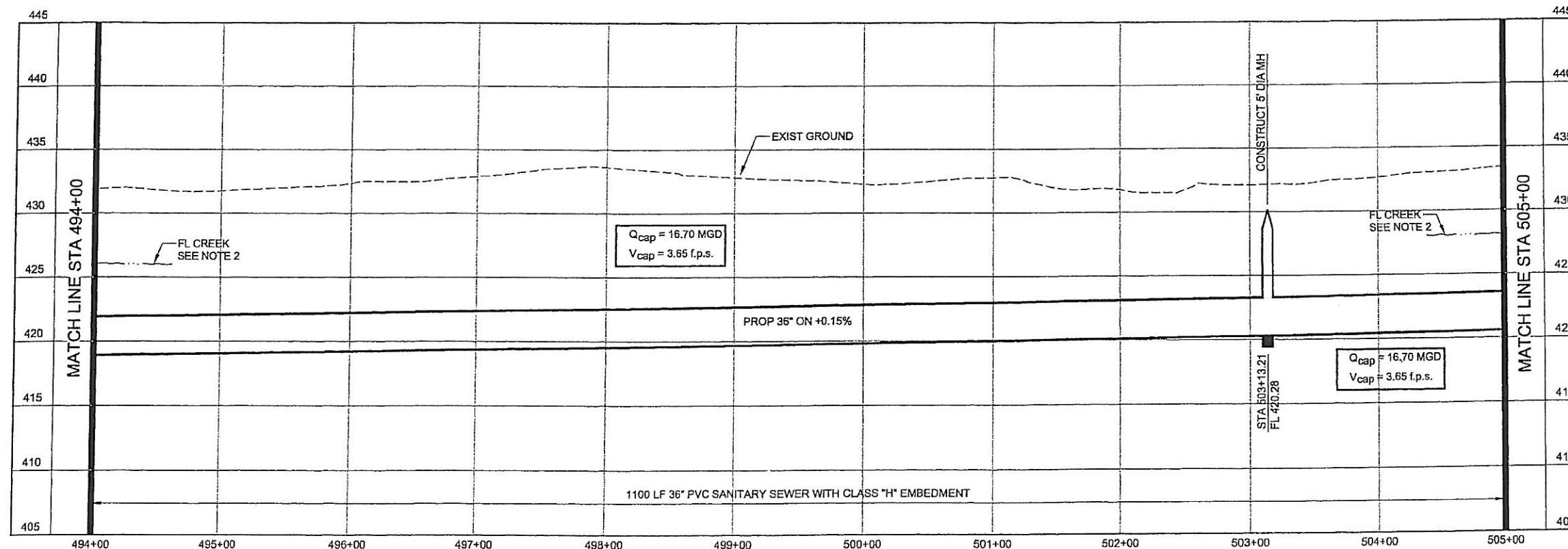


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
503+13.21	6988706.03	2598537.10	13° 17' 44" RT

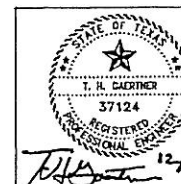
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
1137 (IR)	6988609.29	2598579.49	435.04
1548	6988206.58	2598347.41	431.60

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- RIM ELEVATION OF MANHOLES SHOWN ON THIS SHEET TO BE CONSTRUCTED 24" BELOW FINISHED GRADE OF GROUND SURFACE.



NORTH TEXAS MUNICIPAL WATER DISTRICT ROCKWALL-HEATH TRANSFER SEWER RHC 01-1, SECTION 2 SANITARY SEWER PLAN AND PROFILE 494+00 TO 505+00			
KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.		CM-0148	DWG. NO. 4 OF 36



A	11/5/03	Revised Horizontal Control Data.	THG	THG
A	11/5/03	Added notes 3.	THG	THG

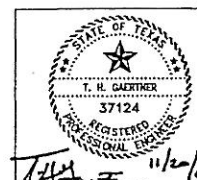
HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
508+16.82	6989185.39	2598691.46	23° 34' 41" RT
509+16.82	6989260.37	2598757.63	23° 34' 41" LT
509+69.30	6989310.33	2598773.72	42° 05' 43" LT
513+84.05	6989688.49	2598603.40	21° 04' 22" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
1135 (IR)	6989245.20	2598784.23	437.11
1534	6989487.76	2598429.20	434.85

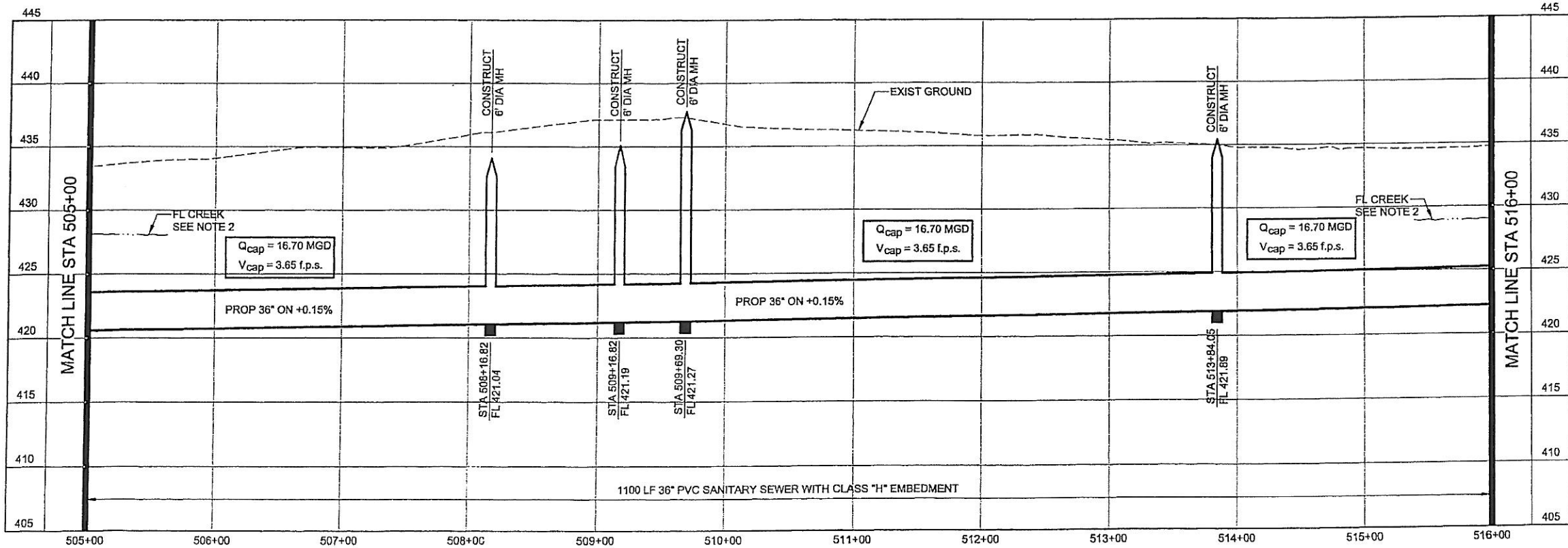
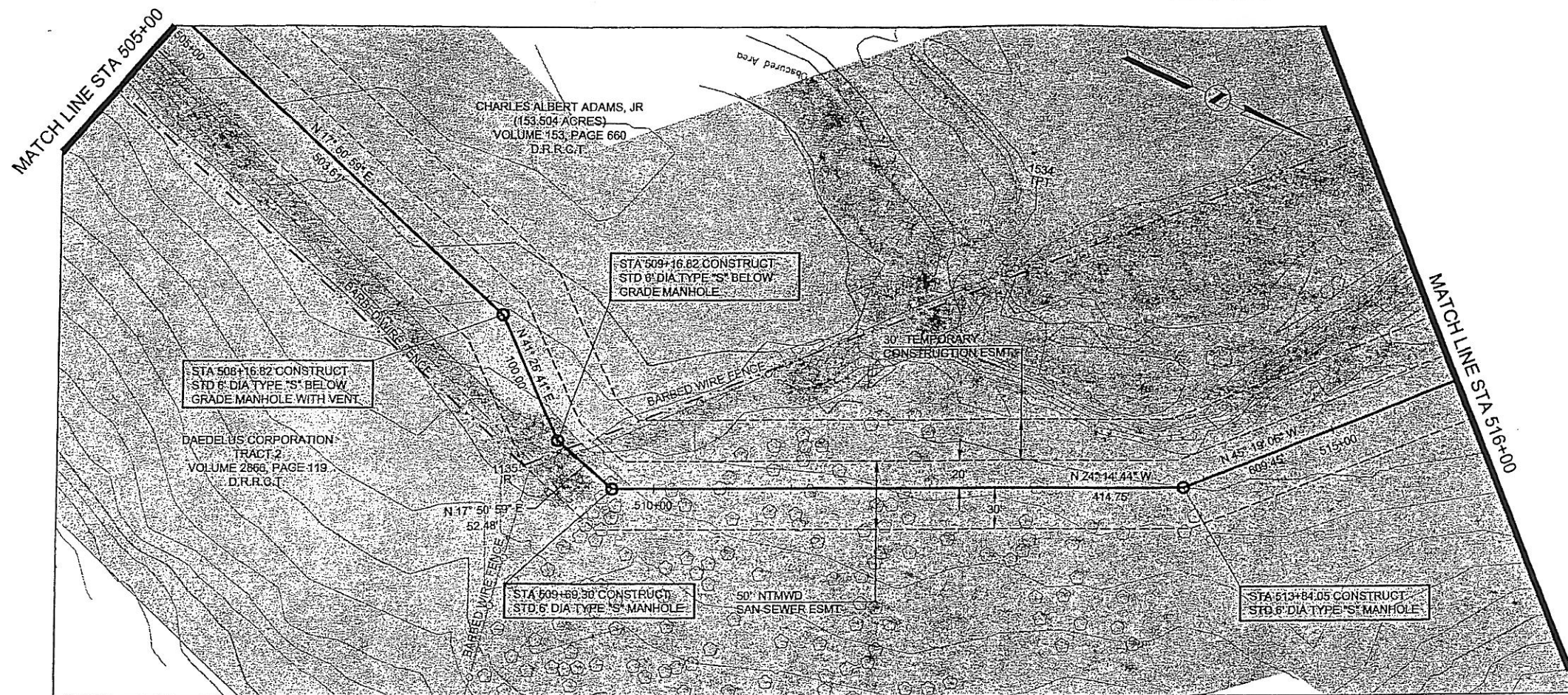
- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
 - RIM ELEVATION OF MANHOLES AT STATIONS 508+16.82 AND 509+16.82 TO BE CONSTRUCTED 24" BELOW FINISHED GRADE OF GROUND SURFACE.

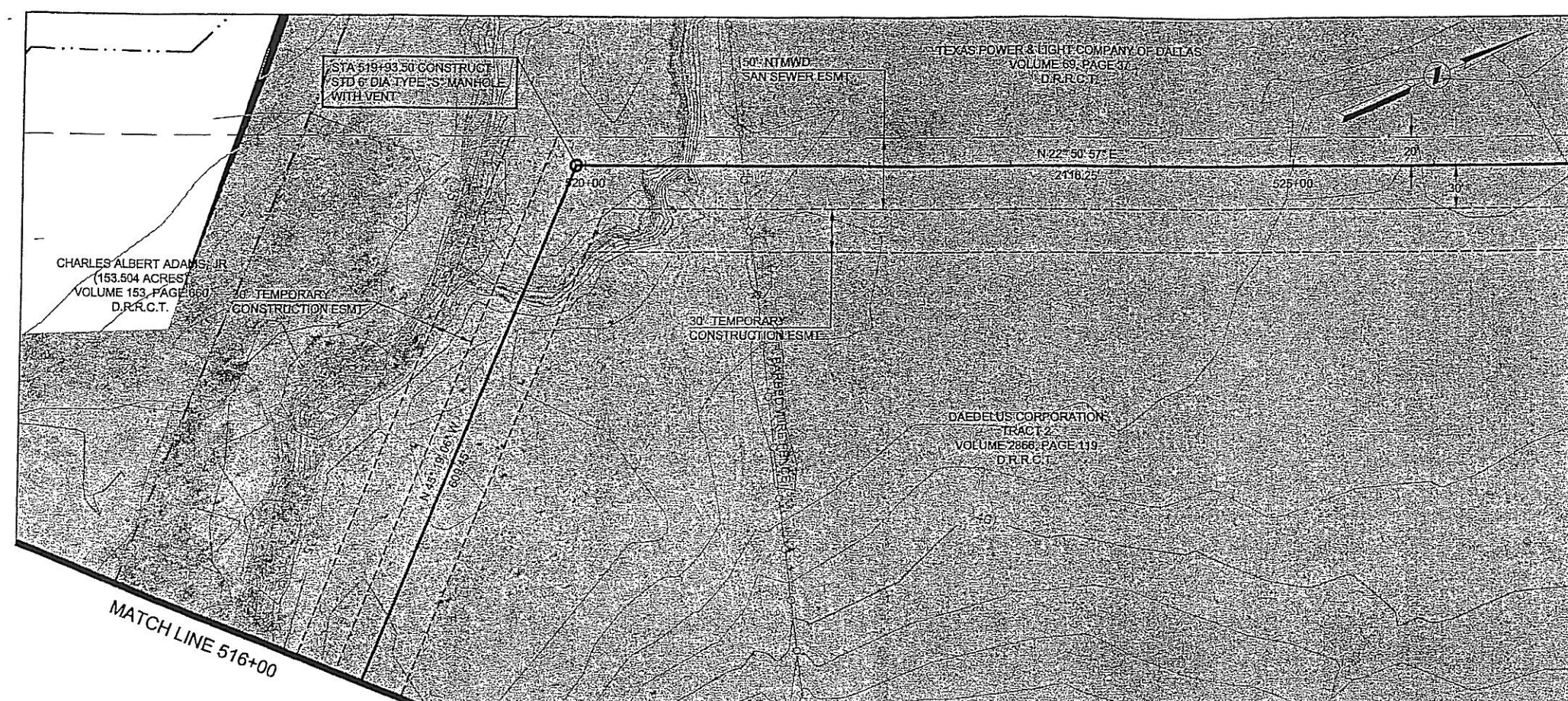
NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
505+00 TO 516+00

KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	5 OF 36



A	11/5/03	Revised Horizontal Control Data.	THG	THG
A	11/5/03	Added note 3.	THG	THG
NO	DATE	REVISIONS	MADE	CHKD

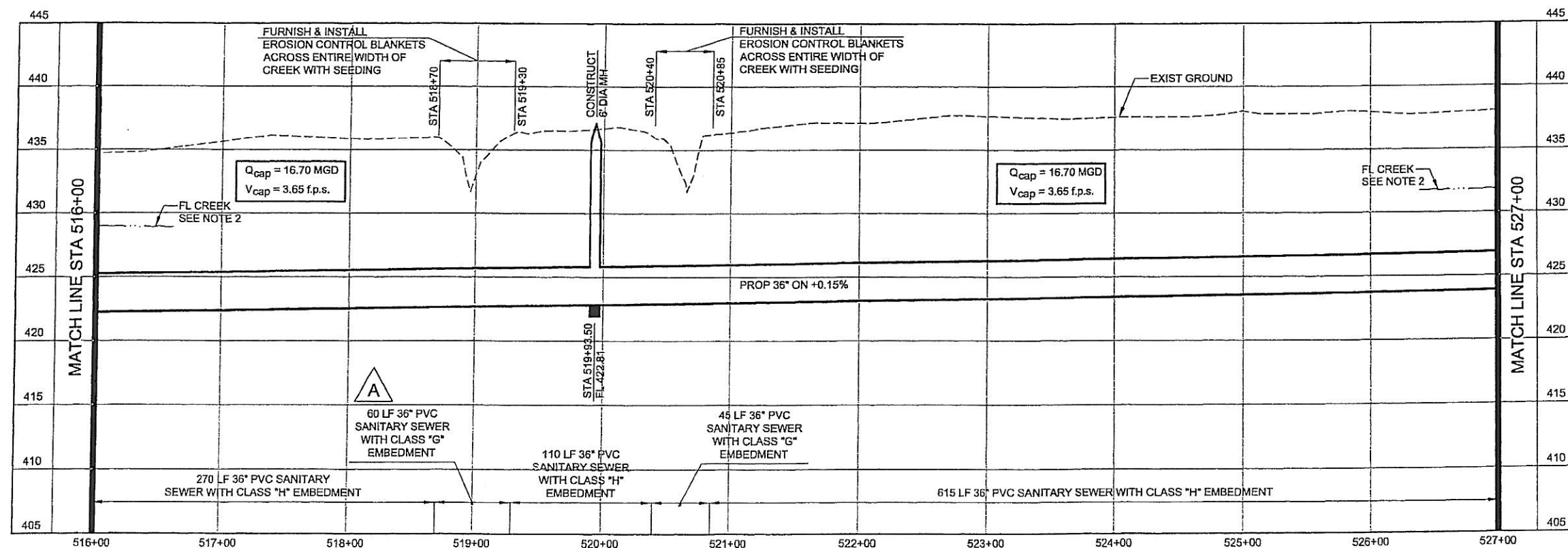





HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
519+93.50	6990117.04	2598170.07	68° 10' 03" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
NONE			

- NOTES:
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



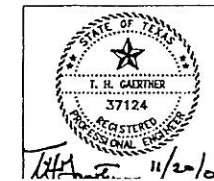


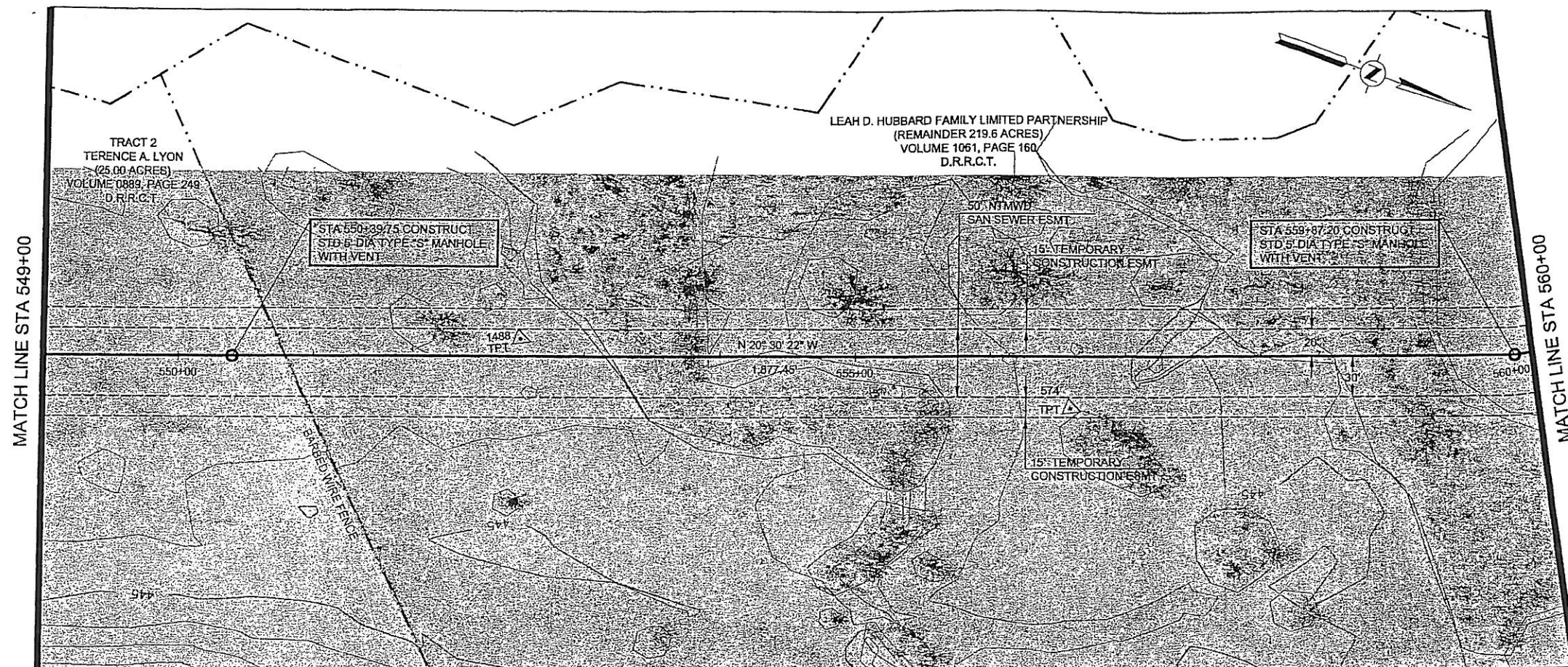
**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
ROCKWALL-HEATH
TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER
PLAN AND PROFILE
516+00 TO 527+00

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003

NO	DATE	REVISIONS	MADE/CKD	JOB NO.	CM-0148	DWG. NO.	6 OF 36
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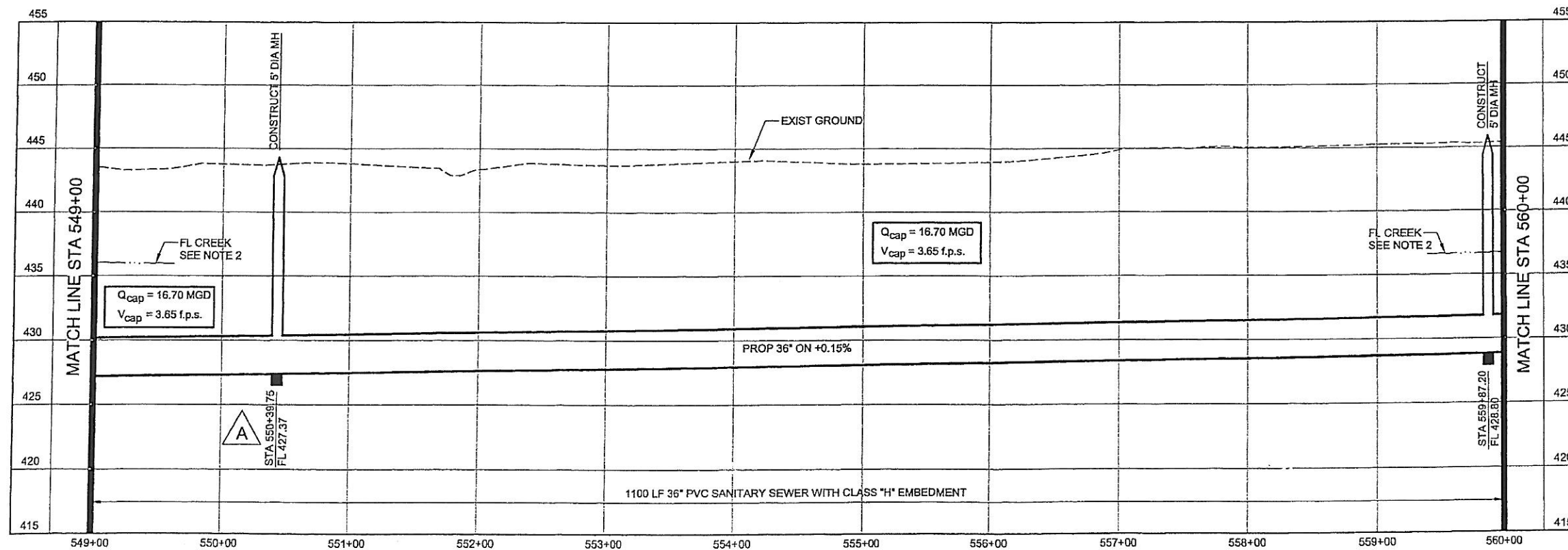


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
550+39.75	6992938.29	2598666.04	00° 00' 00"
559+87.20	6993825.71	2598334.14	07° 39' 36" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
574	6993532.08	2598484.92	444.32
1488	6993132.93	2598579.28	443.86

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



**NORTH TEXAS MUNICIPAL
WATER DISTRICT**

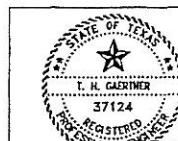
**ROCKWALL-HEATH
TRANSFER SEWER
RHCf 01-1, SECTION 2**

**SANITARY SEWER
PLAN AND PROFILE
549+00 TO 560+00**

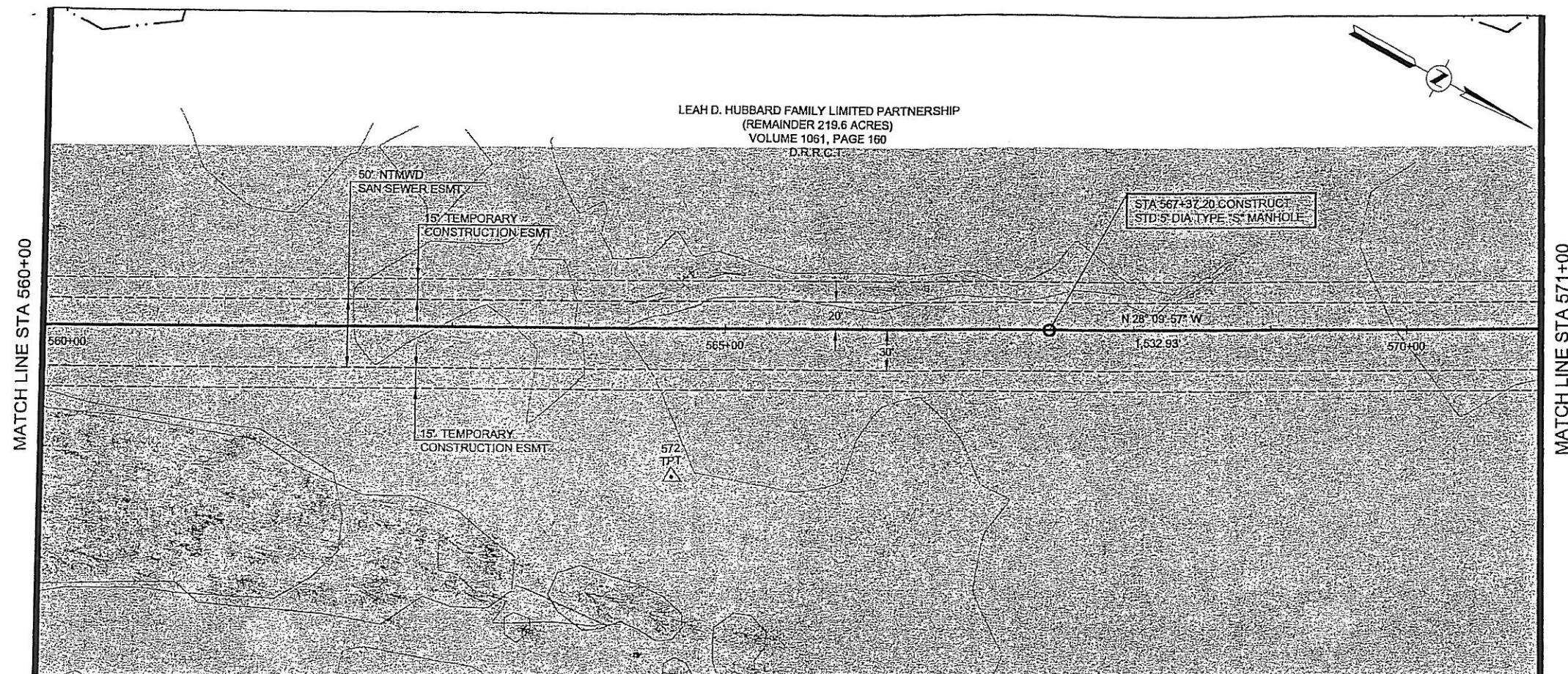
KBR

Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.		CM-0148	DWG. NO. 9 OF 36



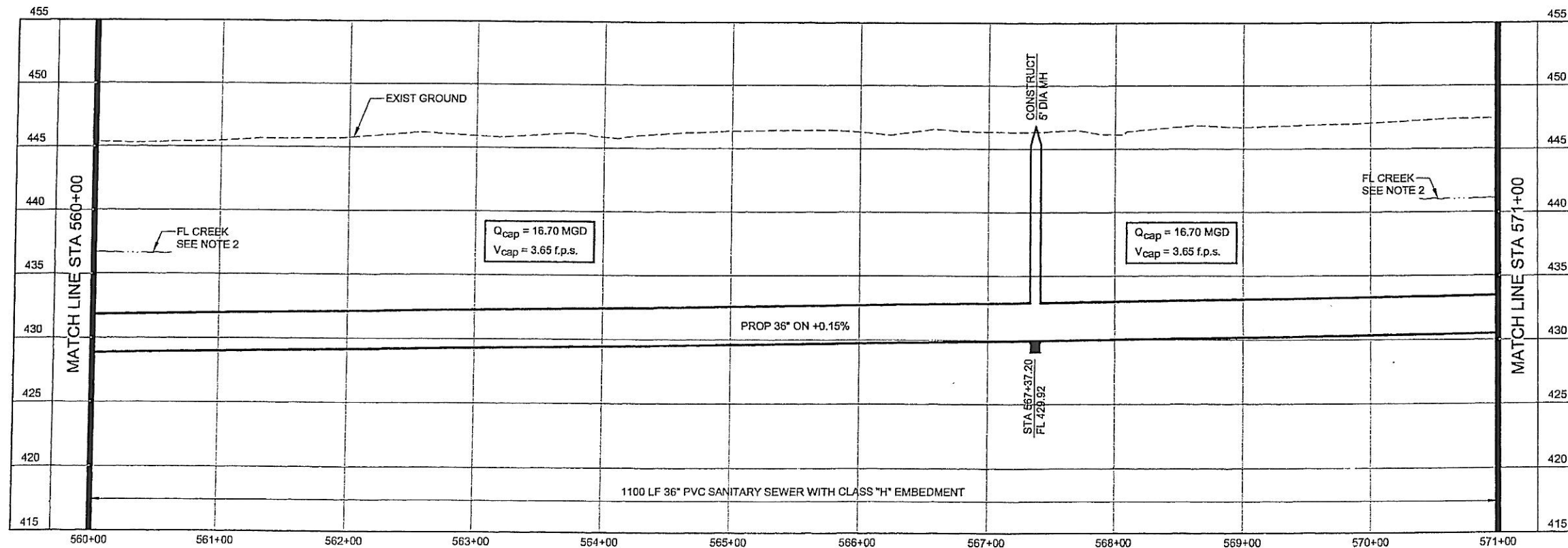
NO.	DATE	REVISIONS	MADE/CKD	JOB NO.
A	11/4/03	Moved manhole to the correct stationing.	THG	THG



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
567+37.20	6994486.89	2597980.12	00° 00' 00"

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
572	6994295.22	2598205.89	445.91

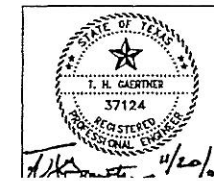
- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



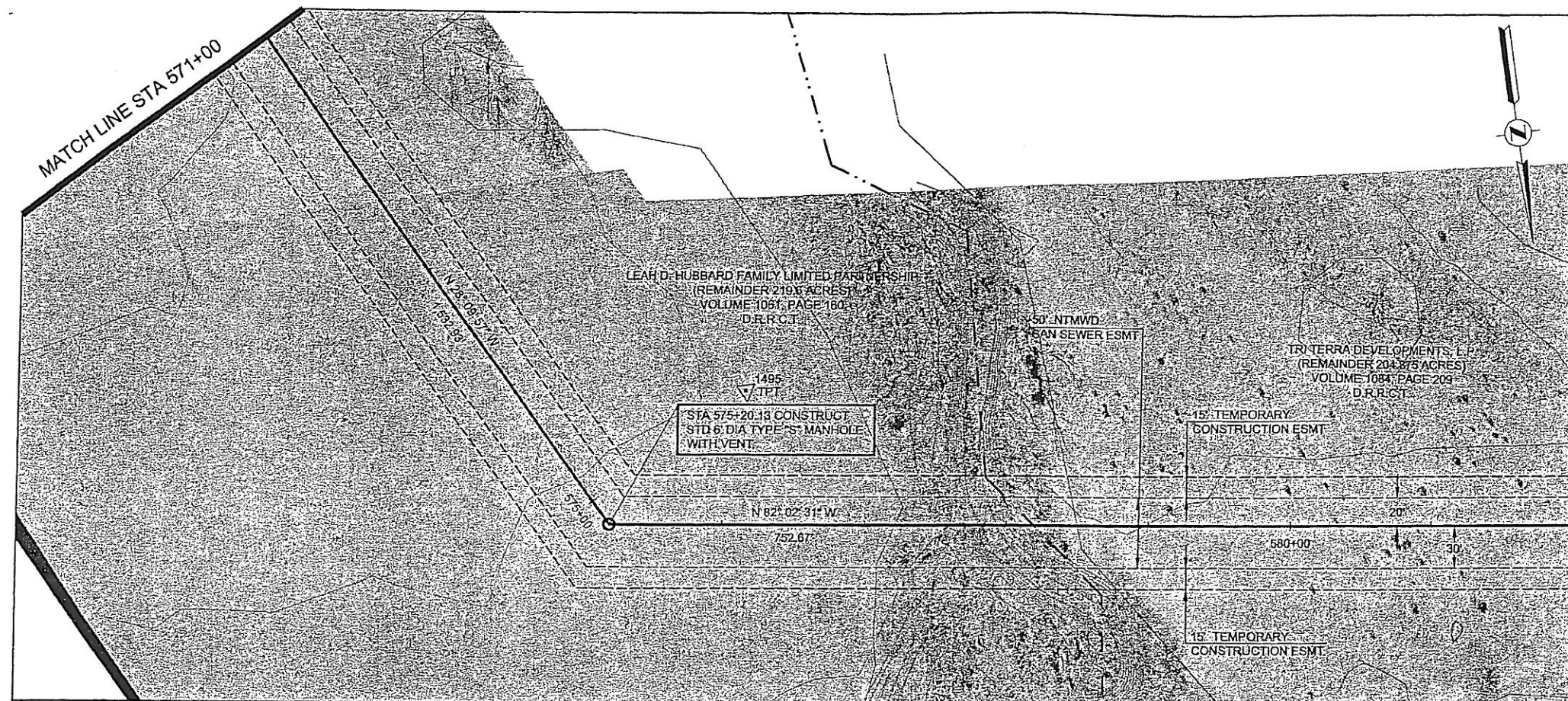
NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
560+00 TO 571+00

KBR
 Kellogg Brown & Root, Inc.
 Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.		CM-0148	DWG. NO. 10 OF 36



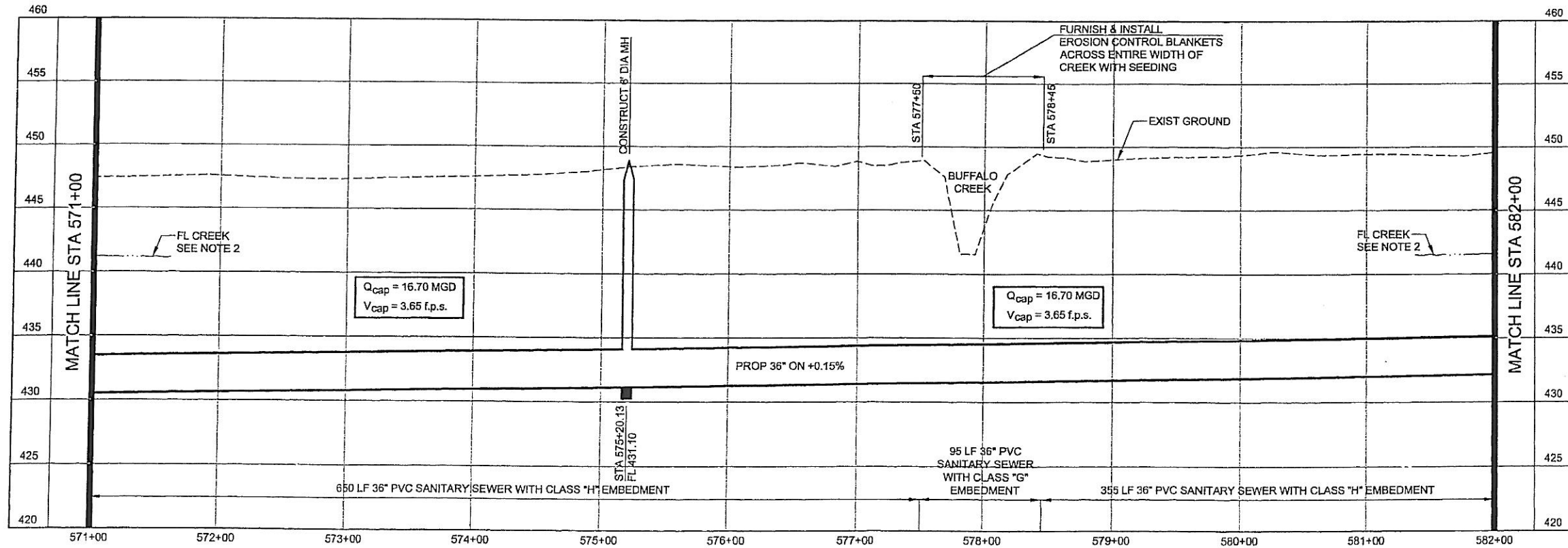
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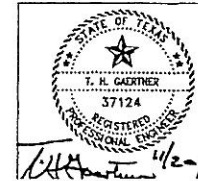
HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
575+20.13	6995177.12	2597610.56	53° 52' 33" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
1495	6995096.65	2597503.08	448.28

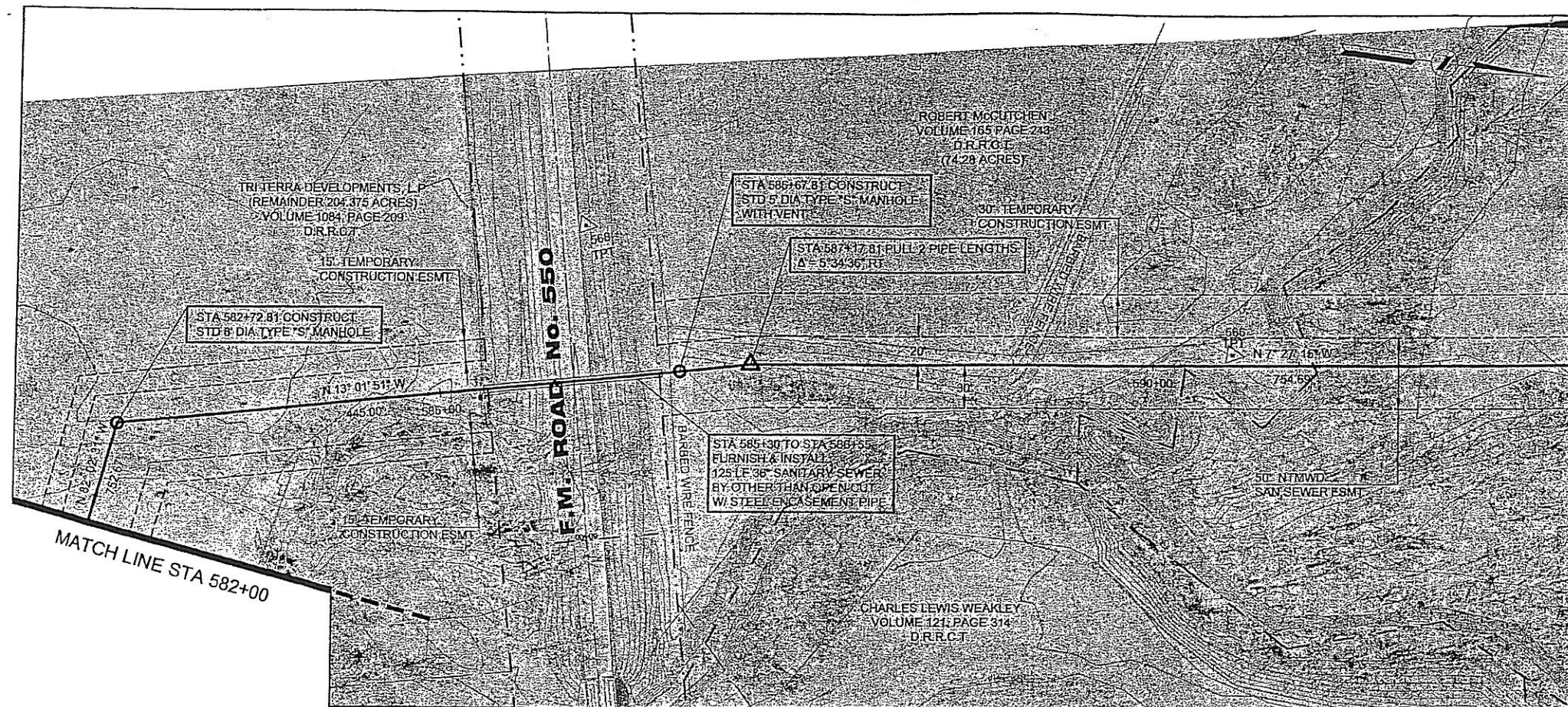
- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
571+00 TO 582+00



NO	DATE	REVISIONS	MADE/CKD	JOB NO.	DWG. NO.

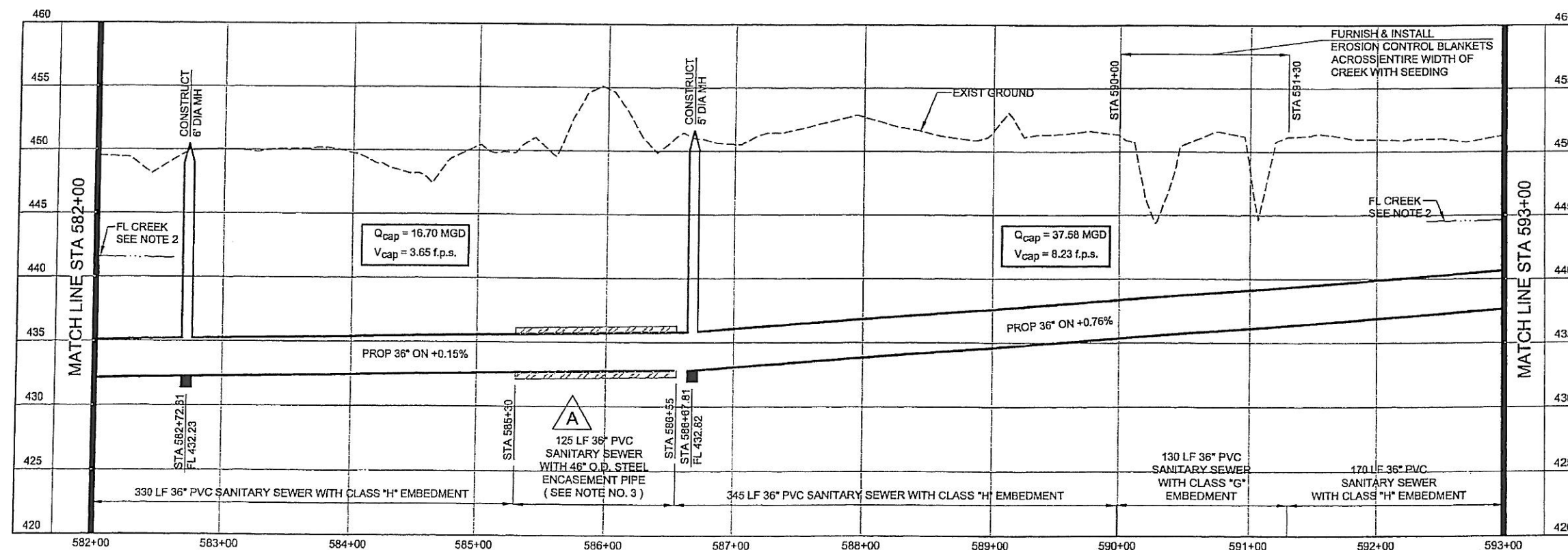


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
582+72.81	6995281.33	2596865.14	69° 00' 39" RT
586+67.81	6995666.15	2596776.07	00° 00' 00"

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
587+17.81	6995714.87	2596764.80	
566	6996048.20	2596713.61	451.08
568	6995585.74	2596684.43	453.37

NOTES:

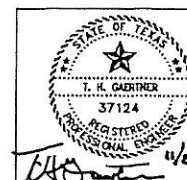
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- MINIMUM WALL THICKNESS FOR THE STEEL ENCASUREMENT PIPE SHALL BE 5/8".



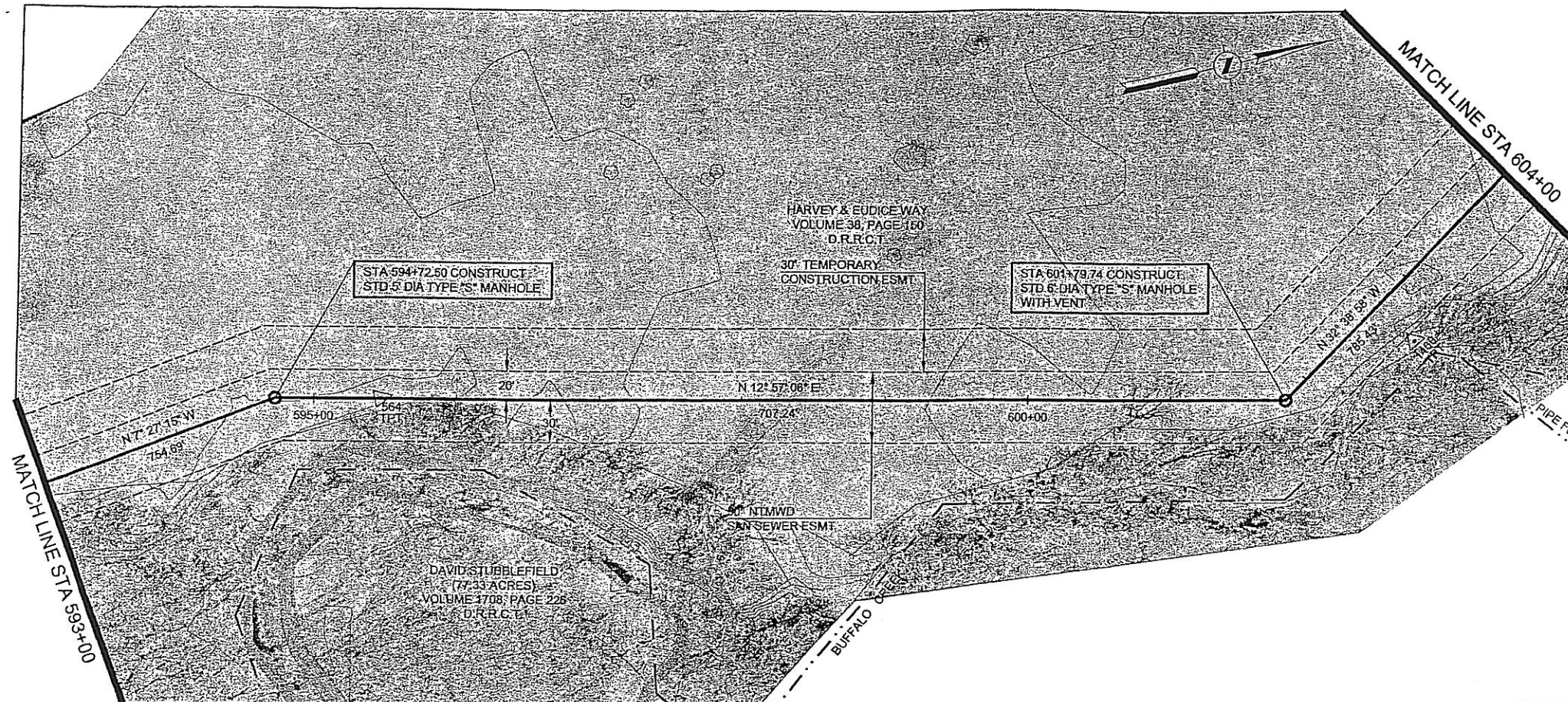
**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
**ROCKWALL-HEATH
TRANSFER SEWER
RHCF 01-1, SECTION 2**
**SANITARY SEWER
PLAN AND PROFILE
582+00 TO 593+00**

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED KBR HORIZ. SCALE 1"=50'
DRAWN KBR VERT. SCALE 1"=5'
CHECKED THG DATE SEPTEMBER 26, 2003



NO	DATE	REVISIONS	MADE	CHKD	JOB NO.
A	11/11/03	Added encasement pipe size and wall thickness.	THG	THG	

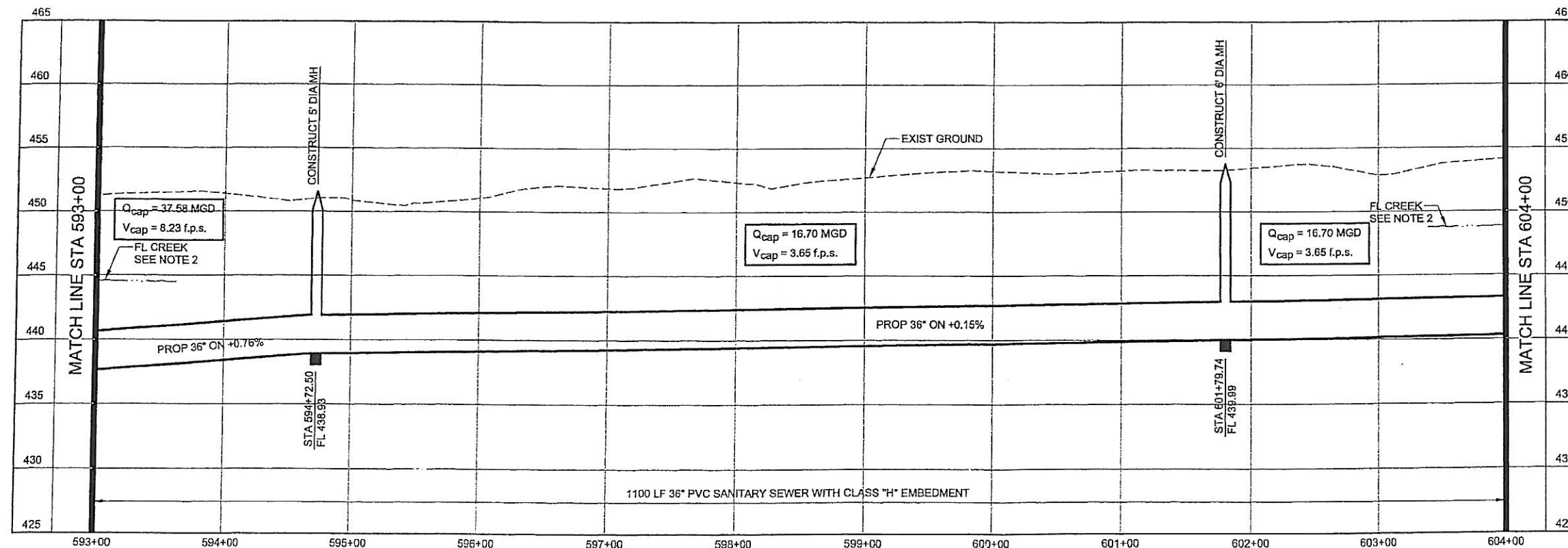


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
594+72.50	6996463.18	2596666.89	20° 24' 21" RT
601+79.74	6997152.43	2596825.40	45° 36' 05" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
564	6996535.44	2596683.17	450.60
1460	6997249.82	2596805.40	453.61

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.

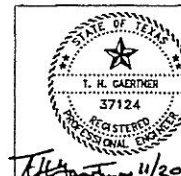


**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
**ROCKWALL-HEATH
TRANSFER SEWER
RHCf 01-1, SECTION 2**
**SANITARY SEWER
PLAN AND PROFILE
593+00 TO 604+00**

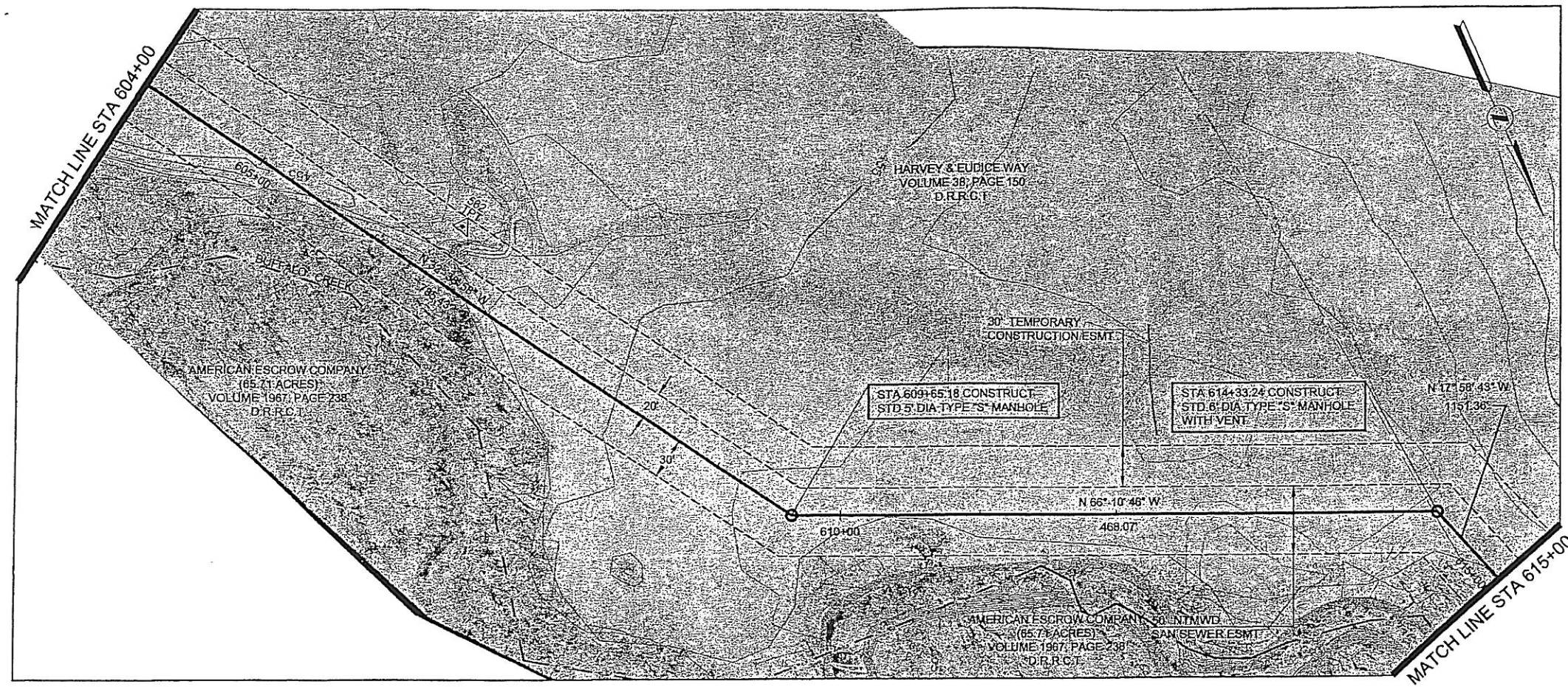
KBR

Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	13 OF 36



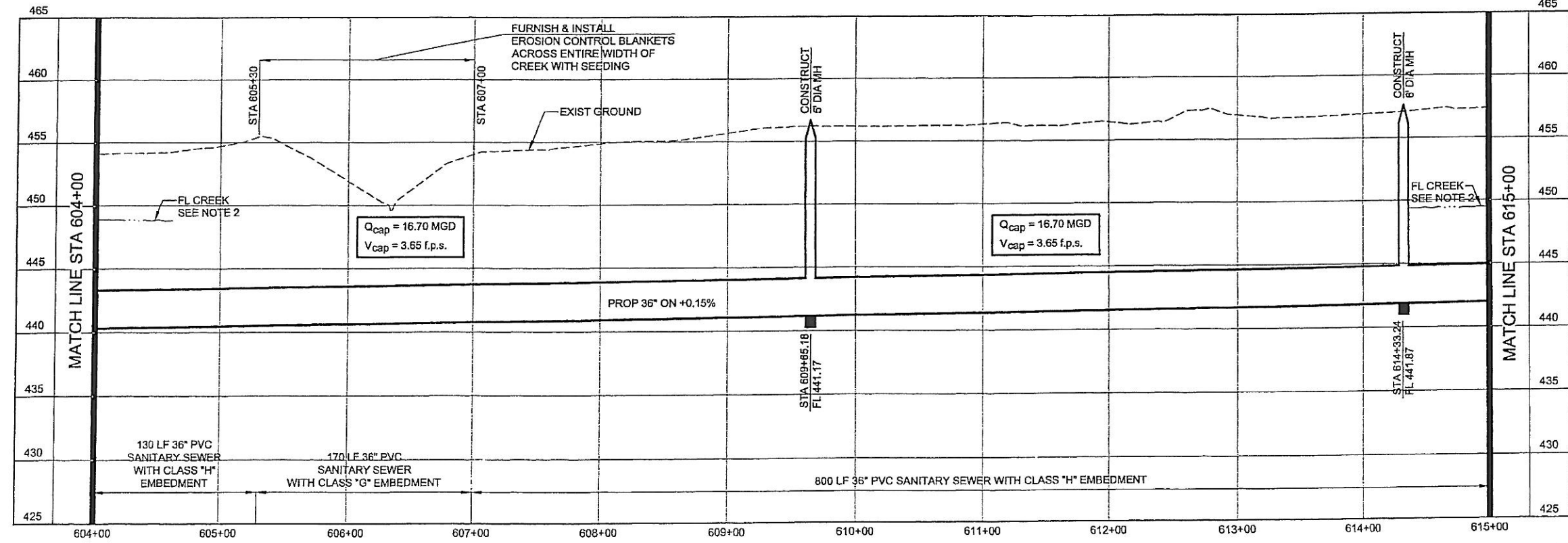
NO	DATE	REVISIONS	MADE	CKD



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
609+65.18	6997813.76	2596401.66	33° 31' 48" LT
614+33.24	6998002.80	2595973.47	48° 12' 03" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
562	6997524.31	2596536.53	453.70

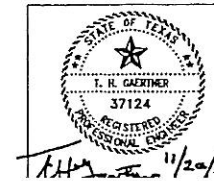
- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
604+00 TO 615+00

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.		CM-0148	DWG. NO. 14 OF 36

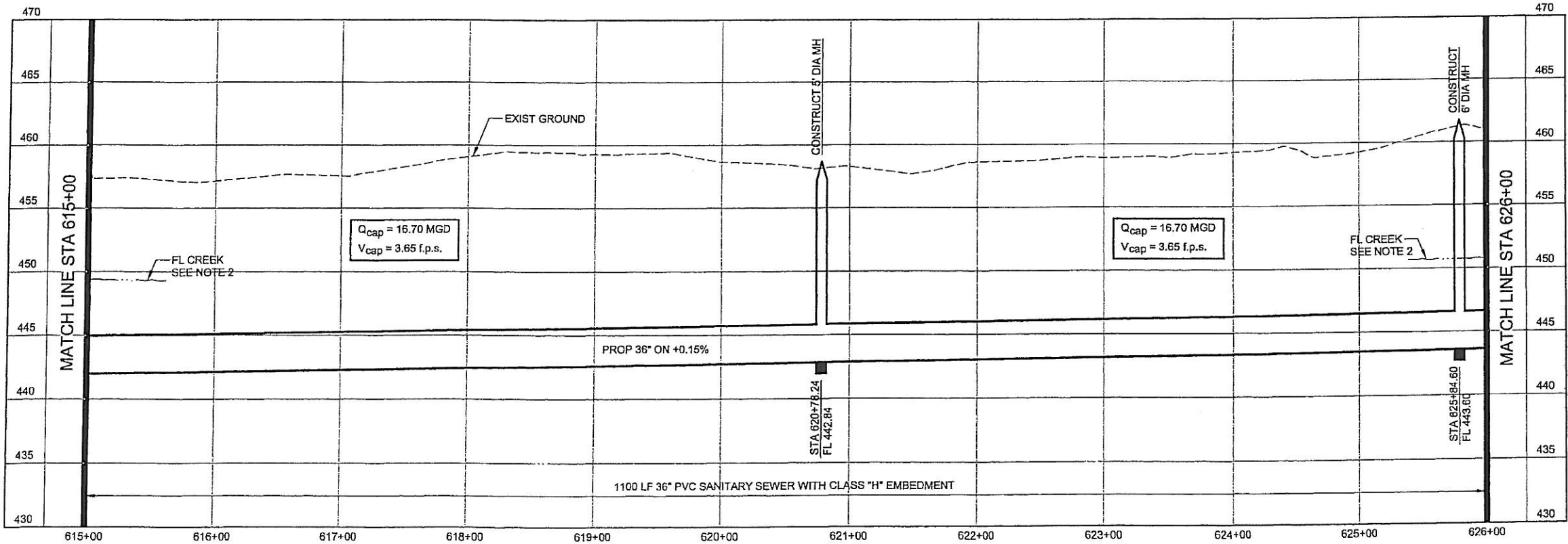


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
620+78.24	6998616.56	2595774.29	00° 00' 00"
625+84.60	6999097.94	2595618.09	62° 40' 34" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
556	6998701.65	2595709.07	459.89
560	6998064.20	2595937.48	457.49

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



NORTH TEXAS MUNICIPAL
WATER DISTRICT

ROCKWALL-HEATH
TRANSFER SEWER
RHCF 01-1, SECTION 2

SANITARY SEWER
PLAN AND PROFILE
615+00 TO 626+00

KBR

Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED: KBR HORIZ. SCALE 1"=50'
DRAWN: KBR VERT. SCALE 1"=5'
CHECKED: THG DATE SEPTEMBER 26, 2003

MADE/CKD: JOB NO. CM-0148 DWG. NO. 15 OF 36



FILED 4/20/03

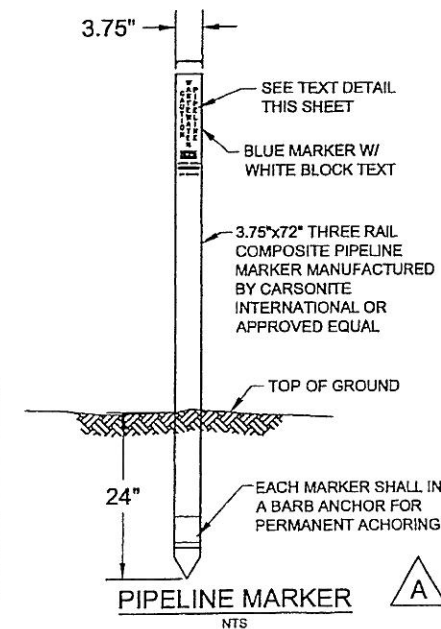
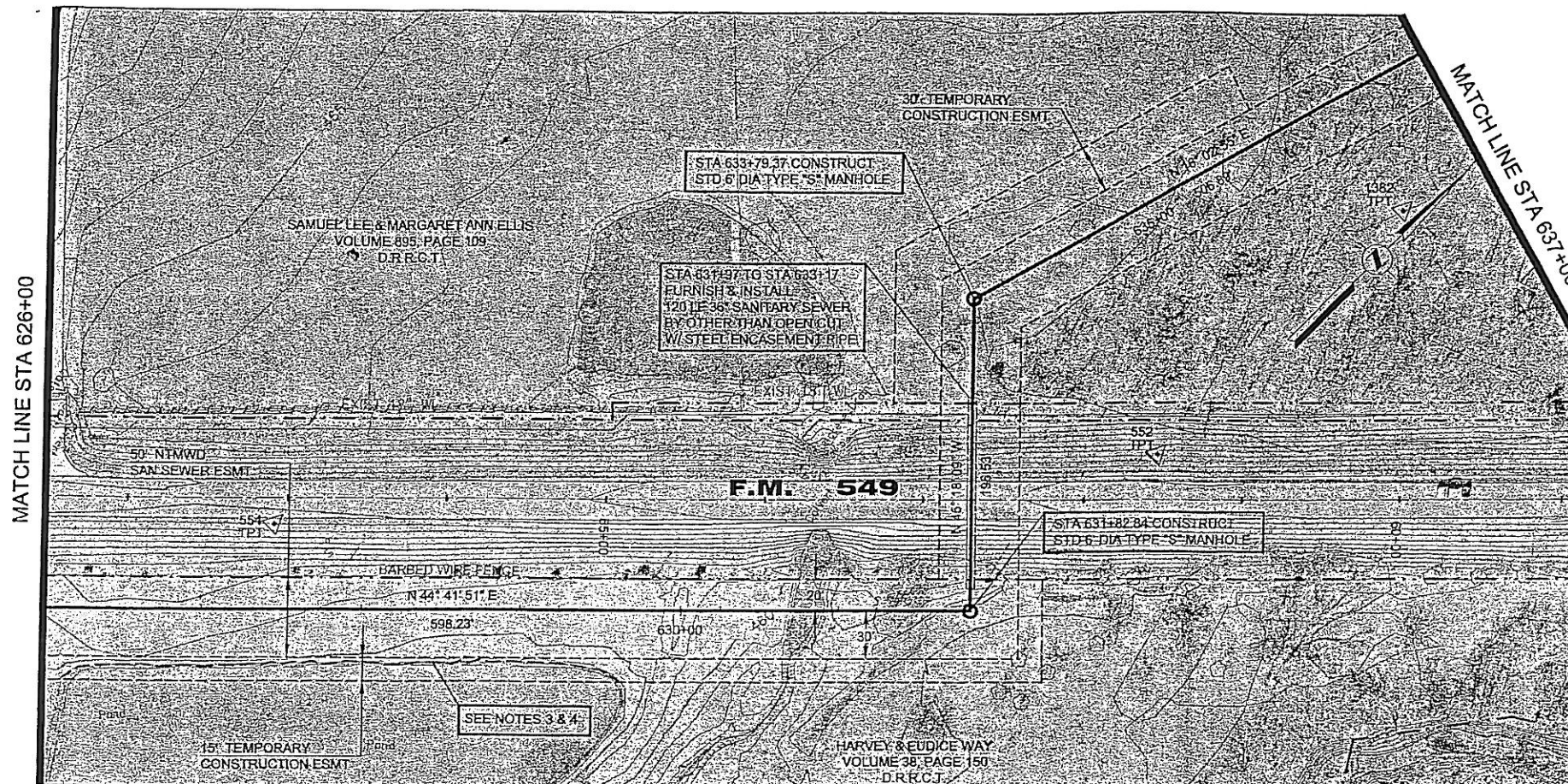
NO. DATE REVISIONS

MADE/CKD: JOB NO.

CM-0148

DWG. NO.

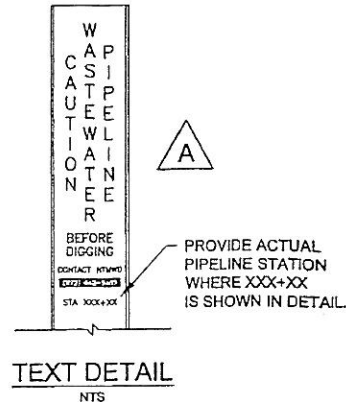
15 OF 36



- NOTES:
1. MARKER SHALL BE LOCATED ON BOTH SIDES OF ALL ROADS AND RAILROADS AT THE R.O.W. LINES OVER THE CENTER OF THE PIPELINE.
 2. EACH MARKER SHALL HAVE A STICKER WITH THE FOLLOWING INFORMATION "CAUTION WASTEWATER PIPELINE - CONTACT NTMWD (972) 442-5405, STA. XXX+XX" (SEE TEXT DETAIL THIS SHEET).
 3. CONTRACTOR SHALL PROVIDE THE OWNER A POST DRIVER (PART #PDR1), A POST PULLER, AND 5 ADDITIONAL PIPELINE MARKERS.

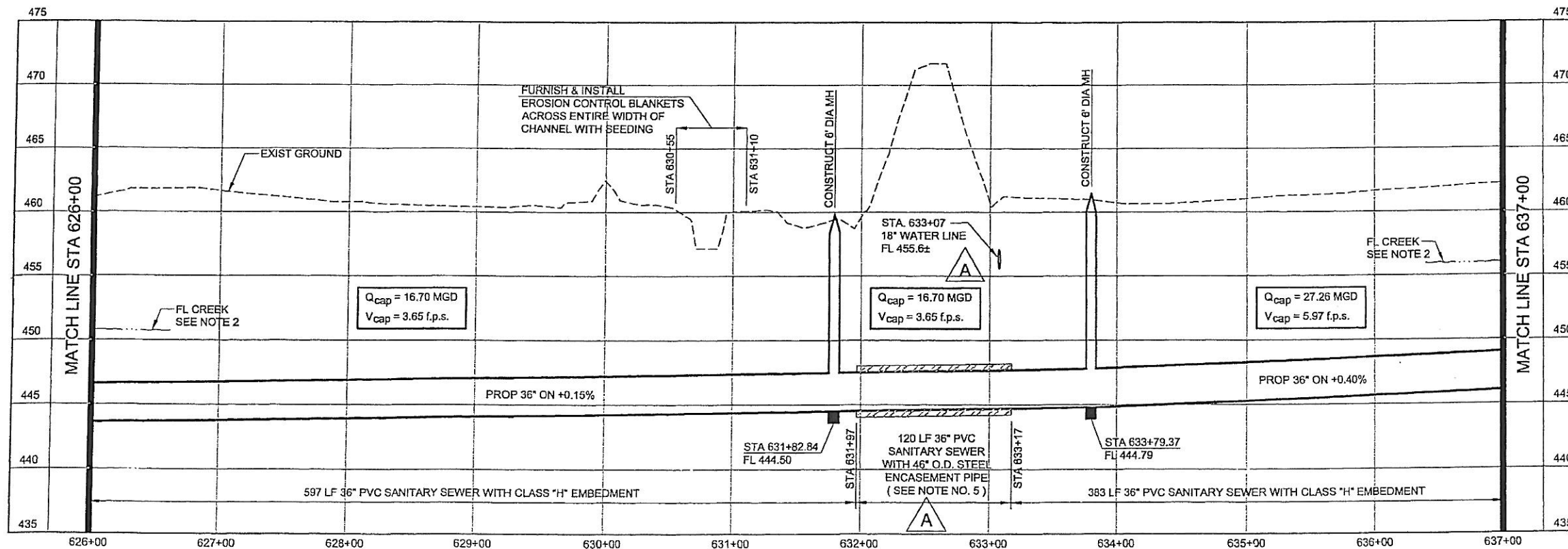
HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
631+82.84	6999523.18	2596038.86	90° 00' 00" LT
633+79.37	6999661.41	2595899.16	61° 21' 04" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
552	6999674.53	2596049.85	466.72
554	6999246.97	2595691.96	468.98
1382	6999892.77	2596050.56	462.13

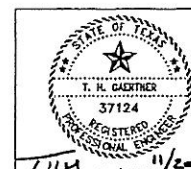


NOTES:

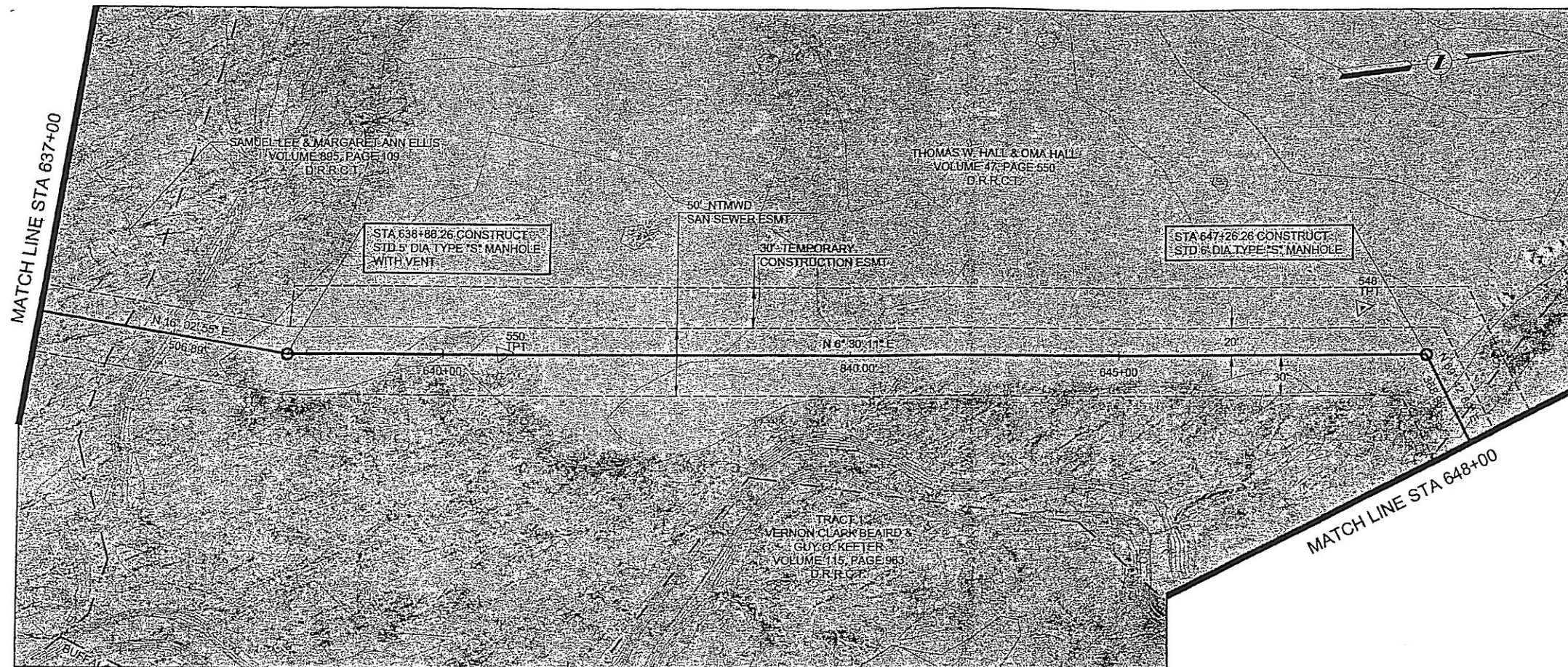
1. SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
2. FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
3. CONTRACTOR SHALL INSTALL EROSION CONTROL SILT FENCING PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR PREVENTING CONSTRUCTION ACTIVITIES FROM DISTURBING POND.
4. CONTRACTOR SHALL UTILIZE TRENCH SAFETY AND WELL POINT SYSTEMS AS REQUIRED TO MAINTAIN TRENCH INTEGRITY DURING INSTALLATION OF THE SEWER RUNNING ALONG THE EDGE OF THE POND.
3. MINIMUM WALL THICKNESS FOR THE STEEL ENCASUREMENT PIPE SHALL BE 5/8".



NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
626+00 TO 637+00



NO.	DATE	REVISIONS	MADE BY	CHECKED BY
A	11/6/03	Added 18" water line to profile.	THG	THG
A	11/6/03	Added encasement pipe size and wall thickness.	THG	THG
A	11/11/03	Added Pipeline Marker details and notes.	THG	THG

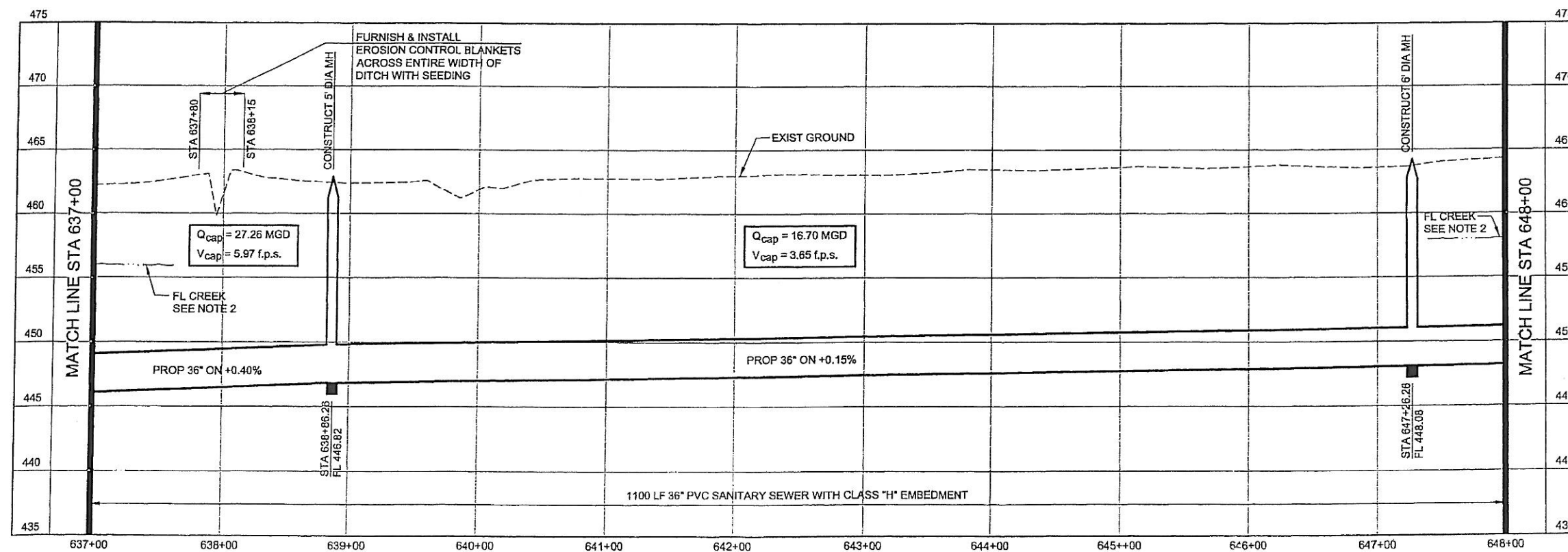


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
638+86.26	7000148.55	2596039.30	09° 32' 44" LT
647+26.26	7000983.14	2596134.43	63° 12' 47" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
548	7000940.28	2596094.62	463.72
550	7000305.36	2596056.70	462.68

NOTES:

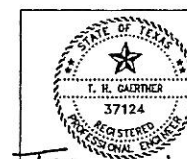
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.

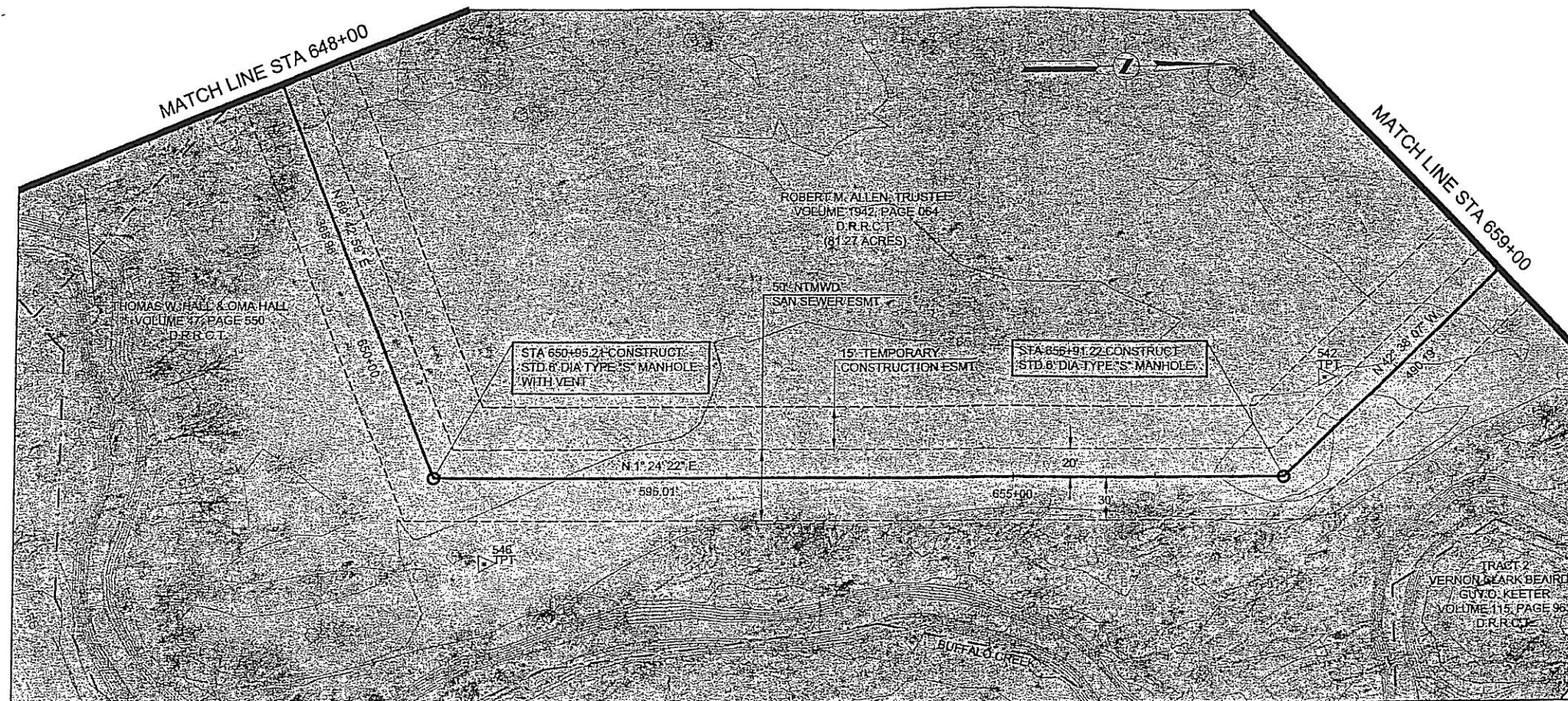


**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
**ROCKWALL-HEATH
TRANSFER SEWER
RHC# 01-1, SECTION 2**
**SANITARY SEWER
PLAN AND PROFILE
637+00 TO 648+00**

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	17 OF 36

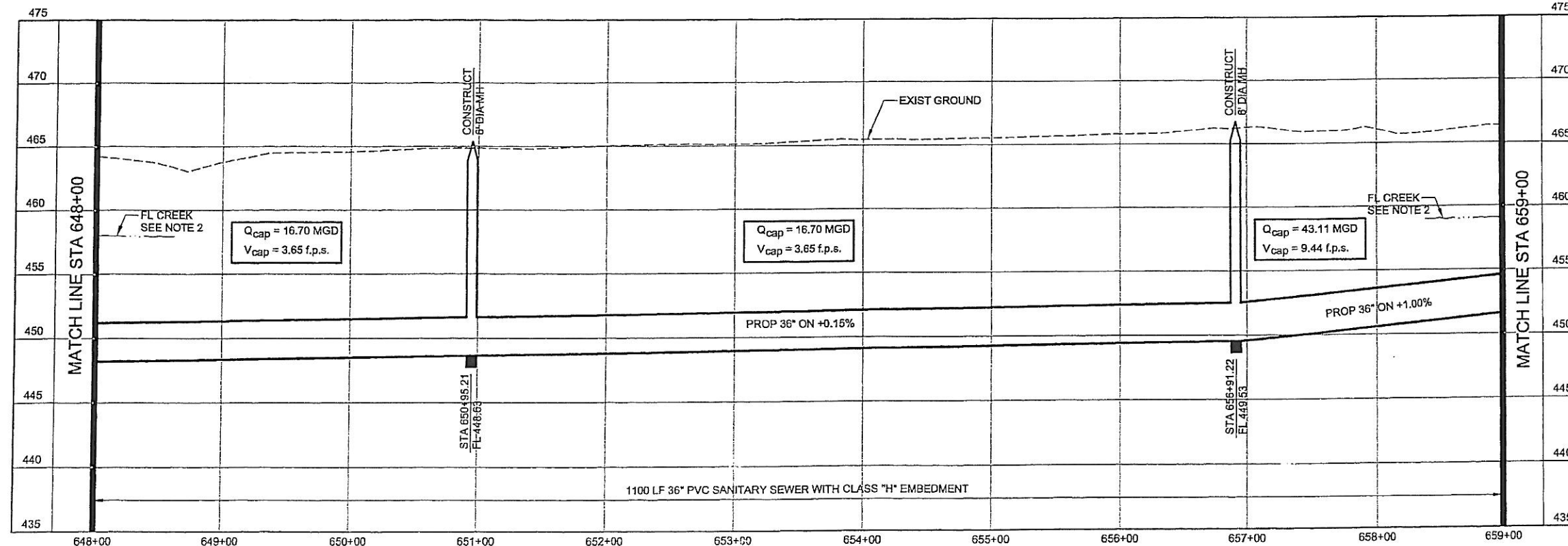




HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
650+95.21	7001111.05	2596480.51	68° 18' 36" LT
656+91.22	7001706.88	2596495.13	44° 02' 30" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
542	7001737.18	2596426.32	465.99
546	7001154.67	2596541.43	465.32

- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



**NORTH TEXAS MUNICIPAL
WATER DISTRICT**

**ROCKWALL-HEATH
TRANSFER SEWER
RHC# 01-1, SECTION 2**

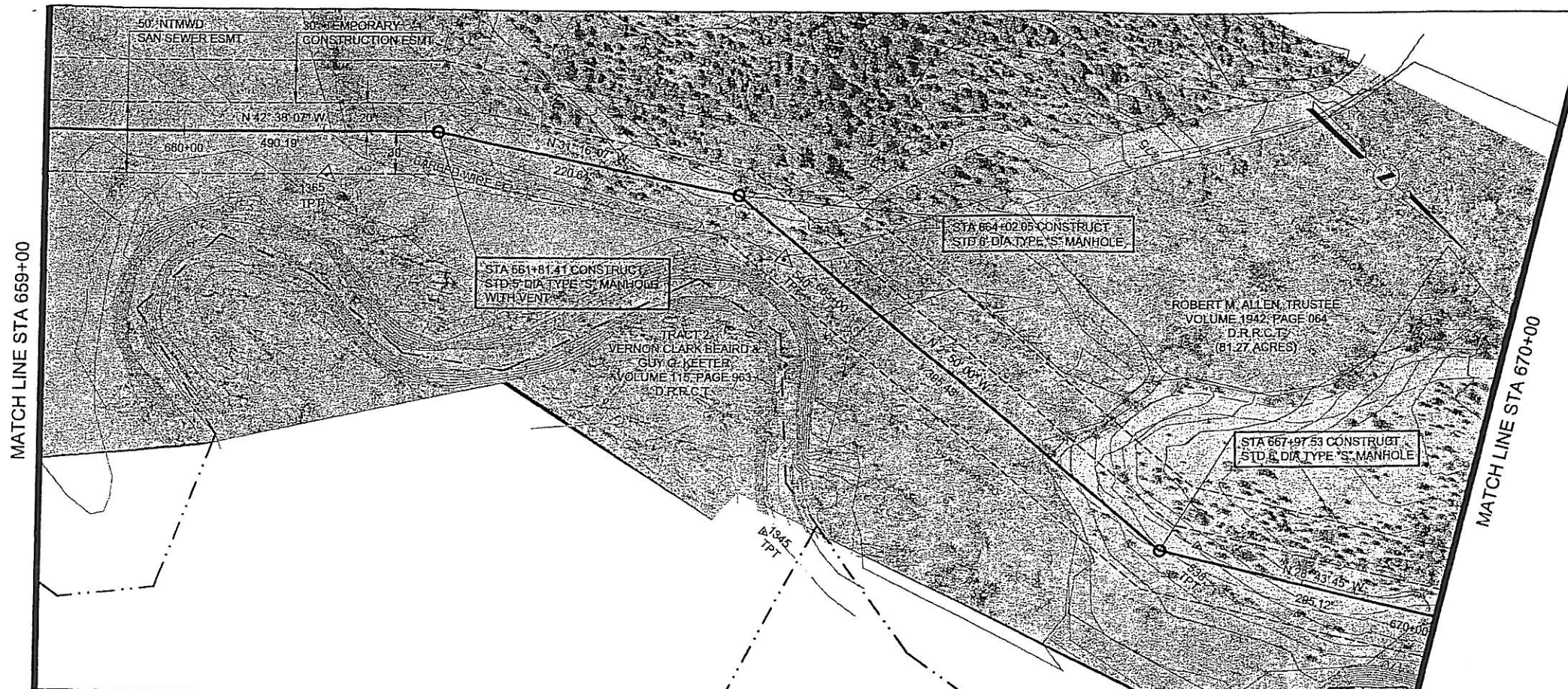
**SANITARY SEWER
PLAN AND PROFILE
648+00 TO 659+00**

KBR

Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
MADE/CKD	JOB NO.	CM-0148	DWG. NO. 18 OF 36



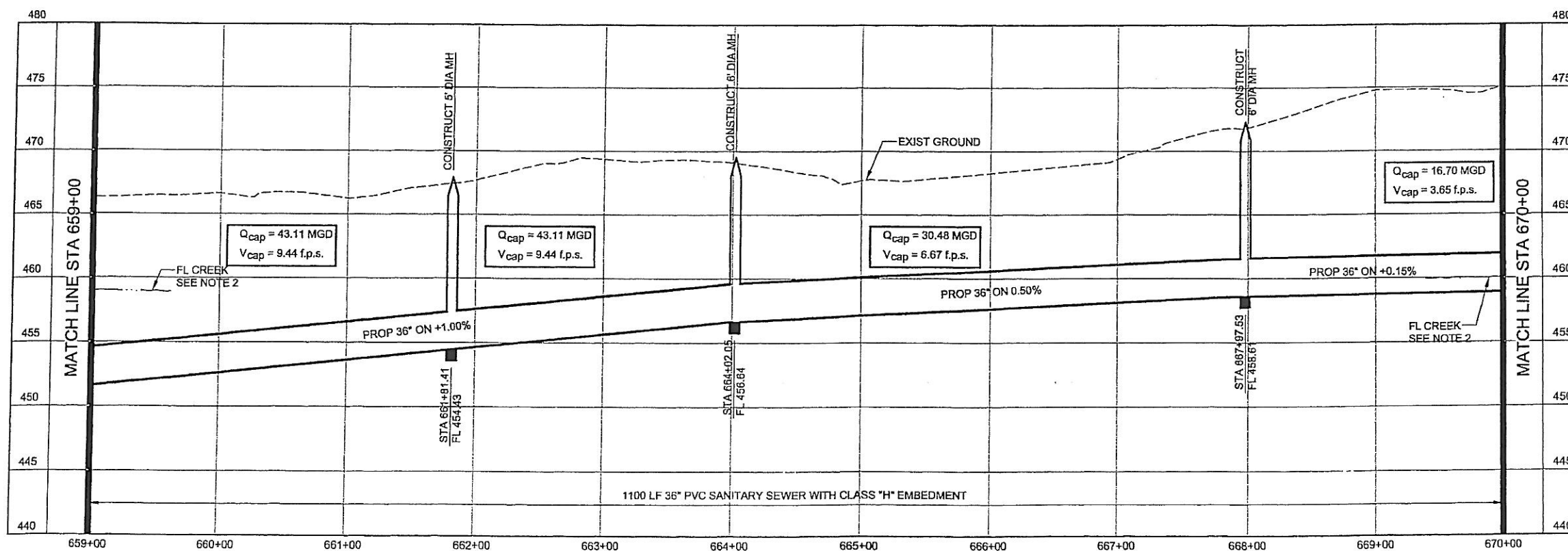


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
661+81.41	7002067.50	2596163.11	11° 22' 00" RT
664+02.05	7002256.09	2596048.59	28° 26' 07" RT
667+97.53	7002551.08	2596029.04	25° 53' 46" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
538	7002668.17	2596008.76	473.16
540	7002310.76	2596059.81	467.58
1345	7002434.16	2596211.02	464.47
1365	7002030.31	2596239.28	466.70

NOTES:

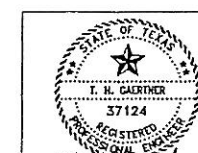
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
ROCKWALL-HEATH
TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER
PLAN AND PROFILE
659+00 TO 670+00

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
MADE/CKD	JOB NO.	CM-0148	DWG. NO. 19 OF 36



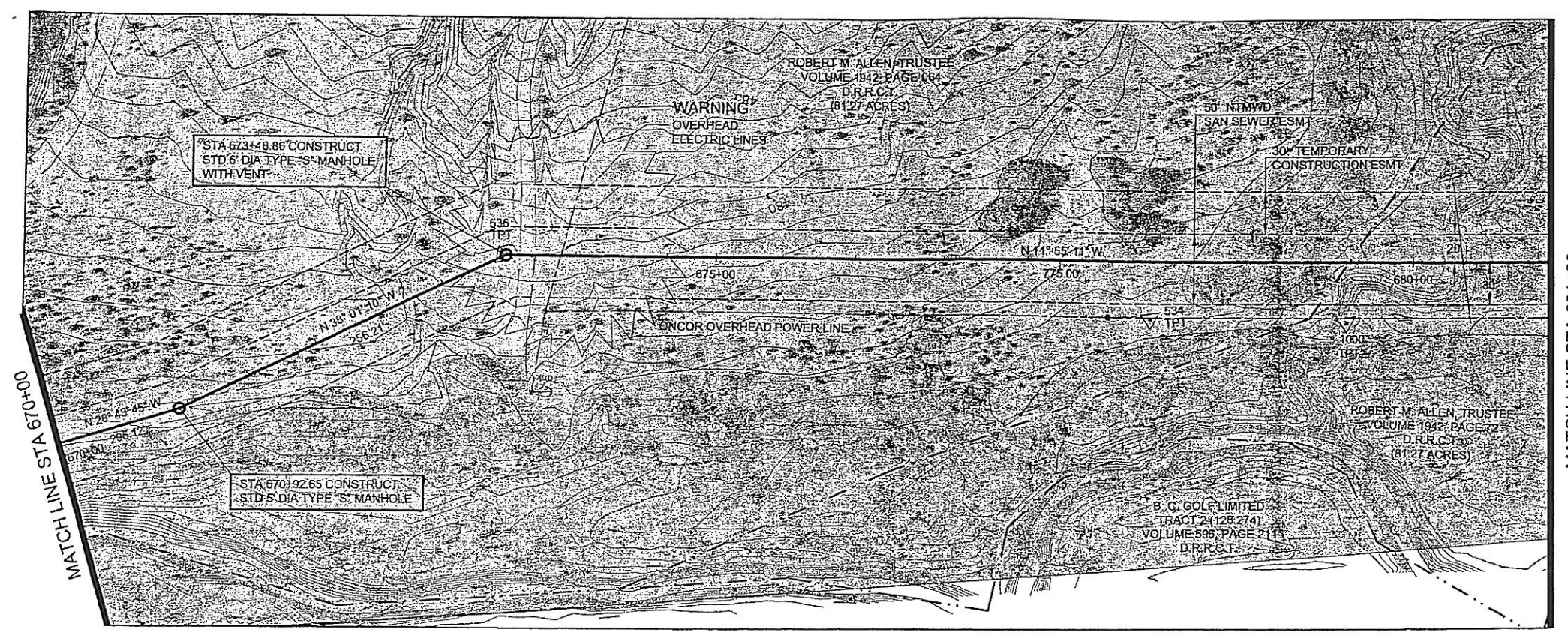
11/20/02

NO DATE REVISIONS

MADE/CKD JOB NO.

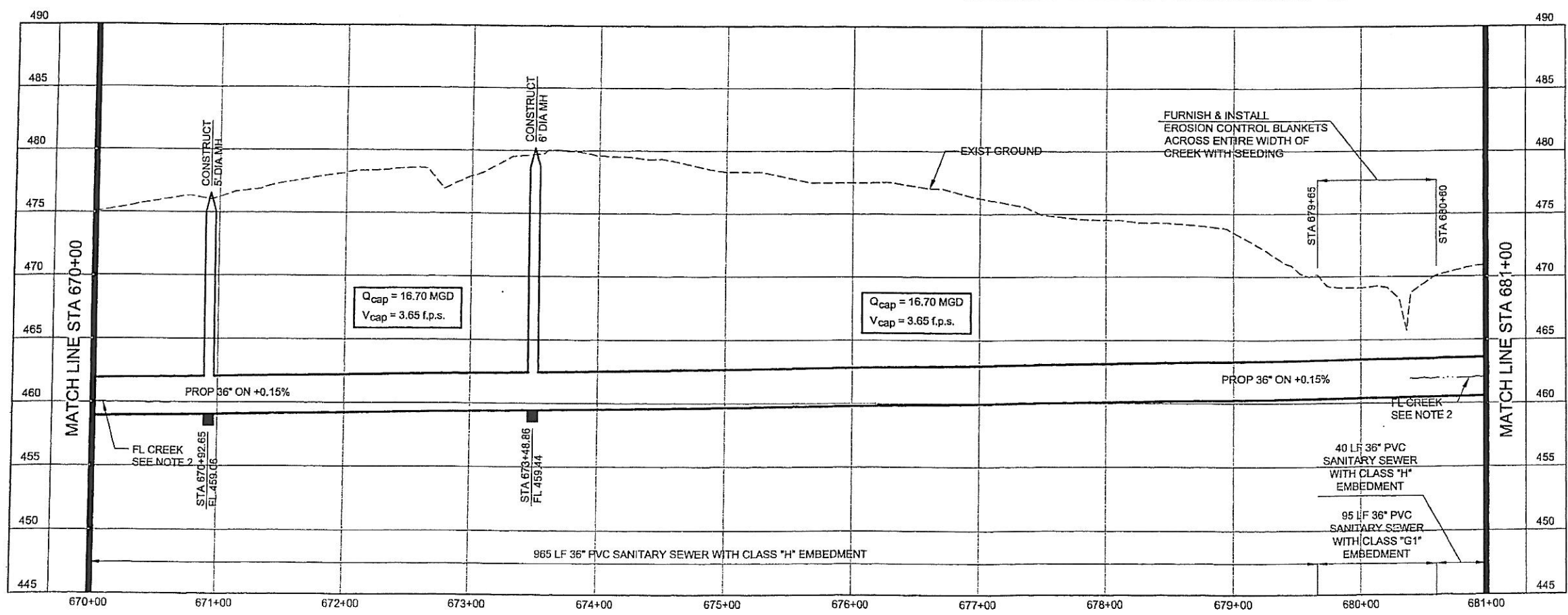
CM-0148

DWG. NO. 19 OF 36




HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
670+92.65	7002909.87	2595887.19	06° 16' 49" LT
673+48.86	7003111.72	2595729.38	26° 05' 59" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
534	7003574.69	2595673.64	473.79
535	7003109.45	2595730.93	479.76
1000	7003710.45	2595647.18	467.41



- NOTES:
1. SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 2. FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



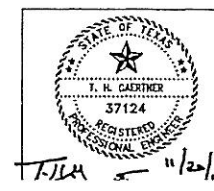
NORTH TEXAS MUNICIPAL
WATER DISTRICT

ROCKWALL-HEATH
TRANSFER SEWER
RHC# 01-1, SECTION 2

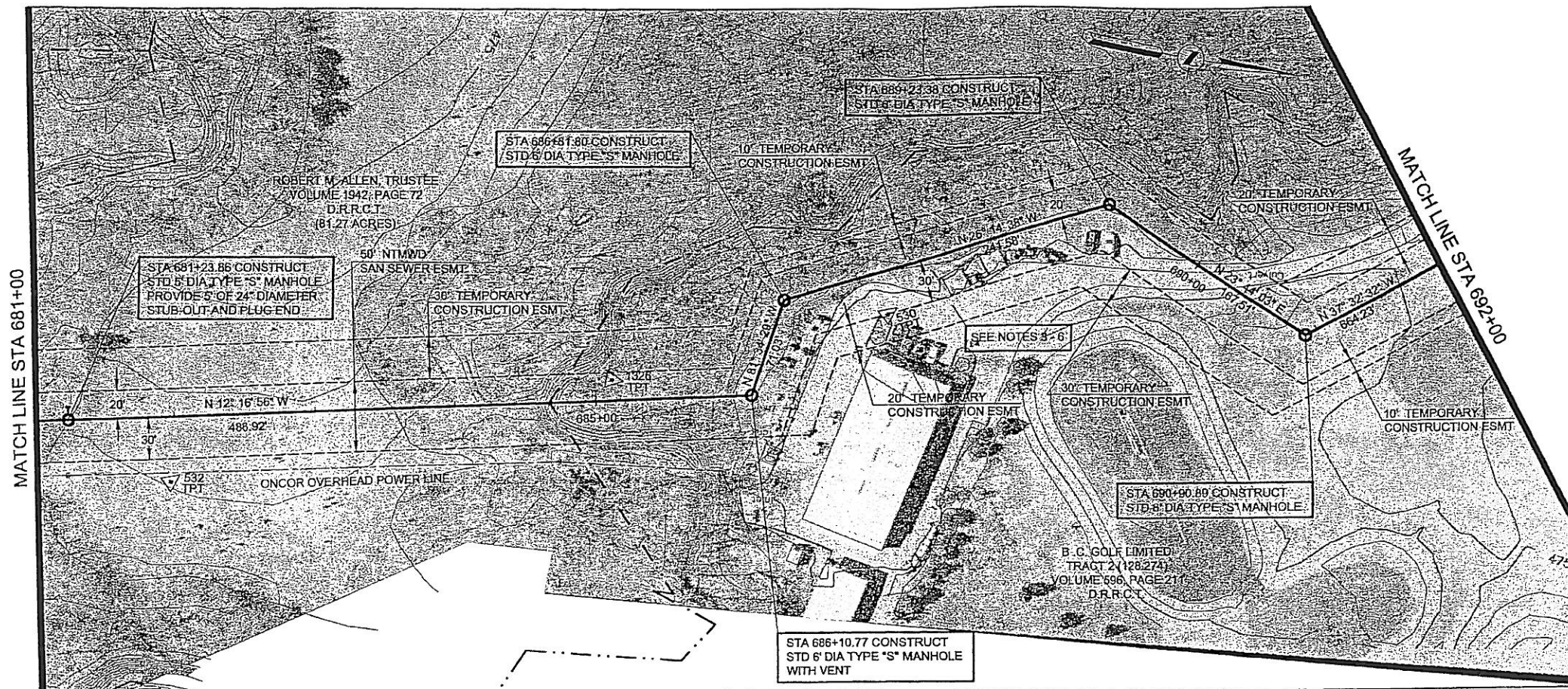
SANITARY SEWER
PLAN AND PROFILE
670+00 TO 681+00

KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
MADE/CKD		JOB NO.	CM-0148
DWG. NO.	20	OF	36



NO.	DATE	REVISIONS

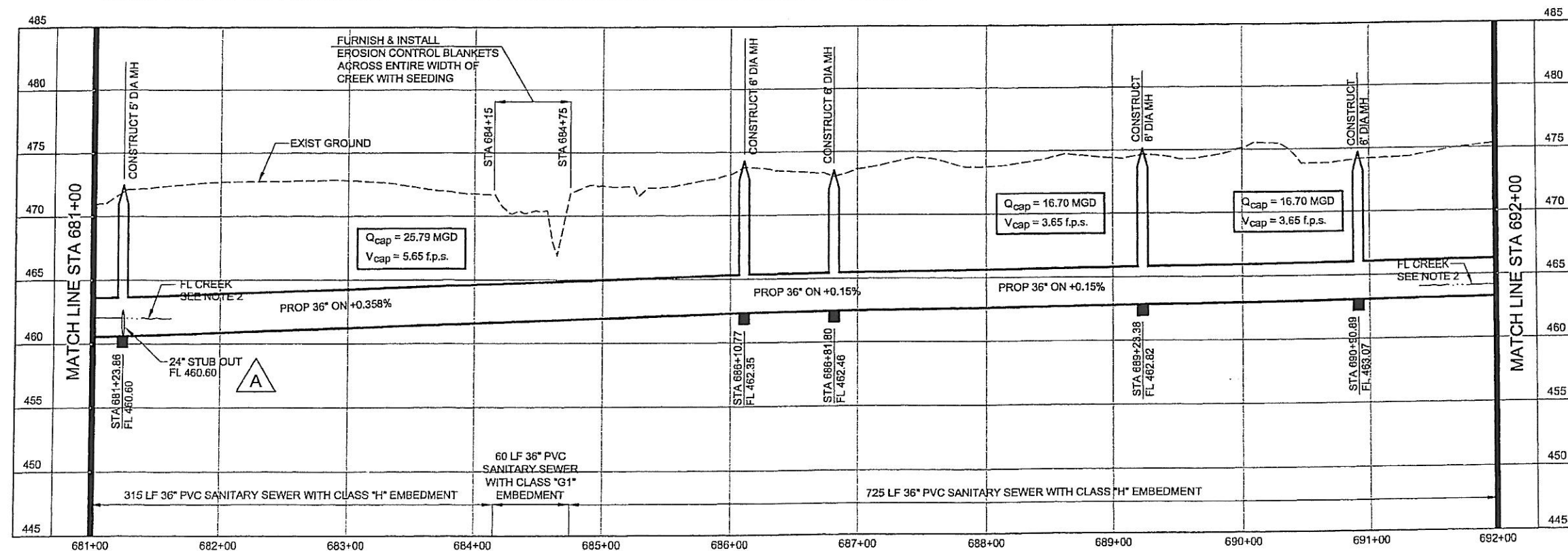


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
681+23.86	7003870.01	2595569.31	00° 21' 45" LT
686+10.77	7004345.77	2595465.73	69° 17' 33" LT
686+81.80	7004356.18	2595395.47	55° 19' 52" RT
689+23.38	7004572.86	2595288.65	49° 58' 41" RT
690+90.89	7004726.20	2595356.07	61° 16' 35" LT

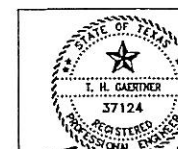
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
530	7004431.23	2595392.43	475.41
532	7003950.93	2595599.14	472.04
1326	7004245.25	2595472.46	472.26

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- ACCESS TO THE GOLF COURSE MAINTENANCE BUILDING SHALL BE MAINTAINED DURING CONSTRUCTION. EXISTING PAVING, DRIVES AND CART PATHS DAMAGED OR REMOVED BY THE CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER THAN THEIR PRE-CONSTRUCTION CONDITION.
- CONTRACTOR SHALL INSTALL EROSION CONTROL SILT FENCING ON BOTH SIDES OF THE EASEMENT ACROSS THE GOLF COURSE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
- CONTRACTOR MAY ONLY CONSTRUCT THE PROPOSED SANITARY SEWER FACILITIES ON B.C. GOLF LIMITED PROPERTY DURING THE MONTHS OF JANUARY AND FEBRUARY. ALL CONSTRUCTION AND RESTORATION ACTIVITY FOR THE WHOLE LENGTH OF THE PROPOSED SEWER THROUGH THE GOLF COURSE PROPERTY MUST BE STARTED AND TOTALLY COMPLETED IN THAT SINGLE TWO MONTH TIME FRAME.
- THE CONTRACTOR SHALL REPLACE ALL GRASS DISTURBED BY THE CONSTRUCTION ON B.C. GOLF LIMITED PROPERTY WITH GRASS SOD APPROVED BY B.C. GOLF LIMITED.

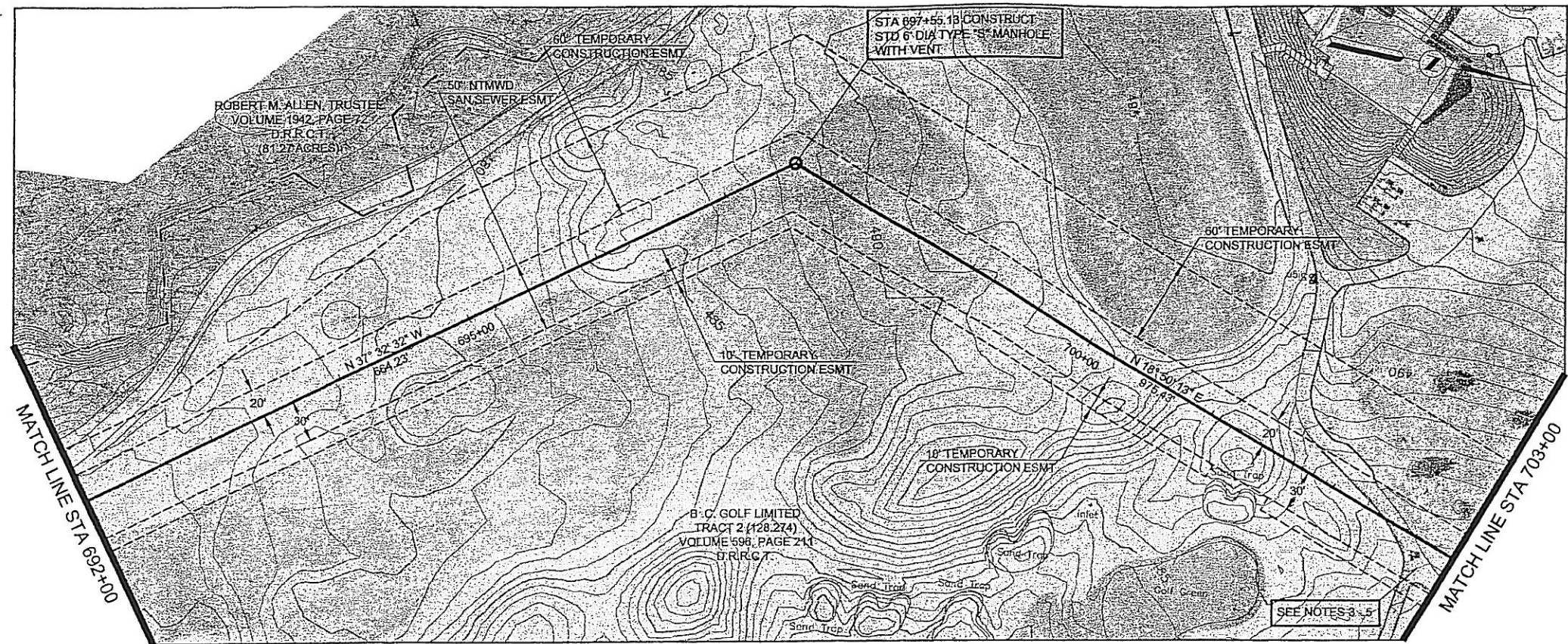


**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
ROCKWALL-HEATH
TRANSFER SEWER
RHCf 01-1, SECTION 2
SANITARY SEWER
PLAN AND PROFILE
681+00 TO 692+00



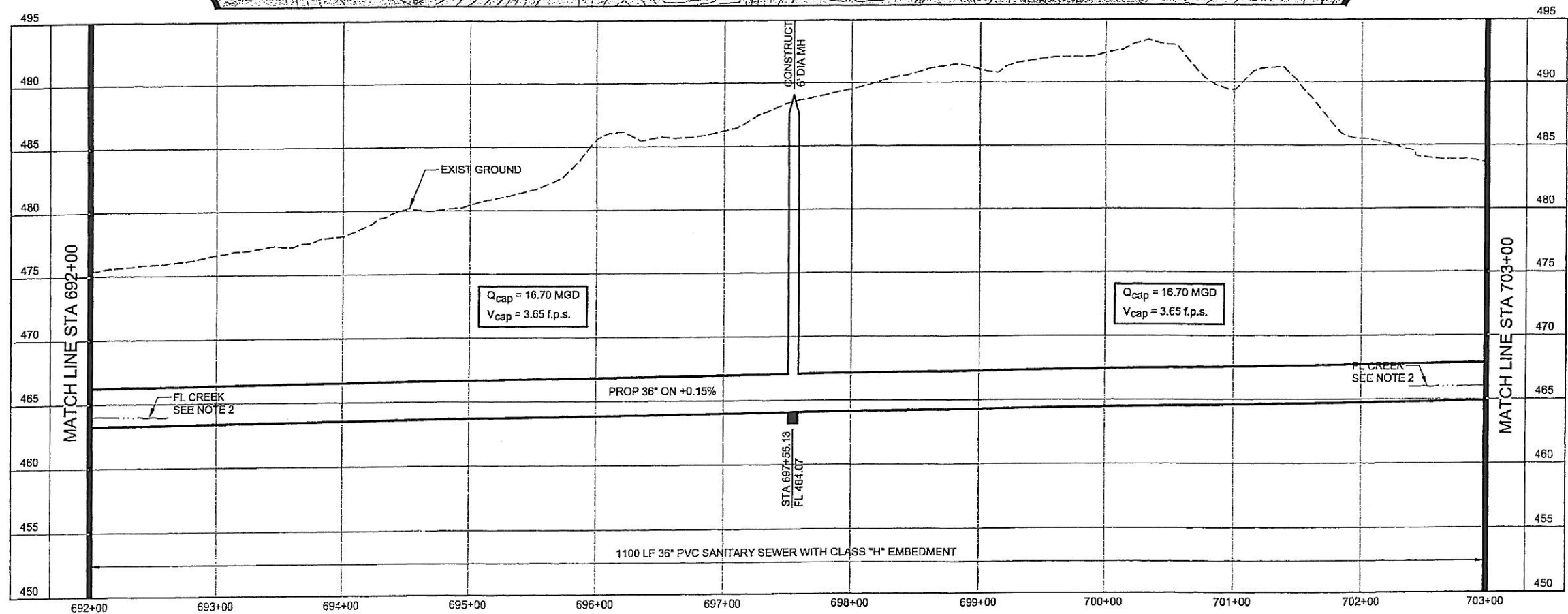
NO	DATE	REVISIONS	MADE	CHKD	JOB NO.
A	11/6/03	Added 24" diameter stubout in profile for MH at Sta 681+23.86.	THG	THG	

KBR			
Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
		DWG. NO.	CM-0148
			21 OF 36



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
697+55.13	7005252.88	2594951.32	56° 22' 45" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
NONE			



NOTES:

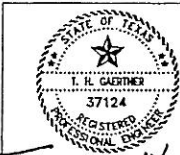
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- ACCESS TO THE GOLF COURSE MAINTENANCE BUILDING SHALL BE MAINTAINED DURING CONSTRUCTION. EXISTING PAVING, DRIVES AND CART PATHS DAMAGED OR REMOVED BY THE CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER THAN THEIR PRE-CONSTRUCTION CONDITION.
- CONTRACTOR SHALL INSTALL EROSION CONTROL SILT FENCING ON BOTH SIDES OF THE EASEMENT ACROSS THE GOLF COURSE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
- CONTRACTOR MAY ONLY CONSTRUCT THE PROPOSED SANITARY SEWER FACILITIES ON B.C. GOLF LIMITED PROPERTY DURING THE MONTHS OF JANUARY AND FEBRUARY. ALL CONSTRUCTION AND RESTORATION ACTIVITY FOR THE WHOLE LENGTH OF THE PROPOSED SEWER THROUGH THE GOLF COURSE PROPERTY MUST BE STARTED AND TOTALLY COMPLETED IN THAT SINGLE TWO MONTH TIME FRAME.
- THE CONTRACTOR SHALL REPLACE ALL GRASS DISTURBED BY THE CONSTRUCTION ON B.C. GOLF LIMITED PROPERTY WITH GRASS SOD APPROVED BY B.C. GOLF LIMITED.

**NORTH TEXAS MUNICIPAL
WATER DISTRICT**
ROCKWALL-HEATH
TRANSFER SEWER
RHC# 01-1, SECTION 2
SANITARY SEWER
PLAN AND PROFILE
692+00 TO 703+00

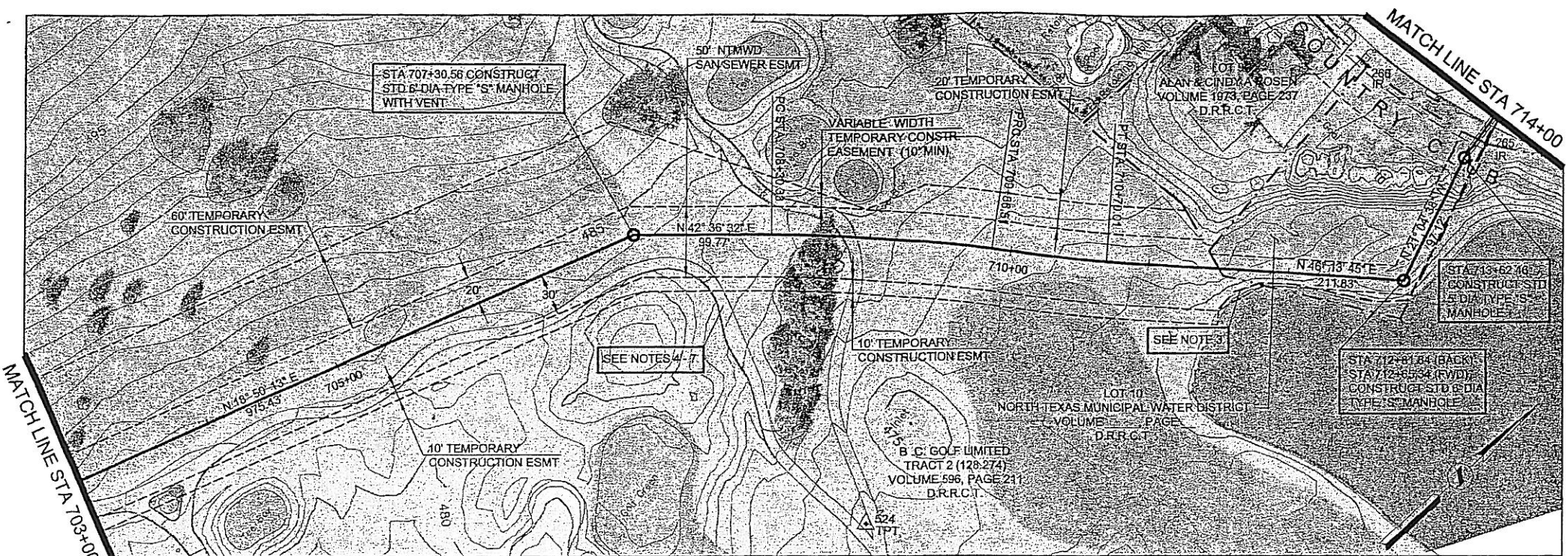
KBR

Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
MADE/CKD	JOB NO.	CM-014R	DWG. NO. 22 OF 36

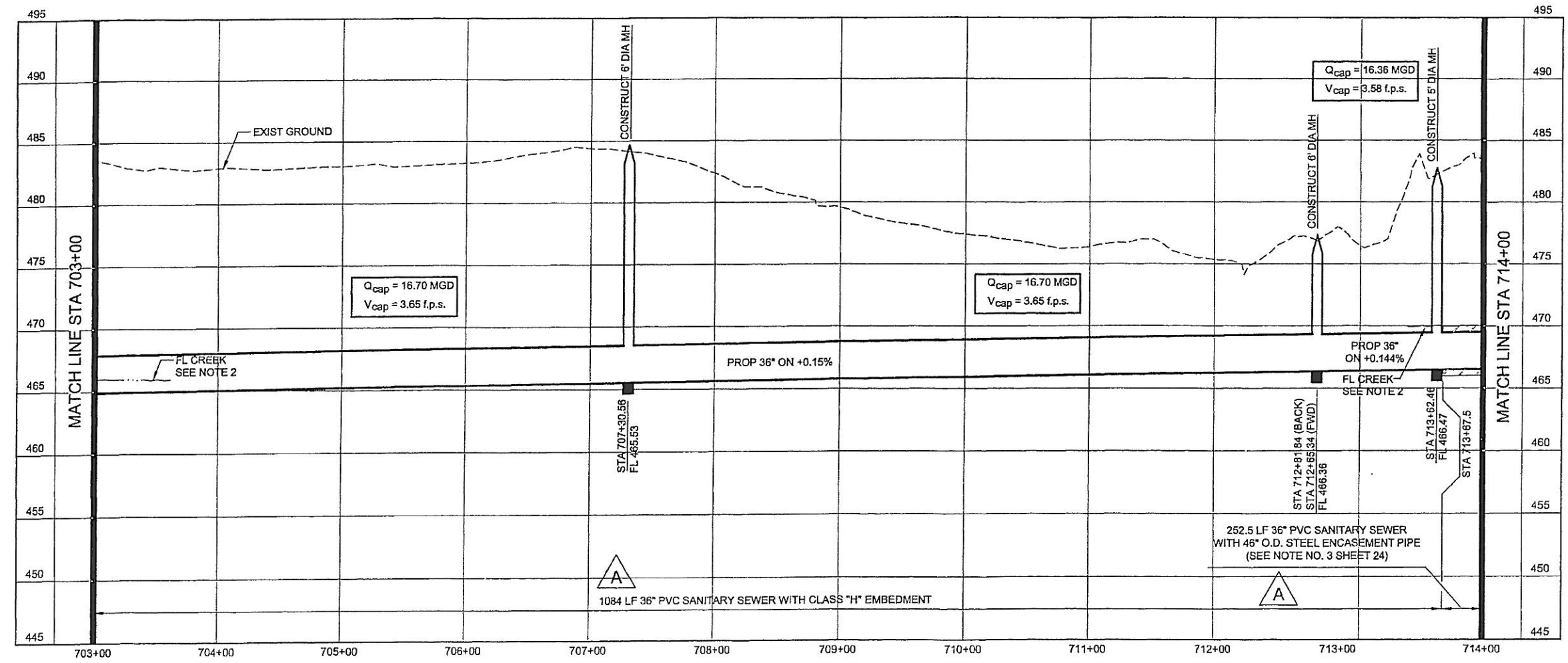


11/20/03



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
707+30.56	7006176.07	2595266.27	23° 46' 19" RT
712+81.84	7006558.99	2595662.32	67° 18' 22" LT
713+62.46	7006649.61	2595627.40	10° 36' 32" RT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
524	7006159.52	2595532.00	475.82
265 (IR)	7006668.07	2595631.21	482.88
266 (IR)	7006642.12	2595532.33	484.60



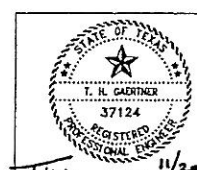
- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
 - CONTRACTOR SHALL INSTALL EROSION CONTROL SILT FENCING PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR PREVENTING CONSTRUCTION ACTIVITIES FROM DISTURBING POND.
 - CART PATHS DAMAGED OR REMOVED BY THE CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER THAN THEIR PRE-CONSTRUCTION CONDITION.
 - CONTRACTOR SHALL INSTALL EROSION CONTROL SILT FENCING ON BOTH SIDES OF THE EASEMENT ACROSS THE GOLF COURSE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
 - CONTRACTOR MAY ONLY CONSTRUCT THE PROPOSED SANITARY SEWER FACILITIES ON B.C. GOLF LIMITED PROPERTY DURING THE MONTHS OF JANUARY AND FEBRUARY. ALL CONSTRUCTION AND RESTORATION ACTIVITY FOR THE WHOLE LENGTH OF THE PROPOSED SEWER THROUGH THE GOLF COURSE PROPERTY MUST BE STARTED AND TOTALLY COMPLETED IN THAT SINGLE TWO MONTH TIME FRAME.
 - THE CONTRACTOR SHALL REPLACE ALL GRASS DISTURBED BY THE CONSTRUCTION ON B.C. GOLF LIMITED PROPERTY WITH GRASS SOD APPROVED BY B.C. GOLF LIMITED.

NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
703+00 TO 714+00

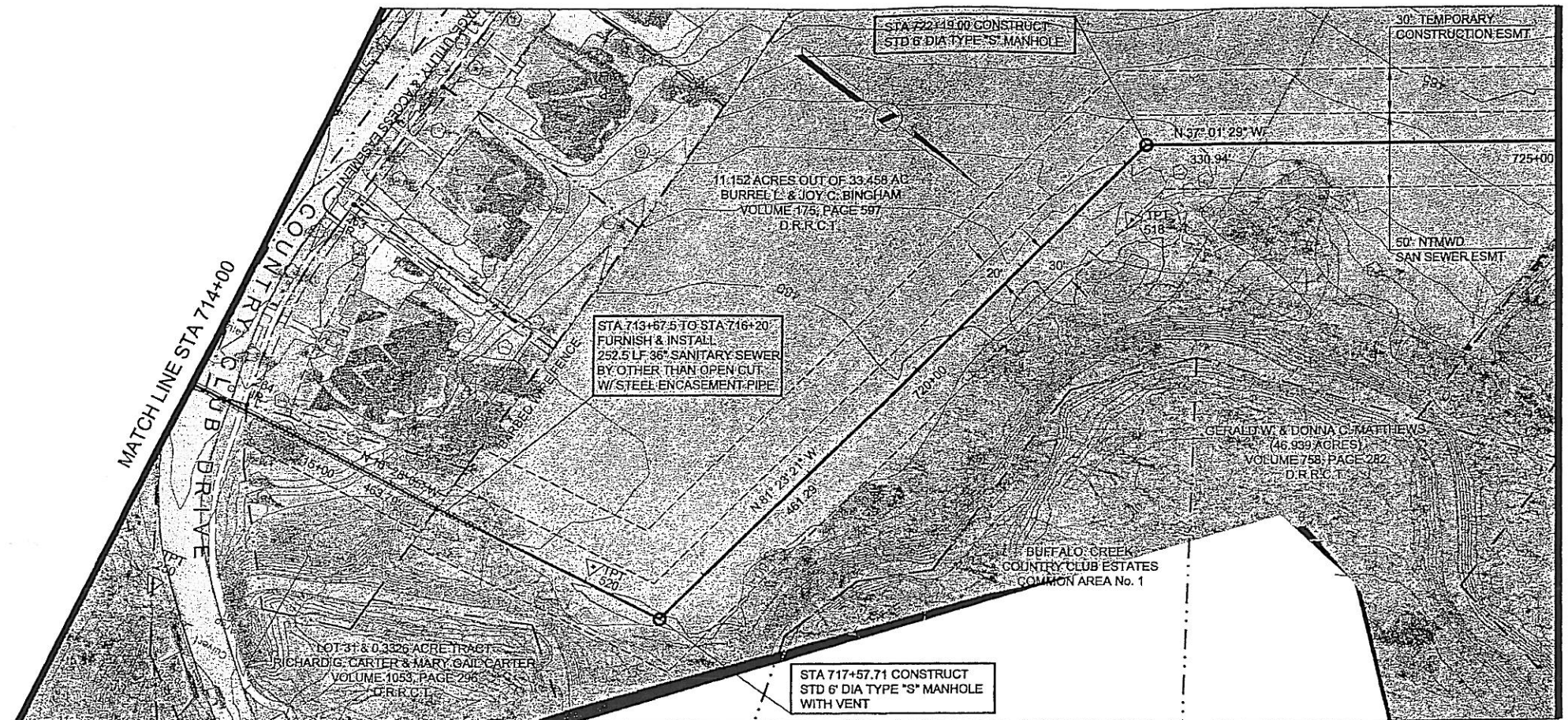
KBR
Kellogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003

NO.	DATE	REVISIONS	MADE/CKD	JOB NO.	CM-0148	DWG. NO.	23 OF 36
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11/20/03

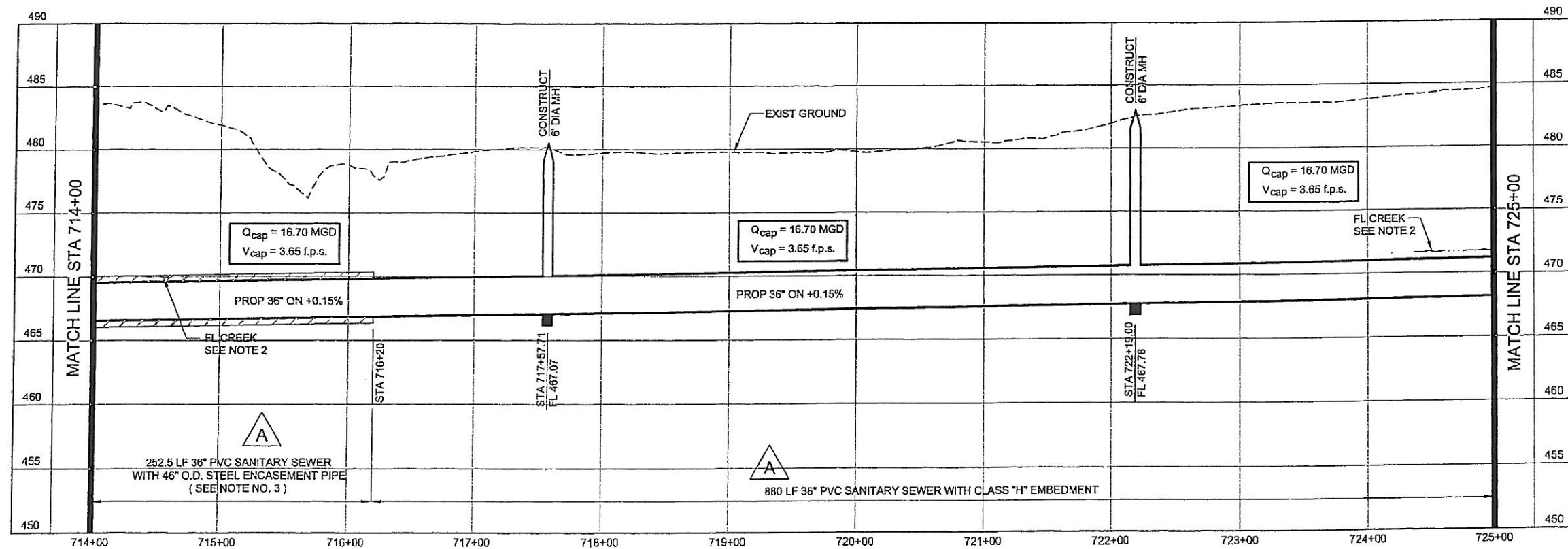



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
717+57.71	7007038.28	2595555.58	70° 55' 16" LT
722+19.00	7007107.34	2595099.49	44° 21' 52" RT

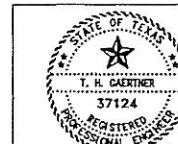
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
250	7006748.72	2595743.50	481.18
263 (IR)	7006699.63	2595458.41	485.43
264 (IR)	7006724.37	2595609.30	483.76
518	7007130.27	2595145.78	481.35
520	7006980.26	2595554.29	479.38

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- MINIMUM WALL THICKNESS FOR THE STEEL ENCASUREMENT PIPE SHALL BE 5/8".




NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
714+00 TO 725+00



A	11/6/03	Added 24" diameter stubout in profile for MH at Sta 681+23.86.	THG	THG
A	11/6/03	Added encasement pipe size and wall thickness.	THG	THG

KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	24 OF 36

T.H.G. 11/20/03
 NO DATE

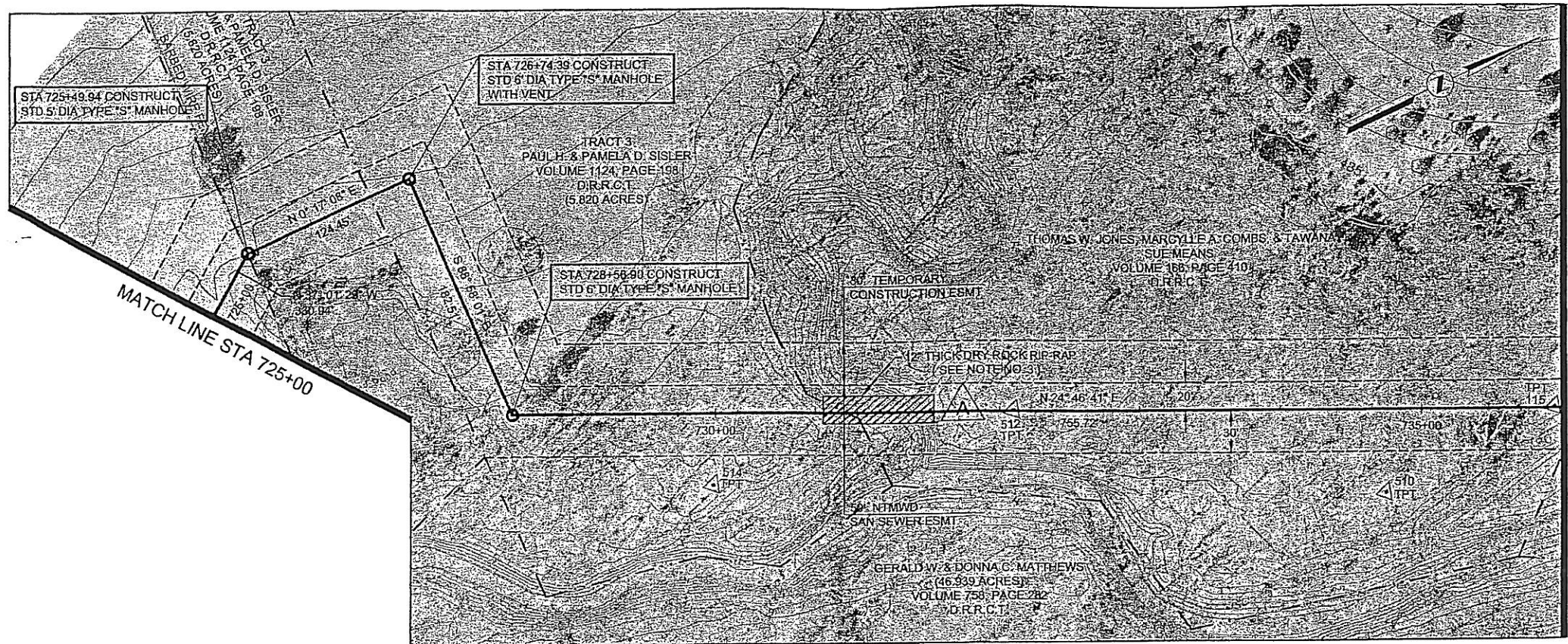
REVISIONS

MADE/CKD

JOB NO.

DWG. NO.

24 OF 36

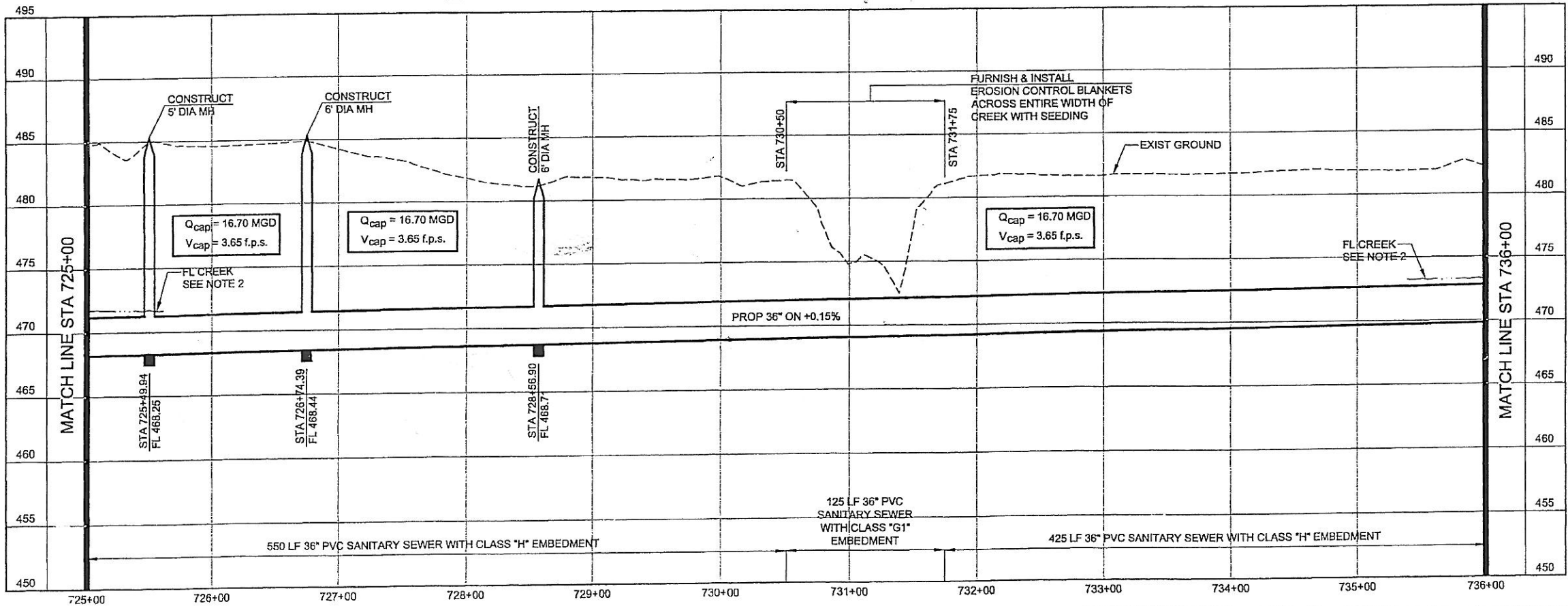



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
725+49.94	7007371.56	2594900.21	37° 18' 37" RT
726+74.39	7007496.01	2594900.83	90° 44' 51" RT
728+56.90	7007492.72	2595083.31	66° 15' 18" LT

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
115	7008161.72	2595390.90	482.42
510	7008028.55	2595395.78	481.62
512	7007813.24	2595230.58	481.75
514	7007600.26	2595188.94	480.77

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.
- PROVIDE APPROXIMATELY 60 CU. YD. OF DRY ROCK RIP-RAP. LIMITS OF PLACEMENT WILL BE DETERMINED IN THE FIELD BY THE ENGINEER AT TIME OF PLACEMENT.

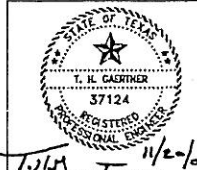



NORTH TEXAS MUNICIPAL WATER DISTRICT
 ROCKWALL-HEATH TRANSFER SEWER
 RHC# 01-1, SECTION 2
 SANITARY SEWER PLAN AND PROFILE
 725+00 TO 736+00

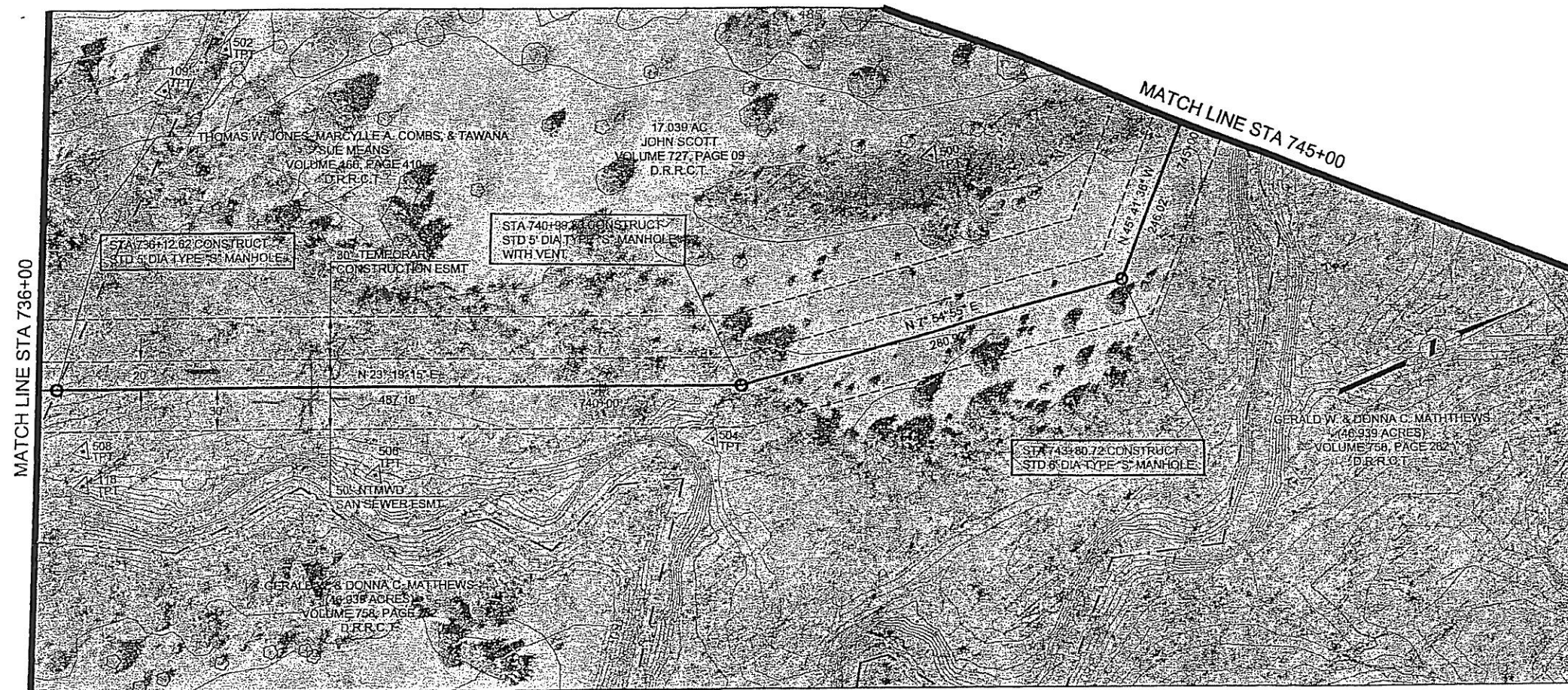
KBR

Kellogg Brown & Root, Inc.
 Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HOR. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148	DWG. NO.	25 OF 36



NO	DATE	REVISIONS	MADE	CHKD
A	11/18/03	Added rock rip-rap.	THG	THG
A	11/18/03	Added Note No. 3.	THG	THG

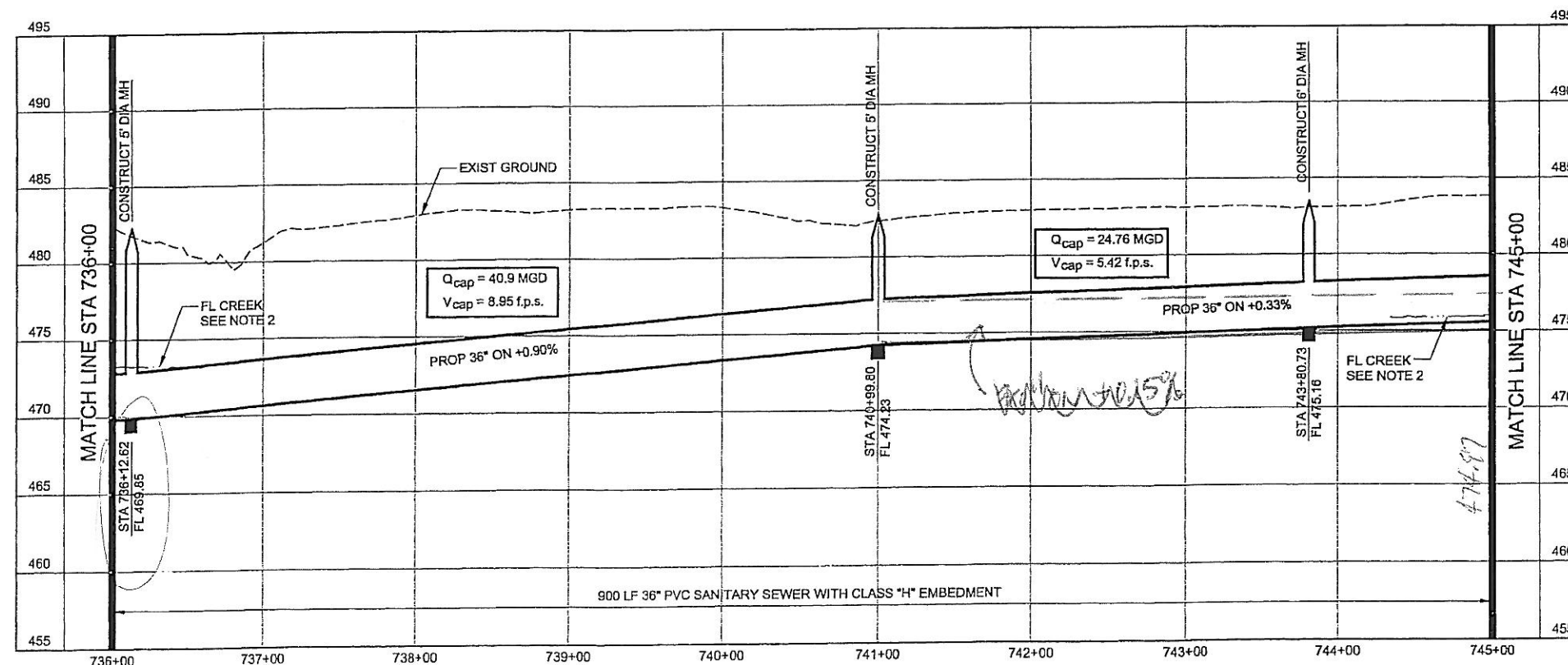


HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
736+12.62	7008178.87	2595400.04	01° 27' 26" LT
740+99.80	7008626.25	2595592.90	15° 24' 20" LT
743+80.72	7008904.49	2595631.59	53° 36' 31" LT

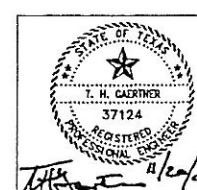
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
109	7008333.59	2595237.28	486.39
118	7008169.16	2595470.66	478.59
500	7008813.74	2595496.72	483.46
502	7008385.11	2595227.84	485.92
504	7008592.10	2595619.60	482.01
506	7008363.03	2595547.91	479.50
508	7008179.12	2595447.56	481.48

NOTES:

- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



NORTH TEXAS MUNICIPAL WATER DISTRICT	
ROCKWALL-HEATH TRANSFER SEWER	
RHC 01-1, SECTION 2	
SANITARY SEWER PLAN AND PROFILE	
736+00 TO 745+00	



DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
NO	DATE	REVISIONS	MADE/CKD
JOB NO.	CM-0148	DWG. NO.	26 OF 36



HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
746+26.74	7009076.34	2595455.53	70° 47' 20" RT
748+69.75	7009296.41	2595558.60	56° 50' 24" LT
751+53.75	7009532.56	2595400.84	29° 57' 15" RT
752+19.41	7009598.08	2595396.50	29° 28' 43" RT
754+20.39	7009779.19	2595483.63	67° 35' 00" RT
754+60.00	7009776.93	2595523.17	00° 00' 00"
755+16.76	7009775.69	2595579.94	-

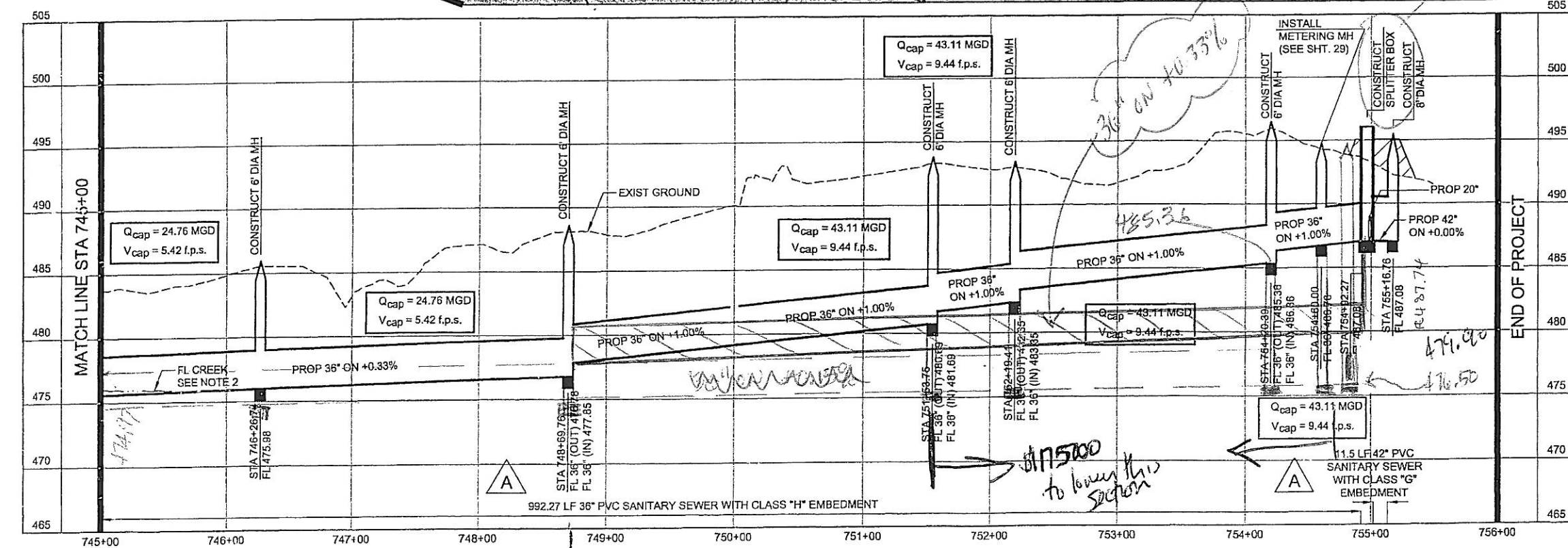
SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
38	7009768.62	2595600.14	491.82
83	7009182.08	2595544.83	484.53
89 (IR)	7009713.57	2595572.82	491.23
90 (IR)	7009750.73	2595536.16	492.75
96 (IR)	7009824.75	2595563.12	494.68
138 (IR)	7009165.02	2595550.35	482.31

NEW ROCKWALL SEWER

END OF PROJECT

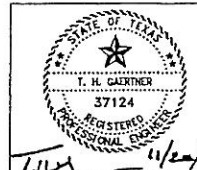
FL IN = 497.07
PROP. FL OUT (REGULATED SEWER) = 471.90
(still need sign @ creek)

- NOTES:**
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - FLOW LINE AT BUFFALO CREEK SHOWN FOR REFERENCE ONLY.



END OF PROJECT

NORTH TEXAS MUNICIPAL WATER DISTRICT
ROCKWALL-HEATH TRANSFER SEWER
 RHCf 01-1, SECTION 2
SANITARY SEWER PLAN AND PROFILE
745+00 TO END

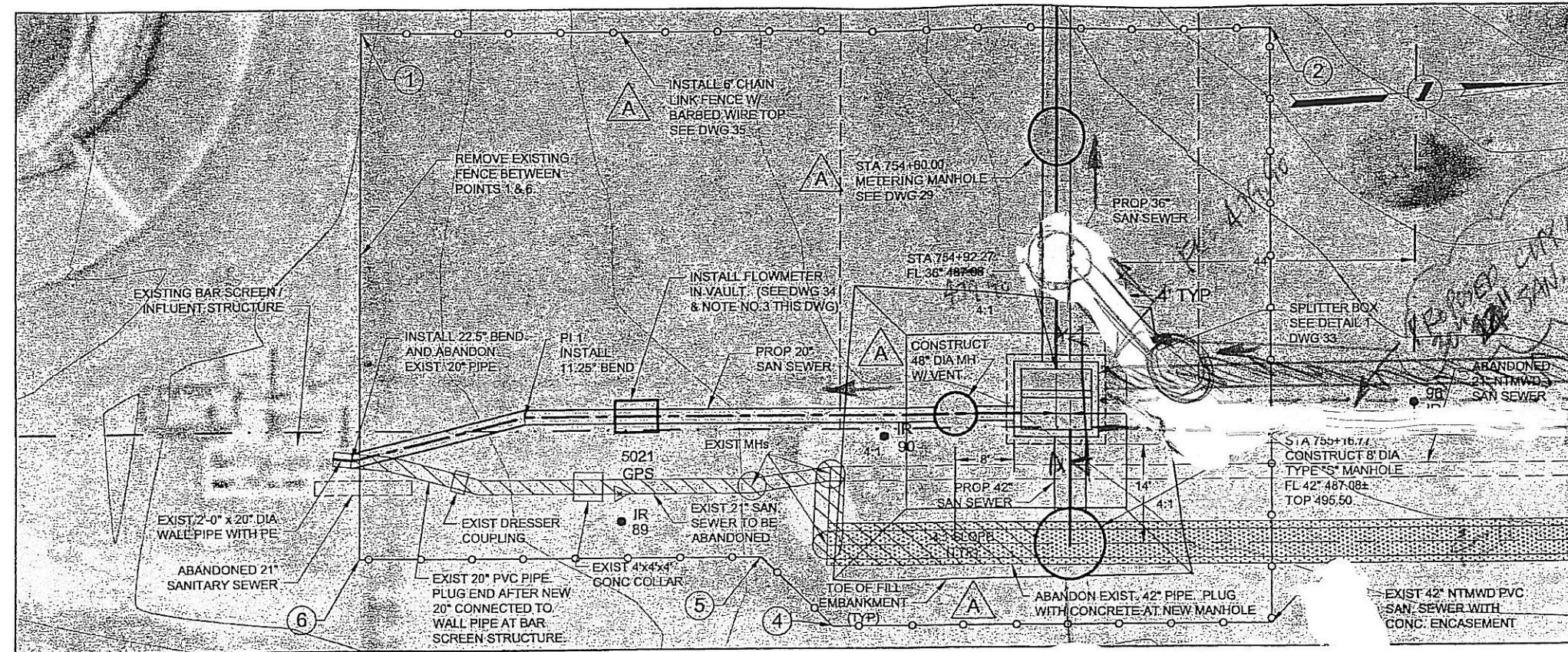


DESIGNED	KBR	HORIZ. SCALE	1"=50'
DRAWN	KBR	VERT. SCALE	1"=5'
CHECKED	THG	DATE	SEPTEMBER 26, 2003
NO	DATE	REVISIONS	MADE/CHKD
A	11/10/03	Moved Metering Manhole to Sta 754+60.00.	THG THG
A	11/10/03	Corrected length of pipe in profile.	THG THG

KBR
 Kullogg Brown & Root, Inc.
 Engineered by KBR Technical Services, Inc.

DESIGNED KBR HORIZ. SCALE 1"=50'
 DRAWN KBR VERT. SCALE 1"=5'
 CHECKED THG DATE SEPTEMBER 26, 2003

JOB NO. CM-0148 DWG. NO. 27 OF 36



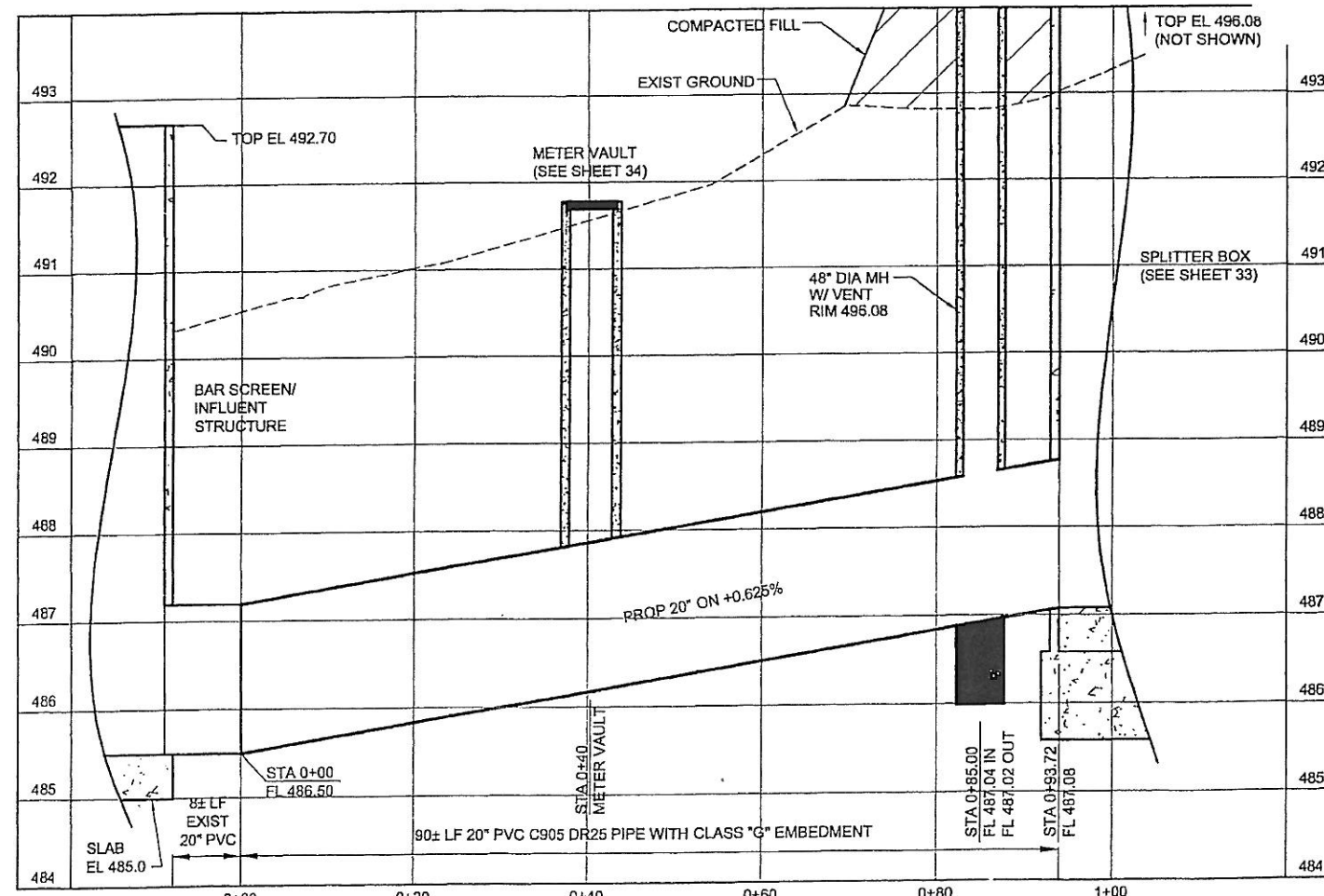
HORIZONTAL CONTROL DATA			
COORDINATES			
MH STATION	NORTH	EAST	DELTA
0+00	7009676.61	2595561.97	19° 51' 00" LT
PI 1	7009701.00	2595557.38	13° 55' 05" RT
0+93.72	7009769.74	2595561.31	-
754+60.00	7009776.93	2595523.17	00° 00' 00"
754+92.27	7009775.09	2595555.38	-
755+16.77	7009775.69	2595579.94	-

SURVEY CONTROL			
COORDINATES			
POINT NO	NORTH	EAST	ELEVATION
38	7009786.62	2595600.14	491.82
89 (IR)	7009713.57	2595572.82	491.23
90 (IR)	7009750.73	2595536.16	492.75
96 (IR)	7009824.75	2595563.12	494.68

HORIZONTAL CONTROL - FENCING			
COORDINATES			
FENCE CORNER	NORTH	EAST	NOTE
1	7009680.9±	2595502.8±	TIE TO EXIST FENCE
2	7009807.56	2595509.84	-
3	7009803.15	2595592.79	-
4	7009742.23	2595589.42	-
5	7009732.79	2595579.08	-
6	7009676.7±	2595575.9±	TIE TO EXIST FENCE

NOTES:

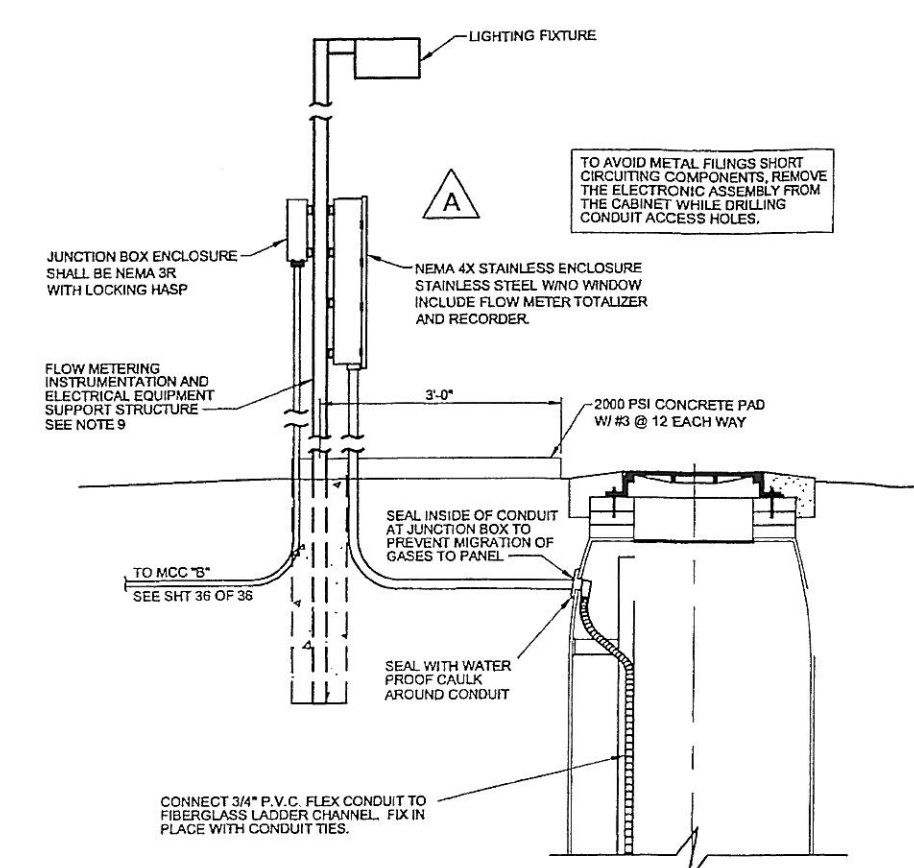
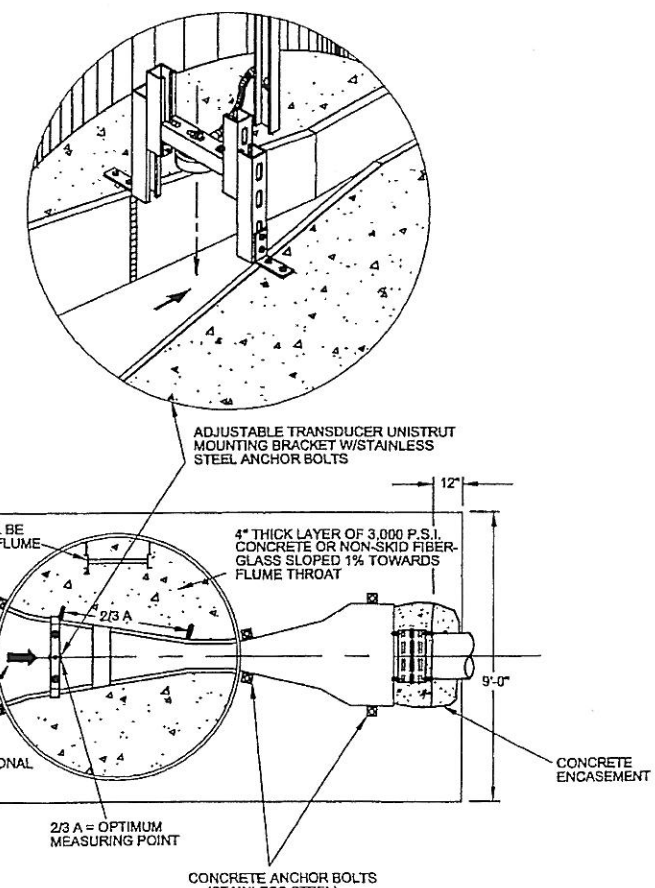
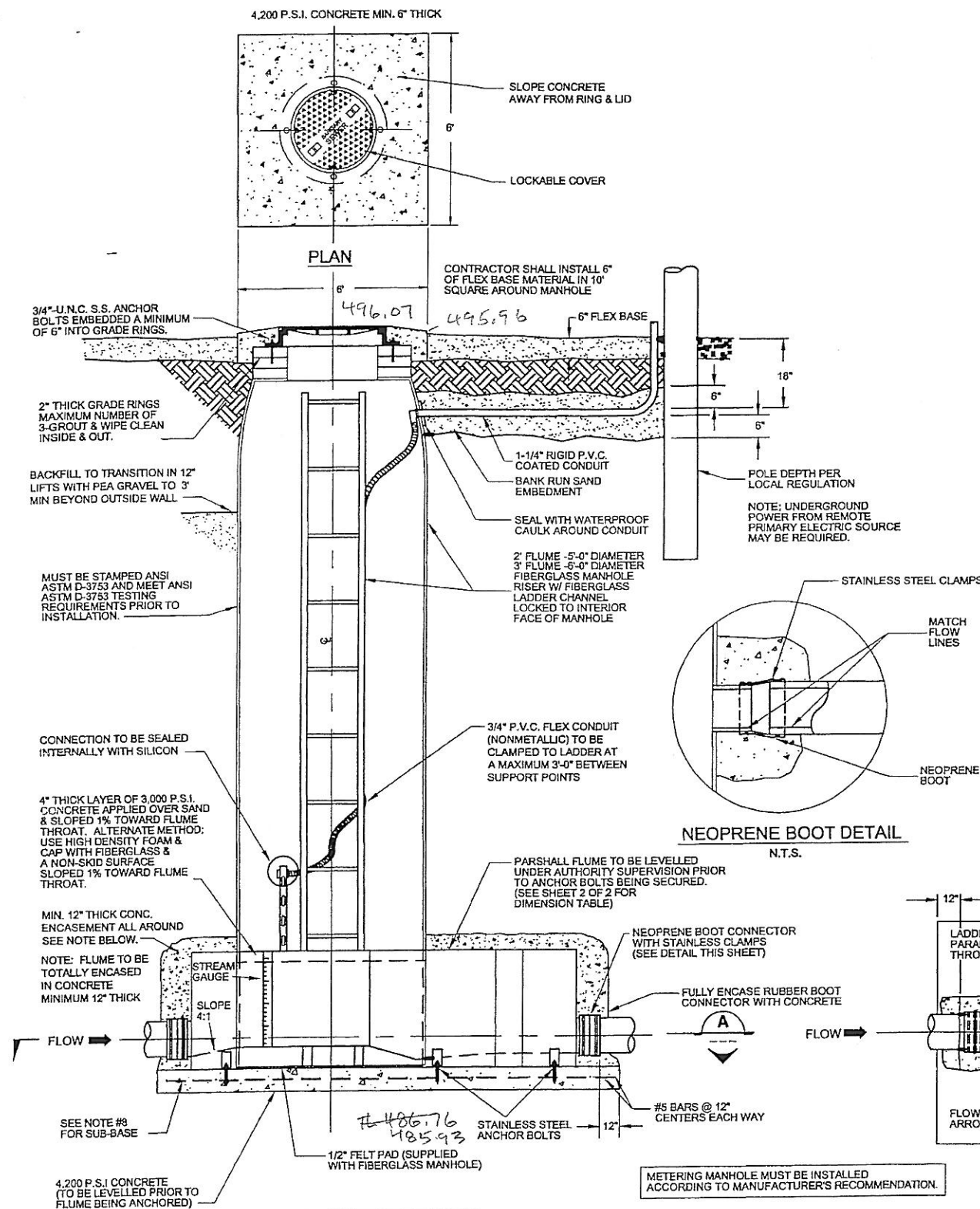
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
- REMOVAL, PLUGGING, OR ABANDONMENT OF EXISTING FACILITIES TO BE COORDINATED WITH NTMWD.
- CONTRACTOR TO PROVIDE AND INSTALL EASTECH BADGER, TRANSIT-TIME ULTRASONIC FLOWMETER, MODEL 4600.



NORTH TEXAS MUNICIPAL
WATER DISTRICT
ROCKWALL-HEATH
TRANSFER SEWER
RHCF 01-1, SECTION 2
SANITARY SEWER
INTERCONNECTION /
20" PLAN AND PROFILE, 0+00 TO END

KBR
 Kellogg Brown & Root, Inc.
 Engineered by KBR Technical Services, Inc.

NO	DATE	REVISIONS	MADE	CHKD	JOB NO.	DWG. NO.
A	11/7/03	Moved Metering Manhole to Sta 754+60.00.	THG	THG	CM-0148	28 OF 36
A	11/7/03	Added 48" vented manhole on 20" sewer line.	THG	THG		
A	11/7/03	Added fill embankment around splitter box and manholes.	THG	THG		
A	11/7/03	Revised Model number on meter in note 3 to 4600.	THG	THG		
A	11/7/03	Added fencing and corner location Table.	THG	THG		
A	11/7/03	Revised Horizontal Control Data.	THG	THG		



- NOTES:**
1. ALL OUTSIDE CONDUITS AND FITTINGS SHALL BE HOT DIPPED RIDGED GALVANIZED COATED CONDUIT AND SHALL HAVE A 40 MIL. NOMINAL THICKNESS OF P.V.C. COATING BONDED TO THE CONDUIT, BY FLUIDIZED BED METHOD. INSIDE CONDUIT SHALL BE 3/4" P.V.C. FLEX CONDUIT NON-METALLIC TYPE LFNC FIXED IN PLACE WITH CONDUIT TIES.
 2. METERING STATION SHALL BE LOCATED AS SHOWN IN THE PLANS.
 3. ALL POWER AND/OR CONTROL CONDUCTORS SHALL BE XHHW INSULATED COPPER POWER AND CONTROL WIRE CABLE.
 4. ENCLOSURES FOR ALL INSTRUMENTATION AND EQUIPMENT AND ELECTRICAL JUNCTION BOX SHALL BE NEMA-4X OR 3R WITH STAINLESS STEEL FITTINGS.
 5. CALIBRATION OF INSTRUMENTS FURNISHED SHALL BE ACCOMPLISHED BY A QUALIFIED REPRESENTATIVE OF THE MANUFACTURER OF THE INSTRUMENTS, WITH N.T.M.W.D. METERING PERSONNEL PRESENT.
 6. ROUTE SIGNAL CONDUIT ON SITE.
 7. ALL CONDUITS SHALL BE SEALED AT PANELBOARDS, JUNCTION BOXES, CONDULETS AND AT TERMINATION POINTS.
 8. A) THE BASE FOR THE 12" THICK (MIN) CONCRETE SLAB SHALL BE UNDISTURBED SOIL.
B) IF IMPROPER SOIL CONDITIONS ARE ENCOUNTERED WHICH WOULD CREATE A POOR SUB-BASE FOR PLACEMENT OF THE 12" THICK (MIN) CONCRETE SLAB, THE DEPTH SHALL BE OVER-EXCAVATED AND CRUSHED STONE AND OR SAND SHALL BE PLACED BEFORE CONCRETE IS PLACED.
 9. SEE METERING MANHOLE DETAILS SHT 2 OF 2.

- GENERAL NOTES:**
1. ALL CONCRETE SHALL BE 3,000 PSI UNLESS OTHERWISE NOTED.
 2. ALL CAST IRON SHALL MEET ANSI A21.5 SPECIFICATIONS.
 3. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.

ELEVATION

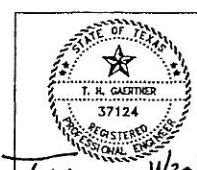
NORTH TEXAS MUNICIPAL WATER DISTRICT

ROCKWALL-HEATH TRANSFER SEWER

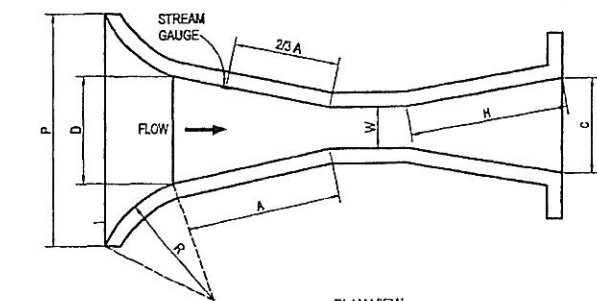
RHCF 01-1, SECTION 2

SANITARY SEWER DETAILS

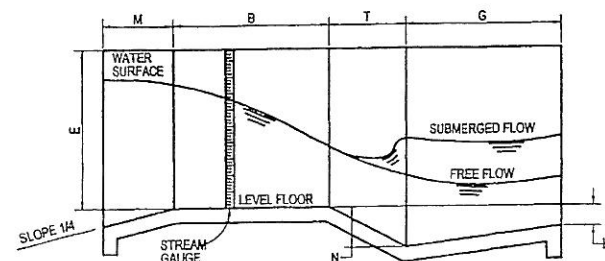
METERING MANHOLE DETAILS (SHT 1 OF 2)



A	11/4/03	Revised elect. service and equip. mounting details	KBR	THG
NO	DATE	REVISIONS	MADE	CKD
DESIGNED	KBR	HORIZ. SCALE	AS SHOWN	
DRAWN	KBR	VERT. SCALE	AS SHOWN	
CHECKED	THG	DATE	SEPTEMBER 26, 2003	
JOB NO.	CM-0148	DWG. NO.	29 OF 36	



PLAN VIEW

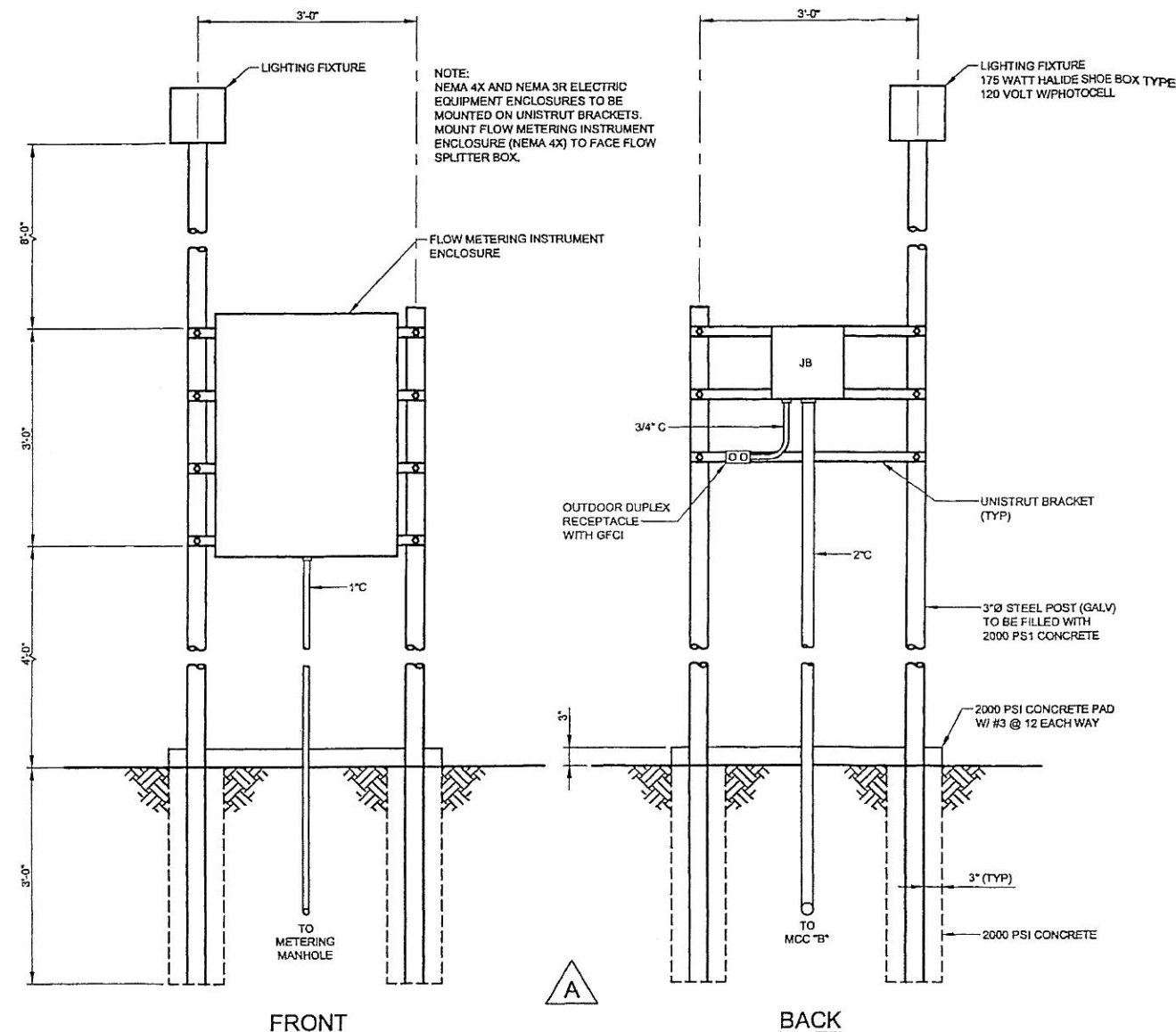


PROFILE

PARSHALL FLUME TABLE OF DIMENSIONS

W		A		2/3 A		B		C		D		E		T		G		H		K		M		N		P		R		X		Y	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
	1	1	2 9/32		9 17/32	1	2		3 19/32		6 19/32		9		3		8		9 3/4"		3/4				1 1/8						5/16		1/2
	2	1	4 5/16		10 7/8	1	4		5 5/16		8 13/32		9		4 1/2		10		9 7/8"		7/8				1 11/16						5/8		1
	3	1	6 3/8	1	1/4	1	6		7		10 3/16	2			6	1		2	1		1			2 1/4						1		1 1/2	
	6	2	7 1/16	1	4 5/16	2		1	3 1/2	1	3 5/8	2	1		2		2	3		3	1			4 1/2	2	11 1/2	1	4		2		3	
	9	2	10 5/8	1	11 1/8	2	10	1	3	1	10 5/8	2	6	1		1	6	2	9		3	1		4 1/2	3	6 1/2	1	4		2		3	
1		4	6	3		4	4 7/8	2		2	9 1/4	3		2		3		3	3		3	1	3		9	4	10 3/4	1	8		2		3
1	6	4	9	3	2	4	7 7/8	2	6	3	4 3/8	3	2		3			3	3		3	1	3		9	5	6	1	8		2		3
2		5		3	4	4	10 7/8	3		3	11 1/2	3	2		3			3	3		3	1	3		9	5	1	1	8		2		3
3		5	6	3	8	5	4 3/4	4		5	1 7/8	3	2		3						3	1	3		9	7	3 1/2	1	8		2		3
4		6		4		5	10 5/8	5		6	4 1/4	3	2		3						3	1	6		9	8	10 3/4	2			2		3

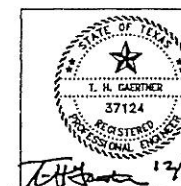
**FLUME SIZE REQUIRED FOR THIS PROJECT AT STATION 750+00



FRONT

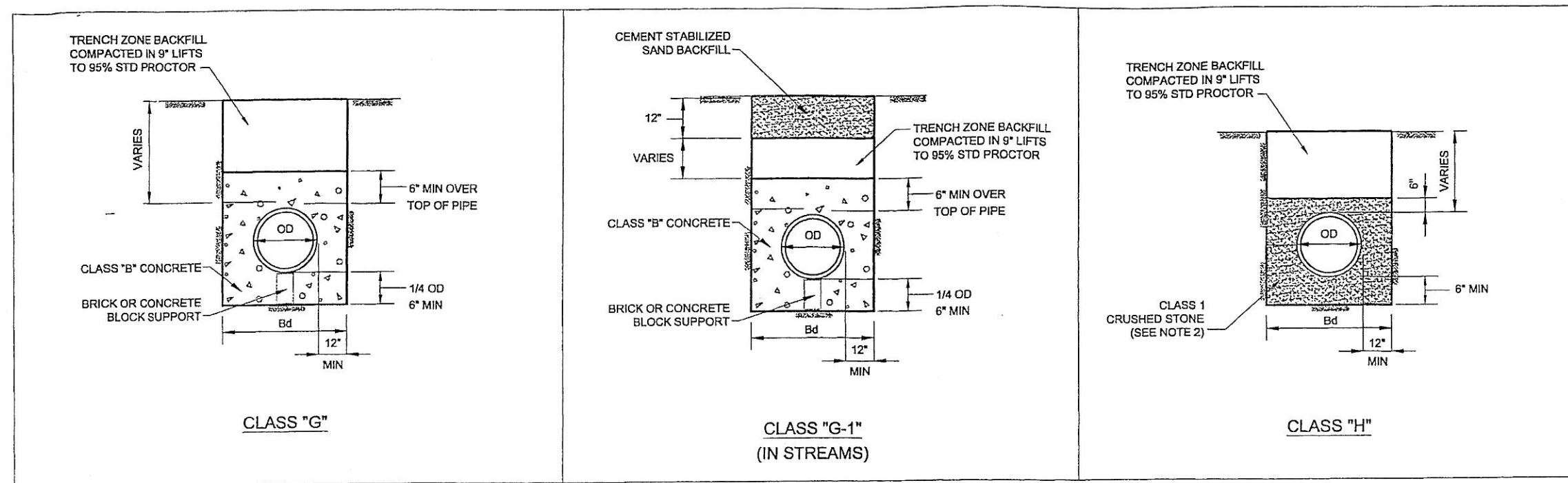
BACK

FLOW METERING INSTRUMENTATION AND ELECTRICAL EQUIPMENT SUPPORT STRUCTURE



NO	DATE	REVISIONS	MADE	CHKD	JOB NO.	DWG. NO.
A	11/4/03	Revised elect. service and equip. mounting details.	LC	THG		

NORTH TEXAS MUNICIPAL WATER DISTRICT			
ROCKWALL-HEATH TRANSFER SEWER			
RHCf 01-1, SECTION 2			
SANITARY SEWER DETAILS			
METERING MANHOLE DETAILS (SHT 2 OF 2)			
KBR			
Kallag Brown & Root, Inc.			
Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	AS SHOWN
DRAWN	KBR	VERT. SCALE	AS SHOWN
CHECKED	THG	DATE	SEPTEMBER 26, 2003

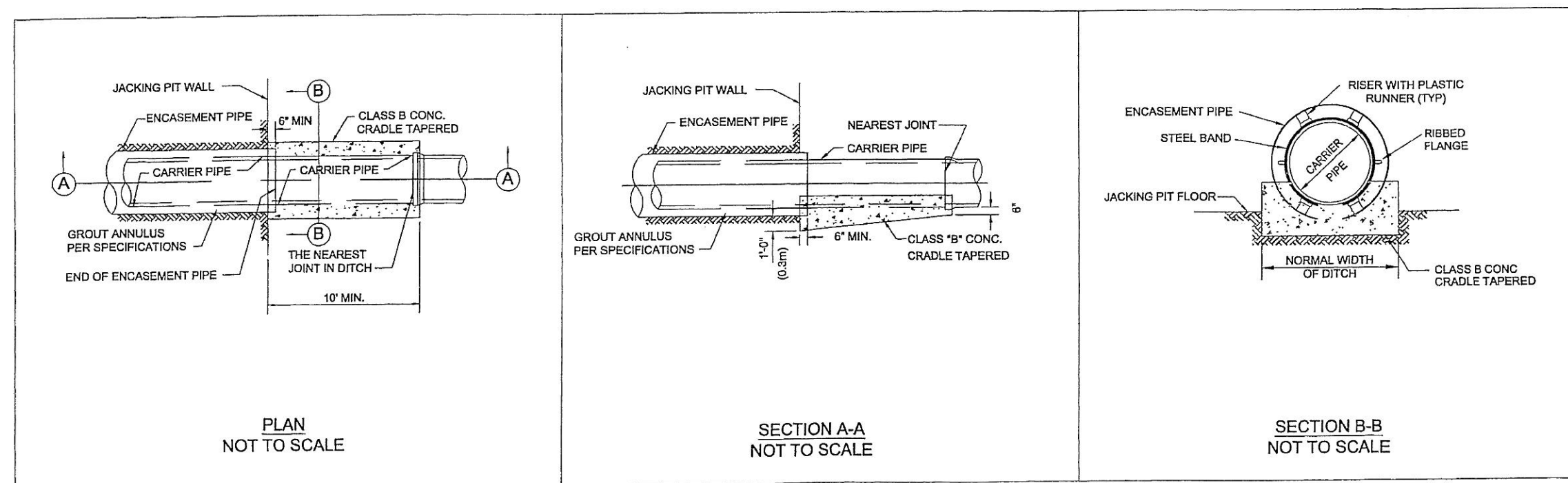


EMBEDMENT NOTES:

- Bd IS TRENCH WIDTH
- CLASS 1 CRUSHED STONE EMBEDMENT GRADATIONS

RETAINED ON 1 1/2-INCH SIEVE	0%
RETAINED ON 1 INCH SIEVE	0 - 5%
RETAINED ON 1/2 INCH SIEVE	40 - 75%
RETAINED ON NO. 4 SIEVE	90 - 100%
RETAINED ON NO. 8 SIEVE	95 - 100%
- TRENCH ZONE BACKFILL SHALL BE NATIVE SOIL MATERIAL PRODUCED BY THE TRENCH EXCAVATION.

PIPE EMBEDMENT DETAILS NOT TO SCALE

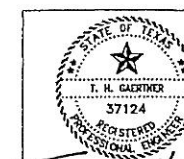


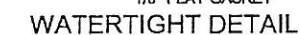
ENCASEMENT NOTES

- CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT FOR CARRIER PIPE TO ENSURE MIN. 1.5" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
- CONTRACTOR SHALL FURNISH & INSTALL A MINIMUM OF 3 CASING SPACERS PER JOINT OF PIPE. CASING SPACERS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS. CASING SPACERS SHALL BE MODEL A12G-2, MANUFACTURED BY P.S.I. OR APPROVED EQUAL.

ENCASED ROAD AND RAILROAD BORE DETAILS


NORTH TEXAS MUNICIPAL WATER DISTRICT	
ROCKWALL-HEATH TRANSFER SEWER RHCF 01-1, SECTION 2	
SANITARY SEWER DETAILS EMBEDMENT & ENCASEMENT DETAILS	
KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.	
DESIGNED	KBR
DRAWN	KBR
CHECKED	THG
DATE	SEPTEMBER 26, 2003
JOB NO.	CM-0148
DWG. NO.	31 OF 36






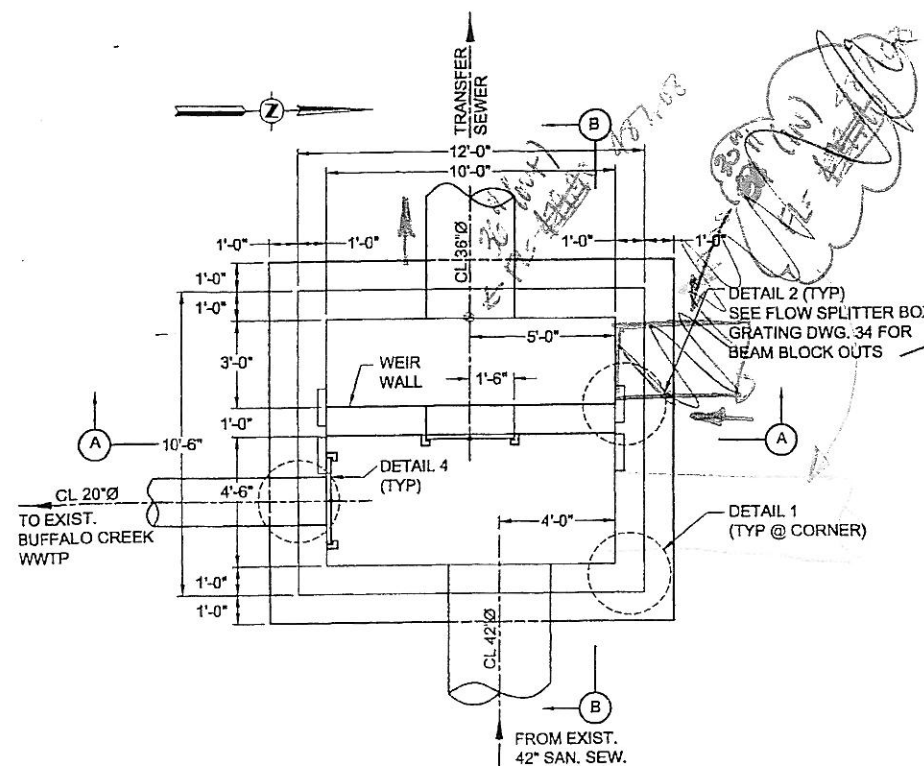
DIAMETER (FT.)	WALL (IN)
5 OR 6	8
7	9
8	10
9	11
10	12

1. PRECAST MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 AND PROJECT SPECIFICATIONS.
2. EACH JOINT SHALL BE PROVIDED WITH AN O-RING DESIGN AND THE EXTERIOR OF EACH JOINT SHALL BE SEALED USING A PREFORMED JOINT SEALING COMPOUND.
3. USE PRESSURE TYPE MANHOLE FRAME AND COVER.
4. MANHOLE SHALL BE PLUMB TO WITHIN 1" FOR EVERY 5 FT OF VERTICAL DEPTH.

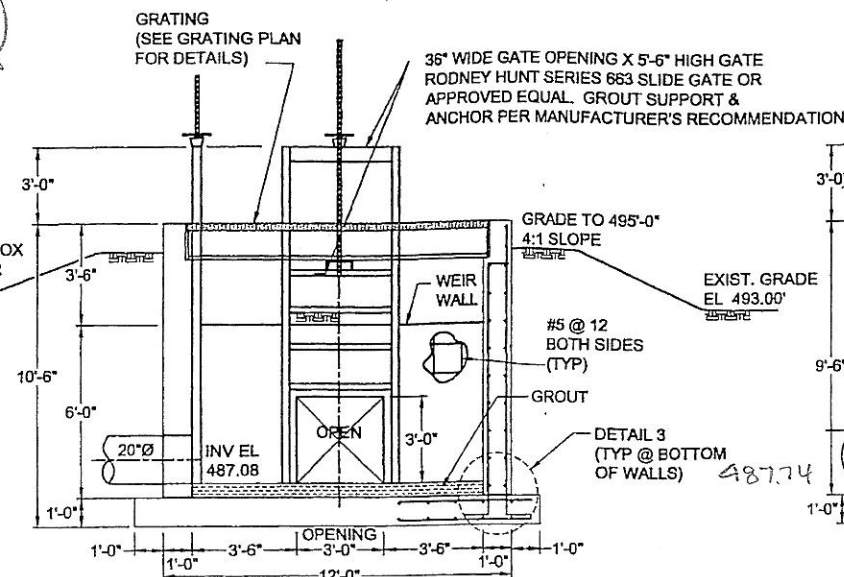


NO	DATE	REVISIONS			MADE BY

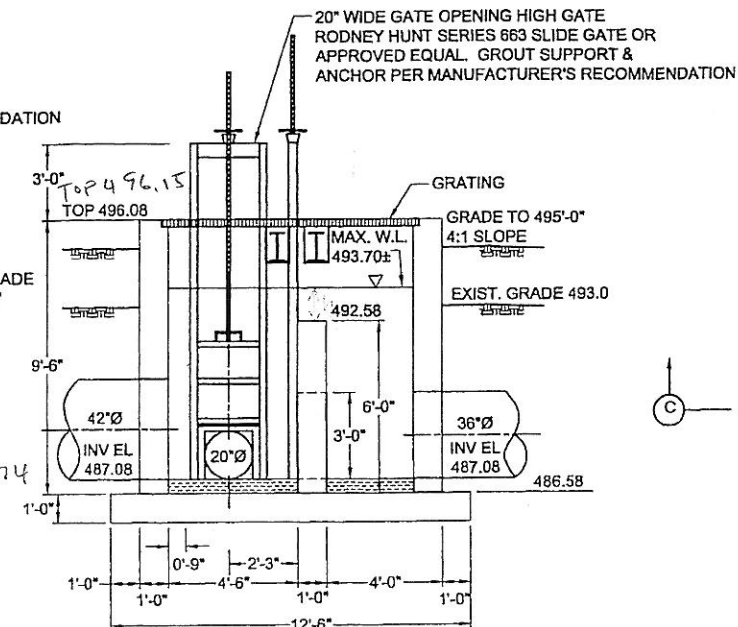
		
<p align="center">NORTH TEXAS MUNICIPAL WATER DISTRICT</p>		
<p align="center">ROCKWALL-HEATH TRANSFER SEWER RHC# 01-1, SECTION 2</p>		
<p align="center">SANITARY SEWER DETAILS MANHOLE DETAILS</p>		
<p align="center">KBR Kallogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.</p>		
DESIGNED	KBR	HORIZ. SCALE AS SHOWN
DRAWN	KBR	VERT. SCALE AS SHOWN
CHECKED	THG	DATE SEPTEMBER 26, 2003
KD	JOB NO. CM-0148	DWG. NO. 32 OF 36



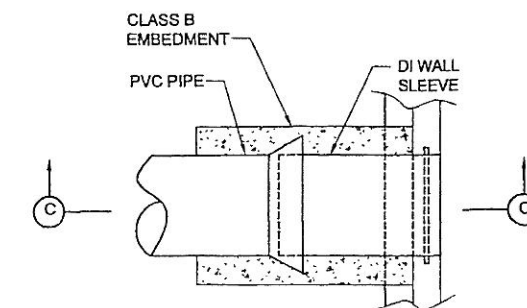
PLAN SPLITTER BOX DETAILS
NOT TO SCALE



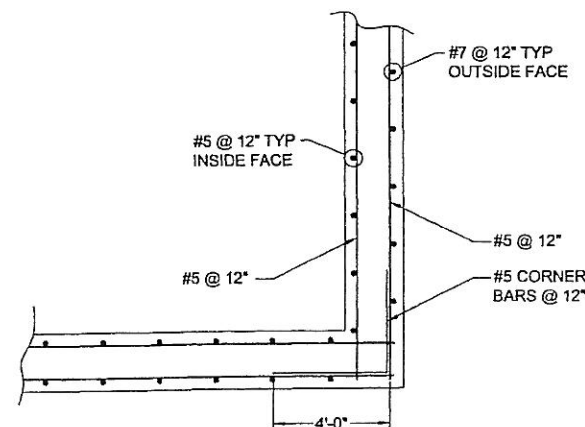
SECTION A-A
NOT TO SCALE



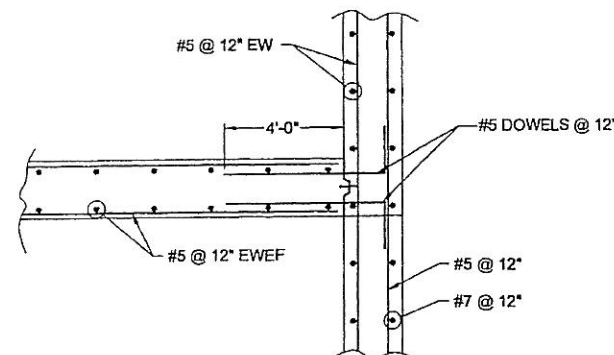
SECTION B-B
NOT TO SCALE



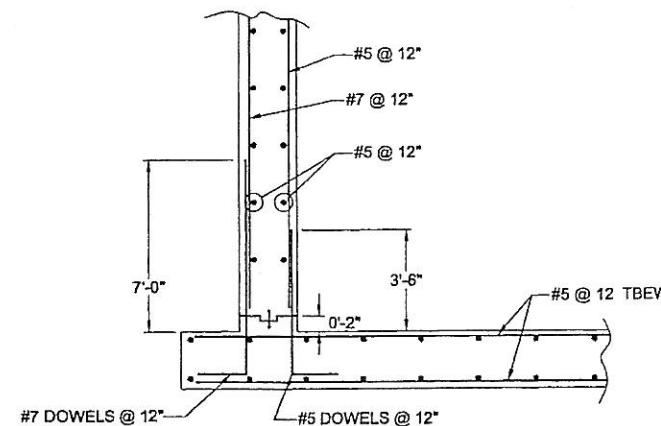
PLAN SPLITTER BOX
PIPE WALL CONNECTION
NOT TO SCALE



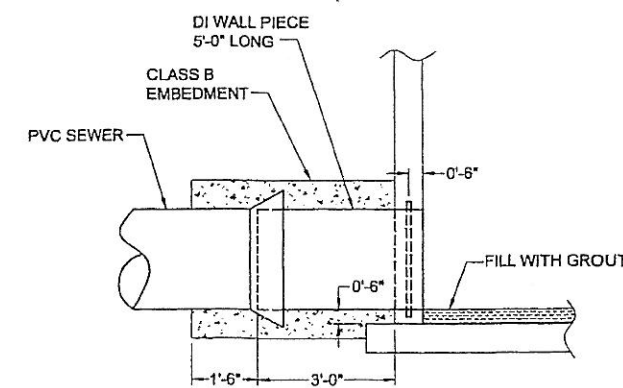
PLAN - REBAR DETAIL
NOT TO SCALE



PLAN - WEIR WALL DETAIL
NOT TO SCALE



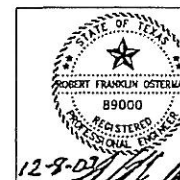
ELEVATION - REBAR DETAIL
NOT TO SCALE



SECTION C-C
NOT TO SCALE

PROTECTIVE COATING FOR WETTED INTERIOR CONCRETE SURFACES OF SPLITTER BOX

- COAT ENTIRE INTERIOR SURFACES OF CONCRETE STRUCTURES THAT WILL BE SUBMERGED IN WATER AND EXPOSED TO MOISTURE IN THE VAPOR SPACE ABOVE THE WATER LEVEL.
- PREPARATION: ALLOW CONCRETE TO CURE FOR AT LEAST 28 DAYS. REMOVE GREASE, OIL, EFFLORESCENCE, CHALK, DUST, AND DIRT WITH SOAP AND WATER. MAKE SURFACE PREPARATIONS FOR APPLICATION ACCORDING TO MANUFACTURER'S INSTRUCTIONS. PREPARE SURFACE IN ACCORDANCE WITH SPECIFICATIONS FOR SSPC-SP13/NACE SECTION 4.3.1 OR 4.3.2.
- APPLICATION: APPLY ONE ON THE FOLLOWING POLYAMIDE COAL TAR EPOXY SYSTEMS.
 - AMERON: 16 MILS SYSTEM. APPLY TWO (2) COATS OF AMERCOAT 78HB, 8 MILS EACH.
 - SHERWIN-WILLIAMS: 20 MILS SYSTEM.
 - APPLY TWO (2) COATS OF HIGH MIL SHER-TAR EPOXY ENAMEL, B69-40, 10 MILS EACH.
 - NOTE: REQUIRE MINIMUM 7 TO 10 DAYS CURE BEFORE PLACING STRUCTURE IN SERVICE.
 - TNEMEC: 16 MILS SYSTEM. APPLY TWO (2) COATS OF SERIES 46H-413 HI-BUILD TNEMEC-TAR, 8 MILS EACH.



12-8-03

REVISIONS

MADE/CKD

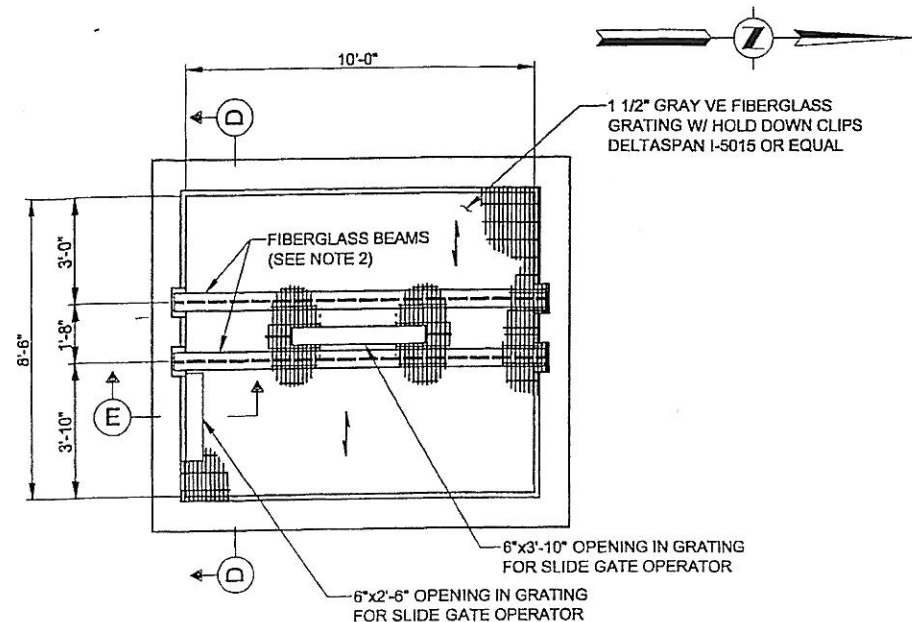
JOB NO.

CM-0148

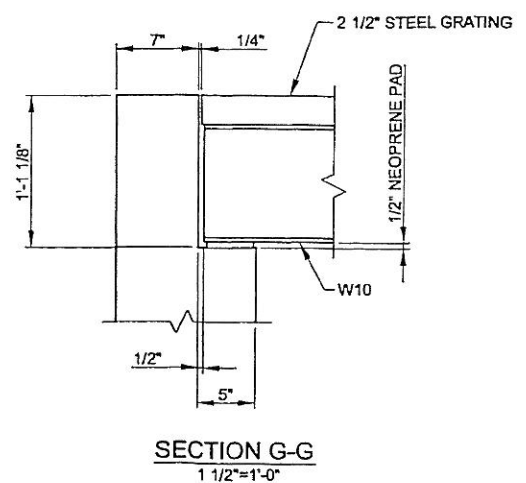
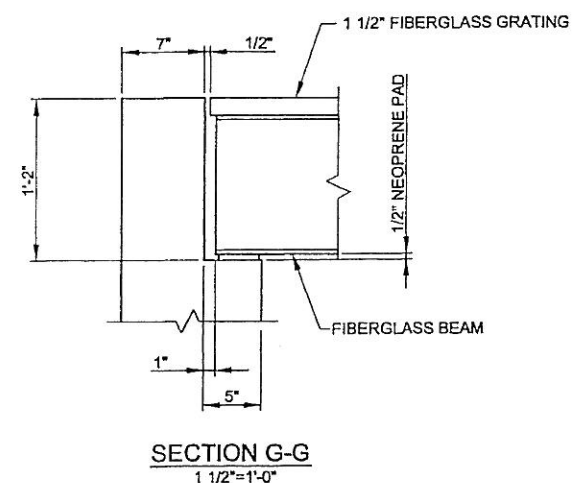
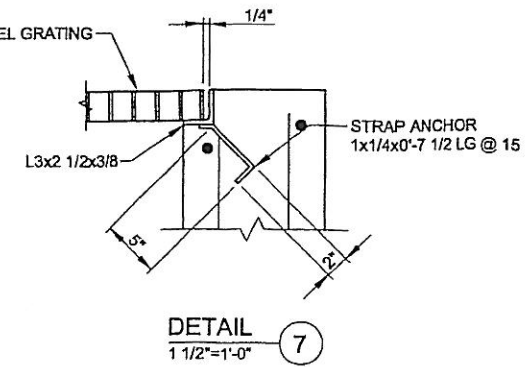
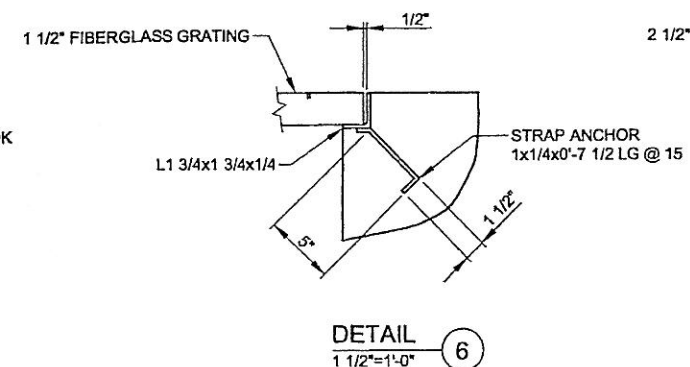
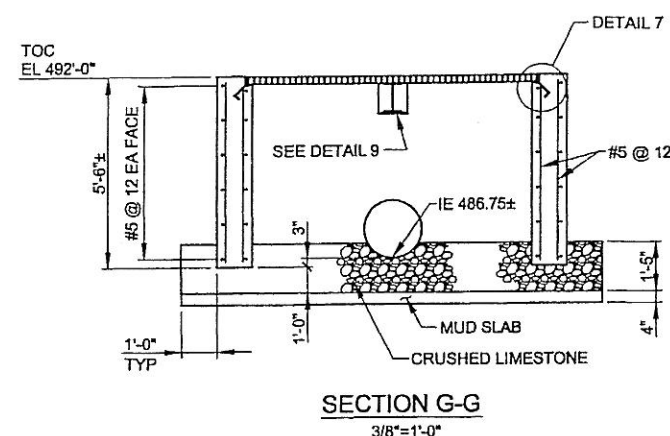
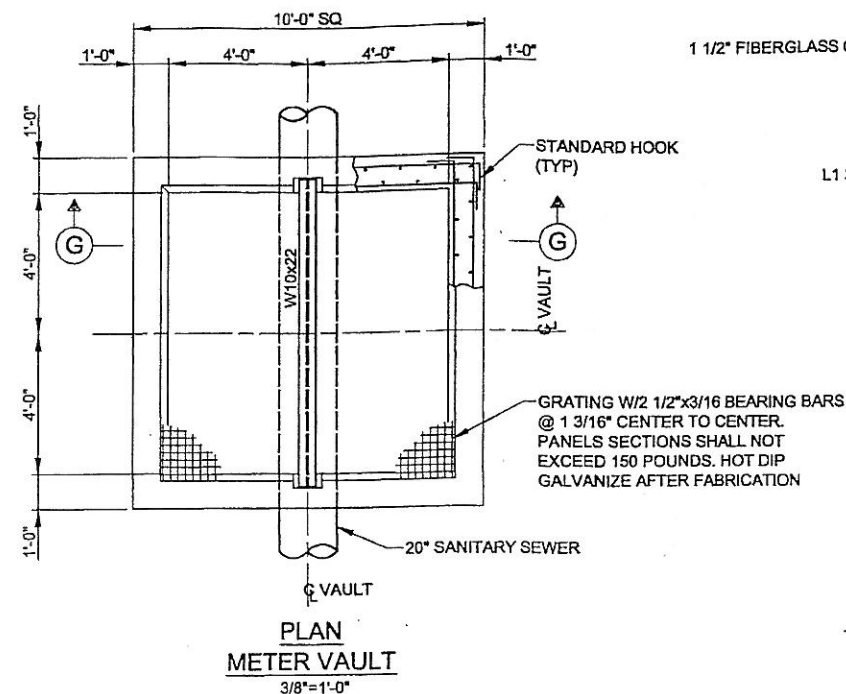
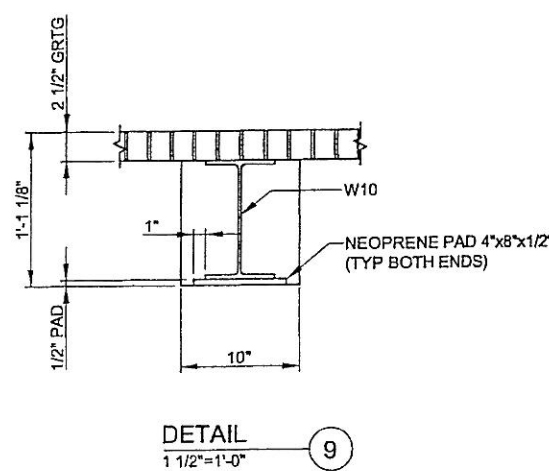
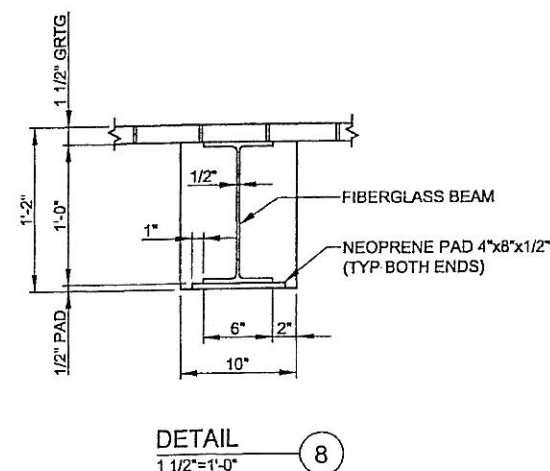
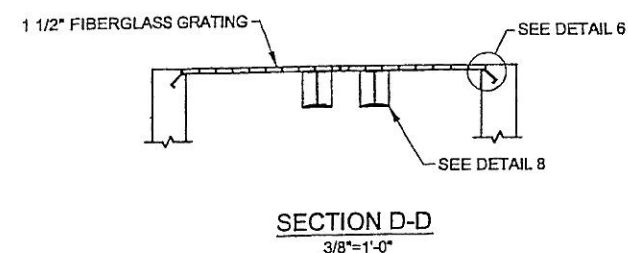
DWG. NO.

33 OF 36

NORTH TEXAS MUNICIPAL WATER DISTRICT			
ROCKWALL-HEATH TRANSFER SEWER RHCF 01-1, SECTION 2			
SANITARY SEWER DETAILS FLOW SPLITTER BOX			
KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.			
DESIGNED	KBR	HORIZ. SCALE	AS SHOWN
DRAWN	KBR	VERT. SCALE	AS SHOWN
CHECKED	THG	DATE	SEPTEMBER 26, 2003
12-8-03	NO DATE	REVISIONS	MADE/CKD



PLAN
GRATING DETAILS
FLOW SPLITTER BOX
3/8"=1'-0"

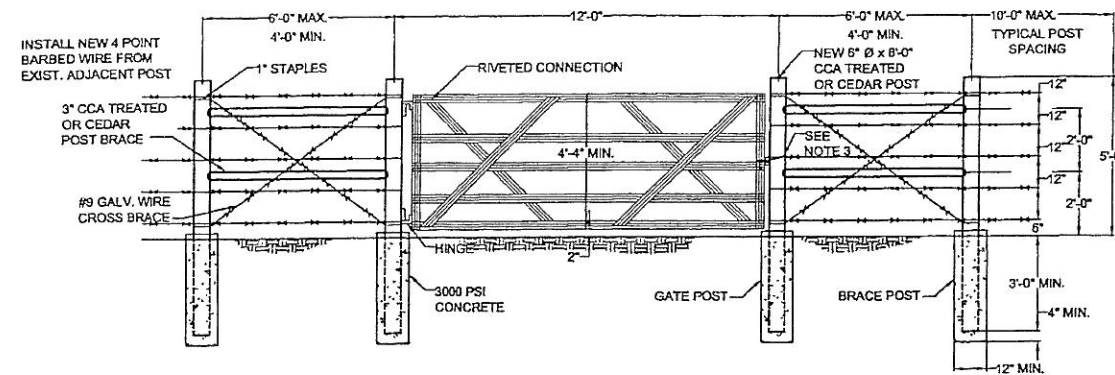
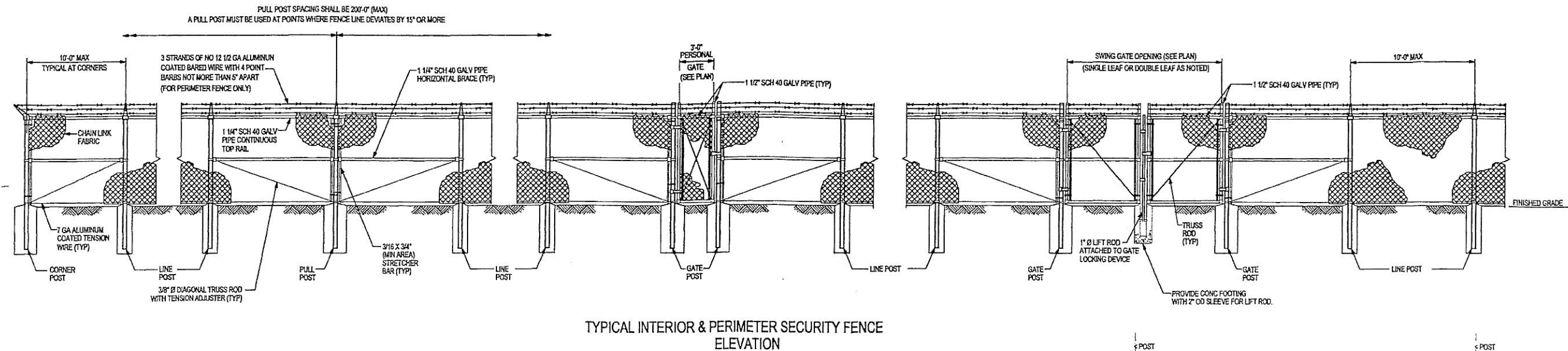


NOTES:

- CONTRACTOR TO VERIFY DIMENSIONS OF SLIDE GATE FRAMES AND ADJUST LOCATION OF FIBERGLASS BEAMS TO AVOID AN INTERFERENCE.
- FIBERGLASS BEAMS TO BE 12" DEEP WITH A 1/2" THICK 4" WIDE FLANGE AND 1/2" THICK WEB.

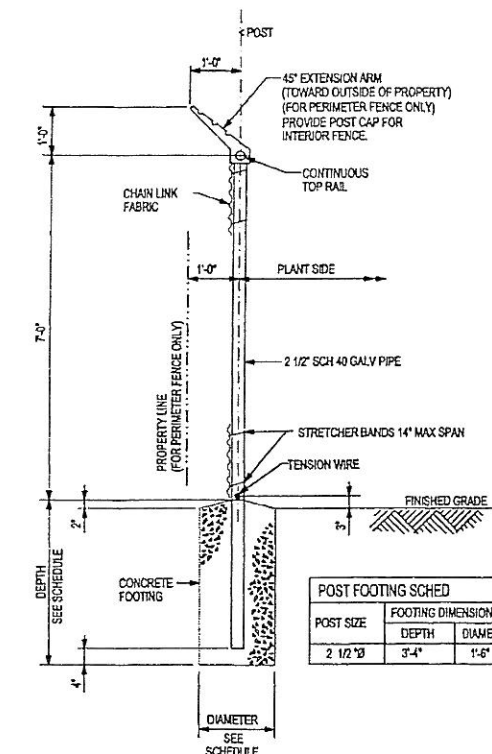
<p>NORTH TEXAS MUNICIPAL WATER DISTRICT</p>			
<p>ROCKWALL-HEATH TRANSFER SEWER</p>			
<p>RHCF 01-1, SECTION 2</p>			
<p>SANITARY SEWER DETAILS</p>			
<p>SPLITTER BOX GRATING AND METER VAULT</p>			
<p>KBR Kellogg Brown & Root, Inc. Engineered by KBR Technical Services, Inc.</p>			
DESIGNED	KBR	HORIZ. SCALE	AS SHOWN
DRAWN	KBR	VERT. SCALE	AS SHOWN
CHECKED	THG	DATE	SEPTEMBER 26, 2003
NO. DATE	REVISIONS	MADE/CKD	JOB NO. CM-0148
			DWG. NO. 34 OF 36



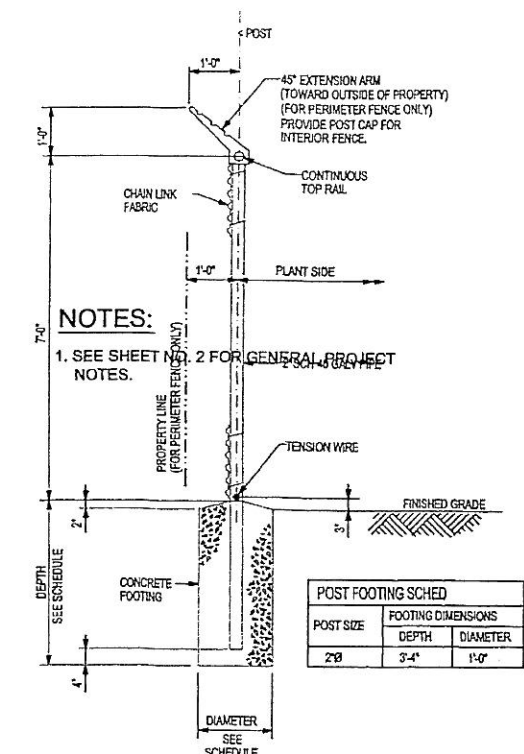


- NOTES FOR STEEL GATE:

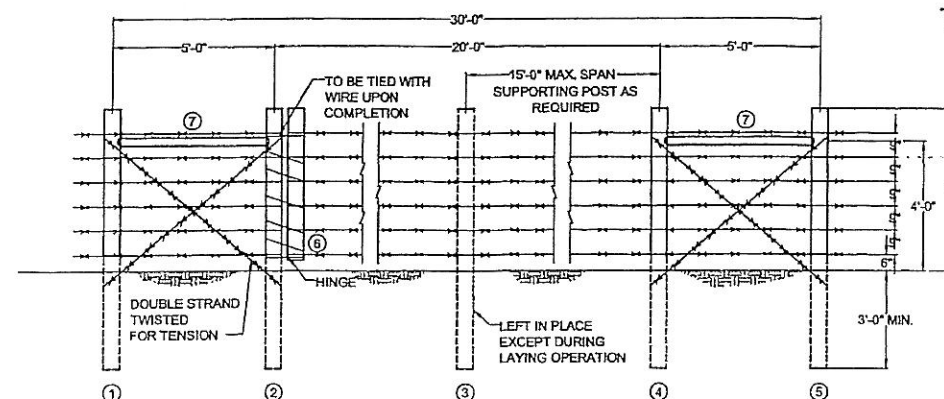
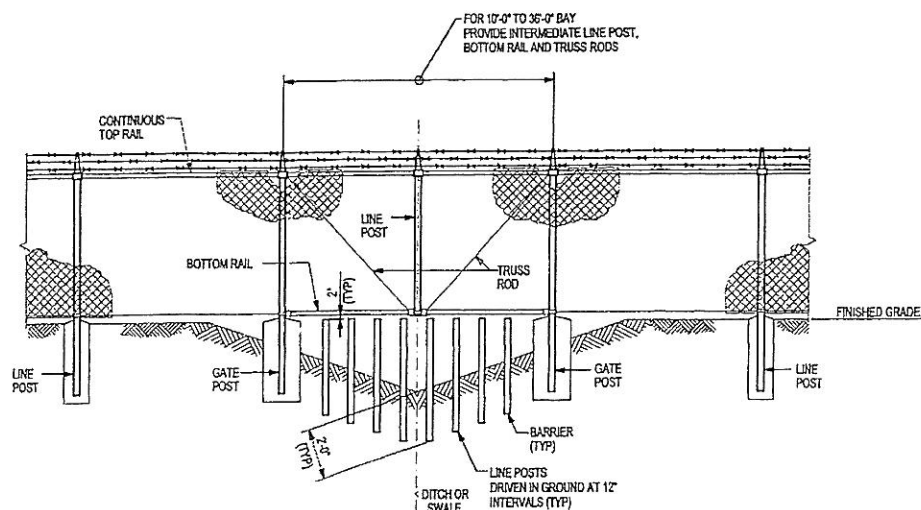
1. GATE MANUFACTURER SHALL FURNISH GALVANIZED HINGES AND HINGE BOLTS.
2. GATE MANUFACTURER SHALL FURNISH GALVANIZED SLIDING LATCHES FOR GATES LOCATED IN FIELD FENCES.
3. CONTRACTOR SHALL FURNISH GALVANIZED CHAIN AND PADLOCK FOR GATES. LOCKS SHALL BE IDENTICAL FOR ALL GATES. MASTER KEY SHALL BE GIVEN TO THE NORTH TEXAS MUNICIPAL WATER DISTRICT. USE MASTER LOCK NUMBER SPECIFIED BY NTMWD.
4. WHERE EXISTING ADJACENT POST IS MORE THAN 6'-0" FROM NEW GATE POST, CONTRACTOR SHALL INSTALL NEW LINE POST 6'-0" MAX. FROM GATE POST.
5. WHERE NEW FENCE IS REQUIRED THE POSTS SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10'-0", SHALL BE 6" Ø MIN. AT TOP, 8'-0" LONG, SET A MINIMUM OF 3'-0" BELOW GROUND AND THOROUGHLY TAMPED IN PLACE.



POST FOOTING SCHED		
POST SIZE	FOOTING DIMENSIONS	
	DEPTH	DIAMET
2 1/2" Ø	3'-4"	1'-6"

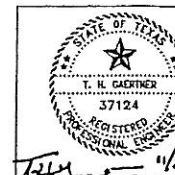


POST FOOTING SCHED		
POST SIZE	FOOTING DIMENSIONS	
	DEPTH	DIAMETER
2x4	3'-6"	1'-0"

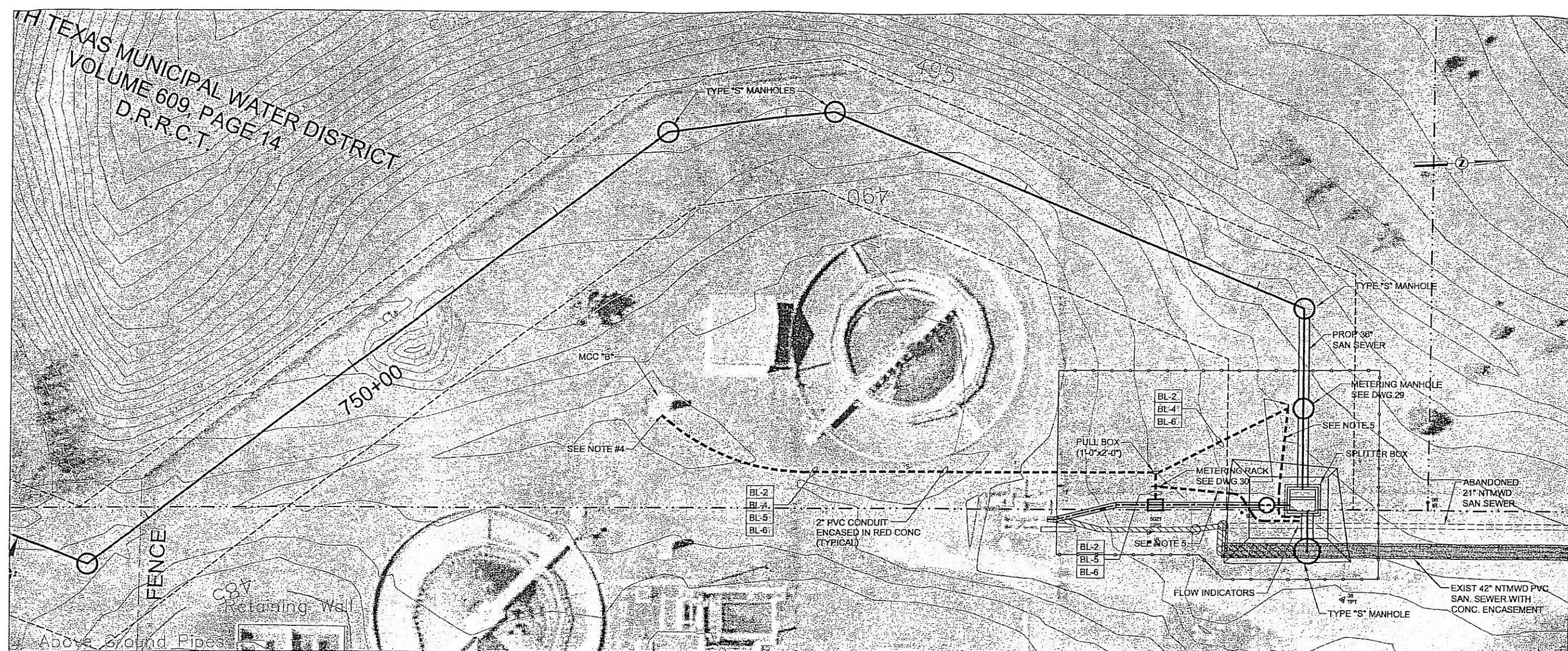


- ### MATERIAL DESCRIPTION

- | | |
|-------------------|---|
| NO. 1, 2, 3, 4, 5 | 8" TIP x 8" CCA TREATED OR CEDAR POST |
| NO. 6 | 5" x 5" x 4'-9" CCA TREATED OR CEDAR POST |
| NO. 7 | 5" x 5" x 5' CCA TREATED OR CEDAR POST |
| WIRE | 12 1/2 GAGE - 4 POINT GALV. BARBED WIRE |




A	11/19/03	Added Permanent Steel Gate detail.	JL	THG
A	11/11/03	Added Gate for Barbed Wire Fence detail.	JL	THG
NO	DATE	REVISIONS	MADE	CKD



PANEL: "BL"				
LOCATION: MCC "B"				
ENCLOSURE: MCC				
FAULT RATING: 10KA				
VOLTAGE: 120/240				
AMPS: 100				
PHASE: 1				
MLO/MCB: MCB (100A)				
CKT	BRKR	LOAD SERVED	WIRE/CONDUIT	TAG
1	20/1	PORTABLE DEWATERING PUMP RECPT.	2#12, #12G., 3/4"C.	BL-1
2	20/1	METERING STATION LIGHTS	2#12, #12G., 2" DUCT	BL-2
3	20/1	FLOOD LIGHTS	2#12, #12G., 3/4"C.	BL-3
4	20/1	PHARSHALL FLUME FLOW METER	2#12, #12G., 2" DUCT	BL-4
5	20/1	ULTRA SONIC FLOW METER	2#12, #12G., 2" DUCT	BL-5
6	20/1	METERING STATION RECEPTACLES	2#12, #12G., 2" DUCT	BL-6
7	20/1	SPARE		
8	20/1	SPARE		
9	20/1	SPARE		
10	20/1	SPARE		
11	20/1	SPARE		
12	20/1	SPARE		
13	20/1	SPARE		
14	20/1	SPARE		
15	20/1	SPARE		

- NOTES:
- SEE SHEET NO. 2 FOR GENERAL PROJECT NOTES.
 - REMOVAL, PLUGGING, OR ABANDONMENT OF EXISTING FACILITIES TO BE COORDINATED WITH NTMWD.
 - CONTRACTOR TO PROVIDE AND INSTALL EASTECH BADGER, TRANSIT-TIME ULTRASONIC FLOWMETER, MODEL 4600.
 - CONTRACTOR TO VERIFY ANY EXSITING MCC STUB-OUTS. IF NONE ARE AVAILABLE COORDINATE WITH THE CLIENT FOR MCC ENTRY.
 - 1" PVC CONDUIT W/1 TWISTED PAIR #16 AWG SHIELDED CABLE FROM METERING RACK TO FLOW INDICATORS AT THE SPLITTER BOX.



NORTH TEXAS MUNICIPAL
WATER DISTRICT

ROCKWALL-HEATH
TRANSFER SEWER
RHCf 01-1, SECTION 2

SANITARY SEWER
INTERCONNECTION /
ELECTRICAL

KBR
Kollogg Brown & Root, Inc.
Engineered by KBR Technical Services, Inc.

DESIGNED	KBR	HORIZ. SCALE	1"=40'
DRAWN	KBR	VERT. SCALE	
CHECKED	THG	DATE	SEPTEMBER 26, 2003
MADE/CKD		JOB NO.	C.M.0148
		OWG. NO.	36 OF 36

